



Kathy Malnick (NASA IV&V)

Kevin Carmichael (NASA HQ Office of Chief Engineer, Detailee)

Jon Verville (NASA GSFC)

Software Engineering Electronic Handbook

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What is it?

- Guidance material to help the NASA workforce implement requirements in NPR 7150.2A and promote best practices
- Addresses topics of interest identified by the community of practice (e.g., Acquisition, Model Based Software Development, use of COTS/GOTS/MOTS/OSS, etc.)
- Addresses 132 individual requirements in NPR 7150.2A and 30 topic areas
- Guidance material includes requirement specific guidance, rationale, examples, best practices, lessons learned, references, tools and templates





Why is a Handbook Needed?

- Guidance material provides further explanation of the requirements and the rationale for why they exist
- Handbook provides relevant and approved information to aid software developers in meeting NPR requirements
- Best-in-Class examples, templates, and tools are provided to help developers get started quickly and maintain compliance with the NPR
- Allows developers to easily find and focus on specific information necessary to comply with requirements



Why Electronic?

- Software workforce prefers electronic access to traditional paper references
- Allows guidance material to be “published” as it is developed vs. when it is all finished
- Allows easy updates and corrections
- Easily searchable, e.g., tagged material
- Delivers targeted material with easy access to reference material
- Integrated into the NEN Software Engineering Community of Practice (CoP)



History

- NASA Software Working Group opted for electronic version of the Handbook in 2009
- Inputs regarding Handbook content collected from the software community
- Inputs sorted into “features” and “guidance” and prioritized in January 2010
- Guidance material was further sorted into topics and NPR requirements
- NEN selected as the access point for the Handbook and host for some features such as Ask-an-Expert, or the NASA PAL





Top 10 Requested Features

#	Feature	Location
1	Classification and Safety Critical Assessment Tools	NEN CoP
2	Link requirements to "best in class" examples and templates	Handbook
3	Lifecycle products linked to major milestones, integrated with 7120 and 7123	Handbook
4	Present all requirements associated with a software class and include applicable safety critical and assurance requirements	Handbook
5	Traceability of 7150 requirements to 7120 and 7123 related requirements	Handbook
6	Gateway to agency tools, training, and agency and center experts	NEN CoP
7	Ability to search the NPR from different user perspectives	Handbook
8	Definitions of terms	Handbook
9	Links to agency and center processes and PALs	NEN CoP
10	Compliance matrices	NEN CoP



Top 10 Guidance Areas Requested

#	Feature	Location
1	Applying requirements to small projects	Handbook
2	Transitioning to a higher class	Handbook
3	Compliance to requirements	Handbook
4	Tailoring of project assets, with examples	Handbook
5	Use of COTS, GOTS, MOTS and Open Source	Handbook
6	Acquisition of software	Handbook
7	Flow down of NPR requirements on contracts and to other centers in multi center projects	Handbook
8	Waiver process at center and HQ	Handbook
9	Guidance on P(Center) + SO	Handbook
10	Qualification of flight software	Handbook

Credible Guidance

- Guidance material developed by a dedicated team that has topic expertise or has researched the material which includes interviews with experts – including IV&V personnel
- References are provided to related material both inside and outside of NASA
- All material is approved for inclusion in the handbook by the Program Executive for Software Engineering in the HQ OCE



Intended Audience

- SW Developers
- SW Managers
- SEPG/SPI Personnel
- SA Personnel, including IV&V
- Project Managers
- Tech Authority Personnel
- Non-Software Engineers who develop software
- Systems Engineers



Relevance for IV&V

- Better quality project artifacts
- Reference for IV&V personnel
 - Understand Agency intentions and expectations for software engineering requirements
 - Compliance matrices for requirements by software class
 - Product maturity map and lifecycle review entrance and exit criteria
- Opportunity to provide feedback for updates based on experience with projects





Where is it?

NASA ENGINEERING NETWORK

SOFTWARE ENGINEERING

Software Engineering



Ask an Expert

Ask and Find questions from Software Engineer Experts



NASA Software Engineering Handbook (Beta)

NASA Software Guidebook Wiki



Classification Tool (Beta)

Link to software classification guide



NASA Software Process Asset Library (PAL)

Software Process Asset Library



Contact List

Search and Locate Software Engineering Experts from around NASA



Reading Room

Find out what other Software members are reading.



Document Library

Software Documents



Training

Recommended courses for software engineers



Forums

Discuss and read about what is going on in software.



Suggestions

Have an idea or suggestion for the community? We want to hear it!



Links

Software Engineering External Links



SUB COMMUNITIES

 [Software Architecture Review Board](#)

nen.nasa.gov/software

Availability

- Prototype now available on NEN Community of Practice
- Most topics and NPR requirements guidance complete
- Wiki structure is functional
- Related features (forums, contact list, etc.) in place on NEN Community of Practice
- Handbook ready for Agency review – January 2012
- Target completion of agency review is March 2012



Available Formats



- ▶ One master PDF with all “static” material
- ▶ Individual PDFs for each section with informational header page
- ▶ All PDFs have embedded links back to web equivalent (for use when viewing PDFs on a PC)

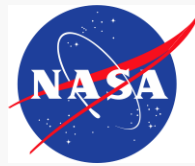


- ▶ Website with all dynamic content and majority of “static” content
- ▶ Interactive site for extensive collaboration, contribution, and commenting
- ▶ Extensive links between NEN CoP and Handbook site



Contact Information

- Kevin Carmichael
(216) 433-3966
kevin.r.carmichael@nasa.gov
- Kathy Malnick
(304) 367-8245
kathy.d.malnick@ivv.nasa.gov
- Jon Verville
(301) – 286-8741
jonathan.p.verville@nasa.gov



Questions