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**Software Architecture
Competence Development and
Collaboration**

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Agenda

- Background
- Goals
- Program Structure
- Desired Capabilities of Graduates
- Collaboration Enablers
- Summary



Background

- January 2004 – Raytheon established a company-wide **Raytheon Certified Architect Program (RCAP)** for senior system and enterprise architects
 - Spans all Raytheon Businesses; participants from U.S., U.K, and Australia
 - Participants are Raytheon employees only
 - Certification requires fulfillment of several dozen criteria in the areas of :
 - Professional Development, Core Skills, Practitioner Experience, Contributions to the Architecture Discipline

- October 2011 – Raytheon supplemented RCAP with a new ‘training branch’ focused on software architecture, the **Software Architecture development Program (SwAP)**



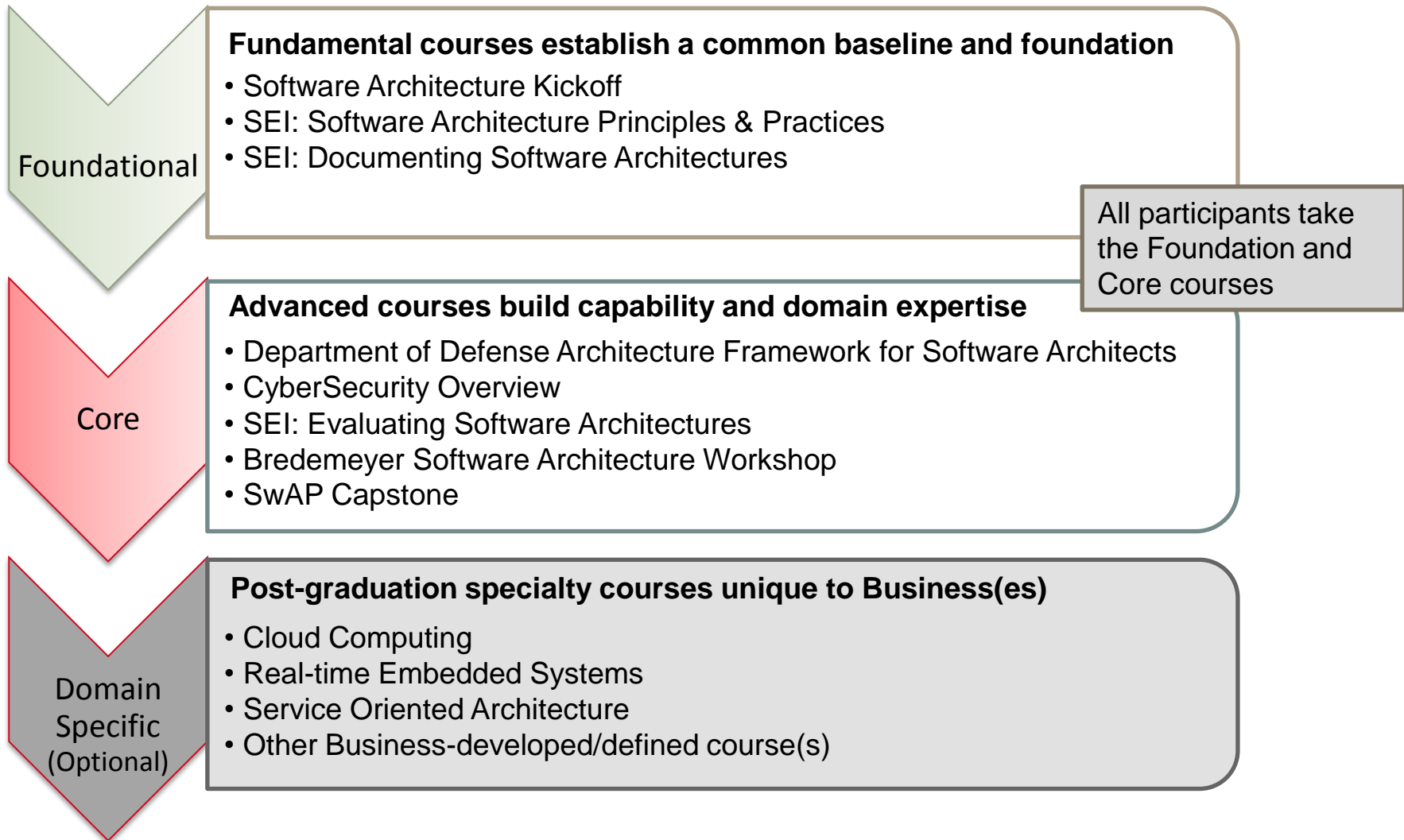
ET&MA
RAYTHEON CERTIFIED
ARCHITECT PROGRAM

Goals

- Improve program quality and schedule through standardization of our software architecture practice
- Enhance collaboration and reuse opportunities by establishing a company-wide community of Raytheon Software Architects
- Develop and enhance the skills & capabilities needed for software architects



Program Structure



Desired Capabilities of Graduates

- Leadership of Software Architecture Activities
- Leadership of Software Architecture Teams
- Understanding of Strategically Important Architecture Trends and Technologies
- Understanding of Established Software Architecture Patterns, Strategies, and Tactics
- Understanding of Raytheon's Architecture Enablers & Assets
- Improved Collaboration Ability

Collaboration Enablers

- Architecture Training
- Raytheon-wide Technology Interest Groups (TIGs)
- RSpace Communities of Practice (CoPs)
- Internal Workshops and Symposia
- Raytheon Architecture Collaboration Tool (ACT)
- Industry / Consortia Collaboration
- Lotus Notes Mailgroups



Collaboration Topics Mapped to SWAP Courses

	Program Kickoff	SEI Principles and Practices	SEI Doc Software Architecture	Software Architecture Workshop	DoDAF	Cyber Training	SEI Evaluating SW Architectures	Capstone
Collaboration as an Architecture Building Block	++							+
Collaboration Enablers	++							+
Process Focused Collaboration	++	+	+	+				++
Architecture Descriptions to Support Collaboration	++	+	++	++	++			+
Bridging Systems and Software Architecture	++				++			+
Architecture Teams & Governance	++							+
Role & Skills of the Architect	+							++
Collaborative Exercises	++		+	++	++	+	+	++

Collaborative Focus of SWAP Training

- eLearning (16%)
 - Learn at own pace
 - Exercises, assessments, additional resources
- Lectures (38%)
 - Raytheon and Industry Subject Matter Experts
- Case Studies (14%)
 - Focus on real Raytheon programs
- Collaborative Team Exercises (32%)



Blended methods address different student learning modes

Summary

- Raytheon has established a new company-wide software architecture training and development program (SwAP)
- SwAP has a focus on creating a collaborative ‘architect community’
- SwAP leverages a variety of corporate collaboration enablers
- SwAP leverages the approach and lessons learned from our long-term Raytheon Certified Architect Program (RCAP)



Questions?

Biography

Doug Dusseau is the Chief Software Engineer for Product Development at Raytheon Technical Services Company (RTSC) in Indianapolis, Indiana and is the current Chairman of the Raytheon Corporate Architecture Review Board. Doug is a Raytheon Certified Architect, and has been certified as a Master Open Architect (The Open Group) and an ATAM® Evaluator (SEI). Prior to his current position, Doug was the Chief Architect responsible for developing RTSC's Product Line Architecture.

Doug has over 25 years of experience leading the development of military hardware and software systems, and has authored numerous papers.

He has a bachelors degree in engineering from Purdue University and an MBA from Indiana University.



Biography

Rolf Siegers joined Raytheon in 1984 and currently leads Raytheon's company-wide Raytheon Mission Architecture Program (RayMAP), a set of initiatives addressing architecture process, assessments, training and certification, government/academia/standards org collaborations, reference architectures, governance, and tools. Rolf is an Engineering Fellow, Raytheon Certified Architect, member and past Chair of Raytheon's Corporate Architecture Review Board, and past Corporate Technology Area Director for Architecture & Systems Integration.



Rolf has led several multi-disciplinary architecture teams for large-scale, software-intensive national and international systems since 1997. He is certified as a Master Open Architect (The Open Group), ATAM® Evaluator (SEI), and Software Architecture Professional (SEI). Rolf has presented at conferences for IEEE, U.S. Department of Defense, Object Management Group (OMG), International Council on Systems Engineering (INCOSE), Integrated Defense Architectures, The Open Group, and the Software Engineering Institute (SEI).

Rolf holds bachelor degrees in Computer Science and Mathematics from Huntingdon College and is a member of IEEE and INCOSE. He resides in Dallas, Texas with his wife and three children and is part owner of a neighborhood cafe in his community.

Biography

Randy Case is a technology strategist for Raytheon Network Centric Systems (NCS) and the Chief Systems Architect for the strategic architecture of NCS. Before that, Randy was the North Texas Systems Engineering Center Director for Raytheon's Network Centric Systems business, managing nearly 200 Systems Engineers, Specialty Engineers, Engineering Fellows, and Scientists.



Randy was the Technical Area Director (TAD) at Raytheon for Architectures and Systems Integration for 2003-2004, where he established the Raytheon Architecture Review Board (ARB) and the Raytheon Certified Architect Program (RCAP). RCAP was accredited by The Open Group in March 2009 and re-accredited in 2011. Prior to the TAD position, Randy was the architect of the Raytheon Integrated Product Development System (IPDS). He was the Lead Systems Engineer for IPDS, and the lead engineer on two programs and has worked as an engineer on a number of programs both large and small, defense and commercial related.

Randy has a BSEE from the University of Texas (at Arlington). He was the head of the INCOSE Standards Technical Committee (2008-2009), and has contributed to a number of systems related standards (IEEE-1220, ISO 15288, and others). He is a senior member of IEEE.

Biography

- Don Wilson is a Principal Engineering Fellow at Raytheon Missile Systems in Tucson, Arizona. He leads the technical development of software strategy and execution at the world's largest producer of missile systems. He has focused on the development of product line software strategies for missile systems and related products. Don is the Chair of Raytheon's Information Systems and Computing Technology Network and a member of Raytheon's Architecture Review Board. He holds a BS in Computer Science from Rutgers University.

