

REPORT 5

Technology and the
public. Evaluation of
ICT in museums

Report nr. 5 - "Technology and the public. Evaluation of ICT in museums"

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A Publication by Working Group 3: Audience Research, Visitor Relation Management and Learning Styles

The Learning Museum Network Project

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Introduction of LEM – The Learning Museum Project

Margherita Sani

'Technology and the public. Evaluation of ICT in museums' is one of seven reports which are published within the framework of the EU funded project LEM – The Learning Museum, which aims to create a permanent network of museums and cultural heritage organisations, to ensure that they can exploit their potential as learning places and play an active role with regard to lifelong learning in a knowledge based Europe.

The project is funded by the Lifelong Learning Programme Grundtvig for the period 2010-2013 and can be regarded as the arrival point of a number of previous EU projects carried out between 2007-2010, which dealt with lifelong learning in museums (LLML and MuMAE), intercultural dialogue (MAP for ID) and volunteering (VoCH), all of which are documented in the LEM website.

LEM not only draws from the materials collected, the lessons learned and the contacts established by its forerunners, but moves one step further in the direction of establishing a permanent space for museum professionals and adult educators to meet, exchange experiences and good practices and learn from each other, therefore contributing to the creation of a European community of professionals interested in heritage education and lifelong learning in museums.

The network started with 23 partners from 17 European countries, plus one partner from the United States of America, the Museum of Anthropology of the University of Denver, taking advantage of the possibility offered in 2010 for the first time by the Lifelong Learning Programme, to involve third country organisations.

As a network, LEM aims in the first place to grow and acquire new associate members which, in March 2013, had tripled the number of founding institutions. A wide range of museums, heritage organisations, academies, institutes for learning and universities are now part of the network, representing 25 countries. There are Ministries, Museum Associations and other umbrella organisations, individual museums, small and large, institutions active in the education field, all working on an equal level and engaged in sharing information, making it available to a wider public and learning from one another.

The philosophy of LEM indeed is that of considering museums not only as learning places, where educational activities are delivered, but also as learning organisations themselves, learning from the public, the local community, other agencies and, of course, from other museums.

The idea of peer learning is core in LEM and, in order to fully support it, work has been articulated into working groups, each led by a LEM partner.

The research subjects have been chosen by the working groups themselves:

- New trends in the museums in the 21st century
- Museums and the ageing population
- Audience research, learning styles and visitor relation management
- Museums as learning places- learning spaces in museums
- Museums and intercultural dialogue

'Technology and the public. Evaluation of ICT in museums' is one of the three publications produced by Working Group 3 'Audience research, learning styles and visitor relation management'.

In addition to collecting materials, sharing them on the website and eventually producing a report on the theme researched, working groups undertook study visits to each other or to third institutions, to come in contact with working practices of other colleagues throughout Europe.

This idea of learning by being directly exposed to other people's practices and experiencing different work environments represents an important added value to the project, not only with regard to the members of the working groups, but more widely, through the LEM mobility scheme, which is open to partners and associate partners and provides the opportunity to spend some time working in another institution.

In fact some of the project partners, initially five, but increasingly more, have offered placements to other LEM members, for periods lasting from a few days to two weeks to three months. This results not only in the strengthening of ties within the network at personal, professional and institutional level, but allows individuals to actually learn by being exposed to different working situations.

Dissemination is another important aspect of LEM. International conferences, seminars and round tables are being organised regularly and attract a wide European audience. They are occasions for intensive networking and learning, offer plenty of social events and are combined with visits to local institutions to meet stakeholders. Where possible, they are also live streamed to reach an even wider public. A number of smaller dissemination events are also organised at local or national level.

Finally, the website is the digital platform where all the knowledge acquired by the project is kept and made available. It is a dynamic and interactive forum, first of all to receive and exchange materials about the subject area 'museums and lifelong learning' and secondly to provide information about the project. It is a virtual learning environment, providing information on existing literature, projects and actors and is kept updated through continuous research, data analysis and provision of new information by an international editorial team and by the project partners. Everyone is invited to send materials to be published on the LEM website, and participation is favoured through the use of web 2.0 tools. At the beginning of each month an electronic newsletter is sent out to all those who have

subscribed to it.

The website therefore functions as a community-building tool for all those who are interested in the topics addressed by LEM. Through the networking activities of its partners and associates, the website and the dissemination events, LEM expects to reach the whole museum and heritage community and a large part of the adult education sector.

www.lemproject.eu

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Technology and the public. Evaluation of ICT in museums

The increasing number of technologies and devices (including iPhone, iPad and the like) provides new perspectives for the use of multimedia applications in

the broad field of cultural heritage.

Users frequently access multimedia information at all times, in different circumstances and venues, choosing



– among the many devices available – the most suitable ones.

Since the first half of the 20th century, thanks to the incredible development of technical machinery able to merge and swirl the senses of hearing and looking, the growth of media has been wild and the continued development of technologies has expanded

the possibilities and forms to an uncontrolled extent. Moreover, in the past decade the role of the online/web environment has grown exponentially, offering a space free of opportunities, which represents today a benefit for the exhibition's audience and offers museums a venue for fresh improvement.

Nippon
Between Myth and Reality:
Arts and Culture from the Land of the Rising Sun

Words

photographs nude food relationship wife diary body exhibition lugan G&H **Japan** war japanese WŌREN bondage evolution prostitute: movement perfection **Gutai** painting revolutionary performance corps installation materials Achiya bulletin Western Japanese technique space Lugan visitor energy techniques dimension Bulletin

albumen ukiyo-e japan prostitute geometric prints book women books **Shunga** esampe B&W pocket books prostitutes print donne

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— Themes from the exhibition
— Highlights

Within the frame of LEM - Learning Museum Network Project, a permanent network of museums and cultural heritage organizations, the Working Group 3 (WG3) ***Audience research, visitor relation management and learning styles*** focuses on specific but correlated activities.

active role in lifelong learning society, increasing access to cultural life and fostering social cohesion, innovation and creativity, this group gives particular attention to the above mentioned areas, approaching them in different but complementary ways, among which the most significant could be summarised as follows:

Given that in the 21st century museums can play an

- By investigating the use of multimedia technology



in museums and cultural heritage institutions, as well as the role of multimedia in influencing and/or targeting the visitors

- By identifying different visitors' learning styles and conducting extended audience research to determine learning profiles

- By carrying out qualitative researches on the impact of museum activities on the participants' lives, individual growth and personal development.

Since the beginning of the LEM project in 2010, while exploring this broad field, a number of steps have been taken to explore this area by WG3 members.



During the first LEM meetings the group developed a working plan; each member of the group brought into the discussion numerous topics of interest, as well as gathering and submitting documents, information and research material. The next stage involved discussing the contributions.

Meanwhile, three study visits were made:

- November 2011 - Glasgow, Riverside Museum: group members were introduced to the recently opened museum and its audience research which was based on the participation of the local community, visitor studies and the use of ICT for targeted audiences.
- February 2012 - The Gallo-Roman Museum of Tongeren (awarded European Museum of the Year 2011): the staff presented the extended research which was conducted during the renovation of the museum and helped design the new permanent exhibition, as well as the I-Discover interactive experience.
- June 2012 - Cap Sciences, Bordeaux: the team presented its new interactive RFID, a device which enables visitors to access personalised content, to play quizzes and to give their opinion throughout the different exhibition halls.

The group members felt the need to create three subgroups, each one focusing on a particular but complementary aspect of the key theme of the working group.

The use of multimedia technology in museums and cultural heritage institutions, as well as the role of

multimedia in influencing the visitors, set a common ground for the study of Cap Sciences and TEC-Lab. Indeed, both asked themselves how visitors and online users are currently using multimedia, or how they would like to use multimedia in order to enhance their experience within the field of cultural heritage.

The present study begins with the investigation of the current state of user studies and audience research within the LEM network. A survey was held among LEM partners and has showed that, due to the lack of time and resources, many museums currently use basic questionnaires and spend little time or no time in analysing the results.

Given this situation, the group decided to collaborate on the development of a User study framework and to design a template survey - adapted and tested on the field - that could easily be adapted to museums and cultural heritage institutions in general, with the aim of reaching comparable user studies across museums and institutions.

Cap Sciences and TEC-Lab have benefited and learnt from each other through this collaborative process. As a result of this fruitful teamwork, the group aims to provide the LEM community and cultural heritage institutions in general with a tool to better understand visitors' use of multimedia, and therefore enhance their experience within the field of cultural heritage.

This report presents the framework as described above, two User studies and the template survey for User studies.

Evaluation of multimedia ICT for museum organisations

The investigation's aim is the analysis of the following aspects:

- The use of multimedia technology in museums and cultural heritage institutions
- The impact of multimedia for visitors and internet users

A User study framework has been developed. The motivation for this framework is to foster the development of a more accurate understanding of how visitors and online users are currently using multimedia, or how they would like to use multimedia in order to enhance their experience within the field of cultural heritage.

The goal is not to standardise user studies across different institutions, which would be clearly unattainable: each institution must be allowed to follow its own agenda and its own needs. The aim, instead, is to reach comparable user studies. If the results of different user studies (across Europe at least) can be compared, it would be possible to build a corpus of empirical evidence.

This data will allow researchers and practitioners to understand how visitors and online users behave with respect to the use of multimedia (both actual use and desirable use).

The framework (see Annex 1) has the following features:

- It lists all the different topics that should be addressed.
- It does not dictate the research method: interviews, questionnaires.
- It exemplifies the topic through specific questions; these examples should be taken as reminders, as the specific way of formulating the questions can change from case to case.
- It calls also for context information: as the institution, the collection, the specific exhibition, etc. This information should not be asked of people (visitors or internet users) but they must be provided in order to properly interpret the study.

This framework consists of 2 major sections:

– **PART I, written by the institution.**

It provides all the contextual information that is important in order to properly interpret the user study, but which cannot be asked directly to the user.

– **PART II, completed via surveys or interviews or focus groups.**

It enquires about the actual usage of multimedia and what visitors would have desired (in terms of technology and in terms of content). It addresses also the time frame: before the visit, during the visit and after the visit.

For online users it enquires about the actual

usage of multimedia, the desired usage and the relationship with a visit (is it likely that a visit will follow or was the visit already taken place?).

In addition to the framework, this document includes two sample User studies that exemplify the framework itself:

- ***Consonanze: Dialogues across time***
A User Study (March 2012) carried on by TEC-Lab. An investigation concerning the exhibition *Consonanze: Dialogues across time*, held at the Museo Cantonale d'Arte and Museo d'Arte, Lugano (Switzerland), from 16 October 2011 to 8 January 2012.
www.consonanzelugano.ch,
TEC-Lab (www.tec-lab.ch)
- ***Lascaux-Exposition internationale***
A User Study (January 2013) carried on by Cap Sciences.

An investigation concerning the exhibition '*Lascaux – exposition internationale*' held at Cap Sciences, Bordeaux (France), from 12 October 2012 to 6 January 2013.

www.lascaux-cap-sciences.net

- ***Template survey***

A template survey developed by TEC-Lab. It would be a standard to be offered to the museums and to their visitors

The results of the activities of this group can be of great relevance for cultural heritage research and practice in Europe. The framework in fact, if properly followed, would allow the comparison of user studies carried on by different institutions. Therefore, empirical evidence can be accumulated, driving research and improving the practices, especially for small-medium institutions that have not the strength (or the resources) to carry on extensive user studies on their own.

ANNEX 1: User Study Framework for Multimedia Users and Audience for Cultural Heritage

Introduction: Motivations and Overall Goals

With the aim of evaluating how multimedia/ICT plays a role in cultural heritage organisations, a framework has been created to support the organizations' understanding of how their users currently use multimedia or how they would like to use multimedia in the future to enhance their cultural experiences (both online and on-site).

The ultimate goal is to reach a standard, across Europe first and then worldwide, to allow researchers and practitioners to compare their studies of how visitors (online and on-site) make use or would like to utilise multimedia.

Structure and rationale

The framework consists of two major sections: a focus on contextual information and the use of multimedia.

PART I

It should be completed by the institution. It provides all the contextual information that is important in order to interpret the user study properly, but which cannot be asked directly to the user.

PART II

It enquires about the actual usage of multimedia and the desired usage, in terms of both technology and content. It also addresses the timing issue: before the,

during and after the visit to the museum.

For online users, it enquires about the actual use of multimedia, the desired use and the relationship with a visit (is it likely that a visit will follow or had the visit already taken place?).

Collated demographic data is both general and specific regarding the usage of technology.

Research framework

What follows is neither a form for surveys nor a questionnaire. It is rather a template that will allow different institutions to share the results of their research effort about visitors, online users and audience in general.

The specific subject is the role of technology as a way to enhance real world visits but also as a communication channel on its own.

NOTE: in order to interpret and share information properly, the context for the user research must be provided. Therefore, in the following, there are C sections and U sections:

- C sections should be filled in by the institution, in order to provide the overall information needed for future user research.
- U sections should be filled in with user/visitor information; the actual way of collecting information can vary, ranging from on-site surveys, on-line surveys, and interviews.

PART I: context (to be completed by the institution)

C section 1: Context

- Institution: museum with a permanent collection, exhibition in a museum, archaeological site
- Cultural field: contemporary art, fine arts, archaeology, prints
- Occasion: specific exhibition, permanent collection, one-time activity, repetitive activities, festival
- Main target: schools, tourists, local people, returning visitors, experts

C section 2: Multimedia offered as support

- Website
 - Practical information (location, ticketing, opening hours)
 - Catalogue (list of works)
 - Introductory material
 - Commentary (cultural content)
 - Support for the visits (itineraries and so forth)
- Download (downloadable from the website for later usage)
 - Practical information (location, ticketing, opening hours)
 - Catalogue (list of works)
 - Introductory material
 - Commentary (cultural content)
 - Support for the visits (itineraries and so forth)
- Mobile (intended as a way to support the visit)
- Technology
 - Audio guide
 - Multimedia guide

- Telephone guide

- Content
 - Practical information (location, ticketing, opening hours)
 - Catalogue (list of works)
 - Introductory material
 - Commentary (cultural content)
 - Support for the visits (itineraries and so forth)

C section 3: Method for collecting visitors'/users' information

- Surveys
 - On-site, self-administered
 - On-site, assisted
 - Online
- Interviews
 - On-site, recorded
 - On-site with notes
 - Remote (via phone or Skype)

PART II: visitors and users

U Section 1: Multimedia usage

A: Visitors (people attending the event)

- BEFORE the visit
 - Which media has been used (internet, newspaper, word of mouth) to know (about the event, the museum)?
 - Which media was **used** for practical information?
 - Which devices?
 - How long?
 - What part of the content was useful,

- interesting, actually used?
 - Which media was **actually used** for accessing ‘cultural content’?
 - Which devices?
 - How long?
 - What part of the content was useful, interesting, actually used?
 - Would you like to have additional content?
 - What type of content?
 - On which media?
- DURING the visit
 - Which media has been **used** (billboard, labels, audio-guides, multimedia guides)
 - Which devices?
 - How long?
 - What part of the content was useful, interesting, actually used?
 - Would you have liked to have additional content?
 - What type of content?
 - On which media?
- AFTER the visit
 - How in-depth/additional information make your visit more interesting?
 - Which media is **used** (website, download, catalogue, etc.) to get additional information?
 - Which devices?
 - How long?
 - What part of the content would be more interesting?

B: Online users

- Which media has been used (internet, newspaper, word of mouth) to know about the event, the museum?
- Which media **has been** used for accessing ‘cultural content’?
 - Which devices?
 - How long?
 - What part of content was useful, interesting, actually used?
- From users to visitors
 - Has the visit already taken place? How was the usage of multimedia related to the visit?
 - Is a visit going to follow?
 - If YES:
 - Why?
 - Was multimedia influential (the online usage persuaded the user to pay a visit)? In what sense?
 - If NO:
 - Why?
 - Was multimedia not influential (in the sense that it persuaded the user NOT to pay a visit)? In what sense?

U SECTION 2: Profile (for all)

- Demographic data (for visitors and online users): age, provenance, expertise, cultural background, and nationality.
- Information about the visit (only for visitors): when, how it was organised.
- Information about online usage (for all): confidence with technology, preference about technology, typical usage of technology (last week, last month).

Annex 2: Consonanze: Dialogues across time. An example of User study

Report on the User Study (March 2012). An investigation of the exhibition *Consonanze: Dialogues across time*, held at the Museo Cantonale d'Arte and

Museo d'Arte, Lugano (Switzerland), from 16 October 2011 to 8 January 2012; www.consonanzelugano.ch. TEC-Lab (www.tec-lab.ch)



PART I: INTRODUCTION

The exhibition *Consonanze: Dialogues across time* proposes a fascinating trip across different periods of art history. With masterpieces from the permanent collections of the Museo Cantonale d'Arte and Museo d'Arte, Lugano, it presents works from the 15th century to contemporary art. Paintings, sculptures, drawings and photographs are organised following an original criterion, different from the standard timeline of most exhibitions.

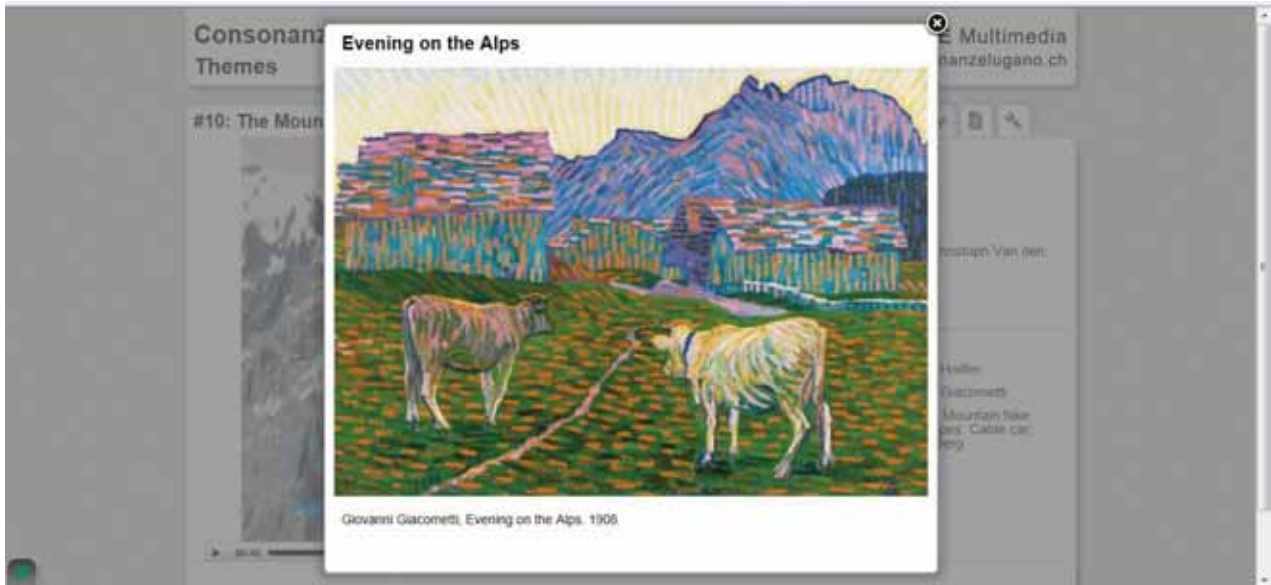
The visitor is provoked to grasp the essence of each

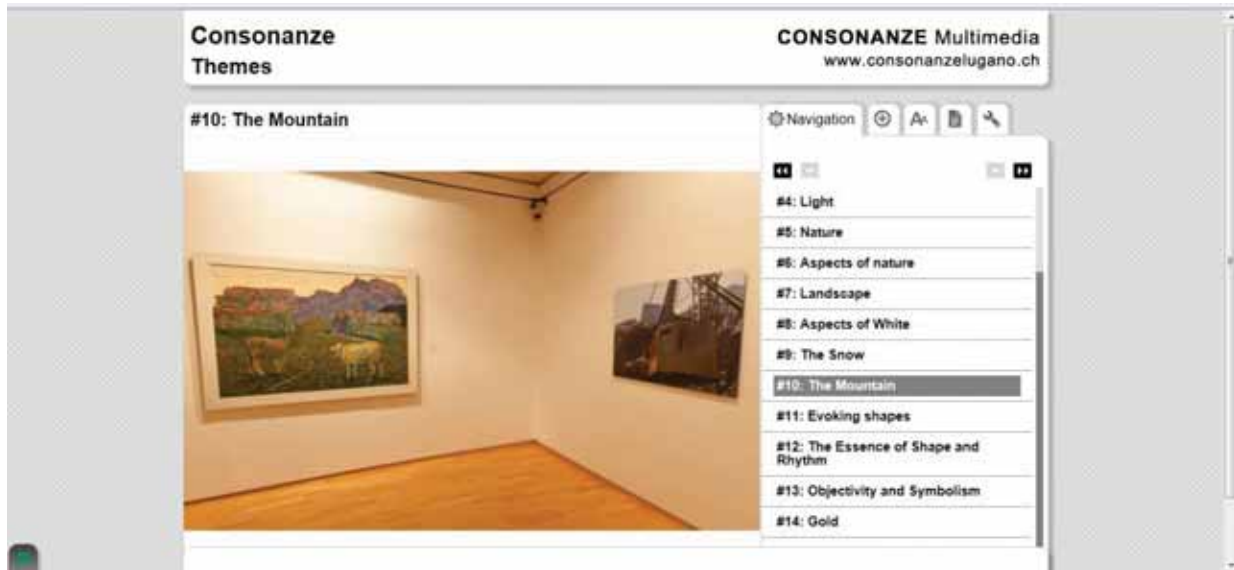
artwork by comparing it with pieces by different artists and from different periods, yet similar in their aim, subject, or formal elements.

This provides an unusual aesthetic experience for art lovers.

TEC-Lab a multidisciplinary laboratory of Università della Svizzera italiana at the Faculty of Communication Science, created the multimedia support for the exhibition and also conducted a visitor study.

Data was gathered at the museum, where the visitors were interviewed immediately after they had visited





the exhibition. The survey is based on a questionnaire completed by the researcher who interviewed the visitors. 120 questionnaires were collected.

The main subjects of the survey were how visitors had used the content before visiting the exhibition (in order to prepare themselves) and how (and when) they would have liked additional content. In addition, standard demographic data was collected.

This report synthesises the most relevant data, and all the details can be found in the last part of this annex

1) CONTEXT

a) Institution

- Museo d'Arte, Lugano, Switzerland
- Museo Cantonale d'Arte, Lugano, Switzerland

b) Cultural field

- Modern and contemporary art

c) Event

- Temporary exhibition

d) Main target

- Returning visitors
- Local visitors
- Tourists
- Friends of the Museums

e) Venue

- LOCAL MUSEUM: Museo d'Arte, Lugano, Switzerland
- REGIONAL MUSEUM: Museo Cantonale d'Arte, Lugano, Switzerland

f) Mission

- Showcase of works by the permanent collection

2) MULTIMEDIA SUPPORT

a) Website

- Content
 - Information on the exhibition (home page)
 - Press area
 - Practical information
 - Virtual tour
 - Multimedia section
 - Audioguide
 - Online survey
- Downloadable content:
 - multimedia section
 - audioguide
 - press and informational material

b) Mobile device (smart phone, tablet)

- technology:
 - Audioguide
 - Multimedia section
- Content:
 - Information on the exhibition (home page)

- Press area
- Practical information
- Virtual tour
- Multimedia section
- Audioguide
- Online survey

3) VISITORS' AND USERS' INFORMATION

a) Surveys

- On-site self administered
- On-site assisted
- Online

b) Interviews

- On-site on paper

PART II: VISITORS AND USERS

U SECTION 1: Multimedia usage

A: VISITORS (people attending the event)

- **BEFORE** the visit

Fig. 1 Media to inform visitors about the exhibition

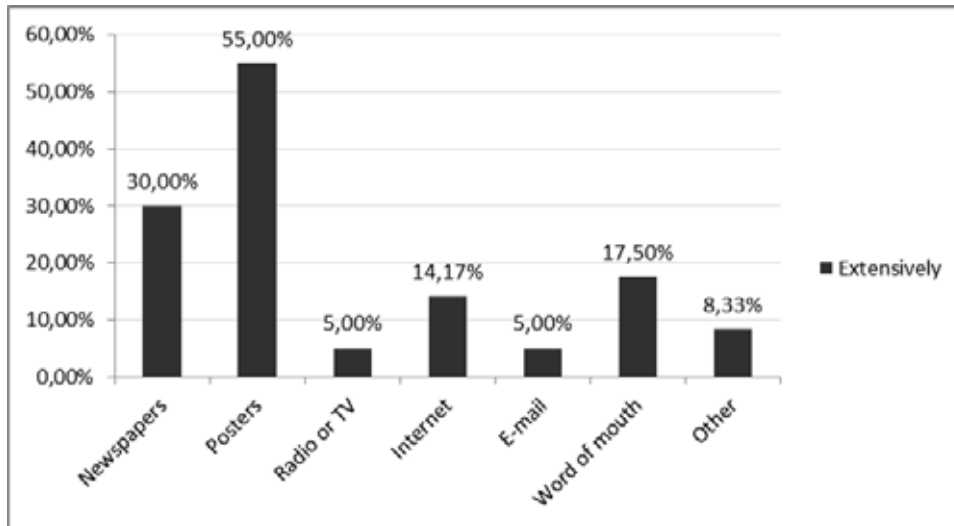


Fig. 2 Preparation before visiting the exhibition

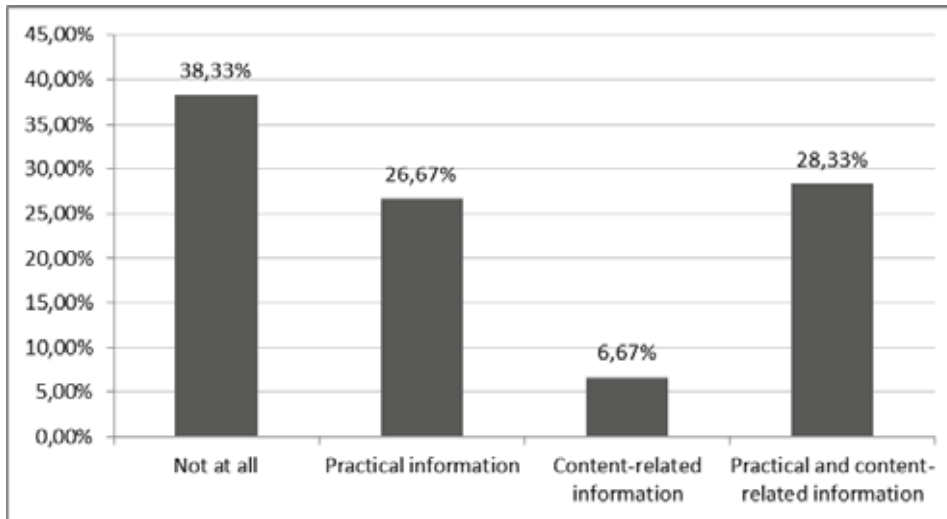


Fig. 3 Obtaining practical information

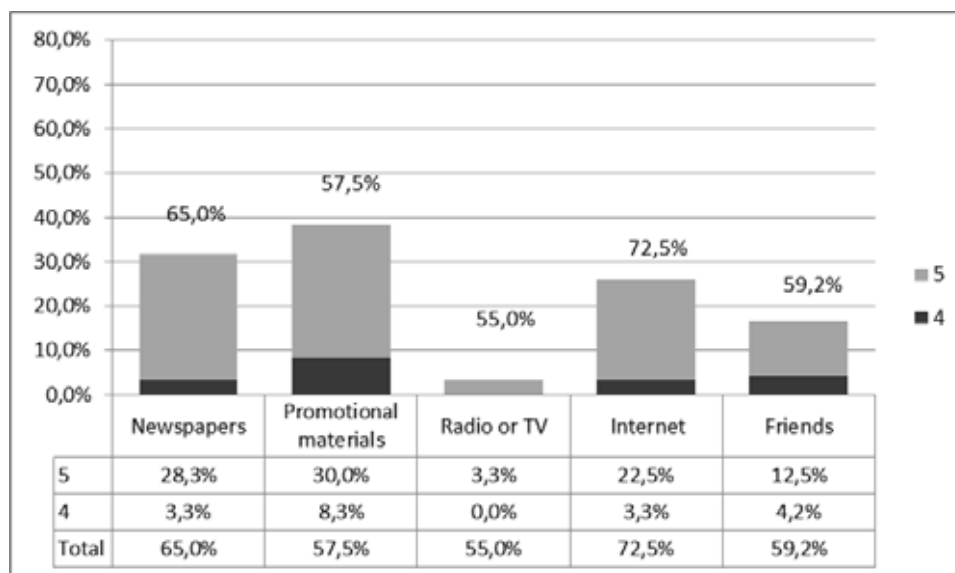
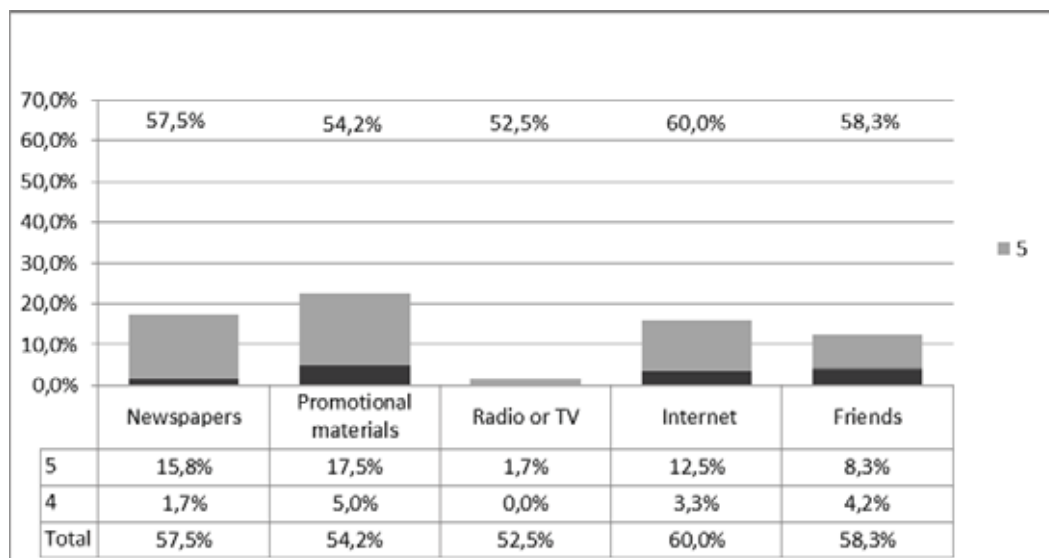


Fig. 4 Obtaining content-related information



- **DURING** the visit/ **AFTER** the visit

Fig.5 Interest for additional content

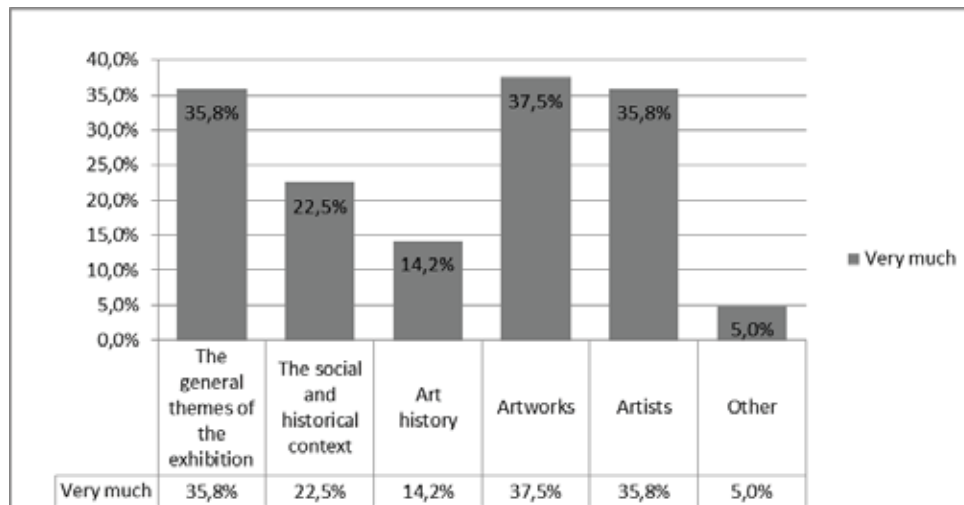


Fig.6 Media for additional content

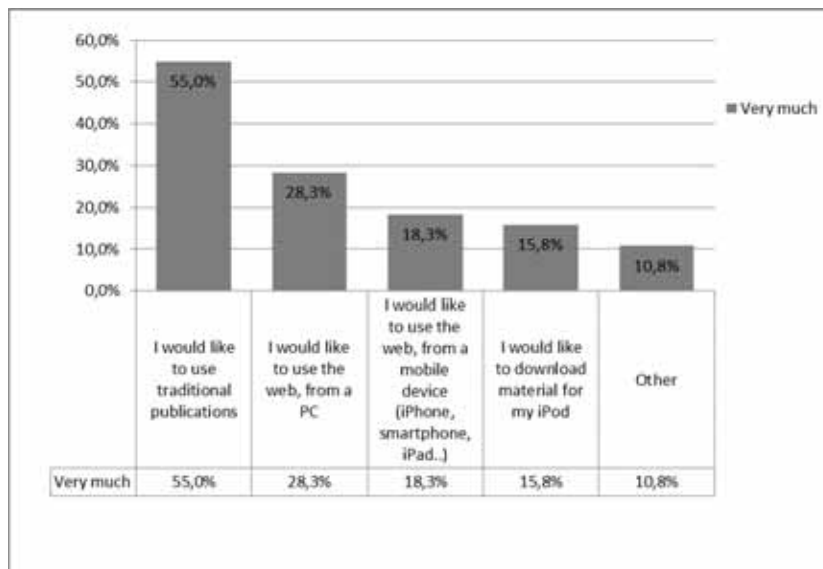


Fig. 7 Media versus Geography

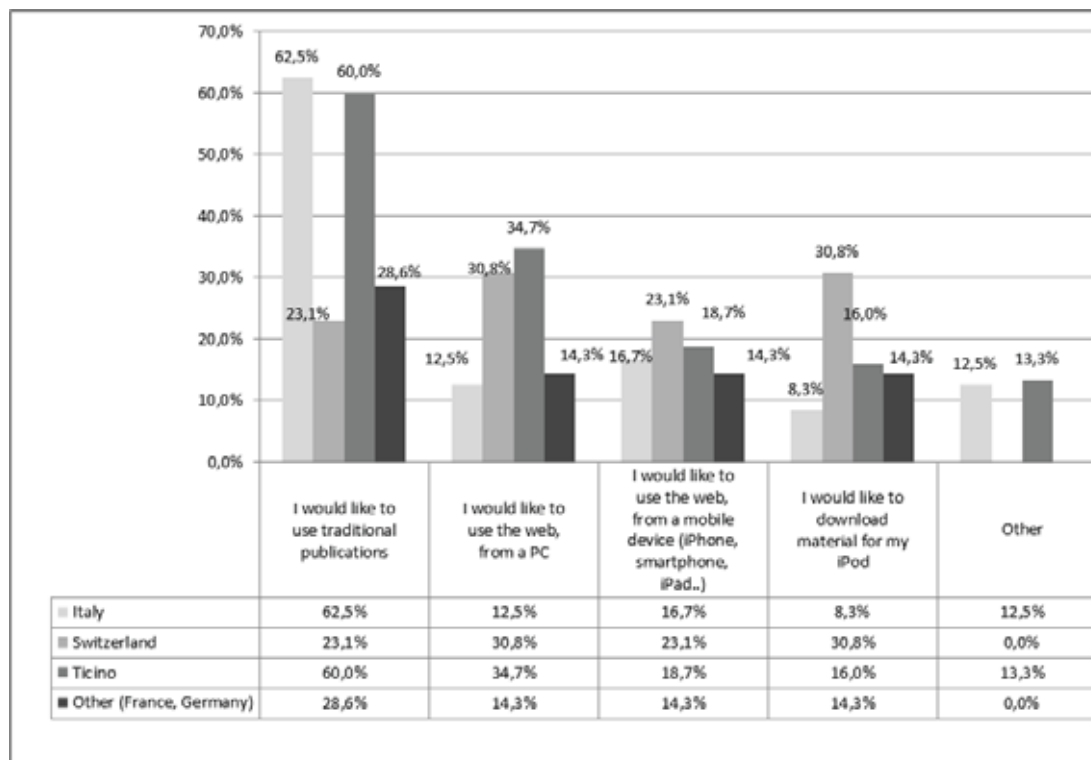


Fig. 8 Timing for additional content

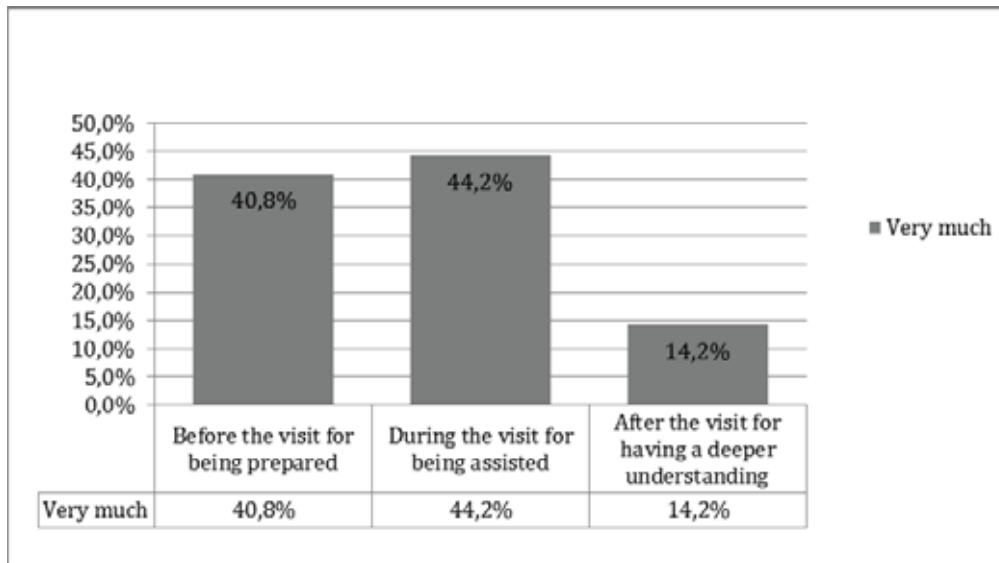
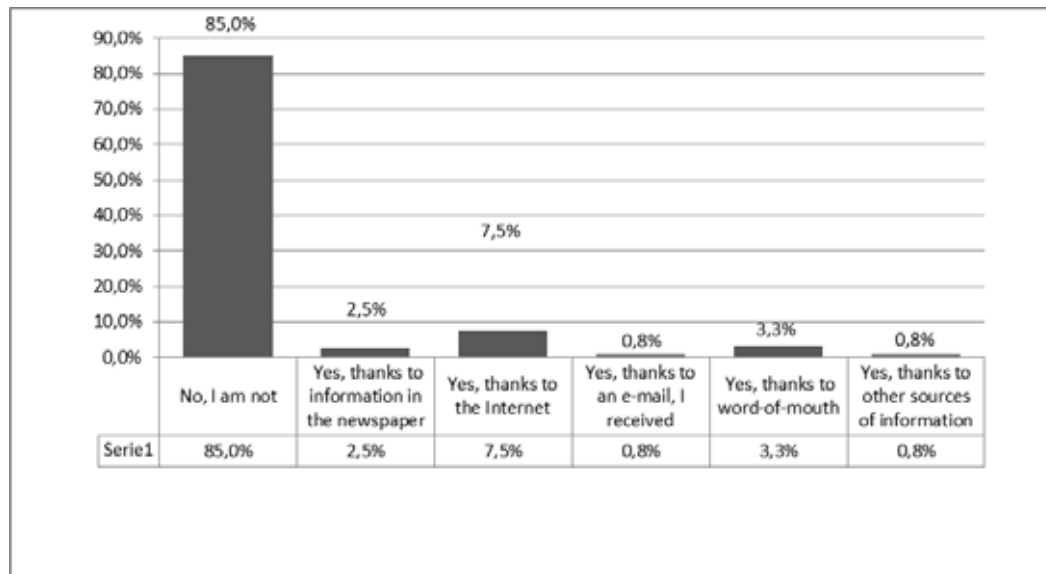


Fig. 9 Awareness of *CONSONANZE Multimedia*



- U SECTION 2: Profile

a) Demographic data

Fig. 10 Geography

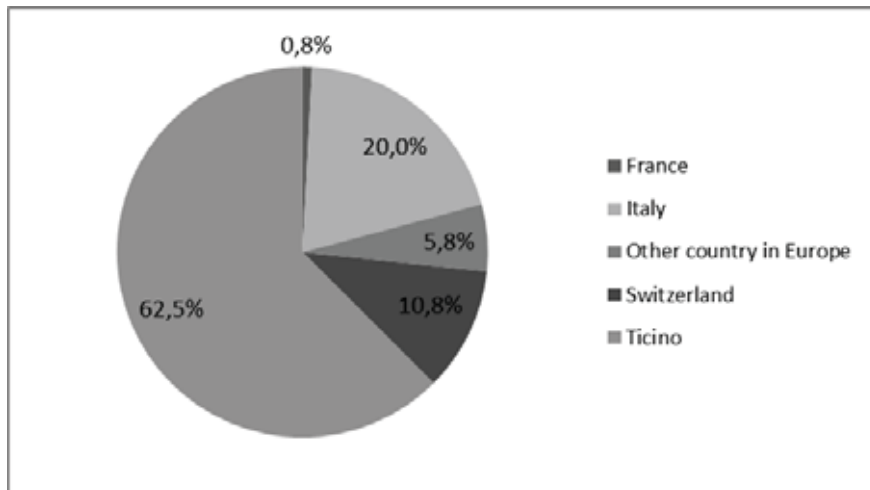


Fig. 11 Expertise: number of exhibitions visited in the previous 12 months

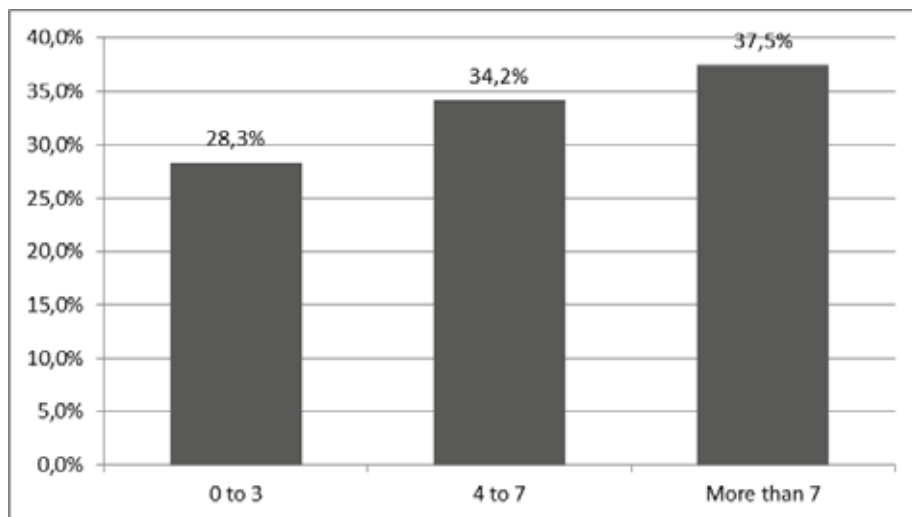


Fig. 12 Confidence with technology

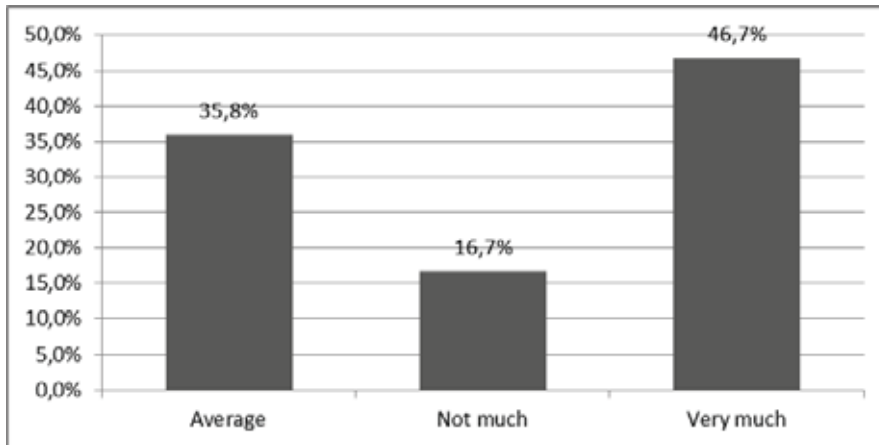


Fig. 13 Age

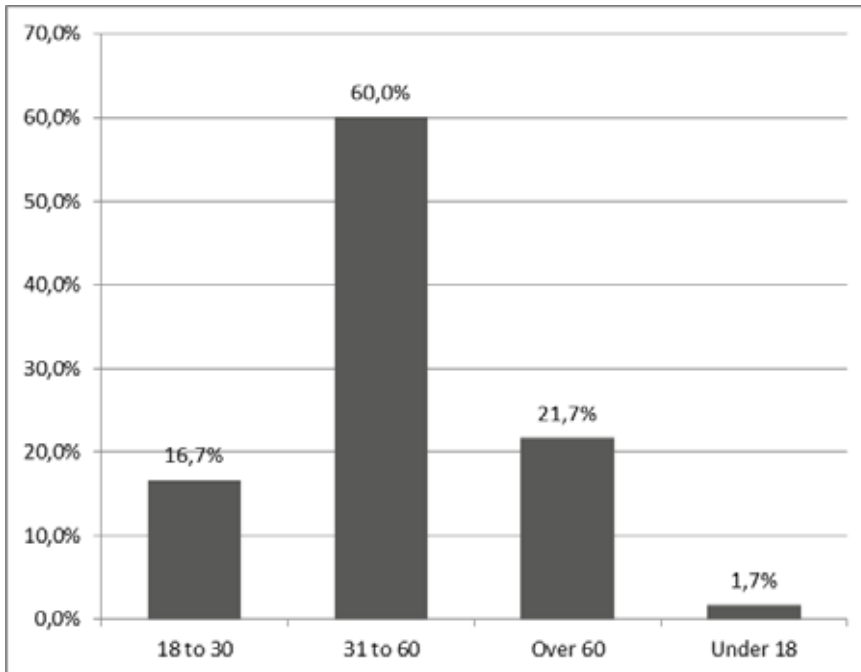


Fig. 14 Sex

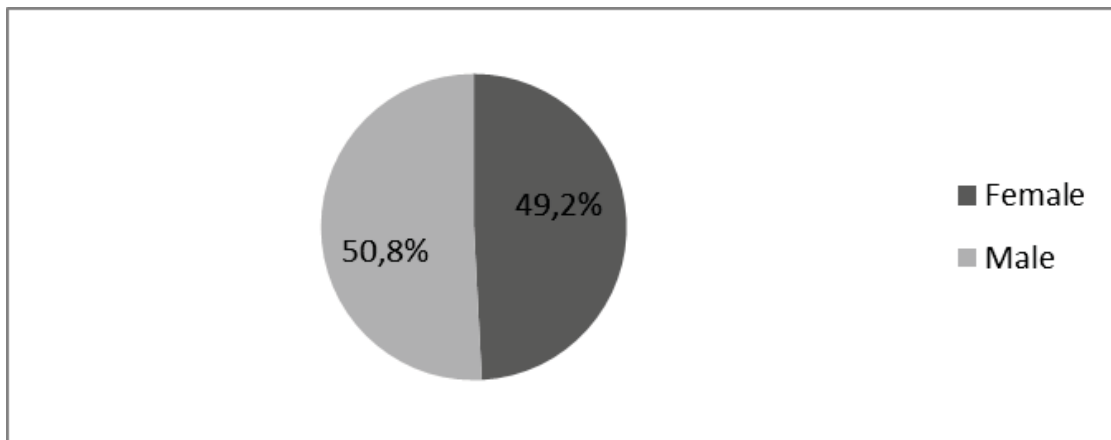
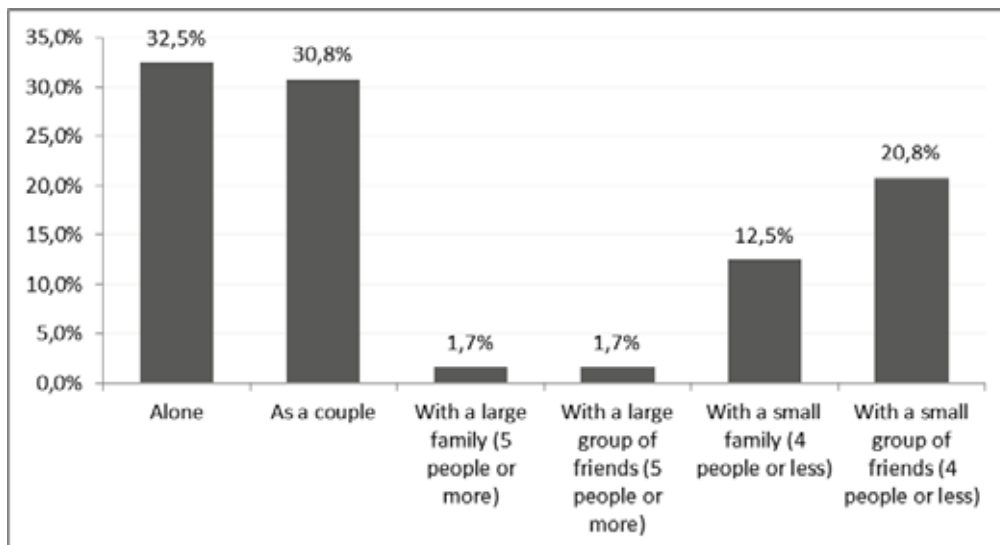


Fig.15 Visiting



Commentary:

Knowledge about the exhibition (Fig. 1)

Posters (in town), (local) newspapers and 'word of mouth' were the sources for knowing about the exhibition. This reinforces the hypothesis that a local community was mainly involved in dissemination information about the exhibition.

Preparation before the exhibition (Fig. 2)

Most people (38,3%) visited the exhibition with no advance preparation. Also most visitors sought practical information (location, hours, ticketing) before their visit.

Sources of information (Fig. 3-4)

Promotional material (available in town), newspapers and Internet were the main sources, both for practical information and for in-depth content.

Additional content (Fig. 5)

At least one third of visitors would like to have more information about Artworks, Artists and the Themes of the exhibition. Social context and Art history were less in demand.

Media for additional content (Fig. 6- 7)

Traditional media are the favorite, rather than technology, for getting additional content. This is contradictory with respect to previous user studies carried out in 2010 and 2011. There is also a contradiction with the self-declared 'confidence with technology' by visitors who participated in the survey. The geographic origin compared with media preference shows contradictory results (with visitors

from Switzerland, but not from Ticino, were more inclined to use technology).

Timing for additional content (Fig. 8).

Most of the visitors would like to have more content while visiting (and this understandable) or before visiting (which is contradictory with the fact that most visitors did not prepare themselves at all before the visit). Very few would like to have additional content after the visit; this again contradicts our previous user studies.

Awareness of multimedia support (Fig. 9)

Most visitors ignored the existence of the multimedia support (on the web, and for mobile devices). This is a clear consequence of the lack of adequate promotion (and also of the lack of interest for technology of this specific community of visitors).

Geography (Fig. 10)

With respect to other exhibitions (monitored before) with can notice a much higher proportion of local visitors (62.5% from the region and more than 73% from Switzerland). The largest foreign community was from Italy (20%).

Expertise (Fig. 11)

A large proportion of visitors (37.5%) was well qualified, having visited more than seven exhibitions in the previous year. This reinforces the hypothesis that most of the visitors came from the local community, which includes frequent visitors of the exhibitions held in Lugano.

Confidence with technology (Fig. 12)

A surprisingly high number of visitors (46,7%) a declared a strong confidence with technology; it is questionable of this self-evaluation, also in the light of the following answers.

Age-Sex (Fig. 13, 14)

Usual distribution, with no particular features.

Way of visiting (Fig. 15)

It is no surprise that most visitors were alone or as a couple. Small groups and small families were the next largest.

DETAILED DATA

How did you come to know about CONSONANZE?

	Not at all	A little	Extensively
Newspapers	32.50%	3.33%	30.00%
Posters	15.83%	8.33%	55.00%
Radio or TV	50.83%	3.33%	5.00%
Internet	40.83%	12.50%	14.17%
E-mail	57.50%	2.50%	5.00%
Word of mouth	40.83%	3.33%	17.50%
Other	47.50%	0.00%	8.33%

Did you prepare for your visit before the exhibition?

Not at all	Practical information	Content-related information	Practical and content-related information
38.33%	26.67%	6.67%	28.33%

Where did you acquire practical information? Please rate (1: not at all; 5: extensively)

	1	2	3	4	5	Total
Newspapers	28.3%	2.5%	2.5%	3.3%	28.3%	65.0%
Promotional materials	18.3%	0.0%	0.8%	8.3%	30.0%	57.5%
Radio or TV	47.5%	3.3%	0.8%	0.0%	3.3%	55.0%
Internet	38.3%	3.3%	5.0%	3.3%	22.5%	72.5%
Friends	40.8%	0.8%	0.8%	4.2%	12.5%	59.2%

Where did you acquire content-related information? Please rate (1: not at all; 5: extensively)

	1	2	3	4	5	Total
Newspapers	35.0%	4.2%	0.8%	1.7%	15.8%	57.5%
Promotional materials	30.0%	0.0%	1.7%	5.0%	17.5%	54.2%
Radio or TV	47.5%	2.5%	0.8%	0.0%	1.7%	52.5%
Internet	40.0%	2.5%	1.7%	3.3%	12.5%	60.0%
Friends	44.2%	0.8%	0.8%	4.2%	8.3%	58.3%

Would you like to have more contents about the following?

	Not at all	Maybe	Very much	Total
The general themes of the exhibition	28.3%	20.8%	35.8%	85.0%
The social and historical context	33.3%	20.0%	22.5%	75.8%
Art history	40.8%	21.7%	14.2%	76.7%
Artworks	29.2%	19.2%	37.5%	85.8%
Artists	28.3%	20.0%	35.8%	84.2%
Other	45.0%	5.0%	5.0%	55.0%

If you could have access to more content, how would you like that content delivered to you?

	Not at all	Maybe	Very much	Total
I would like to use traditional publications	10.0%	13.3%	55.0%	78.3%
I would like to use the web, from a PC	22.5%	17.5%	28.3%	68.3%
I would like to use the web, from a mobile device (iPhone, smartphone, iPad..)	27.5%	20.0%	18.3%	65.8%
I would like to download material for my iPod	28.3%	15.0%	15.8%	59.2%
Other	28.3%	5.8%	10.8%	45.0%

What is your preference for the timing?

	Not at all	Maybe	Very much	Total
Before the visit for being prepared	15.0%	15.8%	40.8%	71.7%
During the visit for being assisted	6.7%	25.0%	44.2%	75.8%
After the visit for having a deeper understanding	29.2%	15.8%	14.2%	59.2%

Are you aware of the existence of CONSONANZE Multimedia (www.consonanzelugano.ch)?

No, I am not	Yes, thanks to information in the newspaper	Yes, thanks to posters	Yes, thanks to radio or TV	Yes, thanks to the Internet	Yes, thanks to an e-mail, I received	Yes, thanks to word-of-mouth	Yes, thanks to other sources of information
85.0%	2.5%	0.0%	0.0%	7.5%	0.8%	3.3%	0.8%

Where do you live?

France	Italy	European country	Switzerland	Ticino
0.8%	20.0%	5.8%	10.8%	62.5%

During the last year, did you visit other exhibitions or museums?

0 to 3	4 to 7	More than 7
28.3%	34.2%	37.5%

How confident are you with technology?

Average	Not much	Very much
35.8%	16.7%	46.7%

How old are you?

Under 18	18 to 30	31 to 60	Over 60
1.7%	16.7%	60.0%	21.7%

Are you

Female	Male
49.2%	50.8%

How did you visit this exhibition?

Alone	As a couple	With a large family (5 people or more)	With a large group of friends (5 people or more)	With a small family (4 people or less)	With a small group of friends (4 people or less)
32.5%	30.8%	1.7%	1.7%	12.5%	20.8%

ANNEX 3: *Lascaux - Exposition internationale.* An example of User study

Report on the User study. An investigation concerning the exhibition *Lascaux- exposition internationale* held at Cap Sciences, Bordeaux (France), from 12 October 2012 to 6 January 2013. <http://www.lascaux-cap-sciences.net/>

PART I: INTRODUCTION

Lascaux – exposition internationale is an invitation to explore, experience and understand a major Palaeolithic art site. Monumental, interdisciplinary and interactive, it offers visitors a unique, instructive and emotionally intense experience.

Discovered by chance in 1940 by four teenagers, the Lascaux caves in southern France have inspired and awed anthropologists, pre-historians, scientists, and artists ever since. Beautifully subtle paintings and engravings of animals line the deep cave walls – sophisticated artwork created at the hands of our early ancestors nearly 20,000 years ago. In an effort to preserve their fragile existence the caves have remained closed indefinitely, denying us even a glimpse of their shadowed majesty.

Combining new imaging technologies with a partial replica of the cave along with explanatory areas, this exhibition shows and explains the various aspects of this iconic site of the history of humanity,

both from the point of view of prehistoric human's culture and from that of the site's conservation. On their visit to the world of Lascaux, visitors will be able to share in 70 years of scientific and artistic efforts to preserve the paintings in the Palaeolithic caves for generations to come, as well as learning how to decipher them and understand what motivated the Lascaux artists.

This exhibition was created by the General Council of Dordogne, with support provided by the Regional Council of Aquitaine, the French Ministry of Culture and Communication, and the European Union.

The main subjects of the survey included how visitors appreciated the use of multimedia (content, usability, playful aspect) and how and when they would have liked additional content. In addition, standard demographic data has been collected.

Data was gathered at the Science Centre, where the visitors were interviewed immediately after they visited the exhibition. The survey is based on a questionnaire completed by the educator who interviewed the visitor. 218 questionnaires have been collected.



1) CONTEXT

a). Institution

Cap Sciences is a science centre based in Bordeaux, Aquitaine. The Association was founded in 1995 on the initiative of the Ministry of Research and the Regional Council of Aquitaine. For over 15 years Cap Sciences has been producing and presenting educational and cultural programmes to develop awareness and understanding of science and technology.

This can be through on-site, travelling and online exhibitions and workshops, through events, visits and encounters, as well as through online multimedia reports and social media connections. Cap Sciences has developed an expertise in creating and managing resources and networks to support the dissemination of science and technology.

As a centre for scientific, technical and industrial

culture approved by the Ministry of Education and Research, Cap Sciences has always acted as a link between the world of research and the public by allowing the latter to discover and understand the themes, issues and the nature of scientific, technical and technological applications. Over the years, its connections have multiplied and widened. On a daily basis Cap Sciences connects not only with the general public and a vast number of school children, but also with a wide range of professionals from companies, industries, research centres, institutions and associations, from the scientific but also from the

cultural, political and business worlds.

Since 2011, Cap Sciences has been managing **the INMEDIATS project**. This unique project brings together 6 of the major French science centres to make science and technology more accessible to all and in particular to 15-25 year-olds. To that end, it experiments and develops new tools for science communication using the potential of digital new technologies (personalised content, multimedia platforms, serious games, living labs, fablabs, social media and so on).



b). Cultural field

Scientific culture, science and society issues.

c). Event

Temporary exhibition Lascaux – exposition internationale.

d). Main target

General audience, tourists, local visitors, schools.

e). Venue

Regional science centre.

f). Mission

Cap Sciences main mission is:

- the core **science centre** mission – Though its onsite and travelling exhibitions, workshops and events, Cap Sciences reaches around 250 000 people each year. It runs activities in its main building along the Garonne, but also in three ‘satellite’ sites: two in underprivileged suburbs being redeveloped and one specialising in archaeology. It is also more and more often called upon as a consultant and commissioned to manage external science culture projects.
- a mission at the heart of **professional networks** – As a regional science centre, Cap Sciences is involved in running, facilitating and promoting the regional network of organisations which contribute to disseminating scientific, technological and industrial culture. It promotes synergies and brings its expertise. Cap Sciences is involved in defining the political strategies linked with regional research and innovation and runs

the local creative industry network for the display of knowledge.

- a **research and development** mission – Cap Sciences develops collaborations and networks to set up and test technologies, and study their interactions with the audience. This activity is set up in a cluster-like structure bringing together research centres and companies with Cap Sciences, especially from the creative industry sector. This allows start-up companies to acquire experience and references, and brings innovation to the science communication field

Cap Sciences has also greatly developed its **editorial activity**, now mostly through digital media, working with a network of journalists to cover research and innovation and science culture events.

2) MULTIMEDIA SUPPORT

a). Website

- General information on the exhibition
- Practical information
- Information on the different modules of the exhibition

b). Modules of the exhibition

- Observation | The first modules of the exhibition retrace the history of the cave with the screening of an original **3D film** that thoroughly explores Lascaux, telling the story from its discovery to its closure in 1963, and presenting the adventure of making the copy (from Lascaux 2 to Lascaux 3).
 - Simulator of human presence [sensor – screen – video projector]

- Simulating the artist Monique Peyral at work reproducing the paintings [touch screen]
 - Reproduction of the paintings and 3D modelling [touchscreen – laser]
- Contemplation | Silent immersion in the darkness of a reconstructed nave (283 m²) among replicas of parts of the cave never before reproduced: the Nave and the Well Scene.
 - Reflection | Lascaux: Who, how and why? All these questions are dealt with using objects

for handling, **interactive educational play stations** and **interviews** with scholars. The 4 hyperrealist sculptures of Cro-Magnon, created by Elisabeth Daynès for the exhibition, show us ancestors who were astonishingly close to us. **Interactive tables** help the visitor interpret the works, and discover subtle engravings under the paintings.

- Testing interpretation scenarios [touch screen – 3D projections]





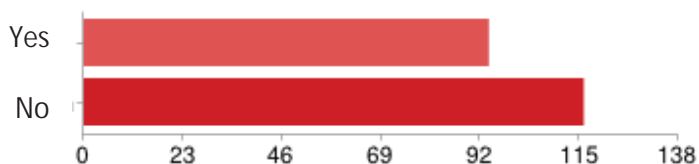
3) VISITOR AND USER INFORMATION

Surveys were administrated on-site.
Visitors were assisted by educators.

PART II: VISITORS AND USERS

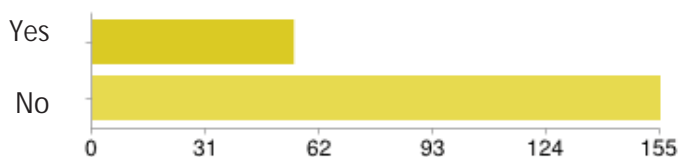
Graphs are highlighting the percentage of people who replied to the questions.

1. a. Did you prepare for your visit to the exhibition? – Practical information



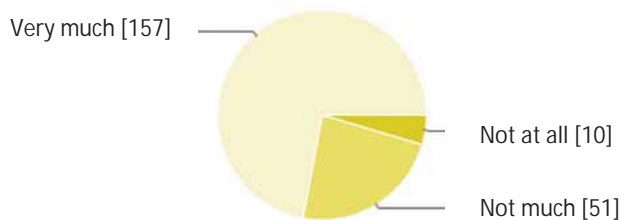
Yes	94	43%
No	116	53%

1. b. Did you prepare for your visit to the exhibition? – Content-related information



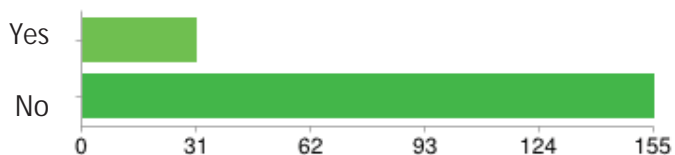
Yes	55	25%
No	155	71%

2. Did you find enough information in the exhibition?



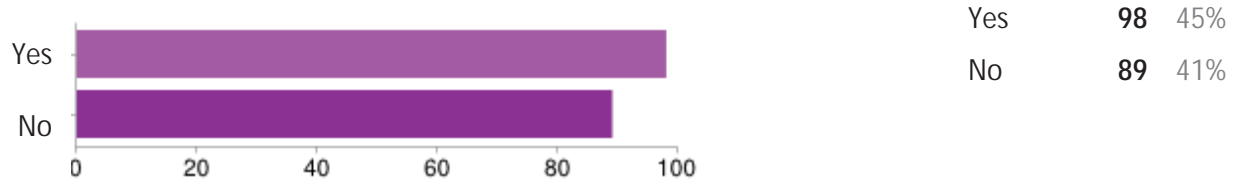
Not at all	10	5%
Not much	51	23%
Very much	157	72%

3. a. If you could have access to more information, how would you like this information delivered to you? – More texts

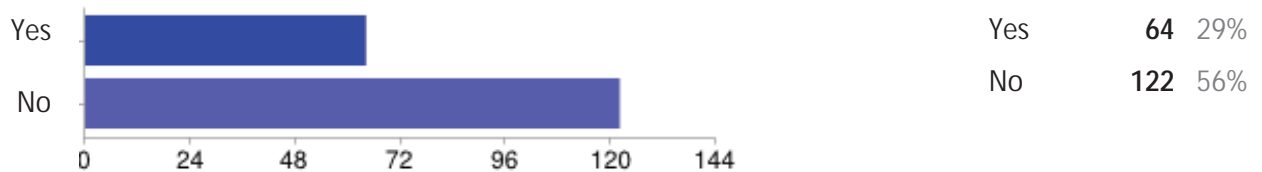


Yes	31	14%
No	155	71%

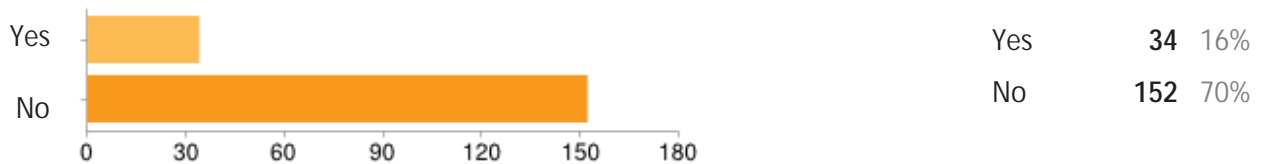
3. b. If you could have access to more information, how would you like this information delivered to you? – More interactions with mediators



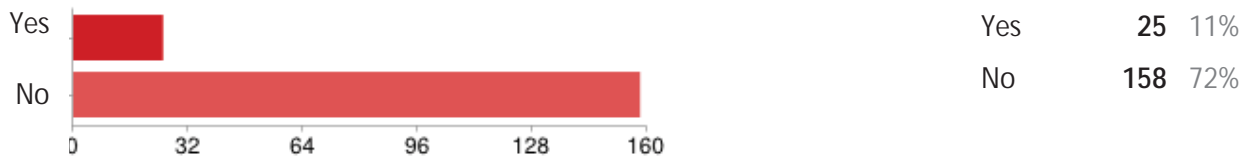
3. c. If you could have access to more information, how would you like this information delivered to you? – More multimedia



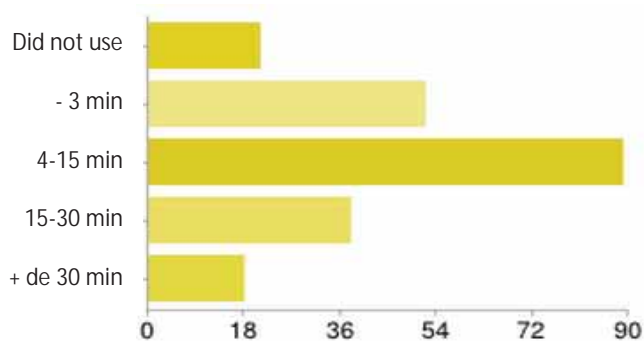
3. d. If you could have access to more information, how would you like this information delivered to you? – Via internet, on a smartphone, tablet



3. e. If you could have access to more information, how would you like this information delivered to you? – Via downloads

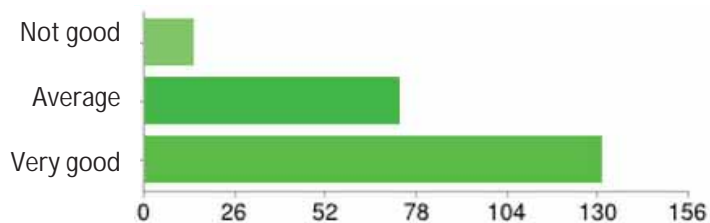


4. How long did you use the multimedia during your visit?



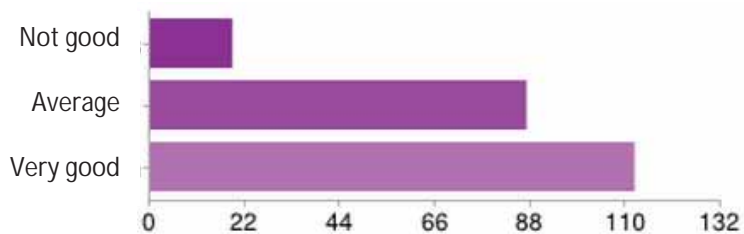
Did not use	21	10%
Less than 3 minutes	52	24%
Between 4 and 15 minutes	89	41%
Between 15 and 30 minutes	38	17%
More 30 minutes	18	8%

5. a. How did you find the multimedia? - Content



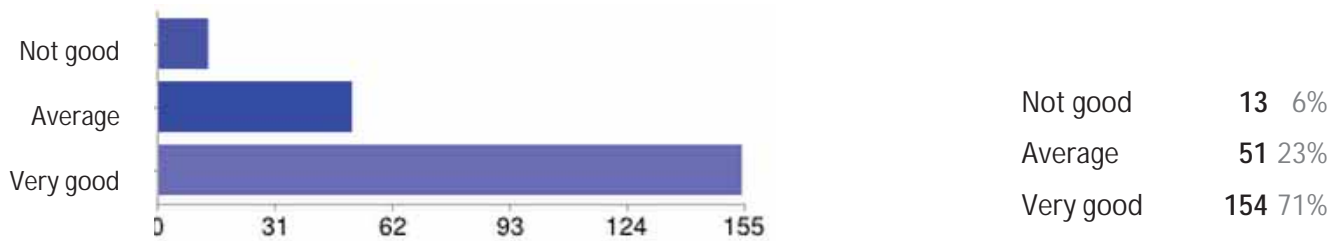
Not good	14	6%
Average	73	33%
Very good	131	60%

5. a. How did you find the multimedia? - Content

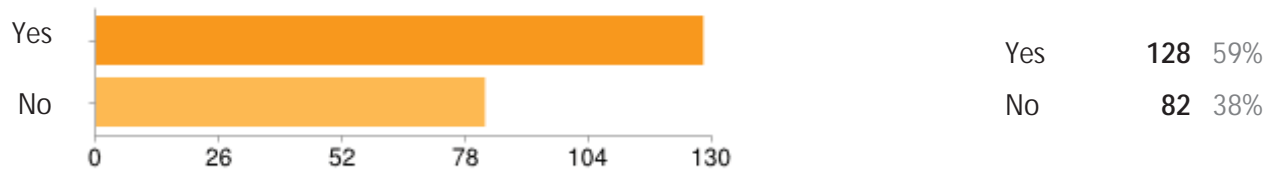


Not good	19	9%
Average	87	40%
Very good	112	51%

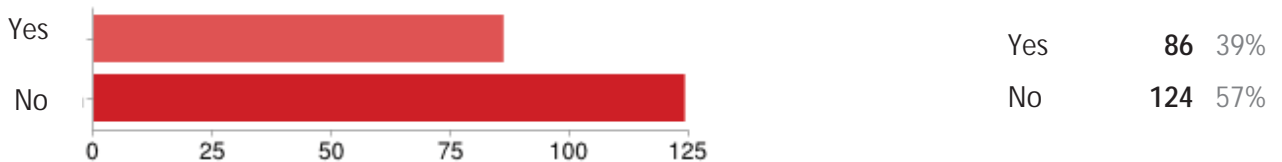
5. c. How did you find the multimedia? – FUN-ability



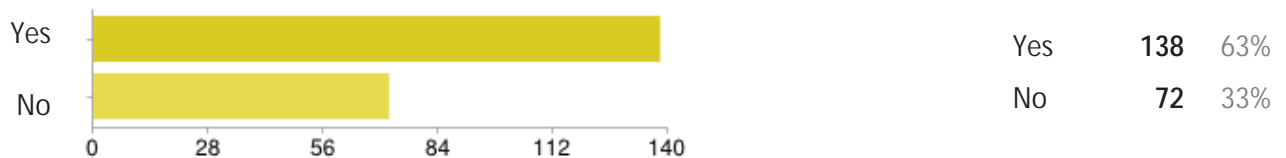
6. a. If you had the opportunity, how would you like to continue your visit online? – Access exhibition content on the internet



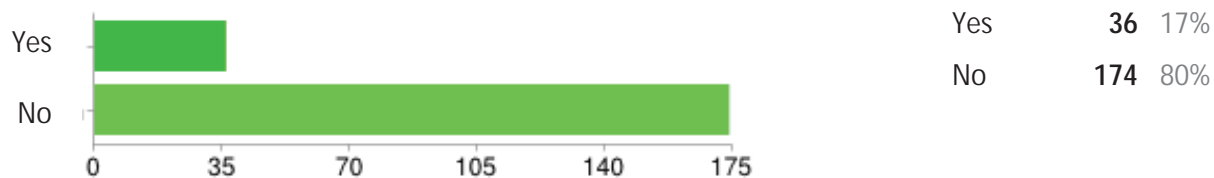
6. b. If you had the opportunity, how would you like to continue your visit online? – Download content



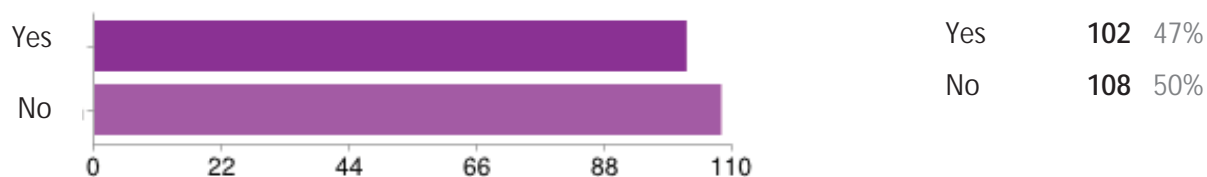
6. c. If you had the opportunity, how would you like to continue your visit online? – Discover new content



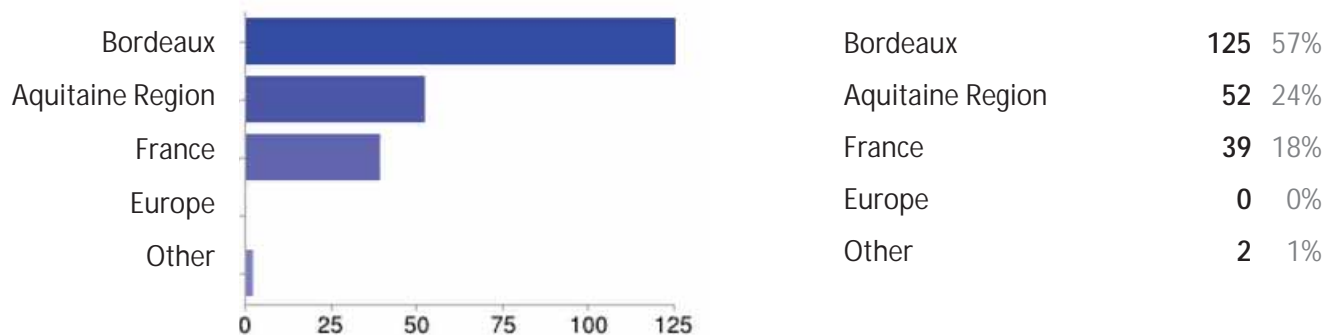
6. d. If you had the opportunity, how would you like to continue your visit online? – Share your experience with other users/visitors



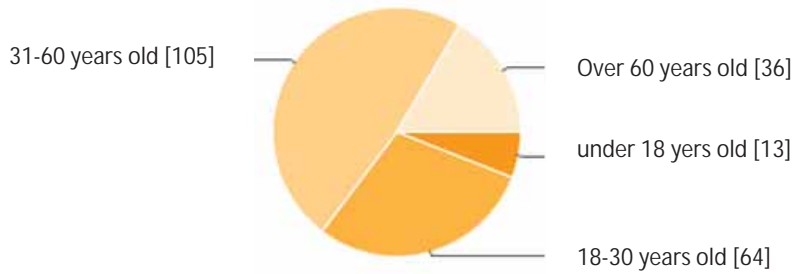
6. e. If you had the opportunity, how would you like to continue your visit online? – Ask questions to researchers and experts



7. Where do you live?

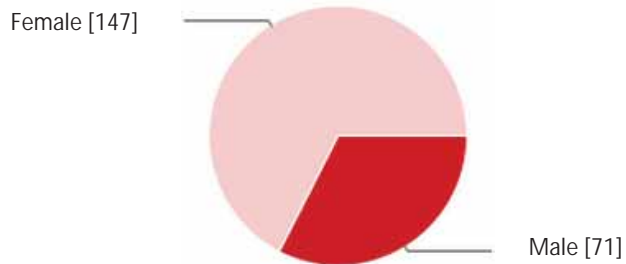


8. How old are you?



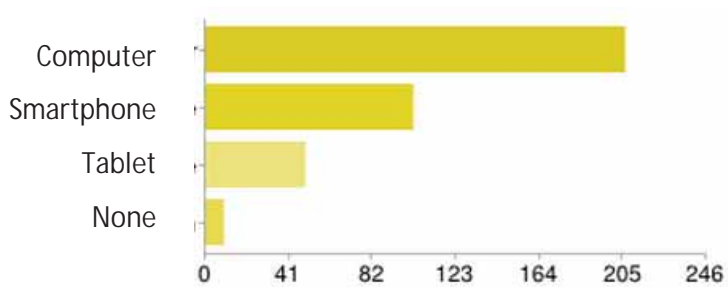
under 18 yers old	13	6%
18-30 years old	64	29%
31-60 years old	105	48%
over 60 years old	36	17%

9. Are you



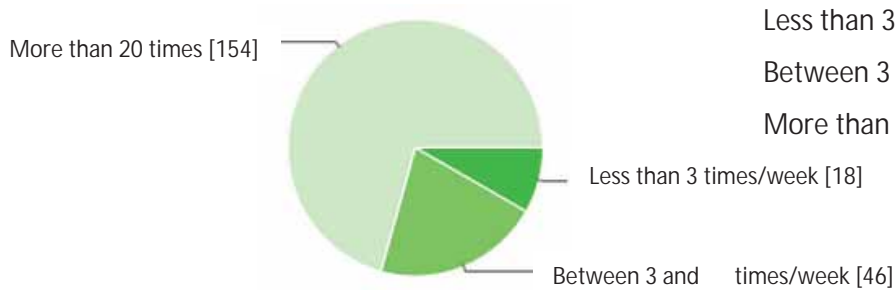
Male	71	33%
Female	147	67%

10. Do you use?



Computer	205	94%
Smartphone	102	47%
Tablet	49	22%
None	9	4%

11. How often do you use the internet?



Less than 3 times/week	18	8%
Between 3 and 19 times/week	46	21%
More than 20 times/week	154	71%

Commentary:

Preparation before the exhibition (Fig. 1a, b)

Most people (71%) admitted having visited the exhibition with no advance preparation (Fig. 1b). Practical information (location, hours, ticketing) was most popular.

Additional content (Fig. 3a, b, c)

The majority of visitors did not wish to receive additional content in form of text, whereas nearly half of the visitors would have liked to have more interaction with the mediators and guides.

On the contrary, additional multimedia content was less in demand.

Media for additional content (Fig. 3d, e)

Traditional media is favoured over technology when acquiring additional content. There is also a contradiction with the self-declared 'confidence with technology'.

Multimedia content, usability and FUN-ability

The majority of the visitors (60%) found the multimedia content interesting and easy to use and interact with (51%). Also, 71% of the visitors considered the multimedia content as fun and entertaining.

Timing for additional content (Fig. 6a, b, c, d, e).

Most of the visitors would like to continue the visit with online material as well as receive additional content after the visit. However, visitors are not interested in sharing comments and opinions with other visitors online. Nearly half the visitors (47%) are interested in asking further questions to researchers and experts online.

Geography (Fig. 7)

With respect to previous exhibitions (held at Cap Sciences) it is noted an increase number of visitors in general (10 times higher) and in particular a much higher proportion of non-local visitors (outside the Aquitaine region) (18%). As always, the largest community came from the city of Bordeaux (57%).

Confidence with technology (Fig. 10, 11)

A surprisingly high number of visitors (71%) declared a strong confidence with technology; the reliability of this self-evaluation is questionable, also in the light of following answers.

Age-Sex (Fig. 13, 14)

Usual distribution, with no particular feature. Most visitors are between age of 31 and 60 (48%) and female (67%).

ANNEX 4: A Template Survey for User Studies

Date _____ Time _____ Name _____

MUSEUM NAME/EXHIBITION TITLE

1. How did you know about this museum/ exhibition?

Not at all	A little	Extensively	
			Newspapers
			Posters
			Radio, TV
			Internet
			Word of mouth
			Other

Comment:

2. How did you come to this exhibition?
(you may check more than one entry)

	Alone
	As a couple
	With a small family (4 or less)
	With a large family (5 or more)
	With a small group of friends (4 or less)
	With a large group of friends (5 or more)

3. Have you **prepared** for this visit? (reading, searching the internet, etc..)

Not at all	A little	Extensively	
			Practical information (location, ticketing, timing, ..)
			Cultural information

Comment:.....

4. What **sources** have you used to prepare for the visit?

Not at all	A little	Extensively	
			Newspapers
			Material from the exhibition organisers
			Radio, TV
			Internet

Comment:.....

5. Would you like, now, to have **additional content** delivered to you?

(1: not at all 2: maybe 3: very much)

1	2	3	
			I would like more content

Comment:.....

6. What **additional content** would you like to have?

(1: not at all 2: maybe 3: very much)

1	2	3	
			About the theme of the exhibition
			About the permanent collection's themes
			The social and historical context
			Art history
			Artworks
			Artists
			Other

Comment:.....

7. How would you like to have **additional content** delivered to you?

(1: not at all 2: may be 3: very much)

1	2	3	
			I would like more content
			I would like to use traditional publications
			I would like to use the Web, from a PC
			I would like to use the Web, from a mobile device (iPhone, smart phone, iPad,...)
			I would like to download material for my iPod
			Other

Comment:.....

BACKGROUND AND DEMOGRAPHIC INFORMATION

1. Where do you live?

- Country of the museum
- Europe
- Other: _____

2. How old are you?

- > 18
- 18-30
- 31-60
- over 61

3. Are you...

- Female
- Male

4. During the last year, have you visited other exhibitions or museums?

- From 0 to 3
- From 4 to 7
- More than 7

5. Do you use....

- PC
- Smart phone
- Tablet
- Other
- None

6. How often did you connect to the Internet last week?

- < 3 times
- between 3 and 19 times
- > 20 times

7. For how long have you been connected to the Internet last week?

- < 10 minutes
- between 10 minutes and 1 hour
- > 1 hour

VARIABLE PART/Ex: use of multimedia

8. How did you access the multimedia?
(you may check more than one entry)

USED	Device for accessing the multimedia
	PC
	iPod (download)
	iPhone
	iPad
	Other mobile device

9. How long did you explore the multimedia?

Less than 3 minutes	Between 4 and 15 minutes	Between 15 and 30 minutes	More than 30 minutes

Comment:.....

10. Did you find the Multimedia interesting?
(1: not interesting at all 2: interesting 3: very interesting)

1	2	3

Comment:.....

11. How did you find the **quality of content** of the multimedia?
(1: poor 2: acceptable 3:very good)

1	2	3

Comment:.....

12. How do you rate the **technical quality** of the multimedia?
(1: poor 2: acceptable 3:very good)

1	2	3

Comment:.....

13. Do you think that the multimedia is **useful** for providing a better experience?
(1: not at all 2: may be 3:very much)

1	2	3	Usefulness of the multimedia
			Generating desire to actually visit the exhibition
			Better understanding of the exhibition

Comment:.....

Authors' biographical details

Michela Negrini is a PhD candidate at the University of Lugano (USI), Switzerland and her research activity focuses on communication, exploring the role media and technology play in contemporary art museums, in particular focusing on media art. She has participated at the INCCA Database for the Artists' Archives project, a network of professionals connected with the conservation of modern and contemporary art. She participated in a collaborative project with the Vrij Universiteit of Amsterdam and the Dutch Institute for Cultural Heritage, and also works on collaborative projects on contemporary art exhibitions, video and film productions, as well as film festivals in different countries.

Paolo Paolini is full Professor at the Politecnico di Milano. He graduated at the University of Milan in Physics, and has a Master and Ph.D. in Computer Science from the University of California at Los Angeles (UCLA). He has been active in different research fields, including data bases, hypertext, multimedia authoring, multimedia applications, requirement analysis, web design, accessibility (for disabled users), use of technology for Cultural Heritage and Education. Paolo Paolini is the author of more than 150 scientific papers in international journals or at international conferences. He has been scientific coordinator of more than 50 projects, at international and national levels. He is currently scientific coordinator of HOC-LAB, a multidisciplinary laboratory, active in several fields, including eCulture and eLearning.

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LEM - The Learning Museum Partners

**Institute for Cultural Heritage
of the Region Emilia-Romagna (IT)**

www.ibr.regione.emilia-romagna.it (Project coordinator)

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www.landesmuseum.at

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German Museums Association (DE)

www.museumbund.de

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www.dkmuseer.dk

**Hellenic Ministry of Education and Religious
Affairs, Culture and Sports**

Department of Exhibitions & Museum Research (GR)

www.yppo.gr

Finnish Museums Association (FI)

www.museoliitto.fi

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Office of State-owned Museum (ES)

www.mcu.es/museos/

Cap Sciences (FR)

www.cap-sciences.net

National Gallery of Ireland (IE)

www.nationalgallery.ie

Chester Beatty Library (IE)

www.cbl.ie

City of Turin

Cultural Heritage Department (IT)

www.comune.torino.it/museiscuola/

Amitié srl (IT)

www.amitie.it

Estate Academy of Rumsiskes Museum (LT)

www.rmda.lt

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www.lnmm.lv

European Museum Academy (NL)

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Sverresborg Trøndelag Folk Museum (NO)

www.sverresborg.no

National Network of Romanian Museums (RO)

www.muzee.org

Nordic Centre of Heritage Learning (SE)

www.nckultur.org

Glasgow Life / Glasgow Museums (UK)

www.glasgowmuseums.com

The Manchester Museum (UK)

www.museum.manchester.ac.uk

**National Institute of Adult Continuing
Education (UK)**

www.niace.org.uk

University of Denver

Museum of Anthropology (US)

www.du.edu/anthro/museum.htm

Associate Partners are listed on

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