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| Province of British Columbia |
| API Management |
| Product Review |
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|  |
| **10/8/2015** |

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Objective

* To perform a targeted and time-boxed evaluation of products that were not reviewed during the previous fiscal year.
* To provide a list of optional technologies on a component by component basis.
* To confirm or abandon recommendations made during the previous fiscal year to use a single central product to satisfy the top priority requirements.

Methodology

* Selected products were evaluated over a two week period.
* Product documentation was reviewed to confirm required functionality
  + [**Mashape**](https://www.mashape.com/) ([**Kong**](https://getkong.org/)**,** [**Gelato**](https://mashape.gelato.io/)**,** [**Galileo**](https://www.apianalytics.com/))
  + [**StrongLoop**](https://strongloop.com/) (NodeJS)
  + **[Swagger.io](http://swagger.io/)** [(](http://swagger.io/)[**[Swagger Editor](http://swagger.io/)**](http://editor.swagger.io/#/)[,](http://swagger.io/) [**[Swagger UI](http://swagger.io/)**](http://swagger.io/swagger-ui/)[)](http://swagger.io/)
* Where required, products were installed, configured and tested to verify their abilities.
* We are not applying a weight to each decision criteria, rather a presence / absence of ability. Consequently, one or more products may be used to satisfy requirements.

Product list

* [**Mashape**](https://www.mashape.com/) (Kong, Gelato, Galileo)
  + [**Kong**](https://getkong.org/)**:** API Keys, rate control/throttling. Scalable, modular and platform agnostic. Runs in front of any RESTful API as an API Gateway and includes the ability to add extra plugins.
  + [**Gelato**](https://mashape.gelato.io/)**:** API console within the API Explorer
  + [**Galileo**](https://www.apianalytics.com/)**:** Real-time monitoring, custom reporting, debugging, logging, api request replay and comparisons, consumer usage, time-series usage charts
* [**StrongLoop**](https://strongloop.com/)**:** Provides the ability to develop RESTful APIs in a visual manner. Utilize Node to connect to data.
* **[Swagger.io](http://swagger.io/)**
  + [**Swagger UI**](http://swagger.io/swagger-ui/)**:** API console within the API Explorer (alternative to Gelato)
  + [**Swagger Editor**](http://editor.swagger.io/#/)**:** Tool for developers to edit their own swagger definition files.

# [Engagement levels](https://github.com/BCDevExchange/Our-Project-Docs/blob/master/spikes/Spike30-Meeting-Notes-2015-09-22.md)

|  |  |  |  |
| --- | --- | --- | --- |
| **Engagement Level in Ascending Order** | **Self Serviceable?** | **Provider Activity** | **Feature Needed** |
| Advertisement Only | Yes | supply swagger URL | API explorer; |
| search; |
| code snippet; |
| Extended Channel | Yes | compose swagger | + API gateway; |
| swagger composer |
| Exclusive Channel | Yes | + supply SSL cert files | + dynamic SSL cert selector |
| (Migrate Domain) | change existing DNS to a CNAME |
| Simple hosted repo with CRUD operation | Yes | Create data model via GUI | + modeller |
| Complex hosted repo | No | + supply custom code via PR | GitHub! |
| (custom code to transform data) |

**Table 1:** Engagement Levels

# [Decision Criteria](https://github.com/BCDevExchange/Our-Project-Docs/blob/master/spikes/Spike30-EDS-Decision-Criteria.xlsx)

The list below includes criteria used to compare products

|  |  |
| --- | --- |
| **Category** | **Item** |
| **API Key Management** | Ability to generate, manage and utilize |
| **Throttling / Rate Control** | Implement and configure |
|  | Multi-tier access and performance level  (anonymous vs key) |
| **API Console / Explorer** | Simulate API requests and provide code snippets |
|  | File type used to build console |
| **CKAN Integration** | Ability to integrate with CKAN |
| **Analytics** | **statistics and reporting** - historic |
|  | **statistics and reporting** - real-time |
| **Access Control** | Illustrate authentication (e.g., Digest, Oauth2) for users of the API gateway (federated approach, GitHub). |
|  | Ability for system admin to define levels of access for accounts |
|  | Ability to disable an application's access to an API |
| **Gateway Hosting** | Cloud |
|  | On-premises |
| **Registration** | **Registration** - APIs |
|  | **Registration** - Applications (using an API key) with list of APIs used and business area / contact name |
|  | **Registration** - Users - Developers - Self-serve to register account |
| **API Access** | Programmatic api access to all API gateway functions |
|  | Type of API offered for programmatic access (REST etc) |
| **General / Technical** | **Performance** - No latency is introduced |
|  | **DNS/namespace** - Preserve API providers dns/namespace |
|  | **Scalable** - Scalable architecture (200 API scenario). |
|  | Support for CORS |
|  | **Sustainable** - Clients can contribute their own information, fill in text, deliver their own Swagger files etc. |
|  | **Protocol Support** - Ability to support multiple protocols (REST, SOAP etc) |
|  | **Ease of configuration** - for BC Gov't staff |
|  | **Ease of administration** - Time, resources and complexity |
|  | **Geo-redundancy** - Multiple servers for load balancing & failover option |
|  | **Platform Agnostic** - Ability to run on multiple platforms |
|  | **Size of Footprint** - Technical overhead |
| **Misc / Experience** | **Self-serve** - Access for API owners (access their API key) |
|  | **Interface** - Product comes with an interface |
|  | **Interface** - Customizable UI |

**Table 2:** Decision criteria

Technology Options

|  |  |  |
| --- | --- | --- |
| **Features** | **Product** | **Product Dependency** |
| API Key Management | **Kong** (Mashape)  \*Built on NGINX with a Cassandra DB | N – Stand-alone |
| Throttling / Rate Control | **Kong** (Mashape)  \*Built on NGINX with a Cassandra DB | N – Stand-alone |
| API Gateway Interface | 1. Custom interface **to be built** (not yet scoped)  \*HTML5, JavaScript  2. Or, use Kong’s Admin UI (not yet available) | N – Stand-alone |
| API Console / Explorer | **Swagger UI** – API explorer  \*(Mashape Gelato as an alternative) | N – Stand-alone |
| Analytics | **Galileo** (Mashape) | **Y - Kong** |
| Access control | **Oauth2**  \*(GitHub account required) | N/A |
| Gateway Hosting | VMs – On-premises and cloud hybrid  (on-prem where required, in cloud where available) | N/A |
| Developer Workspace | GitHub | N – Stand-alone |

**Table 3:** Technology options based on component

Approach

* A modular and loosely coupled design can be implemented to utilize purpose-specific products.
* A scalable architecture to prepare for increased system usage in the future.
* Where on-premises hosting is required, multiple nodes can be used to offer reliable, load balanced tools with a geo-redundant backend. Where feasible and approved, cloud hosting can be used.
* The final selection of these products will be made on a component-by-component basis with respect to the overall system needs.
* Self-serve tools will be offered to developers and digital resource owners (where feasible).
* A phased approach will be taken in the development of the system. Initial version features will be determined based on top priority requirements as well as technical constraints.
* Developers can use tool offered through (or linked from) the BC Developers Exchange page and save their work to GitHub.

Demonstrations

|  |  |
| --- | --- |
| **Component** | **Example** |
| API Keys & Throttling | Mashape ([Kong](https://getkong.org/about/)) |
| API Console Builder | Swagger.io ([Editor](http://uat-api3.bcdevexchange.org/api-editor/)) |
| API Console | Swagger.io (UI – [BGEO](http://sandbox.apis.gov.bc.ca/apidocs/)) |
| API Console (option 2) | Mashape ([Gelato](https://bcdevexchange.gelato.io/api-explorer)) |
| Statistics and Reporting | Mashape ([Galileo](https://analytics.mashape.com/)) |

Additional documentation

**API Owner Engagement Levels:**

<https://github.com/BCDevExchange/Our-Project-Docs/blob/master/spikes/Spike30-Meeting-Notes-2015-09-22.md>

**Draft Decision Criteria:**

<https://github.com/BCDevExchange/Our-Project-Docs/blob/master/spikes/Spike30-EDS-Decision-Criteria.xlsx>

**API Mgmt R2:**

<https://github.com/BCDevExchange/Our-Project-Docs/issues/30>