

State of Colorado Data Integration Strategy

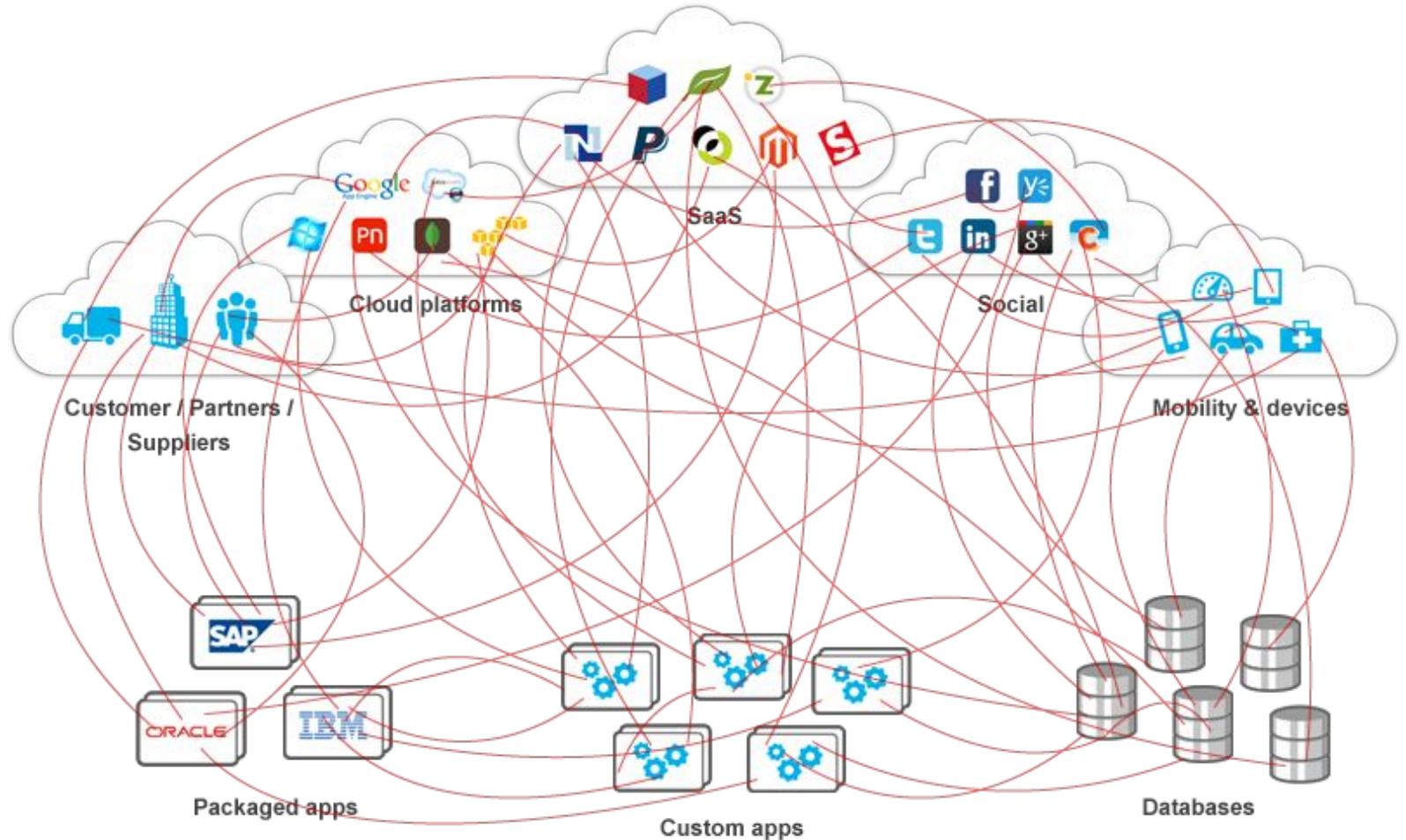


- State of Colorado's Integration Strategy
- About MuleSoft: Company Overview and Industry Positioning
- MuleSoft's API-led Approach and the Application Network
- Existing MuleSoft Deployment at State of CO
- Q&A

OIT data integration strategy - current state

Current state of data integrations:

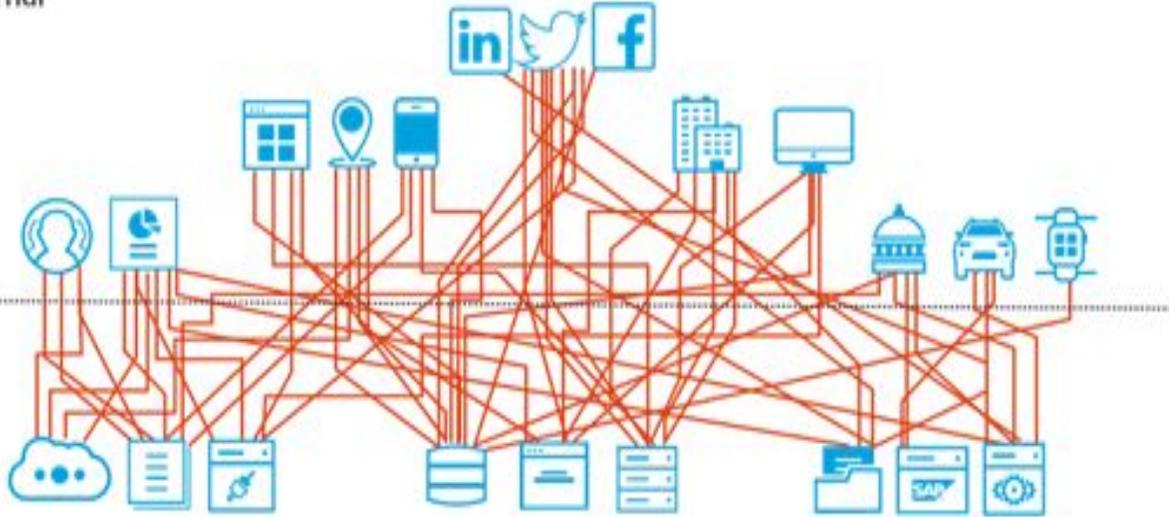
- Many **point-to-point**, static/batch, one-off data integrations
- **Complexity, data silos**, and rigid support models
- Vendor-specific data integrations lead to **vendor support lock-in** scenarios
- **Lack of transparency**, data governance, performance monitoring, and insufficient failover or resilient services



Consensus: We have a problem

OIT data integration strategy - vision

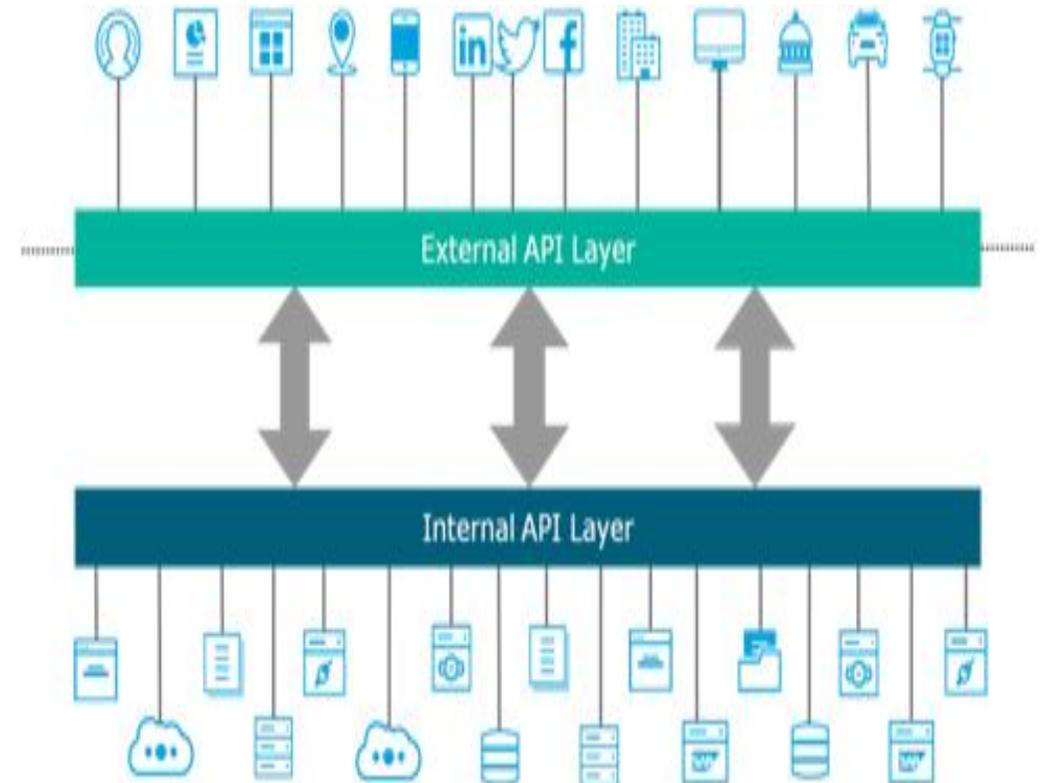
External



Internal

How do we go from this?

To this...



How do we get there?

- **Promote data sharing and interoperability** across agencies via APIs, while preserving privacy and security.
- **Maximize reuse** of work to provide access to systems and data to minimize point-to-point integrations between data and systems. That is, create an interface once, use it many times.
- **Govern data sharing and interoperability** on a continuous basis to document access to and use of data to **ensure compliance** with data security requirements and agreed upon data sharing terms.
- **Minimize cost** and effort of data sharing and interoperability over time.

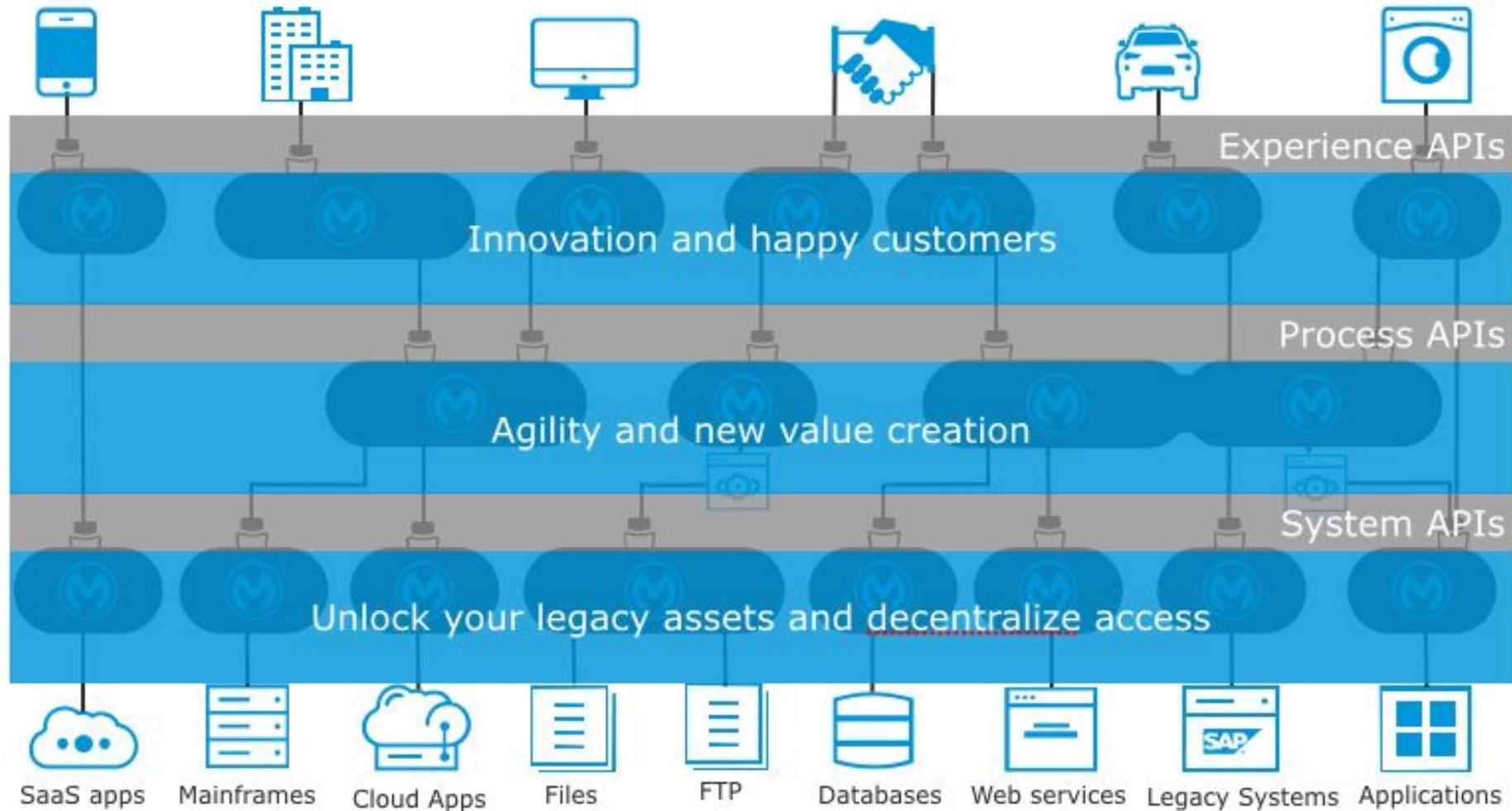
Why Mulesoft?

- Cohesive Enterprise Architecture
- Improved Scalability
- Faster Delivery
- Enhanced Operational Efficiency
- Streamlined Development Skills

*"Based on industry standards, the cost to develop a custom interface is estimated to be approximately \$40,000, depending on complexity and type of protocol used for its development. This also includes the development of the infrastructure. Industry standard development costs for batch service interfaces range from \$15,000 to \$30,000. Direct Access screen interfaces with an estimated three to five screens per interface is less expensive at \$7 – 8,000 per interface. In addition, **the expected costs of annual support and maintenance over a 5+ year life cycle for each interface is estimated to be between \$15,000 and \$30,000 per year, per interface, or a total of \$125,000 to \$200,000 each, again over a 5 year life cycle.**"*

--Gartner Insight Research – IT Cost Optimization (www.my.gartner.com)

MuleSoft API Framework



Overview of MuleSoft and the Anypoint Platform





Industry Leader

- \$188m+ 2016 revenue
- 1,000+ enterprise customers
- 1000+ employees globally
- Sustained 75% year-on-year growth
- 150,000+ strong developer community



Notable Customers



MuleSoft provides a software solution to support the entire integration and API lifecycle

Industry leading solution

- MuleSoft's solution supports the **full integration lifecycle** on-premise or in CloudHub i.e. MuleSoft's hosted, cloud-based offering .
- MuleSoft's solution delivers reliable and scalable **integration, orchestration, mediation, and transformation**, while promoting reusability.

Faster to build, easier to scale

- **Design-first approach** to all phases of the API lifecycle with baked-in best practices.
- **Market-leading integration capabilities** make it easy to connect to anything on the backend or orchestrate processes across multiple endpoints.

Uniformity of tooling

- MuleSoft delivers **a single, cohesive toolset** across Anypoint platform including a single runtime and single design environment.
- Tools are all **java-based** ensuring that multiple technologies and skillsets aren't required.

MuleSoft continues to be identified as a leader, demonstrating the longevity of our expertise and innovation



Magic Quadrant for Full Lifecycle API Management - October 2016



Magic Quadrant Enterprise Integration Platform iPaaS - March 2016



Magic Quadrant for On-Premises Application Integration Suites - July 2014

Standardized Platforms | Technology Innovation



Investment in Cloud Computing models

Cloud	Infrastructure as a Service (IaaS)
Amazon(AWS)	***** Primary IaaS Public Cloud
Google	**** Only used in combination with PaaS projects
Efort	***** (VBlock) primary datacenter for onsite

Cloud	Platform as a Service (PaaS)
SalesForce Force.com, Communities,	*****
Mulesoft CloudHub	*****
Google AppMaker	*****
Amazon(AWS) tbd	****

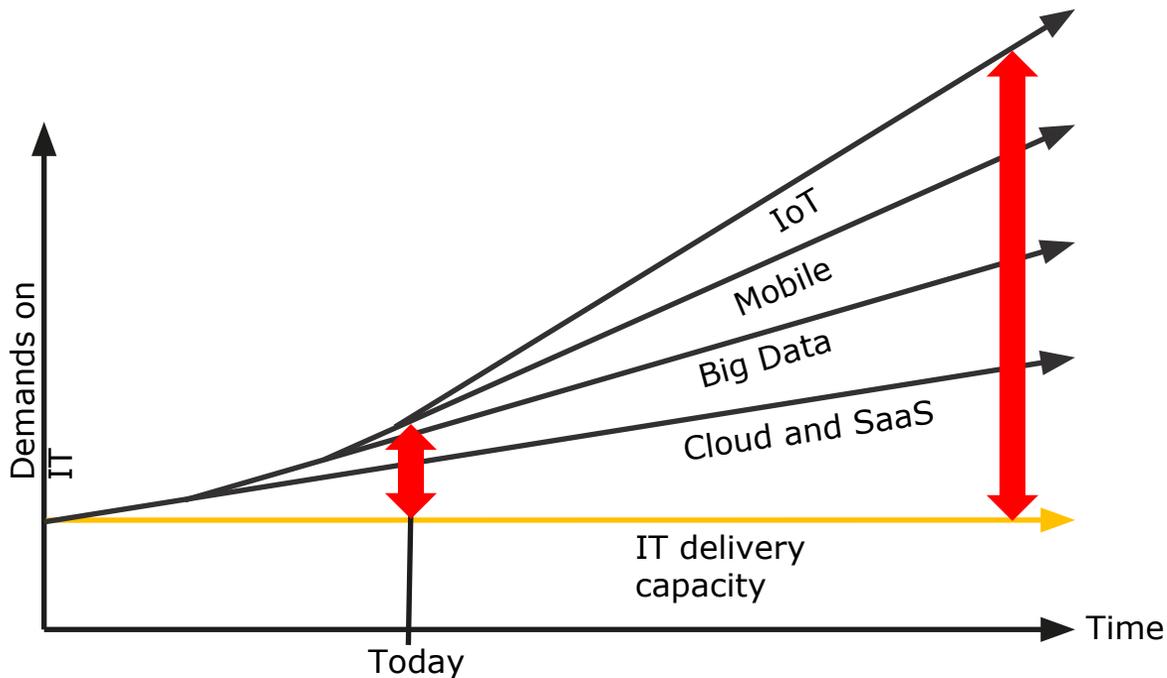
Cloud	Software as a Service(SaaS)	Service
Google	G Suite	Email, Collaboration
Hyland	Perceptive OnBase	ECM
Salesforce		CRM
Box		Secure document collaboration



- Deployed on AWS
- AWS VPC Architecture reflects existing OIT compliance controls
- FedRAMP ATO (platform) pending

Digital pressures create a widening the delivery gap

Key digital pressures in the industry



Key trends in government IT

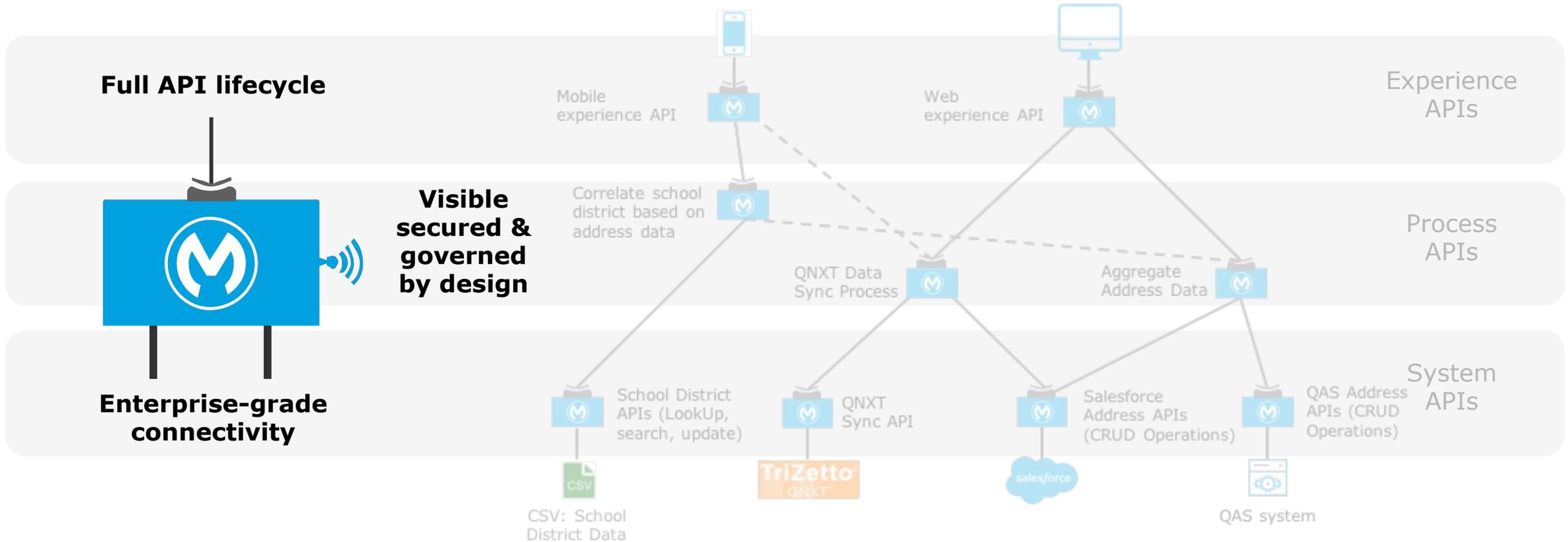
- Proliferation of **IoT** (for example - increased smart city related initiatives).
- Increased need for **security**.
- **Increasing citizen expectations** (digital platforms and services).
- **Data collection and analytics**.
- Increased adoption of a **cloud-based architecture** to increase solution flexibility.

Data Sources:

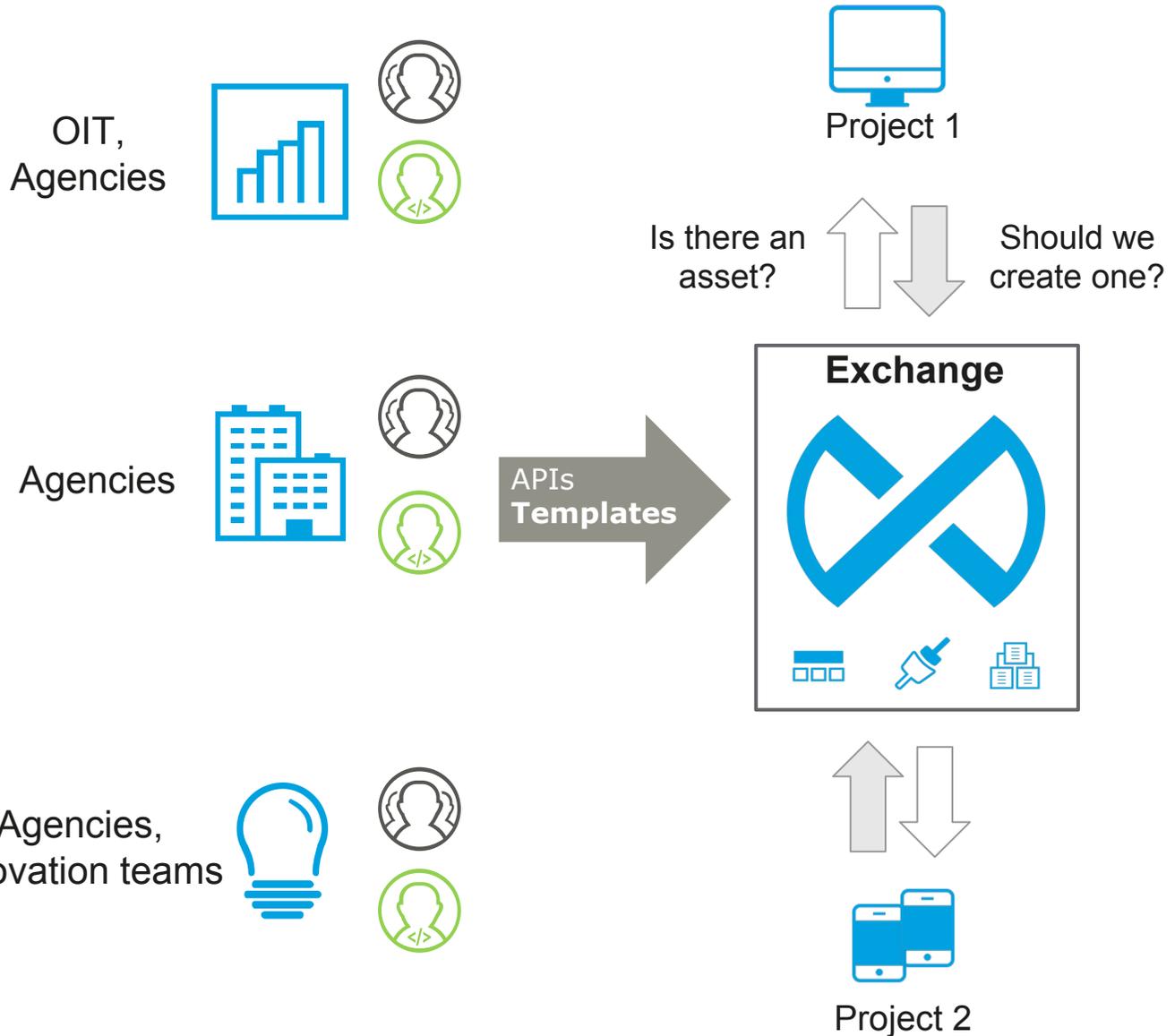
- [Futurum, Sept 2017 – Top Digital Transformation Trends in Government](#)
- [Deloitte, A Government Perspective: Tech Trends 2017](#)

In fiscal year 2010, operations & maintenance (O&M) spending was 68% of federal IT budget, while in fiscal year 2017 agencies planned to spend 77% of IT funds on O&M.

API, an essential building block



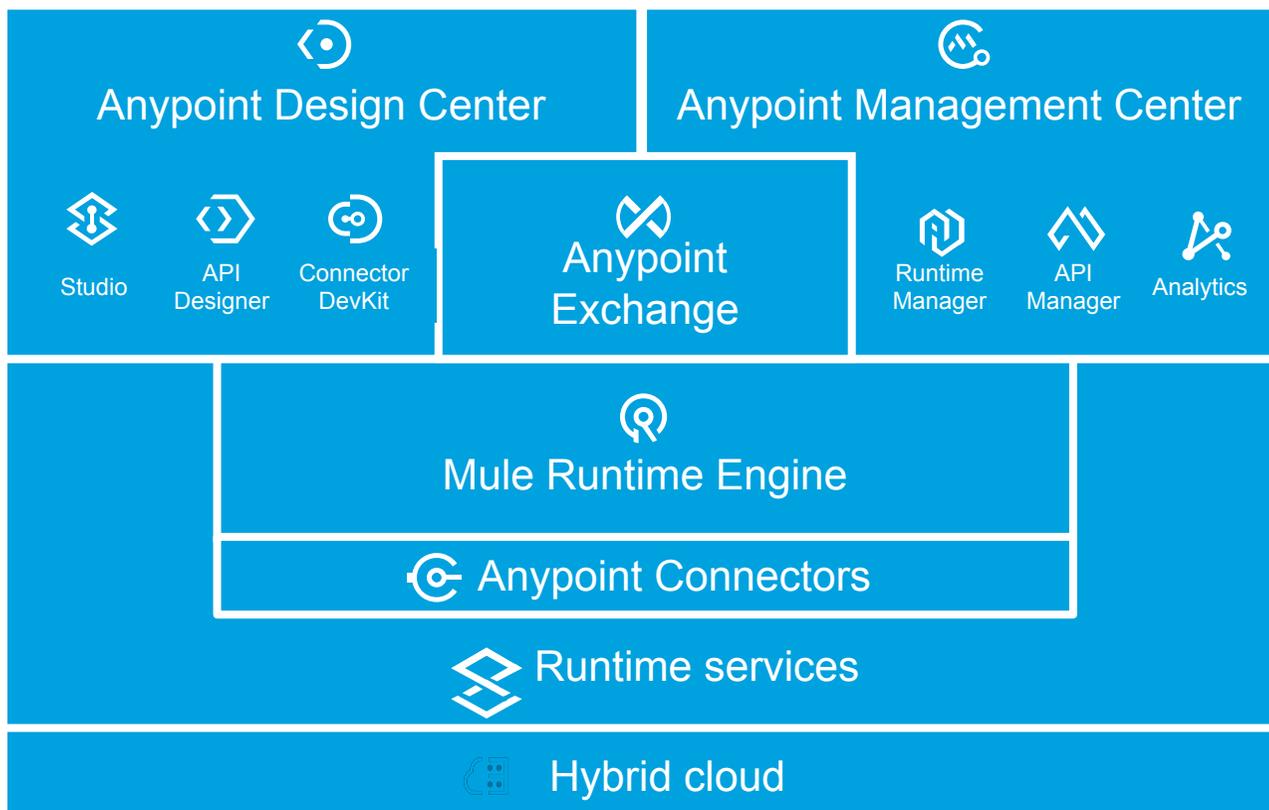
C4E in action



- 
- ### C4E cross functional team
- Productize and publish
 - Encourage collaboration
 - Drive self-reliance

MuleSoft delivers a platform for speed, agility, and innovation

----- MuleSoft's Anypoint Platform -----



Enables full API life cycle



End-to-end security



Ubiquitous connectivity



A single, unified platform



Write once, deploy anywhere

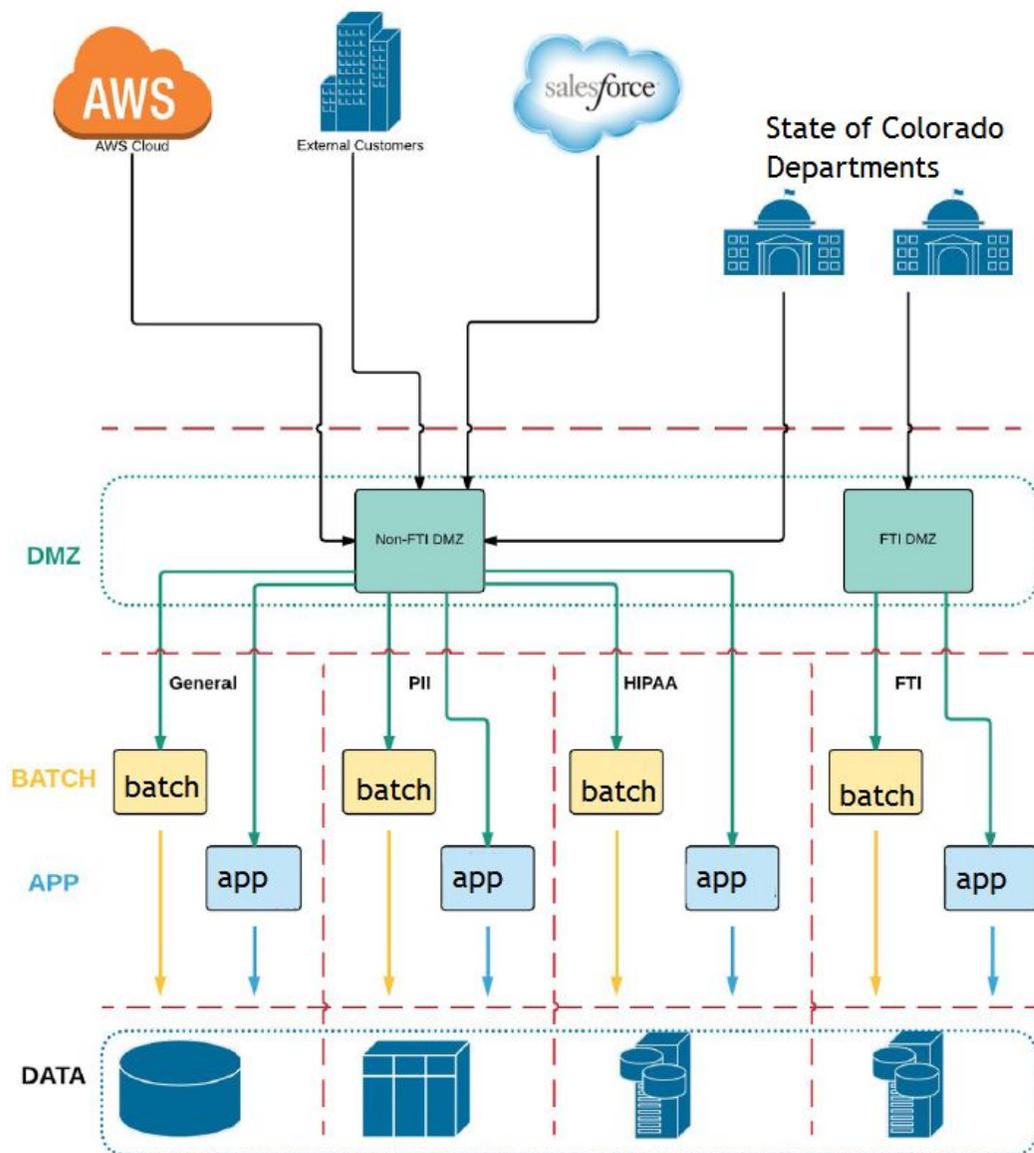


Center for Enablement (C4E) to institute governance and drive reusability

MuleSoft @ State of Colorado



Existing MuleSoft deployment at OIT



Key Highlights

- Increased speed by leveraging reusable patterns and assets.
- Compliant deployment zones that ensure data privacy
- Centralized management of all integrations and APIs
- Automated CI/CD leveraging State's approved toolset.
- <https://anypointmgmt.state.co.us/>

Projects Overview

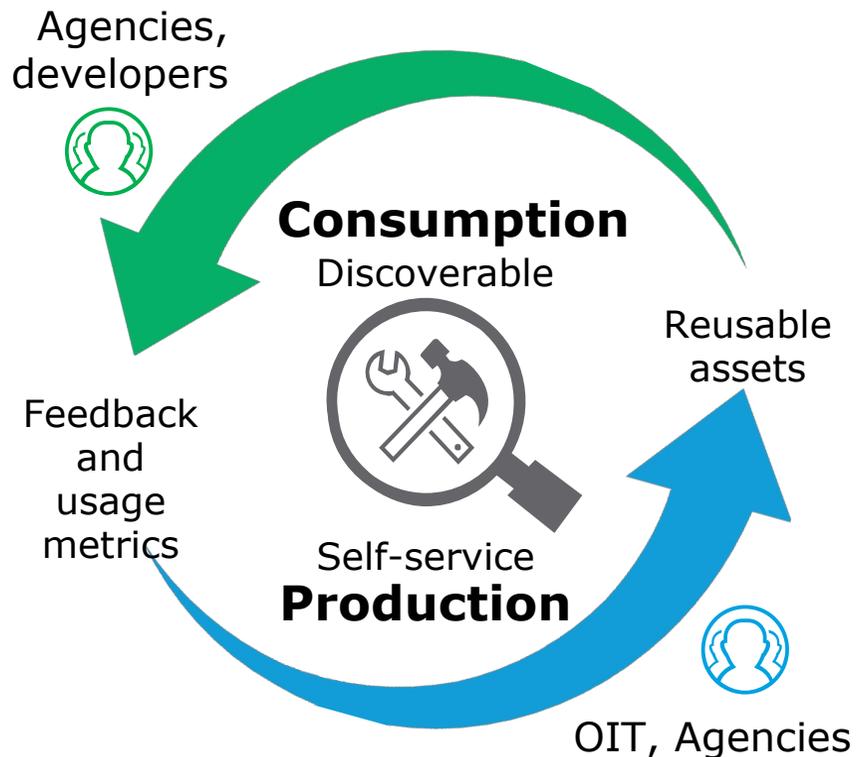
Currently **live in production**:

- **CDHS**: LEAP
- **CDLE**: UI Telephony / Five 9's
- **CDOT**: Snowplow tracking
- **CBMS**: System integrations for eligibility determination

In-progress / upcoming initiatives: HR Works, MJ Data Coordination, CBMS Modernization, CHATS Modernization, Joint Agency Interoperability, CDLE UIM.

Planning / Consideration: CDOT Data Management & ITS, CDHS LEAP Connection to PEAK.

Solving problems *at scale*...



- Create scale through reuse
- Enable self-service
- Encourage innovation “at the edge”
- Promote quality
- Retain visibility and control



- Develop and mature a sustainable organizational structure based on the Center for Enablement concept of operations.
- Develop and promulgate standard patterns and practices for the development and use of APIs.
- Develop a stable and predictable cost model for agencies to utilize the service.
- Ultimately negotiate an enterprise license agreement with Mulesoft to control costs of additional licenses.
- Provide quarterly monitoring and reporting to agency customers on the use of the ESB and use of the APIs to their data.
- Ensure governance of APIs are consistent with explicit governance requirements for the data.
- Maximize discovery of APIs and understanding of appropriate use of APIs across the state enterprise, with appropriate security and privacy constraints as defined in the governance of the data.

On more granular level, Center for Enablement team members will be responsible for:

- MuleSoft Enterprise Framework - establishing and maintaining all aspects of it, including development of common services, templates and patterns, enforcing role based access and behavior patterns
- API lifecycle management (reviewing designs and deployment to production)
- Mentors, trainers and force multipliers / senior developers - when leading and assisting project implementations; focused on System and Process APIs, on occasion, Experience APIs
- Operational support and monitoring of MuleSoft assets
- Provide solution recommendations / directions and specifications

Line of Business Developers (OIT teams supporting agencies):

- Responsible for design, development and implementation of APIs in accordance (adherence) to enterprise framework & API lifecycle
- Responsible for operational support of implemented integrations for their LOB
- Engaging the Integration team for assistance in solution design, platform utilization and support along the SDLC
- Focused on System and Experience APIs

- Hardware infrastructure
 - Reflected in common policy based on use of infrastructure (servers, memory)
- Personnel
 - Reflected in common policy based on charge back for various resources (BAs, PMs, developers)
- Mulesoft license costs
 - 2 phases: current license year, pre-ELA, post-ELA
 - Current license year (ends 5/31): Cost allocation to agencies' use of surplus licenses based on total cost of pool of license. Prorated by time deployed.
 - Pre-ELA based on costs of licenses charged by Mulesoft, renegotiated this year.
 - Post-ELA: Cost allocation based on consumption of licenses as proportion of total licenses in use and cost of ELA.
- Overhead

MuleSoft Resources



Training: Role-based training & certifications enabling developers, architects and operations; Delivered online or in-person.



Support: Resolution to technical issues arising from using Anypoint Platform; Round the clock support for S1 cases in production.



Customer Success: Best practice enablement and conduit to wider MuleSoft team.



Services: Deliver targeted service offerings and best practices, when you need it.

Key Team Members

At State of Colorado:

- Jon Gottsegen – Chief Data Officer, OIT
- Casey Carlson – Chief Enterprise Architect, OIT
- Milo Knezevic – Program Manager, OIT

MuleSoft team @ State of CO:

- Vance Wagenknecht – Account Executive
- Amit Fernandes – Customer Success Director
- Andy Hui – Customer Success Architect
- Gopi Soundarrajan – Professional Services Engagement Managers
- John VanSant - Principal Solutions Consultant

Q & A - open dialog



- What are the items we need to be considering
- Where do you see opportunities for API led integrations in your environment
- More mature engagement model through BASE & standard intake process
- Other thoughts?

- Whitepapers:
 - API-Led connectivity for the Australian Government - <https://www.mulesoft.com/lp/whitepaper/api/australia-government-api>
 - Best Practices for API-led architecture in Government - <https://www.mulesoft.com/ty/wp/government-api-led-connectivity>
 - Solutions for Government Health IT - <https://www.mulesoft.com/ty/wp/government-healthcare-it-solutions>
 - Your Roadmap to Government IT Modernization - <https://www.mulesoft.com/ty/wp/your-roadmap-government-it-modernization>
- Mulesoft's Anypoint Platform - <https://www.mulesoft.com/platform/enterprise-integration>
- Anypoint Platform for API Management - <https://docs.mulesoft.com/anypoint-platform-for-apis/anypoint-platform-for-apis-administration>
- MuleSoft's Hybrid Cloud Solution - <https://www.mulesoft.com/resources/esb/hybrid-cloud-integration-solutions>
- MuleSoft's CloudHub - <https://docs.mulesoft.com/runtime-manager/cloudhub>
- Webinars: MuleSoft Anypoint Platform Overview - <https://www.mulesoft.com/webinars/api/mule-101-anypoint-platform-overview>