

IIC Testbed Overview

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What is the Industrial IoT Really About?



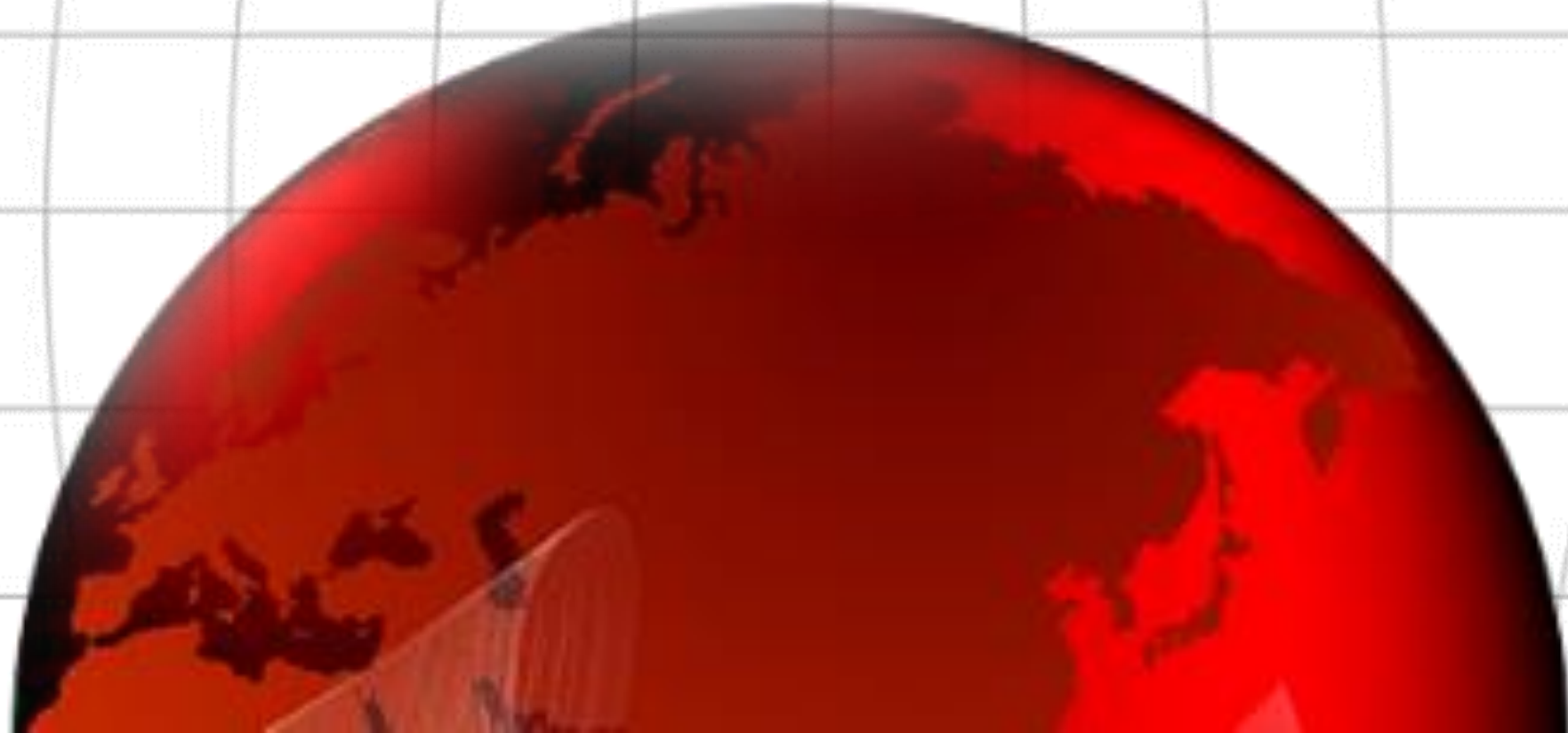
What is the Industrial IoT Really About?

Combining
technologies from
all industries



To make all
industries better

Industrial Internet Consortium





What Does the IIC Do?

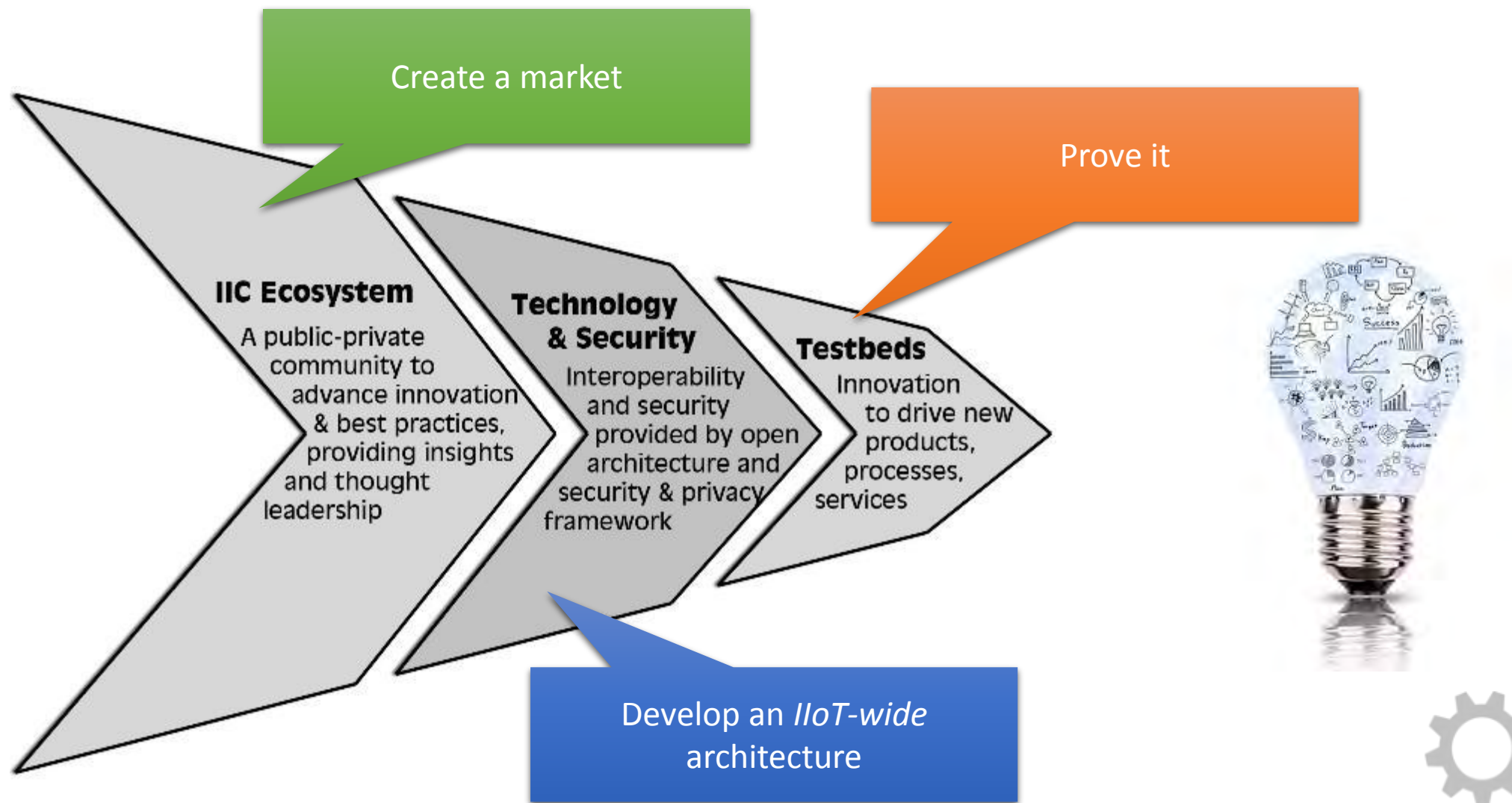
*Our mission is to design and demonstrate an Industrial Internet of Things (IIoT). We will **develop the guidance** needed to securely connect and profitably deploy intelligent systems across devices, edge, and cloud.*

Our Mission





How Can the IIC Guide the IIoT?



IIC Small Industry Members



IIC Small Industry Members



IIC Founders, Contributing Members, & Large Industry Members



IIC Nonprofit, Academic, & Government Members



**industrial internet
CONSORTIUM**
The World's Largest IoT Consortium
The IIC Created the IIoT Market

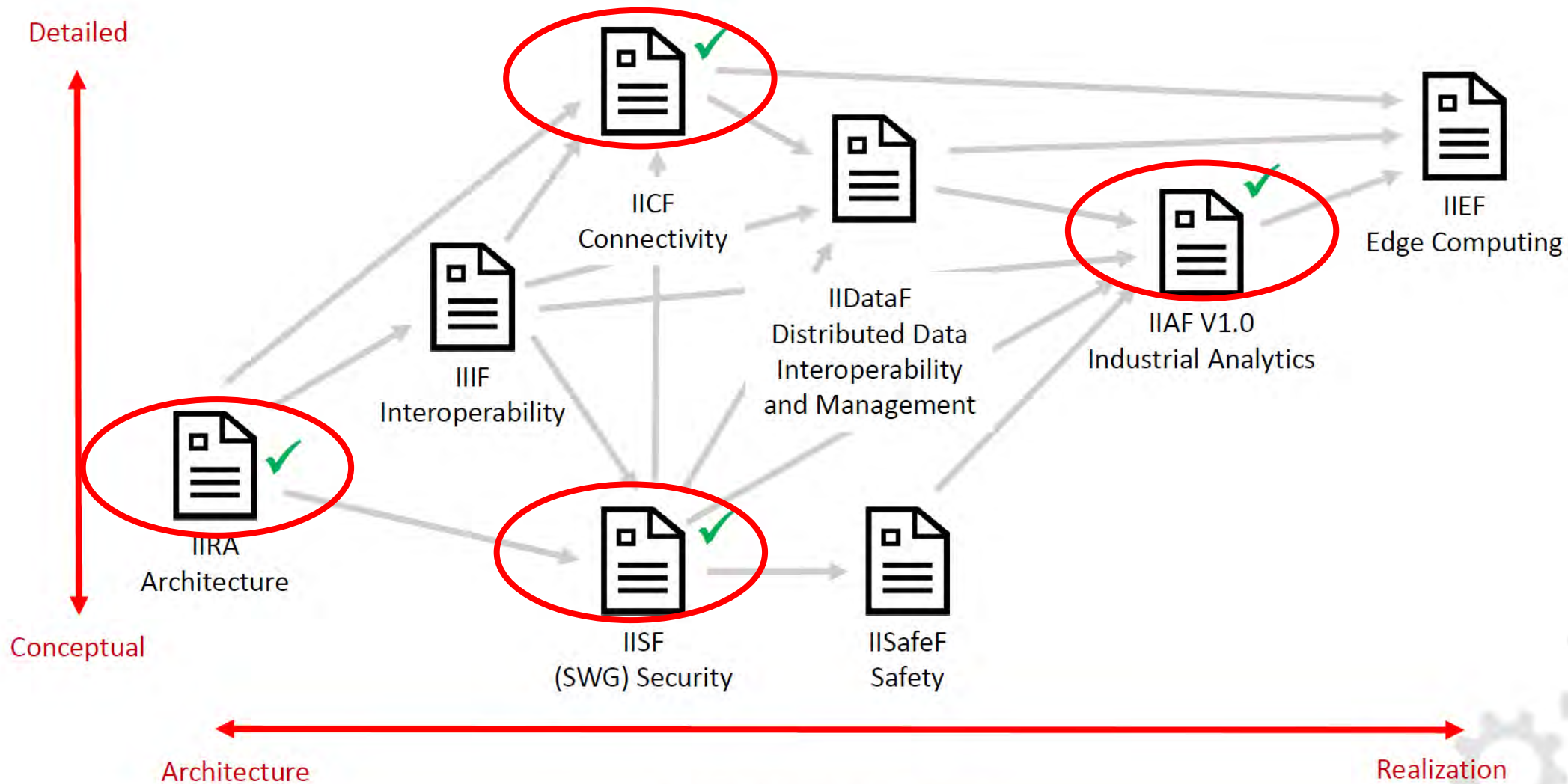
IIC Founders, Contributing Members, & Large Industry Members



IIC Nonprofit, Academic, & Government Members



Expert Guidance



Broad and Deep Testbeds



- IIC has by far the industry's most comprehensive testbed program
- Key goals
 - Ensure practical guidance
 - Make impact
 - Span the industry





Control and Communication for Microgrids Testbed

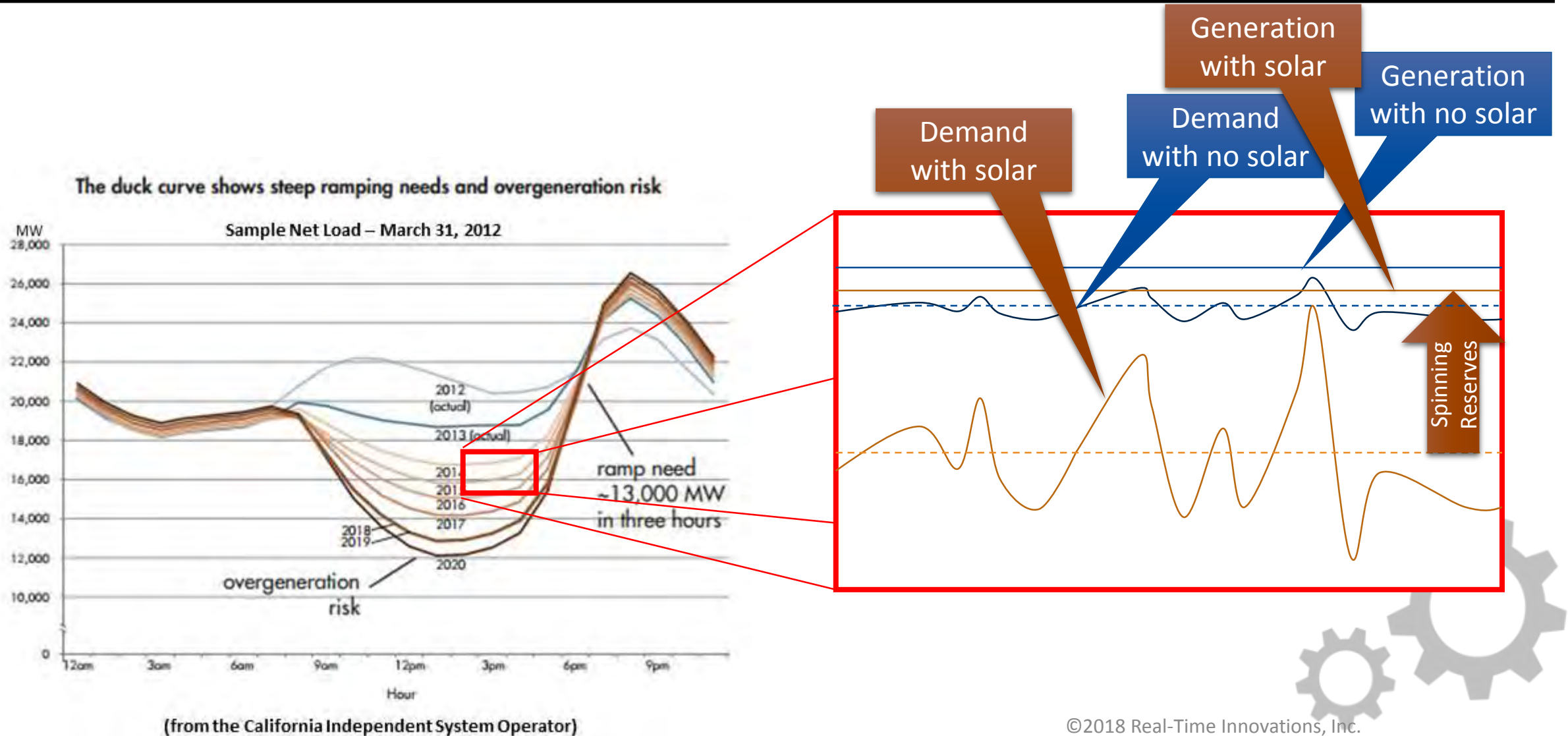




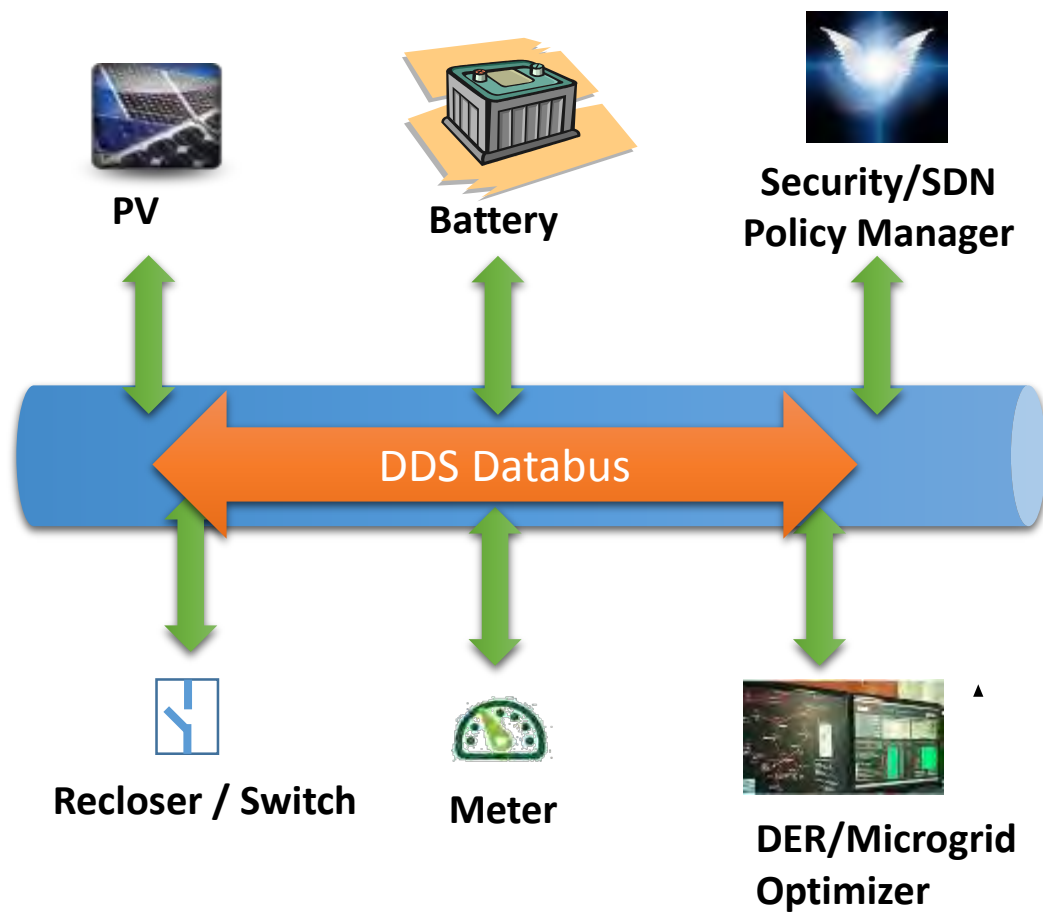
Current System: Central Generation



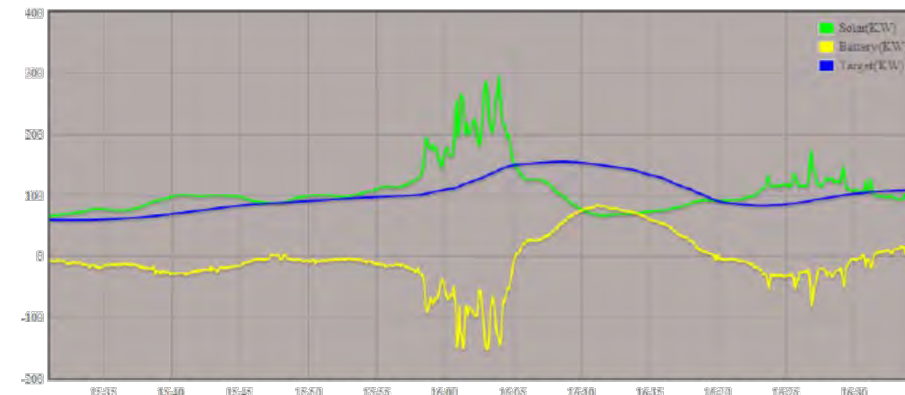
Problem: Clean Energy is Dirty Power



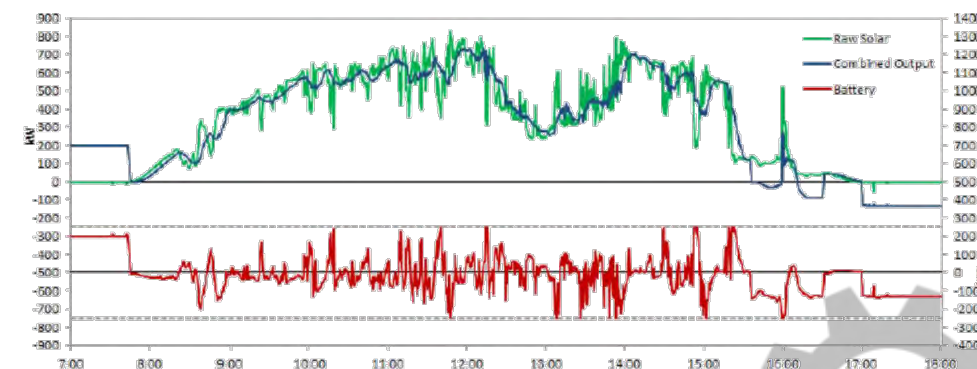
OpenFMB™: Standard to Enable Efficient DER



1 Hour
Snapshot



12 Hour
Waveform



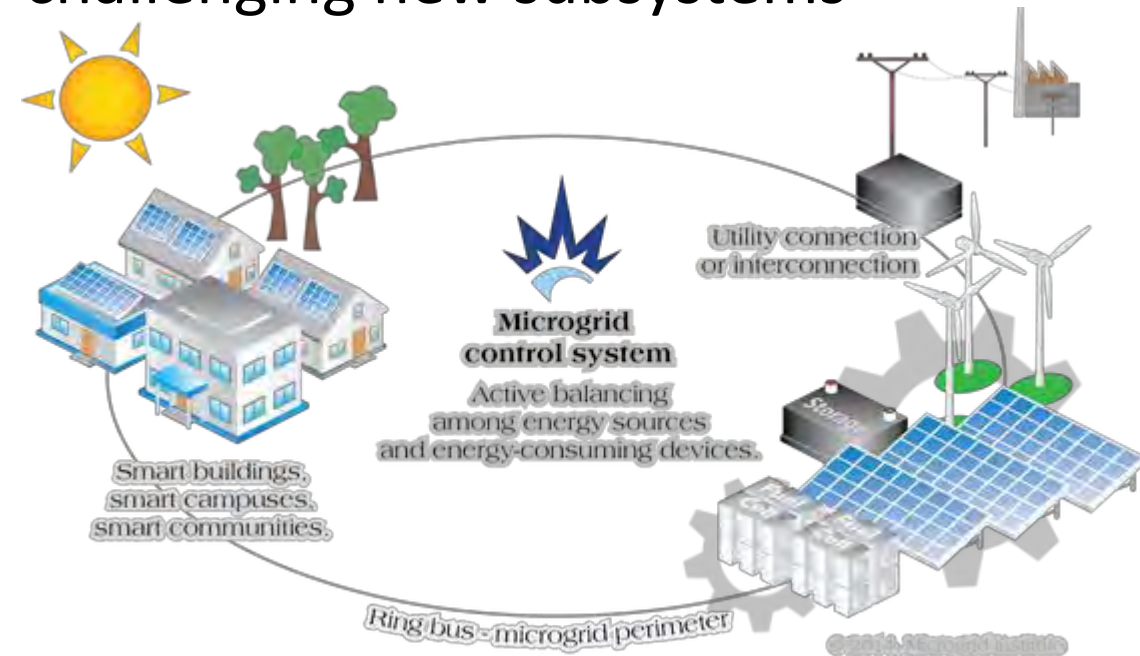


Microgrid: A Smart Grid Microcosm

- Microgrids are sections of the grid that contain both load and generation and can operate independently from the grid at large
- Generation capability is frequently from renewable sources like wind or solar
- Energy storage is typical in microgrids – challenging new subsystems

Microgrids are important to smart grid research

- Encompass most of the elements of a full sized grid
- Offer a good representation of the challenges grid operators are facing





Connected Care Testbed



Problems: Mistakes Kill



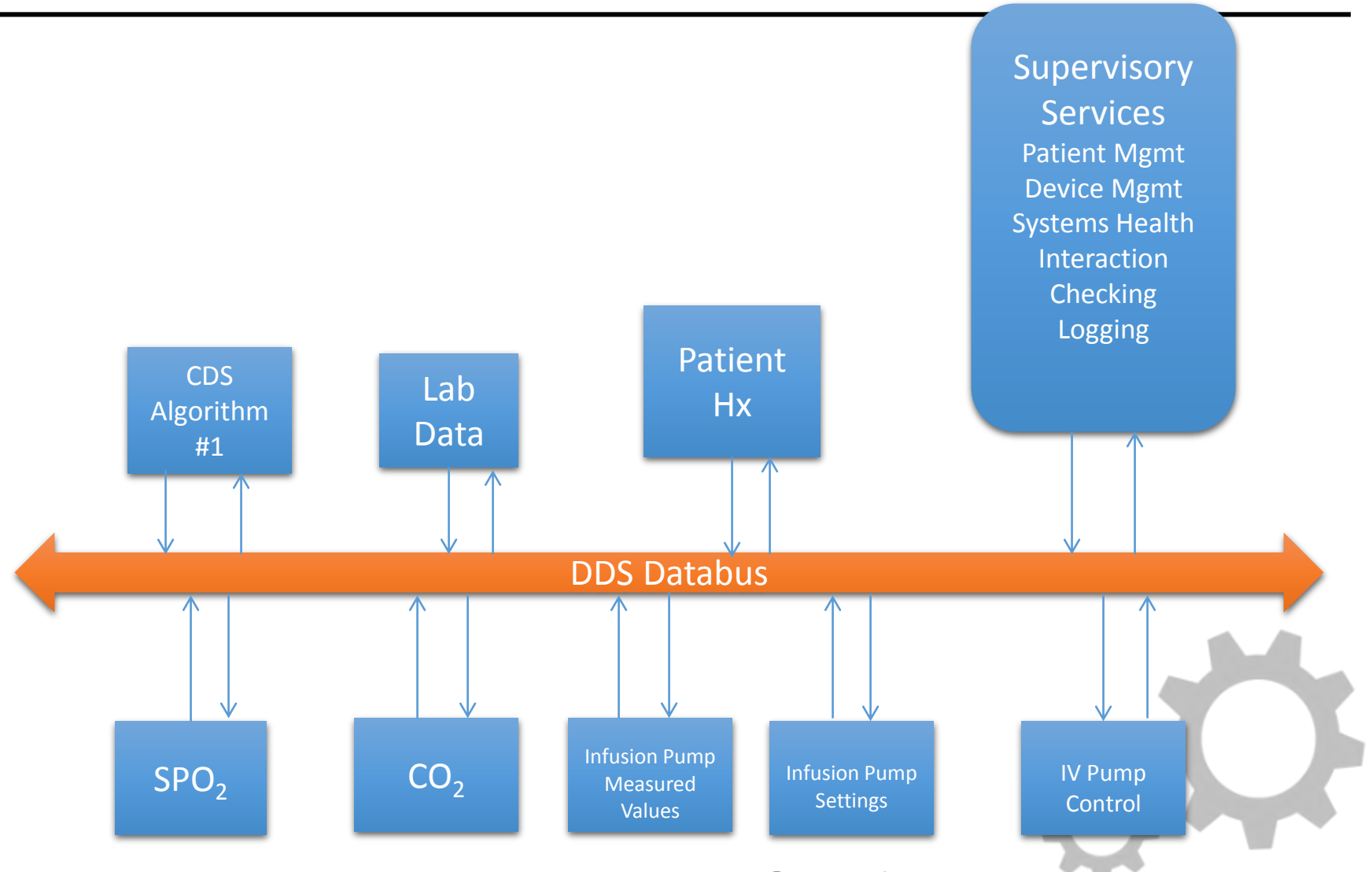
“... the anesthesiologist forgot to resume ventilation after separation from cardiopulmonary bypass...

Every surgical team surveyed has experienced this error!

Hospital error is the 3rd leading cause of death in the US
Inefficiency reduces patient outcomes



Solution: Smart Connected Patient Care



The Connected Care Testbed

Lead Company

- RTI, MGH/Partners MD PnP Program

Participating Companies

- GE, PTC

Market Segments

- Hospitals, Clinics, Consumers

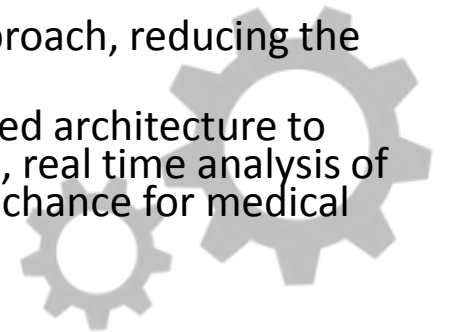
Goals

- Implement secure real-time data aggregation and analytics and enable patient EMR synchronization of relevant collected data.
- Provide a platform for clinical decision support within a healthcare environment.
- Ensure prescription and treatment adherence in a hospital/clinical.
- Meet all health industry standards for patient privacy and security of data collected, as well as regulatory compliance



Benefits

- Enables the market to develop connected health solutions that will lower healthcare costs and improve patient outcomes.
- Provides a framework for the integration of medical devices into the broader Internet of Medical Things.
- Utilizes a standards based approach, reducing the development cost/time.
- Takes advantage of a distributed architecture to provide highly reliable, secure, real time analysis of healthcare data, reducing the chance for medical errors.



MDPnP Lab @MGH (Harvard)

Cybersecurity Lab



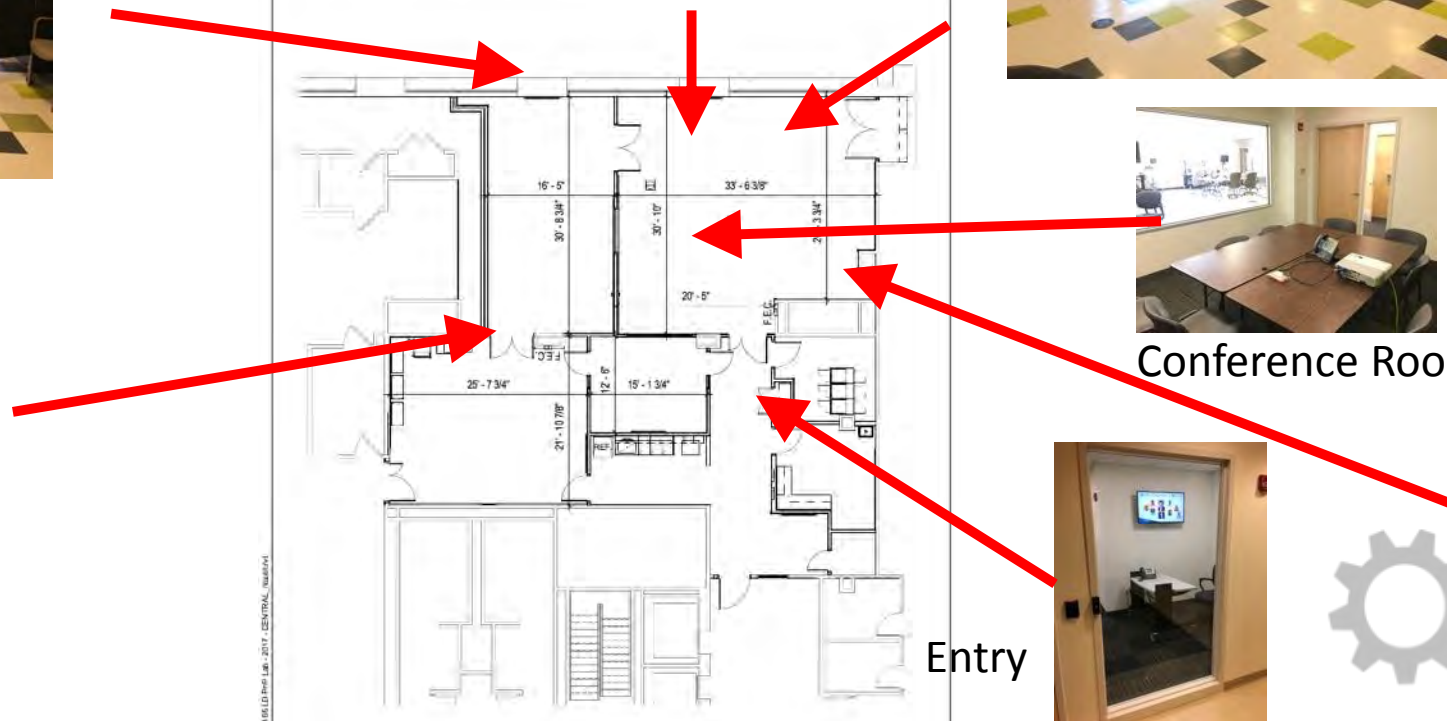
Connected care Testbed



Interoperability Lab



Biomedical Device-EHR
Integration Lab



Conference Room

Server Room



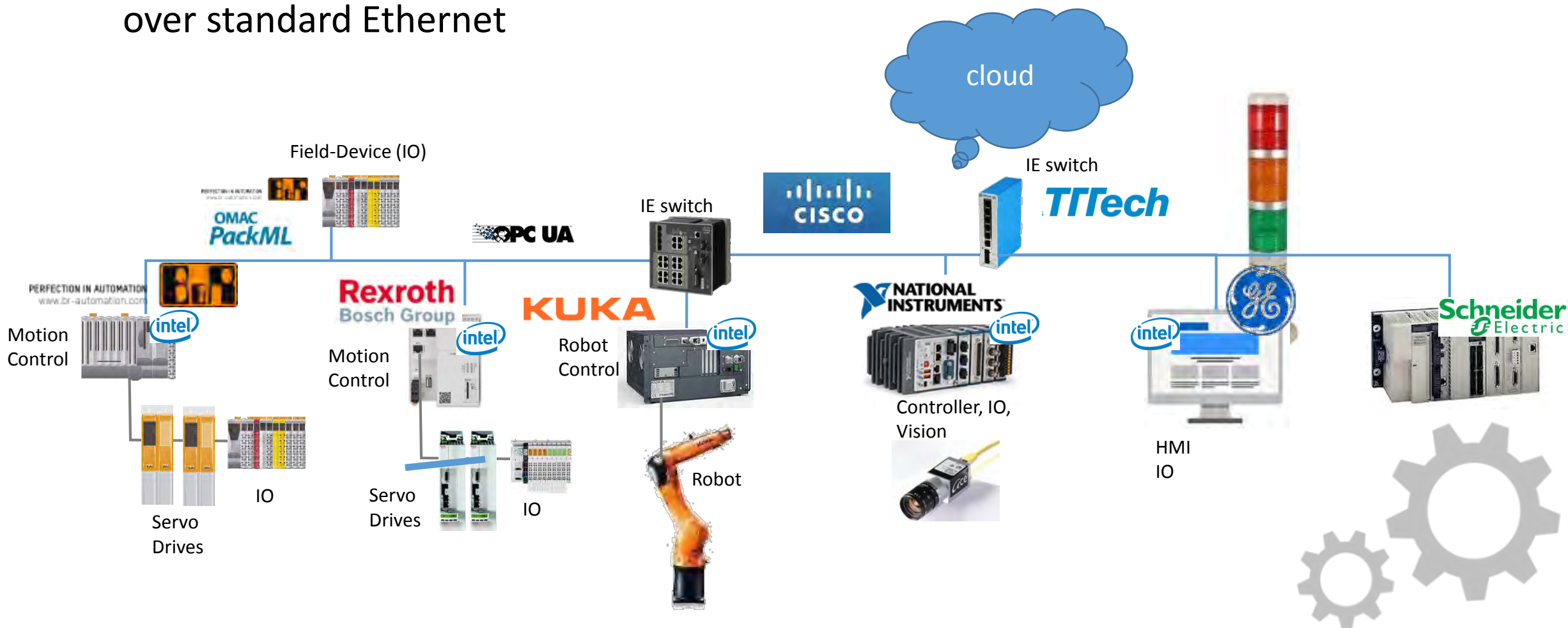
Entry



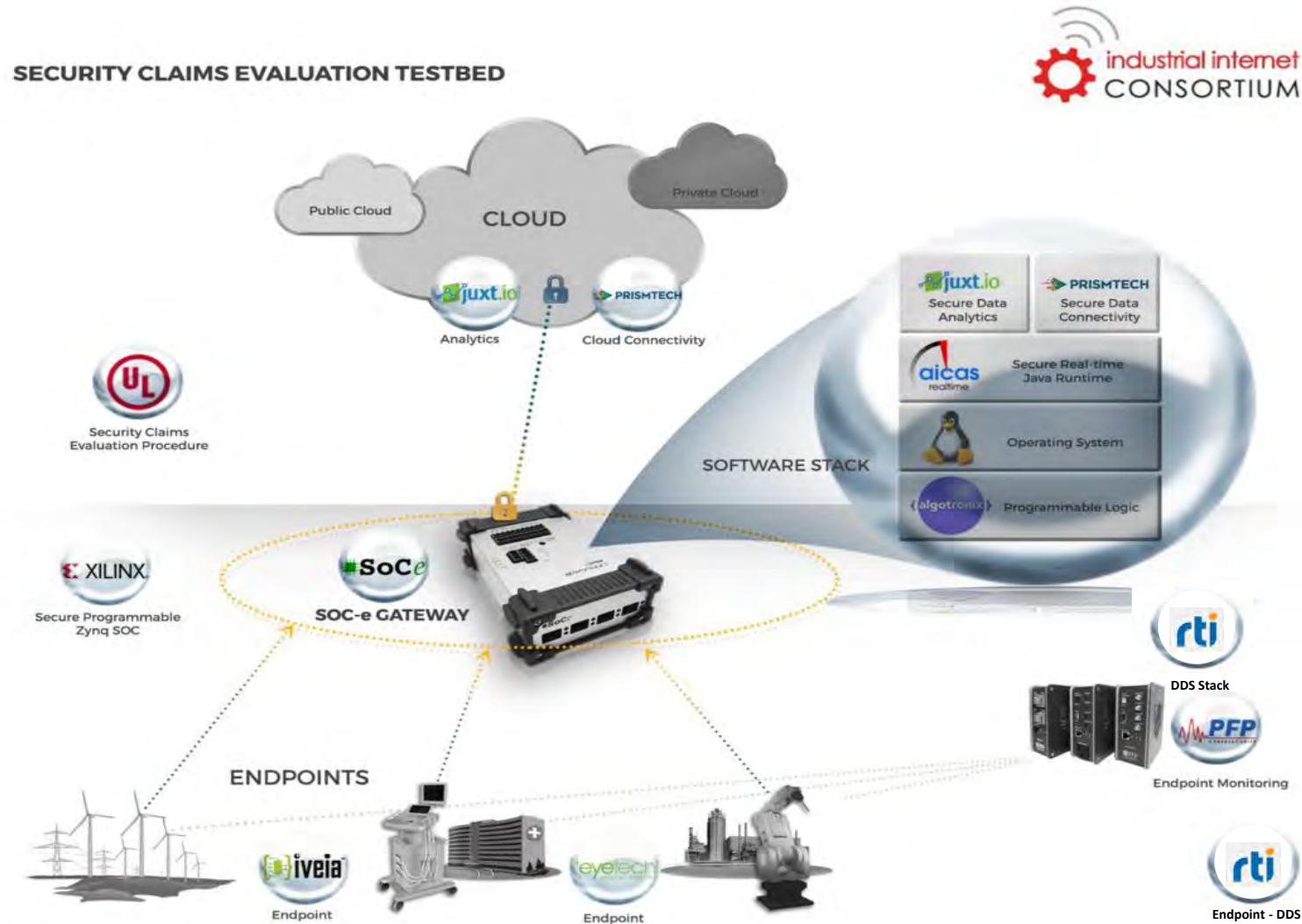


Time Sensitive Networks (TSN) Flexible Manufacturing for Robotics and Automation Cells

Real-time control & synchronization of high performance machines
over standard Ethernet



Security Claims Evaluation Testbed



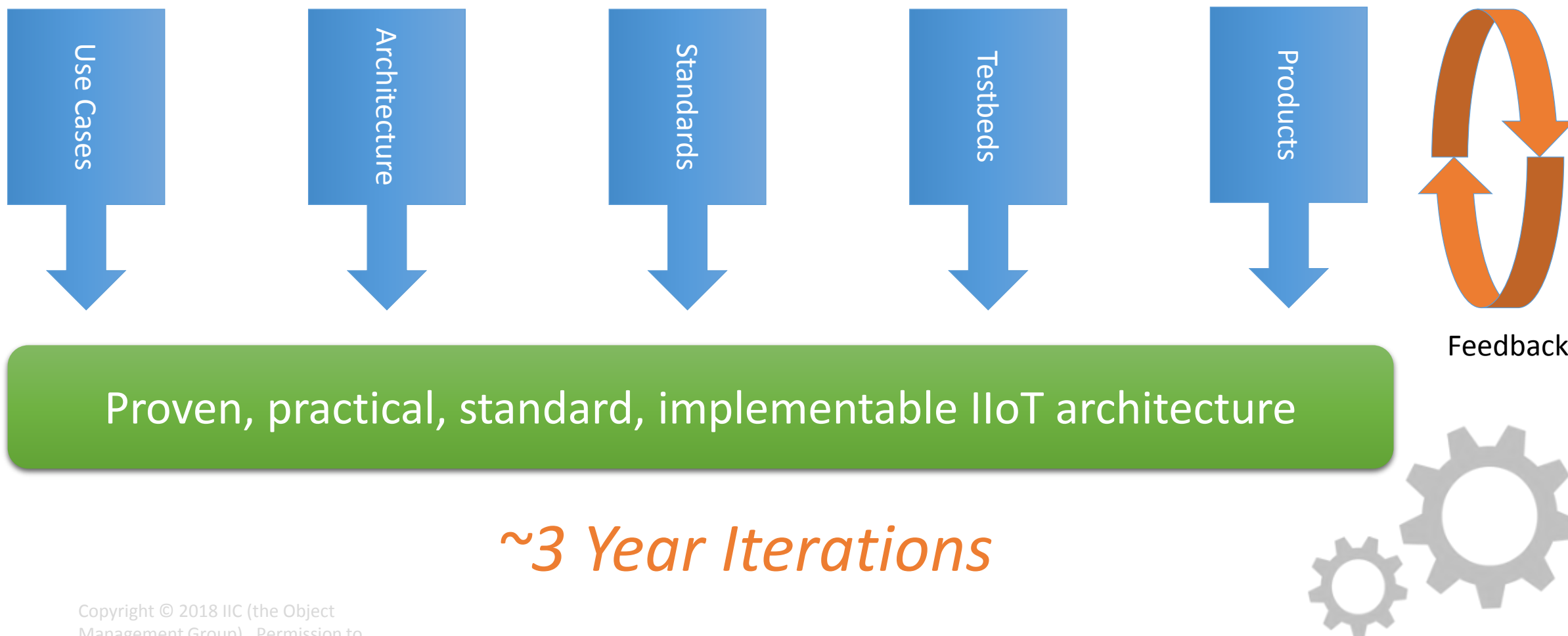
- IIC Sponsor Companies
 - Xilinx
 - Underwriters Laboratories (UL)
 - Aicas
- Collaborating Companies
 - Algotronix, EYETech, iVeia, JUXT, PFP Cybersecurity, RTI, SOC-e



Architectural Development Process



The IIC's Development Process



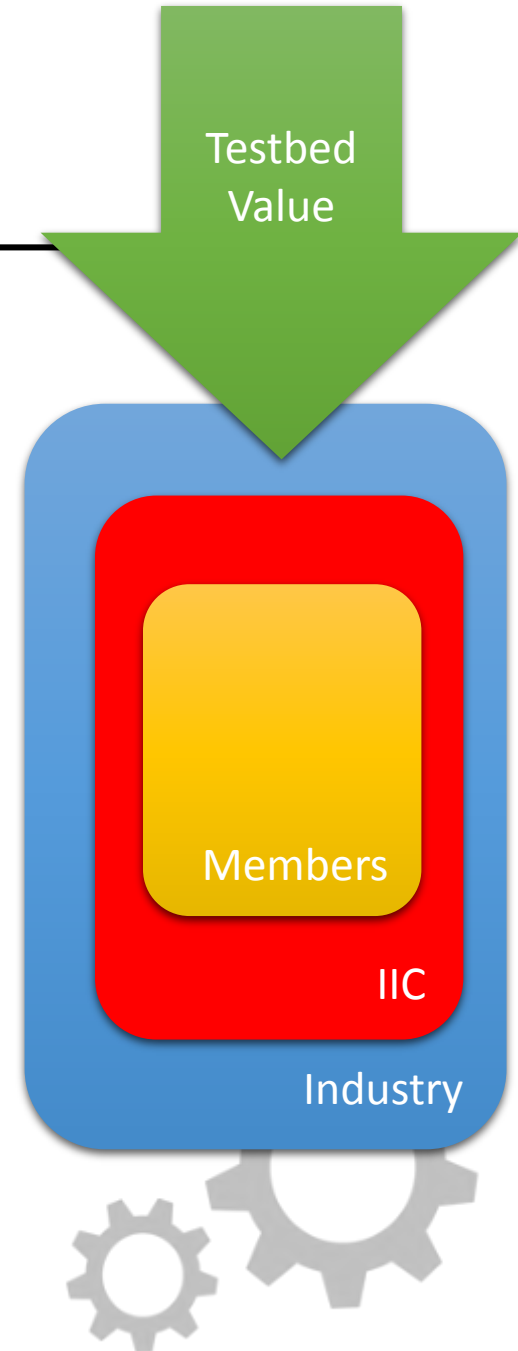
~3 Year Iterations



IIC Testbed Program Goal: Practical Use Guidance

- Prove architecture & technology, develop best practices, accelerate progress
- Enable practical thought leadership in key applications
- Learn & iterate
- Encourage teaming, best use of guidance
- Drive market visibility, funding

Value to IIoT, IIC, Members



RTI & The Industrial IoT

- RTI is the largest IIoT connectivity vendor
- 1300+ designs, many real-world programs across industries
- DDS, tools, services, support, secure & certified versions



Connect!



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<https://www.linkedin.com/in/stan-schneider-102466/>
- CEO Real-Time Innovations
 - Largest IIoT connectivity vendor
 - 1000+ designs
- Vice Chair, IIC Steering Committee
- Advisory Board, IoT SWC
- Top-25 Global IIoT Influencer
- PhD, EE/CS, Stanford

