THE CALIMERA RESEARCH ROADMAP: THE ROLE OF LOCAL INSTITUTIONS IN DELIVERING INTERACTIVE ACCESS FOR CITIZENS TO EUROPE'S CULTURAL HERITAGE

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The goals of the FP6 IST cultural heritage research work programme are of key significance for local institutions (public libraries, museums and archives). Equally, they can play a vital role in achieving those goals by applying innovative technologies and strategies from the priority research areas and transforming them into helpful services which can be easily used by ordinary citizens in their everyday lives. If they are to be centrally involved in future IST calls addressing community-based cultural heritage services, local cultural institutions need to identify a solid basis for their own R&D priorities, backed by an analysis of the issues which deserve European support. The CALIMERA Research Roadmap addresses these issues form a user-driven function perspective.

INTRODUCTION

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The CALIMERA 18 month Co-ordinating Action (December 2003-May 2005) is monitoring technical developments and solutions already emerging from IST and national research and assess their potential as widely transferable technologies for use by local institutions. It is co-ordinating and sensitising the stakeholders including professional networks, national and local authorities and industrial players, laying the groundwork for participation in future calls.

CALIMERA will increase sharing of best practice, mobilising and adding European value to IST-based national programmes, producing guidelines and benchmarking tools with a special focus on the needs of local archives and museums and addressing the needs of the end user by identifying a framework for focused research on usability/ease-of-use.

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This co-ordination and preparatory work is underpinned by a high-impact dissemination programme targeted at decision-makers, managers and professionals, including a portal website providing access to best practice, relevant research and innovative solutions. Full versions of all documents referred to in this paper can be found on www.calimera.org.

Finally CALIMERA is developing the agenda and working structures for collaboration on local services with Europe's research partners globally and nurture the involvement of the countries of South East Europe, which may be the next candidates for EU membership.

CALIMERA RESEARCH ROADMAP [1]

The 'Research Roadmap' addresses actions which are needed to secure maximum impact and opportunity, in a rapidly developing digital and networked environment, for local cultural heritage institutions across Europe and beyond. The Research Roadmap should be read in conjunction with other CALIMERA reports and especially in relation to its Report D2 on business models and issues

Within the scope of 'local cultural heritage institutions' we include museums, libraries, archives, galleries and the increasing number of public and private institutions, within the local area, which are associated with cultural activity. Since such activity impacts strongly on such core concerns as learning and economic activity, the latter for example through tourism, the application of the research roadmap is extensive.

CALIMERA has been tasked with working towards an outline for research in this field, defining its role "to ensure better use of technology so that ordinary people can participate more actively in the information society through the work of their local cultural institutions, such as libraries, museums and archives mediating services." There is a "need for a relevant renewed strategy for societal applications, building on the eEurope 2005 Action Plan, which involves Europe and its partners in making better use of ICT and network infrastructure, working towards effective, integrated approaches to usable local services with the potential to contribute significantly" in many areas of society.

The Roadmap draws on the findings of the CALIMERA "Business models and issues report" [2]. The former report presents a number of obstacles to and drivers for the adoption of technological solutions for local archives, libraries and museums. Many of these obstacles and drivers represent important issues where more research is needed. Examples drawn together in a pervious CALIMERA 'research portfolio' exercise provide us with knowledge of the range of new activities taking place and innovative solutions being employed in local cultural institutions, which can pave the way for providing a model for research in this area. Such a model is presented below.

We are indebted to many individuals for their contributions to the thinking which is represented in the Research Roadmap report, and for their critique of it. It is particularly important to acknowledge the influence of the DigiCULT Support Measure, and its

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excellent series of technology watch reports and other publications. One of its early reports suggested that the key challenges facing Europe's cultural institutions include the requirement:

•   "to provide access to the riches of European cultural heritage by enabling interoperability between its various sectors. This can only be achieved if issues associated with variation in standards and interoperability across these sectors can be addressed;

•   to build tools and systems to tackle the increasing volume of material needing to be digitised and maintained in accessible forms;

•   to address the technological, intellectual, legal and economic problems related to archiving and long-term preservation of cultural heritage content;

•   to unlock cultural heritage resources by offering personalised, highly interactive, stimulating, hybrid environments and shared spaces to foster the construction of cultural heritage content; and,

•   to enable players from different sectors and users to participate actively in creating enriched environments for cultural heritage services by building easy-to-use, intelligent, collaborative and highly interactive tools and systems for non-technical users."

The present report, which has been informed by DigiCULT's and others' thinking, is an attempt to map the research required to enable local cultural heritage institutions to play a full part in developing a usable, useful and enjoyable European ecultural landscape.

Defining functions

The diagram on the next page (Fig. 1), has been developed as a way of illustrating the range of different functions which need to be supported by systems operated by or on behalf of local cultural heritage institutions. It is important to emphasise that the diagram is provided purely to offer a functional view: it does not suggest specific systems, nor does it suggest that there is one-to-one mapping between functions and systems – most, if not all, real world systems will support multiple functions.

In the diagram, the end-user (i.e. the member of the public who makes use of the local cultural institution) is at the centre. A cartoon image is used to indicate the typical end-user's multitasking within multiple roles, balancing different demands on time, skills and interests. The inner ring of functions are those which the user wishes to perform – such matters as asking for information or undertaking formal or informal learning. The outer ring contains those functions which the institution carries out – for example, acquiring resources, describing them and interpreting them. It should be emphasised that there is no one-to-one mapping between user functions and institutional functions, and that as a functional diagram this presentation has nothing to say about the range of functionality which any individual system would support.

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A final limitation of the analysis is that functions have different levels of complexity. For example 'learning' is a complex activity that will almost certainly involve 'asking for information'; but equally, 'asking for information' may well become a 'learning' experience. This illustrates that this report should be read only as an indication of where research is needed to support a range of simple and complex functions; it is not a guide to specific R&D projects or application scenarios, although these are used to illustrate the argument.
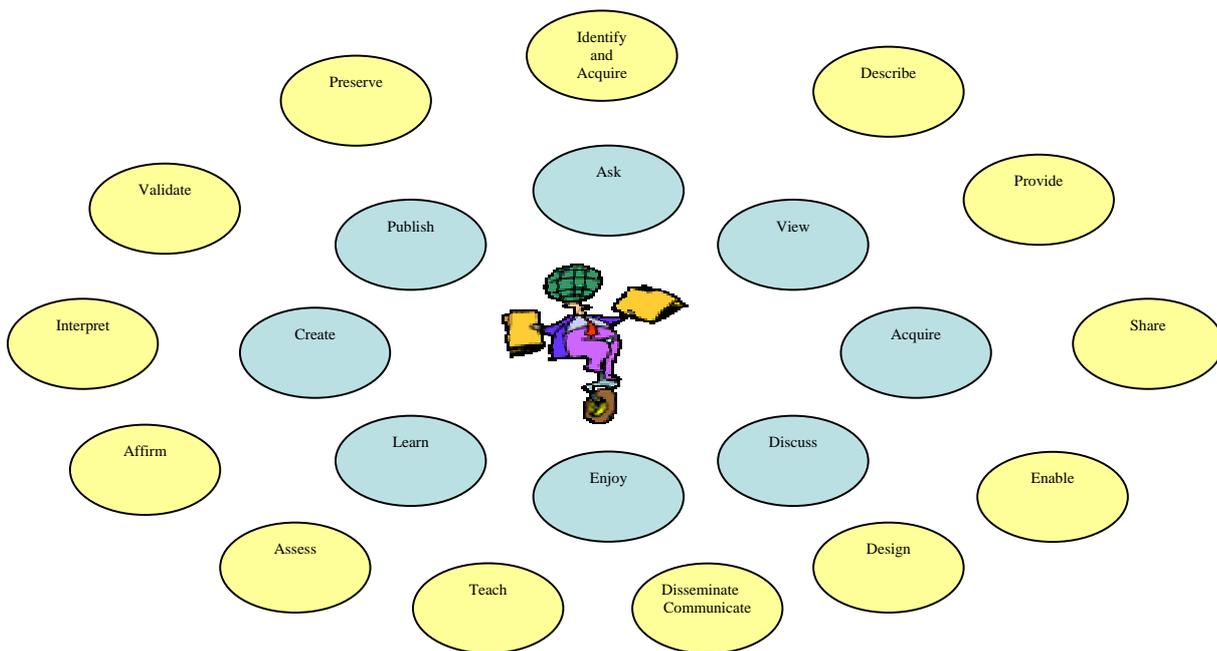
Fig 1: defining user and institutional functions

As stated, our conclusions should be read in conjunction with other CALIMERA reports and especially in relation to its D2 Report, which was concerned with business models and issues [2].

Some other key considerations

Without rehearsing all those issues, we would draw attention to the critical role of national organisations (ministries of culture or equivalent and other relevant bodies) in policy making and coordination. We believe that there is evidence that where there is a lack of national policies the development of local services is constrained. A research issue would be to explore this topic in depth, uncovering such evidence and isolating good practice.

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It is also important that the contribution which local cultural institutions make to European society should be better understood. While we recognise the difficulties of funding such research under the IST Programme, this does not diminish its importance. Continuing efforts are needed to assess impact.

We would also note that the development of staff skills – which includes broader issues such as the appreciation of the potential of new technologies and attitudes which are positive towards their adoption – will be critical to success. Research which addressed these issues would be valuable.

Turning to the specific issues described in this report, it needs to be emphasised again that the analysis of research and development questions by function is not intended to imply that single function responses are desirable. Indeed, quite the opposite – there is a major challenge to develop integrated systems which address multiple challenges and provide seamless services for users. However, we cannot address the research roadmap without undertaking analysis of the issues into their separate challenges. What is important is that researchers synthesise their responses and show how multi-functional services can be developed to meet real-world requirements.

The issue of standards compliance, and the use wherever possible of open standards, will remain critical. The difficulties and challenges of this for the local institution should not be underestimated, partly because standards often require high levels of technical understanding but more especially because the environment (eg. local or regional authority) in which the institution operates must also be committed to standards compliance. It is helpful that national authorities are addressing this issue and mandating standards.

Because there is great scope for sharing solutions between institutions at the local level, it is particularly important that whenever feasible software should be open source. However, this must not be at the expense of maintainability and sustainability: there will be occasions when a proprietary product is appropriate because of the support which it receives.

The long term sustainability of solutions must remain a major issue. Too often highly innovative and indeed far-sighted developments have failed to become embedded in services, for a whole variety of reasons. We believe that steps are needed to avoid such products failing to negotiate the gap between the 'development' and 'deployment' phases.

Contributors to this work have frequently emphasised that usability (in the broadest sense) and ease of use are absolutely critical to success. This implies that user requirements must be clearly understood from the outset, not just in terms of functionality but in terms of presentation. This can be coupled with a 'design for all' approach which recognises the requirements of disabled and other 'non-standard' users from the outset.

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This leads naturally to consideration of the interface devices which users are likely to exploit. While the PC, with screen, mouse and keyboard, may be fairly ubiquitous at the moment we are seeing a much wider range of end-user technologies being brought into play. Mobile devices are now commonplace, and starting to be exploited by the cultural sector (especially with the capabilities of 3G); game consoles are in very wide use but have hardly yet broken out of their user ghettos; digital television will undoubtedly be taken for granted by the end of the current decade; looking to the future, intelligent devices will exploit ambient technologies. Local cultural institutions need to make use of all these in offering attractive and user-friendly services.

In reviewing these options, it is necessary to consider carefully what value is added by services for the time and effort that the end-user expends. Over-complex systems which merely confuse the end-user will not attract sustained use.

This then leads to the question of bi- and multi-lingual support. This has been referred to in the above discussion under a number of functions (primarily 'ask') but must be tackled systematically across all services within what is now a networked Europe. While part of the effort may be expended on translating content (perhaps dynamically) it is also important that this effort extends to the presentation interfaces – providing multi-lingual icons and buttons on screen is a simple example.

What are the key elements that should be given priority for research? We have been unable to identify unanimity on this question among the Calimera consortium but we suggest that the following represent the majority view:

•   A greater focus on understanding and describing the user requirement. Local cultural institutions must be focused on their users, but these are not monochrome. We need to specify in detail what different kinds of users want and expect from their interaction with and participation in cultural pursuits which are or can be enabled by technology. The local cultural institution has deep understanding of citizens' needs, preferences, ambitions and dreams.

•   Tools to enable users to create content together with systems which allow that content to be managed systematically and sustainably. Creation should be seen not only as an individual but critically as a shared enterprise, with tools to enable this to happen. The local cultural institution becomes a true centre of creativity.

•   Systems which couple together learning and enjoyment, placed within a clear local (and thus relevant to the user) context. Learning services may require – and would almost certainly benefit from – collaborative development with (often accredited) learning providers and require development of skills by the staff of the cultural institutions. The creative local institution is also a learning institution.

•   Dissemination and communication of information about the content and services of the local institution, to users and potential users, between users (as they share the

treasures that they find) and to other institutions. The local institution becomes a focal point in the mind maps of citizens and related services.

•	Interoperability between systems to ensure that integrated services can be offered at the point of user interaction – which may be within other bodies' portfolios of services – so that the institution is fully involved in the life of the citizen. The local institution's services mesh seamlessly into the panoply of technology-based and other services with which individuals interact, and become a natural part of everyday life.

The watchwords for the local cultural institution, then, are: citizens / creativity / learning / communication / involvement

References

[1] P. Brophy, "CALIMERA research roadmap". January, 2005.

[2] C. Dallas. "Report on business models and issues". November, 2004