



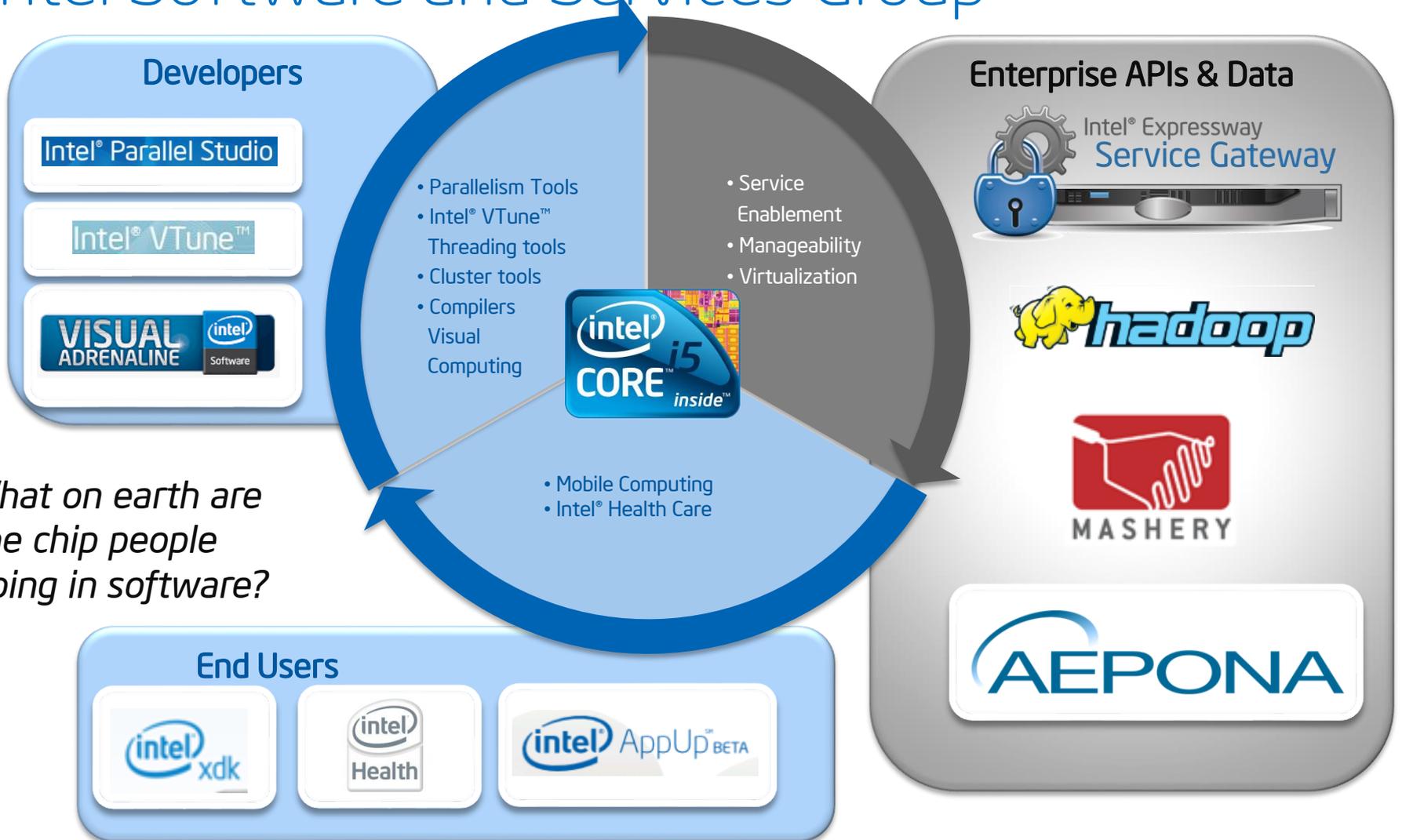
# The Coming of Age of Internal API Management

**Pete Logan**

**Senior Sales Engineer**

**Intel Services Division / Mashery**

# Intel Software and Services Group

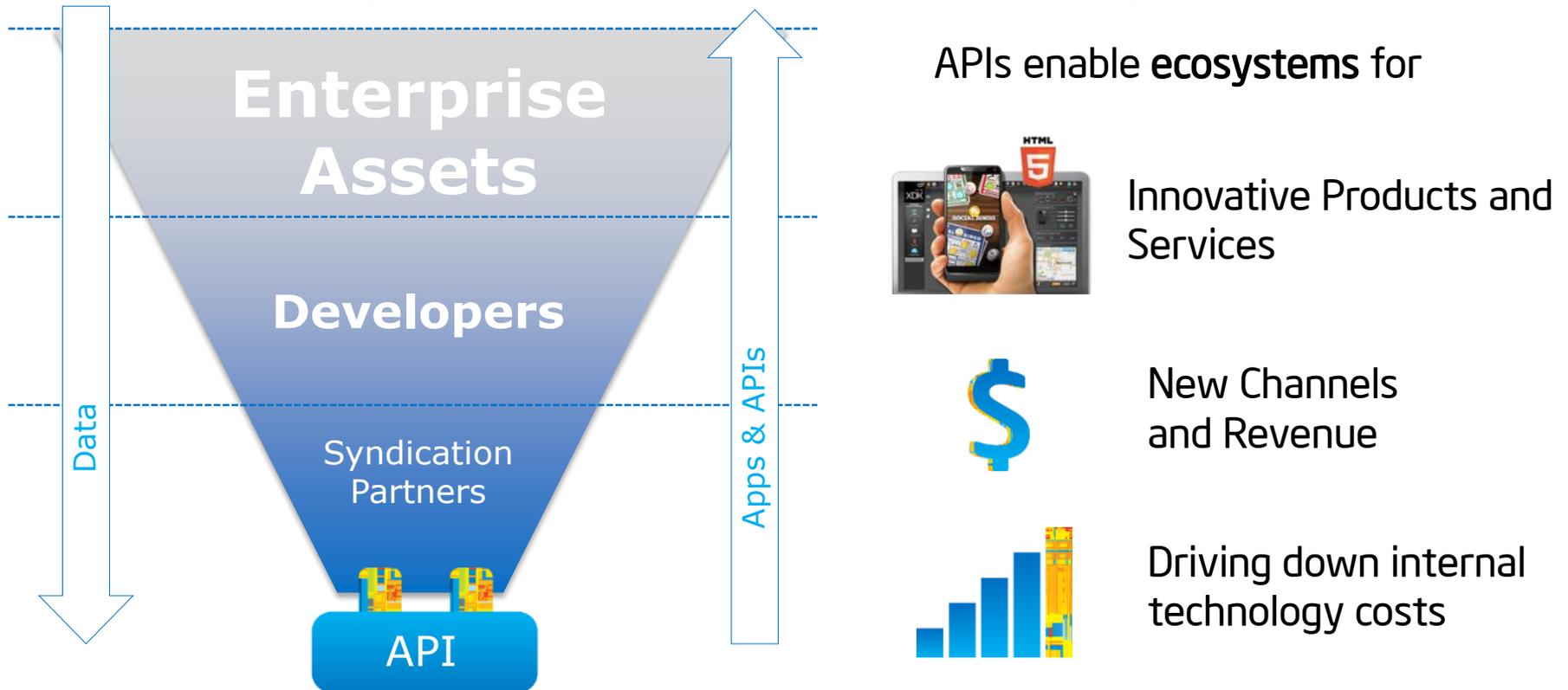


*What on earth are the chip people doing in software?*

SSG has a long history of helping developers and Enterprises unlock the full capabilities of Intel® hardware components through inspired software engineering

# Business Value of APIs

**Gartner says 75% of Fortune 500 Enterprises will open an API by 2014**



**“Unless you’re Steve Jobs,” Jolin says, “it’s very difficult to create a set of products that will be right for everyone. And with an API, you don’t have to.”**

# API Management Drives Value



\$2 Billion/Year

80% of what we do is business through APIs

– John Watton, Expedia Affiliate, Travolution.co.uk, April 2012



3rd party applications built on the [eBay] Open Platform accounting for \$6.9 billion in Gross Merchandise Volume (GMV).

– Kumar Kandaswamy, May 31, 2012



BlueCross  
BlueShield

The fact that we were able to provide the data in services API and still allow the customers to meet their own SLAs with their end users made a big difference

– Elliott Torres – Technology Director, Blue Cross & Blue Shield

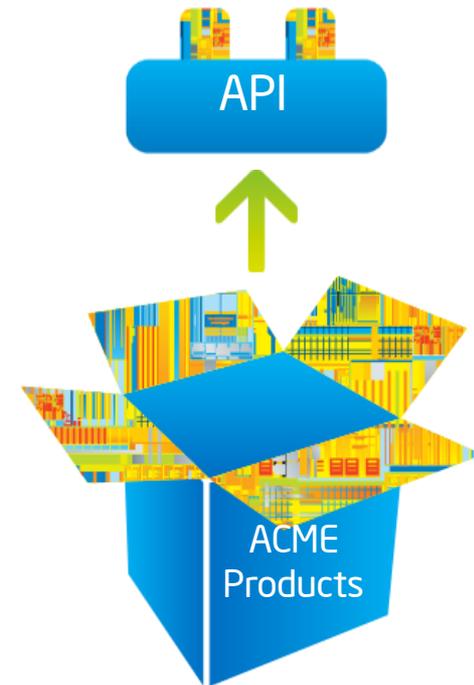
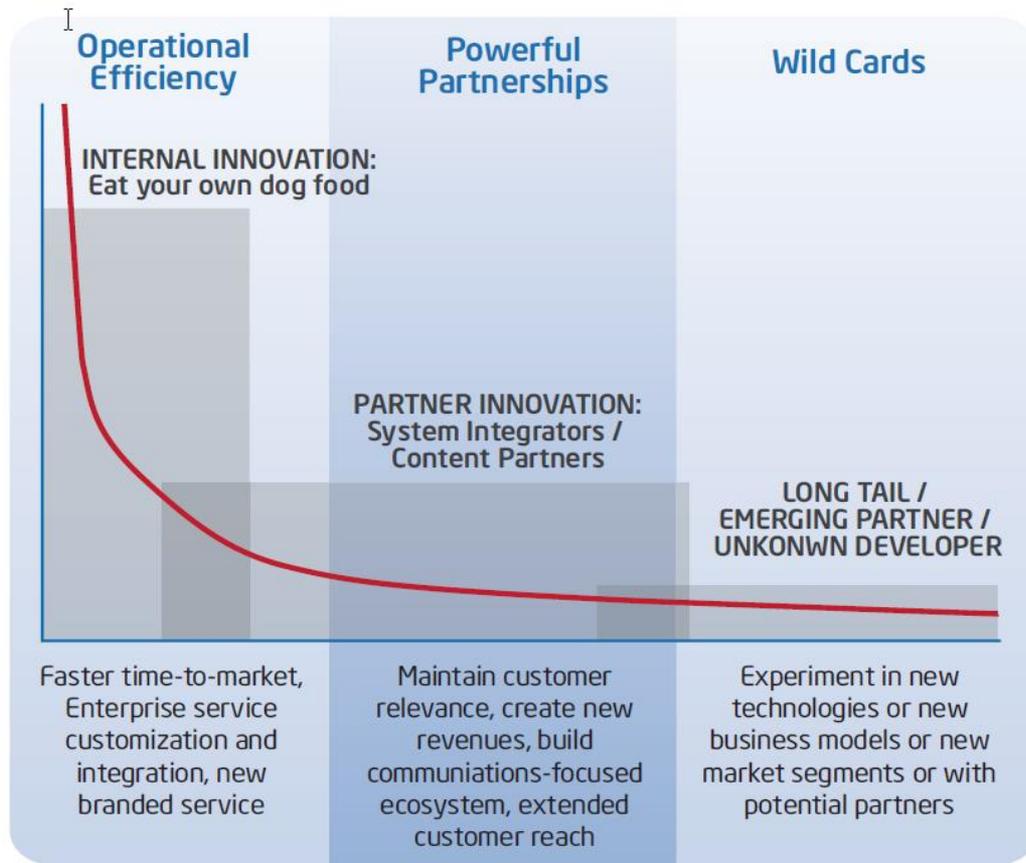


We want to enable services for our gamers across all platforms, whether it is console games, PC games, mobile games. We are looking forward to opening these APIs to external developers, the community and the fans.

– Martin Lavoie, Product Director, Online Technology Group

Traditional Enterprises are following the success of Internet companies exposing APIs

# Different API Syndication Channels, Motivations, Packaging Strategies

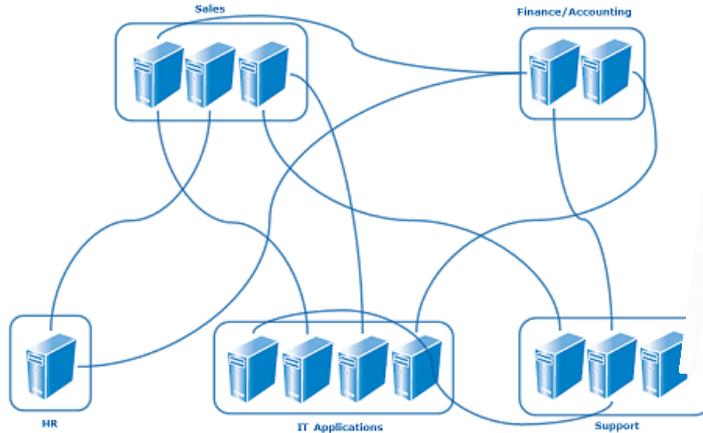


An API strategy is becoming a must...in terms of speed to market with new products, maximizing business development, and product development opportunities.

— Steve Kurtz, VP Business Development, USA TODAY\*

# The Coming of Age of Internal APIs

Enterprise Spaghetti



*"It takes nearly three years of public API requests to equal one day's worth of private API requests" - Netflix*

*"API Secret #5: Internal use may be the biggest API use case" - John Musser*

*"For Evernote, the popular cloud service, 99% of their calls are API calls from internal apps. Only 1% are external calls -John Musser*

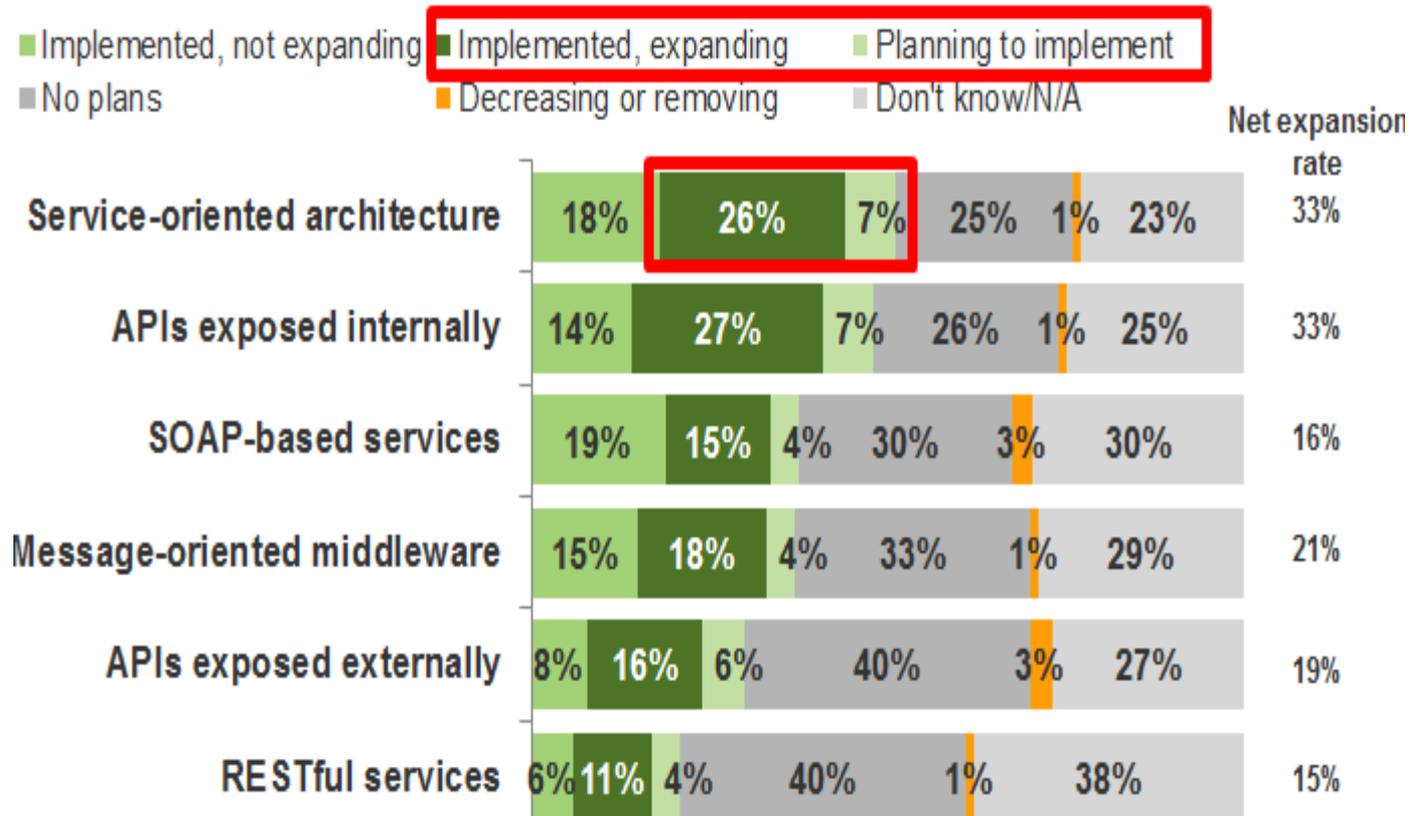
**Lesson: Apply what works, ditch the jargon**

# SOAsaurus: I told you I was ill



# And SOA is old, dead stuff, right? Wrong!

Which of the following architecture styles does your organization currently use or plan to use?



Note: Net expansion rate = "implemented, expanding" + "planning to implement" - "decreasing or removing"

Base: 368 Professional Developers, IT Developers, Consultants that work for organizations with 1,000+ employees

Source: Forrsights Developer Survey, Q1 2013

# API Management vs. SOA: The Commandments

## SOA

- All components should be exposed as services
- All (or most) services should use SOAP/WSDL interfaces
- All services are discoverable from a SOA registry/repository
- Registry/Repository shares service inside the Enterprise
- High barrier to use, proprietary verbs/actions, complex format
- All services should use WS-\* security
- Reuse can be stifled

## API Management

- All components should be exposed as services
- All services (or most) should use REST interfaces
- All services are discoverable from a portal
- Portal works inside and outside the Enterprise
- Low barrier to use, predefined verbs/actions, simple format
- Services can use defacto security stds
- Reuse can be accelerated

Hint: Enterprises need both for Internal API Management

# Internal API Management: Defined

How do I manage, catalog, and control APIs across different

- ✓ Vendor products
- ✓ Datacenter models
- ✓ Developer Teams

To...



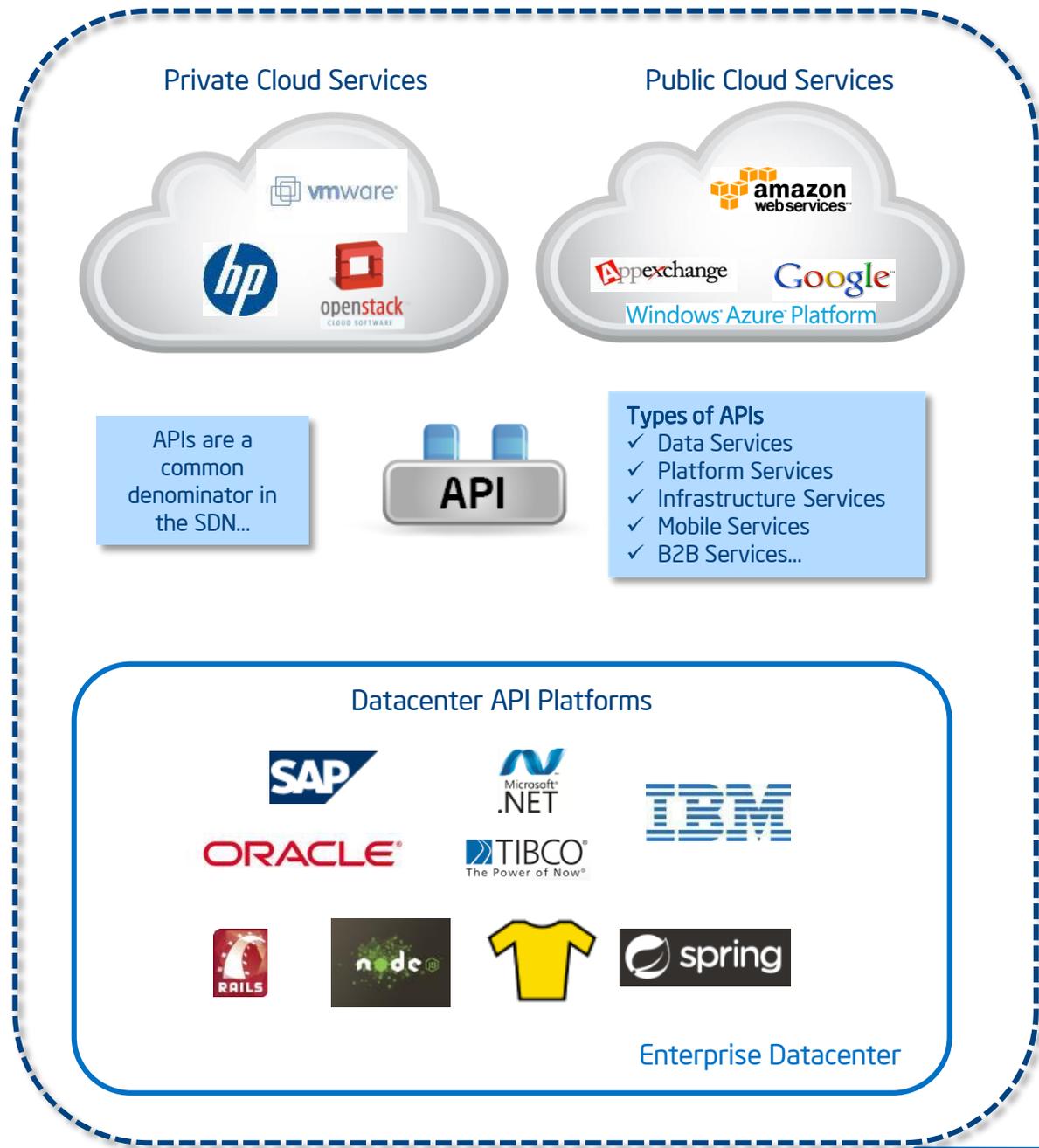
Reduce Development Costs



Reduce Development Costs

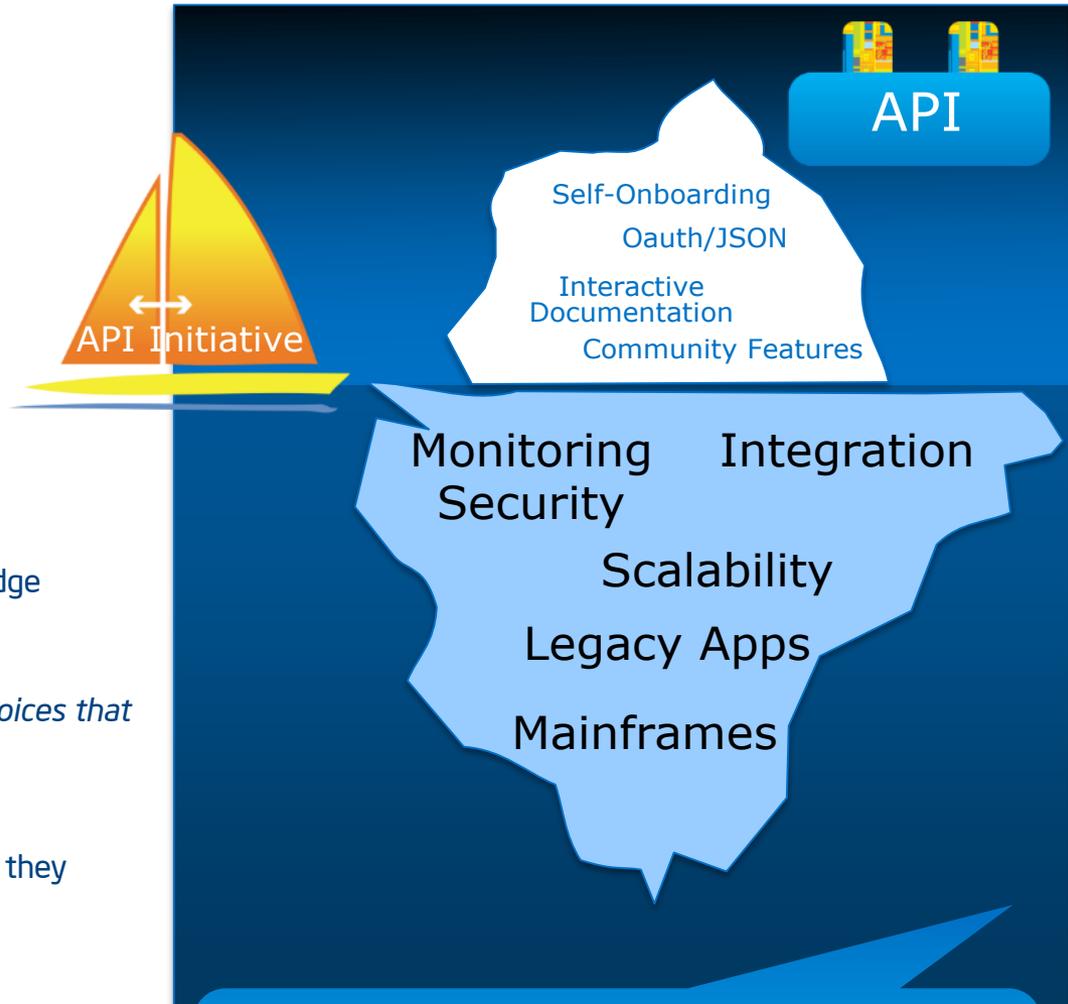


Increase Innovation through sharing services



"Hybrid Enterprise"

# Enterprise API Barriers



## Non-Functional Requirements

- Scalability – Especially In the face of mobile
- Enterprise Security & Control
- Integration & Mediation – Building the API bridge

## Legacy Debt

- *Existing business processes & technology choices that impede and hamper faster value creation*
- A1: The larger the Enterprise, the more debt
- A2: The larger the enterprise, the more value they have to gain from APIs

## API Sharing

- If nobody knows about it, it doesn't exist
- If people know about it, but its too hard, it doesn't exist

Enterprise complexity is a beast. Don't underestimate scope, scale or custom nature of API surfacing for mission critical systems

# Built in SOA Standards Barriers

- XML
  - XSD
  - Xpath
  - Maybe XSLT
- SOAP
  - WSDL
  - UDDI
- WS Security
  - X509 digital signature
  - AuthN mechanisms
  - PKI & Cert Authorities
- WS-Addressing
- WS-Trust STS
- WS-SecureConversation

# Interlude: WSDL Complexity

```
<?xml version="1.0" encoding="UTF-8"?>

<wsdl:definitions xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:axis2="http://quickstart.calculator/"
xmlns:ns1="http://org.apache.axis2/xsd"
xmlns:ns="http://quickstart.calculator/xsd"
xmlns:wsaw="http://www.w3.org/2006/05/addressing/wsdl"
xmlns:http="http://schemas.xmlsoap.org/wsdl/http/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:mime="http://schemas.xmlsoap.org/wsdl/mime/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:soap12="http://schemas.xmlsoap.org/wsdl/soap12/"
targetNamespace="http://quickstart.calculator/">

  <wsdl:documentation>Calculator</wsdl:documentation>

  <wsdl:types>

    <xs:schema attributeFormDefault="qualified"
elementFormDefault="qualified"
targetNamespace="http://quickstart.calculator/xsd">

      <xs:element name="subtract">

        <xs:complexType>

          <xs:sequence>

            <xs:element minOccurs="0" name="first_no" type="xs:int"/>

            <xs:element minOccurs="0" name="second_no"
type="xs:int"/>

          </xs:sequence>

        </xs:complexType>

      </xs:element>
```

Calculator WSDL  
7,373 bytes  
Add/Subtract/Multiply/Divide

Compresses To...  
931 bytes  
87% Reduction

*“Using WSDL is like playing chess on a six-dimensional chessboard in three languages”*

Side note: Found complete “C” program calculator – source code: 731 bytes

# A Story of Two Services



## Microsoft .NET – SOAP API

- ✓ WCF SOAP service deployed, nobody can find or use it
- ✓ Exposes functionality required for internal mash-up app
- ✓ Service has been re-implemented three times by different development teams
- ✓ Web service running core business with partner banks – can't easily change

Developers Want this to Go away

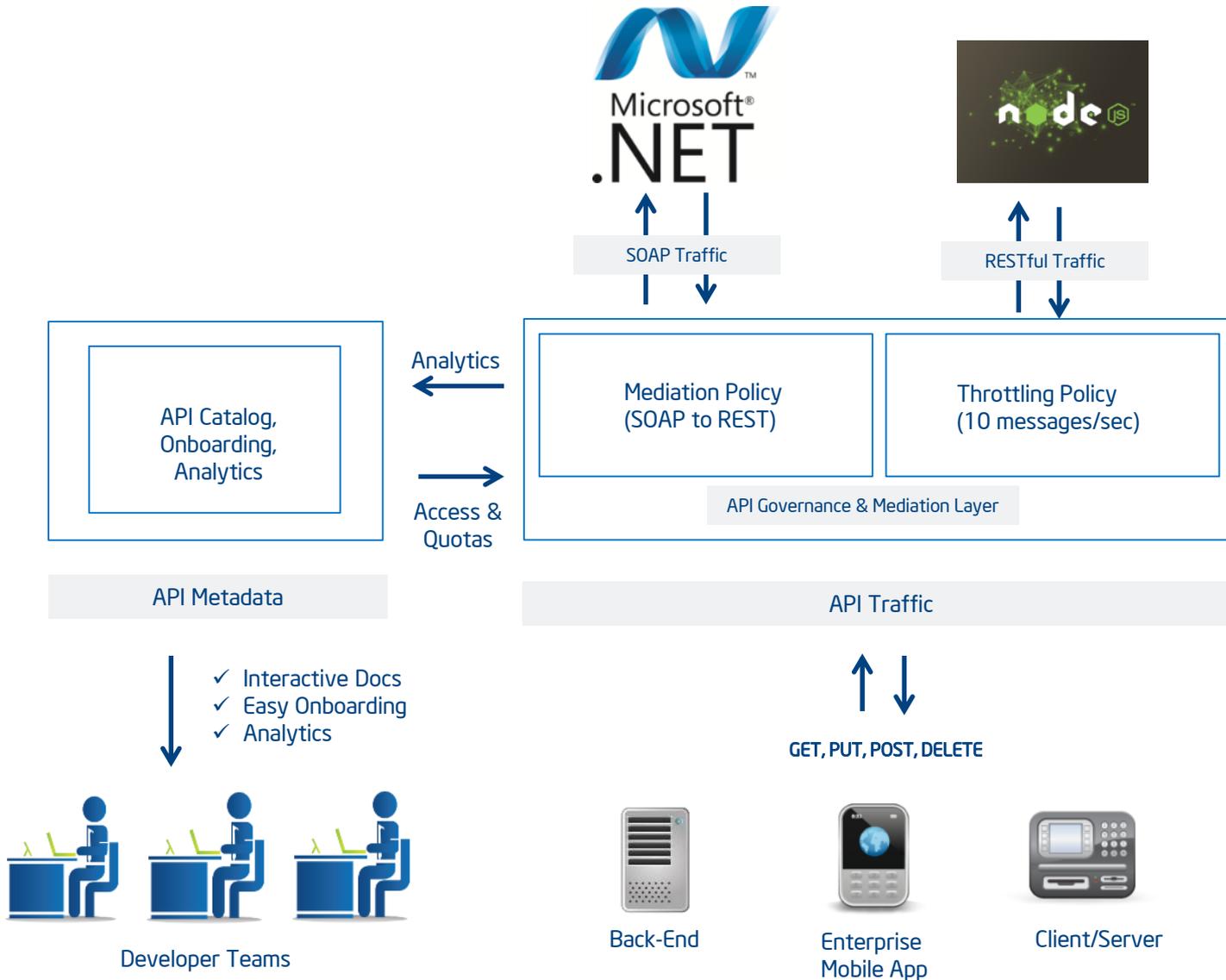


## Node.js– REST API

- ✓ Hot new server-side JS platform for high performance & concurrency
- ✓ Organic service, created as side project
- ✓ Every developer wants to try it out, needs resource protection
- ✓ Service destined for use with Enterprise mobile apps
- ✓ No security

And want this to stay...

# API Sharing & Mediation Saves Services



# API Sharing & Mediation Saves Services



API Metadata



- ✓ Interactive Docs
- ✓ Easy Onboarding
- ✓ Analytics



Developer Teams



Microsoft®  
.NET

SOAP Traffic



RESTful Traffic

Analytics



Access & Quotas



Mediation Policy  
(SOAP to REST)

Throttling Policy  
(10 messages/sec)

API Governance & Mediation Layer

API Traffic



GET, PUT, POST, DELETE



Back-End



Enterprise  
Mobile App



Client/Server

# API Sharing & Mediation: To the Cloud...



API Metadata

Analytics

Access & Quotas



SOAP Traffic



RESTful Traffic



SOAP Traffic



API Traffic



- ✓ Interactive Docs
- ✓ Easy Onboarding
- ✓ Analytics

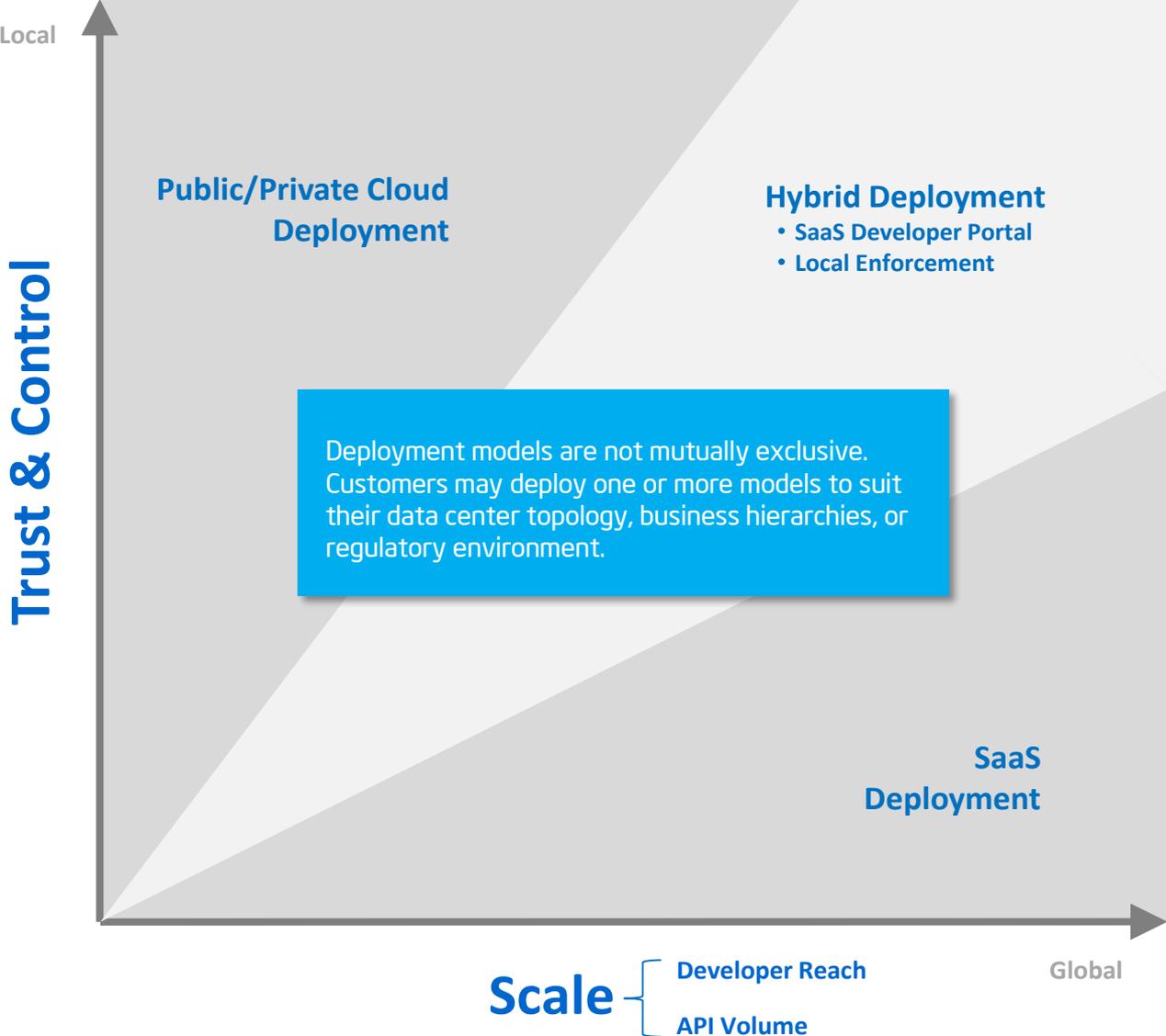


Developer Teams

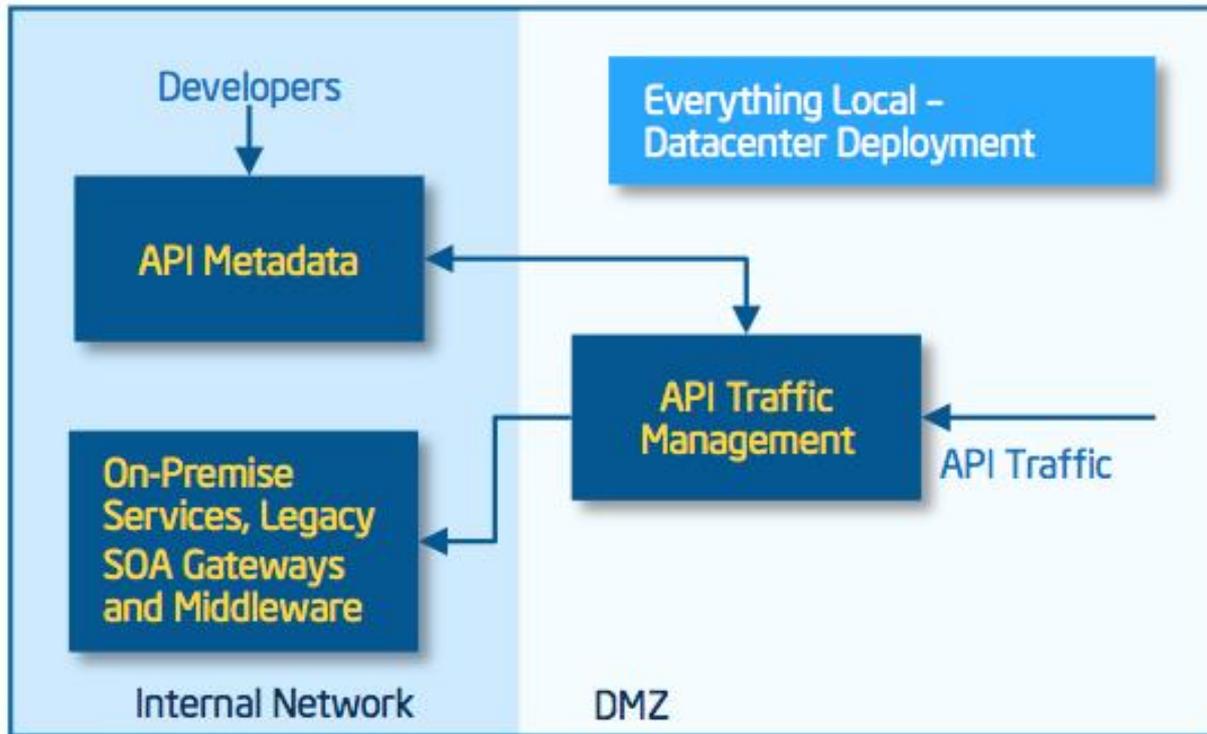
## Internal API Abstraction Layer

- ✓ Defend against cloud vendor lock-in
- ✓ Increases flexibility, support elasticity of APIs and services
- ✓ Developers unaffected by service changes
- ✓ Developers don't have to manage cross-domain API security
- ✓ Managed credentials
- ✓ Single audit point

# Market Requirements Continuum

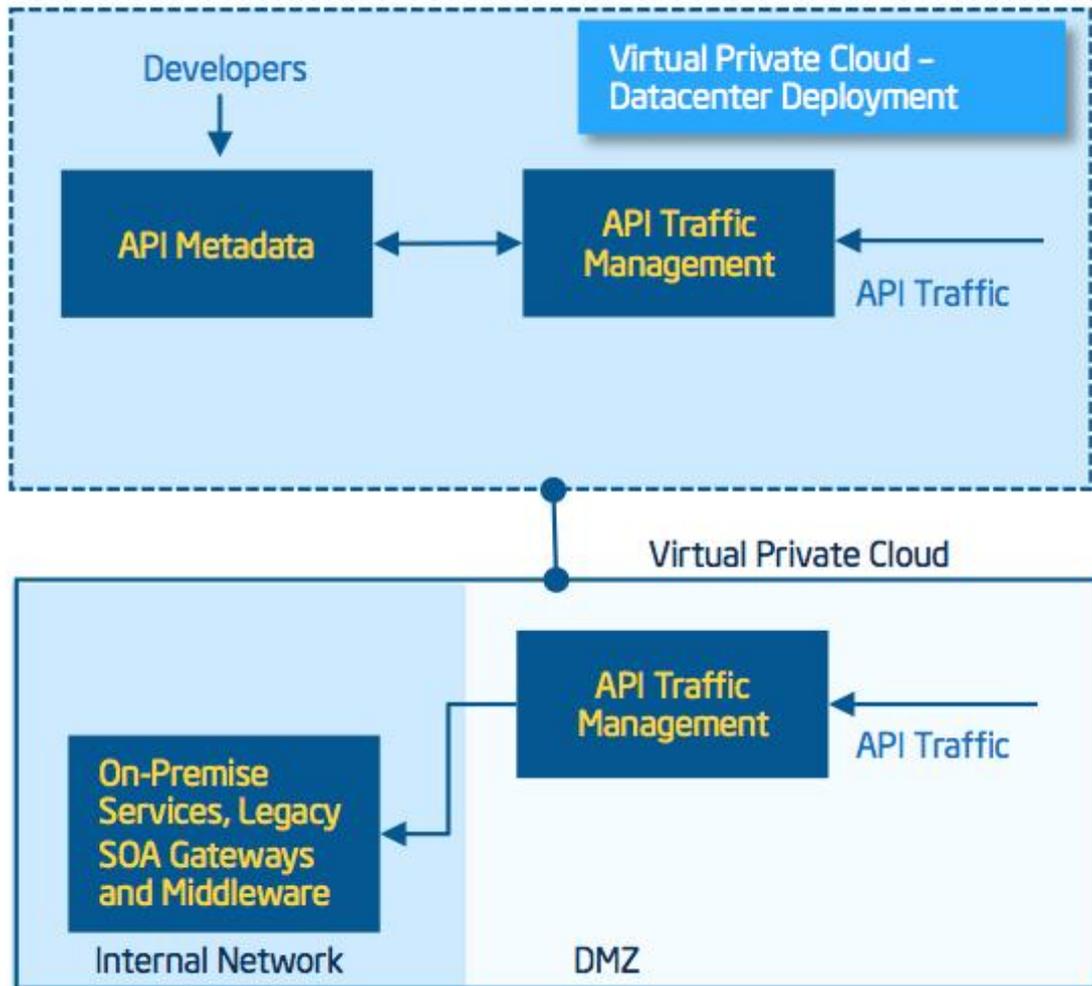


# Everything Local



- ✓ Maximizes control & security
- ✓ Maximizes local API sharing
- ✓ Perpetual cost model
- ✓ High upfront costs, lower TCO

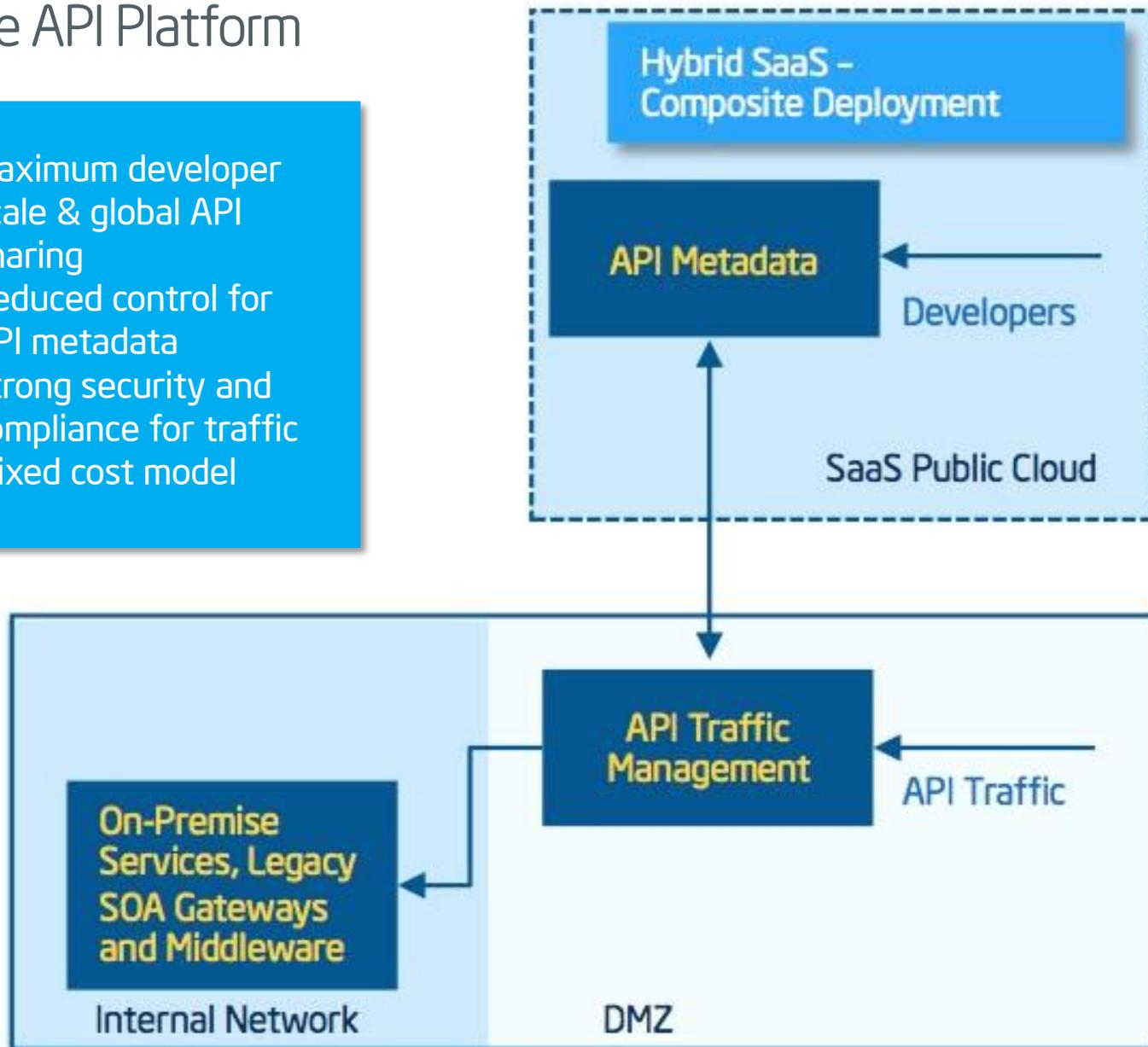
# Virtual Private Cloud



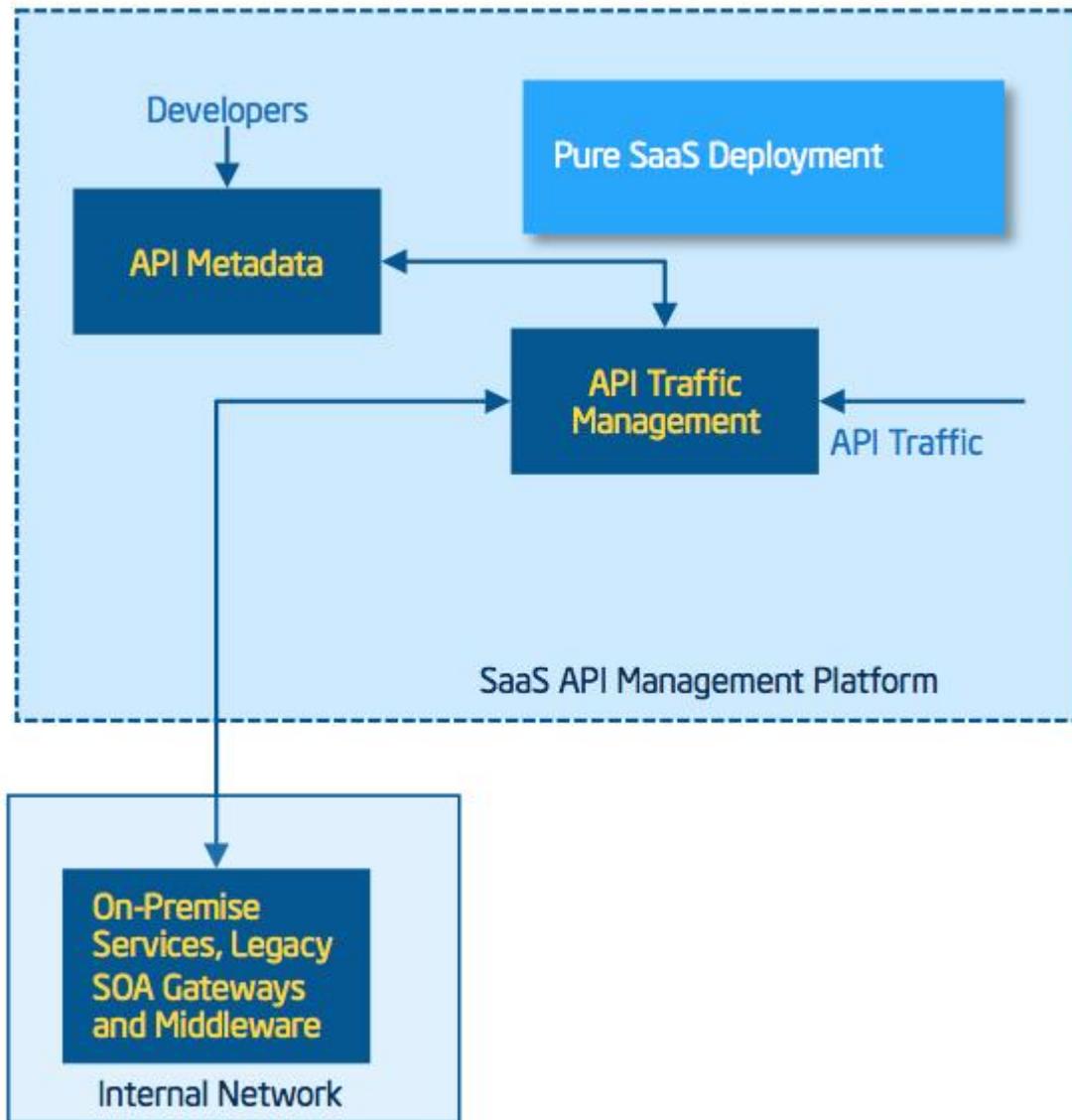
- ✓ Maximizes local API sharing
- ✓ Controlled scalability
- ✓ Mixed cost model
- ✓ Different network performance profile

# Composite API Platform

- ✓ Maximum developer scale & global API sharing
- ✓ Reduced control for API metadata
- ✓ Strong security and compliance for traffic
- ✓ Mixed cost model



# SaaS API Platform



- ✓ Maximum developer scale & reach
- ✓ Reduced control,
- ✓ Lowest upfront cost, potentially higher long-term TCO
- ✓ Reduced maintenance costs
- ✓ Potentially higher switching costs

# Portals Make APIs Accessible

## Room Availability

API Version 1.0 Subscribe

 API Provider: Facilities [facadmin](#) | Contact: Facilities Admin [facadmin](#)

[conference\\_rooms](#) [facilities](#) [meetings](#)

Facilities APIs including room status, physical plant status & controls, etc.

### Description

Find real-time availability of conference rooms based on in-room sensor readings

### Interactive Documentation

API Key:  [Refresh](#)

**/roomavailability** [Show/Hide](#) | [List Operations](#) | [Expand Operations](#) | [Raw](#)

GET	<a href="#">/roomavailability</a>	Get room availability status
-----	-----------------------------------	------------------------------

# Documentation Makes APIs More Accessible

## /roomavailability

Show/Hide | List Operations | Expand Operations | Raw

GET /roomavailability

Get room availability status

### Implementation Notes

Returns room list with availability status based on location parameters

### Response Class

Model | Model Schema

#### RoomAvailabilityInfo {

Facility (undefined, optional),  
Header (undefined, optional),  
Rooms (List[Room], optional): List of room status

}

#### Room {

BuildingName (string, optional): Name of the building,  
Confidence (int, optional): Confidence rate (0-100),  
FloorNumber (int, optional): Floor of the building,  
IsAvail (boolean, optional): Room availability,  
RoomMapImage (string, optional): Room location on the map (url of the image),  
RoomName (string, optional): Internal room id,  
RoomType (string, optional): Room type

}

# Test The API from Within the Portal

## Response Content Type

application/json ▼

## Parameters

Parameter	Value	Description	Parameter Type	Data Type
site	<input type="text" value="(required)"/>	Site where the buildings are located. Mandatory field.	query	string
building_name	<input type="text" value="(required)"/>	Building where the rooms are located	query	string
floor_number	<input type="text"/>	Floor where room is located	query	int
room_type	<input type="text"/>	Type of room available is requested for (e.g. Phone Booth, Collaboration, Public Conference Room, Training Room)	query	string
limit	<input type="text"/>	Cap the number of results to speed up the request	query	int

## Error Status Codes

HTTP Status Code	Reason
403	Raised if the supplied API key is not recognized

Try it out!

# Platform Capabilities to Surface and Manage APIs



## Intel API Management Platform

### Capabilities by Functional Domain

API Integration & Security	Service Integration	On prem	API Metadata Server	SaaS	Open API Developer Onboarding
	Data Protection		API Lifecycle		Public Community Management
	Codeless API Surfacing		API Catalog		Developer Enablement Tools
	SOA Governance		API Content Management		Cloud Traffic Management
	PCI & PII Compliance		Cross Datacenter Persistence		API Analytics & Reporting
	Threat Protection		API Analytics & Reporting		Extended Developer Network
	Local SLA Management		Local Traffic Management		API Content Management
	AAA		Partner AP Developer Onboarding		API Value Tracking

Connected Mobile App Developer Tools



Only Intel has a “Complete API Management & Services Platform” with built in data compliance and connected mobile app dev tools

# Thanks for your time...

Some take away points:

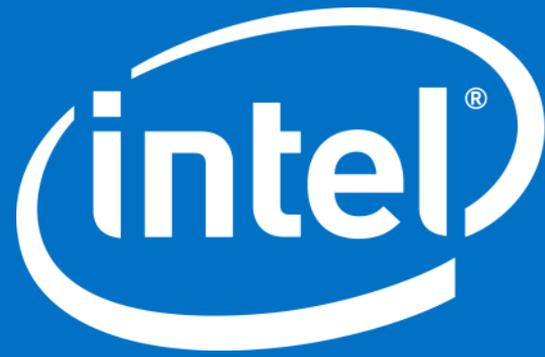
- Internal APIs will bring the best return
- SOA isn't disappearing anytime soon
- Mediation allows reuse of legacy services
- Decide your model of API Management
- Get your developer experience right

You're welcome to have a chat at the Intel table.

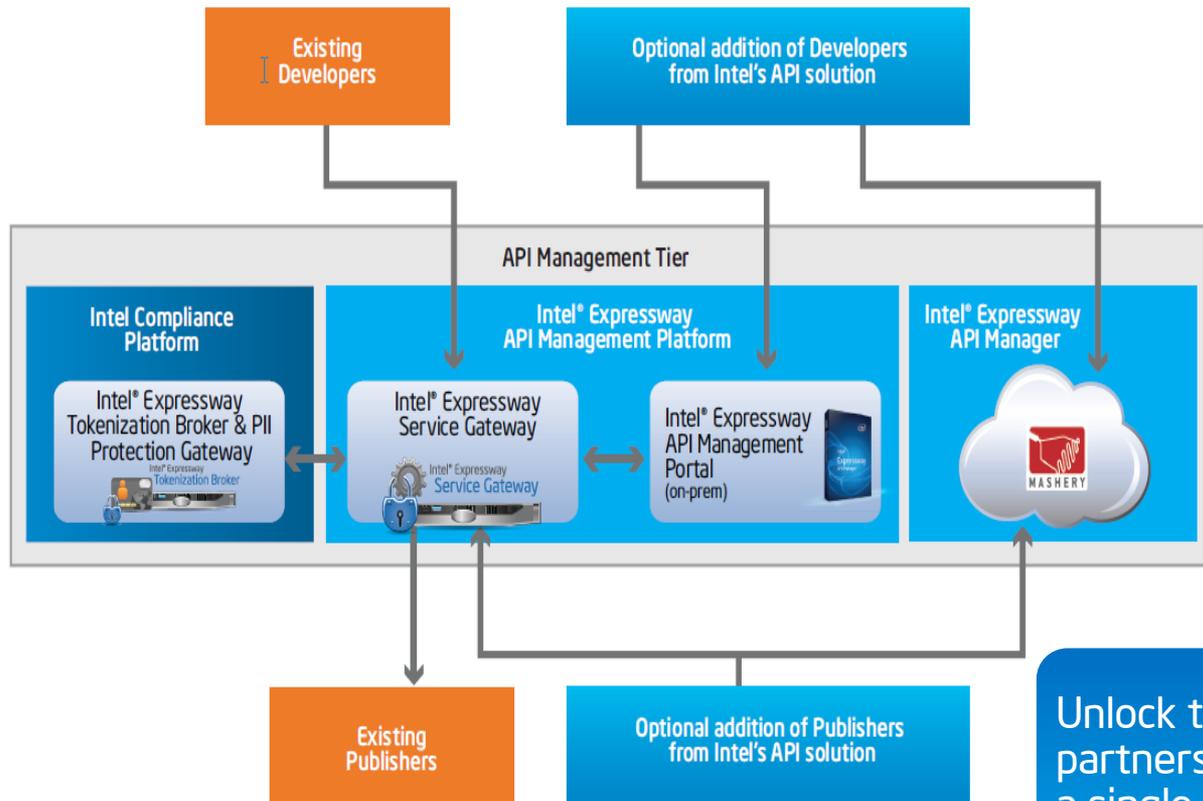
@PeteLOgan

Cloudsecurity.intel.com

Mashery.com



# Intel's Complete API Management Portfolio

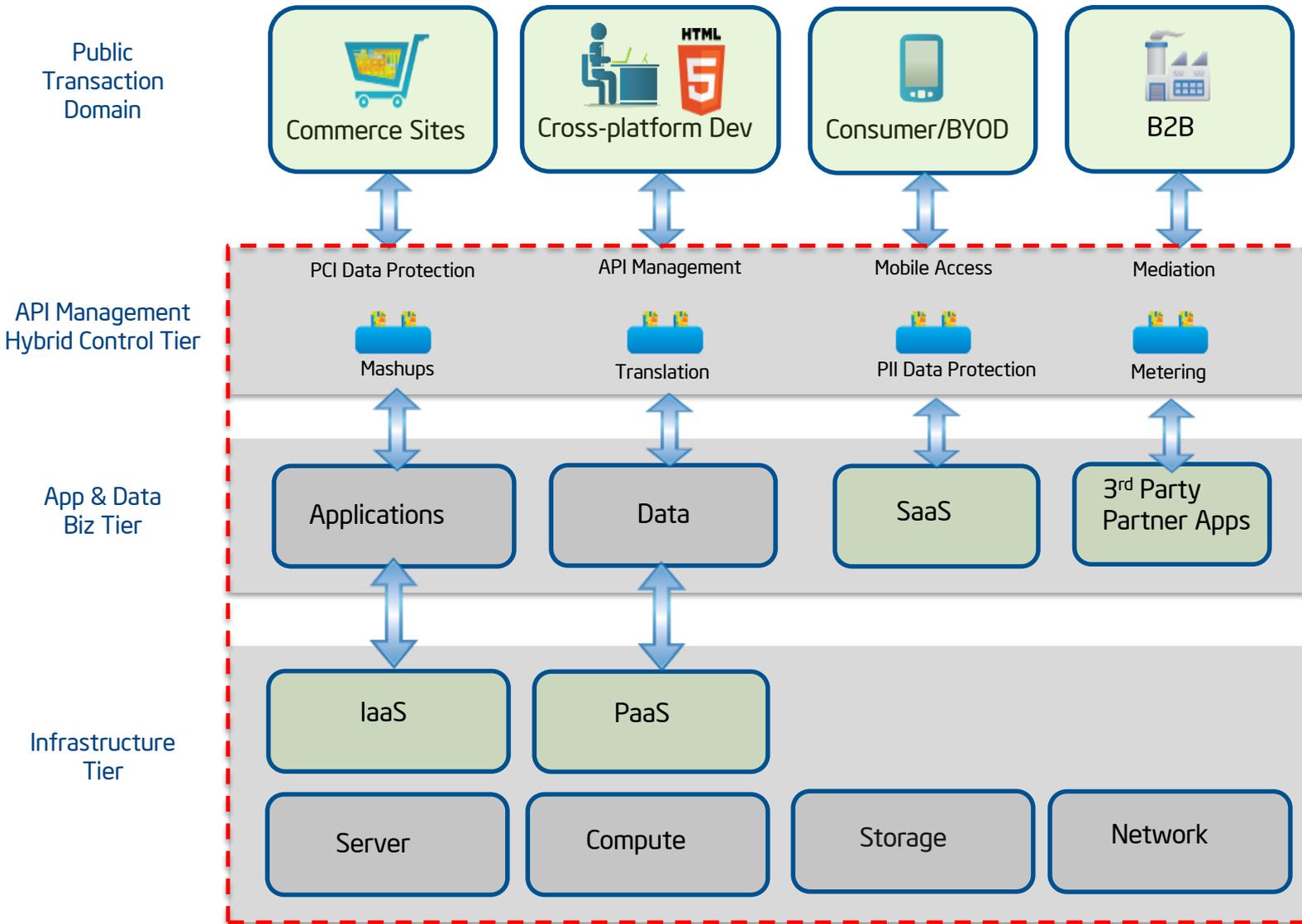


- Integrate & Connect
- Enterprise Secure
- Flexible Governance

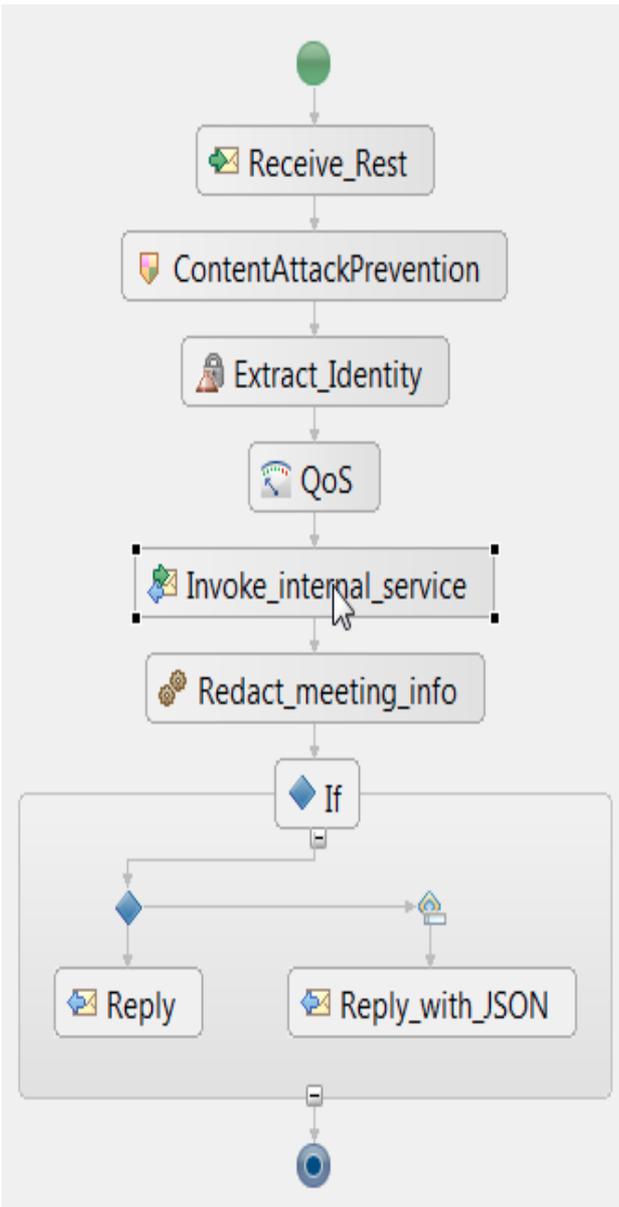
Unlock the business potential of your partners, customers, and developers. All with a single, customizable platform deployed securely in the cloud, on premises, or both

Flexible API and services platform for enterprise

# Anatomy of an API Centric Data Center Today



# Configuration, not Code



Vs ?



```
@UriTemplate("{userid}/")
public UserResource getUser(@UriParam("userid")
    String userid) { return new UserResource(
    uriInfo, emf.createEntityManager(), userid);
}

@GetMethod("GET")
@ProduceMime("application/json")
public JSONArray getUsersAsJsonArray() {
    JSONArray uriArray = new JSONArray();
    UriBuilder ub = null;
    for (UserEntity userEntity : getUsers()) {
        ub = (ub == null) ? uriInfo.getBuilder(
        ) : ub.clone();
        URI userUri = ub.
            path(userEntity.getUserid()).
            build();
        uriArray.put(userUri.toString());
    }
    return uriArray;
}
```