

Reuse Working Group

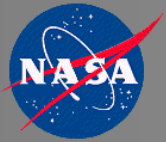
Chair: Chris Mattmann (NASA JPL)

Co-Chair: Bob Downs (SEDAC)

9th Earth Science Data Systems Working Group Meeting

New Orleans, LA

October 20–22, 2010



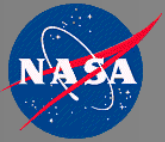
- Goals of the Working Group include:
 - Increasing community capacity and interest in reusing existing assets
 - Contributing to the removal of existing barriers to reuse
- The scope of the Working Group includes focusing on:
 - The reuse process, and not the technology infusion process
 - Software code and other design artifacts
- Major accomplishments during FY2010:
 - Starting to work together with [decadal survey missions](#) (DSMs)
 - Completing the [Reuse Enablement System](#) (RES) Test Plan and Policies documents, and packaging and distributing a system to SMAP for installation
 - Completing and posting the v1.0 [Reuse Readiness Level](#) (RRL) document
 - Drafted [Software Packaging Recommendation](#) document with WG input
 - Running the peer-recognition software [reuse award](#)
 - Continuing [outreach](#) via the portal web site, [publications](#), etc. (present at AGU, ESIP, IGARSS, IRI, ESSI; papers in DSJ, ESIN; chapter in an IN-TECH book)
- Rough reuse breakout schedule:
 - Day 1: open source software
 - Day 2: DSMs, RRLs, software packaging recommendation, outreach and publication opportunities
 - Day 3: planning for the coming year, preparing report-back



Background



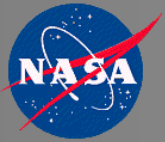
- About the NASA Earth Science Data Systems (ESDS) Software Reuse Working Group (WG):
 - The WG was started in 2004 to **facilitate reuse of software assets within the NASA Earth science community.**
 - Membership is limited to NASA-funded projects and investigators, though there have been many contributions from the general Earth science community.
 - The WG has been working to establish a “marketplace” for reusable Earth science software artifacts by working to increase the supply and availability of reusable assets.
 - Also, the WG has worked to increase the community capacity and desire for reuse by demonstrating the feasibility and value of reuse.
 - Through regular meetings of the full WG and a smaller support team, a variety of activities are performed to encourage and enable reuse.
- Goals of the Reuse WG include:
 - **To spend less time, money, and effort on software development**
 - **To increase productivity and improve quality through reuse**
 - **To increase the number of available reusable assets**



Reuse WG Charter Highlights

- Purpose
 - Address technical issues required to enable and facilitate reuse of software assets, including open source products, within the NASA Earth science community
- Goals
 - Demonstrate the feasibility and value of reuse
 - Increase the supply and availability of reusable assets
 - Make recognizable and easy-to-evaluate candidate reuse solutions
 - Minimize the cost of infrastructure activities to support the community's reuse activities
 - Increase community capacity and interest in reusing existing assets
 - Contribute to the removal of existing barriers to reuse
 - Recommend incentives to encourage reuse
- Scope
 - Facilitating reuse across projects and not interfering with local control of participating systems
 - Focusing on reuse process and not on technology infusion process
 - Focusing on reuse of existing assets rather than reusability of newly developed assets
 - Focusing not only on software code, but also on design artifacts (architectures, software designs, ICDs, test plans, etc.)
 - Focusing on reuse of proven operational and NASA Earth science specific software assets

The charter was updated this year, but the primary purpose, goals, and scope of the Reuse WG and its activities remain the same.



Reuse WG Activities

Reuse Implementation Projects

Efforts that result in the publication or use of a reusable component

Support/Enablement Activities

Efforts that provide tools and mechanisms to enable reuse

Outreach and Education Activities

Efforts that increase community awareness and understanding of benefits, best practices, etc.

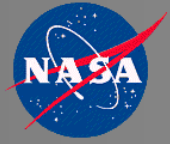
Policy Change Activities

Efforts to reduce policy barriers to reuse

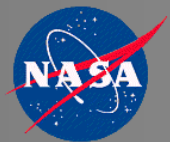
Reuse Incentive Activities

Awards and structural changes that directly or indirectly encourage reuse

- Examples of work in some of these areas include:
 - Recommending that NASA create a **Reuse Enablement System** (repository) for Earth science reusable software assets; development of **Reuse Readiness Levels**
 - Creating a **web site to promote and provide information about reuse**
 - Providing NASA with **policy recommendations to encourage reuse**
 - Developing a **reuse peer-recognition award**

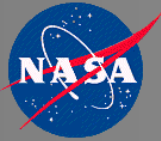


Summary of Activities

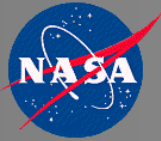


2010 Major Accomplishments

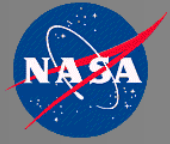
- Software Reuse Enablement System (RES)
 - Made minor revisions and updates to prototype RES
 - Finalized and posted initial RES Test Plan document
 - Finalized and posted initial RES Policies document
 - Packaged RES, distributed to SMAP, and helped set up an instance
- Software Reuse Portal Web Site
 - Continued to maintain and update site
 - Continued to publicize site to the community
- Continued development of Reuse Readiness Levels (RRLs)
 - Held a one-day workshop to review and finalize the RRLs
 - Completed and posted final v1.0 RRL document
 - Began collecting suggestions for improvements in a v1.1 draft document
- Continued software reuse peer-recognition award
- Contributed to knowledge on reuse with publications and presentations, and joined social networks for additional outreach
- Continued weekly support team telecons and monthly WG telecons



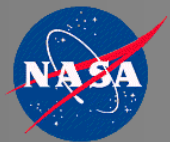
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- *Decadal Survey Missions*
 - Opened communications with missions
 - Published/presented on topics related to reuse in NASA Earth science missions
 - *Best Practices and Guidelines*
 - Selected existing document style to use as standard template for all documents
 - Published version 1.0 of the RRLs
 - Developed a software packaging recommendation (to be finalized this meeting)
 - *Reuse Enablement System (RES)*
 - Completed RES Policies and RES Test Plan documents
 - Packaged and distributed RES to SMAP, and assisted with set-up of their RES
 - *Reuse WG Peer Award*
 - Continued running peer-recognition award
 - Developed and submitted a recommendation for enhancement of the award
 - *Publishing Opportunities and Conferences*
 - Continued publishing/presenting on reuse (e.g., ESIP, IGARSS, IRI, ESSI, AGU)
 - Special sessions at AGU Fall Meetings



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- 8th ESDS WG Meeting
 - 1 poster and 2 invited talks
 - Abstracts and poster presentations
 - 2009 and 2010 Fall AGU Meetings
 - 2010 Winter and Summer ESIP Federation Meetings
 - IGARSS 2010
 - Papers and oral presentations
 - Data Science Journal paper on RRL uses
 - Earth Science Informatics paper from 2009 ESSI Workshop
 - 2010 Earth and Space Science Informatics Workshop
 - IRI 2010
 - Invited book chapter
 - In *Aerospace Technologies Advancements* by IN-TECH (available online through Sciyo.com)
 - Special sessions
 - RRL Workshop
 - Fall AGU Meeting (2009 held, 2010 scheduled)



Reuse Breakout Sessions



Reuse Breakout Agenda

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- Day 1, Joint Breakouts (1:00pm and 3:30 pm)
 - Discussions on open source and its applicability to reuse
 - Day 2, Breakout #1 (9:00 am)
 - Decadal survey mission report backs
 - RRLs part 1: calculator tools and integration into RES
 - *Invited speaker: First Lastname (affiliation)*
 - Title
 - Day 2, Breakout #2 (11:00 am)
 - RRLs part 2: possible updates, planning for v1.1, integration and use cases in decadal survey missions
 - Day 2, Breakout #3 (1:30 pm)
 - Finalizing the Software Packaging Recommendation v1.0
 - Day 2, Breakout #4 (3:45 pm)
 - Review accomplishments of the past year
 - Identify future publication and outreach opportunities
 - Day 3, Breakout #5 (9:00 am)
 - Plan next year's activities and prepare meeting report-back