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NASA Procedural Requirements

COMPLIANCE IS MANDATORY

NPR 7150.2

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Subject: NASA Software Engineering Requirements

Responsible Office: Office of the Chief Engineer

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PREFACE

P.1 Purpose

Software engineering is a core capability and a key enabling technology for NASA's missions and supporting infrastructure. This NASA Procedural Requirements (NPR) supports the implementation of the NASA Policy Directive (NPD) 2820.1, NASA Software Policies. This NPR provides the minimal set of requirements established by the Agency for software acquisition, development, maintenance, operations, and management. This NPR is intended to support NASA programs and projects to accomplish their planned goals (e.g., mission success, safety, schedule, and budget) while satisfying their specified requirements. This NPR provides a thorough, but not all inclusive, set of software engineering requirements in generic terms to be applied throughout NASA and its contractor community.

P.2 Applicability and Scope

P.2.1 The requirements of this NPR cover software created or acquired by or for NASA, including commercial-off-the-shelf software (COTS), government-off-the-shelf software (GOTS), modified-off-the-shelf software (MOTS), open source, reuse, legacy, and heritage software. Requirements in this NPR apply to all of the Agency's product lines containing software systems and subsystems. The applicability of requirements in this NPR to specific systems and subsystems within Agency product lines, programs, and projects is determined through the use of the NASA-wide definition of software classes in Appendix B, in conjunction with the Requirements Mapping Matrix in Appendix D. It is not uncommon for a project to contain multiple systems and subsystems having different

software classes. Through the use of the Requirements Mapping Matrix, the number of applicable requirements and their associated rigor are scaled back for less critical software classes.

P.2.2 This NPR applies to NASA Headquarters, NASA Centers, and NASA Component Facilities.

P.2.3 This NPR shall be applied to software development, maintenance, operations, management, acquisition, and assurance activities started after its effective date of issuance [SWE-001].

Note: This document is not applicable to software development, maintenance, operations, management, acquisition, and assurance activities started before its effective date of issuance (i.e., existing systems and subsystems containing software for Shuttle, International Space Station, Hubble, Chandra, etc.). If the respective Governing Program Management Council (GPMC) determines that an existing software activity should follow all or part of this NPR, the results of that decision should be documented in the Project Plan (as defined in NPR 7120.5, NASA Program and Project Management Processes and Requirements). The respective GPMC can make this determination based on the safety criticality of the existing project, the mission criticality, project cost, current phase of the existing program, etc.

P.2.4 This NPR provides procedural requirements to the responsible NASA project managers and contracting officers for NASA contracts. It is made applicable to contractors through contract clauses, specifications, or statements of work in conformance with the NASA Federal Acquisition Regulation (FAR) Supplement.

P.2.5 This NPR does not supersede more stringent requirements imposed by individual NASA organizations and other Federal Government agencies. NASA program and project management requirements are contained in NPR 7120.5, NASA Program and Project Management Processes and Requirements. Requirements in this NPR are identified by "shall" and a requirement number. Any material not identified by a "shall" in this NPR is informative in nature (e.g., notes, introductory text, etc.). The responsible party for each requirement is identified by an underline.

P.3 Authority

- a. 29 U.S.C. 749d, Section 508 of the Rehabilitation Act of 1973, as amended. Specific requirements for accessibility may be found at 36 CFR Part 1194, available at <http://www.access-board.gov/sec508/508standards.htm>.
- b. 35 U.S.C. 200 Chapter 18 - Patent Rights in Inventions Made with Federal Assistance.
- c. 40 U.S.C. § 11101 et seq., Clinger-Cohen Act of 1996.
- d. 42 U.S.C. 2457 Property Rights in Inventions.
- e. 42 U.S.C. 2473(c)(1) of the National Aeronautics and Space Act of 1958, as amended.
- f. 44 U.S.C 3501 et seq., Paperwork Reduction Act of 1994 (Public Law 104-13).
- g. OMB Circular A-130, Management of Federal Information Resources.

P.4 References

See Appendix A for a complete reference list of all documents cited in this NPR.

P.5 Cancellation

None.

/S/

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