Open standards and Open-APIs in Vodafone's Digital Transformation

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Digital Transformation

How do we deliver the type of end-user experience you get from companies like Amazon and Uber?

How can we ensure the investments we make in becoming a Digital Service Provider support our future goals?
Vodafone Digital Transformation Journey

- **DXL co creation**
  - API & Digital Development Guilds, Inner Source, increased maturity

- **DXL execution**
  - API’s, Architecture, CI-CD, Collaboration Tooling Principles & Standards

- **DXL mobilisation**
  - Digital Accelerators, One Digital Blueprint

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**Appex Omnichannel Catalyst**: Adaptive, Predictive & Personalised Experienced eXellence.
Winner! TM Forum Live! 2017: Outstanding Performance in the Catalyst Program
Future Architecture | Vodafone Digital Architecture Mapping to ODA

Engagement Management
- Cloud Native Front End Layer
  - Digital Self-Service
  - Digital Human Assisted
  - 3rd Party B2B2X

Cloud Native Agility Layer - DXL
- TM Forum Open APIs
- Identity Authentication and Authorisation
- Agile Tooling
- Content Management
- DXL Search
- Digital Data Management & Cache
- Advanced API Foundry
- Microservices & API Foundry
- Management & Gateway
- Microservices

CSM APIs
- Party Management
- Core Commerce Management
- Production

Intelligence Management

Customer Engagement
- Drive
- Get Help
- Buy
- Engage
- Grow
A Digital Accelerator in Each Market

Design Thinking

Agile Methods

Iteratively Building Digital Capabilities to Local Priorities

People in Agile Formation

Using

Building Digital Capabilities
DevOps Tooling

1. Co-creation of Agile design assets and scrum backlog

2. Code creation, version control, modification and life cycle management of software assets

3. Automated central build and integration of the entire application

4. Automated quality assurance and code analysis

5. Build Automation

6. Execution of end-to-end testing in production and production-like environments

7. Automated deployment to Production

8. Live monitoring of production environments

9. Production ready code, ready to be shared

Unit Test and Static Code Analysis

JUnit
SonarQube
SAST
SCA

Monitoring Tools

Prometheus
iCINGA
Splunk
Kibana

Test Automation Tools (SIT/Performance/Security)

JUnit
jMeter
Appium
DAST
ZAPROXY

Test failures
Two Guilds and One Co-Creation Community to drive inner-source behaviours, global standards and speed

**MyVodafone App & DXL Co-Creation Community**
Scope: Group Technology & EU Cluster Markets

**API Architecture Guild**
Scope: All Markets, Platforms and Group Functions
- Methods & Tools
- Empowered People, Agile Process Open source style governance
- Blueprints, Reference Implementations

**Digital Development Guild**
API Guild | Collect, Guide, Manage, Standardize

**Collaboration**

- **Governance**
  - Lightweight governance process (open source style)
  - Governance Team is made up of a SPOC to from each Local Market Team
  - Experts will pass through TMForum API Certification program
  - Increased people technical career path
  - Drive collaboration and re-use between local markets

- **Manage**
  - Manage and approve Vodafone extensions to TMForum openAPIs
  - Manage the Vodafone MVP Journey APIs
  - Monitor TMForum “schemafication” impact
  - Guidelines for TMForum extensions
  - Guidelines for DxL Journey APIs
  - Contribute back to TMForum standard
  - Monitor APIs usage and compliance

- **Catalog**
  - Repository for all local market APIs
  - Federated Governance
  - Community review of APIs
  - Tools & Conformance Testing Kits
  - Dashboard for Transparency of Conformance and Testing Results
  - Governance community and support for APIs selection, extensions and mappings

**Efficiency**

**Transparency**
API Guild | Considerations

- Manage, control & submit back the Vodafone extensions to TMForum openAPI's
- Manage and control the DxL Journey API's creation, ensuring collaboration and re-use
- Review and approval of changes that impact multiple teams and/or systems
- Manage the impact of the TMForum “Schemafication” process on DxL development making sure there is a high degree of consistency between APIs - shifting from all inline definitions to a externalized standard JSON Schemes
- Create KPI's to quantify value and metrics that Vodafone can use to measure progress and alignment to strategy
- Provide guidelines and guidance
- Re-use
- Guidelines
- Schema Process
- DxL API's
- Journey API's
- Life Cycle Mgmt.
- KPI's & Monitoring
- Faster roll-outs
"TM Forum Open APIs provide a complete framework for supporting our Digital Transformation, providing a common data model and internet standard API schemas, together with tools, methodologies and most importantly, training and certification. " – Steve Garley, Vodafone University

Train experts from each local market to become TMForum OpenAPI certified
- TMForum Open API Developer certification
- TMForum Information Framework (SID) certification

The local experts will:
- play the leading role in educating the local market functions in API design, extensions & compliance to the standards accelerating digital transformation
- be part of the Federated Governance
- advising and reviewing the contributions from other local markets
- manage the governance artefacts and repositories
- publish all the Vodafone extensions back to TMForum OpenAPI
Automated API Compliance Engine | Architecture

Open Source Style API Guild Governance Team
Collaborate and automate via Slack Enterprise Grid

Integrated Chat-Ops & Testing Automation

Automated API Test Engine product platform

Executive Dashboard

OmniChannel Test Engine

Automated Static schema and implementation tests

Shared Source Code Repository

GitHub Enterprise

Local Market
Automatically Uploads API Specifications and Test Scripts using simple Automation to enable continuous testing

API Guild

Enterprise Grid

Local Market DXL

Local API Gateway

Local Git Repo

CI/CD

Apigee API Gateway

DxL Reference Implementation

Dev Portal Swagger Hub

Simplified

C2 General
API Compliance - What it looks like

Static Check
Takes place before the API is deployed

- The API Designer gets the chance to test if his API is compliant with different standards
- Two type of results categories: RuleBased and InDepth.
  - Rule-based: will highlight which rule has been breached and where
  - InDepth: will provide more details using the delta format for differences

```
{  
  "ruleId": "delete-param",  
  "message": "/partyAccount (get) - Param fields deleted",  
  "path": "/partyAccount",  
  "method": "get",  
  "param": "fields"
}
```

Dynamic Check
It requires a run-time environment, API is deployed

- Example use cases are embedded in API swagger
- Dynamic tests and μService mocks are generated and deployed in build pipeline
- Dynamic tests executed in build pipeline
- Dynamic tests verify positive and negative scenarios
MyVodafone App & DXL Co-Creation Community

| Inner Source Co-creation model to deliver a platform |

1. Platform Framework
   - Dxl structure
   - Common App
   - Micro-services and APIs
   - Consistent journeys
   - Rules & standards to ensure transferability

2. Collaboration
   - Markets contribute 10% of existing resources for co-dev
   - Tooling & Guilds

3. Federated development
   - Distributed E2E tasks to achieve working codes in modular catalogues
   - Features, APIs and microservices are available for any other channels

4. App releases
   - App is distributed in releases
   - Markets can locally adapt within releases (No big bang)
   - Business owns the features and manages the releases
Collaboration with the Telco Community to drive the industry forward.

API Guild driving API Standardisation to TMForum OpenAPI

Commercial & Technology Architecture alignment on CX Journeys, Features

Inner-Source Approach to collaboration and governance

Collaboration with the Telco Community to drive the industry forward.