Building Applications Programming Interfaces for the Future

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NY Software Process Improvement Network
ThoughtWorks
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- APIs are Forever
- “Alphabet Soup”
- Syntax vs. Semantics
- The Support Problem
- Identifying Key Issues
- Publishing Definitions
- Validation/Sandboxes
- The Future

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APIs are Forever

- APIs are export products
- Outsiders will invest $+++ in code
- Deprecation perhaps; Removal unlikely
- Shortcomings have LARGE consequences

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“Alphabet Soup”

REST

Asynchronous

HTTP

XML

SOAP

JSON

Synchronous

MultiRequest

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Syntax vs. Semantics

- The “Mad Libs(TM)” Test
- JSON vs. XML – irrelevant
- JSON with eval() – dangerous
- RPC vs. REST – relevant
- SOAP vs. REST – irrelevant

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JSON compared to XML

```
{ "FirstName" : "Robert",
  "LastName" : "Gezelter",
  "Address" : {
     "StreetAddress" : "3520 167th Street",
     "City" : "Flushing",
     "State" : "NY",
     "PostalCode" : "113581731"},
  "PhoneNumbers" : [
     {"type" : "office"
     "Number" : "7184631079"},
     {"type" : "mobile"
     "Number" : "........"}]
  "LineItems" : [{
     ... }]
   }
```

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JSON compared to XML

```
<Order>
  <FirstName>Robert</FirstName>
  <LastName>Gezelter</LastName>
  <Address>
     <StreetAddress>3520 167th Street</StreetAddress>
     <City>Flushing</City>
     <State>NY</State>
     <PostalCode>113581731</PostalCode>
  <PhoneNumbers>
     <type>office</type>
     <Number>7184631079</Number>
     <type>mobile</type>
     <Number>........</Number>  </PhoneNumbers>
  <LineItems>
     ...  </LineItems>
  </Order>
```

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The Support Problem

- Bugs are expensive
- Ambiguity is worse
- Problems in the age of Twitter
- Whose fault?

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Identifying Key Issues

- Synchronous/Asynchronous
- Transport (e.g., HTTP, SMTP)
- Integrity
- Security (e.g., HTTPS, HTTP)
- Expandability
  - Transaction IDs
  - e.g., HTTP 1.0 vs. HTTP 1.1
  - Expandability mitigates obsolescence

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Publishing Definitions

- Imprecision causes confusion
- Less expensive than later problems
- Schemas provide a formalism
- Grammars beyond schemas
- State machines
- Character sets (e.g., ASCII, UTF-8)

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Validation/Sandboxes

- Publish good examples
- Maximize use of sandboxes
- Grammar+Schema implies correctness
- Use same tools for testing

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The Future

- Well-thought out APIs are timeless
- Less diversity; less expense
- Preserve customer code investment
- Avoid error resolution

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Summary

APIs should NOT be considered agile, they are a contract with your customer and future.

Good specifications reduce long-term, aggregate costs for vendor and consumer.

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Questions?

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Session Notes & Materials:
http://www.rlgsc.com/nyspin/2016-01/building-apis-for-the-future.html

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