Overview of IIC and the Emerging Industrial IoT, AI and Analytics Ecosystem

Wael William Diab
Secretary, IIC Steering Committee
IIC Liaison WG Chair, Technology WG Chair, Industrial AI TG Chair
Senior Director, Huawei

IVI:IIC Workshop 2018

industrial internet
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Acknowledgements

Eric Harper (ABB)

Shi-wan Lin (Thingswise)

Edy Liongosari (Accenture)

Terry McElrath (IIC)

Stephen Mellor (IIC)

Will Sobel (Vimana)

Agenda

Overview of IIC

> Brief Overview of IIC
>
> Update on New IIC Leadership

Liaison Working Group: Driving the Industry Ecosystem through Building Coalitions

Industrial AI Task Group

> Overview and Motivation
>
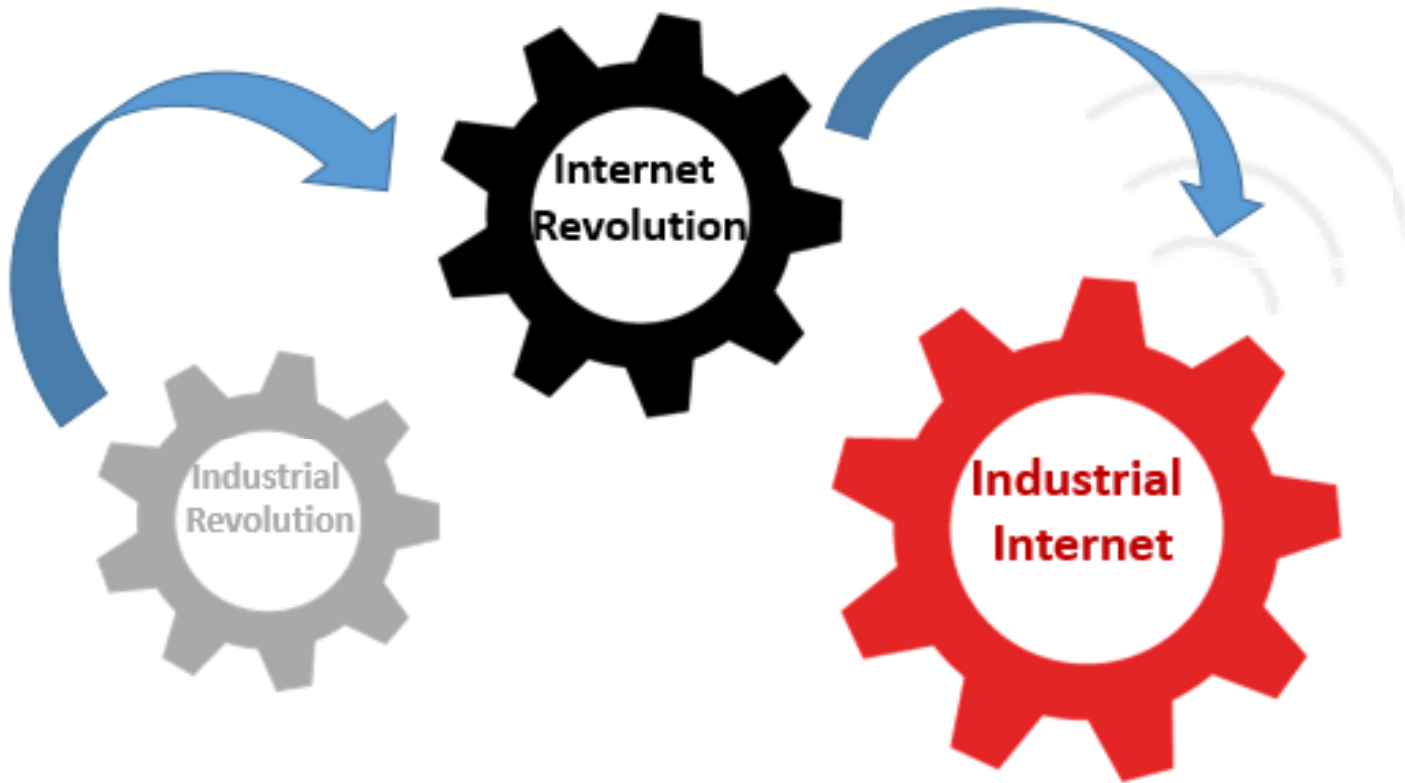> Industrial Analytics Framework (IIAF)

Concluding Remarks

Getting Involved

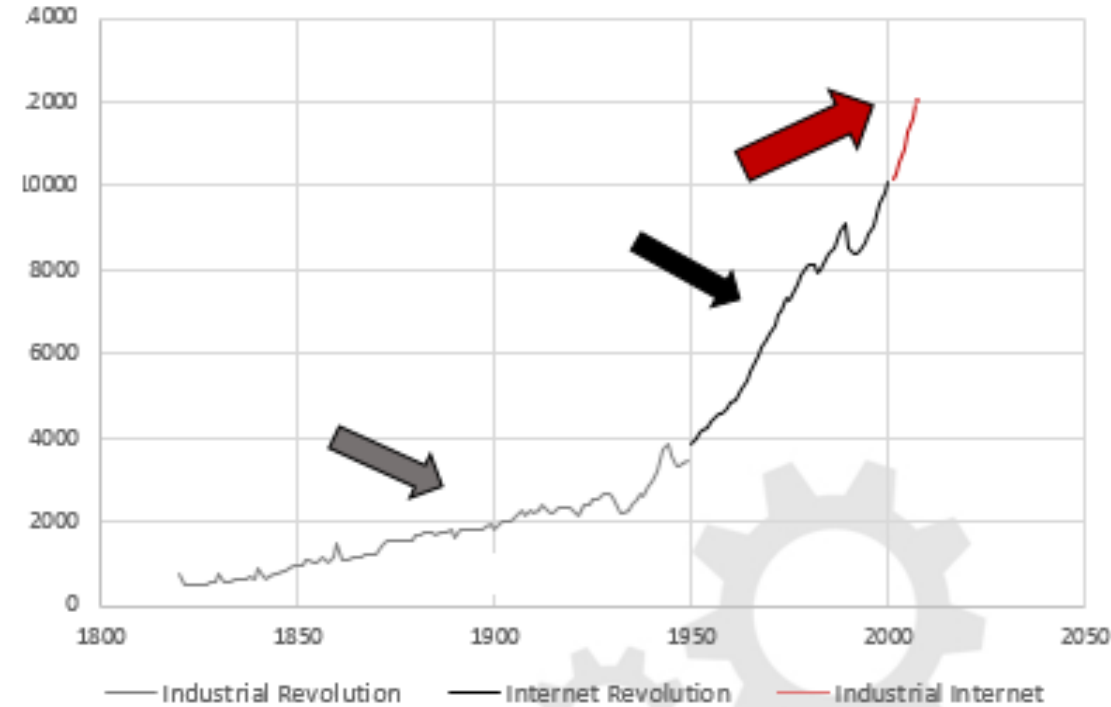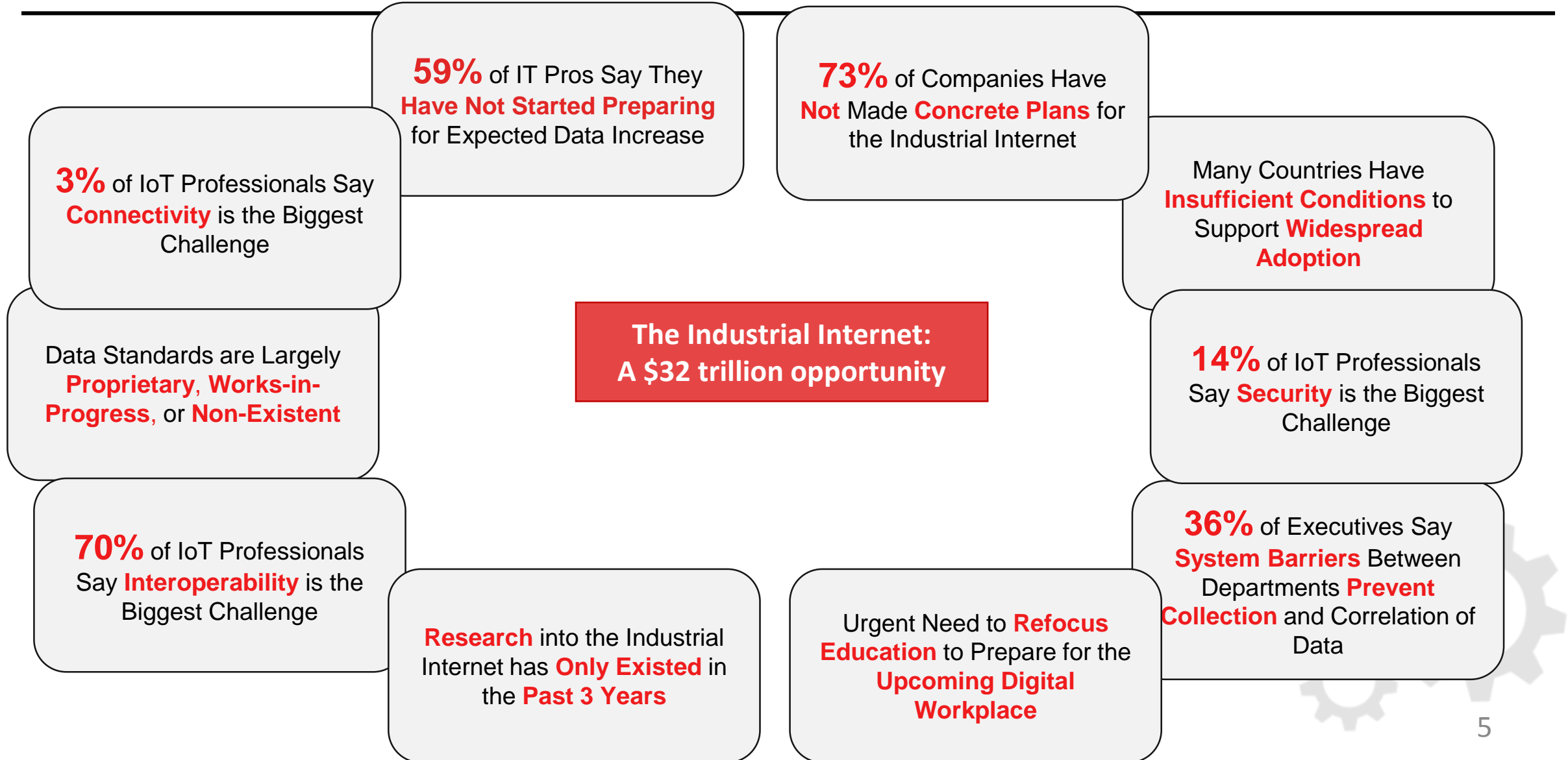# The Industrial Internet is leading the next economic revolution

Yet there are current roadblocks to widespread adoption

59% of IT Pros Say They **Have Not Started Preparing** for Expected Data Increase

73% of Companies Have **Not** Made **Concrete Plans** for the Industrial Internet

3% of IoT Professionals Say **Connectivity** is the Biggest Challenge

Many Countries Have **Insufficient Conditions** to Support **Widespread Adoption**

Data Standards are Largely **Proprietary**, **Works-in-Progress**, or **Non-Existent**

The Industrial Internet: A $32 trillion opportunity

14% of IoT Professionals Say **Security** is the Biggest Challenge

70% of IoT Professionals Say **Interoperability** is the Biggest Challenge

36% of Executives Say **System Barriers** Between Departments **Prevent Collection** and Correlation of Data

Research into the Industrial Internet has **Only Existed** in the **Past 3 Years**

Urgent Need to **Refocus Education** to Prepare for the **Upcoming Digital Workplace**

5

Industrial Internet Consortium Vision & Mission

***Vision**: The Industrial Internet Consortium (IIC) is the world's leading organization transforming business and society by accelerating the Industrial Internet of Things (IIoT).*

***Mission**: Our mission is to deliver a trustworthy Industrial Internet of Things (IIoT) in which the world's systems and devices are securely connected and controlled to deliver transformational outcomes.*

An open, neutral "sandbox" where the IIoT Ecosystem of global industry, academia and government meet to collaborate, innovate and enable.

- More than 250 organizations from more than 30 countries and growing
- 27 active testbeds all over the world from more than a dozen different segments
- Numerous publications including Reference Architecture; Security Framework; Analytics WP

The IIC is an open, neutral "sandbox" where industry, academia and government meet to collaborate, innovate and enable.

IIC Founders, Contributing Members, & Large Industry Members

IIC Founding and Contributing Members

BOSCH · EMC² · GE · HUAWEI · IBM · intel · SAP

ABB · ERICSSON · at&t

OLYMPUS · TOSHIBA · Hewlett Packard Enterprise · Itron · HCL · accenture · DELL

KUKA · Rostelecom · BOEING · TOYOTA · TÜV SÜD · MITSUBISHI HEAVY INDUSTRIES · Schindler

MICHELIN · SAMSUNG · HITACHI · infineon · B&R · HARTING · iot INSTITUTE

ORACLE · pitney bowes · Haier · KONICA MINOLTA · FUJITSU · Microsoft

CISCO · NEC · Tech Mahindra · Infosys · Micron · NATIONAL INSTRUMENTS · Munich RE

ptc · MITSUBISHI ELECTRIC Changes for the Better · EQUINIX · XILINX ALL PROGRAMMABLE · 3M Science. Applied to Life. · GENPACT · TATA

IIC Founders, Contributing Members, & Large Industry Members

IIC Small Industry Members
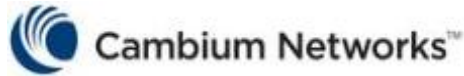
IIC Small Industry Members

IIC Nonprofit, Academic, & Government Members
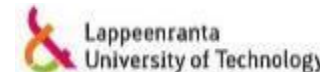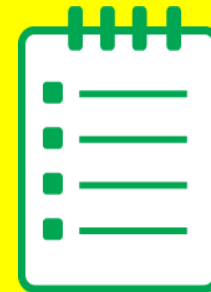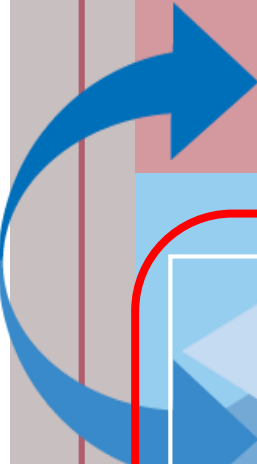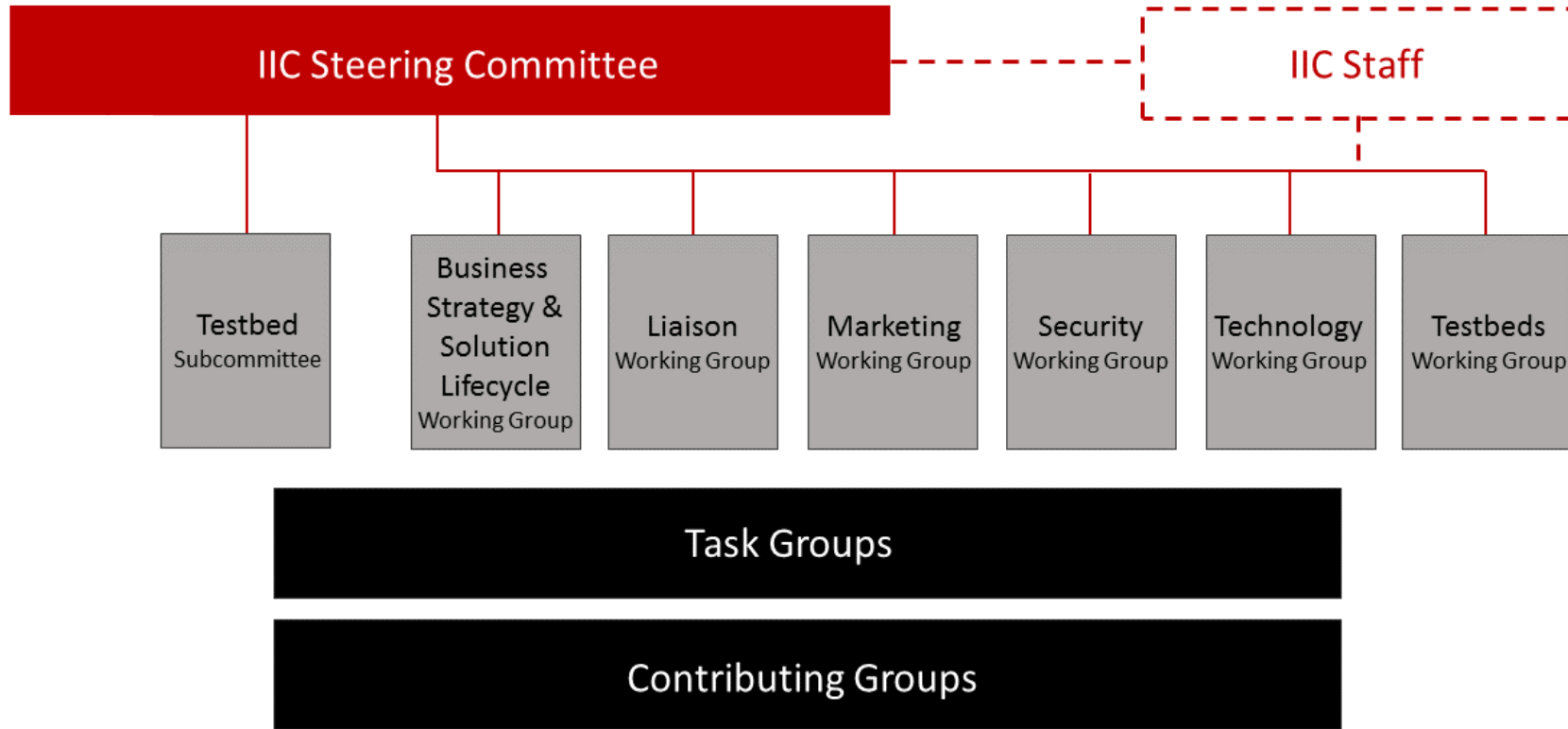
Organizational Structure of the Industrial Internet Consortium

IIC Newly Elected Leadership Team

Director of Business Development,
Bosch Software Innovations

Mr. Dirk Slama,
Chair

CEO,
Real-Time Innovations

Dr. Stan Schneider,
Vice-Chair

Senior Director,
Huawei

Mr. Wael William Diab,
Secretary

Chief Architect for IoT Solutions,
Dell Technologies

Dr. Said Tabet,
Chair, Tested Subcommittee

Executive Director,
Industrial Internet Consortium

Dr. Richard Soley,
Executive Director

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Liaison Working Group: Driving the Industry Ecosystem through Building Coalitions

Industrial AI Task Group

      Overview and Motivation

      Industrial Analytics Framework (IIAF)

Concluding Remarks

Getting Involved

The IIoT Ecosystem: Criticality of Liaisons

IIC has more than 38 existing [liaisons](#) and currently has 30 more in flight!
**   That's impressive for an organization that has its 4th birthday on March 27th, 2018!**
Below is a sample of the ecosystem that IIC is creating in the industry

Building Coalitions to Address the IoT Ecosystem

*IIC Vision: The Industrial Internet Consortium (IIC) is the world's leading organization **transforming business and society** by **accelerating** the Industrial Internet of Things (IIoT).***

*IIC Mission: Our mission is to deliver a trustworthy Industrial Internet of Things (IIoT) in which **the world's** systems and devices are securely connected and controlled to deliver **transformational outcomes**.*

LWG Mission: The IIC Liaison Working Group

- *Facilitates **external** interactions with the goal of **building relationships** for IIC*
- *Coordinates internal **stakeholder** requests and interest with external organizations*
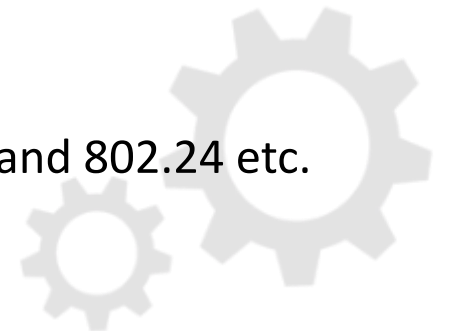
Building Coalitions to Address the IoT Ecosystem

Liaison Working Group *Strategic* Objectives

- **Build** and coordinate **collaborative**, working relationships inclusive of **government** organizations, formal **standards** development organizations and **open source industry** organizations
- Working with peer working groups, identify gaps in the **portfolio** of IIC and create then leverage relationships for IIC
- Make **strategic recommendations** to IIC Steering Committee to grow ecosystem
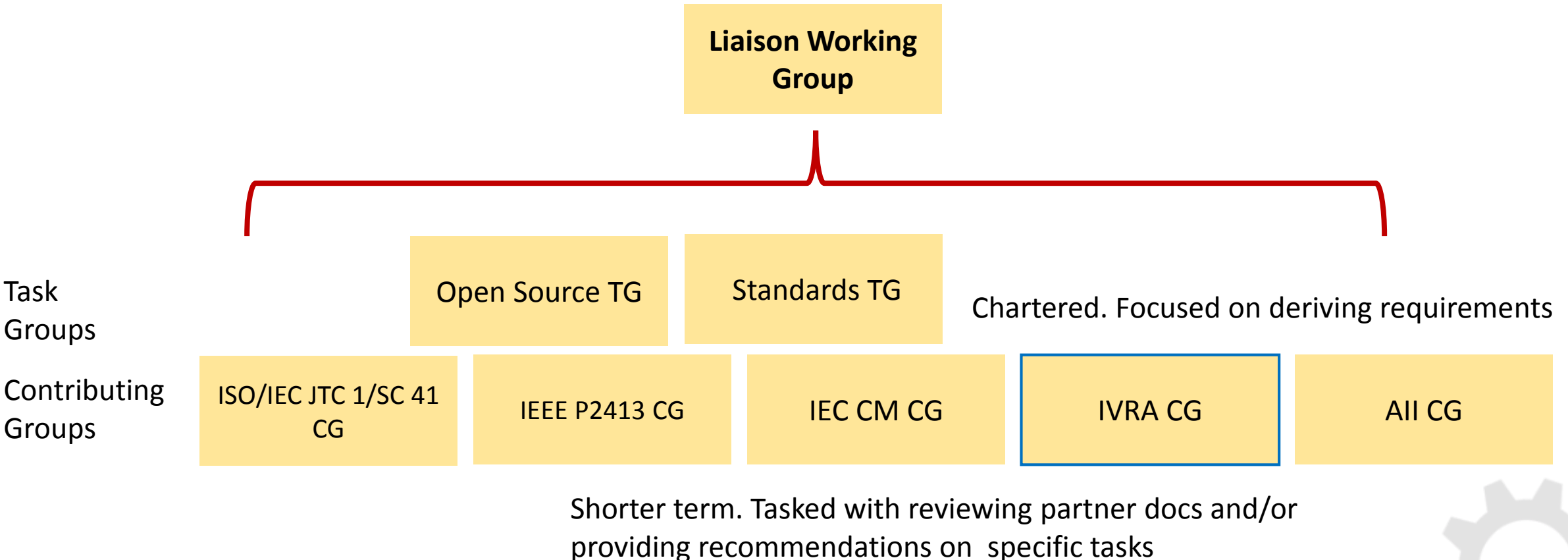
Example areas of *collaboration*

- **Joint workshops** conducted with partners (partner hosted)
  - E.g. IIC:IVI (Japan), IIC:CAICT (China), IIC:I4.0 (Germany), IIC:ECC (Industry)
- **Technical workshops** e.g. technology and security workshop with NIST, IIC:NEMA
- Collocated, IIC hosted **workshops** e.g. IIC:oneM2M, IIC:OSGi
- Liaison partnerships with organizations focusing on **verticals**
- Liaison partnerships with global **SDOs focused on IoT technologies**
  - E.g. ISO/IEC JTC 1/SC 41 (IoT), ISO/IEC JTC 1/SC 27 (Security), oneM2M, IEEE P2413 and 802.24 etc.
- Liaison partnerships with global **SDOs focused on related areas**
  - E.g. ISO/IEC JTC 1/WG 9 (Big Data)

Liaison Working Group – February 2018

Liaison Working Group

Task Groups

Open Source TG

Standards TG

Chartered. Focused on deriving requirements

Contributing Groups

ISO/IEC JTC 1/SC 41 CG

IEEE P2413 CG

IEC CM CG

IVRA CG

AII CG

Shorter term. Tasked with reviewing partner docs and/or providing recommendations on specific tasks

# LWG Officer Team – Meet the Liaison Working Group Team

- Working Group Chairs
  - Wael William Diab
  - Stephen Mellor
  - Gary Stuebing

- Standard Task Group Chairs
  - Erin Bournival
  - Mark Crawford
  - Ya Ling Zhou

- Open Source Task Group Chairs
  - Erich Clauer
  - Kai Hackbarth
  - Jiaxin (Jason) Yin

- Contributing Groups Chairs
  - Erin Bournival – ISO/IEC JTC 1/SC 41 CG
  - Jacques Durand – IVRA CG
  - Yunchao Hu – IECCM CG
  - Anish Karmarkar – ISO/IEC JTC 1/SC 41 CG
  - Haihua Li – AII CG
  - Sumeet (Sam) Malhotra – IVRA CG
  - Eric Simmon – P2413 CG
  - Vyacheslav (Slava) Zolotnikov – P2413 CG

- Liaison Staff
  - Skyler Lew – Liaison Coordinator

# LWG At-A-Glance by the Numbers (Leaving Helsinki)

- 38 Liaisons established
- 3 Liaisons approved by IIC awaiting partner approval and/or legal review
  - 1 Liaison conditionally approved awaiting legal review
  - 2 new liaisons approved awaiting partner
- 2 additional new proposed liaisons (*yes, since Tuesday*)
- 2 workshops in Q2
- 1 Being planned for Q3

Open Source
3%

SDO
31%

Industry Alliance
51%

Govt
15%
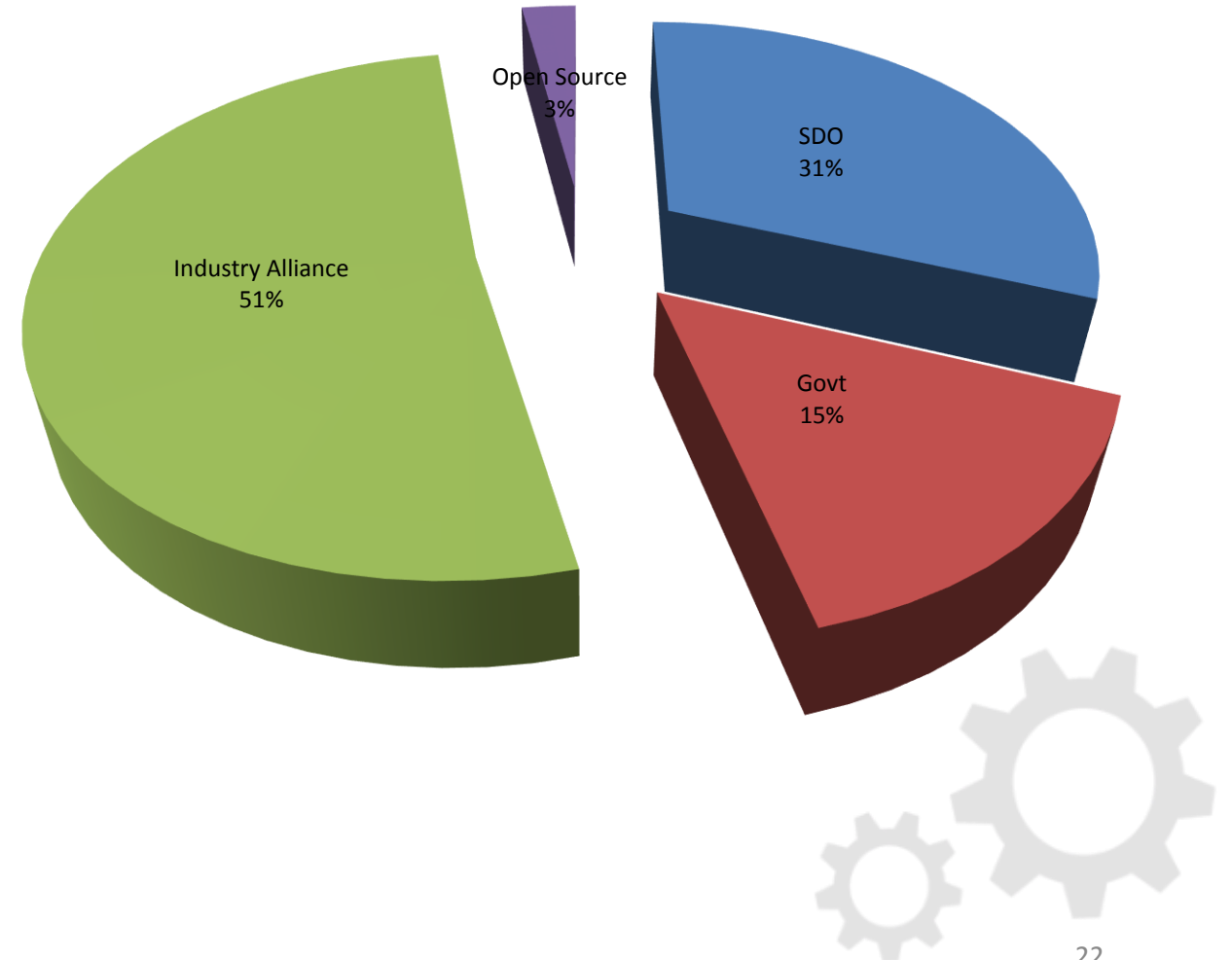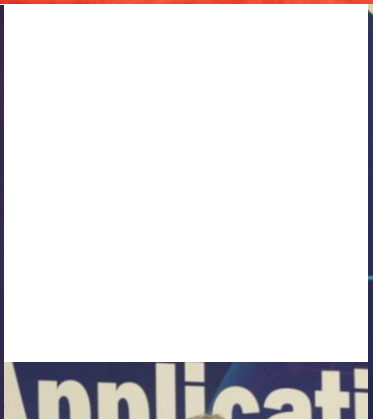
5TH INTERNATIONAL WORKSHOP ON BIG DATA 14-AUG-2

AGENDA

08:30 – 09:15 **Coffee + Registration**
09:15 – 09:30 Welcome
  Ray Walshe CHAIR of IWBD
  Enda McDonnell, Director o
09:30 – 09:45 Official Opening
  Adrienne Harringtion
  Head of Data Protection Uni
  Irish Government Dept. of a
09:45 – 10:00 Special Guest
  Daniele Rizzi - EC DG CNEC
  European Standardisation F

Session 1

10:00 – 10:25 **Wo Chang** - ISO IEC JTC1 W
  ISO Big Data Reference Arch
10:30 – 10:55 **Wael Diab** – HUAWEI / IIC /
  Big Data Ecosystem
11:00 – 11:30 **Coffee and Networking**
Session 2
11:30 – 11:55 **Ashok Ganesh** - CEN CENELEC
  Future Industry Standardisation
12:00 – 12:30 **Arne J Berre** – TF6 LEAD BDVA
  BDVA Standardisation
12:30 – 13:30 **LUNCH**
Session 3
13:30 – 13:55 **Rigo Wenning** – W3C
  Big Data Europe –Data Engine
14:00 – 14:25 **Ingo Simonis** – OPEN GEOSPATION CONSORTIUM
  Standardized Geospatial Big Data
14:30 – 14:55 **Georgios Karagiannis** – AIOTI
  WG3 AIOTI Standardisation
15:00 – 15:30 Panel Session
  Ray Walshe (Insight@DCU)
  Daniele Rizzi (European Commission)
  Wo Chang (NIST / IEEE-SA)
  Ana Garcia (Big Data Value Association)
  Thomas Hahn (OPC Foundation)
15:30 – 15:45 Final Remarks
15:45 – 16:30 **Close of Workshop and Networking**

5TH INTERNATIONAL WORKSHOP ON BIG DATA DUBLIN IRELAND 14TH AUG 2017

Adrienne Harrington
Dept. of Taoiseach (IRLGOV)
Head of Data Protection Unit

Daniele Rizzi
European Commission
Data Policy and Innovation

Ray Walshe
IEEE-SA/BDVA/ ISO
Chair of BDVA TF6SG6

Ana Garcia
Big Data Value Assoc.
BDVA Secretary General

Thomas Hahn
OPC Foundation
Board member

Ashok Ganesh
CEN CENELEC
Director Innovation

Arne J Berre
Big Data Value Assoc
TF6 Technical Task Force

Giorgios Karagiannis
AIOTI
Lead WG3 Standardisation

Wael William Diab
Huawei / IIC / ISO TC204
Sr. Director / Chair IIC Liaison WG

Rigo Wenning
W3C
Personal Data Expert

Wo Chang
NIST / IEEE-SA
ISO IEC WG9 Big Data

Ingo Simonis
Open Geospatial Consortium
Director Innovation

NSAI   BDV BIG DATA VALUE ASSOCIATION   ISO

IWBDS'17

International Workshop on Big Data Standardisation

14th Aug 2017 @ Dublin City University

https://iwbds17.eventbrite.ie
to reserve a FREE Ticket

International data analysis workshop (5th JUNE, 2017)

10 speakers, About 200 participants from 100+ entities, in CAICT, Beijing

IIC:IVI Signing Ceremony @Hannover Messe (April 2017)

IIC:IVI Workshop @Tokyo Big Sight (June 2017)

>220 Registered Attendees
(limited by space)

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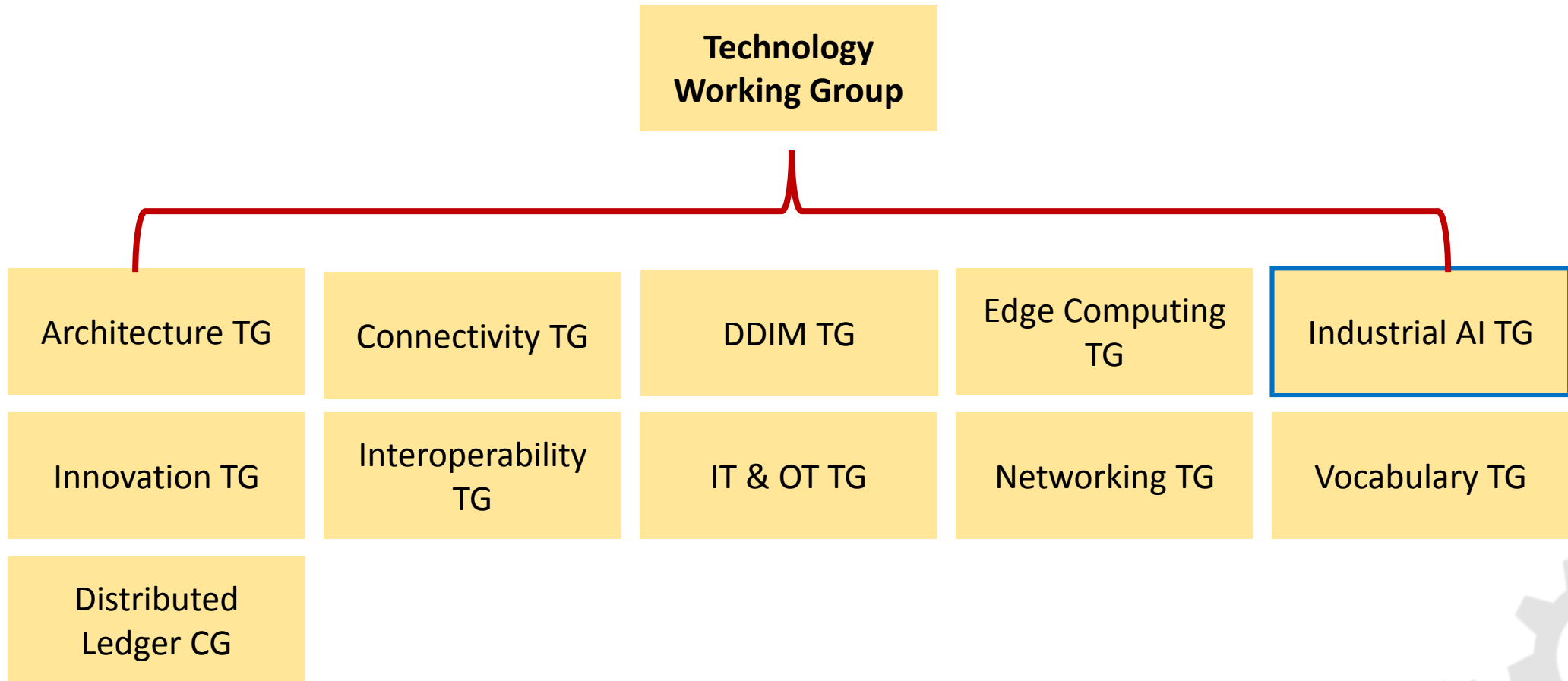
      Industrial Analytics Framework (IIAF)

Concluding Remarks

Getting Involved

Technology Working Group – May 2018

Industrial Analytics Task Group
Work and Deliverables Landscape

Initial deliverables are a White Paper and Industrial Internet Analytics Framework

Group's target schedule is

- Q1 2017 for White Paper ← **Completed 0317**
- Q3 2017 for first release of Framework ← **Completed 1017**
- Q4 2018 for second release of Framework ← **Initial exploratory phase**

Internal stakeholder for liaison relationships

- E.g. ISO/IEC JTC 1/WG 9 (Big Data), MESA , MTConnect

Membership engagement Initiatives

- Invited speakers
- Host Industrial Analytics panels (session and plenary)

Represent IIC IA topics at liaison partner events and external engagements

- Big Data workshop (JTC 1/WG 9 in Ireland), analyst/reporter calls and *today!*

Coordinate industrial analytics interests within Technology Working Group family e.g. Edge, Safety, Vocab etc.

Collaborate with internal stakeholders outside of TWG e.g. I3C, LWG, BSSL, Marketing etc.

Identify and work on cross-cutting issues related to analytics

IIC Industrial Analytics General Session Expert Panel (Dec 16)

- Participants
  - Wael Diab (Huawei) Chair / Moderator
  - Eric Harper (ABB) Chair
  - Nilesh Auti (TechMahindra) Panelist
  - Terrence Barr (Electric Imp) Panelist
  - Brent Hodges (Dell) Panelist
  - Shi-Wan Lin (Thingswise) Panelist
  - Shyam Nath (GE) Panelist
  - Sven Schrecker (Intel) Panelist
  - About 70+ in the audience

- Topics included
  - Overview of Analytics in the ecosystem
  - Tiered analytics
  - Technical challenges and opportunities for analytics
  - Safeguards in the system design
  - Use cases and vertical examples
  - Smart security for analytics

Industrial AI TG Panels on AI and Analytics

- Held two panels, one on Industrial AI (Left) and one on Industrial Analytics (Right)

- Peak of ~75 attendees

- AI Panel: Moderator: Wael. Panelists: Shi-wan (Thingswise), Christopher (ABB), Liang (Huawei) and Dan (Xilinx)

- Analytics Panel: Moderator Eric. Panelists: Brad (SAS), Pieter (XMPro), Ram (Tata Consultancy Services)

- Strong feedback (~entire room) to repeat for future meetings

Introducing IIAF

- This presentation provides an overview of the Industrial IoT Analytics Framework (IIAF)

- Is a first-of-its-kind blueprint that addresses the entire industrial analytics ecosystem

- The target audience is IIoT decision makers, such as system architects / designers and business leaders, looking to successfully deploy industrial analytics systems

- Provides information about concepts and components of the IIoT system, which architects require to develop and deploy a viable analytical system in an industrial setting

- Takes into account industrial requirements, goals and cross-cutting concerns. Maps analytics to the supported IIoT applications, ensuring that business leaders can realize the full potential of analytics and thus enable more-informed decision making

Industrial Analytics: The engine driving the emerging IT/OT revolution

MAIN TOPICS

- Framework overview
- Business View Point
  - Creating Business Value
- Usage View Point
  - Getting started with Industrial Analytics
- Functional View Point
- Implementation View Point
  - Design considerations
- AI and Big Data
- Analytic Methods & Modelling
- System Characteristics and Crosscutting Functions Related to Analytics

OT Focus

IT Focus

Traditional enablement

- Efficiency
- Utilization
- Consistency
- Continuity
- Safety

IIoT enablement

Impacts:
- *Data*
- *Analytics*
- *Interconnect*
- *Control*
- *Interaction*
- *Insight*

- Agility
- Cost reduction
- Security
- Speed
- Business Insight
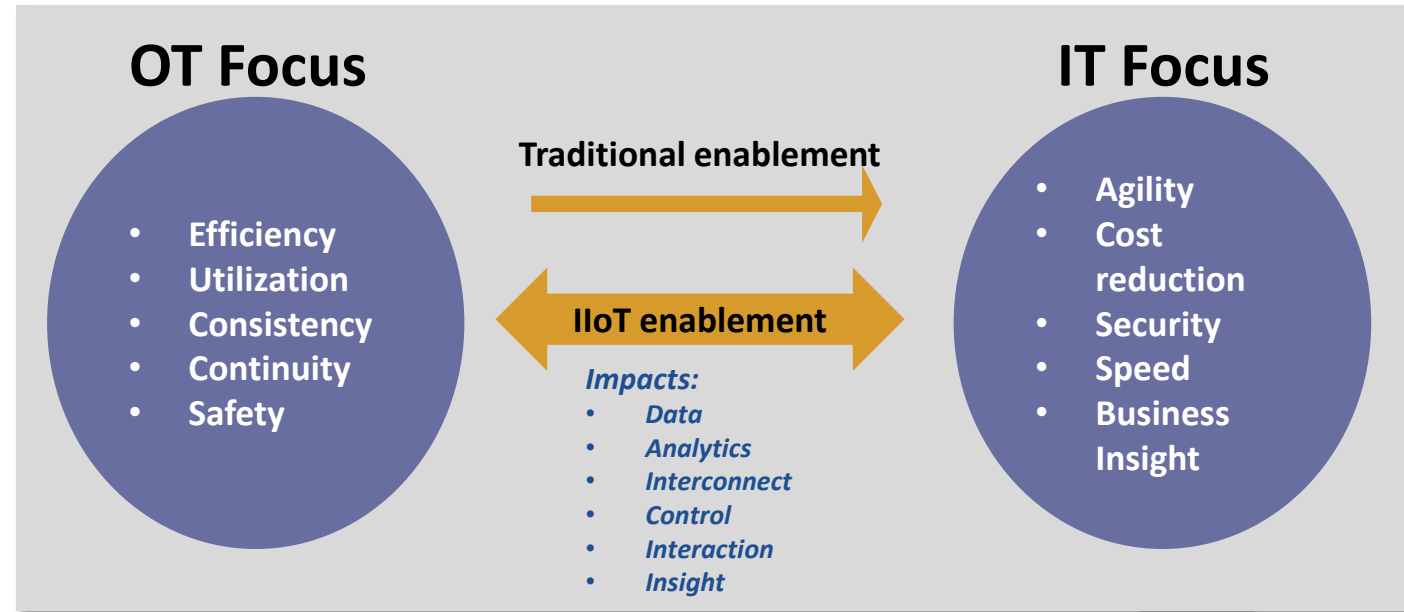
Industrial IoT Analytics Framework Overview

Provides guidance and assistance in the development, documentation, communication and deployment of Industrial Internet of Things Analytics Systems.

The IIAF does this by taking a holistic view of the entire industrial IoT ecosystem that the analytics is operating in. A number of view points are considered along with emerging technologies in this space and cross-cutting concerns:
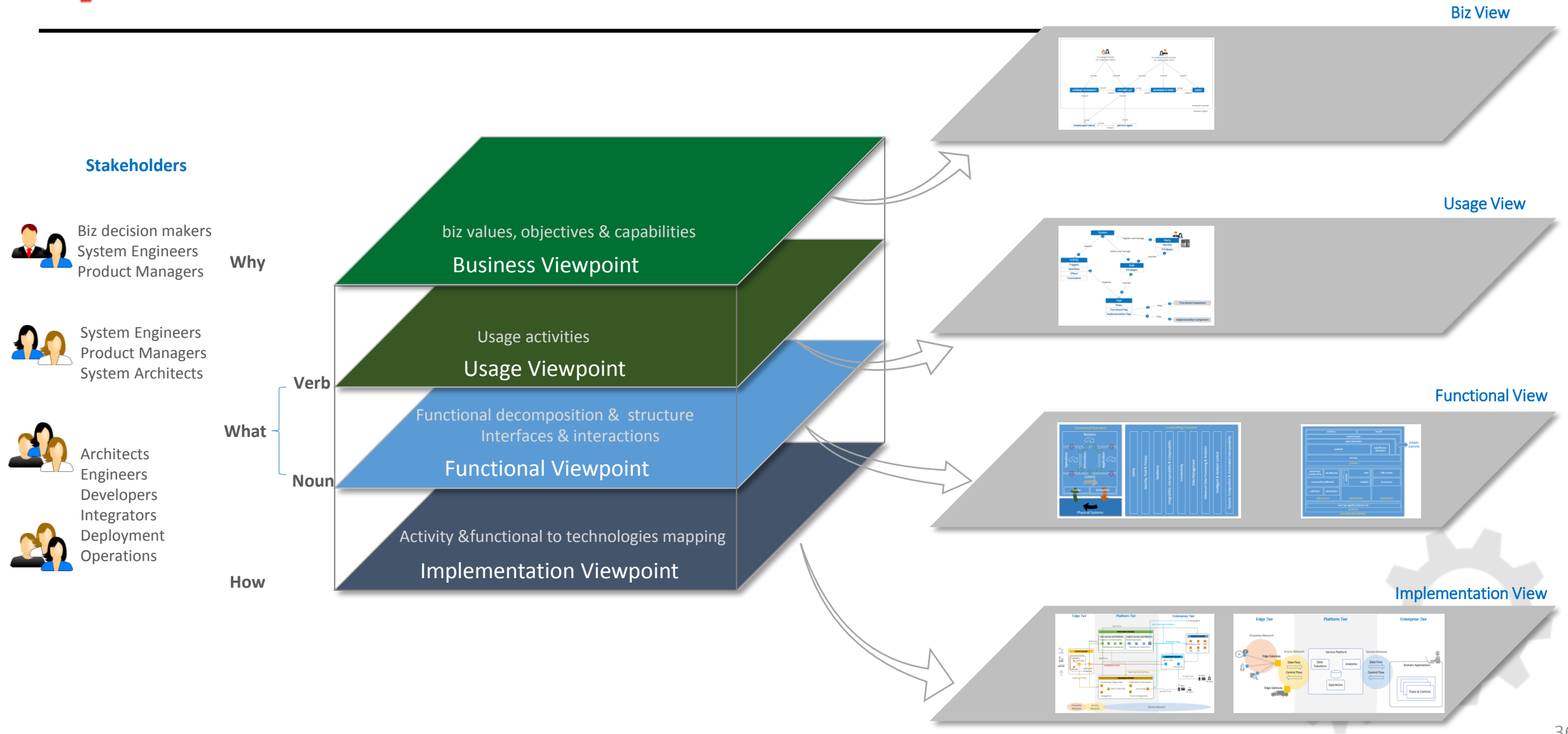
- Business viewpoint
  - E.g. Creation of Business Value
- Usage View Point
  - E.g. Getting started with Industrial Analytics
- Functional View Point
  - E.g. Analytics Architecture Objectives and Constraints
  - E.g. Analytics Functionality
- Implementation View Point
  - E.g. Design considerations
  - E.g. Analytics Capacity Consideration
- Artificial Intelligence (AI) and Big Data
- Analytic Methods & Modelling
- System Characteristics and Crosscutting Functions Related to Analytics

> " Analytics may be broadly defined as a discipline transforming data into information through systematic analysis. Industrial Analytics is the use of analytics in IIoT systems. "

> " Within the Industrial space, the merger of IT and OT is providing for innovation and creating disciplines such as condition monitoring to increase uptime and reduce operational costs (OpEx) "

> " If data is the new oil, data analytics is the new engine that propels the IIoT transformation. "

IIAF Architectural Description Built on ISO/IEC/IEEE 42010:2011

Biz View

Stakeholders

Biz decision makers
System Engineers
Product Managers

Why

biz values, objectives & capabilities

Business Viewpoint

Usage View

System Engineers
Product Managers
System Architects

Verb

Usage activities

Usage Viewpoint

What

Functional View

Functional decomposition & structure
Interfaces & interactions

Noun

Functional Viewpoint

Architects
Engineers
Developers
Integrators
Deployment
Operations

Activity &functional to technologies mapping

Implementation Viewpoint

How

Implementation View

Business View Point – Creating Business Value

> " Industrial analytics, applied to machine data for operational insights, is as an engine driving the convergence of OT and IT, and ultimately value creation for the Fourth Industrial Revolution. "
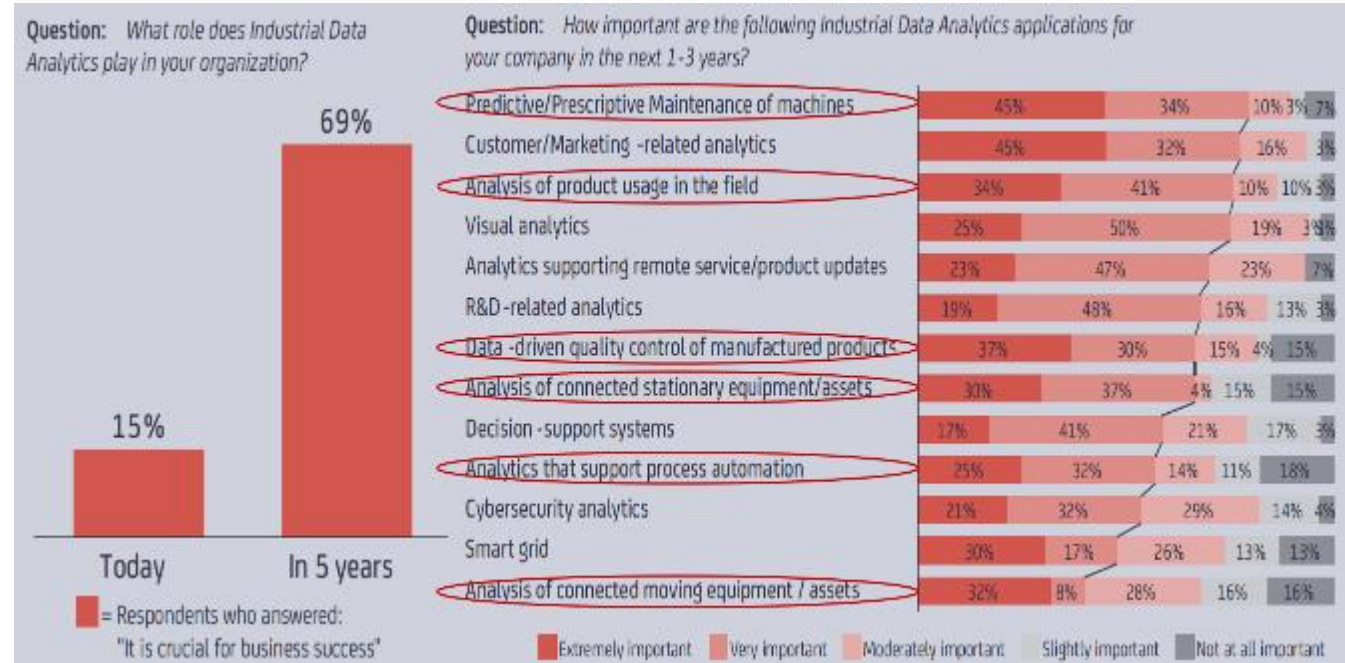
What is it? Attends to concerns of the identification of stakeholders and their business vision, values and objectives in establishing an industrial analytics system in its business and regulatory context

Why is it Important? IA provides crucial insights for decision makers, which in turn translate to an increase in the efficiency of labor and capital, which determine long-term GDP growth

A survey by Deloitte shows predictive analytics to be at the top of the list

Advanced Manufacturing Technologies	US	China	Europe
Predictive analytics	1	1	4
Smart, connected products (IoT)	2	7	2
Advanced materials	3	4	5
Smart factories (IoT)	4	2	1
Digital design, simulation, and integration	5	5	3
High performance computing	6	3	7
Advanced robotics	7	8	6
Additive manufacturing (3D printing)	8	11	9
Open-source design/Direct customer input	9	10	10
Augmented reality (to improve quality, training, expert knowledge)	10	6	8
Augmented reality (to increase customer service & experience)	11	9	11

A survey by IoT Analytics GmbH found 69% of business leaders consider industrial analytics crucial for their businesses within 5 years

Question: What role does Industrial Data Analytics play in your organization?

69%

15%

Today | In 5 years

= Respondents who answered: "It is crucial for business success"

Question: How important are the following Industrial Data Analytics applications for your company in the next 1-3 years?

	Extremely important	Very important	Moderately important	Slightly important	Not at all important
Predictive/Prescriptive Maintenance of machines	45%	34%	10%	3%	7%
Customer/Marketing -related analytics	45%	32%	16%		3%
Analysis of product usage in the field	34%	41%	10%	10%	3%
Visual analytics	25%	50%	19%		3%
Analytics supporting remote service/product updates	23%	47%	23%		7%
R&D-related analytics	19%	48%	16%	13%	3%
Data -driven quality control of manufactured products	37%	30%	15%	4%	15%
Analysis of connected stationary equipment/assets	30%	37%	4%	15%	15%
Decision -support systems	17%	41%	21%	17%	3%
Analytics that support process automation	25%	32%	14%	11%	18%
Cybersecurity analytics	21%	32%	29%	14%	4%
Smart grid	30%	17%	26%	13%	13%
Analysis of connected moving equipment / assets	32%	8%	28%	16%	16%

Usage View Point – Getting Started with Industrial Analytics

What is it? Addresses the concerns of expected system usage.

"Industrial analytics are used to identify and recognize machine operational and behavioral patterns, make fast and accurate predictions and act with confidence at the points of decision"

Analytics fall into 3 areas:

- **Descriptive**

- **Predictive**

- **Prescriptive**

The framework introduces unique requirements when planning to deploy industrial analytics

Correctness	Industrial Analytics must satisfy a higher level of accuracy in its analytic results. Any system that interprets and acts on the results must have safeguards against undesirable and unintended physical consequence.
Timing	Industrial Analytics must satisfy certain hard deadline and synchronization requirements. Near instantaneous analytic results delivered within a deterministic time window are required for reliable and high quality actions in industrial operations.
Safety	When applying Industrial Analytics, and interpreting and acting on the result, strong safety requirements must be in place safeguarding the wellbeing of the workers, users and the environment.
Contextualized	The analysis of data within an industrial system is never done without the context in which the activity and observations occur. One cannot construct meaning unless a full understanding of the process that is being executed and the states of all the equipment and its peripherals are considered to derive the true meaning of the data and create actionable information.
Causal-oriented	Industrial operations deal with the physical world and Industrial Analytics needs to be validated with domain-specific subject matter expertise to model the complex and causal relationships in the data. The

Functional View Point – Architecture Objectives and Constraints

What is it? focuses on the functional components in an industrial analytics system, their structure and interrelations and the relation and interactions of the system with external elements, to support the usages and activities of the overall system.

An end-to-end IIoT system in the IIRA is functionally decomposed into five functional domains:
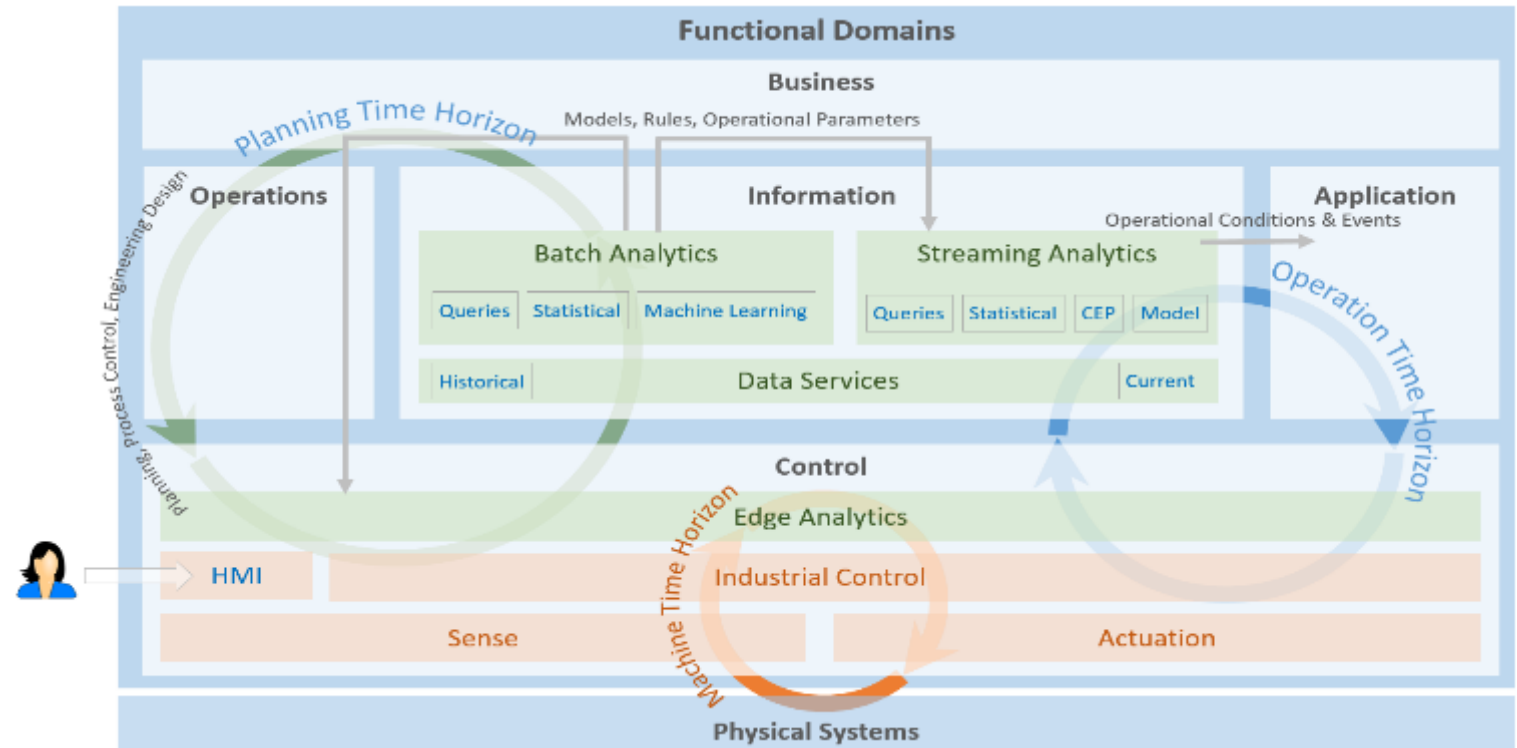
- **Control**
- **Operations**
- **Information**
- **Application**
- **Business**

Figure 4-1. Analytics Mapping to the Industrial Internet Reference Architecture

Implementation View Point – Design Considerations

What is it? Deals with the technologies needed to implement functional components (functional viewpoint), their communication schemes and their lifecycle procedures. Major sections include design and capacity considerations as well as deployment models and data preprocessing, transformation and curation. Below is an example of design considerations

"One of the common questions is *where* the analytics should be performed."

Considerations such as **scope, response time and reliability, bandwidth, capacity, security, volume, velocity, variety, analytics maturity, temporal correlation, provenance, compliance** etc. determine where the analytics run.

The framework introduces a table with these factors

Industrial Analytics Location

Evaluation Criteria	Plant	Enterprise	Cloud
Analysis Scope			
Single site optimization	X	X	X
Multi-site comparison		X	X
Multi-customer benchmarking			X
Results Response Time			
Control loop	X		
Human decision	X	X	
Planning horizon	X	X	X
Connectivity Reliability			
Site	X		
Organization	X	X	

Emerging Technologies – Artificial Intelligence and Big Data

What is it? Innovations in a number of areas related to AI and Big Data are being applied to IA. The framework looks at taxonomies of artificial intelligence and emerging computational techniques in big data in relation to industrial analytics.

> In IIoT applications, machine learning and deep learning provide new approaches to build complex models of a system or systems using a data-driven approach.

> Big data requires computational systems and networks to be designed around the data. It will transform how businesses operate and the digital/physical divide.
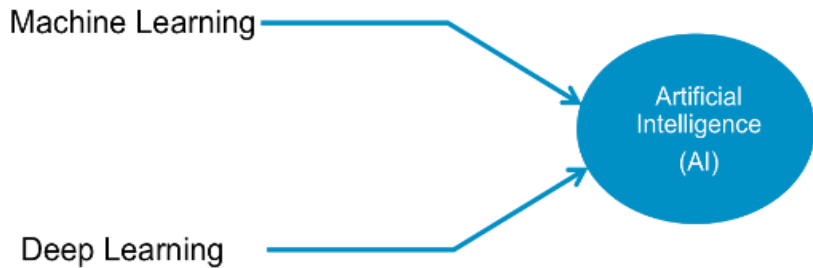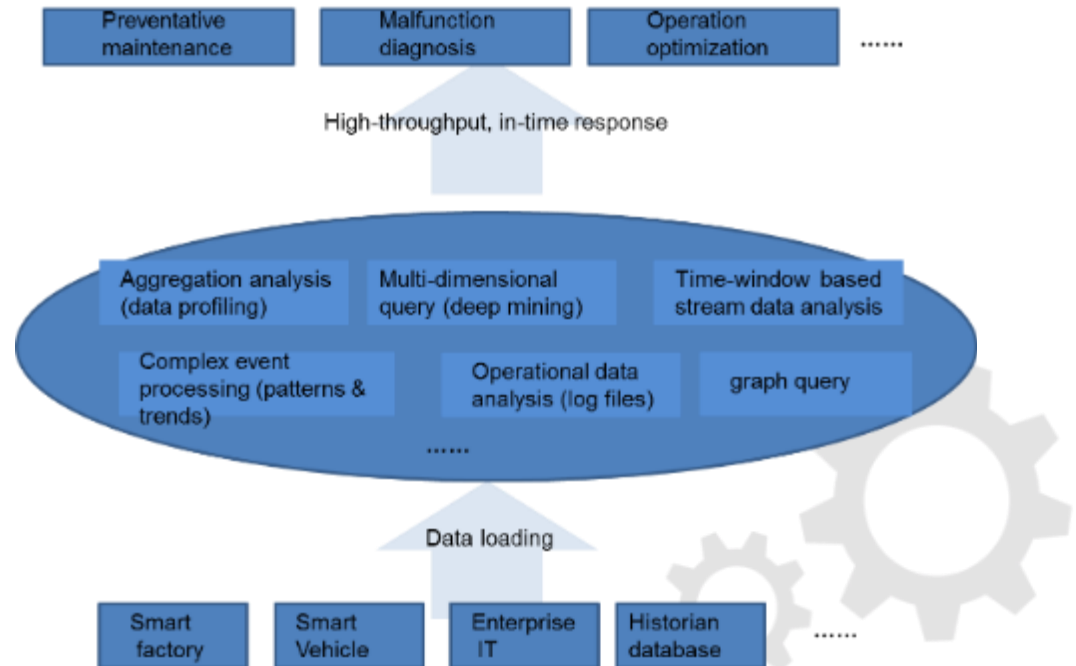

Figure 6-2 Artificial Intelligence (AI)
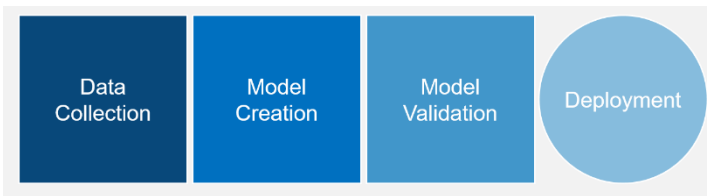
Figure 6-8 Deep learning workflow

Example of Multi-Typed Data Processing in Big Data Analytic Systems

Analytics Methods and Modelling – Model Building

What is it? Survey of methods, models, algorithms and frameworks used for industrial analytics applications.

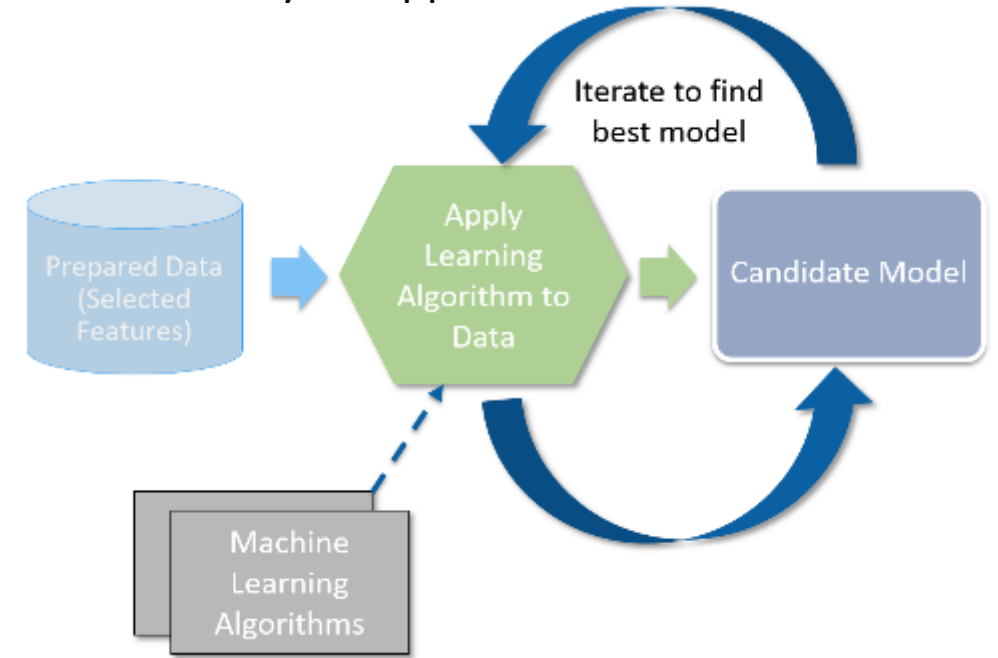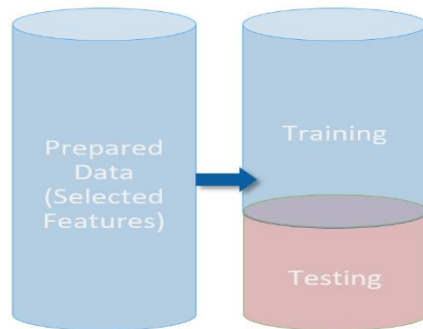| Algorithms		
Anomaly Detection (Baseline)	**Classification (Diagnostic)**	**Regression (Predictive)**
One-Class SVM	Neural Networks	ARMA
PCA-based	Support Vector Machine	Linear Regression
Gaussian Mixture Model (GMM)	Decision Forest	NN Regression
Logistic Regression	Bayes Classifier	Bayes Regression

Figure 7-4 The model building process

Figure 7-5 Splitting data for cross validation

Total Population	**Predicted Condition**	
	Predicted Condition Negative	Predicted Condition Positive
True Condition — Condition Negative	True Negative	False Positive (Type I Error)
True Condition — Condition Positive	False Negative (Type II Error)	True Positive

Figure 7-6 Confusion matrix showing types of classification errors for a binary classification problem

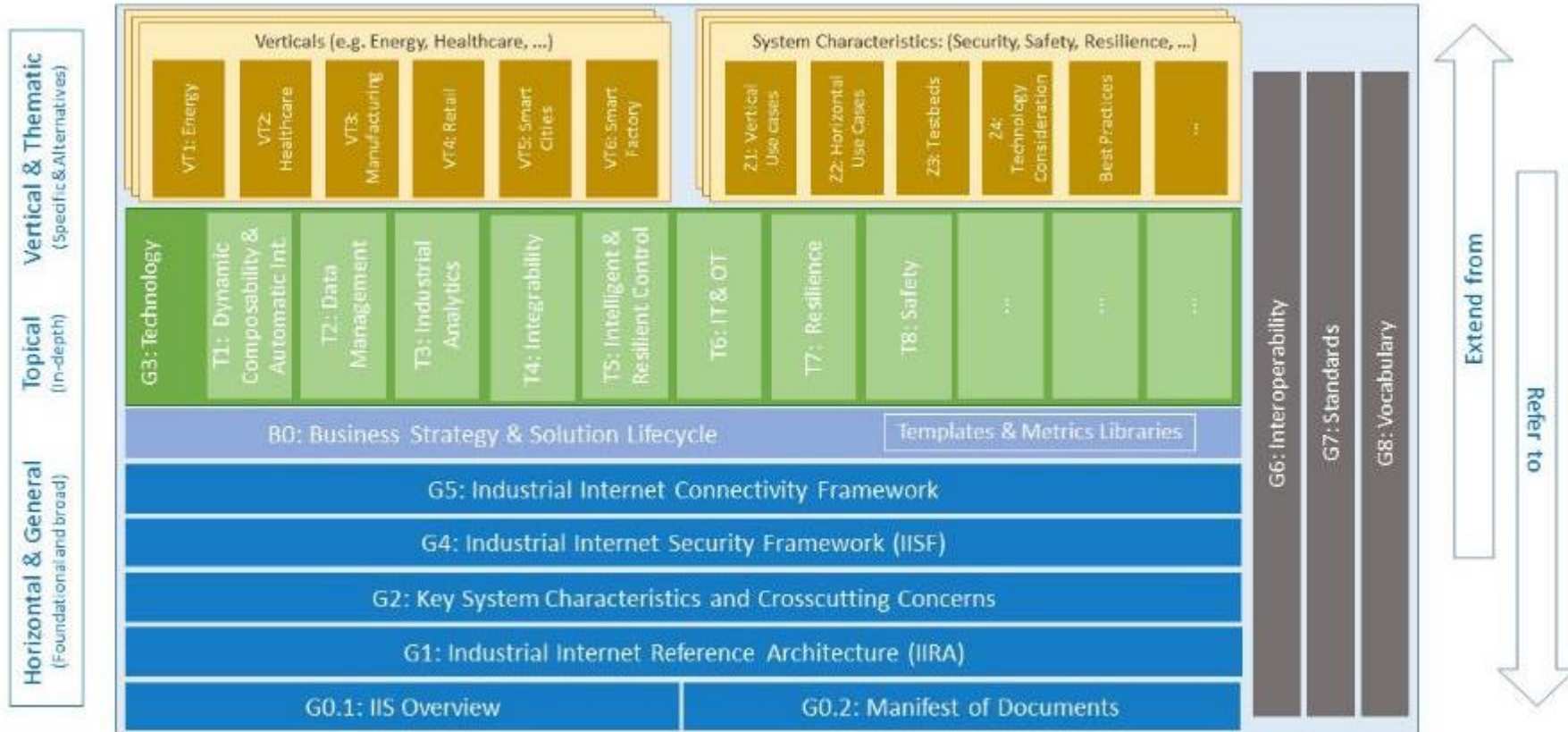# Relationship with other IIC documents

Figure 1-1 IIC Technical Publication Organization

Key takeaways

- As a fledgling discipline combining advances in mathematics, computer science and engineering in the context of Information Technologies (IT) and Operational Technologies (OT) convergence, industrial analytics plays a crucial rule in the success of any IIoT system

- The IIAF is the first blueprint that decision makers, such as IIoT system architects and business leaders, can use to deploy industrial analytics systems

- The IIAF provides a common understanding and encourages interoperability across the IIoT ecosystem

- Takes into account industrial requirements, goals and cross-cutting concerns
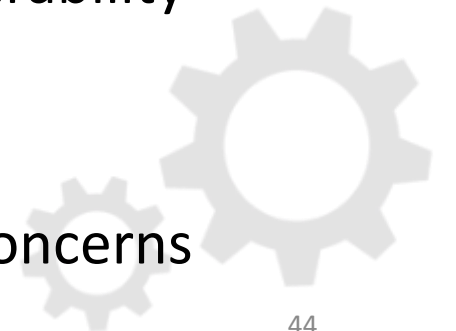
IIC Analytics White Paper and Framework Useful Links

IIAF (Published 1017)

https://www.iiconsortium.org/pdf/IIC_Industrial_Analytics_Framework_Oct_2017.pdf

White Paper (Published 0317)

https://www.iiconsortium.org/pdf/Industrial_Analytics-the_engine_driving_IIoT_revolution_20170321_FINAL.pdf

Press release on IIAF

http://www.businesswire.com/news/home/20171024005049/en/Industrial-Internet-Consortium-Publishes-Industrial-IoT-Analytics

Video Discussing IIC's Industrial Analytics – Longer Conversational Style

https://youtu.be/g0rs5YlMqtA

Video Overviewing the Industrial Analytics Framework – Shorter Clips Style

https://www.youtube.com/watch?v=oLmitX5eW08

⚙ Agenda

Overview of IIC

> Brief Overview of IIC

> Update on New IIC Leadership

Liaison Working Group: Driving the Industry Ecosystem through Building Coalitions

Industrial AI Task Group

> Overview and Motivation

> Industrial Analytics Framework (IIAF)

Concluding Remarks

Getting Involved

Concluding Remarks: It Takes An Ecosystem!

AI, Analytics and IoT are **3 sides of the same coin**!

- IoT is focused on sensor networks that *source* the data
- AI (and Big Data) are enabling technologies focused on machine learning, algorithms and architectures that *learn and process* the data
- Analytics is focused on the use of the processed date *insights and business value*

Successfully deploying industrial analytics is key to realizing the full IIoT business potential

- Requires consideration of the technology, industrial requirements, vertical applications driving the business and a look at the entire platform

IIAF is a first-of-its-kind blueprint for decision makers that addresses the entire ecosystem

IIC, its TWG, LWG and IAI TG are working with a coalition of partners.

Agenda

Overview of IIC

       Brief Overview of IIC

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Getting Involved

Getting Involved: IoTSWC 2018

- IoT Solutions World Congress ([IoTSWC](#)) is partnership between Fira Barcelona and IIC
- Successful 2017 event
    - 13,000 visitors (8,134 in 2016)
    - 250 speakers (160 in 2016)
    - 240 exhibitors and sponsors (170 in 2016)
    - 114 Countries (71 in 2016)
    - 24,000 square meters (14,000 in 2016)
- IoTSWC 2018
    - Key dates
        - Call for papers opened January 9th, 2018
        - Call for papers closes 16th April, 2018
        - Review and approval of papers by [Program Committee](#) from close till 31st May, 2018
        - Program up on the website 10th June, 2018
        - Congress runs 16th – 18th October
    - 7 tracks
        - Manufacturing, Energy & Utilities, Buildings & Infrastructure, Healthcare, Open Industry, Enabling Technologies
    - 2 Forums
        - Artificial Intelligence & Cognitive Systems
            - AI and Cognitive Systems [Forum](#) will run through the entire congress
        - Blockchain
- Opportunities for panelists if you are interested

Track Chairs

Manufacturing: *Helena Lisachuk and Calvin Smith*

Connected Transporation: *Jamie Smith and Said Tabet*

Energy & Utilities: *Eric Harper & Jeff Lund*

Buildings & Infrastructure: *Leila Dillon and Ron Zahavi*

Healthcare: *John Denning and Helena Lisachuk*

Open Industry: *Mark Crawford and Tim Scannell*

Artificial Intelligence: *Edy Liongosari and Wael William Diab*

Enabling Technologies: *Edy Liongosari and Shyam Nath*

Getting Involved: IoTSWC 2018 – AI Forum

Come and learn how adding Artificial Intelligence to Industry Internet of Things (IIoT) Solutions can completely transform and bring the solutions to the next level. Enhanced insights, complex decision making, self-learning and self-healing are just a few of the capabilities that AI enables. It also provides much more sophisticated user interactions and richer experiences. The possibilities that AI brings to IIoT are endless. Hear the success stories of how AI is applied to IIoT systems and get a look at how this emerging technology is changing the industry and landscape. Topics Include:

- Applications, use cases and/or vertical industry use cases of AI in IIoT
- AI computational techniques (e.g. machine learning, genetic algorithms, etc.)
- Algorithmic training, landscape and open source
- AI system architectures and related technologies (e.g. Big Data)
- AI Security, Privacy and Trustworthiness
- AI system development and deployment processes, methodologies and best practices
- Infrastructures supporting AI-enabled IIoT systems
- AI ethical considerations (e.g. algorithmic bias)
- Societal impact of AI
- Emerging industry ecosystem and landscape (e.g. standardization, industry alliances, etc.)

Community. Collaboration. Convergence.

Things are coming together.

www.iiconsortium.org

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