

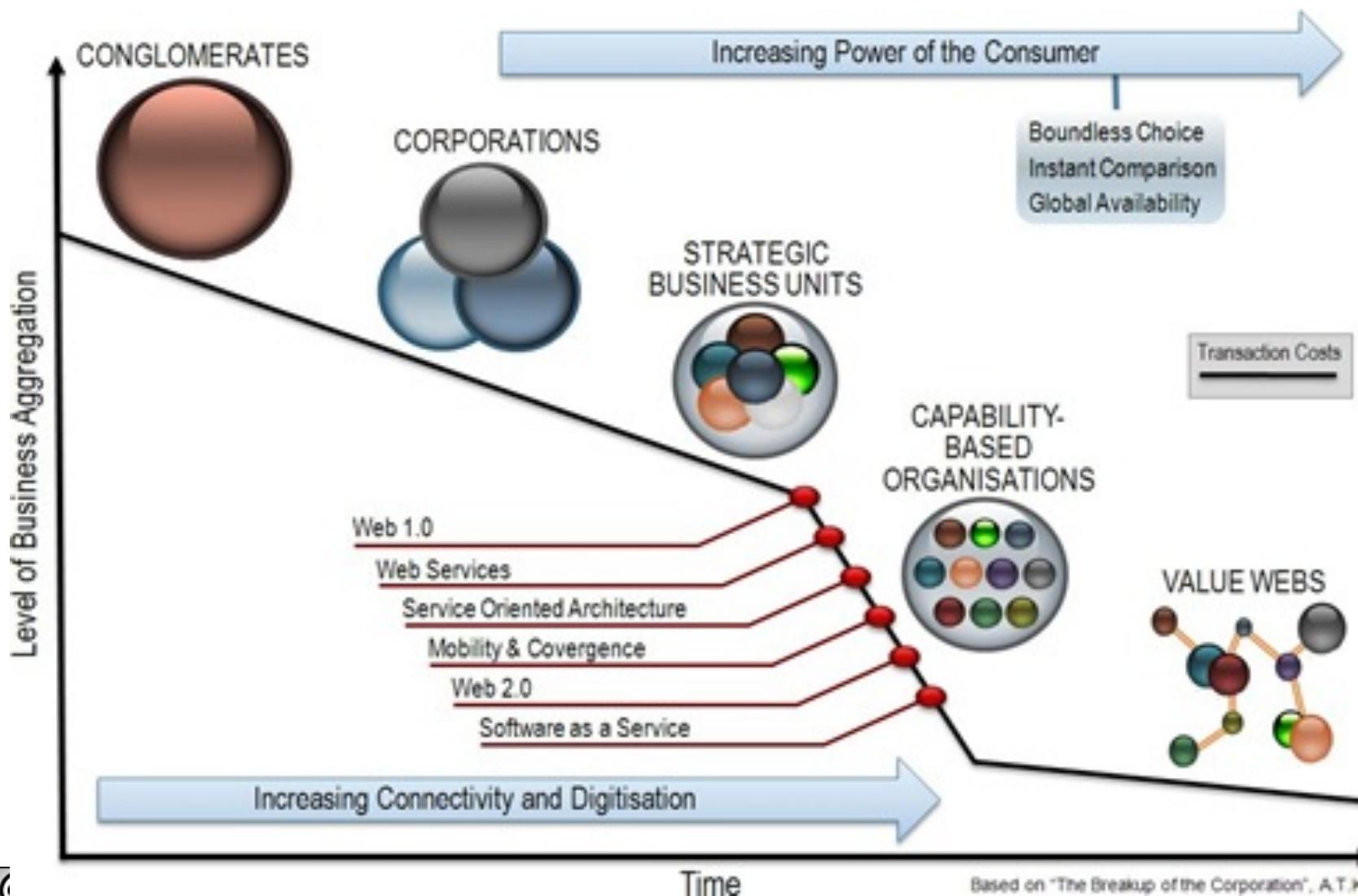
APIs and API Management

Oxford University
Software Engineering
Programme
December 2018



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The Breakup of the Corporation



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Time

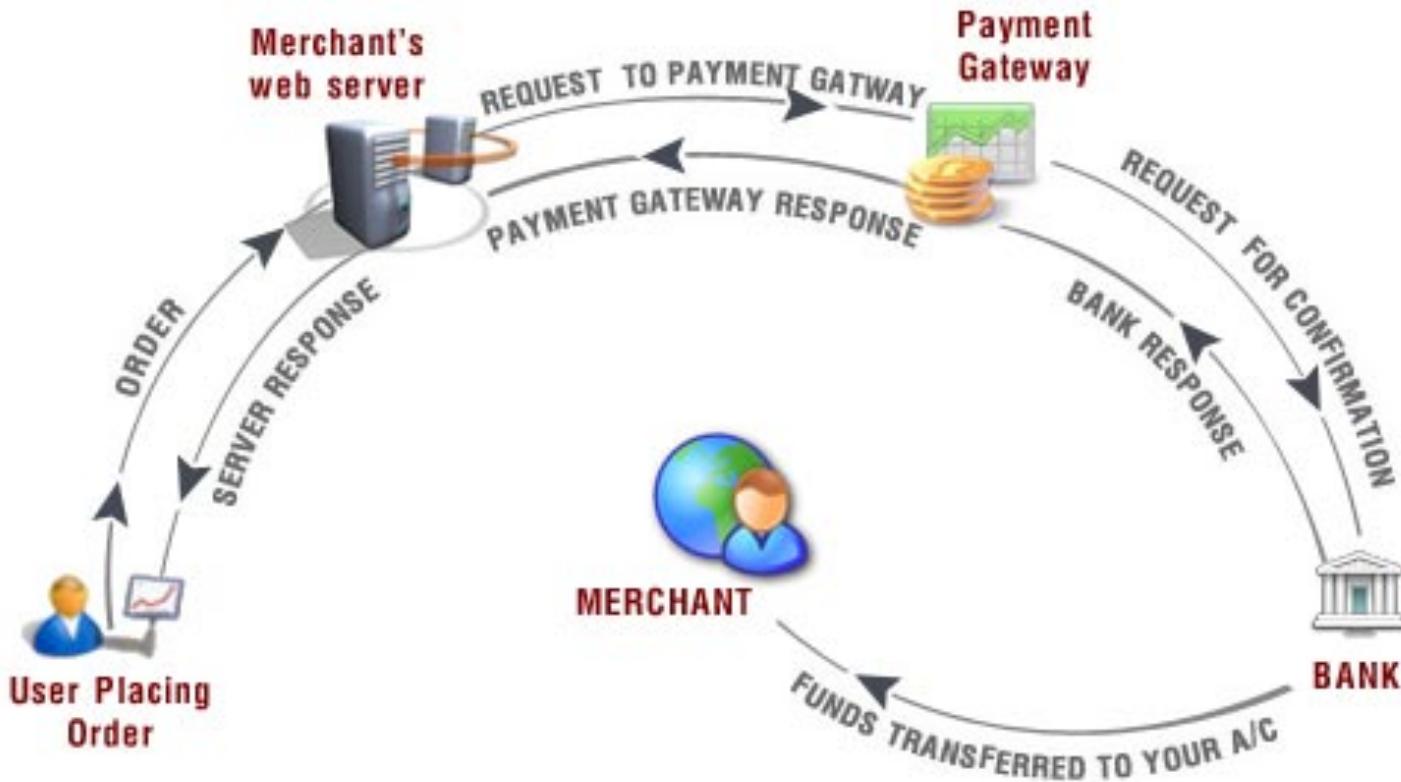
Based on 'The Breakup of the Corporation', A.T.Kearney

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



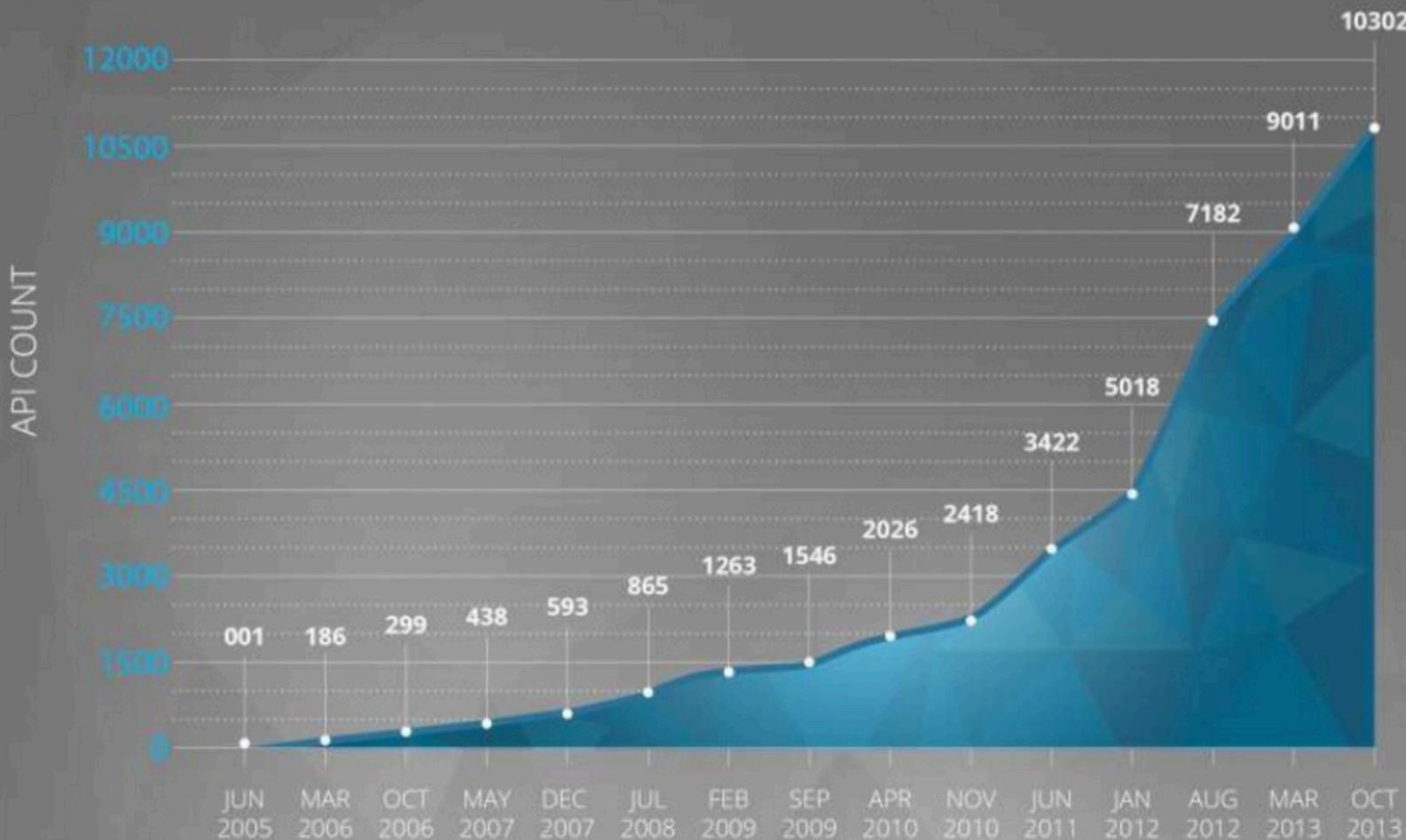
APIs All the Way...





ProgrammableWeb

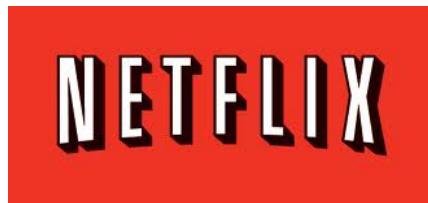
Growth In Web APIs Since 2005



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Some statistics (3-5 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





Embedding financial services into the daily lives of people.

The role of APIs

APIs distribute and integrate Wells Fargo services into their partners.



**TRANSPORT
FOR LONDON**
EVERY JOURNEY MATTERS



Delivering safer
commuter experiences.

The role of APIs

APIs integrate road, rail, and commuter systems to fuel data intelligence and decision making.



**HM Revenue
& Customs**

Digital-first taxation.

The role of APIs

APIs transform legacy systems into real time, universal interfaces.



BNY MELLON

Turning wealth into a
globally connected
network.

The role of APIs

APIs automate and
accelerate the flow of money
across 10K credit unions.

The Global Impact

APIs now account for 25% of the Internet's traffic.

\$1 trillion is up for grabs through the redistribution of revenue through APIs (McKinsey 2017).

25% of revenue flows through APIs (Vanson Bourne 2018).



“

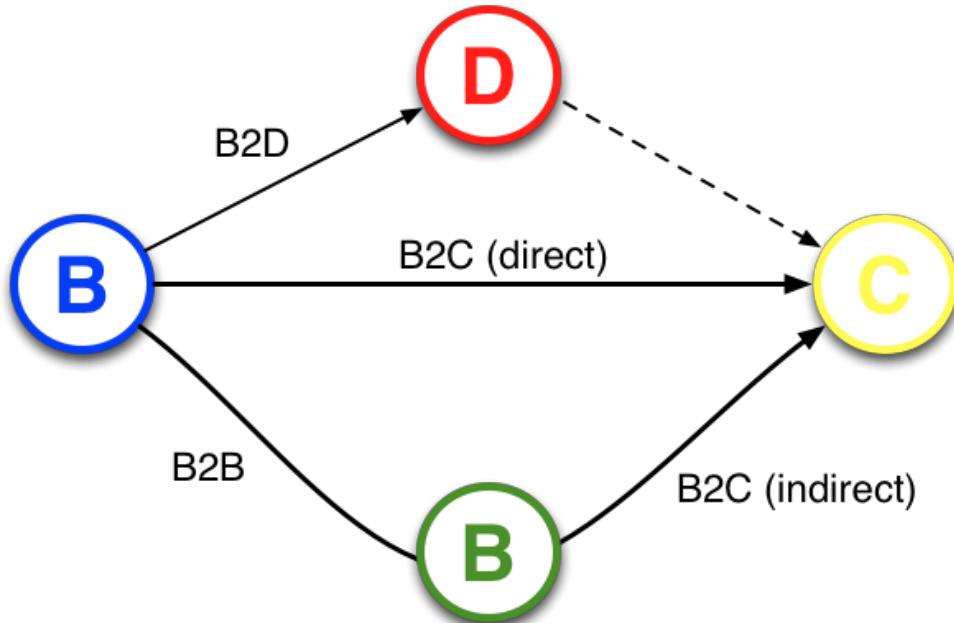
APIs create business agility that fosters the rapid business reconfiguration necessary to continually adapt to an unknown future of constant change.

- **Randy Heffner**
Forrester Research



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API Opportunities

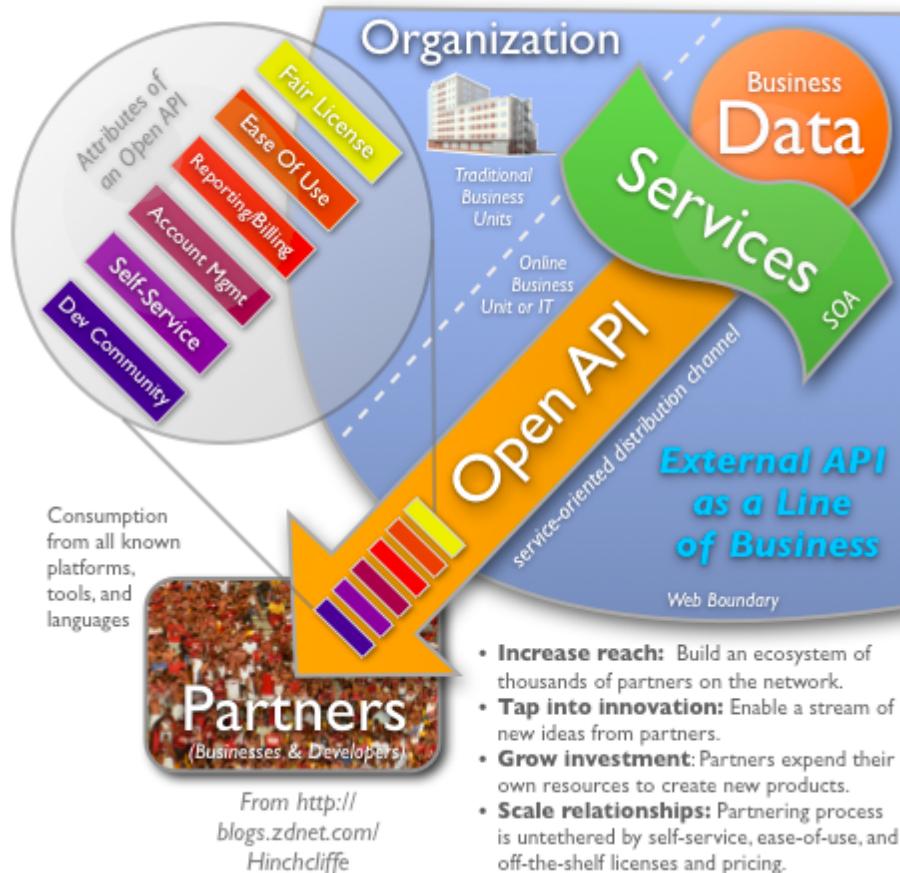


“APIs create a new relationship opportunity –
B2D; Business to Developer, that creates
direct B2C, B2B and indirect B2C relations”



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Running your SOA like a Web startup

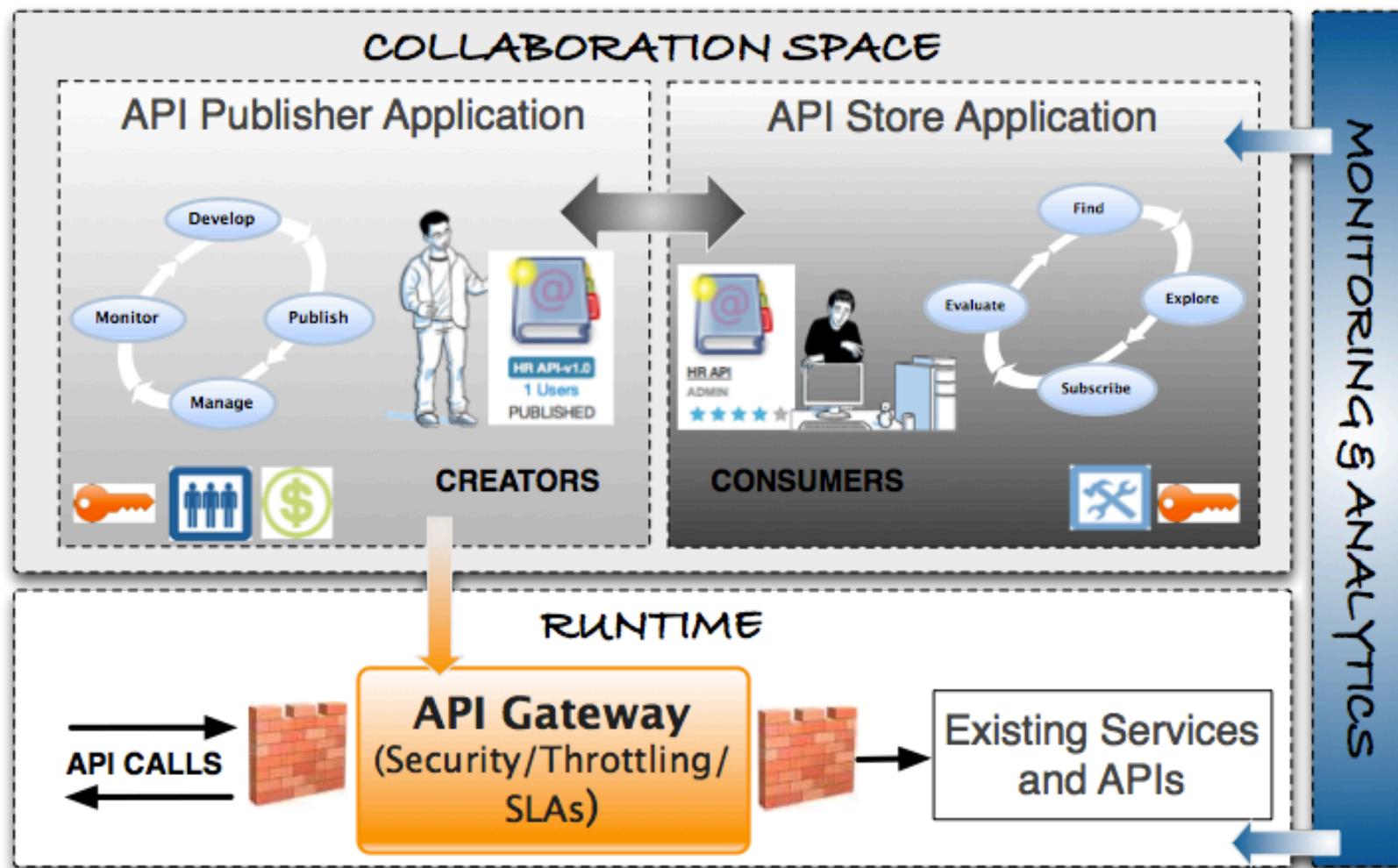


<http://www.zdnet.com/blog/hinchcliffe/running-your-soa-like-a-web-startup/525>



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API Manager Components

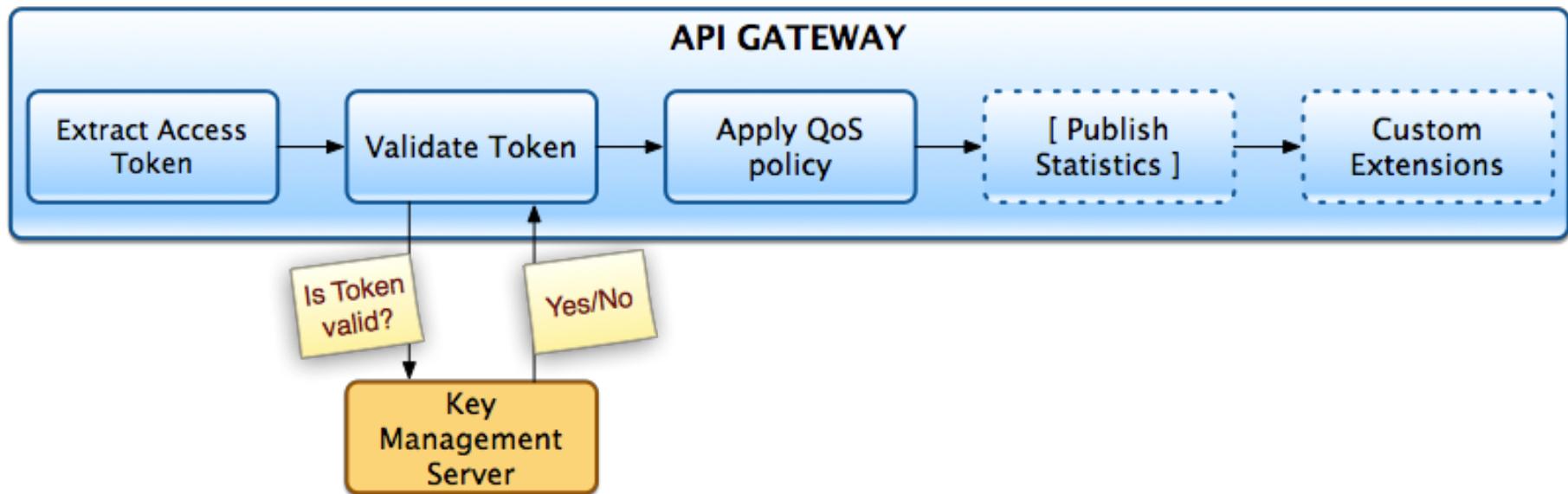


Understanding the Flow

- 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



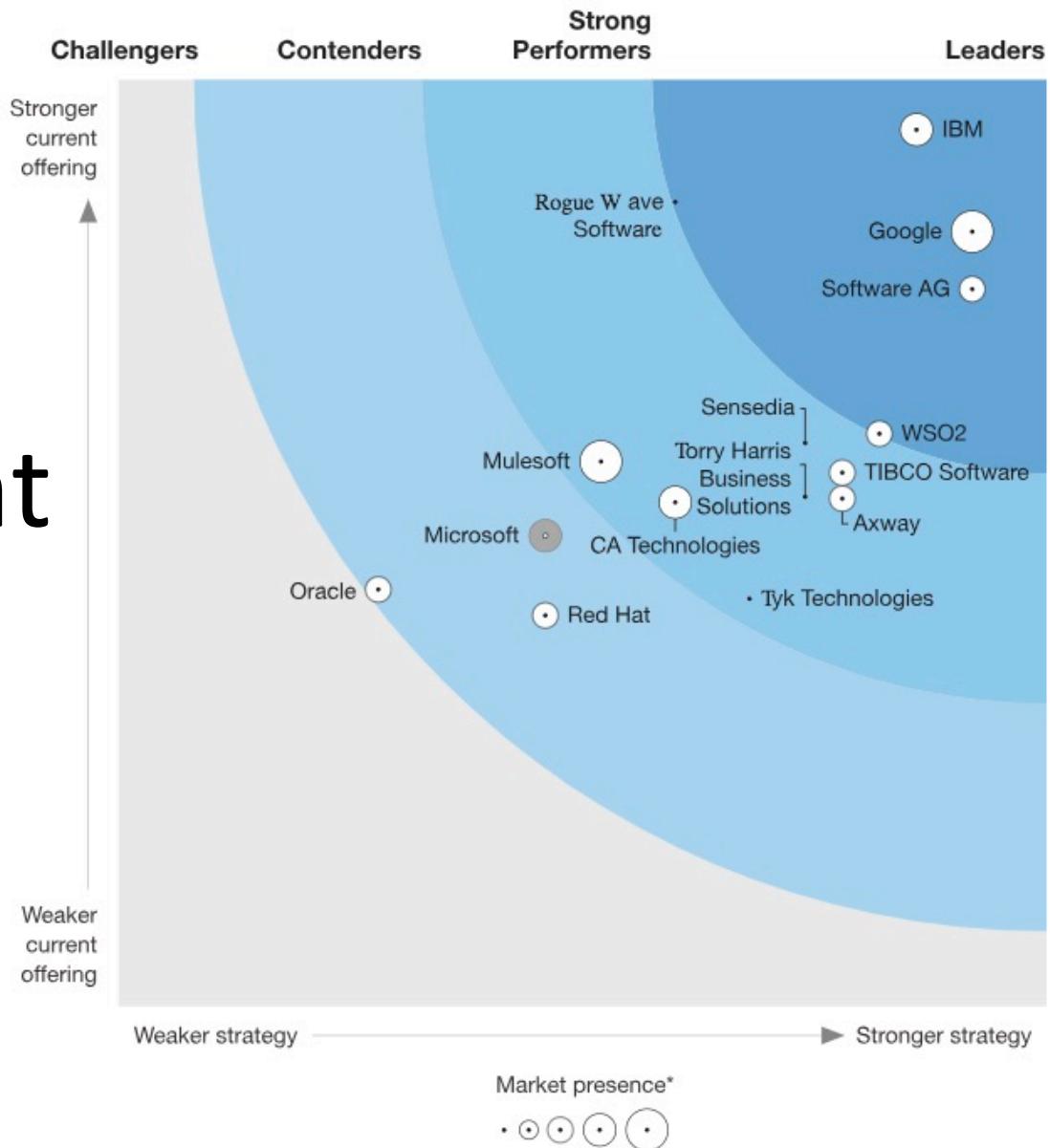
API Management benefits

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



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API Management Market



Questions?



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