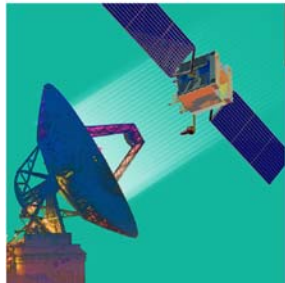


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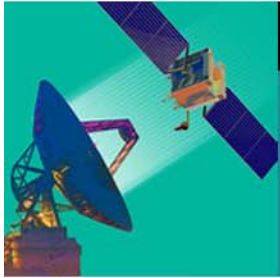
Session 15

Looking Beyond the Horizon

Plenary Session Summary

Supannika Mobasser, The Aerospace Corporation

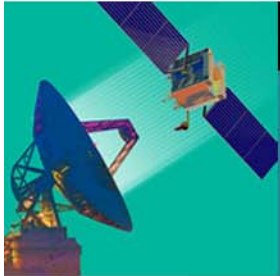
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Smarter system

- Alexa
 - **Alexa**, launch the federated ground system
 - **Alexa**, move my satellite to the higher orbit
 - **Alexa**: please don't do anything, I will take control and I will call you if there is any problem.
 - You don't have to be the expert in everything, we can simple make a request
- “**Ask Jim**”, GMSEC is supposed to answer every question we have

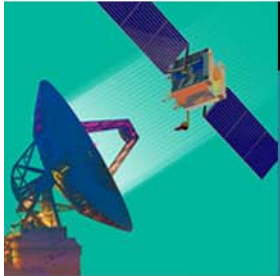
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Themes, Ideas, and concepts

- Without vision, the people perish
- Dynamic international collaboration
- **PEMLOV's architecture:** pluggable, extensible, modular, loosely-coupled, one-size-fits-all, vendor-agnostic, standards-based
- We can be compromised but we can reconstitute very quickly
- Good news is we have the data, bad news is we have a lot of data
- Operators and engineers do not consider security as innovation; hence it is even more painful
- Several needed technologies are already there, we just have to use it differently

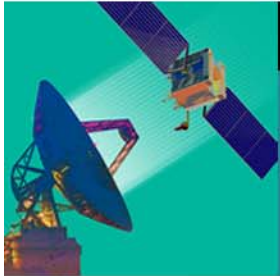
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Change is the new norm

- Innovation is painful but necessary
- Seven years ago, biggest threat is physical security, today: cyber security and software
- Space is congested and competitive, but as of now, space is contested.
- Ground system is going to change every 3-5 years, but on the software side, it is even faster than that.
- This generation accepts app as standard way of communication. Future works have to build around the apps.
- People can't change because they are too focused on the now
- From risk aversion to risk fondness
- Inertia is polar opposite of the innovation
- 20 years later, we will still be talking about getting rid of stovepipes

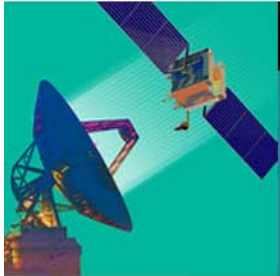
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All I need is Money, People, and ConOps

- I think it requires more money than what I have
- With a “Big Money” new project, a new set of requirements is produced that makes the system “Complex, slower and more expensive”
 - “Fatty” budgets allows diversity, acting against reusability
- Don’t stop advocating to solve problems that people don’t know they have!
- Don’t require a big bang to get started, can run alongside existing networks
- There will be lots of questions about “how”; it’s the leader’s job to be several steps ahead
- We want to share the lessons learned that is quite often being treated as lessons forgotten

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Interesting tidbits

- “Lowest staffing at program level at SMC; Twice as many programs”
- “Maybe we’ve got the requirements wrong, maybe we don’t need 15-year satellites”
- New terms
 - **GSAW**: Ground Systems Architectures Workshop
 - **MSAW**: Martian Systems; **EXSAW**: Exoplanet systems
- Space Law is coming
- *As-a-Service*
 - Telemetry, and Tracking as a Service (TTaaS)
 - Navigation as a Service (NaaS)
 - Spacecraft as a Service (SCaaS)
 - Flight Software as a Service (FSWaaS)
 - Ground Segment as a Service (GSaaS)