



International Committee on
Global Navigation Satellite Systems

Performance Standards Dream Team – Report to ICG

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***Bengaluru, India
8-13 December 2018***



ICG International Committee on
Global Navigation Satellite Systems

Sub-Group Members focused on Performance Standards – Dream Team

- Alexey Bolkunov (co-lead), Sergey Kaplev, Igor Silvestrov - Russian Federation
- John Lavrakas (co - lead), Andrew Hansen, Karl Kovach - United States
- Hillar Tork, Peter Buist, Rafael Lucas-Rodriguez, Daniel Blonski - European Union
- Satoshi Kogure, Masaharu Kugi, Daiju Ichinose – Japan
- Li Jianwen, Du Juan - China



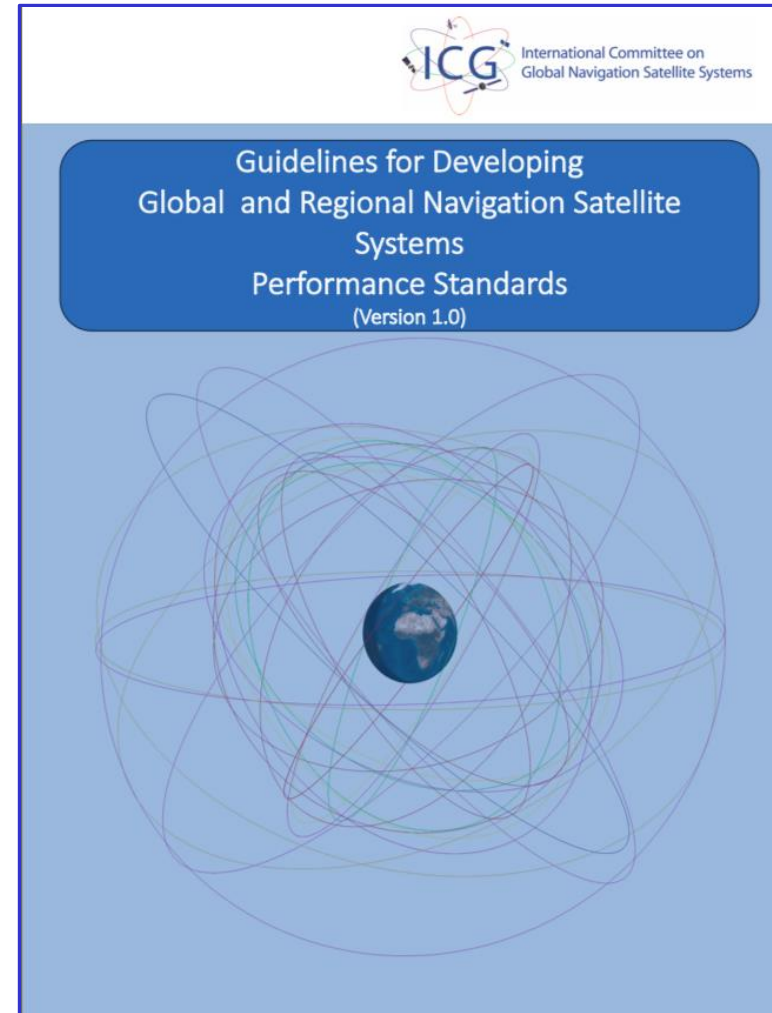
Background

- ICG-6 (2011) WG-A(S) Recommendation 4.1 – develop a template individual GNSS providers consider when defining open service performance.
 - Goal: reach consensus on minimum common set of parameters
 - Each system use its own definitions and calculation methods
- October 2012 – WG-A(S) prepares draft template (V2)
- ICG-9 (2014) – Draft Calculation Methods for Template
- ICG-10 (2015) - WG-A(S) agrees not to have common document, but asks providers to share information
- ICG-11 (2016) “Dream Team” formed at ICG-11 in Sochi
- 2016 Survey conducted of DT members – elements to be included in Performance Standard/Service Definition
- October 2017 – Guidelines for Developing Performance Standards (draft) issued, updated June 2018
- November 2018 – Guidelines V1.0 approved at ICG-13.
- September 2019 - Published to ICG Website
- **Performance Standard ~ Service Definition Document**



Activities and Progress

- Performance Standard Guidelines – **published on ICG website**
 - www.unoosa.org/oosa/en/ourwork/icg/working-groups/s/PSindex.html
- Develop definitions – **in progress**
- Develop calculation methodologies - **ongoing**
- Collaboration with IGMA – **Holding monthly joint meetings; held joint workshop with IGMA in June 2019**



Performance Standards Workshop, Vienna

- “Open” Meeting on June 12
- Attended by China, Europe, Japan, Russia, and United States
- Performance Standards Definitions
 - Update was proposed to PS Guidelines to make the standards for Slot Availability “Key” in place of Range Availability
- Next steps –
 - Complete Definitions
 - Consider updates to PS Guidelines
 - Share hints & tips; harmonize calculation methods
 - Russia to host workshop in Spring 2020





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Performance Standards Dream Team

- Monthly Teleconference calls
 - Held continuously since January 2018
 - Completed PS Guidelines document
 - Now working on PS Definitions annex to Guidelines
- Spring Workshops
- Special Topic
 - Posed at 2019 WG-S Intersessional meeting
 - “Consider Multi-GNSS Performance Monitoring”
 - Team assessment
 - Our team mission is to develop minimum common set of parameters to be considered by each service provider in defining their standards
 - Standards reflect commitments by service providers
 - Multi-GNSS operation does not imply a commitment and we don’t see a path to defining standards for multi-GNSS

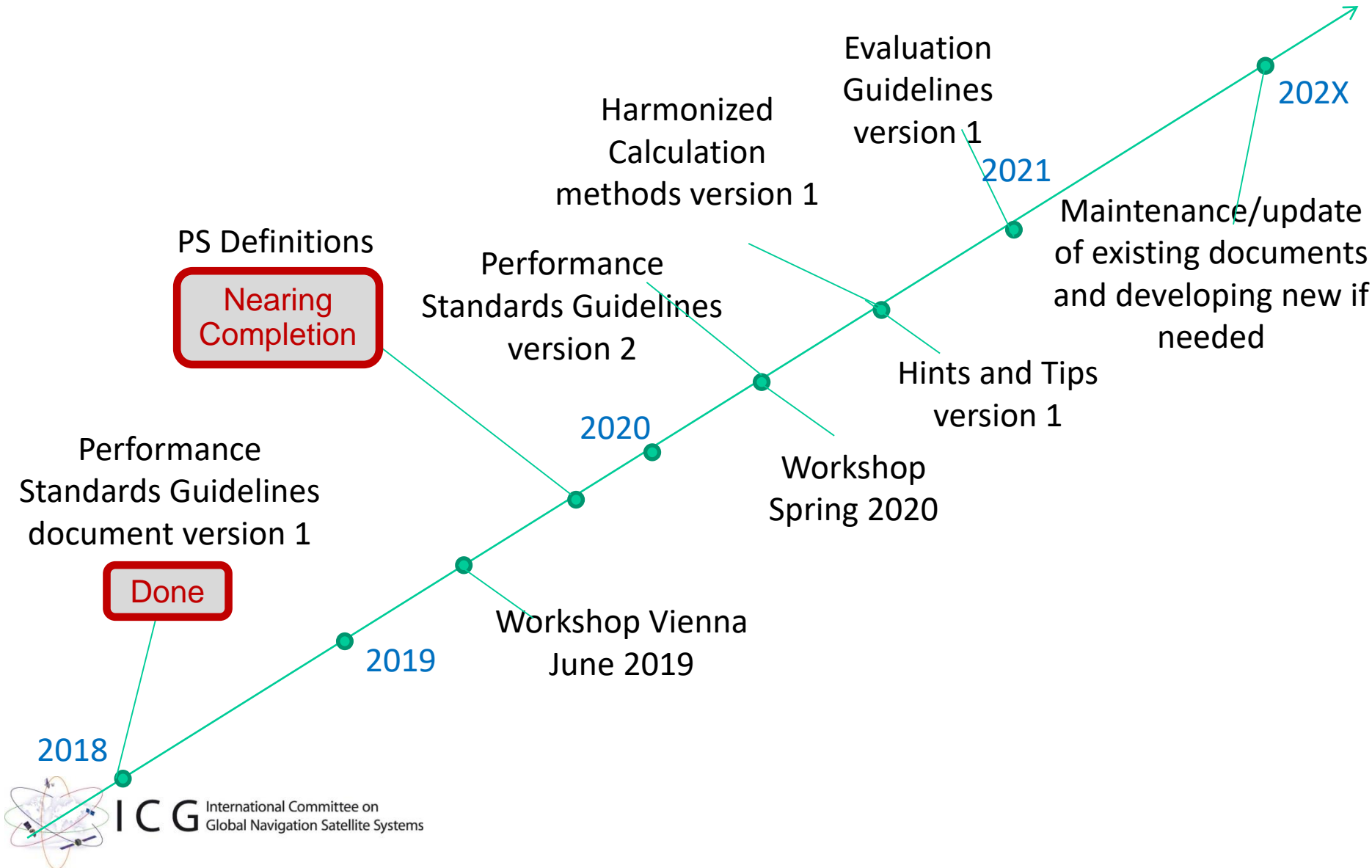


Roadmap & Scorecard – GNSS Performance Standards

Item	Status	Comments
Draft Calculation Methods applicable with DDST-2012	Complete	Draft Calculations Methods Document prepared and provided in 2014
Develop minimum common set	Complete	Begun Dec 2016; Finalized Sep 2017
Issue Performance Standard Guideline Document (“Guidelines for Developing Performance Standards”)	Complete	Recommendation for WG-S and ICG-13
Each GNSS/RNSS provide definitions for terms	Complete	Discussed on monthly teleconference calls (MTC)
Finalize harmonized set of definitions	In progress	Ongoing; complete early 2020
Prepare revision to PS Guidelines (V2)	In progress	Add definitions as appendix
Each GNSS/RNSS identify calculation methods used in PSs and SDDs	In progress	Ongoing. Discussed in MTCs
Hints and Tips on PSs and SDDs (or their new revisions) development and parameters estimation and evaluation	Under discussion	To be discussed in MTCs
Calculation methods Guidelines	Under discussion	To be discussed in MTCs
Further tasks and challenges, including maintaining of issued documents	Under discussion	To be discussed in MTCs



Performance Standards Dream Team Roadmap



Next steps

- DT to hold workshop in Spring 2020, hosted by Russian Federation.
- Continue to hold monthly meetings
 - Complete definitions
 - Prepare Performance Standards Guidelines version 2
 - Discuss and resolve questions on calculation methods

