

Synthetic Aperture Standards Committee

March 9, 2022

Deciding What to Standardize

- Ultimate goal of SASC Study Groups is to recommend which standards to pursue
- An IEEE standard is a document established by consensus that provides rules, guidelines, or best practices for a particular technology or process
- It provides a basis for comparison and a reference point against which other approaches, designs or algorithms can be evaluated
- A useful standard satisfies a universal need and describes not only the methods and practices that are adequate for implementing a particular task but also exhibits the quality attributes associated with technical excellence. A technically excellent standard is complete, clear, correct, consistent, and coherent. After publication, a well-written standard establishes uniform engineering or technical criteria, methods, processes, and practices.
- The goal of the SASC is to arrive at useful, high-quality standards for synthetic apertures, and in particular the critical signal processing functions used in image formation

Quality of a Standard

- Useful standards enable system interoperability and scalability
- Typically, acquisition managers want to use open standards-based products that seamlessly work together and can be integrated into existing processes and systems
- A standard likely to be incorporated into a system design is detailed, correct, up-to-date, and provides sufficient information for system engineers to make informed decisions about the standard's application, impact and implementation

Synthetic Aperture Radar

- Many commercial sources now sell geospatial satellite imagery, including SAR data. Back-end information extraction from SAR imagery is also available from commercial analytics companies
- Hundreds of radar imaging satellites are in the pipeline to be launched over the next 2 or 3 years
- Many commercial satellite operators started out monitoring agricultural operations or searching for opportunities in oil and gas. Now satellite companies provide information about where to situate solar farms, or provide imagery for urban planners developing schematics for smart cities
- Anxiety about climate change is also fueling a large upsurge in funding for climate monitoring projects around the world that rely on SAR
 - Some companies have fully funded satellites using charitable contributions from groups interested in monitoring climate change
- Shift to commercial image providers creates a need for SAR standards that are suitable for benchmarking data quality

Standards vs Bailment Agreements

- One way the government has been testing commercial capabilities is through the use of bailment agreements
- These arrangements give a gov't agency a chance to take temporary possession of a company's imagery, analysis or other service at zero cost, so as to determine the data's utility and to provide feedback to the vendor
- Nearly two dozen bailment agreements have been executed over the last few years. Several companies have now won operational contracts after initially agreeing to a bailment agreement
- ***High-quality standards are better than bailment agreements for cultivating a viable satellite imagery marketplace since standards are universally accessible***

Synthetic Aperture Sonar*

- *Possible sonar functions to standardize include...*

- Micronavigation,
- Image formation,
- Reconstruction algorithms,
- Computational methods,
- Adaptive processing,
- Autofocus,
- Low fractional bandwidth systems,
- Transducer modeling and construction,
- Embedded hardware,
- Autonomy,
- Environment characterization,
- Survey optimization,
- Automatic target recognition

* suggestions courtesy of Isaac Gerg

Logistical Details

- Once approved by the Committee, Study Groups can immediately begin their activity
- First step is to schedule a kick-off meeting
- Study Group Chair (appointed by SASC), Vice-Chair, Secretary should work together to plan meetings, track attendance, and document discussion and results
- Anyone in attendance at a Study Group meeting can vote
- Default lifespan of all PAR SGs is six months
- For a longer-term, ongoing review of a technical area, the SASC may establish a Standing Committee that becomes a permanent-until-disbanded subgroup tasked with a specific scope
- Meeting invites should go out to entire SASC membership
 - Please use email aliases; stds-sps-sasc@ieee.org and SPS-SASC-MBRS@ieee.org
 - We can provide WebEx links