industrial internet
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Industrial Internet Consortium turns up the volume on end-user engagement

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At its recent members meeting, the organization announced a new focus area. Member companies represent IT and OT suppliers, and there is now enough common ground established within IIoT that the Industrial Internet Consortium can focus attention on end users via its IIC Accelerator Program.

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Introduction

The Industrial Internet Consortium's most recent announcement to focus on end users with its IIC Accelerator Program was part of the ongoing growth and evolution of the organization. In September 2019, in Anaheim, California, members (including 451 Research) came together to hear the status of ongoing workstreams and programs.

Much of the work happens between face-to-face meetings with the quarterly gathering, offering time to take stock and find common threads across the various workstreams. Members also heard presentations from end-user customers such as Nestle, and reports from the End User Leadership Council, which was originally started in 2018.

451 TAKE

451 Research has written about the IIC over the course of its five-year existence, and now, as a member organization, we contribute as analysts and technology practitioners where appropriate. We covered the June Member's Quarterly meeting, which focused on the merging with OpenFog. For all the technical aspects of IIoT, it is often organizational and social challenges that need to be addressed first. 451 Research coverage and Voice of the Enterprise surveys have documented the IT/OT struggles in enterprises, and the IIC has leveraged its diverse member base of IT and OT companies to execute at a vendor level. Now that some degree of unity has been formed, IIC can assist customers that may still face that challenge.

Testbeds help vendors gather and work together, bringing a multidisciplinary approach, and have been an IIC staple. The organization is building on top of the testbeds with new extensions to the IIC Accelerator Program via customer-led IoT Challenges, the End User Leadership Council providing valuable insight, and fast-acting Test Drive proof of concepts. There was also widespread discussion of the role of the human workforce in this era of rapid automation. Empowering the workforce with digital insights is the missing link in the IIoT space, ranging from the basics of digital documentation up to providing full contextual digital twins in augmented reality. As we stated in our long-form report Augmented and Virtual Reality: Which Use Cases Are Gaining Traction and What's Next?, closing the digital loop to the workforce can significantly increase OEE (overall equipment effectiveness). A common thread in our conversations with end-user companies in the industrial space is the importance of the people in the organization.

Evolution of the IIC

The IIC is a program run by the Object Management Group. It is not a standards body, but a not-for-profit partnership of industry, government and academia. Its mission is to accelerate the development of the industrial internet. Membership combines both IT- and OT-focused companies and interests, and is made up of all sizes of organizations. The IIC consists of over 200 organizations, with more than 4,000 participants across 30 countries.

Members engage with working groups in the areas of business strategy, technology, security, test beds, liaisons and marketing. Each of those areas' work produces common viewpoints, documentation of frameworks and working solutions to problems. Alongside the formal consensus documentation, the IIC also produces a regular Journal of Innovation with peer-reviewed articles on themed subjects, the most recent being artificial intelligence.

As a member-driven organization, it is able to engage in new approaches as the IIoT industry evolves. It already has over 25 testbeds being worked on at varying degrees of scale, from proving the need for a basic connectivity component to larger industry-wide use cases. Now that it has a core of common understanding and a working structure, it is able to look more outwardly at the end users, i.e., the customers for IIoT.

It had already formed an End User Leadership Council in 2018, and a key ongoing finding from that panel indicated that the common language and reference architectures and approaches were creating confidence in IIoT, but that more vertical-specific cuts were needed to fit with customer processes. The first End User Leadership Council meeting focused on smart manufacturing, but is growing to cover energy, transportation, healthcare and smart cities.

This End User Leadership Council and testbeds are part of the IIC Accelerator Program, along with other initiatives that include public contests such as IoT Challenges addressing a customer problem, and short-term rapid Test Drives offering a proof of concept (PoC) approach with members. It is also forming special interest groups, the first being Over-the-Air, for solutions in the automotive and other industries, open to members and non-members.

The IIC does not stand alone in the industry. Its Liaisons Working Group creates ongoing agreements and connections with over 45 other bodies. Announcements in September included liaisons with the Global Mining Guidelines Group and the Open Geospatial Consortium. This group is also now looking to progress relationships with customer user groups as well.

The IIC runs events such as the IoT Solutions World Congress in October each year in Barcelona, where it brings members and end users together. Members typically are required to bring a customer with them to present, in order to keep it an outward-looking event, not one focused on technology for its own sake. 451 Research is chairing two panels at this event. The ICC is also running the OpenEdge Symposium, formerly Fog World Congress (The OpenFog organization is now fully integrated into the IIC) in December, for which 451 Research is contributing to the organization of the innovation track, as well as keynoting the conference.

Resource hub

The IIC resource hub continues to evolve as the findings and documentation from the past five years is gathered together in a navigable online application. It has been designed for more than one type of interface, with explorers being built to guide users into the right collections of information.

It now consists of the previously released IIoT Project Explorer that asks qualifying questions about types of project, size, scale and industry, and the new Maturity Assessment, which helps question the user about their organizational readiness for IIoT. The Maturity Assessment, like Project Explorer, offers a quick, standard and detailed set of questions. The latter is for IIC members only, but 'quick and standard' is available to anyone. Questionnaires are kept local to the machine that is making the request, because the ICC is not gathering any centralized details.

Smart building challenge

With the Smart Construction challenge underway, the next outward-facing IoT challenge is in the smart building space. Challenges involve multiple groups competing to produce results for use cases in the space are then judged by a jury, with prizes including a PoC with one of the principal partners. Buildings sit in an unusual space within the IoT world, in that solutions can apply to office space as much as to factory space.

While each building has its own specific needs, the general features of a space, and its comfort, safety and utilization, tend to cross industry silos. Some of the suggested areas for the challenges include usage flow analytics, smart metering in multi-tenant commercial buildings, and environment control such as lighting and HVAC. Smart building dashboards also feature for marketing, engaging with digital twins and the use of augmented reality in building management and maintenance.

Extended BizOps for User Industries

As an example of the process and how the IIC evolves, the Extended BizOps for User Industries (EBU) Contributing Group is a gathering of interested parties looking at the gap between IIoT offerings from vendors and the needs of users. It also is looking to address the mismatch between user industry innovation tools that are aimed mostly at hardware, and the needs of modern software architecture.

As a Contributing Group, it will work to produce a whitepaper with a further recommendation to become a full Task Group once it has defined its space and validated the problem area. The term BizOps has been used to tie in with the commonly used DevOps and increasingly DataOps, although it initially started as BizDevOps, indicating it is about development. It is looking to potentially slot into the IIoT Business Model innovation process, and act within the IIoT Maturity Model and toolkit, and training areas in the IIoT Resource Hub.

Industrial Internet Reference Architecture

The Industrial Internet Reference Architecture (IIRA) is one of the major documents from the IIC, first published in 2015, with ongoing updates to take it to its current v1.9. The Architecture Task Group proposed some evolutions to the architecture. This is ongoing work, but aims to engage in understanding a system of systems, both horizontal and vertical. At some of last quarter's meetings, a theme evolved that too often people were not given enough focus. The work looks to resolve that issue with the awareness that human activity and behavior need to be part of the description of a system.

Industrial Internet Vocabulary

The Industrial Internet Vocabulary Technical Report is one of the other foundational documents that IIC published in 2015, and has updated almost annually since. In Anaheim, the members met to finalize the next version, due soon. This work is often overlooked because it's usually a small tribe of folks truly dedicated to vocabulary, but this is important work. In the new version (expected in a matter of days), more than 20 authors have added a definition for digital twin, and removed virtual entity in favor of the newly added digital representation.

Conclusion

The number of projects and groups that the IIC has can appear daunting. The resource explorer and Maturity Assessment in the resource hub hides much of that, in favor of getting end users to the information they need; and hopefully, to then approach the IIC and its members for help. The IIC's mission has always been about the benefits of adopting IIoT as part of industrial digital transformation, and the Object Management Group's experience in running these multi-company bodies is helping steer it toward end users, with tangible products and positions to offer.