APIs and API Management

Oxford University Software Engineering Programme

January 2018

The Breakup of the Corporation
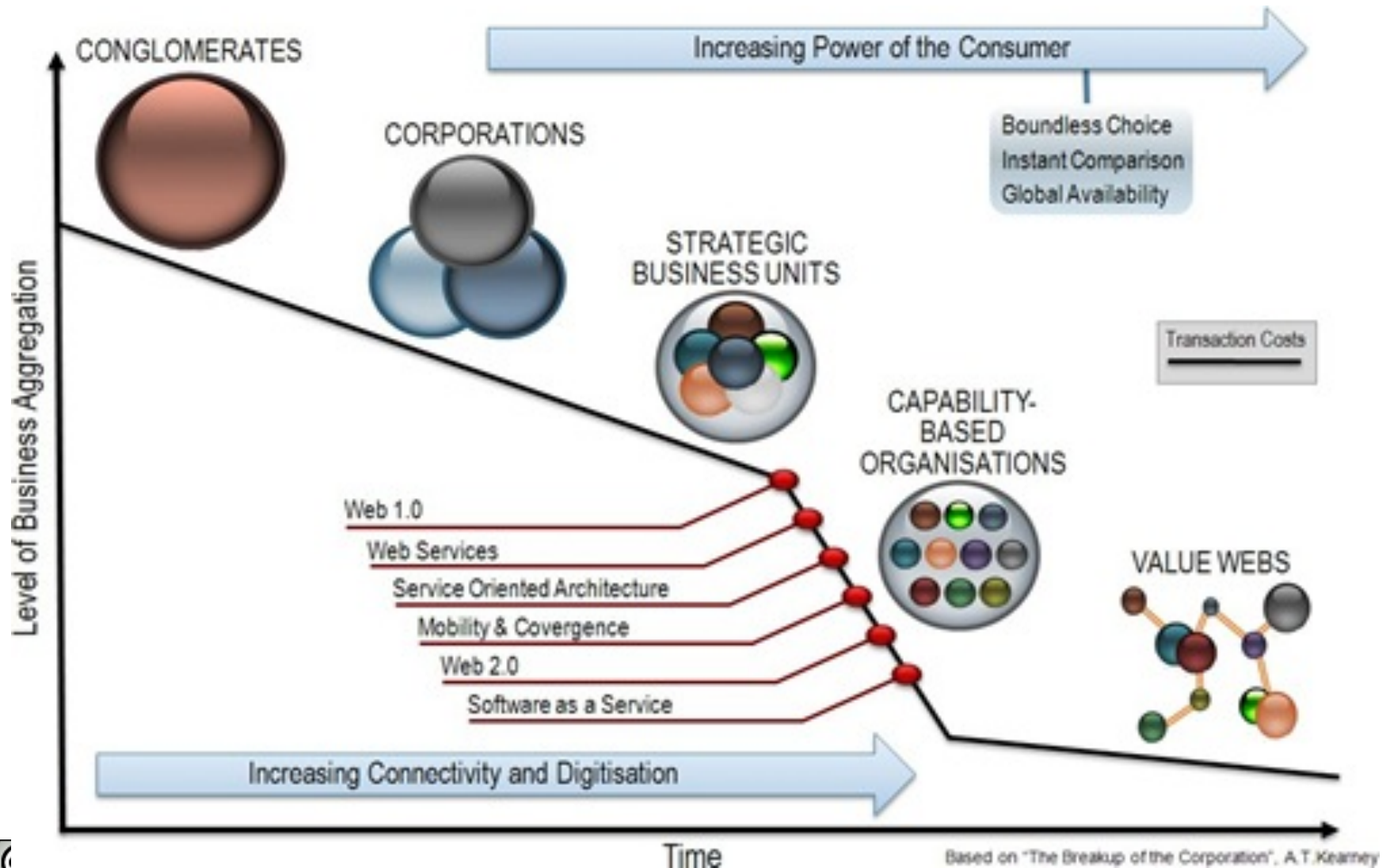
APIs

- **An API** is a business capability delivered over the Internet to internal or external consumers
  - Network accessible function
  - Available using standard web protocols
  - With well-defined interfaces
  - Designed for access by third-parties

- **A Managed API** is:
  - Actively advertised and subscribe-able
  - Available with SLAs
  - Secured, authenticated, authorized and protected
  - Monitored and monetized with analytics
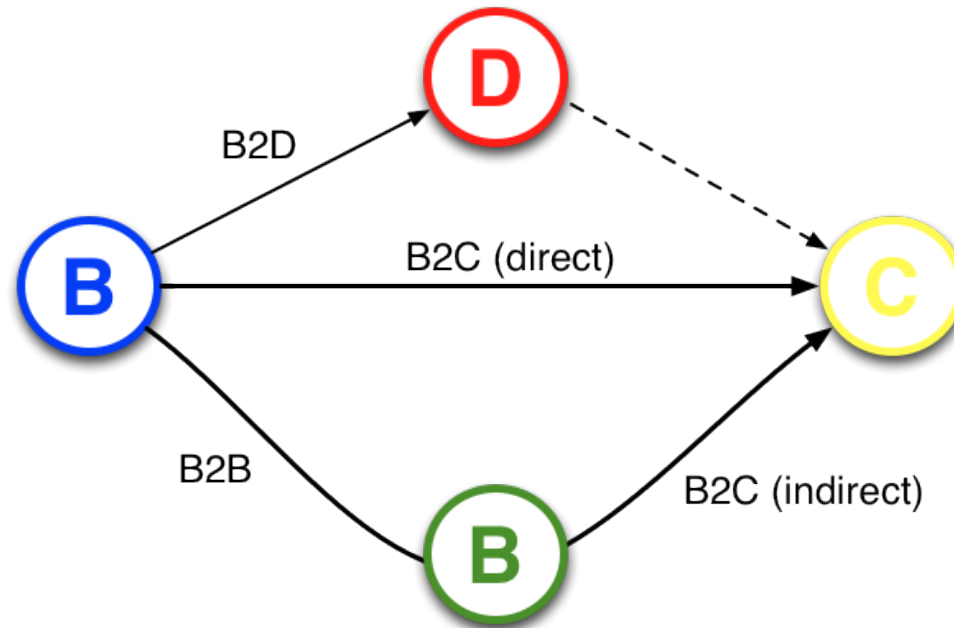
APIs All the Way...
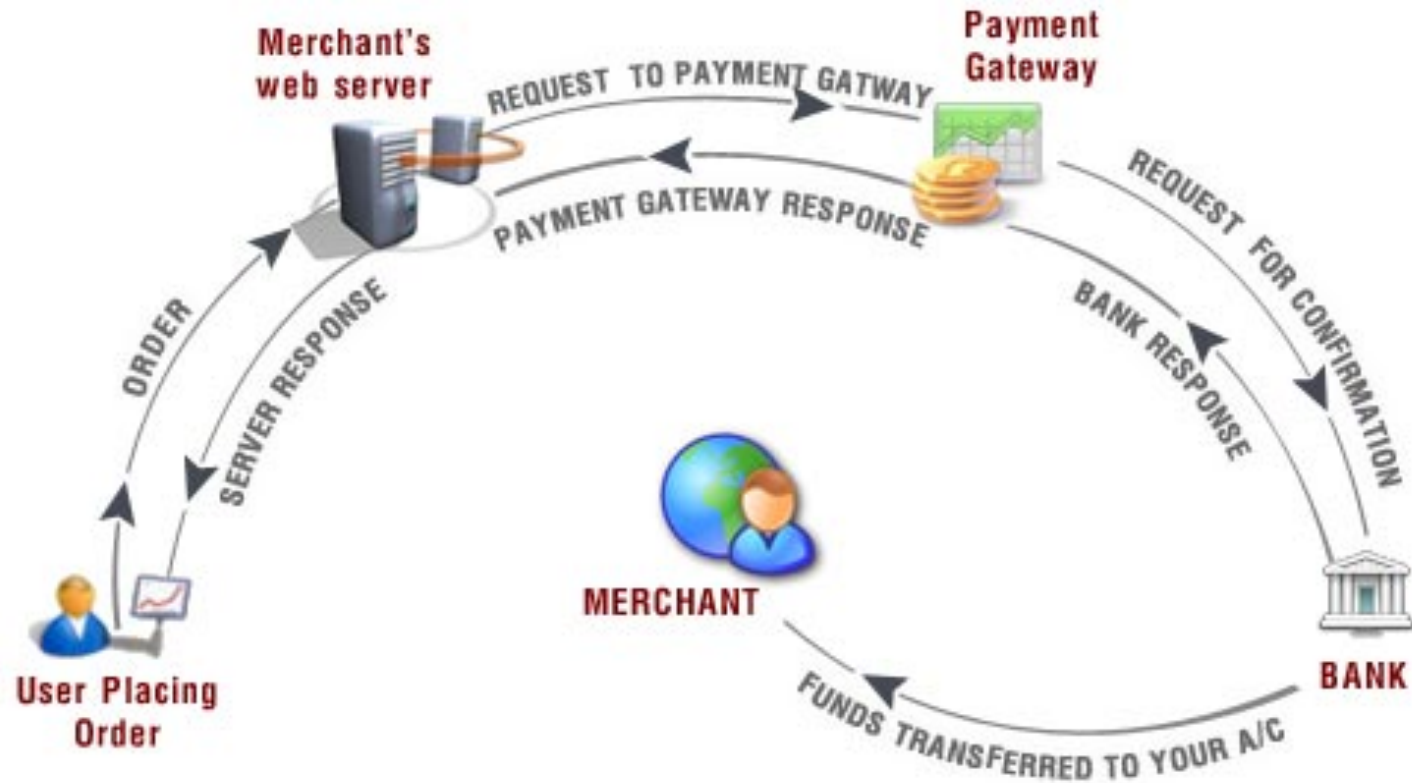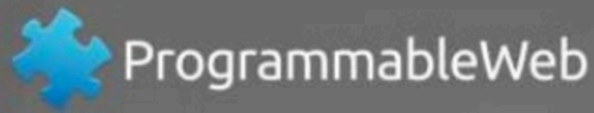
Growth In Web APIs Since 2005

Some statistics
3 years old!

- Twitter : More than 15 billion calls per day 75% through APIs

- Netflix : More than 1 billion calls per day

- Facebook : More than 5 billion calls per day

- Amazon : More than 260 billion objects store in S3

- eBay : More than 6 billion transactions per day
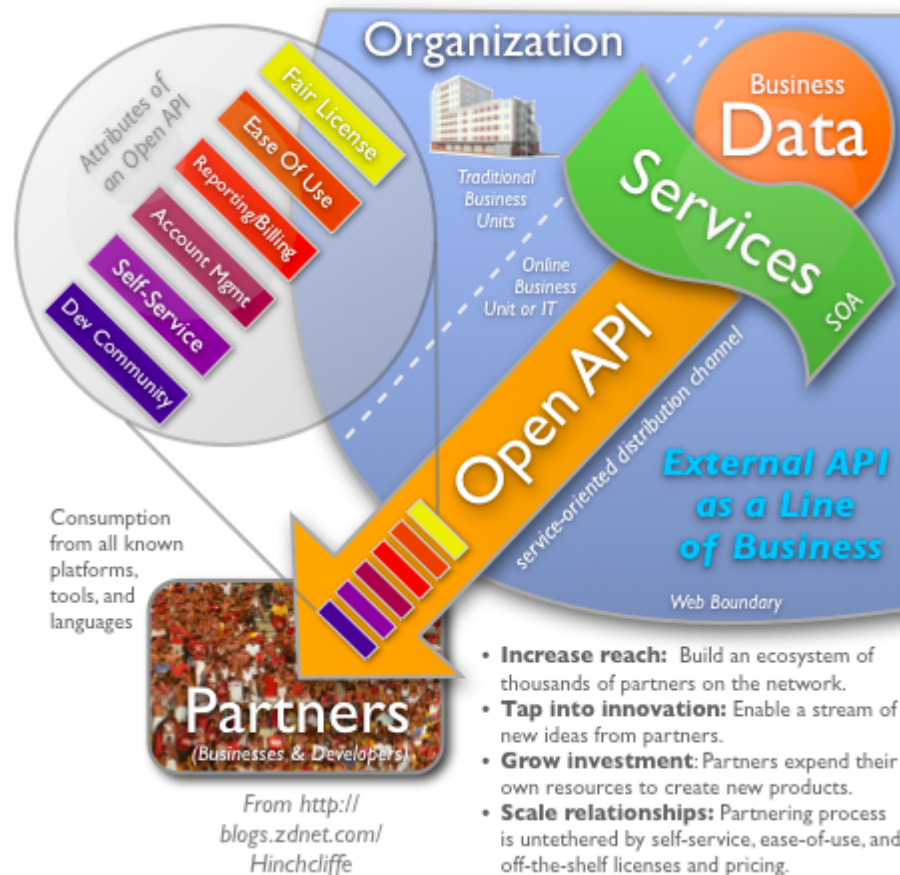
API Opportunities

"APIs create a new relationship opportunity –
B2D; Business to Developer, that creates
direct B2C, B2B and indirect B2C relations"

Running your SOA like a Web startup

From http://blogs.zdnet.com/Hinchcliffe

API Ecosystem Model

From SOA lessons learned, best practices roles

- **API Creator**
  - Builds, manages, and versions API
  - Understand business and technical requirements
  - Cares about usage and scaling
 - Seeks feedback, ratings, usage
- **API Publisher**
  - Publishes, Promotes and encourages consumers to adopt APIs
  - Determines usage patterns and how to best monetize asset
  - Monitors and secures
- **API Consumer**
  - Understands the interface definition
  - Subscribes and connects application to API
  - Monitors own usage and cost basis
  - Provides feedback and ratings

API Manager Components
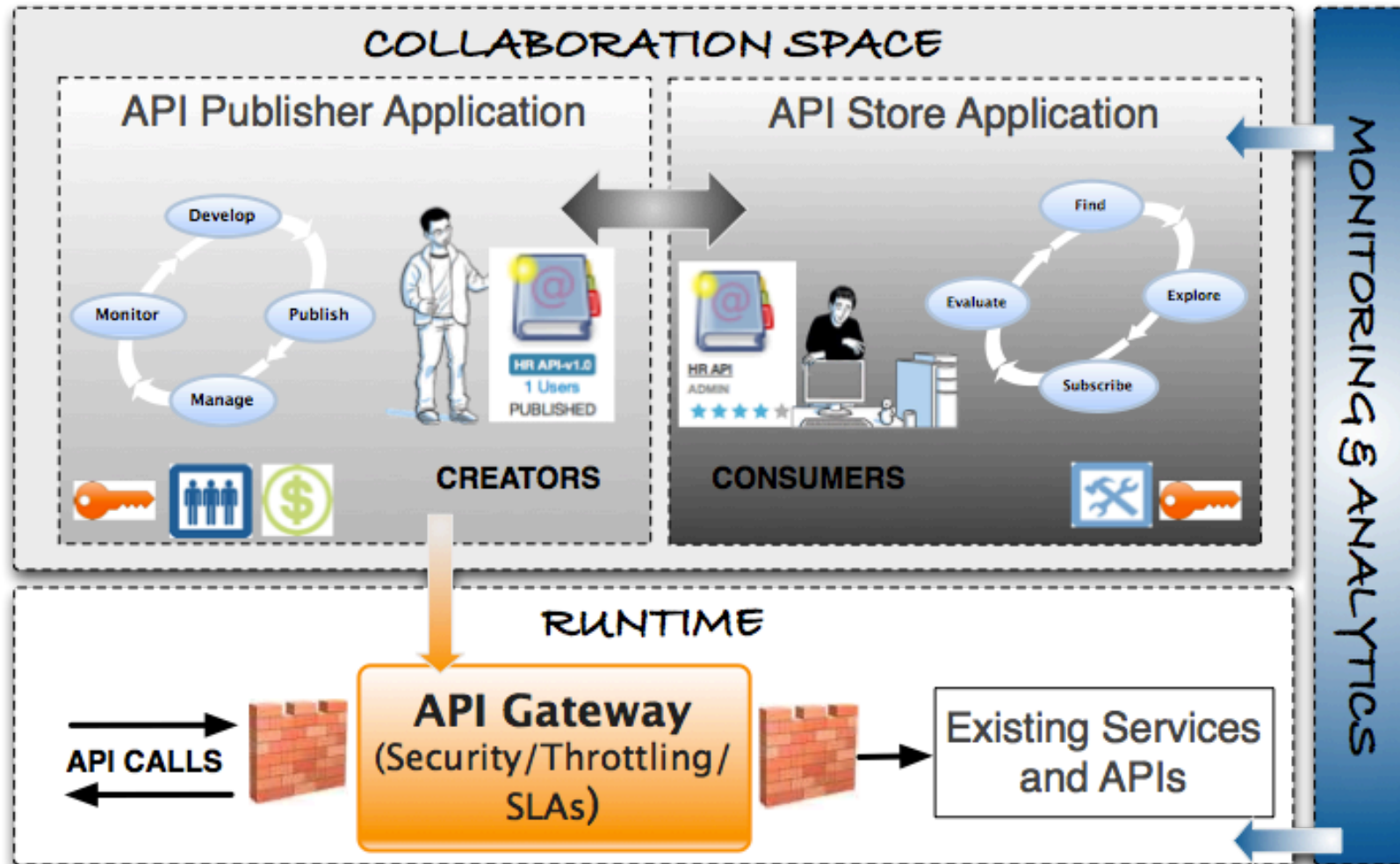
Understanding the Flow

- API Creator adds API into API Manager
  - [Optionally provides Sandbox endpoint]
- API Publisher approves publish
- API Consumer finds API
- API Consumer subscribes to API and obtains a key
  - [Optional an approval process is started]
- OAuth2-based Key issued
  - [Optionally issue both production and sandbox keys]
- API Consumer application makes a call
- API Key is validated
- API Key metadata is used to identify:
  - Throttling / Rate limiting policy
  - Sandbox / Production endpoint
  - Event is metered/monitored against the API, Key, IP address, etc

Using the API key to enable context
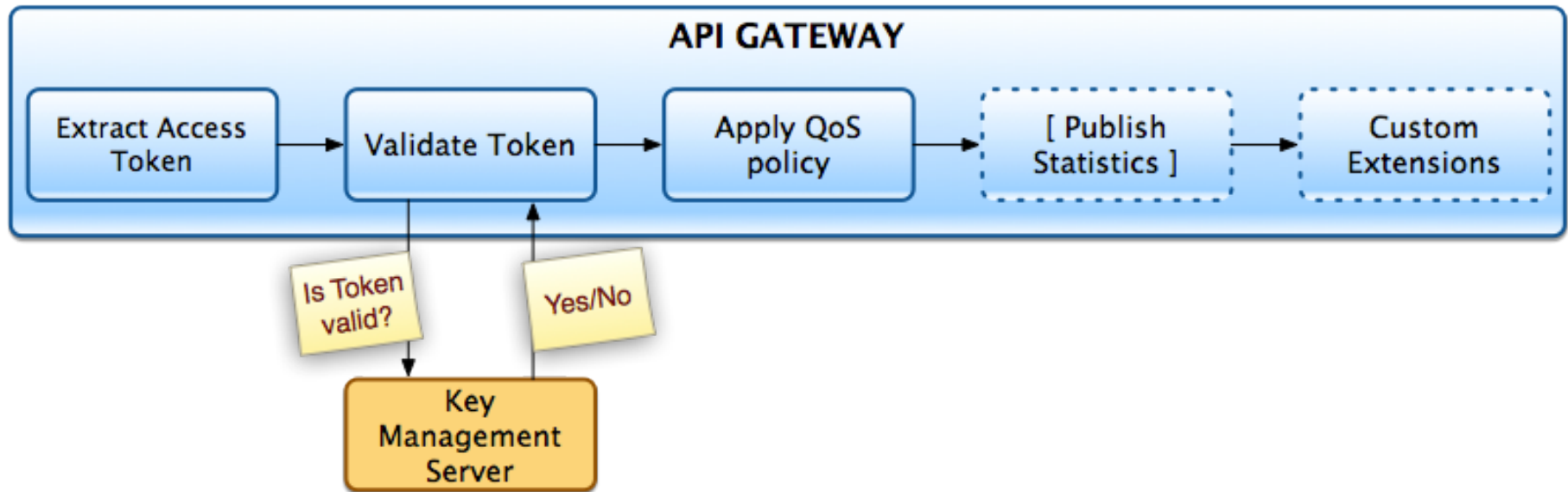
API Management benefits

- Prototyping and fast feedback
- Aggregation and virtualisation
- Versioning
- Documentation
- Key issuing and management
  - Transparent OAuth2
- Workflows
  - On-boarding, subscription, approval
- Throttling and monetisation
- Analytics

API Management market

- Apigee
- Layer7 / CA
- 3Scale
- Mashery / Intel
- IBM Castiron
- WSO2 API Manager

Questions?