Industry Collaboration for Open Lifecycle Service Orchestration (LSO) APIs

Dan Pitt
dan@mef.net
www.mef.net

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MEF

Outline

- Who we are & what we're up to (and why it matters to OCP)

- MEF 3.0

- LSO: abstractions & realities

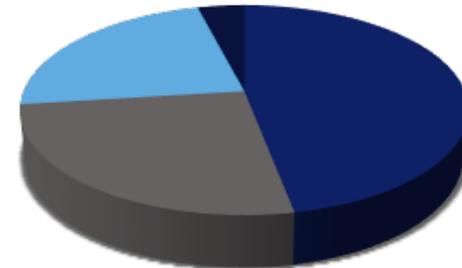- Community, open source (SW & HW), proof points, OCP

MEF: Who, What, How

1. Who: 200+ Communication service providers, vendors (enterprises)

2. What: Agile, assured, orchestrated, *revenue-producing* services

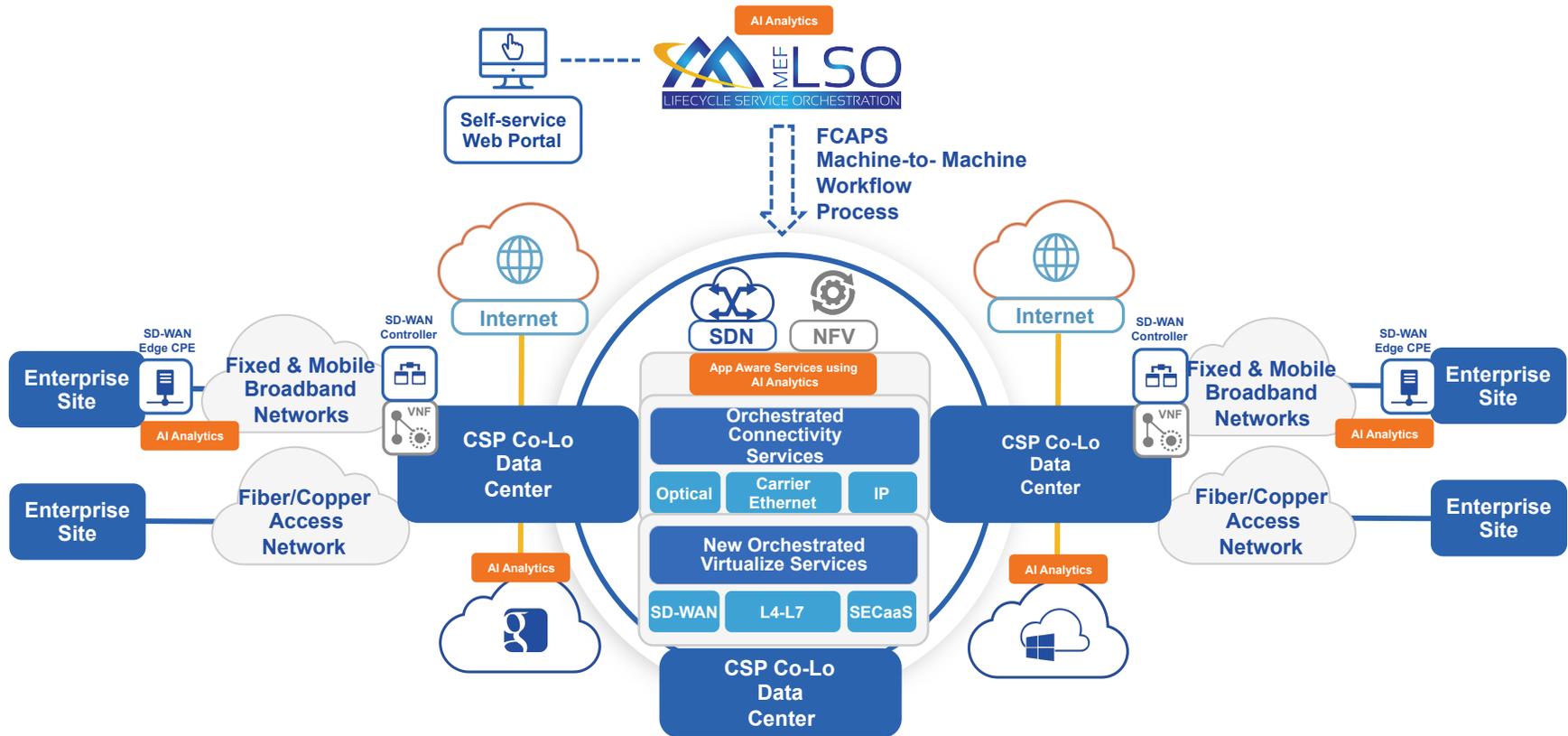3. How: Service definitions, LSO APIs, certification, community
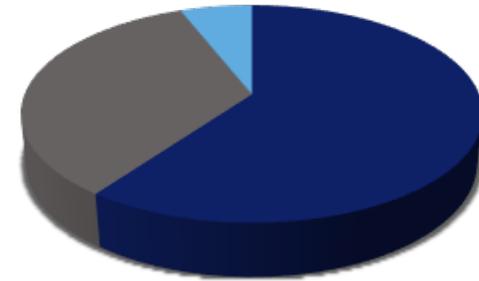
■ SPs ■ Vendors ■ Others

■ NA ■ EMEA ■ APAC ■ CALA

Automated, Virtualized, Application-Aware

Key Principles

- SDN, NFV, Cloud, *disaggregation*, open source
  - For MEF community: easily include OCP as an implementation option
  - For OCP community: understand large OCP market opportunity enabled by MEF 3.0 & LSO abstractions

- Brownfield

- Healthy ecosystems: operators, vendors, enterprise customers

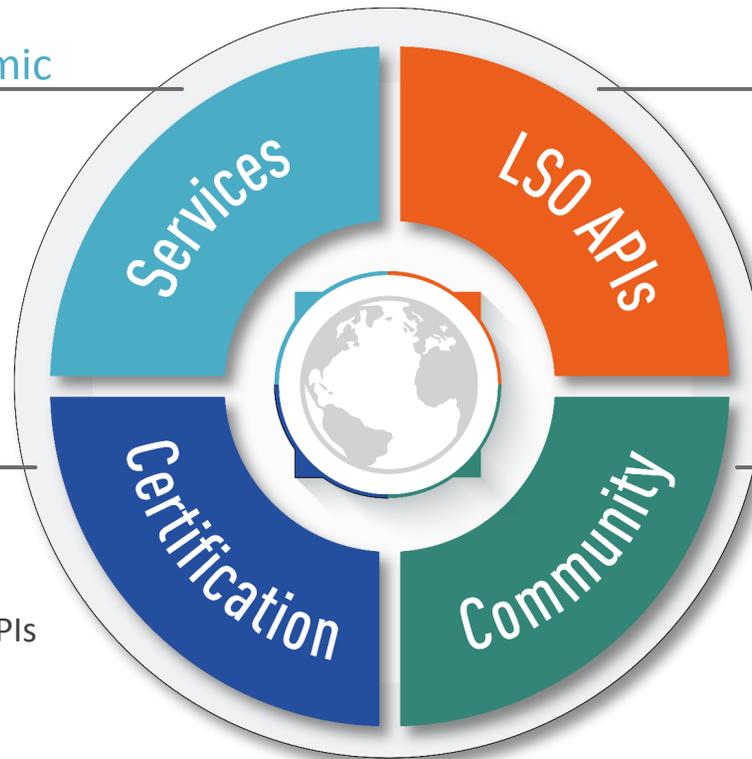- Business success (despite transformation pain)

MEF 3.O: Four Pillars for Agile, Assured, Orchestrated Services

Orchestrated & Dynamic

- Wavelengths
- Carrier Ethernet
- IP VPNs
- SD-WAN
- Security-as-a-Service
- Application Services

Agile

- Cloud-based test and certification platform
- Subscription-based
- For both services & LSO APIs

Services

LSO APIs

Certification

Community

Open

- Multi-provider service orchestration
- Multi-technology network orchestration
- SDKs and specifications

Expanded

- Global membership
- Developer community
- Certified professionals
- Open source projects & SDOs
- Enterprise advisory council
- MEFnet platform

LSO – Lifecycle Service Orchestration

- Framework of abstractions
- Components defined by function, separated by ref. points
  - Customer Application Coordinator; Business Applications; Service Orchestration Function; Infrastructure Control & Management; Element Control & Management
- Abstraction boundaries described by APIs
  - East-West: Cantata, Allegro, Sonata, Interlude
  - North-South: Legato, Presto, Adagio
- Purposes:
  - Enable service providers to compose *& concatenate* services using their choice of components: closed, proprietary, open, open-source, integrated, bare metal
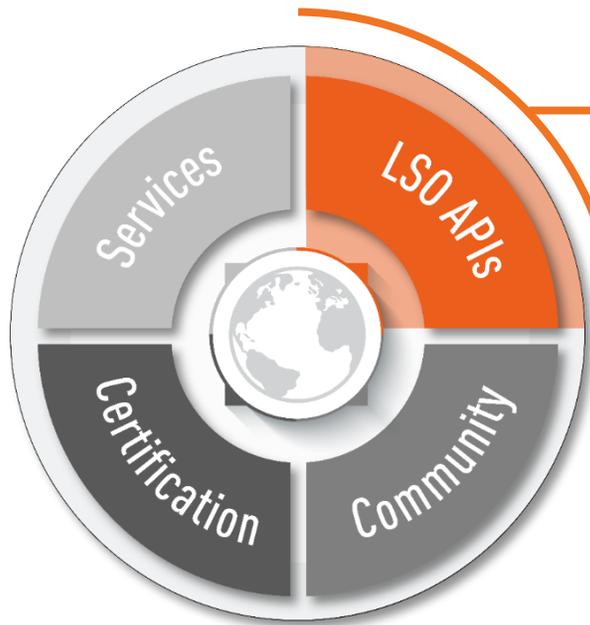 - Foster a supplier ecosystem that optimizes organically

Formalities

- API definitions
- Information models
- Data models
- Interface profile specifications
- Service definitions
- Certifications

Informalities

- LSO Hackathons
- Developer Community
- "SDK"s before IPSs
- MEFnet
- Example implementations
- Reference implementations

MEF

LSO APIs, SDKs

Based on **MEF 55: LSO Framework** Specification

Released as **SDK**s

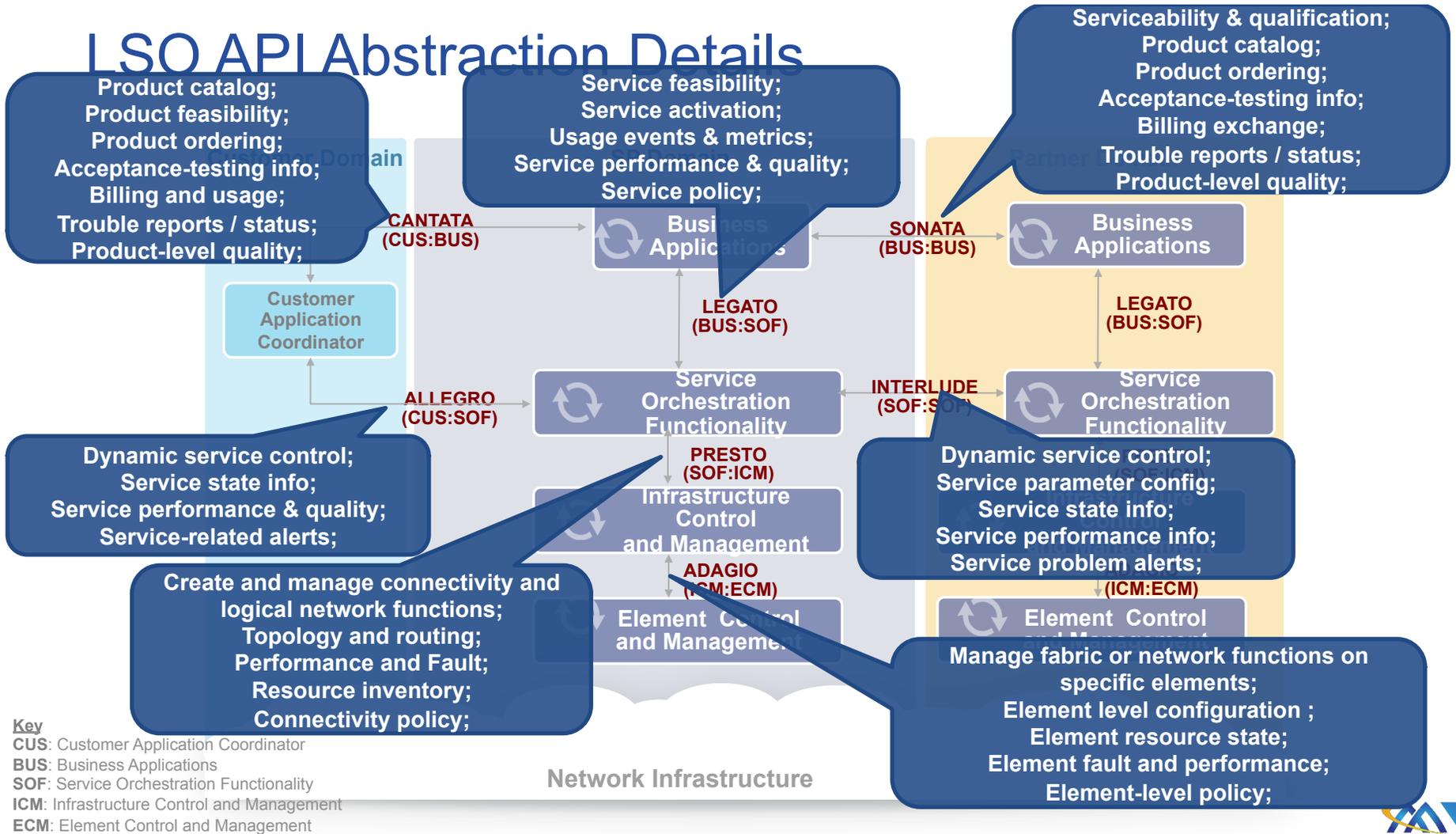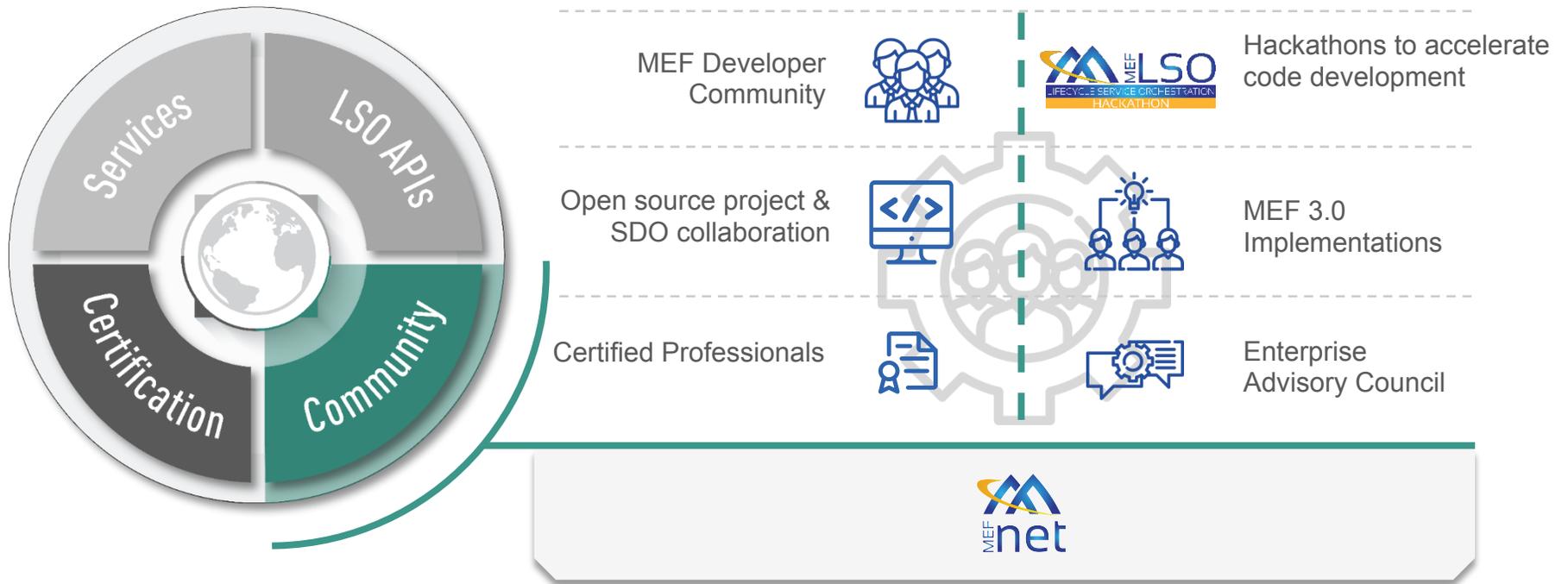Available in **experimental** or **published** states

3-6 month **sprint** cycles

- Define epics, user stories for the LSO Reference Point
  - Example: Sonata Epic1: availability capabilities; Epic2: ordering capabilities
- Implement the Data Model on MEFnet
- Test on MEFnet and feed results back to refine Data Models
- Share with other SDOs, open source projects
- Showcase at the end of sprint

LSO API Abstraction Details

Product catalog;
Product feasibility;
Product ordering;
Acceptance-testing info;
Billing and usage;
Trouble reports / status;
Product-level quality;

Service feasibility;
Service activation;
Usage events & metrics;
Service performance & quality;
Service policy;

Serviceability & qualification;
Product catalog;
Product ordering;
Acceptance-testing info;
Billing exchange;
Trouble reports / status;
Product-level quality;

CANTATA (CUS:BUS)

Business Applications

SONATA (BUS:BUS)

Business Applications

LEGATO (BUS:SOF)

LEGATO (BUS:SOF)

Customer Application Coordinator

ALLEGRO (CUS:SOF)

Service Orchestration Functionality

INTERLUDE (SOF:SOF)

Service Orchestration Functionality

Dynamic service control;
Service state info;
Service performance & quality;
Service-related alerts;

PRESTO (SOF:ICM)

Infrastructure Control and Management

Dynamic service control;
Service parameter config;
Service state info;
Service performance info;
Service problem alerts;

ADAGIO (ICM:ECM)

(ICM:ECM)

Create and manage connectivity and logical network functions;
Topology and routing;
Performance and Fault;
Resource inventory;
Connectivity policy;

Element Control and Management

Element Control and Management

Manage fabric or network functions on specific elements;
Element level configuration ;
Element resource state;
Element fault and performance;
Element-level policy;

Network Infrastructure

Key
CUS: Customer Application Coordinator
BUS: Business Applications
SOF: Service Orchestration Functionality
ICM: Infrastructure Control and Management
ECM: Element Control and Management

MEF

MEF Expanded Community

MEF Developer Community

Hackathons to accelerate code development

Open source project & SDO collaboration

MEF 3.0 Implementations

Certified Professionals

Enterprise Advisory Council

Information Models

- Collaborative effort with TMF, ONF, ETSI, LF/ONAP
  - Goal: common or federated modeling approach
- Modeling language, patterns, extensibility, hierarchy, metadata
- Tooling

MEF 3.0 Implementation Projects

MULTI-VENDOR SD-WAN	FULFILLMENT AND ACTIVATION	SERVICE TELEMETRY
SECAAS	OPTICAL TRANSPORT	MULTI-ONAP
REAL-TIME MEDIA	CLOSED LOOP CONTROL	CONNECTED VENUE

LSO Incorporating SDN, NFV, Open Source, OCP
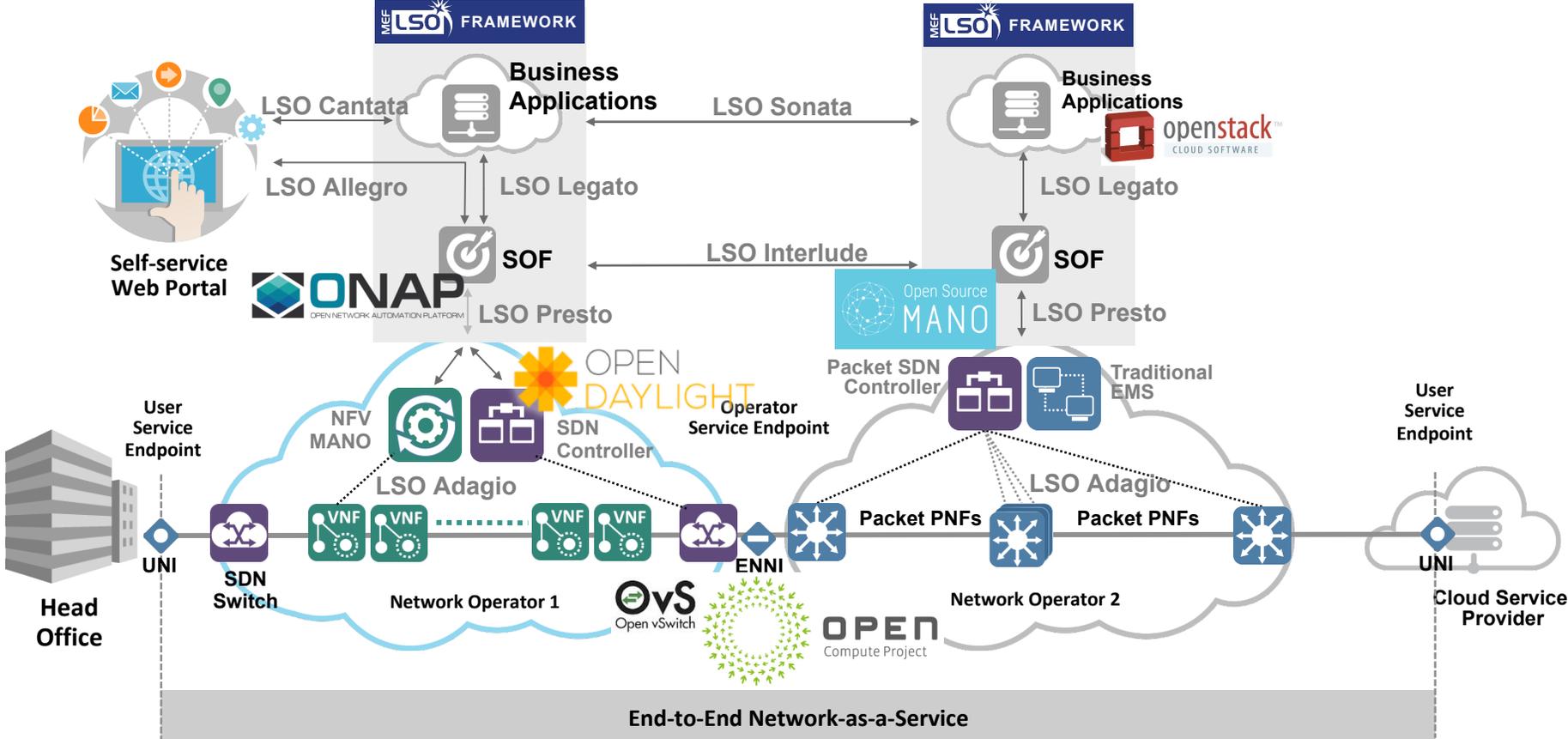
Proof Point: ONAP-Based Global Virtual Fabric
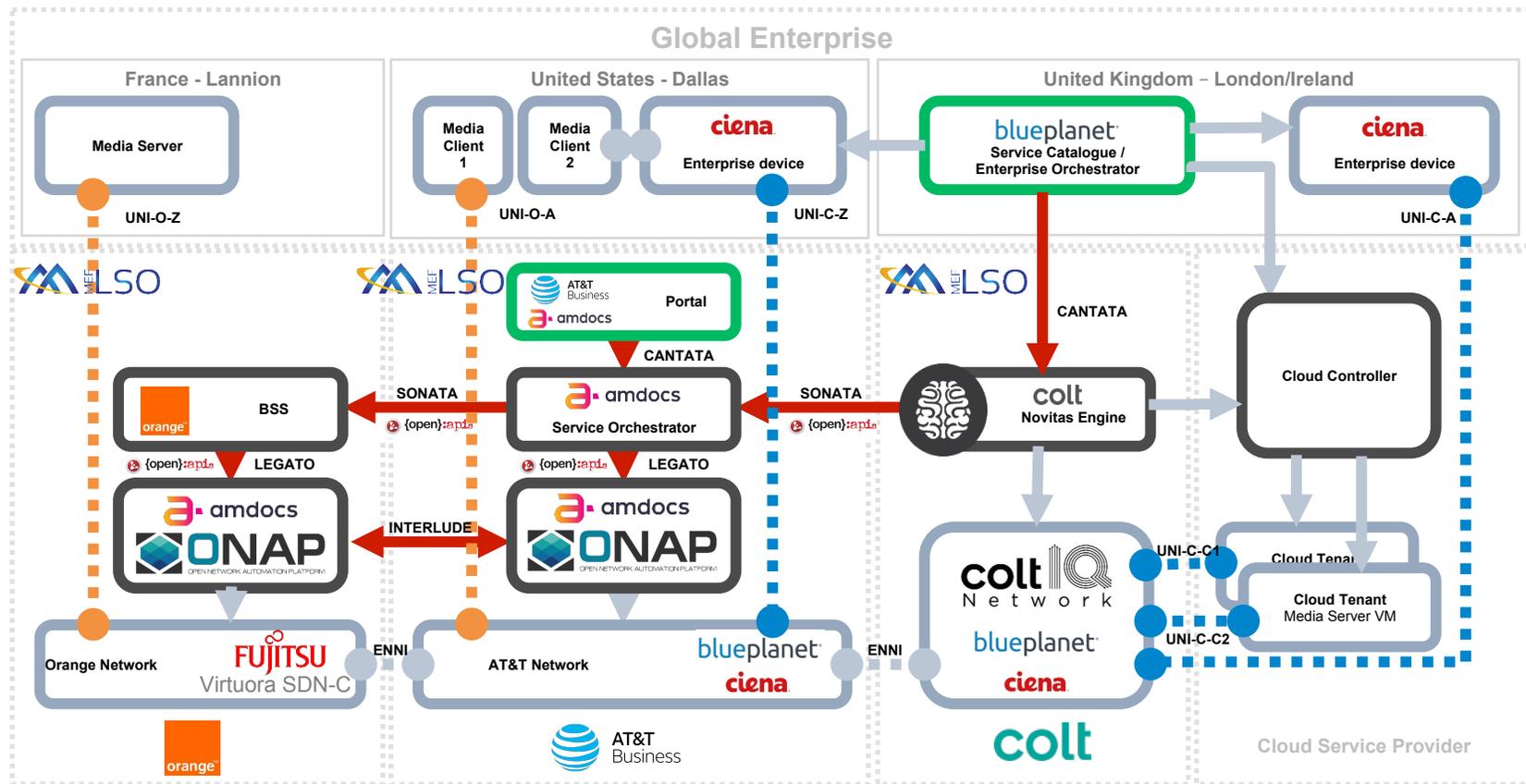
Operator Degrees of Freedom

- Greenfield/brownfield

- Transport technology

- Telco cloud, public cloud, edge cloud, premises DC, out in the network

- Open source, open I/F, closed source

- SW/HW, integrated, bare metal, OCP, TIP

Enabled by LSO abstractions

Conclusions, Implications

- Telco transformation inevitable
  - New technologies, architectures (networking, computing)
  - Services, apps invariant over technology choices
  - Breakdown of rigid, monolithic solutions into SDN, NFV, OCP
  - New supply chain
  - New skills
- MEF transformation inevitable
  - Not just specifications but SDKs, POCs, IMs, experience
  - Global ecosystem of partner cos., orgs., .orgs
  - Pace, cadence, tension, agility

MEF LSO   *Many opportunities to incorporate OCP*