Bugtrackers *triplification*

Olivier Berger olivier.berger@it-sudparis.eu

Andrei Sambra andrei.sambra@telecom-sudparis.eu

Valentin Vlasceanu ion_valentin.vlasceanu@it-sudparis.eu
(INF / TELECOM SudParis / Institut TELECOM, France)

Abstract: To interconnect bugtrackers, and especially the one used to manage free software projects, one need tools to convert their custom format to a common interoperable form. We, in the context of the *Helios project*, are working on refining existing ontologies to describe bugs from the most used bugtrackers in open source software. We propose two prototypes for review, based on *triplify* and *EvoOnt BOM*, which export bugs from *bugzilla* installations and *Debian's UDD* in the form of RDF triples.
Key Words: RDF, bug, bugtracker, triplify, Debian, bugzilla, UDD, Linked Data

1 Introduction

Bugtracking is a vital activity for open source[1] development. Most open source software development groups use one bugtracker (among popular Open Source bugtrackers are bugzilla, Trac, Mantis, etc.). We, in the context of the HELIOS project[Helios Project], aim at addressing bugtracker synchronization issues. To that purpose, the potential of using Semantic Web technologies for navigating between the many similar bugs filed in the different bugtracker systems scattered all over the open source ecosystem is experimented.

2 Bug tracking on the Semantic Web

For the needs of open source software maintainers and packagers, we aim at helping automating some of their daily work like monitoring the status of linked bugs. This will be helpful to free software distribution maintainers, who package the software released by upstream projects, and maintain a link between users of the distributions (who have reported their problems to the distribution's bugtracker) and the upstream project's bugtracker.

To do so, it's essential to increase communication mechanisms, beyond bugtracker silos. Unfortunately, at the moment, such links between bugs are not always formally defined in the bugtracker applications, and their semantics is most of the times ambiguous. This used to render almost impossible the exploitation of such links without ad-hoc developments.

[1] we consider *free software* and *open source* as synonyms in this document

2.1 Bug tracker interoperability

There are very few tools that allow to interact between bugtrackers. *Launchpad* is such a SAAS tool, but with an internal database, which doesn't allow use of its bugs model by external applications. *Bts-link* or *Mylyn* are other client tools, which do web-scrapping or SOAP invocations, and both have custom code to address each bugtracker specific bug model.

2.2 Bug/Issue semantic representation

The first step we have taken in Helios is to try and find an existing standard that can model bugs from the following bug trackers: Debian's Debbugs, Bugzilla, Mantis, Launchpad, Gforge/FusionForge, Trac. There's none, to our knowledge, established as such standard at the moment.

We are thus participating to the *baetle*[baetle] community that seeks to establish a standard for interoperability between bugtrackers, and are currently evaluating the use of EvoOnt BOM[EvoOnt], which we will extended, in the context of the Helios project[2].

3 Current status

We have developped two prototypes using Triplify to generate data comming from a copy of the *Ultimate Debian Database*[UDD] (which contains facts about Debian bugs[Debian]), and from any Bugzilla[Bugzilla] installation. Both will exhibit information in the form of RDF+N3 data.

They should help as a reference implementation in order to validate the ontologies, and to start populating the Semantic Web with descriptions of Open Source projects Linked Bugs.

3.1 Bugzilla Triplification

The triplify configuration we propose will expose facts about Bugzilla bugs (using EvoOnt BOM's `Issue` class as a base), the bugtracker's users (bug reporters, assignee, etc.) using SIOC's `User` and FOAF's `Person`, and the links between these : bugs reported by one account owned by a person, etc.

The detailed description, an example of the output data, and a link to a live demonstrator as well as the latest version of the `config.inc.php` file can be found on our project's wiki page at this URL [TriplifyBugzillaToRdf].

Please note that this is a work in progress implementation with a lot more features planned for the future releases (like modeling of the bug comments as SIOC discussions).

[2] The BOM extension we are developing is available at [Helios BT Ontology], and is an ongoing work.

3.2 Ultimate Debian Database Triplification

Much like the bugzilla triplification, we've designed a configuration of triplify [TriplifyUDDToRdf] using the same ontologies and relations to publish facts about Debian bugs, using the database of these bugs present in Debian's UDD[UDD].

We're running a demonstrator[UDD triplify demo] which provides real data relating to the hundreds of thousands of Debian bugs as well as their thousands of reporters (for a snapshot of UDD taken late July).

Particularly interesting are links between bugs, like the ones of Debian that are referring to bugs in upstream project's bugtrackers. These are described by `forwarded-upstream` relations in Debbugs, that we've mapped to a new `helios-bt:reportedAlsoIn` property. See [TriplifyUDDToRdf] for links to examples of such bugs on the live demonstrator.

4 Conclusion

We wish to propose the two prototypes developped on triplify and the Helios BT ontology as our submission to the *LOD Triplification Challenge 2009*.

These first prototypes show that *EvoOnt BOM* fits very well the modeling of bugtracker bugs in the context of the use for bugs tracking on the Semantic Web, provided that some extensions are designed. We believe this will help pave the way to more Linked Open Data for open source bug facts in the coming months.

References

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[Bugzilla] Bugzilla home page `http://www.bugzilla.org/`

[Debian] Debian's bugtracker `http://bugs.debian.org/`

[EvoOnt] Software evolution ontology `http://www.ifi.uzh.ch/ddis/evo`

[Helios Project] Helios project home page `http://www.helios-platform.org/`

[Helios BT Ontology] Helios Bugtracking Ontology `http://picoforge.int-evry.fr/projects/svn/helios_wp3/helios_bt.owl`

[TriplifyBugzillaToRdf] Bugzilla Triplification wiki `https://picoforge.int-evry.fr/cgi-bin/twiki/view/Helios_wp3/Web/TriplifyBugzillaToRdf`

[TriplifyUDDToRdf] Bugzilla Triplification wiki `https://picoforge.int-evry.fr/cgi-bin/twiki/view/Helios_wp3/Web/TriplifyBugzillaToRdf`

[UDD] Ultimate Debian Database `wiki.debian.org/UltimateDebianDatabase/`

[UDD triplify demo] `http://kilauea.int-evry.fr:8081/triplify/UDD/`