Changes in the Requirements Engineering Processes for COTS-based systems

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Abstract

As COTS products (hardware, software, components, subsystems, etc) are considered for integration into ever more complex systems, some process changes need to be considered in the area of Requirements Development.

In systems that relied primarily on custom developed subsystems, it was entirely appropriate to development the majority of requirements, at all levels, before the construction of subsequent systems components (h/w or s/w). But with the increased use of COTS products, the very nature of the COTS products are likely to have an impact on the system requirements themselves. Because COTS products provide a fixed set of capabilities (and sometimes even unknown capabilities), not all of which are required or even desired, and because some of the candidate system requirements may not be satisfied by any COTS product, there is an increased likelihood that not all system needs can or will be satisfied by any collection of COTS products.

Thus, a new problem arises for such COTS-intensive systems, namely that an early understanding of the available COTS products in the appropriate marketplace is now required. This implies a need to iterate between requirements definition/development and COTS product evaluations, much earlier in the system lifecycle than has been traditional. This presentation addresses some general challenges with using COTS in large, complex systems, and then addresses some of the paradigm shifts necessary to increase the success of using such COTS products.

About the Speaker

Ron Kohl *has been involved in the large systems integration business for 22 years, working on NASA's Space Shuttle and Space Station programs (Onboard Flight Software systems) while with IBM's Federal Systems Division in Houston. Ron has provided process, training and program/proposal support in Systems and Software Engineering areas during several years with Loral's and Lockheed Martin's Federal Systems Headquarters Technical Staff and then with Lockheed Martin's Software and Systems Resource Center (SSRC).*

Ron is now with AverStar Co. (formerly known as Intermetrics), in Fairmont, WV, as the Chief Systems Engineer for NASA programs, where we provide software IV&V and other systems and software engineering services to NASA for various Space programs (Space Shuttle, Space Station, EOSDIS, X-33, Mars 98) and other Federal Agencies.

Ron is actively involved in several external professional and industry associations: EIA's G-47 TC ('owner' of EIA 731 and 632, Systems Engineering Process Capability Model and Process Standards), INCOSE's Measurements WG and Risk Management WG and IEEE's Architecture WG (co-author of IEEE 1471, "Recommended Practices for Architecture Descriptions). Ron is also the past chair of the AIAA's Software Systems TC. Ron has a B.S. in Mathematics from the University of Wisconsin - Oshkosh and an M.S. in Mathematics from Southern Illinois University - Edwardsville.

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