



Outcomes of WG-B Application Subgroup

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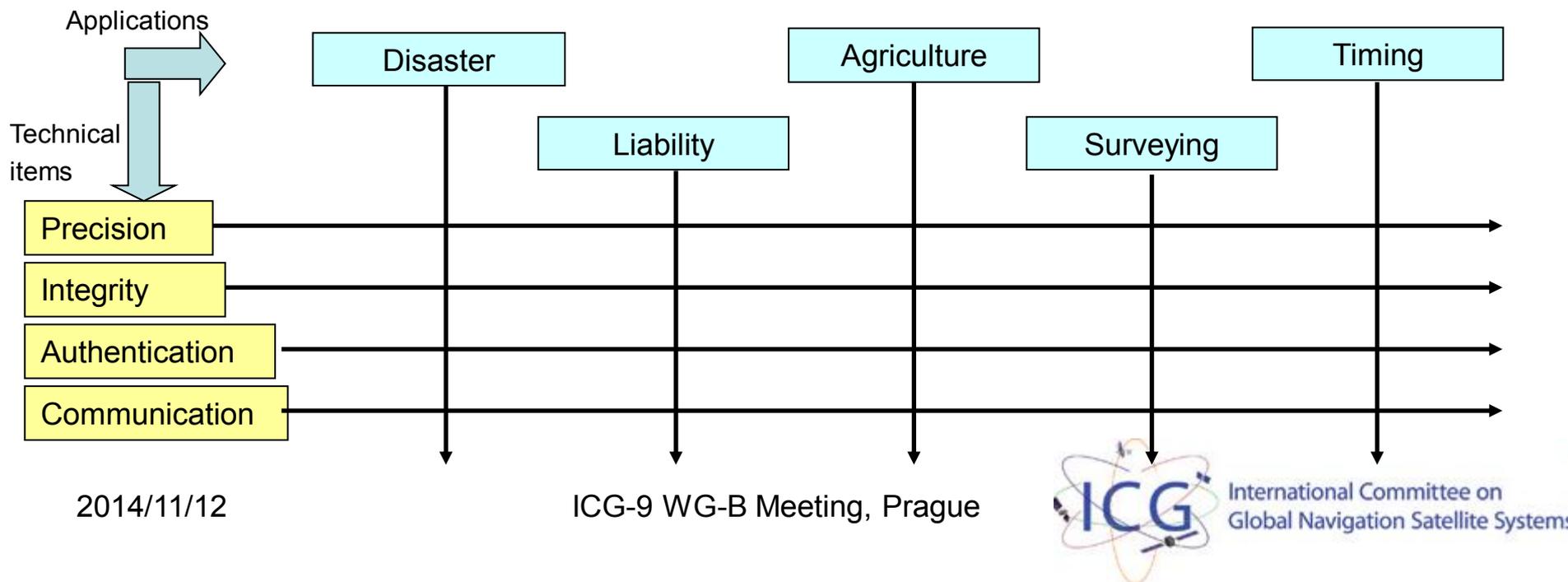


Objectives of App SG

1. To monitor and review technique improvements;
2. To identify additional and/or potential requirements from user/application side;
3. To identify current GNSS shortcomings on services and performances;
4. To recommend GNSS performance enhancements to system providers;
5. To promote multi-GNSS applications by cooperating with user communities.

Work Plan on Monitoring Fields

	2013/14	2014/15
Classification	Mass-market	<i>Professional</i>
Applications	■ Disaster Management	■ Agriculture
	■ Liability	■ Surveying
		■ Timing



Agenda of 4th SG meeting

October 22nd in conjunction with ISGNSS 2014, Jeju, Kora

Co-chairs: Xingqun Zhan, Mine Masaya and Sang Jeong Lee

Presentations	“East Asia - The region with the densest SBAS augmentation”	Takeyasu Sakai ENRI, Japan
	“Combined GPS/BeiDou Positioning Performance in South Korea”	Byung-Kyu Choi KASI, Korea
	“Cm-Level High Precision Navigation Capabilities and Applications Using Japanese Quasi-Zenith Satellite System”	Hiroshi Koyama MELCO, Japan
	“BDS Applications on High-Precision Positioning”	Jun Shen BNStar, China
	“BDS/GNSS Applications in Disaster Prevention and Relief”	Baoming Li Spacestar, China
Discussions	Meeting outcomes	All
	Recommendations	All

Overview of App SG Meetings

Meeting	Venue	Date	Theme	In conjunction with
1st	Munich, Germany	2012/3/12~13	Mass Market Liability	Munich Summit 2012
2nd	Wuhan, China	2013/5/14	Surveying Disaster Management Maritime Liability	China Satellite Navigation Conference 2013
3rd	Daejeon, Korea	2013/7/18	Mass Market Disaster Management Agriculture Surveying Timing	National GNSS Research Center Symposium 2013
4th	Jeju, Korea	2014/10/22	SBAS Surveying Mass Market Disaster	International Symposium on GNSS 2014

Outcomes from 1st ~4th App SG meetings

- Several core applications were identified by SG to monitor, such as, Disaster management, Personal Navigation, Transportation, Surveying, Agriculture, Liability Applications, Timing
 - Dominant subject (presentation numbers):

Disaster management	30%	Transportation	13%
Personal Navigation	30%	Surveying	13%
 - Notice :
 - Indoor – Outdoor Seamless PNT services are highly required for disaster management, personal navigation and etc.

Outcomes from 1st ~4th App SG meetings

- Several enabling technologies were identified by SG, such as, Precision, Communication, Integrity, Authentication, SBAS
 - Dominant subjects (presentation numbers) :

Precision	40%
Communication	30%

including the collaboration with communication system
 - Notice :
 - Multi-GNSS is effective for improving the availability.
 - High precision positioning (~cm-level) is required for some APPs.

Outcomes from 1st ~4th App SG meetings

- Additional discussions :
 - Short message is useful for disaster management.
 - GNSS reliability is important for users.
 - SBAS corrections are useful to enhance positioning accuracy for Open Service Users
- *Monitoring fields are covered.*
- *Sub Group will compile the findings in a report, targeting to quantify a range for the user needs per application domain in the next phase.*

Conclusions of App SG

- Trends coming from the user community are identified
 - ✓ Reliability is a general concern for all GNSS- based services community
 - ✓ Seamless / ubiquitous navigation applications grows rapidly
 - ✓ Dynamic high precision positioning including PPP is required by more and more GNSS applications
 - ✓ SBAS corrections are useful to enhance positioning accuracy for varieties of Open Service Users
 - ✓ Short message is beneficial especially for disaster management.

Conclusions of App SG

- Several important issues are identified regarding to SBAS
 - ✓ Interoperability of SBAS to be pursued through the SBAS IWG
 - ✓ Benefits for SBAS Open Service users arise from SBAS ranging functionality
 - ✓ Wide area PPP (Precision Point Positioning) is available to serve together with SBAS, but long convergence time shall be settled in advance

- Suggestions to the ICG
 - ✓ Encourage Open Service Usage of SBAS
 - ✓ Detailed work is followed up by SBAS IWG

2015 Work Plan of App SG

- To compile the findings obtained so far in a report, targeting to quantify a range for the user needs per application domain in the next phase
- To hold the 5th App SG Meeting best before July 2015
- To keep monitoring the requirements from user communities on reliability
- To identify the requirements on Timing Services
- To monitor the technic improvements from receiver end
- To draw suggestions and recommendations to ICG WG-B