Catalyst to demonstrate marketplace approach to scaling IoT across industries

A TM Forum proof-of-concept Catalyst will show how a B2B2X marketplace approach can enable companies to digitise their business and, in this Catalyst cycle, take advantage of commercial IoT at scale, including the secure, zero-touch establishment and in-life management of millions of devices.

Telcos around the world face the challenge of undergoing extensive digital transformation, re-engineering or deploying new IT systems and transforming their culture so they can continue to grow and compete with hyperscale digital-native companies.

These telcos, or communications service providers (CSPs), are under increasing pressure to offer a rich set of products and services which are pulled together from an array of partners, as well as providing their own products and services as part of someone else’s bundled offer, all as self-service.

Other traditional industries – from energy and agriculture to government, manufacturing and automotive – also face similar needs for digital transformation. These sectors have a compelling need to embrace new technologies and business models to unlock additional revenues and reduce operational costs. This could include creating solutions that incorporate hybrid cloud services, intent-based networks, CPE edge devices, industrial controllers and more.

These sectors face the same challenges as CSPs – they need to determine:

- How to easily build a worldwide and frictionless partnering digital ecosystem, or partake in one?
- How to present an elegant digital customer experience, despite the complexity associated with delivering products and services via a complex ecosystem of partners?
- How to choose the right partners and quickly onboard their products and services?
- How to quickly abstract and onboard their own products and services, and assemble and bundle them with third parties’ products and services?
- How to ensure that multi-partner offerings can easily be delivered and managed once they are ordered?
- How to attract businesses to grow this worldwide digital ecosystem?

A TM Forum proof-of-concept Catalyst project is looking at tackling these challenges and exploring the various roles CSPs and their partners can play in these new transformed verticals.

The champions of the Digital Business Marketplace Catalyst are BT, Deutsche Telekom, NTT and T-Mobile. Catalyst champions bring business challenges that they need to solve, each providing a unique angle based on their geography, strategy and capability. Having four champions on board highlights the size of the opportunity for CSPs to continue developing their capabilities beyond basic network connectivity in these various industries.

Champions work alongside the Catalyst participants – in this case, Agile Fractal Grid, BearingPoint/Beyond, Digiglu and Intel – to develop rapid-fire solutions to the challenges, something that typically takes three to six months, but, exceptionally, in this case, just two months.

Digital business marketplace

The first, and fundamental, use case the team will tackle is the creation of a worldwide digital ecosystem with frictionless partnering.

There is a constant need for CSPs to deliver new products and services, provide brilliant customer experience and achieve DevOps excellence. If you contrast this with the deluge of new 5G, IoT, SDN, NFV, AI and other technologies, the mass of companies feeding into the innovation-chain, and the ever-increasing list of partners that CSPs need to work with, there is an increased likelihood of not meeting one or more of your goals. For example, to deliver a basket of products and services in an agile way, you may have to work in silos, which inevitably will have cost implications and, most likely, not give the customer a seamless order journey experience.

Gary Bruce, Research Manager, BT and the lead for this Catalyst project says, “If we can persuade all partners to speak the same product and service ‘language’, we will be able to deliver truly frictionless partnering ecosystems. This is vital, because if we don’t deliver this frictionless ecosystem, there will be large detrimental effects felt by everyone in the ecosystem.”
“If CSPs can create digital B2B2X partnering ecosystems,” Bruce offered, “we can fix the product and service language barrier. By digitizing the way that products and services are modelled, we can provide digital representations of them; and, if these digital representations follow a common model applied across the ecosystem, then it becomes much easier to combine ecosystem products and services together. Adding common business and technical rules to the ecosystem make it easier to do things like cross-selling, enforcing dependencies and intricate orchestration across the products and services. It’s a win-win!”

“In this Catalyst we also explore a pattern for the monetization of digital products and services that is fully automated and secure,” states Sigrid Braun, Deutsche Telekom. “The Catalyst provides end-to-end use cases from ordering to billing and demonstrates opportunities for new revenue streams in a digital ecosystem.”

The Catalyst is beneficiary from BearingPoint//Beyond’s Infonova platform and Digiglu’s digital experience framework to create its B2B2X digital business marketplace. And with the marketplace in place, the Catalyst will resolve the complexities of partnering, product and service onboarding, aggregation, delivery and management, and delivering Generation Y type experiences.

So, you can see the need for a digital business marketplace! It’s do or die, wouldn’t you say? Naturally, there are going to be barriers when transitioning from one paradigm to another. This is why Bruce wanted to leverage the TM Forum Catalyst programme, and member and non-member partners, to provide compelling use cases and prototypes to fuel the justification for this transition. He believes the Catalyst provides two compelling B2B2X digital transformation cases – secure, zero-touch establishment and in-life management of IoT devices; and smart energy – to start this journey, and there will be many more.

**Secure, zero-touch establishment and in-life management of IoT devices**

The first compelling B2B2X digital transformation use case the team is tackling is the secure, zero-touch establishment and in-life management of IoT devices at scale.

The specific numbers vary according to who you ask but forecasters agree there will be tens of billions of connected devices worldwide by 2025 (up to 75 billion), with 5G set to speed up proliferation.

Dr Mohammad Zoualfaghari, Research Manager, BT, says, “There has been much discussion on how IoT data will create value, but a question often overlooked is, ‘how will all these IoT devices be securely provisioned and managed in-life?’ Today, most deployments are manually intensive – something that is unsustainable if we want to deploy billions of devices. This is a problem that the industry must address if we are to harness the value of mass IoT deployments.”

As an example, in a smart city context, Zoualfaghari notes that as many as three million devices may be required. Each of them needs to be connected to an IoT platform before any useful data can flow. Manual provisioning of each device typically takes around 25 minutes, which, in this example, would represent a total of one and a quarter million hours of effort -- the equivalent of over 500 person-years of work. It isn’t viable. Add to this the security concerns associated with manual provisioning and the additional effort required to provide in-life device management, and the need for a scalable, automated and secure solution becomes obvious.

To help solve this problem, the Catalyst is leveraging Intel’s Secure Device Onboard (SDO) technology. SDO uses silicon ‘hardware roots of trust’ as the foundation of the secure onboarding process. In addition to being secure and fast (typically taking about one minute to onboard a device), SDO also offers ‘late binding’ — the ability for customers to choose their target IoT platform at the time of setup, rather than when the device is manufactured, which is the case with many automated systems. Intel is working with the industry to establish SDO as an open industry standard.

BT has innovated a suite of zero-touch technologies, which work with multiple connection, attestation, bootstrapping and device management capabilities. These inventions are the source of several patents; 2 already granted, 2 filed and 19 under submission. BT has also architected an industrialized approach, combining its patented capabilities with SDO, a choice of IoT platforms, and the Infonova and Digiglu platforms, which leverage the TM Forum Open APIs, to provide secure, zero-touch and monetized IoT device establishment and in-life management at scale, spanning the ecosystem of capabilities with a self-service customer experience.

Through the B2B2X digital business marketplace, an organization could charge for the use of its patented components on a granular basis as part of its offering. The Catalyst will demonstrate how, using common data models alongside common technical and business rules, any of the zero-touch services and IoT platforms can readily be mixed to meet business outcomes, financial constraints and technical requirements of a given customer. This could be provided by a combination of different partner organizations to give that flexibility and customer choice.

Bruce, explained, “For example, we might recommend using a BT IoT Data Hub for a particular customer, but if they felt it didn’t fully meet their needs, we could also easily provide options to use AWS IoT, Azure IoT or other IoT services as a part of our solutions. Further
options would equally be made available for providing zero-touch connectivity, attestation, bootstrapping and device management services.”

**Smarter energy**

At [Digital Transformation World](#) in Nice next week, the Catalyst team will outline its second compelling use case, which is around an energy industry scenario.

The demand for electricity has increased worldwide, massive power outages are more likely as grids age, electricity generation is becoming more decentralized, and power systems are becoming more complex.

The National Rural Electric Cooperative Association (NRECA) in the United States has recommended the establishment of a new approach which supports greener energy, higher reliability and better security. NRECA envisions an evolution to a grid in which all segments operate with the same information and control model – regardless of scale, and each segment shares information with all the others but can also isolate itself and act independently.

Such a grid will require various partners’ capabilities as a service, including a trusted communications network, rapid and accurate data collection and information-sharing, advanced analytics, cybersecurity, renewable energy and more.

The new approach is now being driven on a practical level by the Agile Fractal Grid, which has joined the Catalyst team to speed up this work, learn from other industries and drive standards.

**Community contribution**

As part of this work, the Catalyst team is using and will contribute back to several TM Forum tools and best practices to benefit the whole industry.

It is using the [CurateFX ecosystem modeling tool](#), for example, to map out how different companies could work together, including managing some of the complexities around data handling and management and how each company will fulfill its role for every scenario on each IoT device.

At Digital Transformation World, the [Digital Business Marketplace](#) Catalyst team will also outline a complex supply chain scenario which demonstrates how issues such as billing and settlement, returns and refunds, and procurement transparency can be handled.

While the Catalyst team is focused on a few specific industries and use cases this cycle, the stage has been set for an expanded scope later on this year in the next TM Forum Catalyst cycle, including 5G, asset management, LPWAN technology and more!