Grid enabled access to rich media content

Requirements Identification and Analysis

Project Reference No.	**FP6-34363**
Deliverable No.	**D1.2**
Relevant work package:	**WP1: Platform Requirements Analysis**
Nature:	**R (Report)**
Dissemination Level:	**PU (Public)**
Document version:	**final**
Date:	**15/02/2007**
Editor(s):	**ATC**
Document description:	This document describes the Grid applications requirements, from both the end user and technical perspective, which can be identified to support the middleware, services and application development of the GREDIA platform.

History

Version	Date	Reason	Revised by
01	24/11/2006	Table of Contents	V.Tountopoulos (ATC)
02	9/1/2007	First Draft	V.Tountopoulos (ATC)
03	25/1/2007	Second draft for London meeting	V.Tountopoulos (ATC)
04	9/02/2007	Added user survey results	K. Diamantakou (ATC)
05	11/02/2007	Modified Security requirements and added Appea Use case	N.Sarris (ATC)
06	13/02/2007	Prefinal version peer review	N.Sarris, V.Tountopoulos (ATC)
07	15/02/2007	Final version	N.Sarris, V.Tountopoulos (ATC)

Authors List

Organisation	Name
ATC	Vasilios Tountopoulos, Katerina Diamantakou, Nikos Sarris, Dimitris Koutlis, Richard Brown
SYMBIAN	John Pagonis
DW	Wifried Runde, Jochen Spangenberg, Tim Koch, Martin Pinkerneil
CYF	Piotr Nowakowski, Daniel Harezlak, Marian Bubak
ICCS	Dimitrios Tsoumakos, Nectarios Koziris
CITY	Andrea Zisman, Bill Karakostas
UMA	José Luis Vivas
DIAS	Greg Andreou, Antonis Karatzias
POPSO	Mauro del Barba, Marco Tempra

Table of Contents

List of Figures

List of Tables

List of Abbreviations and Terms

ADAMO	Archive databases Music and Word
ADAPRESS	Text Database for Manuscripts, Press and Agency Messages
API	Application Programming Interface
Appea	GREDIA Application Development Platform
APTN	Associated Press Television News
ARD	Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland – Consortium of public-law broadcasting institutions of the Federal Republic of Germany
ATM	Asynchronous Transfer Mode
AVID	Advanced Visual Information Display
AWS	Audio-Work-Stations
CDC	Connected Device Configuration
CLDC	Connected Limited Device Configuration
CMS	Content Management Systems
CRD	Credit Risk Department
DIAS	Digital Audio Production and Broadcast System
DRM	Digital Radio Mondiale
EDL	Editing List
FESAD	TV database of the ARD Network
FTP	File Transfer Protocol
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	Hyper Text Transfer Protocol
HTTPS	Hyper Text Transfer Protocol Secure
I/O	Input/Output
ID	Identification Number
IIS	Internet Information Services
LAN	Local Area Network
MM	Multimedia
MOS	Microsoft Office Specialist
NDS	News Distribution System
NRS	News Room System
OMF	Open Media Framework
OS	Operating System
P2P	Peer-To-Peer
P2P	Peer-to-Peer
PAN	Press Archive Network
QoS	Quality of Service
SAP	Service Access Point
SEMC	Sony Ericsson Mobile Communications
SNG	Satellite Newsgathering Trucks
SSL	Secure Sockets Layer
TTS	Time, Topic and Transmission Scheduling
UIQ	User Interface Intelligence Quotient
UMTS	Universal Mobile Telecommunications System

VJ	Video Journalism
VMS	Video Management System
WDR	Westdeutscher Rundfunk (German radio and TV station)
WSRF	Web Services Resource Framework
ZDF	Zweites Deutsches Fernsehen – "Second German Television"

Executive Summary

The purpose of this document is to detail the methods used and the result of the process for gathering and analysing the user and system requirements for the GREDIA project. In that respect, this deliverable describes the Grid applications requirements, from both the end user and technical perspective, which can be identified to support the middleware, services and application development of the GREDIA platform.

The process for analysing user requirements was based on the scenarios identified for the envisaged pilot applications, which guided an extended user survey, carried out through interviews and questionnaires. The latter were analysed and used to determine the GREDIA use cases, the functional and non-functional requirements.

1. Introduction

"A quoi ça sert?"
"*What's it for?*"

-President Chirac (of France)
on being shown the Millennium Dome,
by Prime Minister Blair

One of the critical success factors in the development of a high quality software product is the deep understanding of the user's real requirements, as opposed to their perceived requirements. This is where many projects fail; they do not correctly specify what the system should do.

User Requirements Capture is the process by which user desires, needs and expectations are gathered in order to establish what the users will actually use the software for.

Essentially, User Requirements Analysis is about refining the software product so that is meets customer needs, as opposed to simply meeting their specification.

User Requirements Capture can therefore be difficult because:

- The developers are not the users
- Inadequate requirements information may be collected from users
- Each individual type of user may have their individual requirements, but cannot define the overall system requirements
- Users do not know what the particular software system can and cannot do
- Too many "nice-to-have's" that wouldn't actually be used.

Once identified, the user requirements effectively lay the foundation for developers, testers, and implementers to begin determining the functionality, responsiveness, and interoperability required of that system.

Unfortunately, many people consider gathering user requirements as a waste of time. However, the strategy is crucial to a project's success for developers and project managers to obtain accurate user requirements as well as increase the level of end-user involvement on the project.

1.1. Expectations

A fundamental challenge for the technology-oriented enterprises is to meet customers' expectations, when developing products and services. Due to the strong competition that they face nowadays, a successive approach should be the design of products on the basis of the achieved quality. In this direction, requirement analysis is the foundation of a user-centred approach, creating products that appeal and meet user needs at the closest level.

User requirements analysis provides precise descriptions of the content, functionality and quality demanded by prospective users. For the identification of user needs the user perspective must be assumed and result in:

- ✓ **Functional requirements** *(What the users want the system to do)*

The goals that users want to reach and the tasks they intend to perform with the new software must be determined. By recognising the Functional Requirements, we understand the tasks that involve the abstraction of why the user performs certain activities, what his constraints and preferences are, and how the user would make trade-offs between different products- software applications. The important point to note is that **WHAT** is wanted is specified, and not **HOW** it will be delivered.

- ✓ **Non-functional requirements** *(The restrictions on the types of solutions that will meet the functional requirements)*

Specification of non-functional requirements includes the categorization of the users (professionals and personal users), the description of user characteristics such as prior knowledge and experiences, the special needs of professional (journalists, editors, etc) and personal users (news audience), subjective preferences, and the description of the users' environment, in which the product or service will be used. Legal issues, intellectual property rights, security and privacy requirements are also an issue.

1.2. Methods for capturing user requirements

Methods such as observation, interview, document analysis, focus group and analysis, checklists or questionnaires can be used for the elicitation of user requirements. Scenarios and Use Cases have also become a popular technique for task analysis.

Different requirements analysis methods can be applied in parallel to complement each other in order to yield more effective results.

For carrying out the process of requirements identification and analysis a variety of tools were used in a complementary way. These tools are listed together with their benefits and drawbacks in the following table, while the details of their implementation are described in the following sections:

Table 1: User requirements analysis tools employed

METHOD/ TECHNIQUE	DESCRIPTION	BENEFIT	DRAWBACK
Scenarios /Use cases /Personas	Detailed realistic examples of how users may carry out their tasks in a specified context with the future platform	Personas can bring user needs to life	Scenarios may raise expectations too much. Personas may over simplify the population
User Surveys	A set of written questions to a sample population of users. Surveys can help determine needs, current work practices and attitudes to the new system ideas	Relatively quick method of determining preferences of large user groups. It also allows statistical analysis	This method may not capture in depth comments and may not permit follow-up
Focus Groups	This technique brings together a cross-section of users in discussion group format. A useful method for requirements elicitation	Allows rapid abstinence of a wide variety of user views	Recruitment effort to assemble groups. Dominant participants may influence group disproportionately
Interviewing	A series of fixed questions with scope for the end user to expand on his response	Interviews allow quick elicitation of ideas & concepts	Negotiate access/possible different opinions from different users
Existing Systems /Competitor Analysis	Comparison of expected product with existing systems	Effective in identifying current problems, possible new features and acceptance criteria	This method may lead to including too many new functions or make system too similar to a competitor's

1.3. Effectiveness of user requirements analysis

The effectiveness of user requirements analysis in the beginning of a development project depends to a large extent on the type of project.

Collecting user requirements for potential consumer products requires much effort, and the risk to fail is still very high. As long as consumers have no idea of the innovative product or service, it will be very difficult for them to state their needs. Creativity of designers is required for the transfer of user requirements into innovative consumer products.

For the development of professional applications precise user requirements analysis and specification is essential. Professionals often are available who perform the tasks under investigation.

Task analysis is obligatory for the development of safety critical applications. A characteristic of safety critical work domains is that tasks and procedures are precisely defined before new support tools are built. This is a good precondition for the specification of functional and non-functional requirements.

User requirements analysis is an error prone part of the development process and errors not detected at this stage may lead to expensive system failures later. For this reason, user requirements should be verified as soon as design solutions and prototypes are available.

1.4. Document structure

This deliverable is structured as follows:

Section 2 presents the scenarios serving the two pilot applications envisaged in GREDIA for two critical business sectors, namely, media and bank. Section 3 analyses the results collected for the conduction of interviews with the various Focus Groups. Section 4 describes the results from the questionnaires, which were distributed for gathering the users' opinion on the pilot application scenarios. Section 5 presents an analysis of the internal structure and workflow of the GREDIA Business Users, which will provide the operational environment for instantiating the GREDIA platform with the pilot applications. Section 6 describes the use cases scenarios as they are determined from the analysis of the Focus Groups and the questionnaires. Finally, Section 7 provides the functional and non-functional requirements of the GREDIA system and Section 8 summarizes some concluding remarks.

2. Description of the GREDIA scenarios

"*Scenarios are arguably the starting point for all modelling and design*"
Alistair Sutcliffe -RE'03

As explained, requirement analysis is a process that may last throughout the life-cycle of the GREDIA project. But in order to deduce the system most crucial requirements, a number of application scenarios, which envision the future uses of the GREDIA platform, were authored in the format of storylines.

Individual persons were identified in this process to represent the needs of larger groups of users, in terms of their goals and personal characteristics. They act as 'stand-ins' for real users and help guide decisions about functionality and design. Through these persons, the motivations, expectations and goals are becoming more familiar so the consortium can reach a common understanding of the targeted product and the potential users interviewed can comprehend the context in which they are questioned.

These persons were brought to life with specific names and personalities. Even though fictitious, they are based on knowledge of real users. Some form of user research was conducted within the consortium user partners before they were authored, in order to ensure that they represent end users rather than the opinion of the person writing the scenarios.

Although the scenarios have many benefits, they alone will not ensure the success of the user requirements recognition process. There is still a need to use other methods (such as user surveys) in order to understand the detailed tasks or services GREDIA platform will need to accommodate. However, the scenarios formed the basis for the requirements recognition process. Through these stories the relevant system capabilities were identified and utilised to interview users and determine the importance of each feature, so that priorities could be set and the most important use cases could be described.

2.1. Media Sector

With the explosion of ultra portable photo/video capture media (i.e. based on mobile phones, PDAs or solid state camcorders) everyone can capture reasonably good quality audiovisual material while on the move. We have recently started to experience the emergence of amateur 'reporters' who are able to capture events as they happen on their portable device. With sites like Flickr and Youtube anyone can upload such media for the benefit of others (typically on a free basis). Within GREDIA we envision a system that will cater for the reporter who is on the move with lightweight equipment and wishes to capture and transmit news content. This user needs to safely and quickly upload the media to a secure server to make it easier to others to access and to avoid situations where his device's battery dies out or other malfunction destroys or makes his media unavailable.

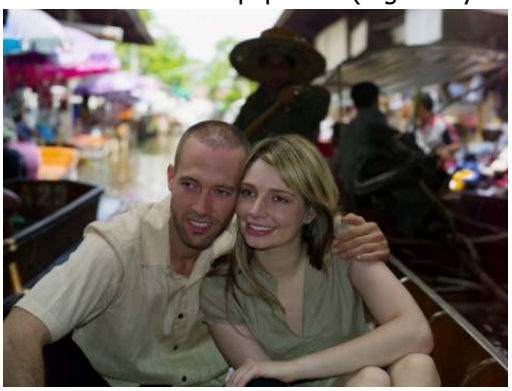
The GREDIA media pilots aim to bring together the market orientation and pervasiveness of mobile communication technology with the promise of a dynamically concerted use of resources and services provided through Grid infrastructures. In the media domain, both the distribution of content and the need for rapid access of this content are apparent. News are inherently distributed everywhere and their value falls geometrically with time. These two reasons make the need of Grid technology evident in both scenarios, which represent, however, a plethora of relevant business cases which share these two common characteristics: need for fast access to distributed content. Especially the P2P overlay network which is proposed in the framework of GREDIA is expected to impact significantly the access time and make such applications really useful to the associated users – as news delivery applications that do not have the capability to deliver the news from everywhere to anywhere as immediately as possible will never have any significant value in the business applications market.

2.1.1. GREDIA GRID ONLINE – Enabling Professional and Citizen Media

One of the main innovations for media professionals, researchers and the general public alike was the launch of *GREDIA GRID ONLINE (GGO)* as the preferred platform for editors, freelance journalists and also semi-professional reporters and bloggers from all kinds of backgrounds including civil rights organisations. GGO provides a comprehensive and easy-to-use tool kit to define a personalised working, storage and exchange environment to its members that supports all major operating systems as well as access from desktop computer, notebook and common mobile devices. Let's meet our Media Users using GGO…

Susan Michaels & Peter Sixtus, *Bangkok -Thailand*

Susan Michaels and her partner **Peter Sixtus** live in Thailand since the mid 90ies. Both had already several years of experience as journalists when they finally decided to move to Bangkok. Travelogues as well as cultural and culinary reports were their "bread and butter business" during their first Thailand years but it soon became apparent that the media houses in Germany liked the idea of having their own foreign "correspondents "at their disposal, without additional financial burden to the overall head count. Due to this fact Susan and Peter constantly broadened their journalistic spectrum that now includes political topics as well as travel guides, Internet crime or environmental issues. In 2001 they also added video productions to their portfolio which was dominated by print, Internet and radio publications by then. Susan's and Peter's new journalistic outlet was especially facilitated due to the sharp decrease in costs for professional and semi-professional camera equipment (e.g. Sony PD 150 or 170), editing software (e.g. Final Cut) and increasing availability of fixed and mobile broadband connections. Quality and interoperability of tourist-type camcorders nowadays match or even outperform professional media requirements in the late Nineties.



With the launch of GGO Susan and Peter transferred their core working and collaboration space into this sophisticated online environment which soon became an indispensable tool to manage major parts of their professional life including acquisition of new assignments and co-operation with other freelancers.

Both subscribed to an "unlimited" GGO account that allows them to store vast amounts of categorised data within their personal GGO space and define various types of access rights. While access to GGO follows the "always-on" paradigm all of Susan's and Peter's raw materials, e.g. pictures, videos, sketches, unedited interviews and texts are directly uploaded to the secure GGO area and are thus immediately available to their authorized peers.

These include their main employers as well as selected content brokers and co-operating news agencies. GGO's integrated features allow for fast and easy annotation of the available raw material with summaries and keywords, which generate "content and news alerts" that are pushed to potentially interested parties based on the personal interests of Susan's and Peter's professional network and relationships. An integrated rights management verifies access rights and conditions of use. A subsequent payment process is triggered when required.

While in a highly networked and "always-on" world the value of news became extremely real time and multi-platform dependent, extensive use of GGO considerably increased the income of Susan and Peter and allowed fast-paced yet quality-aware and investigative journalism to pay off.

But GGO's features offer even more. Susan and Peter collaborate with a group of journalists that share certain interests and topics. GGO provides all members of a dedicated group mutual access to data that is stored in a dedicated "Peers Portfolio". Again data uploaded to this area is semantically processed including GPS information if available and respective peers are automatically informed about new material relevant to their topics of interest and possible means and conditions for co-

operations. Based on pre-defined parameters suggestions for share of work and share of revenues are generated and exchanged. This highly automated/semi-automated process has led to a substantial increase of journalistic peer groups enhanced by non-professional or semi-professional citizen journalists and bloggers covering an immense range of different subjects and providing an enormous quantity of data with real-time topicality never experienced before.

Since GGO is based on a de-centralized P2P and Grid architecture, which provides highest safety standards, redundancy and certified QoS performance even the real time upload of large video files runs smoothly with only limited extra costs for additional storage and data traffic. That means even if Susan and Peter are shooting a video travelogue in remote locations like the Khorat Plateau in Northeastern Thailand, they are seamlessly connected with GGO via WIMAX/WIBRO/UMTS. That allows almost real-time browsing and processing of pictures just shot minutes ago by everyone they have granted access to – thus fully exhausting "real time networked journalism".

Since three years Peter also lectures "Tri-Media in European Local Journalism" at the Academy of the "Bangkok Post", Thailand's leading daily newspaper, where he introduces journalists to the concept and status quo of tri-media (Video, Audio, Text) journalism. This knowledge transfer is supported by the Leonardo da Vinci programme, a vocational training initiative of the European Union and Peter uses GGO to store and share all relevant training material with his students.

While Susan is a passionate diver for many years she also uses GGO to publish her Deep Blue Thailand blog and manage the diving community around it.

2.1.2. Workflow for Newspaper reporter

This workflow bears many similarities with the GGO described in the previous paragraphs. Therefore, here we focus on the case where a journalist must gather some data out in the field, either because she is covering an event or because she is out to get an interview from someone, rather than the case where all research for an article is done at the journalist's workstation. Let's meet our Reporter on the move…

Elisabetta Martelli, *Genoa- Italy*

Elisabetta Martelli lives in Italy and she is proved to be an acclaimed and respected journalist, whose work has encompassed every face of the profession: she's been a reporter for both weekly and daily newspapers; she's written columns and investigative stories for magazines; she has appeared on Italian television with both political commentaries and investigative stories.

She performs two types of research; research of general nature, which she will do if she is not familiar with the topic covered, or research into past news items that might be linked in some way to whatever topic she is currently covering.

The first type of research is done usually on the Internet or by direct transfer of knowledge from people that are experts on the subject. The second type of her research is usually done by searching the publishing software archives for articles that are relevant to the topic. All articles that are entered into the publishing software have metadata associated with them so she can perform her searching in a number of ways, using a category, keywords, publishing information and any other metadata that the article was tagged with during it's lifecycle.

For instance, yesterday morning she received a new task on her mobile device by her editor through the GGO System. The task was "The impact of the latest big prisoners' insurrection on the Political situation of Italy" and the deadline was until the end of this week. Today is Wednesday!

In order to be immediately informed for the special issues of the insurrection, not only will she perform a fast research through the GREDIA platform, which will provide her articles from trusted political sites, but she will also search in the publishing archives for articles that are relevant to past similar prisoners' insurrection.

Today she visited the prison to interview some of the prisoners, in order to find out the reasons of their outbreak. She requested for a photographer also to be allocated for the report through the GGO. While interviewing the prisoners, she also used her mobile device as a digital audio recorder so that she could record her own thoughts and interviews.

Late in the evening, Elisabetta is at home. She is now composing the story using all the available material; photos provided by the photographer and by the publishing archive, audio files from her mobile device and all relevant information she received on her desktop through GREDIA.

Tonight, after completing the composition of the story Elisabetta makes a second selection of the best photos taken during the report. She then tags these photos with metadata and adds them to the publishing system through the GGO.

She also tags the final document with the relevant metadata and sends both document and photos to her editor through her mobile device for approval. The editor after receiving a notification of a pending article for review, he can either approve or reject the document and photos.

Elisabetta tomorrow will receive comments on her article that she will have to incorporate before publishing it.

The final story has to be tagged with publishing information such as a title, subtitle, and publication section and sent to the layout department.

Elisabetta Martelli is a busy woman; everyday a different task and consequently too much information to handle, in a variety of ways. Through GREDIA she has all her information available together. Elizabeth knows what she needs to do, automate her research and incoming information, has all her facts at her fingertips and is ready to write. She never misses the urgent stuff, saves time researching the interesting ones, and always has the factual stuff at her fingertips when it comes down to that writing stuff.

2.2. Banking Sector

The financial market faces a lot of challenges to make transactions more flexible and effective. The standing of the bank customers comprises an emerging and promising feature of major importance, which enables the evaluation of the customers' profile for current and future transactions and the establishment of a network of trusted parties. For the time being, the Basel II standard is the dominant way to provide with reliable creditability data and calculate the potential credit risk of a transaction.

The Basel Committee permits banks a choice between two broad methodologies for calculating their capital requirements for credit risk. One alternative, the Standardised Approach, is to measure credit risk in a standardised manner, supported by external credit assessments. The other alternative, the Internal Ratings-based Approach, which is subject to the explicit approval of the bank's supervisor, would allow banks to use their internal rating systems for credit risk. The issue of building a good internal rating system is very important, because of the impact on the market and the bank's capital requirements. The first pillar of the Basel II provides improved risk sensitivity in the way that capital requirements are calculated for three major components of risk that a bank faces: credit risk, operational risk and market risk. Credit risk can drive the evaluation process for the other two components, and thus comprises the most important calculation, which can be measured through credit scoring.

It is of fundamental importance that the potential customers give to the bank as much information possible so that the credit score is affordable and precise and the bank can take better decisions in the evaluation (and probably tailor a better price for the customer). The bank usually takes into account a lot of different information sources in its rating system: the history of transactions the customer had in the past with the bank, the evaluations from the branch performed during loan generation, risk scores

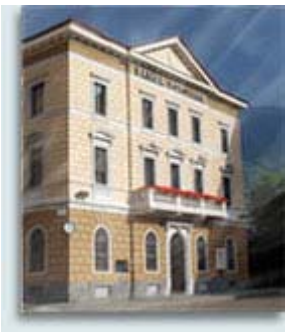
from interbanking systems (e.g. Centrale Rischi of Banca d'Italia for our national market), and quantitative and qualitative data from the customer.

The development of a reliable credit scoring application needs both Internal and External sources of information to be applied. The envisaged application can be built upon Grid technology, so that companies wanting to collaborate provide to their banks the access to the qualitative and quantitative data autonomously and in a controlled way. Based on the provided information, a reliable credit scoring application should be developed, which collects information from distributed parties. GREDIA is the appropriate platform to handle all the communication to remote parties and enable the calculation of the credit risk components, based on advanced data collection and sophisticated risk management calculation techniques. GREDIA will also have to ensure the privacy of the information made available to the banks and the secure exchange of data, allowing only the correct actors to reach the correct information.

It is of major significance to maintain external information agents to provide the appropriate information. For example, the activities in the Stock Market performed by a customer could have impact on the credit score calculations for various transactions with separate branches of a bank, as well as separate banks. Nevertheless, the distribution of the information having an impact on the final risk assessment is imposed from the fact that, in such an application each actor has the right to have access only to a specific set of information.

In summary, the *Credit Scoring Application* proposed as a pilot in the GREDIA project is the realization of a Grid-based 'virtual work space' enabling the exchange of complex and sensitive/confidential information, between the customers and their bank(s), in a Basel II related credit scoring scenario.

Marcelo Fernandez, Happy Toy



'HappyBank' is a fast developing bank with an increasing number of branches, quite dispersed in the greater geographical area of northern Italy. In order to survive in the competitive financial world, HappyBank has been struggling to attract new investments, with a big part coming from loan products. However, the difficulty has always been that the potential risk of such products has to be evaluated on a continuous basis. This risk assessment is usually based on both internal and external data for each potential customer, thus the application of a reliable credit scoring system should be able to handle highly distributed information.

'HappyToy' is a medium-sized company, which started up as a family-owned business 10 years ago, but recently managed to get into the Stock Market, actually being quite active as its rapid growth attracted the interest of many investors.

Marcelo however, who is the manager and founder of HappyToy, is very ambitious with many new ideas which require additional funds needed quite fast in order to get the products into the market before the holiday season.

Being a customer of HappyBank since the early days of the company, Marcelo decided to apply for a quick loan as he has also heard that HappyBank since recently operates the 'EasyLoan' service which manages to respond on whether a loan has been approved even within the same day.

Marcelo had used EasyLoan in the past for applying for another loan to a different bank and the parameters forming the profile of his company have been kept secure in his computer, invisible to outside sources. So, Marcelo just connected through the same secure Web interface, updated

some figures that had changed and submitted his request in less than an hour. During this process Marcelo also updated some financial transactions indicating that the respective commitments have been met on their side. However, EasyLoan can check that this is true, based on automatic communication with price-feed terminals (e.g. Bloomberg, Reuters, etc).

The profile Marcelo has to complete consists of both quantitative and qualitative data, including figures from the financial statements, as well as predictive figures (as an estimated turnover) and views of the immediate competition of HappyToy in the targeted market. An advantage HappyToy has in the creditability result is that Marcelo has a great experience in financing and is the father of two highly educated sons able to help or take over the company in unforeseen circumstances. Moreover, Marcelo has described the assets that HappyToy owns, including other company shares, which can be pledged, in order to mitigate the credit riskiness, if needed.

Some of the financial data provided require the additional support of official documentation which could also be easily provided by Marcelo with the attachment of scanned versions of the documents which are automatically encrypted and available to HappyBank in case they prefer to run a more thorough investigation. Such attached documents (as the financial statements) are also sometimes checked to correct typing errors and ensure the accuracy of the submitted figures.

The automatic evaluation of loan allowance is performed upon the results of measuring the credit risk, which is defined by regulations set by the Credit Risk Department (CRD). This process involves the calculation of the credit score through internal bank procedures which have been modelled in the EasyLoan system specifically for HappyBank. Authenticated users from the side of HappyBank are informed of the automatic recommendation of EasyLoan regarding any loan application even when they are out of their office, exploiting a secure notification mechanism through their mobile phones. The HappyBank employee authenticated to accept, reject or modify some parameters of the risk assessment mechanism can then request execution of these processes through his authorised desktop or mobile device by transparent activation of secure Grid services implemented for this purpose.

An important aspect of the EasyLoan system is the fact that only authenticated users can have access to specific sensitive content and only after the consent of the content owner. This has been achieved with the adoption of specific Grid security mechanisms and the service oriented mechanisms which allow maintenance of sensitive data within the premises of their owners.

The Grid technology proved ideal for the realisation of EasyLoan as distribution of data and computational power could be exploited in a transparent manner, allowing for the secure reusability of credit profiles resulting to an effective and reliable decision support system.

3. The GREDIA Focus Groups

3.1. The 'Focus Group' process

*"**is'al mujarrib wala tas'al Tabib**".*
If you want to know what it feels like, ask a patient, not a doctor.
Arabic Proverb.

The 'Focus Group' tool [1][2] was selected in order to uncover the goals and needs of potential users so that we can design in the most effective way the necessary tools and technologies within the GREDIA project.

Focus Groups are not polls, but in-depth qualitative interviews with a small number of carefully selected people.

Qualitative data derived from focus groups are extremely valuable when vivid and rich descriptions are needed. In fact, Focus Groups are an increasingly popular way to learn about opinions and attitudes.

According to the late political consultant Lee Atwater, the conversation in Focus Groups "***gives you a sense of what makes people tick and a sense of what's going on with people's minds and lives that you simply can't get with survey data***".

Unlike the one-way flow of information in a 1-on-1 interview, FGs generate data through the "give and take" of group discussion. Listening as people share and compare their different points of view provides a wealth of information – not just about what they think, but also why they think the way they do.

Among the advantages of Focus Groups are the following:

- A wide range of information can be gathered in a relatively short time span
- The moderator can explore related unanticipated topics, as they arise during the discussion

Generally, a Focus Group is conducted by "moderators" who are skilled in maintaining good group dynamics. The moderator's basic job is to keep the group "focused". He /she has the goal of helping the group generate a lively and productive discussion of the topic at hand.

Much of the data quality in Focus Groups depends on how effectively the moderator asks the questions and how well this person keeps the discussion targeted on the research objectives.

In our case, our users, Deutsche Welle, Banca Popolare di Sondrio and DIAS conducted the Focus Groups.

Throughout the discussions between the actual users (professional users) and the domain experts, the moderators tried to identify the target audience, their typical tasks and priorities and finally their specific constraints.

After the sessions, we had become familiar with the importance of our users' interface objectives. Therefore the results provided us not only with the different potential features /requirements of the system but also with the key outcome of the Project.

3.2. Composition of the GREDIA Focus Group

The composition of a successful Focus Group is usually based on the homogeneity or similarity of the group members. Bringing people with common interests and experiences together makes it easier for them to carry on a productive discussion.

On this basis, we decided to have in the discussion table a representative of each potential GREDIA user category:

Media Sector

From the ***Newspaper & Magazine*** sub-category, there was at least one representative from the following professions:

1. Chief Editor / Editor
2. Annotator
3. Archive Manager
4. Journalist / Reporter Correspondent
5. Photographer

From the ***TV and Radio Broadcaster*** sub-category, there was a representative of the following professions:

6. Producer
7. Journalist / Reporter

From the ***Internet*** sub-category, there was a representative of the following professions:

8. Editor of e-Publication
9. Journalist / Reporter

Banking Sector

From the Banking Sector, there were representatives from:

1. Credit Operation Managers
2. Cash or credit managers
3. Commercial and mortgage loan officers
4. Saving and loan association managers
5. Credit Analysts

3.3. Discussion Topics

Questions were open-ended, so that there would be many possible replies. Short-answer questions, such as those that can be answered by "Yes" or "No", were be avoided. Questions were more or less:

⇒ Clearly formulated and easily understood by all participants, from any background
⇒ Neutral, so that the formulation will not influence any answer
⇒ Carefully sequenced with easier, general questions proceeding more difficult ones
⇒ Ordered, so that less intimate topics precede the more personal questions

The moderator begun the session with an introduction that included the following:

⇒ Explanation of the purposes of the GREDIA Focus Group
⇒ Laying down some basic ground rules to encourage everyone to participate in the discussion
⇒ Reassuring the participants about the voluntary and the confidential nature of their participation, so as everyone would feel free to speak spontaneously and,
⇒ Introducing of all the participants and explaining the reason they were invited (what they have in common)

Once introductions were complete, the moderators guided the discussion to explore various aspects of the research topic. The moderators handed out the Questionnaires for the participants to fill in and placed the question (issue or topic). The group then had enough time to fill in the Questionnaire and to discuss among them – talking to each other, asking questions and generally interact.

The questions were mainly based on the Questionnaire, which consisted of topics that were identified by the consortium of direct relevance to the GREDIA envisaged platforms functionalities.

3.4. Results

Both quantitative but mostly qualitative results were gathered from this process. All participants completed questionnaires after having finished the discussion, so that they had a good overview of what GREDIA is targeting and what the questions were really about.

The results from these questionnaires were integrated in the analysis provided in the next section. However, the real benefit was that the consortium participants from ATC, DW, Banca Popolare di Sondrio and DIAS who were driving the user requirements analysis process formulated an informative opinion of how professionals from both fields of journalism and banking see the proposed services and what is seen with greater interest. The whole session was also reviewed at a later stage to aid in the formulation and prioritisation of use cases described in the later sections. Some interesting points that emerged during the discussions of the focus groups that were conducted are presented in the following:

3.4.1. DW focus group (Bonn 18 & 19 December 2006)

A total of 8 journalists from various domains (online, TV, radio) working for Deutsche Welle but also for other broadcasters and media participated in the 2 focus group sessions. They had been provided with the GREDIA questionnaire and the GREDIA GRID ONLINE SCENARIO in order to inform the participants about Gredia's aims and ambitions.

On the questionnaire:

Some of the questions (especially Section 4) are too 'self-evident' for journalist.

Often too little range between 'fully agree' and 'fully disagree' (choice between 1 to 10 appreciated; other remarks similar to feedback from the Berlin Focus Group).

Hardware, Networking & Platform Issues

1) All-in-one mobile device might be useful. In case of an "investigative" assignment it should be as small as possible.
2) Fully mobile device needs at least a good quality monitor and QWERTZ keyboard
3) Probably no editing on a handheld device
4) Lap-top, sub-notebook device seems most appropriate (in the context of GGO scenario)
5) Very useful for live or near-live interviews
6) Small mobile devices only of interest for "news oriented material".
7) If you produce a 'long' (from 3 to 30 minutes) story the mobile device and the use of the platform maybe less important.
8) Networking aspect is important in several ways:

   a. Connection to your "home office" environment
   b. Connection to editorial homebase
   c. Connection to various databases (archive, music, images)
   d. Connection to location based information
9) Finding information about your current location (i.e. the location of the story) is even more important than connection to your homebase.
10) The platform must provide information about the location, e.g. contact details for stringers, camera crews, translators, templates to get a permission for filming, information on general rights issues, even GPS information
11) Always-on is definitely important
12) The platform could be especially useful when being on multiple assignments (for different employers).
13) Platform should provide tools to schedule and organise all aspects of the journalist assignments including self organisation and daily planning
14) Being informed about peers/other journalists in the region is useful
15) Networking with other journalists is beneficial especially when working on international topics/assignments abroad
16) You should get information on recent and past assignments of other journalists
17) With such a platform freelancers could become small news agencies
18) When working with video the video processing and editing is of course a key feature
19) I would expect some kind of seamless video processing. For example automated video encoding into any format required
20) You should be able to upload your raw material (video) to the platform.
21) I have problems to see the innovation aspect. For audio production most of it is already possible using various tools, e.g. e-mail.
22) Tools and interfaces will be important so people would move from using various tools to one platform.
23) The platform will only be attractive when fully tailored to journalist's needs

Professional Media Quality vs. Citizen Media

1) Definition of quality definitely depends on the topic/particular case.
2) You'll find excellent stuff – also for video – done by one single journalist who does it all.
3) We already have a many-fold media world: different expertise within one team producing one single item, the VJ approach, citizen media and user generated content. They will all co-exist.
4) In the past being a good journalist used to be enough. Now you're supposed to be a good audio technician, a good camera man, a good editor and a good presenter as well.
5) Usually it's easier to work with a team. Each one a specialist, so they can give advise.
6) Specialists ensure quality.
7) A VJ is limited.
8) Technical issues distract from core journalistic work.
9) Professional standards matter!
10) User generated content and citizen media is not necessarily journalism but more a life in public and media.
11) Citizen media is like Grassroots journalism which is nothing new.
12) For Citizen media a platform like GGO is definitely appealing

IPR and Business Aspects

1) In an environment like this the protection of ideas and concepts is crucial.
2) Networking is fine but access restrictions are very important
3) The protection of ideas, concepts and content is probably the most difficult aspect I see.
4) The platform must be a trusted source itself!
5) IPR issues and reliability are extremely important!
6) The platform could accelerate the bidding process for concepts/ideas to multiple channels/publishers considerably.

7) The content brokerage aspect is appealing.
8) While being on one assignment you could propose or sell other aspects of that story much faster to other potential employers.
9) When offering such a service you need to clearly define a target group, i.e. professional journalists.
10) You should also capture the requirements of COMPANIES like new agencies, broadcasters, content brokers etc. Would they welcome such a platform?

3.4.2. DIAS focus group (Nicosia 21/12/2006)

A group of 10 journalists from all departments gathered for the focus group. 2 radio journalists, 2 television journalists, 2 newspaper journalists, 2 sports journalists and 2 journalists from the magazines department.

The focus group was given an introduction to the project and a general high level discussion about the technologies used in the project and then handed the questionnaire to fill out.

During the time they answered the questionnaire each section and question was discussed in more detail.

Section 1 planning the work

Not a lot of time was spent discussing this section but the points made that all agreed with where:

⇒ It would be great if working in a group to help get organised
⇒ They felt that the face to face meetings to decide everyday tasks are also important as they allow all to give feedback so they would not like to use their mobile device as the only way of scheduling their day and work

Section 2 Capturing the Story

Here a lot of the opinions depended on which media the journalist worked with.

⇒ They all agreed that if text would be captured or used it would be important that the device used has a better input interface compared to the mobile phone devices of today.
⇒ Journalists that worked with video and images had serious reservations about the quality of images or video captured on a mobile device.
⇒ On the other hand they all agreed that breaking news reports could both use video and photos from a mobile device even if quality wasn't as high as normal video or photo cameras.
⇒ Capturing audio was considered a must and is a technique used now with normal recording devices. A discussion arose about what extra benefits could be provided by grid technology. With a bit of guidance on the technology side the possibilities of using a grid platform where discussed. Ideas mentioned where:
    1. Automatic access to data as it is recorded by the whole team working on a subject.
    2. The possibilities of feeding the data back or using the processing power of the grid to provide (almost instant) speech recognition.
    3. Automatic lookup for similar stories while working on a current story. Results could include text photos and video
    4. A list of other journalists working on similar reports and subjects, although they where concerned about privacy and choosing who to share information about what they are working on with.

Section 3 Accessing the Information

The biggest concern here of all journalists was privacy and security of information. Even though the 4th section deals with security it took a lot of effort to steer the conversation away from the issues of security and who can access information.

- All time access to the news was a concept that a lot of the journalists didn't find appealing initially as they felt that news equals work for them. The team then discussed the continuous access to the news for a journalist working on his own and on a per article basis and all agreed this would be useful.
- This discussion then led to the subject of community journalist. It was quite a foreign and strange subject to all but 1-2 journalists in the group. It was hard for them to envision how this paradigm could work. All finally agreed that if ethic code was kept and all journalists acted professionally the concept of a community journalist would be a success.
- After they got the concept of the community journalist the focus changed to how such a journalist could make the most of a grid platform. An idea that was discussed and all liked was that of establishing trust with each other on the grid network. This they thought would help solve a lot of the problems with trusts between journalists and ensure that those breaking the trust or acting in a non professional way would be soon marked out.
- On the subject of searching most journalists favoured structured data such as categories and subcategories. The reaction to other less structured forms of data tagging and storage seemed to stem mostly from the bad experiences they have had so far with similar search technologies. After discussing a little the possibility of improved keyword or natural language queries they did concede that it might be worth it but they still had some reservations.

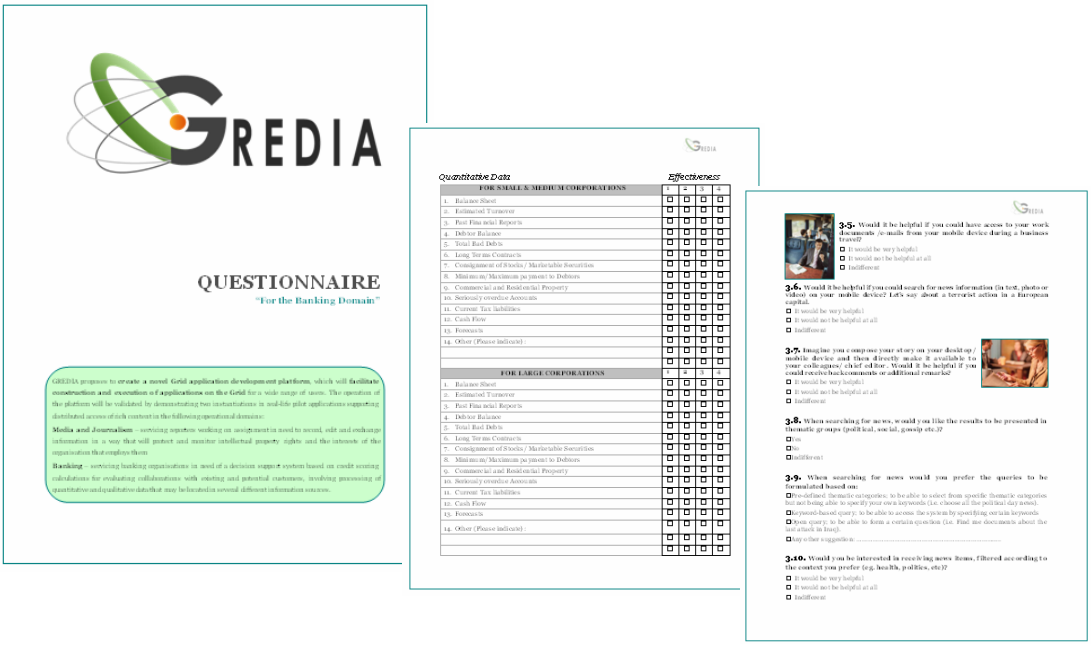
Security

Security was a hot topic of discussion and the biggest concern of all journalists present. A quick rundown of how a digital signature was given to the group and how it could be tied into cryptography.

- Credibility was considered very important especially if the grid network was something large and with participants from a different geographical location. The discussion about establishing trust through a network of people that was mentioned earlier was offered as a solution to this problem.
- Given that digital signatures could be trusted and possibly used for encryption of data too the group did feel that they could trust the grid despite initial comprehensiveness on this issue.

4. The GREDIA Questionnaires

4.1. Introduction



A survey involves administering a set of written questions to a large sample population of users. Surveys can help determine information or users, work practices and attitudes.

The GREDIA questionnaires was purposed to identify User Needs for potential Services and Methods, which may in the future be available through the GREDIA platform. The questionnaires were produced in two different versions (attached in Annex I) for the respective user groups and were sent to potential users electronically (by e-mail) through the contacts of partners from the whole consortium. Results were collected both in electronic and hard copy format.

Through this User Survey we tried to collect information, which we analysed to guide the consortium in building both GREDIA platforms in the way that it will be most useful to "Media Users" as well as to the "Banking Users".

The final goal of the consortium was to provide GREDIA Users with the necessary tools for an easier and personalized navigation in the world of news.

4.2. The Questions

Having gained the experience from the Focus Group, we had an idea of the difficulties the respondents faced while answering the questionnaires, so we used this knowledge in order to improve our questions.

Through the questionnaires we re-designed, we tried to produce variability of responses. When a question produces no variability in responses, we are left with considerable uncertainty about why we asked the question and what we learned from the information.

We tried to keep our questionnaires short, as long questionnaires get in general fewer responses. Response rate was the single most important indicator of how much confidence we can place in the results. Therefore we did everything possible to minimize the questionnaires' length so as to maximize the response rate.

Furthermore, we tried to give our questionnaires' parts a title that is short and meaningful to the respondent. A questionnaire with titles is generally perceived to be more credible than one without.

For instance, we split the questionnaire in parts for the Media sector:

- Planning your work
- Capturing your story
- Accessing the information
- Security issues
- Technical Questions

The same for the Media sector:

- Credit scoring basics
- Customer data collection
- Loan details
- Mobility issues

We also tried to include clear and concise instructions on how to complete the questionnaire. We chose questions very easy to understand, short sentences and basic vocabulary, simple and direct language.

Finally, we tried to be creative, use images and humorous quotes in order to hold the respondent's interest.

4.3. Data Analysis

Data analysis and interpretation is critical in such an analysis. We needed to deduce answers to:

- What does this information mean?
- Can we use the data in a constructive way to define the requirements and then establish a plan?

After collecting all questionnaires we created a data base where we gathered all responses and calculated statistics that could be useful to deducing results concerning the user needs. Completed questionnaires were received from individuals resident in the following countries: Greece, Cyprus, Germany, Italy, and UK. The results are described in the following sections, differentiating between the Media and the Banking users:

4.3.1. MEDIA SECTOR

Sample: 56 Users

- **60%** are post graduates and another **35%** graduates
- **55%** are between 31-40 years old and **30%** between **41-60**
- **55%** have a more than 10 years work experience and 2**0%** travel once or twice a year for their stories
- **95%** work in an office and **55%** of them often work "on the go"

Question	Possible answers	%
Planning your work		
Would it be helpful if you could use the mobile device as a calendar**?**	It would be very helpful	30%
	It would probably be helpful	**55%**
	It would not be helpful at all	05%
	Indifferent	10%
Would it be helpful if you could be informed for tasks **through mobile device?**	It would be very helpful	15%
	It would probably be helpful	**40%**
	It would not be helpful at all	20%
	Indifferent	25%
Capturing your story		
Would it be interested in composing **your story on your mobile device?**	It would be very helpful	20%
	It would probably be helpful	**55%**
	It would not be helpful at all	15%
	Indifferent	10%
Would it be interested in recording **an interview on your mobile device?**	**It would be very helpful**	**50%**
	It would probably be helpful	25%
	It would not be helpful at all	20%
	Indifferent	05%
Would it be interested in sending /publishing **your story through your mobile device?**	**It would be very helpful**	**50%**
	It would probably be helpful	25%
	It would not be helpful at all	20%
	Indifferent	05%
Would it be helpful if you annotated **your story through your mobile device?**	It would be very helpful	30%
	It would probably be helpful	**45%**
	It would not be helpful at all	15%
	Indifferent	10%

Do you consider "classified metadata**" helpful?**	**Yes, it would be very helpful** It would probably be helpful No, I prefer my own categories Indifferent	**50%** 35% 15% 0%
Would it be helpful if you monitored **the procedure of the story through mobile device**	It would be very helpful **It would probably be helpful** It would not be helpful at all Indifferent	30% **60%** 05% 05%
Accessing the information		
Would it be helpful if you could have access **to your work documents from your mobile device?**	**It would be very helpful** It would probably be helpful It would not be helpful at all Indifferent	**55%** 30% 15% 0%
Would it be helpful if you could search **for news information on your mobile device?**	**It would be very helpful** It would probably be helpful It would not be helpful at all Indifferent	**55%** 45% 0% 0%
Would it be helpful if you could receive comments **for your article on your mobile device?**	**It would be very helpful** It would probably be helpful It would not be helpful at all Indifferent	**65%** 30% 05% 0%
Would you prefer your formulated queries to be based on:	Pre defined thematic categories **Keyword based query** Open query Other suggestions	42.5% **47.5%** 8.5% 1.5%
Would it be helpful if the search results are presented in thematic groups**?**	It would be very helpful **It would probably be helpful** It would not be helpful at all Indifferent	30% **60%** 05% 05%
Would it be helpful if you received news, filtered **according to your interests?**	It would be very helpful **It would probably be helpful** It would not be helpful at all Indifferent	40% **50%** 10% 0%

Would you mind if a system kept information?	I would probably mind I wouldn't mind at all **I would be concerned** I would definitely mind	25% 30% **35%** 10%
Would you be interested in joining professional communities worldwide?	It would be very helpful **It would probably be helpful** It would not be helpful at all Indifferent	20% **60%** 5% 15%
How often would you use a system providing the aforementioned functionalities?	Every day **Often** Rarely Never	20% **60%** 20% 0%
Security issues		
Do you consider credibility of sources **important when you use news material for your work?**	I only use trusted, known sources… **I mostly use trusted sources…** I always look for new sources… Credibility of sources does not really trouble me…	27,5% **50%** 17.5% 05%
How much do you trust the existing mobile technologies **for exchanging files?**	Very **I am somewhat concerned** I am mostly concerned I do not trust them at all	15% **65%** 20% 0%
Would you be interested in attaching a digital signature to your article?	**It would be very interesting** It would be probably be interesting It would not be helpful at all Indifferent	**45%** 30% 20% 05%
Technical Questions		
Telecommunication standard for mobile, PDA	**2G** 3G WiFi I don't know	**41.25%** 16.25% 06.25% 36.25%
Telecommunication standard for laptop	2G 3G WiFi **I don't know**	10% 05% 40% **45%**

We asked, journalists answered…

Would you be interested in capturing the following on your mobile device?

	Indifferent	Useful	Necessary	Useless
Images	20%	65%	10%	5%
Video	15%	65%	15%	5%
Sound	15%	65%	15%	5%
A mix of all the above	10%	70%	15%	5%

What kind of metadata do you usually use to annotate a news item?

	Indifferent	Useful	Necessary	Useless
Title	70.00%	25.00%	0.00%	5.00%
Subtitle	55.00%	30.00%	0.00%	15.00%
Location	25.00%	40.00%	25.00%	10.00%
Date	35.00%	35.00%	10.00%	20.00%
Abstract	20.00%	35.00%	30.00%	15.00%
Topic	25.00%	45.00%	20.00%	10.00%
Keywords	45.00%	25.00%	20.00%	10.00%
Names	45.00%	30.00%	15.00%	10.00%

How would you prefer to access your news? Please indicate the frequency of the device you mostly use in order to receive news:

	Indifferent	Useful	Necessary	Useless
Mobile Device	25.00%	20.00%	40.00%	15.00%
Desktop computer	95.00%	0.00%	0.00%	5.00%
Laptop computer (on the go)	55.00%	25.00%	10.00%	10.00%
A mix of all the above	45.00%	30.00%	15.00%	10.00%

Which format do you prefer for receiving news?

	Indifferent	Useful	Necessary	Useless
Text	20.00%	35.00%	45.00%	0.00%
Images	10.00%	60.00%	25.00%	5.00%
Video, Sound	45.00%	75.00%	60.00%	15.00%
A mix of all the above	10.00%	65.00%	20.00%	5.00%

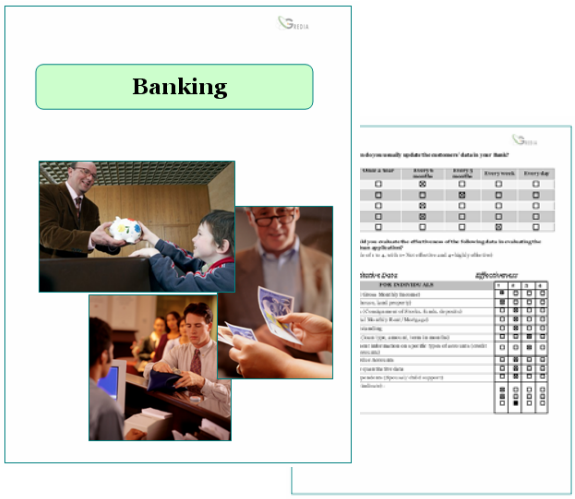
Would it be helpful if you could search for material (text, images, and video) either from your desktop or your mobile device, through a central point of access?

	Indifferent	Useful	Necessary	Useless
Desktop	15.00%	65.00%	20.00%	0.00%
Mobile Device	15.00%	75.00%	0.00%	10.00%

As it can be deduced from the above, the most "desired" requirements to Media potential users in a ranked list are the following:

1. Comments for their story on mobile device **(95%)**
2. Filtered news and results in thematic groups **(90%)**
3. An electronic way for monitoring the procedure of their story **(90%)**
4. Keyword based queries (**88%**)
5. Classified metadata **(85%)**
6. Access to work documents from mobile device **(85%)**
7. Usage of the mobile device as a calendar for every day tasks **(85%)**
8. Communities **(80%)**

4.3.2. BANKING USERS ANALYSIS



Sample: 48 potential Users

- **61%** are between 41-60 years old
- **44%** are graduates and another**33%** post graduates
- **72%** have a more than 10 years work experience

Our potential users were mostly Credit Analysts working in different Banks throughout Europe. **100%** of these Banks offer e-Banking and only **33%** offer telephone Banking. **83%** of the Banks have a privacy policy for the customers' confidential treatment of their transactions through the web. An average of **20%** of the customers utilizes these functionalities.

Question	Possible answers	%
Credit Scoring Basics		
Does your Bank utilize Credit Scoring Techniques **with any of its lending approvals?**	**Yes** No	89% 11%
Which are the basic credit lines **in your bank?**	**SMEs** Large Enterprises Households	63% 4% 33%
Are there any credit lines which are considered to be of higher risk?	**Yes** No	56% 44%
Does the bank have any exclusion **in restricting a loan?**	Yes **No**	**28%** **72%**

We asked, bankers answered…

How often does your Bank usually update the customers' data?

	Once a Year	Every 6 months	Every 3 months	Every week	Every day
Balance Sheet	88,9%	11%	0%	0%	**0%**
Other Financial Statements	72,2%	16,7%	11%	0%	**0%**
Financial Data	66,7%	11%	16,7%	0%	**5,6%**
Other quantitative data	50%	0%	27,8%	0%	**22%**
Qualitative data	**77,8%**	**5,6%**	**11%**	**0%**	**5%**

Who is responsible for updating the customers' data in your Bank?

Cashier	11%
Personnel from R.Dept	83.3%
Customer himself	5.6%

Part A: Quantitative Data

The following tables provide information for evaluating the most useful qualitative data for the Credit Scoring procedure. The data are divided into the 3 basic Credit Customer Lines (Individuals, Small & Medium Enterprises and Large Corporations).

CUSTOMER TYPE	1=Not effective, 4=highly effective			
For Individuals	1	2	3	4
1. Income (Total Gross Monthly Income)	0%	16,7%	16,7%	66,7%
2. Fixed assets (house, land property)	0%	0%	27,8%	72,2%
3. Current assets (Consignment of Stocks, funds, deposits)	0%	27,8%	38,9%	33,3%
4. Expenses (Total Monthly Rent/Mortgage)	5,5%	16,7%	38,9%	38,9%
5. Total debt outstanding	0%	11%	33,3%	55,6%
6. Loan analysis (loan type, amount, term in months)	5,5%	5,5%	55,6%	33,3%
7. Account payment information on specific types of accounts (credit cards, retail accounts)	11%	22%	44,4%	22,2%
8. Seriously overdue Accounts	0%	5,6%	44,4%	50,0%
9. Life insurance quantitative data	5,5%	61%	22,2%	11,1%
10. Number of dependents (Spousal/ child support)	0%	33%	44,4%	22,2%

According to our users, the most effective quantitative data for analyzing an Individuals' application are:

- Fixed Assets
- Income
- Total debt outstanding
- Seriously overdue accounts

CUSTOMER TYPE	1=Not effective, 4=highly effective			
For SMEs	1	2	3	4
1. Balance Sheet	5,6%	0%	33,3%	61,1%
2. Estimated Turnover	0%	22,2%	61,1%	16,7%
3. Past Financial Reports	0%	38,9%	44,4%	16,7%
4. Debtor Balance	0%	27,8%	38,9%	33,3%
5. Total Bad Debts	0%	11,%	38,9%	50,%
6. Long Terms Contracts	0%	16,7%	61,1%	22,2%
7. Consignment of Stocks/ Marketable Securities	0%	55,6%	44,44%	0%
8. Minimum/Maximum payment to Debtors	0%	33,3%	61,1%	5,5%
9. Commercial and Residential Property	0%	22,2%	27,8%	50%
10. Seriously overdue Accounts	0%	22,2%	27,8%	50%
11. Current Tax liabilities	11%	38,9%	44,4%	5,5%
12. Cash Flow	0%	11,1%	33,3%	55,5%
13. Forecasts	0%	33,3%	55,6%	11%

According to our users, the most effective quantitative data for analyzing a SMEs' application are:

- Balance Sheet
- Cash Flow
- Commercial and Residential Property and,
- Seriously overdue accounts

CUSTOMER TYPE	1=Not effective, 4=highly effective			
For Large Corporations	1	2	3	4
1. Balance Sheet	0%	0%	23%	77,8%
2. Estimated Turnover	0%	11%	44%	44%
3. Past Financial Reports	0%	22,2%	28%	50%
4. Debtor Balance	0%	22%	39%	38,9%
5. Total Bad Debts	0%	11%	27,7%	61%
6. Long Terms Contracts	0%	16,7%	62%	22%
7. Consignment of Stocks/ Marketable Securities	5,5%	33,3%	45%	16,7%
8. Minimum/Maximum payment to Debtors	0%	27%	50%	22,2%
9. Commercial and Residential Property	0%	27%	27%	44,4%
10. Seriously overdue Accounts	0%	22%	28%	50%
11. Current Tax liabilities	5,5%	33,3%	50%	11%
12. Cash Flow	0%	11%	44%	44%
13. Forecasts	0%	22%	44%	33%

Finally, according to our users the most effective quantitative data for analyzing a Large Corporations' application are:

- Balance Sheet
- Past Financial Reports
- Seriously overdue accounts

Part B: Non numerical Data

Qualitative information can enrich and enliven evaluations. But, equally important, qualitative data can allow the emergence, or discovery, of new, unanticipated information relevant to a Bank's attempt to evaluate a customers' application. The following tables present a scale of the most important non numerical data, according to our credit analysts.

CUSTOMER TYPE	**1**=Not effective, **4**=highly effective			
For Individuals	**1**	**2**	**3**	**4**
1. Kind of job (whether it is personal or he/she depends on a company)	5,6%	0%	38,9%	55%
2. Status of employment (Full-time, part-time etc.)	5,6%	0%	22%	72%
3. Marital Status	11,%	44%	33,%	11%
4. Education, work experience and skills	0%	61%	27,8%	11%
5. Household type	5%	33%	38%	22%
6. Age	5%	27%	50%	16%
7. Ethnicity	44%	22%	27%	5,5%
8. Number/ Sex of Children	38,8%	33%	11%	16,6%
9. Employer information	0%	50%	38,8%	11%
10. Presence in adverse public records (bankruptcy, judgements, suits, liens, wage attachments, etc.), collection items, and/or delinquency (past due items)	0%	0%	16%	83%
11. Reluctance to take risks	0%	33%	50%	16%
12. Health information and ability to issue life insurance	0%	61%	33%	5%
13. Purpose of loan	0%	5%	55,6%	38,89%

According to our users, the most effective qualitative data for analyzing an Individuals' application are:

- Presence in public records
- Status of employment
- Kind of job
- Purpose of loan

CUSTOMER TYPE	1=Not effective, 4=highly effective			
For Individuals	**1**	**2**	**3**	**4**
1. Management team information	0%	22%	61,11%	16,7%
2. Product/services range	0%	27,8%	61%	11%
3. Market share	0%	22,2%	55%	22%
4. Branches	0%	72,2%	27%	0%
5. Business Ownership (i.e. Sole Proprietorship, Partnership, Corporation)	0%	27,7%	44%	27,78%
6. Years in Operation	0%	27,7%	50%	22,2%
7. Suppliers and Vendors	0%	22%	61%	16,7%
8. Competition	0%	22,2%	61%	16,7%
9. Political, legal and regulatory environment	5,56%	66,7%	11%	16,7%
10. Donations and Contributions	50%	50%	0%	0%
11. General market/ economic conditions	11%	16,7%	50%	22,2%
12. Competence of management (for equities)	0%	33%	38,89%	27,8%
13. Judgment on the company's ability to pay (for loans and receivables)	0%	0%	38,9%	61,1%
14. Specific Loan Purpose (Purchase of Equipment, Inventory, Refinance Existing Loan or Debts etc.)	0%	11%	27,8%	61,1%
15. Guarantors	0%	0%	33%	66,7%

According to our users, the most effective qualitative data for analyzing an Individuals' application are:

- Guarantors
- Judgment on the company's ability to pay
- Specific Loan Purpose

How many loan applications do you receive per year?

	Less than 1.000	Less than 10.000	More than 10.000	I don't know
Households	72%	11%	5%	**11%**
Enterprises	**61%**	**22%**	**5%**	**11%**

Usually most loan applications that fail are rejected due to:

	Always	Often	Seldom	Never
Credit Scoring result	5,6%	33%	55,6%	**5,5%**
Lack with cooperation with the customer	22,2%	16,7%	44%	**16,6%**
Inadequate financial data	**33%**	**50%**	**16%**	**0%**

Would it be helpful if you could have access to the risk assessment mechanism through your mobile device?

	Very Helpful	Probably helpful	Not helpful	Indifferent
To be notified of any loan applications	11,1%	27,8%	44,4%	**16,6%**
To be notified of any system recommendation for the loan applications	16,7%	22,2%	38,9%	**22,2%**
To be able to modify the system parameters	**16,7%**	**22,2%**	**38,8%**	**22,2%**

If there was a platform which you could use to retrieve financial information coming from various external sources what fields would you need to base your search on?

	Very Helpful	Probably helpful	Not helpful	Indifferent
Type of data	61%	16,7%	16,7%	**56%**
Customer name	77,8%	16,6%	5,6%	**0%**
Date	11%	22,2%	61,1%	**5,6%**
Keywords	**33,3%**	**44%**	**16,7%**	**5,6%**

Our users seem rather concerned with the existing mobile technologies for exchanging data. As far as the communication standard they use, they answered:

	2G	3G	WiFi	I don't know
Mobile device	22,2%	5,56%	0%	**72,2%**
Laptop	**0%**	**0%**	**11%**	**88,9%**

5. GREDIA Partners Analysis

5.1. Deutsche Welle

The following description will provide you with general information about Deutsche Welle and its three media departments TV, Radio and Online (see Section 5.1.1) and how communication and information/data transfer are organised in order to give insight into the production workflow of a broadcaster with a particular focus on the creation, editing and transmission of TV programmes.

Section 5.1.2 provides an overview of the currently used applications and systems at Deutsche Welle. It should already be noticed that the system in operation at present for information/data access and transfer NDS (News Distribution System) will be replaced by the forward-looking News Room System (NRS) which is to be fully implemented at DW in 2008. The comprehensive workflow analysis at DW-TV in Section 5.1.3 is addressing all work steps of a TV production, beginning with information research, production preparation, the actual production, the transmission of the film material and ending with the post-production. Again, please note that the description often refers to the new NRS. Some of the mentioned features are not yet available, but it was decided to describe the workflow as it will be in the near future. Section 5.1.3.6 portrays Video Journalism, a new form of footage production in which one single person takes over the role of reporter, cameraman, audio assistant and possibly even the picture editor.

Because GREDIA is addressing also producers of news material who do not have a journalistic background, Section 5.1.4 gives a short overview how private persons usually publish their footage at the moment, be it on blogs or video sharing web sites. Finally, Section 5.1.5 illustrates two short real life scenarios of freelance journalists to ensure that the technology developed in the GREDIA project will be of real value for anybody interested in producing and publishing video material.

5.1.1. Structure of Deutsche Welle and its Single Departments (TV, Online, Radio)

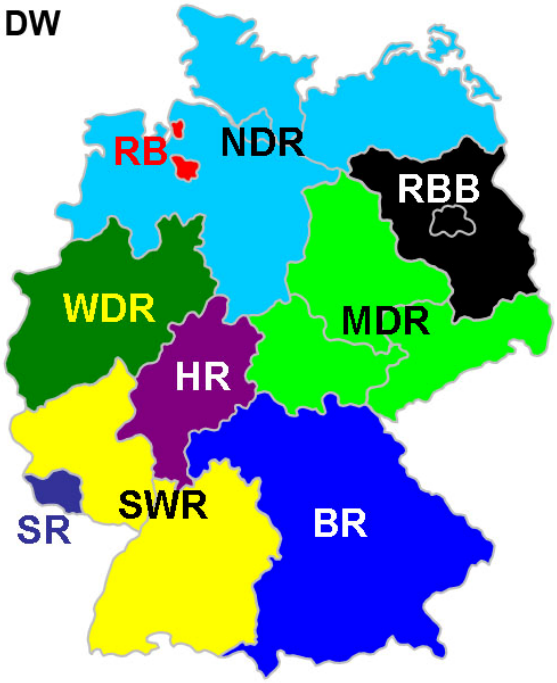


Figure 1: ARD Network

5.1.1.1 About Deutsche Welle

Germany's international broadcaster Deutsche Welle is an associated member of the Arbeitsgemeinschaft der öffentlich-rechtlichen Rundfunkanstalten der Bundesrepublik Deutschland –

Consortium of public-law broadcasting institutions of the Federal Republic of Germany (ARD) network. ARD (please refer to Figure 1) is a joint organisation of Germany's regional public broadcasters.

DW focuses on people around the world with an interest in Germany and Europe, in particular opinion leaders and the so-called "information elite", providing them with news and information content, inter-cultural communication, and service-oriented information.

At present, about 1,200 employees from more than 60 countries work for Deutsche Welle, making it a true multinational and multicultural organisation. DW maintains external bureaux in Washington, Moscow and Brussels, and co-operates closely with the network of correspondents operated by the ARD and ZDF (Zweites Deutsches Fernsehen – "Second German Television").

5.1.1.2 DW-TV

Deutsche Welle broadcasts via satellite an up-to-date TV programme that is produced in Berlin. The news and information programme is transmitted around the clock: twelve hours each in German and English, the language changes every hour. In Europe, North, Central and South America, North Africa and the Near and Middle East also programme windows in Spanish (2 hours per day) and Arabic (3 hours per day) are broadcast.

The structure of the programme is as follows: news on the hour, a magazine show or documentation on the half hour. All broadcasts take thirty minutes. Additionally DW-TV produces a news show in Dari and Pashto. These shows are transmitted terrestrially by different re-broadcasters in Afghanistan.

Inter alia DW-TV is broadcast via Nilesat to the entire Arabic region. For the prime time in this region, a programme window in Arabic is produced. The news is produced in Arabic and the German magazine shows and documentations are subtitled in Arabic. The middle hour of the three-hour window consists of two feature/documentation elements that are synchronised in Arabic.

5.1.1.3 DW-WORLD

DW-WORLD is the multi media online offering of Deutsche Welle that is made up of text, images, audio and video on-demand, audio and video live streams. DW-WORLD is provided in thirty languages.

The seven languages German, English, Russian, Chinese, Spanish, Portuguese for Brazil and Arabic, the so-called pilot languages, have their own independent editorial online teams. They write and compile a comprehensive offering that is tailored to the opportunities of the Internet. The online offering can be classified into thematic sections (politics, economy, culture, etc.). Multi media contents (text, images, audios, videos) are offered as well as online specific and interactive features (opinion polls, links to the DW archive, www links, quizzes, etc). Beside the self-made contributions the editors also use the offering provided for all departments of Deutsche Welle. The online editors exchange manuscripts with the Radio editorial teams of the same language (German, English, Russian, Chinese, Arabic).

Online assistants evaluate DW's Radio and TV offerings with regard to their Web reusableness as audios and videos on-demand.

The Radio editorial staff of these languages (German, English, Russian, Chinese, Arabic) and respectively the TV editorial staff (German, English, Spanish, Arabic) fill their own sections with content in DW-WORLD's offering. Like in a virtual programme guide information on contributions and broadcasts can be placed in these sections.

For the other 23 languages, the so-called base languages, DW-WORLD coordinates the Internet presences. It provides the technical platform and central services such as the offering of images and banners. The contents are produced by the Radio editors of the respective languages using Radio contributions as a starting point. The online offering of the single languages can vary considerably with regard to content and multi medial elaboration.

5.1.1.4 DW-RADIO

DW-RADIO broadcasts its programme world-wide in 28 languages – among these German – via distribution technologies such as satellite, analogue short, medium and ultra short wave as well as to DRM (Digital Radio Mondiale, digital short wave). The broadcast volume amounts more than 100 hours per day.

The 24/7 German programming of DW-RADIO transmits world-wide. It provides news on an hourly basis that include information on politics, economy, culture and sport as well as background and service programmes. These programmes are broadcast in four-hour blocks.

The 24/7 English programme of DW-RADIO can be received via satellite, short wave and on the Internet. News and live coverage are changing with background reports and magazine shows.

DW-RADIO can be received in the following regions and languages:

World-wide: German, English

Europe: Albanian, Bosnian, Bulgarian, Greek, Croatian, Macedonian, Polish, Romanian, Russian, Serbian, Turkish, Ukrainian

Asia: Bengali, Chinese, Dari, Farsi, Hindi, Indonesian, Pashto, Urdu

Africa/Near-East: Amharic, Arabic, French, Hausa, Kiswahili, Portuguese.

5.1.2. Existing Applications and Systems at Deutsche Welle

Deutsche Welle is currently in a transition phase with regard to its systems used for communication and access and distribution of any kind of multimedia content. The NDS (see 5.1.2.1) which is still in operation at DW in late 2006 is to be successively being replaced by the NRS, to which will be referred frequently in the following chapters to consider the requirements of a forward-looking system in a media company.

The following features will be enabled by introducing the NRS at Deutsche Welle:

- Access to text, audio and image agencies, ARD (network of regional broadcasters in Germany) sources, archive and all DW productions
- Reduction of multiple entries, data maintenance, elimination of errors
- Connection to the system for planning, production, control/automation (TV), programme controlling and accounting purposes
- Easy, intuitive and Windows compatible operation

The NRS must allow for:

- Support of all DW programme languages
- Intuitive research and browsing
- Illustration of the workflow
- Exchange of ideas, topics and work results between the different departments (TV, Radio, Online)
- Topic and Time scheduling
- Intuitive text creation and editing
- Presentation continuity and transmission scheduling
- Presentation continuity control and preparation of play-out (TV)
- Provision of programme accompanying information
- Interfaces to archive systems (Image, Audio, Text)
- Connection to digital broadcast and production system of Radio
- Connection to Video Management System of DW-TV
- Connection to Content Management Systems of DW-WORLD

In 2007 DW will start a test phase for the NRS. It is planned that the new system will be fully implemented by mid-2008.

5.1.2.1 Hitherto Existing News Distribution System (NDS)

In 1994 the installation of a new NDS (News Distribution System, product "NewsWire2000" from the company NEXUS informatics, today company Dalet [1]) in Cologne started. It aimed at the fast and location-independent communication between all those involved in the production of Radio and TV programmes.

About 900 places of employment were set up in three expansion stages; the functionality was determined by DW-RADIO. In 1998, an emergency system was installed in Cologne. In 2003 DW

moved to Bonn; the central systems of the NDS moved to the data processing centre of the new building.

Today 37 international press agencies deliver news in 12 languages (15 agencies deliver via the Internet). 14 internal sources such as news messages, contributions, comments, etc. are also fed in. The data of the news area are stored for at least six months. Chosen German agency messages and manuscripts are stored in archive pools. Via interfaces NDS data are transferred to the archive systems or DW-WORLD.

In 1998, the NDS went on stream in Berlin with about 250 work stations. Due to the different production flows (Bonn: DW-RADIO/DW-WORLD; Berlin: DW-TV) and due to security reasons, a separate central hardware system was installed in Berlin. This divide into two systems (Bonn and Berlin) entails a significant improvement of availability and software maintenance. The functionalities of the systems are determined by the produced TV programme. Beside the agency reception, the machine control for the teleprompter and the caption generator initiated by the programme planning currently play an important role.

As an emergency action, both NDS centres were connected in such a way that agency messages on a local NDS can be retrieved from the other location, i.e. messages in the NDS in Bonn can be retrieved in Berlin.

5.1.2.2 Archive databases Music and Word (ADAMO)

In 1997 the archive database Music and Word ADAMO was set up to archive DW's and external productions. Technical base is the database software Basis of the firm Open Text.

Reference data to archived sound storage mediums and audio files are stored. For digital recordings the respective reference data is linked with the audio file that is deposited on DW'S mass storage. Editors search for music and word recordings on a Web interface of one of the two databases. As long as the wanted recording is available digitally, it can be "pre-listened" in reduced quality directly from the result mask using a media player. By using this result mask, copies of audio files can be transferred from the audio mass storage into the digital production and broadcast system (DIAS).

In 2003, the database system has been integrated into the new hardware and operating system SUN/Solaris. Currently about 1,300,000 music and 200,000 word data files are stored.

After the set-up of the NRS (Newsroom System), the archive databases Music and Word can be retrieved via the NRS user interface.

5.1.2.3 Text Database for Manuscripts, Press and Agency Messages (ADAPRESS)

In order to supply the editorial teams with up-to-date information and background reports from German and foreign-language newspapers, journals and other press publications, the electronic press archive (ADAPRESS) was set up in 2000. The system using a database was installed by the company CCI (today Atos Origin).

To provide the editorial teams with a wide range of publications, DW established a co-operation with other ARD broadcasters named Press Archive Network (PAN). The regional broadcaster WDR (Westdeutscher Rundfunk) installed an own acquisition system for DW. The system ADAPRESS serves as research database.

Via a net connection up to 2,400 press articles (reference data, ASCII-texts, images) are transferred from the participating broadcasters to DW's press database. Beside press articles some chosen manuscripts stored in the NDS are transferred via WDR's acquisition system to the press database ADAPRESS.

Within the scope of the NRS project, the archiving of manuscripts and the archiving of chosen agency messages in the press database is envisaged. Firstly, a data export to WDR's recording system must be installed.

In 2006 a fill level of 140 GB is reached. The yearly growth rate is about 40 GB. This rate will increase significantly with the start of the archiving of agency messages. Editors can retrieve press articles via a Web interface. It is planned for the future to retrieve the press database via the NRS.

5.1.2.4 Digital Audio Production and Broadcast System (DIAS)

In several expansion stages the Digital Audio Production and Broadcast System (DIAS) at Deutsche Welle was built up. Core task of this system is the production of simple audio contributions by editors at so-called audio-work-stations (AWS), the play-out of all contributions in the broadcast studio and the programmed play-in and –out of contributions in automated broadcast tracks (e.g. transcription service Radio, music channel).

The complete tape-free production and broadcast handling is realised with this system through a multitude of interfaces (e.g. to the digital audio archive, to the programme and contribution exchange as well as to studio production systems).

In 2001 the final state was achieved and in 2003 the system was adjusted to the requirements of the new broadcasting centre. The asset comprises about 60,000 titles with an audio capacity of about 600 GB (approx. 5,500 hours).

About 700 users deploy the system at 50 audio work stations, 150 edit stations in the editorial departments. Furthermore 80 PCs serving as play-out or editing computers in the broadcast and production studios and in the play-in areas.

The production and broadcast system possesses fully-automated interfaces to several systems, such as:

- Replicator (contribution exchange between the members of the federation of regional German broadcasters, ARD, and the capital studio)
- DigaMailbox (individual contribution-file-transfer via ISDN)
- individual contribution-file-transfer via the Internet (FTP, HTTP, E-Mail)
- programmable recording system for internal and external audio sources for up to 24 parallel recordings
- production work stations (SADiE) with professional, linear edit system for high-quality cutting
- Pre-listening of contribution at any PC via a Web interface (DaletWeb)
- Exchange of contributions for long-term storage (digital audio archive)
- Contribution transfer for the Internet presence of the DW CMS (content management system)
- Provision of billing, controlling and documentation files for the SAP system (DW's bookkeeping system)

The currently used production and broadcast system at DW-RADIO in Bonn (software: DALET 5.05 [1]) must be replaced. The to-be system must meet technical further developments and increased requirements to a production and broadcast system. The DIAS interface used by the editors needs to be initiated from the NRS in the future.

5.1.2.5 TV database of the ARD Network (FESAD)

FESADneu is a co-production of the ARD members that will replace the currently existing database FESAD which has been in use since the mid-80s. The data organisation is based on the relational database management system Oracle 9i which will replace the hitherto used STAIRS database from IBM. FESADneu has been used by the TV archive of Deutsche Welle since December 2004.

FESADneu documents and archives all TV productions of DW-TV as well as camera material, external material and agencies. The database is the reference system to the archived material and supports the re-use of DW's programme. Via a Web client all data of the TV archive can be retrieved in read-only mode. In the future the TV database can be accessed with the NRS.

FESADneu will be expanded successively: a new interface to the server-based production systems (FESADpreview) and a new module for electronic programme exchange (called PASAD) will be installed.

After the introduction of FESADpreview the application can be started while using the NRS.

5.1.2.6 Content Management Systems of DW-WORLD

DW-WORLD uses several content management systems (CMS). These are made up of an editorial system and a presentation system, both containing an emergency system, as well as a test and

development system. Central database is an Oracle database server which has a stand-by database and a MySQL database.

At the moment DW-WORLD runs the following Internet pages:

http://www.dw-world.de

http://mobile.dw-world.de

http://www.kalenderblatt.de

http://www.campus-germany.de

http://www.dw3d.de

http://www.german.tv

http://www.inspiredminds.de

http://www.germanizer.com

http://www.qantara.de

The applications have several interfaces to other applications (inter alia DW networks, DIAS, NDS, Internet provider).

Within the scope of the NRS project it is planned to integrate a user-friendly way to transfer manuscripts from the NRS to the CMS. Furthermore, online manuscripts of each language shall be made available in an NRS pool for DW-internal research.

5.1.2.7 Video Management System (VMS)

In the course of the digitisation of the TV production, Deutsche Welle integrated a video management system (VMS) in Berlin. The complete system will be implemented successively; the VMS is only the first part of it.

The system is responsible for the digital (news-) production process. It records automatically or manually the video feeds of the following agencies:

- Associated Press Television News (APTN)
- Eurovision (EBU)
- Reuters Television
- More routes (transmissions etc.)

Editors can watch and choose a low resolution copy of the recorded material. The editor compiles an editing list (EDL) that is processed either automatically by the system or by a cutter working at a non-linear edit suite. The result is a video file ready for transmission. It is transferred to the broadcast server "Omneon" after release by the duty editor. Furthermore contributions can be processed immediately by foreign-language editors.

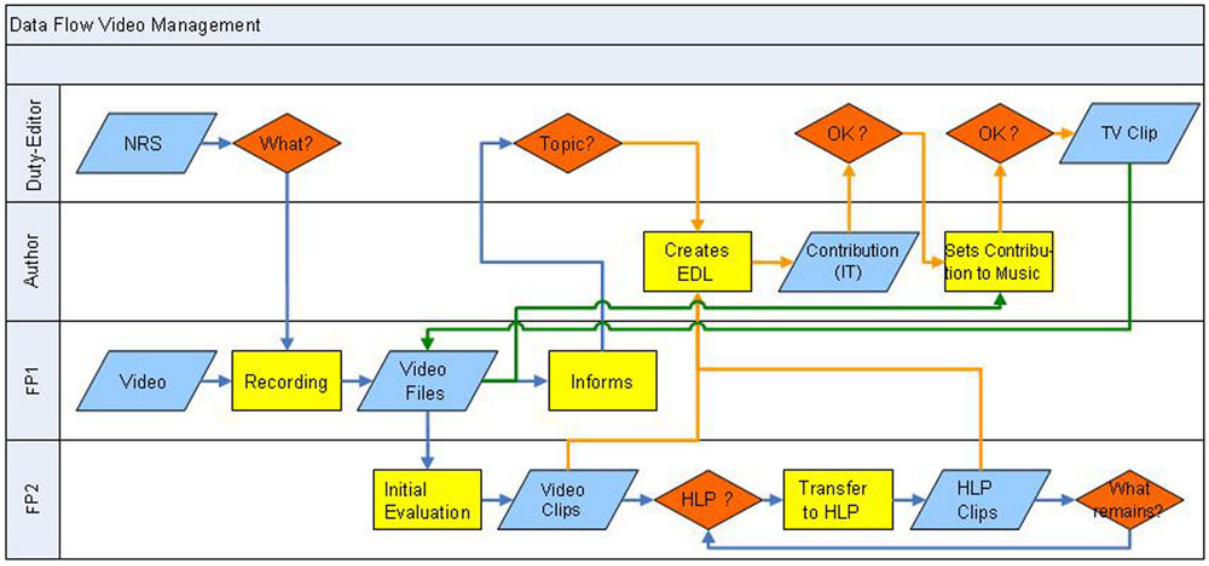


Figure 2: Dataflow Video Management

In a later stage a so-called highlight archive will be implemented in the VMS. The highlight archive enables editors the fast access to older material that bears reference to the latest news.

The further development of the VMS requires a close connection of the VMS to the news distribution system as well as to the newsroom system.

The requirements are:

- The use of a distinct machine-readable contribution ID (from the first idea to the billing after the broadcast)
- Integration into the transmission scheduling of the NRS. A "viewer" playing video files shall be started from the contribution pool of the NRS or from the broadcast schedule of the NRS
- Providing key frames which can be displayed as thumbnails in every summary of the NRS
- Providing information on the edit status of a contribution to be displayed in the transmission schedule of the NRS
- Providing metadata for further use in the contribution container of the NRS.

Examples:

- Title
- Author
- Source
- Date
- Additional information

A central requirement to the VMS is to follow the Microsoft Office Specialist (MOS) standard to ensure a smooth integration into the NRS as well as the ability to integrate clients of external applications in the interface (plug-in).

Once the VMS is fully-operational, it will allow for:

- Automatic and manual ingest
- Preview and keyword indexing
- Browsing/Search from all connected work stations
- Editing and sound recording in the editorial office
- Transfer to studio/broadcasting server
- Fully-digital production and transmission

5.1.2.8 Time, Topic and Transmission Scheduling (TTS) at DW-TV

The TTS is relevant in following fields:

- Time scheduling
- Topic planning
- Transmission scheduling
- Contact management
- Producer's estimate
- Handing over to internal payment allocation

In conjunction with the NRS project internal payment allocation, producer's estimate and contact management are not considered. Figure 3 provides an overview about the TTS processes and entities.

5.1.2.8.1 Time scheduling

Time scheduling is a pre-requisite for topic planning. Beside date and time, the title, search terms and memos are collected.

A fixed date can be allocated to one or more editors and/or directly be taken over to a topic.

The daily schedule contains all fixed dates of the day and all dedicated broadcasts and topics. More overviews exist: monthly and yearly schedules as well as an evaluation of free dates, i.e. those dates that are yet not allocated to a broadcast.

The TTS is Web-based (HTML, IIS, MS-SQL server).

5.1.2.8.2 Topic Planning

A topic entry includes the following data:

- Production number
- Cost centre / cost unit
- Editorial staff
- Duty chief, duty editor, telephone number
- Reporter
- Date and length of broadcast
- Title
- Memos (information, links)
- Manuscript
- Producer's estimate

Editors use the topic planning for a long-term preparation and for requesting the essential production resources.

A topic entry can be initiated by fixed dates (from the time schedule) or other sources such as the news situation (agency messages), editorial conferences or the necessity to request production resources.

Topic entries that are not allocated to a broadcast date are stored automatically in the topic pool. After allocating a broadcast date, the topic can be found in the transmission schedule.

Accepted manuscripts and archive memos are in the topic of the transmission schedule; the status is displayed in the summary. The archive memo is the starting point for creating the insert list. The insert list is transferred manually into the transmission schedule or directly into the caption generator.

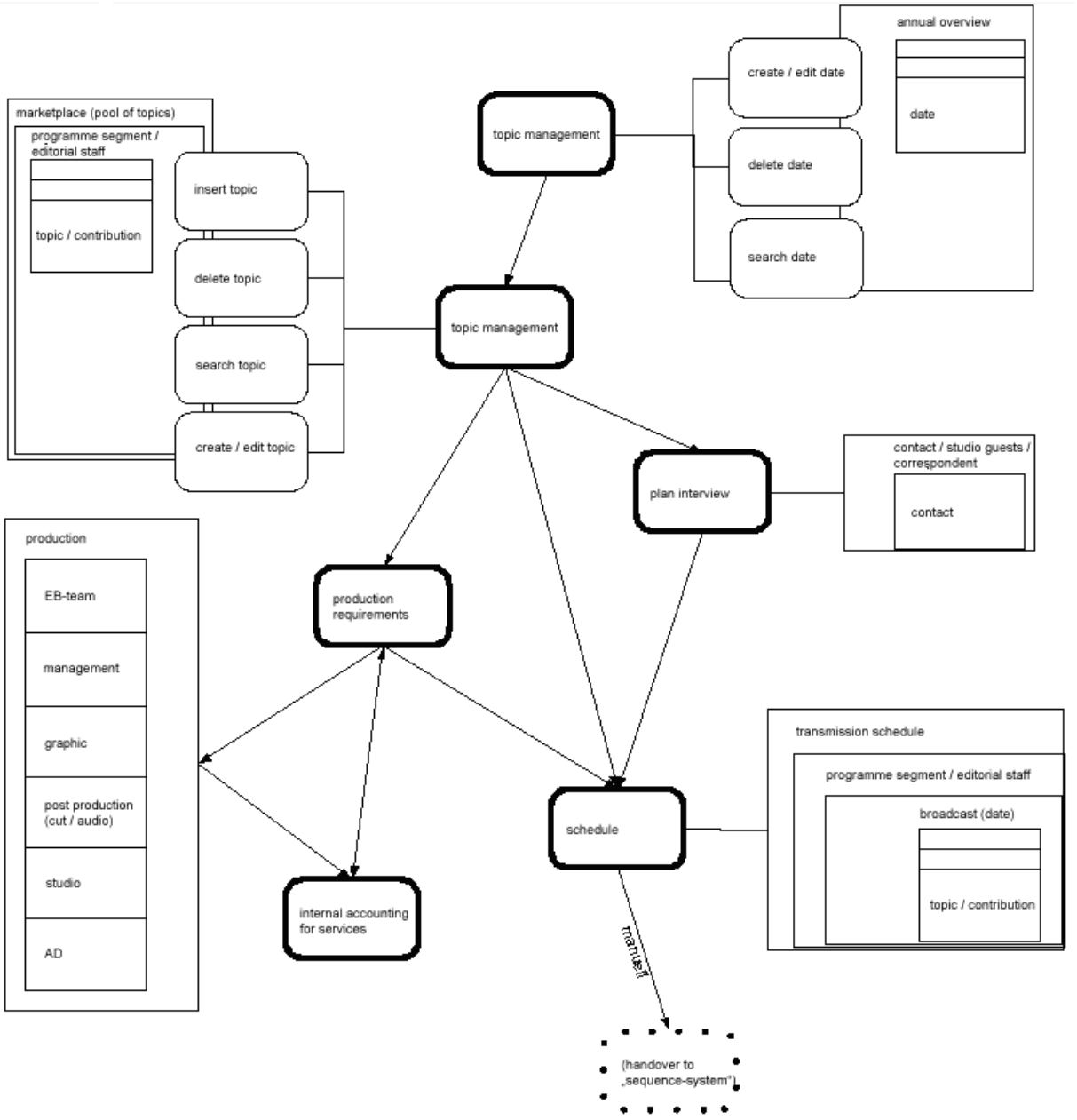


Figure 3: TTS processes and entities at DW-TV

5.1.2.8.3 Transmission Scheduling

The transmission scheduling is also used for short-term scheduling.

The work in the transmission scheduling is carried out with a selection mask. By choosing the date the broadcast schedule is opened; it sums up all contributions of the day and per editorial staff. Furthermore allocated dates and interviewees are visible. In a so-called "topic pool" topics are collected and made accessible.

Existing contributions without broadcast date can be allocated to a broadcast in the transmission scheduling. Contributions which shall be repeated are also entered here.

The transfer of contributions into the newswire transmission schedule is carried out manually in the presentation continuity. This workflow includes the supply of contributions and the registration of all required components for the continuity. This work can be partly accomplished by using copy and paste.

The time, topic and transmission scheduling shall be realised in the new NRS. The TTS systems in Bonn and Berlin have the same technical groundwork, but they vary in their functional range. The functional requirements can be found in the corresponding chapters.

5.1.2.9 TTS at DW-RADIO

The system TTS Radio is based on the homonymous system of DW-TV, but the specific Radio requirements have been taken into account. It comprises of the modules transmission scheduling, topics/contributions, diary, contacts/interviews and a secured area for master data administration.

The TTS displays the programme structure and the broadcasts of DW-RADIO in different importance levels. The top level contains the programme pattern which is structured by day and time of broadcast and programme line. The single broadcasts are located in the programme line. Due to the summer/winter time change the programme line must be adjusted at least twice a year. Programme reforms entail more modifications. The structure of the programme line in the TTS should comply with the structure used in today's DALET system. An automated adjustment does not occur. The consistency between the two systems is currently not warranted.

The beginning of the scheduling or the documentation of a broadcast starts by choosing the appropriate programme or the scheduled day of broadcast. The modules time scheduling and contacts/interviews may be used irrespective of a certain broadcast. One can connect these by taking over fixed dates or contacts.

The contribution level is displayed in the modules topics/contributions and transmission scheduling. The module topic/contributions offer a non-sortable overview about all contributions of a broadcast or of the day of broadcast. The order of the single contributions of a broadcast is set in the transmission schedule.

The TTS system shall be replaced completely after the start-up of the NRS.

5.1.3. Workflows and Objectives at DW-TV

5.1.3.1 Core Process Information Extraction

Work in a TV editorial department is fragmented and the division of labour requires a twofold display of all NRS-relevant workflows: as a process model and as activities of all persons/roles/systems involved. These two models help to understand work and data flows and processes that come along with the production of a broadcast.

To ensure ascertainability, the representation as activities requires the reduction of the complex interactions of a TV editorial staff. The representation allows for seeing all NRS-relevant activities in the system context. The activities that take place in the NRS environment are also displayed in the process representation.

Text information on all activities is provided in the following sections.

5.1.3.1.1 Representation of Activities/Data

To the left of the activities, the data sources are shown, to the right the results of the activity are displayed. Details are not given here. The details on the data can be found in the directory of services under "Data flow in the workflows".

5.1.3.1.2 Roles

By reducing the number of involved persons, the representation is simplified significantly. It is reduced to such roles that are important in the later technical realisation (authorisation concept, mechanisms of communication). A role can be taken by different users and a user can perform different roles (at the same time).

The following roles are of importance in a TV editorial department:

- Orderer – in general duty editors
- Producer – e.g. reporters, correspondents, authors
- Service providers – cutter, sound recordists, designer, speaker, cameramen, and colleagues from the editorial staff

5.1.3.1.3 Obtaining Information

The process of obtaining information has many consistencies in the single departments DW-RADIO, DW-WORLD and DW-TV. There are no fundamental differences in the activities research and time scheduling at DW-RADIO, DW-WORLD and DW-TV.

At the beginning the data must be collected, indexed and provided with metadata. This first acquisition can be performed automatically (agency stream), manually (video feeds), locally (by the VTR editor) or remotely (metadata in the agency stream).

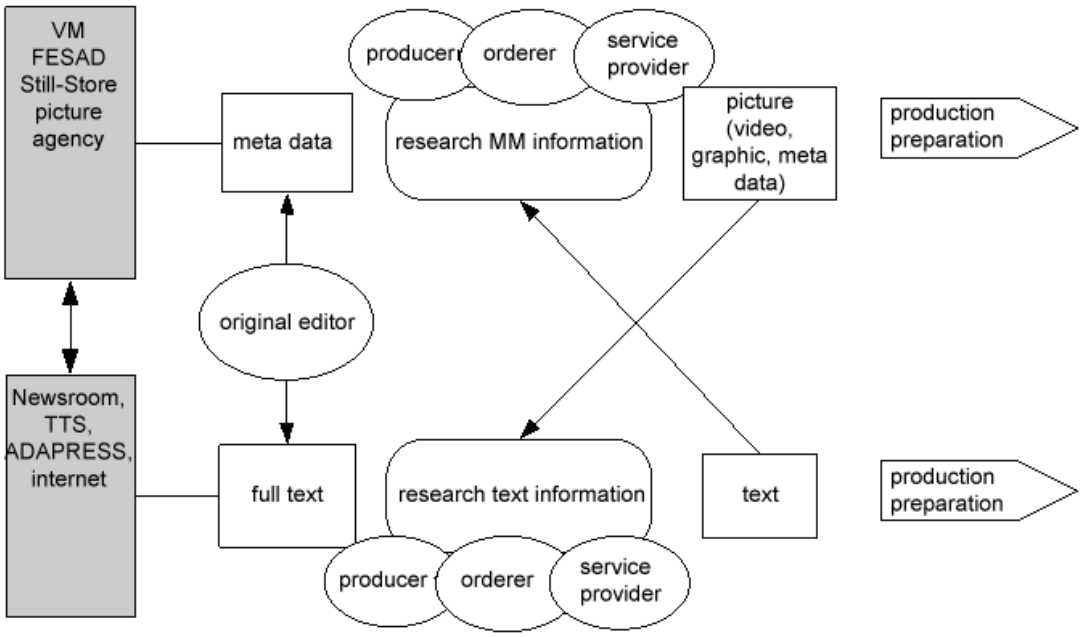


Figure 4: Dataflow in DW structures

Figure 4 shows the data flow (on the left: sources and source systems; to the right: activity results):

Sources are:

NRS

- Topic and Time Scheduling of the NRS (TTS at present)
- DW-internal databases
- DW-external databases
- Video Management System
- Graphics sub-system
- Archive systems (for text and multi media content)

Four defined roles participate in the information obtaining process:

- Collector
- Orderer (for topic evaluation)
- Producer (for realising topics)
- Service Provider

The activities "Search for text information"and "MM information"(multi media information) interact: if multi media content is found, search for additional text information may be required. Correspondingly, retrieving text information may lead to the search for adequate MM content. This procedure my lead to several iterations within the process "Obtaining Information" - in any case it ends in an information pool that is forwarded to the process "Production Preparation".

Figure 5 demonstrates the workflows and illustrates the main difference between text and multi media research: multi media content (graphics, videos) must generally be modified by the collector, before it can be retrieved in the NRS or a sub-system. In any case the research result is the same: information that is directly influencing the evaluation of a topic and the production of a contribution.

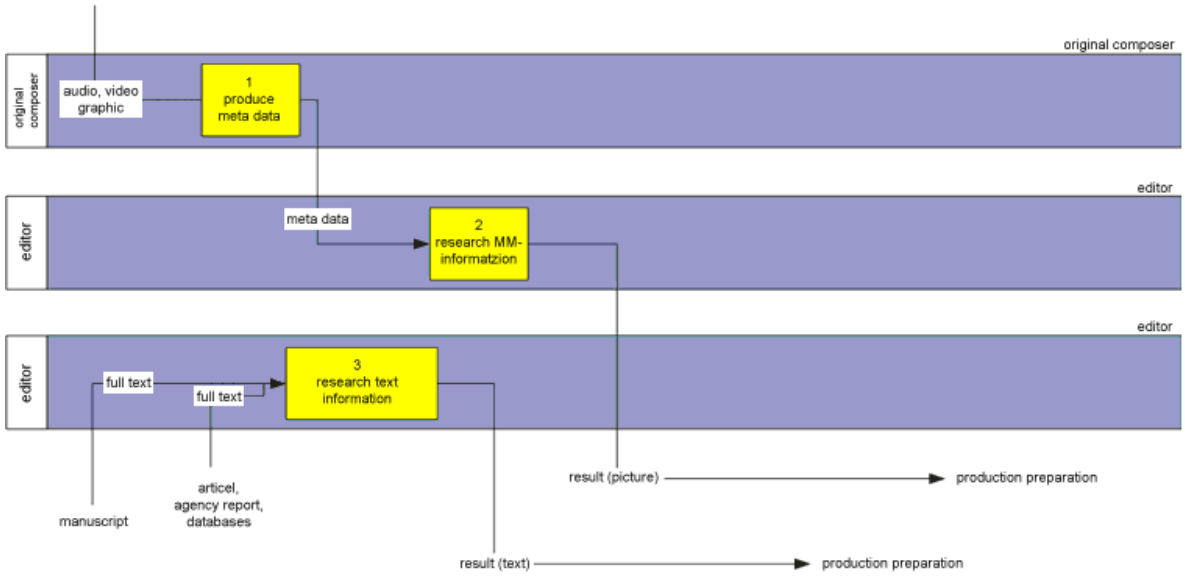


Figure 5: Workflows in DW structures

Producing Meta-data (1)

For the time being image and video agencies do not provide trustworthy and complete meta-data to the actual content. Consequently, an automatic transfer into the editorial system is not warranted. The systems for the creation and the modification of meta-data must support the editor's work intuitively and user-friendly. First, the content must be viewed and a suited sub-system (application window or ActiveX-Plugin in the NRS window) allows for the creation and modification of meta-data. The NRS must provide an opportunity to import the meta-data from the sub-system, to display the retrieved text information and to make it available for research.

5.1.3.1.4 Information Research

Basically the clients of each sub-system have a more or less sophisticated search function. In order to ensure an efficient and convenient research, the NRS and its sub-systems should provide a consistent search function.

Multi Media Information Research (2)

Multi media content, when not fed in a broadcast live, consists of:

- Audio data from the sources:
  - ADAMO
  - DIAS (very uncommon)
- Video data from the sources:
  - Video Management System
  - FESADNeu
  - Advanced Visual Information Display (Avid) Environment
- Graphics data from the sources:
  - Graphics Sub-system (Signum, VizRT)
  - AP Image Server
  - Internet Image Databases

The direct research of multi media (i.e. contents saved in binary format) is not possible, but the search for meta-data. For the research text terms of one or more of the following categories are necessary:

- Source
- Date
- Time of day
- Title

- Description
- Priority

The search can take place in any system/sub-system that contains meta-data for MM content. These are VMS, graphics sub-system and other systems at the periphery (e.g. ADAMO), but also – after importing the meta-data - the NRS. By clicking the search result, a viewer/editor opens: if a client is installed in the sub-system the application itself (ideally as plug-in in the NRS client), at any other working places a web client or a license-free viewer.

Researching Text Information (3)

Text information can be found in:

- Articles from:
    - Daily newspapers (analogue)
    - ADAPRESS
    - Internet Archive Databases
- Manuscripts from:
    - NRS
    - ADAPRESS
- Agency Messages from:
    - NRS
    - Databases with access: Intranet, Internet

For searching text information in the NRS it is necessary that the NRS offers a search engine. It would be helpful to install a "meta search" for data that is not imported into the NRS, i.e. the search mask of the NRS forwards the query to other sources.

The user can take search terms of one or more of the following categories:

- Source
- Date
- Time
- Title
- Keyword
- Full text
- Priority

The search results should be listed and linked to the appropriate full text.

The search results can also be the starting point of a new research. Text and MM search may influence one another. The result of the core process is information that is part of the media product (contribution, presentation, broadcast).

5.1.3.2 Core Process Production Preparation

Due to the plethora of feasible sources and the subsequent work steps, the core process "Production Preparation" has many activities that are carried out simultaneously.

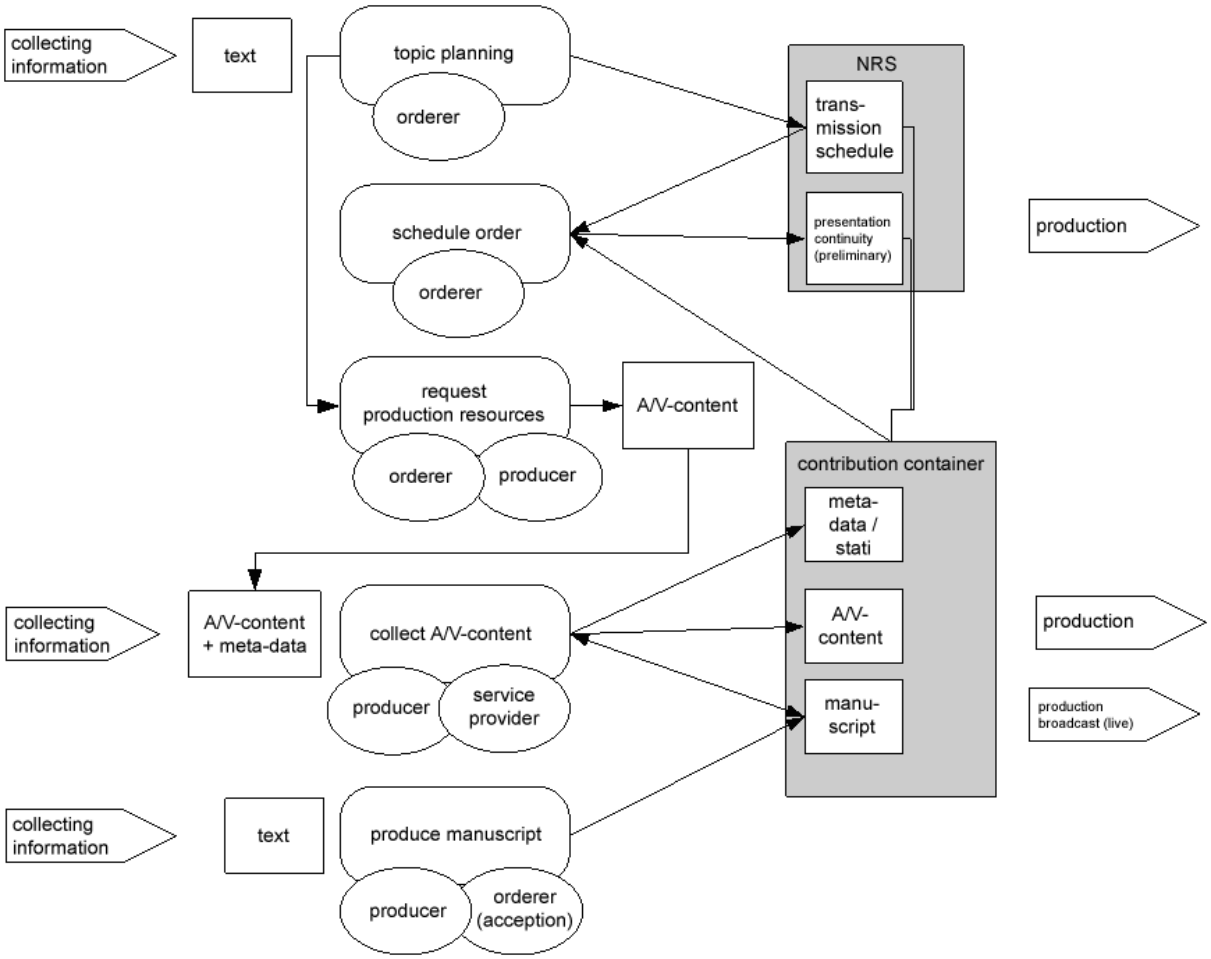


Figure 6: Core Process Production Workflows

Figure 6 shows an overview of data and workflows. The flow is running from the left to right and from the top to the bottom (beside interactions and loop-backs). The activities "Topic Planning", "Story-board" and "Creating Manuscript" are NRS-relevant and are displayed graphically in the following.

5.1.3.2.1 Topic Planning

Topic and story-board planning are core activities of a newsroom. Beside collecting, administrating and displaying agency messages, a modern NRS must support ideally the editors at the creation, administration and realisation of a transmission.

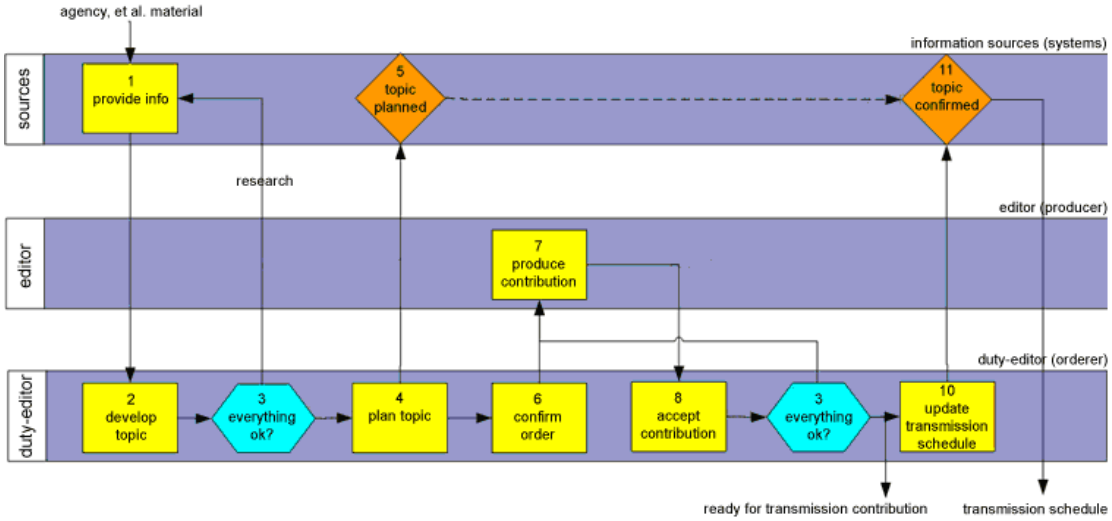


Figure 7: Topic Planning, Story-board and Creating Manuscript Workflow

Providing Information (1)

Information is the starting point for topic planning. This information is available in text format be it an agency message, news, a notice or simply a thought. The information is analysed, a topic idea is born and evaluated by the editor and his team. The NRS is to support this interaction between editors and their colleagues (e.g. instant messaging).

Topic Development and Planning (2,4)

At the end of the editorial process the topic is recorded in the topic plan. The system for storing and modifying topic plans should be integrated in the NRS or at least connected to it via an interface. To develop a topic, the duty editor must be able to create a "contribution pool" in the scheduling tool (NRS or other). This set of data can contain various text or MM contents (copies of the raw data or a link to the raw data). The contribution pool is either stored in the story-board of an existing broadcast or in a pool defined by the editor. By drag and drop it can be moved to the story-board of the broadcast in which the contribution shall be transmitted the first time.

Here are some examples of object in a contribution pool

- Broadcast materials:
    - Video clip
    - Contribution text
    - Presentation text
    - Inserts
    - Frame graphics, set-in
- Information materials:
    - Agency messages
    - Presentation proposals
    - Archive material (text or multi media) as background material

Only a limited number of materials to be broadcast can be stored in the contribution pool (example: only one video clip, but more inserts). In contrast, any number of information materials can be added to the contribution pool. The run-down transfers only broadcast materials for the play-out to the sub-systems. In case information material is rededicated during a transmission, the sub-systems must receive this information and the play list must be corrected accordingly (cf. §functional requirements to the interfaces").

5.1.3.2.2 Story-board

The creation and update of story-boards is a continuous process starting days or weeks in advance of the transmission and ending with the broadcast.

This process starts with collecting topics and ends in an entry in the broadcast schedule and, thus, in a contribution pool for contents and meta-data.

5.1.3.2.3 Updating Broadcast Schedule

The broadcast schedule should be updated manually or automatically (through status changes in the NRS or other systems). After creating or transferring a contribution pool in a transmission schedule updates can be carried our by:

- Status change "Approved" (texts: in the NRS; video clips: automatically from the VMS or manually with acknowledgment to the VMS)
- Status change "For transmission" (automatically from the VMS or manually with acknowledgment to VMS, additionally this change must be noticed in the run-down for the sequential control of submission "Pebble Beach", because the contribution cannot be broadcast otherwise)
- Status change "On hold" (manually, must be taken into account in the run time calculation: on hold contributions are not counted and this status must be transferred to the studio server)
- Status change "Activated" (contrast of "On hold", manually)
- Status change "On air" (automatically from the sequential control of submission "Pebble Beach")

- Status change "Transmitted" (automatically from the sequential control of submission "Pebble Beach")
- And all changes in the contribution pool, e.g. meta-data, text run time of a contribution

5.1.3.2.4 Requesting Production Resources

With the creation of a contribution pool the production preparation of the actual contribution starts. At this stage it means the request for production resources:

- Camera team
- Transfer
- Creation of graphics
- Booking of an edit suite

The A/V content produced here is raw material for the actual production. It is together with the A/V material from the core process „Information extraction" the working material for the activity "Collecting A/V content".

5.1.3.2.5 Collecting A/V Content

This activity is the actual collection of raw material and means collecting A/V contents for the production of a contribution. A/V content is collected in a pre-defined place in the VMS, the contribution pool of the NRS or the like and is available for the producer. At this place also metadata for the production of a contribution, the introduction of a broadcast, the accounting of a broadcast or the correct archiving are collected.

5.1.3.2.6 Creating and Accepting a TV Manuscript

Generally this activity is based on text information. The activities "Collecting A/V Content" and "Creating TV Manuscript" interact. The existence or the lack of A/V content can influence the structure of the manuscript. On the other hand it may happen that mandatory text needs illustrating images.

Figure 8 illustrates the activity "Creating a TV Manuscript":

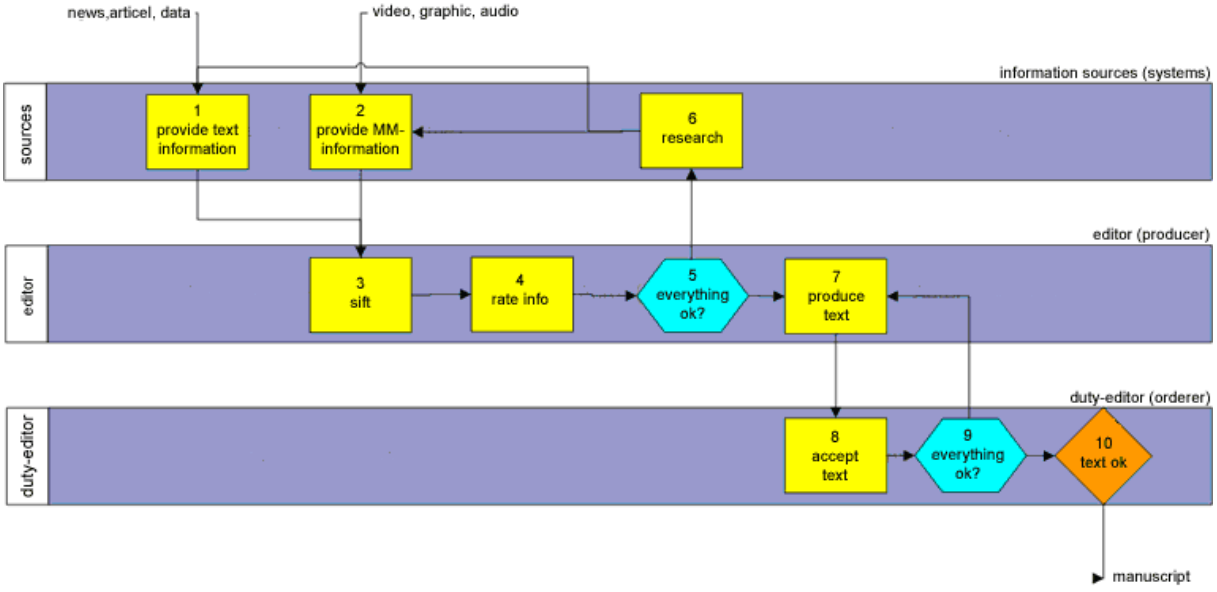


Figure 8: Creating a TV Manuscript

The final step of this activity is the acceptance of the manuscript, e.g. the joint revision of the text by the author and the duty-editor.

Providing Text Information (1)

The source systems (NRS, internal and external databases) provide text information. It is either sorted chronologically or following the search terms used. The obtained information can be transferred to the manuscript by copy and paste or drag and drop.

Providing Multi Media Information (2)

The source systems (VMS, graphic sub-system) provide multi media information (graphics, video clips). The information is also displayed either chronologically or following the search terms used. This information can't be transferred directly to the manuscript, but it provides essential information for the writing of the text.

Browsing and Evaluating Information (3, 4)

The research in text-based and multi media systems is continued until the author has collected all required information and materials.

Creating and Accepting Text (7, 8)

The duty-editor modifies the author's text and respectively asks for revision. When the text is up to Deutsche Welle's standard it can be released. These processes have two results: a manuscript and a status change which must be displayed in the NRS.

5.1.3.3 Core Process Production

Within the process "Production" the NRS is only involved as a receiving system, i.e. the NRS receives information on the status and the subsequent updates of the presentation continuity. The process "Production" is illustrated in Figure 9.

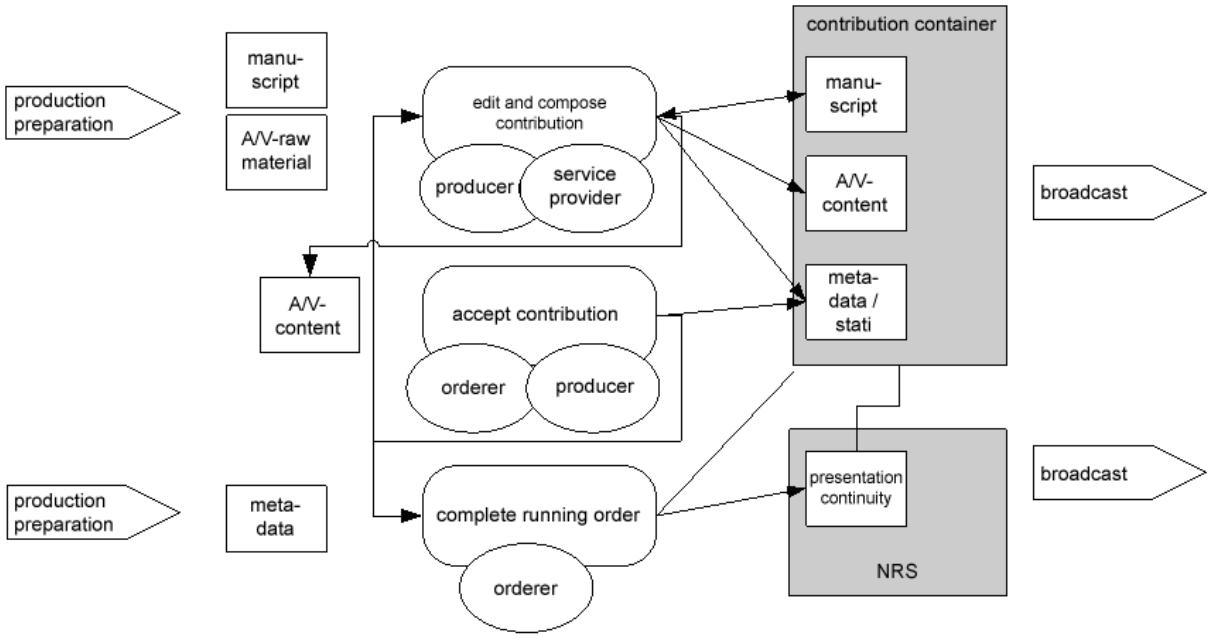


Figure 9: Core Process Production

5.1.3.3.1 Cutting a Contribution and Setting the Contribution to Music

The A/V raw material and the manuscript (or at least a concept) of the contribution are edited here. At the end this activity results in the contribution itself, but also in status messages which help the duty-editor to follow the processes of cutting the contribution.

This activity isn't NRS relevant.

5.1.3.3.2 Accepting a Contribution

Unlike accepting a contribution text, the result of this activity isn't the contribution but the contribution status. The status change must be shown in the NRS; even if the status has been changed in the VMS by the editor, the new status must be forwarded immediately and automatically to the NRS.

The status "Accepted" approves the contribution to be adapted and respectively to be broadcast. The status "Not Accepted" leads back to the activity "Cutting a Contribution and Setting the Contribution to Music".

5.1.3.3.3 Completing Running Order

A running order is „Work in Progress", i.e. it is updated continuously from the first creation of the plan until the end of the telecast.

These updates are initiated by two events:

- New information on a report is available
- New information on the status of a report is available

The first events entails the activity "Topic Planning" the second the activity "Completing Running Order".

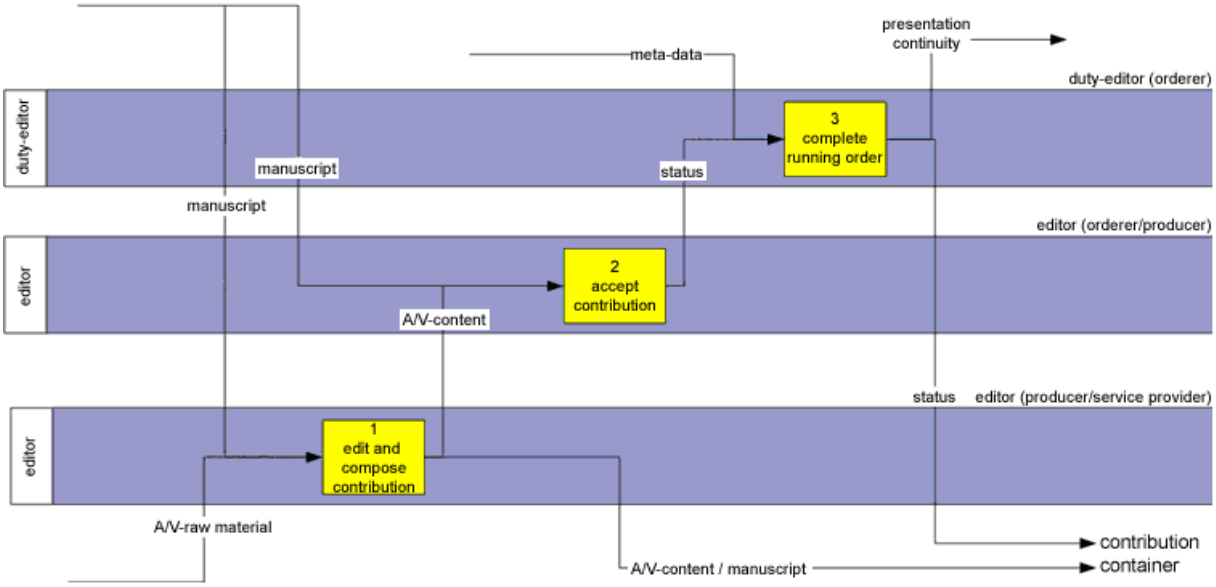


Figure 10: Completing a Running Order

The status messages and the metadata of a contribution are crucial for finalising the running order. Information on the status and the whereabout of video files, the length of a clip and further instructions of the production are important. This information should be transferred automatically to the contribution pool of the running order and connected sub-systems should be updated as well to avoid faulty and double inputs.

The duty-editor (respectively the NRS of the duty-editor) collects status messages to update and finalise the running order. A contribution is ready for transmission, when all required elements (presentation, video clip, set-in, further effects, graphics, lines, sources, etc.) are ready-made. It might be helpful to develop a scheme in which the NRS can mark automatically a contribution as "ready for transmission" when the requirements are met. It must be possible to leave some elements "not ready for transmission" without setting the whole contribution pool as "not ready for transmission" (e.g. a video clip must be ready for transmission, a set-in not necessarily).

5.1.3.4 Core Process Transmission

During a live transmission all systems must co-operate in real time:

a. The NRS with the running order
b. The video server
c. Graphic sub-systems
d. Teleprompter
e. Caption generator etc.

The NRS plays a central role here.

5.1.3.4.1 Running a Transmission

For the NRS the activity "Running a Transmission" is the most complex one.

The transmission schedule is at the centre of this activity. The broadcast schedule of the NRS controls all connected systems via interfaces and links. It calls on the required sources (video file on the studio

server, graphic file in the graphic system, inserts, set-ins etc.) and makes them available to the vision mixer and sound engineer. By deploying appropriate control systems it would be possible to run a complete broadcast (including live sequences, camera positions, light positions, etc.) by the data listed in the transmission schedule.

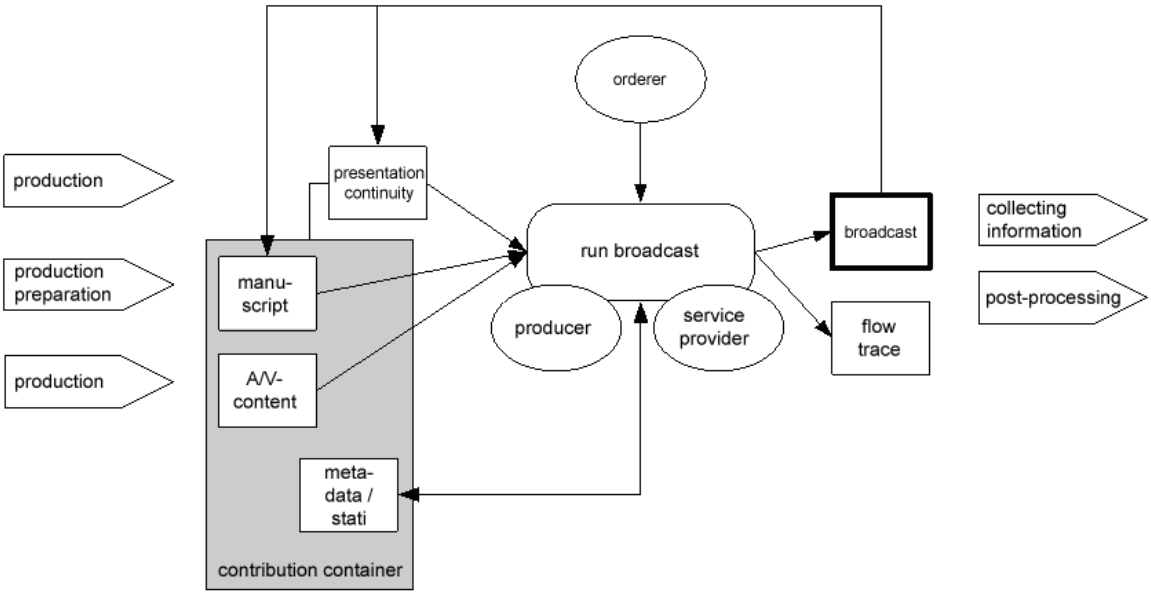


Figure 11: Core Process Transmission

The activity "Running a Transmission" includes:

- Provision of all A/V content
- Delay control
- Updates of the transmission schedule and respectively the play lists of the sub-systems, caption generator and teleprompter
- Status changes ("hold", "active", "transmitted") in the contribution pool
- Automatic creation of the technical log for archiving and post-processing

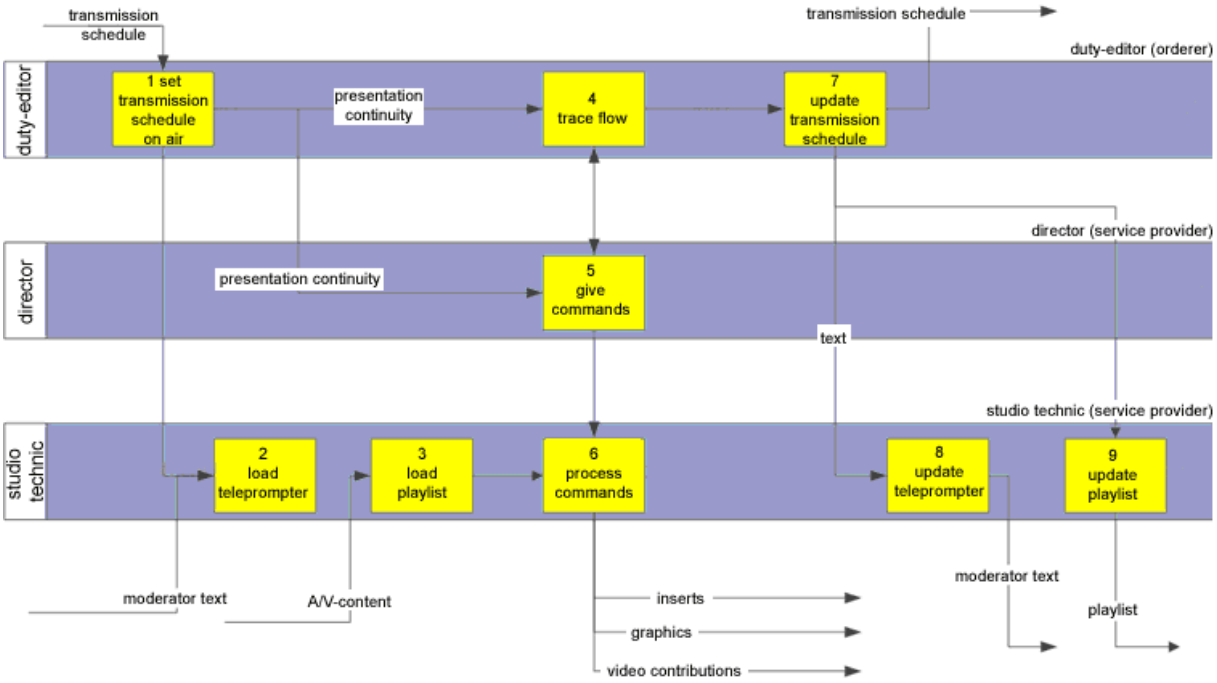


Figure 12: Running a Transmission

Setting Running Order "on air" (1)

In a studio only one running order at a time can be active ("on air"), but the NRS must be able to supply and control several studios with different running orders. The transmission running order is activated at a determined point of time a few minutes ahead the broadcast. So all play lists are transferred to the respective sub-systems:

- The studio server Omneon identifies and automatically uploads video clips (3)
- The teleprompter automatically loads the presentation texts (2)
- The graphic system automatically loads the set-ins, complete picture graphics etc.
- The caption generator automatically loads the inserts (3)
- (At a later stage): the camera control loads a play list of angles etc.

So the studio crew has available all sources automatically.

Delay Control (4,7)

As long as the running order is not updated by the chief-editor at the beginning of the broadcast, the executive editor follows the calculated and real run times of the broadcast. Because live parts (presentations, live connections) of the broadcast often do not last as long as calculated before, the executive editor has to adapt the length of the broadcast in line with real remaining time of the broadcast. For this he has the following options:

- reduction or extension of presentations
- changing contributions for shorter or longer backup-contributions that were "on hold" before
- adjustment of minimal impreciseness by arrangements ("run slower")

To fulfil these tasks, the executive editor must have available the following functions:

- Continuous updates of the forecasted complete run-time
- Continuous display of deviations from schedule
- Immediate update of the play lists of connected systems
- Immediate update of the teleprompter
- Feedback on succeeded/aborted updates
- Opportunity to control each part of the broadcast (manually if required) via the interface of each sub-system

5.1.3.5 Core Process Post-Processing

Running orders are produced automatically and exported for further technical use. For post-processing running orders and archive memos are printed and filed. The accounting with SAP used at DW is carried out by using the running orders and manually-made fee lists. At DW-TV SAP is not involved in TV productions, consequently all accounting relevant data must be prepared for this accounting system. This is made manually, because the news distribution system knows neither a contribution pool nor a contribution ID.

The same applies for the archiving of contributions until the video management system has been fully introduced.

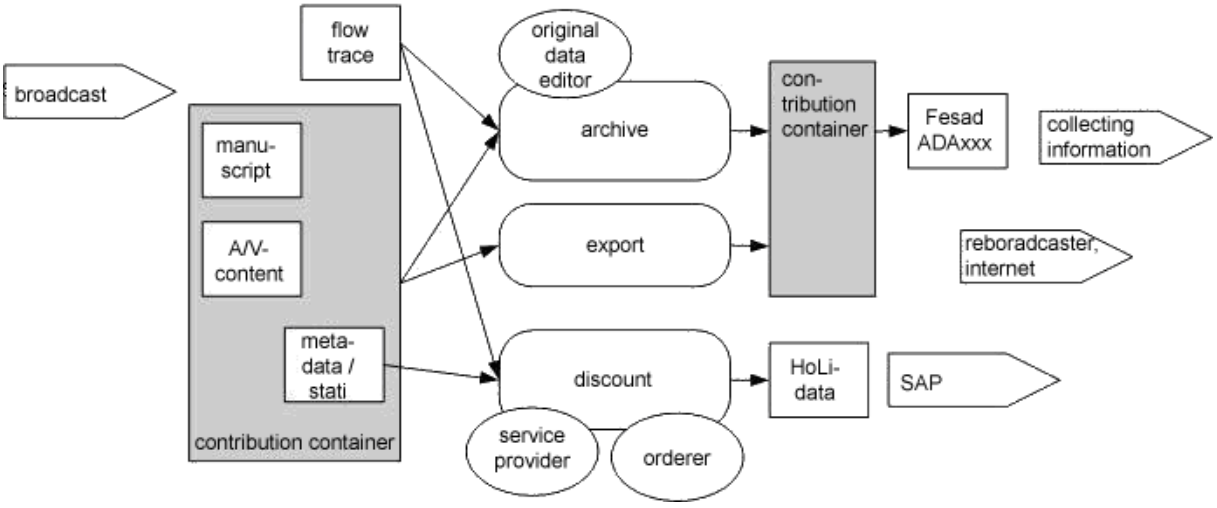


Figure 13: Core Process Post-Processing

The NRS must fulfil following requirements:

- Providing accounting relevant data in the contribution pool
- Transfer of these data to SAP via an interface or news function
- Opportunity to display and print accounting relevant data from the contribution pool
- Optional: status "cleared" in the contribution pool
- Export of presentation continuity in different formats with different filters (to re-broadcasters, Intranet)

5.1.3.5.1 Archiving

The NRS provides the contribution pool and the data and metadata contained in it as raw material for the archiving in FESAD and other archive systems. Transmission recordings are also raw material that can be used in the core process "Information Extraction". Archived material, be it text or A/V content, is available for obtaining information.

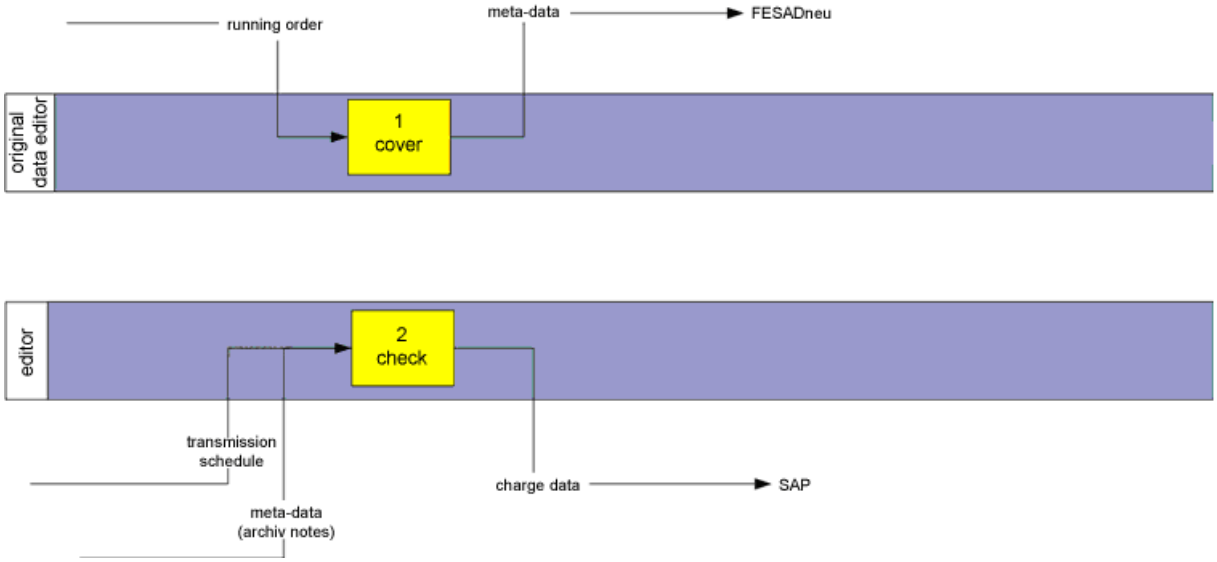


Figure 14: Archiving of Video Clips

The initial editor processes the essence and the metadata of the archived material and stores the data in the archive system FESADNEU.

Following actions must be feasible:

- Contribution pool must be editable also after the transmission
- Metadata must be exportable to an XML format
- Bi-directional exchange of metadata between VMS and NRS.

5.1.3.6 Video Journalism at DW

As described above traditional television field crews usually consist of at least two people: the reporter and the cameraman. Larger field crews may be used in bigger productions. However, in news broadcasts, finding a crew with more than two people in the field is rare.

In contrast to this Video journalism is a new form of broadcast journalism. A video journalist (VJ) simultaneously handles the roles of reporter, cameraman and audio assistant while on the move. Furthermore the video journalist edits (at least raw) draft or final versions of the actual news item.

VJ thus conceives shoots and cuts film contributions single-handedly using digital technology. A digital camera and an edit software integrated in a computer workstation enable the production of videos in broadcast quality.

Video journalism is emerging rapidly in the broadcasting domain due to obvious cost savings while maintaining acceptable journalistic and editorial quality at least for straight-forward, up-to-the-hour TV News productions.

The workflow of a VJ working for DW-TV is as follows:

- Develop idea/storyline/ get assignment from editor/editor-in-chief
- Get "mobile" equipment:

DW uses a Panasonic AGDVX-100 DA/DB camera and a connected MKE 441 microphone.

- Shooting on location including interviews (recording to Camera hard disc or removable disc)
- Editing and Dubbing:

Via the camera the A/V material is imported to the AVID editing suite and transcoded to Open Media Framework (OMF) files. The journalist previews the raw material (optional: additional film or photo footage retrieved from TV archive; optional: rights clearance for non-proprietary footage, drafts an edit list). The journalist then edits the video including original statements, ambient sound, music and additional graphics.

Finally the journalist/author transfers the video files to the sound studio where commentary is added. Furthermore sound and music is adapted and synchronised.

- Screening and Acceptance by Editor-in-chief or Editor-in-charge
- Broadcast on TV

5.1.4. Publishing Videos on the Internet

There are a lot of blogs and web sites on the Internet where journalists or private persons can publish footage.

5.1.4.1 Blogs

Blogs or Weblogs are electronic logs. The author provides text, images and/or videos on the Internet, which are listed in a chronological order. Due to the easy production and handling of blogs, "bloggers" are very often private persons without a journalistic background, so some regard blogs as a new form of grass root journalism. Many commercial providers also use this way of offering their content. Blogs are based on the RSS standard.

During the Football World Cup 2006 Deutsche Welle offered a blog hosted by former Brazilian football player Giovane Elber.

There are several sites which help the author creating his own blog like Blogger.com, TypePad.com and WordPress.com on the Internet. German examples for blog creation sites are Twoday.net, Blogigo.de, Blogger.com, blog.de, blogg.de, diary-z.de, myblog.de and logz.net.

Blog software makes publishing very easy, and it is flexible enough that the author can use it to create all kinds of sites, not just the web journals for which it was originally designed. Any of these sites

allow the user to get journalism on the Internet quickly and easily, but each strikes a different balance between ease-of-use and power of features.

Blogger.com is a free blog site owned by Google and targeted at beginners and people who care more about the ease of getting their content on the Internet. Each Blogger site is a list of uncategorized articles for which an RSS feed is automatically generated.

Typepad.com has a good balance of ease of use and powerful features. A Typepad account gives the user the configuration options and RSS feed offered by Blogger (minus automatic AdSense) plus many more features, all in a simple, straightforward administration application. With Typepad, the author can categorize posts with as many custom categories as he wants, though there is only one RSS feed for each blog. There are numerous templates to choose from and you can customize each using a drag-and-drop interface, then save different customized layouts so you can switch back and forth.

WordPress.com is offered for free and has some advanced features for a hosted blog. WordPress supports hierarchical lists of categories (e.g. sub-categories, and sub-categories of sub-categories) and creates an RSS feed for each category. It has built-in wizards for importing blog entries from other blog services such as LiveJournal, and exporting your data for use elsewhere. Users the author allows to contribute can be assigned one of four roles, from Contributors, whose work must be approved before it goes live, to Administrators, who have all the access and power of your account. WordPress also allows one to upload attachment files and has built-in wizards for placing multimedia content in your blog.

Blogtopsites.com offers an overview which blog sites exist categorised by genres, but it certainly only scratches the surface.

5.1.4.2 Video Sharing Web Sites

Video portals such as YouTube, MyVideo.de, Clipfish.de, etc. are free video sharing web sites. They are getting more and more popular with tens of thousands self-made videos available, making users to prosumers (producers and consumers).

These portals allow for uploading videos to their servers and adding tags defined by the user. They give the prosumer HTML that he can use to embed the video in a web page or blog post. Each video one puts on the web site has a permanent URL and code to embed it in a web page. If one wants to tie a series of videos together, he can assign videos to channels he creates.

On YouTube users can submit videos in common-file formats such as .mpeg and .avi. YouTube automatically converts them to the H.263 variant of Flash Video and makes them available for online viewing. YouTube creates RSS feeds for videos by a given user and for a given tag. If an author is looking for more advanced features, he can take advantage of an active user community that has built some sophisticated tools.

Recently BBC Worldwide has announced a partnership for the first ever peer-to-peer (P2P) distribution network with Azureus. Azureus offers the application Zudeo that enables creators of rich media content (film directors, videographers, musicians) to publish and distribute their work to millions of viewers, in high quality format (DVD-Quality, HD-Quality). Azureus will offer popular, high-resolution British comedies and dramas from BBC Worldwide on its new digital media platform.

5.1.5. Real Life Scenarios of Freelance Journalists

5.1.5.1 Scenario 1

The following describes how a known freelance TV journalist (based in Berlin) works for one particular customer (a Dutch TV station) to illustrate some of the issues involved in current working practices.

- Every Monday morning, the TV journalist combines an information sheet with topics of the week to come and interesting stories worth covering in Germany to his contacts at a Dutch TV station. The info sheet contains short text summaries of individual events, times & dates, sometimes photos (no moving images) and other information of relevance.
- The list is sent to the Dutch TV station via e-mail (or fax) on Monday morning
- Depending on the interest of the Dutch TV station, and their plans for the week ahead, they contact the Berlin-based journalist and order one or more particular items.

- The items are priced according to a previously agreed pricing scheme. Price depends on things such as duration, travel, needed equipment, location etc. The prices for all items are calculated on the basis of a particular, previously agreed pricing scheme.
- Production is undertaken (not exhaustively listed her): research, location checks, filming.
- Post-production is undertaken (not exhaustively listed her): editing, sound, effects etc.
- The finished product is available.
- Usually, the finished product (film) is sent to the customer (in this case Dutch TV) physically by courier (e.g. UPS, DHL etc) NOT via ATM (Asynchronous Transfer Mode - which would be technically possible (and more convenient), but far more expensive. (The format of the tape is DigiBeta or (older versions) BetaSP. That means a tape with the film travels to Holland by plane or car or van or truck or a combination thereof.)

5.1.5.2 Scenario 2

To illustrate another situation, we imagine a plane flying into a high rise building in Berlin and show here how our Holland-based TV station (with no employed reporters in Berlin, but working with our freelance journalist from scenario 1) would most likely handle the affair.

- General: Within 10 -20 minutes, various SNGs (Satellite Newsgathering Trucks) would be at the scene of the event (they either operate on their own account or belong to broadcasters, agencies etc)
- Dutch TV would book camera crew (and sound, possibly lightning) directly (stationed as close as possible to the event)
- Dutch TV would book SNG facilities directly
- Dutch TV would book editing facilities directly
- Dutch TV would book a satellite uplink directly to feed the material into their play-out system
- Dutch TV would contact and book their freelance reporters on the ground (those who are available, those who are known to Dutch TV, those who have already established a working relationship with Dutch TV). The reporters on the ground is supplied with all the logistic information (location, SNGs, camera crew / sound, time slots, requested coverage etc)

Please note: Most of all the above happens in parallel as time is crucial in news reporting!

- The reporter on the ground uses the provided facilities and reports on the event (live and delayed / recorded coverage).

In some cases, the reporter / journalist on the ground also takes over particular roles (e.g. he books the camera crew or co-operates with a "full team", has his own editing facilities etc). How exactly the operation works depends on established procedures and requirements. In any case, reporting on such events requires mostly the same "ingredients", which are:

- back-office / administration / logistics / planning / co-ordination
- reporter / journalist
- possibly assistant / runner / fixer
- recording crew (camera, sound, light)
- editing facilities (fixed or mobile, e.g. in SNG) and editing staff
- sending facilities (satellite, ATM etc), operator and booked / leased lines
- customer / play-out / broadcaster.

5.2. DIAS

5.2.1. Programme and Publishing Structures at DIAS

DIAS is the largest media group in Cyprus operating two TV and three Radio stations along with publishing two newspapers and six magazines.

5.2.1.1 Broadcasting

5.2.1.1.1 Television

Sigma

Sigma is the only fully independent television station in Cyprus, celebrates ten years of broadcasting this year. On the air 24 hours a day, seven days a week since 1995, it attracts a mainly young, urban audience in the 18-45 age group. Sigma licenses content directly from all the major US studios and from the largest international distribution companies and but also produces a number of local series and shows. Sigma TV has the largest news production group on the island with a number of journalists and news crews.

Sigma Sports

Recently Sigma has lunched two new digital channels that will be dedicated to sports and primarily the UEFA Champions league for which Sigma has an exclusive broadcasting agreement with UEFA.

5.2.1.1.2 Radio

Radio Proto

Launched in 1990, Radio Proto is now the most popular island-wide radio station. It has the widest selection of news, music, talk shows and DJ personalities on the island. It broadcasts live 24 hours a day on the Internet and claims more than 10,000 unique visitors per day. Radio proto also has a dedicated group of journalists and sport analysts but frequently cooperates with journalists from both the television's news group and journalists from the publishing department of the company.

Radio Super

Radio Super is the primary choice of music stations on the island. The program is focused mostly on Greek music with frequent guest stars from the Greek and Cypriot music scene.

Love radio

Love radio is the Cypriot version of the well known Greek radio station. The Greek program of the station is re-transmitted to the island.

5.2.1.2 Publishing

5.2.1.2.1 Newspapers

Simerini

Simerini is an independent tabloid with an average daily circulation of over 10,000 copies. Its circulation shoots up to 35,000 on Sundays, when the second-largest in circulation magazine in Cyprus, TV Star, is distributed with the paper. SIMERINI is the first Greek speaking newspaper to offer its readers an electronic daily edition on the Internet in 1998 with more than 10,000 unique daily visitors that generate more than 120,000 hits

City free press

City free press is the first free press newspaper on the island of Cyprus. It circulates on the Friday each week. The distribution points for the newspaper are Cafes, Bars and other social venues around the island. The content is mixture of lifestyle, entertainment, sports and other easy to read material.

5.2.1.2.2 Magazines

Time out

Time Out Cyprus", the first international magazine to be officially licensed for a Cypriot edition. The first issue, published in February 2002, sold out its initial print of 7,000 copies within days and it is already another success for Dias.

"Time Out Cyprus", which is published in Greek, follows the style and format of six other Time Out magazines, providing information on a huge range of entertainment genres: cinema, theatre, music, art & books, sport, clubs & bars, eating out and more. In addition to the related articles and listings, the magazine also features some 40 pages of interviews, features and regular columns aimed at a broad readership aged 18-45.

Mme Figaro

When it became obvious that the Cyprus market not only has the capacity but also requires the existence of a new monthly magazine for women, Dias Publishing House decided to fill in this gap by bringing to Cyprus the successful international magazine Madame Figaro. With subjects both taken from the international versions and original content Madame Figaro has established itself in the Cypriot market.

To Periodiko

Founded in 1986, "To Periodiko" was the first weekly magazine to be published in Cyprus. It introduced colour print and advertisements for the first time and claimed more than a 25,000. "To Periodiko" is a full colour weekly magazine with features on current events, politics, lifestyle and fashion.

Exclusive

Free with the Saturday edition of simerini , it has been a favourite with the reading public since its very first issue. The rich and famous, celebrities and VIPs, who's hot and who's not they're all in Exclusive.

TV Star

A popular television magazine, which combines a TV guide with features on entertainment and the island's social life. It has a weekly circulation of 25,000 copies. STAR circulates on Sundays.

In Business

In Business is the first and only business magazine exclusively for the Cypriot market. It is published monthly with topics that focus on both the local and international markets.

5.2.2. Existing Applications and Systems at DIAS

5.2.2.1 Television

5.2.2.1.1 Newsroom software

The news department of Sigma TV uses a newsroom solution offered by Autocue Ltd. The original version was installed in 1995. This was based on a Dos and Novell environment and was used until 1999. In 1999 the infrastructure was updated and WinCue, the new version of the software for the Windows environment was installed. The solution allows for workflow control of news items with a review and approval process, archives old items that then can be searched, automatically receives feeds from wire services and makes them available to the journalists and can feed approved items to the autocue prompter.

The system is currently used by the team of about 20 journalists on site and covers all the newsroom needs.

Feeds from Reuters, the Cyprus news agency, the Athenian news agency and the Reuters TV service transcripts are digested by the system and made available to the whole editing team.

The plans for the near future include an update to the newsroom software with a solution that will also offer the opportunity to journalists to access digital video material, not just text transcripts and do rough editing and scene selection.

5.2.2.1.2 News Archive

Because all video content currently available is stored in analogue format a large collection of news items is available in Betamax tapes. These tapes are archived by the news department using a web based software that was developed by a local firm.

The person in charge of the archive labels all tapes that are to be stored and enters the code into the system along with a description, keywords and date. This is then made available to all journalists to search for relevant visual material from the search interface of the software.

With the digitization of the newsroom software down the road this software will too be replaced with a solution tied to the newsroom software. As the amount of data already available in Betamax format is quite large the old News Archive program will be available along side any new solution until the analogue data is converted to a digital format and imported into the new system.

5.2.2.1.3 Programs Archive

A modified version of the News Archive solution is also used to manage the rest of the TV's inventory too. While all features of the News Archive software remain the same, features for tracking of contracts and what material has been used have been added.

Even with the digitization of the newsroom the management of the rest of the TV's inventory will be managed for a while yet by this software as the amount of Betamax tapes available is many times that of the News Archive. Furthermore plans of going fully digital are still not in the immediate future as this has a very high cost.

5.2.2.1.4 Continuity

The continuity software is a legacy system used to interface between the commercial management software and the video servers that store and broadcast commercials. It is written for a DOS environment and will be made obsolete by the new commercial management software.

5.2.2.2 Radio

5.2.2.2.1 Megamix

Megamix is a radio automation software developed by Soundsoft Ltd and is used in all of the group's Radio Stations. The software is based on a client-server architecture with a central database where all audio material is available and accessed by a number of different clients. The main type of clients are

the On-Air client which is used at the radio studio, the commercial client which is used to schedule commercial breaks and the scheduling client that is used to create play lists.

The main database can store music in mp3, wma and wav format.

5.2.2.3 Publishing

5.2.2.3.1 NewsAsset Press Edition

News Asset is the publishing software used by all newspapers and magazines of the group. News Asset is a product of ATC and was installed at the beginning of 2005. It offers a full publishing solution including content management features, content work flow, fully searchable archive, digestion of wire feeds, integration with page layout software and web publishing software.

The software offers journalists their own workspace where they can create and store documents, search for older published articles or wire service items and collaborate with others to create content.

News Asset is based on a central repository that stores data along with metadata for all items which can then by accessed by clients from within the LAN or from the internet which allows

5.2.2.4 Commercial management

All commercially related activity, such as advertisements and sponsorships are handled by a program written by Greek software house Askew. The program handles all activities related to the sale of air time or space to customers. It has a basic customer relationship management module, an advert inventory where the program keeps track of the material that is to be played or printed, scheduling for the radio and television where advert breaks can be scheduled in the program and the advertisements to be played are chosen and finally a module that keeps track of customers contracts and activities.

The software is custom made and tightly tied to the procedures that where followed at the time the software was purchased. This software is in the process of being replaced with a more modular software. The new software will have roughly the same structure as the system being replaced but will allow better integration between the television, the radio and the publishing departments of the group and be more flexible in interfacing with current broadcasting and printing equipment.

5.2.3. Work Flows and procedures at DIAS

5.2.3.1 Newspaper

5.2.3.1.1 Layout

The newspapers daily layout is decided by the editorial staff of the newspaper and the newspapers advertising department. The advertising department checks the number of orders in the commercial management software for the Newspaper of the next day. It then prepares a first layout with the advertisements placed in the right places.

The layout is then handed over to the editorial team of the newspaper. The editors then decide the amount of articles that will be needed to complete the newspapers layout.

5.2.3.1.2 Articles

Each day a number of main articles are included in the newspaper regardless of what layout is handed to the editorial staff from the advertising department. After the editorial staff receive the initial layout the decision for what other articles will be included is taken and assigned to journalists.

Through the publishing software the articles follow the workflow and once approved for publishing are transferred to the layout department that finalizes the page layout and sends the paper to be printed.

Metadata is attached to articles and pictures as this information is entered into the system. Since the text of all articles can be searched, the metadata entered by the journalists for text articles is considered sufficient. This isn't the case with photos so all photos that enter the workflow are later re-examined and further metadata is added to allow for a richer photo archive.

5.2.3.2 Radio

5.2.3.2.1 Programming

The radio programming department had two main jobs. To schedule what programs are playing and to give a rough outline of what kinds of songs will be played during the programs. The scheduling of radio programs is pretty easy as the program doesn't change much with the exception of sport events which are usually just added into the schedule at a later time and replace whatever program was scheduled to air.

The creative department of the radio department meets on a weekly basis and sets guidelines for producers to follow during the week. After the decision is made play lists based on the guidelines are entered into Megamix. For any song requests that are not immediately available in the Software, producers ask the programming department for the song or album. If the music requested is not in the Megamix database but can be digitized (for examples if on a CD that can be converted to mp3's) it is added to the database, if not the cd or vinyl is prepared so that the producer can pick it up before her radio program.

5.2.3.2.2 Advertisements

As the number of advertising slots per each hour of air time is fixed, the advertising department can schedule the breaks ahead of time. Using the commercial client they schedule a number of breaks for each hour and upload them to the database. It is then up to the producer of each program to schedule these breaks into the transmission.

5.2.3.2.3 News

The news department prepares news updates at the beginning of every hour and two larger news programmes that are transmitted daily in the morning and at midday. The news production uses a mix of data from both the newspaper and the television departments for the hourly updates but produces mostly original data in the format of phone and studio interviews for the morning and afternoon news programs.

5.2.3.3 Television

5.2.3.3.1 Programming

The Programming department of the television prepares a rough outlines of the schedule at the beginning of each month. This program is then handed to the advertising department that adds to the rough outline advertisement breaks. This rough guide is then sent to all customers and advertisement agencies.

As this is only a rough guideline the daily schedule is usually revised multiple times but must be finalized by the programming at 17.00 on the day before it is to be aired so the programming department can prepare all material that is needed for transmission. The advertising department is allowed more freedom in changes to the advertising schedule as long as it does not exceed the allocated time slot.

5.2.3.3.2 Advertisement breaks

As soon as customers receive the schedule the advertising department starts accepting orders for booking airtime. Customers that have contracts for a specific time slot get priority while other are served usually on a first come first serve basis.

5.2.3.3.3 News Department

The news department prepares news updates and current affair programs. The news updates are produced daily and transmitted at 18.00, 20.30 and 24:00. The news programs are usually a mixture of both international and local news items. For local items a journalist and a cameraman are sent to capture the pictures. After they return to the station the journalist books an editing station and along with a video editor prepares the video material for the report. After the editing is done the journalist then uses the WinQue software to add the report's script, which when approved by the News editor is sent to the prompter.

If archive material is needed for a report or program the journalists use the News Archive software to search for the material and after finding the material they need then request the tape from the archive department.

For international news the video feed provided by Reuters is the main source of video material. The video feed is automatically recorded and stored each day. Along with the video Reuters sends a transcript of the video which is automatically stored in the WinQue database. Journalists then search the transcripts for any data that interests them and retrieve it for use. They then follow the normal flow of video editing and writing the script.

When a report is finished the news editor decides which reports and video are worth storing in the archive.

5.3. POPSO

Banca Popolare Di Sondrio (BPS) is a co-operative bank, located in Valtellina, a valley in northern Lombardy. It is strongly connected with its territory of origin but, thanks to the expansion of the last decade, it also has big opportunities in all the national area.

Banca Popolare di Sondrio is mainly a retail bank, but also has controlling interests in both property Management Company and a tax collection, as well as minority holdings in insurance, leasing and stockbroking concerns.

BPS offers its customers products and services that can satisfy all the banking, financial and insurance needs. This is possible also thanks to participated companies, specialized in different sectors, formed mainly with others co-operative banks.

Special attention is given to small-medium size companies, in order to comply with the bank mission that would favour the economic progress in the areas falling within its competence.

In 1995 Banca Popolare di Sondrio Suisse SA was set up in Lugano, which is active mainly in private banking and asset management. During the last years it has developed continuously and now it has 17 domestic branches in the Swiss area.

Through its membership of ARCA, BPS carries out fund management, specialised financing operations and offers different products in the field of life and damage insurance.

The bank is also one of the few Italian brokers in gold.

At the end of 2005 the bank had a network of 303 domestic branches (including 93 treasury offices); while at the end of 2002 the number of total branches was of 258 domestic branches (including 80 treasury offices).

At the end of 2005 number of employees was 2,149 and 1,878 at the end of 2002 (this number at the end of 1997 was 1,356).

Banca Popolare di Sondrio has a long-standing experience of 34 years in electronic data control. Thanks to technological innovation, this sector is acquiring more and more strategic importance in various companies. With its professional experience in this area, the Bank has developed a vast range of services, predominantly telematic, to suit all requirements, varying from the individual needs to the professional's and from the craftsmen's to those of major companies.

The bank has always paid a great attention to innovation, and has developed procedures and services, often with the support of advanced technologies; amongst them the nine following applications are worth noting:

1. the first Italian expert system to analyse risk management data supplied by "Banca d'Italia";
2. the first application built by an European bank to archive data on compact disks (1987), with search engine and visual interface;
3. the production, first in the world, of checks with a tri-dimensional hologram printed on the surface;
4. an application to store and search internal documentation on CD-ROM technology (Aladino 1993);
5. a workflow management procedure, integrated with expert system and intelligent agents, to help human operators in the careful management of particularly delicate areas;
6. the entrance in the Internet arena, in November 1995, with a web site;
7. the first Italian remote banking application (Gestes -May 1997-) on the Internet;
8. SCRIGNO, an interesting Internet Banking application, dedicated to retail customers, released in November 1997, firstly as an informative service and then evolving to permit the issuing of dispositions.
9. the web site of the bank is changed and it has been made accessible for motorial and e sensorial disabled; besides it has been created SCRIGNOfacile, the special release of the Internet Banking application for disabled people, that is completely accessible.

6. Scenarios Use Cases

"Use Cases are just Requirements with good P.R."
-Anthony Kesterton
IBM Rational, 2006

6.1. Identifying Scenario Use Cases for Media Pilot Application

As it can be elicited from the above descriptions, there can be one media pilot application running over the Grid-enabled P2P system developed in GREDIA (defined as GGO), operating with different parameters according to the users being either in the broadcasting or printed news domain. Thus, to this point forward, both the scenarios described by DIAS and DW will be treated as one and will be referred to as the media sector pilot application.

A sample information flow for the media pilot application is provided in Figure 15. In this, the major actors involved have been defined, along with the main interactions between them.

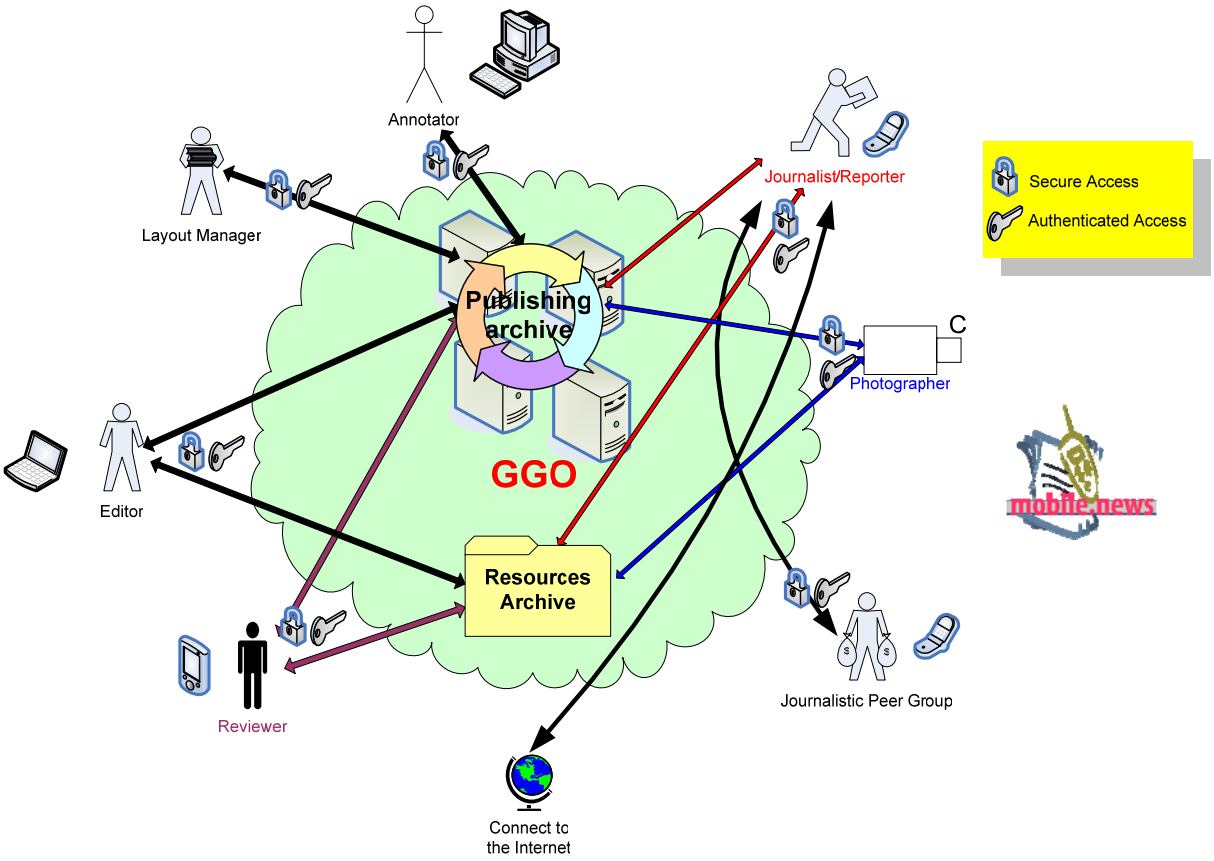


Figure 15: Information Flow for the Media Pilot Application

Based on the figure and the scenarios for the media sector, a set of use cases have been identified along with a first level analysis. To this direction, each use case is assigned a unique identification number (ID) with the prefix "MUC" and a tabular description provides necessary features as their goal, the corresponding scenario excerpt and the steps necessary to carry out the necessary functionality. It is certainly expected that these will be refined during the design and implementation processes according to a continuous feedback loop to be finalised with the final delivery of the GREDIA system. The identified use cases for accomplishing the media pilot application are listed in the following table:

Table 2: Use Cases for Media Pilot Application

ID	Use Case Title	Use Case Description
1.	Add/edit GGO user	A new user is added to the GGO system
2.	Login the GGO	All users have to log-in the GGO system before using any functionality
3.	Formulate the 'news' task	The Chief-Editor captures the news -item idea and formulates the task to be carried out. Journalists and/or photographers and/or other necessary personnel are selected by the Editor to carry out the assignment of composing an article
4.	Notify Human Resources of task assignment	Any user that has been assigned a task is immediately notified on their personal device
5.	Search for news material	A journalist can search for news material through the GGO interface in: 1. external sources 2. his or other organisation's historical archive
6.	Get query results	The system returns results based on the metadata description of the stored material
7.	Record audio/video	The Journalist can use a mobile terminal for recording audio or video utilising file space on the Grid
8.	Create news item	A journalist can create an article either through a desktop or mobile device using text and referencing various multimedia files
9.	Submit news item	The composed news item is submitted to the GGO indicating access rights, pricing information, and people to be notified of its completion
10.	Join a Community	Journalists/Reporters can join a peer group to share their knowledge
11.	Review news item	Authorised users can access a news item and apply changes which can be tracked
12.	Archive news item	News items can be added to the historical archive by authorised users
13.	Approve news item	Final approval by the Chief-Editor is required before the article goes to the publishing line
14.	Annotate news item	Authorised users can add metadata to any news item
15.	Assign news item publishing position	The Layout Department assigns position/timing of the news item either on printed or electronic press
16.	Display breaking news	GGO users are instantly notified of breaking news according to their preferences

Use Case ID:	MUC1		
Use case name:	Add/edit GGO user		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Provide authentication mechanisms		
Scenario example:	All users must be subscribed in the GGO system		
Priority:	High		
Activity step Description:	• A new user fills in or edits an electronic subscription form with his profile information • The GGO administrator adds a new user to the system by approving the form or approves the user profile change		

Use Case ID:	MUC2		
Use case name:	Login the GGO		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Provide authentication mechanisms		
Scenario example:	All users login to the GGO system		
Priority:	High		
Activity step Description:	• A user launches the GGO application • The user provides username and password • The system checks the user data and permit or denies entry to the GGO		

Use Case ID:	MUC3		
Use case name:	Formulate the 'news' task		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	The Chief-Editor captures the news-item idea and formulates the task to be carried out		
Scenario example:	The Editor captures the idea and formulates the task to be assigned		
Priority:	High		
Activity step Description:	• The Editor textually describes the news-item task • The Editor selects human resources from a list including all personnel with their expertise and calendars/task lists • The Editor adds a deadline and other comments that may be necessary		

Use Case ID:	MUC4		
Use case name:	Notify Human Resources of task assignment		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Any user that has been assigned a task is immediately notified on their personal device		
Scenario example:	Journalist and Photographer get assignment from Newspaper Editor		
Priority:	High		
Activity step	• The system sends an automatic notification to users that have been		

Description:	assigned a task on their mobile device • When the user accepts or rejects the task the system notifies the task assignee (Editor)

Use Case ID:	MUC5		
Use case name:	Search for news		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	A journalist can search for news material through the GGO interface in: 1. public sources 2. his organisation's historical archive 3. trusted commercial portals according to the subscriptions paid-for		
Scenario example:	The Journalist gets familiar with the topic		
Priority:	High		
Activity step Description:	• A user formulates a search query • The user selects sources to search from a list • The user submits the query		

Use Case ID:	MUC6		
Use case name:	Get query results		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Receive query results from available repositories		
Scenario example:	The Journalistic receives a list with the results of the search query		
Priority:	High		
Activity step Description:	• The system returns results based on the metadata description of the stored material. • Results can be sorted according to the journalist's needs, such as thematic groups. • Visualization of results is based on the end user device capabilities (low resolution video for mobile devices)		

Use Case ID:	MUC7		
Use case name:	Record audio/video		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Record digital audio/video		
Scenario example:	The journalist/reporter can request for a digital audio recorder or video camera		
Priority:	Medium		
Activity step Description:	• The Journalist can use his mobile device for recording audio or video • The produced multimedia file is stored on the user's filespace on the Grid		

Use Case ID:	MUC8
Use case name:	Create news item

Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	A journalist can create an article either through a desktop or mobile device using text and referencing various multimedia files.		
Scenario example:	Material is composed on the journalists' computer		
Priority:	High		
Activity step Description:	• Text article(s), audio and/or video files are produced/captured through the user terminal device • A multimedia document is produced providing references to any files • The document is stored on the user file space on the Grid		

Use Case ID:	MUC9		
Use case name:	Submit news item		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	The composed news item is submitted to the GGO indicating access rights, pricing information, and people to be notified of its completion		
Scenario example:	Journalist submits the article.		
Priority:	High		
Activity step Description:	• The Journalist selects the multimedia document to submit • The document maybe annotated with keywords or categories • Pricing information may be attached • Access rights to individuals, groups or communities are defined • People/groups to be notified of the document completion are defined • The journalists submits the document • The GGO notifies the necessary users/groups of the document existence		

Use Case ID:	MUC10		
Use case name:	Join a Community		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Journalists/Reporters can join a peer group to share their knowledge on relevant topics. (groups are created by the administrator)		
Scenario example:	GGO enables Susan and Peter for collaborating with a group of journalists that share certain interests and topics.		
Priority:	Medium		
Activity step Description:	• A user selects a peer group to join and applies for inclusion or suggests a new group • The GGO administrator is notified to approve the application • On approval all members of the group are notified • On rejection the applicant is notified of the reason		

Use Case ID:	MUC11		
Use case name:	Review news item		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006

Goals/Description:	Authorised users can access a news item and apply changes which can be tracked
Scenario example:	Editor/reviewer approves submitted article
Priority:	High
Activity step Description:	• The Editor and a Reviewer are informed that a new item is ready for review • They can remotely access the article • They provide comments, which can be tracked by authorised users

Use Case ID:	MUC12		
Use case name:	Archive news item		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	News items can be added to the historical archive by authorised users		
Scenario example:	The Editor selects files from a number of multimedia content that the Journalist believes are suitable for publication with the news item		
Priority:	Medium		
Activity step Description:	• The Editor or Archivist select a news item for the archive • Further annotation maybe added • The item is stored to the publishing archive for possible future use		

Use Case ID:	MUC13		
Use case name:	Approve news item		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Final material is tagged for publication		
Scenario example:	Editor approves the article		
Priority:	High		
Activity step Description:	• The final article is tagged as approved by the Editor. • The publishing manager is notified of the approval		

Use Case ID:	MUC14		
Use case name:	Annotate news item		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Add metadata information to the material under publication		
Scenario example:	Editor adds publishing information		
Priority:	High		
Activity step Description:	• Authorised users (journalists, annotators, editor) select keyword(s) or annotation categories • Metadata information involves the title, subtitle, location, date, abstract, topic and keywords of the material • News item is annotated with selected keywords or categories		

Use Case ID:	MUC15		
Use case name:	Assign news item publishing position		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006

Goals/Description:	Determine on the exact position of the publishing items.
Scenario example:	Newspaper Layout
Priority:	High
Activity step Description:	• The Layout Department selects position/timing code of the news item either for printed (page/position) or electronic (portal position/time in news broadcast) press

Use Case ID:	MUC16		
Use case name:	Display breaking news		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	4/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	GGO users are instantly notified of breaking news		
Scenario example:	A journalist is notified of a news event in his area with an instant message		
Priority:	Medium		
Activity step Description:	• The system notifies each user of breaking news according to their preferences		

6.2. Identifying Scenario Use Cases for Bank Pilot Application

A sample information flow for the bank pilot application is provided in Figure 16. In it, the major actors involved in the bank pilot application have been defined, as well as the main interactions between them.

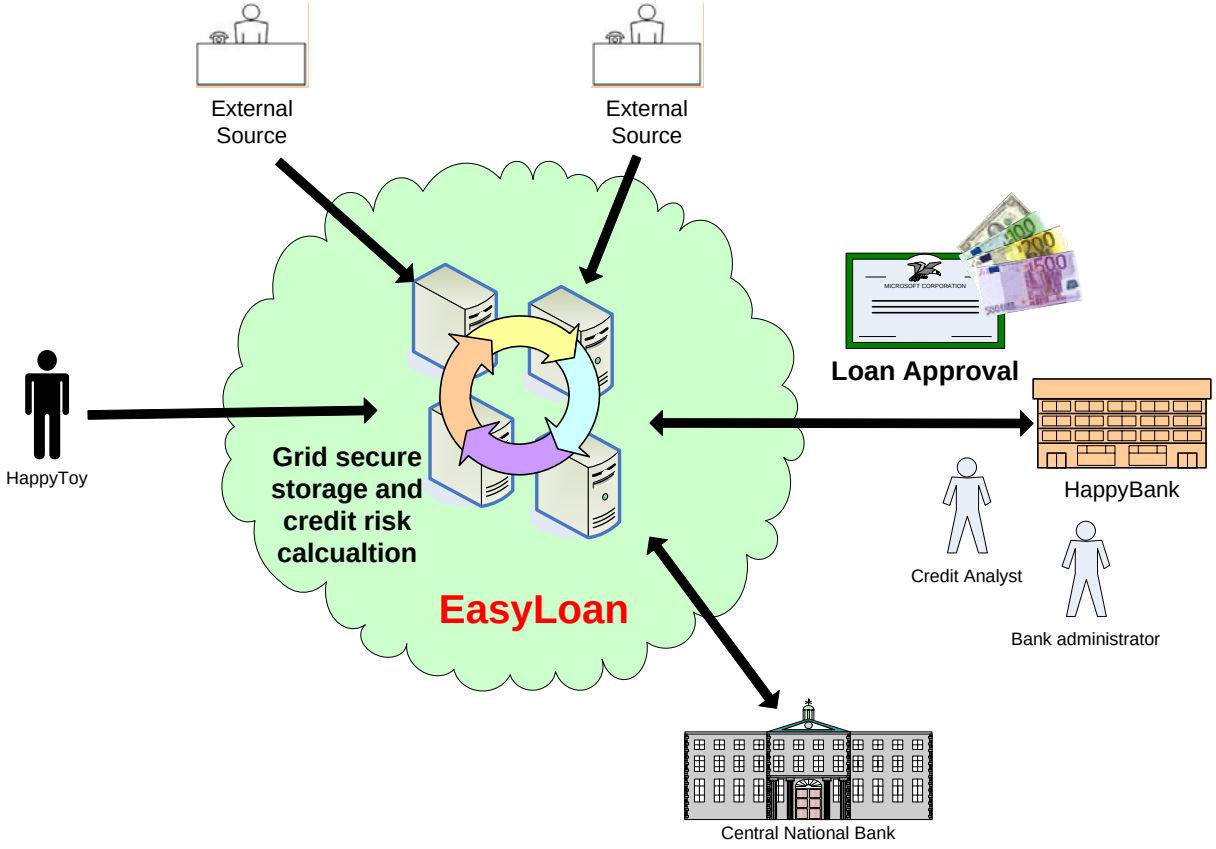


Figure 16: Information Flow for the Bank Pilot Application

Based on the figure and the scenario for the bank sector, a set of use cases can be identified and a detailed analysis of them is provided. Again, each use case is assigned a unique identification number (ID) with the prefix "BUC" and they are detailed in a tabular form describing necessary features as their goal, the corresponding scenario excerpt and the steps necessary to carry out the necessary functionality. It is expected that these will be refined during the design and implementation processes according to a continuous feedback loop to be finalised with the final delivery of the GREDIA system. The identified use cases for accomplishing the bank pilot application are listed in the following table:

Table 3: Use Cases for Bank Pilot Application

ID	Use Case Title	Use Case Description
1.	Create new profile	Create new customer profile
2.	Login the system	Secure Login to EasyLoan Web Interface
3.	Fill-in profile data	Complete form with customer profile information
4.	Allow profile usage	Inform if the profile can be made available to third party for calculating the credit score
5.	Add external source	Describe interface for acquiring data from an external source
6.	Get data from external source	Retrieve information from trusted external information brokers

7.	Submit search query	Search for financial information from external sources
8.	Get search query results	The system returns results based on the metadata description of the stored material
9.	Select credit scoring approach	Select standardised or internal ratings based CS approach
10.	Create credit scoring model	Create the model, which will be used for the calculation of the credit risk score
11.	Submit credit score model for approval	Submit the model for approval by the national financial authorities
12.	Run credit score model	Run the credit score model, using the specified parameters
13.	Calculate customer credit line	Categorise customer (individual, SME, etc) according to submitted profile
14.	Notify of calculation result	Communicate the result of the credit score application
15.	Manual profile update	Update Customer profile
16.	Automatic profile update	Automatically update the profile based on data from external sources
17.	Recalculate credit score	Recalculate the credit risk score after updating customer's profile

Use Case ID:	BUC1		
Use case name:	Create new profile		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Create a new user		
Scenario example:	Marcelo applies for a profile for his company.		
Priority:	High		
Activity step Description:	• User fills in an application form for creation of a profile • The administrator approves the application and creates the user profile • The user is notified and authentication information are sent to him		

Use Case ID:	BUC2		
Use case name:	Login the System		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Provide authentication mechanisms		
Scenario example:	Marcelo logins to the secure Web interface		
Priority:	High		
Activity step Description:	• A user accesses the EasyLoan web application • The user provides username and password • The system checks the user data and permit or denies entry to the EasyLoan web application		

Use Case ID:	BUC3
Use case name:	Fill-in profile data

Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Provide information about the customer's profile		
Scenario example:	Marcelo provides the parameters forming the profile of his company.		
Priority:	High		
Activity step Description:	• User fills-in general profile data • Selects the category of customer (individual, small-medium enterprise, large corporation) • Provides quantitative data (income, fixed assets, current assets, loan analysis, balance sheet, annual turnover, etc.) • Provides qualitative data (management team information, quality of the company etc.) • Provides digitized official documentation for assisting bank cross-checking activities, such as correcting typing errors.		

Use Case ID:	BUC4		
Use case name:	Allow Profile usage		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Indicate customer's preference to make profile data available for calculation of credit score by a specific bank		
Scenario example:	Marcelo clicks the relevant button on the Web interface to enable the EasyLoan system to use the profile		
Priority:	Medium		
Activity step Description:	• After filling in the necessary profile data, the customer indicates whether they can be used from third parties selecting specific organisations		

Use Case ID:	BUC5		
Use case name:	Add external source		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Describe interface for acquiring data from an external source		
Scenario example:	"EasyLoan" can check the validity of the profile data, based on automatic communication with price-feed terminals and governmental sources.		
Priority:	High		
Activity step Description:	• The system administrator provides the parameters needed for accessing information from an external source • A name and code are given to the source • The source is added to the EasyLoan system		

Use Case ID:	BUC6		
Use case name:	Get data from external source		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Retrieve information from trusted sources		
Scenario example:	"EasyLoan" can check the validity of the profile data, based on		

	automatic communication with price-feed terminals and governmental sources.
Priority:	High
Activity step Description:	• The EasyLoan credit score calculation algorithm requests data from an external source based on specific parameters • The system draws data from the external source based on the given parameters

Use Case ID:	BUC7		
Use case name:	Submit search query		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Perform search queries to available repositories		
Scenario example:	"EasyLoan" users can search the archives of the external sources for stored financial data.		
Priority:	High		
Activity step Description:	• User selects the external sources that are to be used • User submits search query with the given parameters • Search is performed according to the given parameters (customer name, dates, keywords, etc.)		

Use Case ID:	BUC8		
Use case name:	Get search query results		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	The system returns results based on the metadata description of the stored material		
Scenario example:	The "EasyLoan" user receives a list with the results of the search query		
Priority:	High		
Activity step Description:	• The system returns results based on the metadata description of the stored material. • Results can be sorted according to the user needs. • The query results can be filtered according to the role of the user submitting the search request		

Use Case ID:	BUC9		
Use case name:	Select credit scoring approach		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Select standardised or internal ratings based Credit Scoring approach		
Scenario example:	The evaluation of the loan allowance involves the calculation of the credit score through internal bank procedures		
Priority:	High		
Activity step Description:	• The bank user selects either the standardised or the internal rating based credit scoring approach according to the BASELII standard. • Easyloan updates the respective bank CS model		

Use Case ID:	BUC10
Use case name:	Create credit scoring model

Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Create the model, which will be used for the calculation of the credit risk score		
Scenario example:	The evaluation of the loan allowance involves the calculation of the credit score through internal bank procedures		
Priority:	High		
Activity step Description:	• The bank user selects from the customer profile fields offered by EasyLoan the ones to be used in the credit scoring model • The bank user defines the weights for each profile field • The bank user describes the algorithm for the calculation of customer credit score		

Use Case ID:	BUC11		
Use case name:	Submit credit score model for approval		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Submit the model for approval by the national financial authorities		
Scenario example:	The evaluation of the loan allowance involves the calculation of the credit score through internal bank procedures		
Priority:	High		
Activity step Description:	• The bank user after having defined a model for credit scoring applies for the approval of the national financial authority • The EasyLoan system notifies the central bank of this application and makes the model available to them for approval • The EasyLoan notifies the applicant bank of the authorities approval or rejection • If the model has been approved it ia flagged as usable by the corresponding bank		

Use Case ID:	BUC12		
Use case name:	Run credit score model		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Apply the credit score model to a certain customer		
Scenario example:	The credit score procedure has been modelled in the EasyLoan system specifically for HappyBank		
Priority:	High		
Activity step Description:	• The bank submits request for estimating the credit risk of a customer • EasyLoan checks if the bank CS model is valid • EasyLoan checks if the customer has approved use of their profile by the specific bank • EasyLoan checks if the profile is complete regarding the requested information by the bank model • EasyLoan retrieves requested data from external sources as required by the bank model • EasyLoan calculates the credit score • EasyLoan notifies the bank user of the result • EasyLoan notifies the customer of the profile usage		

Use Case ID:	BUC13		
Use case name:	Calculate customer credit line		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Categorise customer (individual, SME, etc) according to submitted profile		
Scenario example:	The credit score is calculated from the "EasyLoan" system		
Priority:	High		
Activity step Description:	• EasyLoan runs a calculation on the customer profile as soon as this has been completed to determine the customer credit line category • The result is added to the user profile and the user is notified		

Use Case ID:	BUC14		
Use case name:	Notify of calculation result		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Communicate the result of the credit score application		
Scenario example:	Authenticated users from the side of "HappyBank" are informed of the automatic recommendation of "EasyLoan" regarding any loan application when they are out of their office, exploiting a secure notification mechanism through their mobile phones		
Priority:	High		
Activity step Description:	• After EasyLoan completes a calculation the result is communicated to the involved authorized users with instant messages		

Use Case ID:	BUC15		
Use case name:	Manual profile update		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Keep profile data up-to-date		
Scenario example:	Marcelo connected through the same secure Web interface and updated some figures in the profile		
Priority:	High		
Activity step Description:	• Customer connects to secure Web interface • Customer Logs in the "EasyLoan" personal profile • Customer updates the profile data if needed		

Use Case ID:	BUC16		
Use case name:	Automatic profile update		
Created by:	V.Tountopoulos	**Last updated by:**	
Date created:	5/1/2006	**Date last updated:**	
Goals/Description:	Automatically update the profile based on data from external sources		
Scenario example:	Update data regarding shares of the "HappyToy"		
Priority:	Medium		
Activity step Description:	• EasyLoan communicates on regular basis external Information Providers to check changes on the user profile data • Retrieve new data • Update the respective section of the customer's profile area		

Use Case ID:	BUC17		
Use case name:	Recalculate credit score		
Created by:	V.Tountopoulos	**Last updated by:**	N.Sarris
Date created:	5/1/2006	**Date last updated:**	9/1/2006
Goals/Description:	Recalculate the credit risk score after updating customer's profile		
Scenario example:	"EasyLoan" recalculates credit score		
Priority:	High		
Activity step Description:	• EasyLoan signals that customer profile data have changed either because of manual or automatic update • EasyLoan checks if Credit scoring recalculation is allowed by the specific customer and required by a specific bank • If recalculation is allowed and required the new result is calculated • The bank user is notified of the result • The customer is notified of the profile usage		

6.3. Identifying Usage Scenario for the Grid Application Development Platform

6.3.1. Appea Functionality

Appea (the GREDIA Application Development Platform) is a system which enables users to construct application scenarios from available computational services and by making use of the services provided by actors (for instance – journalists and editors in the media application, or banking assistants in the banking application). Appea provides means for developers to **express application scenarios** in a formalized manner (by using a specially-prepared notation) and for application users to **execute predeveloped scenarios** using their end-user interface (called the Application Portal). However, in order for Appea to function, it has to interface with several external components developed by other Work Packages of the GREDIA project.

6.3.2. Basic Assumptions

It is understood that each **application** within the GREDIA framework is intended to serve a particular domain of users (for instance – media clients) and that each application consists of a number of potential **application scenarios** which reflect the business logic of that application. In this sense, Appea provides the following:

- A platform for designing and executing application scenarios;
- A virtualization layer for Grid resources;
- An integration layer, bringing together services implemented in various technologies.

In order to function properly, Appea relies on a set of basic assumptions which are listed below. First, we assume that the project environment consists of a set of services (thus implementing the concepts of SOA (Service Oriented Architectures) and that all application entities (services representing application functionality) are virtualized. Each application (see above) can comprise several scenarios and each service can be used in many scenarios. Therefore, services are reusable and should be accessible to application scenario developers as basic building blocks of GREDIA use cases.

The scenarios can be modelled over the existing application's virtualized resources (services) with the use of a formalized notation. Hence, Appea performs the following activities:

- Specifies a notation for assembling application virtualized resources and data flow between them to model business processes of the application domain;
- Executes the application scenarios by matching and invoking appropriate services keeping the track of the actual execution state;
- Monitors the execution of service operations and stores the collected data, thus providing information used to optimize the execution process;
- Stores information about the actual state of Grid services including syntactic and semantic descriptions to allow for easy service discovery and scenario development;
- Provides application scenario developers with a user-friendly development environment;
- Ensures transport layer security.

6.3.3. Types of Appea Users

Appea distinguishes several groups of system users, depending on their roles in the system. Here, we define three basic groups of users, each of which is associated with a set of use cases related to system maintenance and use.

6.3.3.1 Service Developer

While not strictly a user of Appea architecture, this type of user is responsible for **wrapping** application functionality in interfaces which enable their invocation by the Appea Invoker. Since the middleware infrastructure and the services which operate in this infrastructure are not technically part of Appea, this user is not directly involved in operating the Application Development Platform. Instead,

the role of this user is strictly preparatory, enabling application scenario developers and application users to access and make use of application scenarios (see below).

6.3.3.2 Application Scenario Developer

This type of user (a member of the IT staff of a participating organization) is responsible for expressing business scenarios and storing them for application users to access. This user should be proficient in the use of the application development notation and will make use of the Developer GUI. Predefined scenarios provided by this user are stored in the Scenario Repository to be accessed by the Application Portal (and hence by application users – see below).

6.3.3.3 Application User

This is the end user of the GREDIA platform – a domain expert (i.e. journalist, editor, bank employee etc.) with no in-depth knowledge of Grid computing or the GREDIA framework architecture. The application user will access and execute stored application scenarios. The actual execution of said scenarios is delegated to the Execution Service which will take care of invoking services, retrieving data and notifying users about any events associated with the execution of a scenario.

6.3.4. Scripting Approach to Development of Application Scenarios

The application scenarios developed in Appea will be expressed using a formalized notation akin to a scripting language. This language, developed in Task 4.1 on the basis of a popular scripting platform (yet to be decided) will enable application scenario developers to access Grid services and objects in a uniform way, irrespective of their underlying implementation technologies. Thus, all Grid operations will share common characteristics, become available in the development environment as simple methods of the language and will be executed automatically, by the Invoker, by interfacing with suitable middleware modules. Ontological translation between the virtualized layer of Grid objects (supplied to the developer) and the physical layer of Grid services (to be operated on by the Invoker) will be provided by the Service Registry.

The scripting approach to application scenario design carries numerous advantages, the most important ones being:

- Availability of all programming constructs typically associated with programming languages (loops, conditional constructs, OOP, threading, exception handling etc.)
- A great level of flexibility when implementing business logic,
- Ability to invoke Grid operations as methods in the scenario script,
- Separation of scenario scripts and the underlying implementation technologies (services),
- Ability to modify scenario scripts and have the changes immediately reflected by the application behaviour,
- Ability to construct scenarios for any type of application, given the appropriate service pool,
- Ability to seamlessly integrate human input in application scenarios,
- Ability to integrate security handling in the notation (for instance – through exception handling).

7. GREDIA Requirements

Of the main objectives of the GREDIA project is to develop an Application Development Platform which should assist users of the GREDIA system by combining the available services and data into coherent applications providing added value for the end users of the system.

The Application Development Platform is intended to be accessed by two types of users:

- The Business Applications Users, who are application developers with the ability to design application scenarios and store them for use by other users,
- The GREDIA Platform Users, who are domain experts with little to no knowledge on the aspects of Grid computing and they will make use of the system by executing the pre-prepared scenarios.

It is the goal of WP4 "Grid Application Development Platform" to make the Application Development Platform as versatile as possible to accommodate all types of possible uses of the Grid infrastructure present in the GREDIA project and to support all types of use cases scenarios in support of the GREDIA pilot applications. To this end, the Application Development Platform will offer great flexibility to the application developers who will not be constrained in the types of applications they can create using tools developed within the WP4 activities.

The application developer is an experienced IT user who will make use of the platform by designing application scenarios. It is assumed that the GREDIA infrastructure can be divided into two types of resources:

- data resources, which are data elements generated by system users and available for use by other system users – in all forms and shapes, from individual files to databases,
- computational resources (all elements which provide computational functionality, i.e. process data and return results for the user or for other computational resources to handle.

Both types of resources are expected to be provided by other WPs of the project, most notably by WP3 "Grid Middleware Services Development" and WP5 "Grid Mobile Service Deployment", and deployed in the GREDIA infrastructure so that the Application Development Platform can access them.

The Application Development Platform aims to abstract these two types of resources as Grid Objects, i.e. provide a common interface for accessing all types of data and computational resources and concealing their complexity. The platform will cover such technologies as database/file access, database aggregations, Web Services, WSRF and component services (the information on which will be stored in the appropriate registries) and present to the Grid expert a single, unified API (on the basis of a scripting language) which the application developer can then use to construct application scenarios. The API will enable the developer to make use of all facilities traditionally offered by a high-level programming language (such as OOP, threading, I/O etc.) combined with the added functionality of being able to access Grid objects and execute Grid operations as simple objects/operations of the language (in accordance with the notation developed in T4.1 "Notation for specifying Application Execution"). In short, WP4 enables the developer to treat all types of Grid resources as building blocks in constructing coherent scenarios, providing added value to end users. Furthermore, WP4 will support the application developer by preparing a GUI to facilitate the development of GREDIA application scenarios and including monitoring tools which enable the application developer to assess the status of the Grid computing infrastructure at any given time.

The domain expert will make use of the GREDIA infrastructure by executing application scenarios prepared by the Application developers. Although WP4 does not directly cater to the end users of the platform (i.e. journalists/banking experts), it provides the infrastructure which makes it possible to develop applications for these groups of users. The application scenarios will be stored in a dedicated repository and all registered users of the platform will be able to access and execute them.

Because the Application Development Platform introduces an additional layer of abstraction between the application scenarios and the actual resources needed to execute them, it is possible to withhold deployment and scheduling decisions until the applications are actually ready to execute. In this way, a Grid Operation remains an abstract concept until it is tied with a concrete resource at runtime, thus exploiting the greatest advantage of computing Grids, i.e. flexibility of resource usage while at the same time providing optimal performance regardless of the current status of the architecture. All such decisions will be handled by the runtime system developed in T4.2 "Application Execution Assistant" and concealed from the end user.

The requirements for the GREDIA system can be divided into functional and non-functional ones. They come from the independent perspective of both the potential groups of users and they should refer to development layers that the GREDIA Platform lays on. These layers are namely the Application Layer, which involves the interface for executing the business applications, and the Middleware Layer, which involves the platform tool for designing the business applications.

The functional requirements can directly be extracted from the scenarios use cases of the pilot applications. Thus, in section 7.1, the functional requirements of the GREDIA platform are analysed, according to the use cases of the separate pilot applications, which have already been described in section 6. In order to identify the appropriate non-functional requirements, the main aspects of the GREDIA system, from a technical point of view, should be considered. In that respect, section 7.2 defines the framework for the requirements that a Grid enabled P2P platform should fulfil, while section 7.3 is dedicated to the analysis of the specific non-functional requirements that the GREDIA system poses for.

7.1. Functional Requirements

Although the specification of functional requirements is closely associated with the partial components of the GREDIA design architecture, which hasn't been defined yet, a set of general requirements can be identified. As the GREDIA platform design and implementation goes on, all these requirements will be refined and be specified in more details. In this direction, this section elicits a set of functional requirements, based on the Scenarios Use Cases identified in Section 6.

The GREDIA functional requirements can be clustered into the following categories:

- Network specific requirements
- File and database management requirements
- Query and retrieval requirements
- User Interface requirements
- Security requirements
- Requirements for providing miscellaneous functionality

Based on these categories, the rest of this section is dedicated to the definition of the functional requirements of the GREDIA platform, which can be associated with the Use Cases of the GREDIA Pilot Applications. Thus, for every category of requirements, a table is provided, which contains the following:

- The incremental Requirement Identification Number (RIN);
- The respective requirement description;
- The association with the Scenarios Use Cases of either the Media or the Banking Pilot Application (according to the use cases reference number).

It should be noted that in some cases, the association with scenarios use cases is not applicable, since the respective functional requirements may stem from the general concept of the applications scenarios or the objectives that the GREDIA platform should facilitate.

7.1.1. Network specific requirements

RIN	Description	Associated Use Cases
1.	System requires a streaming server	MUC7, MUC16
2.	System supports wireless interfaces	

7.1.2. File and database management requirements

RIN	Description	Associated Use Cases
3.	System contains many repositories for storing MM information	MUC5, BUC3, BUC5
4.	Repositories can store multimedia content (image, audio, video, text)	MUC9, MUC12, BUC3

5.	System allows for creation of profiles, groups, communities and categories	MUC1, MUC10, BUC1, BUC3
6.	Stored information is clustered to categories	MUC6, BUC8
7.	Large size files are transferred away from low capabilities mobile devices.	MUC7
8.	Receive content from fixed/wireless public networks	MUC5
9.	Upload content	MUC9, MUC12, BUC11
10.	Download content	MUC5, MUC6, MUC11, BUC6, BUC8

7.1.3. Query and retrieval requirements

RIN	Description	Associated Use Cases
11.	Items can be annotated	MUC6, MUC14, BUC3, BUC8
12.	Manually provide metadata descriptors	MUC14, BUC8
13.	System can search and select user	MUC3
14.	Query results are sorted based on predefined categories	MUC6, BUC6, BUC8
15.	Query results are sorted based on keywords	MUC6, BUC6, BUC8
16.	Query results are based on metadata descriptors	MUC6, BUC6, BUC8
17.	System enables for browsing and navigating MM content	
18.	Content is adapted to requested mobile device	MUC5, MUC6, MUC11, BUC6, BUC8
19.	Content can be delivered	MUC4, MUC9, MUC11, BUC11, BUC14

7.1.4. User Interface requirements

RIN	Description	Associated Use Cases
20.	Platform allows users for contacting the administrator	MUC1, BUC1
21.	Users can provide metadata descriptors to annotated items	MUC14, BUC8
22.	Use Interface runs on mobile devices	
23.	Media Player tools are necessary on the client side	MUC6, MUC7, MUC11
24.	Platform requires identification	MUC2, BUC2
25.	User is informed about the authentication results	MUC2, BUC2
26.	User can provide profile data	MUC2, BUC3
27.	User can update profile data	MUC3, BUC15
28.	User is informed of changes in profile data	MUC4, BUC17
29.	User is notified of new items available	MUC11, MUC15, MUC16, BUC14, BUC17

7.1.5. Security requirements

RIN	Description	Associated Use Cases
30.	System requires authentication mechanisms for user identification	MUC1, MUC2, BUC1, BUC2

31.	Users are classified to groups	MUC1, BUC2
32.	System needs to give the capability to the administration users to define user group access permissions	MUC11, BUC11
33.	Users can access to specific content based on their role	MUC4, MUC10, BUC13
34.	System uses data encryption	
35.	Single authentication process is required for accessing the functionality of the system	

7.1.6. Requirements for providing miscellaneous functionality

RIN	Description	Associated Use Cases
36.	System provides administration users with the capability to add new, update, delete users	MUC1, BUC1
37.	System needs Web Server	
38.	System provides access through different devices (PC, mobile, PDA)	
39.	System can make reference backup repositories	
40.	The user count is locked if the user tries to login three times in succession unsuccessfully	MUC2 BUC2
41.	System adds services and information sources	MUC3, BUC5
42.	System publishes items	MUC15

7.2. General requirements for Grid Architectures and Peer-to-Peer Systems

GREDIA focuses on enabling a peer to peer access to multimedia content distributed across a grid environment. The grid concept is extended to cover peer nodes communicated over wireless infrastructures, which means that the requirements of such a system should incorporate all these areas of interest.

The major challenges that a grid architecture should consider for are [7]:

- Heterogeneity; grid environments aggregate large numbers of independent and geographically distributed computational and information resources, including supercomputers, workstation-clusters, network elements, data-storages, sensors, services, and Internet networks. Similarly, applications typically combine multiple independent and distributed software elements such as components, services, real-time data, experiments and data sources.
- Dynamicity; the Grid computation, communication and information environment is continuously changing during the lifetime of an application. This includes the availability and state of resources, services and data. Applications similarly have dynamic runtime behaviours in that the organization and interactions of the components and services can change.
- Uncertainty; uncertainty in Grid environment is caused by multiple factors, including dynamicity, which introduces unpredictable and changing behaviours that can only be detected and resolved at runtime, failures, which have an increasing probability of occurrence and frequencies as system/application scales increase and incomplete knowledge of global system state, which is intrinsic to large decentralized and asynchronous distributed environments.
- Security; security is a key attribute of grid system, as resources and information data across the virtual organisations should be shared in a flexible and secure way. Security can be considered in many levels, including the authorization of use, the authenticated access to available data and the trustworthiness of sources.

The heterogeneity of data means that information is stored in different formats across multiple areas. Data discovery and information delivery mean that information is located and is remotely accessed irrespective of the data format. This is a difficult task, since data can be stored under multiple

directories that are associated with each file system type. This means that data retrieval causes the job executions to slow down, thus the grid system should be aware of the data location and the different formats and perform the appropriate interpretation of the content before joining data within grid applications.

Security is a fundamental requirement for both grid and p2p systems, especially in current architectures, which enable the cooperation of different network platforms over wireless environments and have to tackle with a large amount of distributed data. Security requires three fundamental services, namely authentication, authorization and encryption. However, these services incorporate a large set of security functionalities, when referring to the security requirements of a grid architecture and are summarized in the following [5][6]:

- Integration with existing security infrastructures across platforms and hosting environments. The overall grid security architecture should be agnostic and extensible to incorporate new security services as they become available.
- Interoperability between the different domains that the grid services traverse through.
- Establishing trust relationships between multiple security domains running on different peer networks. Due to the dynamic nature of a grid environment, it is unfeasible to establish end-to-end trust prior to execution of an application. The issue of trust establishment becomes complicated with transient Grid services.
- Ability to control access to grid components based on authorization policies.
- Providing interfaces to plug-in different authentication mechanisms and enabling for a unique secure logon process to the end users
- Providing mechanisms to allow delegation of access rights among peer nodes to retrieve specific data, while ensuring that the access rights delegated are restricted to the tasks intended to be performed within policy restrictions.
- Ensuring the privacy of the involved parties, by defining and enforcing privacy policies.
- Protection of data confidentiality.
- Message integrity by ensuring the detection of unauthorized changes to provided data.
- Qualifying the security assurance level that can be expected of a hosting environment. The security assurance level indicates the types of security services provided by an environment. This information is useful in deciding whether to deploy a service in the environment.

The P2P nature of the GREDIA system poses for special requirements [4], since the access control mechanisms for the authentication of mobile users are usually subject to centralized approaches. This is because of the support for various mobile devices, which they often lack of resources for running conventional security mechanisms themselves. However, both grid and p2p concepts introduce the distribution of such functionality, as many peers are often responsible for the resources they provide. Besides this, scalability is often an issue in P2P networks. The access control mechanism must therefore suitably face the problem of large number of peers.

The above mentioned characteristics impose requirements on the GREDIA system for developing the envisaged Grid applications, in a p2p manner. This system should be able to specify applications which can detect and dynamically respond during execution to changes in both, the state of execution environment and the state and requirements of the application. This suggests that the GREDIA applications should consist of discrete, self-managing components which incorporate separate specifications for all of functional and non-functional behaviours. The interface definitions of these components should be separated from their implementations to enable heterogeneous components to interact and enable the dynamic selection of components.

7.3. Non functional Requirements

Based on the general requirements identified in 7.2, this section presents the non functional requirements, which should be considered during the development of the GREDIA system. These are summarised on Table 4.

Table 4: Non functional requirements of GREDIA system

Non-functional	Requirement summary
Performance	This requirement has to do with QoS characteristics, such as bandwidth availability for data intensive transmissions. It also concerns to the time required for performing the operations allowed by the system, typically publication, searching and retrieval of documents, and the subsequent delay imposed to the end users for experiencing services.
Scalability/ Expandability	The system should be able to scale and expand the dispatch centre to be able to handle more traffic. The system's performance attributes should be maintained independent of the number of nodes or documents. A dramatic increase in the number of nodes or documents will have minimal effect on performance and availability.
Resource Management Capabilities	GREDIA platform allows for the publishing, searching, and retrieval of multimedia content. An advanced resource management module with sophisticated capabilities, such as editing or removal of documents, management of storage space, and operations on metadata is envisaged.
Semantic Grouping of Information	Semantic grouping of information and organization of the information content is considered in GREDIA system, based on the content and the location.
Availability	Ensure that authorized users have always access to data and associated assets 24/7 with 99.9% reliability. This requirement entails stability in the presence of failure, or changing node populations and has an impact on the mobile environment and the services included in the service compositions.
Security	Refer to Section 7.3.3
Fairness	Ensuring that GREDIA platform users offer and consume resources in a fair and balanced manner. This may rely on accountability, reputation, and resource trading mechanisms.
Robustness, Fault Detection and Recovery	It should be ensured that content and content delivery services are available at any time even if some hardware or software components fail to function. For this reason, alternative means for ensuring content and service availability will have to be defined. The system must log that a service, or content source has failed and log which service/source was used instead. The application should be notified, so that it is possible to inform the user that an alternative service/source has been selected. This should be done with no involvement from the end users.
Maintainability	If a service has been upgraded, then the old version of the service must be available for some time in order for the IT personnel to upgrade the software to use the new version of the service.
Portability	All client modules will run on predefined mobile hardware and since services are invoked over the Internet there are no specific requirements regarding portability.
Distribution	New mobile client module versions will be distributed using the internet.
Usability	Easy to use. User documentation should not be necessary for ordinary tasks.
User interface	Should give access to all system functionalities providing easy navigation through all features with personalisation capabilities depending on the system usage.

Non-functional	Requirement summary
System stability	In addition to the requirement with respect to availability, the system must handle errors occurring in a sensible way. This requirement concerns all systems/tools/services in the architecture.
Deployment	Ease of deployment - Must be able to update mobile modules through the internet.

Apart from the above mentioned non functional requirements, special attention to the core concepts of mobility and security should be given. Thus, the following sections refer further to the requirements for supporting the GREDIA system over a secure mobile environment.

7.3.1. Application Development Platform Requirements

The design of the Application Development Platform is closely associated with the description of the business applications, which the platform is oriented to facilitate for. Based on the information provided in section 0 about the initial adumbration of the business applications scenarios and the corresponding use cases identified in section 6, it can be determined how these applications can be "gridified", in the means of how they can be translated into standalone data and computing resources, which the system can then integrate.

All the non-functional requirements that are presented on Table 4 should be taken into account for the development of the Application Development Platform. Further to them, another important issue that can have an influence to the development aspects of the Application Development Platform has to do with how data is stored and accessed through the GREDIA system. GREDIA is intended to handle MM data in real time, which means that the Platform should consider for supporting streaming methods and enable the real time transfer of MM files from and to the peers of the GREDIA system. However, GREDIA users will access files distributed over heterogeneous networks, which implies that transcoding is necessary for enhancing the performance and ensuring fundamental QoS criteria of the Application Development Platform. Content adaptation is essentially required over mobile networks, in which performance is highly affected by network conditions.

7.3.2. Requirements for Mobile Operating System Environment

GREDIA services need to be offered and be readily accessible to mobile clients for enabling the mobile Grid. Although such services are to be platform agnostic for the benefit of ICT and academia, it is pragmatic for the GREDIA consortium to utilise and leverage Symbian's involvement, leadership and expertise in the mobile space. For that matter the recommendation is for the partners to make use of mobile devices running, the EU developed, Symbian OS mobile platform which is in the majority of smartphones deployed in the EU today.

Symbian, suggests that devices built using the latest versions of Symbian OS be used for the mobile aspect of the GREDIA project. At the time of writing such devices are offered by Sony Ericsson Mobile Communications (SEMC) and Nokia, while other manufacturers offer devices on the older versions of the OS (and hence are expected to offer on the new versions as well). Symbian OS v9.1 and newer versions that are expected to arrive, not only offer an open, secure and real-time mobile platform, but also come with a range of GUIs on a plethora (about 105+) of devices. Consequently partners have enough choice in terms of capability, cost and form factor of devices to choose from; in experimenting and deploying services as well as proving use cases.

Symbian OS enables partners to develop their software on a number of frameworks such as Symbian OS C++, Java (Connected Device Configuration - CDC and Connected Limited Device Configuration - CLDC), Python and Ruby as well as others. At the same time development environments and SDKs come for free for both UIQ and S60 GUIs and application frameworks.

Symbian's Developer Network as well as Nokia's and SEMCs counterparts offer free as well as paid-for support and consulting.

Symbian suggests that partners start their investigations with mobile phones operating with Symbian OS v9.1 that have Wi-Fi (802.11g) capabilities as well as UMTS. As newer versions become available Symbian will suggest and help with transitions to newer version of the platform.

7.3.3. Security Requirements

The security requirements are distinguished according to the different security services. They relate to safeguarding the accuracy and completeness of data and processing methods and the prevention of authorised entities to access and modify data. The security requirements lay on the following general categories:

- Data confidentiality

The protection of sensitive data, such as those dealing with financial issues, implies for guarding against the unauthorized corruption or deletion of information by intruders, either insiders or outsiders. This means that only authorised users can have access to specific piece of information and to respect the security restrictions posed on such data (intellectual property rights). However, not all of available data has the same level of confidentiality, so the project should take care for enabling the access of the right user to the proper information.

Further to that, since the produced platform is envisaged to operate on a mobile environment, the need for special security actions is apparent. Thus, data stored in the mobile grid should be encrypted to provide an advanced layer of security.

- Trust and reputation

Trusted service providers comprise the most appropriate sources of information to the users. Trust can be measured by different methods and is closely related to the reputation of the information source. As part of the work undertaken by the project is the specification of the appropriate model for measuring the reputation of a peer node in the GREDIA system and, subsequently, determine how trusted can be to execute a service, as well as to provide any extension to existing models, where this is necessary.

- Authorisation and access control

The Web-centric nature of current business applications and the distributed structure that the GREDIA system is envisaged for make the access control to be more challenging and complicated. Creating and enforcing the proper access control policies is critical to ensuring that only the appropriate users can see various types of information, and to prove those policies were enforced. Without such policies, an unscrupulous user or administrator at the partner's site could easily access, corrupt or steal data.

Unauthorised access to any data is obviously undesirable and, for that reason, a number of policies and access control mechanisms should be applied on the GREDIA system, in order to ensure that all threats are successfully confronted. There are a lot of authorization mechanisms, which are based on the following:

  - Identity
  - Role
  - Trust and reputation
  - Context-based properties
  - Group membership

- Data integrity and authenticity

Data integrity is a crucial factor in service provisioning, thus secure storage and transfer of data between the client applications and GREDIA system will need to be ensured, through the appropriate encryption methods (either over SSL or through HTTPS connections). The unauthorized or malicious manipulation of data for different kinds of media and financial information can cause for improper service execution and reception of fault evaluation results. It is the task of GREDIA to examine what authenticity verification controls are performed today and analyse the appropriate modifications to them.

- Authentication

Authentication is a necessary functional feature of the security framework, as long as authorization to data access is required. The combination of username and password is required for accessing multimedia content stored in the various peer nodes of the GREDIA system. If certain services require authenticating information, it will be provided at execution time, from the application and will not be stored as part of the composition specification. It should also be considered the accessibility control to the peer groups over what data is collected, how it is used, and how it is maintained.

8. Conclusions

This document presented the process followed by the GREDIA project to capture, analyse and record the requirements for the GREDIA platformσ, as expressed by users who belong to the targeted groups. The tools used to achieve these objectives have been described in detail along with the results the consortium reached, which will be later employed in the system design process. Although this document describes a baseline of requirements, it is expected that subsequent refinements will be applied through the design and implementation phases according to a feedback loop connecting the users testing and evaluating the prototypes with the implementation team.

9. References

[1] http://bosr.unl.edu/focus_groups.html

[2] http://client.norc.org/whatisasurvey/chapters/chapter5.htm

[3] Dalet software for Digital Broadcast: http://www.dalet.com/

[4] Stephanos Androutsellis-Theotokis And Diomidis Spinellis, "A Survey of Peer-to-Peer Content Distribution Technologies", ACM Computing Surveys, Vol. 36, No. 4, December 2004, pp. 335–371.

[5] Pascal Fenkam, Schahram Dustdar, Engin Kirda, Gerald Reif, and Harald Gall, "Towards an Access Control System for Mobile Peer-to-Peer Collaborative Environments", Proceedings of the Eleventh IEEE International Workshops on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE'02), June 2002, pp. 95-102.

[6] Bart Jacob, Michael Brown, Kentaro Fukui and Nihar Trivedi, "Introduction to Grid Computing", IBM redbook, December 2005.

[7] M. Parashar, Z. Li, H. Liu, V. Matossian, and C. Schmidt, "Enabling Autonomic Grid Applications: Requirements, Models and Infrastructure", O. Babaoglu et al. (Eds.): SELF-STAR 2004, LNCS 3460, pp. 273–290, 2005.

10. Annex I – The GREDIA questionnaires

QUESTIONNAIRE

"For the Media & Journalism Domain"

GREDIA proposes to **create a novel Grid application development platform**, which will **facilitate construction and execution of applications on the Grid** for a wide range of users. The operation of the platform will be validated by demonstrating two instantiations in real-life pilot applications supporting distributed access of rich content in the following operational domains:

Media and Journalism – servicing reporters working on assignment in need to record, edit and exchange information in a way that will protect and monitor intellectual property rights and the interests of the organisation that employs them

Banking – servicing banking organisations in need of a decision support system based on credit scoring calculations for evaluating collaborations with existing and potential customers, involving processing of quantitative and qualitative data that may be located in several different information sources.

This questionnaire is purposed

to identify User Needs for potential Services and Methods,

which may in the future be available through the GREDIA platforms.

Through this User Survey we aim to collect information, which we will analyse and finally utilize in building an application in the way that it will be most useful to the Media & Journalism Domain.

Our final goal is to provide GREDIA Users with the necessary tools for an easier and a safer navigation in the business world.

Respondent' S Details

Name:

Organization:

Profession*:

Country*:

Required fields*

Personal Information

To help us evaluate your answers, please indicate:

Your age

☐ 20-30
☐ 31-40
☐ 41-60
☐ 60-

Your education level

☐ Graduate
☐ Post Graduate
☐ Doctorate
☐ Other (Please indicate……)

Your work experience in the Media Sector

☐ 1 year or less
☐ 2 years to 4 years
☐ 5 to 9 years
☐ 10 years or more

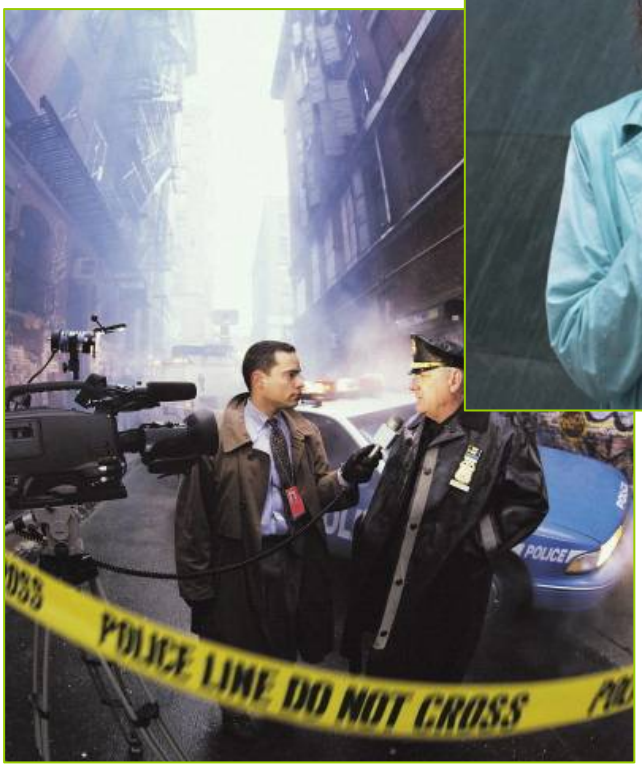
Please indicate the frequency of your working location:

	Always	Often	Seldom	Never
Office	☐	☐	☐	☐
Home	☐	☐	☐	☐
On the go	☐	☐	☐	☐
A mix of all the above	☐	☐	☐	☐

How often did you travel for business this year?

☐ Several times a month
☐ Once a month
☐ 1-2 times a year
☐ Other (Please indicate ……..……..)

Media & Journalism



Planning Your Work

Would it be helpful if you could use your mobile device as a calendar which will allow you to monitor yours and your colleagues' workplan?

- ☐ It would be very helpful
- ☐ It would probably be helpful
- ☐ It would not be helpful at all
- ☐ Indifferent

Would it be helpful if you could be informed for your everyday tasks, assigned by your supervisor, through your mobile device?

- ☐ It would be very helpful
- ☐ It would probably be helpful
- ☐ It would not be helpful at all
- ☐ Indifferent

Capturing the story

Would you be interested in capturing the following on your mobile device?

	Useless	Indifferent	Useful	Necessary
Images	☐	☐	☐	☐
Video	☐	☐	☐	☐
Sound	☐	☐	☐	☐
A mix of all the above	☐	☐	☐	☐

Would you be interested in composing your story on your mobile device?

- ☐ It would be very helpful
- ☐ It would probably be helpful
- ☐ It would not be helpful at all
- ☐ Indifferent

Would you be interested in recording an interview on your mobile device?

- ☐ It would be very helpful
- ☐ It would probably be helpful
- ☐ It would not be helpful at all
- ☐ Indifferent

Would you be interested in sending/ publishing your story or captured items to your colleagues/ editor through your mobile device?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

Would it be helpful for you if you could be able to annotate your story or captured items through your mobile device?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

What kind of metadata (comments) do you usually use to annotate a news item? Please indicate:

	Always	**Often**	**Seldom**	**Never**
Title	☐	☐	☐	☐
Subtitle	☐	☐	☐	☐
Location	☐	☐	☐	☐
Date	☐	☐	☐	☐
Abstract	☐	☐	☐	☐
Topic	☐	☐	☐	☐
Keywords	☐	☐	☐	☐
Names	☐	☐	☐	☐

When providing your article/ news item, would it be helpful to you if they are classified, based on pre-defined categories according to the annotation you have provided?

☐ YES, it would be helpful
☐ It would probably be helpful
☐ NO, I would rather to be able to suggest/ add my own thematic category
☐ Indifferent

Your colleagues are at the office editing a story but you are on the move. Would it be helpful if you could monitor the procedure of the editing through your mobile device?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

Accessing the Information

How would you prefer to access your news? Please indicate the frequency of the device you mostly use in order to receive news:

	Always	Often	Seldom	Never
Mobile Device	☐			
Desktop computer	☐	☐		
Laptop computer (on the go)	☐	☐		
A mix of all the above	☐	☐	☐	

Which format do you prefer for receiving news?

	Indifferent	Useful	Necessary	Useless
Text	☐	☐	☐	☐
Images	☐	☐	☐	☐
Video	☐	☐	☐	☐
Sound	☐	☐	☐	☐
A mix of all the above	☐	☐	☐	☐

Please indicate which news sources you use more frequently for collecting news content for your everyday work.

→ Commercial Sources (ex. Portals like Deutsche Welle Online, Google- News)

……

→ Community Sources (Blogs/ Podcasts, etc.)

……

Would it be helpful if you could search for material (text, images, and video) either from your desktop or your mobile device, through a central point of access?

	Indifferent	Useful	Necessary	Useless
Desktop	☐	☐	☐	☐
Mobile Device	☐	☐	☐	☐

Would it be helpful if you could have access to your work documents /e-mails from your mobile device during a business travel?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

Would it be helpful if you could search for news information (in text, photo or video) on your mobile device? Let's say about a terrorist action in a European capital.

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

Imagine you compose your story on your desktop/ mobile device and then directly make it available to your colleagues/ chief editor. Would it be helpful if you could receive back comments or additional remarks?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

When searching for news, would you like the results to be presented in thematic groups (political, social, gossip etc.)?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

When searching for news would you prefer the queries to be formulated based on:

☐Pre-defined thematic categories; to be able to select from specific thematic categories but not being able to specify your own keywords (i.e. choose all the political day news).

☐Keyword-based query; to be able to access the system by specifying certain keywords

☐Open query; to be able to form a certain question (i.e. Find me documents about the last attack in Iraq).

☐Any other suggestion: .....

Would you be interested in receiving news items, filtered according to the context you prefer (eg. health, politics, etc)?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

Would you mind if a system kept information provided by you regarding your personal interests in News?

☐ I would probably not mind
☐ I wouldn't mind at all
☐ I would be concerned
☐ I would definitely mind

Would you be interested in an electronic way for communicating with colleagues of the same professional Community worldwide and sharing news items though your mobile device or through your desktop?

☐ It would be very helpful
☐ It would probably be helpful
☐ It would not be helpful at all
☐ Indifferent

How often would you use a system providing the previously mentioned functionalities?

☐ Every day
☐ Often
☐ Rarely
☐ Never

Security

Do you consider credibility of sources important when you use news material for your work?

☐ I only use trusted, known sources so I can be confident of the credibility
☐ I mostly use trusted sources but I frequently supplement them with additional ones
☐ I always look for new sources, but try to check their credibility
☐ Credibility of sources does not really trouble me; I use any sources.

How much do you trust the news that is presented to you?

☐ I always trust the news I read
☐ I trust the news I read, but sometimes I am concerned of their trustworthiness
☐ I trust the news I read, but most of the times I am concerned of their trustworthiness
☐ I never trust the news I read

How much do you trust the existing mobile technologies for exchanging files, i.e. sending your story/ article?

☐ Very
☐ I am somewhat concerned
☐ I am mostly concerned
☐ I do not trust the existing mobile technologies at all

Lets say you want to send an interview you have just recorded through your mobile device to your editor. Would you be interested in attaching a digital signature to it, in order to ensure that use of the material will have your authorization?

☐ It would be very interesting
☐ It would probably be interesting
☐ It would not be helpful at all
☐ Indifferent

Technical Questions

Which telecommunication standard does your mobile device (cell phone, PDA, etc.) use for data transfer?

☐ 2G
☐ 3G
☐ WiFi
☐ Other: ……..
☐ I don't know

Which standard do you use when accessing the Internet with your laptop when you are on the move?

☐ 2G
☐ 3G
☐ WiFi
☐ Other: ……..
☐ I don't know

Thank you for your time!

QUESTIONNAIRE

"For the Banking Domain"

GREDIA proposes to **create a novel Grid application development platform**, which will **facilitate construction and execution of applications on the Grid** for a wide range of users. The operation of the platform will be validated by demonstrating two instantiations in real-life pilot applications supporting distributed access of rich content in the following operational domains:

Media and Journalism – servicing reporters working on assignment in need to record, edit and exchange information in a way that will protect and monitor intellectual property rights and the interests of the organisation that employs them

Banking – servicing banking organisations in need of a decision support system based on credit scoring calculations for evaluating collaborations with existing and potential customers, involving processing of quantitative and qualitative data that may be located in several different information sources.

This questionnaire is purposed

to identify User Needs for potential Services and Methods,

which may in the future be available through the GREDIA platforms.

Through this User Survey we aim to collect information, which we will analyse and finally utilize in building an application in the way that it will be most useful to the Banking Domain.

Our final goal is to provide GREDIA Users with the necessary tools for an easier and a safer navigation in the business world.

Respondent' S Details

Name:

Organization:

*Profession:

*Country:

*** Required fields**

Personal Information

To help us evaluate your answers, please indicate:

Your age

- ☐ 20-30
- ☐ 31-40
- ☐ 41-60
- ☐ 60-

Your education level

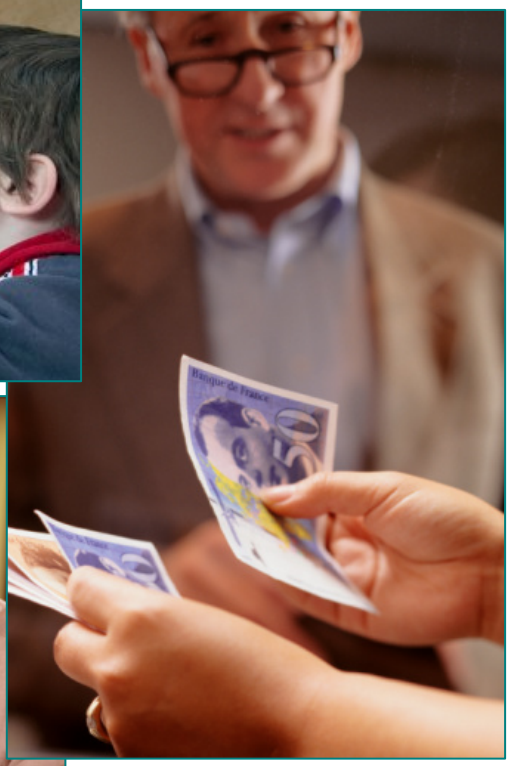
- ☐ Graduate
- ☐ Post Graduate
- ☐ Doctorate
- ☐ Other (Please indicate .....)

Your work experience in the Banking Sector

- ☐ 1 year or less
- ☐ 2 years to 4 years
- ☐ 5 to 9 years
- ☐ 10 years or more

Can you please confirm your specific role/ responsibilities in a sentence?

Banking



Credit Scoring Basics

Does your Bank utilize Credit Scoring Techniques with any of its lending approvals?

- ☐ Yes
- ☐ No
- ☐ If yes, please indicate: .....

Which are the basic credit lines in your Bank?

- ☐ Small & Medium-sized Enterprises
- ☐ Large Enterprises
- ☐ Households
- ☐ Other (Please indicate): .....

Can you give us a short description of how the Bank defines the Credit Lines? (eg. based on annual turnover, number of employees, etc.)

Are there any credit lines which are considered by the Bank to be of higher risk, and where special lending criteria apply?

- ☐ Yes
- ☐ No
- ☐ If yes, please indicate:

Does the Bank have any portfolio exclusions/limits which in any way restrict the granting of loans?

- ☐ Yes
- ☐ No
- ☐ If yes, please indicate:

Where do you (or your bank) obtain customers' information (Statement of financial holdings) from?

	Always	Often	Seldom	Never
Newspapers	☐	☐	☐	☐
Price-feed terminals				
(i.e. Bloomberg / Reuters)	☐	☐	☐	☐
Bank valuation	☐	☐	☐	☐
The customer	☐	☐	☐	☐
Governmental sources	☐	☐	☐	☐
Other (Please indicate):				
.....	☐	☐	☐	☐
.....	☐	☐	☐	☐

Over the past months, how has the demand for loans or credit line to enterprises changed at your Bank, apart from normal seasonal fluctuations?

	Loans to SMEs	Loans to Large Enterprises	Loans to Households
Decreased considerably (--)	☐	☐	☐
Decreased somewhat (-)	☐	☐	☐
Remained basically unchanged (Ø)	☐	☐	☐
Increased somewhat (+)	☐	☐	☐
Increased considerably (++)	☐	☐	☐

Customer Data Collection

Which of the following functionalities does your Bank offer to the customer?

	Yes	No	I don't know
Telephone Banking	☐	☐	☐
e- Banking	☐	☐	☐

If your Bank offers Web Banking Services, please answer the 3 following questions:

How many customers utilize the above mentioned functionalities?

- ☐ Less than 10% of the customers
- ☐ 10% of the customers
- ☐ Between 10% and 59% of the customers
- ☐ 50 % of the customers
- ☐ More than 50 % of the customers
- ☐ Other (Please indicate): .....

Does the bank have a policy for the privacy of customer's data and confidential treatment of information through web transactions?

- ☐ Yes
- ☐ No
- ☐ I don't know

Does the bank verify the legitimacy of the customer who has submitted an application to the Bank website?

- ☐ Yes
- ☐ No
- ☐ I don't know

Who is responsible for updating the customers' data in your Bank?

- ☐ A cashier
- ☐ Personnel from the Risk Department
- ☐ The customer himself
- ☐ Other (Please indicate): .....

How often do you usually update the customers' data in your Bank?

	Once a Year	Every 6 months	Every 3 months	Every week	Every day
Balance Sheet	☐	☐	☐	☐	☐
Other Financial Statements	☐	☐	☐	☐	☐
Financial Data	☐	☐	☐	☐	☐
Other quantitative data	☐	☐	☐	☐	☐
Qualitative data	☐	☐	☐	☐	☐

How would you evaluate the effectiveness of the following data in evaluating the risk of a loan application?

(Use a scale of 1 to 4, with 1=Not effective and 4=highly effective)

Quantitative Data	Effectiveness			
FOR INDIVIDUALS	**1**	**2**	**3**	**4**
1. Income (Total Gross Monthly Income)	☐	☐	☐	☐
2. Fixed assets (house, land property)	☐	☐	☐	☐
3. Current assets (Consignment of Stocks, funds, deposits)	☐	☐	☐	☐
4. Expenses (Total Monthly Rent/Mortgage)	☐	☐	☐	☐
5. Total debt outstanding	☐	☐	☐	☐
6. Loan analysis (loan type, amount, term in months)	☐	☐	☐	☐
7. Account payment information on specific types of accounts (credit cards, retail accounts)	☐	☐	☐	☐
8. Seriously overdue Accounts	☐	☐	☐	☐
9. Life insurance quantitative data	☐	☐	☐	☐
10. Number of dependents (Spousal/ child support)	☐	☐	☐	☐
11. Other (Please indicate):	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐

Quantitative Data	Effectiveness			
FOR SMALL & MEDIUM CORPORATIONS	**1**	**2**	**3**	**4**
1. Balance Sheet	☐	☐	☐	☐
2. Estimated Turnover	☐	☐	☐	☐
3. Past Financial Reports	☐	☐	☐	☐
4. Debtor Balance	☐	☐	☐	☐
5. Total Bad Debts	☐	☐	☐	☐
6. Long Terms Contracts	☐	☐	☐	☐
7. Consignment of Stocks/ Marketable Securities	☐	☐	☐	☐
8. Minimum/Maximum payment to Debtors	☐	☐	☐	☐
9. Commercial and Residential Property	☐	☐	☐	☐
10. Seriously overdue Accounts	☐	☐	☐	☐
11. Current Tax liabilities	☐	☐	☐	☐
12. Cash Flow	☐	☐	☐	☐
13. Forecasts	☐	☐	☐	☐
14. Other (Please indicate):	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
FOR LARGE CORPORATIONS	**1**	**2**	**3**	**4**
1. Balance Sheet	☐	☐	☐	☐
2. Estimated Turnover	☐	☐	☐	☐
3. Past Financial Reports	☐	☐	☐	☐
4. Debtor Balance	☐	☐	☐	☐
5. Total Bad Debts	☐	☐	☐	☐
6. Long Terms Contracts	☐	☐	☐	☐
7. Consignment of Stocks/ Marketable Securities	☐	☐	☐	☐
8. Minimum/Maximum payment to Debtors	☐	☐	☐	☐
9. Commercial and Residential Property	☐	☐	☐	☐
10. Seriously overdue Accounts	☐	☐	☐	☐
11. Current Tax liabilities	☐	☐	☐	☐
12. Cash Flow	☐	☐	☐	☐
13. Forecasts	☐	☐	☐	☐
14. Other (Please indicate):	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

Qualitative Data	Effectiveness			
FOR INDIVIDUALS	**1**	**2**	**3**	**4**
1. Kind of job (whether it is personal or he/she depends on a company)	☐	☐	☐	☐
2. Status of employment (Full-time, part-time etc.)	☐	☐	☐	☐
3. Marital Status	☐	☐	☐	☐
4. Education, work experience and skills	☐	☐	☐	☐
5. Household type	☐	☐	☐	☐
6. Age	☐	☐	☐	☐
7. Ethnicity	☐	☐	☐	☐
8. Number/ Sex of Children	☐	☐	☐	☐
9. Employer information	☐	☐	☐	☐
10. Presence in adverse public records (bankruptcy, judgements, suits, liens, wage attachments, etc.), collection items, and/or delinquency (past due items)	☐	☐	☐	☐
11. Reluctance to take risks	☐	☐	☐	☐
12. Health information and ability to issue life insurance	☐	☐	☐	☐
13. Purpose of loan	☐	☐	☐	☐
14. Guarantors	☐	☐	☐	☐
15. Other (Please indicate):	☐	☐	☐	☐
	☐	☐	☐	☐
FOR CORPORATIONS	**1**	**2**	**3**	**4**
16. Management team information	☐	☐	☐	☐
17. Product/services range	☐	☐	☐	☐
18. Market share	☐	☐	☐	☐
19. Branches	☐	☐	☐	☐
20. Business Ownership (i.e. Sole Proprietorship, Partnership, Corporation)	☐	☐	☐	☐
21. Years in Operation	☐	☐	☐	☐
22. Suppliers and Vendors	☐	☐	☐	☐
23. Competition	☐	☐	☐	☐
24. Political, legal and regulatory environment	☐	☐	☐	☐
25. Donations and Contributions	☐	☐	☐	☐
26. General market/ economic conditions	☐	☐	☐	☐
27. Competence of management (for equities)	☐	☐	☐	☐
28. Judgment on the company's ability to pay (for loans and receivables)	☐	☐	☐	☐
29. Specific Loan Purpose (Purchase of Equipment, Inventory, Refinance Existing Loan or Debts etc.)	☐	☐	☐	☐
30. Guarantors	☐	☐	☐	☐
31. Other (Please indicate):	☐	☐	☐	☐

Loan Details

How many loan applications do you receive per year?

	Households	Businesses
Less than 1.000	☐	☐
Less than 10.000	☐	☐
More than 10.000	☐	☐
Other (Please indicate):		
.....	☐	☐
.....	☐	☐

Usually most loan applications that fail are rejected due to:

	Always	Often	Seldom	Never
Credit Scoring Result	☐	☐	☐	☐
Lack of cooperation with the customer	☐	☐	☐	☐
Inadequate Financial Data	☐	☐	☐	☐
Other (Please indicate):				
.....	☐	☐	☐	☐
.....	☐	☐	☐	☐

Would it be helpful if you could have access to the risk assessment mechanism through your mobile device?

	Very Helpful	Probably helpful	Not helpful	Indifferent
To be notified of any loan applications	☐	☐	☐	☐
To be notified of any system recommendation for the loan applications	☐	☐	☐	☐
To be able to modify the system parameters	☐	☐	☐	☐

If there was a platform which you could use to retrieve financial information coming from various external sources (eg Stock Market, Bloomberg, Reuters, etc.) what <u>fields</u> would you need <u>to base your search on</u>? (eg. find the balance sheets of company X)

	Always	Often	Seldom	Never
Type of data (eg balance sheet)	☐	☐	☐	☐

Customer Name	☐	☐	☐	☐
Date	☐	☐	☐	☐
Keywords	☐	☐	☐	☐
Other				
.....	☐	☐	☐	☐

Mobility

How much do you trust the existing mobile technologies for exchanging private data?

☐ Very
☐ I am somewhat concerned
☐ I am mostly concerned
☐ I do not trust the existing mobile technologies at all

Please indicate the telecommunication standard that ...

	2G	3G	WiFi	I don't know
Your mobile device (cell phone, PDA, etc.) use for data transfer?	☐	☐	☐	☐
You use when accessing the Internet with your laptop when you are on the move?	☐	☐	☐	☐