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Malcolm Baldrige National Quality Award 2007 Award Recipient

ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
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Systems Engineering Standards: Status and Needs

28 October 2010

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Disclaimer:
Discussion presented here is a general government perspective from the speaker's involvement in various efforts to develop SE standards and guides, particularly within SC7 – Systems and Software Engineering

Role, Need, or Value of Standards for Acquisition and Engineering, especially Systems Engineering

Need for SE Standards

- *Standards provide a minimum set of mandated guidance - necessary, but not always adequate*
- *Standards provide a common baseline for evaluating processes and practices within diverse organizational and project contexts*
- *Standards represent a set of "pre-made" decisions that have shown value with respect to project and system performance*
- *Problem is deciding appropriate level of standardization*
  - *With acquisition reform, focus turned to "performance-based requirements" and higher-level guidance versus detailed how-to standards*

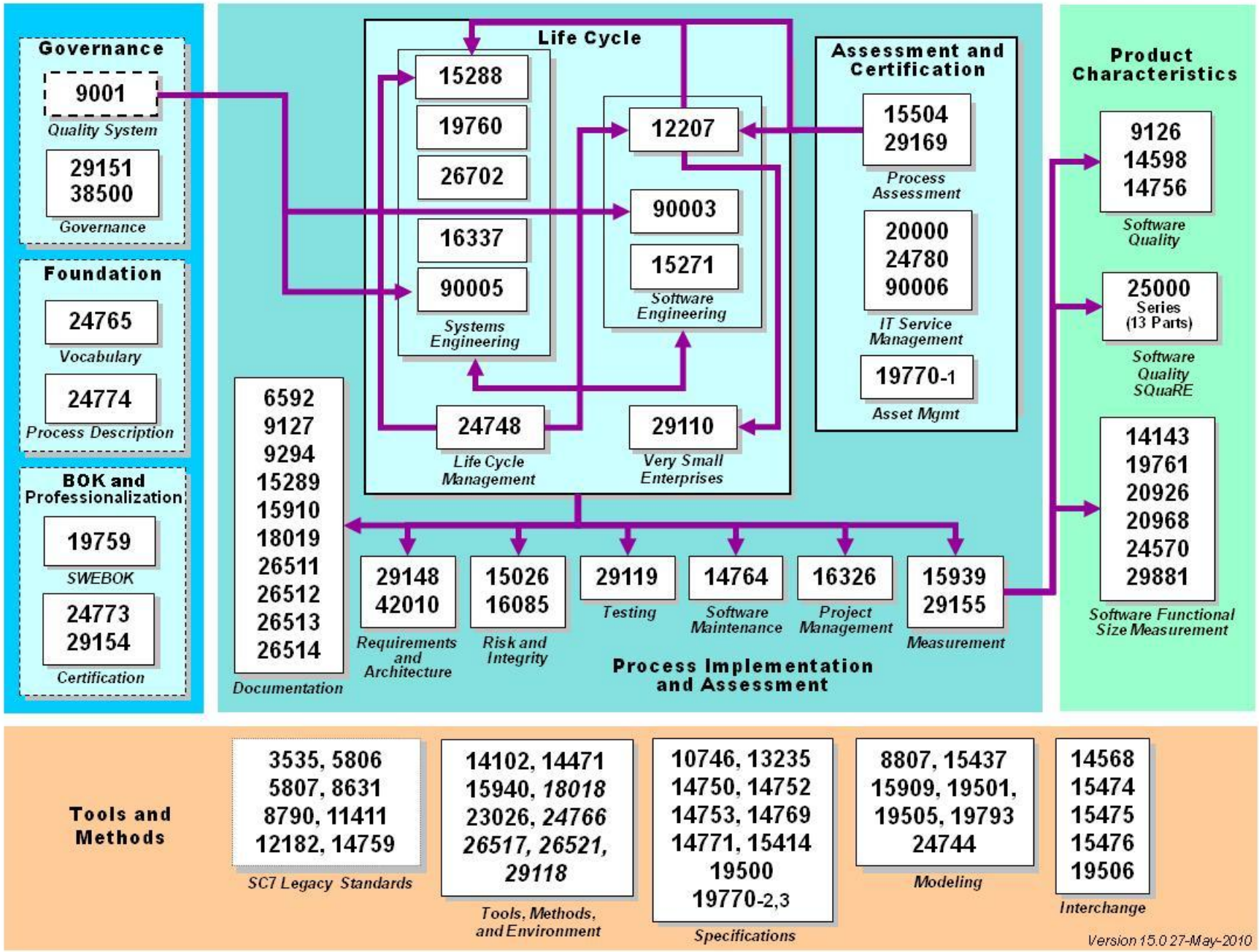
State of Systems Engineering Standards

(from the perspective of SC7 - Systems and Software Engineering - Process Standards)

Industry Standards Usage in DoD

- *Defense Acquisition Guide (DAG) defines and describes DoD system and software lifecycles and processes*
  - *Aligned with industry standards (e.g. ISO/IEC 15288)*
- *DAG processes are basis for Defense Acquisition University (DAU) courses*
- *DAG processes are basis for specific organizational standard processes (OSPs)*
  - *e.g. U.S. Army RDECOM-ARDEC*

Overview of the ISO/IEC SC 7 Standards Collection



DoD Adoption of SC7 Standards

- *ISO/IEC 15288:2008 - System life cycle processes*
- *ISO/IEC 12207:2008 - Software life cycle processes*
- *ISO/IEC 15504 - Process assessment*
  - *Part 2: 2003 - Performing an assessment*
  - *Part 3: 2004 - Guidance on performing an assessment*
  - *Part 5: 2006 - An exemplar Process Assessment Model*
- *ISO/IEC 15939:2007 - Measurement process*

DoD Involvement – SC7 Standards

- *ISO/IEC 15026 - Systems and Software Assurance*
- *ISO/IEC 14598 - Requirements engineering*
- *ISO/IEC 42010 - Architecture Description*
- *ISO/IEC 24748 - Life cycle management - Guide for life cycle management*
- *ISO/IEC 29119 - Software Testing*

Top Needs

- *Systems and Software Assurance*
- *Requirements Engineering*
- *Architecture Design Standards*
- *Verification and Validation*
- *Configuration Management*

DoD/MIL Standards vs. Industry Standards

Pros / Cons

DoD/MIL Standards

- **Pros**
  - More specific to needs
  - Shorter development cycle (of the standard)
  - More control
- **Cons**
  - Not universally applicable
  - Joint development implications
  - Maintenance burden
  - Not generally validated

Industry Standards

- **Pros**
  - Wide-spread use
  - Wider involvement
  - Supports law and policy
- **Cons**
  - Long development cycles
  - Less control
  - Wider involvement
  - Not generally validated

Decision Criteria

- *Do any existing industry standards exist in this area?*
- *Have they proven to enhance performance?*
- *Do they meet government requirements?*
- *Are updates being made – can government requirements be incorporated?*

Use of Industry Standards

- ***Requires involvement of DOD subject matter experts and users – GET INVOLVED!***

Contact Information

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