THE INTEROP-VLAB: A EUROPEAN SUCCESS STORY

by

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March 2021

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"A likely impossibility is always preferable to an unconvincing possibility"

(Aristotle)

Introduction

When I started, in 1986, to work at European Commission's DG XIII (now DG CONNECT) I quickly became aware of the importance of collaboration and cooperation in building and realizing ambitious projects. My first assignment was in the Directorate responsible for the RACE programme (R&D in Advanced Communications Technologies for Europe, 1988-1992), headed by Roland HÜBER. The programme implementation included an extensive collaboration of telecommunications actors in planning the programme and in development of the technical Workplan. Continuing collaboration with industry and telecommunications operators allowed a yearly update of the both Programme Workplan and the workplans of each project. In addition, regular meetings between the consortia making up the programme ('Concertation Meetings') ensured that there was a continuous informal process of progress monitoring and adjustment, where necessary, by all projects. The Concertation mechanism was actually central to the collaboration achieved within the RACE programme as it led to a multiplication factor in the results accomplished by the partners for the investment they had individually made.

In January 1993, I joined the Directorate responsible for the Telematics Applications programme, headed by Michel RICHONNIER, in which the Concertation mechanism was reinforced by a Clustering mechanism whereby all individual projects were 'clustered' according to the key technologies used or the socio-economic objectives set. (For example, the unit which I headed from 1999 to 2002, Telematics for Public Administrations, had two clusters: Smart Government and e-Democracy.)

Clustering and Concertation were then two interdependent tools, which I systematically used in the strategic and operational management of the Research Framework Programme Units I was responsible for, even after 2002 when the massive reorganization of the Directorate-General and the arrival of a new generation of managers were followed by the rapid dereliction of these tools.

Though Concertation and Clustering lost ground in the European Commission's DG INFSO at the turn of the century, the 6th Research Framework Programme nevertheless introduced two new instruments – 'Integrated Projects' and 'Networks of Excellence' – that were a strong response to the need to reach excellence through the mobilization of a critical mass of resources and the increased importance given to 'integration' of efforts through lasting joint activities and partnerships.

My purpose here is to conjure up a few aspects of the story of one of these Networks of Excellence – the INTEROP Network of Excellence – which has been a true success story and which almost 15 years after its termination I still enjoy the honor and privilege to support as its Ambassador.

At the origins of Networks of Excellence

During the implementation of the priority thematic areas of the 6th Research Framework Programme (FP6, 2002-2006), Networks of Excellence were designed to strengthen scientific and technological excellence on a particular research topic by networking together at European level the critical mass of resources and expertise needed to be a world force in that topic. This expertise was networked around a joint programme of activities aimed principally at creating a progressive and durable integration of the research activities of the network partners while, of course, at the same time advancing knowledge on the topic. The meaning of "integration" included "research activities in common", "common use of resources", and "common management".

This expertise was deemed to be networked around a "joint programme of activities" aimed principally at creating a progressive and durable integration of the research activities of the network partners while, of course, at the same time advancing knowledge on the topic. Networks of excellence were therefore an instrument designed primarily to address the fragmentation of European research and hence, to restructure and reshape the way that research in Europe was carried out on particular research topics.

The said joint programme of activities consisted of at least the following components:

- a programme of jointly executed research, possibly of a long-term character and multidisciplinary;
- a set of integrating activities aimed at bringing about the restructuring and reshaping of how the participants carry out research on the topic considered;
- a set of activities designed to spread excellence, including networking and training activities to help transfer knowledge to researchers external to the network;
- the management and governance of the network, particularly important due to the ambitious goals of the networks.

FP6 financed 167 projects as Networks of Excellence, involving some 5 000 participants and a cumulative EU contribution of 1,2 billion euro (against eligible investment costs of 1,9 billion euro). On average, each Network of Excellence involved around 30 partners and an EU contribution of 7 million euro per contract.

The assessment of collaboration by the European Court of Auditors

In 2009, the European Court of Auditors released a Special Report No 8 on "Networks of Excellence and Integrated Projects in Community Research Policy: Did They Achieve their Objectives?"[1]

In view of assessing the extent to which Networks of Excellence had achieved their specific objective of promoting durable integration of the research activities of the network partners, the Court analyzed whether:

- The resources put into the network could be considered significant in relation to each participant's overall budget;
- Networks of Excellence had significant control on the deployment of the resources made available for the project;
- The high-level researchers initially envisaged had actually been involved in the project;

– Networks of Excellence had progressed towards long-term research activities and partnerships beyond the duration of Community funding.

The Court considered that, notwithstanding their success in promoting research collaboration and projects of reasonable quality, Networks of Excellence audited have not achieved their specific objective. In particular:

a) Most participants allocated a relatively small proportion of their research capacities to the network;
b) Networks of Excellence failed to reach control over resources made available and to ensure the adequate coordination of project activities. Participant organizations did not accept that Networks of Excellence's governance structures decide how networked resources should be used;
c) In most cases the involvement of key high-level scientists in Networks of Excellence was not realized;
d) Self-sustainable long-term research activities and partnerships were not achieved for any of the audited Networks of Excellence, thus making future collaboration subject to continued public support.

According to the European Court of Auditors, the results of the project reviews carried out by the independent experts showed that full restructuring of activities and integration between partners took place in less than two thirds of the Networks of Excellence assessed (59 out of 101). The Court's assessment was that Networks of Excellence often put in place only traditional forms of research collaboration on individual actions, instead of coherent and long-term joint activities and partnerships. Two main factors, according to the Court, could explain the difficulty that Networks of Excellence had in achieving lasting integration.

Firstly, the goal of setting up a new kind of intra-European network, by integrating institutions previously in competition with each other, requires a new approach to research collaboration. The reluctance of many organizations to engage in a long-term commitment did not favor this aim. Public research centres, at the heart of the Networks of Excellence's objective, found difficulties in integrating with each other due to their institutional structure and budgetary constraints. For industry, the treatment of intellectual property was a matter of particular concern.

Secondly, given there are areas where substantial integration can only be achieved progressively, in practice the maximal duration of five years proved not to be realistic. However, in several cases the project duration had been even reduced during the negotiation stage.

The Court concluded: "*The fact that most Networks of Excellence financed under FP6 have not reached durable integration raises the question as to the conditions under which it is justified to continue their financing beyond the initial duration, under the ongoing Seventh Framework Programme (FP7).*"

The Court's assessment did not apply to the INTEROP Network of Excellence, which actually did so well in fulfilling its promises that it was recognized by then European Commission's Directorate-General for Information Society and Media, now Directorate-General for Communications Networks, Content and Technology (DG CONNECT), as the Project of the Month in March 2008.

The INTEROP Network of Excellence

Rationale and Objectives

At the origin of the INTEROP Network of Excellence was the observation that the lack of interoperability between ICT systems was becoming a strong bottleneck in the collaboration and co-operation of enterprises. Organizations involved in such endeavors have to exchange business information and have to have the same understanding of the meaning of the exchanged information.

The purpose of the INTEROP Network of Excellence (2003) was to set-up a durable, self-sustaining Europe-wide virtual laboratory dedicated to Enterprise Interoperability with both academic and industrial involvement aiming to extract and exchange new knowledge from the integration of the three thematic domains identified in the IDEAS roadmap: Ontology, Enterprise Modelling, and Architectures & Platforms. Therefore, the INTEROP work programme deployed a collaborative approach with three aims:

- to integrate the knowledge in the three domains to give sustainable sense to interoperability;
- to structure the European research community and influence organizations' programs to achieve a critical research mass;
- to animate the community and spread industrially significant research knowledge outside the network.

The work programme addressed four work areas:

- Integrating Activities: (i) Knowledge Map, (ii) Method of Work and Platform Enabling Collaboration, Knowledge Sharing and Dissemination, (iii) Mobility of Researchers, (iv) Method for scientific integration and assessment;
- Joint Research Activities: (i) Common Enterprise Modelling Framework in Distributed Environments, (ii) Generation of customized enterprise software from Enterprise Modelling, (iii) Ontology-based Integration of Enterprise Modelling and Architecture & Platforms, and (iv) New architectures and platforms for interoperability;
- Spreading of excellence activities: (i) Training by e-learning, (ii) Dissemination and communication, (iii) Transfer of research to industry.

In a spirit of 'concertation' and collaboration, and with a view to ensuring efficient industrial impact, in particular through future standardization, INTEROP – a university-oriented project – and the ATHENA Integrated Project (https://cordis.europa.eu/project/id/507849/fr) – an industry-oriented project – were strongly encouraged to interact.

The INTEROP Network of Excellence Fact Sheet presented the project as follows in 2003:

"World-class competitiveness of European Enterprises, including SMEs, strongly depends, in the future, on their ability to concretize massively and rapidly networked dynamic organizations. New Technologies for Interoperability within and between enterprises, have to emerge to radically solve the recurrent difficulties - largely due to the lack of conceptual

approaches - encountered to structure and interlink entreprises' systems (information, production, decision). Today, research on Interoperability of Enterprise Applications does not exist as such at the European level.

As a result of the IST Thematic Network IDEAS, the roadmaps for interoperability research emphasizes the need for integrating three key thematic components: Ontology to identify interoperability semantics in the enterprise, Enterprise Modelling to define interoperability requirements, and Architectures and Enabling Technologies to provide implementation frameworks. INTEROP aims to extract value from the sustainable integration of these thematic components and to develop industrially significant new knowledge. Network's role will be to create the conditions of a technological breakthrough to avoid that enterprise investment be simply pulled by incremental evolution of IT offer.

To ensure efficient industrial impact, INTEROP proposes, as a validation and dissemination strategy, to have strong interactions with IPs in the same domain of interest, like ATHENA in which the major enterprise-oriented IT providers are involved, in particular regarding future standardization.

The Joint Programme of Activities aims to: integrate the knowledge in Ontology, Enterprise Modelling and Architectures to give sustainable sense to interoperability; structure the European research community and influence organizations' programs to achieve critical research mass; animate the community and spread industrially significant research knowledge outside the network."

INTEROP Key data

Grant Agreement ID	508011
Start Date	1 November 2003
End Date	30 April 2007
Source of EU Funding	FP6-IST
EU Contribution	€6,500,000
Project Coordinator	Université de Bordeaux I Sciences et Technologie (France)
Number of Partners	50

INTEROP factors of success

The success of the INTEROP Network of Excellence has been obviously due to the vision, strong commitment and dedication to Enterprise Interoperability of talented academics and engineers like Prof Guy DOUMEINGTS (Emeritus Professor at University of Bordeaux), Prof. Dr.-Ing. Kai MERTINS (Fraunhofer IPK), Prof. Jean-Paul BOURRIÈRES (Laboratoire de l'intégration, du matériau au système – IMS), Prof. Keith POPPLEWELL (Professor of Engineering Manufacture and Management, Coventry University), Raul POLER (Professor in Operations Management and Operations Research at the Universitat Politècnica de València – UPV), and many others. As Charles Darwin said long ago: "*It is not the strongest of the species*

that survive, nor the most intelligent, but the one most responsive to change", and this is why, I believe, thanks to the resolve and enthusiasm of its core group of leaders, the INTEROP Network of Excellence (2004-2007) constantly withstood the forces of high winds that characterize innovative environments and finally flew to success early and throughout its implementation.

Another (related) factor of success has been the trail of endeavors, experience, successes and failures, which the INTEROP leaders have constructed along their years of collaboration, both across Europe and internationally. I got involved in the field of enterprise interoperability during the spring of 2004, when I was appointed Head of the eBusiness Unit at European Commission's DG CONNECT, but in fact European interest in that field had started four years before with the launch of a road-mapping initiative called IDEAS (Interoperability Developments of Enterprise Applications and Software) as a response to repeated requests by European industry (Aerospace, Automotive, Manufacturing, etc.) to address the protracted issue of the cost of non-interoperability of information technology solutions. In other words, The INTEROP Network of Excellence was not only a new project – it was actually a journey, which its actors had begun long before, with its twists and turns, ups and downs, and yet a continuing commitment to fulfilling its mission. In my role in the eBusiness Unit, I could witness the commendable commitment of the INTEROP team to building and maintaining over the years a world-class organization with a dynamic corporate culture.

From INTEROP Network of Excellence to the INTEROP-VLab

The International Virtual Laboratory for Enterprise Interoperability (INTEROP-VLab, http://interop-vlab.eu) has always been for me a true European success story and, by the way, the demonstration that well managed, well-thought networks of excellence were a pathway for success of collaboration in Science and Technology[2].

The first meeting of the INTEROP-VLab took place on September 26th, 2007. This was only six months after the official launch of the INTEROP-VLab. With my DG CONNECT colleagues Peter FATELNIG and Joël BACQUET, we had praised the INTEROP-VLab community for the long and successful journey that had brought it from the IDEAS Thematic Network in 2002 to the creation of an international network of organizations bringing together experts from industry, academia and research centres. Just 18 months later, the INTEROP-VLab was more present and more powerful than ever with 8 member-poles, 70 partner organizations, and more than three hundred researchers spread over the world.

In recognition of the successful launch of the INTEROP-VLab, its proven capacity to live up to and deliver on its promises, and beyond that to the members' high working ethics, strong leadership and collaborative spirit, and durable commitment and dedication to the research excellence, the European Commission chose the INTEROP-VLab in May 2008 to be the official repository of Enterprise Interoperability public deliverables from the 5th Research Framework Programme onwards. This represented the European Commission's gratitude to the achievements of the INTEROP Network of Excellence and its conviction that INTEROP-VLab was just getting started and the best was yet to come.

Thanks to the mediation of my colleague Cristina MARTINEZ, former Project Officer of INTEROP and then Head of the "Future Internet Enterprise Systems" (FInES) Cluster, Guy

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[2]   The history of the INTEROP-VLab can be found in the following book: ARCHIMEDE 5bernard) and VALLESPIR (Bruno) (eds.), "Enterprise Interoperability: INTEROP-PGSO Vision", iSTE Ltd and John Wiley & Sons, Inc., 2017.

DOUMEINGTS had a first meeting on January 19th, 2009 with two high level officials from Directorate-General for Enterprise and Industry (now Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs). This was a mark of recognition and for me a genuine satisfaction and sense of fulfilment to see the enhanced potential of the INTEROP-VLab to cooperate in the transfer of information regarding Enterprise Interoperability.

The INTEROP-VLab is today a virtual, i.e. distributed and coordinated research organization, which is capable of aggregating existing and future research laboratories in close connection with industry, to achieve a number of goals that each single participant organization could not reach. It animates a network of 9 regional poles, bringing together leading academics, research centers, industrial stakeholders, SMEs, from 9 European countries and from China, and it provides an access route to 200 top specialists in the domain of Enterprise Interoperability. The INTEROP-VLab aim is to provide Manufacturing Modelling, and Simulation and Method for:

- the definition and implementation of Performance Indicators and Impacts;
- Business and Technical Requirements elicitation for manufacturing solutions;
- implementation of Factory of the Future (Industrie 4.0) solutions;
- development and implementation of Supply Chain Management;
- implementation of Internet of Things solutions.

Even if it entails personal exposure, I would like to say that I always fully supported the INTEROP-VLab Management's commitment to carrying on its development by recruiting new poles and partners and by strengthening the relationship between the coordination body and the poles. Further integration between these two entities, cohesion by adherence to the same scientific objectives, and long-term collective commitment to the content of what constitutes the essence of the INTEROP-VLab – research, dissemination and education – have been for me the key to durable success.

INTEROP and INTEROP-VLab: A trail of innovative projects

Acronym	Title	EU Program	Status
Smart4Health	Citizen-centered EU-EHR exchange for personalized health	H2020	Running
DIH4CPS	Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs	H2020	Running
I4Q	Industrial Data Services for Quality Control in Smart Manufacturing	H2020	Starting 2021
CPMSinCPPS	Cutting edge Process Modelling and Simulation	Open call	Completed
PSYMBIOSYS	Product-Service sYMBIOtic SYStems	H2020	Completed
C2NET	Cloud Collaborative Manufacturing Networks	H2020	Completed
FITMAN	Future Internet Technologies for Manufacturing	FI-PPP	Completed
TELL ME	Technology Enhanced Learning Living Lab for Manufacturing Environments	FP7	Completed

MSEE	Manufacturing Service Ecosystem	FP7	Completed
ComHigh Tech	Increasing the competitiveness of enterprises by improving and specializing human resources in the field of new technologies, in a knowledge-based society and for a durable development	EU Social Fund	Completed
UNITE	UpgradiNg ICT excellence by strengthening cooperation between research Teams in an enlarged Europe	FP7	Completed

The future of the INTEROP-VLab: A sharp taste of the Internet of Things

If we looked back to the archeology of "enterprise interoperability" we would observe that the phrase has changed its meaning significantly over the years. Changes in word meanings – a process called *semantic shift* – happen for various reasons and in various ways. "Enterprise interoperability" has changed towards broadening (it has become more inclusive) and amelioration (it has risen in status). In the late 1990s, "enterprise interoperability" was considered as the ability of systems or components to exchange information and use it without requiring a specific effort from the users of these systems. Today, "interoperability" is about connecting (i) people (i.e. making people in one company or between different companies to work together beyond their respective organizational silos and corporate cultures), (ii) data (i.e. the simultaneous operation of different data models – hierarchical, relational, etc. – and the use of the different query languages, (iii) service (i.e. solving the syntactic and semantic differences as well as finding the connections to the various heterogeneous databases), (iv) process (i.e. how to make different processes work together, whether they concern the internal processes of one company or to the processes of two or more companies), (v) business (i.e. a harmonized way of working at the levels of organization and company in spite of the different modes of decision-making, methods of work, regulations, culture of the company and marketing approaches, so that business can be developed and shared between companies). In short, interoperability must consider social, political and organizational factors.

The INTEROP-VLab quickly made a major contribution to the upgrading of the meaning of the word "interoperability". In EU-funded projects like MSEE and FITMAN, for example, it addressed the technological, semantic and business innovation dimensions of interoperability. This shift from merely technological interoperability to semantic interoperability, and beyond, has been conducive to progress in the Internet of Things. In particular, "agreement on the context and meaning of the data being exchanged is key to establishing effective and accurate information models, enabling semantic interoperability between applications, subsystems and devices in Industrial Internet of Things systems." [3]

I applaud this evolution, which I would like to describe briefly by conjuring up three different ongoing EU-funded projects.

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[3] LOFTUS (Arti), "Semantic Interoperability and Standardization of Information Models to Advance the Industrial Internet of Things", IoT Evolution, March 05, 2021.

The Smart4Health project (https://smart4health.eu/en/) aims to develop a prototype application that allows users to collect, manage, share and donate their health-related data throughout the European Union, thus realizing the vision of every citizen of the European Union being able to access her own health data easily and securely within each member state.

The Smart4Health prototype will comprise the 4HealthPlatform (4HP) data layer connecting with the 4HealthNavigator (4HN) portal for services and applications. Using the 4HealthPlatform, citizens will be empowered with electronic healthcare record exchange, personal connected health services, and the ability of data donorship to the scientific community. Activities surrounding the Smart4Health platform will enable citizen to manage, collect, access and share own health and healthcare data.

The project provides an easy-to-use, secure, constantly accessible and portable health data and services prototype within the EU and beyond, thus advancing citizen health and well-being, nurturing digital health innovation by enhancing interoperability and bridging the gap between political intent and citizen agency – citizens managing own and own-generated health data in the EU and beyond, with data in actionable formats; providing for smart processing and analysis; citizens digital Health and Care with validated open source interoperability assets and new tools; secure, seamless communication of health-related data through clarity and oversight.

Smart4Health started recently the registration and collection of data for the prevention of low back pain through the Internet of Things[4].

DIH4CPS – IoT-driven Interoperability for Digital Innovation Hubs

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[4]   https://www.jornalmedico.pt/atualidade/40740-projeto-smart4health-arranca-com-os-primeiros-case-studies-para-a-prevencao-da-dor-lombar.html

The DIH4CPS project (Fostering DIHs for Embedding Interoperability in Cyber-Physical Systems of European SMEs) aims to support 'Smart Anything Everywhere' initiatives and Europe's overall strategy of Industry digitization, so that any company in Europe has access to a Digital Innovation Hub (DIH), supporting it in its digital transformation. The objective is to leverage the network of Digital Innovation Hubs and solutions providers on a European scale, focused on cyber-physical systems, the Internet of Things, and embedded systems.

Backed by the INTEROP-VLab, DIH4CPS (https://dih4cps.eu) can innately build on an extensive existing network, add value to its existing knowledge capabilities, and guarantee the sustainability of the growing DIH network.

The project expects to leverage and sustain its impact far beyond its duration, thus creating a vibrant, overarching and cross-sector one-stop-shop for collaboration between SMEs, DIHs and technology providers.

I4Q – IoT-driven Interoperability for Manufacturing

Since the amount of industrial data coming from smart small-size and cost-effective interconnected factory devices is huge, the challenge today is how to guarantee data reliability with functions grouped into five basic capabilities around the data cycle: sensing, communication, computing infrastructure, storage, and analysis and optimization.

The i4Q innovation action (Industrial Data Services for Quality Control in Smart Manufacturing) aims at developing a Reliable Industrial Data Services (RIDS) solution based on the Internet of Things (IoT) – actually a complete suite consisting of 22 i4Q solutions able to manage the huge amount of industrial data and including simulation and optimization tools for manufacturing line continuous process qualification, quality diagnosis, reconfiguration and certification for ensuring high manufacturing efficiency, thus leading to an integrated approach to zero-defect manufacturing.

The i4Q innovation action (https://www.i4q-project.eu) will be demonstrated in 6 Use Cases from relevant industrial sectors (consumer appliances, wood industrial equipment, metal machining, ceramic pressing, plastic injection, metal industrial equipment) and representing two different levels of the manufacturing process (machine tool providers and production companies).

I4Q is of particular importance to me because of its adherence to the concept of "sensing enterprise", which I and two of my colleagues in DG CONNECT had suggested in 2013[5].

Conclusion

The INTEROP Network of Excellence, which reached a successful conclusion in 2007, was followed a few months later by the creation under Belgian law of the European Virtual Laboratory for Enterprise Interoperability (INTEROP-VLab) – a networked association whose members are pooled in nine autonomous "Poles", including eight in Europe and one in China (the Harbin Institute of Technology). Each Pole is a legal structure composed of universities, research centres, companies or associations of SMEs, which cooperate in a same geographical area and have expertise in the Enterprise Interoperability, Enterprise Systems and Applications, and Future Internet domains. The activities of the Poles are synergized at European and international scale by a light coordination structure, which has demonstrated so far efficiency and effectiveness in coping with the heterogeneity of local environments and the need for synergy at the global level. Each Pole defines its own internal rules including the condition of partnerships, in accordance with the INTEROP-VLab rules and objectives.

The ongoing pandemic caused by the new coronavirus and its variants has put the EU under strain, approximatively from February 23rd, 2020 when Italian authorities quarantined 10 small towns south-east of Milan until February 10th, 2021 when the European Commission President said the bloc had been too late to authorize vaccines and that it had placed too much confidence in vaccine suppliers. Some countries coped satisfactorily with the first wave – or had the good fortune of minimal exposure to the virus – whereas others were hampered by poor preparedness, indecisive leadership and discord between central, regional and local governments. Above all, nations gave the impression that they were unable to learn from each other. Make no mistake – I agree this has little to do with enterprise interoperability, not even with the management of Research Framework Programs and Projects, but it comes as a timely warning that the old lessons of RACE, Telematics Applications, and Networks of Excellence stand true in terms of the essential need to promote without any hesitation and with constant determination the principles of cooperation and 'concertation', whether they take the form of a "Concertation Meeting", a "Cluster" or a "Pole".

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[5]   https://www.theinternetofthings.eu/gerald-santucci-cristina-martinez-diana-vlad-calcic-sensing-enterprise

Annex 1: INTEROP-VLab Meeting 6-7 April 2009, INTEROP-VLab Headquarters Bureau Aquitaine Europe, Brussels, Belgium

Ladies and Gentlemen,

I thank Guy Doumeingts for having invited me to the next meeting of the INTEROP-VLab on April 6th and 7th, 2009. I regret that I can be with you only "virtually"! I wanted so much to stand by you in our joint quest to promote Enterprise Interoperability and to help this important area realize its full potential. The preparation of the upcoming International Conference I-ESA China 2009 as well as further obligations relating to my work on RFID and Internet of Things policy, force me to keep myself away from your meeting. But let me say that it's always a privilege to address, even remotely, such a distinguished group of representatives of the Enterprise Interoperability community. I'm proud to share some of your ideals and expectations.

The INTEROP-VLab initiative is clearly one creating a climate which supports continued innovation in the field of ICT and which highlights and enhances the benefits of the European co-operative model.

I just would like to make a few points.

First, I remember the first meeting of the INTEROP-VLab, which took place on September 26th, 2007, in the same place where you will have your meeting next week. This was only six months after the launch of the INTEROP-VLab. With my colleagues Peter Fatelnig and Joël Bacquet, we had praised your community for the long and successful journey that had brought it from the IDEAS Thematic Network in 2002 to the creation of an international network of organizations bringing together experts from industry, academia and research centres. Eighteen months later, the INTEROP-VLab is more present and more powerful than ever with currently eight member-poles, 70 partner organizations and more than three hundred researchers spread over the world. Congratulations to each and all of you!

Second, and in relation to my previous point, I'd like to inform you that the INTEROP Network of Excellence, which has been the founding initiative of the INTEROP-VLab, was one of one hundred sixty-seven Networks of Excellence funded by the European Commission during the 6th Research Framework Programme. These projects involved together some 5,000 participants and a cumulative EU contribution of 1.2 billion Euro. On average, each Network of Excellence had around 30 partners and an EU contribution of 7 million euro per contract. A recent draft report of the Court of Auditors stated that self-sustainable long-term research activities and partnerships were not achieved for any of the audited Networks of Excellence, thus making future collaboration subject to continued public support. Perhaps. But I regret that the auditors did not interview the INTEROP Consortium! Their harsh judgement would certainly have been smoothed off. Incidentally, you must know that INTEROP was recognized by DG Information Society and Media as the Project of the Month in March 2008.

Third, in recognition of the successful launch of the INTEROP-VLab, its proven capacity to live up to and deliver on its promises, and beyond that to the members' high working ethics, strong leadership and collaborative spirit, and durable commitment and dedication to the research excellence, the European Commission chose the INTEROP-VLab in May 2008 to be the official repository of Enterprise Interoperability public deliverables from the 5th Research

Framework Programme onwards. This represented our gratitude to the achievements of the INTEROP Network of Excellence and our conviction that you were just getting started and the best was yet to come.

Fourth – and this is one illustration of what I've just said – the INTEROP-VLab animated, according to the principle of "Knowledge Café", a very successful "Networking Session" at the last ICT Conference, held in Lyon on November 25th, 2008. More than thirty people participated to a lively discussion on semantic operability, interoperability for collaboration and knowledge sharing, agent-supported interoperability – and more topics. On the same occasion, many attendees to the conference visited the INTEROP-VLab exhibition and enjoyed the demonstration of the I-V KMap and the e-Learning platform.

Fifth, thanks to the mediation of my colleague Cristina Martinez, former Project Officer of INTEROP and currently Head of the Future Internet Enterprise Systems Cluster, Guy Doumeingts had a first meeting on January 19th, 2009 with two high level officials from DG Enterprise and Industry. The presence of one of them, Antonio Conte, at your meeting next week is for the INTEROP-VLab a further mark of recognition and for me a genuine satisfaction and sense of fulfilment to see the enhanced potential of the INTEROP-VLab to cooperate in the transfer of information regarding Enterprise Interoperability. DG Enterprise and Industry has contacted its networks, in particular the Enterprise Europe Network and the Small Business Act, and has invited them to join the debate launched by the INTEROP-VLab.

Lastly, even if it entails excessive personal exposure, I would like to say that I fully support Guy Doumeingt's commitment to carry on the development of the INTEROP-VLab by recruiting new poles and partners and by strengthening the relationship between the coordination body and the poles. Further integration between these two entities, cohesion by adherence to the same scientific objectives, and long-term collective commitment to the content of what constitutes the essence of the INTEROP-VLab – research, dissemination and education – are for me the key to durable success. I had already stressed that point in September 2007 by saying that stakes were too high for the INTEROP-VLab to contemplate failure, and therefore all partners had to remain committed all along the "working trail".

Thank you for all you do so well, and have a pleasant and effective meeting next week.

Introduction to the morning session

We celebrate today the 20th anniversary of Europe-China cooperation in ICT for Enterprise. Indeed, China is today the first "partner" of Europe in ICT R&D… While the 7th Research Framework Programme (2007-2013) is still running, there are already 42 Chinese participants in current projects. The total figure was 105 for FP6 (2002-2006), 20 for FP5 (1998-2002), and 9 for FP4 (1994-1998).

Today is therefore an important milestone. But we need to be aware that without the vision, incessant commitment and stubborn dedication of a handful of leaders from both sides who triggered that cooperation during the late 1980's, such as Professor Guy Doumeingts and Professor Xu Xiaofei, it is likely that a long bridge would still separate Europe and China in this important field.

I'd like to stress that out of the five European pioneer organizations that were involved in the first Europe-China Cooperation Programme in the area of CIM under the ESPRIT programme – University of Bordeaux 1, University of Ireland at Galway, CAP Gemini Belgium, RPK University of Karlsruhe, and ITIA CNR Milano – the first three organizations are represented in this meeting today.

Let me add how I am pleased to stand up here today in company of Michel Carpentier who is the man who did so much and so well during the eighties to foster Europe-China cooperation at a time when even for a Director General of a powerful department of the European Commission it was far from easy to put a bet in for such an outstanding policy.

But, as the old Greek philosopher Aristotle said: "A likely impossibility is always preferable to an unconvincing possibility."

I have no doubt that those people who came aboard the Europe-China cooperation ship all along these 20 years will share with us today the lessons to be drawn from that cooperation and give us hints to the path we need to take for attaining further summits and achieving further successes."

Conclusion of the morning session

I have heard this morning so many ideas that it is difficult for me to pick up only a few. If however, I would have to summarize the presentations, I would just stress what Professor Xu said some minutes ago: "The biggest success of Europe-China cooperation in ICT for Enterprise has been to develop friendship for a long term."

The INTEROP-VLab is a good measure of that success and that friendship. More than four years after the end of the FP6 INTEROP Network of Excellence, the VLab lives on today with

9 Regional Poles, 69 partners, and 12 Thematic Groups. This is a gigantic achievement! and the Chinese Pole, which is one of the four founding partners of the INTEROP-VLab, has been playing a major role in its development.

Many achievements have been attained over the past 20 years. The National University of Ireland at Galway told us that it hosts 2,000 international students out of a total of 17,000. It manages fourteen links to China academic organizations in several different fields.

CAP Gemini drew for us some key lessons from the past:

- Transferring theoretical knowledge of CIM-OSA and GRAI methodology,
- Applying CIM-OSA and GRAI methodology in several factories including some European joint venture (Dongfeng-Citroën in Wuhan),
- Training people in project management,
- Developing a Project Management Handbook, and perhaps most importantly,
- Conveying values!

In 20 years, Europe and China have learnt how to cooperate, how to transfer methods to manage complex projects efficiently and effectively, how to tackle linguistic and cultural barriers, respective "ways of doing" (or "ways of thinking", as Tu Zhiying said, the Master student of HIT working at University Bordeaux 1 to get a PhD), and how to develop services with strong human interaction.

TANET, the UK Pole of the INTEROP-VLab, stressed the importance of SMEs in the e-economy.

We also heard graduate students from Europe and from China share with us their very positive experience of learning abroad. Their enthusiasm, their faith in the future, their dedication to studying and learning in remote outstanding locations are for me the best measure of the great success of the cooperation between Europe and China. The "ways of doing and thinking" have drastically got closer to each other and I've no doubt that these students will strive to disseminate their experiences and knowledge with many other students in ICT.

Beyond these remarkable achievements and promises, I believe that Europe-China cooperation is teaching all of us an essential lesson – the equal dignity of all cultures. What would be the world today without China's quest for harmony, friendship, unity, and correct gesture, its intuition of the tension of contraries as a source of momentum and life? What also would be the world without Europe's unique legacy of the incessant tensions between the rule of law and the use of force, democracy and oppression, spirituality and materialism, measure and *ubris*, reason and myth? I see much similarity between Europe's and China's values and traditions, and the 20-year cooperation in ICT for Enterprise can both reflect and build upon them. Furthermore, in order to promote the equal dignity of cultures, China and Europe are best placed to stress the necessity of the diversity of cultures. Globalization is indeed often presented as a new form of colonization aiming at imposing everywhere the same relationship – or absence of relationship – to History, Humans and Gods. In reality, globalization is good if what is shared, what circulates, what shapes peoples' minds are training, knowledge, progress, mutual understanding, and the sharing of values and wealth; bad on the contrary if it means standardization, formatting, reduction to the least common denominator, or the primacy of market forces. Europe and China can and should promote jointly this humanistic culture whose very essence is to bring societies together around ethical principles.

I'd like to turn now to Professor Xu and ask him what he thinks of the relevance and utility of a Chinese concept like *Tianxia*[6] for thinking the future from a true global perspective.

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[6] In Chinese, *tianxia* means "all under heaven".