

Creating Mission Assurance Champions to Enable Mission Assurance Information Infusion & Feedback

Adapting Mission Assurance Workshop – Oct 19th, 2022



Professional Background

- 16 Years in Aerospace: Civil, Defense, Commercial:
Space, Aeronautics & Science
- Manufacturing → Design → Launch → Mission Ops +
Program Management
- Traditional Prime → Newspace → Government
 - Currently NASA STMD – Small Spacecraft Technology
& Flight Opportunities via BryceTech

A Range of Mission Assurance Experiences

- Zero insight, oversight or internal processes
- Commercial processes w/ government insight
- Oversight + 1000+ of data item deliverables, flight computer deliverables, etc

A Range of Mission Assurance Organizations

- No formal processes or people to lead mission assurance activities
- Individuals charged with all Safety, Mission Assurance & Quality duties → Common
- Mission Assurance Organizations as part of business unit or independent

Agile Mission Assurance



Reduction in External Oversight & Insight

Organic, yet cultivated vendor processes that can be trusted



Diverse, Active Community

Data resources (lessons learned, part databases, etc) are being sought out, actively and added back to

Lean Six-Sigma Champions

- 1-2 day coursework-based programs to “certify” individuals as mentors within working level teams
- Champions promote lean activities within working teams, act as “translator” between experts and staff

Example Curricula (KCG 2022)

- Strategic Lean Planning
- Organizing for Lean
- Leadership and Change Management
- Adjusting the culture to Lean
- Developing a Lean Vision
- Developing a Lean Roadmap
- Selecting and Managing Projects

- Identifying Teams and the Roles of Team Members
- Project Management
- Performance Metrics
- Effective Deployment of Lean Tools
- Implementation Success Factors

Mission Assurance Champions

- Following Lean Six-Sigma methodology, **develop a curricula** which covers the core elements of what contributes to effective mission assurance processes
 - **Draws from multi-agency experiences:** civil & defense, science, R&D....
- **“Certify” individual champions through** completion of the curricula, who act as translators between the government mission assurance community and vendor internal teams
- **Formalize a continuous learning criteria** – expectation of attendance and participation in workshops, forums, and classes to stay current as a Mission Assurance Champion (CEU-style)

Curricula Example

Johnson-Roth (2011), NRO (2008), NASA OSMA (2022)

- Mission Risk Designations & Classes
- Requirements Definition, Verification, and Management
- Risk Assessment & Management
- Root Cause and Corrective Action Processes
- Parts, Materials and Processes
- Environmental Compatibility
- Integration & Test
- System Safety
- Program Management Practices
- System Design Assurance
- Supply Chain Risk Management
- Change & Configuration Management
- Do No Harm Mission Assurance Practices
- Test Like You Fly
- Close call, Incident and Mishap Processes
- Post Flight Reporting & Documentation
- Case Studies / Lessons Learned
- Mission Assurances Tools & Databases (What/Where/Why/How)
- Regression Testing practices
- Ground Systems & Facilities Considerations

HW: Require Champions to Apply and Report Back

Johnson-Roth (2011): [https://s3vi.ndc.nasa.gov/ssri-kb/static/resources/TOR-2011\(8591\)-21.pdf](https://s3vi.ndc.nasa.gov/ssri-kb/static/resources/TOR-2011(8591)-21.pdf)

NRO (2008): <https://www.nro.gov/Portals/65/documents/news/articles/2008/2008-05.pdf>

NASA OSMA (2022): <https://sma.nasa.gov/news/sma-news-archive/sma-technical-excellence>

Continuing Education Elements



Workshop / Conference
Attendance



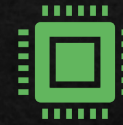
Communities of Practice
w/ Active Participation
from Champions



S3VI Events, LEARN
Forum



Aerospace Corp
Systems Engineering
Forum



Short Courses (IEEE,
AIAA, University)



NASA STEP (NASA
Internal Only)

Incentivizing Participation

There should be no cost to attend; Primarily virtual sessions?

- Must have a government contract with a participating agency

Participant companies agree to provide inputs back into community

- Lessons learned / case studies
- Contribute back to curricula or continuous education development (i.e. present at a community of practice)

Proposal win theme for participating companies

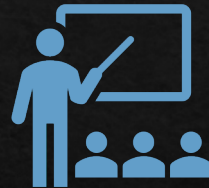
- Named champions
- Being willing to participate builds further trust via open communication

Status & Next Steps



**The piece parts already exist →
although some live behind agency
firewalls**

Curate lessons, create a single stop web portal with
links to materials



Develop a Forum

Watch at own pace, followed by scheduled discussion
webinar?



Who's the host?

Continue to develop and market concept