



European
Global Navigation
Satellite Systems
Agency

THE EUROPEAN DIMENSION OF GNSS

„Galileo – das europäische Satellitennavigationssystem –
eine neue Qualität für Nutzer im Verkehrsbereich?“

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European
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Agency

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European satellite navigation programmes- EGNOS



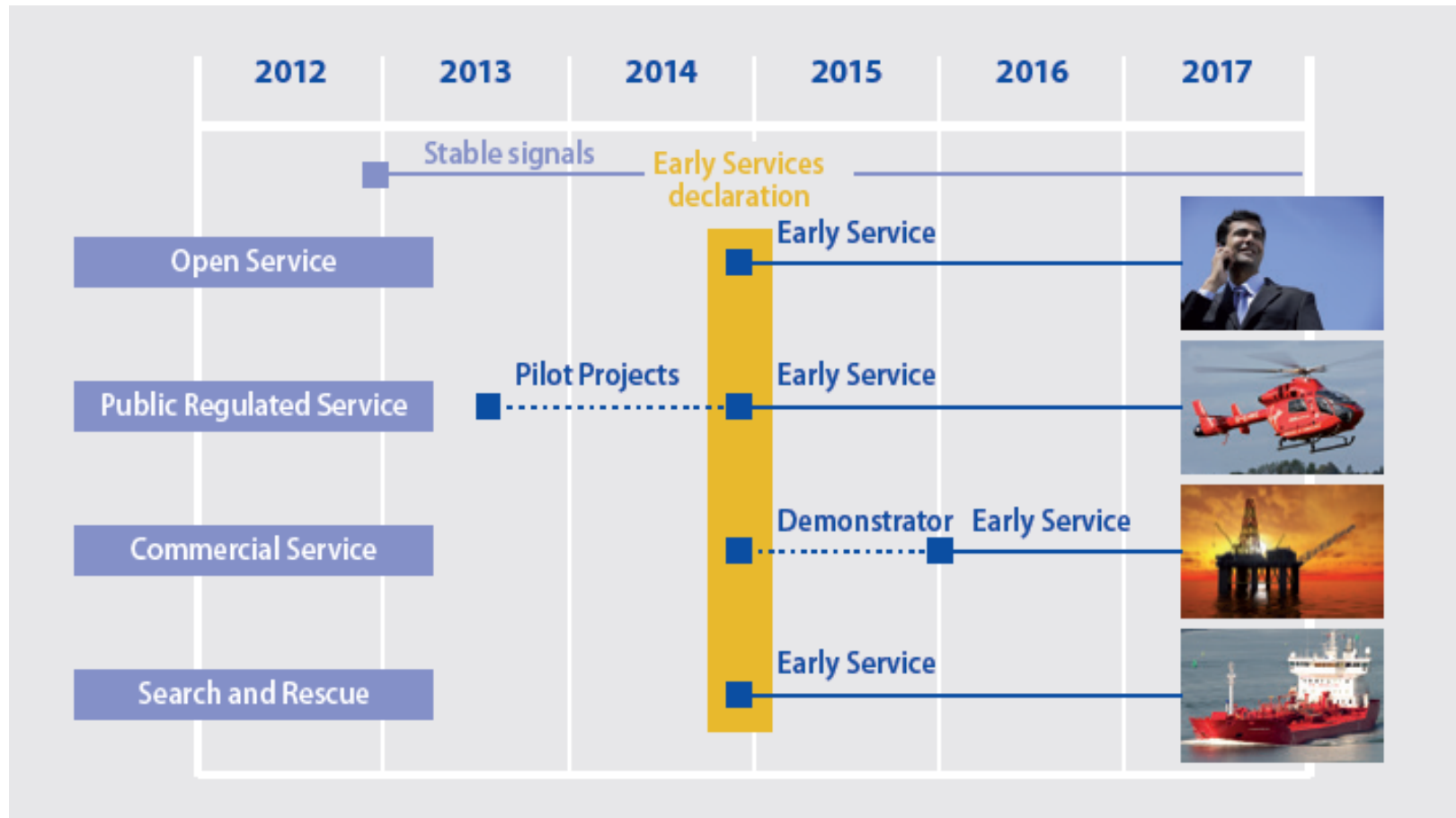
- increases the **accuracy** of GPS positioning and provides information on its **reliability**
- **3 services** (OS, SoL, EDAS)
 - open service is operational since **October 2009**
 - Safety of Life service declared operational in **March 2011**
- Designed primarily for **Aviation**, adopted already in other segments:
 - **209 EGNOS-based approach procedures in 12 countries**
 - **2/3 of farmers** using GNSS adopted EGNOS
 - EGNOS inside the **EU largest road user charging scheme** deployed after 2009 service declaration
- Available in about **70% of commercial receivers models**
- An **enhanced version of EGNOS** is currently under development. It will offer Galileo corrections and a wider coverage area expanding into Africa and the Middle East

European satellite navigation programmes- Galileo

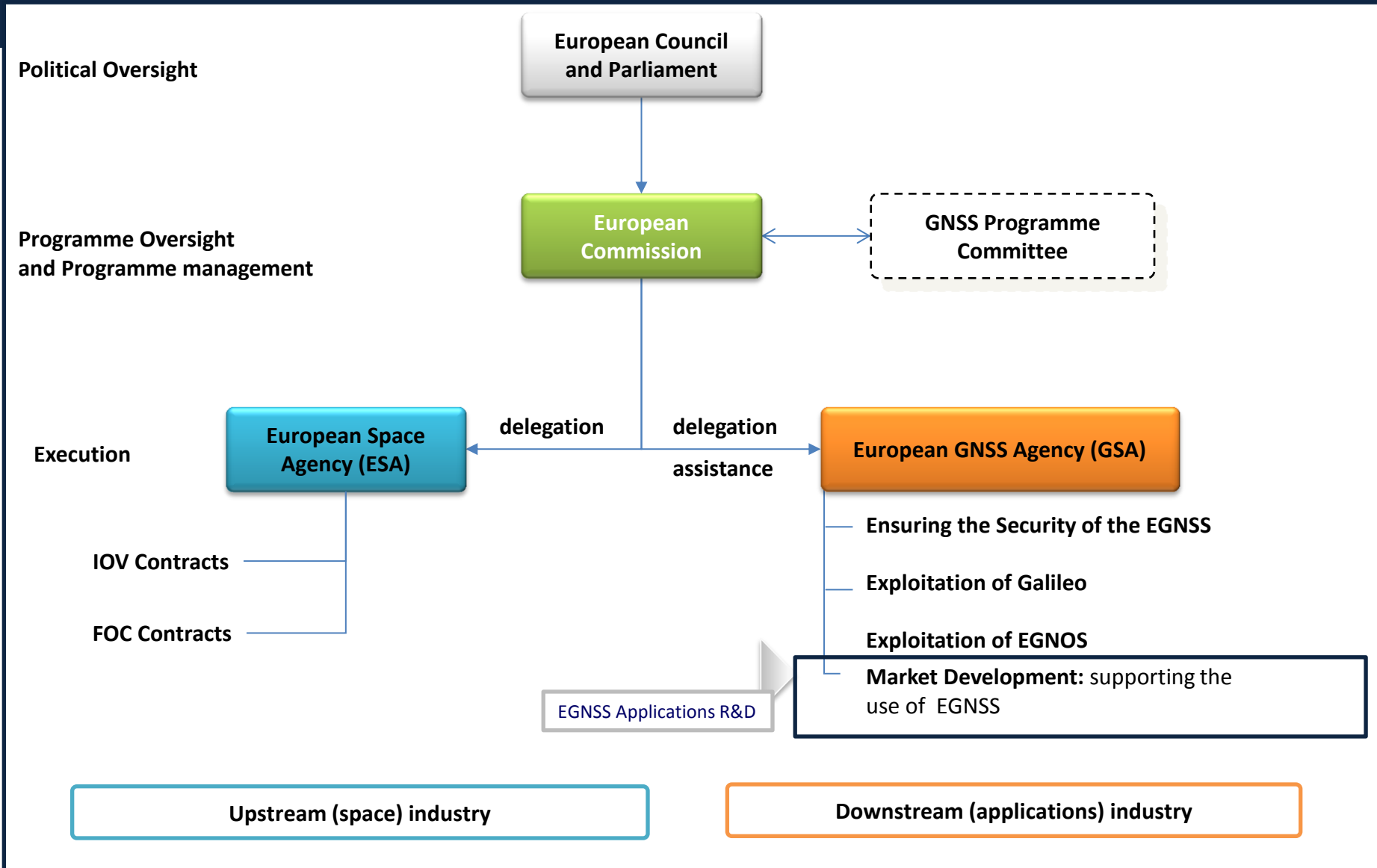


- **Autonomous** infrastructure
- Highly **accurate** global positioning services **worldwide**
- Under **civilian control** and wholly **interoperable** with GPS
- **4** services (OS, CS, PRS, SAR)
- Already **30%** of receiver models are Galileo ready
- On **12th March 2013**, Galileo passed an historic milestone for European space when the very first determination of a ground location fix was achieved

Galileo services - Implementation Plan – subject for possible review



Management of the EU GNSS programmes

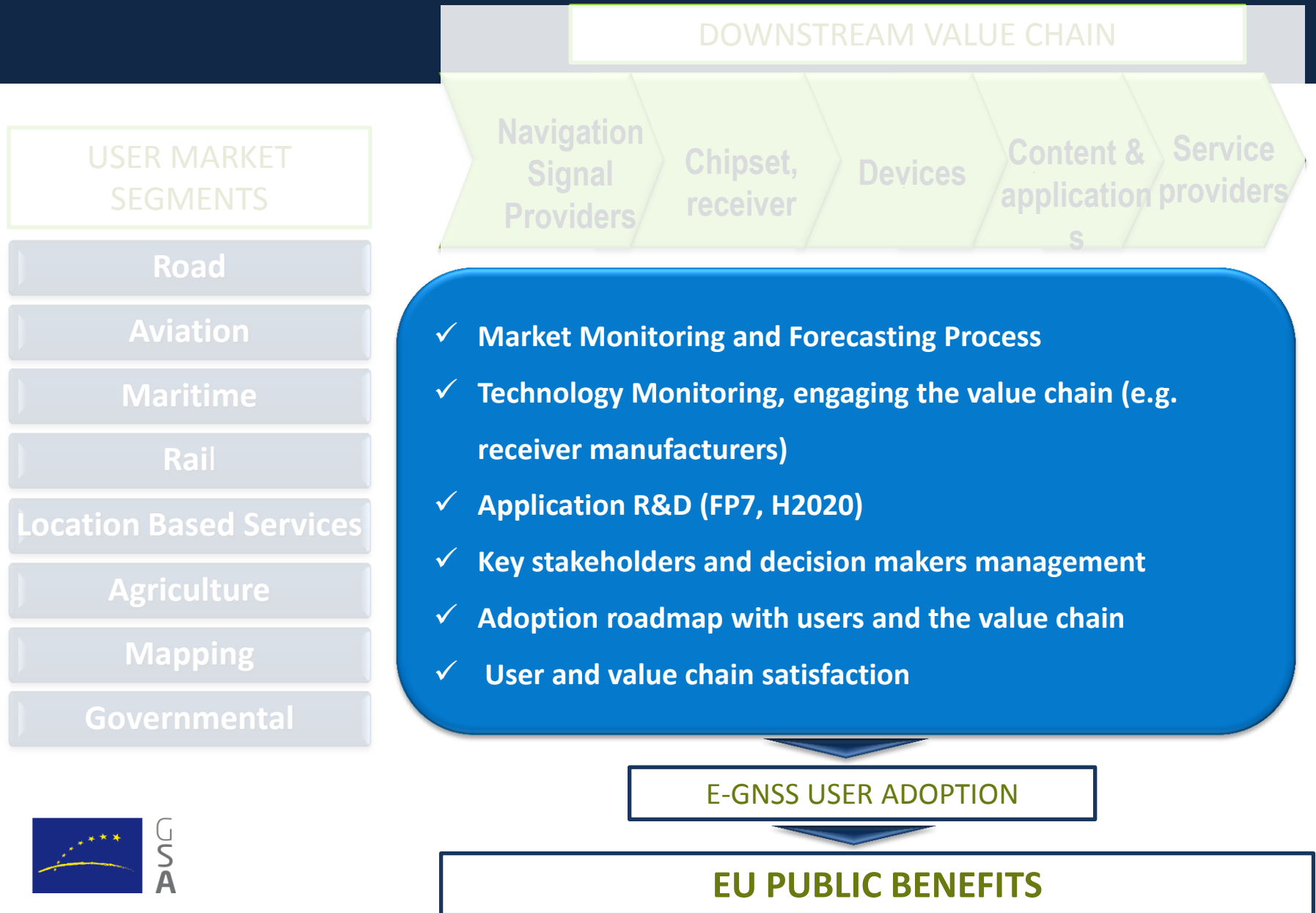


European GNSS Agency (GSA) – key figures

- **Staff: 128**
- **Headquarter: Prague, Czech Republic**
- **Security monitoring centres in France and the UK**



Integrated management for successful adoption of EGNOS and Galileo



Relevance of EGNSS services for applications

Service \ Segment		LBS	Road	Aviation	Maritime	Rail	Surveying/ Mapping	Agriculture
		EGNOS	Open Service		Operational		Operational	
Safety of Life				Operational	Galileo FOC/ EGNOS V3	Galileo FOC/ EGNOS V3		
GALILEO	Open Service	Galileo Early Services	Galileo Early Services	Galileo Early Services	Galileo Early Services	Galileo Early Services	Galileo Early Services	Galileo Early Services
	OS/CS Authentication	Galileo FOC/ EGNOS V3	Galileo FOC/ EGNOS V3		Galileo FOC/ EGNOS V3	Galileo FOC/ EGNOS V3	Galileo FOC/ EGNOS V3	
	CS High Precision		Galileo FOC/ EGNOS V3		Galileo FOC/ EGNOS V3		Galileo FOC/ EGNOS V3	Galileo FOC/ EGNOS V3
	Public Regulated Service							
	Search and Rescue	Galileo Early Services		Galileo Early Services	Galileo Early Services			



Operational



Galileo Early Services



Galileo FOC/ EGNOS V3

Recent E-GNSS adoption results in key markets

Aviation



- **209 EGNOS-based procedures available in 12 countries**
- **Sweden and UK published their first LPV procedures** in the last month
- Strategic alliance with Business Operators to promote EGNOS based operations

Road



- **Slovakia to adopt EGNOS this year in 17.500 Km tolled roads**
- **Belgium selected the consortium that will adopt a EGNSS based tolling solution** for trucks under operation in 2016

Agriculture



- **EGNOS adopted by 70% of EU farmers using GNSS**

Surveying & Mapping



- Confirmed **interest of service providers in Galileo triple frequency capacities** in on-going consultation

Maritime



- **Galileo recognition process initiated at the IMO World Wide Radio Navigation System**, following the acceptance of the EC proposal, drafted with GSA support, matching Beidou first move

Rail



- Confirmed **interest in EGNOS performance testing by UNISIG**, the a leading railway signalling group, which will pave the way towards use of EGNOS in railway signalling

LBS



- **The first smartphone Galileo enabled:** Meizu MX4, unveiled in Beijing in September, is the first device equipped with Mediatek processor MT6595, which makes use of Galileo. Other smartphones follow: Lenovo Vibe X2 and Xiaomi Redmi

GNSS market report presents trends and opportunities of the global GNSS market



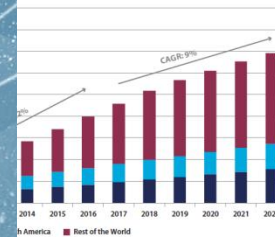
GNSS SEGMENTS COVERED:

- LBS
- Aviation
- Road transport
- Maritime
- Rail
- Surveying
- Agriculture

EXECUTIVE SUMMARY 5

GNSS devices by 2022 – almost one for every person on the planet

Installed base of GNSS devices by region



- Over the coming decade, the installed base of GNSS devices will increase almost four-fold, largely driven by increased penetration in regions outside Europe and North America.

- Such a large number of devices, almost one GNSS receiver for every person on the planet, has the potential to deliver additional significant benefits, not measured in this report, especially in terms of time and fuel savings, as well as efficiency gains.

- It is expected that the number of GNSS devices will increase in Europe and North America from 1 to 3 per inhabitant over the coming decade.

- For the Rest of the World, rapid growth, albeit from a low initial starting point, will see an increase from 1 device per 10 inhabitants to 1 per 2 inhabitants over the coming decade.

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October 2013

GNSS Market Report – Issue 3



Complexity of LBS segment

Recent developments:

- Augmented reality – an information overlay in mobile devices on top of the physical world.
- Indoor positioning – location of people and objects inside large buildings, such as airports and shopping centres.

Upsurge in number of applications:

- 775,000 in Apple App Store in 2013.
- 700,000 in Android Apps compared to 88,000 in 2011.
- An estimated 40% of applications use location information.

- Integration of positioning into devices such as cameras, watches, and binoculars.
- Location information sent from devices to application layers to enable sharing and tracking (e.g. for recording the distance run, social networking).

- Various positioning technologies integrated into one device.
- GNSS remains the primary positioning solution outdoors, offering better accuracy than Cell ID and Wi-Fi.
- Technological developments concentrate on seamless integration and the switch from

Applications: personal navigation, point of interest search, LBS advertising, person and objects tracking, emergency call location, location based gaming, sport and entertainment, weather information and news, social networking

Application Stores:
Apple App Store
Windows Phone Store
Google Play
Amazon App Store

Devices: Smartphones, tablets, digital cameras, fitness and tracking devices, binoculars

Technology: Cell ID, Wi-Fi, GNSS, IMS

Examples of applications:

- FourSquare – users “check in” at a certain location, enabling social networking, finding points of interest and recommending places.
- Wikitude – augmented reality application, adding information to camera view on points of interest, tourist information, etc.
- Find Me Maybe – sends geo-localized SMS to Facebook and Twitter informing contacts of the user’s situation.

- Binoculars – built-in GPS receiver automatically geo-tags video clips and photos.
- Fitness devices – GPS watches for runners, cyclists, and swimmers.
- Augmented reality glasses.

- IMES* – provides 3D position in indoor locations with an accuracy of about 10 m. The same GNSS receiver can process both GNSS and IMES signals leading to seamless navigation between outdoor and indoor

The fourth edition of the Market Report will appear in Q1 2015!





THANK YOU

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