

COST

Domain Committee "ISCH"

COST Action (IS0704)

Start Date (16 April 2008)

AN INTEROPERABLE SUPRANATIONAL INFRASTRUCTURE FOR DIGITAL EDITIONS (INTEREDITION)

MONITORING PROGRESS REPORT

Reporting Period: from (27 April 2010)
to (18 April 2011)

This Report is presented to the relevant Domain Committee.
It contains three parts:

- I. Management Report prepared by the COST Office/Grant Holder***
- II. Scientific Report prepared by the Chair of the Management Committee of the Action***
- III. Previous versions of the Scientific Report; i.e., part II of past reporting periods***

The report is a "cumulative" report, i.e. it is updated annually and covers the entire period of the Action.

Confidentiality: the documents will be made available to the public via the COST Action web page except for chapter *II.D. Self evaluation*.

Based on the monitoring results, the COST Office will decide on the following year's budget allocation.

Executive summary (max.250 words):

COST Action IS0704's ('Interedition') third year continued with 'developing through application' a community, heuristics and technology based approach to interoperability for the field of digital textual scholarship. Several open source proof of concept tools based on Interedition's microservices model for technical interoperability were delivered. These tools proof Interedition's point of interoperability as driver for sustainable tool and methodology development. The development process proofs Interedition's point of community and heuristics interoperability: tools are built by an open source development community sparked in the textual research community, and these tools are now at the center of an impressive network ecology that has sprung up around Interedition's initiative. In year three Interedition has started the process of disseminating its results, by way of Training Schools, conference contributions and article publication. Interedition has a succesful impact with ESRs in textual scholarship, (documentary) history, and digital humanities. It also has a relative succesful impact with established researchers in those fields. To sustain IS0704's result, year 4 should focus powerful dissemination towards larger infrastructural frameworks like DARIAH and CLARIN, and potential stakeholders like digital libraries (e.g. Europeana). It should furthermore try to secure the 'trickle funding' needed for sustaining its model for open source development in the humanities and sustainability of data and tools in that field.

I. Management Report prepared by the COST Office/Grant Holder



I.A. COST Action Fact Sheet

- **COST Action IS0704 - AN INTEROPERABLE SUPRANATIONAL INFRASTRUCTURE FOR DIGITAL EDITIONS (INTEREDITION)**
- **Domain ISCH**

- **Action details:**

CSO Approval: 16/11/2007
Entry into force: 07/02/2008

End date: 15/04/2012
Extension: NA

- **Objectives**

The main objective of the Action is to produce a roadmap or manual conceptualizing the development of a technical infrastructure for collaborative digital preparing, editing, publishing, analyzing and visualizing of literary research materials. There is a great need for international cooperation in the development of tools for scholarly digital editing and analysis of literary material. Research groups from individual institutes exchange research results through conferences and journals and report on their methodological advances, but these results and advances often cannot be scientifically verified or tested because the used hardware and software is not available to or easy to use by other researchers. A shared technical infrastructure for the preparation, editing, publishing, analysis and visualization of literary material does not exist. This Action aims to form an international Management Committee of researchers that have a thorough experience in electronic editing and digital text analysis for scholarly purposes in a national context. A series of meetings will be called for researchers in the field of literary research and information technology to meet on the topic of a shared supranational networked infrastructure for digital scholarly editing and analysis. The Action will deliver a roadmap for the implementation of such an infrastructure.

(Keywords: tools development, interoperability, usability, scholarly cooperation and collaboration, scholarly digital infrastructure.)

- **Parties:** *list of countries and date of acceptance*

Austria (<i>intention</i>)	Greece (<i>01/08/2010</i>)	Poland (<i>07/07/2009</i>)
Belgium (<i>07/02/2008</i>)	Hungary	Portugal
Bulgaria (<i>27/11/2009</i>)	Iceland	Romania
Croatia	Ireland (<i>82/07/2008</i>)	Serbia
Cyprus	Israel (<i>03/02/2009</i>)	Slovakia
Czech Rep.	Italy (<i>17/04/2008</i>)	Slovenia
Denmark (<i>07/02/2008</i>)	Latvia	Spain (<i>10/02/2011</i>)
Estonia	Lithuania	Sweden
Finland (<i>26/05/2008</i>)	Luxembourg	Switzerland
FYR of Macedonia (<i>22/09/2008</i>)	Malta	Turkey
France (<i>17/03/2008</i>)	Netherlands (<i>07/02/2008</i>)	United Kingdom (<i>07/02/2008</i>)
Germany (<i>07/02/2008</i>)	Norway	

- **Intentions to accept:** *Austria*

- **Other participants:** *NA*

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- Dr. Anissava Miltenova, Institute of Literature (Sofia, Bulgaria)
- Dr. Elena Pierazzo, King's College London (London, UK)
- Dr. Kathryn Piquette, Oxford University (Oxford, UK)
- Dr. Susan Schreibman, Trinity College (Dublin, Ireland)
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- Dr. Tomasz Parkola, PSNC (Poznan, Poland)
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I.C. Overview activities and expenditure

(year) Budget

Total Action Budget:

Remaining Action Commitment:

Meetings

Meeting Type	Date	Place							Cost	Total
										0

STSM

Beneficiary	Date	Place							Cost	Total
										0

Workshops

Title	Date		Place						Cost	Total
	From	To	From	To						
										0

General Support Grants

Beneficiary	Date								Cost	Total
										0

Schools

Title	Date	Place							Cost	Total
										0

Dissemination

Title	Date	Place							Cost	Total
										0

Others

Action Total : 0

II. Scientific Report prepared by the Chair of the Management Committee of the Action, describing results achieved during the Action operation in this period, in no more than 3 pages (the report is “cumulative”). All items listed in Sections A, B, and C, below, must be addressed.

Additional documentation such as extended scientific reports, proceedings of workshops, seminars or conferences may be provided separately as an annex to this report, and should be referenced in the report.

II.A. Innovative networking

- *Innovative knowledge resulting from COST networking through the Action. (Specific examples of Results vs. Objectives)*

In year 3 (2010-2011) of COST Action IS0704 ‘Interedition’ worked on practicing and disseminating the model for interoperability that Interedition derived from its (theoretical) results in year 2. Year 2 was focusing agreement on a model for interoperability as a three ‘layer cake’ a three tier model: tier 1 representing community level interoperability within and between research communities; tier 2 pertaining to semantic interoperability of research heuristics and data models; tier 3 concerned with technical interoperability of tools and data connectivity over lightweight protocols.

Practice what you preach meant for Interedition in tier 1 networking two related communities: that of textual scholars and (research) librarians applying digital tools and data, and that of tool builders in digital humanities. Networking and outreach was accomplished in the first case by organizing Training Schools. In the case of researcher/tool builders Interedition created the seedling of an open source development community in the humanities through Think Tanks.

The most valuable insight that the meetings created is that interoperability indeed is a leveraging force for sustainability of digital tools and data: interoperability is a prerequisite for sustainable tool development, data curation and exchange. Not only in digital textual scholarship, but in the wider arena of (digital) humanities. We think that Interedition is creating proof that the key to sustainable tool development in digital scholarship is not so much in defining and building digital infrastructure, but in agreeing upon definitions for workflow decomposition and protocols for web servicing small processes, components and data. The so called ‘microservices model’ developed through Interedition utilizes cloud computing principles to leverage digital humanities tool building into a sustainable endeavour.

Year 3 has been a year of practicing theory and disseminating that practice. Successful proof of concept tools based on the microservices model have been developed and released. The key message of interoperability over light weight protocols as leveraging power for sustainable development, tools, and data has been focus of various scholarly outreach activities (conference papers, articles and training schools). IS0704 has been spreading its message and results also by connecting to various other COST Actions: Open Scholarly Communities on the Web (A32); Women Writers in History (IS0901); Medieval Europe - Medieval Cultures and Technological Resources (IS1005).

COST networking has allowed IS0704 ‘Interedition’ to spread its insights and results towards a wide audience in the scholarly community within and beyond the EU meanwhile. One way was through training schools (e.g. Israel National Library, Jerusalem, Israel; Trinity College, Dublin, Ireland). Another through conference contributions (e.g. ESTS, Pisa Italy), and articles (e.g. “The Digital Edition 2.0” in *Bibliothek und Wissenschaft* special issue, forthcoming). This means that Interedition meanwhile has a fair outreach towards the established academic target audience, and most certainly with a audience of ESRs in the field of digital humanities.

A most valuable result from networking abilities offered through COST is the project ecology that has emerged around Interedition, which is showcasing the interest of the textual scholarly community in Interedition’s findings. Important key projects are Juxta,

DARE, SAWS, TextGrid, eXist, SADE, TEXTvire, TILE, NTT, etc. A fuller list is available at <http://www.interedition.eu/wiki/index.php/AssociatedProjects>.

- *Significant scientific breakthroughs as part of the COST Action. (Specific examples)*

As reported the three tier model (cf. last year's report) for interoperability is a successful framework for producing sustainable digital tools in digital humanities, as has been proven by the application of this model to Interedition's prototypes. The resonance and uptake of these prototypes in the digital scholarly community is a relevant methodological success. Furthermore, the establishing of a OSDC (Open Source Development Community) seedling has the potential of redefining digital tool development in digital textual scholarship and the broader humanities, aiming for more sustainable software, more coordinated effort, and more focused tool building. However: this is indeed a seedling of impact, careful attention should be given to fostering this seedling to provide larger and lasting impact.

Dissemination of the three tier model for interoperability, the ideas for distributed (microserviced) architecture for digital editions and associated tools, and the application of the tools in a fair number of digital humanities projects can be dubbed a relative success. Audiences in the digital libraries, digital humanities and especially relevant groups of ESRs have been successfully targeted for dissemination.

The OSDC seedling established through COST Action IS0704 'Interedition' --comprising key ESRs in both the fields of history, textual scholarship, and IT-- has produced two significant prototype tools that are now being used in several digital humanities projects: CollateX (a high performance text collation engine) is being utilized in several important digital scholarship projects (cf. last year's report). A text/image prototype has now been added and is being utilized in amongst others the TILE project and notably the Madrid Complutense University based and Google sponsored project *Collaborative Annotation of Digitalized Literary Texts*.

- *Tangible medium term socio-economic impacts achieved or expected. (Specific examples)*

There are no significant additions to make to last year's estimations on socio-economic impact. Socio-economic impact of Interedition's result will be tangible but modest in the field of textual scholarship (cf. 2009-2010 report). Socio-economic impact of Interedition's model for interoperability and sustainability may be much higher *if* the model should be taken up by a number of key projects base in digital humanities and (foremost) in the digital library domain. Dissemination of the results will be key to this, cf. 'II.D. Self evaluation'.

- *Spin off of new EC RTD Framework Programme proposals/projects. (List)*

Although Interedition was active in a number of grant proposals the passed year, these activities did not materialize in substantial funding yet.

Most notably Interedition took part in a 3MEuro international grant proposal for the Canadian SSHRC ("Digital Knowledge Communities bid") which would allow European partners to join an US/Canadian initiative for building international digital scholarly infrastructure. This bid is still under consideration.

Interedition also was part of the ESF Research Networking Programme proposal 'NeDiMAH' (Network for Digital Methods in the Arts and Humanities).

- *Spin off of new National Programme proposals/projects. (List)*

At the moment Interedition is working on Dutch national level to propose a broader digital humanities infrastructure to be put on the ministerial roadmap for research IT infrastructure. Also Dutch – Polish collaboration has started on a proposal to share digital infrastructure for digital libraries (PSNC). Interedition supported several smaller individual research and training grants (e.g. DHO Training School, Ireland), 'Studia Stemmatologica' (Finland), a Google Research grant proposal titled 'Mining the Intertextuality in Google Books', a Rubicon grant (Netherlands) 'Armenia meets West: Digital methods for reconstructing the Armenian historiography of the Crusades', etc.

II.B. Inter-disciplinary networking

- *Additional knowledge obtained from working with other disciplines within the COST framework. (Specific examples)*

The benefits that were pointed out in last year's report continue to exist and continue to propel the Action. Added knowledge, specifically about success and fail factors in crowd sourcing (for which a Wikipedia experienced ESR was attracted to the Action), has again been found in tying experience of the IT field in with Interedition. This year Interedition developed useful connections to subject domains like Classical/Byzantine documentary studies (SAWS project) and stemmatology (Studia Stemmologica). Interedition was from the outset primarily aimed at textual scholarship and the 'domain' of digital editions of literary works. These new networked connections add in much valued additional requirements and heuristics from various humanities research fields previously not targeted by Interedition.

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide scientific impacts. (Specific examples)*

The level of interdisciplinary achieved through this COST Action is providing an impact with the primary targeted community of textual scholars. Dissemination to realize this has been fairly successful through conference contributions (e.g. ESTS, Pisa, November 2010, and Polish Digital Libraries Conference, Poznan, October 2010), articles, and training schools (e.g. Jerusalem: "Structures, Tools and Ideas for Scholarly Digital Editions", October 2010). However, the success of the interoperability models developed through Interedition is dependant of impact with other stakeholders too. Interedition will be focusing these stakeholders (by way of larger EC infrastructural projects in the humanities like DARIAH and CLARIN) in the coming year. Much of the success of impact will be dependent on the ability of this COST Action to secure modest follow up funding to sustain the established open source development community and to sustain the model of interacting/interfaces with the actual research communities targeted. (Cf. II.D Self evaluation).

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide socio-economic impacts. (Specific examples)*

Cf. Tangible medium term socio-economic impacts achieved or expected. (Specific examples) above.

II.C. New networking

- *Additional new members joining the Action during its life.*

Although it is advisable for this Action's cause and effectiveness probably *not* to grow too large, it is attracting new members. Given that the Action is about interoperability it stays open to joining as a principle. In the 2010-2011 year the Action welcomed the participation of Greece, Spain and Austria.

- *Total number of individual participants involved in the Action work. (Number of participants. Give % of female and of Early Stage Researcher participants)*

The total number of individual participants involved in this Action hovers around 140. About 40 to 45 participants are actively involved from time to time (around 20 to 25 participants can be deemed as very active). Of the active participants 12 are female (27-30%). At least 16 participants (35-40%) qualify as early stage researcher. Numbers of course vary as not all participants are or will be involved for the entire duration of the Action.

- *Involvement of Early Stage Researchers in the Action, in particular with respect to STSMs,*

networking activities, and Training Schools. In addition, justification should be provided if less than 4 STSMs were carried out during the year.

Participation of ESRs has been high in the year 2010-2011 for COST Action IS0704 'Interedition'. IS0704 organized a number of training school and think tanks where participation of ESRs was very high. Together with the Science Officer of COST it was decided to have ESRs targeted and involved mainly by way of multi day think tanks (so called 'bootcamps') as this facilitates more ESRs to join and allows to combine a critical mass of thinking that STSMs will not allow for time and budget wise. In all about 16 to 18 ESRs were active one or more times in Interedition by way of 'bootcamps' in the Action's year 2010-2011.

- *Involvement of researchers from outside of COST Countries. (Number of participants from non-COST Countries approved by the CSO. Give % of such participants from countries with reciprocal agreements. Specify their contribution)*

4 Non-COST Country (US/Canadian) researchers were involved in the various training schools and think tanks of IS0704 in this year. IS0704 until now has no formal collaborative link on institutional level in non-COST countries, but by way of participating researchers is linked to various relevant institutions and programs like MITH (US) and Tapor (Canada).

- *Advancement and promotion of scientific knowledge through publications and other outreach activities. (Number of publications and other outreach activities that resulted from COST networking through the Action. Complete list should be given in an annex)*

Interedition's prototype tools have been published as open source code (e.g. <http://collatex.sourceforge.net/> and <https://github.com/tla/Interedition>). Research activities in Interedition resulted in at least 8 conference and colloquia papers and presentations, 1 key note lecture, and a scientific journal article in 2010-2011. These are publications where Interedition could be said to be pivotal, it's hard to estimate however the number of publications that in one way or another are connected to or are referring to Interedition meanwhile. This number is probably equivalent.

- *Activities and projects with COST network colleagues.*

COST Action IS0704 'Interedition' has been organizing workshops in collaboration with COST Action A32 ("Open Scholarly Communities on the Web"), has been cooperating within meetings of COST Action IS0901 ("Women Writers in History"), and is planning to co-organize a larger colloquium/workshop in connection with COST Action IS1005 ("Medieval Cultures and Technological Resources").

- *The capacity of the Action members to raise research funds.*

Several members of the Action have again been involved in preparing grant application proposals. Unfortunately however, until now non of these have been successful. A small number of applications is still under consideration. For the coming year Interedition aims to focus a number of key dissemination opportunities towards related networks and projects (DARIAH, CLARIN, THAT) to connect to potential co-applicants for research and infrastructural funding proposals. (See also II.D. Self evaluation).

II.D. Self evaluation

The Action has progressed again satisfactory according to plans and planning outlined in the general Work Plan and planning of the MoU, meeting gradually more of its objectives. The ability of this Action to produce theory, dissemination *and* tools is particularly satisfying. Especially the success in establishing a seedling of an Open Source Development Community in the field of textual scholarship can be viewed as a major success in furthering the Action's cause of more interoperability. In this way Interedition has created the *potential* for a large methodological and

technological impact in this field and in a wider part of the humanities.

Dissemination –as a main concern of the previous self evaluation– has been rather successfully targeted by utilizing the COST Training School instrument, by producing relevant conference contributions, and by producing scientific results in software and article contributions. Connecting with several relevant other COST Actions also may prove a way of disseminating IS0704's results and keep momentum going. Also the websites (<http://www.interedition.eu> and <http://www.interedition.eu/wiki>) have been utilized more for in- and outward dissemination. Still however it is the wish of the MC to see particularly <http://www.interedition.eu> reflect more of Interedition's results at overview level. Also the website should be more reflective of the project ecology (the network of projects that Interedition is meanwhile representing), it should state more clearly Interedition's position between initiatives like DARIAH, CLARIN etc.. Lastly the MC would want to see the website reflect more of the 'people involved with Interedition' (as a counterweight to the rather technology permeated information that is now available). The MC is aware that a lot of this information is available through the Action's 'wiki' (<http://www.interedition.eu/wiki>), but wants the Action to strive for more concise and readable overview on the Action's website. The allowance in the budget for dissemination will be geared towards meeting these recommendations.

The decision to involve and network both textual scholars as well as IT-researchers within in Think Tanks ('bootcamps') has been a driving success factor for this Action. These bootcamps are the proof-of-concept for Interedition three tier model for furthering interoperability and cooperation in the field of (digital) humanities.

In all Interedition has developed and tested a very promising model for building and interoperating digital textual scholarly tools. Both tools, models and theory may have far greater applicability than the initially targeted research community of textual scholarship. Results and methods developed through Interedition could very well be useful for, and applicable to more humanities research fields (history, archaeology etc.), but certainly also in the domain of digital libraries and scientific publishing.

However, what Interedition until now has brought about is a modest proof of concept of its microservices architecture and model for interoperability and sustainability. Interedition lacks on its own the broad user base that is required for lasting impact in the mentioned application domains. Also Interedition at this point can, given its economic capacity, not sustain or snowball the valued open source development community it sparked into a self sustaining community for the IT technology support for humanities, digital libraries etc.

It is therefore that Interedition in its last year should focus highly and primarily on networking existing larger initiatives that support digital humanities infrastructures to generate enough momentum and a large enough consortium of willing partners to formulate a proposal to sustain Interedition's results. Apart from continued dissemination towards the targeted research community, Interedition will therefore disseminate its results towards relevant initiatives like CLARIN, DARIAH, Europeana, etc

Furthermore Interedition should make sure that in its last year the relevance of its works is again also promoted towards a critical mass of senior researchers in the targeted research communities. It is true that Interedition is very successful in tying in communal capacity of methodology and tool developing by way of Early Stage Researchers, creating a model for interoperable tool and infrastructure building supporting textual and history research. At the same time however, it should not be forgotten that these models and successes should be most forcefully brought to the attention of the established 'players' in the targeted field. It's therefore suggested that Interedition aims to either organize or contribute to a significant research summit (colloquium or conference) to generate such impact.

COST could assist in creating such impact by enabling 'ambassador missions' towards critical networks and conferences. COST funding is primarily aimed at 'inward' dissemination by organizing meetings and attracting stakeholders to these. However, a powerful way of 'outward' disseminating is presenting the Action's results and cause at key occasions in other EU networks and research conferences. Though current COST regulations allow for this a little, it could be supported more explicitly.

III. Previous scientific report(s)

2009-2010 Progress Report

II.A. Innovative networking

- *Innovative knowledge resulting from COST networking through the Action. (Specific examples of Results vs. Objectives)*

In the running year 2009 – 2010 of COST Action IS0704 'Interedition' COST networking has primarily enabled the members of this Action (more precise those involved in Working Group 3 'Strategic IT recommendations' and Working Group 2 'Prototypes') to investigate and recognize the requirements and prerequisites for a digital infrastructure supporting the primary targeted community (literary researchers and textual scholars), both on research heuristics, community and technical level. The combined COST/JISC workshop in Birmingham (September 2009) provided a platform to exchange current knowledge and models for the interoperability and sharing of tools and data in the research domain with a large international audience of relevant researchers (a.o from TAPoR, King's College, TextGrid, Aus-e-Lite). From this workshop, as well as from smaller meetings with DARIAH representatives (<http://www.dariah.eu/>), and ties to the Royal Netherlands Academy of Arts and Sciences project 'Alfalab' (<http://alfalablog.knaw.nl>), and also through original research by researchers involved with this action, it has become clear that the current feasible way forward for furthering and supporting digital literary and textual scholarship interoperability is by creating and supporting research community oriented virtual research environments (VREs).

VREs are research community specific (as opposed to generic), research subject driven (as opposed to technologically 'pushed') and comprise distributed solutions (as opposed to being integrated or centralised platforms). This model is rather orthogonal to the models currently applied to digital tool and environment creation in most 'digital humanities' initiatives. Interedition (COST Action IS0704's 'nickname') now strives to propagate this distributed, open, research network oriented model.

From an IT point of view this means that interoperability (as a means to lever sustainable digital heuristics, digital tool development, as well as data exchange, reuse, discoverability and preservation; for which determining the principles is a major objective of 'Interedition') must be addressed not at the functional level but at the level of digital/architectural workflow and protocol. The Gothenburg Working Group 2 Meeting and meet up with COST Action A32's experts (22-27 May 2010) resulted in determining the principle of workflow decomposition into web services. Utilizing this principle, intricate workflow heuristics can be modelled as pipelines of interchangeable web services communicating over lightweight exchange protocols (i.e. REST).

The November 2010 IT and subject experts workshop on digital textual collation explored a concrete and practical use case for both the community oriented model (by way of reflecting and networking current models for digital textual collation) and the technical feasibility of the web services oriented technical solution.

The technical feasibility of web services and distribute workflow/architecture was demonstrated by the successful development of Interedition's first prototype CollateX. That development (by Working Group 2) also expressed the viability of networking European wide (and even wider) IT capabilities in the humanities, showing that networked and time concentrated development effort through a community of open source developers leads to cross fertilization of digital solutions. Such is shown by the current results: the open source publication of CollateX (cf. <https://launchpad.net/collatex> and <http://sourceforge.net/projects/collatex/>) and the objective of the involved IT researchers to adopt prototype 1 'CollateX' as the core algorithmic collation engine in a number of related textual scholarship projects: Juxta (Virginia University/US), TextGrid (Würzburg University/Germany), SD Editions (ITSEE/UK), The Versioning Machine (DHO/Ireland) and the 'Hermans Volledige Werken'-project (Huygens Institute/The Netherlands). These tools will all use the collation engine as a web service over standardized web service protocol, exchanging data and workflow information in open standards, hence effectively demonstrating a first supranational web services based distributed interoperable solution to support tools in the field of textual scholarship. A demonstrator web GUI for Interedition's prototype 'CollateX' is due to be released June 2010. Preparations for prototype 2 (Image

annotation) have begun early 2010 and comprised networking with a number of possible new members.

The 'Research Communities + VREs + Web Services Interoperability' model that now is in 'blue print' use by Interedition has also been at the core of grant proposal produced through the Interedition consortium (or Action members). A 7th Frame Work Proposal was produced involving a partner consortium 'eScholar' as well as an ERC Grant proposal.

- *Significant scientific breakthroughs as part of the COST Action. (Specific examples)*

Finding, agreeing and introducing the 'three tier' model existing of research communities & heuristics (tier 1), Virtual Research Environments (VREs) to support those communities and heuristics (tier 2), and lightweight web services for sustainable interoperability (tier 3) may be regarded as a modest breakthrough for modelling and deploying sustainable supranational digital infrastructure in the targeted domain. The practical application of this model by way of Interedition's first prototype signifies a significant breakthrough, as it is the first time in this domain that multiple projects in the European realm (and beyond) will share distributed scalable algorithms and services, offering research community specific front ends. This is a major step towards demonstrating a model for sustainable interoperability and development of digital tools in this research field.

- *Tangible medium term socio-economic impacts achieved or expected. (Specific examples)*

Given the socio-economic dimensions and contribution of the targeted field (literary research and digital textual scholarship) socio-economic impacts will likely always be deemed modest. However, given the progress of Interedition's prototype 1 a considerable impact in the workflow of textual scholarship may be expected. Text collation is a cumbersome, error prone and labour intensive but necessary step in any scholarly editing process involving variant text. The potential of Interedition's prototype is to highly reduce the effort involved in this part of the textual research heuristic. Furthermore, applying the overall model of research communities oriented VRE development may result in considerable gain in resource discovery and effectiveness and efficiency of resource usage. The principle of web services based sustainability of tools development, distributed approach to sustainability of tools and data and may result in models for highly efficient tool and data sharing. The open source development community approach to sharing IT development capacity may prove very cost reducing by propagating more shared sustainable solutions and networking knowledge.

- *Spin off of new EC RTD Framework Programme proposals/projects. (List)*

The year 2009 – 2010 of Action IS0704 'Interedition' resulted in a 7th Frame Work Proposal (call FP7-INFRASTRUCTURES-2010-2) under the title: "eScholar: Virtual Research Communities". Unfortunately we received message that this proposal was not accepted. Based on the Interedition principles an ERC Grant proposal has been submitted early April. By way of our Bulgarian member IS0704 was also involved in FP7 proposals SLAVO in ICT (call for digital libraries) and MEDIATOR (call Regpot-2010). Neither of these successful unfortunately.

- *Spin off of new National Programme proposals/projects. (List)*

A Polish national research proposal for scholarly tools development for digital libraries is under development.

A number of national level projects is meanwhile benefiting from Interedition's concrete results: Juxta (Virginia University/US), TextGrid (Würzburg University/Germany), SD Editions (ITSEE/UK), The Versioning Machine (DHO/Ireland) and the 'Hermans Volledige Werken'-project (Huygens Institute/The Netherlands) are preparing to utilize Interedition's distributed text collation solution.

Current planning will result in national support for an Israelian 'Datastructures, Tools and Ideas' workshop.

A proposal for a Google sponsored 'Summer of Code' is in preparation.

Progress had been made in the national project Repertorium (Bulgarian Academy of Sciences, Sofia) in analytical description and encoding of medieval palimpsests (Greek, Cyrillic, Glagolitic). The Repertorium includes about 300 descriptions of Slavic manuscripts together with samples of original texts (TEI P5).

In the field of full text edition of medieval manuscripts the national project "The Tenth-Century Cyrillic Manuscript Codex Suprasliensis: the creation of an electronic corpus" won a UNESCO grant (2010-2011). This project is intended not only to unite digital images of all three parts of the Codex Suprasliensis, currently located in three different countries (the National Library in Warsaw, Poland; the National Library of Russia in St. Petersburg; and the National and University Library in Ljubljana, Slovenia), but to develop an electronic version of the Codex Suprasliensis, together with critical apparatus, parallel Greek text, translation, vocabulary, grammatical analysis, and tools for searching. Digital images of all sheets of the monument will be available simultaneously with the text as a unified electronic product.

II.B. Inter-disciplinary networking

- *Additional knowledge obtained from working with other disciplines within the COST framework. (Specific examples)*

The involvement in IS0704 'Interedition' of a (meanwhile) international based open source development community of IT researchers in what is basically a textual scholarly field has proven paramount for the development of the lightweight protocol web services model for the interoperability and sustainability of digital scholarly tools and heuristics. The involvement of experts from the field of the social study of science, as well as the possibility to attract expertise from a wide range of international digital humanities projects has been essential to develop the model of 'research community targeted VRE development'.

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide scientific impacts. (Specific examples)*

We expect that the level of inter-disciplinarity reached with networking IT researchers and domain experts will have considerable scientific impact. Until now the major and almost singular constituted form of interoperability in the field of (digital) textual scholarship has been by way of the TEI guidelines (which constitutes a de facto agreement on textual modelling and encoding). However, the TEI comprises a data format / structure, it does not lay down a model for algorithmic or workflow process interoperability. The web services approach does, and may be the first effective model for interoperating digital tools and services in the field of digital textual scholarship. As Interedition (IS0704) is able to both provide theory, model and proof of concept, as well as the establishing of a viable open source development community to carry forth the development of the (prototype) infrastructure, it's very likely that this Action's results will have a high impact. The success of IS0704's first prototype (which will be functioning as a core service to at least four well established digital tool producing projects in the field) may serve as an indicator for this expected result. The same interdisciplinary approach is applied by a team in Sofia University and in Bulgarian Academy of Sciences (specialists in informatics and in philology) This team is working on digital tool development related to digital libraries of Cyrillic written cultural heritage.

The expected impact will be supported in this and next year of the Action by a strategy for dissemination. A key peer reviewed article on Interedition's principles and prototypes will be completed by July 2010. Furthermore we intend to focus the November 2010 conference of the European Society for Textual Society with a number of Interedition related papers and presentations.

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide socio-economic impacts. (Specific examples)*

Cf. *Tangible medium term socio-economic impacts achieved or expected. (Specific examples)* above

II.C. New networking

- *Additional new members joining the Action during its life.*

During this Action's year Poland and Bulgaria joined as signatory countries. A small number of additional institutes and organizations from the signatory countries have been involved in the action. In accordance with the advice of the Domain Committee Rapporteur 2009 we aim to not grow significantly beyond the current Action's membership number. The Action's membership number and composition is apt and strategic for a careful bottom up approach to introducing the derived interoperability principles to the field.

- *Total number of individual participants involved in the Action work. (Number of participants. Give % of female and of Early Stage Researcher participants)*

No changes to report since last Annual Progress Report.

- *Involvement of Early Stage Researchers in the Action, in particular with respect to STSMs, networking activities, and Training Schools. In addition, justification should be provided if less than 4 STSMs were carried out during the year.*

Most of the early stage researchers involved in this Action are connected to the Working Groups 3 ('Strategic IT Recommendations') and 2 ('Prototyping'). Delivering the proof of concept prototypes is mainly the accomplishment of these early stage researchers involved in either Working Group meetings, STSM's (8 conducted) or connected 'bootcamps' (1 organized in the current year). Early stage researcher involvement has resulted in several paper proposals and a significant contribution to the FP7 proposal delivered. One intended key peer reviewed publication will involve considerable authorship of these early stage researchers.

- *Involvement of researchers from outside of COST Countries. (Number of participants from non-COST Countries approved by the CSO. Give % of such participants from countries with reciprocal agreements. Specify their contribution)*

This Action until now involves no researchers of institutions from outside COST. However several international experts (2 US, 2 Australian) from non COST countries have been taking part in a number of Working Group 3 ('Strategic IT recommendations') meetings.

- *Advancement and promotion of scientific knowledge through publications and other outreach activities. (Number of publications and other outreach activities that resulted from COST networking through the Action. Complete list should be given in an annex)*

This Action has not yet produced publications. In its first year this Action's main dissemination has been through the connected website (www.interedition.eu). Currently a peer reviewed article on the results is in preparation. The November 2011 conference of the European Society for Textual Scholarship is targeted as a key occasion for dissemination of results. A number of involved researchers is aiming to have contributions on behalf of the Action to this conference. IS0704's first prototype has been released as open source software tool at (<https://launchpad.net/collatex> and <http://sourceforge.net/projects/collatex/>), technical development information has been published. A web GUI to this tool will be published and documented in June 2010.

- *Activities and projects with COST network colleagues.*

This Action organized two workshops in conjunction with COST Action A32 ('Open Scholarly Communities on the Web'). A workshop was called in Gothenburg in May 2009 to relate the ongoing IT research in this Action to that of A32. In November 2009 the workshop on 'Current Issues in Digitally Supported Text Collation' was co-organized with COST Action A32. IS0704 'Interedition' is furthermore developing ties to COST Action IS0901 ('Women Writers in History') which is interested in the VRE heuristics modelling approach by this Action.

- *The capacity of the Action members to raise research funds.*

In the reporting year six members of this Action were involved in putting together an FP7

proposal ('eScholar', cf. above). Unfortunately this proposal was not granted funding. An ERC grant proposal has been submitted by an involved senior researcher. The Poznan (Poland) based PSCN is preparing an Interedition related national funding proposal for digital tool development related to textual scholarship and digital libraries. Multiple members of IS0704 are working on funding proposals to network early stage scholarly researchers and early stage IT researchers (a.o by way a of a proposal for a Google sponsored 'Summer of Code').

II.D. Self evaluation

In all COST Action IS0704 'Interedition' progress is satisfactory. Especially the progress made by Working Group 3 ('Strategic IT recommendations') with respect to attracting and tying in expert advice from the European and wider arena of digital textual scholarly experts, and by that finding common ground for heuristics modelling and principles for technical interoperability, has been essential and effective in furthering Interedition's cause. The planning of further workshops, one of which is also focused on tying in tool development ideas from early stage researchers promises to be a continuing of this impetus for the field. The progress made by Working Group 2 'Prototyping' is very satisfactory. Working Group 2 was able to establish the seeds of a humanities open source development community, sharing common principles towards open, distributed and light weight solutions for tool and data interoperability in the targeted research field. The publication of the first prototype, the coming forth shortly of a web GUI demonstrator for this first prototype, and foremost the fact that at least 4 digital independent projects in the field are gearing up to utilize the results of Working Group 2 may be called a success. A true gain is the common ground found between Working Group 2 and 3 and external projects in the '3 tier' approach to sustainable and collaborative development of digital research tools.

Working Group 4 ('Roadmap') has made considerable progress in inward disseminating the networked knowledge generated by Working Groups 2 and 3 and a first rough draft of the 'Roadmap' should become available in the first half of the third year of this Action's running. Working Group 4 also has been successful in initiating further funding proposals. However, this has as of yet not lead to funding being granted. In the coming year new initiatives for FP7 grant proposals will be taken. A number of smaller grant proposals have been submitted, of which at this time is not yet known if they have been granted.

Due to several reasons, the tasks Working Group 1 'European Dimension' in 2009-2010 took a different course than was planned beforehand. On the one hand, it proved very difficult to get the promised information on the wiki (links to surveys, key occasions, networks) organised. In 2010-2011 we will have to make sure the necessary information will be there. On the other hand, a task that was only planned for year 3 and 4, to initiate new grant proposals on an international scale, foregrounded itself on the Working Group through the opening of a very interesting call: FP7-INFRASTRUCTURES-2010-2. Working Group 1 will intensify its primary task of inward and outward dissemination. The focal point of dissemination will be the website at www.interedition.eu. WG1 will publish its overview on existing surveys and studies on digital scholarly editing and interoperability there. Also on the website WG1 will deliver a list of key occasions (conferences, symposiums) and networks (Bamboo, Talia etc.) suitable for outward dissemination to which Interedition's 'message' may be targeted. In addition to that, it will deliver a dynamic 'proactive' list of existing projects and networks pertaining to Interedition's cause. The latter list will be 'proactive' in the sense that it will state what the WG1 members think other projects' relevance for Interedition could be, which will hopefully entice additions and elaborations by proper members of those projects, thus provoking discussion (on interoperability).

One key difficulty encountered in the past year pertained to the organizing of the 7th Framework Programme Proposal. The news that this Action was preparing such a grant proposal generated generous feedback and interest of many members and potential partners. This meant that there was a large impetus and motivation in the domain of literary, linguistic scholarship and the digital library community to produce a proposal. The drawback however, was that this drew heavily on the effort and time the Chair/Working Group Leader of Working Group 4 and Working Group Leader of Working Group 1 could invest in running the Action itself. Putting forth a 7th Framework proposal nearly depleted all time allocated to running the actual Action on a day-by-day basis. As proposals

also run the risk of being rejected, it's a matter of consideration how much effort it should take on part of Chair and Vice Chair to steer the production of such a proposal. A possible solution to this is to focus an actual workshop on the production of such a proposal, but this seems somewhat orthogonal to the scientific purpose and objectives of such networking events. Of course the creation of grant proposals is of direct scientific supportive value, but it's questionable how heavy such effort should draw on the resources of a COST Action to actually network existing research and generate innovative collaborative research through it's networking events, because proposals have less tangible or secure results than the actual networking of existing research. Thus, it seems there's an imbalance in the effort required to produce FP7 proposals and the average budget envelope of COST Actions.

2008-2009 Progress report

II.A. Innovative networking

- *Innovative knowledge resulting from COST networking through the Action. (Specific examples of Results vs. Objectives)*

The primary objective of this Action as formulated in the MoU is to create "a 'roadmap' or 'manual' conceptualizing the development of a technical infrastructure for collaborative digital preparing, editing, publishing, analysing and visualizing of literary research materials". In the MoU the 'roadmap' was primarily established as a practical and technical guide on how to implement the proposed infrastructure. Through networked knowledge resulting from the first Working Group meetings it's become apparent that any successful infrastructure (i.e. as in having an impact within the targeted community) should propose thoroughly feasible and acceptable solutions concerning a number of issues additional to 'just' the technicalities of a digital infrastructure. The most important of these are:

- Defining interoperability on different levels. 1) Syntactic interoperability (this concerns the IT specifics of information exchange protocols, formats, components, services); 2) Semantic interoperability (this concerns the form and function of the textual and referential model used on/conveyed over the infrastructure, determining textual, content or domain interoperability); 3) Community interoperability (this concerns the ability to discover and exchange textual information in an open way but respecting any rights and restrictions on usage of data).
- Recognizing requirements and prerequisites for a digital infrastructure supporting the primary targeted community (literary researchers) resulting from the connections between the primary targeted community and other communities, like those surrounding (digital) libraries, institutional (university) libraries, and existing on and of line scholarly digital editions.
- Preparing for changing academic/research dynamics. Rather than expressing or modelling the prevalent institutional based research models, the 'roadmap' should focus on an infrastructure that promotes and supports cooperative online research dynamics; distributed analysis and information services; and decentralised peer review systems.

It's debatable whether 'Interedition' as a COST Action should take it on to answer / research these different additional issues within the Action time frame. But these issues should at least be identified and addressed as important aspects pertaining to any feasible digital infrastructure proposed in the 'roadmap'.

The intensive exchange of knowledge over the first year of the Action has furthermore resulted in the preparation of the first survey on existing digital infrastructure in the wider European area and beyond. Particularly useful for the progress of the Action was the inference of about 30 high level specifications or requirements for a digital infrastructure to be proposed in the 'roadmap'; and the agreement that the basic architecture of any internationally shared infrastructure for scholarly editing purposes should consist of an open network of on line services. These results of networked knowledge will contribute directly to the contents of the 'roadmap' and a first dissemination result, a short manifesto on interoperability for digital infrastructure for scholarly publishing and research purposes.

Achieving the first results for the secondary objectives of this Action was only possible through the networking possibilities offered through COST. The first proof of concept prototype web service is expected to be completed mid 2009 as a result of 'bootcamps' for involved IT-researchers dovetailing with proper Working Group(s) meetings generating functional requirements and feedback on site. Networking of Working Group 1 ('European Dimension') is resulting in the preparation of a first further proposal for funding for this Action's objectives.

As a result of the networking possibilities provided through COST, this Action is attracting an influx of knowledge from different related networks and projects, eg: COST Action A32, Juxta, Talia, CLARIN.

- *Significant scientific breakthroughs as part of the COST Action. (Specific examples)*

As mentioned above, a significant breakthrough was to be found in establishing agreement on about 30 high level specifications for the digital infrastructure to be proposed in the roadmap; such agreement is paramount for any possible impact of the Action's results. Cooperative and networked research for the development of the first proof of concept prototype resulted in significant technical (notably scalability and the defining of discrete components in the work flow) and conceptual (notably combined superbase based/permutation based collation of multiple text witnesses) improvements on the underlying automated text collation technology for digital text. Cooperative research resulted in identifying a series of valuable research and prototyping areas that should be explored in depth through the next years of the Action. These areas include: text collation, discovery and exchange of on line scholarly data (sources), service registry and exchange, cross media annotation, security and authorization, ontologies.

- *Tangible medium term socio-economic impacts achieved or expected. (Specific examples)*

The COST IS0704 Action is nearing the end of its first year of running. It's too early to estimate or establish socio-economic impact of the preliminary results of this Action.

- *Spin off of new EC RTD Framework Programme proposals/projects. (List)*
 - COST Action IS0704 is intending to prepare a proposal for the upcoming FP7 5th ICT Call for which the draft topics suggest a strong match with some of the Action's goals and objectives. Working Group 1 is investigating other possible related calls.
- *Spin off of new National Programme proposals/projects. (List)*
 - Individual members of this Action are participating in a proposed JISC workshop.
 - Interedition is connected to the Alfalab project of the Royal Netherland Academy of Arts and Sciences.

II.B. Inter-disciplinary networking

- *Additional knowledge obtained from working with other disciplines within the COST framework. (Specific examples)*

The major advancements that were made in the underlying technology of this Action's first proof of concept prototype (part of the secondary objectives of this Action) were only realized through heavy involvement of IT-researchers and experts. The interdisciplinary research (combined IT and humanities expertise) conducted on the specific problem of text collation has resulted in important improvements of the collation algorithms used in the first prototype web service that this Action will deliver in support of its proposals for a greater digital infrastructure.

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide scientific impacts. (Specific examples)*

It's expected that this level of interdisciplinarity may indeed be sufficient to provide scientific impact in the fields of 'Humanities Computing' and digital scholarly editing. It's not unreasonable to expect this Action to add focus to the problem of interoperability of digital scholarly editing tools. Currently

interoperability is sought mainly through convergent data format(s). The interdisciplinary research in this Action may add or shift focus to interoperability of digital data models and analytic services. Also it may be expected to add focus to quality of software solutions within the field of 'Humanities Computing'. Higher standards of software quality may in turn result in more reusable/durable tools and services from which higher impact humanities research may result.

- *Evaluation of whether the level of inter-disciplinarity is sufficient to potentially provide socio-economic impacts. (Specific examples)*

COST Action IS0704 is nearing the completion of its first year of running. It's too early to estimate or establish socio-economic impact of the level of interdisciplinarity of this Action.

II.C. New networking

- *Additional new members joining the Action during its life.*

In its first year this Action attracted new members from Bulgaria, Finland, Ireland, Israel and Macedonia. It's expected that new members from Poland will join shortly.

- *Total number of individual participants involved in the Action work. (Number of participants. Give % of female and of Early Stage Researcher participants)*

The total number of individual participants involved in this Action hovers around 35. Of these participants 5 are female (14.3%). At least 8 participants (22.9%) qualify as early stage researcher. Numbers vary slightly as not all participants are or will be involved for the entire duration of the Action.

- *Involvement of Early Stage Researchers in the Action, in particular with respect to STSMs, networking activities, and Training Schools. In addition, justification should be provided if less than 4 STSMs were carried out during the year.*

Most of the early stage researchers involved in this Action are connected to the Working Groups 3 ('Strategic IT Recommendations') and 2 ('Prototyping'). Delivering the first proof of concept prototype is mainly the accomplishment of these early stage researchers involved in either Working Group meetings, STSM's (5 conducted) or connected 'bootcamps' (2 organized). Early stage researcher involvement is resulting in a symposium paper proposal and contributions to the intended FP7 ICT Call 5 proposal.

- *Involvement of researchers from outside of COST Countries. (Number of participants from non-COST Countries approved by the CSO. Give % of such participants from countries with reciprocal agreements. Specify their contribution)*

This Action until now involves no researchers of institutions from outside COST Countries.

- *Advancement and promotion of scientific knowledge through publications and other outreach activities. (Number of publications and other outreach activities that resulted from COST networking through the Action. Complete list should be given in an annex)*

This Action has not yet produced publications. In its first year this Action's main dissemination has been through the connected website (www.interedition.eu).

- *Activities and projects with COST network colleagues.*

This Action is organizing two workshops in conjunction with COST Action A32 ('Open Scholarly Communities on the Web'): a pre-workshop brainstorm session for involved IT-researchers (May 2009) and a workshop for IS0704/A32 members and interested dovetailing with an ESTS-conference (November 2009).

- *The capacity of the Action members to raise research funds.*

At least 4 members of the Action are in some way involved in current activities that try to raise funds for research or research related activities (primarily activities aimed at dissemination). From past results it may be expected that some of these activities will result in successful applications.

However, none of the current activities have resulted in actual funding applications yet. (Note that concrete funding applications in year 1 of the Action were also not expected from the general Work Plan outlined in the MoU.)

II.D. Self evaluation

The Action has progressed satisfactorily along the lines and planning outlined in the general Work Plan and planning of the MoU. The objectives set for year 1 were largely met: the first proof of concept prototype (secondary objective) was delivered, the first contributions and outline of the primary deliverable ('roadmap') were realized. The intended survey of existing digital tools and frameworks for scholarly editing and analysis in the wider European area did not materialize but preparations for it are meanwhile being made.

Particularly satisfying is that the Action seems to be causing a momentum that generates related activities that are beyond the intended scope of its primary and secondary objectives. The initiatives for a number of proposals and workshops that are developing as a result of the networking provided by the Action seems to be the result of this momentum.

Undoubtedly the joint Working Groups meetings were key occasions to network the research and bodies of knowledge represented by the different members of the Action. Especially the organization of so called 'bootcamps' dovetailing with these Working Group meetings, where early stage researchers and IT-experts involved put feedback 'to work' immediately, are found to be valuable opportunities to propel the cause of the Action.

The involvement of a relatively large proportion of early stage (IT-)researchers can not be overestimated. It's this involvement that has made considerable progress in the technology of the first prototype possible and has contributed greatly to the development of ideas for the architecture of the infrastructure the Action wants to propose in its primary deliverable, the 'roadmap'.

The initiatives to organize a number of workshops in conjunction to COST Action A32 are seen as a very positive development that will benefit both Actions in reaching their objectives.

A momentarily weak aspect of the Action is its 'power and effectiveness' of outward dissemination. Although inward dissemination (by the involved members presenting research and networking their knowledge through the Working Group meetings) is satisfactory, outward dissemination lags behind. The members of the Action should guard that the second year of the Action sees a firm growth of the body of knowledge represented on the Action's website, that a satisfactory amount of related publications will be produced in conjunction with the Action and that much more general communication and call for participation is sought through common channels (like well known and well read on line news letters and mailing lists within the connected research communities). Also the internal communication of the Action should draw considerable more attention. Although the essential communications are being looked after, there should be a more steadily stream of information available for the involved members and interested parties through regular news feeds, mailings and the Action's website.

[end]