



MEF19



WORKSHOP II

LSO APIs:

Enabling Service Automation Across
Multiple Providers & Technology Domains



Inter-Provider Automation with LSO APIs – LSO Sonata Roadmaps & Use Cases



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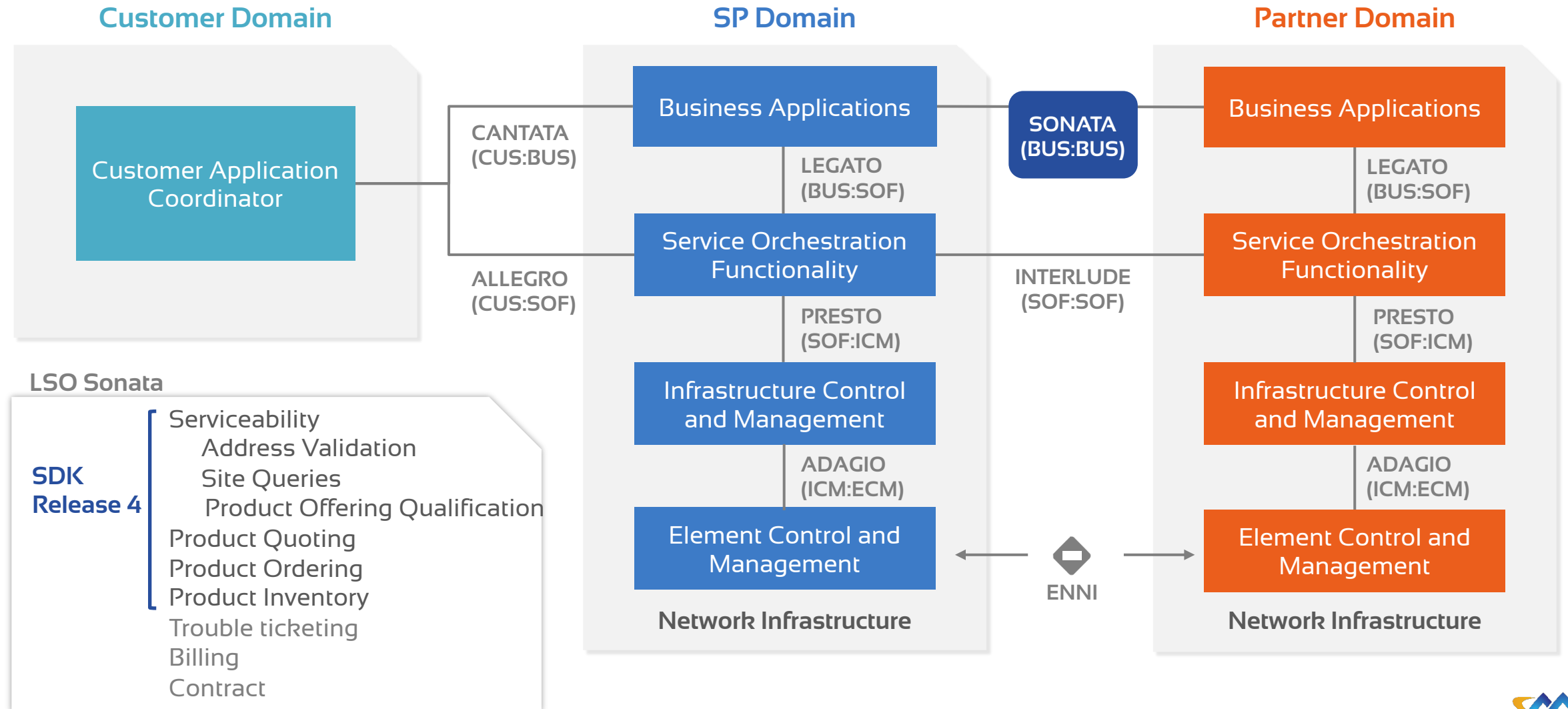


David Ball

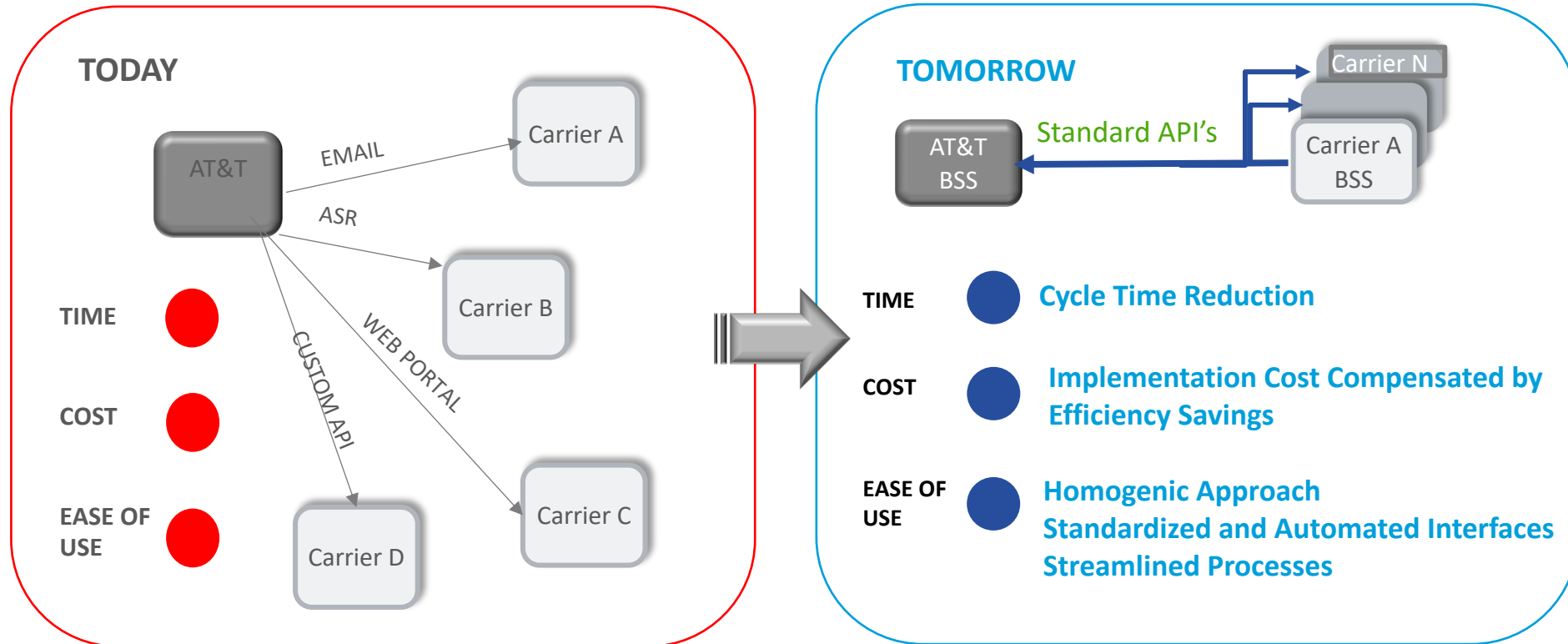
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Principal Engineer, Cisco

LSO Sonata for Inter-Provider Service Automation

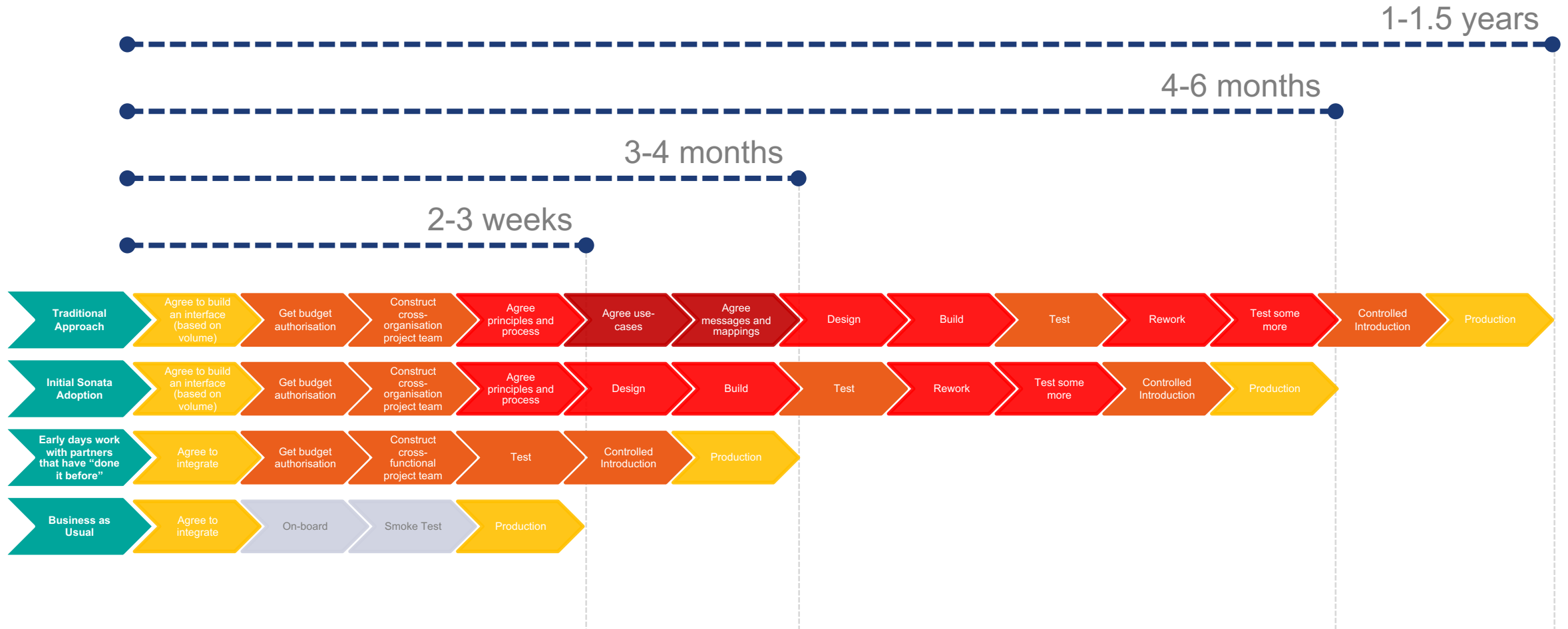


Member Perspective: Why are LSO Sonata APIs important?



Member Perspective: Standardised interfaces are a no-brainer

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LSO Sonata vs. Pre-Standard Wholesale Buy-Sell Model



Competitive Advantage - Services

Impact Areas	Pre-Standard Wholesale Model	LSO Sonata-Based Wholesale Model
Dynamic services	<ul style="list-style-type: none">✗ Only in own footprint✗ Most services static	<ul style="list-style-type: none">✓ Shift to dynamic service✓ Can extend to partners using standard APIs
Customer Experience	<ul style="list-style-type: none">✗ Complex manual processes✗ Mix of email, spreadsheets, ASR, proprietary portals & APIs	<ul style="list-style-type: none">✓ On-demand provision using end-to-end automation✓ Single portal with standard APIs
Service delivery time*	<ul style="list-style-type: none">✗ Weeks or Months	<ul style="list-style-type: none">✓ Minutes

* Assumes physical infrastructure in place.

LSO Sonata vs. Pre-Standard Wholesale Buy-Sell Model



Revenue

Impact Areas	Pre-Standard Wholesale Model	LSO Sonata-Based Wholesale Model
Service delivery time*	✗ Weeks or Months	✓ Minutes
Time to revenue	✗ Days ✗ Potential lost revenue if standardized APIs not adopted	✓ Minutes
Revenue boost from business-to-business service automation features	✗ None	✓ 5% to 10% ✓ Triggers higher volume of quoting ✓ Extends dynamic service revenue opportunity off-network

* Assumes physical infrastructure in place.

LSO Sonata vs. Pre-Standard Wholesale Buy-Sell Model



Operational

Impact Areas

Pre-Standard Wholesale Model

LSO Sonata-Based Wholesale Model

API integration into BSS/OSS

- ✗ Significant time/cost for each new partner
- ✗ Up to 18 months per partner

- ✓ One-time development cost
- ✓ Then 3 to 6 weeks setup per partner using LSO Sonata APIs

Ongoing operational costs

- ✗ High - multiple processes, manual errors
- ✗ High time & cost to manage many proprietary APIs

- ✓ Lower opex & errors through automation (% impact varies)
- ✓ Major savings by aligning on single standard approach for all partners

Return on SDN/NFV investment

- ✗ Mostly limited to own footprint

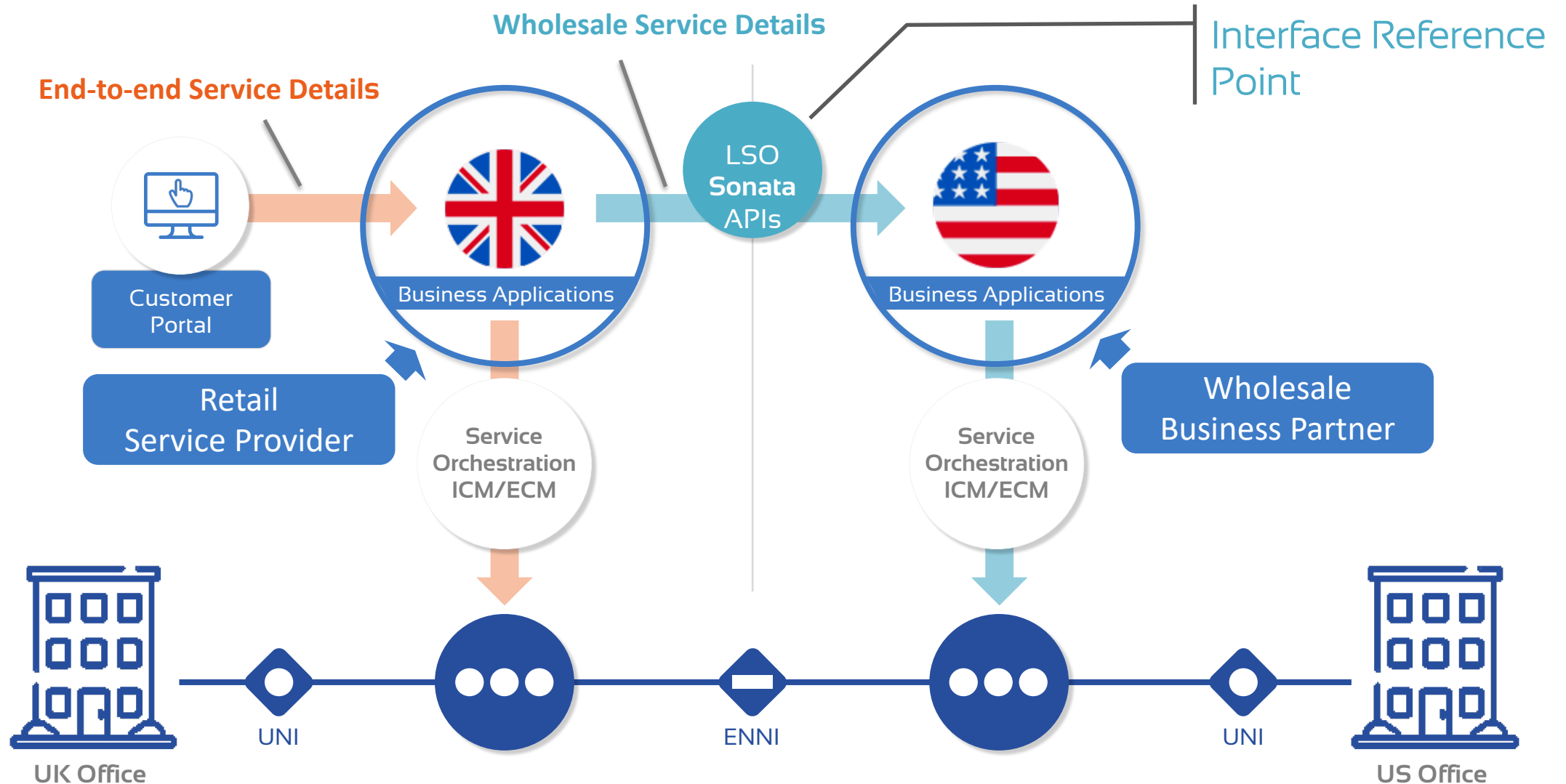
- ✓ Maximized potential for federation of SPs using standard APIs

Workforce impact

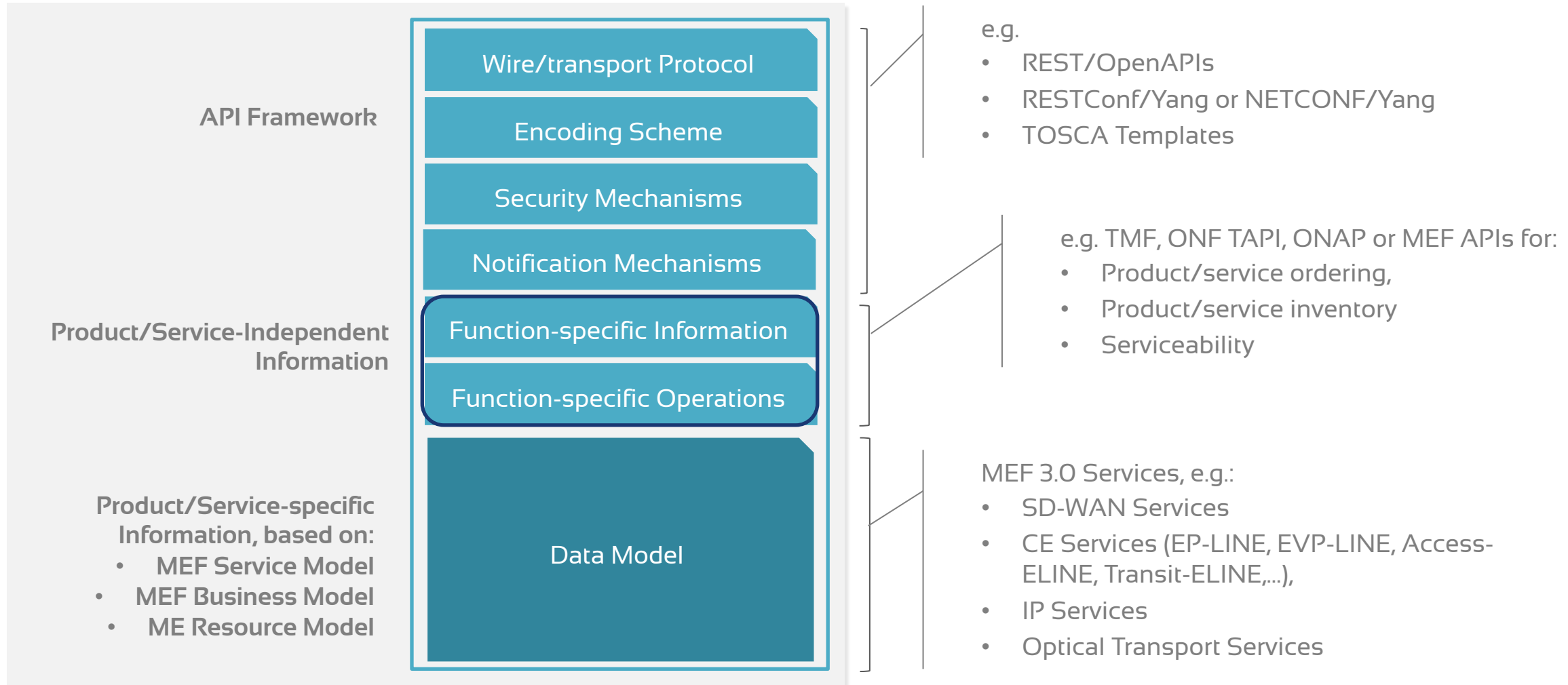
- ✗ Often need to perform time-consuming manual tasks

- ✓ Skilled professionals freed to work on higher-value projects

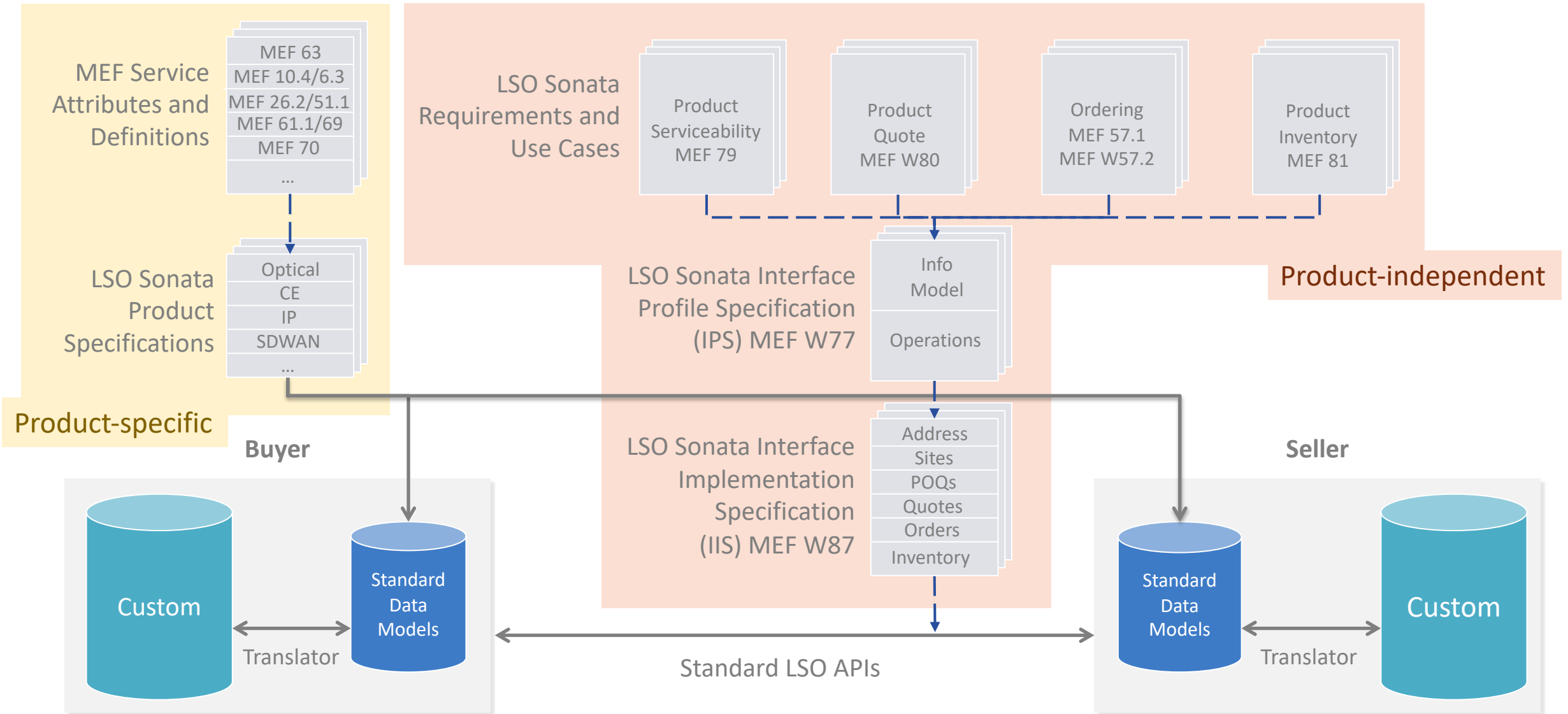
Linking inter-provider business applications with LSO Sonata.



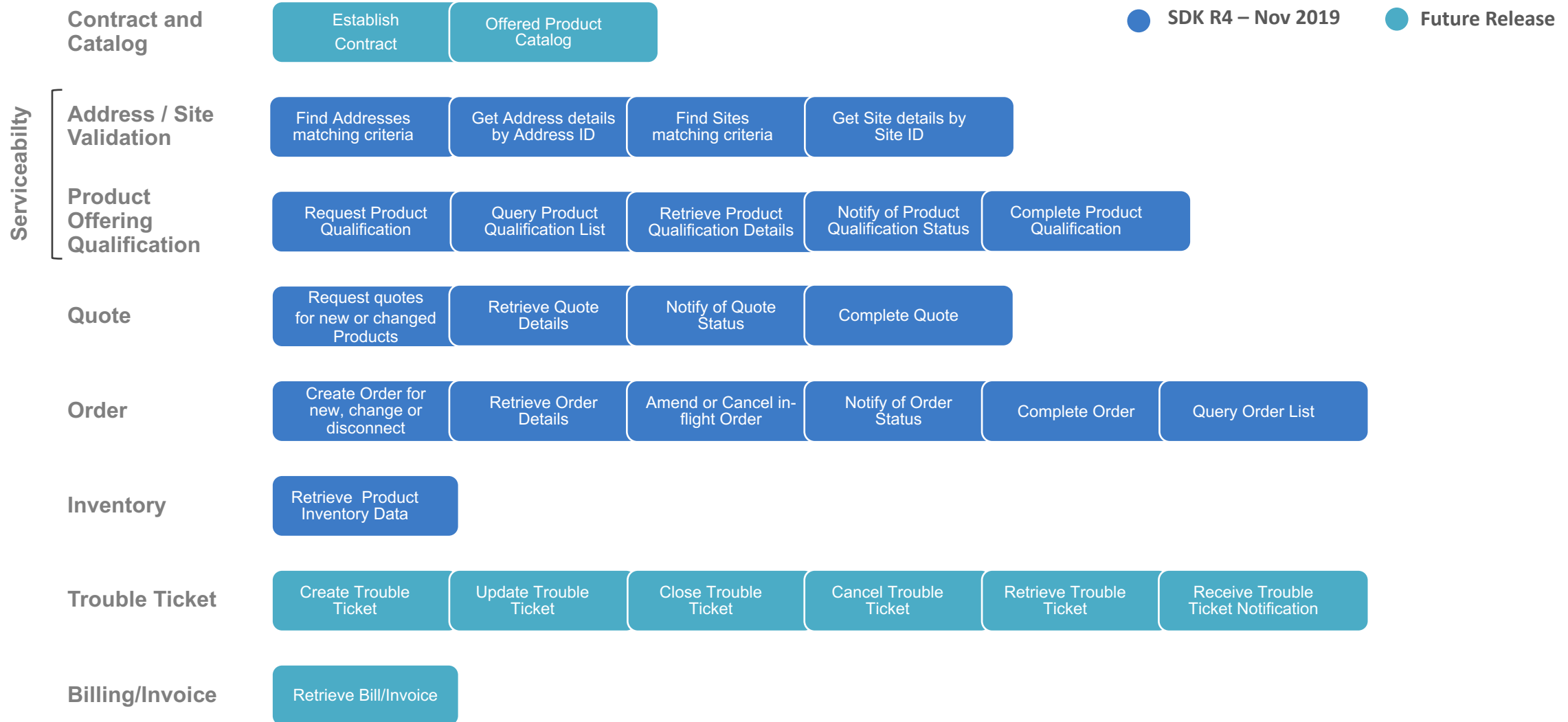
LSO API Approach: Separation of API Framework, Functions and Product/service-specific data



LSO Sonata Document Artifacts Relationship



LSO Sonata Release Roadmap



LSO Sonata APIs

Scenarios

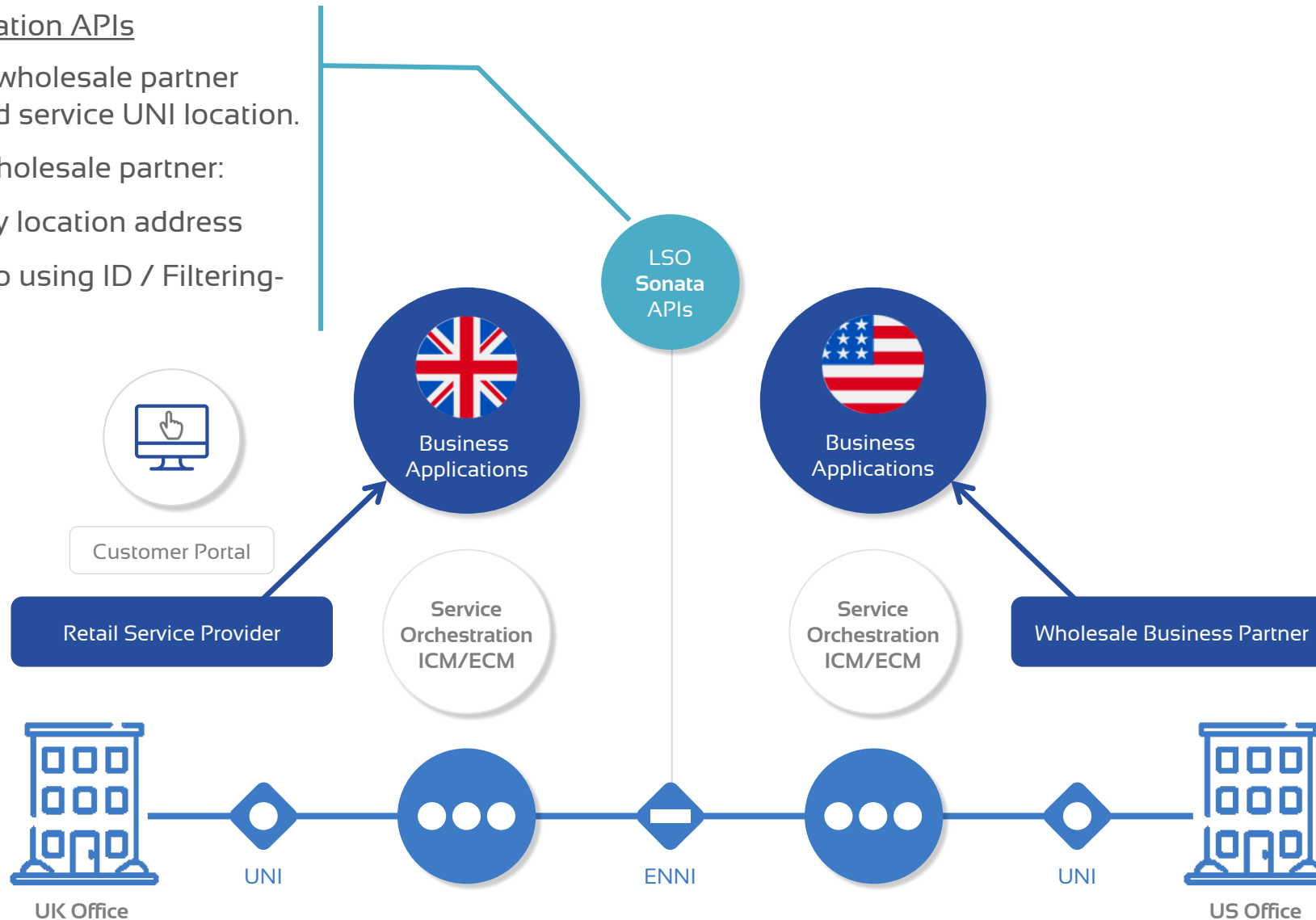
LSO Sonata API Use Case – Address/Site Validation

Address/Site Validation APIs

Retail SP validates wholesale partner address/site for end service UNI location.

Retail SP queries wholesale partner:

- Validate delivery location address
- Retrieve site info using ID / Filtering-criteria

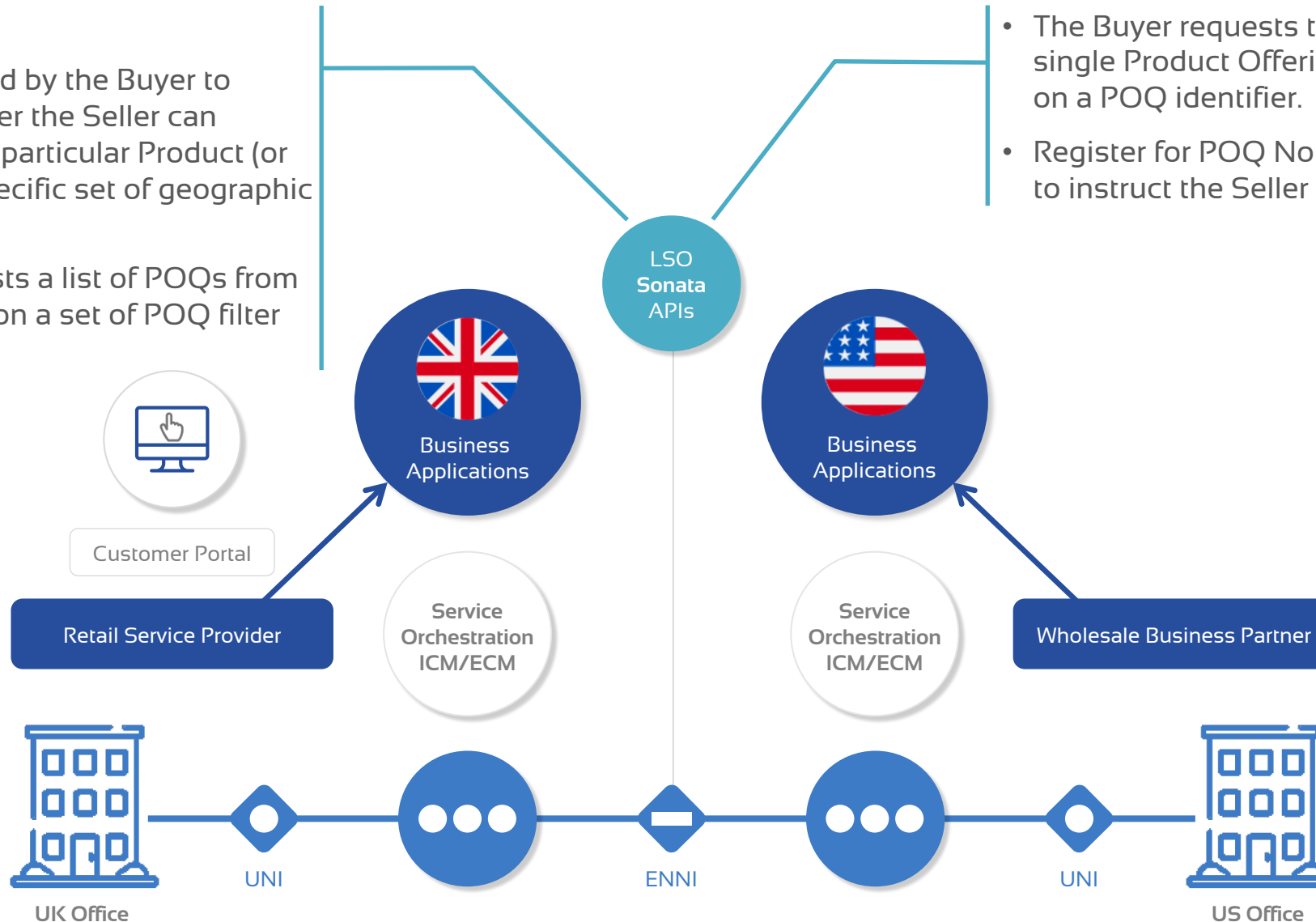


LSO Sonata API Use Case – Product Offering Qualification (POQ)

POQ API

- A request initiated by the Buyer to determine whether the Seller can feasibly deliver a particular Product (or Products) to a specific set of geographic locations.
- The Buyer requests a list of POQs from the Seller based on a set of POQ filter criteria.

- The Buyer requests the full details of a single Product Offering Qualification based on a POQ identifier.
- Register for POQ Notifications by the Buyer to instruct the Seller of POQ state changes.

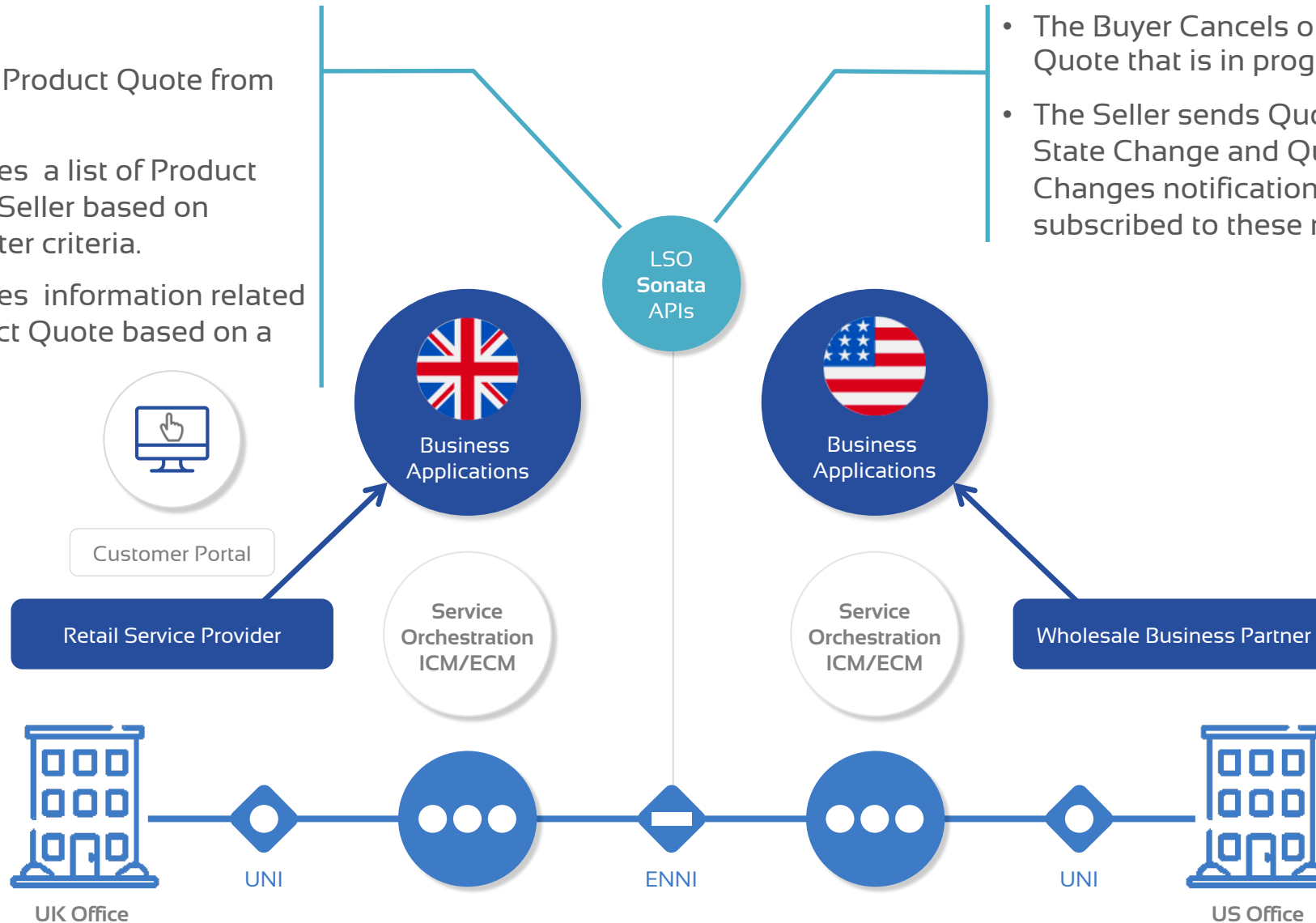


LSO Sonata API Use Case – Quote

Quote API

- Buyer requests a Product Quote from the Seller.
- The Buyer retrieves a list of Product Quotes from the Seller based on Product Quote filter criteria.
- The Buyer retrieves information related to a single Product Quote based on a Quote identifier.

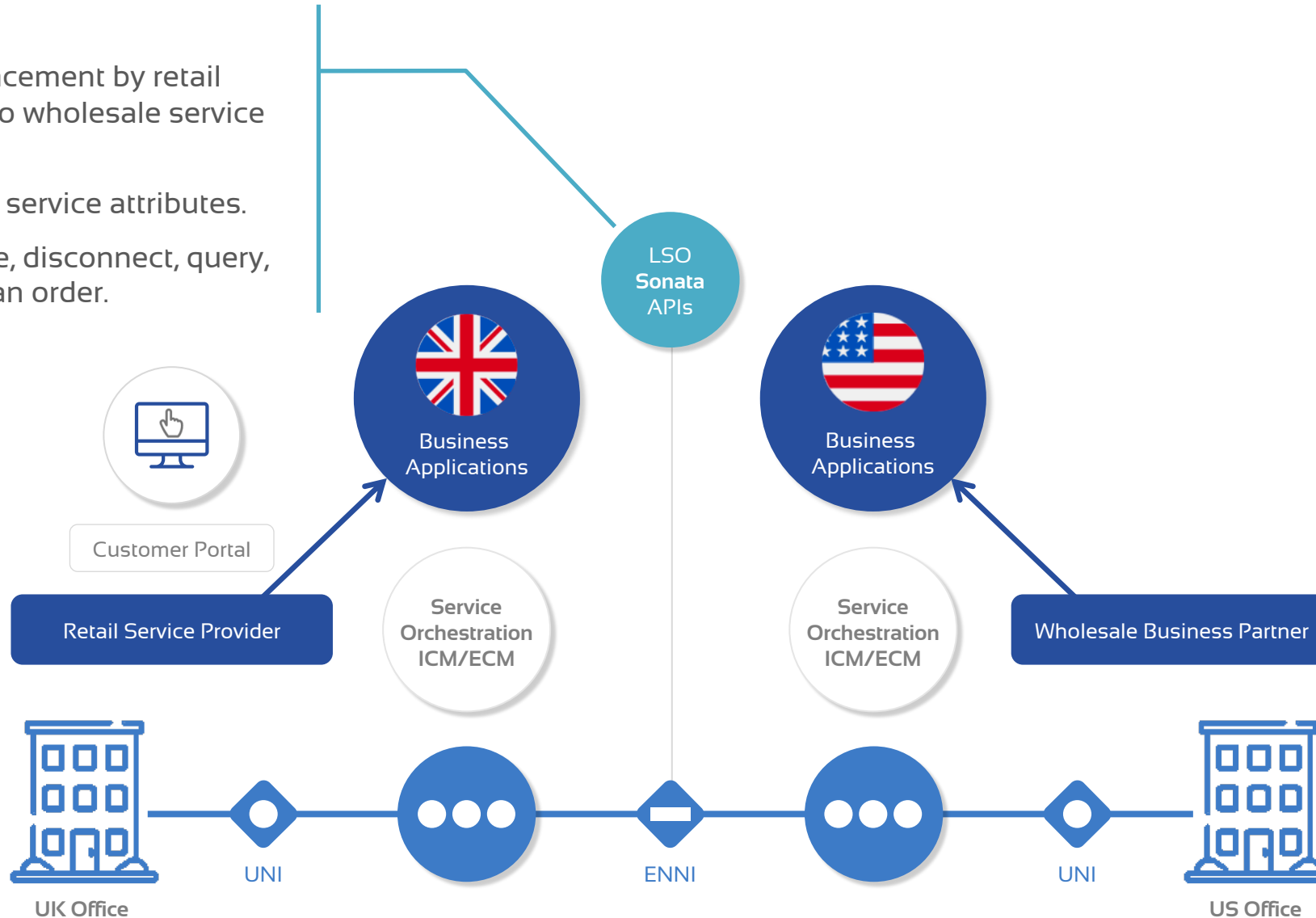
- The Buyer Cancels or Rejects a Product Quote that is in progress.
- The Seller sends Quote Creation, Quote State Change and Quote Attribute Value Changes notifications to the Buyer who has subscribed to these notifications.



LSO Sonata API Use Case – Order

Order API

- Enables order placement by retail service provider to wholesale service partner.
- Includes relevant service attributes.
- Buyer can change, disconnect, query, amend & cancel an order.



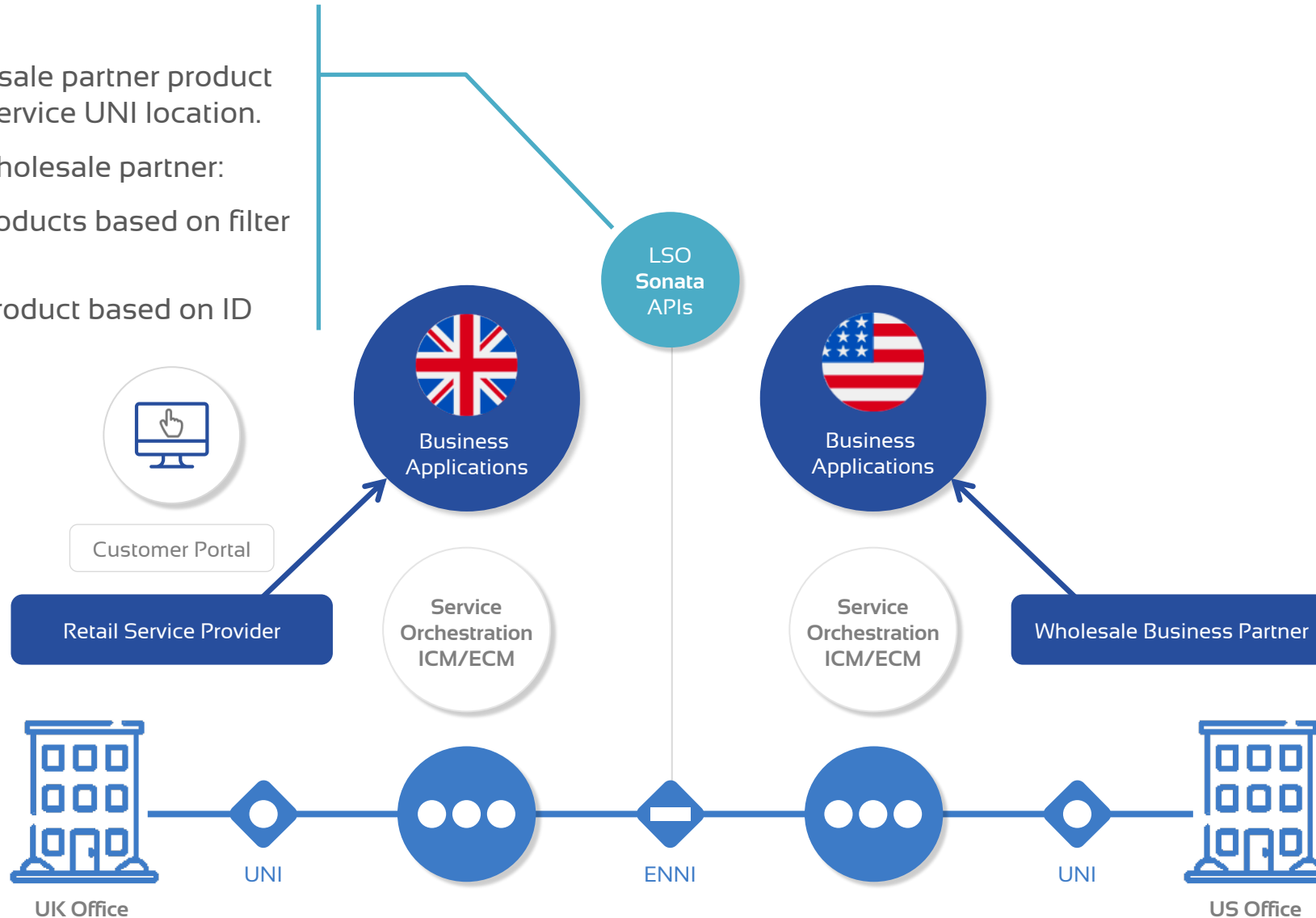
LSO Sonata API Use Case – Inventory

Inventory API

Retail SP get wholesale partner product inventory for end service UNI location.

Retail SP queries wholesale partner:

- Retrieve list of products based on filter criteria
- Request single product based on ID



LSO Sonata APIs

Proposed Future Scenarios



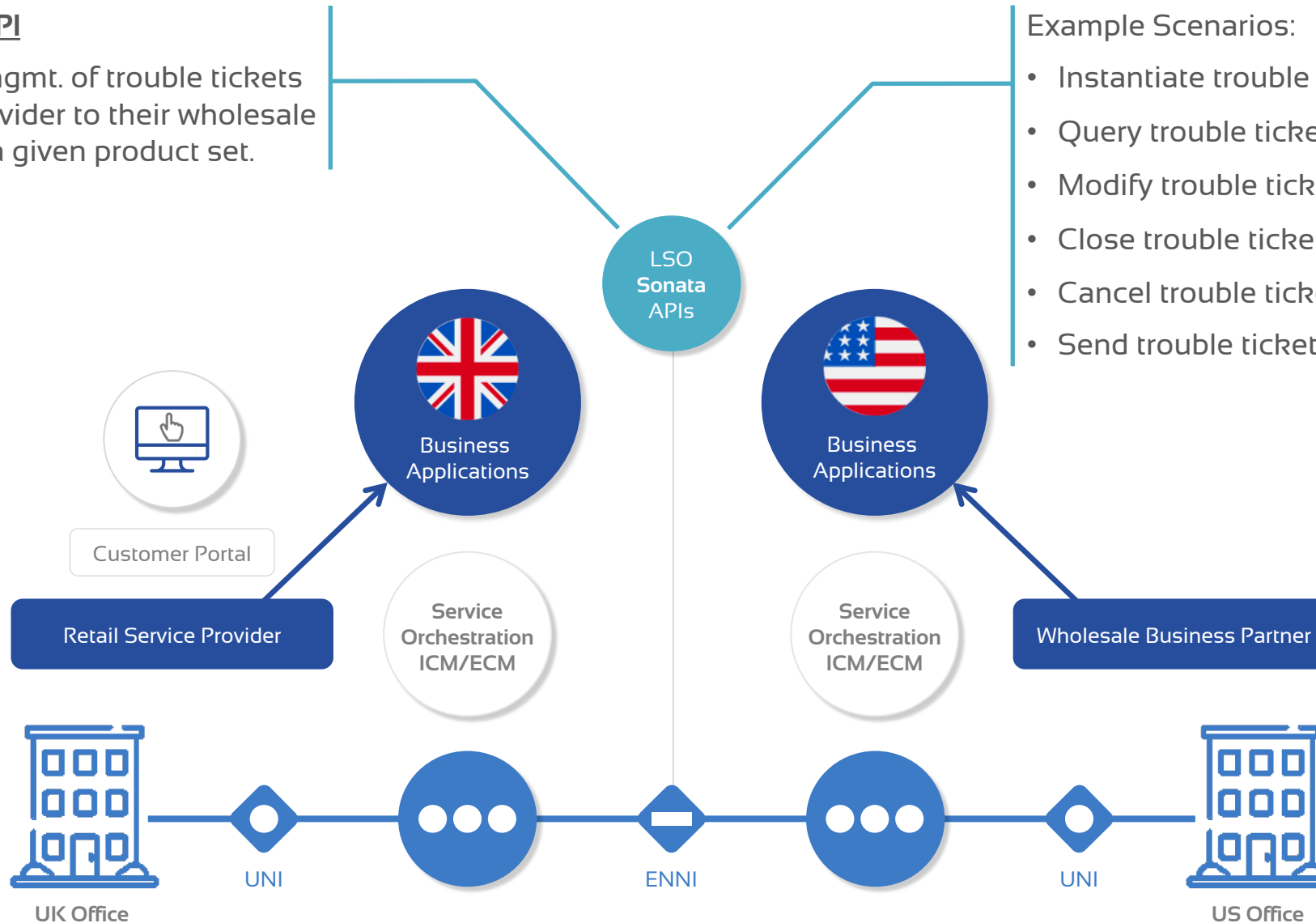
LSO Sonata Trouble Ticketing API Use Case

Trouble Ticketing API

Enables creation/mgmt. of trouble tickets by retail service provider to their wholesale service partner for a given product set.

Example Scenarios:

- Instantiate trouble ticket
- Query trouble ticket(s)
- Modify trouble ticket
- Close trouble ticket
- Cancel trouble ticket
- Send trouble ticket-related notifications



LSO Sonata Billing and Settlements API Use Case

Commercial Billing & Settlement API

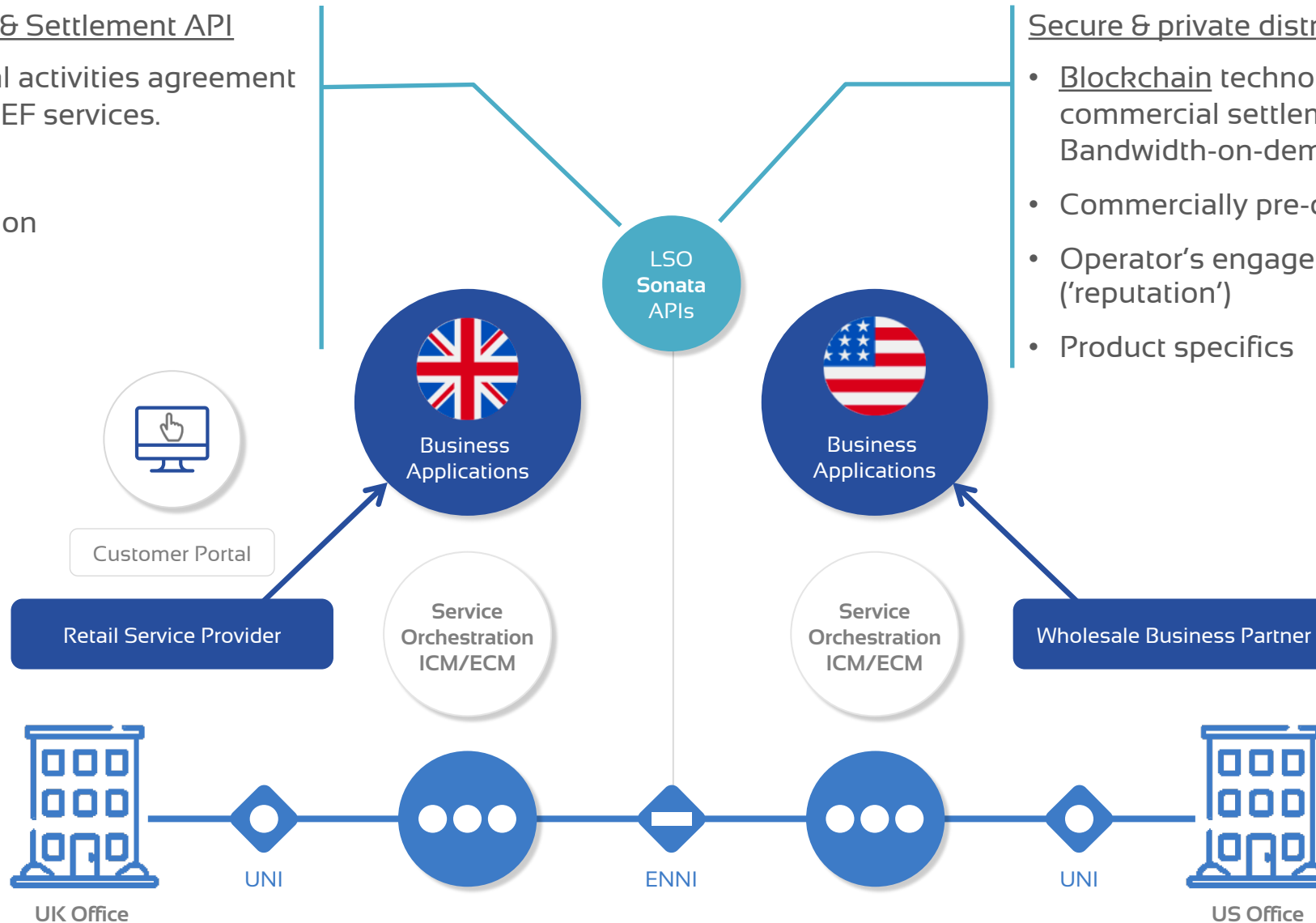
Enables commercial activities agreement for set of defined MEF services.

Includes:

- Customer definition
- Price vs. cost
- Margin concept

Secure & private distributed ledger

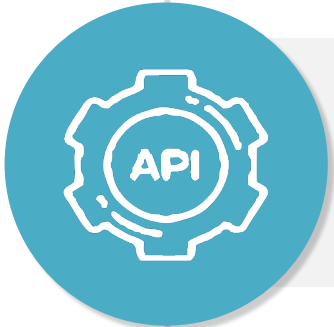
- Blockchain technology used to automate commercial settlement for services. e.g. Bandwidth-on-demand
- Commercially pre-qualified operators
- Operator's engagement history ('reputation')
- Product specifics



LSO Sonata SDK R4 (November 2019)



- Available on the [MEF GitHub](#)
- Reference JSON schemas for product specification description



- Updated API definitions for:
Inventory | Quote | Serviceability | Product Order



Updated Draft Standards of the Business Requirements and Use Cases for:

- [Address, Service Site, and Product Offering Qualification Management: Requirements and Use Cases \(MEF 79 Draft Standard R3\)](#)
- [Quote Management: Requirements and Use Cases \(MEF 80 Draft Standard R2\)](#)
- [Product Inventory Management: Requirements and Use Cases \(MEF 81 Draft Standard R3\)](#)

LSO Sonata FAQ – A Comprehensive Resource

1. What is the big picture relevance of LSO Sonata APIs?
2. What are LSO Sonata APIs?
3. What service provider challenges do the LSO Sonata APIs address?
4. What LSO Sonata APIs are available today & what are planned?
5. Can LSO Sonata APIs be used to orchestrate all MEF 3.0 services?
6. How would you characterize industry support for LSO Sonata APIs?
7. Has anybody implemented LSO Sonata APIs?
8. What is MEF 3.0 LSO Sonata certification, and why is it important?
9. What is the process for MEF 3.0 LSO Sonata certification?
10. Has anyone signed up for MEF 3.0 LSO Sonata certification pilot yet?
11. How can I learn more about LSO Sonata APIs in action – like PoCs?
12. What is the relationship between MEF LSO Sonata APIs & TM Forum APIs?
13. How can I contribute to LSO Sonata API work?
14. What are leading industry professionals saying about MEF LSO Sonata APIs?

Download from MEF.net [here](#).



MEF LSO Sonata APIs – Frequently Asked Questions

1. What is the Big Picture relevance of LSO Sonata APIs for the industry?

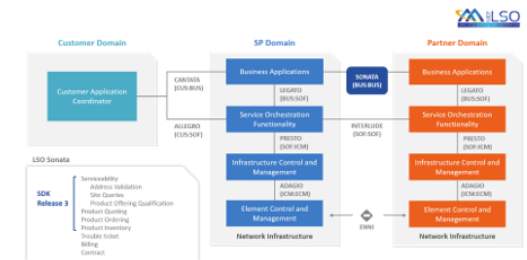
The communications industry is in the midst of a multi-year transformation to dynamic and assured services across a global ecosystem of automated networks, as envisioned in the [MEF 3.0 framework](#). With each day, consensus builds that service providers must become more cloud-like and automated to deliver more powerful networking solutions with unprecedented user- and application-directed control over network resources and service capabilities.

It will not be enough for providers to offer dynamic connectivity and virtualized services over just their own networks. Providers must transition from operating as independent islands of excellence to being integral players in a worldwide business federation of cloud-like networks that support standardized dynamic services across multiple operators. This opinion of MEF is based on direct engagement with top decision-makers and influencers employed by the biggest service providers in the world, along with many of their wholesale buy and sell partners.

To realize this vision, MEF has advanced initiatives related to a full family of standardized MEF 3.0 services – including Carrier Ethernet, SD-WAN, Optical Transport, and IP – as well as standardized [MEF 3.0 LSO \(Lifecycle Service Orchestration\) Sonata APIs](#) that are foundational to orchestrating these services across federated networks.

2. What are LSO Sonata APIs?

MEF is standardizing LSO Sonata APIs as part of a comprehensive effort to standardize multiple sets of LSO APIs enabling service automation across providers and over multiple network technology domains. LSO Sonata APIs relate to the interface reference point within the [LSO Reference Architecture](#) that supports business-to-business interactions between service providers. LSO Sonata APIs combine service-agnostic TM Forum Open APIs with MEF 3.0 service definitions. The collaboration secures a service provider's investment in both MEF and TM Forum while delivering an accelerated time-to-market and time-to-revenue. The full suite of planned LSO Sonata APIs deals with serviceability (address validation, site queries, product offering qualification), product inventory, quoting, ordering, trouble ticketing, contracts, and billing.



MEF LSO Sonata APIs FAQ, September 2019, v5

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