


## Working Group Preview

# Ground System Architectures Workshop



Session 12A

Beyond “Shall Statements”:  
Modernizing Requirements  
Engineering

*Leyna Cotran, Lockheed Martin Space Systems and University of California, Irvine; Eric Dashofy, The Aerospace Corporation*

# BeSSt Working Group Goals

---

- **Motivation**

- ❖ Requirements define and scope our systems. Latent defects in requirements are the most expensive to fix.
  - They therefore represent our greatest cost savings opportunities.
- ❖ Requirements engineering practices remain relatively stagnant.
- ❖ What we teach in school about requirements is rarely reflected in practice.

- **Can we do better than “shall statements” in requirements engineering?**

# Working Group Format

---

- **Sample Topics for Discussion**

- ❖ How can we move **beyond English-language sentences** to capture requirements?
- ❖ How can we **harmonize our approaches** to requirements engineering with modern techniques for architecture, implementation, and testing?
- ❖ Should we continue to **separate requirements engineering** from design, or try to integrate them more closely?
- ❖ Should we adopt **agile or fluid methodologies**, where requirements evolve along with the system, rather than being developed all-at-once up front? What are the implications for development and contracting models?
- ❖ How should we **train the next generation** of engineers?
- ❖ How many requirements is **too many, or too few**?

# BeSSt Invited Presenters/Panelists

---

## ❖ Professor Richard N. Taylor, UC Irvine

- Classical requirements engineering practice has failed to deliver. A way forward exists, based upon software architecture.

## ❖ Ban Al-Ani, UC Irvine

- Current requirements engineering approaches are inherently hubris: they do not take into account the target users' context and environment.

## ❖ Jorge Seidel, Aerospace Corporation

- Why do we use fixed, document-based requirements in a world of hyper-exponential change?

# BeSSt Invited Presenters/Panelists

---

## ❖ Andrea Richards, Raytheon

- Why do we lack a strong feedback loop from test and verification back to requirements development for the next generation of systems?

## ❖ Dale Robinson, Raytheon

- The number of requirements should be as few as possible: this allows for a wider trade space.

## ❖ Emil White, Lockheed-Martin

- Why do we continue to develop requirements without regard for how they will be verified, when this causes trouble for us all the time?