Collaborating to Grow the Digital Ecosystem

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Deputy CEO, TM Forum
@nikwilletts
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
Digitization of Every Industry

Everything that can be digitized, will be

‘Telco’  Digital Service Provider
The value chain is now a complex value fabric of partners – a web of digital ecosystems
Who Underpins the Digital World?

- Cities
- Health
- Climate
- Finance
- Mobility

Collaborative Innovation Platform
## Digital Businesses Do It Differently

### Communication Service Provider vs. Digital Native

<table>
<thead>
<tr>
<th></th>
<th>Communication Service Provider</th>
<th>Digital Native</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TTM</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lean Operations</td>
<td>o 3-6 months to stand up a service</td>
<td>o Service provisioned every 11 seconds</td>
</tr>
<tr>
<td></td>
<td>o Mostly manually</td>
<td>o Designed for DevOps</td>
</tr>
<tr>
<td>Customer Centricity</td>
<td>o &lt;100 servers per headcount</td>
<td>o 15,000 servers per headcount</td>
</tr>
<tr>
<td></td>
<td>o Many thousand service reps</td>
<td>o Crowd-sourced customer service</td>
</tr>
<tr>
<td></td>
<td>o Negative* NPS</td>
<td>o +75% NPS</td>
</tr>
<tr>
<td></td>
<td>o Products mature and evolve, digital service only an add-on, constant re-organisations but limited culture shifts, only partly data driven</td>
<td>o Unreasonably aspirational, obsessed with its customers, challenges everything, hires for digital skills en masse, data driven</td>
</tr>
</tbody>
</table>

*Source: McKinsey, TM Forum

**Digital Transformation = 360° Continuous Change**

### Agile Business
- Agile IT & Hybrid Management
- Zero-touch Operations
- DevOps & Procurement
- Continuous Transformation

### Open Digital Ecosystems
- Internet of Everything Management
- Partnerships
- B2B2x
- Innovation Incubator

### Customer Centricity
- Customer Experience Management
- Omni-channel retail, care, service
- Cognitive/Al Customer Care

### Analytics
- Metrics & SLAs
- Security & Privacy
Your Forum is Growing to Meet the Need

Digital Principles & Enablers
- Agile Business & IT
  DevOps, Business & IT Transformation
- Open Digital
  APIs, B2B2X, Partnering
- Customer Centricity
  CEM, Data Analytics, Security, Privacy

TM Forum Capabilities
Collaborative R&D | Prototypes | Communities | Toolkits | IP | Research | Events | Training

TM Forum
- CSP > DSP
  SDN/NFV
  5G
  OSS/BSS

Smart City Forum
- Traffic
  Energy
  Waste
  Environment

Smart Health Forum
- Tele-med
  EHR Integ.
  Wellness
  Care@Home

Smart Climate Forum
- Cities
  Land Use
  Conservation
  Alt. Energy

Smart Finance Forum
- Insurance
  Payments
  Sensors
  Automation

Smart Mobility Forum
- Autonomous
  Telematics
  Safety
  Connectivity

From Telco to Digital Business Enabler

IoT/IoE | Frameworx™ | Digital Ecosystem Reference Architecture

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See you at TM Forum Live! May 9-12 2016!

Partnerships & Digital Ecosystems
- Smart City Live!
- Internet of Everything Live!

Customer Centricity
- Analytics Live!
- Customer Centricity Live!

Agile IT & Operations
- Agile Ops Live!
- 5G Live!
- NFV Live!
- IT Transformation Live!
Thank you!
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@nikwilletts
Value of standards and best practices in the growing digital ecosystem

W. George Glass
BT Chief Systems Architect
Introduction

- Introduction to Digital Ecosystems
- Where have we used standards in BT and what has it done for us?
- Some ideas on best practice around architecture and standards in our growing digital ecosystem
- Are you ready to get digital and join an eco-system near you?
Introduction

What is a Digital Ecosystem

Orchestrated services from multiple suppliers

- We all have our existing systems estate and infrastructure
- When we have to, or wish to, deliver services across our estates and our partner and supplier estates we call it an ecosystem
- Each “service provider” exposes their services into an environment where we can construct e2e services from exposed partner API’s
- We have identified key services as part of DSRA that enable collaboration
What’s causing the change?

- Technology changes
  - mobile, social, analytics, cloud, virtualisation
- Traditional businesses becoming digital and stretching their boundaries into other digital businesses, digital customers and digital devices
- Internet of Things
  - Interconnection of embedded computing devices across the internet
- Connected Home
  - Wide range of interconnected devices and services
- eHealth
  - Ecosystem of healthcare applications, enabling collaboration between practitioners and patients from self-care, diagnosis, treatment, recovery and well being monitoring
- Enables opportunities for new digital relationships with customers, suppliers, end users, partners, developers, data sources, makers of smart devices etc.
Insights

Approximately 4500 systems
Catalogued 3298 interfaces (SDK’s or API’s)
Increasing yearly

Vertically integrated Highly complex data
Lengthy & costly dev cycles

Excessive maintenance & support costs
Reliability and stability issues
Heavily regulated environment

Monolithic analogue services that were hidden from each other, and our customers
26 platforms

- BT’s business functionality has been partitioned into a set of cooperating IT platforms.
- Reusable common capabilities (SDK’s/API’s) – keeping engineering costs down.
- Reusable process blocks – consistent customer experience.
- 26 platforms and 700 systems – simplicity and ruthless standardization.
- Intended to minimise whole life costs, reduce cycle time for launching new capabilities and facilitate business agility.
Platform oriented approach

- Platforms consist of applications and their data
- Expose a set of relevant business services that can be consumed by, or consume, other platform services
What is an SDK or an API?

A capability is a coherent block of business functionality within a Matrix Platform. It has its own "Attributes" (data) embedded within it. It has "Operations" (functions) that you can invoke on it. The operations are exposed via the Capabilities Interface.
Progress

- Established 26 Platforms
- Defined/designed ~200 core Capabilities (SDK’s/API’s)
- Systems Rationalisation
  - Target is 85% reduction in current overall BT systems
  - We have closed the following numbers of systems to date
    - 2005/06 – 203,
    - 2006/07 – 527,
    - 2007/08 – 638,
    - 2008/09 – 323,
    - 2009/10 – 285,
    - 2010/11 – 235,
    - 2011/12 – 242
    - 2012/13 - 168 (Includes 6 large systems)
    - 2013/14 – 325
    - 2014/15 – 222
    - 2015/16 – target 200 – 142 to date
Using the SDK’s

- Designs start with the intentional, predictable, repeatable business process
- Expressed in a design template that maps consistently from business process to capability
- Measured in terms of the Customers experience
  - Quantified by ‘Cycle Time’ and ‘Right First Time’ value
- Uses BT and supplier capabilities (or services)

[Diagram of Customer Oriented Architecture]

- M. Customer
- M. Cust Location
- M. Commercial Compatibility
- M. Cust Billing
- M. Customer Order
- M. Billing Order
- M. Payment
- M. Authentication
- M. Product Availability
- M. Appn't Routing
- M. Domain Activation
- M. Supplier Order
- M. IT Order
- M. B2B Talk
- M. Computing Resource
- M. Storage Resource
- M. Access
- M. Core
- M. Eng Test
- M. Backhaul
- M. Technical Availability
- M. Place
- BT capability
- Supplier capability
Using the SDK’s

- Correlation with TM Forum API’s

http://projects.tmforum.org/wiki/display/API/API+Table

- Built: API exists
- Soon: API’s coming soon
- Later: API planned later

M. Place

M. Technical Availability

M. Supplier Availability

M. BT capability

M. Supplier capability
Fundamentals

- Start with the fundamentals – get the data model right
- Can you abstract the problem and spot/build the patterns?
- Identify the key services that you offer, model them and then expose them
- Always design for n+1, and test the implementation for n>= 0
- Wrap key legacy services to expose them to the new world
- Can you define what “good” looks like from a process perspective – is it repeatable, predictable, measurable
- Short delivery cycles, with scope determined at start of the cycle – we used 90 day cycles
- In the Eco-system understand what your partners bring to the table
Get involved!

- Your business has the architecture it deserves!
- To fix it, requires action
- Architecture is like gardening:
  - Continuous pruning - systems and API’s
  - Occasional replanting – don’t be afraid to replace a system
  - Often cutting out dead wood – remove redundant or inefficient systems and processes
  - You can’t continuously re-landscape – only use when you need a step change
- Don’t be afraid to join in the discussions at Action Week – even if you believe your solutions are sub-optimal – you will have variations on service that challenge our thinking
Light hearted analysis: Are you ready?

- Digitisation may a necessity in your world because of volume, complexity or survival
- There are many ways to start the journey, even in the oldest industries
- Collectively, we have to bring IT to the world to unlock opportunities

<table>
<thead>
<tr>
<th>Connected automatic</th>
<th>Great comms, but unaware of opportunities</th>
<th>Is data/service useful to others?</th>
<th>Ready for everything, real time interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected manual</td>
<td>Internal interest in what you are up to</td>
<td>You can tell me after the event that I missed something great</td>
<td>Data/service currency is only question</td>
</tr>
<tr>
<td>Not connected</td>
<td>Happy in your own little world</td>
<td>You have been automating your business</td>
<td>Need to get connected to eco-systems</td>
</tr>
<tr>
<td>Analogue</td>
<td>Digital passive</td>
<td>Digital active</td>
<td></td>
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</tbody>
</table>
Standards Best Practices and Developing a Digital Business
A Point of View from: Chris Boyd Director of Digital Architecture at Telefonica Global
Do we need Standards and Best Practice in a Digital Ecosystem??

- Standards what do they do?

BP Framework
Information Framework SID
Application Framework TAM
Voice, Data, Mobile, TV
Digital

Stable
Evolving

Integration

SOA
Integration

??
Our Approach - Delivering a digital business

Beyond BSS: IT to I3 Transformation
Do things Once: Exploiting Shared Services
Business Transformation enabled by IT
Business Transformation enabled by IT
Global
Standardization, Common Solutions & Integration Reuse
Action and Challenges

- Developing new core using TMF standards
  - Leveraging and contributing to existing standards
- IT to I3 program
  - Helping evolve the digital reference ecosystem architecture
  - Building an ecosystems whilst building the standards

Collaboration is key value a long with speed to develop

Speed is relative – on our own we would be slower…
Challenges

- No standards – Big Winners and Big losers
  - Beta Max vs VHS, Vinyl vs CDs vs Digital…..
- Communications need huge investment and long term return
- How do we bring our suppliers on our digital journey?
- Can we build fast enough and in a common way?
Navigating Action Week: Addressing the roadmap of challenges

Peter Dunmore, VP, Program & Portfolio Management, Program & Portfolio Management, TM Forum
Key Topics

- Addressing the Roadmap of Challenges

http://actionweek.tmforum.org/agenda/
Aligning topics

**Agile IT and Operations**
(intra-organization)
How do I transform my business to be fit for the digital world?

**Open Digital / IoE**
(inter-organization)
How do I simplify/accelerate partnering in the digital world?

**Customer Centricity**
How do I gain and retain customers in the digital world?
How do I provide **Revenue Management**, **Security and Privacy**?
Agile Business and IT Program

- **Digital Operations Center of the future**: Enabling the transition to an Agile Virtualized world
- **Managing Hybrid Networks**: Extending proven assets of today to encompass virtualization
- **IT Transformation**: Enabling the IT transformation to the support service of tomorrow

Related and joint work streams in ZOOM and Core Frameworx projects

**APIs:** Bridging the value fabric
Agile deliverables for R16.0 (freeze 16th May/release 27th June) and focus for Action Week

Top 3 deliverables for R16.0:

- Industry agreed and adopted information model and related technical assets for managing hybrid networks. (This is a collaborative project across ZOOM and FX projects)
- End to end orchestration architecture across multiple partners, supporting virtual and hybrid infrastructure. (This is a collaborative project across the ZOOM, FX and API projects, working with DERA and DSRA)
- Practical guide and maturity assessment for the introduction of DevOps methods to a traditional Digital service provider

Agile focus for Action Week includes a significant amount of cross team work to leverage the face to face to support

- Industry agreed and adopted information model and related technical assets form managing hybrid networks. (This is a collaborative project across ZOOM and FX projects)
- End to end orchestration architecture across multiple partners, supporting virtual and hybrid infrastructure. (This is a collaborative project across the ZOOM, FX and API projects, working with DERA and DSRA)
- Alignment of the top level DERA architecture with both the TM Forum APIs and a detailed component structural architecture for implementation of highly componentized complete end to end support services
- Customer Centricity Program – Customer Experience Management, Big Data Analytics and Metrics

- Using Customer Experience as a differentiator

- Propelling Business Success with Analytics

- Customer Centricity in the Hyper Connected and Virtual World
Customer Centricity deliverables for R16.0 and focus for Action Week

- Top 3 deliverables for R16.0:
  - How To Guides for Customer Experience Management and Data Analytics. Link up the best practices into a blueprint for getting started or improving your CEM and data analytics approaches.
  - Omnichannel and 360 view of the customer guidebooks – go from introductory guide to full guidebooks (possibly suites) in these two critical areas for CEM
  - Initial IoT (eHealth, Smart City) and Virtualization customer experience and data analytics use cases and metrics for customer experience.

- Customer Centricity focus for Action Week
  - How-To Guide development
  - Omnichannel and 360 guide development
  - Cross team interactions with ZOOM and Open Digital to gather inputs
Security & Privacy

- Establishing and managing trust with partners
  *Demonstrable security and privacy*

- Data management for digital services
  *Regulatory and guidance for handling data across its lifecycle*

- Security & Privacy in a Virtualized and Connected World
  *Identifying and managing the risks – Collaborative Risk Management*
Security and Privacy deliverables for R16.0 and focus for Action Week

- **Top 3 deliverables for R16.0**
  - For Security - produce a Catalogue of Collaborative (security) Requirements (CCR) derived from business scenarios (canvases) and Address some of CCRs based on prioritization - Collaborative Risk Management approach
  - For Privacy – produce privacy management application for multi-company ecosystem, and demonstrate across catalysts. Privacy management API approved.

- **Security and Privacy** focus for Action Week
  - **Security**
    - Review of business scenarios – initial collaborative security requirements
  - **Privacy**
    - Raise profile of Privacy Management across the Forum, FX, DSRA, DERA, Catalysts via cross team sessions
    - Continue API development/approval and progress updating TR243
    - Develop plan for addressing Privacy Standards and legislation
Revenue Management

- Revenue Management

Revenue Assurance

Fraud management

Charging & Billing

Asset Management
Revenue management deliverables for R16.0 and focus for Action Week

- Top deliverables for R16.0
  - Revenue Assurance: Produce RA Survey’16 Report, Review/update KPIs and develop balanced Scorecard for RA
  - Fraud Management: Finalize changes to FMMM, New Survey, Develop approach to Fraud Risk management
  - Asset Management: Develop best practices guidebook for Network Asset Management (NAM), Understand the implications/opportunities for NAM within SDN/NFV and develop deliverables as appropriate.
  - Charging and Billing - Update/develop guidance on: Revenue Sharing, Party Settlements and Wholesale

- Revenue Management focus for Action Week
  - Raise awareness and leverage cross team meetings
  - Progress against all R16.0 deliverables
  - Develop guidance on impact of SDN/NFV on all areas
Open Digital/IoE Program - purpose-built program to address IoE opportunities and challenges

- **Digital Service Business Models (why):**
  Creating the “wikipedia” of Digital Business scenarios and models that will enable innovation in IoE

- **Enabling technologies to support Digital Ecosystem management (what):**
  best collaboration practices among Digital Ecosystem partners with API’s and security
  Digital Services Orchestration for IoE Management Scenarios and Digital Ecosystems Platform

- **IoE Innovations Center for Industry Ecosystems (who):**
  Early stage projects in IoE, Smart X, Digital Services – such as Digital Finance, IoE and analytics, Digital Health, Smart Building and Retail

Innovation Center - E.G Smart Health is the use of technology to deliver better health to more people at lower cost. Opportunity to join 3 Smart Health catalysts under the common theme "Taking care to the patient" - Care@Home; Hospital2Home; and Anywhere Point-of-Care Diagnostics.
IoE Industry Innovations Center – early stage projects in IoE, Smart X, Digital Services – such as Digital Finance, IoT-Big Data based on collaborative business and technology liaisons with Industry Associations and targeted SDOs.
Open Digital deliverables for R16.0 and focus for Action Week

- Top 3 deliverables for R16.0
  - Business Scenarios and Ecosystem Partnerships. Create a library of 50-100 business scenarios and a white paper/Technical Report for usage and extend B2B2X work as needed
  - IOE Innovation Center. White paper summarizing results of the Innovation center activities and Project assessments for maturity

- Open Digital focus for Action Week
  - Business scenarios. Knowledge and understanding across all Catalysts and level of completion. Further Biz Scenario Patterns identified
  - Enable Context-Specific Digital Ecosystems interoperability. Digital Services Interoperability including Orchestration for IoE, Platform (includes DSRA) and Catalog. Outline structure with owner for Technical Report
  - Addressing Roadmap of Challenges – IoE and Innovation. Incubate new verticals and common patterns outline structure with owners describing IoE Management
IoE innovations Center - Smart City

- Smart City

Enable the efficient management of smart city services
*Merging the best from the TM Forum API program with the FiWARE city contextual APIs to create the FiWARE NGSI Framework*

Create an e2e Smart City Maturity & Benchmark Model
*The industry’s first end-to-end maturity model for urban innovation*

Iterate the smart city catalysts
*Work together to plan, design and start executing on the smart city catalysts for Nice*
IoE Innovation Center - Smart City

- Smart City deliverables for R16.0 and focus for Action Week
  - Top 3 deliverables for R16.0
    - FiWARE NGSI Framework initial version
    - Maturity model and benchmark version 0.3
    - Validation via Catalysts
  - Smart City focus for Action Week
    - Outline, ownership and progress against deliverables
    - Review catalysts
    - Review of high priority work items based on Council feedback
  - Recent press release
IoE Innovations Center - Smart Climate

- Smart Applying TM Forums global reach and expertise in driving public private partnership in collaboration to support COP21

- Create a global alliance for better climate & life

- Create a platform for knowledge sharing & innovation

- Rapid development of prototype projects
IoE Innovations Center - Smart Climate

- Smart Climate focus for Action Week

- 2 Climate catalysts
  - Ideation gathering 240 ideas
  - Top 20 will presented to Jury Jan 20th, now 7 Winning Ideas
  - Industry context of IT impact
  - Join Wednesday if interested to participate

- Responsible Data Sharing
  - Pilot Projects presented (Orange, Telefonica, Telecom Italia)
  - New project explored
Setting Expectations

- Four different meeting types
  - Learn, Define and Scope, Align, Create and Build
- SMARTer Objectives
- Clearly defined roles
- New topics and activities – *including*:
  - Catalysts
  - Hackathon
  - Smart Cities
  - Smart Climate
  - Smart Heath
  - …
Key Topics

- Addressing the Roadmap of Challenges

http://actionweek.tmforum.org/hackathon/

Partnered with

https://www.tmforum.org/collaboration/catalyst-program/
Join us as we award individuals who have contributed significantly to TM Forum collaboration work and driving the industry forward.

Wednesday during AM break
# Agenda at a Glance

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-10:30 am</td>
<td>General Session</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
</tr>
<tr>
<td>10:30-11:00 am</td>
<td>Morning Networking Break</td>
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<tr>
<td>11:00 am-12:30 pm</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
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</tr>
<tr>
<td>12:30-1:30 pm</td>
<td>Lunch</td>
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</tr>
<tr>
<td>1:30-3:00 pm</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
<td>Project Sessions</td>
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<tr>
<td>3:00-3:30 pm</td>
<td>Afternoon Networking Break</td>
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</tr>
<tr>
<td>3:30-5:00 pm</td>
<td>Project Sessions</td>
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<td>Project Sessions</td>
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<td>Project Sessions</td>
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<tr>
<td>5:15-6:30 pm</td>
<td>Networking Meet Up - <em>cash bar</em></td>
<td>Catalyst Dragon’s Den</td>
<td>Catalyst Dragon’s Den</td>
<td>5:30 pm start: General Session: Wrap Up</td>
<td></td>
</tr>
<tr>
<td>6:30-7:30 pm</td>
<td>Happy Hour</td>
<td>Happy Hour</td>
<td>Happy Hour</td>
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<td>Happy Hour</td>
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</tbody>
</table>
Key points …

- Printed agendas every day from registration
- Check update board at registration for any last minute changes
- Forgotten the wifi code and / or where lunch is – check your badge!
- Confluence/IPR help desk by registration
- Enjoy!