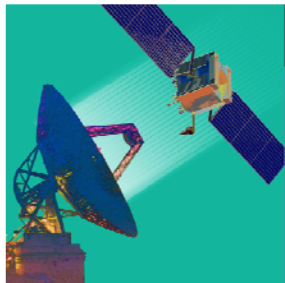


Working Group Outbrief

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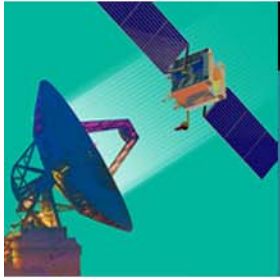


Session 11E

Open Source Practitioners in Aerospace

*Wayne Burke, NASA/Jet Propulsion Laboratory, California
Institute of Technology*

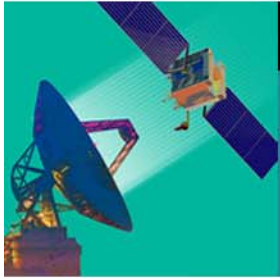
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Session Goals

- Convene the budding open source software community within aerospace.
- Share lessons learned.
- Get questions answered.

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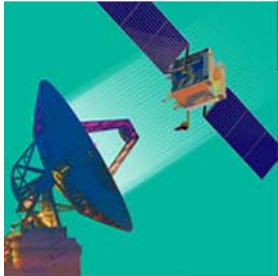


Presenters/Panelists

Co-Chairs:

- Wayne Moses Burke, NASA JPL
- Vale Sather, Aerospace

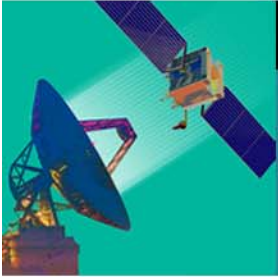
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Breakout Sessions

- Open Source Software – Lessons Learned
- Is there anybody out there? Finding open source practitioners within the workplace
- Involve cross-domain contributions / building community
- Open Source Software Security and Assurance
- Ball Aerospace Cosmos
- Low Side Develop / High Side Deploy
- The Sociology of Open Source
- Buyer's Remorse – How to abandon or modify an open source approach after engaging
- Open Source Licensing
- Configuration Management and Sustainability of Open Source

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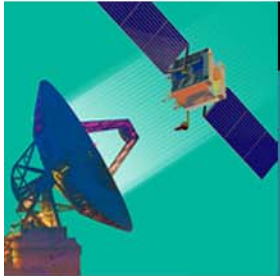


Key Points: Open Source Software – Lessons Learned

Proposed by Vale Sather, Aerospace

- Although OSS provides opportunities for negative intent, it also permits peer review, however sometimes it was not taken up.
- Training is required for developers on management of OSS especially for larger teams. Control is required.
- A one-government repos for OSS may be useful, however that would be expensive.
- Regarding legal advice; OSS communities have legal advisors, if you are part of that community you can potentially leverage the legal advice/guidance.

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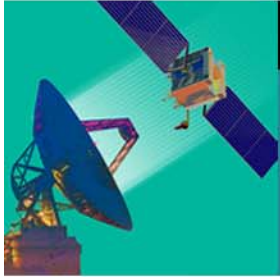


Key Points: Is there anybody out there? Finding open source practitioners within the workplace

Proposed by Lewis John McGibbney, JPL

- Mechanisms for reaching out to OS practitioners in the organization
- Brining the community together
- Keeping momentum going
- Bringing in speakers
- Making OSS a social endeavor
- Organizational policy can really drive OSS community building
- Open source hardware is another area where community building can provide value for the organization
- Cross-project code availability exists however hard boundary lines exist which do not permit code to be provided externally.
- A large part about this involves getting the right people into the right places.

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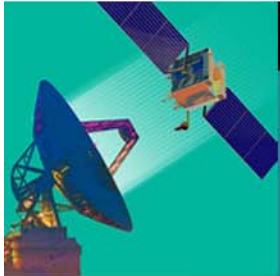


Key Points: Involving cross-domain contributions / building community

Proposed by Dan White, Valparaiso University

- What is SatNOG about and what does it involve?
 - Build the community via a rewards system for continued participation
 - Contacts in amateur radio and other individuals who may maintain stations
- Documenting how new people can get involved, what is the mechanism behind participation? Putting this information out very clearly is a good catalyst for making your project more viable in the longer term.

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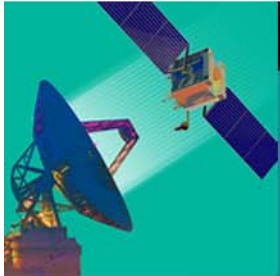


Key Points: Open Source Software Security and Assurance

Proposed by John Farrell

- Discussion involved the availability of tools for security assessment/analysis
- Vendors which provide such services include, Black Duck, Open SAM, BSAM (best practices for open source reliability and security vulnerability).
- Security standards developed at MITRE; software quality issues are being separated into Common Quality Enumeration.
- The session provided a grounding for individual interested in engaging with the topic.
- SCI (started a few weeks ago); JFAC were established for setting up a best practices initiative.
- Integration of static code analysis with nightly builds can go a long way to improving security and assurance.

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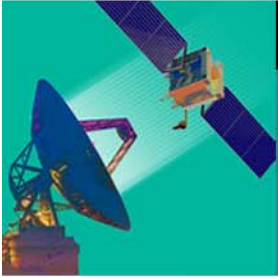


Key Points: Ball Aerospace Cosmos

Proposed by Ryan Mel

- Talk provided overview of what Cosmos is. Each feature was described for the command telemetry control.
- License selection was discussed and justified. This involved the use of a license which permitted commercial activities.
- Concerns were raised regarding the use of OSS for injecting malicious code into the Cosmos codebase.
- Discussion of the scripting language (Ruby); which involves a command control extension scripting functionality.
- Discussion also touched on 3rd party contributions from OSS community.
- Technicalities of data encryption were discussed as well as software configuration
- Finally, Cosmos users were stated

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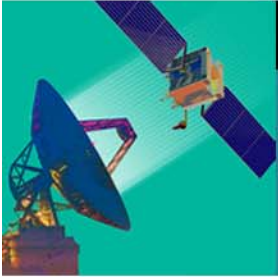


Key Points: Low Side Develop / High Side Deploy

Proposed by Jorge Seidel, NRO

- An overview of Low side High side (LsHs) was provided
- Ongoing efforts which present problems displayed by LsHs scenarios were covered (DARPA XDATA, DARPA MEMEX)
- Support for working on problems representative of the LsHs space needs to include and involve people. This relates to the recruitment of developers on the Ls which are able to work on similar representative problems.
- MITRE has a software/hardware group which works in this area and there is research to be done in order for more lessons to be learned.
- LsHs problems can potentially be addressed by Space Apps program

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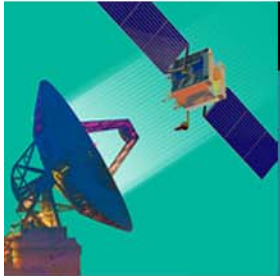


Key Points: The Sociology of Open Source

Proposed by David Mittmann, NASA JPL

- Conversation began on similarities between JPL's OSS ecosystem and open source foundational model
- Topics such as meritocracy, releases, release management, project incubation, and assessment of quality include

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Key Points: Buyer's Remorse – How to abandon or modify an open source approach after engaging

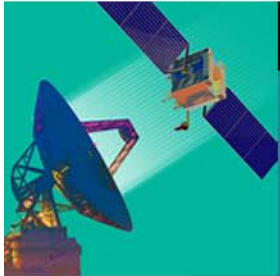
Proposed by Richard Doyle, NASA JPL

- The scenario is that you are well down the process of 'open sourcing' or have consumed open source software. For some reason there is a direction change. How can this be managed.?

Community perspective;

- there are already processes in place for managing such events e.g. project retirements (there is already an established process)
- Sociological changes include FUD (fear, uncertainty and doubt); why did this have to change course, is this still reliable, is this a consequence for us.... Technically?

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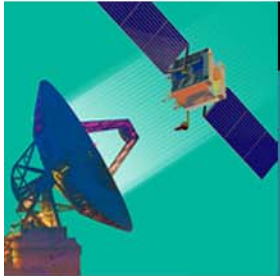


Key Points: Buyer's Remorse – How to abandon or modify an open source approach after engaging

Consumer perspective

- DOD scenario; still in the early stages of understanding what OSS actually is. Risk assessment in this scenario is something which is still an under-developed, misunderstood concept. Fear of Open Source (FOSS) is an issue when risk management.
- Institutional Memory; (Government consumer) acquisitions come and go, however the lessons need to be retained and understood in order for them to be applied across projects.
- To what extent to these types of Gotha's be managed through careful planning and risk management? There is no silver bullet. We tend to crown the risk assessments to the upper right of a 5x5 graph at this point in time.

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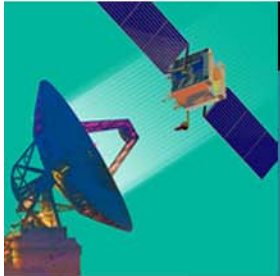


Key Points: Buyer's Remorse – How to abandon or modify an open source approach after engaging

From a Provider Perspective;

- When does directional change effect a provider? Possibly competitions.
 - In this case, we need to think about the original reason we decided to open source in the first place. 1) to help the community at large, or 2) to be a leader in a field.
- Baseball field scenario e.g. field of dreams, if you built it they will come. This is however not always the case
- Marketing strategies may play a huge role in the viability of an OSS project. This can provide an advantage.
- The group is going to look into writing a paper on the topic of Buyers Remorse

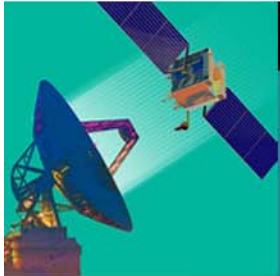
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Key Points: Open Source Licensing

- Particularly for Government, USAF, etc would like to utilize OSS. The licensing issue they run into involves the contributing back does not suit this consumption model. Changes do not even need to be application specific, however contribution of such 'fixes' raises security issues.
- Dual-licensing adds extra administration layers on top of engaging with OSS, however it provides flexibility for working with, and accepting contributions for the software.
- The company states that 'they own' the software. This raises issues when the company slams extra provisions on the license. This can have negative effects from within an OSS community.

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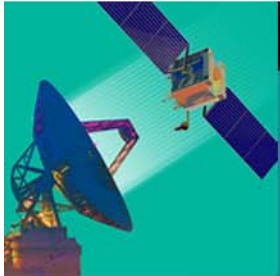


Key Points: Configuration Management and Sustainability of Open Source

Proposed by Michelle Dobard-Anderson, Aerospace

- Configuration management is the process of tracking change within a project over time. Controlling and reporting on those changes.
- How do I know what OSS is within my project? What happens when the OSS disappears?
- A number of tools were discussed which aid in quantifying 'dependency hell'. Software such as Apache Maven and artifact repositories can be used in an attempt to reduce dependency hell through improving insight and organizational awareness into the problem. This can be done through reporting mechanism available within such software.

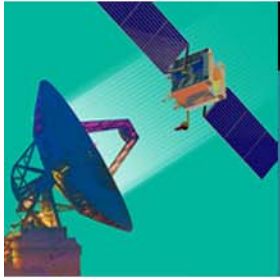
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Key Points: Configuration Management and Sustainability of Open Source

- Other products in this space include Black Duck, etc. for better understanding
- Challenges in the DoD environment involve no OSS being accepted for very specific reasons.
- Finally, University participants provided insight into the value of interchanges such as GSAW such that OSS products can be used by students and vice versa.

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Conclusions

The room was small but the afternoon was very productive
The participants engaged with the topic