

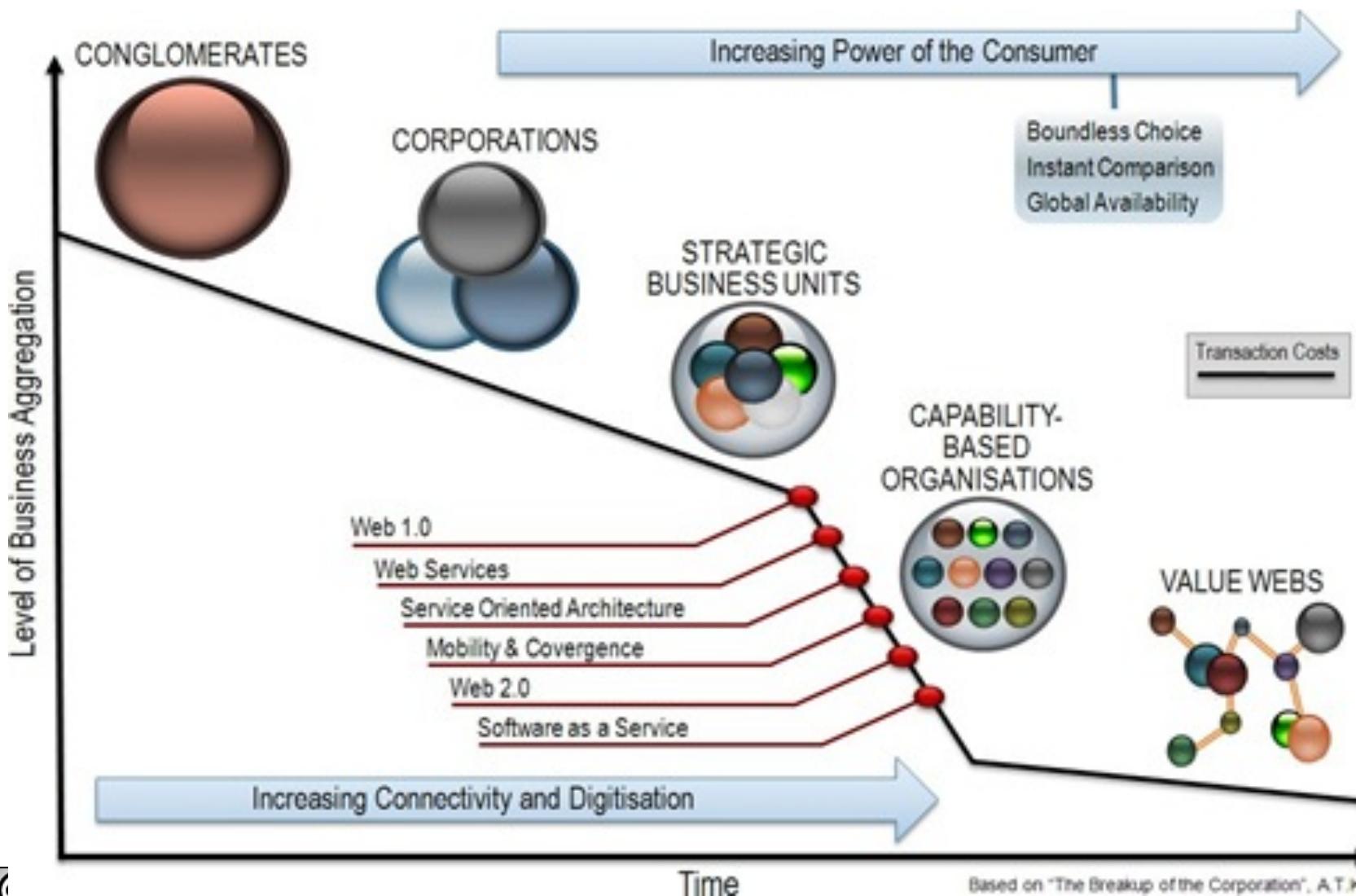
APIs and API Management

Oxford University
Software Engineering
Programme
December 2019



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The Breakup of the Corporation

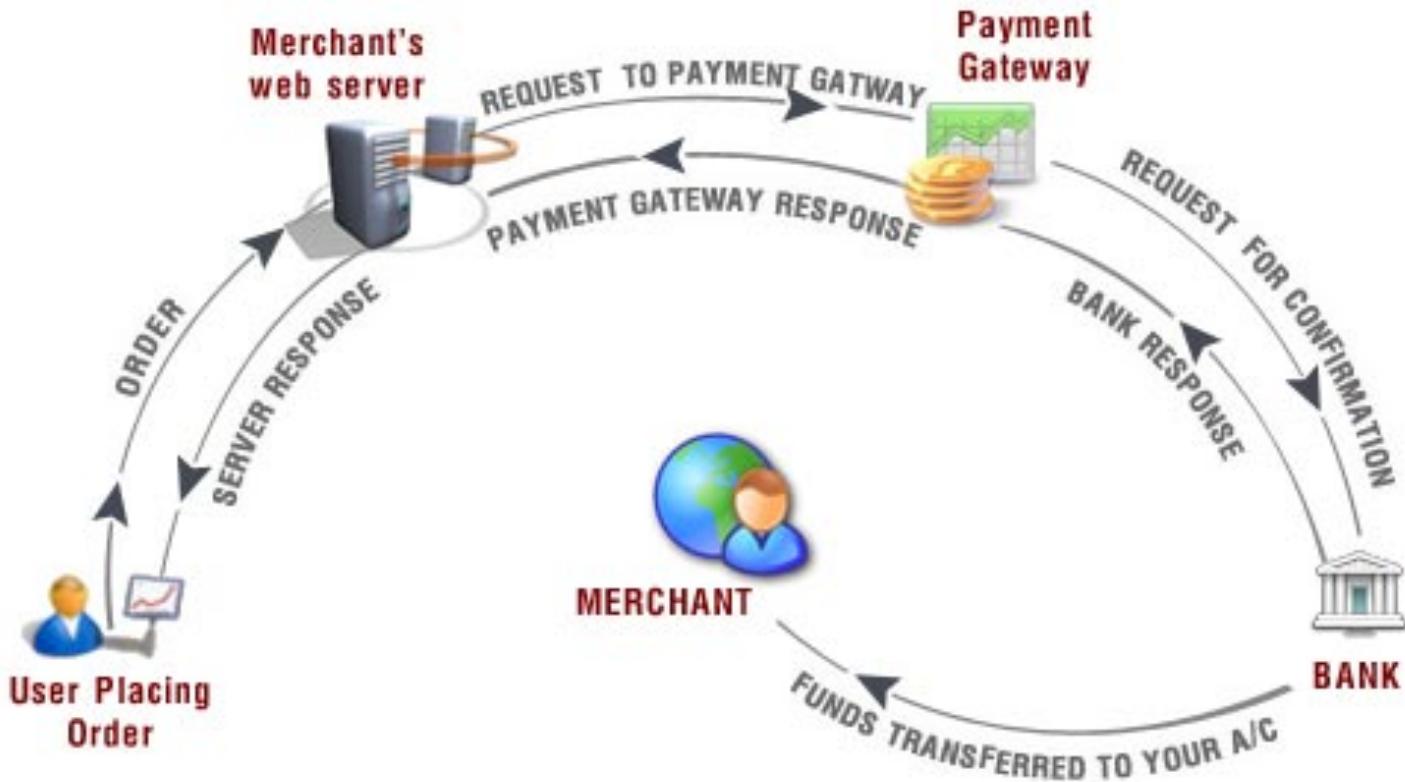


APIs

- **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



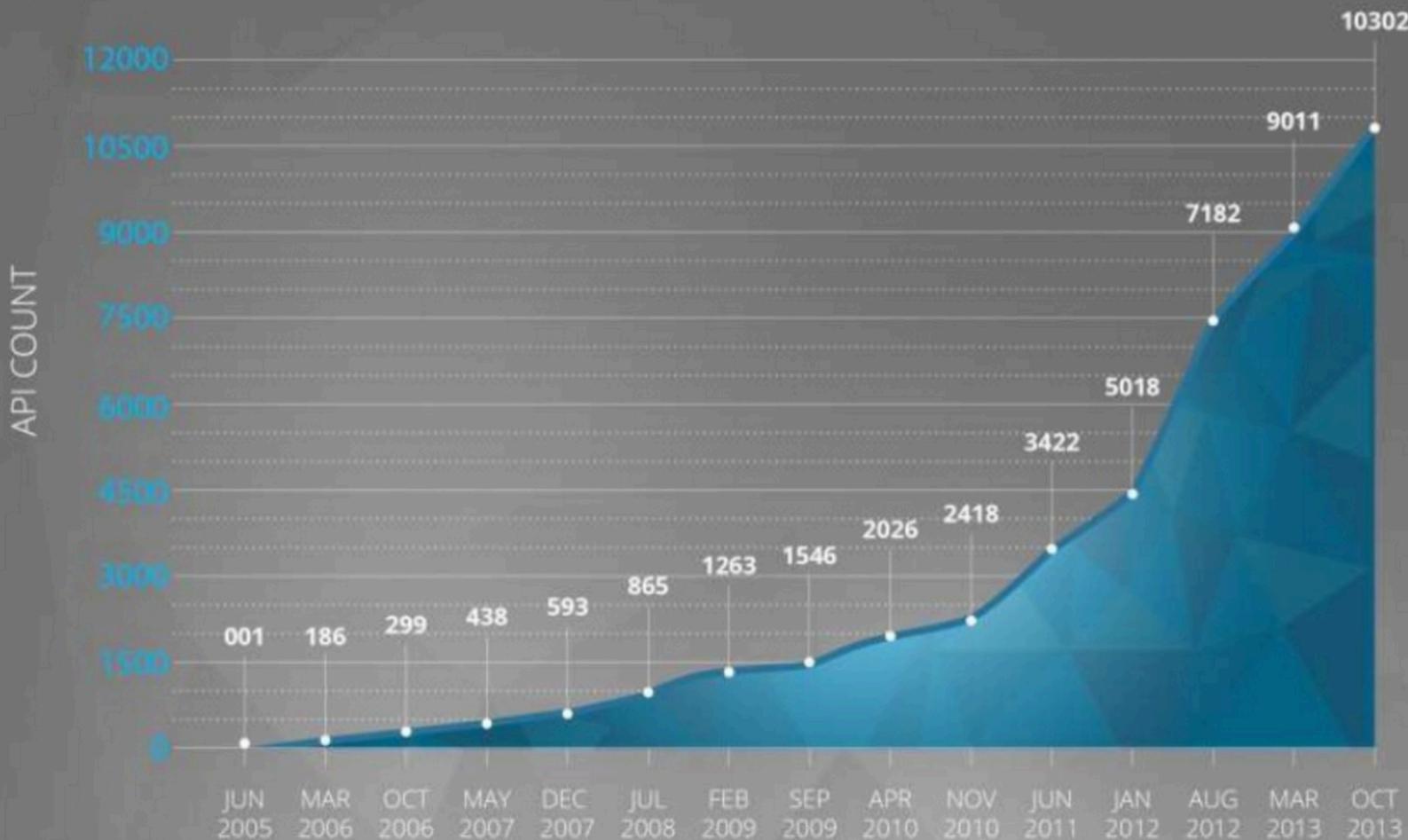
APIs All the Way...





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



Wells Fargo Gateway - Home X +

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<https://developer.wellsfargo.com/apis/payments/wire-payment-and-status>





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The role of APIs

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

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Explore APIs

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Integrate

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[Manage applications](#)
[Testing in the sandbox](#)
[Create a test user](#)

<https://developer.service.hmrc.gov.uk/developer/registration>



The screenshot shows a web browser window with the title bar "NEXEN". The address bar contains the URL "nexen.bnymellon.com/app/login?SMQUERYDATA=-SM-krg9PSZWEqJ6GURGFU4cRM9kafJlidOkSitYkKj%2B1eFZ2TxEl%2BAnZa4qUwvxYYGu...". The main content area features a large image of a modern skyscraper at night. Overlaid on the image is the text "Simplified, intuitive and power packed. Experience the power of NEXEN." in white and blue. To the right of the image is a login form with fields for "User ID" and "Password", a "Sign In" button, and links for "Forgot Password" and "Enter User ID". Below the main image are two white boxes: one containing a portrait of a person wearing a hard hat and the text "Our Thinking", and another containing support information like "Hours of Operation" and "Internal Employees".

Simplified, intuitive and power packed.

Experience the power of NEXEN.

Our Thinking

BNY Mellon is invested in the power of big ideas. With some of the sharpest minds and most innovative thinkers in financial services, our unique perspectives can have a profound impact on investors' attitudes and actions. Our forward-thinking insights are shaping the future of finance.

Culture and Society
Investment Insights

Support

Hours of Operation
Sunday 8:00 p.m. through Friday 8:00 p.m.
Eastern Time
support@bnymellon.com

Internal Employees
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Americas Europe, Middle East, Africa



BNY Mellon
\$33,000,000,000,000
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“We want to blur the lines
between our technology and
our customers”

Jonathan Pearl,
Director and Global Head,
NEXEN Platform Management,
BNY Mellon



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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).



“

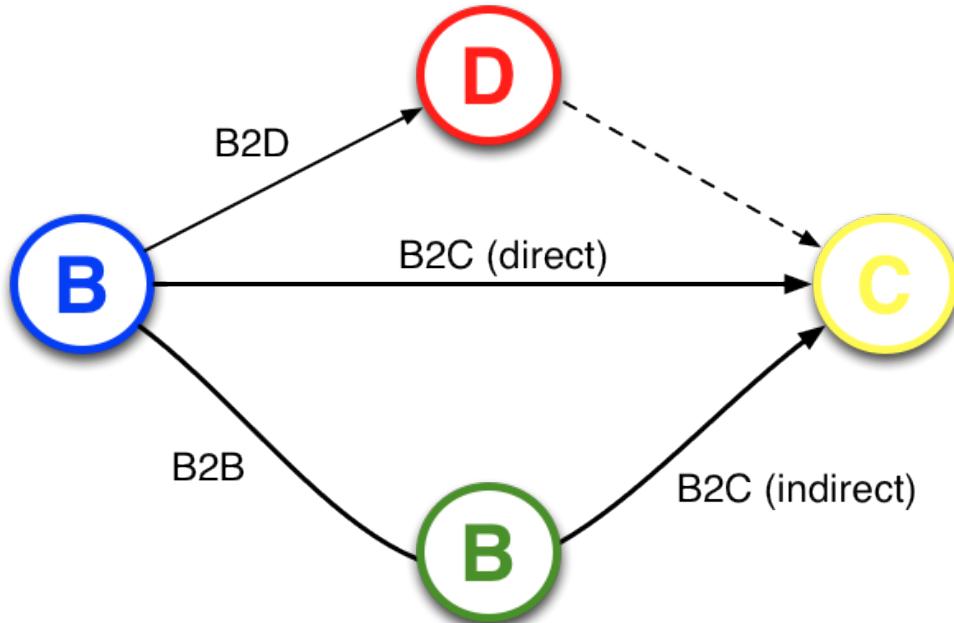
APIs create business agility that fosters the rapid business reconfiguration necessary to continually adapt to an unknown future of constant change.

- **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

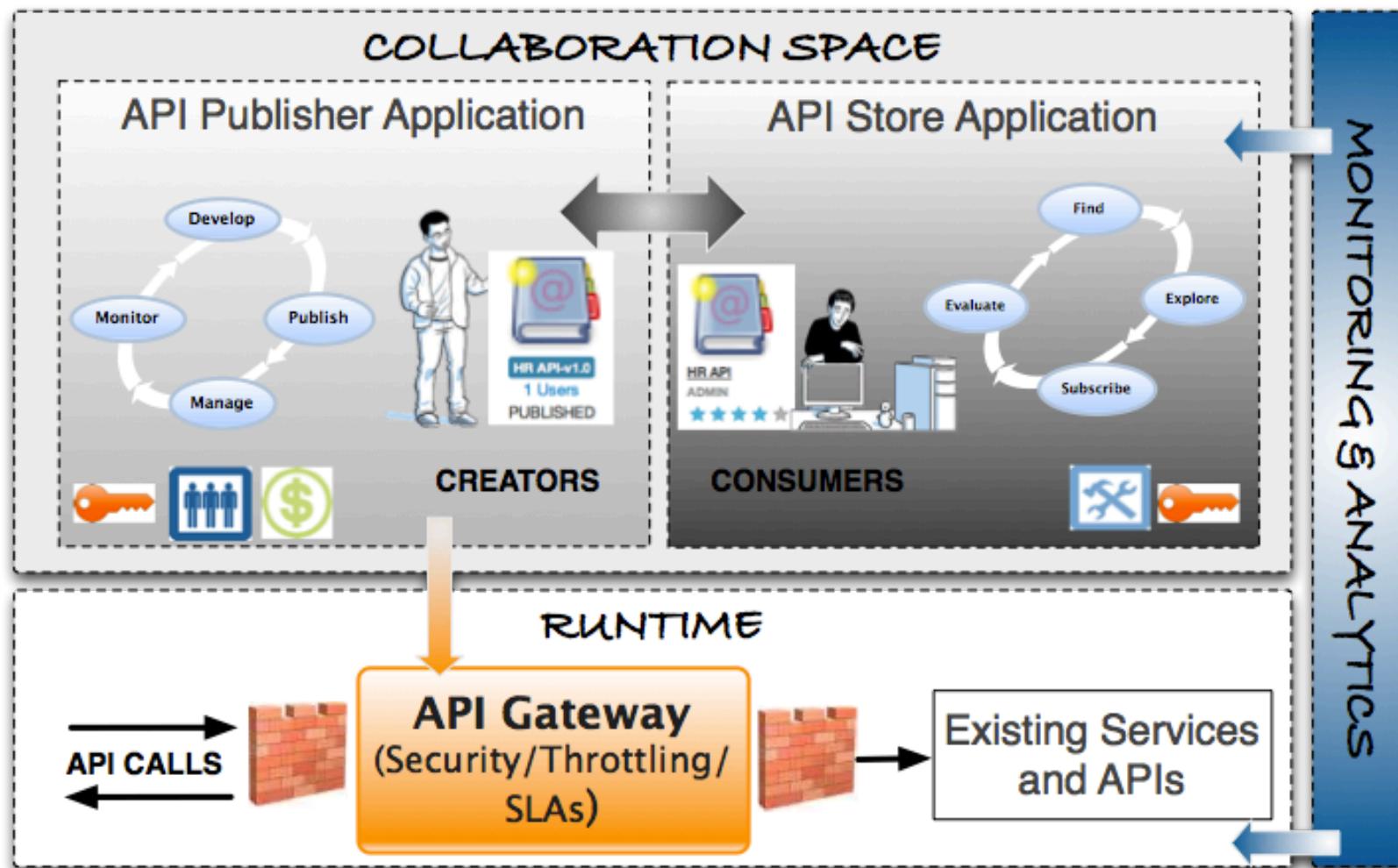


<http://www.zdnet.com/blog/hinchcliffe/running-your-soa-like-a-web-startup/525>



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API Manager Components

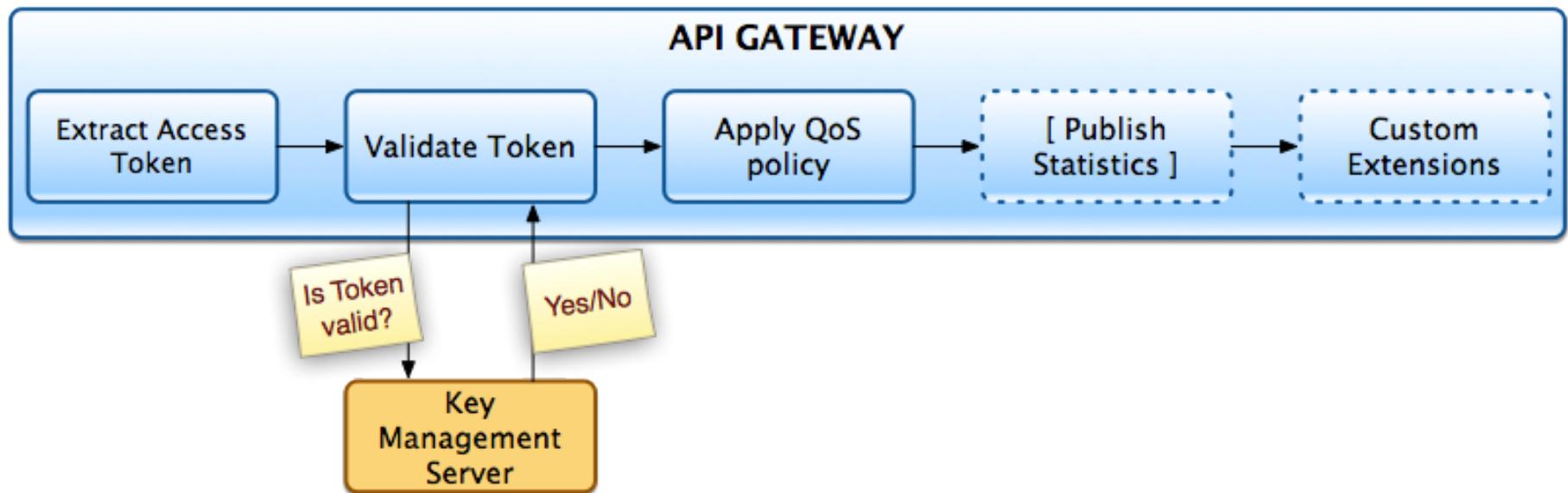


Understanding the Flow

- 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



Questions?



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