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Managing Your APIs in a Manufacturing Environment

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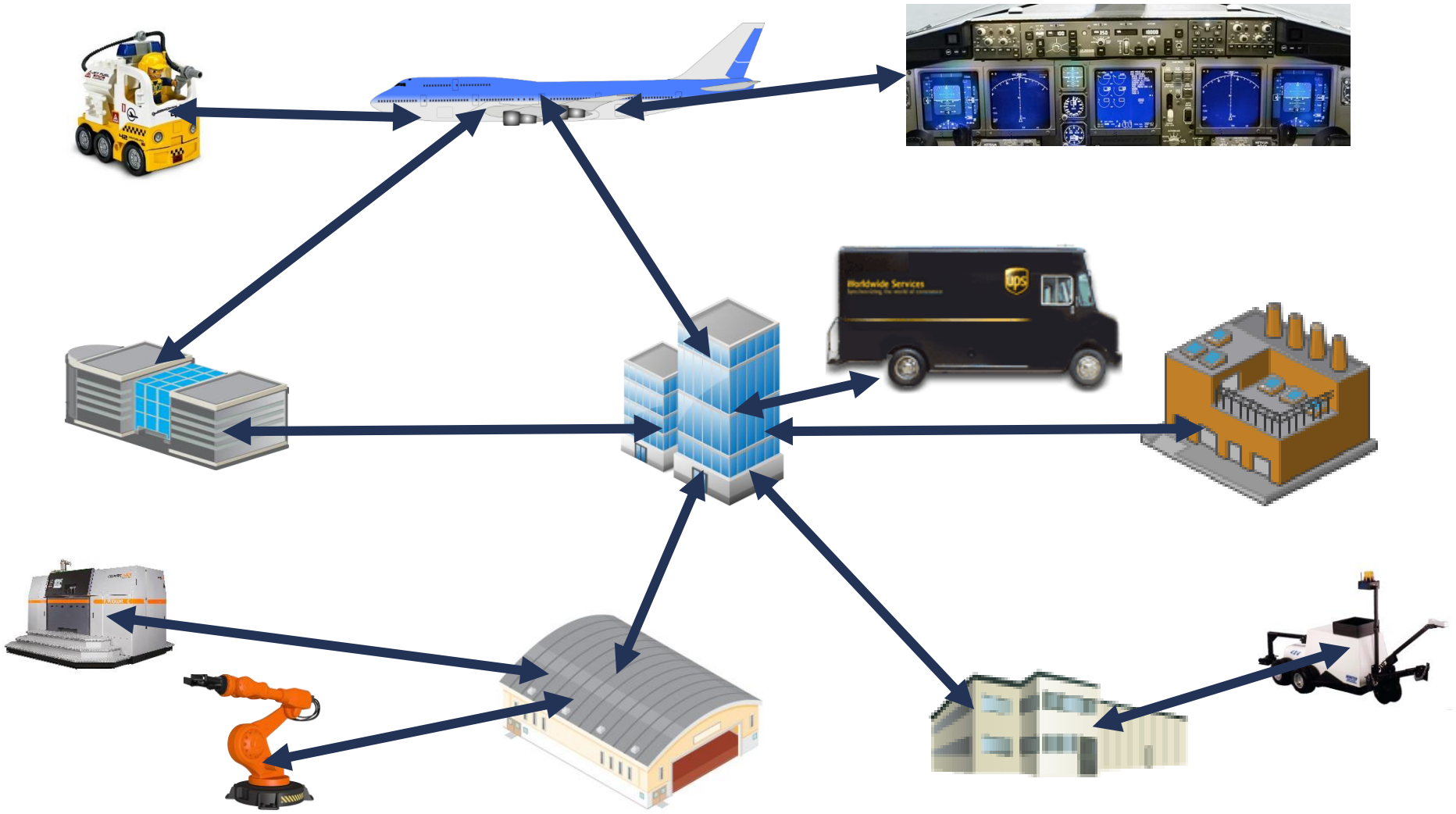
What is an API?

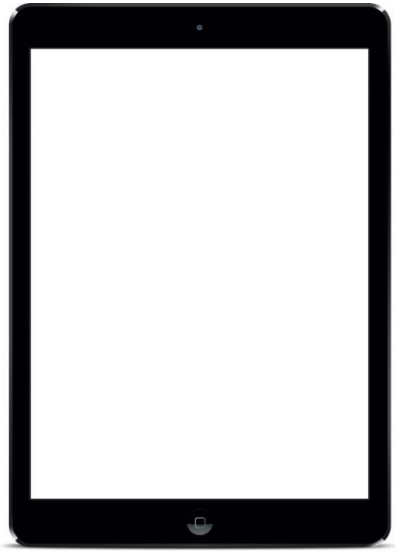
An API, strictly speaking, is defined as an access method to a service (or a service interface, according to SOA terminology)

Gartner-Magic Quadrant for Application Services Governance

Where do APIs Exist in the Manufacturing World?



How and when they are accessed is changing



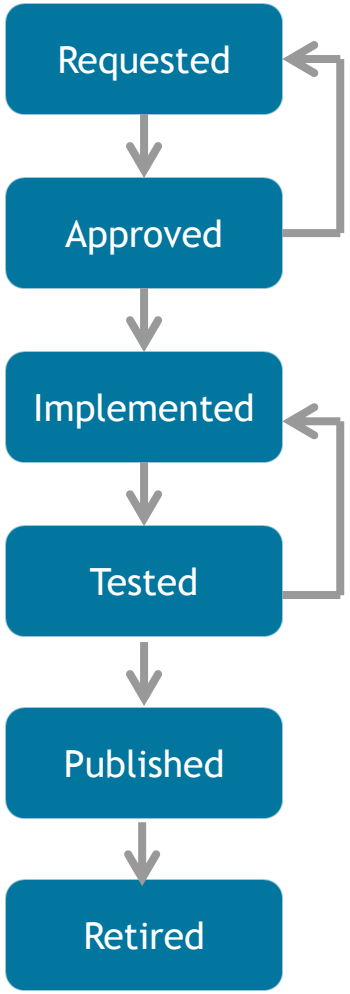
This additional interaction brings challenges

What are some strategies to address these issues?

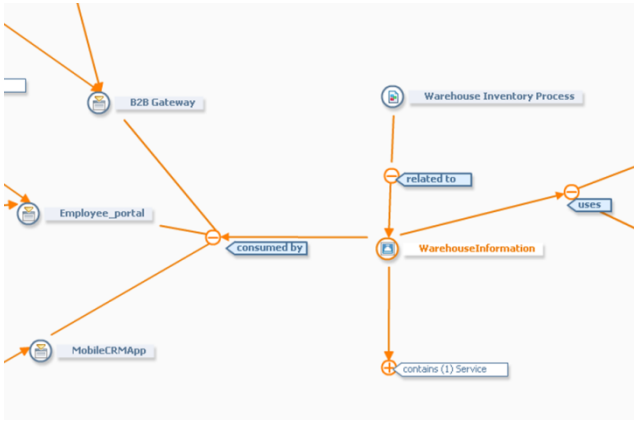
- API Lifecycle Management
- API Virtualization
- Utilize a Gateway Reverse Proxy
- API Consumption (Onboarding and Discovery)
- API Throttling
- API Monitoring
- Caching for Scale

API Lifecycle Management

- Lifecycle Models represents the distinct phases from conception to retirement of an Asset
- Use Lifecycle Models to
  - Foster stakeholder collaboration by approvals and notifications
  - Steer asset visibility throughout the lifecycle
  - Enforce policies according to the lifecycle state
- CentraSite allows free definition of Lifecycle models
  - Per individual Asset Type
  - Per Organization
  - Globally



Managing the lifecycle of your API

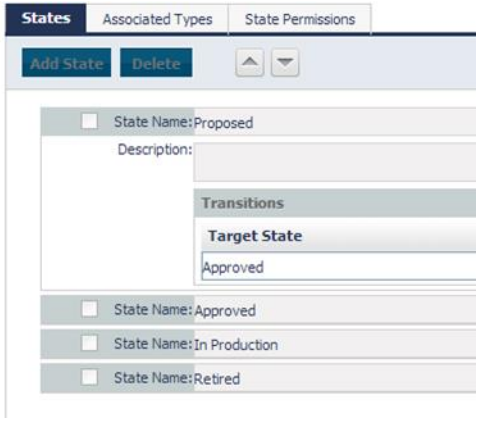


Dependencies & impact analysis

Salesforce:
`/services/data/v20.0/sobjects/Account`

Intuit:
`/api/v1/app/BillingStatus/<appid>`

API versioning



Provisioning, deprecation & retirement

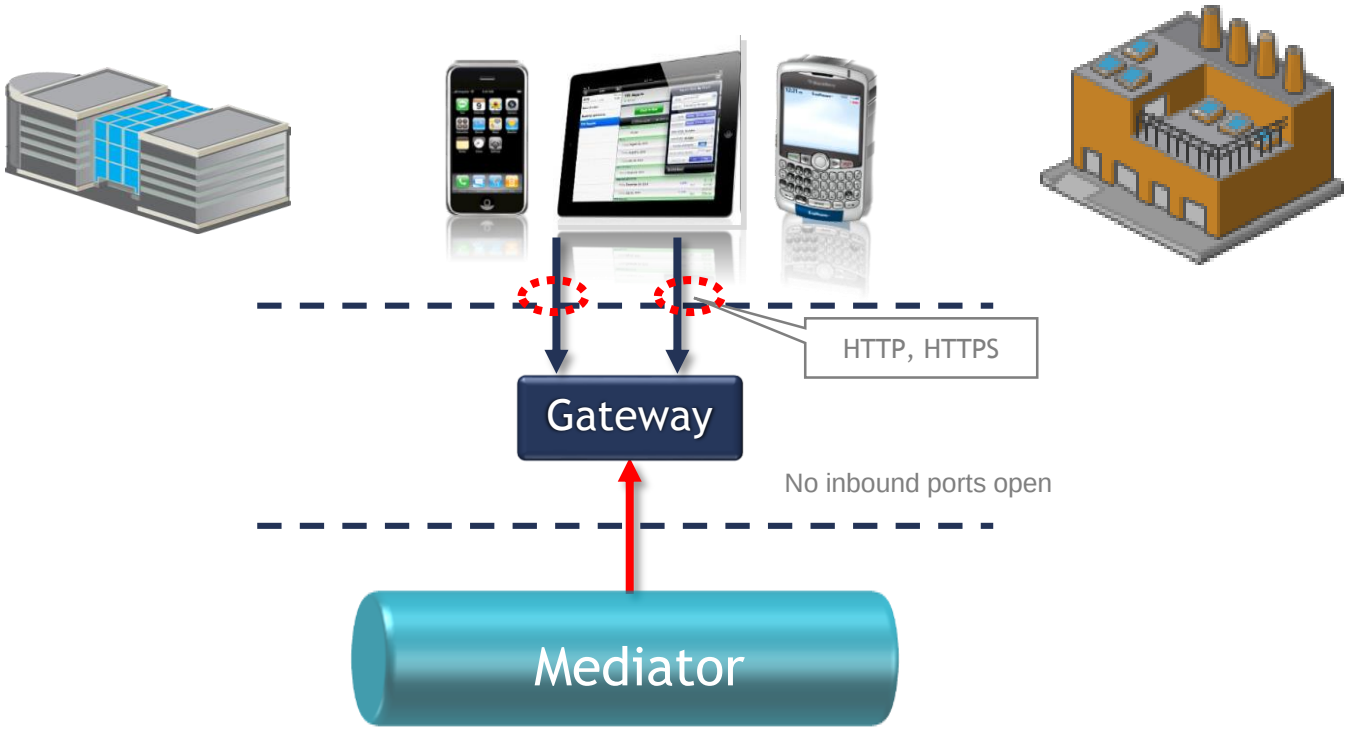
Lifecycle Management ensures involvement of key stakeholders in the SDLC

API Virtualization

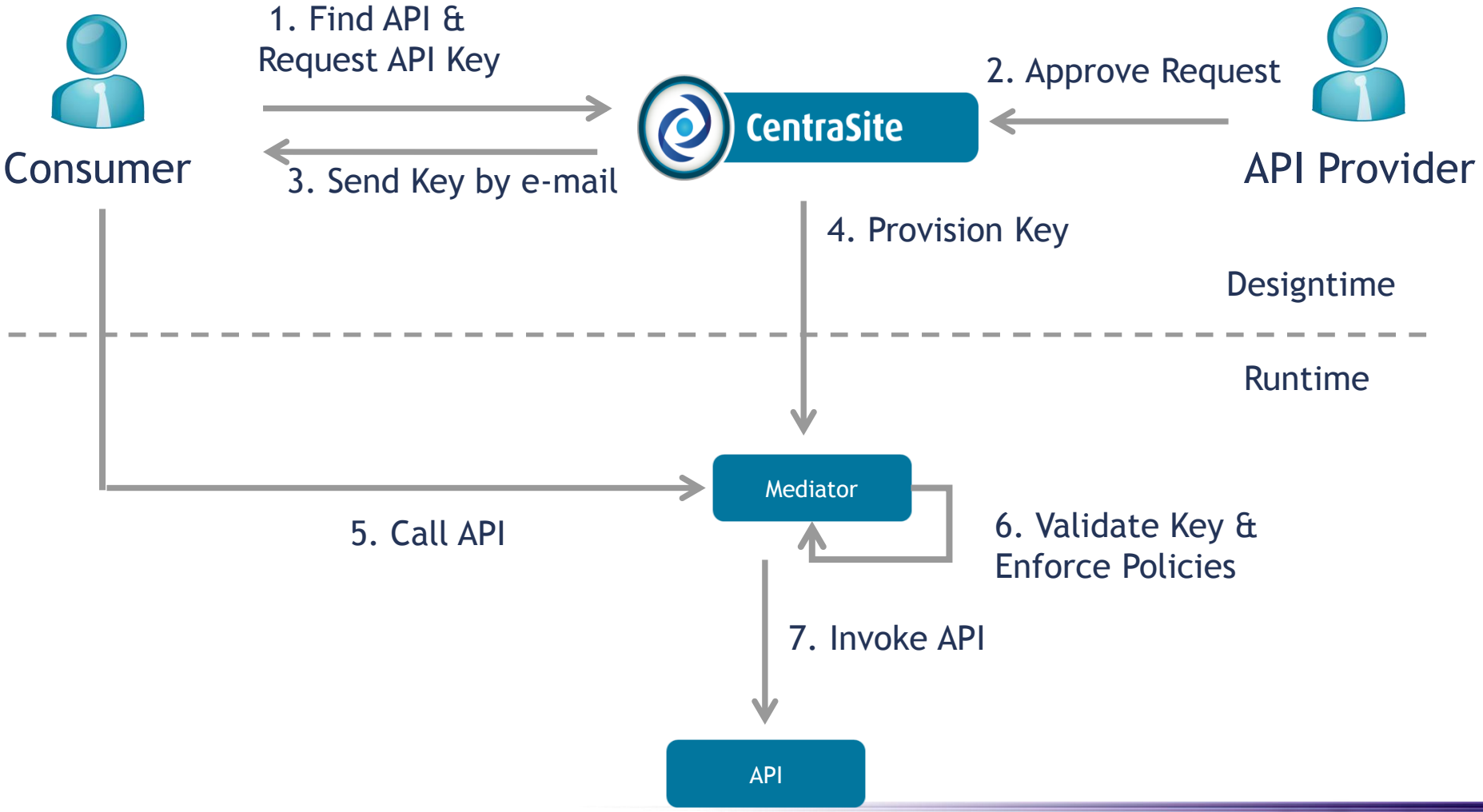
- Creation of a new virtual service without the need for coding to
  - Establish inbound protocol
  - Set security protocol and authentication mechanisms
  - Schema Validation & Timestamps
  - Define API Key management

- Advantages
  - Consumers of APIs only interact with the façade, never the real services
  - Do not need to rewrite REST APIs for legacy SOA APIs
  - Ability to add transformation for additional capabilities without coding
  - Avoid vendor lock in with loosely coupled interface without coding
  - Common security framework
  - Centralized registration and onboarding

Utilize a Gateway Reverse Proxy

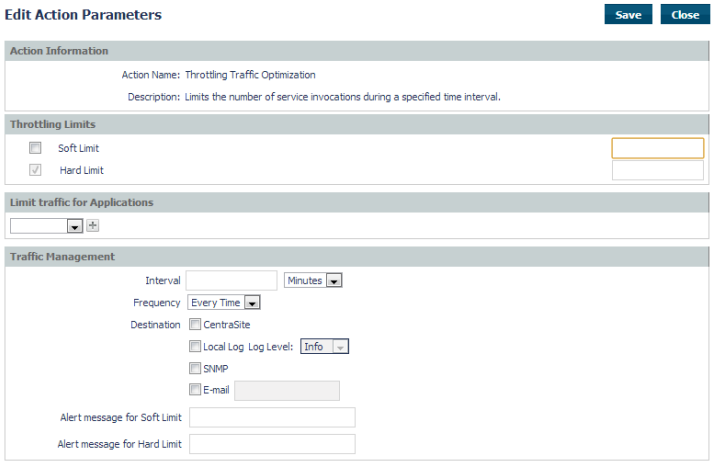


API Consumption (Onboarding and Discovery)



API Throttling

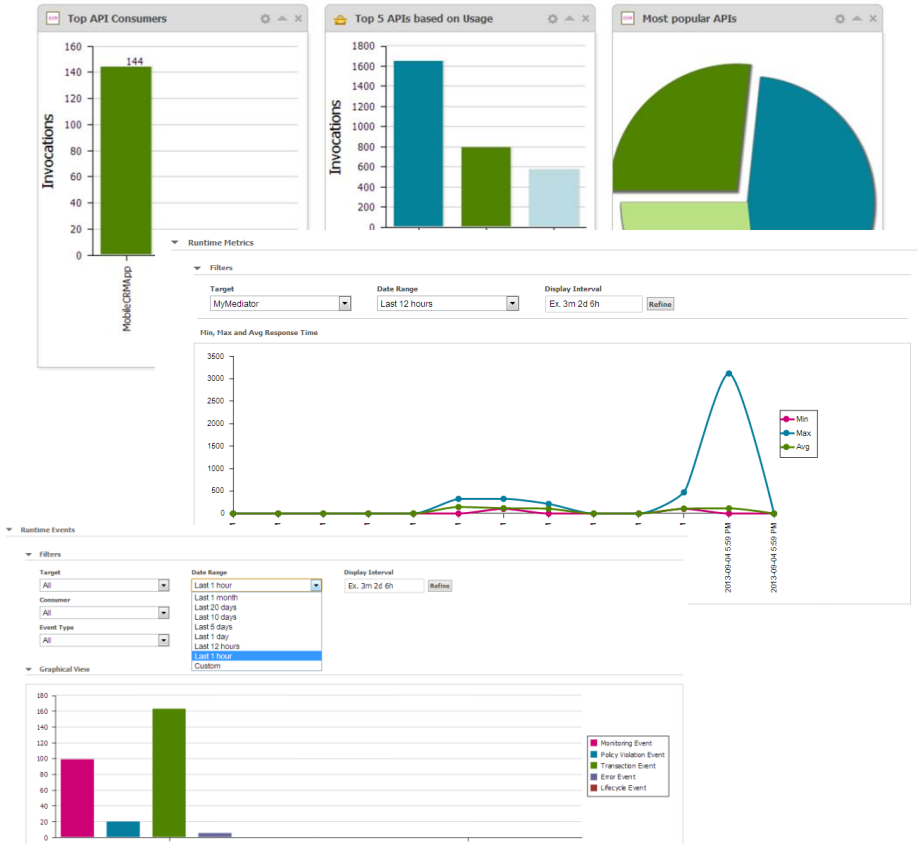
- Traffic Management Use Cases
  - Protect your backend services by constraining the traffic
  - Establish classes of services for consumers
- Use the Throttling Traffic Policy
  - Choose soft and hard limits
  - Choose the consumers (all or specific ones)
  - Configure the alerting mechanisms



API Monitoring

Leverage Analytics

QoS	Support
Traffic	Marketing
Trends	Business



"You can't manage what you can't measure"
- Peter Drucker

Caching for Scale

- Sensors will generate significantly more data then you plan for
- IOT will connect more devices that you anticipate
- Service requests to your resources will outpace your systems
- Utilize caching to remove those bottlenecks while also improving performance

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APIs in Action – Large Logistics Company

Available on the App Store

"Freight should be as simple as shipping parcels"

API to access 140+ procurement & logistics services for sea, air, road & rail freight

Customer is not a public reference.

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Transforming Proactive Maintenance

Through near real-time streaming analytics

OPPORTUNITY:

- Jenbacher engines provide onsite generation for power, heating, and cooling
- Support additional revenue stream through contracted engine maintenance
- Requirement to meet SLAs for uptime across multiple customers and locations
- Preventative maintenance avoids unplanned downtime and reduces costs

SOLUTION:

- Advance maintenance deployment before outage saves GE ~1K/engine/year
- 3,400+ engines are monitored using machine-to-machine feeds
- 250 data points every 30 seconds
- With 10 second latency, Presto combines engine service diagnostics and engine application performance statistics into consolidated dashboard

RESULT:

PROACTIVE MAINTENANCE

Deployment and Performance Diagnostics

SAVES $3.4+M PER YEAR

3,400+ engines monitored using machine-to-machine feeds

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