Hodoyoshi Panel Discussion

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Presentation Outline

- Operational Mission (Commercial, Governmental)
- Upcoming Missions (Scientific, Governmental)
- Discussion: Quality vs. Cost
NTS

- Nanosatellite Tracking of Ships (also known as CanX-6)
- Ship tracking using Automatic Identification System (AIS)
- COM DEV Ltd, Canada
- COM DEV AIS Receiver

- 6.5 kg, 20 by 20 by 20 cm (excluding antenna)
- Initially technology demonstrator, become an operational mission
- Operational (4 years, 5 month)
- Rapid development and deployment (6 mo. development, launch in mo. 7)
AISSat-1

- Automatic Identification System Satellite 1
- Ship tracking over Norway
- Norwegian Defense Research Establishment/FFI
- FFI/Kongsberg AIS Receiver

- 6.5 kg, 20 by 20 by 20 cm (excluding antenna)
- Initially technology demonstrator, become an operational mission
- Operational (2 years, 3 month)
**BRITE Constellation**

- **Bright Target Explorer**
- Six satellite space astronomy constellation for long-duration observation of bright stars with extremely long periods of oscillation.
- UniBRITE, BRITE-Austria (U. Vienna, TUG, FFG), BRITE-PL1, BRITE-PL2 (SRCPAS), BRITE-Toronto, BRITE-Montreal (CSA)
- 3 cm aperture optical telescope
- 6.5 kg, 20 by 20 by 20 cm (excluding antenna)
- Launch of UniBRITE and BRITE-Austria at the end of 2012 on PSLV-C20
- Launch of BRITE-PL1 on Dnepr-2012#1 in 2013
- Launch of BRITE-PL2 TBC
- Launch of BRITE-Toronto, BRITE-Montreal on Dnepr-2013
**NEMO-AM**

- **Nanosatellite for Earth Monitoring and Observation – Aerosol Monitor**
- Regional aerosol monitoring
- Indian Space Research Organization, India
- Observation in 480-500/660-680/860-880 nm dual polarization, multi-illumination angle, 40 m to 200 m GSD, ~100 km Swath
  * 500-600 nm band not used, instrument capable to 2.5 um
- 15 kg, 44 by 27 by 20 cm, with 60 by 60 cm main array
- In Final Manufacturing Phase Completion in 2013
- Launch on PSLV
**AISSat-2**

- **Automatic Identification System Satellite 2**
- Ship tracking over Norway
- Norwegian Defense Research Establishment/FFI (Governmental)
- FFI/Kongsberg AIS Receiver

- 6.5 kg, 20 by 20 by 20 cm (excluding antenna)
- Rebuild of AISSat-1
- Launch TBA, in final negotiations
NEMO-HD

- Nanosatellite for Earth Monitoring and Observation – High Definition
- Multi-spectral high-resolution imaging
- Slovenian Centre of Excellence for Space Sciences and Technologies (SPACE-SI)
- 2.8 m GSD, 10 km Swath Multi-Spectral Imaging (PAN/B/G/R/NIR) and Real-time HD Video
- 75 m GSD Wide Swath HD Imaging and Video
- 50 kg, 44 by 27 by 20 cm
- Completion in end of 2013
- Launch in 2014
Discussion

Quality vs. Cost

- Advanced nanosatellites open new application possibilities
- Performance driven by end-user, limited by physics
- New technologies improve performance, quality while controlling costs and schedule
- Design with margin helps ensure quality
- Heritage is important, reduces risks
- Small, tightly-knit, experienced team