

2018-01-12 Call Note - IoT Whitepaper Report Out

2018-01-12 Itana Call Minutes

Attendees:

Jim Phelps	
Dan Kiskis (Univ. of ...)	12062215065
Dana Miller (Miami ...)	12066852749
Daniel (Georgetown)	13102062929
Guest 7	16174950483
J.J. Du Chateau (Wi...	19108931677
Jacob A. Morris (UW)	Ann Doyle
Jan Cheetham	Beth Schaefer (UW-...
Ken Klingenstein	 Brenda Reeb (IDData)
Kevin Violette (UNC...	Brendan Bellina, UC...
Louis King (Yale Uni...	Dan Kiskis (Univ. of ...)
Luke Tracy	Dana Miller (Miami ...)
Mark Bronnimann - ...	Daniel (Georgetown)
Raoul Sevier (Harva...	Guest 7
Rupert (UWash)	J.J. Du Chateau (Wi...
Sherri Yerk-Zwickl ...	Jacob A. Morris (UW)

Agenda:

1. Roll Call (by timezone - East to West)
2. Scribe Shout-out - It's easy to scribe: [How To Scribe Itana Notes](#)
3. Agenda Bash
4. IoT Whitepaper Report Out - Ken Klingenstein
 - a. IoT checklist https://docs.google.com/document/d/15m6oMwQGBv1SNeVBO2SnCPBNi9ZAd6w_JmYJw0QPENo/edit.
 - b. IoT cover letter https://docs.google.com/document/d/1Gn_ULiRu5DgkZS5N98aUXvJ876Ty7wIWZsLDdkl_EXM/edit.
5. Itana Org Updates
 - i. Working Group Updates
 1. API Working Group
 2. Business Architecture Working Group
 3. EA Maturity Model
 4. IoT Whitepaper - see above
 - ii. Book club update - [Dave Gray, The Connected Company \(2012\)](#)
 - iii. Steering Committee Update

Ken Klingenstein – IoT Report

The working group was joint effort between Internet2, Itana, and T&I. The focus was on enterprise-level IoT, not on the consumer market.

Two primary artifacts delivered by the working group:

1. Motivational document – to be used to gather executive support. It was also pointed out that this document could be used to help architects with their efforts as well.
2. An IoT checklist which may be used when evaluating IoT implementations.

Importance of data stewardship.

Early in the session the importance of data stewardship was brought up. IoT vendors may provide SaaS solutions or otherwise use the internet. Data collected by the IoT devices may end up being owned, partially or otherwise, by these 3rd party vendors. Having an established governance framework for data stewardship is very beneficial when looking at the different IoT solutions and the type of data they collect.

Motivational Document

Motivational Document and Risk Examples

- Intended for C-level leadership
- Presents both the opportunities and the risks associated with IoT on campus
 - Opportunities for research, institutional efficiencies, even improved student outcomes
 - Risks are financial, reputational, operational, and legion
- Has a set of examples to be inserted into the briefing doc, depending on institutional profile
 - Medical school, Engineering, Facilities, etc.
- Provides a list of lessons learned:
 - Pay attention
 - Understand that horses have left the barn
 - Look for gaps in responsibilities, lack of authority, etc.
 - New needs for data stewardship
 - A lifecycle approach is useful
- https://docs.google.com/document/d/1Gn_ULiRu5DgkZ55N98aUXvJ876Ty7wIWzLDdki_EXM/edit

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The motivational document was originally intended for the C-suite and executive leadership to help make a business case for IoT, explain risks, opportunities, and to help influence decisions. The motivational document may be used as a tool for architects and others presenting the use case.

Lifecycle management checklist

Enterprise IoT Lifecycle Management Checklist

- An evolving set of questions to help direct the acquisition, deployment, and continuing management of IoT
- Intended to be useful across all types of institutional acquisitions, including research, health safety and security, operational, etc.
- Lifecycle phases include:
 - Discovery, Planning, Acquisition, Deployment, Maintenance and Decommissioning
 - Topics include network requirements, power requirements, security needs, privacy issues, data processing, etc.
- Intended to illuminate gaps, build connections, etc.
 - RACI analysis may be useful
- https://docs.google.com/document/d/15m6oMwQGBv1SNeVBO2SncpBNi9ZAd6w_JmYJw0QPeNo/edit

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The lifecycle management checklist provides a number of questions regarding IoT devices covering the lifecycle, from purchase to retirement.

Data stewardship again came up as an important takeaway. The location of stored data, the points of integration, analytics and reporting all require a degree of governance.

The IoT market today appears to be the “wild west” in regards to data stewardship, as Louis King put it on the call.

IoT devices may not be a part of the campus network, some use cellular or other types of network. There's a question of governance here as well. If they aren't on the campus network, what group manages them?

Additionally, IoT solutions may be formed from components from multiple vendors which complicates data stewardship and other governance functions.

The working group recommends having a data management plan in place before taking on IoT.

Three sample lifecycle checklists

- An emergency management system making extensive use of campus sensors, end-user devices, alarm and notification systems, etc.
- An acquisition of a IoT research system by an academic department
- An innovative student outcomes initiative that connects student schedules to sensors attached to preferred exercise devices in the Recreation Center, identifying exercise opportunities in real time
- https://docs.google.com/document/d/1C-M2Kq9E1E9K27UJTXPX2cVUNfnr4_DqTrML4F7PVvg/edit

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Deferred Opportunities

Deferred opportunities

- Fingerprinting devices
- Integrated IAM and IoT
 - Several basic ingredients are being formulated by IETF
- Virtual segmentation and the elastic network perimeter
- Tracking IoT cybersecurity legislation

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The working group did not have the time to look into these opportunities but they may be important for consideration during any implementation.

One key discussion on the call regarded authentication and authorization in IoT. These devices are “dumb”, and there are potential security issues with default and simple passwords. Additionally, the working group saw that standards for authentication and authorization are not fully developed around IoT. This should be taking into consideration. The IETF is working on a framework called ACE for authentication and authorization.

IETF - ACE

- Authentication and Authorization for Constrained Environments
 - A framework for specific profiles and implementations
- Use cases at <https://tools.ietf.org/html/rfc7744>
- Intent is to transport OAuth tokens across CoAP to devices
- Draft Architecture at <https://tools.ietf.org/html/draft-ietf-ace-actors-06>
- “This means that the complexity of authenticated authorization can often be moved back and forth between these two aspects.”

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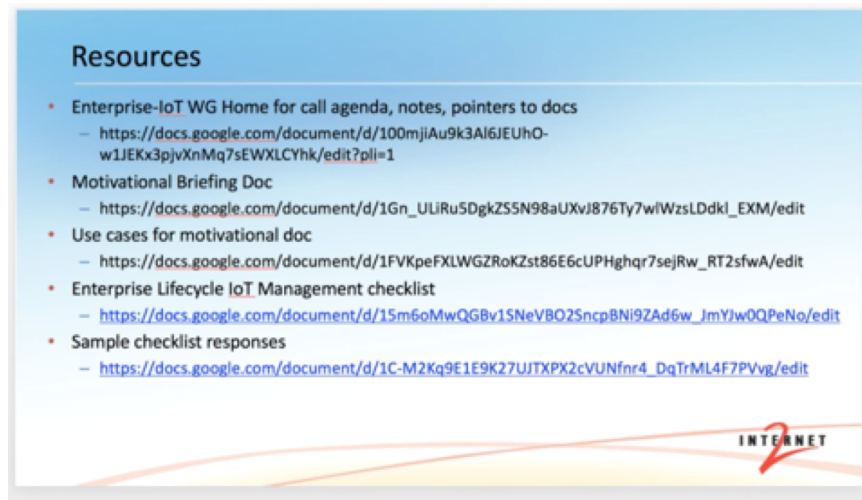
IETF activities – CORE and CoAP

- <https://www.internetsociety.org/blog/2017/11/rough-guide-ietf-100-internet-things/>
- CORE WG – CONstrained Restful Environments –
 - <https://tools.ietf.org/wg/core/>
 - Key output is CoAP – Constrained Application Protocol
 - <https://tools.ietf.org/html/rfc7252> and <http://coap.technology/>
 - specialized web transfer protocol for use with constrained nodes and constrained (e.g., low-power, lossy) networks. The protocol is designed for machine-to-machine (M2M) applications such as smart energy and building automation.
 - CoAP provides a request/response interaction model between application endpoints, supports built-in discovery of services and resources, and includes key concepts of the Web such as URIs and Internet media types. CoAP is designed to easily interface with HTTP for integration with the Web while meeting specialized requirements such as multicast support, very low overhead and simplicity for constrained environments.
 - See <http://coap.technology/impls.html> for implementations

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CORE and CoAP are two other standards efforts undertaken by the IETF to address the constrained environments IoT devices provide.

Resources



Resources

- Enterprise-IoT WG Home for call agenda, notes, pointers to docs
 - <https://docs.google.com/document/d/100mjiAu9k3Al6JEUhO-w1JEKx3pJvXnMq7sEWXLCYhk/edit?pli=1>
- Motivational Briefing Doc
 - https://docs.google.com/document/d/1Gn_ULIRu5DgkZS5N98aUXvJ876Ty7wIWzsLDdki_EXM/edit
- Use cases for motivational doc
 - https://docs.google.com/document/d/1FVKpeFXLWGZRoKZst86E6cUPHghqr7sejRw_RT2sfwA/edit
- Enterprise Lifecycle IoT Management checklist
 - https://docs.google.com/document/d/15m6oMwQGBv1SNeVBO2SncpBNi9ZAd6w_JmYJw0QPpNo/edit
- Sample checklist responses
 - https://docs.google.com/document/d/1C-M2Kq9E1E9K27UJTXPX2cVUNfmr4_DqTrML4F7PVvg/edit

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End of presentation

Questions:

Is there anything that separates higher ed from the rest of the IoT market? – J.J. Du Chateau

Response – Environments such as medical schools and research are different environments. With research, for instance, someone may purchase IoT outside the normal procurement process, or it just may be inexpensive enough where the normal process does not escalate it into IT. An IoT environment developed in this way may exist outside governance frameworks.

Additionally, higher ed, in general, is highly decentralized, which incurs hurdles for governance. The population is also highly transient.

Itana org working group updates

- Business working group scheduled – on calendar
- Maturity model – Louis coordinating next call. Current version online. Looking for feedback on trying to implement maturity model and applying it
- Book club – 10 members for book club. Survey coming out for meeting schedule
- Steering committee update – Jim elected for another 2 years by unanimous decisions
- Upcoming – **Strengths Finder**

Call ending