

About the Conference

In 2013, Europe's 5 leading mapping, cadastre and land registry associations signed a Common Vision Agreement.



Taking into account the emergence of today's rapidly advancing digital information society, which is generating increased demands from the property and land information community, these five associations established this agreement. It is meant to achieve closer cooperation in order to look together at the future role of mapping, cadastre and land registry agencies as well as ensure more effective exchange of experience and knowledge and also reduce expenses.

Hosted by the Dutch Cadastre, Land Registry and Mapping Agency (Kadaster), this was the inaugural first Common Vision Conference held June 5th to 7th 2016 in Amsterdam. Headed by the overall theme *Migration to a Smart World*, topics such as Smart Cities, Marine Cadastre, Interoperability, Location Infrastructure and eGovernment were discussed.

There were 170 senior level professionals attending from all over Europe, who were asked to which association they feel most affiliated.



O To which association do you feel most affiliated?

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Anouk Povel-Michels MSc. Chair Organising Committee Common Vision Conference 2016 This report talks about each presentation that was given and highlights the many interesting discussions that followed. The conference used a communication facility called BuzzMaster, which allowed the participants to share comments via their smartphone. These comments are shown in the report as images. The abstracts and presentations can be downloaded from the conference website – <u>www.cvc2016.nl</u>.

Day 1 Monday's Welcome Session

Frank Tierolff opened the conference and gave a speech where he highlighted the importance of working together in these rapidly changing times. The roles of cadastre and land registry agencies are changing and together we are stronger (using the analogy with sports).

Hans Mommaas presented "How (Smart) data may unlock our imagination (or not..)". He took the audience along in the urgent need for exploring new pathways by using the information explosion to open new experimental platforms. The PBL Netherlands Environmental Assessment Agency is the Dutch institute for strategic policy analysis in the fields of environment, nature and spatial planning. Monitoring data are a corner stone for PBL's assessments, policy evaluations and outlooks.

He talked about the information pyramid and where the data of cadastre and land registry agencies could play an important role.



Hans Mommaas showed some illustrations and suggestions from the 'shop floor' of the PBL Netherlands Environmental Assessment Agency, between 'science' and 'creativity', between 'assessment' and 'exploration'.

Smart cities, the end of simple registration?

This session took a broad look at smart cities. The effect that cadastre and land registry agencies can have on smart cities. The choice between individual projects or an interwoven network of partnerships. The change of customers' needs and usage, how can we meet user demands? More involvement from society using for example crowd sourcing and the impact on the quality of data registers and related privacy risks. The sustainable development goals (SDG) of the United Nations. Open and linked data for use in smart cities.

After the presentations, a dialogue started on how the concept of a smart city could influence our views on the way property and land is registered. It seems that our role in smart cities or smart urbanisation concepts are not yet clearly identified. Society needs to find a way for example to implement sustainable energy sources in cities rather than the use of traditional fossil fuels. There are increasingly more vacant office buildings in cities. For the future we need to make our cities sustainable (Dubbeling). High Precision Positioning is very useful for creating smart cities. They can be used for many applications including autonomous vehicles (cars but also agriculture operations), guidelines for visual impaired, indoor navigation, investigating accidents and managing water ways. The High Precision Positioning opportunities are endless (Rijsdijk).

Of course we will remain responsible for the delivery of precise and accurate property and land information (data). However, it seems that our position is becoming more active in laboratories and scenario modelling as well as in the design of new city concepts. Cities as dynamic and pragmatic environments seem to challenge us to take on such a role and position especially towards meeting the sustainable development goals (SDG) of the United Nations.

Discussion insights

How do smart cities in Europe affect the Cadastre and Land Registries?

Who creates the vision of a smart city and what should it be like (Dresscher)? The Cadastres should be flexible and ready to register new kinds of objects like roof tops or perhaps even empty spatial areas for future cable cars. It is Cadastre's ambition to step up to society and be a key player in formulating a vision for a smart city. We are experts in spatial planning. We hope to enhance trust from society on property and land ownership issues. (Rijsdijk). We have the data and we can give expert spatial planning advice, so we should want to be moving towards smart urbanisation. The people or residents are the key players who will be living there and using it. Urbanisation is a better word than city (Dubbeling). Indeed we need to create a link between authoritive data from the official cadastre agencies and crowdsourced data by using metadata and semantic models. We cannot keep on sitting on the goldmine. People are the key, our goal of a smart city should be to make them optimally happy. City and citizen should go hand in hand, you have to keep the Earth alive! (Bregt).

The audience sent in some remarks.



How does open and linked data stimulate innovation in Europe and thus creates smart cities?

We all want open and free data as well as accurate and reliable data. Such data comes with a price tag to collect and maintain. We need viable financial resources (Dimitris). It is a challenge to find a financial model that is cost effective (Pekka). During the 2016 FIG Working Week in New Zealand, an interesting story was told. After some major earthquakes hit New Zealand some years ago, which caused much damage to buildings, all citizens were invited to share their views on what they would like a city to look like. There were more than 100K reactions received. The government effectively used this citizen input to give direction to plans to re-create many areas (Tierolff). Whilst we are all in agreement that citizen input is crucial, the question is raised as to how to organise this collaboration. We all need to starting defining a model to get citizen input. From past initiatives, it is clear that in big cities, more people participate. It is a bit 'hip' to participate, which makes its popular. However in rural areas and areas where there is much ethnic diversity, it is harder to get citizens to share their input. Models need to be created in order to get all citizens to share ideas on their definition of a smart city; all genders, all ages (generations), all persons. This is a bottom up approach.

New Zealand is a good example of how it can be organised (Dresscher).

O How does Open en Linked Data stimulate innovation in Europe					
worthless. The data is stupid - the user has to be smart. <i>Ingrid Vanden</i> <i>Berghe</i> Ownership by the citizens	(and thus create Nee ideas by other entities and persons. But: Take a close look at the quality of the data and the conclusions that Will be drawn	Open and linked data enable citizens participate actively in the planning process	It helps to understand why things happen eg the example of airbnb. And can help finding solutions to problems we weren't even aware we had t <i>Elly Johannes</i>		
Rob Van De Velde Clearly it boost Carlos Alonso	Open and Linked Data makes data accessible Jochgem Gunneman	Dimitris Rokos Innovators can work on real innovations, not spending time for	Innovation requires open access to multiple data sources. Roger Longhorn		
Gives a great opportunity for new applications MAURICE BARBIERI	We need to define a semántic model and a proccess to link data Jesus Camy	innovative solutions for getting data <i>Elita Baklane</i> Ansherea	It enables us to understand situation on locations better and to create ideas about our		
So far not much. Needs to be further adopted <i>Walter T. De Vries</i>		Smart connections, sustainable planning Mairolt	future cities <i>Frank Tierolff</i> Go step by step <i>Željko</i>		
concept of open data, how open? Maria José Silva		Enable innovative use by new actors Pia Dahl Høigaard	it makes new innovative applications possibel Michael Germann		



Let's talk about Marine Cadastre

This session focused on the results of a marine cadastre project that was carried out by the Common Vision partners entitled: Marine Cadastre: a support for the Blue Economy? What is the link with Blue Economy and Blue Growth? What are the consequences of the UN Convention of Law on the Sea (UNCLOS) and EU's Integrated Marine Policy? What are the effects of water management on the cadastre and land registers?

We were introduced to the status of marine cadastres in Europe and we were shown examples from other countries including USA and Canada. Australia and America have advanced marine planning information management systems. Over 70 percent of the planet's surface is covered by water, the majority of which is in the world's seas and oceans. Half the world's population lives within 60 km of the sea, and three-quarters of all large cities are located on the coast. 23 out of 28 EU countries have a coastline whereas the EU's coastline is 7 times as long as the US' and 4 times as long as Russia's (Balla).

Europe has a potential blue economy exceeding 500 billion Euros/y. For cadastre and land registry agencies it seems that we have to join forces to take advantage of these developments. Legal certainty is a key element for developing the blue economy.

The United Nations sea law is known as the UNCLOS. Current legislation should be harmonised for Europe and perhaps new legislation is needed, our terminology is still unclear (de Latte). We might suggest that a marine cadastre component is added to the national spatial data infrastructure. Interesting situations in France and Sweden were shown. France has the intention to add coastal marine data to their French 3D Geoland Portal (Smith) and a database for disposition of rights on existing private and public water for i.e. fishing. In order to create and maintain a strong functioning maritime SDI, parties really need to work together: property and land institutions, coastal authorities, fishing and marine environmental groups (Andersson). In July 2014 the EU Council approved a Directive for the creation of a common framework for Marine Spatial Planning in Europe. Every country may form its own spatial planning framework and there are minimum common planning principles for interregional seas. Pending questions include the relationship with spatial planning and the national and European institutionalisation.

Discussion insights

We saw a need (77%) for a marine cadastre in Europe that focuses on registration of rights and restrictions. A percentage of 69% disagreed with the statement that a marine cadastre should be limited to the territorial sea to keep costs low and meet priority needs.

We thought that a national mapping agency or cadastral agency should be responsible for maintaining official marine cadastre information. The others hydrographic office (8%), National agency devoted to marine cadastre (19%), trusted third party organisation (3%), international organisation (19%) and none of the above (3%) were less expected.



We found out that a marine cadastre is indeed (85%) of added value for marine spatial planning. It is the provision of data on rights for 11%, for the registration of boundaries (8%), for distributing legal, administrative and spatial info (71%) end 15% decided that a marine cadastre is not required.

On the question about how will the Marine Cadastre development deal with different organisations recording data on sea environment. The audience responded with an 81% for corporation.





What do we need for smart interoperability?

This session focused on how to connect different processes and information to underpin or provide answer to the information society. Information use and collection stands on its own anymore. Harmonisation, semantics and standardization are necessary. How can we combine our strengths and what has to be improved? How can we optimize the impact and added value of developments achieved in IMOLA, ISA, ELF and EULIS? How can we stimulate politicians to harmonise legal frameworks between countries so that cross border transactions in real estate and exchange of related information can be more effective?

We found out that a holistic approach is needed for [inter]operability between public administrations, businesses and citizens. Citizens are the masters of social enterprise "even back in the French Revolution we were talking about open data, according to a French law maker in 1788." A list of actions to achieve interoperability in a single digital market was presented (Abecasis). In 2010 the European Interoperability Framework (EIF) was created and revisited in 2016.

Twenty-four countries have already implemented EIF as a basis for their public services. This framework will be revised in the coming months based on best practices. The ISA is the EU program (2016-2020) for achieving Interoperability Frameworks and Solutions for European public administrations, businesses and citizens (ISA2). This program contains 9 work packages including geospatial solutions (package 4). The European Location Framework (ELF) is meant to be the gateway to pan-European maps and cross-border information offering a lot of benefits. ELF is connecting everyone to authoritative geo information data for Europe. The power of geo information is being unleashed like never before. ELF is a gateway, a point of access and meets INSPIRE implementation demands.

Combining various sets of geo data into geo information can lead to predictive modelling. The difference between public authorities' geo information and Google geo information is that one is authentic and highly accurate whilst the other is quick and easy. Google has CROWD trust, but cadastres have trust too. Cadastres need to migrate to the role of 'provider to society" so that geo data can become GeoTRUST (in the app) with a high frequent refresh rate.

Digital private services are developing faster. The number of devices is growing explosively as well as available apps, services and data. How do we connect with both the governmental and the private services? It was suggested to break down the wall between them.

Discussion insights

We have to look after the needs of the market. There is no time for a long-term strategy and building scientific theoretical information. Our community can only succeed if we act and stop talking. Nowadays time is going too fast for that (Barbieri). Three countries score high on digital public services (NL, DK, ES). These countries also score high on allowing access to key register towards enhancing eServices (eID, eDocs, etc).

How can we still connect, get onboard. Increasingly, people will be getting data/information from non-official sources. An example was given: If I am taking a hike, I am happy with Google data. If I am boarding a plane, the data better be authentic (Vanden Berghe).





We concluded that the base registers are the accelerators of public modernization. But "trust" is our role to citizens and to ensure them that they can trust data. Public Consultations reveal lots of lack of trust (Arvanitis).

There is a mismatch between what we are doing in eGovernment discussions. We need to come out of our niche, go partner with third parties, for example Google. Create cooperation (Vanden Berghe). The question is "What are the elements that could be agreed among them. Glossary? Vocabulary sharing? We are reaching for cross border cooperation" (Abecasis).

Do not make things too complicated. <i>Ingrid Vanden Berghe</i> Look after the needs of the market	Reuse best practice,dont invent the wheel! Ingmar Vali Talk and learn from each other. Understand the needs of partners.	become sidelined by global firms who are already partnering <i>Andrew Loveless</i> Focus on solutions not problems, and deliver! <i>Mick Cory</i>	Work closely with our customers ~ be clear as to who they are and what they value most from the differentiated offer we can provide David Henderson
MAURICE BARBIERI Know each other better and profit our contributes Maria losé Silva	Daniel Steudler Just do it! Pekka	Work with expert partners Anouk Povel Adapt to an interoperable digital crossborder market by leaving behind	Be pragmatic and solve one problem at the time and not find the perfect solutions Lars Häg
Prioritise what needs to be tackled first Julie Barry		our traditional perceptions of our work Dimitris Rokos	We must be more generous less selfish <i>Amalia Velasco</i>
		Lets have legal aspects for us, not against us <i>Mairolt</i>	What do users want? What is fit for purpose? <i>Roger Longhorn</i>
		Analyse all avail Sol Mateu	

How can we combine our strengths and what needs to be improved?



Tuesday's welcome session (June 7th 2016)

Joep Crompvoets presented "Smart Governance for migrating to a Smart World". A Smart World is needed to stimulate prosperity for everyone in the world and to connect everybody to each other. Therefore we all need to better define what is meant by of *smart* before we can begin to understand how to migrate to a Smart World.

A Smart World is not Utopia nor an imaginary place and it is definitely attainable. It is world where everything is connected to each other. It consists of innovative and interactive technologies or the internet of things. It offers data clouds, digital devices, interoperability, sensors, big data, social media, governance and so on....

The human race is creating more and more data every day. Think of your tweets, your Facebook messages, LinkedIn stories as well as posted photos, videos and endless other online comments. It's all data. It is estimated that each person is producing 300MB of data per day. There are lots of people socially connected and government is investing more in cloud solutions.

Microsoft is investing heavily in Research and Development on "cloud technology and security services". Only 0,5% of data is analysed. Social media is still in its infancy stage, it is only now developing. It is anticipated that cloud computing will cross the \$270 billion mark by 2020.

Governments have an important role to play in these developments. The criteria for good governance are about performance, responsibility, accountability, transparency, policies for guaranteeing results, rights and duties. But there is still a bottleneck for the development of a Smart World.



In order to develop a Smart World with so many connections and data , there is also a strong need for clear laws and rules (35% of the audience agreed), competition and market (14% of the audience agreed) and a profound cooperation (51% of the audience agreed). An interdisciplinary team of



different expertise's is needed for providing good governance so that we can create meta governance clouds over a public cloud and membership clouds.

The main beneficiary of a smart world are the citizens (93%) and the private sector (7%). So we can conclude that the main benefit of a Smart World for public administrations is a better service delivery to our citizens and private sector.



Before an institutional change can take place, a shift needs to be made towards willingness; let's communicate!!!

The future of location infrastructure

Cadastres, land registries and mapping agencies will become more and more key players in national spatial data infrastructures. Will this be the end of old fashion land registration? Interoperability will prevail in the cadastre and land registry domain. Think about cables and pipelines portals, 3D cadastre systems and geodata stores such as the Dutch PDOK that house (nationwide) datasets provided by government organizations. What is the impact of ELF, EULIS and Inspire and how can we optimize the added value of these frameworks.

We discussed the development of the European Location framework (ELF) as a result of long-term European cooperation. ELF is the consequence of many years of work. In 1992 in Amsterdam a meeting took place, GIS Europe. There the first conversations took place on layers on maps and seamless data that led to the realisation of ELF. We need to continue this dialogue (Pauknerova). ELF is a strong example of cooperation among public authorities..

The European Location Service (ELS) began in 2013 and nowadays consists of 12 features running on authentic data from cadastre agencies and offers a search via an inter-active map. The coverage of Europe is minimal but it is growing. ELS could be huge. It needs a financial plan to become sustainable and to remain up and running at all times for a long long time. With the help of the EC and EuroGeographics for the technical infrastructure, we can reach our long-term goal and obtain full European coverage (Mick Cory).

Eurogeographics will take ownership of the system architecture. But the content is key. The Netherlands' PDOK (public services on the map) geodata store turned out to be an instructive case study with increasing numbers of open datasets and numbers of users. The Netherlands had to fulfill the Inspire demands of making web services available to a broader audience. PDOK was the answer. Users are strongly invited to bring in their ideas and improvements. PDOK is cost effective and user friendly and a good example of cooperation among various governmental and public authorities. PDOK receives millions of hits each month with a big demand for authentic cadastral data. PDOK delivers without advertisements or pop-ups. At present, municipalities are not obligated to make their data available via PDOK but we are working hard to get them all on board. On the European level, research for solutions is ongoing and interesting cross border cases have already been officially registered. Cooperation for sharing views and finding common ground between countries has already started.

The 3D cadastral parcel is hard to read, but a 3D visualisation is much clearer which saves time and costs. The Delft train station, the first Dutch 3D cadastral registration, was shown. It was realised through a successful collaboration with Delft University, Kadaster and the notary community. All parties involved saw their worlds open up, this 3D solution makes land registration much easier. The Rotterdam railroad which was registered in 2D, cost many weeks to complete. A 3D visualisation costs a fraction of that time.

Differences between the volume parcels of Queensland were also discussed. The combination of architectural data (BIM) and juridical spaces showed the added value. Research will continue, however a Dutch newspaper suggested that the Kadaster is ready to go completely 3D. However, it will take some time to reach this innovation.

Discussion insights

"The ELF Project succeeded in delivering a solid foundation for developing future European Location Services (ELS)", the audience stated. Only 3% believe that ELF is more than this. It can aspire to Smart Cities, we need to go beyond today's ELF (Cory).

The main limitation for the future of a full-fledged 3D cadastre implementation is juridical (53%), 33% of the audience believes in a registrative limitation and only 14% believes in technical restrictions. Some research on this subject has shown that the problem with implementing 3D has more to do with the limits of today's registration system than juridical, as the audience voted (Stoter). It is an important argument, it depends on how cadastre and land registry agencies are set up in each individual country. In Switzerland, there are two separate organisations. The land registry is not interested in 3D. We, at the cadastre, see a need for it. Land use planning will help push this up the political agenda (Steudler).

The statement "3D cadastre is only needed at the level of individual construction and not for every property in the registers map" had interesting results. We conclude that the audience was more or less divided on this issue, 48% agreed and 38% partly agreed. Using 3D you can see how properties interact with each other (not physical but juridical boundaries). The right of easement, for example, does make this difference (Stoter).



Integrated and interconnected portals are the best way to open up information and serve the society (60%), 40% of the audience disagreed with this statement. Portals are supply driven. They offer lots of information but the portals do not meet user needs. There is a need to and demand for being able to find data. Can portals organise autonomous data (Salzmann)?

The Cadastre in the Czech Republic do not want to make all of their data available via open data portals. They prefer to keep some types of data in-house, and make it available upon request after reviewing. Other data can be open and will be made available in portals (Pauknerova).



The future of ELS is fully depending on the willingness to share topographic information cross border and free of share.



We have to respect the fact that some countries charge for their data. You have to fund the gathering of the data. Some countries get funding from Ministries but not all of them. This is why ELF/ELS needs a strong financial model besides the willingness to share information cross border and free of charge (Cory).

Cadastre as part of e-Government

Cadastres have become a valued part of e-Government. We witness an ongoing development towards i-Government and i-Society. Cadastral information is part of the information suite that society requires in the spatial and legal domains. We increasingly work in networks, information is increasingly linked and all parties in the network are actively involved. This has an impact on how we use and value the contributions of the (professional) crowd, determine the quality of linked authoritative data and touches aspects of access to data, personal data protection, ownership of data and quality.

A new European Justice portal will be implemented before 2018. It is the intention to get each national cadastre and land registry agency throughout Europe connected. The Land Registers Interconnection (LRI) project will give DG Justice funds to get more countries connected. It is not clear what will happen with the current EULIS (European Land Information Services) portal. This portal will be taken over by the DG Justice. There are 6 countries connected to the EULIS portal at present.

The problem is however that any European Commission party is not interested in non-EU countries and that worries EULIS. Thus the EULIS network organisation wants to remain in existence until at least 2018 during the LRI project. EULIS believes in the Commission, that all will go smooth (Wouters). In addition to the portal, there are parallel initiatives to facilitate the delivery of public services across borders for the benefit of all, like the e-signature, the e-invoicing and the e-id initiatives.

Creating building blocks is the core business of CEF (Connecting Europe Facility). The known building blocks are eID, eDelivery, eSignature, eInvoicing, Automated Translation. They are the result of several large scale pilot projects across several policy levels. The message that CEF wants to bring to the national cadastres, land registries and mapping agencies is to re-use these building blocks and place the user at the centre. Whatever is already on the shelf should be re-used. The Lithuanian case showed an implementation of the European Regulation on Electronic Identities and Trusted Services. They use the building blocks in their eGovernment gateway. We find each other when we share a problem, for example inter-connection between countries on foreign court issues (Knevel).

The Estonian case showed the importance of government support for e-services initiatives in their cadastre and land registry systems. This system was set up after the reform in 1992 with Internet technology. Estonia has 1.3 million people and knows two separate institutions. There is a strong relation between cadastre and the population register. The population and land register give each citizen a unique code. It is all digital in Estonia and works well, there is no fraud (Vali). Estonia is a good use case of eGovernment, of using the building blocks (Salzmann).

The Spanish case showed that also the bigger countries join up. The Cadastre and the Property Rights Registry jointly have coordinated a legal act in order to provide security and transparency to the real estate market. New regulations are designed to foster harmonization and reuse of information between Cadastre and Property Right Registration. Technology enables solutions that previously were impossible to think of. Technical problems were solved with a multidisciplinary approach and all stakeholders were actively involved. A smart model of coordinated interaction between the Cadastre and the Property Rights Registry was established with preservation of their autonomy. The Spanish citizens receive a good service right now.



The case of Her Majesty's Land Registry (HMLR) made clear that long time traditional services don't need to be a burden but can be transformed into customer oriented land electronic services interfaced to web based map search solutions. Ordnance Survey is extending its capabilities in the different paradigms of today to fulfill the user demands in the "Geo-vation" initiative. Taxation in Great Britain is not cadastre based. It is based on ownership data that is provided by Ordnance Survey. Traditionally, it was the role of the HMLR to provide confidence to the economy (Robson). Her HMLR is working on setting up eID, eSignature and all by using building blocks. Technology used to be governmental driven (thru big investments) but today there is a demand from the citizens to make processes easier and thus digital. Portals house data that is accessible in real-time and supports whoever and whenever needed. As opposed to the Government publishing data at their own convenience, their authentic data has to be useful and give value to a purpose. We call it "Geovation".

There are important legal aspects of a Smart World, for example the question "who owns the data?". Smart and legal solutions go hand in hand. Land is immovable but you can create a digital object of it. eConveyencing is the process of transferring property and/or land digitally and this opens up possibilities for theft. There is another issue; the language of the law is not in zero's and one's. It is quite tricky to translate this into a digital Smart World. The advice to registrars is to focus on your input, your profession will change but you will still have a role to play (van Erp).

Finally we were introduced in the current blockchain principles with high potentials for multiple purposes and applications. The Bitcoin as a crypto currency was mentioned. Very controversial! The variety of systems in Europe although still challenge us with many questions of standardization and harmonisation.

Discussion insights

In relation to the blockchain idea's we asked the audience the question below.



Anouk Povel-Michels MSc. Chair Organising Committee Common Vision Conference 2016 It is establishing new for me and therefor difficult to give an opinion (Henderson). It is of interest to us (HMLR) but for me personally (Robson) is a challenge.

The audience believes that in 20 years the role of cadastre and land registry agencies will be as part of eGovernment infrastructure (76%). Roles as full service providers, certification institutes and other is divided among the other 24% of the audience. Cadastre and land registry agencies will change to a more service oriented market and will take over present tasks (Wouters). In Estonia the cadastre and GIS information is public. Anyone can see the map on the internet without any restriction. Also land titles- ownership, mortgages are public. The information should be in the context of eGovernment very open. We have no fraud because of this (Vali).

With both pride and gratitude, we look back on a successfully held Common Vision Conference 2016 in Amsterdam.

Final Words

On behalf of the Organising Committee, the Dutch Kadaster expresses its sincere thanks to all participants for their contributions and enthusiasm.

The Common Vision Conference 2017 will be held in October 2017, organised by the Bundesamt für Eich- und Vermessungswesen (BEV) of Austria, including the participation of WPLA and FIG.



The last question proposed: