User Requirements Analysis assisted by Online Questionnaires
Lessons Learned in PISTE, Implications for MELISA and LoVEUS
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Overview

Presentation Units

1. The Requirements Engineering Process in the Group
2. Requirements in PISTE
3. Lessons learned
4. Requirements in LoVEUS and MELISA
5. Conclusions
Requirements Engineering

The Process in the Research Projects
The Requirements Philosophy of the Projects

- Inherent Expertise in Consortia
  - Technology Providers and Integrators
  - Basic Research/Core Technology Enhancements
  - Service/Infrastructure Providers
  - End Users

- Requirements in Phases
  - Estimation of requirements based on application domain knowledge (Warning: BIAS!)
  - Requirements validation
  - Requirements consolidation
  - Validation based on requirements
Questionnaires

Who to ask...

✓ Different Categories of involved entities
  - Actors, the ones that will operate the product(s)
  - Clients, the marketing departments of the exploitation partners
  - Customers, the ones that will finally buy the product
  - Stakeholders: all other people involved in the delivery of input for the requirements-document

✓ What do we expect to learn from each of them
  - What is the routine that we will replace/support/ease?
  - Exact information flow
  - Desired control flow
  - What are their “dreams”?
  - How much are they willing to pay for these dreams to come true?
At the appropriate level of detail...
Questionnaires

How to ask...

✓ Informal discussions (the corridor case…)
  - Most productive
  - Products of chance
  - No paper to write on…

✓ Interviews
  - Time restrictions and schedule incompatibilities
  - Resource limitations (either small groups in the company, or external groups to be financed)
  - Skilled people necessary

✓ Online Questionnaires
  - Natural extension of high-technology projects…
  - An interesting alternative to explore…

✓ User Workshops (ARIS Project)
Requirements Collection Process

Collect & Classify Criteria → Questionnaire

Requirements Collection

End-Users

Internal Actor 1

…

Internal Actor N

Homogenization & Generalization

Internal Users

External Users

quest → feedback

Application Requirements

UML Use Cases

quest → feedback
Requirements Collection Process

User Requirements
- End-user requirements
- Internal Actor requirements
- Performance requirements
- Interface requirements
- Resource requirements

Users
- Trade-off

Related Applications

Application Scenarios

feedback

UML Use Cases
Requirements in PISTE
Overview of the PISTE Project

The Project Fact Sheet

- **Project Acronym:** IST-1999-11172 PISTE
- **Full title:** Personalized Immersive Sports TV Experience
- **Start Date:** 30 months
- **Overall duration:** 538.4 PMs
- **Initial Res. Plan:** 5.293.707 €
- **Budget estimate:** 2.600.000 €
- **Commission funds:** 11 Contractors +
- **Consortium:** 1 Subcontractor
Overview of the PISTE Project

The PISTE System Architecture

Enhanced Content Creation

Broadcasting over existing (DVB) infrastructure

Enhanced Content Viewing and Interactivity

“Non intrusive” Content Capturing
Overview of the PISTE Project

The PISTE 3D Application Scenarios
PISTE Questionnaires

Going Online

 Spectators' questionnaire (1 of 3)

Profile of the Interviewee:

Name:
Surname:
Email:
Age:
Occupation:
Education:

1. How often do you watch sports events or sports news?
   - Every day
   - Approx. three times a week
   - Once a week
   - Occasionally, a few times per month
   - Only before/during/after major sports events (a few times per year)
   - Rarely, but I read sports newspapers
   - Rarely, but I browse Web-pages related to sports
A team involved in the requirements process for at least 3 months (of preparation) and 1 more at a later stage (evaluation)

Three Different Types of Questionnaires
- Broadcasters
- Athletes, Trainers and Sports Officials
- Viewers

Each of the questionnaires consisted of 3 to 5 sections
- Consisted of 3 to 5 sections
- Included video clips and pictures
The Details of the Questionnaires

- Publication in News-Groups
- Boost after introduction in the E.R.T. portal
- Lots of (Verbal) "Propaganda"
- 54 entries within 2 months
- 3 countries mostly
  - Greece
  - Poland
  - Germany
- Results in their majority as expected
- Influence on Requirements: confidence
- Ongoing evaluation (survey to statistics)
The favorite sports

Interest in Sports in General (Grade 6-10)

Number of people

Grade

Tennis
Volleyball
Basketball
Soccer
Athletics

Athletics
Soccer
Basketball
Volleyball
Tennis
Questionnaire Results in PISTE

The special case of athletics

Interest in Athletics

Number of people

Grade

Sports

100m run

High-Jump

Long-Jump

100m run

Javelin

High-Jump

Long-Jump

100m run

Javelin
Questionnaire Results in PISTE

Viewer Skills

- Familiarity with computers
- Familiarity with computer/console games
- Education
- Frequency of Watching Sports
How much time after the attempt of an athlete is completed would you still want to examine the replay?

- **Within 1 minute**: 0 people
- **Within 2 minutes**: 0,5 people
- **Within 5 minutes**: 1 people
- **Within the broadcasting session**: 1 people
The special case of audio for locally stored replays

During a replay do you prefer to hear:

- Replay related sound
- Sound related to the ongoing events

Number of People

![Bar chart showing preference for audio during replays](chart.png)
Usability in PISTE

The PISTE Sender Side
Usability in PISTE

The PISTE iTV Receiver

PISTE Interactive
TV Style-Guide
Usability in PISTE

User Evaluation Workshops
Lessons learned
Lessons learned

General Questions to be Asked – A sample list

- What percentage of the target group(s) can be reached online?
- Is the selection procedure of the people “approached” unambiguous? (active “recruiting”)
- Data Protection: Information about data obtained without the knowledge?
- Complete and serious vs. incomplete and spam – what is the selection procedure in the automated process?
- Are the lists of Questions “distilled”? How much time is necessary?
- Is the user in full control (especially interrupts)?
- European Products need Europe-wide coverage.
Requirements in MELISA and LoVEUS
The Project Fact Sheet

- **Project Acronym:** IST-2001-34755 MELISA
- **Full title:** Multiplatform e-Publishing for Leisure and Interactive Sports Advertisement
- **Start Date:** May 1st 2002
- **Overall duration:** 33 months
- **Initial Res. Plan:** 540,5 PMs
- **Budget estimate:** 5,340,335 €
- **Commission funds:** 2,900,000 €
- **Consortium:** 12 Members (after one amendment)
Overview of the MELISA Project

The Application Scenarios
MELISA Questionnaires

Going Online

1. Are you interested in subscribing to such betting service and placing bets as described?
   - Yes
   - No
   If No, please skip the following questions and click "Next" at the bottom of the page.

2. What type of subscription / pricing would you prefer for such a service?
Questionnaire Results in MELISA

The favorite sports
Questionnaire Results in MELISA

Betting and the wrong group selection?
Questionnaire Results in MELISA

Preferred Platforms

- PDA
- Mobile phone
- Internet
- Interactive TV
Questionnaire Results in MELISA

Business Model Information

Percentage of people (%)

<table>
<thead>
<tr>
<th>Interest Level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all</td>
<td>5</td>
</tr>
<tr>
<td>A little</td>
<td>25</td>
</tr>
<tr>
<td>Very</td>
<td>15</td>
</tr>
<tr>
<td>Extremely</td>
<td>5</td>
</tr>
</tbody>
</table>

Interested in subscribing to the visual enhancements service
MELISA Questionnaires

The Details of the Questionnaires

✓ 75 people within the initial period (less than 1 month)
✓ Ongoing survey
✓ An update of the evaluation to take place before the initial prototype
✓ A replacement of the mock-ups to take place after the initial prototype
✓ A risky experiment of combining trials evaluation and questionnaire updates!
Requirements in the LoVEUS Project
Conclusions
Conclusions

**Why and how to use online questionnaires**

- Only if you can give a concise and clear picture
- The advantage is NOT time, it is the AMOUNT
- Usability is something that needs to be applied to the online questionnaires themselves
- Big numbers can be expected if and only if
  - A well visited site makes the appropriate advertisement
  - The person to reply does not spend too much time
  - Learns something while doing or
  - Earns something after having done…
- Like every other tool: it is a useful tool for high-technology projects, if used appropriately!
technology with a human vision