SEVENTH FRAMEWORK PROGRAMME

FP7-ICT-2011-1.5 Networked Media and Search Systems
b) End-to-end Immersive and Interactive Media Technologies

Specific Targeted Research Project

VENTURI
(FP7-288238)

immersiVe ENhancemenT of User-worlD Interactions

[D7.2.2 Dissemination and Exploitation Strategy M12]

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## Summary of the document

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Executive Summary

Scope
This document presents the dissemination and exploitation strategy of the VENTURI project and reviews all dissemination activities carried out during the first 12 months of the project.

Audience
This deliverable is public.

Summary
In this report, the consortium presents its activities and overall strategy for making the VENTURI project and technologies visible to a wider audience of relevant users, as well as its plans to exploit the project results on a business level. This report will be updated and the strategy refined as needed by the subsequent reports D7.2.3-D7.2.4, delivered in M24 and M36.

Structure
This deliverable is structured into five sections. Section 1 overviews the topics of this document. Section 2 presents a market view and the results of a stakeholder analysis, with the objective to characterize the ecosystem around VENTURI and to identify the user groups relevant to the project’s success. Based on this analysis (detailed in Section 3), a communication strategy with a variety of dissemination activities has been developed to ensure all relevant groups are reached in an appropriate manner. All dissemination activities completed during the reporting period are also reviewed in this section. Section 4 elaborates on the partners’ plans to further exploit the project results for their businesses, continuing beyond VENTURI’s funding span. Section 5 summarizes this report and draws the conclusions.
1. Introduction

In this report, the consortium presents its strategy on dissemination and exploitation. We strive to make VENTURI and the technologies developed during the lifetime of the project visible to a wide audience of relevant users. This deliverable therefore overviews the current market and identifies the relevant target user groups. A dissemination strategy is presented and the activities carried out so far are reviewed. Furthermore, this document describes how the partners plan to exploit the project results on a business level. As the project evolves and possibly new technology and market trends arise, the strategy detailed in this document will be reviewed and refined as needed in the subsequent reports D7.2.3 - D7.2.4, delivered in M24 and M36.

The VENTURI project

VENTURI aims to create a pervasive Augmented Reality (AR) paradigm by exploiting, optimizing and extending current and next generation mobile platforms and by verifying platform and QoE performance through life-enriching use-cases and applications to ensure device-to-user continuity.

VENTURI will deliver an extended-content platform that will allow developers to realise new AR applications, leveraging on the project’s research, resulting in innovative and superior paradigms, aimed at improving quality of service and experience. The subsequent tools and services will be offered as a coherent integrated environment as well as stand-alone items.

Dissemination and Exploitation Strategy

The dissemination and exploitation plans are prepared from the beginning of the project, so that developments (and especially prototypes’ features) are prioritized based on dissemination and exploitation potential and opportunities. For this, a market overview and a stakeholder analysis with respect to the VENTURI project were elaborated (see Section 2). Based on this, the Consortium has defined dissemination activities (Section 3) and an exploitation strategy (Section 4), which will both be reviewed at the end of each project-year and updated according to the project’s progress and, if applicable, with other information such as new market and technological developments outside of the project.
2. Market view and stakeholder analysis

Market view
According to Gartner Inc., Augmented Reality (AR) is one of the Top 10 strategic IT technologies of our time [1] and according to a market study from ABI Research from 2011 [2], revenues from mobile AR are expected to grow from 21 million USD in 2010 to 3 billion USD in 2016. The main drivers are said to be opportunistic application developers, marketers/retailers (AR as part of the marketing mix including multi-media marketing), and Internet service providers (real-time search, internet of things). On the other side of the spectrum, consumer adoption appears to be mainly driven by solid use cases, according to the study. The AR market size in the very near future is therefore potentially quite large and of high commercial interest.

Currently, there are different kinds of technical players active in mobile AR. One key group of innovators are venture capitalists or privately funded start-up companies focused on the creation of AR solutions. VENTURI partner metaio is one of the largest companies in this group, operating as a technology provider for the AR industry (i.e. mobile application developers and content creators), and also in the end user market: *junaio*, the AR browser developed by metaio for the popular Android and iOS platforms, is highly successful and has already been downloaded several million times. Other companies very active in the field include: Total Immersion (which only recently started to offer mobile solutions); String (offering mobile solutions based on marker-tracking); Layar (offering a mobile AR browser); and Wikitude (offering an AR browser).

The second kind of market participants are large corporations that have started offering AR as part of their overall platform and product offerings. This group can be split into two classes: end-user product manufacturers, and silicon and platform vendors. Within the first class, Sony for example, world leader in portable gaming and a partner in VENTURI, has just recently launched the PlayStation Vita console with mobile AR as one of its key focus areas. Within the second class, Qualcomm, known as a big player in mobile processors and chipsets, is complementing their hardware solutions with AR technology as well; currently it is the largest company to provide its own AR SDK called *Vuforia*. ST and STE, two partners in VENTURI, have the strong commitment to enrich their product offering with AR-enabled silicon chips and platform solutions. While Total Immersion and Qualcomm are pursuing different strategies (full service provider versus platform leadership), metaio is, to date, the only provider that serves the market with all types of AR offerings on different mobile platforms.

A third important group are players participating indirectly in the AR market. Many of the large mobile platform creators, such as Apple and Samsung, conduct AR related research to identify future trends and investigate the potential of their own platforms. Currently, however, most of them do not offer their own AR solutions, but rather provide third party application developers and technology providers AR-capable platforms and infrastructure for implementing compelling AR use cases. Google is a special market participant in this context: they are currently not perceived as a direct key player in mobile AR, but they have successfully established important base technologies in this field, including the Android OS for mobile devices and various data services for implementing location-aware use cases (e.g. Google Maps, Places, Geo Location, etc.). Google is also a very active player in standardization and the research community, working on both hardware and software in numerous AR-related areas (e.g. human-machine interaction, computer vision, and visualization). Google could therefore decide at any time to become another direct participant in the AR market and would be successful quite quickly.

At the time of writing, the AR market is evolving rapidly. Given the growing availability of AR-capable mobile hardware, the strategic decisions taken by large players in this field, and the gain in popularity of AR services by end users, the commercial AR market can be expected to innovate and grow considerably within the next few years.
years. The VENTURI consortium will therefore continuously monitor the current market situation in order to identify new technologies, market trends, and players as they arise.

**Stakeholder analysis with respect to the VENTURI project**

Interest in AR technology is tremendous,吸引着来自各个领域的玩家：它需要许多不同的参与者来完成AR技术链并带来一个新的AR情景。这反映在VENTURI联盟的组成中，该联盟结合了技术专长，AR技术提供者，移动应用程序开发人员，以及移动设备和芯片制造商。随着非技术玩家的加入，我们已经确定了4大类利益相关者，具体到VENTURI，详细如下。

**Research** institutions (like Fondazione Bruno Kessler, Fraunhofer HHI, or INRIA) and research departments of commercial AR technology providers (like metaio's) develop algorithms and technologies for implementing AR core functionalities, including e.g.: tracking of the device relative to its surrounding, 3D reconstruction for content, and classification of the environment for context awareness. VENTURI provides them with a stimulating environment for investigating new methods based on upcoming hardware and realistic data, for exchanging first-hand knowledge with industry partners, and for disseminating their achievements to the scientific community, industry and end users in the form of the yearly VENTURI prototypes.

**Industrial** stakeholders represent the most diverse and closely interlinked group relevant to VENTURI. Commercial AR technology providers (such as metaio) exploit new research results to implement the tools needed for realizing compelling AR scenarios: including software for content creation, platforms for content delivery, and AR frameworks running on end user devices. To ensure interoperability and performance, technology providers (e.g. STMicroelectronics and ST-Ericsson) that develop the underlying hardware platform: ranging from specialized chipsets, to fully integrated platforms (including Imaging processing, CPU, GPU, other HW accelerators), need to work together closely with end-user product manufacturers (e.g. Sony). They also ensure interoperability with the operating system and network service providers, by delivering drivers and tools that expose the hardware functionality and provide integration. The content providers and mobile application developers (such as e-Diam) finally utilize the software tools and development kits provided by both technology providers and device manufacturers to create AR media and implement scenarios as interactive AR applications on the mobile hardware. For the group of industrial stakeholders, VENTURI provides a unique platform to push forward AR technology on an inter-disciplinary level, with the opportunity to work with all players in the AR technology chain on both higher level concepts and technical details. Technology providers and end-user product manufacturers may benefit directly from the results of this work, allowing them to deliver better hardware and software products to mobile application developers, content creators, and end users. VENTURI also targets content providers, both from non-profit areas (e.g. cultural institutions) and commercial (e.g. service providers or the print industry), aiming to push the VENTURI platform as a means of reaching their customers through innovative services.

**End Users / Consumers**, i.e. people using AR-enabled mobile devices and AR applications, are considered as another important stakeholder group for the VENTURI project. Daily adoption of AR technology is however still comparably low, thus awareness must be fostered. To reach them, VENTURI must meet user requirements and needs, to ensure long term success and solid exploitation. Hence VENTURI strives to produce yearly prototypes that will illustrate the power of the platform and its usefulness. Different communication channels will be exploited to disseminate these results to a wide audience of end users, including various media channels and at end-user fairs.
Finally, there is the group of **Standard Committees and Policy Makers**. Standardization in the fields addressed by the VENTURI project is at different stages, ranging from technical topics to legal regulations. Part of the technical work in VENTURI can be founded on widely adopted standards (e.g. for graphics visualization and networking), which will ease integration and interoperability. Some other technical works are related to just-emerging standard, such as Computer Vision acceleration. With new AR usage scenarios just evolving on the mobile platforms, standardization at higher conceptual levels (such as AR mark-up languages) is however just at the beginning. Concerning legal regulations, questions surrounding data security and privacy, network neutrality, and intellectual property arise daily in the news. As these issues become relevant for an ever growing number of end users, the need for cross-European and international standardization becomes apparent. The results delivered by the VENTURI project may give valuable input to the standardization and policy bodies, to help determine future research needs or to identify the need for regulation.

These four categories of users are the major stakeholders identified as being relevant for the VENTURI project and are summarized in the table below. VENTURI aims to deliver enabling technologies specifically focussed on the interests of the first three groups, i.e. researchers, the industry ecosystem, and end-users. Both dissemination and exploitation activities will thus need to take into account their different interests, which will be detailed in the following Sections. Standards committees and policy makers need to be targeted separately with the focus more on the conceptual level rather than the technical one. A brief overview of such a strategy will be given at the end of the next section and is detailed in the yearly deliverables about contribution to standards, D7.4.1-3.
### TABLE 1: SUMMARY OF THE STAKEHOLDER GROUPS RELEVANT TO VENTURI.

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Examples</th>
<th>Why is VENTURI of interest to them?</th>
<th>Relevance for project success?</th>
<th>How to reach them?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td>Research institutes, universities</td>
<td>Exchange of research results, algorithms, and test data in order to push innovation forward.</td>
<td>The innovation rate in this field is high, so exchange of knowledge and engagement in the research community is considered important.</td>
<td>Conferences, workshops, publications, Networked Media and Search Systems community activities</td>
</tr>
<tr>
<td><strong>Industry</strong></td>
<td>Technology provider, end-user product manufacturer, developers, content providers</td>
<td>Early knowledge about future services and technologies in order to build business strategies surrounding the use of an immersive AR platform.</td>
<td>Allows early access to next generation mobile platform technologies, sharing of knowledge, and a better understanding of the requirements and current limitations in the various areas.</td>
<td>Industrial fairs, the partners’ business networks, developer conferences, technical blogs</td>
</tr>
<tr>
<td><strong>End-user / Consumer</strong></td>
<td>People that appreciate the immersive presentations of context information (e.g. tourists), players of AR games, and user groups with the need for special assistance (e.g. visually impaired people)</td>
<td>Novel possibilities to discover the world, to experience a new category of entertainment, and to be more autonomous and self-assured in situations that require assistance.</td>
<td>Keeping end-user expectations, usability requirements, specific needs, and technological backgrounds in focus is critical to ensure the long term exploitation potential of the project technologies.</td>
<td>Project website, Internet and classical media / press, digital social networks, end-user fairs</td>
</tr>
<tr>
<td><strong>Standards Committees / Policy Makers</strong></td>
<td>European commission, standards bodies such as MPEG CVDS, W3C, MPEG for AR (now in discussion), Khronos Vision.</td>
<td>Determine needs for future research, standardization, and regulation.</td>
<td>The committees provide a platform to promote project technologies and identify areas that require further standardization and regulation; Adoption of available standards eases interoperability and integration of existing technologies.</td>
<td>Engagement in standards bodies, activities of the EC and the Networked Media and Search Systems community</td>
</tr>
</tbody>
</table>

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Key messages of the project

Despite the diversity and technical complexity of the fields covered within VENTURI, people from outside the project should be able to grasp at a glance what VENTURI is about. Therefore, the consortium has developed three key messages that pinpoint the project framework and its mission:

<table>
<thead>
<tr>
<th>VENTURI is</th>
<th>a collaborative European project targeting the shortcomings of current Augmented Reality design; bringing together the forces of mobile platform manufacturers, technology providers, content creators, and researchers in the field.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VENTURI aims to</td>
<td>place engaging, innovative and useful mixed reality experiences into the hands of ordinary people, by co-evolving next generation AR platforms, algorithms and interaction design.</td>
</tr>
<tr>
<td>VENTURI plans to</td>
<td>create a seamless and optimal user experience through a thorough analysis and evolution of the AR technology chain, spanning device hardware capabilities to user satisfaction.</td>
</tr>
</tbody>
</table>

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3. Dissemination plan and activities

As detailed in the stakeholder analysis in Section 2, VENTURI aims to deliver enabling technologies specifically focussed on the interests of the following user categories:

1. Consumer-level end-users,
2. Industry stakeholders prospering around mobile AR technology and content generation,
3. Research departments and institutions in related fields.

Dissemination in VENTURI will target all these interest groups, taking into account their distinct expectations and level of expertise with mobile AR technology, as well as their reachability by means of different communication channels. The dissemination strategy detailed below includes activities at both the local and global level, to ensure the high visibility of the VENTURI project both nationally and internationally.

Basic communication material
Getting to know the VENTURI project and its consortium should be effortless for the general-public, experts from the various technical fields, and the media/press alike.

Therefore a package of basic communication material has been prepared, and made available within the first six months for download from the project website (https://venturi.fbk.eu, see also below). It includes PowerPoint slideshows (which present the project’s goals and the consortium at different levels of detail), an introduction video and footage for broadcasting on TV and the web, as well as supporting material (including the VENTURI logo and a textual description of the project). The communication material has been continuously extended within the first project year, and now additionally includes a technical whitepaper describing VENTURI plans and technical achievements so far, as well as a printable project flyer to be distributed at upcoming exhibitions and workshops.

As the project develops, the publicity material will be updated and amended regularly to highlight the latest project results (such as the yearly prototypes), aiming to generate media coverage and to encourage a consistent presentation of the project to the public.

![Presentation Slides and Flyers](https://venturi.fbk.eu)

**Figure 1:** Presentation slides and flyers as part of the basic communication material.

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During the first project year, the consortium has been actively promoting the start of the project and spreading the VENTURI vision at various occasions detailed in the sections below. Press releases in multiple languages were issued and received coverage from both printed media and the online press. These articles, as well as any future media receptions, will be linked to in the ‘News’ Section of the website and are summarized below:

- Press release about the VENTURI project, issued by FBK on Nov. 9th 2011 [3]
- News release about the project, published by the Alpha Galileo Foundation on Nov. 9th 2011 [4]
- Print article covering the project, published by the Corriere dell’Alto Adige and the Corriere del Trentino newspapers on Nov. 10th 2011 [5]
- Online article mentioning VENTURI in the context of research in Italy, released by Galileo - Giornale di Scienza on Nov. 11th 2011 [6]
- Print article about VENTURI in the l’Adige newspaper on Nov 11th 2011 [7]
- Press release in multiple languages about the project, issued by STMicroelectronics and ST-Ericsson on Dec. 8th 2011 [8]
- Press release about the joint presentation of VENTURI partners metaio and ST Ericsson at the Mobile World Congress 2012 in Barcelona (Spain), issued by metaio on Feb. 24, 2012 [9]

**FIGURE 2: ARTICLES COVERING VENTURI IN THE PRINT MEDIA.**
**Project website and online dissemination**

The project website, available at [http://venturi.fbk.eu](http://venturi.fbk.eu), will be the central repository for all online dissemination activities and the starting point to get to know VENTURI in more detail.

It has been setup by the coordinator (i.e. Fondazione Bruno Kessler) at the start of the project, and filled with an initial structure and content. The website is an evolving platform that will adapt according to the project’s needs. Within the first project year, existing content has been updated and new content continuously been added. This effort by all partners will sustain during the whole lifetime of the project, in order to provide the visitor with the latest developments and access to all relevant information. FBK as the project coordinator takes care of the website hosting and system maintenance, ensuring that the site will remain on-line indefinitely, or until VENTURI’s relevance has diminished. The current structure and content of the website is illustrated in the following screenshot and further detailed below.

![Screenshot of the project website - http://venturi.fbk.eu](http://venturi.fbk.eu)

The ‘**Project**’ section of the website introduces the project context and vision, details the objectives of each work package, and introduces each partner and its role in the project.

The ‘**Results**’ section lists all public deliverables created in the course of the project, as well as the publications resulting from VENTURI funded research. The section also contains presentations about the project and its technologies.

All press coverage about VENTURI is monitored and aggregated within the ‘**News**’ section of the website. This includes press releases by consortium partners, articles published in print newspapers and the online press.
videos presenting the project and its technologies, as well as relevant references to VENTURI in blogs and social media networks.

The ‘Press Kit’ section provides media organizations with the contact details of the project coordinator and access to some basic communication materials, such as a printable flyer, and the project logos. Further publicity materials will be added as new project results become available.

The ‘Links’ and ‘Reserved’ sections are currently targeting the consortium members exclusively, with restricted access to e.g. non-public deliverables, datasets used for algorithm development and validation, the internal online collaboration platform Steerforge, document templates, and meeting minutes.

To accompany the website and ease the publication of videos produced within the course of the project, the consortium has also created a dedicated channel on the YouTube video platform. The channel is publicly available at http://www.youtube.com/user/ChannelVenturi and currently contains two videos that are also embedded into the project main website. Further videos, including demonstrations of the yearly prototypes, will be put online by the partners as new results are being presented.

![Figure 4: Screenshot of the VENTURI YouTube channel.](image)

In addition to the project’s website and YouTube presence, social media networks are considered a further valuable tool for communication, well suited for targeting the broad audience of consumer-level end-users, and increasingly monitored by professionals in the field. All industry partners within VENTURI have high visibility on the most popular social media platforms (including Twitter, Facebook, and YouTube) and reach a huge number of relevant end-users, AR application developers, and researchers all over the world. In order to maximize the impact of social media dissemination, VENTURI will therefore carefully utilize the well-established social media infrastructure of the consortium partners to broadcast project-related news, and to draw attention to the latest project achievements and upcoming events where VENTURI will be presented.

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Dissemination at exhibitions, workshops, and related events

Trade show exhibitions, industrial workshops, and related events provide a premier opportunity to get into face-to-face contact with targeted VENTURI user groups. They represent an ideal spot to showcase the project technologies live and to a large audience, for communicating the project vision, and to generate press coverage with international impact. The consortium partners therefore plan to present VENTURI technologies at several large exhibitions that are both relevant to technical experts and open to consumer-level end-users.

Dissemination activities at such exhibitions and workshops will include online or offline demonstrations of hardware and software prototypes, talks given by VENTURI partners in special interest sessions, and the distribution of information material to the targeted user groups.

Specifically, we plan to showcase VENTURI demonstrators at the largest international exhibitions on consumer electronics and information technologies, including IFA Berlin, CeBIT Hannover (both Germany), and CES Las Vegas (USA). These trade shows are highly important to industry experts from all over the world, and are equally open to the general public. The fairs attract several hundred thousand visitors each year and are therefore very important visibility windows to highlight VENTURI results to both final users and major companies.

We also intend to promote VENTURI at specialized exhibitions, such as the Mobile World Congress in Barcelona (Spain) and insideAR in Munich (Germany). Such exhibitions are targeted towards professionals from specific fields and provide an appropriate platform to present VENTURI technologies on next generation mobile hardware platforms specifically to industry stakeholders. insideAR, for example, is an event dedicated completely to Augmented Reality, and organized by consortium partner metaio. Each autumn, the latest advances in the AR field are presented at this technology fair, with many partners of metaio showing the most recent integration results, as well as plenary talks being held by prominent invited speakers from all around the world. The first VENTURI demonstrator will be unveiled during insideAR 2012, which will take place shortly after the end of this reporting period, during October 1-2, 2012 in Munich, Germany.

During the first reporting period M1-M6, Troed Sångberg from consortium partner Sony-Ericsson has been presenting the project at two occasions. At Telematics Munich, the largest European-focused telematics event held during November 9-10, 2011, he gave a presentation titled “Future of Mobile and Automobile” [10]. He discussed how the work being done for windshield AR in the car industry might work together with consumer electronics AR in the mobile industry, e.g. visors. In his talk “A glimpse of the future of Innovation and Communication” [11] given on November 11th, 2011, at the EBE conference in Seville, Spain, Troed Sångberg overviewed how innovation and communication evolves, and discussed the use of current visor technology in AR. EBE is Europe's second largest web conference with around 2000 attendees, and a video recording of his presentation is available online. At both events, VENTURI has been introduced to the audience as a new European project aiming for innovative mobile AR solutions.

Several consortium members have been attending this year’s Mobile World Congress (MWC 2012), which took place in Barcelona (Spain) on February 27th – March 1st 2012. Two partners, namely metaio and ST Ericsson, demonstrated a game based on the technology allowing 3D miniature city tracking as a preliminary implementation of the first VENTURI use case. The demonstration was presented in both ST Ericsson private and public booths (see also the photos below), and an accompanying press release has been published on metaio’s website [9]. The 3D tracking technology demonstrated at MWC is now part of a free mobile Augmented Reality Software Development Kit (SDK), which is available for download on metaio’s website since March 14, 2012 (http://www.metaio.com/software/mobile-sdk/). Being optimized for, among others, ST Ericsson chipsets, the new version 3.1 of the metaio Mobile SDK assembles core technologies necessary for creating the most
interactive and immersive AR experiences, such as the overlay of virtual information on building facades, city streets and almost any 3D real world object or device.

**Figure 5:** Joint presentation of VENTURI partners ST Ericsson and Metaio at the Mobile World Congress 2012.

**Figure 6:** Demonstrator presented by Metaio and ST Ericsson at the Mobile World Congress 2012.
During the second reporting period M6-M12, Javier Campos from consortium partner eDiam has been invited to the Jornada Aumentame Congress 2012, held on April 28\textsuperscript{th}, 2012, in Terragona, Spain, to give a talk about AR and new technologies in the context of education. In his presentation, VENTURI has been introduced to an audience of about 150 people, creating the link on how the AR technologies evolving from the project can be used to enhance educational use cases. The slides and a video recording from this presentation, as well as photos from the event, are available online [12].

\textbf{Figure 7: Javier Campos (eDiam) presenting VENTURI at the Jornada Aumentame Congress 2012 in Terragona, Spain.}
Scientific dissemination

Scientific achievements in the various fields of VENTURI research will be submitted for publication at high-profile national and international conferences on mobile computing, image pattern recognition, augmented reality, geo-sensing and vision processing. This includes such renowned conferences as CVPR, ISMAR, SIGGRAPH, ICIP, IGARSS and VMV. Both single and cooperative works, as well as jointly authored papers will be considered by the consortium partners and presented at the conferences as a talk or poster.

To generate additional scientific community attention, we also plan to organize one or more special sessions at relevant conferences, covering the project technologies. One event targeted by the consortium for example is the MIRAGE conference on computer vision and graphics, which will be held 2013 in Berlin, Germany.

We also intend to show VENTURI technical results together with incremental demonstrators to the academic communities at events such as ICVSS, the International Computer Vision Summer School, which provides courses by world renowned experts in the field, from both academia and industry, covering both theoretical and practical aspects of real computer vision problems, as well as examples of their successful commercialization.

In the very beginning phase of the project, VENTURI partner metaio participated in the tracking competition of ISMAR 2011, which is one of the most important international Augmented Reality conferences, and was held in Basel 26th-29th of October, 2011. The tracking challenge was based on a general logistics scenario commonly encountered in industrial Mixed Reality settings, with a worker having to pick a list of items in a storage facility. metaio succeeded to win the competition based on their 3D tracking and registration technology, which also forms the basis of the planned VENTURI developments. Detailed information about the contest can be found on the official conference site and the web, including the challenge rules [13], detailed results of all sub-contests [14], and a user report [15].

![Figure 8: Photos from the ISMAR 2011 tracking competition, won by VENTURI partner metaio.](image)

Other than the tracking competition, metaio also presented two long papers “Gravity-aware Handheld Augmented Reality” [16] and “RGB-D camera-based parallel tracking and meshing” [17] that were accepted at the ISMAR 2011 main conference. One demonstration relating to each accepted paper was given. In the workshops organized next to the conference, metaio presented an additional paper “Benchmarking Inertial Sensor-aided Localization and Tracking Methods” [18], accepted at the 2nd International Workshop on AR/MR Registration, Tracking and Benchmarking (TrakMark2011).

VENTURI technologies have furthermore been disseminated by consortium partner INRIA at the 6th European eAccessibility Forum held in Paris at the end of March 2012 [19], a conference organized by the Institute of e-Accessibility (IAN) under the high patronage of the French president Nicolas Sarkozy. Here, Jacques Lemordant...
gave a presentation “Queries in the Augmented Town” [20] on what will be the next generation of accessible pedestrian navigation systems as envisioned in VENTURI, with a focus on visually impaired people. The presentation slides as well as the video presented during this talk can be found online.

VENTURI partners have presented the project and preliminary results at several conferences also during the second half of the first project year.

Project coordinator Paul Chippendale from Fondazione Bruno Kessler gave a 25 minute oral presentation “Augmented Reality at FBK” [21] to the Italian Pattern Recognition Group GIRPR at their yearly convention on May 22nd, 2012, in Siena, Italy. The main portion of the presentation concerned the VENTURI project, enriched with results from other recent AR activities conducted in the Technologies of Vision unit in FBK. The paper and slides can be downloaded from the VENTURI website.

![Figure 9: Paul Chippendale (FBK) presenting VENTURI at the GIRPR convention 2012 in Siena, Italy.](image)

During the week 22-27 July 2012, Mauro Dalla Mura (FBK) and Michele Zanin (FBK) participated to the 32nd IEEE International Geoscience and Remote Sensing Symposium (IGARSS2012) in Munich, Germany. With over 2700 participants from 68 countries, IGARSS is the main annual event of the IEEE Geoscience and Remote Sensing Society (GRSS). Mauro and Michele presented two VENTURI related papers, both in oral sessions. Mauro Dalla Mura presented “Augmented Reality: Fusing the Real and Synthetic Worlds” [22], an overview about possible impacts of Augmented Reality technologies on the field of Remote Sensing. The topic received a lot of interest, to the point that the room was completely full and the organizers were forced to close the doors and leave people outside. The following day Mauro had the opportunity of presenting the paper again in a bigger room, reaching an even wider audience. Michele Zanin presented the paper “Feature Preserving Method for Creating Visual Appearance Models and Virtual Views from Collective Images” [23], about how to exploit visual data embedded in geo-registered images. Also in this case the room was completely full and the interest of participants was evident. Both papers will be published in the conference proceedings and be available for download from the IEEE Xplore Digital Library; the presentation slides are accessible at the project website.
At the annual OpenStreetMap Conference “State Of The Map 2012” (SotM12) held in Tokyo/Japan during September 6\textsuperscript{th}-8\textsuperscript{th} 2012, Jacques Lemordant of INRIA made a presentation on the Pedestrian Dead Reckoning based indoor localization system which will be used in the 2\textsuperscript{nd} and 3\textsuperscript{rd} year VENTURI use case demonstrators. A video accompanying the talk has been put online [24], demonstrating the testing of the localization application in a Japan Railway.

Two more scientific publications have already been accepted and will be presented shortly before and after the end of this reporting period:

VENTURI partner FBK will present a paper “Visual-inertial Tracking on Android for Augmented Reality Applications” [25] at the 2012 IEEE Workshop on Environmental, Energy, and Structural Monitoring Systems, to be held just before the end of this reporting period, on the 28\textsuperscript{th} of September in Perugia, Italy.

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Selim Ben Himane of metaio contributed a book chapter “Handheld augmented reality involving gravity measurements” [26] to volume 36, issue 7 of the Elsevier Computer & Graphics journal. The chapter is already available online and will be published in print by November 2012.

**Further details about both publications will be presented in the upcoming deliverable D7.2.3.**

**Contribution to standards**

With VENTURI incorporating and pushing forwards a broad spectrum of technologies from very different technical domains, the consortium considers the exploitation of existing and currently evolving standards as essential, not only to ease technology integration and interoperability within the project, but also to support the adoption of the project technologies on a larger scale beyond the EU funded lifetime of VENTURI. Many standardization activities relevant to the project are still in a draft stage and will evolve in upcoming iterations into standards that support and benefit the project’s vision. Therefore, several consortium partners are already active in a number of standardization bodies within their technical fields in order to monitor the current developments and to support them with contributions and standardization proposals. The consortium as a whole sees this as an opportunity to gain an early insight into upcoming developments, and to ensure continuing innovation by contributing specific recommendations into the standardization processes based on project results. The yearly deliverables D7.4.1 - 3, which are due in months 12, 24, and 36 respectively, are designed to account for this evolution by: identifying specific topics that would benefit from further standardization; identifying relevant standard bodies; and proposing strategies to communicate with those organizations.

**Figure 12: Olivier Pothier (ST-France) presenting VENTURI at the Sixth AR Standards Community Meeting 2012 in Geneva, Switzerland.**

During July 23-24, 2012, VENTURI partners ST-France, metaio, and Fraunhofer participated at the Sixth AR Standards Community Meeting [27] held at the International Telecommunications Union (ITU) in Geneva, Switzerland.

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Switzerland. With representatives of the most influential AR standards bodies (e.g. Khronos Group, Open Mobile Alliance, W3C, ISO/ITC, ITU, and the Web3D Consortium), major AR technology players (e.g. Qualcomm, NVIDIA, Layar), and AR stakeholders from various other fields (OEMs, Telco providers, researchers) presenting and discussing their latest advancements, the regular AR Standards Community meetings are a unique platform for establishing a global view onto current standardization activities and upcoming roadmaps, for the interdisciplinary exchange of expert opinions on technologies and standards, and for identifying new domains for future standardization. At this sixth meeting, the VENTURI partners were invited to introduce the project, with an overview presentation given by Olivier Pothier (ST-France). In the same session, public deliverable D2.1.1 (Use cases, application definition and system requirements) was also presented, as a contribution to the AR Reference Model proposal under discussion during this meeting.

On September 1st, 2012, Jacques Lemordant from INRIA had a meeting in Tokyo with Hiroshi Kawamura, the former president of the Digital Accessible Information System (DAISY) Consortium [28], and representatives of the Assistive Technology Development Organization (ATDO) [29], to discuss the standardization of a content model for Augmented Reality Applications. The National Information Standards Organization (NISO) [30] and DAISY have published the “Authoring and Interchange Framework for Adaptive XML Publishing Specification” [31], and the AR Standards Community (see above) has acknowledged strong connections between DAISY, NISO and AR experiences. As a result of this meeting, an experiment is planned starting from EPUB3 content and enhancing it with geographic information to produce an AR application. Results from this experiment will be reported to the AR Standards Community.
4. Exploitation plan

Exploitation management
While adoption of the full project results is expected to take place after the end of the project, subsets of the results may be utilized and commercialized in a shorter time period, especially looking at the high market interest (see Section 2). Based on the market view and identified stakeholders, partners have identified exploitation potential.

Looking forward, partners will identify short-term and long-term exploitation plans for the project results and correlate them against project progress. Also, a business plan will be elaborated before the end of the project to prepare and define the exploitation phase. Starting from the second year of the project, after the first version of the integration of the VENTURI platform, a joint exploitation of the VENTURI platform will be considered in more detail.

Exploitation and technology transfer by Industrial exploitation

ST is a Silicon Provider with a leading position in various fields including multimedia signal processing, such as Set-Top Boxes, Image Signal Processors, Portable Navigation Devices, etc., bringing innovative IC’s to the market that can make the difference for the introduction of new services. The Company aims to define and develop HW and SW solutions, and related IP’s, to be integrated, in cooperation with STE, within the VENTURI platform, considered as innovative, highly integrated and low powered AR mobile solutions. Common marketing actions and product promotions by the project partners to customers at international conferences and events will surely lead to an incremental visibility and gradual introduction of the VENTURI platform as a new generation mobile platform. ST-Italy sees VENTURI as a first step in the direction of more complex and enriching infotainment solution for users of all ages and profiles, not only in the Smartphone arena but also in other application fields, leading to possible future cooperation with the VENTURI project partners.

STE as a leading provider of Mobile Computing Platforms has a strong interest in increasing its Market penetration through results and outcomes of VENTURI. More in details:

- AR technologies and therefore the output of the VENTURI project are seen as an outstanding enabling factor for:
  - Mobile Phones and Mobile Devices Manufacturers (Top 5 Mobile phone Manufacturers, Android Industry ecosystems).
  - Suppliers & Partners Ecosystem related to Mobile devices Suppliers and Manufacturers
  - Key stakeholders in Mobile Technologies, such as Google
- STE thus aims to promote its Platforms as “AR-ready” by showing how can VENTURI increase and improve the capabilities and performance of the Platform itself.
- Possibility to increase IP and Patent portfolio will be strongly endorsed.
- Innovation generated by VENTURI will be incorporated, where possible and proper, into STE’s Next Generation Embedded Platform, aiming to advance Mobile Platforms in 2013 and beyond.
- In addition, STE aims at increasing the Value of its offering through win-win technical and co-marketing collaboration with Industrial and Research Partners of VENTURI.
- STE would also aim to include VENTURI-enabled demos and prototypes in its Promotion Packages, as a key vehicle for increased Visibility (and, ultimately, increased Market Share) of its Product Portfolio
- Finally, STE aims to utilize VENTURI outcomes as a starting point for future collaboration with Major Partners and Customers for further advancements on AR technology.
metaio is the leading provider of commercial AR systems based on its technology platform metaio SDK. The main interest therefore lies in disseminating the results for future product development, e.g. by developing new and improved tracking methods for memory- and power-restricted devices, also reaching a performance optimization by collaborating directly with a platform manufacturer, looking at current and future requirements for immersive experiences. In addition, metaio’s next-generation augmented reality browser application junaio® with its existing base of both content providers and users offers an ideal distribution platform for the VENTURI services. In return, business models such as location-based advertising could be derived by its own products. metaio also foresees that research results from the VENTURI project will contribute to the generation of new patents, further underlining Europe’s leading position in research.

e-Diam will use the VENTURI results to further develop their advanced, intelligent software for Android based devices. Their main interest resides in the mixing of hardware and software platforms that will help the user to have a richer knowledge of their surroundings thanks to ‘context’. Have access to context will allow e-Diam to apply AI techniques, taking AR concepts to a new level, which should significantly improve the user’s experience.

Sony Mobile Communications is a world leading mobile device company with state-of-the-art industrial design and user experience focused interaction. VENTURI is a key project in which Sony will offer its research into new interaction paradigms for augmented reality, where the current windows and application computing paradigms might fail. The results from the research being done in VENTURI is intended to advance the general knowledge in the field by dissemination activities towards universities, industrial partners and by continuing Sony’s activities in open innovation where insights are shared on all channels interacting with developers as well as consumers. Recognizing that an immersive AR experience needs innovation in interaction design as well as in hardware platforms is an important part of the VENTURI project and one Sony is well placed to contribute to as well as utilize.

Exploitation and technology transfer by research partners

Fondazione Bruno Kessler’s main interests in VENTURI are focussed around the core technologies for extracting metadata from media and user context awareness. Once these technologies have matured, a number of applications will be possible and it is FBK’s plan to exploit them in the first instance in local tourism and outdoor museum projects. The mobile AR prototype developed in VENTURI could be finalized into a real product, exploiting the facilities provided by the business models behind the App markets (for Android based devices)). FBK’s strong links with the Alpine territory will be exploited to provide a broad user platform.

The Fraunhofer Society is the largest organization for applied research in Europe, promoting and undertaking applied research in an international context, from direct utility to private and public enterprise, and is of wide benefit to society as a whole. The Fraunhofer Institute for Telecommunications Heinrich-Hertz-Institute (HHI) has a long tradition in marketing its R&D results by licensing intellectual property in its algorithms, software and hardware solutions to industry. It sees a high market potential for this kind of exploitation in the field of virtual and augmented reality. In addition, HHI will exploit the new 3D reconstruction and pose estimation methods in future augmented reality applications. This will strengthen its position as an international centre of excellence for 3D reconstruction and processing technologies. Further potential lies in the integration of complex software systems, thus representing the basis for products developed in close partnership with existing (e.g. MikroM GmbH, Vis-a-Pix GmbH) or new spin-off companies. In particular, HHI intends to further develop the VENTURI technology towards marketable products. This will be done in collaboration with the industrial project partners and funded by industrial contracts. In addition, HHI actively contributes to standardization, and presents its results at conferences, exhibitions or large fairs like CeBit and Siggraph.

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INRIA's main interest in VENTURI is to find technical expertise among partners to bring into reality the concept of urban safe pedestrian tracks for visually impaired people. On a safe pedestrian track, sidewalk work planned by city authorities is accessible through a web channel and precise coordinates of landmarks can be entered in the geographical information system. INRIA has a working system for Mobile Augmented reality Audio navigation (indoor and outdoor) which has been developed for visually impaired people. But in difficult cases like navigation in urban canyons and shopping centres, there is a need to use a vision system collaborating with a map-aided positioning system to give position correction by checking landmarks and pre-recorded images. INRIA will find expertise in vision and image matching in this project, hence the possibility to enhance its navigation system for visually impaired people.
5. Results and Conclusions

This report has presented the strategy of the consortium for dissemination and exploitation of the project results.

Based on an overview of the current market situation and an analysis of stakeholder groups relevant to the project success, four categories of users have been identified that will be targeted within VENTURI. The consortium plans to deliver enabling technologies specifically focused on the interests of the research community, the AR industry ecosystem, and consumer-level end-users; Policy and standard bodies will also be appropriately addressed.

An integrated communication strategy has been proposed in this document, which ensures that all relevant user groups can be reached by suitable channels. VENTURI has already achieved visibility within the first project year, both by press coverage, and by dissemination at scientific conferences and an international technology fair. New activities are already planned, and the consortium expects to reach a wide audience particularly with the presentation of the first yearly prototype just ahead, premiered at insideAR at the beginning of October, 2012.

Finally, this report has outlined the partners’ plans to exploit the project results for their businesses. As new results will emerge from the joint work in the project, this strategy will be refined to identify further opportunities for short- and long-term exploitation, also beyond the lifetime of VENTURI.
References


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