Agenda and Prospectus

NIST Smart Manufacturing Workshop April 10-11, 2017

***SM apps and service marketplaces***

Abstract:

SM apps and service marketplaces: Chair – Dr. Jim Davis, SMLC/UCLA ([jdavis@oit.ucla.edu](mailto:jdavis@oit.ucla.edu)), Co-chair – Dr. Thorsten Wuest, WVU ([thwuest@mail.wvu.edu](mailto:thwuest@mail.wvu.edu)). Last year’s session considered the general functionality and barriers for a rich set of Marketplace services by focusing on: (1) functions, components and requirements, (2) a systems perspective, (3) challenges and barriers and (4) the role of Standards. This session also produced some clarity on definitions and offered views of Smart Manufacturing and Marketplaces based on technologies and practices where “practice” refers to the business and technology applications and activities that are needed to produce desired operational and business outcomes. This year’s session on SM apps and service marketplaces considers the technology, business and security landscape of commercial and non-profit SM Marketplaces, operational scope and the operating definitions of ‘open’ marketplace. In the context of ‘open’ and operational scope for Marketplace services, the session will drill down on the nature of operational data, data contextualization, constructs for composability, systems engineering practices and security practices.

Objective:

The objective of this SM apps and service marketplaces breakout session of the NIST SM workshop is to bring together experts from industry, academia, and government to consider the following specific questions in four panels:

1. Assuming Marketplace and Cloud are associated, what is the nature of services vs. applications (application implying licensed or purchased software operational on premise)?
2. What is the landscape of Marketplaces, definitions of open, security and the range and scope of operating problems and business models.
3. What is the nature of operational data, how is it contextualized; what are the data structures, e.g. data streaming, involved in composed apps; what is the nature of data security?
4. What are the constructs and reference architectures for composability of data-based apps for manufacturing operations? What do we mean by operational apps; what is composed; what are the possible constructs for composition; and what are the considerations of this kind of operational security?

Workshop structure:

The workshop is designed around four panel presentations and discussions comprised of experts from industry (users & service providers), academia and government. The panels comprised of an estimated three or four experts, each offering 10 min overviews, will be followed by group discussions facilitated as around-the-table comments. The panels will be:

1. *Recap of last year’s session, level set on services vs. applications*

(April 10, 1:00pm – 2:30pm, session 1)

In this session, the SM apps and marketplace services group will review the outcomes of last year’s session. The group will review and level set on those definitions that are key to describing business and technology elements and practices. This will include level setting on Marketplace and Cloud and the nature of cloud services vs. on premise applications. The group will also level set on the agenda, objectives, deliverables, method of discussion, and format of facilitation.

1. *Landscape of commercial and non-profit marketplaces – Part I & II*

(April 10, 2:45pm - 4:15pm & 4:30pm – 5:30pm, session 2)

This discussion will focus on the nature of services vs. applications and on commercial, vendor driven marketplaces vs. marketplaces formed by non-profit institutes and/or organizations. Different business drivers lead to differences in how marketplaces consider and support app resources, access, inclusion, data about applications and security. There can be differences in scope and areas of emphasis and from a landscape standpoint there can be differences in target communities, batch, continuous and discrete manufacturing support, specific industry sectors and/or small, medium and large manufacturers. There are provider, market, support, security, integrator, engineering, technology supply side impacts, to name a few. There are different definitions and facets of ‘open’ associated with different business models and the question of interoperability among marketplaces.

1. *Data, apps, composability, security and reference architectures - Part I & II*

(April 11, 8:30am – 10:00pm & 10:15am – 11:30am, session 3)

Marketplace apps and composability both depend on and drive contextualized data, data models and new modeling, engineering and operational practices. Architectural constructs and functionality need to be reflected in the marketplace services and the layers of interoperability. Reference architectures have become the vehicle for describing data and application services and service interoperability standards for different providers to offer independent and interoperable platforms for service integrators. Services that are linked, interdependent marketplace services involve structures with commitments to architecture and standards. This session considers the nature of the data, the relationship of the data with apps and the applications systems and the commitments that affect services, the role of data models and how service based systems are engineered and put into operation.

1. *Summary, convergence and directionally on resolved*

(April 11, 1:00pm – 3:30pm, session 4)

The previous sessions will have raised many points and have opened further questions. This last session will leave the important time to go around the table to hear from each of the participants on key points, where there is convergence among such a diverse group and what remains unresolved. These comments will form the basis of the report.

Outcome:

The individual outcomes for each of the panels are summarized below:

1. Characterizations of scope and similarities and differences of currently existing commercial and non-profit marketplaces.
2. What is their understanding, definition and convergence on views and what areas remain unresolved?
3. Open issues (current/future), challenges and opportunities from the perspective of provider, user and research communities; existing research needs, knowledge gaps.
4. A better understanding of the need for standards, practices and technologies for the Marketplace to work (Are there alternatives?) and the current status regarding available standards (industry/academia).
5. Outlook on the future development of a Smart Manufacturing marketplace

When the outcomes of the individual panel discussions are combined, there is an expectation of a consensus regarding the full scope of the market place, what it can drive, where there can be role conflicts and how to make it work. The intention is to summarize the findings in a state of the art / roadmap paper (depending on the outcome).

1. Panel 1 *Recap of last year’s session, level set on services vs. applications*

*Panelists tbd*

1. Panel 2 *Landscape of commercial and non-profit marketplaces*

*Panelists tbd*

1. Panel 3 *Data, apps, composability, security and reference architectures*

*Panelists tbd*

1. Panel 4 *Summary, convergence and directions fr unresolved topics*

Administrative:

The sessions will be recorded in order to be able to summarize the results correctly in the aftermath. However, the records will not be released (only the chairs will have access) and subsequently deleted after the summary is completed. If someone has objections regarding the recording, please contact the chairs prior to the session.