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?
Winner! TM Forum Live! 2017: Outstanding Performance in the Catalyst Program
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. Test failures

7. Automated deployment to Production

8. Live monitoring of production environments

9. Production ready code, ready to be shared

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**Collaboration Environment**

- **GitHub Enterprise**
- **Confluence**
- **Jira**
- **Maven**
- **Nexus**
- **JFrog Artifactory**
- **Bitbucket**
- **Slack**

**Agile Planning & Collaboration Tools**

**Software Change & Configuration Management**

**Build Automation**

**Release Automation**

**Platform as a Service**

**Test**

**Production**

**Test Automation Tools (SIT/Performance/Security)**

- **JMeter**
- **Appium**
- **DAST**
- **ZAPROXY**

**Unit Test and Static Code Analysis**

- **JUnit**
- **SonarQube**
- **SAST**
- **SCA**

**Monitoring Tools**

- **Prometheus**
- **ICINGA**
- **Splunk**
- **Kibana**

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**Test failures**

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**Production Path**

**Test Path**

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**Execution of end to end testing** in production and production-like environments
Two Guilds and One Co-Creation Community to drive inner-source behaviours, global standards and speed

**Drive Inner Source**

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

**Drive Standards & Speed**

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

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

**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
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
- Provide guidelines and guidance
- 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
- 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

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

Train experts from each local market to become TMForum OpenAPI certified

- TMForum Open API Developer certification
- TMForum Information Framework (SID) certification
Automated API Compliance Engine | Architecture

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

**Integrated Chat-Ops & Testing Automation**

- **API Guild**
  - LM 1
  - LM 2
  - LM 3
  - GT

**Automated API Test Engine**

- **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

**Local Market DXL**

- **Local API Gateway**
- **Local Git Repo**

- **DxL Reference Implementation**
  - **Apigee API Gateway**
  - **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

```json
{
  "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 code-development
   - 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
Summary

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

Enterprise Grid