End-to-end Service Orchestration

Inmanta enables communication service providers (CSPs) to deliver their services **much faster and with more flexibility**. Its end-to-end service orchestrator automates and streamlines the entire operational process. Instead of months and years to deliver services and release new features, Inmanta reduces the process to a matter of days and minutes.

1. End-to-end:

Inmanta has a holistic, **end-to-end** approach towards management and orchestration (MANO), covering all aspects of the services and the underpinning (network) infrastructure. End-to-end has 3 dimensions (see Figure 1):

1. **Multi-domain:** Inmanta Service Orchestrator integrates and coordinates all different elements of the telco architecture across multiple domains: 3rd party VNFs, SDN controllers, virtual as well as physical equipment, datacenter resources and cloud platforms.
2. **Multi-layer:** An architecture defines multiple levels of abstraction. Inmanta is the top-level (overarching) orchestrator that bridges the (abstraction) gap towards the underlying layers. Therefore it can operate at any orchestration level: OSS, NFVO, VNF Manager, NMS and element manager.
3. **Full lifecycle:** Inmanta manages the full service lifecycle, including upgrades, monitoring and decommissioning, and it manages the state of each resource type as defined in the service model.

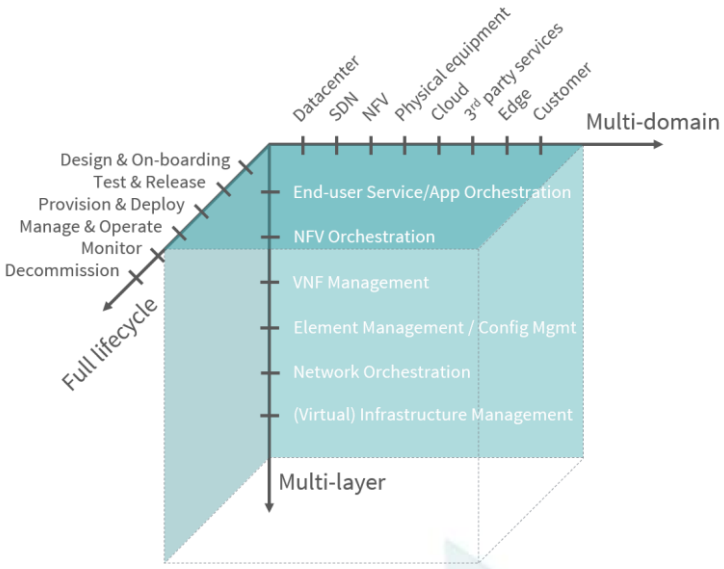

Figure 1: The 3 dimensions of end-to-end

2. Open:

Interoperability and multi-vendor support are key characteristics for an orchestrator. Inmanta Service Orchestrator is designed to be **open and flexible**. It is an open, modular **framework** that enables CSPs to easily select and integrate the best-of-breed technologies, without vendor lock-in.

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Inmanta returns the ownership and control of telco infrastructure and services to the CSPs. In addition, Inmanta's orchestration engine and modelling language are available in open source.

3. Programmable:

Inmanta ensures higher productivity through **high programmability**, abstraction and maximal reuse. We offer CSPs **powerful modelling** to rapidly create and on-board new services as well as to express the desired **intent**. Domain experts can encapsulate complexity and hide technical details into reusable components, while the business can rapidly compose new services and applications by combining these components.
These new (end-to-end) services can be tested, verified and deployed in a simple and repeatable way, supporting the delivery of carrier-grade services.

Use Cases:

- **Residential:** Management and orchestration of **vCPE** and collocated services, incl. dynamic chaining of value-added services (security, parental control, home IoT)
- **Business:** End-to-end **network service orchestration of carrier ethernet** (MEF) over multiple domains and across vendors, incl. value-added services (firewall, SD-WAN, NFV)
- **Mobile:** Orchestration and lifecycle management (deployment, monitoring, scaling, upgrade, decommission) of **virtualized mobile core services** (vIMS, vEPC etc.)
- **5G**: **End-to-end service and network management** automation across multiple administrative and/or geographical domains (MEC, CORD, network slicing)

Technical Details:

Inmanta shields most of the underlying complexity. We have a **unifying approach** to automate and manage telco services, so CSPs can easily connect components from different vendors across the network. They only have to specify which components and policies are required (i.e. the intent), and the orchestrator will automatically create and execute the workflow to roll-out the end-to-end service.

Inmanta uses a **top-down** approach with **different levels of abstraction**. Each abstraction level exposes an interface to the layer above, with a strict separation between this interface and its implementation(s). Through its powerful modelling language, engineers and operators have access to true infrastructure as code, enabling them to represent any concept and data.

About the company:

Inmanta NV is a **spin-off of the University of Leuven (KU Leuven)**. Its automation and orchestration technology is based on 10+ years of research and on the founders' leading-class expertise in software engineering, automation, cloud computing, and systems management.

Inmanta selected by Swisscom, Proximus and Telia as the winning service orchestrator of their call for innovation

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