**BCF 2.0 RESTful API**

All API access is over HTTPS. Data is sent as query parameters and received as JSON.

* Every resource has a corresponding Json Schema.
* Json Hyper Schema for link definition
* Authentication OAuth2

**Paging, Sorting, Filtering**

* [Link header introduced by RFC 5988](http://tools.ietf.org/html/rfc5988#page-6).
* custom HTTP header ***X-Total-Count***

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| **Operator** | **Operation** |
| | | Greater than |
| < | Less than |
| \* | Wild card for contains (eg: es should yield you "less", "guess" etc) |
| = | Equal to |
| |= | Greater than or equal to |
| <= | Less than or equal to |
| != | Is not equal to |

**page**

requested page (it could be record, item, itemNumber, pageNumber, section, sectionNumber, index, offset)

**pageSize, page\_size (since our json keys are on that format (e.g. verbal\_status)) ??**

requested items per page (records, recordsPerPage, itemSize, items, sections, range)

**sortColumn, sort\_column ??**

sort by column name (sortBy, orderBy, sortCol)

**sortDirection, sortDir, sort\_direction, sort\_by**, **- (for descending or no sign if ascending) ??**

sorting direction ( ascending is default or, desc=true/false, sort, sortDir)

Regards to the pageSize vs page\_size. I believe that the common norm is to use \_ (or -) to separate words in URLs. Here are some examples:  
  
<https://developers.facebook.com/docs/graph-api/using-graph-api>:  
- see e.g topic\_filter  
  
<https://dev.twitter.com/docs/api/1.1>:  
- see e.g. screen\_name  
  
<http://developer.netflix.com/docs/REST_API_Reference#jcs-2>:  
- see e.g. max\_result

I think we should follow the query string convention for using the query strings. I think the convention like "verbal\_status" we should always follow it for json property but not in the url. I have had problems using the symbols (- or \_) in the query strings. I can't exactly remember the programming language (maybe php) and our javascript expert also confirms that he has had that problem. Also, using "-" for Desc I think is not self explainable.

In regards to sortDirection vs minus-prefix, this was actually a suggestion taken directly from the two best practices documents that we shared last week:  
  
<https://drive.google.com/file/d/0B8Wgpx02U7oLcW9qeFVOVGQyNDg/edit?usp=sharing>  
<http://www.vinaysahni.com/best-practices-for-a-pragmatic-restful-api#advanced-queries>  
  
This was just to make the URLs shorter

Perhaps "sort column" should be "sort by" as a json response does not represent columns per se.

***Filter use the escape characters:***

Escape codes: <http://www.december.com/html/spec/esccodes.html>

%26 for "&"

%7C for „or“

v2/<resouce\_name>?filter=<json\_attribute><operator><value><Escape codes of AND or OR><json\_attribute><operator><value>......

(key1=value1%7Ckey2=value2)%26key3!=value3

v2/messages?filter=unread=true%26receiver.id=guid%26date>12.12.2013

***"&" to combine different query parameters (operations)***

v2/projects?page=1&pageSize=5&sortColumn=type

***Query parameters with filter:***

v2/projects?page=1&pageSize=5&sortColumn=type&filter=unread=true%26date>12.12.2013

**Caching**

ETAG

ETags, or entity-tags, are an important part of HTTP, being a critical part of caching, and also used in "conditional" requests.

The ETag response-header field value, an entity tag, provides for an "opaque" cache validator.

The easiest way to think of an etag is as an MD5 or SHA1 hash of all the bytes in a representation. If just one byte in the representation changes, the etag will change.

ETags are returned in a response to a GET:

joe@joe-laptop:~$ **curl --include http://bitworking.org/news/**

HTTP/1.1 200 Ok

Date: Wed, 21 Mar 2007 15:06:15 GMT

Server: Apache

**etag: "078de59b16c27119c670e63fa53e5b51"**

Content-Length: 23081

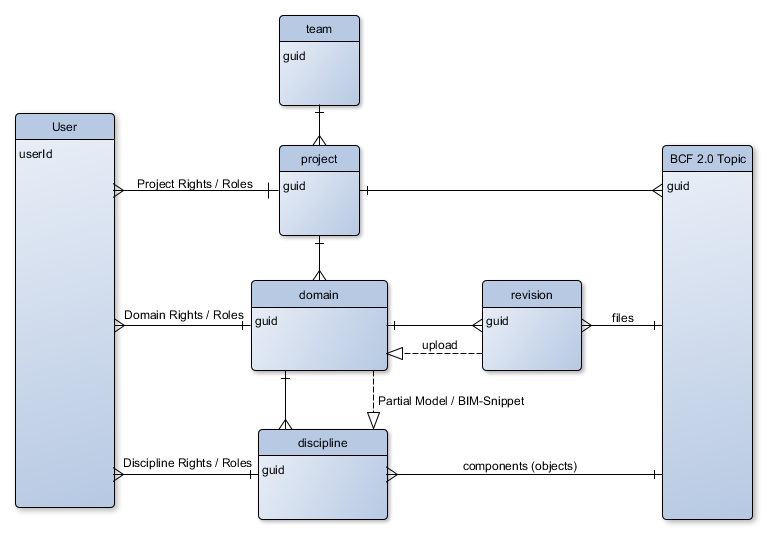
…..

**JsonP and cross-domain**

**JSONP** or "[JSON](http://en.wikipedia.org/wiki/JSON) with padding" is a communication technique used in [JavaScript](http://en.wikipedia.org/wiki/JavaScript) programs running in web browsers to request data from a server in a different domain, something prohibited by typical web browsers because of the [same-origin policy](http://en.wikipedia.org/wiki/Same-origin_policy).

**Structure**

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**Resources**

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| ***Version*** | |
| /V0.99 | GET |

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| ***(Version) Schemas*** | |
| /V0.99/schemas | GET Link Schema |
| /V0.99/schemas/{rel} | GET |

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| ***Teams*** | |
| /V0.99/teams | GET, POST |
| /V0.99/teams/{guid} | GET, PUT, DELETE |

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| ***Projects*** | |
| /V0.99/ teams/{ guid }/projects | GET, POST |
| /V0.99/ teams/{ guid }/projects/{guid}  /V0.99/projects/{guid} | GET, PUT, DELETE |

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| ***(Projects) Thumbnail*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/thumbnail  /V0.99/projects/{guid}/thumbnail | GET, POST, DELETE |

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| ***(Projects) Schema*** | |
| /V0.99/ teams/{ guid}/projects /{guid}/schema  /V0.99/ projects /{guid}/schema | GET,POST, PUT, DELETE (extensions.json) |

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| ***Domains*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/domains | GET, POST |
| /V0.99/ teams/{ guid }/projects/{guid}/domains/{guid}  /V0.99/ domains/{guid} | GET, PUT, DELETE |

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| ***Disciplines*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/ domains/{guid}/  diciplines | GET, POST |
| /V0.99/ teams/{ guid }/projects/{guid}/ domains/{guid}/  disciplines/{guid}  /V0.99/ disciplines/{guid} | GET, PUT, DELETE |

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| ***Revisions*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/divisions/{guid}/revisions | GET, POST |
| /V0.99/ teams/{ guid }/projects/{guid}/divisions/{guid}/revisions/{guid}  /V0.99/revisions/{guid} | GET, DELETE |

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| ***Topics*** | |
| /V0.99/teams/{ guid }/projects/{guid}/topics | GET, POST |
| /V0.99/teams/{ guid }/projects/{guid}/topics/{guid}  /V0.99/topics/ {guid } | GET, PUT, DELETE |

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| ***(Topics) Revisions*** | |
| /V0.99/teams/{ guid }/projects/{guid}/topics/{guid}/revisions  /V0.99/topics/ {guid }/revisions | GET, POST |

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| ***(Topics) Divisions*** | |
| /V0.99/teams/{ guid }/projects/{guid}/topics/{guid}/devisions  /V0.99/topics/ {guid }/devisions | GET, POST |

??? is Disciplines the same as Components

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| ***(Topics) Disciplines*** | |
| /V0.99/teams/{ guid }/projects/{guid}/topics/{guid}/disciplines  /V0.99/topics/ {guid }/disciplines | GET, POST |

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| ***(Topics) Document References*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/topics/{guid}/  document\_references  /V0.99/topics/ {guid }/ document\_references | GET, POST |
| /V0.99/teams/{ guid }/projects/{guid}/topics/{guid}/  document\_references/{guid}  /V0.99/ document\_references/{guid} | GET, DELETE |

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| ***(Topic) Related Topics*** | |
| /V0.99/ teams/{ guid }/projects/{guid}/topics/{guid}/related\_topics  /V0.99/topics/{guid}/related\_topics | GET, POST |
| /V0.99/ teams/{ guid }/projects/{guid}/topics/{guid}/related\_topics/{guid}  /V0.99/ topics/{guid}/related\_topics/{guid} | GET, DELETE |

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| ***(Topics) Comments*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/comments  /V0.99/topics/{guid}/comments | GET, POST |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/comments/{guid}  /V0.99/comments/{guid} | GET, PUT, DELETE |

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| ***(Topics)( Comments) Viewpoints*** | |
| /V0.99/ teams/{id}/projects/{id}/topics/{guid}/comments/{guid}/  Viewpoints  /V0.99/ comments/{guid}/viewpoints | GET |

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| ***(Topics) Viewpoints*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/viewpoints  /V0.99/topics/{guid}/viewpoints | GET, POST |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}  /V0.99/viewpoints /{guid} | GET, PUT, DELETE |

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| ***(Topics) (Viewpoints) Bitmap*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/  bitmap  /V0.99/viewpoints /{guid}/bitmap | GET, POST, DELETE |

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| ***(Topics) (Viewpoints) Snapshot*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/  snapshot  /V0.99/viewpoints /{guid}/snapshot | GET, POST, DELETE |

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| ***(Topics) (Viewpoints) Comments*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/comments  /V0.99/viewpoints /{guid}/comments | GET, POST |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/comments/{guid}  /V0.99/ viewpoints /{guid}/comments/{guid} | DELETE |

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| ***(Topics) (Viewpoints) Components*** | |
| /V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/components  /V0.99/viewpoints /{guid}/components | GET,POST |
| V0.99/ teams/{guid}/projects/{guid}/topics/{guid}/ viewpoints /{guid}/components/{guid}  V0.99/components/{guid} | GET, DELETE |

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|  | **Account**  **Owner** | **Project**  **Admin** | **Project**  **Editor** | **Project**  **Viewer** | **Model**  **Admin** | **Model**  **Editor** | **Model**  **Viewer** |
| **Create Project** | x | x |  |  |  |  |  |
| **Admin Project**  **(eg. invite)** | x | x |  |  |  |  |  |
| **Edit Project** | x | x | x |  |  |  |  |
| **Delete Project** | x | x |  |  |  |  |  |
| **View Project** | x | x | x | x | x | x | x |
|  |  |  |  |  |  |  |  |
| **Create Discipline** | x | x | x |  |  |  |  |
| **Edit Discipline** | x | x | x |  |  |  |  |
| **Delete Discipline** | x | x | x |  |  |  |  |
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| **View all Models** | x | x | x | x |  |  |  |
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| ***(Teams) Roles*** | |
| /V0.99/teams/{guid}/roles  [      {          "id": "f11d32e2-30b7-4f81-8a74-2165ecc00cf6",          "name": "Project\_Editor",          "customRole": false,          "resources": [              {                  "resource": "UserRightProject",                  "rights": [                      "Project\_Edit",                      "Project\_View",                      "Model\_ViewAll"                  ]}]},      {          "id": "2baca0e4-2eee-4f7c-bc56-22ed54a1859c",          "name": "Account\_Owner",          "customRole": false,          "resources": [              {                  "resource": "UserRightGlobal",                  "rights": [                      "AllProjects",                      "AllModels",                      "Project\_Create"                  ]}]      },      {          "id": "a298b28d-9711-4a76-9a7d-910cbf144ee5",          "name": "Project\_Admin",          "customRole": false,          "resources": [              {                  "resource": "UserRightProject",                  "rights": [                      "Project\_Admin",                      "Project\_Edit",                      "Project\_Delete",                      "Project\_View",                      "Model\_ViewAll",                      "Model\_Create"                  ]              }          ]      },      {          "id": "a618d075-7e4a-4bde-9d58-d2979696fa96",          "name": "Project\_Viewer",          "customRole": false,          "resources": [              {                  "resource": "UserRightProject",                  "rights": [                      "Project\_View",                      "Model\_ViewAll"                  ]}]}] | GET  ***Why is this team-related ?*** |
| ***(Projects) Members*** | |
| /V0.99/teams/{guid}/projects/{guid}/members  /V0.99/projects/{guid}/members  POST: Assign a project role to an existing member of a team. Only the user with "Account Owner" or "Project Owner" role can use this API call.  {    "member": {      "user\_id": "bf5b2382-1d14-b8df-8454-947f83b45c25"    },    role: {      id: "Project\_Editor"}    GET: Get the member list of a project along with their respective project roles.  [{  "member": {  "user\_id": "7aa846f2-6014-f68d-8dd4-4c7941d7cbcc",  "email": "customer1@bimplus.net"  },  "role": {  "id": "Project\_Editor" }},  {  "member": {  "user\_id": "bf5b2382-1d14-b8df-8454-947f83b45c25",  "email": "customer2@bimplus.net"  },  "role": {  "id": "Project\_Viewer“  }}]  PUT: Update the project role of a team member. Only the user with "Account Owner" or "Project Owner" role can use this API call.  {"member": {  "user\_id": "bf5b2382-1d14-b8df-8454-947f83b45c25",  "email": "customer@bimplus.net"  },  "role": {  "id": " Project\_Viewer"…… | GET,POST, PUT |

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| ***Users*** | |
| /V0.99/users  POST: Create a new user | POST |
| /V0.99/users/{user\_id}  GET: Get information about the user  PUT: Modify the user  DELETE: Delete the user; Remove from all teams and projects | GET,PUT,DELETE |

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| ***(Users) self*** | |
| /V0.99/users/self  GET all informations about the logged on user | GET |