New Economy and Digital Culture – the REGNET project

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ABSTRACT

The concept of a European Digital Library cannot only be based on a technical framework enabling access to digital goods – there is also a need to introduce new ways of cooperation between different stakeholders (Cultural Organisations, Industries, Administrations, etc.) as well as to "re-engineer" traditional business processes in the light of globalisation and world wide markets. The main activities within a support environment for I(nternet) Markets comprise: Content Engineering, Platform Engineering, and Enterprise Engineering.

The REGNET - Cultural Heritage in REGional NETworks project - targets to all of the three areas. The project was introduced under the Action Line 'Access to digital collections of cultural and scientific content' of the European Union IST-Information Society Technologies Programme and 23 partners, cultural organisations (museums, libraries and archives) and IT-industry representatives, from 10 European Union states as well as Bulgaria and Russia are participating.

ENVISAGED ACHIEVEMENTS

REGNET will set up a functional network of cultural service centres through Europe which will provide IT-services dedicated to cultural heritage organisations. A technical and legal framework, the REGNET system, for such a service infrastructure will be developed. This will offer services like data entry, search and retrieval, and e-Business. It will be based mainly on integration work using state-of-the-art components. The network will integrate multi-media industries, content providers and service centre operators. Existing cultural infrastructures will be exploited and new infrastructures should be developed where necessary.
The technical infrastructure should allow to set up even low cost service centres. The membership concept of the service centres will generate a critical mass of digital or physical goods contained in Content Provider's organisations.

THE PLAYERS WITHIN THE NETWORK

The four players within the network are the content providers, the service centre operators, the system developers and end users. The content providers (museums, libraries, archives etc.) will provide access (via wired and wireless communication) to their digital contents, services and products and offer them to their clients (B2C). In return they can use the REGNET facilities for multimedia productions and data base management, or cooperate with other REGNET partners during the creation of data bases, generation of multimedia products or creation of a

virtual exhibition (B2B). The service centre operators will generate income by providing the technical infrastructure (software/hardware) to content providers and other partners within the REGNET network. They offer additional IT-services and consultancies. And the system developers are selling the REGNET system to other cultural service centres and content providers. They implement additional components for the REGNET software system (additional 'nodes' like an 'exhibition creator', etc), and will generate income via licence fees for the REGNET system. For the end user the system will offer easy and wide access to cultural heritage data information and the purchase of CH related goods and services at one point, with stress on the production of personalized goods (e.g. CDROM) and services.

STANDARDS AND METADATA

REGNET will also provide a unique facility to meta data definitions for both CH-related data and e-business related data via the search entry in the REGNET – Portal and the REGNET - Ontology subsystem. Here not only meta data related to objects is addressed, but also definitions of work flows, business processes, etc. are included which lead to the concept of Ontology within the Cultural Heritage domain. Within the project a data entry facility using WEB-browsers and adaptable to different needs within different domains (Museums, Library, Archives) will be established. This facility will support existing standards (ICOM/CIDOC, UNIMARC, ISAD(G), etc) and is configurable by the REGNET System user. At the e-Business level REGNET provides the generation of a customised shopping cart systems within the business to consumer (B2C) framework.

MOBILE ENTRY

It will be examined how next generation mobile networks can be exploited to widen the potentiality of WEB services in the field of Cultural Heritage. Appropriate gateway functions and interworking units will be envisaged to interface the REGNET architecture with the UMTS (Universal Mobile Telecommunication Systems) structure and ensure a seamless provisioning of REGNET services to mobile customers.

ELECTRONIC CATALOGUES

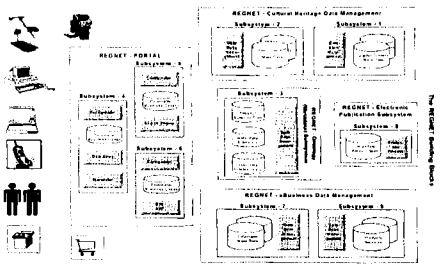
Already existing electronic catalogues (OPACS: Online Public Access Catalogues) referring to cultural & scientific objects contained in libraries, museums, archives, and galleries, as well as to goods and services will be used. Where there are no catalogues yet new catalogues will be developed in order to establish a 'virtual union' catalogue of all OPACS and product/service catalogues held locally.

BUSINESS ENGINEERING

In addition the work includes the outlining of necessary 'supply chains' and the connected business processes and functions to deliver digital and physical goods. All the business transactions on the B2B and B2C level (containing payment features, copyright systems, authentication control, etc) will be guided by a legal framework that will be worked out accordingly. The reorganisation of existing processes and introduction of computerised functions which make transactions for low money goods worth while (e.g. small copyright fees for digital images) is an essential part of the project.

THE REGNET SYSTEM ARCHITECTURE

The building blocks which constitute the REGNET-System are supporting access to cultural & scientific information as well as to product & service information offered by different organizations. The building blocks are outlined in the figure below. The REGNET-Portal enables entry of remote data, distributed search and e-business functions. The Cultural Heritage Data Management allows the search in distributed metadata repositories connected to data of cultural heritage content. The e-Business Data Management gives access to distributed goods and services catalogues via an e-business system. And the Ontology Checker contains specifications of metadata, terminologies etc. which are used in the e-business and cultural heritage field.



Finally the Electronic Publisher allows the production of personalized digital products based on standardized metadata and work flows.

REGNET extends the traditional access facilities to distributed heterogeneous catalogues by integration of product and service catalogues managed by e-business systems. Because of the large REGNET consortium real world tests covering 6 European regions (a dozen states) are possible.

The project will observe and take into account the ongoing and recent work of CEN/ISSS (Electronic Commerce Workshop) but will also look into recent activities like RosettaNet, eCo-Framework, OBI, etc.

REGNET will evaluate a networked organisation model (comparable to the Art Museums Image Consortium/AMICO in the United States) and the integration possibilities of tools and systems for co-operative working.

CONTENT CREATION, PLATFORM MANAGEMENT, ENTERPRISE ENGINEERING

Within the REGNET system there are three building blocks which can be considered as vertical functions:

1) Content creation and management is based on actual standards efforts in the field of the different organisations involved. The inclusion of so called 'Dublin Core' meta data is as well an actual topic as the Z39.50/XML-related standardisation work is, which is targeted to a harmonised search and retrieval facility across different domains. REGNET may influence the development of a so called Z39.50/XML-application profile: the Bath-Profile. This technique, to make Online Public Access Catalogues (OPACs) interoperable, is essential to REGNET, since by this way the catalogue of the REGNET shopping system is generated dynamically according to the request of a user.

2) The platform management is based on up-to-date internet technology and is the basis for the middle ware being the agent between content and service supplier and the requester (user).

It is expected that during the implementation of REGNET the first large trials of systems following the OBI reference architecture will deliver results (RosettaNet).

3) The enterprise engineering will focus on some selected business processes and functional units: access to distributed catalogues, a shopping cart system, creation of a personalised catalogue based on retrieved data from the 'virtual catalogue' (in printed and electronic form), an internet auction system (e.g. offering duplicates of posters), and a delivery system for physical goods (e.g. goods from museum stores).

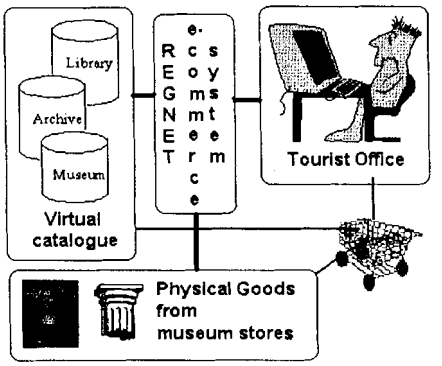
On a 'horizontal' basis the XML/XSL-technology is used to structure data semantically and physically. This affects the creation of meta data, describing real (primary) objects (artefacts, naturefacts,...), media objects (photos, videos, ...) or bibliographic type objects (literature in the broadest sense). On the other hand all information within business transactions is wrapped within XML structures: Order, Invoice, Despatch, Report, ...). The recent developments in the field of XML/EDI standardisation will be used (ebXML). Another topic will be the definition of information products by appropriate document type definitions and style sheets. This should enable the 'non-media-professional' end user to easily generate catalogues or even CD-ROMs on demand. This might be the first step into the direction to create virtual exhibitions on demand by users themselves.

USER SCENARIOS

The scenarios outlined below can be considered as a first reference to e-Business processes only.

1. Business to Consumer (B2C):
A tourist wants to buy articles related to the cultural heritage of a region; he/she is interested in physical goods from one or more museum shops as well as in specific surrogate (images) of cultural objects located in museums, archives, or libraries in the region.

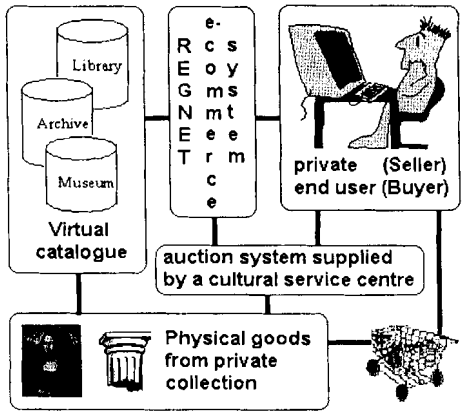
He/she can use a terminal at a tourist office where he/she searches the REGNET virtual catalogue for relevant images and information, browses for articles located in museum stores and places orders.



2. Business to Business (B2B):
A museum wants to produce a CDROM containing information about specific objects that he/she is interested in and which are related to a region.

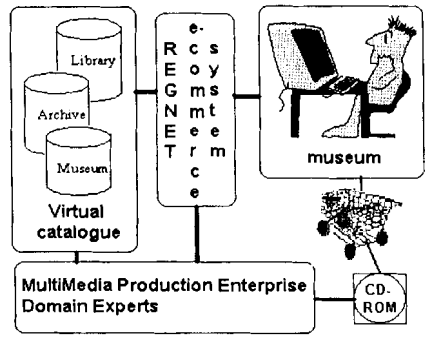
The curator at the museum's side selects relevant information (text, images, films); he/she contacts a media producer, selects the basic layout/storyboard for the CDROM and works out together with the industrial partner - eventually with the help of

other expert(s) - the final storyboard and the work flow necessary for the production process. He/she signs a contract for the production process and receives the master copy of the CDROM.



3. Consumer to Consumer (C2C):
The owner of a private collection wants to sell some of his/her assets on a maximum prize. He/She thinks about putting the offers on the internet.

He/She digitises with the help of a REGNET-Partner (e.g. Cultural Service Centre/CSC) surrogates of the goods which will be sold. Additional information and expertises are gained after consultation of the Virtual Catalogue. An dedicated Internet Auction System is set up at an Cultural Service Centres (CSC) site and offers



bidding to interested user communities. The marketing of this auction is supported by the CSC. This business case can be considered as combination of B2C and B2B functions and demonstrates that a stakeholder can obtain different roles in different business-cases.

MARKET SITUATION

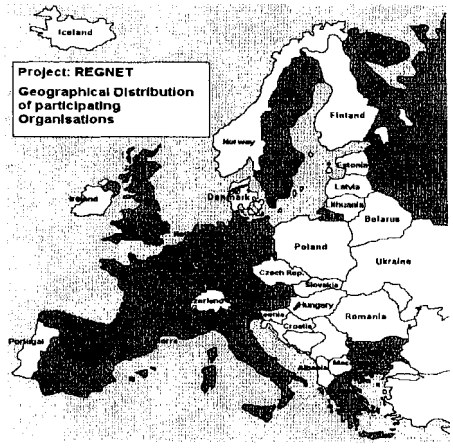
Electronic commerce, notably business to business e-commerce, is booming and world-wide e-commerce sales are expected to grow 40 times between 1998 and 2003 by which time they will become over 15% of all sales. The Internet and e-commerce are also leading to a surge in new company creation. The market for REGNET systems and services can to some extent be reckoned by the number of museums, libraries and archives in Europe. A rough estimation would deliver a potential number of 3.000 (15% of 20.000 museums) museum shops throughout Europe being candidates to be partner of the REGNET network!

The project is a research and development project with a demonstration phase. It started April 1st 2001 and will last for two years. The whole project budget is above 5 Mio.

EUR and to 48,5% funded by the European Union. Project Coordinator is AIT Angewandte Informationstechnik Forschungsgesellschaft mbH. http://www.regnet.org/

Partners within REGNET

For efficient testing of the developed REGNET System a wide area distribution of partners with regional importance is crucial. Therefore 23 partners and 2 subcontractors from twelve different European countries are included in the REGNET project.



The following map shows the geographical distribution of the partners.

ABOUT THE AUTHORS

Dr.Walter Koch received a PhD in Mathematics and Physics from University of Graz in 1970. He is shareholder and director for AIT Research Ltd. (Angewandte Informationstechnik Forschungsgesellschaft mbH.), and is an Associate Professor at the University of Graz and a Guest Professor at the University of Krems.

Prof. Koch's relevant experience includes:

- From 1976 to 1998: Head of different research institutes at JOANNEUM RESEARCH Ltd. In Graz:
- Consultant to different national and international organizations (eg UNESCO, DFG, EC, Austrian ministries, Graz municipality)
- Member of several international and international scientific associations (eg. ICOM, ÖGDI, ONORM, VÖB, UNESCO)
- Project experience: bibliographic information, information systems, IT-management, EU Projects (TAP, Raphael, TenTelecom; IST), ESA, CIMI
- Overall Project Co-ordination and management of the EU-project REGNET, Cultural Heritage in Regional Networks
- Personal consultant to the EU-Project DIGICULT

Prof. Koch has published more than 70 papers and technical reports, and presented papers in four continents at least at 100 conferences, seminars and workshops.

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Mag. Gerda Koch received a Master of Arts in English with a combination of studies in Economics and Law at the University of Graz, and also received an academic degree in a course of studies on Multimedia at the University of Graz. Since 1991 Mag. Koch is employed at AIT, Applied Information Technique Ltd. There she worked for diverse informatics projects as eg. a

production automation system for a window-producing company, or the database publishing production of the yearly published Austrian Statistics on Non-University Education. She also collaborated in the European Union TenTelecom project MOSAIC (Museums Over States And vIrtual Culture) for the Austrian partner of the project. Since 1998 Mag. Koch is managing director of AIT Ltd. She now focuses on cultural digital content provision as she worked for the national project MODOK (Modular Documentation System) for the Austrian Ministry of Science and Traffic and the EU-project COVAX (Contemporary Culture Virtual Archive in XML). Within the EU-project REGNET, Cultural Heritage in Regional Networks Gerda Koch is also responsible for co-ordination and project management.

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