Mozilla Addon Builder
Definition of the Package Building System

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If in doubts, please take a look at the accompanied document:
`http://github.com/zalun/FlightDeck/raw/master/Docs/Addon%20Builder%20-%20Build%20System.pdf`.

1 Syntax

1.1 Objects

`x`, `y`, `z` — *represents* `[a..z]`
`m`, `n` — *represents* `[0..9]+`

`Ux` is the specific User (identified by *User:name*)

`Px` is the specific Package (identified by *Package:name*)
It should always be used within its `type` context as `Lx` — Library or `Ax` — Addon
Every Package has an associated PackageRevision[1] (identified by a triplet `Ux:Py.n` *User/Package/PackageRevision:revisionNumber*)

`Mx` is the Module (identified by `Ux:Py.n:Mz` *PackageRevision/Module:name*[2])

1.2 Object identification — revision numbers and HEAD

`Ux:Py.n` defines revision of the Package.
`Ua:La.1` — First revision of Library `La` saved by `Ua`.

`Ux:Py.n:Mz` defines the precise Module revision — a Module inside the PackageRevision.
`Ua:La.1:Ma` — Module `Ma` inside the first revision of Library `La` saved by `Ua`.

`Px` $\Longrightarrow$ `Uy:Px.n` is the HEAD revision of the Package
`La` $\Longrightarrow$ `Ua:La.1` — `La`'s HEAD points to the first revision of Library `La` saved by `Ua`.

`Ux:Py.n` $\supset$ {`Ux:Py.m:Mz, ...`} Modules inside the Package revision.
`Ua:La.2` $\supset$ {`Ua:La.1:Ma, Ub:La.2:Mb`} — Second revision of Library `La` saved by `Ua` contains `Ma` saved by `Ua` in his `La`'s first revision and `Mb` saved by `Ub` in his second `La`'s revision.

[1]PackageRevision is not the same as Package version. The latter is just meta-data, a text field of PackageRevision object used only in exported `XPI`. It will no longer be used for data identification.
[2]Every data object is identified by a PackageRevision. The concept is similar to *git*'s commits. In essence, for every saved Module change, a new PackageRevision is created.

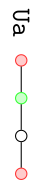
2 Editing Library and its Modules

2.1 Starting point

All next scenarios start from the `Ua:La.1` defined as follows.

`La` ⟹ `Ua:La.1` ⊃ {`Ua:La.1:Ma`}

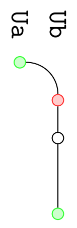
Package `La` is created by User `Ua`.
`La`'s HEAD is PackageRevision identified as `Ua:La.1`
It contains only one module - `Ma`
Following steps had to happen to achieve above status:



`Ua` creates empty Library `La`	`Ua:La.0` ⊃ {}
System sets `La`'s HEAD	`La` ⟹ `Ua:La.0`
`Ua` adds new Milestone `Ma` to `La`	`Ua:La.1` ⊃ {`Ua:La.1:Ma`}
`Ua` sets the HEAD	`La` ⟹ `Ua.La.1`

2.2 Scenario (1 Module, 2 Users, no dependencies)

`Ua` and `Ub` are working on `La`
`Ub` modified one module

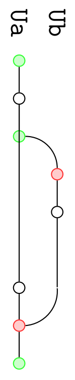


`Ub` creates new branch	`Ub:La.0` ⊃ {`Ua:La.1:Ma`}
`Ub` saved changes to `Ma`	`Ub:La.1` ⊃ {`Ub:La.1:Ma`}
`Ub` sends *request* to `La`'s creator to updade `La`'s HEAD	
`Ua` accepts the request by setting the HEAD to `Ub`'s version	`La` ⟹ `Ub:La.1`

Result: `La` ⟹ `Ub:La.1` ⊃ {`Ub:La.1:Ma`}

2.3 Scenario (2 Modules, 2 Users, no dependencies)

`Ua` and `Ub` are working on `La`
`Ua` created module `Mb`
`Ub` is working on `Mb`



`Ua` adds a new module `Mb` to `La`	`Ua:La.2` ⊃ {`Ua:La.1:Ma, Ua:La.2:Mb`}
`Ua` sets the HEAD	`La` ⟹ `Ua:La.2`
`Ub` creates new branch	`Ub:La.0` ⊃ {`Ua:La.1:Ma, Ua:La.2:Mb`}
`Ub` modifies `Mb`	`Ub:La.1` ⊃ {`Ua:La.1:Ma, Ub:La.1:Mb`}
`Ub` sends request to `Ua` to upgrade `La`	
`Ua` modifies `Ma`	`Ua:La.3` ⊃ {`Ua:La.3:Ma, Ua:La.2:Mb`}
`Ua` acepts `Ub`'s request, upgrades `La`	`Ua:La.4` ⊃ {`Ua:La.3:Ma, Ub:La.1:Mb`}
`Ua` sets the HEAD	`La` ⟹ `Ua:La.4`

Result: `La` ⟹ `Ua:La.4` ⊃ {`Ua:La.3:Ma, Ub:La.1:Mb`}

2.4 Scenario (2 Modules, 2 Users, no dependencies)

`Ua` and `Ub` are working on `La`
`Ub` created module `Mb`

1. `Ub` adds a new module `Mb` to `La`
   `Ub:La.0` $\supset$ {`Ua:La.1:Ma`} — automatic fork of `La`
   `Ub:La.1` $\supset$ {`Ua:La.1:Ma, Ua:La.1:Mb`}
2. `Ub` modifies `Mb`
   `Ub:La.2` $\supset$ {`Ua:La.1:Ma, Ub:La.2:Mb`}
3. `Ub` sends request to `Ua` to upgrade `La` from `Ub:La.2`
4. `Ua` modifies `Ma`
   `Ua:La.2` $\supset$ {`Ua:La.2:Ma`}
5. `Ua` acepts `Ub`'s request
   `Ua:La.3` $\supset$ {`Ua:La.2:Ma, Ub:La.2:Mb`}
6. `Ua` sets the HEAD
   `La` $\Longrightarrow$ `Ua:La.3`
7. Result: `La` $\Longrightarrow$ `Ua:La.3` $\supset$ {`Ua:La.2:Ma, Ub:La.2:Mb`}

2.5 Scenario with conflict (2 Modules, 2 Users, no dependencies)

`Ua` and `Ub` are working on `La`
`Ua` created module `Mb`
`Ua` and `Ub` are working on `Mb`
Conflict arises...

1. `Ua` adds a new module `Mb` to `La`
   `Ua:La.2` $\supset$ {`Ua:La.1:Ma, Ua:La.2:Mb`}
2. `Ua` sets the HEAD
   `La` $\Longrightarrow$ `Ua:La.2`
3. `Ub` modifies `Mb`
   `Ub:La.0` $\supset$ {`Ua:La.1:Ma, Ua:La.2:Mb`} — automatic fork of `La`
   `Ub:La.1` $\supset$ {`Ua:La.1:Ma, Ub:La.1:Mb`}
4. `Ua` modifies `Mb`
   `Ua:La.3` $\supset$ {`Ua:La.1:Ma, Ua:La.2:Mb`}
5. **CONFLICT**
   At the time we've got two versions of La.Mb which came out from the same version
6. `Ua` sets the HEAD
   `La` $\supset$ `Ua:La.3`
7. `Ub` receives info that his source is behind the HEAD
   `Ub:La.1:Mb` (and `Ub:La.1`) is marked as *conflicted*
   `Ub` can't send the update request
8. `Ub` manually solves conflict by editing the `Mb` and removing the *conflict flag*
   `Ub:La.2` $\supset$ {`Ua:La.1, Ub:La.2:Mb`}

9. `Ub` sends request to `Ua` to upgrade `La` from `Ub:La.2`
10. `Ua` acepts `Ub`'s request
    `Ua:La.4` $\supset$ {`Ua:La.3:Ma, Ub:La.2:Mb`}
11. `Ua` sets the HEAD
    `La` $\Longrightarrow$ `Ua:La.4`
12. Result: `La` $\Longrightarrow$ `Ua:La.4` $\supset$ {`Ua:La.3:Ma, Ub:La.2:Mb`}

Draft/Ideas

update Library if Library HEAD has been changed something should tell the User that an update is possible. It should then (on request) change the versions of all Modules which are not in conflict with updating Library. In essence, if
`Ua:La.1` $\supset$ {`Ua:La.1:Ma, Ub:La.2:Mb`} is a Library to be updated and
`La` $\Longrightarrow$ `Uc:La.3` $\supset$ {`Ub:La.1:Ma, Uc:La.3:Mb, Uc:La.1:Mc`} is current HEAD, then
`Ub:La.2:Mb` should be updated to `Uc:La.3:Mb` and `Uc:La.1:Mc` should be added.
User should receive a notification that `Ua:La.1:Ma` is not in sync with HEAD.

forking Consider forcing users to create their copy of a Package before entering to edit mode (as in *github*), find a better name if needed ...

revision graphs should be created inside this documentation.
Consider using tikz `http://www.texample.net/tikz/examples/`

To be continued…