The Industrial Internet Consortium (IIC) held its quarterly meeting at SAP headquarters in Heidelberg, Germany. Bosch and SAP jointly sponsored a one-day session with the IIC and Plattform Industrie 4.0. There were 315 member representatives from 105 IIC member companies and a 75 additional people attending the IIC/Plattform Industrie 4.0 joint session.

The meeting was a landmark in many ways. Let us count them.

TECHNOLOGY WORKING GROUP

The *Vocabulary Task Group* has received a substantive comment that will need to be addressed by the Technology Working Group before publication of the next version. This is our first comment that has held up a publication, so we must be getting to the nitty-gritty!

The *Connectivity Task Group* is completing the latest version of the Connectivity Framework. In the next few weeks, it will be made available for Technology Working Group review. If it passes with no substantive comments, it will go on to membership-wide review.

The *Technology Working Group* has approved the latest version of the Industrial Internet Reference Architecture (IIRA). It comes in two parts: an Overview (G1) and Key System Concerns (G2). It will be circulated for membership review shortly.

(IIC publications that are more than the opinions of the authors go through a proposal phase, writing and review, then a review by a Working Group. Once the Working Group is satisfied, the paper may be published as a "white paper". For technical reports, a paper may be submitted for membership-wide review. If no objection is raised, it becomes a formal IIC publication.)
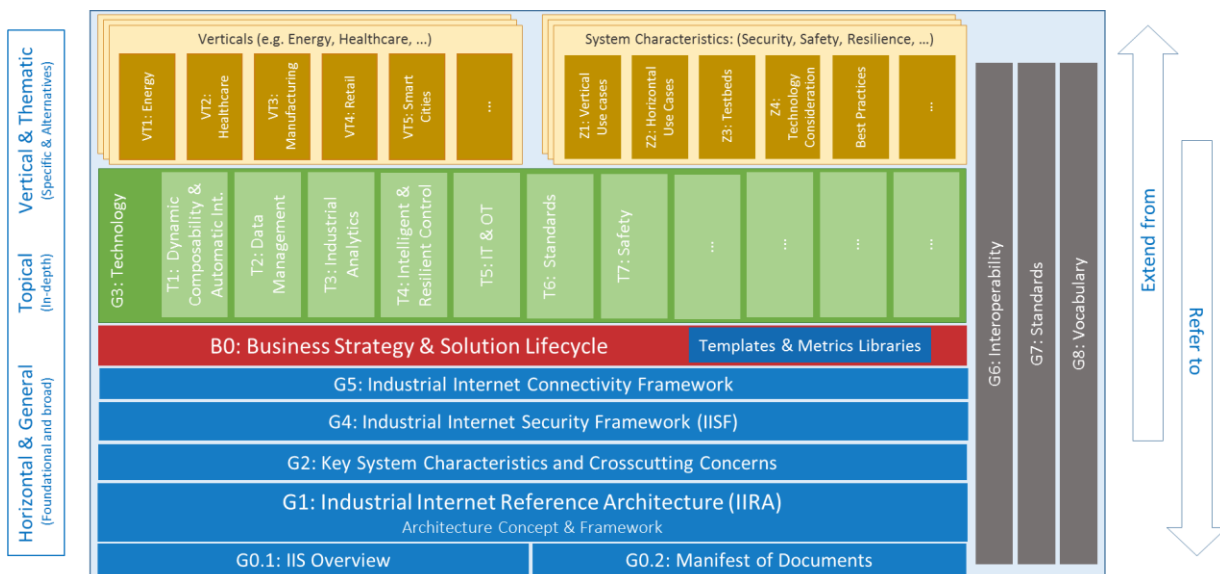
TESTBED WORKING GROUP

The Testbed Working Group had a record 24 testbeds presented at the meeting. There are currently 23 approved testbeds, five active proposals and eight concept-stage testbeds in the pipeline. The Steering Committee approved the Smart Factory Web Testbed (KETI, Fraunhofer IOSB) and one other that will soon be made public.

These approved testbeds, of course, are in their earliest stages, but the IIC now has testbeds that are up to two years old. These testbeds are beginning to yield results in three major areas: best practices, standards' requirements and modifications to technical references. To gather these results, the Testbed Working Group is considering a set of lightweight questions that can be answered in the quarterly reports expected from each testbed. We may, for example, ask:

- What best practices are you likely to apply on your next projects?
- What innovations have been realized?
- What changes would you like to see in IIC technical references?
- Any big gaps in the technical references that need to be filled?
- What noteworthy standards are employed by your testbed?
- Which standards bodies are you collaborating with?
- What standards would you like to have had available?

The goal is to feed these results into our other work, specifically best practices, standards' requirements and modifications to technical references. Any suggestions warmly welcomed!

INDUSTRIAL INTERNET SECURITY FRAMEWORK

After much intensive work the Industrial Internet Security Framework has been published. This landmark document is comprehensive, developed by international security experts from the IIC. Its objective is to drive consensus in the industry, promote IIoT security best practices and accelerate their adoption. The document's release was immediately picked up by the press, with at least 60 articles, three of which we highlight below:

- Computerworld,
- SiliconAngle and
- IT Business Edge.

Far from resting on their laurels, the Security Working Group set up a "war room" at the meeting, and while not otherwise occupied, created several further deliverables including:

- a FAQ,
- several pieces for the media,
- joint work with IIC members involved in Plattform Industrie 4.0 and
- a plan for the next quarter.

If you are looking for an executive overview, rather than the Full Monty, please see the supporting whitepaper, The Business Viewpoint of Securing the Industrial Internet.

MARKETING WORKING GROUP

Apart from working to publicize the Security Framework, the Marketing Working Group manages several task groups focused on different vertical markets. These include:

The *Energy Task Group* is actively seeking new Energy-themed case studies to publish under the IIC library of case studies.

The *Healthcare Task Group* identified several deliverables for the next quarter including a healthcare architecture to map to the IIRA, a possible healthcare testbed in China and several healthcare use cases.

The *Retail Operations Task Group* hopes to present a testbed proposal at IoT Solutions World Congress in Barcelona.

The *Smart Factory Task Group* has been chartered and is working towards the creation of a whitepaper titled "*The IIoT–An Evolution to a Smart Manufacturing Enterprise*".

For their day job, the Marketing Working Group planned and hosted, with RTI, the Industrial Internet Security Forum in Sunnyvale, CA on October 6th. The presentations from this event are posted here.

BUSINESS STRATEGY AND SOLUTIONS LIFECYCLE WORKING GROUP

The Business Strategy and Innovation Framework is being prepared for membership-wide review.

The IIoT Solution Assessment Toolkit and IIoT Project Toolkit are gamified tools to help project managers quickly determine what they know (and what they don't) and to understand the scale of the problem they face. Copies of the Toolkit prototype were distributed in Heidelberg and were very well received. These deliverables are now undergoing membership-wide review for wider distribution.

The *Ecosystem Task Group* is developing a matching service between small companies looking for markets and large companies seeking to collaborate. They have a template, and one proposal (if that's the word) already.

The *Use Cases Task Group* is upgrading the Security Use Cases document developed as a starter for the Security Framework for release as a use case.

Based on the Industrial Internet Interoperability Coalition (I^3C), the Working Group is looking to develop a case study identifying interoperability hotspots.

LIAISON WORKING GROUP

In keeping with the [Industrial Internet Interoperability Coalition]() (I^3C) initiative, the profile of the Liaison Task Group has been raised. It is now a Working Group with responsibility for all

interactions with external groups, as well as ensuring that internal groups can easily collaborate with 'the outside'.

The Liaison Working Group will also be the channel that funnels the results from testbeds to standards-development organizations.

In addition to Plattform Industrie 4.0, the Liaison Working Group is also responsible for managing relationships with 'regional teams'. We discussed two potential liaisons, one with ITAC that was approved by the Liaison Working Group and the Steering Committee thereafter. Dr. Richard Soley, Executive Director of IIC signed the agreement in Tokyo on October 5rd. We are also working with other countries.

JOINT DAY WITH PLATTFORM INDUSTRIE 4.0

The morning was given over to several high-level presentations.

In the afternoon, we held joint working sessions with Plattform Industrie 4.0. Each Joint Task Group (JTG) is led by one person from Plattform Industrie 4.0 (listed first below in deference to our guests), and one person from IIC. They are:

- JTG1: Products, Production Systems and IIoT Solutions: the Lifecycle Perspective (Johannes Diemer (HPE), Eric Harper (ABB))
- JTG2: Architecture Alignment of RAMI4.0 and IIRA (Martin Hankel (Bosch), Shi-Wan Lin (ThingsWise))
- JTG3: Collaboration on Testbeds (Thomas Hahn (Siemens), Joseph Fontaine (IIC))
- JTG4: Requirements for Standardization and Interoperability (Dirk Slama (Bosch), Michael Hoffmeister (Festo))
- JTG5: Security (Michael Jochem (Bosch), Sven Schrecker (Intel)) and
- The German Regional Team, led by Heiner Lasi from Steinbeis.

We were honored to have Guenther Oettinger (EU Commissioner for Digital Economy and Society) present on Industrial Internet and Transatlantic Relations.

Five testbeds exhibited at the joint IIC/I4.0 day.

STEERING COMMITTEE AND PLENARIES

On IIC's first birthday, it recognized Dr. Shi-Wan Lin (then of Intel, now founder of ThingsWise) for his contributions to the Industrial Internet Reference Architecture. The Steering Committee has since decided to make such recognition a more formal and regular occurrence. Accordingly, they tasked the Working Group and Task Group Leads with determining which award to make this quarter, and then to vote on nominations.

The award selected was for Innovation. We are pleased to announce that Brad Miller is the first recipient of the IIC Awards Program for Technical Innovation. Brad Miller is a Senior Cognition

and Decision Scientist at GE Global Research and is co-chair of the IIC Technology Working Group. Brad received the award for his out-of-the-box innovative thinking and influence on the IIC technical community.

An example of how Brad is helping others think more innovatively is his contribution of "Design Space Consideration" to the latest revision (soon to be published) of the Industrial Internet Reference Architecture (IIRA). His contribution broadens the scope for IIoT system designers to consider design possibilities and factors that were otherwise not normally being taken into account. Another example is Brad's idea of a "Peer to Peer, Distributed, Ad Hoc, Amorphous Computing" for the long term IIoT system design direction, described in an article he co-authored in the IIC Journal of Innovation, June 2016 Edition.

Congratulations Brad and thank you for your contributions and dedication to the IIC technical community!

The next award will be for the greatest contribution in the last year to testbeds. Nominations open shortly, and the Leads will vote in November. If you are an IIC member representative, get your nominations at the ready!

The Steering Committee held a panel where member representatives can ask questions.

Taken together, the increasing depth and breadth of deliverables, the partnerships with national organizations, the increasing profile on liaisons with standards-development organizations and increasing awareness of the need to secure global supply chains and global value chains, it is clear that the IIC has become a global hub for industrial IoT.

Things are coming together! ™

The Industrial Internet Consortium is an open membership organization with 250 members from 30 countries, formed to accelerate the development, adoption and widespread use of interconnected machines and devices, intelligent analytics, and people at work. Founded by AT&T, Cisco, General Electric, IBM and Intel in March 2014, the Industrial Internet Consortium catalyzes and coordinates the priorities and enabling technologies of the Industrial Internet. The Industrial Internet Consortium is managed by the Object Management Group® (OMG®). Visit www.iiconsortium.org.