

Progress Continues on Cyber-Physical Framework

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During the summer of 2014, the National Institute of Standards and Technology (NIST) kicked off a working group effort to develop a framework and roadmaps for cyber physical systems. Mid January 2015, this public working group focused launched the second phase of its work.

Cyber-physical systems (CPS) are often simply referred to as “smart” systems. These co-engineered systems comprise interacting networks of physical and computations components. The influx of smart technologies has expanded CPS domains to include infrastructure (grid, water, gas), buildings, emergency response, healthcare, manufacturing, transportation, and numerous others. **The public working group** aims to take a multi-domain perspective to ensure the research, development and deployment guidance it produces will be applicable within all CPS domains as well as supporting cross-domain applications. In particular, this group intends to address needs for a common lexicon and taxonomy as well as a reference architecture.

These working **group efforts began during the summer of 2014** with plans for the first several phases over the course of a year. The first face-to-face meeting during August launched the first phase of the initiative to draft a framework for the CPS elements. This work produced draft reports from each of the five subgroups – Reference Architecture, Use Cases, Cybersecurity, Timing, and Data Interoperability. Following the launch of the first phase, the subgroups organized meeting and collaboration to create initial documents that would eventually combine as elements of the CPS framework.

All five subgroups completed their documents by the close of 2014, **so now efforts are underway** to integrate and review the work. This second phase aims to produce a combined framework document by integrating the work completed by the subgroups and refining it further. The third phase of the work will result in a CPS technology roadmap which will identify opportunities for additional collaboration and propose a timeline for follow-on efforts to address key technical challenges.

According to the current timeline, the combined framework is expected to be finalized this spring. The group is scheduled to have its next face-to-face meeting in April, which will conclude the framework phase and launch the roadmap activities. A draft of the roadmap is anticipated in June 2015, followed by a month of review before its finalized in July. Another, related effort underway is also being led by the NIST Engineering Laboratory’s Smart Grid and Cyber-Physical Systems Program Office. The Cyber-Physical Testbed Development Workshop is scheduled for February 24-25, 2015 and will explore future research and development areas for CPS.

Ultimately, these efforts hope to head off several trends like the sector-specific applications of cyber-physical system deployments and the expansion of the Internet of Things without a foundation of interoperability. By drawing stakeholders from government, industry, and academia, the working group hopes to address the increasing need for systems-of-systems solutions to integrate CPS across domains. For insights on how CPS and other technologies are shaping the federal landscape, **check out the Federal Industry Analysis team’s recent report on emerging federal technology markets.**

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