Special issue

Private and Public Sector Co-operation in National Land Tenure Development in Central and Eastern European Countries
Carissimi amici, colleghi, soci AIT,

Il nuovo mandato per il triennio 1997-99 è iniziato con numerosi impegni per tutti noi e fra le principali attività troviamo:
- il seminario di Berlino: FAO/Italeco/AIT con pubblicazione degli Atti sulla Rivista AIT;
- il contratto CEC per la formazione, assegnato all’AIT e con la partecipazione di Centro Interregionale, Eurimage ed ESA.
- I° Conferenza Nazionale Parma 20 settembre-3 ottobre 1997;

Le prime due attività corrispondono ad una nuova e precisa strategia della Associazione, che prevede apertura verso l’esterno con risvolti di diffusione della materia, di didattica, e di economia nel senso che sono attività con completa copertura finanziaria.


Il seminario ha avuto grande successo ed ha messo in luce l’ottima collaborazione con FAO ed Italeco; viste le premesse non sono esclusive altre iniziative simili.

L’iniziativa è stata promossa dal Presidente uscente Adriano Cumer a conclusione del suo mandato (1994-96); l’occasione è stata giudicata dal Consiglio Direttivo uscente degna di interessamento perché consente di aprire collaborazioni, oltre alla presente, su temi di comune interesse ed allo stesso tempo di reperire fonti di finanziamento opportune per le sempre precarie situazioni economiche dell’Associazione.

Con questo spirito è stata decisa anche la partecipazione al Call for Tender, indetto dal Centre for Observation, Space Application Institute, del Centro Comune di Ricerca di Ispra. Il progetto proposto ‘Tecnologie per lo studio del territorio: strumenti operativi per le amministrazioni locali’ è stato approvato e finanziato, unico italiano su 9 accettati degli oltre 40 pervenuti. Dal 26 giugno 1997 e fino al 26 marzo 1998 l’AIT è quindi impegnata a svolgere e rispettare i termini del contratto firmato ad Ispra il 26 giugno scorso.

Il contratto CEC porterà alle casse AIT 50.000 ECU che serviranno per l’organizzazione di:
- due Seminari, di cui uno internazionale,
- un Corso di formazione presso l’ESA (ESKRIN) grazie all’interessamento di Maurizio Fea,
- la predisposizione di un ipertesto da distribuire su CD-ROM,
- la pubblicazione di un numero speciale della Rivista.

I responsabili legale, operativo, e amministrativo sono rispettivamente il Presidente, Giovannaria Lechi, il Segretario Scientifico, Mario A. Gomarasca, e il Tesoriere, Piero Dainelli, ma ne discutiamo ciascuno di noi dovrà assumersi personalmente l’interesse e portare a termine con grande cura. Con questo contratto, e con il precedente FAO, consolidiamo la fisionomia dell’Associazione e la possibilità di avere fondi e collaborazioni analoghe per il futuro. Per la prima volta, avendone la possibilità, abbiamo potuto siglare dei contratti con collaboratori che lavoreranno per questo progetto e per l’Associazione. In particolare, Paolo Pensalfi, diplomato al recente Corso IAD a Firenze, contribuirà a sviluppare l’ipertesto e Fabio Vescovi, Dottorando a Milano, contribuirà ad assolvere i gravi impegni e le scadenze contractuali. Per quanto i Consiglieri non percepiscano emolumenti, la buona riuscita delle iniziative, l’approvazione e l’interessamento dei Soci, sarà la gratificazione che ci auguriamo.

Il progetto AIT/CEC, però, potrà avere un utile riscontro e aprire nuove prospettive future solo se ci sarà una risposta concreta e collaborativa da tutti voi. Le attività proposte sono il motorino d’avviamento che, se correttamente azionate, potranno far funzionare a lungo il motore AIT.

La Conferenza di Parma, che vede per la prima volta in Italia affiancate AIT, SIFET, AIC e AMFMP, GIS Italia, ha richiesto un gravoso impeiego organizzativo e di cura con conseguenti elegittimi esigenze delle altre Associazioni. Tuttavia, la Conferenza sarà la vetrina del lavoro svolto e l’Assemblea dei Soci deciderà poi sulla validità dell’opera e sull’opportunità o meno di continuare questo sodalizio fortemente voluto da alcuni e contrastato da altri. L’idea di costituire un gruppo di Associazioni nasce dalla necessità di avere più peso a livello nazionale e di promuovere in più direzioni le attività dell’Associazione.

Questo triennio si aprirà quindi con grandi possibilità, mezzi e speranze, ma anche con le inquietudini specifici di ciascuno dei Soci per rendere i servizi ed i vantaggi che spesso ci avete richiesto e che non sempre abbiamo saputo o potuto dare.

L’impegno che ci attende non è dei più indolci.

Un saluto a tutti

Giovannaria Lechi
Presidente AIT

Mario A. Gomarasca
Vice-Presidente e Segretario Scientifico AIT
Private and Public Sector Co-operation in National Land Tenure Development in Central and Eastern European

Jim Riddell - Editor

Foreword
Good land tenure systems are a necessary foundation for sustainable agricultural practices. The on-going liberalisation of the world’s political economy has brought to the fore the need for open and transparent markets and market transactions. Thus FAO member nations are creating or extensively re-examining their legal systems, conveyancing institutions, mortgages, surveying, registry/cadastre, land information records and conflict resolution.

Former socialist economies are changing from social property models to those based on individual and private rights. Thus they are creating for the first time, or recreating long abandoned property markets in land and other natural resources. Land registration systems and their supporting institutions are not new. What is unprecedented, however, is the magnitude, and the short time span allowed for their creation. Historically landed property systems developed over many decades in rhythm with changes taking place in the social and economic evolution of a society. The sudden collapse of the centrally planned economies and the rapid integration of Eastern and Central European nations into the international economy meant that the entire land information system of an industrialised nation would have to be reorganised in as short a time as possible. Not only would these systems have to be adapted to a liberal economic and political system, but they would have to be adaptable to the constant change that is the hallmark of the market economy.

Nowhere is this more true than in the agricultural sector. The future of agriculture in the developed economies is anything but clear. This will remain a very dynamic sector for a long time. And as this sector responds and adapts, its supporting land tenure institutions will have to be able to respond to new needs and never before experienced demands.

For this reason, these processes will rely to varying degrees on modern LIS [Land Information Systems] taking advantage of the latest technology necessary to achieve overall cost-benefit returns while providing necessary services to the public. This leaves many member states in a quandary of how to achieve the level of services needed to stimulate active market participation before there is sufficient economic growth to generate the tax base necessary to support national land tenure institutions. Thus, it emerges as a legitimate policy choice with each of the national land tenure institutions:

Is there a role for the private sector and the land market?
This is especially important to countries whose national budgets and administrative infrastructures are already limited. The argument in favour of private sector approaches is efficiencies in both cost and timeliness of service; on the other side it is a fundamental responsibility of government to provide its citizens with precise information and security in landed property transactions. There exists a wide range of examples of public sector and private sector co-operation, the challenge that all nations are facing is to identify and implement solutions that respond to their own situation.

Introduction

The Seminar took place at the University of Bologna Residential Centre in Bertinoro – Forlì (Italy) on April 1-5 1997, and itself is the result of public and private co-operation. The Seminar received financial and technical support from: AIT Associazione Italiana Telerilevamento; ERVET SpA – Politiche Ambientali; Italeco SpA IRI – Irintecnica Group; OPVC – Australia; TERANET, Canada; Aerial Images, USA; and the Inland Revenue Service of the United Kingdom.

The Italian Ministry of Finance, the Italian Ministry of Agriculture, Food and Forestry Resources and the IRI Group have also participated in the organisation of the event.

The programme
The Seminar aimed to present concrete examples and share experiences in public and private sector co-operation. The Seminar has been structured and organized around two important panels: the first Panel presented evidence on the obstacles and constraints of public and private co-operation viewed from representatives of the Public sector of the Central and Eastern European Countries involved in the modernisation
of the cadastral system; the second Panel focused attention on **conveyancing and finance** from the perspective of the emerging private sector of the Central and Eastern European Countries (CEEC). The topics presented at the Panels served also for the following working group sessions.

The second part of the Seminar presented important experiences from countries with well-established private sector involvement in land data development and administration.

Finally, the 3 working groups that had been established, entered in a dynamic and constructive discussion and their conclusions, presented in this document, are to serve as the basis for the development of future activities, programmes and collaboration among the participants and their respective agencies.

On the last day, the participants went on a field trip to Bologna to discuss with administrators and technical experts recent developments in the cadastral and emerging issues facing land administrators. The agenda is shown as Annex 1.

**The Web**

The Seminar in Bertinoro was organised with a number of very dynamic processes in mind. The first was that cooperation between Government and private sector service providers will by its nature always be in a constant state of flux. This will be especially the case in the near term future of the Central and Eastern European societies as new land tenure forms emerge and new kinds of services will be needed. This will be particularly true of the agricultural and rural sector where a variety of ownership systems are being tried at present. Which one will emerge as dominant will only be established once economic, political and social integration with the rest of Europe takes place. Thus, it was evident that a single meeting of the Seminar could at best serve as a catalyst, but its impact would be much greater if some sort of follow-up were built in and if the results were made available to an ever wider audience.

The Second dynamic trend that influenced the design of the Seminar is the availability of new technology and new kinds of partnerships. We found an important supporter in the Italian Ministry of Foreign Affairs and the Regional Government Group of Bologna and Emilia Romagna who not only helped financially but also assisted in finding private enterprises that would share some of the work in organising the Seminar. A second major area of support came from the profession itself. For example, the Italian Remote Sensing Association (AIT) and other international professional associations all worked hard to see that participants had access to the state-of-the-art information on private and public sector co-operation.

In this vein, it became evident that if we were to continue to share ideas after the seminar we would need to rely on the Internet. This is not the place to discuss the importance of the Internet. However, we realised that we could not publish a paper containing contributions from 22 different countries, because if we were to do so, we would have to print a book of 350 pages. Expensive to produce, time consuming in production and hard to find: the day of printed distribution seems to have joined the plane table.

The FAO World Wide Web (WWW) pages offer us the chance to inform you in detail on what has been presented in Bertinoro and to avoid presenting only condensed versions of the contributions which we would have to do if we were to publish on paper.

The Seminar documents will be accessible on the FAO Sustainable Dimension's page for the rest of the year and allow a rapid and timely updating of material to be made from any participant and participating country. The interested professional can print just those aspects which are the most relevant to the work at hand.

The present document is a necessary complement to the electronic form. This is due to the continuing contribution by our colleagues at AIT. It will offer you the reader a résumé of the Seminar, and it will also provide you with an invitation to join us at:

http://www.fao.org/ select Sustainable Development, then Land Tenure Service

**Participants**

The Seminar was attended by 30 representatives coming from the private and public sector of Central and Eastern European Countries see Annex 2. In addition, FAO Member Countries with innovative approaches to public – private sector cooperation were represented by their private and public sectors in the case of Italy, Australia and the United Kingdom; Canada and USA were represented by private companies and finally consultants and official of the PHARE Project (European Union). The Director of the Rural Development Division, Mr. Gustavo Gordillo de Anda and Mr. Jim Riddell, Chief of the Land Tenure Service, represented FAO.

**The Seminar**

**Opening statements**

**Welcoming Address Leonardo Melandri**

Senator Melandri welcomed the participants to the International Seminar and to the Region of Emilia Romagna. He placed the subject matter of the Seminar in the historical context of the community of Bertinoro.

The role of the Italian Ministry of Foreign Affairs - General Direction of Cultural Relations in the Promotion of Scientific Events Gianfranco Cicognani

The support of the Italian Ministry of Foreign Affairs to this international scientific Seminar, with 54 participants coming from 22 different Countries, is an initiative in line with the Italian policy, which has the aim to promote Italian scientific and technological co-operation with the countries of Central and Eastern Europe. A further goal of the Ministry is to assist countries in the Region to develop suitable solutions in order to create co-operative initiatives, identify priorities for planning bilateral scientific programs, and to promote direct
contact among Italian and CEEC public and private organisations.
The Italian Law 212 is an operative financial tool available to
the Italian Government for developing bilateral and
multilateral scientific co-operation projects with Central and
Eastern European Countries, in co-ordination with the
General Direction of Cultural Relations activities.

With the above in mind, Mr. Cicognani wanted to assure all
the participants at this international Seminar, the importance
of the Ministry places on their endeavours. The Ministry looks
forward to the conclusions to help guide the participants in
the future, giving the wishes of a very productive stay in
Bertinoro in those exceptional surroundings.

Rural Development New Trend and Emerging Coalitions1 by G.
Gordillo de Anda Director, Rural Development Division, FAO.
The world's agricultural systems are changing. The growing
international debate on how economic and political
liberalisation can be the most effective mechanisms for
ensuring economic efficiency, social well-being and political
efficacy at the national level has produced clear impacts on
the world’s agricultural systems. Changes in agriculture are
reflected in both theory and practice.

Firstly, the abandonment of old models has led to the
substantive changes in the agricultural system and its
relations with other sectors of national economy.

Secondly, changes have resulted in a new theoretical
advocacy regarding the institutional structure of the
agricultural system and in the recognition of a new role and
functionality for the state.

State/Market
Social diversity has led in part to the adoption of ideological
references for a wider representation. At present, state and
market are at the core of the ideological discussion (without
disregarding another reference: material production and the
environment). At the end of this century, a more radical
formulation would be that the image of the world is either
built as a mirror of the market, or the state is solely
responsible for designing the world in which citizens live.

New ways of capital formation are being sought and other
forms of ownership by civil society have emerged with the
reduction of state property. The concept of private property is
also being enlarged and now covers also communal
family property as forms of social, private property, a well as
co-operatives and corporate enterprises, in addition to strictly
individual property.

State and market are mutually related, but in order to benefit
society, their norms of interaction have to be public and
subject to revision. This is the best way to correct the
negative impact of economic changes on social processes.

Panels
First Panel: Major Constraints and obstacles in Private and
Public Co-operation in modernising Land Tenure.
The chairman, Professor Andrzej Hopfer contributed to the
opening of this section by presenting the major problems and
obstacles that the CEEC countries are facing.

First it is important to state that: "No problem of food security
creates the main difficulty - on the contrary, there is or may
very soon be a surplus of agricultural production both as a
food and as a market commodity. In order to improve the
standard of living, to increase employment in the rural areas,
land must be kept and used by proper farmers, in proper
portions, for proper reasons and under proper conditions."

Consequently there are three major subjects for this Seminar
to address:

- Agriculture and rural land use,
- The legal framework,
- Land markets.

Agriculture
In the CEEC the agricultural sector needs clear policies that
will support the development of rural areas (credit, equipment
and services). Land use must be planned and there must be
general conditions in place that encourage an increase in the
demand for agricultural resources and products. A
sustainable land ownership system with proper registration
(cadastre) will favour the private sector in agriculture.

Finally the important role of teaching and training the people
that work in the agricultural sector cannot be forgotten, to
help them advance in a competitive market.

Legal Framework
The challenge will be on creating and carrying out a land
reform that allows a proper supply of land to meet existing
demand. Legal security of landed property, eg. a system of
land title, and other legal assurances of secure use of land,
will be the target of CEEC farmers in the coming years.

One of the key factors will be a system of easy and safe land
transfer between private farmers. But first of all, there will
need to be safe and secure transfer of land from the state or
other collectives bodies to the private person. Once again,
the education and training of lawyers and legal advisers is
fundamental for developing an adequate land information
system and the supporting institutional framework such as
registries, mortgage banks, etc.

It is also important to use some applicable measures - legal
and technical to ferret out the old and create the new farming
units (land consolidation, land reclamation).

Land Market
The farmers of the CEEC must be able to find financial
support from "Land Banks" that would support young,
progressive farmers willing to buy or lease land. The
existence of a preferential system of land transfer from the
state to the farmer, using special tax policy, credits and
subsidies will help the agricultural sector to develop and to
increase its efficiency towards a competitive market. The
important matter is to not let agriculture become a secondary
activity. Thus we will need to use marketing techniques and
other forms of promotion to support the agricultural sector and the land market.

Second Panel: Conveyancing and finance: Private Sector Experience in Eastern Europe

Mr. Eric B. Shearer pointed out in his contribution to the Seminar, that there are "twin policy goals" which the CEEC share:
- the social goal of re-creating and maintaining a sound family-farm system (even within a modern co-operative set-up),
- the economic goal of creating an efficient agriculture capable of competing with and/or eventually joining the European Union's common agricultural programme.

In order to achieve these goals the CEEC must be able to count on suitable financial institutions (and these, in turn, must be able to count on a legal framework that at least limits their risk). The key factor that will permit a new economic development in the CEEC is the evolution of a high quality private sector capable of meeting the demand for professional services in financial, legal and technical fields.

Mr. Kestutis Kristianaitis, from the Lithuanian private sector (Matininkai Korporacija), concluded his intervention stating that the experience gained in the free market is now facing the need for advanced education and training. The Seminar focused, during this Panel, on the increased participation of experts in the CEEC in national and international professional associations. This was seen as an important step in having the established private companies provide assurance to governments, as well as to private sector clients, that they are able to meet international quality standards.

This was supported by a brief report by Dr. A Alexsiene who represented the newly re-established Lithuanian Association of Professional Property Valuers that had re-organised after a hiatus of 50 years. The growth of professional organizations is seen as critical as regards provision of quality professional services.

Important experience of public and private cooperation

The Private sector has been involved in many activities which traditionally have been handled within the public sector, as Mr. Paul Sanderson, Chief Executive's Office, Valuation Office Agency (United Kingdom), pointed out during the Seminar.

Privatization of public utilities in the UK has been a major change which has taken place over the last 15 years and movement from the public to the private sector continues through a variety of initiatives including further privatization, the creation of executive agencies, compulsory competitive tendering, outsourcing, the private finance initiative and other measures designed to improve efficiency and effectiveness.

The representative of the Italian Ministry of Finance, Mr. De Santis, explained the progress that the Italian government has made in recent years in modernizing the Italian cadastre.

The Italian cadastre system is currently administered from two offices (Catasto and Ufficio del Registro). The Ministry of Finance is trying to unify the land tenure management procedures. Actually, this choice comes from the need to unify the Property Register, in order to allow the Cadastre to independently hold and issue both maps and property titles, with resultant economies in personnel costs, reduction of possible registration delays and consequent improvement in property tax collection.

A very important contribution to the Seminar was provided by the officers of Victoria Government (Australia). In 1992 the state implemented a programme aimed at improving the standard of services. An essential element of this programme was the public sector reform, with a reduction of cost for the government and provision of more efficient services.

The Victoria Government Officers described outsourcing as the provision of goods and/or services by an external party which were previously supplied internally. Set out in a contractual agreement, an agreed level of service is provided for a pre-determined fee. The government is still accountable for the delivery of services. However, the actual work is undertaken by the private sector. The quality of the services is the most important aspect that government requires of the private contractors. Since its implementation, outsourcing has been a successful tool that has here permitted government to provide better services at lower costs.

Aerial Images described a service available to the citizens of a number of communities in the United States by implementing an emergency service system on what is essentially a cadastral base plan. Through the Enhanced 911 technology it is possible to locate immediately the need for assistance (police, fire department, etc.) and to give important information to the emergency teams and to the drivers of vehicles.

In order to be efficient the E-911 system must rely in a modernized cadastral mapping system. The high initial cost of the implementation of a GIS based cadastral mapping plan is financed by a nominal service fee added to the phone bill and through integrated data services offered to multiple use/user agencies.

Italeco illustrated the company's experience in the field of cadastral up-dating through the use of digital orthophotos and satellite imagery as a basis for setting up LIS and GIS applications. This is an example of how new technologies can be applied to reduce the expenses of a very costly product.

TERANET provided the participants of the Seminar with an excellent example of how private and public sectors can cooperate in creating a working LIS for land registration and land administration. The government of the Province of Ontario (Canada) realized that it needed to modernize its entire land registry as well as related data sources if it was to...

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provide services demanded by rapid development. In this context the Provincial government launched a request for bids from the private sector for ideas on how to achieve this in the most cost effective and least disruptive manner. A consortium of private contractors who produced a plan that the government considered most appropriate was then formed into a Provincial project called TERANET. TERANET is considered a great success and subsequently other Provinces in Canada are adopting the same approach.

Another important experience of private and public cooperation was presented by ERVET, an Italian private company which is partially owned by the Emilia Romagna regional government. ERVET is currently working on a project for a new information system using GIS. The project’s name is TEMISIA (Territorial Multimedia Information System for Industrial Areas) and is co-financed by the European Union in the framework of the INFO2000 program. The project is under the responsibility of ERVET, its proposer and co-ordinator, with the collaboration of three European partners (OIR, Austrian Institute for Territorial Planning; FORTH, Greek Institute for technological Research; WDA, Welsh Development Agency), the technical and financial contribution of Emilia-Romagna Territorial Programming Assessorship (with the technical contribution of the Regional Cartographic Service), and the participation of CINECA (an inter-university Centre skilled in telematics and a service provider for the Internet). 

TEMISIA is a testbed for building European standard model for gathering, organising, connecting and spreading information concerning industrial areas. The information service, based on GIS technologies, will be accessible on-line (through Internet) in order to search and visualise data, maps, images and to perform different analytical functions for industrial areas and the communal territories concerned. The information system will concern: geographic location, enterprises, services, environmental data, access and transport, possible financial aid, etc. Industrial areas or sites are a key component throughout the EU, for urban and regional development programmes, management and environmental control. At the same time, industrial areas provide important opportunities for firms seeking the best location to establish new productive plants. However, information about industrial areas - planning status, ownership, infrastructures, amenities, accessibility, workforce, other companies already established, environmental status, and so on - is usually dispersed among a large number of sources. This is especially true for information not confined to a single local authority, but covering a whole region or a number of municipalities. This situation leads to very time consuming searches for information not only by potential investors, but also by the local development corporations, administrations and regional development agencies, the main targets of the project can be summarized as follow:

- to improve interoperability and integration among different Geographical Information Systems of European countries;
- provide a pan-European information system for Geographic Information (state-of-the-art, formats and access conditions);
- add value to information, creating on-line and easily accessible multimedia packages;
- create an easy-to-use tool for knowledge about administration and promotion of industrial areas;
- produce a personalized and marketable set of tools (software, guides, courses) in order to aid the reproduction of a similar information system in different geographic areas/regions.

**Example of Private and Public Cooperation in Land Ownership in Russia and Ukraine**

Since the beginning of the 90's the Russian Federation has paid increasing attention to the problem of land reform to meet the need for access to land property. A series of new laws were adopted and as a result 12 million people in the rural areas received private property and 300 thousand private family farms were established. Furthermore, considering the entire population in the urban and rural context, more than 40 million citizens were granted land parcels that averaged between 0.06 and 3 hectares. The Russian Federation State Committee for Land Resources and Land Management (GOSCOMZEM) is the government agency responsible for redistribution of land, maintenance of the State Land Cadastre and registration of land ownership rights.

The new social group of "land owners" was established in Russia but it became immediately evident that Goscomzem had to organize itself in a country that is large, has severe climatic conditions and an undeveloped infrastructure. Furthermore, a historical tradition, with respect to private land ownership, is lacking. There is also a lack of legislation regulating land issues.

To solve this situation the Goscomzemen experts have developed the two stage model of real estate formation and registration. The first stage, or the primary registration, includes general registration of all land properties using modern photogrammetric means. The cadastral map development from this procedure serves as the basis for issuing land title certificates accompanied by a parcel map plan completed with established graphic accuracy. The second stage involves accurate description of parcel boundaries and is carried out on an as needed basis or only when property rights are transferred from one person to another. In this case, the parcel has to be surveyed by conventional land survey means. The use of the two stage approach has allowed the Goscomzemen to issue more than 40 million land title certificates in five years.

The representatives from Ukraine informed the Seminar that land reform started in 1991 after the adoption of the Land Code Law. Starting in 1994 there has been an increasing attention paid to the problem of land ownership and today the
land reform is considered an important part of economic and agrarian development. The main orientation of land reform in Ukraine is toward the ownership of the land by peasant farmers and the restructuring of non-state enterprises. In order to accomplish these goals new structures have been created, such as the institution of the private land ownership, and private land use. In the near future it is expected that the transformation of more than 700 state-owned farm lands into private ownership and the transfer of land to those who work on it will take place.

**Working groups, outstanding needs and recommendations**

The background documentation, the case studies and the panels were the basis for discussion among the participants during the working group activities. The objective was to respond to the general question: the *role of the private sector in national land tenure development*. Three main topics were chosen by the participants: 1) the legal and administrative field, 2) land market development and 3) technological applications.

1) *Legal and administrative issues*

The knowledge of the legal and administrative issues in land tenure development are subjects not easy to understand for the average citizen in any jurisdiction, especially during the transition phase. On the other side, there is a lack of coordinated actions among the agencies that are responsible, both public as well as private sector service providers, in promoting a common integrated approach to land tenure development.

Clear policy guidelines should be developed by improving the legal and administrative machinery to access land ownership and use data, and to ensure data security and integrity. In addition the working group cited the urgent need to modernize and implement land valuation and taxation systems. Finally, there was unanimous agreement that governments must develop and apply modern systems of cost recovery for land information and land transaction services through broadening the use of national LIS technology. This is necessary to reduce the transaction and opportunity costs for those who want to use land for productive purposes.

It is recommended that an international cooperation action should be formed with the aim to:

- prepare a paper on comparative experiences in emerging markets,
- share information about Land Information Services management,
- share information about the effective cost for provision of land-based data.

2) *Emerging land market issues*

The working group started by recognizing the valuable work already carried out by FAO and other UN agencies and the valuable sense of cooperation that the UN agencies instill. Cross-cutting the different country experiences, the working group recognized that the common outstanding need to promote development of the private sector land markets through a coordinated action with the public sector. A viable land market should be managed through:

- a true real estate pricing policy,
- land consolidation, as a tool for improvement of the land market,
- availability of specific credit functions to fund and expand the land market.

Accordingly, the work group discussion then focused on identifying the existing constraints that hinder the development of the land market. Possible strategies should be developed to find indicators and/or coefficients that measure land market activity, to understand the importance of land registration and evaluation and to identify funding sources through private/public sector partnerships.

One of the ways suggested was to share information in the future not only between the different countries, but also between the agencies within a single country through a more extensive utilization of Internet, bulletins and journals.

3) *Technology issues*

Discussion was directed towards deepening the understanding of the major constraints related to the development of a certified methodology for modernization of Land Tenure Systems modernization. It was ascertained that many cadastral authorities are still using out-of-date, or non-standard methodologies to update and/or set-up property registration systems. A possible solution would be to change the orientation to a land registration system (i.e. Cadastre) based on market requirements rather than on historical models.

Another topic that received much attention is the need to compare different land information systems based on centralised or decentralised technology and administration and to improve quality control and data maintenance procedures as well as data security, land tenure modelling and cartographic standards.

The implementation and standardisation of the cadastral LIS should be carried out by organising training and the recruiting qualified personnel together with the use of information distribution systems like the Internet as a support to enhance public access to land tenure information. Finally, a cadastral pilot project, based on Western experience could be a useful tool to identify concrete solutions for the whole land registration process (from cartography to title release).

**Final conclusions**

The governments of the countries which were represented at the Seminar show a willing effort to build a new relationship between the citizen and the state. Governments will more and more be playing the important role of “steering” rather than “rowing”, as has been suggested during the seminar.
This is unique opportunity to set new priorities, no matter which approach or what technology is ultimately chosen for the modernization of the LIS. What is important is the realization, resulting from the seminar deliberations, that the focus is no longer on the state. Rather it has shifted to where it belongs, on the users and their needs. This is a process of shared responsibility, the Seminar concluded. The responsible parties are the Government, the citizen and the LIS professional. The Government cannot abandon its responsibility of providing a predictable, secure and understandable (i.e., clear) environment that permits all its citizens to enjoy the fruits of their labour and property. The citizen must also accept the responsibilities of liberal political and economic institutions. This means active participation in social, political and economic reform. And finally, the LIS professional, be it the property lawyer, the mortgage banker, the land surveyor, and so forth, must instil in the public the assurance of a quality job done for a fair price.

The Seminar aimed to share experiences and to show that in various countries the private sector plays an important role. It is the creativity and the dynamism of the private sector, filtered through the lens of public and professional responsibility, that forms the fundamental basis for a modernized LIS designed for land users and their needs. At the same time the participants agreed that the policy makers must be aware of the experiences that have taken place and of the potential that exists among the private companies to meet public goals.

1 The full text of the papers can be found at the Seminar’s Web site http://www.fao.org
3 The VOA has a comprehensive network of some 100 local and regional offices throughout England, Wales and Scotland. The VOA has over 4500 staff and is the largest employer of professionally qualified valuation surveyors in the world.
Annex 1
Agenda

Tuesday April 1, 1997
Opening Ceremony
Formal Opening:
- Mr. Giancarlo Cicognani, Italian Ministry of Foreign Affairs.
- Mr. Leonardo Melandri, Italian Parliament.
- FAO Introduction to the Seminar: Mr. Gustavo Gordillo de Anda, Director, FAO Rural Development Division.
- Seminar Goals and Organisation: Mr. Jim Riddell, Chief, FAO Land Tenure Service.

Major constraints and obstacles in private and public co-operation in modernising land tenure:
The challenge for Central and Eastern European Countries
- Chairperson and opening comments: Mr. Andrzej Hopfer, Olszyn University of Agriculture and Technology, Poland.
- PANEL I: Ms. Baiba Zeimiele, Mr. Bronislovas Mikuta, Mr. Sushanek Vit, Mr. Gyorgy Fenyo.
Conveyancing and finance: Private Sector Experience in Eastern Europe
- PANEL II: Mr. Maldo Pajo, Mr. Kestutis Kristinaitis, Ms. Albina Aleksiene and Mr. Eric Shearer
- Organisation of the Working Groups

Wednesday April 2, 1997
Comparative Experience:
- The Italian Experience for Cadastre Reform
  * National Institutions: Ministry of Finance Mr. Antonio De Santis
  * Regional level – Emilia Romagna: Ervet – Mr. Roberto Montanari
  * Private sector experience: Italeco – Mr. Lorenzo Turchi, Mr. Pierluigi Potenza, Mr. Fabio Volpe
  - Using the Private Sector for property tax development
- Private Sector Participation in Land Information System Development and Administration
- Outsourcing as a tool for effective land data administration: Mr. John Parker, Surveyor General, Victoria, Australia; Mr. Laphier Graham, Natural Resources and Environment, Land Title Office, Australia.
- Remarks on the theme of the Seminar: Mr. Robert Cross, The Outsourcing and the Contract Management Unit Overseas Projects Corporation of Victoria (OPCV) – Australia.
- E–911System in the United States: a Model of Private and Public Sector Co-operation for the Development of Regional or National LIS and Cadastre: Mr. Ken Ferguson and Mr. Peter Norris, Aerial Images, Raleigh, North Carolina, USA, Mr. John Hoffman, Areal Images Inc., USA.

Thursday April 3, 1997
Comparative Experience
- Public and Private Experience in Regional Planning: the Teranet example. Mr. Chris Valentine.
  Working groups activity

Friday April 4, 1997
(Open to public participation)
Reporting of Working Groups to Plenary
Presentation of Final Conclusions

Saturday April 5, 1997
Field Trip to Bologna
- Land Registration and Cadastre Modernisation in Progress and Legal Reforms
- Regional Cartographic Office

Sunday April 6, 1997
Departure of Participants
Annex 2
List of Participants

Bertinoro - Italy 1 - 5 April 1997

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In 1942 the number of land properties in Hungary exceeded 1 million. In certain parts of Hungary large farms prevailed, other parts instead were characterized by small and medium sized farms. In the villages the only source of living was provided by the land, thus a great hunger for land was experienced.

With the land reform the majority of the land area suitable for being cultivated available for the land reform became the property of the population aspiring to earn its living from agriculture in 1945. Due to the large number of the land claimants an average of 5-10 cadastral "holds" (2.9-5.8 ha) was given per family. The so formed land properties were strengthened by the unbelievable efforts of the new owners and in a few years the agricultural production got into an upswing.

Table 1 illustrates the situation in 1947 regarding the number of land properties and respective areas.

In the early 1950's began the forcibly imposed "socialist transformation" of agriculture which was essentially completed by the early 1960's after greater or smaller detours. As a result of repeated land consolidations the system of property based on private ownership of land ceased to exist and the state and cooperative farms came into being. Table 2 shows the land properties structure at the end of the 1980s. Prior to the socio-economic changes the conditions of land ownership/utilization were fundamentally determined by the cooperative and state ownership (utilization) of the cultivable land. The private property of the land was not remarkable. No land market existed, the state measures limited the trading of lands, the legal regulations were intended to create the unity of land ownership and utilization.

Following the socio-economic changes (of the 1990s) the conditions of land ownership of the previous years were fundamentally altered. As a result of the compensation process, privatisation of the cooperatives and privatisation, the private ownership of land prevailed; a land area of more than 5 million ha was under the ownership of the citizens. The swift, mechanical and not duly considered arrangement of conditions of land ownership resulted in the creation of a land property structure which is unsuitable for an effective agricultural cultivation. The parcels of land obtained by the individual owners under different titles lie scattered; their average area is 1 ha, and their form and size are such that they cannot be economically cultivated. Meanwhile ownership and utilization of land have become strikingly separated from each other over the greater part of the area involved in the change of ownership.

The majority of citizens owning land utilize their land property through leasing. This will not change for a long period of time. Consequently for the sake of an efficient agricultural production, the operating conditions of the entrepreneurs (tenants) who earn their living from agriculture are to be improved also through creation of land utilization security.

The land market has not yet been developed; its functioning is hindered by the incompleteness of the measures of different real estate policies. The legal and illegal purchase of land for speculative purposes is significant, but cannot be precisely estimated because of the low price of the land (1000 Ft/golden crown, on the average). Regarding international land transactions, generally foreigners are allowed to purchase productive land, but they must get a purchase permission. In the permission process a system of conditions is formed, under which the homeland citizen enjoys a priority in most of the cases. The lack of a system of institutions (land credit, mortgage, etc. institutes) supporting the purchase of land of farmers (owners and tenant entrepreneurs) conducting agricultural production by vocation can be felt. A land market influenced by state resources cannot be conceivably without the establishment of said system of institutions.

Unregulatedness of the conditions of land ownership and utilization, long term unambiguous orientation hinder the creation and consolidation of the competitive agricultural production units (family farms, enterprises based on land leasing). Accordingly, any process promoting the establishment and improving the property structure (voluntary exchange of land, land consolidation process and support of land purchase) is to be supported by state sources. The land ownership and utilization conditions necessary to meet the requirements of a market economy can only be achieved in the Hungarian agriculture with the support of the state.

In each of the EU countries the conditions of ownership-utilization (acquisition of land title, land leasing) of productive lands are prudently regulated. It is thus inevitable that provision be made in the course of the ongoing amendment of the 1994 L.V. Land Act for re-regulation of the rights and liabilities related to land ownership and utilization to conform them to the EU regulations. In the framework of

(1) Director General Department of Lands and Mapping Ministry of Agriculture, Republic of Hungary. E-mail: gyorgy.fenyom@f-m.x400.gw.itb.hu
Table 1 - Number and area of landed properties. (as of 1947)
(About the number of landed properties of 50 ha and smaller)

<table>
<thead>
<tr>
<th>Land properties</th>
<th>Total</th>
<th>Arable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>number</td>
<td>%</td>
</tr>
<tr>
<td>50 cd</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>51 - 100 cd</td>
<td>15 582</td>
<td>-</td>
</tr>
<tr>
<td>100 - 200 cd</td>
<td>6 034</td>
<td>-</td>
</tr>
<tr>
<td>201 - 500 cd</td>
<td>4 103</td>
<td>-</td>
</tr>
<tr>
<td>501 - 1 000 cd</td>
<td>1 457</td>
<td>-</td>
</tr>
<tr>
<td>1 001 - 3 000 cd</td>
<td>847</td>
<td>-</td>
</tr>
<tr>
<td>3 001 - 5 000 cd</td>
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<td>5 001 - 10 000 cd</td>
<td>116</td>
<td>-</td>
</tr>
<tr>
<td>10 001 - 20 000 cd</td>
<td>51</td>
<td>-</td>
</tr>
<tr>
<td>20 001 - 50 000 cd</td>
<td>24</td>
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</tr>
<tr>
<td>50 000 -</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*1 cadastral = 0.575 hectares

Table 2a - State farms (combines) by area and golden crown.
(as of 31.05.1989)

<table>
<thead>
<tr>
<th>Area category (ha)</th>
<th>number</th>
<th>area (ha)</th>
<th>%</th>
<th>golden crown category</th>
<th>number</th>
<th>area (ha)</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>1 000</td>
<td>3</td>
<td>1 839</td>
<td>0.2</td>
<td>7,10 - 10,09</td>
<td>4</td>
<td>11 781</td>
<td>1.9</td>
</tr>
<tr>
<td>2001 - 3 000</td>
<td>7</td>
<td>17 262</td>
<td>1.7</td>
<td>10,10 - 14,09</td>
<td>15</td>
<td>108 961</td>
<td>10.9</td>
</tr>
<tr>
<td>3 001 - 4 000</td>
<td>12</td>
<td>41 278</td>
<td>4.1</td>
<td>14,10 - 17,09</td>
<td>18</td>
<td>136 578</td>
<td>13.7</td>
</tr>
<tr>
<td>4 001 - 5 000</td>
<td>18</td>
<td>80 701</td>
<td>8.1</td>
<td>17,10 - 19,09</td>
<td>14</td>
<td>96 321</td>
<td>9.6</td>
</tr>
<tr>
<td>5 001 - 6 000</td>
<td>15</td>
<td>82 583</td>
<td>8.3</td>
<td>19,10 - 24,09</td>
<td>37</td>
<td>271 033</td>
<td>27.0</td>
</tr>
<tr>
<td>6 001 - 8 000</td>
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<td>153 456</td>
<td>15.4</td>
<td>24,10 - 30,09</td>
<td>24</td>
<td>223 386</td>
<td>22.4</td>
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<td>11</td>
<td>98 066</td>
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<td>231 561</td>
<td>23.1</td>
<td>36,10 - 40,09</td>
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<td>22 992</td>
<td>2.3</td>
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<td>209 422</td>
<td>21.0</td>
<td>40,09</td>
<td>1</td>
<td>11 517</td>
<td>1.2</td>
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<tr>
<td>Total</td>
<td>129</td>
<td>999 268</td>
<td>100.0</td>
<td>Total</td>
<td>129</td>
<td>999 288</td>
<td>100.0</td>
</tr>
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</table>

Table 2b - Agricultural cooperatives by area and golden crown.
(as of 31.05.1989)

<table>
<thead>
<tr>
<th>Area category (ha)</th>
<th>number</th>
<th>area (ha)</th>
<th>%</th>
<th>golden crown category</th>
<th>number</th>
<th>area (ha)</th>
<th>%</th>
</tr>
</thead>
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<td>9 549</td>
<td>0.2</td>
<td>7,10 - 10,09</td>
<td>17</td>
<td>68 609</td>
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<td>1001 - 2000</td>
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<td>173 634</td>
<td>3.2</td>
<td>10,10 - 14,09</td>
<td>85</td>
<td>324 739</td>
<td>5.9</td>
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<tr>
<td>2001 - 3000</td>
<td>260</td>
<td>657 396</td>
<td>12.0</td>
<td>14,10 - 17,09</td>
<td>222</td>
<td>987 063</td>
<td>18.0</td>
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<td>3001 - 4000</td>
<td>254</td>
<td>882 229</td>
<td>16.1</td>
<td>17,10 - 19,09</td>
<td>165</td>
<td>718 612</td>
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<tr>
<td>4001 - 5000</td>
<td>217</td>
<td>961 753</td>
<td>17.5</td>
<td>19,10 - 24,09</td>
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<td>543 703</td>
<td>9.9</td>
</tr>
<tr>
<td>5001 - 6000</td>
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<td>849 826</td>
<td>15.5</td>
<td>24,10 - 30,09</td>
<td>286</td>
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<td>6001 - 8000</td>
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<td>1 054 769</td>
<td>19.0</td>
<td>30,10 - 36,09</td>
<td>241</td>
<td>1 033 717</td>
<td>18.8</td>
</tr>
<tr>
<td>8001 - 10 000</td>
<td>42</td>
<td>388 972</td>
<td>6.7</td>
<td>36,10 - 40,09</td>
<td>70</td>
<td>311 210</td>
<td>5.7</td>
</tr>
<tr>
<td>1001 - 15 000</td>
<td>41</td>
<td>462 710</td>
<td>8.4</td>
<td>40,09</td>
<td>23</td>
<td>97 266</td>
<td>1.8</td>
</tr>
<tr>
<td>15 000</td>
<td>4</td>
<td>76 348</td>
<td>1.4</td>
<td>Total</td>
<td>1 245</td>
<td>5 496 186</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*1 cadastral = 0.575 hectares
the re-regulation the acquisition of land ownership by citizens conducting agricultural and forestry production by vocation is to be promoted in order to create the long-term land ownership and utilization unity.

The Arable Land Act regulates the voluntary exchange of land for the budgeting of which an opportunity is offered, also at present, by the Land Protection Fund. According to experience, however, development of the land property structure cannot or can, but only in the long term, be improved through the voluntary exchange of land based on agreement. Thus, land consolidation favoured by the state, aiming at the earliest possible formation of agricultural production units of appropriate size and family land properties for profitable farming, is to be carried out.

To regulate the procedure regarding general land consolidation a separate law is required. Transformation of the conditions of land ownership and the privatization can not be considered completed, because the setting out on the field, the official hand over and entry in the land registration of the parcel of each new owner acquiring land ownership in the course of compensation are not yet completed.

Privatization of cooperatives is expected to take place by the end of 1997. The entry of title in the land registration is an indispensable prerequisite for starting the land consolidation process. Thus, sufficient time remains in 1997 for a careful preparation and harmonization of the bill for the land consolidation process. The bill can get before Parliament in 1998, after approval by the government. The land consolidation can begin in 1999, after meeting the personal, material and legal conditions on the joint initiative of land owners and users. The land consolidation is not linked to time, but is a long term task which has to be carried out in compliance with the regional agricultural development.

Concerning the technical implementation of the land consolidation, an adequate amount of knowledge and experience has been acquired in the course of civil land consolidations and of the TAMA project; in the framework of this pilot programme organized in cooperation by the ministries of agriculture of the Federal Republic of Germany and Hungary, general land consolidation plans have been completed in four counties and in four adjacent settlements areas.

In forming the land properties and in the arrangement of ownership the business federation organizations play an important role. The opinion, proposal or agreement of the organizations was needed for carrying out the consolidation of a given area. The chambers of agriculture have a similar significant role in allotment of the different supports. The land owners and tenants who obtained arable land in the course of privatization do not have sufficient financial resources to bear the total costs of the land consolidation. Hence, the inherent costs must be shared between the state and the land owners and tenants involved in the land consolidation.

Protection and utilization of the arable land

Hungary’s favourable natural resources (duration and intensity of sunlight, amount of heat during the vegetation period, precipitation and water supply, arable land) enable a large variety and a great quantity of crops to be produced yearly. However, the utilization of the natural resources is unimaginable without an attentive management of the country’s water supply. Even at present water is a factor limiting the production on more than one half of Hungary’s territory and its role keeps increasing. Possibilities of crop yield increases are determined first of all by the productivity of the soil and the extension of the area used besides the meteorological and hydrological conditions.

88% of the territory of Hungary is suitable for agricultural and forestry cultivation. The area cultivated agriculturally represents about 70% of the total area. On more than one half of the productive area utilization of the potential productivity is obstructed by unfavourable natural impacts and endowments. Water erosion causes damages to mountain and hilly areas for 2.3 million ha. The area subject to wind erosion risk totals about 1.4 million ha and acidification of the soils is significant.

Considering, that the area usable for agricultural production cannot be increased, one has to strive after a reasonable utilization of arable land, which includes protection of the arable land, safeguarding and increasing its fertility, and wise land utilization.

Our arable land is our national natural resource, which cannot not be substituted, but which can be protected, recovered and improved. The protection and promotion of utilization according to the character of the land is a task of top priority.

Between the end of World War 2 and 1961 due to an ill-planned industrial and urban development policy, the arable land area of the country decreased by about 200,000 ha. In view of this undesirable situation a law, the first in Hungary and unprecedented in other countries, was passed in 1960 for the protection of arable land. As a result, the decrease in loss of arable land initially diminished. However, in 1969, in view of the interests of other branches and of the overall national economy, enforcement of the constraint became less effective. Consequently, in the 1970s the pace of the decrease again increased and showed an annual loss of 24,000 ha. In 1982 regulations were again tightened. The basic principles laid down then are still valid. However, details of the regulation were gradually altered in accordance with the requirements of the time in question.

The protection of arable land however, provides not only for the use of the land for different purposes, but also for a land use liability and promotion, whereas until 1980 only the provision concerning liability existed. However there was the possibility to also claim a support. Consequently to the general diffusion of large scale cooperative farming the amount of uncultivated land continually decreased due also to the checking performed in the field surveys. Another issue, pertinent to the 1970s, when checks on costs
were rather lenient, concerned the matter of what areas to select for productive farming. It is to be noted that as a result of supports, an area of tens of thousands of hectares formerly unsuitable for cultivation was recovered for production. At present the effective legal regulation serves properly the protection of the arable land and also enables the farmers to let the land rest. However, the conditions under which the public administration performs its function change continuously and rather suddenly: thus, certain instructions are expected from now to change in the near future. The basic instructions instead, are likely to remain effective for long periods of time for serving sustainable production development, for protection of the most important means of production of the agrarian sector.

At present the support of land protection performs sufficiently its role. The continuous adaptation of objectives according to support availability and change of conditions is unavoidable. As for its present resources, for proper support they are insufficient.

Protection of arable land cannot be guided by short term objectives. Accordingly, in granting requisition of areas for investment purposes, greater priority than what presently exists must be given to the protection of areas of good quality. Furthermore, it is necessary that investors be stimulated to claim areas of worse quality; to achieve this the payment of the land protection contribution should be more differentiated. In order to lower the expenses of the public administration it seems advisable to abolish the permission procedure and the payment of the land protection contribution under a value limit taking into account the quality of the arable land.

For the sake of protection of good quality land, the survey of the whole territory of the country and the continuation of the land evaluation system based on a soil map, which covers about 1 million ha and is completed, should be performed and, based on it, classification should be made from the point of view of land utilization.

Determination could thus be made of the areas which could be used for other purposes only in extraordinary cases as well as of the areas the greater part of which could be used mainly for afforestation in lieu of agricultural production under proper forms of support.

Following completion of the privatization processes, increasing attention should be paid to checking the utilization responsibilities. Accordingly, special attention must be paid to good quality land areas on which, also consequent to joining the EU, agricultural production is obligatory. Areas of below-average fertility and thus of uneconomic use, must however, during the uncultivated stage, be maintained in fallow for the purpose of arable land rest.
The Lithuanian Experience: Activity of the Private Sector Entities in the Emerging Property Market Environment

Kestutis Kristinaitis

Introduction
Lithuania as well as other nations of Central and Eastern Europe faced a transition from command-based to market economies in the last decade of the century. The process took off in 1991 after the Law on Property Privatisation and the Law on Restitution were adopted. The above laws legalised private ownership and encouraged development of private enterprise greatly in our country.

Development of the land market and real estate market has been gaining more in importance within the environment of general development of national economics.

This Report is an attempt to give a brief review of the progress of privatisation and of gradual development of the property market. Development of the land market is described as a part of the general development of the property market. The Report also describes the role played by the private sector in the property market, its interrelations with public entities and options of expansion of functions of private entities.

Privatisation as a Prerequisite for Development of an Assets Market

Assets
The main phase of privatisation with the use of privatisation checks was completed by 1 July 1995.

An estimated 40% of the national property of Lithuania underwent privatisation, including tangible assets and natural resources managed by the State, public agencies, private corporate and physical bodies.

Table 1 - Layout of Lithuanian National Assets (as at 1 January 1995).

<table>
<thead>
<tr>
<th>Item</th>
<th>Million Litas</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross national assets</td>
<td>129332.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Land fund</td>
<td>28542.7</td>
<td>22.1</td>
</tr>
<tr>
<td>Natural resources</td>
<td>35173.7</td>
<td>27.2</td>
</tr>
<tr>
<td>Corporate assets</td>
<td>27634.8</td>
<td>21.4</td>
</tr>
<tr>
<td>Assets of public agencies</td>
<td>9745.4</td>
<td>7.5</td>
</tr>
<tr>
<td>Domestic assets</td>
<td>25980.4</td>
<td>20.1</td>
</tr>
<tr>
<td>Official reserves of the</td>
<td>2255.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Bank of Lithuania</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Corporation Matininkai Ltd, Justinikio 62, Vilnius, Lithuania – Lithuanian Association of Property Valuers K. Strydo 6 Vilnius, Lithuania

The above data represents the values estimated by statistical data analysis approaches not based on market factors.

Buildings
Privatisation and restitution of this type of assets are stipulated by the following legal instruments adopted in 1991:

- The Law on Primary Privatisation of Public Assets;
- The Law on Privatisation of Assets of Agricultural Establishments of the Republic of Lithuania;
- The Law of the Republic of Lithuania on Terms and Conditions of Restoration of Proprietary Rights of Citizens to the Surviving Real Estate.

During the first phase of privatisation (1991-1995), 83% of gross national assets were privatised; of these, 81% were privatised by subscription of shares and 2.4% by auction.


<table>
<thead>
<tr>
<th>Field</th>
<th>Privatised Assets, %</th>
<th>Capital Share, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>88</td>
<td>71</td>
</tr>
<tr>
<td>Transport</td>
<td>86</td>
<td>28</td>
</tr>
<tr>
<td>Building</td>
<td>91</td>
<td>86</td>
</tr>
<tr>
<td>Trade</td>
<td>82</td>
<td>59</td>
</tr>
<tr>
<td>Municipal economics</td>
<td>77</td>
<td>27</td>
</tr>
<tr>
<td>Utility services</td>
<td>95</td>
<td>88</td>
</tr>
<tr>
<td>Agriculture</td>
<td>99</td>
<td>83</td>
</tr>
<tr>
<td>Private apartments</td>
<td>98</td>
<td>94</td>
</tr>
<tr>
<td>Other fields</td>
<td>34</td>
<td>30</td>
</tr>
</tbody>
</table>

The pace of privatisation was not even. Most of the buildings were privatised during 1992-1993.

By the end of 1992, 98% of private apartments and houses, 88% of industries, 99% of agricultural establishments were privatised.

Table 3 - Pace of Privatisation (1991-1995).

<table>
<thead>
<tr>
<th>Year</th>
<th>Share of Privatised Entities, %</th>
<th>Share of National Capital, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>1992</td>
<td>39</td>
<td>27</td>
</tr>
<tr>
<td>1993</td>
<td>22</td>
<td>31</td>
</tr>
<tr>
<td>1994</td>
<td>15</td>
<td>26</td>
</tr>
<tr>
<td>1995</td>
<td>9</td>
<td>13</td>
</tr>
</tbody>
</table>
Thus, private ownership and liberal market influences were introduced over a period of a few years:
- about 76% of the gross total of privatisable buildings passed to private ownership;
- about 70% of the labour force found employment in the private sector;
- the private sector contributed about 70% of gross output.

Table 4 - Distribution of Privatised Capital By Sector and Type of Holder. (as at the end of 1994, %)

<table>
<thead>
<tr>
<th>Working Stock Company</th>
<th>State</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>17.8</td>
<td>21.4</td>
</tr>
<tr>
<td>Industry</td>
<td>17.1</td>
<td>23.4</td>
</tr>
<tr>
<td>Transport</td>
<td>17.0</td>
<td>21.6</td>
</tr>
<tr>
<td>Building</td>
<td>18.6</td>
<td>17.8</td>
</tr>
<tr>
<td>Trade</td>
<td>19.1</td>
<td>24.0</td>
</tr>
<tr>
<td>Household</td>
<td>24.3</td>
<td>8.8</td>
</tr>
<tr>
<td>Utility</td>
<td>19.7</td>
<td>11.2</td>
</tr>
<tr>
<td>Other</td>
<td>19.4</td>
<td>15.6</td>
</tr>
</tbody>
</table>

Land

Land privatisation and ownership restoration are regulated by the following two laws enforced in 1991 and revised on a nearly annual basis:
- The Law of the Republic of Lithuania on Terms and Conditions of Restoration of Proprietary Rights of Citizens to the Surviving Real Estate,
- The Law on Land Reformation of the Republic of Lithuania.

The Land Fund comprises 22.1% of gross national assets (see Table 1). The land is classified into several use categories (see Table 5).

Table 5 - Classification of the Land of the Republic of Lithuania by Use (01/01/1997).

<table>
<thead>
<tr>
<th>Use</th>
<th>Area, x 1000 hectares</th>
<th>Share of Gross Area, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3,928.5</td>
<td>60.0</td>
</tr>
<tr>
<td>Forest farming</td>
<td>1,994.4</td>
<td>31.0</td>
</tr>
<tr>
<td>Other use</td>
<td>247.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Household land</td>
<td>79.5</td>
<td>2.0</td>
</tr>
<tr>
<td>The land of the National Waterbody Fund</td>
<td>155.7</td>
<td>2.0</td>
</tr>
<tr>
<td>The land of the National Vacant Land Fund</td>
<td>101.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Natural reserve</td>
<td>23.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>6,530.1</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The pace of restitution and privatisation of land is not so stunning compared to the pace of privatisation of buildings.

Chart 1 - Privatised Share of Gross Land of the Republic of Lithuania by Use (01/01/1997).

Only 1.676 million hectares of land were privatised over the period from 1991 to 1997, i.e. 26% of the gross land area.

Real estate market

Information in the Assets Section indicates the emergence of the following private property:
- 83% of buildings,
- 26% of land.

The above privatisation contributed to the development of a considerable supply of property. A considerable share of property privatised for investment checks was sold or given on lease by the new owners.

There are several reasons for exposure of property on the market:
- expectation of profit;
- inadequacy of management;
- bank debt;
- bankruptcy;
- other.

The investment checks-based approach of privatisation encouraged a rapid development of the private sector and of the demand, i.e. the core prerequisite of a market.

The Lithuanian people were massively forced to start their own enterprises. Many of them managed to earn an income. Part of the earnings were invested in real estate. The real
The real estate market started functioning after the demand and supply emerged during 1992-1994. Concurrently, the real estate lease market emerged.

Research into sales-purchase dealings that took place on the open market during 1996 has shown that 11,042 parcels of land and 74,216 real estate properties were sold over the period.

If compared to the relevant category of property, the above figures show that 1.34% of the gross total of privatisable parcels and 8.7% of buildings were sold annually. The trends and the pace of development of the land market during the several recent years will be subjected to a more detailed analysis.

Table 6 - Land Market Development Trend in the Republic of Lithuania.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross number of privatised parcels</td>
<td>475,504</td>
<td>801,936</td>
<td>822,383</td>
<td></td>
</tr>
<tr>
<td>including given on lease, pcs.</td>
<td>730</td>
<td>2,280</td>
<td>4,388</td>
<td></td>
</tr>
<tr>
<td>share (%)</td>
<td>0.15</td>
<td>0.28</td>
<td>0.53</td>
<td>+0.38</td>
</tr>
<tr>
<td>Number of remaining privatisable parcels</td>
<td>473,428</td>
<td>799,656</td>
<td>817,995</td>
<td></td>
</tr>
<tr>
<td>including held under mortgage</td>
<td>522</td>
<td>1,421</td>
<td>883</td>
<td></td>
</tr>
<tr>
<td>share (%)</td>
<td>0.11</td>
<td>0.18</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>change (%)</td>
<td>+0.07</td>
<td>-0.07</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>Number of remaining privatisable parcels</td>
<td>472,604</td>
<td>798,235</td>
<td>817,112</td>
<td></td>
</tr>
<tr>
<td>including sold</td>
<td>2,276</td>
<td>7,815</td>
<td>11,042</td>
<td></td>
</tr>
<tr>
<td>share (%)</td>
<td>0.48</td>
<td>0.98</td>
<td>1.35</td>
<td>+0.87</td>
</tr>
<tr>
<td>change (%)</td>
<td>+0.50</td>
<td>+0.37</td>
<td>+0.87</td>
<td></td>
</tr>
<tr>
<td>Gross number of parcels present on the market</td>
<td>0.74</td>
<td>1.44</td>
<td>1.99</td>
<td></td>
</tr>
</tbody>
</table>

Though at a glance the land market development trend appears positive, the pace of development, excepting the land mortgage operations, is considerably slower compared to that of the rest of the real estate market.

If we compare the number of purchase, sale, lease, mortgage and other real estate transactions that took place on the market in 1996 with the number of real estate properties privatised over the period, we see that 10.9% of the gross number of real estate properties were involved on the market while the proportion of land parcels was only 1.99%. To my opinion, two main circumstances have been hindering the land market development:

- improper legal framework;
- improper land management.

Legal Framework

1) The constitution of the Republic of Lithuania:
   - The former edition of Art. 47 of the constitution read as follows: "Land, inland water bodies and forest may be owned by citizens of the Republic of Lithuania and the State exclusively". Accordingly, no corporate body was allowed to purchase land. Land could only be acquired on a lease basis;
   - The revised edition of Art. 47, yet to be enforced, reads as follows: "Any local government, other national entity, any expatriate entity that meet the criteria listed in the Constitution Amendment Law for the European and Transatlantic Integration carrying out a business in Lithuania may be allowed to purchase land of non-agricultural use pertaining to the buildings or structures directly required for its major business. The terms and conditions of the above purchase are stipulated by the Constitution Amendment Law". Once the above amendment of the constitution is enforced, all the entities will be able to claim some 3-4% of the current Land Fund of the Republic of Lithuania. Consequently, they would hardly be able to put more life into the market.

2) Different laws and resolutions of the Government of the Republic of Lithuania have imposed certain regulations on private land property, i.e.:
   - restrictions of use and management;
   - restrictions of building activity;
   - restrictions of change in land use;
   - other restrictions.

3) The laws related to regulation of privatisation, restitution, land lease and management of public land are subjected to too frequent revisions.

Land Management

The responsibilities concerning land management, i.e. privatisation, restitution, Land Cadastre, recording of ownership and other land rights, national mapping, etc. are distributed among the following institutions:

- Ministry of Agriculture;
- Ministry of Forest Farming (merged recently);
- Ministry of Construction and Urban Development;
- Ministry of Country Protection;
The Ministry of Environmental Protection; Ministry of Justice; Ministry of Local Governments and Reformations. At present each institution is responsible for a separate class of land dependent on its use. The Ministry of Agriculture and Forest Farming is responsible for direct management of two classes of land, i.e.: agricultural land: 60%; forest farming land: 31%. The two classes of land account for 91% of the gross land funds of the Republic of Lithuania.

Chart 3 below shows that several additional institutions are involved in assisting the Ministry in the land management operations.

The above institutional land management organisation fails to meet the expectations of the population and of the State itself. Management processes are of low performance and are not cost-effective. Interests of individual institutions often prevail over those of the general target. Considering Lithuania's experience of the last six years of independence, the current institutional land and real estate management organisation is highly bureaucratic and inconvenient. It fails to assure that the expectations of the State towards development of the domestic land and real estate market and its integration into the European Union are met.

At present the Government is considering the possibility of restructuring the above organisation by separating institutional responsibilities from non-institutional land management responsibilities and by incorporating a single public land and real estate management body.

Implementation of Land Privatisation and Land Market Development

Management and implementation of the privatisation processes cost USD 14 million/year (allocated in the national budget). The funds are utilised to finance the public sector in charge of the above activity. The State does not allocate any funds for development of the private sector. The private sector remains largely unengaged by the State in the process of land privatisation. The private sector earns its income from the services it provides to land owners under the conditions of open market competition.

Chart 3 - Institutions are involved in assisting the Ministry in the land management operations.
In the Chart 4 below, an attempt is made to illustrate the cooperation of the different institutions involved in the implementation of the land management and land market development processes. We will investigate the two following major areas of land transactions to have a better understanding of the above cooperation processes:

- Privatisation and restitution of public land (74% of the gross Land Fund);
- Transactions of private land (sale/purchase, lease, mortgage, etc.) on the open market (26% of the gross Land Fund).

Chart 4 shows the Land Fund divided by rural and urban lands.

Functions of the private Sector Entities in the Land Privatisation and Restitution Processes

Chart 4 provides a clear picture of the current distribution of responsibilities. After a decision to sell a public parcel is adopted by the local government, a private surveyor company, either in town or a city, is contracted by the potential buyer to carry out the cadastral survey of the parcel. Through this assignment, the surveyor produces the data to be used as a basis for the Land Information System. On the basis of these data, the parcel is inserted into the data-bases of the Central Land Register and the Land Cadastre. Privatisable households represent a specific subject of activity of private surveyors. This type of land accounts for as little as 2% of the gross Land Fund.

In rural areas such activity is the responsibility of the Land Management Institute, a public agency. Since the agency has limited its operations to design activity (i.e. preparation of land reformation and land management designs) and does not engage in precise surveying, the data for the Land Information System are obtained through an approximate survey and from project documentation.

Rural parcels are inserted into the data-bases of the Central Land Register and of Land Cadastre on the basis of these approximate data. As much as 24% of the gross Land Fund has been privatised by applying this approach.

Afterwards, in case the owner wishes to carry out a transaction (i.e. sale, lease, mortgage, present, etc.) concerning the parcel, the counterpart, i.e. the institution responsible for approval and the institution responsible for legal registration of the deal, request that precise survey data regarding the parcel in question be produced. The owner, thus, has to turn to a private surveyor company. Otherwise, no transaction could be made.

The above approach of using approximate data of rural
parcels in the Land Information System has been the cause of problems including:
- time-wasting and unnecessary costs for the contracting parties;
- problems for the private surveyors (in practice, landlords use their land acquired on the basis of an approximate map on the in-kind basis. When performing a precise survey of the parcel, the surveyor has to adhere to the map instead of the actual use of the parcel. The difference between the map boundaries and the actual boundaries of the parcel used on the in-kind basis may be as much as 50 meters. In this case the surveyor has to obtain the approval of the mapper for any revisions concerning the original map);
- additional time-wasting for updating of the LIS data at the Central and the Regional Land Cadastre Headquarters;
- additional costs in relation to all the above unnecessary operations of public agencies.

Obviously, the provision of services in rural land privatisation processes represents a great opportunity for private surveyors in their preparation of more precise land management designs and their contribution of precise cadastral data to the Land Information System.

The Role of the Private Sector on the Land Market

Chart 4 shows that certain market land transactions take place exclusively with the aid of private sector bodies. Private surveyor companies, assets valuers, stock brokers and private notarial offices are involved in the above activity.

Private Surveyors

Pursuant to Art. 48 of the Law of Land of the Republic of Lithuania, any person holding a university education diploma, a license to engage in geodesy and mapping works and a permit to engage in public land management activity granted subject to the terms and conditions imposed by the Government of the Republic of Lithuania is entitled to practice as a surveyor. Any private surveyor holding the required license and the permit is entitled to carry out:
- topography;
- geodesic and photogrammetry;
- geodesic base thickening;
- mapping of land parcels;
- preparation of designs for land reformation and land management projects;
- preparation of designs for land parcelization and for other land management projects involving modification of dislocation of parcels of land and their boundaries (in accordance with area mapping documents);
- preparation of land management designs for management and optimisation of land use by agricultural establishments, private farmers and other land users;
- preparation of designs for land nationalization (when contracted by the Land Management Institute);
- preparation of land management designs related to identification of special conditions and restrictions of use, servitude, etc.


The data on the number of private companies holding the necessary licenses and permits to engage in the above activity is presented in the Table 7.

Table 7 - The below data show that the private sector is well developed and equipped to provide a complete range of services of land cadastral survey, topography and mapping to owners of privatised land.

<table>
<thead>
<tr>
<th>Type of Company</th>
<th>Total Number of Companies</th>
<th>Total Number of Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Unlimited Company</td>
<td>182</td>
<td>300</td>
</tr>
<tr>
<td>Private Limited Company</td>
<td>44</td>
<td>700</td>
</tr>
<tr>
<td>Public Limited Company</td>
<td>13</td>
<td>500</td>
</tr>
<tr>
<td>Total</td>
<td>239</td>
<td>1500</td>
</tr>
</tbody>
</table>

Public institutions might utilise the above potential more extensively in the process of implementation of privatisation and restitution of rural land and in preparing land reformation and land management designs as well as performing land surveys for use of the relevant data in the Land Cadastre. Whereas the 740 personnel of the Public Land Management Institute, the sole agency responsible for the above work, is not able to handle the current workload.

Private Notarial Offices

All notarial offices are private in Lithuania. Any citizen of Lithuania who holds a university diploma in law, has at least three years experience as an assessor, and has passed the notary examination qualifies for the position of notary. The above requirements are waived for any person holding a scientific degree and at least ten years experience in law. Appointment and dismissal of a notary is the responsibility of the Lithuanian Minister of Justice.

The private notary acts on behalf of the State. His / her responsibility is to prevent emergence of illegal dealings and documents in administrative law interrelations.

A notary is licensed to perform the following notarial deeds:
- notarization of agreements (i.e. contracts, wills, powers of attorney, etc.);
- assurance of protection of property disposed of by will;
- attestation of the rights to property disposed of by will;
- attestation of the rights to a part of shared property of spouses;
- banning of disposal of property subject to legal registration;
- attestation of legal instruments copies and extracts;
- attestation of signature of the person signatory of a legal instrument;
- attestation of the translation of a legal instrument from one language to another;
Private valuers are usually contracted for the purpose of valuing assets when either of the following circumstances occurs:
- transfer of the subject to a different holder (sale, non-monetary contribution, exchange, present);
- an insurance policy is applied for;
- merger or separation on the basis of a shared ownership;
- the subject is placed under a mortgage, is leased, is used as a guarantee, etc.;
- bankruptcy proceedings are applied as provided for by law;
- a court verdict regarding exaction or remedy is to be executed;
- free-will of the holder,

As at 01/01/1997 private valuers companies in Lithuania totalled 78 and employed 400 assets valuers holding valuers qualification certificates. These companies are perfectly capable of meeting the demand of the above services in an open market environment.

However, private valuers are not allowed to engage in valuation activity concerning:
- taxation;
- requisition.

An exclusive authority to carry out valuations based on the approaches surviving from the era of command-based economics is vested in the two following public agencies:
- Public Land Management Institute - for valuation of land;
- National Inventory, Design and Services Bureau - for valuation of buildings.

To eliminate unnecessary tension in the general public, to avoid legal disputes and to implement a fair assets taxation and requisition system, the following steps have to be undertaken:
- assets valuation for taxation and requisition purposes should be performed in accordance with market-based approaches;
- for such assignments assets valuers from the private sector should be engaged.

The activity of private assets valuers is subject to:
- International Valuation Standards (International Valuation Standards Committee);
- Fixed Assets Valuation Standards (TEGOVOFA);

The above legal instruments stipulate professional and ethical requirements imposed on application of internationally recognized market-based valuation approaches.

Real Estate Agents
Real estate broker is the only profession out of several professions that emerged recently in the market-based...
economic environment which does not have any transparent set of professional and ethical requirements outlined by law or by Governmental resolutions.

In most cases, physical bodies with high-school level education conduct activity as real estate brokers. However, the executives of real estate broker companies usually hold university diplomas.

The Association of Real Estate Brokers was incorporated on 11 March 1997. Its core targets are considered to be:
- involvement in the creation of a uniform set of profession and ethical rules applicable to real estate brokers;
- encouraging real estate brokers in-service training.

As at 01/01/1997 the private real estate agencies operating in Lithuania totalled 86 and employed some 300 real estate brokers.

Responsibilities of a real estate agency include:
- investing in real estate property through renovation or building activity;
- lease of real estate property;
- sale/purchase of real estate property;
- advertising, mediating in real estate sales, purchase and lease transactions.

In addition to private real estate brokers, a Public Privatisation Agency is involved in the market. Its main responsibility is the management of privatisation of the remaining 17% of unprivatised public property.

The following factors should be considered:
- experience of real estate brokers in marketing real estate property on national and local markets;
- experience of international real estate agencies in marketing real estate property on international markets.

Conclusions

Research on the options for development of cooperation between the private and public sectors in the field of development of assets marketing has led to the following conclusions:

1) public institutions fail to utilise the potential and experience of private sector entities in privatisation and restitution as well as in development of the assets market and, in particular:
- in privatisation and restitution of rural land, preparation of land reform and land management designs, and carrying out of land surveys for Land Cadastre to facilitate implementation of the Land Information System;
- in the transactions of sale, lease and exchange on the open market for cash money concerning buildings and parcels owned by the State;
- in providing solutions and implementing market-based approaches for estimation of real estate value for taxation purposes.

The potential of the private sector is least utilised in the fields of privatisation and management of land and other assets. Failure to do so has been directly hindering implementation of the Land Information System and has been preventing further progress in the development of the property market.

On the other hand, the private sector has proved by the services it provides to the market to be possessing adequate qualifications and experience to serve the needs of the parties involved in property transactions. Supply of the private market services makes a positive impact on the market activity.

It should be noted that in addition to private surveyors, notaries, valuers and real estate brokers, private law attorneys, business consultants, stock brokers and other entities are involved on the same market.

Though the private sector is well developed in Lithuania, the following problems have to be settled in the nearest future:
- systematic post-graduate and in-service training;
- professional indemnity insurance.

Solution of the above two problems will make a positive impact on further development of cooperation between private and public sectors.

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The Experience of the Czech Republic in Relation to National Land Tenure Development

Václav Voltr

General information
The total area of the Country is 7.890 mil. ha. Of these, 4.279 mil. ha are agricultural land, with arable land accounting for 3.098 mil. ha and forests 2.630 mil. ha; the remainder 0.160 mil. ha are covered by ponds and lakes (Fig. 1).
The agricultural land is divided into regions suitable for: crop production (41%); sugar beet production (24%), potatoes (14%), fodder plants production (10%), and maize (7%) (Fig. 2).
Decrease in agricultural land has stabilized during the last years at approx. 1,000 ha/year. For the greater part it concerns arable land which is converted into pasture land, meadows and grass fields (Fig. 3).
The land fund is divided into 13,071 cadastral territories. 12,537 thousand land parcels are registered as cadastral territories and 4,879 thousand parcels as agricultural land; the average area of the agricultural land parcel is 0.88 ha.

Return to the natural property relationships has become one of the biggest problems for the Czech Republic after 1989. In agriculture the problem has been solved in three ways: restitution of property to its original owners or their descendents; privatization of state property; transformation of the property of agricultural cooperatives. In the agricultural sector approximately 246 thousand restitutional claims have been made. The overall agricultural area of land being returned to the original owners by the state represents about 80% of the total agricultural area of the country. At the same time, the restitution process has conditioned and slowed down the privatization of state property. Full privatization can only occur when all restitution claims are settled and it is clear which property actually belongs to the state. Only after solution of the land property relationships will a revitalization of the land market be possible. Another important process is the transformation of the property of agricultural cooperatives. The original 1,202 unified agricultural cooperatives have been transformed into 1,142 new agricultural entrepreneurial subjects, and 521 trading cooperatives into joint-stock companies and limited companies.

Land market
The land market is one of the basic presumptions of the future agricultural development. At present there are administrative barriers in the form of unsolved restitution claims and determination of land ownership boundaries. These difficulties, coupled with economic problems in agriculture, delay the land market formation. Here is also demonstrated the great importance of the setting up of the land information system in its complex conception. The lack of primary information on agricultural land prices together with an insufficient access to data on its quality in the scope of cadastral disorient the purchaser partners and the whole process is slowed down. This is one of the reasons for the lack of confidence of banks on granting mortgage credits for agricultural pieces of land. At present these are afforded only to building plots.
The sale of pieces of land requires the judicial evaluation made by a judicial expert - private person accredited by the state. This evaluation should be a part of every contract. All contracts are collected at the cadastral office. The judicial expert warrants a correction of the contractual data and the calculation of the price of the piece of land. This price is necessary for determination of the minimum land tax.
The further connection of the cadastral data processing is still missing. For at least a general view on the market prices of

Figure 1 - Survey of Land Fund Division in CR (thousand of ha).

Completion of the building of the Land Information System is desired for further development of property relationship, for land market development, for fairness of taxation system and for further special use, e.g. landscape care, land use adjustments, water protection etc.

Return to the natural property relationships has become one of the biggest problems for the Czech Republic after 1989. In agriculture the problem has been solved in three ways:

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Voltr
The methodology of collection of the land prices in chosen districts was developed at the Research Institute of Agricultural Economics (RIAE). Till now 24 (out of 76) districts have been covered. The main results are given in Figures 4 to 7. A further development of the market price data processing according to cadastres will be possible after approval of the evaluation law by the Czech Republic Parliament. The suggestion expects the overall expert's reports data processing and further treatment of results by the Czech Statistical Office. At present the agricultural land market accounts for about 0.5% of the agricultural land area. This very low figure causes slow formation of the market maps of agricultural land. As the starting point to a land market it seems to use the rent, which is very extended. Private persons lease about 60-80% of their land, agricultural cooperatives more than 90%. Though the rent is partially influenced by the recommended rent value of 1% of the official land price, the results of the tested enterprises RIAE show substantially higher dispersion, from 0.2% to more than 4%. In spite of this the average rent is about 0.7 - 1% of the official land price.

The comparison with EC countries shows that rent in the Czech Republic is conditioned by the low level of wheat yield; this is influenced however also by further parameters, first of all by subventions to agriculture (Fig. 8).

At present no data on agricultural land rents nor rental values are processed. This lack is not being conceptually solved. At the same time, this kind of data represents, due to very slow rate of agricultural land sale, one of the most important indicators characterizing the market prices of the agricultural land.

One of the important presumptions of the land market development is the identification of the owner boundaries of pieces of land in the cadastral territory by the form of the land consolidation, or by geodetic location (boundary determination of the piece of land). Till the end of 1995, 178 thousand ha of agricultural land were solved simply on the basis of land consolidation, and the process was started for 2,700 applicants for an area of about 65 thousand ha. According to law No. 284/1991, during 1995 123 complex land consolidations (CLC) were started and 7 CLC were finished; overall, 12 CLC (2,800 ha of agricultural land) were finished. To 1 January 1996 more than 153 thousand ha was started and the CLC foundations were prepared for further 120,000 ha of agricultural land. An amount of 892 mil. CZK (Czech Crowns) was expended for land pieces evaluation, their demarcation and realization in 1995.
prepared. The general presumption is the offer of land sale to present tenants of the state farms and to further citizens of Czech origin.

The main activities of the Land Fund of the Czech Republic are the following (except for the management of the state property which is mediated by district offices):
- find state property, which was transformed into state management;
- seek the necessary data and documentation for the real estate cadastral record and to form continuous evidence of the state agricultural land and further agricultural real properties;
- afford the compensatory land pieces for those land pieces, which are not allowed to afford (according to the land law), if possible to be located in the same town;
- rent the state agricultural land to the farm tenants who became also purchasers from the foundation projects of the state estates.

At present the greater part of the agricultural land is rented.

The Land Evaluation
Aside from restitutional purposes and market land prices a very important matter is also the evaluation of land quality, which is necessary for greater fairness in the taxation system, for land consolidation, etc.

The tradition of land evaluation in the CR is more than 100 years old, extending from the so called cadastral yields to the official prices according to the “soil-ecologic evaluation units” (BPEJ). Cadastral yields consisted in regional evaluation of yields and costs on the cadastral land pieces. BPEJ are founded on the central complex soil research from 1960-1970 and following “bonitation” of the agricultural land fund with formation of BPEJ (at present numbering 1818) to the land maps from 1971 to 1981 (scale 1:5000 and 1:50000), which cover the whole agricultural land area of the CR. Each BPEJ is demarcated by a so-called “iso” line, which characterizes the circumference of the territory having almost the same soil-climate characteristics. CR is divided into 78 natural stations, in which long-time observation of yields and costs was carried out. Moreover, more than 7,000 land pieces in different BPEJ were chosen for further study, and later formed a basis for economic land evaluation. From 1983 till 1990 the land was not estimated according to its value. Instead, the point valuation of the productive ability of soil was used according to the energetic value of the agricultural products (GJ).

The data-base of BPEJ is composed of two parts: the pedological block and the economic block. The former consists of a description of the soil-climatic conditions in each BPEJ. This description is encoded in a five-number code.
(in Slovakia six-number code), which means:

- 1st position: climate region, i.e. it characterizes climate according to the temperature, precipitations, moisture certainty; it gives the sum of temperatures over 10°C, average year temperature, average year sum of precipitations, probability of the dry vegetation periods and moisture certainty from 0 to 9 points.

- 2nd and 3rd position: gives the code of the main soil unit; together 78 soil units. The main soil-climate unit is the purpose cluster of the soil forms with similar economic properties, which are characterized by genetic soil type, subtype, soil-forming substrate, granulation, important slope characteristics, thickness of the soil profile, skeletal characteristics and grade of hydromorphism.

- 4th position: the number gives the combination of the slope and skeleton characteristics in the slope division: plane (0°), 1°-3°, 3°-7°, 7°-12°, 12°-17°, 17°-25°, over 25°. The stone content (skeleton characteristics) is divided into four categories from land without stones to strongly stony land.

- 5th position: the figure gives the combination of the soil thickness and exposition. Thickness is divided into 0-30 cm, 30-60 cm and more than 60 cm intervals. Exposition gives plane (0), south (1), east and west (2), north (3).

These data are used for limitation of differentiated sets of farming in the CR in connection with specific files of productionally-located conditions. It is thus possible to utilize the maps for categorization of soil units for specific purposes (soil improvement, demarcation of permanent grass fields, anti-erosion arrangements, etc.)

The latter part - economic block - forms the superstructure over the pedological block and is given in the form of numerical data-base added to the pedological block.

It consists in the calculation of the price of BPEJ on the basis of crop yields categorized for the given BPEJ and the corresponding costs for their production. Categorization consists in assignment of yields of chosen field products to corresponding main soil units and climate regions and is given in the form of so-called estimation type structures, which characterize what kind and amount of the product should be grown in the given BPEJ. This assignment is made on the basis of long-period verification of yields by corresponding research institutes. The costs for production of these fruits are also derived from long-time observations of the group of enterprises which belong to the given main production groups.

The yields according to the main soil units are further corrected by the correcting coefficients for the given BPEJ. These coefficients give the influence of slope and stony characteristics and exposition on the yield of the given products. The yields are actualized in certain periods. Their value is not the same as are the real yields reached in agricultural practise, but forms slightly progressive yields which are accessible when up-to-date technologies are observed.

The costs for fruits production are assigned on the basis of long-time observations of enterprises. Here is utilized the dependence of the grouping of enterprises according to the potential production (shown by the energy units - GJ). The BPEJ is assigned to the corresponding group and for this group the calculation of costs for particular products is made by means of coefficient of natural conditions p and costs.
purposes it is possible to correct the price according to intimation No. 178 by the set of coefficients which include the regional influences on the land price.

The found prices serve at present as a support for determination of the market land prices, for tax purposes and for subventions.

It is desirable to correct such determined prices on the basis of new knowledge on market land prices and to substitute them gradually by the market prices. In spite of that BPEJ will still afford relevant information on the land fund, important at first as the distinguishing point of view for tax policy and planning purposes.

Now the official land prices are based on the end yields of fruits in the BPEJ. From the data of yields and costs of particular fruits the annual gross profit effect (HRRE) is calculated according to the equation:

\[
HRRE = \text{price of the parametrized production} - \text{normative costs for the parametrized production.}
\]

The land price is then calculated on the basis of equation:

\[
UCOP = \frac{HRRE \times (1-D)}{U} + COPb,
\]

where

- \(D\) is the proposed part of tax in HRRE
- \(U\) - chosen interest rate
- \(COPb\) - basic price of the land.

Basic land price eliminates negative values of the land price which are reached under the worst conditions.

The calculated prices are issued in the form of intimation of Ministry of Finance for particular BPEJ (now MF No. 17894 Sb). Because the data-base BPEJ is not fully available (for particular parcels) at present, the lists of prices for the whole cadastral territory are issued, which serve as a basis for land tax calculation (intimation No. 215/1995). For special

Because the land tax is paid by the user, it was not necessary to connect the land maps of BPEJ with the maps of evidence of real estates at the cadastral office. According to the government, from 1 January 1999 the tax payers will be the owners, it is thus necessary to ensure the connection of both map systems. Owing to the economic problems this term will be probably shifted to 2006.

Further reason for the quick connection of both map systems are the subventions to agricultural production. These subventions are based on the official land prices and this situation stimulates the necessity of quick correction of parcels by BPEJ in such a way, to fairly assign subventions and to eliminate the owners of more productive parts of the cadastre.

The higher pressure on solving this situation in connection of the map data-bases rises also from the requirement of complex land use adjustments, which are based on the change of owner’s relationships to the land. Here seems to be advantageous the co-work between the cadastral office and the land office during complex land use adjustments by form of digital cadastral maps. Open questions regard at first measurers’ work, to ensure the completion of the map material in these parts of cadastral territory, where land use adjustments will not be made.


Tendencies and development of Cadastre in the Slovak Republic

Juraj Valis

The real estate cadastre in the Slovak Republic has a rich history, which dates back to the last century. The complex ownership/use relationship in Slovakia in the past and the high extent of land fragmentation, with a variety of small land owners, created a complicated, unclear land property system of difficult legal solution, which became a harmonizing element of the development of the State of Right and contractor’s activity.

The ongoing social changes in the Slovak Republic after 1989 required the immediate creation of a real estate market and the consequent need for application of non traditional methods, with the use of computers and projection technology and of modern information technologies. Legislation norms were adopted which established a space for the solution and consequent creation of a new type of cadastre Information system based on PC technology.

The cadastre legislation framework includes mainly:
1) Law of National Council of SR No: 162/1995 on Cadastre of real estate and on the records of ownership and other real estate rights (Cadastral Act);
2) Law of National Council of SR No: 261/1995 on the State information system;
4) accompanying related regulations.

- The system of cadastral registration of real estate rights is regulated by the Cadastral Act based on three principles, e.g. constructive principle, principle of registration and prenotation principle:
  - **Constructive principle** is based on the fact, that contractual and other real estate related rights originate, change and terminate on the basis of a legal act;
  - **Principle of registration** is based on the fact, that ownership and other rights to real estate, which were originated, changed and terminated by law, by state authority decision, by auction, customary tenure, by increase and elaboration as well as the rights to state or municipal guardianship are recorded in the Cadastre through provision of a notice which, however, has no influential effect on the origination, change and termination of the above rights;
  - **Pre-notation principle** is based on the fact, that in case of unclear legal ownership rights, a note is made in the cadastre on behalf of those who claim to have the correct legal rights but who cannot satisfactorily prove such, and on the notice by the district cadastral department regarding the proposal to the court for ownership determination; following the final decision of the court about the existence of the right to the property, the record in the cadastre, according to the principles of registration and pre-notation record, is deleted.

The cadastre is the result of the work of surveyors, lawyers and “information providers” and consists of:

1. **descriptive data database**;
2. **geodetic data database**.

The descriptive data database includes information about owners, hirers, holders, flats, non urban area, buildings on the lands and connected complete information about right relations, delivered documents and leaden seals, real estate centroid points, spatial units and about codes.

The geodetic data database includes especially digital cadastral maps as files and in determined cadastral territories and the numeric expression in the prescribed form called vector cadastral map. The geodetic data database provides the user in the form of vector cadastral map or in the graphic cadastral map with information about territory, descriptive situation of pertinent elements and appearance on the land surface. It is also possible to transfer geographical information from map in graphic form into computer by digitising, scanning, incidental scanning followed by digitising of map elements. The important factor is that the cadastral maps are gradually updated and are in one coordinate system, which creates a uniform base for every Geographical Information System.

The Cadastre is developed on two levels:
- on the regional level, it is elaborated by the district cadastral department and operated on the basis of PC LAN/MS DOS/NOVELL/ETHERNET;
- on the central level, it is elaborated by the Institute of Geodesy and Cartography in Bratislava (IGC) on central computer system IBM 4381, IBM-RS 6000, PC connected to local network Token-Ring.

The software for maintenance and updating of the database has been elaborated by the Research Institute of Geodesy and Cartography (RIGC). Programs are created in the programme language of the database system FoxPro version 2.0 and work under the operating system MS-DOS from version 3.30 up. The geodetic data database is elaborated by the graphic system Kokeš, which was created in the Czech Republic. Updating of software is executed by RIGC and special software firms.

Geodesy, Cartography and Cadastre Authority of the Slovak Republic

(1) Geodesy, Cartography and Cadastre Authority of the Slovak Republic
The state of cadastre construction is the following:

1) the descriptive data are acquired and processed over the entire national territory of the Slovak Republic, i.e. 79 district cadastral departments, and at the IGC centre;

2) the geodetic data are processed on PC in vector cadastral map form in 210 cadastral units from a total of 3520 cadastral units.

While in the built-up area (intravilan) in 1989 the cadastre concerned 90% of the territory, in the agricultural and forest area (extravilan) this evidence had to be re-established. This was a difficult task especially owing to the high fragmentation of the land tenure. Land boundaries, which were established on the terrain by boundary marks, practically perished. Their reconstruction is possible on the basis of cadastral formed graphical maps and other numeric and graphic compositions. Notwithstanding these complications, the cadastre covers 35% of the agricultural and forest lands (1 January, 1997).

According to the Cadastral Act, the Cadastre is used also as an Information system and its main functions are:
- protection of the rights to real estate;
- provision of data for fiscal purposes and for real estate estimation purposes;
- provision of data for building other information systems oriented towards real estate (e.g. environment, construction).

Creation, elaboration and provision of cadastral information are executed according to the Instructions for provision of Automated information system on geodesy, cartography and cadastre, containing, in particular:
- definition of data transfer - exchange format;
- cadastral access;
- conditions for provision of electronic data from descriptive data database;
- definition of transfer - exchange format of graphic files - vector cadastral map.

In the framework of the cadastre the following data items are used as standards:
- name of the municipality;
- name of cadastral area, code of cadastral area;
- name and surname of owner or other legitimate person and cadastral area code;
- identification number of owner or other legitimate person;
- commercial name of owner;
- Commercial identification number;
- number and area of the parcel, related to one owner;
- type of land and land use.

In relation to the creation of Land Information Systems and GIS there is an increasing, massive request for cadastral data. At present, the following data transfer possibilities are offered:
- on the electronic media (diskette);
- by remote access (modem);
- direct logging into local network.

The objectives of the cadastral development are established in the Conception of real estate cadastre to year 2005 authorised by the Geodesy, Cartography and Cadastre Authority of the Slovak Republic and assuming maximum use of modern information technology so that it will be especially possible to:
- create integral cadastre (direct connection and synergy between descriptive and geodetic databases);
- create the environment whereby information requirements will be provided after waiting a moment and in very difficult cases in a very short time, including information provided through public data network;
- advance towards improving the quality of the technical level of geodetic data and towards completion of the whole content level of descriptive data;
- group from technical specification elaborating cadastre (to evidence parcels in one graphic system - respectively in one map type);
- reconcile descriptive and geodetic data with the actual status (row of houses, housing estate, etc.);
- secure in real time direct connection and exchange of cadastral data in the framework the two levels (district level - centre);
- secure history (retrospective) of real estate and rights relationships;
- ensure high system security and minimize possible ill services;
- secure adherence to standards for state information system in respect to the State information system legislation;
- secure connection of cadastral with other responsible state and public bodies;
- secure effective protection of personal data.

During construction of the new cadastral system it is important to address the open architecture enabling use to be made of modern component technology. The new software must as much as possible be compatible with the existing situation with the aim to optimise the process of conversion of data from existing data formats into new models. The utilization of Windows NT or Windows 95 is envisaged.

New cadastral system will fulfil the function of securing the correctness and completeness of cadastral data at the national level in the connection to Civil Register, Register of identification numbers of organisations, Registers of land units with the global connection to National information system. Subsequently, the independent archiving system will be developed, through which the security function of new cadastral system will be achieved. The system will fulfil information functions mainly in processing of summary data about land fund, supports for analysis changes in land fund, provision of information concerning the territory of one working place (for example Tax offices, court executors etc.).
Many governments around the world are "re-inventing government", i.e. they are looking at different approaches to undertaking government business. This has involved assessing what should be the role of government and how can services be delivered in the most efficient and effective way for the benefit of all. Opening up services to national markets, and streamlining the regulatory framework to improve the competitiveness of the economy have been mechanisms used.

Australia has over the last few years made considerable changes to the number of government services provided and to the way they are delivered. Within Australia, trade practices, competition policies and mutual recognition of trade, professions and occupations across jurisdictions have all been re-assessed. This has resulted in the sale of many government enterprises in the electricity and gas utility sectors, and the delivery of land, corporate and vehicle registration services. Large water and sewerage authorities have been divided into several separate businesses but created as state owned enterprises to create competition, operating as if they were private enterprises. There has been a strong desire to separate the purchaser/provider relationship in these traditional public operations.

This same approach within the land information industry in Australia has seen much of the "doing" work of government "outsourced" to the private sector. Government is now confining its role to "steering" rather than "rowing." This paper will look at how the delivery of government services in the State of Victoria, Australia, has changed. Discussion will relate to how contracting out of survey, mapping, title registration and related services has occurred, the role quality assurance has played, and the provision of private sector finance; the role of the private sector in delivering government services and the sale of government related businesses to the private sector, where the ownership of intellectual property and public assets is retained by government but managed by the private sector. Specific examples relating to survey, mapping, title registration, aerial photography and digital data will be examined.

Introduction

Increasingly, governments worldwide are looking for alternative strategies to current funding methods and structures for delivering public service. The global recession provided an incentive for governments to reassess the role of the public service. Australia has, over the last few years, made considerable changes to the number of government services provided and to the way they are delivered. Measures have been adopted to minimise government intervention and expenditure (capital and recurrent), and make more efficient use of public sector resources. Trade practices, competition policies and mutual recognition of trades, professions and occupations across jurisdictions, have all been reassessed. Restructuring, privatisation and outsourcing of certain public sector functions are some approaches which have been used by governments within Australia to improve public sector efficiency.

Government policy and associated reforms have a direct impact upon survey, mapping and related services. As Hoogsteden & van Zyl (1992) note, governments have traditionally accepted responsibility for such services, particularly cadastral functions, also retaining control over the provision of these. In the quest for improvements in public sector productivity and service quality, the provision of survey and mapping services by the government are being reassessed, and subjected to reforms outlined by government policy.

Victoria, Australia

Victoria Policy and Objectives

In 1992, the State of Victoria, Australia, underwent a change of government. The new government immediately implemented a major programme of economic and financial reform, the overriding objective of which was to improve the living standards of Victorians, by making Victoria a better place to live, to invest and to do business. The Government recognised that an essential element of this programme was public sector reform, with a reduction in the cost of government critical to industry competitiveness (State of Victoria 1994). Objectives for the reform of the public sector included:

- greater efficiency in the use of the State's total resources;
- increasing the competitiveness of the Victorian economy;
- more efficient service delivery;
the empowerment of consumers;
- the reduction of State debt (State of Victoria 1996).
A range of measures are currently being implemented in order to achieve these objectives, such as:
- minimising government bureaucracy through the focussing of government departments on core functions such as policy development, resource allocation, specification of services and standards setting, monitoring and regulation;
- reducing the size of the public sector through privatisation and contracting out of certain functions;
- the establishment of purchaser-provider (contractual) relationships between core departments and service-delivers;
- ensuring service-delivers are subject to competition wherever possible; and

**National Policies**

Victoria also embraces national uniformity in adopting standards for enhancing market efficiency such as Mutual Recognition and National Competition policies.

**National Competition Policy**

Recognising the need for economic reform throughout Australia, governments and industry advocated the removal of impediments to the freer operation of market forces, particularly in the labour market, manufacturing industry, and in areas of public responsibility such as transport, communications and electricity supply (Alford 1994). To address restrictions on competition within Australia, the implementation of a National Competition Policy was agreed to by the Council of Australian Governments in April 1995. The principle aims of this policy were to facilitate effective competition in the interests of economic efficiency, deliver benefits to consumers and taxpayers and, by improving the flexibility of the economy, improve its capacity to respond to changing market opportunities (Hilmer 1993). Australian Commonwealth, State and Territory governments have now adopted the following principles to address restrictions on competition in the Australian economy:
- independent prices oversight of government business enterprises;
- application of competitive neutrality policies to significant government business activities;
- structural reform of public monopolies;
- review and where appropriate, reform of legislative restrictions on competition;
- provision for third party access to significant infrastructure facilities where required for effective competition in related markets.

Through the application of competition principles to the delivery of government goods and services, internal efficiencies and responsiveness to customer needs will be improved. With competition policy implemented by all jurisdictions, improved economic efficiency will significantly benefit the national economy. At this stage, different States and Territories have taken up National Competition Policy at different rates, with Victoria leading the way and employing competition for the benefit of consumer choice.

**Mutual Recognition**

The principles of Mutual Recognition have also been implemented to address national economic efficiency concerns, the primary purpose being to promote the goal of freedom of movement of goods and practitioners in a national market in Australia. Mutual Recognition aims to ease existing regulatory barriers that impede the movement of practitioners and the sale of goods from one jurisdiction to another. Both the Federal Government and each State and Territory Government in Australia have their own Mutual Recognition Act.

With regard to cadastral surveying, there has been a Surveyors Board Agreement between the Surveyors Boards of the Australian States, Territories and New Zealand, in place since 1892 incorporating the ideas of mutual recognition. This means that a registered surveyor in one state is entitled, on notification to the local registration authority, to be registered to practice as a cadastral surveyor in another state. This allows the freedom of movement of practitioners to meet market demand and encourages the development of an accurate homogenous cadastre within Australia and New Zealand (Office of Surveyor General 1995).

The deregulation of land valuers in Victoria in 1994 was also in line with mutual recognition principles. While land valuers were required to be registered in Victoria, other States and Territories did not require registration, resulting in a partially registered occupation. The Council of Australian Governments agreed in 1992 that registration requirements would be removed for partially registered occupations unless it was essential for public health or safety. Compulsory registration of all land valuers in Victoria was therefore abolished, removing an unnecessary barrier to entry into the profession and streamlining the regulatory framework, with standards for valuers now set by professional bodies. Consumers directly benefit from a more competitive market in land valuation services as a result of the deregulation of the land valuation profession.

**Victorian Initiatives**

Various strategies employed by the Government to achieve their stated objectives are canvassed below.

**Restructuring of the Public Sector**

The minimisation of government bureaucracy, and the subsequent restructuring of the public sector, has resulted in a reduction in government departments from twenty two in 1992 to the current eight departments in 1997. The Department of Natural Resources and Environment is one example of the amalgamation and integration of public sector activities. Separately managed functions relating to primary industries, natural resources, the environment and other public and private land management throughout the State,
were brought together into the one department. Amalgamation has enabled the Department to focus on improved outcomes through the integration of policy advice to government, reduced duplication of services, and improved customer service.

**Separation of the Purchaser and Provider of Services**

One tool being used by Government to achieve their objectives is the separation of the purchaser of services from the provider of these services. In 1993, the independent Victorian Commission of Audit recommended the implementation of a results-based management framework whereby the Government purchases goods and services from its agencies to meet its policy goals (State of Victoria 1995). By changing the focus of management from inputs to emphasising outputs and outcomes, the most efficient and effective way of producing these outputs could be identified. The concept of the separation of purchaser/provider means that while Government continues to fund “public good” activities, it is able to purchase these services from the most efficient provider, be it from external or internal service providers. This leads to greater contestability in the way services are delivered, resulting in improvements in both the quality and efficiency of services, and improves client choice in a range of service delivery areas.

The Department of Natural Resources and Environment, Victoria, is now using the concept of the separation of the purchaser and provider of services to increase the transparency of policy and planning and to identify opportunities for competitive delivery of services. New Zealand has also implemented this concept with a new department, Land Information New Zealand (LINZ), being split into a regulatory side and a service delivery side. The department retains responsibility for policies, regulations, and standards, and continues to own base information such as the cadastre, the Digital Cadastral Database and the Land Titles Office registers and data. The commercial survey, mapping and land activities such as survey control and maintenance, are now the responsibility of a State Owned Enterprise (SOE). The SOE is offered contracts by the department on a first refusal basis until 1998, after which the contracts will become contestable.

**Privatisation and Corporatisation**

Traditionally, government services have been produced by the public sector. With the reform process currently being undertaken however, the focus is on how these services can be produced most efficiently. As Government Business Enterprises (GBE’s) have historically operated in industries with a legislated monopoly, there have been few opportunities for competition to be developed in these markets. The Victorian Government is currently undertaking a restructuring and privatisation program for all Significant GBE’s in order to introduce competition and improve efficiency and customer service. Reform of GBE’s has occurred/is occurring throughout areas including the water, electricity, gas, ports, transport, aluminium and land sectors.

The electricity supply industry is at the forefront of the Victorian’s Government’s privatisation program, having been restructured from a vertically integrated monopoly into (1) five distribution businesses (each comprising a competitive energy retailing arm and a regulated local distribution monopoly), (2) a regulated monopoly transmission system owner, (3) a wholesale electricity market and system security operator, and (4) a number of competing generators. A similar structure for the gas industry is currently being developed with the aim of obtaining the lowest sustainable gas prices for consumers. Current government policy promotes privatisation of government businesses where a net public advantage from the sale occurs (State of Victoria 1996).

Significant Government Business Enterprises which are not to be privatised, are to be conducted on a fully commercial and competitively neutral basis. These GBE’s must face all the costs that are normally borne by the private sector, or else risk distorting competition. A prime example of the corporatisation of GBE’s are the original government owned water and sewerage authorities which have been divided into several separate businesses but created as state owned enterprises operating as if they were private businesses. Both privatisation and corporatisation of GBE’s lead to a working environment which encourages innovation and flexibility. Power companies for example, may venture into the telecommunications market. Implementation of the GBE reform process in Victoria is a means to improve customer service, increase customer involvement and choice, reduce management costs, and achieve lower priced and better quality services. The Victorian GBE reform program is consistent with the competition principles endorsed by the Council of Australian Governments, and has served as a model for the other States and Territories in Australia, prompting them to undertake their own reform programs.

**VicIMAGE**

Survey, mapping and related services provided by the public sector are not immune to Government policy and the current reform agenda. The privatisation of VicIMAGE, a specialist aerial photography service within Survey and Mapping Victoria, was finalised in August 1995. VicIMAGE, which consisted of a photographic function, a map distribution function and a shopfront, provided aerial photography printing services, general public relations assignment photography and a film library, for both Government and non-Government consumers. These services were identified by an internal study as being suitable for provision by external suppliers. Coopers & Lybrand Consultants were then engaged to review and determine the optimal arrangements for provision.

Significant capital investment by the Government was required to improve productivity and reduce prices to enable VicIMAGE to be competitive with the private sector in terms of the price of aerial photography. In addition, it was determined that there was a declining demand for these services from Government customers, and thus associated
revenues could be expected to decrease as well. The review concluded that the continuing provision of VicIMAGE's services by the Government was unviable, and that these could be better supplied by an external supplier (Coopers & Lybrand 1994).

After a competitive tendering process, the entire VicIMAGE business was sold to the private sector, with the exception of the film library which, containing film dating from 1935, was considered to be a valuable historical record of Victoria. The management of the film library is now undertaken by the private sector, with the Government continuing to own the library and the copyright to this material. While the private company may reproduce and sell items from the Aerial Film Library, they must pay royalties to the Government in recognition of this copyright. This process of privatisation has allowed the Government to avoid future financial deficits and significant amounts of capital expenditure, whilst also enabling the provision of these services at competitive prices.

Outsourcing

Outsourcing, or the contracting out of certain functions, is one measure currently being used, particularly in the public sector survey and mapping industry, to achieve the objectives identified by the Victorian Government for reform. Outsourcing is described by the Department of Treasury and Finance (1995) as the provision of goods or services by an external party which were previously supplied internally. Set out in a contractual agreement, an agreed level of service is provided for a pre-determined fee. Government is still accountable for the delivery of services, however the “doing” work is undertaken by the private sector. This process enables the Government to access private sector skills and capital, whilst maintaining overall responsibility for the function or service. Outsourcing is employed where government services are considered to be strategic or core functions or service. Outsourcing is employed where government services are considered to be strategic or core business activities; however, the provision of these government services is not a key requirement of Government.

Key reasons for pursuing outsourcing include:
- costs can be reduced, contained and made more predictable and controllable;
- service levels can be improved;
- risk and responsibility can be transferred to the external service provider;
- increased leverage of assets can be achieved;
- access to expertise and specialist skills can be enhanced;
- quality and standards can be defined and improved;
- access to latest technology can be ensured (Dept. of Treasury & Finance 1995).

The Victorian Government has developed outsourcing and contract management guidelines for use throughout the public sector, providing general guidance for Departments and Agencies. These guidelines assist in the identification of outsourcing opportunities, and provide a framework for use in the business re-engineering process. While advice and consultancy support is available, it is the responsibility of the Departments and Agencies to implement outsourcing projects.

The Office of Surveyor General, Victoria

The role of the Office of Surveyor General is to maximise value and achieve best practice in Victoria’s surveying systems and ensure the provision of the fundamental survey framework for the people of Victoria. Since 1992 the Office of Surveyor General has contracted out its survey work in line with the Government’s outsourcing policy, whereas previously the Office undertook such work itself. With the private sector now undertaking survey work such as this, and the trend away from detailed examination of contractors work, OSG must ensure the quality of the work is satisfactory. One mechanism to achieve this is through the application of Quality Assurance principles.

Since 1989 OSG has pursued the principles of Quality Assurance, achieving certification to the ISO 9002 standard for quality systems in September 1995. Quality Assurance is one mechanism for ensuring products and services are provided which meet customer needs. OSG now require private survey firms who undertake work on behalf of OSG to have quality systems in place. A register of survey firms has therefore been established to ensure that only those firms with the capability to undertake surveys within agreed timeframes and in accordance with the Office of Surveyor General’s instructions, pre-determined standards and statutory requirements, are engaged. Firms and individual surveyors wishing to be accepted onto this register must apply to OSG providing details of any Quality Assurance certification or quality system in place, progress towards certification, and general procedures for undertaking and checking surveys. Firms which satisfy criteria outlined in OSG’s quality procedure are added to the register, and may be selected to undertake surveys. When a survey or survey assessment is required, a number of firms are contacted and invited to tender for the work.

The application of Quality Assurance principles in conjunction with the implementation of outsourcing can therefore be a useful tool for monitoring and ensuring the quality of output from the private sector. In the case of the Office of Surveyor General, it has served to improve the general standard and consistency of information supplied by the surveying profession.

Digital Cadastral Map Base, Victoria

As part of the Victorian Government’s broader strategy to outsource operational activities, the management, maintenance and distribution of the entire State Digital Map Base - Cadastral (metropolitan and rural) has recently been contracted out to the private sector. In the first outsourcing of its type in Australia, the management, maintenance, storage and distribution of the metropolitan cadastral base had previously been outsourced in 1995, however the new arrangements bring the two components together (Dept. Natural Resources & Environment 1997). The Government will continue to own the intellectual property associated with the map base, but the private sector may develop the functions of the map base to keep it ahead of World Best...
Practice standards. The benefits of outsourcing the State Digital Map Base include efficiency improvements, lower costs and improved management of a single, homogenous map base for Victoria.

**Land Titles Office, Victoria**

The core business of the Land Titles Office (LTO) is to provide certainty of title to interests in land located in Victoria. It does this through the maintenance of a land title register guaranteed by the State of Victoria. The LTO ensures that the register is accurate and up-to-date thereby enabling all users to rely upon its integrity and correctness when undertaking property transactions such as development, sale, purchase and lending. By transforming the way in which the LTO carries out its functions, it aims to be the foremost land title registry office in Australia.

The LTO business strategy is to concentrate on its core activities. As part of this strategy, the LTO will be outsourcing its information technology functions, considered to be a non-core activity, and administering IT requirements through a small core of policy and contract management staff. The Government is currently conducting a tender process which will result in the private sector undertaking tasks to automate the LTO records and business systems, operate a licence for remote electronic access rights to land titles data and to acquire LANDATA.

LANDATA offers direct computer access to State-held information about land interests and land tenure through:
- Land Index (a general enquiry service providing information about land ownership and its location);
- Property Enquiry Application (a service which offers access to the property certificates required under the Sale of Land Act);
- Remote Search (gateway services to the current LTO Automated Land Titles System and Unregistered Dealings System).

While the service delivery will be outsourced, the ownership of all titles and related data will remain with the Government.

Tender outcomes will also result in full automation of the LTO, which requires the conversion of paper land titles to a computer database, and supporting documentation of plans of subdivision and instruments to a document imaging system. New business systems are to be installed which will allow immediate response to requests for documents and for updated transactions to be completed with the customer in attendance.

These reforms will lead to substantial improvements to customer service, improve accessibility to land titles data, and further facilitate the development of an integrated, computerised land information system for Victoria.

**Conclusion**

Government services have traditionally been undertaken by the public sector. With the implementation of the Victorian Government reform program however, the focus is now on how these services can be produced most efficiently, whether by the public or private sector. This has led to a greater involvement by the private sector in the delivery of services once provided by government, through measures such as privatisation, outsourcing and the provision of private sector finance. Successful implementation of measures such as these, rely upon a strategic choice of project, comprehensive quality control and effective project management. These measures have already, or are currently, being implemented within the public sector survey and mapping industry, in order to increase product quality, improve customer service, and reduce the costs, transaction times and complexity of the current systems.

The Victorian Government has a goal of “achieving best practice performance by the State public sector contributing to world competitive performance by Victoria’s economy as a whole, and yielding enduring benefits for the Victorian community” (Kennett 1993). The measures taken to achieve this has meant that Victoria is at the leading edge of public sector reform, not only in Australia but internationally.

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An integrated solution for sustaining Enhanced 911 & digital cadastral mapping systems

Hoffman John T.  

Introduction

Often the major obstacle to implementing a modern computer cadastral system is seen as the enormous cost of preparing the information with which the system functions. This information includes accurate base mapping, developing and mapping the land parcel information, database development and upgrading mapping technology. Further, there are significant data maintenance cost issues related to the land parcel databases and the digital map data. Forecasting these costs, both for system implementation and on-going data maintenance, requires careful study and planning. However, if the system can be viewed from the perspective of its benefits for the entire municipality, funding these system costs becomes a far less daunting task.

A wide range of tasks must be accomplished during the initial system implementation. These range from the development and maintenance of accurate digital maps to updating cadastral (land ownership/structure inhabitant) data. Land records must be researched and updated to the highest possible level of accuracy and converted into specialized databases. All land parcels and structures in the municipality must be accurately geo-located in the digital maps and all structure addresses must be validated, corrected or assigned where they do not currently exist. All roadways and streets must be assigned valid street names or number identifications. Databases of all roadway and street names/numbers and the range of addresses for each roadway or street segment must be constructed.

Some of this information already exists in some form within various municipal agencies, such as the water department or the cadastral or property tax office. Therefore, the cadastral system implementation project requires the active participation of a variety of municipal agencies. The various agency managers must be made to understand that once all of the databases are constructed and quality control checked, the resulting information will be an important valuable asset to the day to day operation of their agency.

Geographic information systems (GIS)

In the area of mapping, most municipalities have many agencies that use maps or map products. Customarily, these maps are in paper form and each agency has unique information on their version of the map that is important to their activity. For example, the natural gas department will show the location of each underground gas line and the location of all pump, metering and distribution stations. The street maintenance department maps will most likely not show the location of all gas and water lines but will show the location of all street, storm sewers and street signs, etc. Most often these map sets are developed from different source information, they are maintained over long periods of time by different people with varying cartographic skills and are maintained for different purposes.

The result is that these numerous maps are rarely coordinated and vary widely in their accuracy. Hence should the street maintenance department wish to install a new storm sewer drain, they may (or the may not) call the gas department to see if there is a gas line in the area of the proposed digging. Even if the gas department reports to them that their maps indeed shows a gas line in the area, as the maps are not the same, the reported location from one map will not match, geographically, the same location on the street department map. What then often happens is that the gas line is accidentally cut by the street department digging crew (often with deadly results). Or the supervisor of the digging crew (if he is very careful) uses a line detecting device to locate the gas line (which takes time and expense) and then he directs his crew to dig numerous "test" holes to precisely locate the gas line before the major digging effort begins. If these two departments where working off the same GIS map data, it would reflect all existing and planned gas, water, electrical, and sewer lines. The designers and planners of the new sewer line would have taken the location of the existing gas line into consideration, in the new storm sewer construction plan, before any digging crew was sent out to begin work.

In the case of cadastral mapping, if a GIS system is not yet in place the quality, content, and geographic accuracy of the maps are usually poor. Further, as they were developed from land deeds, property surveys and developmental project plans, they are often old and use varying geographic control systems. Further, as deed data is often abstract and very old, the parcel descriptions usually do not relate well to contemporary conditions. Therefore, it is often very difficult to coordinate the geographic information of other agencies with that of the cadastral office. But most important is the fact that the land tenure information contained in the land records is inaccurate and incomplete. This leads to a variety of problems, both political and commercial. If land records are incorrect, land transactions and development of infrastructure and commercial projects are impacted. If the...
records are incomplete, the consequences are often political instability in the region affected. Land ownership is meaningless without accurate and clear land titles. Another significant factor in this complex mix of issues is the fact that the police and emergency service agencies cannot economically implement and maintain an Enhanced 911 system independently of other municipal agencies when so much of the same data is used by all of these agencies. This is particularly true of geographic data. Many cities and counties have tried to do this only to find major duplications of effort and expense. Additionally, and very important, is the fact that such separation of effort leads to major information inaccuracies and incompatibilities across various agencies just as with the gas and street department. Take for example a situation where a major fire or disaster will affect water and natural gas services in an area. If the geographic mapping information used by the emergency service agency does not match that used by the water department or the gas department, a catastrophe can occur as the result of simple mis-information. Further, if the land record's data does not match the E-911 database information, emergency evacuations, when required, will be incomplete or impossible if the inaccuracies are severe enough.

Fortunately, most governmental agencies have already discovered the value of a very accurate computer based GIS system for cadastral record management. This is where Enhanced 911 provides a unique opportunity because such a GIS system is a key component of the E-911 system.

Enhanced 911 systems

The purpose of an Enhanced 911 system is to provide a digital system for rapid, highly accurate emergency vehicle dispatch and call response monitoring/tracking. The concept of Enhanced 911 is founded on the idea of transferring proven technologies of industries with similar functional requirements to improve emergency response capabilities. Further, the merging of current GIS and advanced database technologies with proven E-911 Computer Aided Dispatch (CAD) systems, and existing communications systems, provides a very cost effective advanced technology solution to emergency response system requirements.

Enhanced 911 technology provides local government with dramatic improvements in emergency services. This technology provides a means to identify the source and location of incoming emergency service calls. It reduces the decision cycle for emergency response dispatchers through computer based automation. It provides extremely accurate, rapid response to a call for service. And it provides an automated system to track the status of all calls for service and of the response personnel.

Optimum E-911 system performance, with minimum system cost, can be obtained by employing proven technologies for both the hardware and software involved in the system operation. These proven technologies include Mobile Data Terminal (MDT) systems, digital/radio interface systems, Global Positioning Systems (GPS), Automatic Vehicle Locating (AVL) systems, Geographic Information Systems (GIS), addressing/re-addressing and database development and Computer Aided Dispatch (CAD) systems. Further, the system is compatible with current VHF and UHF radio system technologies, thereby reducing deployment costs.

The use of these technologies, and the existing hardware and software for integrating their use, can provide emergency service providers with a reliable system with both high immediate functionality as well as future system feature expansion. Further, as these systems are "off the shelf" technologies, they can be adapted to evolving needs without significant development costs or time investment. If the system is expanded to include emergency response aircraft, civil aviation authority approval or certification of the systems can be accomplished concurrent with system deployment.

The typical system would consist of a public safety answering point (PSAP) and one or two central dispatch facilities (normally a primary dispatch site and one alternate site). The PSAP houses the telephone caller answering stations and the controller/decoder systems for capturing the ANI signal off the phone line. The central dispatch facilities would house the transmitter and receiver radios for both voice data, the ALI database systems, the CAD systems and the controllers for decoding the data signals. The PSAP and the central dispatch facility can be combined into one location. The emergency response vehicles (and aircraft) would be equipped with two way radios and may be equipped with a small mobile data terminal (MDT) unit installed which would also contain both the on board GPS unit and the radio interface modem. Additionally, each MDT can contain a magnetic card reader for the simplified employee duty data or other important information desired by the dispatch facility.

Principal steps for creating an Enhanced 911 system

The implementation of an Enhanced 911 system has ten (10) major components:

1. Design the system and define its desired operating characteristics.
2. Conduct a Public Awareness Program.
3. Develop a Geographic Information System
5. Conduct the addressing/re-addressing of the municipality.
6. Create the ALI and MSAG databases and the electronic centerline map.
7. Establish the PSAP and central dispatch facility, along with required radio and telephone equipment and the CAD systems.
8. Conduct testing of the system operation.
9. Conduct training for system operators and emergency response personnel
10. Establish system maintenance procedures.

These components are normally developed sequentially, however, some can be accomplished simultaneously, depending upon the desires of the municipality.
Enhanced 911 system development

A system development plan would be created and coordinated with each activity within municipalities’ operating environment, which would have a role or involvement in the system once it is deployed. The development plan would encompass every aspect of system functional design, component refinement/adaptation, component compliance testing, proving tests, fleet deployment of the system, fleet wide testing, operator and crew training, system acceptance and system maintenance planning.

A variety of Computer Aided Dispatch (CAD) software systems are compatible with this system. Final selection of the CAD system to be used can be determined as a part of the system development plan. An accurate digital centerline map data base, as well as a system for maintaining its currency, is, however, a pre-requisite for the ALI and AVL capabilities of the system to be functional. The development of an accurate digital centerline map can be implemented concurrent with the overall system design and implementation tasks.

ANI and ALI capabilities at the central dispatch center are desirable but not essential for the MDT and AVL aspects of the system to perform correctly. However, unless the ANI/ALI capabilities, as well as rural street addresses, are available, valuable time can be lost during any emergency dispatch.

A proposed funding mechanism

The success of telephone based emergency response systems, usually referred to as an Enhanced 911 system, has resulted in their adoption in a number of countries. These systems dramatically improve a municipality’s ability to provide accurate response to virtually any emergency. For a typical Enhanced 911 emergency response system to function properly several key system components should be in place:
1) Digital telephone technologies must be available;
2) Dedicated telephone trunks;
3) Automatic Number Identification (ANI) signal service must be established at the telephone company central office;
4) Accurate geographic/base mapping information;
5) Accurate municipal resident and business databases;
6) Geographic information system (GIS) and specialized Enhanced 911 database maintenance systems must be in place.

These tasks present significant costs for the municipality. Typically, Enhanced 911 costs are funded through user fees. These user fees are normally collected through direct customer telephone billings. This is because the Enhanced 911 system is based primarily upon requests for emergency service originating from telephone system customers. The necessary funds may also be collected through direct billings to all residents and/or businesses as a municipal emergency service fee. Whichever billing system is employed, the monthly cost to each resident and/or business is quite low. The actual cost is, of course, dependent on how much expense will be incurred to implement the desired 9-1-1 system and other supporting activities. Even with the most sophisticated system, however, the users fees are rarely more than a dollar ($US or its local equivalent) per month.

Implementation of supporting municipal systems, where the costs for such supporting services are financed through the 9-1-1 service fee system, thus become affordable and sustainable.

Collaboration benefits

The most logical approach to the issue of funding a cadastral mapping system is to coordinate implementation and system maintenance costs with the emergency response system because it will use the same geographic and other database information. Indeed, many of the specialized databases found within an Enhanced 911 system are found, often under a different name or identification, within the typical cadastral GIS system. Both cadastral and Enhanced 911 systems are being implemented around the world. Less common is the effort by municipal leadership to coordinate these systems between agencies so that duplication of effort and expense is avoided.

As the result of the commonality of source information and operating databases, the rising interest in Enhanced 911 provides a unique opportunity. Because the cadastral system requirements should be a key component of the E-911 system, municipalities are often able to fund the implementation of the cadastral system through the E-911 service fees. Such coordination also insures that all of the critical geographic data and associated databases are available for use by the emergency service agency, the cadastral agency and any other participating municipal agencies. Because of the nature of GIS systems, and their ability to “layer” geographic and attribute data, critical or sensitive GIS system data can have access restricted only to those authorized to “see” that information. Therefore, a single municipal system can be maintained while the security requirements of each agency are protected.

The E-911 project provides a direct impetus to the development of a modern GIS based cadastral system. The municipal cadastral agency that has customary responsibility for managing mapping information should manage and maintain this system because emergency service staffs are not ordinarily trained in cartographic skills. Hence, the GIS system is usually located within an office that traditionally is directly involved in these mapping activities. Many other agencies may use this information such as the planning office,
the building permits or inspections office, police or the environmental management agency. Each agency with a need for access to accurate geographic information, or which might have “layers” of information which are unique to their functions, may then have a terminal or terminals connected to the main GIS server so that they can access the geographic information system. Often the cost for this system and the associated network is born directly by the E-911 service fee because much of the cadastral data is normally needed by the emergency service providers. The size of the municipality and the monthly service fee will determine the funds available to provide for the development of the GIS based cadastral system.

E-911 databases
The establishment of an Enhanced 911 system facilitates the acquisition of an enormous amount of accurate resident, mapping and infrastructure information to the cadastral agency that might not have been readily available without significant cost. The savings to the many municipal agencies that are derived from having access to a system to collect and maintain this valuable information must be considered in any discussion of E-911 funding. This information is created and then maintained within several key Enhanced 911 databases. These Enhanced 911 databases will assist the cadastral agency in many of its routine daily tasks. Telephone customer name, street address location and telephone number information developed for the Automatic Location Information (ALI) database provides valuable information. The Master Street Address Guide (MSAG) database provides a system to insure that all roadways and streets are properly named and the status of street signage is monitored through reports from emergency service providers. The specialized digital street centerline map used by the Enhanced 911 system provides a key driver for the maintenance of a municipality wide GIS system. These databases also provide the most accurate population profile and census data available to the municipality. Obviously all of this information will be of great value to local cadastral authorities.

Budgeting for cadastral GIS within an Enhanced 911 project
The cost for implementing a GIS based cadastral mapping system will vary with the nature of each unique municipal environment. However, some assumptions as to tasks to be accomplished can be made. No cadastral mapping system is ever entirely completed or absolutely error free at the end of the initial implementation period. During the conduct of routine system maintenance and change updating, many errors and shortcomings will be identified and corrected in the course of normal operations. What is a reasonable completion and accuracy goal for each unique system will depend upon the funding available and local political considerations. Further, the state of land records at the time the project is commenced will directly impact on the overall scope of the cadastral mapping project.

However, there are reasonable measurements to apply when quantifying the scope and cost for a typical cadastral mapping project. Let us assume that the area to be mapped for a given municipality is 2500 square kilometers. For such an area the total number of land parcels might be 60,000-70,000. We will assume the total number to be 65,000. Available parcel data for any given project falls into four basic categories. While the overall quality of the data, that is the level of error, will vary widely, these basic categories still apply. The errors are dealt with as encountered and are usually referred to the municipal government, with the details of the error discovered, for resolution. If no resolution can be determined, the parcel is treated as one with no deed and field research is then conducted.

There are typically four conditions found in researching land parcel deed status. First, some parcels of land will have no valid deed on record. Some parcels will have a deed but no other documentation. These deeds are often quite old and usually refer to landmarks or monumentation that no longer exists. Others will have both a deed and a survey on record. These tend to be more modern and usually have a financial lien on file. The last group is that for which there is a deed and the parcel is already recorded on existing local cadastral or tax maps. These maps may or may not be geographically correct. When creating an accurate cadastral mapping system all of these parcel types must be included in the project. The cost to research and process each into the system varies. The following charts reflect the estimated scope of our project. The costs and parcel configurations are hypothetical but a representative of a project of this size. The estimated costs for the cadastral project include all initial base mapping, source imagery, deed research, field work parcel mapping and creation of a GIS facility to maintain and update the cadastral mapping system, including training. It must be remembered that these figures are intended to demonstrate how to estimate a cadastral project’s scope and how its cost may be integrated into an Enhanced 911 project. Figure 1 reflects estimated costs for cadastral mapping of parcels.

Budgeting for the Enhanced 911 system implementation
If we assume that this municipality has 200,000 residential and business telephone lines and the monthly fee averages US$1.00 per month, annual fee collection is more than US$2.2 million per year to support an E-911 system and related support projects. Some percentage of the billing is normally retained by the telephone service provider to cover the cost of processing the fee. Fees for residents and businesses may vary with the business customers paying a higher monthly fee per telephone line. While local monthly customer database updates and ANI signal fees will vary from locale to locale, as a rule of thumb, about 75% of the fees collected are available to support the non-telephone company system implementation and maintenance costs. Over a five year period, a municipality with 200,000 telephone customer.
The implementation of an Enhanced 911 system is a vital tool in providing accurate, timely dispatch of emergency service providers to the residents of every municipality. Every life saved is enough to justify the cost of such a system. Yet funding an E-911 system should be viewed in the broader perspective of its role in the municipality. Indeed, overall cost savings for supporting municipal agencies can be
achieved if proper planning and coordination are achieved. This is particularly true in the case of GIS and cadastral mapping systems within a municipality. An E-911 system can reduce duplications and increase efficiencies while directly reducing operating costs for the cadastral agency. And best of all, the system can fund the modernization of cadastral mapping and be self-supporting with a minimum of overhead from general funds. The system, when carefully planned and implemented, can bring a synergy to existing municipal organizations and thus maximize the benefits for the entire municipality.

Key Terms
ADDRESSING/ Applying a discreet municipal style numeric street address to every structure.
RE-ADDRESSING
ALI Automatic Location Identifier
(a database of information about the location of the calling telephone such as the street address, municipality, name of the resident living at that address, etc.)
ANI Automatic Number Identification
(an electronic signal transmitted with the voice signal on a phone line which contains the telephone number of the calling telephone.)
AVL Automatic Vehicle Locator
(an electronic system within a vehicle which detects the location of the vehicle and transmit that location data as digital information through the MDT to the central dispatch facility.)
CAD Computer Aided Dispatch
A computer system that automates the emergency call dispatch functions.
CONTROLLER An electronic device which allows the call taker to control the phone line on which the emergency call is received and which detects and displays the ANI signal information.
DIGITAL CENTERLINE MAP
This is an electronic map for use in the CAD computers which is used to display the location of a caller and the layout of the streets within a municipality.
GIS Geographic Information System. A computer system used to manage a digital mapping and information system, such as digital cadastral mapping.
MAILBACK A document delivered to a structure which notifies the resident of a newly assigned street address for that structure and which has a return by mail portion on which the resident provides key information about the telephone and residents who reside in the structure.
MDT Mobile Data Terminal (the unit within a vehicle which transmits and receives digital data.)
MSAG Master Street Address Guide (this is an electronic database which contains information on each road range data for that road segment)
NENA National Emergency Number Association (a U.S. and Canadian organization which establishes standards for E-911 systems)
PARCEL An area of land for which there is a claim of ownership or a deed of ownership.
PSAP Public Safety Answering Point
(facility in which the emergency telephone call taker stations is located.)
SAA Street Addressing Administrator (the local official who has the authority to assign and manage the street addresses for all structures within the municipality.)
TELCO The local telephone company or government agency which provides telephone services.
High resolution Satellite DATA as a new source for cadastral mapping

Fabio Volpe

Summary
By the end of 1997 the first data collected by high resolution orbiting satellites, with resolution down to 1-meter, will be available on the market. These data will have a very important impact on the market and will have potential application in cadastral mapping.

Actual and future market situation
The market of remotely sensed data is divided between two sources: satellite data and aerial photo data. At the moment, the value of the satellite data segment is one fifth of the global market of remotely sensed data; the remaining portion is, of course, domain of aerial photographs.

Satellite data have a variety of applications: environment, geology and exploration, agriculture, forestry. The main application domain (about 35% in 1993, 40% of the market in 1995) is cartography and mapping. The good synoptic view of the satellite images, together with the good performances in terms of correct geocoding of the frames, has allowed the creation of maps from satellite in a wide range of scales, down to 1:25.000. However, many areas all over the world still remain unmapped in a scale in the order of 1:250.000 or better (500.000 square kilometers in Europe, 2.800.000 in Asia, according to NASA Topographic Science Working Group).

Aerial photos have a wide range of applications for detailed mapping, i.e. cadastral mapping.

Mapping requirements in the future may be divided into three categories:
- large scale mapping, for producing cartography at 1: 50.000 scale;
- medium scale mapping, for producing cartography at 1:10.000 scale;
- small scale mapping, for producing detailed maps, at 1:1.000 scale and less.

Large scale mapping will be carried out using satellite data.

Requirements of satellite data for cadastral mapping
In all cases, the user must also be cognizant of the performance characteristics of the satellite data used. To use satellite data as reference for cadastral mapping, data must satisfy the following conditions:
- have a good resolution in terms of pixel size for the required output scale; decreasing pixel size increases the information content of the image and more detailed mapping is achievable;
- have a good accuracy in terms of geocoding of each pixel; this parameter is very important for the precision of the output map;
- have a good radiometric depth in order to have a better discrimination of targets on the image, especially in shadowed or very bright areas;
- have a good availability on the market, to be able to choose the most suitable date of acquisition for the type of map to be created (for example spring or summer images are better market value) which at present requires aerial photos with 1-meter resolution or more, that is not only medium scale mapping, but also part of small scale mapping, like cadastral mapping.

Why use satellite data for cadastral mapping
As of 1998, to produce a cadastral map the user will be able to choose between aerial photo and satellite data. The choice must be made taking into consideration several points:
- according to the marketing headlines of the distributors of satellite products, satellite data will be marketed also in an orthorectified format, thus avoiding all the work (ground control point collection, aerotriangulation, DTM generation, orthorectification) required for aerial photo processing. This situation will allow users to process directly geocoded products, instead of following all the procedures required for orthorectification, including HW/SW;
- The increasing number of operators in satellite data distribution, will possibly give rise to a pricing challenge, that will lead to a global final cost of the data that will be less than that of a comparable scale aerial photo;
- The user can choose between different data, according to his needs; the same area will be covered many times not only during the same year but also during the same week, and the procedure for data collection will be faster and more flexible compared with photographic data collection.

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than winter ones due to less shadow problems);
- have an affordable price, which should be competitive with
that of aerial photos of the same resolution (typically
1:40,000 1000 dpi scanned for 1-meter images).

Performance of high resolution satellite data
According to these requirements, a brief overview of near
future high resolution satellite performance is given.

*Early bird*: the launch, scheduled for mid-1997, will have a
3-meter geometrical resolution and a 6-meter accuracy in
panchromatic mode; the cost of raw data will be about 10
US$ per square kilometer.

*Orbview-3*: the launch, scheduled for mid-1998, will have a
down to 1-meter geometrical resolution and will be available
also in 4-meter multispectral mode (see a simulated image
on the left).

*Quick bird*: the launch, scheduled for mid-1997, will have a
0.82-meter geometrical resolution and a 2-meter accuracy in
panchromatic 11-bits mode; multispectral data will also be
available (3.28-meter resolution).

*Carterra-I*: planned for launch in late 1997, it will have 1-
meter resolution in panchromatic mode, and 4-meter in
multispectral; accuracy will be of 2 meters, and the cost of
orthorectified data will be around 45 US$ per square kilometer.

There are also some already operative missions, that can be
taken into consideration for cadastral mapping:

*SPIN-2*: has a 2-meter resolution in panchromatic mode, and
accuracy of 10-20 meters according to topographic situation.
The cost of the orthorectified data depends on the extension
of the area: for a typical extension of a cadastral application
the cost is in the range 50-65 US$ dollars. The acquisition
must be planned;

*IRS-1C*: has a 5.8 resolution (from 23.5 to 70.5 in
multispectral mode). The cost of geocoded image (not
orthorectified) is below 2US$. An example of IRS-1C image
is shown on the left.

Possible applications of satellite data for
cadastral mapping
The technical requirements for cadastral mapping are
strongly dependent on the situation in the different countries.
All over the world, four different scenarios can be detected:
- countries with high precision cadastral maps in digital
form;
- countries with high precision cadastral maps, but not in
digital form;
- countries with medium to low precision cadastral maps,
not in digital form;
- countries with no graphical cadastre.

Common cadastral mapping goals, for all the detected
scenarios are:
- to have the maps in digital form;
- maps must satisfy accuracy requirements, depending
The application of satellite data to the different situations may be evaluated from the following table, where satellite suitability is compared with the technical requirements (in different columns) in the four situations (in different rows) identified previously.

From examination of the table, it can be pointed out that:
- satellite data are the best solution for the generation of cadastral maps in countries where no graphic cadastre is present;
- satellite data are the best data source for the updating of existing maps;
- satellite data are the best solution for the generation of cadastral maps in the countries where medium to low geometrical precision is required;
- the information content of satellite data is often compliant with that required for small scale mapping.

**Conclusion**

The introduction of high resolution satellite data will change the world of detailed scale mapping, which today relies mainly on aerial photos. Aerial photos will hold the best resolution and information content, due to the possibility of selecting flight height and optical features, but also for quite detailed scales, like those required for cadastral mapping, and especially where accuracy in the order of centimeters is not mandatory, satellite data will be a very good reference document.
TE.M.I.S.I.A. project - territorial multimedia information system on industrial areas
Roberto Montanari

Information concerning TEMISIA
The TEMISIA project, started in January 1997, is co-financed by the European Union, in the framework of the INFO2000 program, administered by DGXIII. The project is carried out by ERVET, the proponent and co-ordinator of the project, with the collaboration of three European partners: OIR (Austrian Institute for Territorial Planning); FORTH (Greek Institute for Technological Research); WDA (Welsh Development Agency), with the technical and financial contribution of Emilia-Romagna Territorial Programming Assessorship (with the technical contribution of the Regional Cartographic Service) and the participation of CINECA (Inter-University Centre specialized in telematics and service provider in Internet). The first step of the project (the Definition Phase) will last 6 months.
An Implementation Phase, lasting 24 months, will be activated after the presentation and approval by the Commission of the results of the first phase.

What is TEMISIA?
TEMISIA aims at building a European standard model to gather, organise, connect and spread information concerning industrial areas.
The project will realise a territorial multimedia information system based on GIS technologies. The information service built on it will be on-line accessible (by the Internet) for the purpose of searching and visualising data, maps, images and of performing different analytical functions about industrial areas and the territories of the Comunes concerned.
The information system will concern: geographic location, land characteristics, planning situation, actual land use, settled enterprises, services, environmental situation, access condition, possible financial aid, etc.

TEMISIA targets
Main targets of the project may be summarised as follows:
- to improve interoperability and integration among the different Geographic Information Systems of European countries;
- to provide pan-European information concerning Geographic Information (state-of-the-art, formats and access conditions);
- to increase information value through the creation of on-line and easily accessible multimedia packages;
- to create an easily usable tool for the knowledge, administration and promotion of industrial areas;
- to produce a personalized and marketable set of tools (software, guides, courses) for aiding the reproduction of similar information systems in different geographic areas/regions.

Why TEMISIA?
Industrial areas or sites are a key component, throughout the EU, for urban and regional development programmes, management and environmental control. At the same time, industrial areas provide important opportunities for firms seeking the best locations for establishing new productive plants. However, the desired information about industrial areas - planning status, ownership, infrastructures, amenities, accessibility, workforce, other companies already established, environmental status, and so on - is usually dispersed among a large number of sources. This is especially true of information not confined to a single local authority, but covering a whole region or a number of municipalities. This situation leads to very time consuming searches for information not only by potential investors, but also by the local development corporations, administrations and regional development agencies. Besides, information from these various sources is often difficult to assess and to compare.

TEMISIA information contents
TEMISIA aims to integrate:
- appropriate thematic strata of existing GIS in the participating regions;
- alphanumeric databases (archives), detailed maps and photographs of various kinds of individual industrial areas in the participating regions;
- enterprise databases of the firms located within the industrial areas;
- environmental databases on the industrial activities;
- socio-economic databases structured according to regional and sub-regional administrative levels (in order to describe the surrounding territories).

More specifically TEMISIA’s contents will cover the following items:
- General socio-economic information and statistics on the
regions involved: at the local authority level, such as
demography, economic structure and trends, transport and
other network services; fairs and exhibitions, main
institutions (brief presentation and field of activity), national
and regional incentives and business regulation (brief
presentation and contacts for further information).
Sources: official statistical agencies, business associations,
and various others.
– Localisation and characteristics of areas for industrial and
artisan enterprises: geographic location, area description,
services in the area, property and management, relationship
with transport and technological infrastructures, opportunities
and types of settlement; attractiveness of new location on
offer; implementation of the land-planning policies devised
by local administrations.
Sources: Technical Offices of local administrations, industrial
area management boards or companies, territorial
development agencies.
– Information on current occupancy and spatial-planning
situation: available lots; lots planned destination;
active/inactive businesses in such lots; lots with on-going
constructions; lots with service areas and centres, their
typology and characteristics; internal road layout;
characteristics of internal technological networks;
Sources: Technical Offices of local administrations, industrial
area management boards or companies.
– Information on the economic activities located in each
industrial area: basic company identification data; type of
economic activity; employment; economic and financial
indicators; etc.
Sources: official registers of firms developed and maintained
by Chambers of Commerce, entrepreneurial associations, legal
register administrations, and private information providers.
– Information on environmental conditions in the industrial
areas: water consumption; energy consumption; waste
production (liquids and solids); air quality;
Sources: official registers of local administrations and
organisations such as health security institutions, environment
regional agencies, Chambers of Commerce.
– Information commonly provided by GIS thematic maps on
soil, underground, hydrogeology, hydrography, morphology,
Commune administrative borders, actual land use, and other
features.
Sources: existing GIS managed by regional administrations.
Source information will thus include existing data banks,
images and photographic data, aerophotographs, thematic
directories, owned and managed mainly by local
administrations, industrial area management corporations,
terrestrial associations, water, energy, waste
management regional and provincial agencies.
Given the variety of type and ownership of source
information much of the definition phase work is devoted to
the study and definition, on the one hand, of appropriate
contractual arrangements with the providers of information
and, on the other hand, of the transformational and
organisational processes which are necessary for setting up
and operating the system on a regular basis.

Updating
For much of the general socio-economic information, its
reliability, consistency and updating are assured by official
institutional sources, central institutes of statistics, specialized
economy, planning, environment, etc.) regional agencies and
local government departments.
At the regional and local level the reliability, consistency and
updating of the technical information content will be assured
by the direct involvement of the industrial area management
boards and by the establishment of local collaboration
networks.
At the transnational level the frequency of information
updating and reliability will be assured by each regional co-
ordinating partner (ERVET, WDA, ÖIR, FORTH).
The information service shall include the provision of 4
general SCREENS of information and consultation (and
several subscreens for each general screen):
– SCREEN 1:
a Welcome screen, with presentation and explanation of the
information service;
– SCREEN 2:
information and maps of Europe, and various related
statistical data at European and National level;
– SCREEN 3:
Regional level information, maps and images, statistical data
on Communes and industrial areas system;
– SCREEN 4:
Information, data, maps and images related to individual
industrial areas.
Access modality at different information levels

The choice of the option “Search by parameters” will produce
a SQL query on the dB that will present a list of relevant
industrial areas according to the user’s imposed conditions.
The user then will be able to improve his search concerning a
particular industrial area, selected from the provided list, or to
modify the query field by changing parameters.

Technology
The software environment to be adopted has been defined
after an overview of partners’ know-how and users
requirements concerning the functional and technical

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specifications, the technological state-of-the-art and the
foreseen developments. The Arc-Info software environment
was chosen on the basis of the following considerations:
- its adaptation to the standards suggested by public
administrations for operating systems (Unix) and database
query languages (SQL);
- the commercialisation of several software packages for PC,
such as Arc-Cad and Arc-View, which are compatible with
Arc-Info formats, necessary for the input functions of
cartography, and for the output data to the remote users;
- its programming through the AML, which eases the setting
up of customised applications;
- the easy management of windows;
- its modularity, which is a guarantee for a future
development of the info system;
- the programming of Arc-View through Avenue, an
object-oriented language;
- the consolidated know-how of the project partners
concerning this technology;
- the issue of new software packages (such as Arc-View
Internet Map Server) which allow to put map and GIS
applications on the Internet.

Other foreseen project developments are:
- creation of a personalised Web server able to guarantee, in
addition to common hypertextual links, the generation of
SQL queries;
- setting up of a GIS application, with the integration of
alphanumeric data and geographic objects related to the
industrial areas of a specific territory, and also their access
through friendly interfaces;
- modulus personalization to be provided to the
first-level-users for management and restitution of both
cartographic and alphanumeric output;
- development of an application, through the use of an author
software, for production of multimedia supported tools for
promotional activities (CD, etc.).

Friendly interfaces will be developed in order to make
possible:
- access to information, images and synthesis data through the
use of hypertextual connections according to Browser
conditions;
- (SQL) query generation and hypertext connections for the
identification of industrial areas matching specific functional
parameters regarding, for example, the presence of particular
productive typologies and/or the availability of sites and/or
the closeness to communication infrastructures and/or the
presence of services, technological networks, etc. Once
selected, the areas can then be the object of a deeper
analysis.

This scheme represents the minimum functional hypothesis,
and the insertion of a specific software like Arc-View Internet
Map Server or GAEA Map Server could enrich the server
functionality, allowing the Internet use in different image
formats, including vectorial, and the management of
cartographic elements produced using Arc-Info.

Minimum scheme for map production and use

Who will use TEMISIA?
(The market and user population)
A multimedia GIS on industrial areas can have useful
applications both for territorial management and monitoring
activities by a variety of public and private institutions and
companies, as well as for entrepreneurs' decision-making
processes about the (re)location of productive activities
and/or for new productive plant investments. In particular,
we have identified two user categories: first and end level
users

First level users, which are institutions and companies
expected also to feed information into the system and to use it
for multiple (including promotional) purposes:
- industrial area management companies;
- territorial development agencies;
- industrial promotion agencies;
- entrepreneurial associations;
- local administrations.

End users, which will be mostly interested in querying the
system on specific aspects, represented by:
- foreign and local investors;
- real estate companies, financial institutions;
- service providers, such as transport enterprises;
- industrial entrepreneurs;
- consultants and researchers.

During the project Definition Phase the analysis of user
requirements will be performed in each of the participating
regions. A common methodology for usability testing will be
defined to achieve the constant involvement of users.
In the Implementation Phase advisory groups will be created
to check progress in the adherence of the service to user
needs. Usability tests will be performed for each functionality
foreseen within the service, both for on-line or CD supported
consultation.

At the end of the project, the service will be launched
following these lines of action:
- the direct involvement of, and awareness actions towards
first-level users (development agencies, entrepreneurial associations, area management companies, etc.), because these are expected to have a strong multiplicative effect towards end-users;
- advertisement on traditional media and on the Internet;
- on-line temporary free charge access, distribution and demos consultation; (a CD-ROM demo production for promotional activities is also envisaged).

**TEMISIA contacts and partners**

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Partners:
- FORTH - Foundation for Research and Technology - Hellas (Heraklion, Crete, Greece).
- WDA - Welsh Development Agency (Cardiff, Wales, Great Britain).
- OIR - Österreichisches Institut für Raumplanung (Austrian Institute for Regional Studies and Spatial Planning - Wien, Austria).

ERVET - Policies for Business, founded in 1974, is one of the regional agencies created by the Emilia-Romagna Region to implement its economic policies. Its mission is to translate regional programmes into actions by designing and implementing innovative research, development and communication projects in cooperation with business operators and organizations in ER and Italy. These actions involve all of the region's productive sectors and specific industrial districts and focus primarily on innovation, quality, internationalization and finance.

To provide timely and effective support to strategies aimed at strengthening and expanding the regional economy, in 1980 ERVET began to create a network of Business Service centres which, together with the parent agency, make up the ERVET System. Today the ERVET system is composed of 8 sectorial and 2 crosswise service centres.

One of the fields of activity for ERVET is the study of the industrial location phenomena in Emilia-Romagna.

To get and provide information about the regional industrial settlement system, ERVET promoted and conducted a systematic census of the industrial areas in Emilia-Romagna. The project, called "Regional Atlas of Productive Settlements", started in the 1990s, collected data and information about more than 1,000 industrial areas in the region (land characteristics, geographic location, relationship with transport networks, available services, land use, type of productive activities already established, etc.), and created a specific alphanumeric database and publications on the results. From this experience and following the new opportunities generated by the development in these last years of information and multimedia technology, ERVET elaborated the TEMISIA project idea aimed at the evolution of such type of information tool, and presented in 1996 a project proposal in the framework of the new European Programme INFO2000, for the Action Line 3.1 in the Geographic Information Area.
The experience from the Baltic Republics: Latvia, Lithuania and Estonia

Legal framework in Latvia

The land privatisation process in Latvia is by nature complex. The speeding up of the privatisation of land (term “land” is used in wider understanding- including all fixtures to land parcel) is essential for the successful development of a market economy.

The transition to a market economy in the field of land related matters is a complex operation that necessitates changes and measures of many kinds. A central aim is to create a functioning land market, in a broad sense of the term. The perspective has to be wide. Steps and changes in different areas have to be reasonably coherent. The development of a land administration system should embrace all the main activities that have to be co-ordinated or integrated in order to meet relevant demands on the system. Real property credit should be introduced as one of the tools for land market development. This requires not only legislation on mortgages but also - in order to attract money for long-term credit - the existence of credit institutions that are sufficient in number and accessible by those credit institutions.

Land reform in Latvia

The Land Reform in Latvia started in 1990 following the re-establishment of Latvian Independence; the government introduced laws which established a legal basis for private land ownership, and introduced procedures for enabling Latvian citizens to own land. The general approach to Land Reform is restitution of ownership rights to pre-war owners or their descendants. Where Restitution is not possible or not applied for, other similar land is given, or compensation paid mainly in the form of monitory obligations (vouchers). It is also possible for citizens to acquire surplus (free) land by ordinary purchases. Non citizens have restrictions on owning land; they have rights to own buildings and have legal rights to use land or to have short or long term leases. The legislation on a free land market is under discussion in Parliament and is expected to be approved within the end of 1997.

The legal base for all land related matters in Latvia is the Civil Code which historically is “imported” from Germany. Already before World War I the Civil Code was influenced by German law, though at that time Latvia was part of the Russian Empire. A certain Baltic Code of Private Law of 1864, with German legislation partly as a model, served as the basic civil legislation in part of the Baltic region, including present Latvia. The code was given continued validity in Latvia after independence in 1920. In 1937 it was replaced by the Latvian Civil Code. A separate Land Register Law, linked to the Civil Code, was adopted at the same time. This legislation was based on similar principles as the German Civil Code and German Land Register Law. This legislation was abolished in 1940.

In 1993 the Civil Code and Land Register Law of 1937, with some minor changes, were revived by the Latvian Parliament. Specific problems concerning land-related matters, consequent to the radical change from the Soviet system to the new legislation, were dealt with in a separate Law on Introduction of the Land Register Law.

The Land reform is implemented by three main parties:
- Local governments (municipalities), which are responsible for decision-making on land privatisation;
- State Land Service, which is responsible for the technical implementation of the Land reform;
- Land Book offices of Ministry of Justice, which are responsible for legal registration of ownership rights.

The special authority was created in 1992 for technical implementation of Land Reform - State Land Service (SLS). It was formed on the basis of institutions which were working for surveying and mapping related activities during the Soviet period and the first years of independence. Since Land Reform was the top priority of Government, this organisation was supported in different ways - also financially by allocation of quite large State budget funds. At the beginning SLS was subordinated directly to the Cabinet of Ministers, but in 1995, as a result of the Government reform, it came under the supervision of the Ministry of Justice, but it still receives funds directly from the State budget. SLS is responsible for the technical implementation of the Land Reform; its main areas of responsibility are:
- Surveying, including geodetic surveying and mapping;
- Valuation for taxation and compulsory purchase;
- Cadastre.

In 1996 the Government of Latvia decided to have a no-deficit State budget. The result of such decision is that State
organisations have less state fund allocations and they should look for other ways to cover their costs.

The Land reform is intended to be carried out within a limited period of time, even this period appears to be longer than was originally expected. November 1, 1997 was the deadline for the submission of claims for restitution of land ownership and purchase of land for users. The formation process of real properties is still continuing. Land (real properties) subdivision on January 1, 1997 was:

- 68% - land assigned for use by physical persons, juridical persons, municipalities and state institutions;
- 17% - real properties of physical and juridical persons, municipality-owned and state-owned properties;
- 8% - claimed but unassigned land;
- 5% - free (unclaimed) land;
- 2% - leased by physical and juridical persons.

Legal framework in Lithuania

Following re-establishment of Lithuanian independence, significant changes took place in a short time. Very important laws on restoration of real property ownership rights, laws on land and other real property registration, on taxation and other laws and sub-legal acts were passed.

Security restrictions on maps, geodesy coordinates and information on land were removed. State enterprises, financed from the state budget and aided by donors, began to produce small and large scale maps, perform the restoration of real property ownership rights, implement land reform and perform main land cadastre and land register works. The private sector produces tourist and special maps, make cadastre surveying of land parcels, evaluate real property. Private notaries approve agreements and other transactions related to property.

The existing laws, providing for the integration of land and other real property registers, constitute the basis for securing the restitution of ownership rights and creating confidence between private owners, farmers, business men and banks. There will be greater possibilities for banks to provide credits under reasonable interest rate and business men will invest more money in the economy of the country and agriculture.

The National Land Survey of Lithuania is partly responsible for the land reform, land cadastre and land register works and fully responsible for the national geodesy reference system and topographic mapping at 1:5000 and smaller scales.

The existing institutional structure for the management of land and other real property is not convenient for users and does not meet the interests of the public and the state in developing a land and property market in Lithuania and integrating Lithuanian agriculture and economy into the European Union. At present the possibility is being considered for reorganization of the existing structure and the establishment of a Real Property Agency under the Lithuanian Government.

Legislation


According to the Law on Mortgage both land and buildings are regarded as real property which may be mortgaged either separately or jointly.

Forms of tenure, according to the Law on Land, are:

- ownership, common ownership and lease.
- Common shared ownership;
- Common joint ownership.

A more precise definition of lease is contained in a separate Law on Lease of Land.

The provisions on land register and cadastre operations are in the Law on Land and in the Government decision No. 316 of 30 04 1992 “Concerning the Approval of Provisions on State Land (with Real Property Elements) Cadastre". But the main law for real property registration is the Law on Real Property Register which was passed by the Parliament in 24 09 1996. Together with it the amended Law on mortgage was also passed and its registration is foreseen under the courts.

The Real Property Register law should join the legal registration of land, buildings and other property ownership. Its implementation should be effective from 01 04 1997. But the organizational structures for real property registration are not yet solved and that is the reason why it is not clear who will fulfill the registration of real property.

On 16 January, 1997 Parliament passed a provisional law concerning suspension of the validity of the Law on the Procedure and Conditions of the Restoration of Rights of Ownership to Existing Real Property. The restoration of ownership rights to existing property, land and apartments privatization is also suspended.

The Government is assigned to prepare a new project of Law on Restoration of Ownership Rights to Existing Real Property and submit it to the Parliament. In the meantime the constitutional principles concerning the continuation of the

(1) Extract from Public and private sector in national land tenure in Lithuania, by Mr. Bronislavas Mikuta, Chief, Land Cadastre Division of the National Land Survey of Lithuania.
The purpose is to speed up the process of restoration of present state should be considered; also to be taken into account are the justified wishes and proposals of household and land owners and leaseholders. The purpose is to speed up the process of restoration of present state should be considered; also to be taken into account are the justified wishes and proposals of household and land owners and leaseholders. The purpose is to speed up the process of restoration of present state should be considered; also to be taken into account are the justified wishes and proposals of household and land owners and leaseholders. The purpose is to speed up the process of restoration of present state should be considered; also to be taken into account are the justified wishes and proposals of household and land owners and leaseholders.

**Legal framework in Estonia**

With the implementation of the land reform, i.e. with privatisation and restitution of land, also a well functioning land market is being created in Estonia after a 50 year interval. It is a well-known fact that during the Soviet period all land in Estonia was under state ownership; for everyone else the only rights on land were the rights of use. The implementation of the land reform as well as the creation of a land market requires also a major reorganisation in the land administration system. In the Estonian situation it actually means that an entirely new land administration system is to be established, because the system of the Soviet period does not meet the objectives and requirements of the new situation. The principles of the new land administration system and the speed of its development help to speed up the land reform process too. Thus, the impact is complex and there is a great interaction between the processes.

### Land reform and land administration system in Estonia and its development

The land administration system includes several governmental agencies the most important of which are: the Government of Estonia, Ministry of Environment, the Estonian National Land Board operating under the aegis of the Ministry of Environment, and the Ministry of Justice. On the county level in 15 counties land related issues are administered by local title book offices, county governors and local land boards within county governments. All the above governmental agencies have been authorised to deal with land administration and the implementation of land reform. Several land related issues are settled at local governments level. The greater part of the work in connection with land restitution and privatization is performed by local governments. The final registration of ownership in the Land Cadastre and in the Title Book (Land Register) is, however, the responsibility of governmental institutions. The National Land Board includes the Land Cadastre and local cadastral offices in every county. The Central Department of Land Cadastre is divided into several divisions, which include the Division of Land Valuation, the Division of Cadastral Index Map, the Division of Information Technology and the Archive. Other objectives of ENLB are the following:
- to organise the activities in the field of geodesy and cartography;
- to deal with land management matters (property formation);
- to coordinate international support.

In the field of land management ENLB is responsible for developing the principles and procedures for property formation. The Law on Land Management and the Law on Physical Planning and Construction were adopted in 1995. Land surveying is performed by chartered land surveyors, even the state orders works from them. ENLB provides for the issue of surveyor attestations and licences, and for surveyor training and supervision. The total number of chartered surveyors is about 300.

In order to develop a new and economically justifiable land use pattern, the property formation during land reform is of crucial importance. Property formation is financed by the customers, works ordered by the state are financed from the state budget. According to the Law on Physical Planning and Construction, all comprehensive and detail plans both on central, county and local levels made so far are to be reviewed. Also the compilation of plans is financed by customers.

### Land valuation

For determining the taxation value of land, ENLB is developing land valuation principles and methods. Land valuation is regulated by the Law on Land Valuation which was adopted in 1994. Land is valued by licensed land valuers, i.e. private persons or companies; also the state uses their services. ENLB organises training for land valuers, issues licences, performs methodical supervision and control. There are approximately 70 licenced valuers. Land assessment has been performed twice: in 1993 and in 1996. The land valuation process and all valuation results are public.

### Land Cadastre and Title Book: the cornerstones of the Estonian land administration system

One of the key issues regarding implementation of the land reform was the creation and development of the Title Book. Land registration is regulated by the Law on Title Book which was passed in 1993. The Estonian land registration system is based on the German legal system. All real properties are to be registered in the Title Book; land registration is entirely financed from the state budget. The register is public and everyone is entitled to take a look at the information and obtain abstracts of titles. Title book offices have been established in every county and

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(1) Extract from Land tenure - Estonian experience, by Mr. Mailo Pajo, Member of the Estonian Parliament, Rural Affairs Committee. The full text of the document can be found at the Seminar's Web site.

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n°10 - maggio 1997

AITורךרנה - Rivista italiana di TELERILEVAMENTO

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they are operating at district courts. It means that titling of real properties has been separated from the executive power being thus under the jurisdiction of the judicial authority. During the land reform approximately 30,000 land parcels have been entered into the Title Book, about 10% of them have been repeated transactions, which indicates a constant development of the land market.

Due to the land reform and a completely new situation, a profound reorganisation of cadastral registration has also been necessary. The activities of the Land Cadastre are based on the Law on Land Cadastre which was adopted in 1994. The Land Cadastre is a part of ENLB and it has its local offices in every county. The total number of offices is 15. The Land Cadastre is financed from the state budget. There are at least 16 different attributes for each parcel in the Cadastral Register. For each parcel a cadastral map, a cadastral index map, a map of restrictions, a land use map, a map of land quality as well as that of land valuation are made.
Public and private partnership
TERANET profile

John-Paul Hayward

Introduction
This presentation concerns the development of the public/private partnership arrangement and the creation of Teranet Land Information Services Inc. - a model for meeting government's business needs for automating land registration services and a catalyst for improving the competitiveness of Ontario's land related information industry. It also discusses some areas for consideration by others involved in the planning and implementation of partnerships.

An overview - Ontario's land registration services
The Province of Ontario maintains two large active systems of land registration - the registry system and the land titles system. The major legal difference between the two systems is that in the land titles system, the government provides a statement with respect to ownership of and interests in land. In land titles, the title is guaranteed; in registry, only the fact that the documents are properly recorded is guaranteed. Except for this feature, both systems operate legally in much the same way for users. In both the government provides a repository for documents and plans along land. Both systems provide notice of an interest in a particular piece of land whether or not the records are searched and this therefore serves as an incentive to register, the time and order of registration determines the document priority. The difference between the actual records is significant: land titles records are parcelized (i.e. organized by land ownership); registry records are maintained by geographical entity (i.e. subdivision or concession lots) so that records relating to many owners are often intermingled. It is estimated that there are about 4 million land ownership records (60% registry and 40% land titles) recorded in 55 Provincial land registry offices. Each county or district in Ontario has at least one land registry office within the jurisdictional area. Patented land may be registered under The Registry Act or recorded under The Land Titles Act depending upon which statute is applicable in the given location. Currently there remain 20 offices which offer only Registry Act services.

Land registration reform and private sector involvement
Both systems of land registration are labour intensive, paper driven recording systems which require storage and retrieval of indexes, parcel registers and searching documents and plans. Use of the system largely requires personal attendance at the land registry offices and searching through multiple books, documents and plans to complete a property transaction.

Major reforms of the land registration system have been underway over the last 20 years and a key touchstone of reform efforts can be traced to the 1971 Law Reform Commission Report which recommended movement toward one system of land registration - land titles as well as computerization of land registration records. The “umbrella” for ministry reform efforts over the years has been POLARIS (Province of Ontario Land And Information System) which has included a series of improvements to legislation and the development of computerized databases. The current database foundation includes:
1) A title index database: computerized land registration indexes organized by property ownership, registration functions performed on-line with immediate records' update, data available through terminals or printout; information accessible by property identification number, address, owners' name, or document number.
2) A mapping database: computerized property maps display survey information, property boundaries and unique property identification numbers (PIN); paper copies of maps available at registry offices to assist the public in searching properties.

The government decision to build these databases in the 1980's provided the basis for the emergence of the present partnership arrangement. Polaris automation began through a prototyping approach in the Oxford County registry office. Its success led to the development of a business case for investing in province-wide automation. Approval by government of an overall 15-year strategy for automation led to an active period of consideration of private sector involvement in Polaris implementation.

Essentially it involved a reevaluation of a limited project subcontracting model and a shift to a broader joint venture model. This rethinking in part arose from unsolicited...
proposals to the ministry from the private sector and the creation of a joint government/private sector committee in 1988 to investigate the appropriate role of the private sector in Polaris implementation. Underlying this interest was the worldwide demand for products and services involved in managing geographically referenced information - a growth area in the 1980's with multi-billion dollar market value. An expanded private sector role was reinforced also by a 1988 provincially sponsored report on 'Competing in a Global Economy' which emphasized the need of government to develop partnerships between industry and government within the context of broader industry development while meeting the business needs of government.

The concept of a strategic alliance emerged from this review process. It was proposed that government and the private sector form a partnership to implement the automation of Polaris and develop an Ontario-based industry specialising in land related information systems in both domestic and international markets. This approach would take advantage of the synergies between both public and private sectors relative to skills, experience and resources.

**Partnership selection**
The government selection of a POLARIS strategic partner was done through a competitive process which was initiated in 1988 - detailed evaluation processes; negotiating processes; and government decision-making processes resulted in a final approval in early 1991. Teranet Land Information Services Inc. was incorporated in May 1991. It is a partnership between the Ontario Government and Teranira Holdings Inc., a consortium of private sector investors representing a variety of institutional, corporate and individual interests. Both shareholders have made a $29 million equity investment. The Teranet Board of Directors is drawn equally from each partner (4 members each) and there are 2 joint appointees. It is a formalized partnership arrangement supported by a series of legal agreements: Shareholder; License; Implementation and Operations.

**Public/private partnership model**
The key business streams of the Teranet strategic alliance can be grouped into the key areas as illustrated in Figure 1. Teranet is best described as a collaborative partnership model with emphasis placed on pooled resources and shared risk and returns. For government, some of the key expectations of the partnership include:
- accelerated implementation of automated land registration services province-wide while continuing to provide good land registration services;
- development of a data distribution network that will provide direct remote access for land registration services and other land related data in a timely way;
- development of industry skills/experience for international marketing.

For the private sector, some of the key expectations include:
- technology transfer from government to private sector building/implementing Polaris;
- opportunity to operate a data utility in Ontario for land registration information as well as a variety of value added products and services including other geo-referenced products/services;
- working business model including joint government participation to use in competing in the world market for

![Figure 1 - Public/Private Sector Partnership Model.](image-url)
similar land related information projects;
- established long term industry opportunity with growth
potential rather than a limited, one-time project-based activity.
Some key points for the comparison of the differences
between government’s original model for automating the land
registration system with the Teranet based model is shown in
Table 2.

Public-private partnership: considerations
There are a variety of partnership “lessons” that can be drawn
from the development of this public/private arrangement.
The following points, by no means comprehensive, are
offered for consideration.

Partnership Selection Process
Tender evaluation, negotiations and decision-making can be
time consuming and require significant resources to ensure
the integrity of the process. This partnership selection
process spanned about 2 1/2 years and had a number of
steps and participants:
- government and external evaluation teams;
- inter-ministerial consultation;
- central government agency reviews;
- negotiation and legal agreement development;
- final government approvals (lapse time for process was
extended due to the timing of the 1990 provincial election).
The overall framework should be carefully planned in
advance -proper selection of a partner for the right reasons
(i.e., common objectives; dependable; add components to the
venture that cannot be provided by government) is
fundamental.

Communications - Public
Maintaining commercially sensitive details of a public/private
business venture must be balanced with an understanding of
government’s public accountability for its actions. Public
disclosure expectations need to be clearly set out at the
partnership planning stages.

Table 2 - Automation of the Land Registration System.

<table>
<thead>
<tr>
<th></th>
<th>Government only model</th>
<th>Public/Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Province-Wide Automation</td>
<td>15 Years</td>
<td></td>
</tr>
<tr>
<td>Funding Model</td>
<td>100% Government</td>
<td>50% - 50% public/private equity; licensing arrangements</td>
</tr>
<tr>
<td>Jobs/Industry Impact</td>
<td>Within government; project sub-contracting</td>
<td>Private sector, long term industry vehicle</td>
</tr>
<tr>
<td>Service Model</td>
<td>Paper based registrations</td>
<td>Remote and on-site searching and electronic registration service</td>
</tr>
<tr>
<td></td>
<td>On-site services; Partial automation; title index/maps only</td>
<td>Full automation; imaged records; automated title records map</td>
</tr>
<tr>
<td></td>
<td>Land Titles conversion</td>
<td>Land Titles conversion</td>
</tr>
<tr>
<td>Information Information</td>
<td>No additional value added products/services</td>
<td>Broad range of land-related data distribution and gateway services</td>
</tr>
<tr>
<td>Products/Services</td>
<td></td>
<td>International marketing</td>
</tr>
</tbody>
</table>
**Flexibility in Arrangements**
There are learning curves involved in the start-up of any new venture but public/private partnership add some additional learning challenges. Private sector interests do not understand the detailed working of government and government does not always recognize the impact of policies/decisions on the private sector. Recognizing the importance of outcomes (e.g. accelerated Polaris implementation) has led, for example, to a rethinking of various processes and procedures for property record automation to streamline or simplify them to achieve mutual business objectives.

**Coordination and Consultation**
Partnerships generate the need for constant coordination and consultation which demands time and ongoing resource commitment. In this arrangement, government is a shareholder as well as a client with Polaris automation activity. There is a strong interdependence of goals and strategies in transforming land registration services through investment in technology. Coordination is required at a site level as well as at a provincial level - consultation activities include Teranet and its subcontractor as well as officials involved in program delivery. It extends to ensuring ongoing input from stakeholders who depend upon land registration services.

As government looks more horizontally and across functions in order to have more effective management in land related information activities - it has also served to highlight an expanded need for partnership coordination.

**Partnership Values - build-In not Add-on**
The Teranet partnership includes a series of formal agreements which establish obligations and rights. These are important in defining the partnership but it is also important to recognize that successfully managing this arrangement, which has long term objectives and returns, rests on maintaining its basic spirit:
- Cooperation;
- openness;
- candour;
- fair and equitable resolution of disputes/issues.

**Public Interest Considerations**
Government partners face the challenge of identifying and making sure that partnership arrangements are tailored to serve specific ongoing public interests. A significant part of this arrangement is built around the operation of a vital public service dealing with land ownership. The agreements reflect these considerations, for example, by:
- maintaining legal integrity through setting standards for conversion of legal records to automated form from paper records;
- maintaining public service availability through setting standards for the availability for the Polaris databases;
- government controls over statutory fees;
- government ownership of land registration data; data licensing provisions on its commercial use.

**Conclusion**
This presentation has focused on how government can use a business partnership model to make a major investment in information technology and foster industry development. The model allows for the partners to combine resources and expertise to make this investment while at the same time sharing in the associated risks and benefits.
The EU Phare Programme and Land Administration Projects (Czech Republic, Hungary, Slovakia and Slovenia)

R. A. Baldwin

The Phare Programme
During the first six years of the Phare programme (1990-1995), more than 5,416 million ECU has been made available to eleven partner countries of Central and Eastern Europe aimed at helping these countries with the economic transformation to a market based economy. The main priorities are the restructuring of state enterprises, (including agriculture), private sector development, and reform of institutions, legislation and public administration. This includes social services, employment, education, health, energy, transport, telecomms infrastructure and also environment and nuclear safety.

For countries that have signed Europe Agreements, Phare is the financial instrument of the European Union’s pre-accession strategy which will eventually lead to full membership. Initially, the program was developed as an immediate response to the challenges facing the central European countries. This has now developed into a “… medium term financial instrument with improved possibilities to promote infrastructure development and infra-regional cooperation”.

One of the key elements in the transformation process is the establishment of an efficient and secure system for the transfer of real land and property assets from one legal entity to another. In many countries this is supported through the land registration process which provides and maintains legal evidence of title (legal ownership) of real land and property assets. A safe and secure land tenure system, and an efficient conveyancing process are essential prerequisites for the development of land markets and provide the framework for land reform, restitution, privatisation and compensation. This is especially important with respect to agricultural land, and hence the inclusion of land registration projects (infrastructure and public administration) within the agricultural components of the Phare programme.

The Phare programme is implemented using a decentralised implementation system involving Task Managers for specific sectors (e.g. Agriculture) located in Brussels, who have responsibility for programmes in their sector for a specific portfolio of countries (e.g. DG Ia is responsible for Europe Agreement countries: Czech Republic, Hungary, Slovakia, Slovenia; Task Manager is Paola Papaloni, Poland - Etienne Claey, Baltic States - Alain Alter, Bulgaria and Romania - Humphrey Abbot). Local Project Management Units are created for project administration, and TA (Technical Assistance) teams are recruited on a project by project basis. The whole activity is coordinated by the local EU Delegation within the recipient country.

Historically, the priorities are established by the recipient itself, and a multi-annual indicative programme is established for a period of five years which sets broad objectives, broad budget limits, and provides the framework for Country Operational Programmes (COP) which are more focussed and of shorter duration. Within the COP there are sector programmes which are then carried out by implementing the proposed projects, completing the defined activities through the contracting of services and supplies.

All contracting is normally by competitive tender, and the Commission has increased its efforts to make this increasingly open and transparent, through the adoption of internet publication of all services contracts greater than 300,000 ecu, and the publication in the Official Journal of the European Union of all supply tenders with a value greater than a certain amount (eg 300,000 ecu in the case of the Czech Republic). The Commission has also introduced Framework contracts in order to speed up the recruiting and contracting of experts (local and international) and reduce the contractual overheads. The Commission carries out audits of the projects, and also has an external monitoring and assessment service.

Land Administration Projects Financed by Phare
(Czech Republic, Hungary, Slovakia and Slovenia)

In Hungary as part of the 1990-1995 programmes, Phare has made more than 12 million ecu available for the wholesale modernisation of the land registration sector, including the development of systems (hardware and software, wide area networking) for the nationwide network of Land Offices. The overall objective of this programme is to develop an efficient land registration sector which is able to efficiently and precisely maintain the land registration records (more than 7,000,000 titles and 55,000 cadastral maps) in a decentralised system spread over 115 offices throughout the country. The programme also has significant components financed by other sources. This total investment represents some 15% of all Phare agricultural funding during this period, and approximately 2% of the total Phare funding received by the country.

In the Czech Republic, a total of 5 million ecu has been made available. This has provided IT infrastructure to support the

(1) Phare Consultant, Kampsax Geoplan, Czech Republic (kampsax@traveller.cz)
immediate re-establishment of the cadastre following the socialist era, and has been aimed at satisfying the most urgent requirements. The Czech Republic has also received significant funding from other sources in this sector, and has used the Phare funding for local area networks, plotting devices, cartographic systems, development systems, and also Training and TA. The Czech Republic has not prioritised agriculture within the programme, and the land registration sector has absorbed 66% of all Phare agricultural sector funding, and approximately 1% of the total Phare funding received.

In Slovakia, a total of 6 million eur has been made available which has been oriented towards TA for Training and system design, as well as equipment for land surveying and measurement, digital mapping and publication of maps, geodetic measurement systems and data base development for land records. Phare assistance includes modernisation of Equipment, including aerial photography where required. This represents 57% of all Phare agricultural sector funding, and approx 2.5% of all Phare funding received by the country.

In Slovenia, there has been no expenditure to date specifically in this sector, however, some funding is foreseen in the COP 96 programme for a Geographic Information System subcomponent. The funding level is limited.

Conclusions

The Phare programme has now been running for more than six years, and many lessons have been learnt concerning the formulation and implementation of projects. Phare has changed its emphasis during this period, moving more towards an instrument supporting EU accession. This may be reflected in further changes to the programme.

The Phare programme publishes a wealth of information about its activities. This is available from the following sources:

European Commission: Information Unit - Phare
Office Address: Montoyerstraat 34 3/80 Rue Montoyer B-1000 Brussels
Mailing Address: MO 34 3/80 Wetstraat 200 Rue de la Loi B-1049 Brussels.
Telephone: (+32) 2 299 1600
Fax: (+32) 2 299 1555

European Commission: Information Unit - Tacis
Office Address: Montoyerstraat 34 3/80 Rue Montoyer B-1000 Brussels
Mailing Address: MO 34 3/88 Wetstraat 200 Rue de la Loi B-1049 Brussels.
Telephone: (+32) 2 296 6065
Fax: (+32) 2 296 8024

Phare has its own web page at:
http://europa.eu.int/en/comm/dg1a/phare.html
Il Telerilevamento è entrato nelle scuole: 
un’esperienza didattica
Valeria Alessandro

Questa esperienza didattica si colloca nell’ambito delle iniziative dell’AIT rivolte alle Scuole ed istituti di istruzione secondaria. All’interno di tale attività sono stati sviluppati e realizzati corsi di aggiornamento di telerilevamento per gli insegnanti (vedi il numero 6 della Rivista) e sono state preparate delle schede didattiche, realizzate insieme all’Associazione Italiana di Cartografia, che trattano in maniera molto semplice e chiara i principi di base della cartografia e del telerilevamento, sia da foto aeree che da satellite.


Il lavoro ha avuto lo scopo di volere insegnare ai ragazzi come leggere ed interpretare le immagini da satellite nell’ambito dell’analisi delle tematiche ambientali. L’esigenza di studiare questo nuovo mezzo di indagine è nata dalla constatazione che numerosi libri di testo, principalmente di Scienze della Terra e Geografia, riportano spesso immagini da satellite senza però un loro adeguato commento ed interpretazione. Poiché alla base di tali interpretazioni, vi sono concetti teorici riguardante le basi fisiche e le elaborazioni numeriche delle immagini, il lavoro didattico è stato di tipo interdisciplinare e si è svolto coinvolgendo in ordine temporale le seguenti materie: Fisica, Matematica, Scienze della Terra e Geografia.

All’interno di ciascuna materia sono svolti solo alcuni degli argomenti fondamentali del telerilevamento (Tab. 1) cercando di esporli in maniera semplice in considerazione anche dell’utenza, ovvero ragazzi frequentanti il primo anno delle superiori.

<table>
<thead>
<tr>
<th>TITOLO ED ARGOMENTI TRATTATI</th>
<th>MATERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BASI FISICHE DEL TELERILEVAMENTO E PRINCIPALI SATELLITI E SENSORI</strong></td>
<td><strong>FISICA E LABORATORIO DI FISICA</strong></td>
</tr>
<tr>
<td>Le basi fisiche del telerilevamento sono state esaminate tutte le principali leggi ed i concetti di base delle tecniche di acquisizione. Per quanto riguarda la trattazione dei satelliti e sensori, a parte la distinzione tra satelliti orbitanti o geostazionari, sono state illustrate le caratteristiche principali dei sensori TM e MSS.</td>
<td></td>
</tr>
<tr>
<td><strong>FORMATO DIGITALE DELLE IMMAGINI DA SATELLITE E PRINCIPALI ELABORAZIONI</strong></td>
<td><strong>MATEMATICA</strong></td>
</tr>
<tr>
<td>Sono state spiegate le differenze tra segnale analogico e digitale ed è stato analizzato in particolare il formato delle immagini da satellite. Tra le elaborazioni di immagini sono state studiate lo “stretching lineare” e le “composizioni di bande”:</td>
<td></td>
</tr>
<tr>
<td><strong>ANALISI DELLE FIRME SPETTRALI DELLE PRINCIPALI TIPologie E COMPOSIZIONI IN VERO E FALSO COLORE</strong></td>
<td><strong>SCIENZE DELLA TERRA</strong></td>
</tr>
<tr>
<td>Sono stati esaminati i grafici relativi alle firme spettrali di acqua, suolo e vegetazione, analizzando le differenze delle firme relative anche ad una stessa tipologia. Sono state quindi analizzate le principali composizioni in vero e falso colore in relazione alle differenti firme spettrali.</td>
<td></td>
</tr>
<tr>
<td><strong>APPLICAZIONI DEL TELERILEVAMENTO IN TEMATICHE AMBIENTALI</strong></td>
<td><strong>GEOGRAFIA</strong></td>
</tr>
<tr>
<td>Sono state interpretate le immagini da satellite relativamente alle seguenti tematiche: Il controllo delle acque; Le conseguenze dell’intervento dell’uomo sull’ambiente; L’ambiente naturale e l’ambiente artificiale; L’urbanizzazione.</td>
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</tr>
</tbody>
</table>

Tabella 1 - Argomenti trattati all’interno del lavoro interdisciplinare.
In particolare per quanto riguarda le applicazioni del telerilevamento, il lavoro è stato realizzato tramite esercitazioni pratiche di interpretazione di immagini da satellite estratte dai libri di testo scolastici.

Alla fine del lavoro gli stessi alunni coordinati e seguiti dagli insegnanti hanno prodotto una relazione. A tale scopo la classe è stata suddivisa in quattro gruppi, il più omogenei possibili dal punto di vista dell'interesse e dell'impegno, a ciascuno dei quali è stato assegnato il compito di redigere la relazione relativa ad una delle materie didattiche specifiche del lavoro svolto.

Alla luce di tale esperienza, si può dire che in generale gli alunni hanno partecipato più o meno attivamente allo studio e, come era prevedibile, hanno mostrato un maggiore interesse nella parte più applicativa del lavoro riscontrando una maggiore difficoltà per le lezioni riguardanti le basi fisiche. Risulta anche evidente che l'inserimento del telerilevamento all'interno dei programmi ministeriali, può essere fatto anche attraverso altre metodologie di studio, come ad esempio tramite l'utilizzo di programmi didattici di elaborazioni di immagine, alla luce del fatto che oramai molti Istituti e Licei sono dotati di un Laboratorio di Informatica.

Chiunque sia interessato ad ulteriori informazioni sulle attività didattiche dell'AIT mi può contattare al seguente indirizzo: Valeria Alessandro, Via C. Monteverdi, 37, 50144 Firenze, Tel:055/366184.
Selezionato tra 40 proposte Europee, ed unico in Italia, il progetto proposto dall’AIT, ha ottenuto un finanziamento, dal Centre for Earth Observation (CEO) del Joint Research Center (JRC) di Ispra, di 50.000 ECU per lo svolgimento delle attività di seguito descritte. Tale programma, rivolto principalmente agli operatori degli Uffici Tecnici Regionali, ma estendibile agli Uffici Tecnici dello Stato, alle Province e Comuni, si prefigge, attraverso Seminari e Corsi di formazione, di migliorare la conoscenza delle tecniche di Telerilevamento ed il loro utilizzo per una appropriata gestione delle informazioni territoriali da parte degli Enti preposti. La finalità è quella di promuovere l’uso dei dati telerilevati esistenti e disponibili in futuro e di definire prodotti ad alto livello qualitativo in risposta ad accertati e reali bisogni dell’utenza al fine di stimolarne la realizzazione. Il programma include le seguenti iniziative:

23 ottobre 1997, STN, Roma
Seminario introduttivo, organizzato dall’AIT, in collaborazione con Eurimage, Agenzia Spaziale Europea (ESA) e Centro Interregionale Coord. e Documentazione per le Informazioni Territoriali (CIR), è focalizzato sui programmi AIT/CEO, e rappresenta un utile foro per uno scambio di informazioni ed esperienze tra gli Enti di cui sopra e gli Uffici Tecnici, con opportunità per questi ultimi di esprimere le loro esigenze.

1-5 dicembre 1997, ESRIN, Frascati
Corso di Formazione, organizzato dall’AIT, con la collaborazione di Eurimage e ESA, indirizzato all’utilizzo dei dati telerilevati e l’organizzazione delle informazioni territoriali.

29-30 gennaio 1998, CNR, Milano
Workshop Internazionale, concepito come opportunità di confronto di attività ed esperienze condotte nel settore del Telerilevamento a livello internazionale, il Workshop si avvale della partecipazione delle Associazioni di Telerilevamento operanti in Europa in parallelo con l’AIT.

marzo 1998
Disponibilità, da diffondere sia su supporto CD-ROM che attraverso rete Internet di un Iper-testo illustrante possibilità applicative ed utilizzo di informazioni territoriali ottenute mediante tecniche di Telerilevamento aereo e da satellite. Collaboratori nella realizzazione di questi programmi sono: Consiglieri e Membri associati dell’AIT, per l’esecuzione delle attività; Centro Interregionale e Coord. e Documentazione per le Informazioni Territoriali (CIR), per il coordinamento con i potenziali utilizzatori; Eurimage e Agenzia Spaziale Europea (ESA), per il coordinamento e l’esecuzione delle attività.

Il 26 giugno scorso si è tenuto ad Ispra, presso la sede del JRC-CEO, un incontro di apertura delle attività proposte e finanziate dal CEO. Si riporta di seguito il verbale della riunione.

Kick Off Meeting
Ispra (VA), June 26, 1997
Meeting participants:
CEO
Giancarlo Maracci
Daniele Ehrlich
Mario A. Gomarasca
Pietro Dainelli
Adriano Cumer
Paolo Pensalfini
AIT
Giovannaria Lechi

In Ispra, June 26th 1997, at 10:30, has been held the Kick Off Meeting of the Contract in object that becomes operative starting from this date and for 9 month, till march 26, 1998. Following the presentation of the 9 financed CEO project concerning the Invitation for Tender RGC 01/97, AIT shows its interest in having contacts with coordinators of the other 8 projects and it is agree in participating at a joint meeting with them, in Ispra, at the end of this year. AIT requires to CEO to have a description of the objectives, programs and activities proposed in these 8 parallel Projects. The proposed schedule table as been modified as following: the first seminar will be held October 23th in Rome, hosted by the Servizi Tecnici Nazionali (STN), Via Curtatone, 7, that kindly accepted to collaborate in this initiative. The activities of the AIT-CEO project will be adequately advertised with a document distributed to all the Technical Regional Services and published on the Rivista Italiana di Telerilevamento.
The programs of the Seminar and of the Training Course will follow the schedule defined in the proposal. Concerning the International Workshop, that will be held in Milan in the Conference Room of the National Council of Research, 29-30 January, 1998, AIT proposes to invite all the representatives of the European Remote Sensing Associations, that are about 20, as declared by the EARSeL secretariat. AIT asked to CEO to operate for the identification of these Associations including the acquisition of the Statutes, Characteristics of the Associations, their main activities. Eventual analogies with the AIT activities and the CEO project will be helpful for the organisation of the International meeting in Milan.

Special emphasis will be reserved at the CEO in general, with an oral presentation, and at this program in particular, with description of the activities, at the 1st National Conference: Le Immagini e le Informazioni Territoriali that will be held in Parma, September 30th, October 3th this year, organised by the AIT jointly with Società Italiana di Cartografia, Società Italiana di Fotogrammetria e Topografia, e AM/FM-GIS Italia.

The number of the attendants at the Training Course will depend from the request of registrations. One person for each Region will be invited, hopefully for the 20 Regions of Italy. The hypertext on EO techniques will be produced as an educational tool. The final product will be a document which can be browsed by users by buttons, from the main menu and/or hyperlinks. The product will be derivable on magnetic media (floppy disks and/or CD-ROMs). Will be evaluated the possibility to download it by internet. The product will be designed in order to be utilized also on Personal Computer with low level configuration.

AIT will promote the diffusion and the link to the EWSE. AIT is the owner of all the products prepared during this Contract, including the proposed hypertest that will be described and promoted in a special number of the Rivista Italiana di Telerilevamento.

### Schedule of events
(contrac duration: June 26, 1997 – March 26, 1998)

<table>
<thead>
<tr>
<th>Event</th>
<th>Weeks after signature</th>
<th>Dates</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kick-off meeting (JRC, Ispra)</td>
<td>1</td>
<td>June 26, 1997</td>
<td>Minutes</td>
</tr>
<tr>
<td>Start Hypertext preparation</td>
<td>1</td>
<td>June 26</td>
<td></td>
</tr>
<tr>
<td>First progress report</td>
<td>8</td>
<td>August 25</td>
<td>1 page by electronic mail</td>
</tr>
<tr>
<td>Introductive Workshop (STN, Roma)</td>
<td>16</td>
<td>October 23</td>
<td>Minutes</td>
</tr>
<tr>
<td>Training Course (ESA-ESRIN, Frascati)</td>
<td>22</td>
<td>1-5 December</td>
<td>Minutes</td>
</tr>
<tr>
<td>Interim Report and presentation of the Hypertext structure</td>
<td>23</td>
<td>December 12</td>
<td>5 copies to JRC</td>
</tr>
<tr>
<td>Interim meeting (IAO, Florence)</td>
<td>24</td>
<td>December 19</td>
<td>Minutes</td>
</tr>
<tr>
<td>International Workshop (CNR, Milan)</td>
<td>30</td>
<td>29-30 January, 1998</td>
<td>Minutes</td>
</tr>
<tr>
<td>End of Hypertext writing</td>
<td>33</td>
<td>February 20</td>
<td>CD-ROM</td>
</tr>
<tr>
<td>Draft final report and presentation of the Hypertext</td>
<td>34</td>
<td>February 27</td>
<td>5 copies to JRC CD-ROMs</td>
</tr>
<tr>
<td>Meeting to discuss draft final report and the hyper-test (CNR-IRRS, Milan)</td>
<td>36</td>
<td>March 13</td>
<td>Minutes</td>
</tr>
<tr>
<td>Final Report</td>
<td>38</td>
<td>March 26, 1998</td>
<td>10 copies to JRC</td>
</tr>
</tbody>
</table>

### Seminario introduttivo
UTILIZZO DEI DATI DI OSSERVAZIONE DELLA TERRA (EO) NELLA PUBBLICA AMMINISTRAZIONE 23 ottobre 1997
Dip. Servizi Tecnici Nazionali, via Curtatone, 7 - Roma

**Programma**
10:00 – 10:30 L'Italia nel Programma CEO - Ing. Antonio Bruno Della Rocca, Delegato Italiano DISC.
10:30 – 11:00 Obiettivi del Progetto AIT/CEO - Dr. Mario A. Gomarasca, Coordinatore del Progetto AIT/CEO.
11:00 – 11:30 Ruolo del Centro Interregionale e uso dei Dati di Osservazione delle Terra (EO) - Dr. Adriano Cumer, Direttore CIR, Roma.
11:30 – 12:00 Progetti internazionali e attività di promozione sull'uso dei dati EO - Dr. Maurizio Fea, ESA-ESRIN, Frascati - Dr. Aldo Argentieri, Eurimage, Frascati.
12:00 – 12:30 L'Interesse all'Uso dei Dati EO dei Servizi Tecnici Nazionali – Dr. Roberto De Marco, Direttore del Servizio Sismico dei STN, Roma.
12:30 – 13:00 Esempi di applicazioni concrete a livello regionale e provinciale - Interverranno rappresentanti delle Regioni Lombardia, Sardegna, Toscana, Veneto.
Corso di Formazione
1 - 5 dicembre 1997
ESA/ESRIN
Via G. Galilei, 00044 Frascati

Organizzato dall’AIT in collaborazione con Eurimage ed ESA, il Corso verte sull’utilizzo dei dati telerilevati e l’organizzazione delle informazioni territoriali, e si svolgerà dall’1 al 5 dicembre 1997 presso l’ESRIN, la sede dell’Agenzia Spaziale Europea a Frascati.

Coordinamento scientifico del corso: Dr. Maurizio Fea, ESA
Segreteria organizzativa e tecnica del corso: Dr. Barbara Scarda, c/o ESRIN, Frascati, Dr. Aldo Argentieri, Eurimage, Frascati

Interfaccia utenti: Centro Interregionale, Roma
Utenti del corso: Personale degli Uffici Tecnici Regionali (max 20 persone)


Orari del corso: dalle 9:00 alle12:30 e dalle 13:30 alle 17:00.

Programma del corso

Principi teorici
T01 - principi di Telerilevamento;
T02 - piattaforme e acquisizione dati telerilevati;
T03 - elaborazione immagini digitali;
T04 - Telerilevamento, Sistemi di Informazione Geografica (GIS) e dati territoriali;
T05 - GIS e alta risoluzione.

Esercizi pratici sulla gestione dei dati (1)
A01 - Selezione immagini;
A02 - elaborazione immagini;
A03 - ortorrettificazione e co-registrazione di immagini;
A04 - classificazione;
A05 - interpretazione visiva dei dati;
A06 - classificazione multi-temporale e valutazione dell’accuratezza;
A07 - dati ad alta risoluzione;
A08 - l’apporto delle nuove missioni commerciali per l’alta risoluzione allo studio delle risorse terrestri;
A09 - l’applicazione del Telerilevamento nei GIS per un uso appropriato dei dati territoriali;
A10 - la necessità del Telerilevamento nei sistemi decisionali

Dati di Osservazione della Terra (EO)
T06 - I Sistemi Informativi Territoriali;
T07 - disponibilità dei dati
T08 - “dataset” e “metadata”; la rete Internet;
T09 - il servizio europeo di interscambio (EWSE);
T10 - precisione e verifica della qualità.

Esercizi pratici sulla gestione dei dati (2)
A11 - Integrazione dei dati di diverse fonti (analoga; digitale; informazioni ausiliarie);
A12 - importanza della frequenza temporale e della corretta selezione dei dati;
A13 - la corretta interpretazione e lettura di dati e metadati;
A14 - disseminazione e distribuzione dei dati;
A15 - standardizzazione delle annotazioni e dei formati;
A16 - navigazione in Internet;
A17 - utilizzatori e produttori dei dati territoriali in EWSE;
A18 - la continuità di questa esperienza;
A19 - accessibilità alla qualità dei dati;
A20 - produzione di dati di alta qualità.

Strumentazione ed immagini telerilevate
Il corso si intende teorico che pratico prevede la visualizzazione e l’elaborazione di immagini telerilevate ed il collegamento in Internet con EWSE, il sistema europeo di scambio di informazioni predisposto dal CEO. Saranno disponibili immagini AVHRR, TM, HRV, LISS III, SAR, SIR-C/X-SAR, MIVIS ed altri, su PC con software per il processamento delle immagini digitali, un GIS e l’accesso a Internet.

Workshop internazionale
29 - 30 gennaio 1998
CNR, Telerilevamento, Milano


L’iniziativa ha lo scopo di confrontare diverse situazioni europee e di indirizzare l’operato dei Servizi Tecnici Regionali ad una migliore collaborazione verso l’Europa. La presentazione di esperienze e capacità acquisite in alcune Regioni d’Italia è intesa quale utile stimolo ad un uso sempre più frequente dei dati di Osservazione della Terra da parte di quegli Enti ed organismi non ancora coinvolti in processi di informatizzazione.

Saranno discusse qualità e affidabilità dei dati e definite procedure per la messa a punto ed organizzazione dell’informazione territoriale. Quest’ultima, di cui i dati telerilevati sono parte integrante, deve risultare di facile accesso e di semplice interpretazione per gli utilizzatori.

Iper-testo
Verrà prodotto un iper-testo delle tecniche dei dati e delle applicazioni EO disponibile su comuni supporti magnetici (floppy disk, CD-ROM) come strumento didattico e di auto apprendimento.

Il prodotto sarà concepito in modo da essere utilizzabile anche su PC di bassa configurazione (per es. CPU 486, 8 Mb RAM, SVGA 640 x 480, 256 colori) e scaricabile via Internet. Il prodotto finale sarà un documento facilmente gestibile dall’utilizzatore per la presenza di menù principali, bottoni e collegamenti. L’iper-testo fornisce informazioni utili sulle tecni-
che di osservazione della terra, reperibilità dei dati e indirizzi di associazioni o enti che operano nel settore.

Rivista Italiana di Telerilevamento
A conclusione delle attività proposte sarà predisposto un numero speciale della Rivista Italiana di Telerilevamento che riassumerà gli argomenti trattati, i risultati raggiunti, e la definizione di iniziative future concernenti gli impegni dell’Associazione in accordo con la promozione dell’uso di Dati di Osservazione della Terra. Saranno raccolte le impressioni ed i suggerimenti dei soggetti a cui questo programma è rivolto per un loro più ampio coinvolgimento.

Per informazioni:
– Associazione Italiana di Telerilevamento
C/o IAO via Cocchi, 4, 50131 Firenze
Tel/Fax 055 570395
E-Mail: sarfatti@iao.florence.it

Progetto “LACOAST”
Il SAI (Space Applications Institute) del Centro Comune di Ricerca di Ispra si è fatto promotore di un progetto, denominato LACOAST (Land cover changes in COASTAL zones), che intende valutare le modificazioni quantitative indotte da attività umane nelle aree costiere Europee negli ultimi decenni. Il progetto, attivato nell’ambito del Pacchetto AS3200 (Progetti applicativi di supporto ai servizi della Commissione) del Programma CEO, prevede una stretta collaborazione con gli utenti e in particolare, a livello di U.E., con la DG XI e con l’Agenzia Europea per l’Ambiente e i suoi Centri Tematici (Per il Land Cover, ETC-LC e per le zone costiere, ETC-CZ, e a livello nazionale i partners già attivi nel Progetto CORINE Land Cover e le Amministrazioni responsabili della gestione del territorio. Per l’Italia, partecipa il Centro Interregionale per le Informazioni Territoriali di Roma, che ha coordinato la realizzazione della cartografia CORINE per 15 Regioni Italiane, ed ha formato un apposito Gruppo di lavoro, al quale partecipano le Regioni interessate. Ciò consentirà non solo la diretta diffusione dei risultati e la loro eventuali utilizzazione immediata, ma anche la formazione di operatori e l’aggiornamento culturale dei partecipanti. L’iniziativa infatti, oltre a verificare le variazioni intervenute nell’uso del suolo, intende contribuire alla formulazione e alla diffusione di consolidate ed affidabili metodologie di controllo, aggiornamento e valutazione qualitativa di dati telerilevanti, integrati da informazioni ancillari di diversa natura ed origine, individuare tendenze evolutive ed eventuali indicatori delle stesse, al fine di porre a disposizione degli Organismi interessati strumenti adeguati ed omogenei per la programmazione d’uso e il controllo del territorio. La metodologia messa a punto prevede il confronto fra la Cartografia CORINE Land Cover* realizzata fra gli anni 1986 e 1996 per gran parte degli Stati aderenti all’Unione Europea e alcuni Stati dell’Est Europeo e dell’area mediterranea e analoga cartografia, da formare ex novo utilizzando immagini satellitari o riprese fotogrammetriche e dati ancillari del passato, con l’individuazione e la valutazione statistica delle modifiche. Il progetto generale è suddiviso in 3 Distinti “Pacchetti”, di progressivo approfondimento, a copertura di aree via via più ristrette e con scala crescente. Il pacchetto 1 (Analisi generale) coprirà una fascia di 10 Km lungo tutte le coste dell’U.E. Per realizzare il previsto confronto fra la situazione esistente all’atto della produzione Cartografia CORINE e il 1975, saranno utilizzate le riprese dell’MSS, oltre a dati ancillari eventualmente disponibili, che dovranno essere corrette geometricamente utilizzando gli stessi riferimenti (DTM, punti di controllo) utilizzati per CORINE.

* Il progetto CORINE-Land Cover ha realizzato una Carta della Copertura del suolo in scala 1:100.000, con 44 voci di legenda su 3 livelli e unità minima carografabile di 25 ettari, per interpretazione assistita da calcolatore di riprese satellitari, una prima elaborazione statistica dei dati. In questa prima fase, è prevista per l’Italia la sola partecipazione alla realizzazione di questo Pacchetto, come peraltro per la maggior parte dei Paesi dell’U.E. Il Pacchetto 2 (Analisi campionaria quantitativa) prevede che si estenda nel tempo, fino a raggiungere gli anni ’50, utilizzando riprese fotogrammetriche di quel periodo. Il Pacchetto 3 (Analisi campionaria di dettaglio) coprirà test periodi - sia per la scala di rilevamento. La conclusione dei lavori per il Pacchetto 1 è prevista per il marzo 1998.
Telerilevamento dei danni alle foreste Appenniniche e Mediterranee
Regol. (CEE) n. 3528/86 E 2157/92 (Protezione delle foreste contro l'inquinamento atmosferico) - Progetto 95.60.IT.004.0

Titolare del progetto:
Centro Interregionale per le Informazioni Territoriali - Via Lucrezio Caro, 67
I-00193 Roma
Tel.: +39 (0)6 32650587
Fax.: 32650724
E-Mail: centro-interregionale@igis.org

Coordinamento: dr. Adriano Cumer - Corso Libertà 35/20
I-39100 Bolzano I-39100
Tel.-Fax: +39 (0)471 272834
E-Mail: acumer@pns.it
Avvio dei lavori: 23 dic. 1996
Termine previsto: marzo 1998

Obiettivi e contenuti del progetto
Realizzazione di cartografie delle manifestazioni patologiche presenti su aree statisticamente ed ecologicamente rappresentative della situazione media dei boschi dell’Appennino e delle Isole maggiori (Sardegna e Sicilia)

Metodologia
- Individuazione delle aree significative, in misura proporzionale alla superficie boschata pertinente alle singole Regioni, con l’ausilio delle indicazioni dei tecnici forestali locali e con la consultazione del materiale cartografico e satellitare del Progetto CORINE-Land Cover (Cartografia della copertura del suolo in scala 1:100.000);
- Elaborazione del piano delle riprese, da eseguire con pellicola Kodak 2443, alla scala di 1:20.000;
- Esecuzione delle riprese;
- Localizzazione sui fotogrammi prodotti, con metodo fotogrammetrico, dei punti dell’inventario forestale nazionale, da utilizzare come ausiliari per la formazione delle chiavi interpretative e come punti di controllo dell’interpretazione;
- Elaborazione di carta dei danni alle foreste, sempre alla scala 1:25.000, con individuazione preliminare a vista dei poligoni interessati da danni manifesti e successivo rilevamento, all’interno di questi e con metodologia statistico-interpretativa, del livello di danno esistente, con riferimento a 4 livelli: bosco sano, bosco con danno lieve o medio, bosco con danni di notevole entità, bosco con alberi morti in misura anomala. Saranno rilevate anche le aree forestali percorse da incendi e quelle con presenza di erosione manifesta;
- digitalizzazione delle cartografie ottenute e loro inserimento in un GIS;
- Validazione dei risultati, con metodologia assunta dalla Guida Tecnica CORINE-Land Cover o altra da concordare con i partecipanti al Gruppo di Lavoro Interregionale appositamente costituito, al fine di valutare collegialmente le metodologie proposte e i risultati ottenuti e di diffonderli per via diretta e privilegiata fra gli utenti reali.
È prevista anche, nel corso del lavoro e al termine di questo, l’organizzazione di incontri di studio, di corsi, di seminari, con partecipazione anche di esperti extranazionali, in particolare dell’area mediterranea.

Attività realizzate o in corso al 15 Agosto 1997
Con il finanziamento delle Regione Umbria ed a cura dell’IRRES (Istituto Regionale di Ricerche Economiche e Sociali) di Perugia, sono state eseguite nel 1995-96 prove applicative delle metodologia illustrata, i cui risultati sono esposti nello studio pilota successivamente citato. Sono inoltre in corso le riprese fotografiche, sulla base delle selezione collegiale delle aree e del piano di volo congegnemente predisposto ed è stata discussa in riunioni del Gruppo di Lavoro citato la metodologia. Si fa presente che la convenzione fra il Ministero delle Risorse Agricole e Forestali e il Centro Interregionale è diventato operante solo nel novembre 1996.

Pubblicazioni o note disponibili
È disponibile, su richiesta al Centro Interregionale, lo studio pilota “Predisposizione di una metodologia per il riconoscimento di stati di stress della vegetazione attraverso l’analisi di foto all’infraosso” di P. Savini e A. Cumer

Commenti
In attesa dei satelliti ad altissima risoluzione e della verifica della loro utilizzazione per il rilevamento di dettaglio della vegetazione e delle sue caratteristiche fisiologiche o patologiche, si ritiene opportuno continuare il ricorso alle riprese fotografiche da aereo. Saranno eseguite anche, se possibile, prove di simulazione delle citate future riprese da satellite.
International Society for Photogrammetry and Remote Sensing

WORKING GROUP II/2"HARDWARE AND SOFTWARE ASPECTS OF GIS"

Sono disponibili presso la segreteria AIT i proceedings del Workshop: "New Developments in Geographic Information Systems", organizzato dall’AIT e dal Reparto Telerilevamento dell’IRRS-CNR di Milano, via Ampère 56, che si è tenuto dal 6 all’8 marzo 1996. Si riporta, di seguito, l’elenco degli articoli in esso contenuti:

*The practical Integration of Remote Sensing and GIS*
David Cowen, IGU, Commission on GIS, South Carolina, USA

*GIS Standards: What should they standardize?*
Werner Kuhn - Dept. Of Geoinformation, Technical University of Vienna, Vienna, Austria

*Data Model Extensions for The Integration of Geographic Information Systems and Remote Sensing*
Mark Gahegan-Department of Geographic Information Systems, Curtin University of Technology, Perth, Western Australia

*Improving Ground Truthing for Integrating Remotely Sensed Data and GIS*
Qiming Zhou, School of Geography, University of New South Wales, Australia; Peter Pilesjo, Department of Physical Geography, University of Lund, Sweden

*Landscape Structure: A Means to Integrate Socio-economic and Ecological Data for Environmental Planning and Management*
Anne Lucas, Department of Geography University of Bergen, Norway

*An Object-oriented Approach for Handling U.S. Defense Mapping Agency Vector Product Format Databases*
Miyi Chung, Maria Cobb, Kevin Shaw, Stennis Space Center, Mississippi, USA, David Arctur, University of Florida, Florida, USA

*The Integration of GIS Information and Remotely Sensed Data for European Scale Land Cover Products*
C.G. Hoffmann and D.P. Roy, European Commission, Joint Research Center, Institute for Remote Sensing Applications, Italy

*Design of Federated Databases for Multi-level Decision Making in Watershed Management*
Yaser A. Bishr and M.M. Radwan, Department of Geoinformatics, International Institute for Aerospace Survey and Earth Sciences, ITC, The Netherlands

*Structure of Metadata in GIS*
Eva-Maria Forster, Regine Hang, and Roman Lenz, GSF-Research Center for Environment and Health, Neuherberg, Germany.

*Integration of a Process Based Model of Saltmarsh Development with Remotely Sensed Data in an Environmental GIS*
Richard Wadsworth and Robin Pakeman, Institute of Terrestrial Ecology, U.K.

*A Modular Approach to Integrated Environmental Modeling Systems Incorporating GIS and Visualization Functionally*
Jonathan Deckyman, Claudio Paniconi, and Sally Kleinfieldt, CRSI, Cagliari, Italy; Andrea Giacomelli, Department of Engineering, University of Milan, Italy

*The Integration of GPS Data into a GIS Landscape Ecology Model Database for Assessing Neotropical Bird Stopover Habitat in Big Bend National Park*
Lawrence R. Handley, Arturo Calix, William Jones, and Wylie Barrow, NBS, Southern Science Center, Louisiana, USA; Kevin Gutzwiller, Department of Biology, Baylor University, USA

*Virtual Reality for Navigation and Analysis of Earth Landscapes*
P.A. Brivio, D. Marini, G. Ober and L. Solda, IRRS-C.N.R., University of Milan, Italy

*A Fuzzy Knowledge Based Decision Support System for Ground Water Vulnerability Assessment*
Elisabetta Binaghi, Iacopo Cerrani, Paolo Madella, Maria Grazia Montesano, and Anna Rumpini, ITIM-C.N.R., Milan, Italy; Francesca Pagnoni, IRRS-C.N.R., Milan, Italy

*Virtual GIS*
Hartmut Brösmale, Jochen Albrecht, and Manfred Ehlers, ISP, University of Vechta, Vechta, Germany

*Decision Models For Environmental Vulnerability and Hazard Assessment in Agriculture Activities*
Mario A. Gomarasca, Francesca Pagnoni, Sergio Strobelt, National Research Council, IRRS-Remote Sensing Unit, Milan, Italy; Stefano Bocchi, Agronomy Department, University of Milan, Milan, Italy.

A Scalable, Object-Oriented GIS Framework
Antonija Mitrovic, University of Canterburry, Computer Science Department, New Zealand; Dejean Mitrovic, Trimble Navigation, New Zealand; and Slobodanka DJordjevic, University of Nis, Computer Science Department, Yugoslavia

GIS and the Key to All Data
R.E. Bartlett, Institution of Transportation Engineers, USA, Hannover, Germany

The GPS in Forestry Applications
Jose T.M. Aranha and Joao Manuel Bento, University of Trasos-Montes e Alto Douro, Portugal-Forestry Department; Jose Alberto Goncalves, Mathematics Department; Nigel Walford, Kingston University, School of Geography, England

Environmental Applications of Hungarian Soil and Terrain Digital Database (HunSOTER)
Laszlo Pasztor, Jozsef Szabo, Gyorgy Varallyay, Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, Hungary

Land Degradation Mapping Combining Satellite Images and GIS Based Soil Information Systems

Hydrological Modeling using Digital Terrain Models
Petter Pilesjo, Department of Physical Geography, University of Lund, Sweden; Qiming Zhou, School of Geography, University of New South Wales, Australia

Metadata On the Lagoon Ecosystem: The Venice Case, Italy
Alberta Bianchin, IUAV, Venice, Italy

The Use of Integrated Models in the Study of Climate Change Impacts
Simon Wright, Nigel Brown, and Terry Parr, ITE Monks Wood, U.K.

The Georeferentiation of Remotely Sensed Antarctic Imagery
Luigi Rossi, ENEA, Italy

Remote Sensing Activities in Europe: An Overview
Vito Cappellini, Chairman of Italy EARSeL, Department of Electronic Engineering, University of Firenze, Firenze, Italy

Integration of LANDSAT Data, GIS, and AGNPS in Assessment of Land Use Impact on Water Quality
Chansheng He, Department of Geography, West Michigan University, Michigan, USA; Yung-Tsung Kang and Changan Shi, Institute of Water Research, Michigan State University, Michigan, USA

GIS, Remote Sensing, and Sustainability: Towards a Proactive Nature Conservation Approach
Thomas Blaschke, Department of Geography, Salzburg, University, Austria

The Use of Multi-Scale Monitoring Techniques for the Prediction of Morphodynamics on Ameland, the Netherlands
Marieke A. Eleveld and Robert A. Van Zuider, International Institute for Aerospace Survey and Earth Sciences, The Netherlands

Possibilities and Limitations of Grassland Mapping with Global Positioning Systems (GPS)

Novità Editoriale
La collana delle pubblicazioni AIT si arricchisce di un nuovo volume.

Il Volume si propone di introdurre al Telerilevamento ed ai GIS chi vuole rinnovare il modo di studiare ed analizzare il territorio in modo sinottico e dinamico utilizzando i più recenti strumenti informatici e nuove tecniche di rappresentazione ed analisi. Le descrizioni da manuale sono infatti integrate da elaborazioni di immagini da satellite, definizione di piani informativi e sviluppo di sistemi per l’integrazione delle informazioni per una più diretta comprensione delle potenzialità di questi sistemi per il supporto alle decisioni nel campo delle risorse agricolo-ambientali.

INTRODUZIONE A TELERILEVAMENTO E GIS PER LA GESTIONE DELLE RISORSE AGRICOLE E AMBIENTALI
di Mario A. Gomarasca
(prefazione di Giovanmaria Lechi, Presidente AIT)

Parte Prima
LA VALUTAZIONE AMBIENTALE: TECNICHE INNOVATIVE

IL TELERILEVAMENTO
E LA LABORAZIONE DIGITALE DEI DATI TELERILEVATI
I SISTEMI INFORMATIVI GEOGRAFICI
Telerilevamento e GIS: casi applicativi
IL GIS DELL'AREA RISICOLA DEL BACINO DEL PO
CASI APPLICATIVI IN SARDEGNA E BACINO DEL LISCIA
UN GIS SEMPLIFICATO DEL BACINO DEL TEVERE

L'EVOLUZIONE DI HARDWARE E SOFTWARE
(per l'elaborazione di dati telerilevati e GIS)

DIZIONARIO TECNICO

Il Volume sarà presentato e disponibile alla prossima conferenza ASITA,
Ente Fiere di Parma,
30 settembre - 3 ottobre 1997

Pubblicazione degli Atti del Convegno su “Telerilevamento e Dissesto Idrogeologico”

All'inizio del corrente anno sono stati pubblicati gli Atti del Convegno: “Telerilevamento e Dissesto Idrogeologico” organizzato agli inizi degli anni ‘90 dall’ENEA, dall’associazione Civita e dal Comune di Bagnoregio. I temi dell’iniziativa coincidono, come afferma Sergio Galli de Paratesi nella sua presentazione, con quelli dell’apertura della “International Decade for Natural Disaster Reduction” (IDNDR) che rappresenta un cospicuo impegno delle Nazioni Unite per gli anni ‘90.

Tema del convegno è stata l’applicazione del telerilevamento alle situazioni di dissesto idrogeologico, tematica molto attuale ancora oggi. Il dissesto idrogeologico costituisce infatti una delle problematiche ambientali più rilevanti in Italia, sia per la complessa struttura morfologica e geologica della regione italiana, sia per l’intenso uso del suolo e delle sue risorse che a volte viene posto in essere dall’uomo. L’obiettivo del convegno era quello di dare delle risposte adeguate, attraverso le nuove tecnologie del telerilevamento, ai problemi di assetto del territorio connessi al dissesto idrogeologico. Al Convegno hanno partecipato: il Dipartimento di Fisica dell’Università di Roma “La Sapienza”, il Dipartimento di Ingegneria Elettronica dell’Università di Firenze, l’Università della Tuscia, il CNR-IATA di Firenze, l’ENEA e la Telespazio.

Chi desidera ricevere copia degli atti può contattare l’ENEA, Ing Fausto Vitiello, Fax 06.3048.3317 - Tel.: 06.3048.3129 - 0336.495400 - e-mail: vitiello@casaccia.enea.it
1a Conferenza Nazionale delle Associazioni Scientifiche per le Informazioni Territoriali e Ambientali
“LE IMMAGINI E LE INFORMAZIONI TERRITORIALI”

Fiera di Parma 30 settembre - 3 ottobre 1997

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30 settembre, 3 ottobre 1997

PROGRAMMA DEFINITIVO
Presentazione

Vi sono in Italia quattro Società Scientifiche, che pur nelle differenze statutarie e nella provenienza e formazione dei Soci, nonché del loro numero, perseguono finalità complementari con peraltro alcune sovrapposizioni ed intersezioni. Si tratta, in ordine di fondazione, della SIFET (Società Italiana di Topografia e Fotogrammetria), della AIC (Associazione Italiana di Cartografia), della AIT (Associazione Italiana di Telerilevamento), ed infine della sezione italiana della AMIFMIGIS (Automated Map/Factilities Management/Geo-graphic Information System International).

Della SIFET va anche detto che essa rappresenta ufficialmente l'Italia nell’ambito della ISPRS (Società Internazionale di Fotogrammetria e Telerilevamento), società della quale l’AIT è da quest’anno componente.

Negli anni trascorsi le quattro Associazioni hanno sempre organizzato convegni o congressi nazionali separati, con sforzi organizzativi e finanziari non indifferenti; va inoltre notato come, per le ragioni sopradette di intersezione degli argomenti trattati, non pochi Soci dell’una o dell’altra Associazione si vedevano indotti a partecipare a pib manifestazioni, con i costi corrispondenti e con dispendio di tempo. Con l’idea di unire gli sforzi, soprattutto in vista delle grandi modifiche che sono in atto nel settore del rilevamento e della rappresentazione del territorio, premessa alla tutela e al riordino dell’ambiente in cui viviamo, le quattro Associazioni si sono accordate per organizzare nel 1997 a Parma la “la Conferenza Nazionale delle Associazioni Scientifiche per le Informazioni Territoriali e Ambientali”.

Il tema generale della grande manifestazione sarà il seguente: “Le Immagini e le Informazioni Territoriali”, che ben si presta a coprire, come un grande ombrello tutti i temi che verranno dibattuti in sessioni parallele. Va ancora detto che le quattro Associazioni terranno contemporaneamente e secondo le rispettive regole statutarie le loro assemblee. Lo scopo finale della manifestazione sarà la presentazione agli Organi di Governo e Legislativi, di adatte e ragionate proposte di riordino del settore del rilevamento, della rappresentazione, del trattamento e della gestione dei dati territoriali: settore che purtroppo, da tempo non è più da noi alla pari con quanto si fa nell’ambito internazionale.

Naturalmente, il tutto su basi strettamente scientifiche, pur senza dimenticare le realtà produttive legate al settore, sia di tipo pubblico che di origine privata.

Il Comitato di Presidenza

Argomenti

- La georeferenziazione dei dati territoriali
- Le applicazioni tematiche del Telerilevamento
- I SIT per la pianificazione e gestione del territorio
- Cartografia e Sistemi Informativi Geografici
- Controllo e qualità

La Conferenza, articolata in comunicazioni orali e sessioni poster, riserva ampi spazi espositivi alle mostre scientifiche, cartografiche e tecniche/commerciale.

MARTEDÌ 30 SETTEMBRE 1997

9.00-10.30
Registrazione
10.30-11.00
Cerimonia di Apertura
11.00-12.30
Relazione dei 4 Presidenti
Inaugurazione della mostra strumentale e della mostra scientifico-cartografica
14.30-15.30
I Sessione Plenaria
Chairman: F. Sansò, Politecnico di Milano
La Georeferenziazione dei dati territoriali

15.30-16.00
Relazioni libere
F. Vespe, A. Manzino, M. Fermi, ASI, Politecnico di Torino, Nuova Telespazio, La rete fiduciale di stazioni permanenti GPS in Italia
V. Bainocchi, M. Barbarella, A. Bianco, P. Carella, M. Fiani, Università "La Sapienza"di Roma, Università di Bologna, RILTER, Istituto Universitario di Napoli, Analisi di una rete di grandi dimensioni

16.30-18.00
Assemblea dei soci SIFET
Assemblea dei soci AIC

Sessione Parallela 1 - Diagnostica Ambientale
Chairman: C. M. Marino, Dip. Di Scienze Ambientali, Università di Milano
CASTAGNOLI, ZANUSO - Analisi ambientale e strutturale dell’asta, delle arginature e delle fasi di pertinenza del fiume Adige mediante telerilevamento aereo.
DEL PERO, FERRONI, MARINO, ZUCCA - Nuove applicazioni dello scanner iperspettrale MIVIS per valutazione della compatibilità ambientale di siti di discarica RSU.
CABRAI F., CEREDDU M.B., MURA M., PINTUS C. - Insegnamento di nuovi metodi di telerilevamento per la mappatura delle aree pericolose.
GIORDANO, VITELLO - Inondazioni e esondazioni storiche del fiume Sarno

Sessione Espositori I - Illustrazione, da parte delle Ditte espositori, dei prodotti esposti e delle politiche aziendali.
IV Sessione Plenaria
Chairman: M. A. Gomarasca, CNR-IRSS, Milano

Relazione Invitata
C. Lavalle, JRC-SAI, Ispra, E. Zilioli, CNR-IRSS-Telerilevamento, Milano
Le Applicazioni Tematiche del Telerilevamento

10.00-10.30
Relazioni libere
D’Alessandro, Nicolosi, Nuova Telespazio, Roma, Utilizzazione di dati di telerilevamento aerospaziale per applicazioni operative nei programmi istituzionali di difesa del patrimonio territoriale e ambientale
Carlo Terranova, AIT, Napoli, Le applicazioni tematiche del telerilevamento per la pubblica amministrazione locale.

11.00-12.30
Sessione Parallela 2 - Programmi e progetti di Telerilevamento nazionali e internazionali
Chairman: G. Calabresi, European Space Agency, Frascati

CHURCHILL P.N., MARACCII G., LAVALLE C. - Il programma ECO (Center for Earth Observation): aggiornamento attività in corso
Bianchi, Marino - Il Telerilevamento iperspettrale in Italia: CNR progetto LARA, tre anni di attività
Volpe F. - Dati da satellite ad alta risoluzione: l’alternativa futura alle foto aeree.
Zilioli E. - Il progetto Salmon: una prospettiva innovativa per lo studio dei laghi
Apponi, Cantoni, Orlandi, Satellite ad alta risoluzione: il programma EarthWatch

Sessione Parallela 3 - Geologia e idrogeologia
Chairman: A. Marinì, Dip. Di Scienze della Terra, Università di Cagliari

Antonietti M., Carrara P., Rampini A. - Rilievi di dati spazio temporali basate su eventi per il monitoraggio ambientale
Terranova C., Ventura G., Vilardo G. - Telerilevamento aerospaziale a supporto della caratterizzazione sismotettonica dell’area vesuviana
Salvatore M.C., Vannoli P. - Rilevamento di elementi geobioclimatici e fotointerpretazione: alcuni casi in Italia
Ranzi R., Arrigazzi M., Bacchi B., Dieci anni di monitoraggio delle curve di deplezione dell’equivalente in acqua del manto nevoso nelle Alpi centrali tramite radiometria NOAA-AVHRR

Sessione Parallela 4 - Posizionamento GPS
Chairman: M. Barbarella, Università di Bologna

BIATTI, CINA, MANZINO - Controllo di qualità dei dati nella stazione GPS permanente di Torino.

Marsella, Mora, Vittuari, Achilli, Baldi - Rilievo fotogrammetrico dell’isola di Vulcano con l’ausilio del GPS.
Bettil, Carfino, Crespi, Marana - Il programma BAMBA per il trattamento dei dati GPS.
Fiani, Troisi, Turturici - Analisi di misure GPS per il controllo delle deformati nel l’area flegrea.
Amadesi E., Bartoli G., Borsetti A.M., Mora P., Righetti L. - Il calcolo a Lucine del Parco Regionale dei laghi di Suviana e Brasimone (BO). Determinazione degli affioramenti con rilievo GPS integrato

Sessione Parallela 5 - SIT ed enti locali
Chairman: R. Bezzi, AIPA

Ruggeri C., Di Massa M. - GIS per lo sviluppo e l’integrazione dei servizi pubblici urbani.
Pascolini M., Peccol E., Riu L. - Tutela e sviluppo delle dimore temporanee in quota: il Sistema Informativo Malghe.
Baloni F., Daini M., Manca P. - La costituzione di un Sistema Informativo Territoriale Integrato (SIT) per la Provincia di Pisa e l’AGN S.p.A.
Evangelisti C., De Marchi D. - Progetto SIT. Comune di Pesaro

Sessione Poster 1, Telerilevamento
Chairman: F. Maselli, CNR-IATA, Firenze

Cacciagui, G., Caroti, W., Ferrì - L’individuazione di piante della costa collinare e montana con il rilevamento aereo di dati SPOT.
Marchetti, L., Rossi, F., Volpe - Integrazione di informazioni per la gestione ambientale del territorio montano.
Tomasoni, G., Obi - Analisi della tessitura urbana in immagini SPOT.
C. Calas, P., Chiarabaglio - Tecnologie di rilevamento cartografico con aerofotogrammetria ad alta quota.
Caizzi, M., Pepe, G., Bolzan, S., Strobelt - Metodi di...
correzione atmosferica per lo studio della qualità delle acque interne.

E. Monti, R. Tomasoni - Il telerilevamento e i Sistemi Informativi Territoriali per la valorizzazione del territorio.


L. Alparone, R. Colombo, A. Garzelli - Analisi di dati telerilevati relativi ad aree agroecologiche: tecniche di pre-elaborazione.

S. Strobelt, C. Giardino - Studi ambientali con iperspettrale da aereo.

C. Ferri, C. Cipriani, G. Bonasia, T. Lettini, V. Pesce Del Fino - Videosservazione nel monitoraggio ambientale: elaborazione, analisi e trasmissione di immagini.

L. Fiumi, C. M. Marino - Potenzialità del telerilevamento aereo con dato MIVIS per la caratterizzazione di materiali di copertura in aree urbane: il cemento-amianto.

F. Vitello, F. Borreccia, L. De Cecco, S. Martini - Applicazioni del telerilevamento per la valutazione delle condizioni ambientali dell’Adriatico.

S. Casartelli, G. Lechi - Classificazione dei bassi fondali della Laguna di Venezia utilizzando immagini TM e immagini del sensore iperspettrale da aereo MIVIS.


P. Boccardo, G. Comoglio, F. Rinaldu - Caratterizzazione di attività estrattive mediante l’utilizzo di dati iperspettrali.


M. Chianella - Sistema di acquisizione e processamento dati da satelliti adibiti al telerilevamento.


A. Marini, M. T. Melis - Evoluzione dell’uso del suolo di un settore del Tigrado mediante analisi multitemporale e multispettrale di dati telerilevati.

R. Bruculeri, P. Peroni, L. Vannicelli Casoni - Individuazione di unità di paesaggio per mezzo di immagini telerilevate in un’area montana.


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GIOVEDÌ 2 OTTOBRE 1997

9.00-10.00
III Sessione Plenaria
Chairman: R. Gavaruzzi, Regione Emilia-Romagna, Bologna
Relazione Invitata
Motta, De Agostini, Novara
Cartografia e Sistemi Informativi Geografici
10.00-10.30
Relazioni libere

G. Piacentini, Autorità di Bacino del Po, Parma, La cartografia di base per la redazione del piano di bacino del fiume Po.


11.00-12.30
Sessione Parallela 6 - Fotogrammetria Digitale
Chairman: G. Forlani, Politecnico di Milano

9.00-10.00
F. Guzzetti, A. Trebeschi - Metodi di collaudo della struttura numerica di una cartografia per un SIT.

G. Gurnari, S. Pari, F. Urbinati, M. Casadei - Applicazioni di GIS avanzato mediante hardware e software di uso comune.

F. Coppola, B. Villa - Rilevare fotogrammetrico di un mappamondo del XVII secolo.

C. Schenone - Sistemi Esperti per l’Aggiornamento automatico da foto aerea e l’analisi territoriale nei SIT.

M. Marino, L. Pinto - Misure topografiche e satellitarie in geodésia di posizione: un esperimento condotto tra le isole Tremiti ed il promontorio del Gargano.

Costantino, Gardini, Gregori, Iori, Napoli - Conseguenze ambientali della scomparsa della "coscienza sistematorica". Un’applicazione GIS in Toscana centrale.


E. Bresci, P. Battelli - L’utilizzazione del GIS in fase di progettazione.

V. Barile, L. Giacobbe, R. Nocera - Un GIS alla scala urbana per il comune di Reggio Calabria.

M. Caprioli, D. Costantino, P. De Fazio - Esperienze di formazione di Sistemi Informativi per i beni architettonico.

M. Caprioli, D. Costantino, P. De Fazio - Le stazioni permanenti GPS per la cartografia ed i rilievi di dettaglio.

G. Bitelli, F. Bonsignore, M. Unguendoli - Progetto di una rete per il controllo della subsunzione nella Regione Emilia Romagna.


Carrai - Tecnologia GIS/LIS nella formazione di Sistemi Informativi catastali nei paesi dell’est europeo e Asia nell’ambito dell’assistenza tecnica della Comunità Europea.

C. Oldrini, B. Manzon, G. Malcotti - Le tecniche di rilevazione dati territoriali con l’ausilio del GPS.

G. Bitelli, L. Vittuari - Tecniche di rilevazione e rappresentazione per l’archeologia: il caso della città Bakchias (El Faysum, Egitto).

R. Gavaruzzi, R. Tegoni, G. Zurla - Imagini raster di alta qualità di fogli delle carte topografiche 1:5.000 e 1:25.000 in Emilia-Romagna.


V. Consorti - I Sistemi Informativi Territoriali per la pianificazione e la gestione dei parchi naturali.

M. Stranges - Un software integrato per l’analisi tematica e morfologica del territorio.

M. Cucita, M. De Maio - Utilizzo di strumenti GIS per lo sviluppo di una nuova metodologia di valutazione del rischio di inquinamento delle acque sotterranee destinate a scopi potabili.

A. Costa - Aggiornamento di carte tecniche e catastali con i dati di rilievo prodotti da professionisti.

N. Milella, V. Zito - Tecniche fotogrammetriche digitali nel restauro virtuale.

G. Canziani, L. Capizzi, G. Manaratti, C. Marzani - Integrazione su piattaforma GIS di strumenti di conoscenza dell’ambiente marino e costiero.

P. Boccardo, G. Comoglio, F. Rinaudo, M. Schiavo - Progettazione di un Sistema Informativo per la gestione delle reti tecnologiche.


Rainoni - I suoli sugli affioramenti gessosi di Caccamo e la loro potenzialità agronomica.

R. Zecchi, R. Barboni - Variazioni recenti della linea di riva tra Punta Marina e Lido Adriano (RA).

S. Casadei, R. Zecchi - Frequenze dei toponimi e variazioni antropogeomorfologiche nel fiume 99 Faenza.

F. Zecchi, A. Ronchi, C. Benedetti - Analisi delle anomalie geomorfologiche all’interno del centro storico di Bologna.


G. Angelo - THE NEPTUNE STONE (Il Sasso di Nettuno). "A chi sa gestire l’acqua e il territorio, il Nettuno d’oro"

ALBERY E., BOCCHI D., LINGUA A., RINAUDO F.: Sistemi a basso costo per l’acquisizione di immagini digitali.

NICOLETTI A.: Tecnica e fotometria in fotogrammetria digitale alla luce di dieci anni di esperienze.

CASSALINI V.: Il test DEEPE sulla misura automatica di punti omologhi in fotogrammetria digitale.

CASTAGNOLI, R.GAVARUZZI: Aggiornamento digitale della Carta Tecnica Regionale 1:5.000 in Emilia-Romagna con foto aeree 1:75.000.

Sessione Parallela 7 - Educazione e formazione
Chairman: A. Selvini, Politecnico di Milano

VIALENNO G., GOMARASCA M.: Territorio senza confini progetto per la scuola.

MUSCARA L.: Stato dell’arte delle tecnologie e direzioni di ricerca per la geografia umana.

ZUNINO V.: I SIT: la formazione.

GOMARASCA M.: Tecnologie per lo studio del territorio: strumenti operativi per le Amministrazioni Locali.

M. A. ESPOSITO, G. SAIO: Una rete europea per la formazione sui GIS

Sessione Parallela 8 - Elaborazione di immagini multispettrali
Chairman: S. B. Serpico, Università di Genova

CHANELLA M.: Sistema di acquisizione e processamento dati da satelliti adibiti al telerilevamento.

BRUZZONE L., CONESE C., MASSELLI F., SERPICO S.B.: Classificazione di immagini telerilevate multisensore di aree agricole.

AVANZI G., MARINO C.M., S.PIGNATI: Geocodifica e mosaico su modello altimetrico digitale di immagini MVIS.

BINAGHI E., RAMPINI A., GHEZZI P., CAPUTO W.: Confronto di tecniche neurali e fuzzy statistiche per la classificazione unmixing.

CONSOLE E., MOUCHOT M.C.: Tecniche sfocate per l’integrazione delle informazioni spaziali e del contesto spaziale.

Sessione Parallela 9 - SIT e ambiente
Chairman: M.A. Esposito, Università di Firenze

FAIS A.: L’approccio Bottom-Up per applicazioni GIS nei servizi di sviluppo agricolo: aspetti metodologici e benefici economici.

BALLONI F., MASONI M.: La gestione informatizzata del P.T.C. della Provincia di Pisa e le procedure automatiche per la valutazione di impatto ambientale

MODAUS S., D’ANGELO M., PERCICH L., PREVITALI F., ZUCCA C.: La valutazione dell’attitudine al miglioramento DEI pascoli: il contributo dei GIS.

S.ANSELMI, E.CANFORA, M.GIANNINI, F.MANES: Analisi di ecosistemi mediterranei mediante l’integrazione di dati a piccola e grande scala.

F.MASSELLI, M.BINDI, L.FIBI, M.PIERI: Estensione di parametri agro-meteorologici sul territorio toscano tra-

miete dati telerilevati ed ausiliari.

Sessione Parallela 10 - Applicazioni radar
Chairman: M. Fea, European Space Agency, Frascati


PARENTI L., TIBALDI A., NERI M.: Fotogeologia radar per lo studio morfologico, strutturale e litologico del Mt Etna NE.

CRIPPA B., CROSETTO M.: Ricostruzione di superfici con SAR interferometrico.


Sessione Parallela 11 - Telerilevamento e cartografia tematica per i SIT
Chairman: A. Cumer, Centro Interregionale, Roma


Sessione Parallela 12 - SIT e reti tecnologiche
Chairman: F. Vico., Politecnico di Torino

GIUDICE M., COLLO A., ALVINO L., CAVALLIO A.: Progetto ATLANTE.

GIANNOTTI V.: - Modello decisionale per lo scavo dei canali veneziani.

ZULIANI L., AUNDERLE R., GIANNOTTI G.: Aquarium: un sistema per la gestione integrata del ciclo di uso dell’acqua.


Sessione Parallela 13 - Reti geodetiche
Chairman: F. Radicioni, Università di Perugia

ALBERTELLA A., SACERDOTE F.: Considerazioni sulla stima dei parametri di trasformazione di datum.

ALEDDA A., BOCCHI M., PIERZOSI M., SURACE L.: I parametri di trasformazione tra il sistema WGS84 e il sistema geodetico nazionale Roma ’40.

COTTICCHIA A., PIERZOSI M., SURACE L.: Il progetto
EUVN97 per la definizione di un sistema altimetrico
europoeo unificato.
AL. BAYARI, BITELLI, BONINI, CAPRA, DOMINICI,
ERCOLANI, GANDOLFI, PELLEGRINELLI, UNGUENDOLI,
VITTARI, GAIVARUZZI - Progetto di raffinamento della rete
Geodetica Nazionale IGM95 in Emilia Romagna. Prima
fase: l'area di Bologna.
RACICIONI F., STOPPINI A. - Georeferenziazione delle
informazioni territoriali ed evoluzione delle reti geodetiche.

16.30-18.00

Assemblea dei soci AIT
Assembly dei soci AM/IFM
Sessione Parallela 14 - Cartografia tematica geologica
Chairman: G. Vianello, Università di Bologna
C. A. BRUNORI, F. DOUMAZ, S. SALVI, F. CINTI,
F. QUATTROCCHI - Un GIS per lo studio di un 'area sismi-
camente attiva: analisi multiparametrica di dati geofisici,
geologi e geochimici per l'individuazione ed il moni-
toraggio di strutture sismogenetiche.
V. FRANCO, G. LA LOGGIA, M. LO BRUTTO - Un Sistema In-
formativo Geografico per l'idrologia ed il rischio erosivo.
E. BAI - Sistemi satellitari per il "rilievo geologico".
B. MARCOLONGO, N. SURIAN - Satellite, aereo e GPS
nella ricostruzione del Nilo quaternario e dei suoi rap-
porti con gli insediamenti antichi (Sudan settentrionale)
MARINI A., SORGA A. - Elaborazione di dati TLR e inte-
grazione di informazioni cartografiche nella pianificazio-
n di un'area geologica in Europa.

Sessione Espositori II - Illustrazione, da parte delle
Ditte espositrici, dei prodotti esposti e delle politiche
aziendali.

VENERDÌ 3 OTTOBRE 1997

9.00-10.30

V Sessione Plenaria
Chairman: S. Dequal, Politecnico di Torino
Relazione Invitata
Koen, Catasto Olandese, CEN TC
La qualità nei Sistemi Informativi Territoriali

11.00-12.30

Tavola Rotonda sul tema Qualità, Controlli, Certificazione
Partecipanti da definirsi

14.30-16.00

Sessione Parallela 15 - Qualità e collaudi
Chairman: B. Astori, Politecnico di Torino
GUZZETTI F., TREBESCHI A. - Una metodologia di verifica
della qualità metrica di immagini telerilevate.
BARILLI M., FORLANI G., PINTO L. - Progettazione e veri-
 fica di voli fotografometrici.
Bianchi A. - Qualità e metadati: relazioni, evoluzione
del contesto.
CORRADINO A. - Lo standard europeo per il trasferimento
del dati geografici (la norma EN 12658 “Transfer”).

Sessione Parallela 16 - Acque costiere e interne
Chairman: L. Alberotanza, CNR-ISDGM, Venezia
B. ODONE V. BARALE - Sviluppo di prodotti informativi
per il monitoraggio delle condizioni ambientali marine
nella zona costiera.
GIARDINO C., PEPE M., BOLZAN G., STROBELT S. - Metodi
di correzione atmosferica per lo studio della qualità
delle acque interne.
CALVO, CIRADOLI, LA LOGGIA, LO PRESTI, SAVONA,
TOMASELLO - Mappatura della vegetazione sommersa
mediante dati multiplatforma: metodologia e risultati.
BROWN S., DOSPO P., LECHI G. - La spettrometria ad
immagine nella gestione di sistemi ambientali complessi:
dati MIVIS sulla laguna di Venezia.
MASELLI F., BINDI M., FIBBI L., PIERI M. - Estensione di
parametri agro-meteorologici sul territorio toscano tra-
mite dati telerilevati ed ausiliarli.

Sessione Parallela 17 - Cartografia tematica della
vegetazione e dei suoli
Chairman: E. Amadesi, Università di Bologna
SARAFI P., DELLI G. - Uso di dati Landsat TM per un
inventario delle superfici coltivate a pioppo nella regione
di Eregli (Anatolia - Turchia).
F. GIANNETTI, R. SALANDIN - Uso integrato di immagini
telerilevate, modello digitale del terreno ed elementi
pedologici nell’analisi dei dissetti della Serra d’Ivrea.
M. BRIGATTI, D. FASOLINI, U. ZECCA, A. PUGLISI - Recent
sviluppi del Sistema Informativo pedologico dei suoli
bombari.
M. CIOLLI, S. TABARELLI, P. ZATLEI - La valorizzazione
delle aree forestali potenzialmente soggette a fenomeni valan-
ghi tramite un S.I.T.
C. GIUFFONI, J. SCEPAN, J. E. ESTES - Utilizzazione di dati
LANDSAT-TM multi-temporal per la mappatura di indici
di agro-ambientali.

Sessione Parallela 18 - SIT, algoritmi e modelli di dati
Chairman: Paolo Mogorovich, CNR-Pisa
A. BIANCHI, G. LENTINI, D. SCHIUMA, S. SICHIROLLO,
S. SORAMAI - Metadati sulla laguna veneta: organizza-
tione e consultazione.
PASCOLO C., PASCOLO P. - Identificazione dei modelli
concettuali nei GIS.
ASIOI R. - GeoMedia: il client geografico universale.
BUSHILL M., DE GRASSI F., ARNOT T. - SIT (After Image
Technology): replicazione di dati territoriali.
G. MONTA - Produzione di carte a media e piccola scala
con l’uso del computer.

16.30-18.00

Sessione Parallela 19 - Algoritmi matematici e tecni-
che di base
Chairman: BELLONE T., MUSSIO L. - Modellizzazione 3D
CROSILLA E, BARBACETTO I. - Analisi e progettazione di una superficie B-Spline per rilevare discontinuità morfologiche.
VISINTINI D. - Un modello dinamico per l'orientamento esterno delle immagini di un “Mobile Mapping System”.

Sessione Parallela 20 - SIT, trasporti e pianificazione territoriale
Chairman: Ugo Schiavoni, Università di Roma Tor Vergata

BRUNO, DUI, PANI, ROCCA, SANNA, VAQUER - Un’applicazione di SIG per la pianificazione territoriale: il PUC del Comune di Villanova Monteleone.
E.BENAZZO, F.MENSIO, P.G. TERZUOLO - La cartografia dei piani naturalistici e forestali come strumento di pianificazione.

Sessione Espositori III - Illustrazione, da parte delle Ditte espositrici, dei prodotti esposti e delle politiche aziendali.
EUROPEAN SYMPOSIUM ON SATELLITE & AIRBORNE REMOTE SENSING
6-10 October 1997
Rome, Italy
Contact: the EUROPTO Series c/o Direct Communications GmbH, Attn: Ms. Susan Jones, Xantener Str. 22 10707 Berlin, Germany
Fax: ++49 30 883 88 11

EUROPEAN SYMPOSIUM ON OPTICS AND OPTOELECTRONICS FOR PUBLIC SAFETY II
11 - 15 October 1997
Ramada Hotel, Wiesbaden, Germany
Contact: http://www.dc-europto.com/EUROPTO/EPTPTEVENTS/europcal.htm

MONITORING THE OCEAN IN THE 2000s: AN INTEGRATED APPROACH
15 - 16 and 17 October 1997
Biarritz, France
Contact: CNES
c/o Agnès Letraublon,
18 avenue Edouard Belin - 31401 Toulouse cedex 4
Tel: 33 0 5 61273626
Fax: 33 0 5 61281327
E-mail: agnes.letraublon@cst.cnes.fr

TECNOLOGIE PER LO STUDIO DEL TERRITORIO:
STRUMENTI OPERATIVI PER LE AMMINISTRAZIONI LOCALI
La pubblica amministrazione in Italia e l’uso dei dati di osservazione della Terra (EO)
23 Ottobre 1997
Dip. Servizi Tecnici Nazionali
via Curatone 7, Roma, Italy
Contact: A. Argentieri
Eurimage c/o ESA/ESRIN,
via Galileo Galilei, 00044 Frascati (Roma), Italy
tel: ++39-6-94180740
Fax: ++39-6-9416772
E-Mail: argentieri@eurimage.it

7th INTERNATIONAL CONFERENCE ON LAKES CONSERVATION AND MANAGEMENT
27-31 October 1997
San Martín de los Andes, Argentina
Contact: Comision Organizadora Lacar 97
Autopista Ezeiza-Cañuelas, Tramo Jorge Newbery km 1.602 (1804) Ezeiza-Prov. de Buenos Aires ARGENTINA
Tel/Fax: +54 1-480 0433
E-Mail: lacar97@incyth.gov.ar

12th INTERNATIONAL CONFERENCES APPLIED GEOLOGIC REMOTE SENSING
17 - 19 November 1997
Denver, Colorado, USA
Contact: Environmental Research Institute of Michigan
P.O. Box 134001
Ann Arbor, MI 48113-4001

CORSO DI FORMAZIONE, TECNOLOGIE PER LO STUDIO DEL TERRITORIO:
STRUMENTI OPERATIVI PER LE AMMINISTRAZIONI LOCALI
1 - 5 Dicembre 1997
ESA/ESRIN, Frascati (Roma), Italy
Contact: A. Argentieri
Eurimage c/o ESA/ESRIN, via Galileo Galilei, 00044 Frascati (Roma), Italy
tel: ++39-6-94180740
Fax: ++39-6-9416772
E-Mail: argentieri@eurimage.it

WORKSHOP INTERNAZIONALE: TECNOLOGIE PER LO STUDIO DEL TERRITORIO:
STRUMENTI OPERATIVI PER LE AMMINISTRAZIONI LOCALI
29 - 30 Gennaio 1998
CNR, Telerilevamento, Milano (Italy)
Contact: A. Argentieri
Eurimage c/o ESA/ESRIN, via Galileo Galilei, 00044 Frascati (Roma), Italy
tel: ++39-6-94180740
Fax: ++39-6-9416772
E-Mail: argentieri@eurimage.it
SENSORS PLATFORMS AND IMAGERY

23 - 27 February 1998
Bangalore, India
President George Joseph, India
Contact: http://www.geod.ethz.ch/isprs

FIRST INTERNATIONAL CONFERENCE ON
GEOSPATIAL INFORMATION IN AGRICULTURE
AND FORESTRY: DECISION SUPPORT,
TECHNOLOGY, AND APPLICATIONS

1 - 3 June 1998
Florida, U.S.A.
Contact: Robert Rogers
ERIM, Box 134001
Ann Arbor MI 48113-4001 USA
Phone (1) 313 994 1200, ext. 3234
Fax: (1) 313 994 5123
E-mail: raeder@erim.org

CLOSE-RANGE TECHNIQUES
AND MACHINE VISION

2 - 5 June 1998
Hakodate, Japan
President Hirofumi Chikatsu, Japan
Contact: http://www.geod.ethz.ch/isprs

THEORY AND ALGORITHMS

6 - 10 July 1998
Columbus, OH, USA
President Toni Schenk, USA
Contact: http://www.geod.ethz.ch/isprs

SYSTEM FOR DATA PROCESSING,
ANALYSIS AND REPRESENTATION

13 - 17 July 1998
Cambridge, UK
President Ian Downman, UK
Contact: http://www.geod.ethz.ch/isprs

ISPRS - EDUCATION AND COMMUNICATIONS

24 - 26 August 1998
Dempasar, Bali Indonesia
President Klaas Villanueva, Indonesia
Contact: http://www.geod.ethz.ch/isprs

RESOURCE AND ENVIRONMENTAL MONITORING

1 - 4 September 1998
Budapest, Hungary
President Gabor Remtey-Fülöpp, Hungary
Contact: http://www.geod.ethz.ch/isprs

MAPPING AND GEOGRAPHIC
INFORMATION SYSTEMS

7 - 10 September 1998
Stuttgart, Germany
President Dieter Fritsch, Germany
Contact: http://www.geod.ethz.ch/isprs

EUROPEAN SYMPOSIUM
ON SATELLITE REMOTE SENSING V

21 - 25 September 1998
Taormina, Italy
Including conferences on Atmospheric Sensing, Earth
Surface Sensing and Platforms and Systems
Contact: http://www.dc-europto.com/EUROPTO/EPT_EVTS/europcal.htm

ISPRS, INTERNATIONAL SOCIETY FOR
PHOTOGRAHAMETRY AND REMOTE SENSING

16 - 23 July 2000
Amsterdam, The Netherlands
Contact: Prof. Dr. Klaas-Jan Beek,
Congress Director, ITC, Hengelosestraat 99,
P.O. Box 6 - 7500 AA Enschede, The Netherlands
Fax: 31 53 487 4335
E-mail: isprs@itc.nl

12th INTERNATIONAL CONFERENCES
APPLIED GEOLOGIC REMOTE SENSING

17 - 19 November 1997
Denver, Colorado, USA
Contact: ERIM/Geologic Conference
P.O. Box 134001
Ann Arbor, MI 48113-4001, USA
Tel: 1 313 994 1200
Elenco delle Associazioni Europee di Telerilevamento

(Maggio 1997)

Associazione Italiana di Telerilevamento (AIT)
Prof. Dr. Ing. Giovanni Lechi
c/o IAO - via Cocchi 4 - 50131 Firenze
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Tel. +39 55 570395 - Fax +39 55 506133
sarfatti@iao.florence.it
Internet page: http://www.iroe.fi.cnr.it/ait

Deutsche Gesellschaft f. Photogrammetrie und Fernerkundung e.V.
Prof. Dr. Ing. J. Albertz
Institut f. Geologie, Geophysik und Geoinformatik
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GERMANY
Tel. +49-30 31 42 3331 - Fax: 30 31 42 1104
zephir@fpkrw42.bv.tu-berlin.de

Finnish Society of Photogrammetry & Remote Sensing
Mr. Jussi Paavilainen
Satelliittikuvakeskus PL 84 - 00521 Helsinki
FINLAND

Société Française de Photogrammétrie et de Télédétection (SFPT)
M. Gérard Bégni
CNES - 18, ave. Ed. Belin
31055 Toulouse Cedex
FRANCE

Österreichische Gesellschaft f. Vermessung und Geoinformation
Dipl. Ing. August Hochwartner
Schiffamtsgasse 1-3
A-1025 Wien
AUSTRIA

Société Belge de Photogrammétrie et de Cartographie
Prof. R. Thonnard
C.A.E. Tour Finances (Bte. 38 Boulevard du Jardin Botanique, 50
B-1010 Bruxelles
BELGIUM

Hellenic Society for Photogrammetry & Remote Sensing
Mrs. Maria Tsaoussi
61 Arahovis St.
10681 Athens
GREECE

Geospace Beckel Plantsilage GmbH
Mr. Juergen Jandoth
Jakob Haringerstr 1
A-5020 Salzburg
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Tel. +43 662 458115-20, 25
Fax: 43 662 458115-4
juergen@geospace.co.at

Hungarian Society for Surveying, Mapping and Remote Sensing
Prof. Dr. A. Detrekoi
Pf. 433
1371 Budapest
HUNGARY
Tel. (36-1)1813 374 Fax: (36-1)1813-374

Irish Society of Surveying, Photogrammetry & Remote Sensing
Dr. Ron Cox
c/o Department of Surveying Dublin Institute of Technology
Bolton Street
Dublin 1
IRELAND

Società Italiana di fotogrammetria e Topografia
Prof. Attilio Selvini
DIAR (Sezione Rilevamento) Politecnico di Milano
Piazza L. da Vinci, 32
I-20133 Milano
ITALY
nieuwenhuis@sc.agro.nl

Netherlands Federation for Earth Observation and Geo-Information
Ir. G.J. Nieuwenhuis
Lambouwuniversiteit Wageningen P. O. Box 339
NL-6700 AH Wageningen
The Netherlands
Tel. +31 3174 74200 - Fax: 3174 24812

Norwegian Association for Cartography, Geodesy, Hydrography and Photogrammetry
Prof. Oystein Andersen  
Storgaten 11  
N-3500 Honefoss  
NORWAY

Polish Society for Photogrammetry & Remote Sensing  
Prof. Dr. Josef Zachimski  
The Stanislaw Stszic University of Mining and Metallurgy  
Ul. Mickiewicza, 30  
PL-30059 Krakow  
POLAND

Associaçao Portuguesa de fotogrammetria e Deteccao  
Remote  
Eng. Acacio Duarte Calvario  
Av. Ilha da Madeira, 22-2Dt  
1400 Lisboa  
PORTUGAL

Spanish Society for Cartography, Photogrammetry &  
Remote Sensing  
Prof. Rodolfo Nunez de las Cuevas  
General Ibanez de Ibero, 3  
28003 Madrid  
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Tel. +34 1 597 9575 - Fax: 1 553V2896

The Swedish Society for Photogrammetry & Remote Sensing  
Mr. Anders E. Boberg  
Royal Institute of Technology Division of Photogrammetry  
S-100 44 Stockholm  
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Tel. (46) 8 790 7344 Fax : (46) 8 7906610

Swiss Society of Photogrammetry, Image Analysis and Remote Sensing  
Dipl. Ing. André Flotron  
c/o Bundesamt f. Landestopographie Seltigenstrass 264  
CH-3084 Wabern  
SWITZERLAND  
rss@nottingham.ac.uk

Chairman, The Remote Sensing Society  
Dr. Jim Young  
c/o Department of Geography University of Nottingham  
Nottingham NG7 2RD  
ENGLAND, UK

GER-INTRADAN A/S  
Dr. B. Moller Sorensen  
Skodsborgejv 222, Sollerod  
DK-2850 Naerum  
DENMARK  
Tel. +45 42 80 7424 - Fax: 42 80 2075

Danish Society for Photogrammetry & Surveying  
Mr. Poul Frederiksen  
Technical University of Denmark  
Landmalervej 7 DK-2800 Lyngby  
DENMARK
Associazione Italiana di Rilevamento
Votazione referendaria per la modifica dello Statuto e del Regolamento

Il giorno 1 Agosto 1997, presso la sede dell’Istituto Agronomico per l’Oltremare in via Cocchi 4 a Firenze, si è riunito il Collegio degli scrutatori nominato dal Consiglio Direttivo AIT nella riunione del 25/7/97, in seguito alla riapertura dei termini per la consegna delle schede di votazione deliberata nella riunione del CD del 18/3/97. Il Collegio degli scrutatori composto dai soci Pietro Dainelli, Luca Ongaro e Paolo Sarfatti ha proceduto allo spoglio delle schede pervenute. Le schede valide pervenute sono risultate 167, su un totale di 219 Soci aventi diritto al voto. Il quorum per la validità della votazione per lo Statuto è pari a 164 (3/4 degli aventi diritto) e per il Regolamento è pari a 146 (2/3 degli aventi diritto). Delle 167 schede valide, 19 provengono da Soci collettivi il cui voto vale 3 volte, 148 provengono da Soci individuali. Effettuato lo scrutinio sono risultati espressi 190 voti, al netto delle schede bianche, con il seguente esito:

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<td>Voti</td>
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Pertanto risultano approvate le variazioni allo statuto e al regolamento come da proposta pubblicata sul N° 78 (maggio/settembre 1996) della Rivista Italiana di Telerilevamento.

Gli Scrutatori:
Paolo Sarfatti
Pietro Dainelli
Luca Ongaro

QUOTE ASSOCIATIVE 1997

<table>
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<th>Tipo di Società</th>
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<td>Socio collettivo</td>
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AIT - Associazione Italiana di Telerilevamento
Richiesta del modulo di iscrizione

Il sottoscritto

Indirizzo

tel. ____________________________  fax. ____________________________

è interessato a ricevere il modulo per l’iscrizione all’Associazione Italiana di Telerilevamento (AIT).

data ____________________________  firma ____________________________

Compilare, ritagliare e spedire a: Segreteria AIT c/o IAO, via Cocchi 4, 50131 Firenze
tel/fax 055 570395
E-Mail: sarfatti@iao.florence.it

n°10 - maggio 1997

AITinforma - Rivista Italiana di TELERILEVAMENTO

85
Il giorno 18 marzo 1997, presso la sede dell’Istituto di
Ricerca sul Rischio Sismico del Consiglio Nazionale delle
Ricerche, a Milano in via Ampère 56, si è tenuta la riunione
del Consiglio Direttivo dell’AIT. La riunione cominciò alle
ore 10,30. Sono presenti i soci:
Annoni, Cassinis, Cumer Dainelli, Galli, Gomarasca, Lechi,
Malagoli, Marchetti, Marini, Sarfatti, Taddei.
Hanno comunicato preventivamente l’impossibilità di parte-
cipare alla riunione i soci:
Carli, Ghiozzi, Profeti.
L’ordine del giorno è il seguente:
1. Saluto del Presidente uscente e del nuovo Presidente.
2. Approvazione dell’ordine del giorno.
3. Approvazione del verbale della riunione precedente da
parte del Consiglio uscente e ratifica da parte del nuovo
Consiglio.
4. Nomina del Segretario Scientifico, del Tesoriere e del
Segretario Esecutivo.
5. Proposte per le nomine di rappresentanti AIT nelle
Commissioni della ISPRS.
6. Proposta di mettere in votazione le modifiche del Statuto
e del Regolamento alla prossima assemblea sociale.
7. Bilancio economico e patrimoniale consuntivo al 31/12/96
e situazione attuale.
8. Organizzazione del prossimo convegno nazionale di
Parma.
9. Proposta di richiesta di finanziamento al CEO (Unione
Europea) per organizzare un corso di formazione sulle tecni-
che di osservazione della terra rivolto a funzionari delle
regioni.
10. Proposta di un censimento della tipologia dei soci AIT
11. Rapporti con le associazioni nazionali francese e inglese
di telerilevamento.
12. Definizione di un calendario di attività per il Consiglio
14. Cancellazione dei soci per morosità.
15. Varie ed eventuali.

1. Saluto del Presidente uscente e del nuovo Presidente.
Cumer in qualità di presidente uscente saluta i presenti rin-
grazando il Consiglio uscente e tutti coloro i quali hanno
collaborato durante la sua presidenza alla buona riuscita
delle attività dell’Associazione.

Lechi in qualità di nuovo Presidente porge il saluto e riassu-
me i contenuti principali del suo programma culturale, già
pubblicato sulla rivista in occasione delle elezioni per il rin-

ovo delle cariche sociali. Sul piano dell’orientamento cultu-
rale i punti più rilevanti sono: operare per un riconoscimento
professionale del telerilevamento; stabilire rapporti di colla-
borazione con le altre associazioni sia a livello nazionale che
internazionale; porre massima attenzione alla formazione;
affidare la segreteria scientifica dell’associazione non solo ad
un segretario scientifico, ma ad un gruppo di lavoro, con
responsabile. Per quanto riguarda la gestione delle attività
propone: il proseguimento delle attività consolidate; l’istitu-
zione di precise responsabilità operative dei consiglieri; il
reperimento dei fondi necessari al funzionamento dell’AIT;
la ricerca di un superamento della disomogenea distribuzione
geografica dell’associazione; il potenziamento dell’informa-
zione distribuita via Internet.

Si apre una breve discussione durante la quale il Consiglio
conferma la piena approvazione del programma presentato,
facendo alcune osservazioni su alcuni temi specifici.

Galli parla dei rapporti passati con l’associazione francese
telerilevamento. Taddei parla della necessità di definire
meglio i contenuti dei corsi universitari di telerilevamento.

Lechi propone di incaricare qualcuno per elaborare una pro-
posta AIT sui contenuti dei corsi di telerilevamento. Cassinis
propone di vedere il quadro di riferimento europeo. Annoni
parla del ruolo del CEO a questo proposito. Lechi propone
che Cassinis faccia da capofila per una ricerca/ricognizione
sui corsi universitari e sulle altre attività di formazione. Il
Consiglio approva la proposta di Lechi.

Dainelli esprime delle perplessità sulla dizione “riconosci-
imento professionale”. Cumer è d’accordo con Dainelli e
ricorda le perplessità in ambito istituzionale sulla reale ope-
ratività del telerilevamento. Galli ricorda il tentativo fatto
alcuni anni addietro a Ispra per verificare l’attendibilità degli
esperti e dei documenti di TLR. In merito alla questione del
riconoscimento professionale Sarfatti ricorda che andrebbe
studiata la possibilità di ottenere certificazioni di qualità.

In conclusione di questo primo punto Lechi legge brevemente
una lettera che invierà ai soci come saluto in qualità di
nuovo Presidente dell’Associazione.

2. Approvazione dell’ODG.
Il Consiglio approva l’ODG della riunione.

3. Approvazione del verbale della riunione precedente da
parte del Consiglio uscente e ratifica da parte del nuovo

Consiglio.

I membri del Consiglio uscente approvano il verbale della
riunione del 23/10/96; l’approvazione viene ratificata dal
nuovo Consiglio.

5. Proposta per le nomine di rappresentanti AIT nelle commissioni ISPRS
Sarfatti riferisce al Consiglio in merito alla richiesta pervenuta dall’ISPRS di nominare dei rappresentanti dell’AIT nelle 7 commissioni ISPRS: I) sensors, platforms and imagery; II) systems for data processing, analyzing and representation; III) theory and algorithms; IV) mapping and geographic information systems; V) close-range techniques and machine vision; VI) education and communication; VII) resource and environmental monitoring. Il Consiglio da mandato al Presidente di esplorare le diverse candidature, per prendere una decisione in una successiva riunione.

6. Proposta di mettere in votazione le modifiche dello Statuto e del Regolamento alla prossima Assemblea sociale.
Sarfatti relaziona sull’andamento delle votazioni per le modifiche allo Statuto e al Regolamento. Non essendo ancora stato raggiunto il quorum il Consiglio decide di prorogare i termini della votazione. Verrà inviato un sollecito al voto a tutti soci in regola con le quote al 31/12/96 che ancora non lo hanno espresso.

7. Bilancio economico e patrimoniale consuntivo al 31/12/96 e situazione attuale.
Sarfatti espone brevemente la situazione finanziaria dell’associazione; il bilancio vero e proprio verrà presentato all’approvazione del Consiglio in una successiva riunione.

8. Organizzazione del prossimo convegno nazionale di Parma.
Gomarasca relaziona brevemente sull’organizzazione scientifica del Convegno. Malagoli relaziona sugli aspetti organizzativi e presenta una bozza di bilancio preventivo. Il Consiglio approva le relazioni e conferma le presenze AIT nei diversi comitati del Convegno.

9. Proposta di richiesta di finanziamento al CEO (Unione Europea) per organizzare un corso di formazione sulle tecniche di osservazione della terra rivolto a funzionari delle regioni.
Gomarasca espone a grandi linee il progetto che verrà presentato, che prevede le seguenti attività: un workshop a livello nazionale, un corso, un ipertexto, un workshop internazionale, un numero speciale della rivista. Il Consiglio approva la proposta di progetto.

10. Proposta di un censimento della tipologia dei soci AIT
Lechi propone di effettuare un censimento sulla tipologia dei soci per analizzare gli interessi dei soci la possibilità di espansione dell’associazione. Il Consiglio approva la proposta. Viene inoltre deciso di pubblicare su un prossimo numero della rivista l’elenco dei soci e di fare una politica di promozione inviando in omaggio la rivista agli studenti che svolgono tesi sperimentali in telerilevamento.

11. Rapporti con le associazioni nazionali francesi e inglesi di telerilevamento.
Viene rimandato alla prossima riunione.

12. Definizione di un calendario di attività per il Consiglio
Viene definita la data della prossima riunione del Consiglio per il 29 aprile a Firenze, presso l’IGM.


14. Cancellazione dei soci per morosità.
Viene rimandato ad una successiva riunione.

15. Varie ed eventuali.
Per le varie ed eventuali Gomarasca relaziona sul-1’organizzazione in collaborazione con Italeco e la FAO di un Seminario internazionale su “Private and Public Sector Cooperation in National Land Tenure Development”. La riunione viene chiusa alle ore 16,30.

Il Segretario Esecutivo
Paolo Sarfatti

Il Presidente
Giovanmaria Lechi
RIUNIONE DEL CONSIGLIO DIRETTIVO

Firenze, 29 aprile 1997


Alla riunione ha portato il proprio saluto e augurio di buon lavoro il Gen. Fabbri, Comandante dell’IGM.

La riunione è stata convocata con il seguente ordine del giorno:
1. Saluto del Presidente
2. Approvazione del verbale della riunione precedente
3. Rivista di Telerilevamento
4. Approvazione Bilancio 1996
5. Situazione Congresso Parma
6. Relazione su convegno FAO-Bertinoro e stampa Atti
7. Rapporti con le altre associazioni europee e EARSel
8. Pagina WEB su Internet
9. Ricognizione sui corsi universitari di telerilevamento e sulle altre attività di formazione in Italia
10. Attività future
11. Ammissione nuovi soci
12. Varie ed eventuali

1. Saluto del Presidente

Il Presidente propone di introdurre la riunione con una comunicazione di Gomarasca riguardante gli impegni futuri dell’Associazione.

Gomarasca introduce parlando del prossimo convegno di Parma. A causa dell’eccessivo numero di persone coinvolte, il comitato organizzatore non è mai diventato operativo; pertanto è stata presa la decisione di affidare a Pubblicistica l’organizzazione e la logistica del convegno, anche se ancora devono essere definiti i termini dell’accordo. Per quanto riguarda il comitato scientifico vi sono molte resistenze ad adottare l’impostazione scientifica e procedurale sperimentata con successo a Chieri. Sono arrivate circa 200 proposte di comunicazioni. Il Consiglio prende atto delle difficoltà e invita il Presidente a chiarire quanto prima inserire agli altri Presidenti i termini economico-finanziari dell’incarico a Pubblicistica. Il Consiglio auspica che la quota di iscrizione del convegno comprenda gli Atti in forma estesa. Gomarasca continua facendo un resoconto del seminario di Bertinoro (FO) sul catalogo e i land information systems nei paesi dell’est Europa, ricordando il nostro impegno con la FAO per la pubblicazione di un numero speciale della rivista con una sintesi ragionata degli atti e di tutto il materiale presentato durante le quattro giornate dei lavori. Turchi dell’Italeco sta facendo un ottimo lavoro ma occorre che sia affiancato al più presto da qualcuno dell’associazione e in particolare da Pranzini in qualità di direttore scientifico della rivista. I fondi disponibili ammontano a circa 18.9 ML. Infine Gomarasca comunica che la proposta presentata dall’AIT per ilCEO è stata prescelta e verrà finanziata. Il contratto CEO porterà un finanziamento di 50.000 ECU per l’organizzazione di due seminari, di cui uno internazionale, un corso di formazione presso la sede ESA-ESRIN da organizzare in collaborazione con il Centro Interregionale, un ipertesto sul telerilevamento e un numero speciale della rivista dell’associazione. Per la prima volta potremo assegnare dei fondi a dei collaboratori, pensati in fase di redazione della proposta, Pensalfini corsista IAO a Firenze e Fabio Vescovi dottorando a Milano che lavoreranno per l’associazione. L’inizio del progetto dovrebbe essere ai primi di giugno e da quel momento occorrerà rispettare tutte le scadenze previste.

In conclusione della comunicazione Gomarasca ricorda ai Consiglieri che il successo delle iniziative dipende strettamente dall’assunzione da parte di ciascuno di precisi impegni e responsabilità.

2. Approvazione del verbale della riunione precedente

Il Consiglio approva il verbale della riunione precedente

3. Rivista di Telerilevamento

Pranzini relaziona sui problemi della rivista esprimendo la sua insoddisfazione per l’ultimo numero appena stampato (n 9, gennaio 1997) che contiene errori e imprecisioni. I problemi sono molteplici: il gruppo redazionale di Pisa che ha problemi di organizzazione, i soci che non mandano articoli e contributi per le varie rubriche (tesi, abstract, ecc.); inoltre sprime perplessità circa i numeri speciali che verranno fatti in futuro (Bertinoro, CEO). Dopo un ampia discussione durante la quale intervengono i soci Carlà, Marchetti, Gomarasc, Lechi, Taddei, Dainelli, Sarfatti viene deciso di spostare redazione e tipografia a Firenze, senza continuare gli spostamenti a Pisa. Per ciò che riguarda il numero per il seminario di Bertinoro Pranzini riafferma la necessità di referare con rigore gli articoli per garantire la
buona qualità di ciò che viene pubblicato; il Consiglio approva. Gomarasca ricorda che comunque non verranno pubblicati gli atti tal quali, ma che ci sarà un lavoro di sintesi fatto da Turchi (ITALECO) e da Toselli (FAO); molti lavori saranno in inglese, ma saranno preceduti da un ampio riassunto in italiano.

Carlà domanda se esiste la possibilità che la rivista diventi internazionale. Taddei offre la propria disponibilità per collaborare alla rivista. Il consiglio decide di scrivere a Pranzini per rinnovargli la propria fiducia come direttore scientifico. Lechi propone di invitare AIC e SIFET a inviare contributi scientifici alla rivista. Taddei propone di fare una rubrica didattica, programmata nel tempo.

4. Approvazione Bilancio 1996
Il consiglio approva il bilancio 1996 che verrà inviato ai soci per la votazione referendumaria.

5. Situazione Congresso Parma
Il punto è stato già ampiamente trattato nella comunicazione iniziale di Gomarasca.

6. Relazione su convegno FAO-Bertinoro e stampa Atti

7. Rapporti con le altre associazioni europee e EARSeL
Lechi propone di organizzare nel 1998 un convegno con le associazioni francesi e inglese di telerilevamento, per dare maggiore apertura internazionale all’AIT; il secondo workshop da organizzare nell’ambito del progetto CEO potrebbe essere una buona occasione. Gomarasca sottolinea che se viene fatto nell’ambito CEO l’argomento del convegno deve essere la formazione. Marchetti si dichiara d’accordo con la proposta del Presidente ma ricorda la necessità di continuare la strada intraposta con il convegno di Parma di collaborazione con le altre associazioni in Italia. Il Consiglio approva la proposta di Lechi.

8. Pagina WEB su Internet
Profeti illustra la situazione della pagina web; gli accessi sono stati fino ad oggi circa 250; viene brevemente descritta l’organizzazione della pagina; esiste anche la possibilità per i soci di mettere un proprio curriculum. Taddei propone di collegare la rubrica di formazione sulla rivista con delle immagini e degli esercizi da mettere sulla pagina web. Il consiglio approva.

9. Ricognizione sui corsi universitari di telerilevamento e sulle altre attività di formazione in Italia
Taddei legge un elenco dei corsi universitari che secondo la legislazione in vigore contengono la parola telerilevamento. Lechi legge un appunto di Cassinis che sta procedendo nella ricognizione.

10. Attività future
Il punto 10 è già stato trattato durante l’introduzione di Gomarasca.

11. Ammissione nuovi soci
Il consiglio approva l’ammissione dei nuovi soci.

12. Varie ed eventuali
Lechi legge la lettera che le 4 associazioni organizzatrici del convegno di Parma invieranno al Presidente della Repubblica per chiedere il patrocinio alla manifestazione. Il consiglio approva.
La prossima riunione del Consiglio viene fissata per venerdì 25 luglio in luogo ancora da decidere. La riunione viene chiusa alle ore 16.30.

Il Segretario Esecutivo
Paolo Sarfatti

Il Presidente
Giovanmaria Lechi
Elenco dei Soci
dell’Associazione Italiana di Telerilevamento
(al 19 settembre 1997)

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L’AIT è diventata membro associato della Società Internazionale di Fotogrammetria e Telerilevamento (ISPRS)

Con il XVIII Congresso della International Society of Photogrammetry and Remote Sensing tenutosi a Vienna nel luglio del 1996 la nostra associazione è diventata membro associato della ISPRS. Questa novità ha per noi una importanza strategica. La ISPRS, infatti, è una società internazionale alla quale aderiscono tutte le più significative associazioni nazionali di fotogrammetria e telerilevamento, oltre ad una serie di membri regionali e membri sostenitori. Per l’Italia il membro ordinario è la SIFET. La ISPRS è strutturata in 7 Commissioni, a loro volta suddivise in 44 gruppi di lavoro, molti dei quali con tematiche direttamente legate al telerilevamento ed alle sue applicazioni.

Commissione I  Sensors, Platforms and Imagery
Commissione II  Systems for data Processing, Analysis and Representation
Commissione III Theory and Algorithms
Commissione IV Mapping and Geographic Information Systems
Commissione V Close-range Techniques and Machine Vision
Commissione VI  Education and Communications
Commissione VII Resource and Environmental Monitoring


Il Consiglio AIT nominerà quanto prima dei “corrispondenti” per ciascuna commissione. Saranno questi corrispondenti a mantenere vivo il rapporto tra la nostra base sociale e le attività ISPRS a livello internazionale, con l’obiettivo di arrivare al 19° congresso ISPRS nel 2000 ad Amsterdam, con l’AIT pienamente inserita nelle attività della Società.

Rettifica

Nel numero 9, gennaio 1997 della Rivista Italiana di Telerilevamento sono stati omessi gli Autori delle Rubriche Progetti e Rapporti. Si riportano le modifiche con le dovute scuse agli Autori per la svista.

La Terra dallo Spazio: dalla Ricerca alla Gestione del Territorio
Organizzato da AGI/SIMA/ESA presso la sede ESRIN di Frascati, 12-13 dicembre 1996
È stato preparato da Maurizio Foa, ESA-ESRIN, Frascati, e Aldo Argenti, Eurimage, c/o ESA-ESRIN, Frascati
Per eventuali informazioni:
mfea@esrin.esa.it
aargenti@esrin.esa.it

Summary of the CEO Workshop on the Publishing of Datasets and Metadata
Ispra, Italy, November 27th 1996
È stato preparato da: Giancarlo Maracci. Joint Research Center, Space Application Institute, Centre for Earth Observation, Ispra (VA) giancarlo.maracci@jrc.it

1° Convegno “Telerilevamento e Cartografia Tematica” Università di Cagliari, Laboratorio di Fotogeologia e Telerilevamento; Cagliari, 13-15 novembre 1996.
È stato preparato da Alberto Marini e Titta Melis, del Laboratorio di Fotogeologia e Telerilevamento, Università di Cagliari.
marni@vaxca1.unica.it
Norme per gli Autori

Nella Rivista sono presenti tre tipi di articoli principali:
- **Ricerche**: articoli che riportano i risultati di ricerche originali;
- **Applicazioni**: articoli che riportano casi di studio in cui vengono applicate metodologie ometologie consolidate;
- **Argomenti**: revisioni critiche di argomenti più generali e presentazioni a carattere didattico di argomenti specifici.

Vengono inoltre pubblicati i resoconti di congressi, di seminari o di attività dei gruppi di ricerca, così come brevi descrizioni di nuove attrezzature e di software di interesse per gli operatori del settore.

Fra le notizie brevi vengono riportati i riassunti di tesi di laurea e di attività dei gruppi di ricerca, codici come brevi descrizioni di nuove attrezzature e di software di interesse per gli operatori del settore.

Gli Autori degli articoli principali sono pregati di rispettare le seguenti norme. Per la stesura degli altri contributi si consiglia di fare riferimento agli ultimi numeri della Rivista.

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