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connecting digital ecosystems

Internet of Everything: Connecting and Monetizing Ecosystems

Webinar June 16 2016

TM Forum is the global member association for digital business, enabling members across a wide range of industries to connect, collaborate and partner to build, deliver, and monetize innovative digital services.

25+ Years Enabling Collaborative Innovation

90,000+ Member Professionals

900+ Member Companies

Global Coverage

Sample of TM Forum's 900+ Member Companies

Connecting the right people across companies, industries and ecosystems

Accelerating innovation and R&D through Member-driven collaboration

Providing the blueprint for digital success via proven best practices, platforms, APIs, models, metrics

How do I simplify / accelerate partnering in the digital world?

- ✓ *Internet of Everything Mgmt.*
- ✓ *Rapid Partnering & Scaling*
- ✓ *B2B2x Best Practice Guidance*
- ✓ *Innovation Incubator*

Open Digital / IoE (inter-organization)

How do I transform my business to be fit for the digital world?

- ✓ *Agile IT & Hybrid Management*
- ✓ *Zero-touch Operations Orchestration & Management (ZOOM)*
- ✓ *DevOps; Procurement*
- ✓ *Continuous Business Transformation*

Agile IT & Ops (intra-organization)

Customer Centricity & Analytics

How do I gain and retain customers in the digital world?

- ✓ *Customer Experience Management*
- ✓ *Omnichannel retail, care, service*
- ✓ *Cognitive / AI Customer Care*

How do I provide Revenue Management, Security and Privacy?

- ✓ *Analytics*
- ✓ *Metrics & SLAs*
- ✓ *Security & Privacy*

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200 Billion Devices & Sensors by 2020

- IoE market expected to grow to $23.97 trillion by 2020

- IoE = person to person (P2P), machine to machine (M2M) and person to machine (P2M) connections

Source: Research & Markets

M2M versus IoT versus IoE:

Machine to Machine
M2M

A *device*...
that captures an *event*...
transmits it over a *network*...
to an *application*....
that translates it into
meaningful information.

Internet of Things
IoT

A network of uniquely
identifiable *"things"*
that communicate
*without human
interaction* using
IP connectivity

Internet of Everything
IoE

Bringing together the
*people, process, data, and
things* to make networked
connections more relevant by
*turning information
into actions*.

Source: https://www.linkedin.com/pulse/m2m-iot-ioe-its-just-gettting-bigger-everyday-sandeep-patel
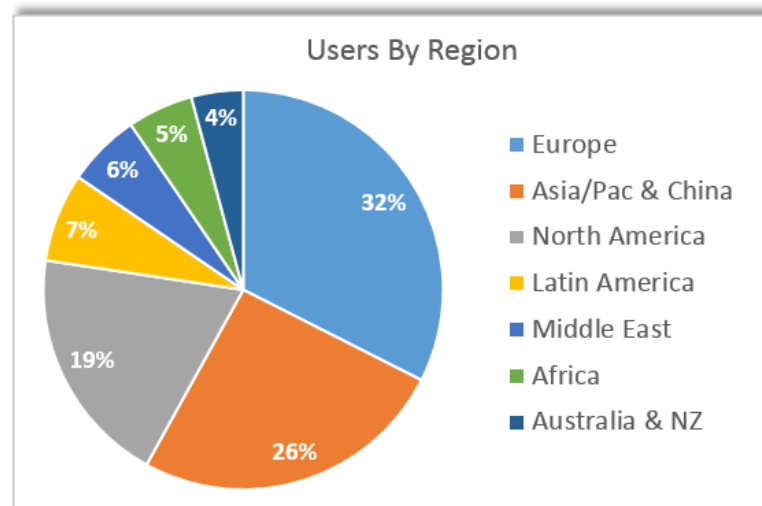
- We all agree that the Internet of Everything (IoE) is going to be huge, encompassing mobility, big data and analytics, sensors, people, places, things and well…everything. The rate of change, innovation and market disruption makes it impossible to envisage what the end game is.

- In this webinar you will learn how TM Forum is uniquely placed to address IoE opportunities and challenges. Our members are working in a set of diverse collaboration projects to help global enterprises, service providers and suppliers drive cross-industry innovation.

- We will present the latest best practices, tools and enabling technologies in Frameworx 16.0 and the plans for our 2016/17 projects. We will also review the ecosystem activities that we currently have underway. And, you will find out all the ways you can get involved to contribute to and benefit from this great work.

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- The webinar will cover the following topics:

- IoE Roadmap of Challenges including "Connecting and Monetizing Ecosystems",

- TM Forum Collaborative projects and workstreams including innovative Business Scenarios,

- Tools & enabling technologies in Frameworx 16 and beyond including the Digital Services Toolkit and Developing Blueprints,

- Ecosystem Activities in the TM Forum – from Smart X Ecosystems to collaboratively addressing the Roadmap of Challenges,

- What's next? How you can get involved, upcoming events and other unique opportunities.

- Expert Speakers:

  - **Craig Bachmann, Senior Director, Open Digital/IoE Program, TM Forum**

 - **John Wilmes, Director, IoT Projects, TM Forum**

Over 133,500 Open Digital Subscribers of the TM Forum's Open Digital / IoE Monthly Newsletter, including over **4484 CxOs**

Over 600 leading members have joined the project:

Users By Region

- Europe — 32%
- Asia/Pac & China — 26%
- North America — 19%
- Latin America — 7%
- Middle East — 6%
- Africa — 5%
- Australia & NZ — 4%

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How companies execute their business and technology, partnerships and innovation will be the difference between winners and losers in the digital world
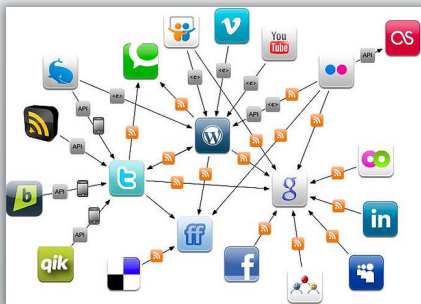
- **Connecting people, places and things** to realize new value by leveraging reimagined business models, scalable technology and innovative market solutions
- As opportunities and disruption arise from IoE, there is a continually shifting landscape of challenges – a **Roadmap of Challenges** to be addressed and effectively managed
- IoE is becoming the way of providing services and applications to consumers, enterprises and industries through **ecosystems of partners**

A pragmatic, collaborative approach to managing digital ecosystems provides a high value way of managing the Roadmap of Challenges focusing on:

- Best digital customer experience
- Best collaboration among partners to build and join dynamic ecosystems
- Best use of Platform Capabilities in new business models
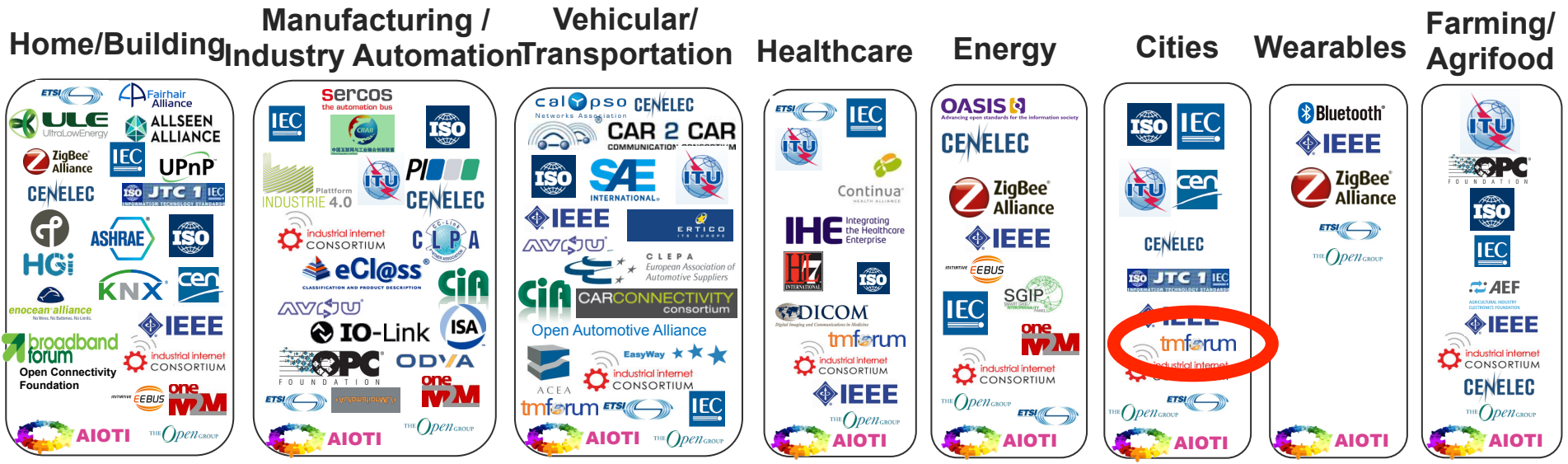- Connecting and monetizing the IoE

The Current State of IoE

The Open Digital /IoE Program

- We know that the IoE opportunity includes a **"Roadmap of Challenges"** that is faced by every organization trying to **monetize the Open Digital Ecosystem**

- *We know that the Roadmap of Challenges is a set of connected business, technology, market, and customer requirements that characterize the new path to monetizing digital services across ecosystems*

- We know that the **"platform economy"** will be underpinning IoE and Smart X services with new business models and new capabilities including cloud, data center, analytics, risk management, and virtualization

- We will discuss **the Digital Services Tool kit** which will enable platform capabilities and business scenarios to be assembled from different entities (metrics, business process, functions etc) to accelerate the deployment of digital services using TM Forum assets

- **The Open Digital/IoE Program** is purpose-built to connect the Roadmap of Challenges, Business Models, Platform Capabilities, and Ecosystem Monetization with a collaborative approach to help our members successfully navigate the new ecosystem business environment and **became new Digital Ecosystem Managers**

The new areas of focus

- **The Roadmap of Challenges**

  - Top Challenge: **Monetization** – Horizontal business and technology patterns have more value as the context and capabilities change – key to situational analysis is lock stepping business with technology

- **IoE and the 4G, 5G Vision**

- **IoE and FinTech – Smart Contracts, Blockchain**

- **IoE Semantic Framework**

(Technology and Marketing Dimensions)

IoT SDOs and Alliances Landscape (Vertical and Horizontal Domains)

The Roadmap of Challenges

Collaboration as the best approach to address the IoE Roadmap of Challenges:

The TM Forum's Open Digital / IoE Program

The IoE Roadmap of Challenges

Market & Customer Challenge	Description
Enabling IoE Monetization	How can businesses quickly identify revenue generating opportunities and execute on them?
Brand Management in an IoE World	How do businesses protect & develop their brand value in an IoE world?
Mindsets & Culture	How do businesses 'think out of the box' at the possibilities, and adjust/adapt quickly enough to ensure their long-term survival and success?
Communicating IoE (Selling the IoE Vision)	How do we effectively communicate IoE to create a compelling and trusted vision to help to drive demand?
Customer Trust (Security & Privacy)	How can we reduce the Security & Privacy risks to an acceptable level so that they no longer present an obstacle to large scale IoE adoption?
Business Vocabulary (Communications)	How can businesses effectively communicate (translate) across industry sectors (short-term and longer-term) in order to identify and capitalize on new market opportunities?

The IoE Roadmap of Challenges

| Business Challenge	Description
Business Model Innovation	How can businesses develop business models that succeed in capturing emerging IoE opportunities at internet pace?
Business (Operating Model) Transformation	How can organizations configure themselves to embrace dynamic IoE conditions to become agile, lean, real-time, data-driven business machines?
Partnering	How can businesses quickly establish partnerships whilst minimizing the risks in complex IoE business scenarios?
Scaling Proven Solutions	How can we maximize the investment in proven solutions by effectively deploying them at scale to capitalize on emerging market opportunities?
Discovering Ecosystems	How do businesses create, detect/find, assess, join (and leave) ecosystems?
Unlocking the Value in Data	If data is the new fuel...how do businesses identify, access, expose, share, and unlock the value in the data to be found across the expanding IoE space?
Data Ownership	How can businesses operate in complex data ownership scenarios whilst increasing their ability to create value by monetizing data?
Real-Time Business Systems	How do businesses achieve real-time (always on) intelligent decision making capabilities?
Skills Gap	How do organizations ensure they have the right people, with the right capabilities, at the right time, to deliver the IoE vision?

The IoE Roadmap of Challenges

Technology Challenge	Description
End-to-End Automation & Management	How do we automate and manage different components so that they can become integrated into a coherent functioning E2E whole without any obvious centralized control?
Legacy Systems & Processes	How can organizations utilize their legacy systems to maximize their return on investment whilst developing new capabilities to support new business opportunities?
Standardization & Interoperability	How can we develop the minimum standards necessary quickly enough to maximize the interoperability between 'things' to meet emerging IoE market demands in a timely manner?
Architecting IoE (Building Modular Building Blocks)	How do business architect their solutions to use, and also create, modular reusable building blocks in a complex IoE world?
Delivering the IoE Network	How do we ensure the right infrastructure is built to support IoE requirements (and what will be the revenue model)?

The TM Forum has options to support a broad range of businesses depending on their operating environment and strategic choices. The current suite of options include:

- Digital Ecosystems Management (Digital Services Reference Architecture)

- Digital Services Toolkit

- TM Forum Catalysts

- Collaboration

- TM Forum Frameworx

- Business Scenarios

- B2B2X Partnering Guide

IoE Management Challenges and Solutions

How do I connect and monetize ecosystems in the digital world?

- ✓ *Internet of Everything Mgmt.*
- ✓ *Rapid Partnering & Scaling*
- ✓ *B2B2x Best Practice Guidance*
- ✓ *Ecosystem Charging, Billing, Partnering Strategy*

Dynamic Business Scenarios
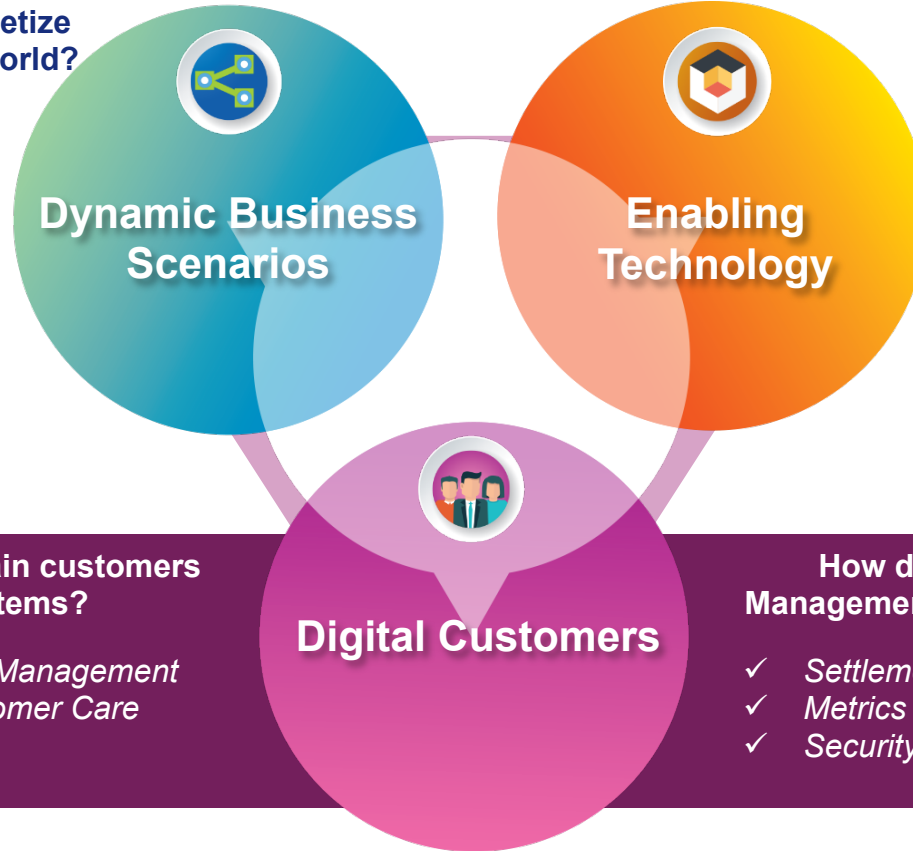
How do I manage ever-changing technologies across the "network of ecosystems"

- ✓ *Platform Capabilities*
- ✓ *SLA Management*
- ✓ *Data/Analytics*
- ✓ *Frame*
- ✓ *Continuous Partner Management*
- ✓ *API's*

Enabling Technology

Digital Customers

How do I gain and retain customers across ecosystems?

- ✓ *Digital Experience Management*
- ✓ *Cognitive / AI Customer Care*

How do I provide Revenue Management, Security and Privacy?

- ✓ *Settlement across ecosystems*
- ✓ *Metrics & SLAs*
- ✓ *Security & Privacy*

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Focusing on Connecting and Monetizing Ecosystems

- The IoT/IoE is a Big Dollars/multi-market opportunity (maybe the biggest transformation in ICT ever) but this opportunity also presents a roadmap of challenges:

- The IoE is built from Connected Products and Services that are put together via a "network of ecosystems" and "platform capabilities" to serve customers in a market environment that is dynamic/ever-changing. This is the IoE Management Challenge

- Management of the IoE includes Business and Market challenges as well as Technology – new requirements for a new Connected, Digital Economy.

- Executing on the IoE opportunity means managing new ways of connecting and monetizing ecosystems – a new "end to end" inter-organizational paradigm that changes business and social norms

- The TM Forum Open Digital/IoE program is purpose-built to help members address the IoE Management Challenge

Verticals and Horizontals

The Roadmap of Challenges examples

- "… **IoT requires a different set of practices (from design to construction),** a different set of techniques and a mix of attitude from "pioneer" to "settler". The underlying components might be quite commodity but what is being built with these is often a process of discovery and exploration. Though there are common lessons, there's a very different mindset and value chain relationships to IoT which is built from experience. **What I'm saying is Physical + Digital is not the same as Digital."**

  o **Simon Wardley**

- http://blog.gardeviance.org/2015/05/the-chief-internet-of-things-officer.html

The Roadmap of Challenges

Many Options, Opportunities – what is the best way to focus?

Vertical Ecosystems, Functional Areas, and And Digital Service Platform Opportunities

Timing of the collaboration, Timing of catalysts

Forrester categories / Forrester verticals --------->	Primary manufacturing	Packaged goods and pharmaceuticals	Chemicals, oil and gas	High-tech and industrial	Retail and wholesale	Transportation and logistics	Media, leisure, entertainment	Utilities and telecoms	Financial services and insurance	Healthcare	Gov't, education, social services
Security and surveillance	1	2	1	3	2	4	3	3	2	3	2
Supply chain management	3	3	2	2	3	3	2	3	1	3	3
Inventory and warehouse	3	3	3	3	3	3	2	2	2	3	2
Customer order/ delivery tracking	2	2	1	3	3	4	2	2	1	3	2
Facilites management	1	1	1	2	2	3	2	3	2	4	3
Industrial asset management	3	2	2	3	1	2	1	3	1	2	2
Smart products	1	2	1	1	3	3	3	3	3	4	3
Smart home management	1	1	1	1	2	2	4	4	2	4	2
Energy management	2	1	2	2	2	3	1	4	0	2	2
Fleet management	2	2	2	2	2	4	1	3	0	2	2

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connecting digital ecosystems

Tools and Enabling Technologies in Frameworx 16.0 and beyond

The Open Digital / IoE Program

Delivered and Continuing and Beginning

- Delivered
  - Digital Services Reference Architecture
  - B2B2X, Business Scenarios
  - Digital Payment Ecosystem
  - Catalogue Management
  - IoE Roadmap of Challenges

- Continuing to extend current work
  - …update charters
- Beginning
  - IoE Semantic Ontology….
  - IoE Monetization ……
  - End to end focus….

Deliverables for Frameworx Releases

Assets in Place

- ❑ B2B2X – Partnership Guidelines
- ❑ Business Models/ Scenarios
- ❑ DSRA
- ❑ API specifications for DSRA services
- ❑ Industry Engagement Methodology
- ❑ Digital Services Toolkit Methodology

Release16.0 Work

- ❑ Ingesting Industry Business Scenarios
- ❑ Collaboration across Business Scenarios, Enabling Technology, Tools, and Industry Ecosystems.
- ❑ Catalyst Proof of Concepts
- ❑ Extensions of B2B2X
- ❑ Extensions of DSRA

Future Focus

16.5 Portfolio for the program - Roadmap of Challenges - IoE: Connecting and Monetizing Ecosystems

- ❑ IoE/Digital Ecosystem Management
- ❑ Platform Capabilities
- ❑ Business Models
- ❑ Industry Proof of Concepts

Digital Service Business Models

TM Forum Assets

In IoE, the innovation is in the new business models and the ability to model ecosystem interaction

A unique resource for "seekers" and "solvers" addressing the new innovative business models for IoE. This includes:

- Ecosystem Scenarios
- Business Model Canvases
- Wardley Value Chain Models
- Case Studies
- Business Architectures
- Business Forecasting
- Buying/selling capability
- Best Practices

Continuous IoE evolution means constantly aligning business approach, technology, and market conditions
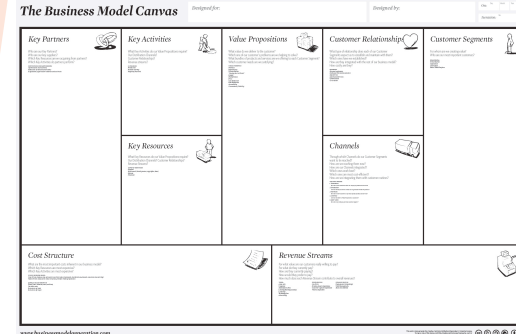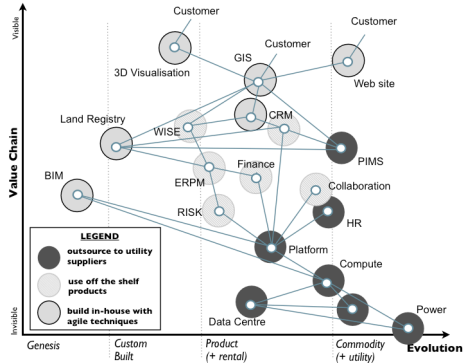
Enabling technologies

TM Forum Assets

De-mystifying the complexity to adopt common best practices

Enabling technologies that accelerate opportunities in Digital Services including:

- Best Practice Models and Frameworks (cross domain/industry)
- Partnership best practices (B2B2x)
- Open Source assets
- API's
- B2B2X Touchpoints and examples
- Architectures (Cloud, XAAS, NFV, ..)
- Big Data Analytics
- Digital Customer Experience
- Security
- Privacy

Collaboratively developing the common language for the next generation of Digital Services
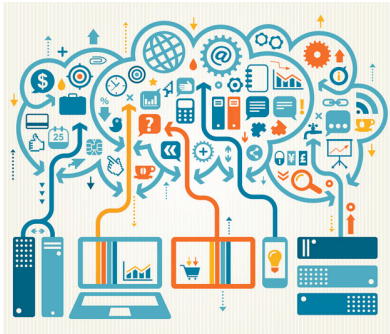
Internet of Things Reference Model

Tools and Methodologies

TM Forum Assets

Pragmatic – "real life" approach to the Roadmap of Challenges

Tools and Methodologies that enable implementation and lower risk including:

- Crowdsourcing Methodologies for best practices
- Confluence models and Collaboration
- Open Hack; Plugfest
- Continuous Catalyst showcases

Continuous Catalyst showcases demonstrate the end to end "Connected World" – examples and resources

Industry Ecosystems

TM Forum Assets

Enabling the IoE "seekers" and "solvers" across fast-moving Ecosystem to Ecosystem management scenarios

The Catalyst program and workstreams focused on applying best practices for the IoE Industry including:

- Smart City
- Digital Finance/FinTech
- Digital Health
- Smart Life/Connected World
- Smart Energy
- Smart Insurance
- Smart Building
- Connected Car
- IOT/IOE cross industry
- Liaisons with Industry Associations and SDO's.

Enabling Digital Ecosystems to thrive in complex partner environments
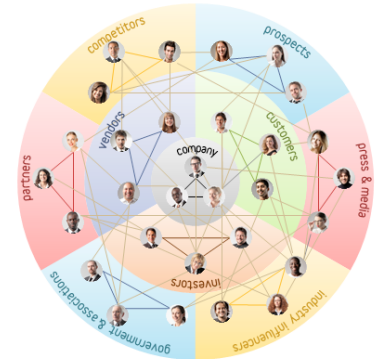
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How you can get involved, upcoming events and other unique opportunities

The Open Digital / IoE Program

- 2016 Member-driven ecosystem interest areas from TM Forum Live! in Nice:

  - **Smart City**
  - **Smart Climate/Home/Life/Energy**
  - **Digital Finance**
  - **Connected Car**
  - **Smart Insurance**
  - **Smart Health**
  - **Digital Payments**
  - **Manufacturing / Industry 4.0**

  - **OPAL Platform – Carbon/Climate and beyond**
  - **Smart Building**
  - **Cable/Canoe**
  - **IoE – from M2M to IoT to IoE to 5G**
  - **Energy Go15**
  - **Mobility**
  - **Smart Life**

- What areas are **you** interested in?

- Engagement possibilities:

- Chartered Workstream, Catalyst, Workshop, Plug Fest, Open Hack, Publications and Research, API Program, 3rd Party event/liaison, Training, Action Week ……..and more

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April/May 2016

Release16.0

IoE Roadmap of Challenges
Enabling Technology
Innovation/Catalyst Reviews
Business Scenarios/B2B2x

London Workshop (April 13/14)

Nice TM Forum Live!

Call for Catalysts

June/July/August

Post Nice – feedback

IoE Roadmap of Challenges
Monetizing Ecosystems
Enabling Technology
Innovation/Catalyst Reviews
Business Scenarios/B2B2x

Action Week Vancouver – July 11-15

Catalyst work

September/Oct/Nov/ Dec

Release 16.5

Portfolio of TM Forum assets and solutions

IoE Roadmap of Challenges
Monetizing Ecosystems
Enabling Technology
Innovation/Catalyst Reviews
Business Scenarios/B2B2x

Yinchaun – Sept 7-9

North America Event – Dallas Nov 2-3

Asia – Event Singapore Dec 7-8

- ODE/IoE Project Workstream:
  http://community.tmforum.org/projects/
  opendigitalproject/default.aspx

- Catalysts: Join one of the rapid-fire,
  proof-of-concept development
  prototype groups to be the front runner
  in the industry – to be presented in
  Dallas and Singapore

- Join at Action Week Vancouver July
  11-15, for face to face collaborative
  experience including Open Hack,
  Catalyst development and working
  sessions:
  http://actionweek.tmforum.org/

Web - https://www.tmforum.org/vertical-markets-connected-ecosystems/iot/

Inform - http://inform.tmforum.org/tag/internet-of-things/

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