

Harmonization of Land Registry in Europe

Hendrik D. PLOEGER and Bastiaan VAN LOENEN, The Netherlands

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SUMMARY

An increase in cross-border transactions of immovable property within the European Union puts a demand for easy access to the information of the national land administrations of the member states. The European Union Land Information System (EULIS) project brings together the registrations of eight European jurisdictions in one portal. In this way it provides cross-border access to information about the rights on real estate, using the information in the computerized databases of the participating land registries. The EULIS project is the first step towards a more transparent system of real estate transactions. The next logical step, from the viewpoint of international accessibility of the information, is that the national land registries within the united Europe will be harmonized or even integrated in one European land registry or administration.

In order to promote cross-border transactions and to facilitate the European mortgage market the authors suggest the introduction of a common way of land registration, in addition to the existing national land registrations: the EuroTitle system. This is a challenging concept, which may bring the required uniformity of land registration in Europe. This approach is in the beginning stages of development and the legal and organisational consequences need to be further explored and developed in order to assess the feasibility of the introduction of such a concept in European land registry.

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1. INTRODUCTION

The European Union works on the harmonisation of Member States' legislation in order to facilitate the free movement of persons, capital and goods and so to make the economy of the Union as competitive as possible. Although article 295 of the EU Treaty excludes 'the system of property ownership' from the influence of 'Europe', we must be aware that the land registries also undergo the influence of EU policies (see Van der Molen 2004).

In the current information age, including the e-government initiatives, increasingly attempts have been made to harmonise information policy in Member States. Improved access to government information includes information within the land registries. Since there are an increasing number of international transactions of real estate within the Union, more and more citizens and companies and their financiers are involved in such transactions. For the national managements of land registries the unification process within the EU has become a major point of discussion.

One result of this discussion is the establishment of the Permanent Committee on Cadastre in the European Union in 2002 (see www.eurocadastre.org) in order to achieve greater co-ordination among the European cadastres and their users. The main objective of the committee is to offer a network that will facilitate the exchange of information, expertise and best practices among the members. Next it wants to represent a link between the cadastres and the organs of the European Union.

Another result is the project EULIS: 'European Union Land Information Service'. The project brings together the computerised information on land of several European countries in one portal (Ploeger & van Loenen 2004). Although the project's primary aim does not reach further than this, we foresee that this is the first step towards more harmonised systems of land administration throughout Europe.

2. LAND REGISTRY WITHIN EUROPE: THE NEED FOR BETTER INFORMATION

2.1 Theory and practise

In theory citizens of the EU are flexible to work and live anywhere they prefer in the Union. The fact that the Dutch website of the real estate agents www.funda.nl nowadays offers the possibility to search on its site for real estate within Europe seems to confirm this flexibility. Sitting in his armchair one can browse 'Funda Europe' and search for the dream house over the border.

But is it really so easy? The practical question as how to become the owner of a house in another country and how to finance it by a loan secured by mortgage is difficult to answer. In most cases the buyer will be ignorant about the relevant rules of land law in the country concerned and if information is obtained about the owners and others having rights on the real estate, it is quite difficult to judge that information on its merits.

The same applies for the possibility to get a loan from a mortgage bank in another members state. Within the EU the single market for banking has been established in January 1993 by the Second Banking Directive 89/646/EEG, but a real European mortgage market seems still far away. The mortgage markets are still domestic. Transnational mortgage lending represents not more than 1% of the whole mortgage business in Europe (Nasarre-Aznar 2004a).

2.2 Real estate transaction within the EU

For EU transactions we can distinguish the following (six) situations:

- A sells property in his own country (CA) to B from another Member State (CB). B lends money from a bank in CA.
- Same, but the bank is located in CB.
- Same, but the bank is located in a third Member State (CC).
- A sells property to B, the property is situated in a third Member State (CD). B lends money from a bank in CD.
- Same, but the bank is located in CB.
- Same, but the bank is located in a third Member State (CC).

2.2.1 The case of Anton and Benjamin

An example will give a good illustration of the questions that arise.

Let's suppose Anton is offering his house in Den Haag (the Netherlands) for sale, and that Benjamin, living in England, is interested in this house. He wants to fund this house by a loan offered by his local banker on favourable conditions.

The buyer and his banker must at least know whether Anton is the lawful owner of this real estate. And if so, he wants to know whether there are others with a legal interest in the real estate concerned.

Their first question will be where to obtain legal information about the house that Anton is offering for sale. Benjamin has to find his way in the relevant system of land registry and learn how to contact its office.

Further, after he has an overview of the registered rights, what will Benjamin and his local banker make from the information that Anton is *erfpachter*, and the City Council of Den Haag is *eigenaar*? And if Benjamin understands this information, how does he know whether the registration in the Dutch *cadastre* implies that this right can be disputed or not? Does Benjamin realise that there may be other relevant interests in the land (for instance servitudes, public law restrictions) that cannot be known from this file, and require an investigation of the deeds in the Dutch *deeds registration*. And finally what is the accuracy and the legal value of the cadastral map showing the boundaries of the real estate of Anton?

2.2.2 The practise

The case is likely to be similar in other cross-border transactions in Europe. The practical solution is that Benjamin hires a local advisor. This specialist is expected to clarify the foreign legal terminology and to provide a sufficient and reliable overview of the legal status of the real estate concerned. That is time and money consuming.

The same applies to his local banker. Uncertainty of the legal situation and the difficulty to export the national mortgage product to the Netherlands will have a deterrent effect. Most likely Benjamin needs to contact a Dutch banker. It is revealing that a recent report of the European Mortgage Federation (EMF 2003) asks for the improvement of transparency and security of Europe's land registers. On-line access to national land and mortgage registers should be made possible on a cross-border basis in all member states, it argues.

In the near future the EULIS system can remove some of the barriers for those taking part in cross-border land transactions within the EU.

3. EULIS

3.1 What is EULIS?

EULIS is a project within the eContent programme of the Directorate-General Information Society of the EU. It is collaboration between the organisations that provide computerised access to the legal information on real estate of eight European jurisdictions: Austria, England and Wales, Finland, Lithuania, the Netherlands, Norway, Scotland, and Sweden, assisted by the participation by Lund University.

The organisation that participates in EULIS is not necessarily the same that is responsible for the deed or title registration. In some jurisdictions, the registry and the digital information are managed by the same organisation (e.g., England and Wales, Scotland), while in others they are two separate entities. For instance, in Sweden the cadastre *Lantmäteriet* provides the digital information, while the land registration itself (in this case an example of title registration) is the responsibility of local courts. Thus, both land registries and cadastres participate in EULIS. In this paper we indicate the organisations participating in EULIS as land registry and/ or cadastre (LRC).

EULIS builds on previous efforts of the land registries and cadastres to describe the characteristics of many national systems of land administration (see Manthorpe 2000, PCGIAP/FIG 2003). It will provide the means to ease the access to cross-border information about the rights on real estate, using the information in the computerised databases of the participating cadastres or land registries.

The project started in January 2002, and finalised June 2004 with the completion of a demonstrator that provides access to the computerised information within each of the national LRC's (www.eulis.org). The decision has been made to continue the co-operation and to set up a operational service in 2005.

In the first phase the project aims at the professional users like real estate agents, solicitors, notaries and financial institutions. Ultimately the service may also be open for private individuals.

The project addressed a variety of issues, varying from the content of the service, and exploring the current national legislation applying to access and use of the data, including a

secure billing system, and the development of a glossary on land law and cadastre: the so called 'EULIS glossary'.

3.2 How does it work?

Simply said the system of EULIS links the essential information of the computerised databases of the participating organisations. For Austria the computerised system is the so called *Grundstücksdatenbank*, for England & Wales the *Land Registry Direct*, for Finland the *Kiinteistötietojärjestelmä* (KTJ), for Lithuania the *Real Property Register*, for the Netherlands, the *Automatisering Kadastrale Registratie* (AKR), for Norway the *Norsk eiendomsinformasjon*, for Scotland *The Registers Direct*, and for Sweden the *Fastighetsdatasystemet* (FDS).

The user connects digitally to their national LRC. The national website directs him to the EULIS portal, where the customer can choose to digitally access one of the other services. So the foreign customer gets on his computer the same screen the national service uses for its native customers (optionally with an English translation). In other words, EULIS, in this stage, doesn't offer a standardised and uniformed presentation of the land information.

The EULIS server counts the number of requests for cross-border data and based on this information, the national LRC bills the customer. Consequently, the national LRC pays its counterpart whose data was requested and provided. In this way, EULIS builds on the existing trust relationships between the professional customers and the national LRC, and on the trust between the participating national LRCs. The main benefit is that customers only have to apply for this service once, with their national registry, instead of registering with all individual registries. The LRCs on the other hand, do not have to go into difficult procedures to accept an application of a foreign customer: they can fully rely on the other LRC for allowing access.

3.3 Content of EULIS

The service provides two types of information. First of all the information asked for, like the number of parcel or object, the name of the owners and holders of limited rights, date of the last transaction and – if digitalised and made accessible on-line – the cadastral map. Furthermore, the applicant will also receive meta-information: e.g., a short overview of the legal description of the right of ownership of land, for example, in Sweden. Moreover, EULIS allows through the so-called 'EULIS glossary' for the translation of legal expressions from the different countries in each of the other languages.

3.4 Breaking the language barrier

Law and language: the importance of the relation between them has been stressed in legal literature. In the light of the development of an European civil law it is a factor that must not be overlooked (see Weir 1995). In the field of contract law a database in all European Community languages has been mentioned in the Report on the approximation of the civil and commercial law of the Member States (EU 2001). This to find common legal concepts and solutions and a common terminology of the legal systems involved. The need for a

common frame of references is further elaborated in the action plan of the Commission (EC 2003, see also Pozzo 2003). A European database of specific (including legal) terms in various languages can be found at <http://europa.eu.int/eurodicautom/Controller>.

From the point of view of harmonisation of European (land) law, the EULIS glossary is a very interesting part of the project. First of all it provides a translation of expressions from one language in an other. An example may be the translation of the Austrian *Hypothek* into the Scottish *standard security*, the Dutch *hypotheek*, or the English *mortgage*. In addition to this translation the user finds a short clarification (definition) of the legal expression. For mortgage that is 'a right in property granted as security for the payment of a debt'.

Next to the expressions in each of the national languages, this glossary consists of 'EULIS terms' and 'EULIS definitions'. They 'act as semantic bridges between (national) concepts used in different jurisdictions' (Tiainen 2004). In fact it can be considered to be the first initiative to develop a pan-European language on (land) law. Although the registries of England and Wales, and Scotland participate in the project, and although the EULIS expression is in English, the expression is not necessarily the same as the common law English terminology. For example, the English *lessee, tenant* is in the EULIS glossary described as *lessee, registered title is register unit*, and finally the English *title, estate, tenure* is in EULIS terminology *title*. This is the equivalent to *bewijs van eigendom* in Dutch, *Lagfart* in Swedish or *Eigentumstitel* for Austria.

For further information about the glossary, especially about the modelling process used in EULIS we refer to Tiainen (2004).

4 LEGAL ASPECTS

4.1 Two questions

Although EULIS has accomplished significant improvements in the ease to access land registry information, it raises at least two legal questions. One is the way access to the data is provided and the way the results are presented. What data can the user obtain, and is the amount and type of information the same for all countries? Another is the value of the information provided.

4.2 Access to information

A study by Van Loenen (2002) on the publication of land administration data found significant differences in the way the LRCs provide access to their information. In some countries one can search through the name of a person, while others only allow searches through object information, like an address. This has resulted in a situation where in some countries an overview of all the land that is registered to one person can be obtained, in others this information is only given to those with a demonstrated sufficient interest, while in certain countries one cannot get such an overview at all.

The research clarified that the cause of the differences may be found in the implementation in national legislation of the European privacy directive (EU 1995). Especially the interpretation of the term 'personal data' seems to be differently interpreted in the Member States (Korff 2002). The name of the registered owner of a parcel is without doubt 'personal data'. But in

case of information like address, the existence of a right of mortgage or the sum of the loan secured by a right of mortgage, the survey demonstrated that there is no consensus in interpretation among the member states.

The differences in access regimes imply for EULIS that although it is possible to access information in the LRCs, the extent to which the information is provided, and the way it can be searched may vary. However, the task of a land registry is more to provide access to the information on real properties, than to provide an overview of one's property. Therefore, from the harmonisation perspective, the issue of access to land registry information is not as pressing as long as at least access is provided through the object information.

4.3 Value of information provided

As mentioned above the basis of EULIS is the information in the computerised databases of the participating organisations. However, the legal value of that information is not at the same level in the countries. The system of land registration, and the starting point of the computerisation of the registry itself can explain this difference. There are within Europe major differences in the systems, mostly the result of cultural and historical differences in background. Let's compare for instance Austria and the Netherlands.

Austria has a by the Government maintained *Grundbuch*, that is a registration of title. The *Hauptbuch*, the main registry in Austria is fully computerised and can be queried on-line (*Grundbuchdatenbank*). The registration of the right is in Austria decisive. It has so called *öffentliche glauben*, almost a full guarantee. Although the registration of deeds is also part of the land registry in Austria, and is the basis of the registration in the *Hauptbuch*, it is of neglectable importance.

In the Netherlands we will find a deed registration (*openbare registers*), which is held with the cadastre (*kadaster*) by one organisation: the Netherlands' Kadaster. It is the cadastral registration that can be queried on-line in the so-called AKR. Although the cadastral database is in practise considered as very important, strictly it has no value from a legal point of view. It is merely the access to the deeds registration. The deeds registration, however, cannot be accessed on-line (yet). For protection of the good faith of the buyer in case of a failure in a transfer of ownership, the establishment of limited rights, or other transactions, the information from the deed registry is decisive. In this aspect it must be stressed that the deed registry is not complete. So the new owner can be confronted with rights that are not registered in deeds.

If we take a look at the organisation of the LRC and the aspect of the accessibility to the public one could argue that the Dutch cadastral registration (*kadaster*) is very much functioning like the *Hauptbuch* in Austria. But from a legal point of view the fact that a right is registered in the *Hauptbuch* has a different value, than the registration in the *kadaster*.

Now for the EULIS system the Austrian *Grundstückdatenbank* and the Dutch *kadaster* (AKR) will be the source of information for the user. This example shows clearly that the value of the information the user will get through EULIS differs. Most users, both layman and professionals, will probably not know this. The danger will be that they consider the offered information as complete and fully reliable. And if they know that this is not true for one or more countries, the result can be that they doubt the value of all information from (for

them) unknown registries. Therefore it is necessary that the meta-information provided together with the result of the query from the databases addresses this aspect prominently.

5 EUROHYPOTHEC: USER REQUIREMENTS FOR EU LAND REGISTRY

Interesting in this aspect is the idea to design a common mortgage for Europe, the so-called Eurohypothech or Euromortgage. The concept itself is dating from 1966, as mentioned by the report 'Development of a European Capital Market' for the European Commission by Claudio Segré.

As mentioned above the creation of a European mortgage market is hampered by the lack of transparency. Not only the transparency for the bankers (the aspect of land law and land registries), but also for the consumers who are not able to compare the mortgage products offered by the bankers in the different member states. The Eurohypothech would help to overcome this. It should also make it possible to secure a loan (or loans) with one mortgage on several properties in different member states. Currently this is not possible. Several national mortgages must be granted in each country to secure different loans

The model for a common mortgage provided by the Eurohypothech Research Group (www.eurohypothech.com) doesn't intend to replace the now around 25 different types of legal frameworks for mortgages and hypothecs in Europe. The Eurohypothech is described as an 'extra tool for lenders and borrowers' (Nasarre-Aznar 2004b).

Although the Eurohypothech as such will provide a European instrument to secure loans, it doesn't resolve the problems of the diversity of the national systems of land law and land registry. It is therefore that the need for standard procedures and meta information has been stressed in literature. Wehrens (2004) suggests the introduction of an official confirmation of the proper registration of the mortgage. This should include statements on the valid creation, on the enforceability of the security right, on the registration and on the specific rank in relation to other land charges. According to him 'such certificates will advisably be issued by those persons, authorities or institutions which are generally in charge of the certification of the Euro-mortgage according to the respective domestic law. The *Publizitätswirkung* (in how far can it be treated as notice to the whole world?) and *öffentlicher Glaube* (public reliance) of this certificate should be regulated by law as well; the same applies to the legal consequences of a divergence between the contents of the certificate and the actual legal position'.

6 THE FUTURE OF LAND REGISTRY IN EUROPE

6.1 The first step: transparency through one central portal

The EULIS project is the first step towards a more transparent system of real estate transactions. The next logical step, from the viewpoint of international accessibility of the information, and clarity about the legal implications of the provided information from the computerised systems, is the integration of the national land registries within the EU in one European land registry. In such an integrated environment EULIS would be the European Cadastre on-line portal. Instead of directing the user to the individual national systems and its interface, as EULIS currently does, the future portal should provide one uniform interface.

The data will be stored in the national systems, but presented in a uniform way in the portal. In this way the computerised systems do not need to be physically integrated in one European database. The national registries will continue to maintain their system the same way they are used to. However, as section 4.3 explains, the legal value of the provided information will still vary per registry.

6.2 Next step A: Harmonization of land registries

The harmonization of the national land registries may be the next step. Technically the integration of different systems of land administration into one harmonised system is not an issue. However, legally and organisationally the integration provides many challenges that need to be researched in more depth. For the feasibility of this integration we are of opinion that a choice for a technical standard and the legal basis of the land registry (very simply said: the choice between title registration or registration of deeds) is more important than the actual differences in land law among the member states of the EU. However, the need to choose for one system is likely to encounter severe resistance from the Member States that need to change their national system. Moreover, agreement about a preferred system may take several decades of discussion and negotiation. If in the end one general system is agreed upon, it may allow for exemptions addressing specific national situations.

However one may question whether such a harmonized system addresses the needs of those taking part in cross-border land transaction sufficiently.

6.3 Next step B: EuroTitle

According to Nasarre-Aznar (2004b) an excellent partner for the Eurohypotheec would be a common European Land Register. The EULIS project is seen in this light as a start, an 'useful tool to increase transnational land conveyancing and charging, which should evolve to a true European e-conveyancing relating to land in future.'

In this light we foresee the introduction of a common way of land registration, an alternative to the existing national land registrations. In order to obtain a Eurohypotheec the bank requires certainty about the legal status of the property or properties encumbered. This certainty can be provided by the introduction of a registration of land with the 'EuroTitle'. This will be a title registration based on (newly developed) European standards. This does not need the introduction of a European Land Registry as such. As long member states in the EU support registration of such a title in the national registry, the national land registry can issue a EuroTitle within its jurisdiction. The land with a EuroTitle is guaranteed by the organisation that registers this title. Such a 'EuroTitle' for land would provide the necessary uniform legal certainty of the rights on land in all member states of the EU, and as such provide a reliable basis for e-conveyancing all over Europe.

According to us this system of land registration may satisfy the needs of those taking part in cross-border land transactions within the EU better than the current improved transparency of national systems or a harmonised system..

7. CONCLUSIONS

An increase in cross-border transactions of immovable property within the European Union puts a demand for easy access to the information of the national land administrations of the member states. Not only the differences between land law in the member states, but also the lack of cross-border transparency and accessibility of the national Land registries of the member states hamper the creation of a real common property and mortgage market.

The European Union Land Information System (EULIS) project brings together the registrations of eight European jurisdictions in one portal. In this way it provides access to cross-border information about the rights on real estate, using the information in the computerized databases of the participating land registries.

EULIS is the first step towards a more transparent system of real estate transactions. The next logical step, from the viewpoint of international accessibility of the information, is that the national land registries within the united Europe will be harmonized or even integrated in one European land registry or administration. However, the requirements of those taking part in cross-border land transactions within the EU provided, harmonisation is likely to be insufficient and the European Union should strive for one uniform system of land registration in order to promote cross-border transactions.

Therefore, the authors suggest the introduction of a common way of land registration, in addition to the existing national land registrations: the EuroTitle system. This is a promising concept, which may bring the required uniformity of land registration in Europe. This approach is in the beginning stages of development and the legal and organisational consequences need to be further explored and developed in order to assess the feasibility of the introduction of such a concept in European land registry.

REFERENCES

- EC, 2003, A more coherent European contract law, An action plan, Brussels 12.2.2003, COM (2003) 68 final.
- EMF, 2003, Integrating Europe's Mortgage Markets, Conclusions by Mr Claude Sadoun, President of the EMF, European Mortgage Federation, November 2003. <<http://www.hypo.org>>
- EU, 1995, Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data, Directive 95/46/EC OJ No L. 281 p. 31.
- EU, 2001, Report on the approximation of the civil and commercial law of the Member States (COM(2001) 398 – C5-0471/2001 – 2001/2187(COS)) of the Committee on Legal Affairs and the Internal Market of the European Parliament, nr. A5-0384/2001.
- Korff, Douwe, 2002, EC Study on Implementation of Data Protection Directive Comparative Summary of National Laws. Study Contract ETD/2001/B5-3001/A/49) Cambridge (UK) September 2002. <http://europa.eu.int/comm/internal_market/privacy/docs/lawreport/consultation/univessex-comparativestudy_en.pdf>
- Loenen, B. van, 2002, Analysis report on the publication of land administration data in an EULIS setting, Project acronym: EDC-11004 EULIS/27575 11-11-2002, 26 p. <http://www.eulis.org/pdf/D61-2_Report_-_Final.pdf>

- Manthorpe, John, 2000, Study on Key Aspects of Land Registration and Cadastral Legislation Part 1 and Part 2, Printed and published on behalf of UNECE Working Party on Land Administration by Her Majesty's Land Registry, London, May 2000.
 <http://www.unece.org/env/hs/wpla/docs/links/wpla_inv2_p1.pdf>
 <http://www.unece.org/env/hs/wpla/docs/links/wpla_inv2_p2.pdf>
- Van der Molen, Paul, 2004, The European integration gets deeper and wider. How does this influence land surveyors? 02. Nordiska Lantmätarekongressen, Järvenpää, Finland 8-10 July 2004.
- Nasarre-Aznar, Sergio, 2004a, A common mortgage for Europe, ENCH Conference, Cambridge, UK July 2-6 2004.
- Nasarre-Aznar, Sergio 2004b, Looking for a model for a Eurohypotheq, Paper for the Real Property Law Project Conference, European University institute, Florence, Italy, 1-2 October 2004.
- PCGIAP/FIG, 2003, Cadastral Template: A Worldwide Comparison of Cadastral Systems, Cadastral country reports based on a jointly developed PCGIAP/FIG template. Established under UN mandate by Resolution 4 of the 16th UNRCC-AP in Okinawa, Japan in July 2003. UN endorsement for cooperation with UN-ECE WPLA, UN-ECA CODI, and PCIDEA. <<http://www.cadastraltemplate.org>>
- Ploeger Hendrik and Bastiaan van Loenen, 2004, At the Beginning of the Road to Harmonization of Land Registry in Europe, European Review of Private Law 2004, p. 379-387
- Pozzo, Barbara, 2003, Harmonisation of European Contract Law and the Need of Creating a Common Terminology, European Review of Private Law 2003, p. 754-767.
- Tiainen, Esa 2004, Directions in modeling Land registration and Cadastre Domain; Aspects of EULIS glossary approach, semantics and information services, Joint FIG Commission 7 and COST Action G9 Workshop on Standardization in the Cadastral Domain, Bamberg, Germany 2004.
- Weir, Tony, 1995, Die Sprachen des europäischen Rechts, Eine skeptische Betrachtung, Zeitschrift für Europäisches Privatrecht 1995, p. 368-374.
- Wehrens, Hans G., 2004, Real Security regarding Immovable Objects, Reflections on a Euro-Mortgage, in: Arthur Hartkamp, e.a. (ed), Towards a European Civil Code, Ars Aequi Libri, Nijmegen 2004, p. 769-783.

BIOGRAPHICAL NOTES

Hendrik Ploeger studied law at Leiden University. In 1997 he finished his PhD-thesis on the subject of the right of superficies and the horizontal division of property rights (Horizontale splitsing van eigendom, Leiden 1997). The same year he did research at the E.M. Meijers-Institute of Legal Studies on the subject of bored tunnels and the rights of landowners. After an assistant-professorship in civil and notary law at Leiden University, he is since 2001 assistant-professor at Delft University of Technology, OTB, section Geo-information and Land management and published on several subjects of land law and land registration. He is also chairman of the FIG working group on 3D-Cadastres.

Bastiaan van Loenen graduated from Delft University of Technology (the Netherlands) in 1998 and from the University of Maine (U.S.) in 2001. In 2001, he started his PhD study at Delft University of Technology researching the impact of access policies of large-scale spatial data on the development of SDIs. He is co-editor of the GSDI publication "Spatial data infrastructure and policy development in Europe and the United States". For several MSc courses in the Netherlands, he teaches on Funding mechanisms for SDI. Bastiaan participates the GSDI legal and economic working group and has created a searchable database with SDI-related and freely accessible literature (see <http://www.otb.tudelft.nl/NGII>).

CONTACTS

Dr. Hendrik D. Ploeger and Ir. Bastiaan van Loenen, MSc
Delft University of Technology
OTB Research Institute for Housing, Urban and Mobility Studies
Section Geo-information and Land Development
Jaffalaan 9
2628 BX Delft
THE NETHERLANDS
Tel. +31152782557
Fax +31152782745
h.d.ploeger@otb.tudelft.nl
bv.loenen@otb.tudelft.nl
www.juritecture.net