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Developing Tango Mobile Applications at HZG

Acknowledges



**EUROPEAN
SPALLATION
SOURCE**

This project is a contribution of the Helmholtz Association Centres and Technische Universität München to the ESS Design Update Phase.

The project's funding reference is FKZ05E11CG1.

We are using:



UFO library



C++ *NeXus* API

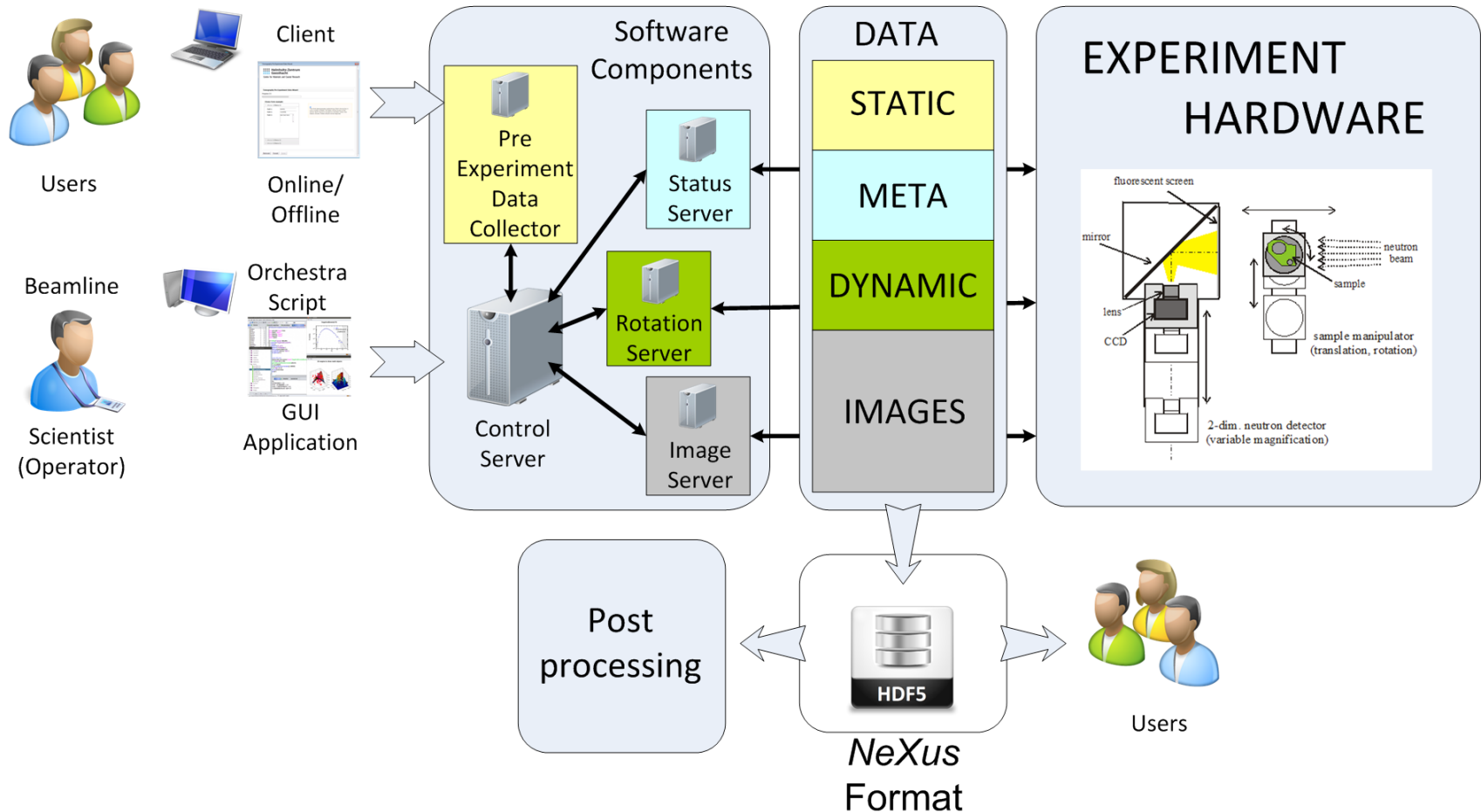
Developing Tango Mobile Applications

Agenda

- Motivation
 - Solution overview
 - Implementation details
 - Tango mobile applications SDK
 - Demonstration (creating Hello World)
 - Conclusions
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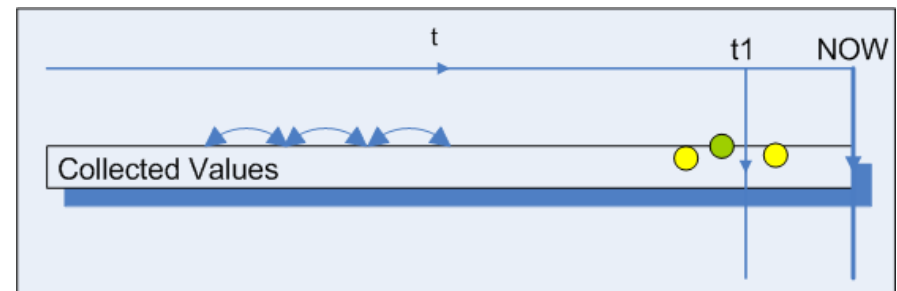
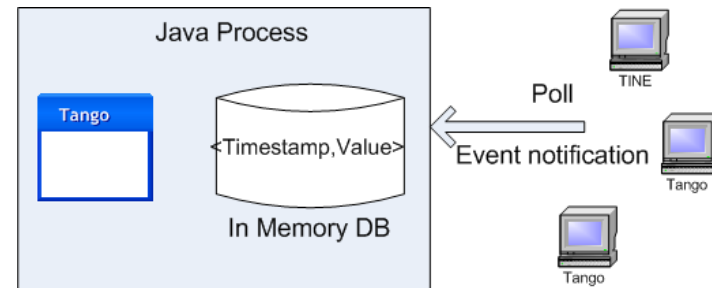
Motivation. The Big Picture.

Software protocol for high throughput tomography



Recap. What is StatusServer?

- Lightweight Java Tango server
- Collects data from remote servers implemented in different systems (Tango, TINE)
- Acts in a non-disturbing way
- Forms a continuous timeline of the experiment
- Configured in a single simple .xml file
- High performance in terms of giving data (processes requests in less than 1 ms)

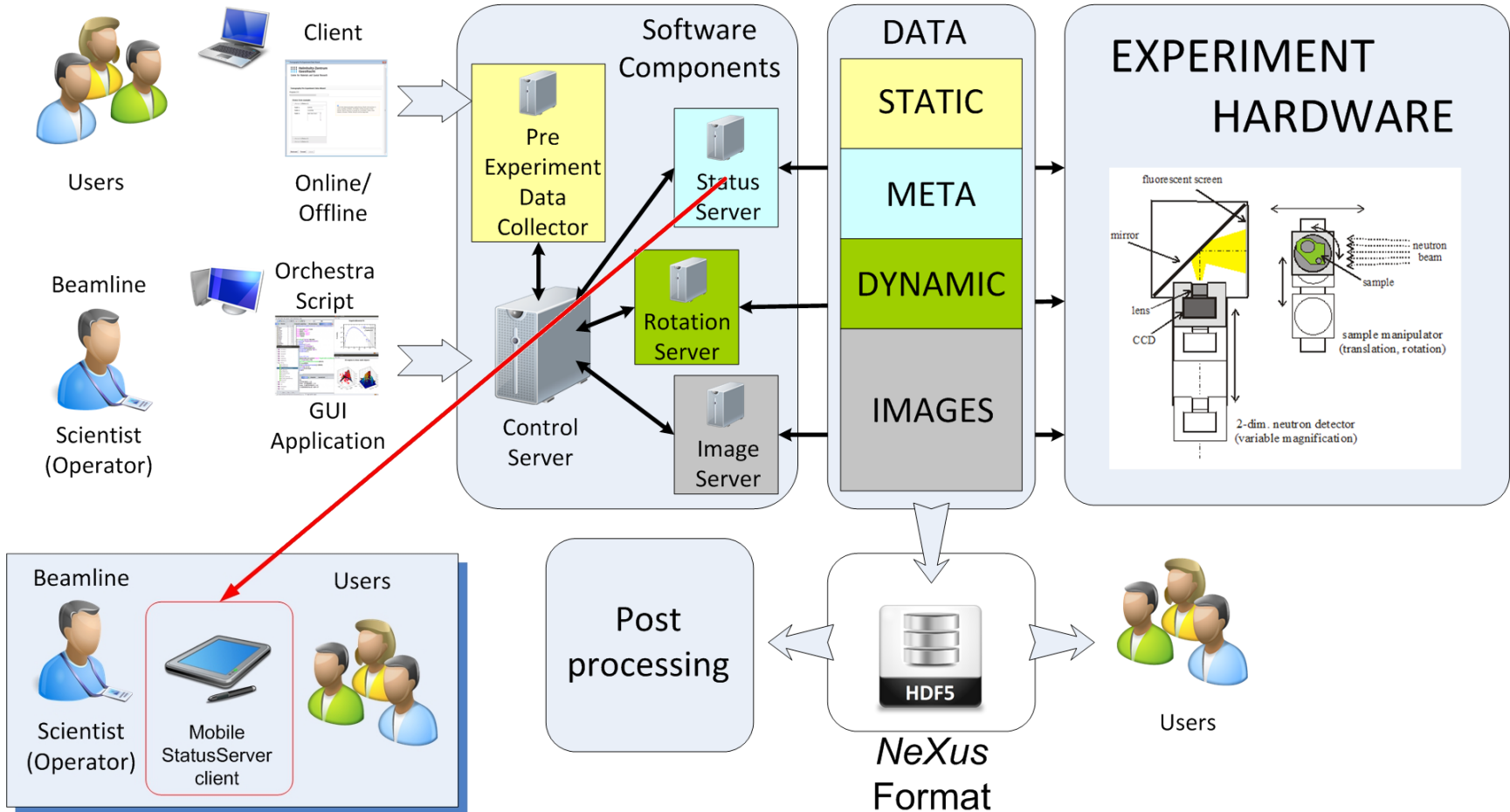


```

<!-- server-name - a tango server name for this server; instance-name - a tango instance name for this server-->
<StatusServer server-name="StatusServer" instance-name="development">
  <devices>
    <!-- tango or tine full device name-->
    <device name="tango://hasqkasharwi.desy.de:10000/mono/exp/vfo5">
      <attributes>
        <!-- name - an attribute name;
        method=[event|poll];
        interpolation=[last|nearest|linear];
        delay - polling frequency in millis. Note: delay for event=0; polling delay >= 20 -->
        <attribute name="Counts" method="poll" interpolation="last" delay="200"/>
        <attribute name="Value" method="poll" interpolation="last" delay="200"/>
      </attributes>
    </device>
  </devices>
</StatusServer>
  
```

Motivation. The Big Picture. Part 2

Software protocol for high throughput tomography

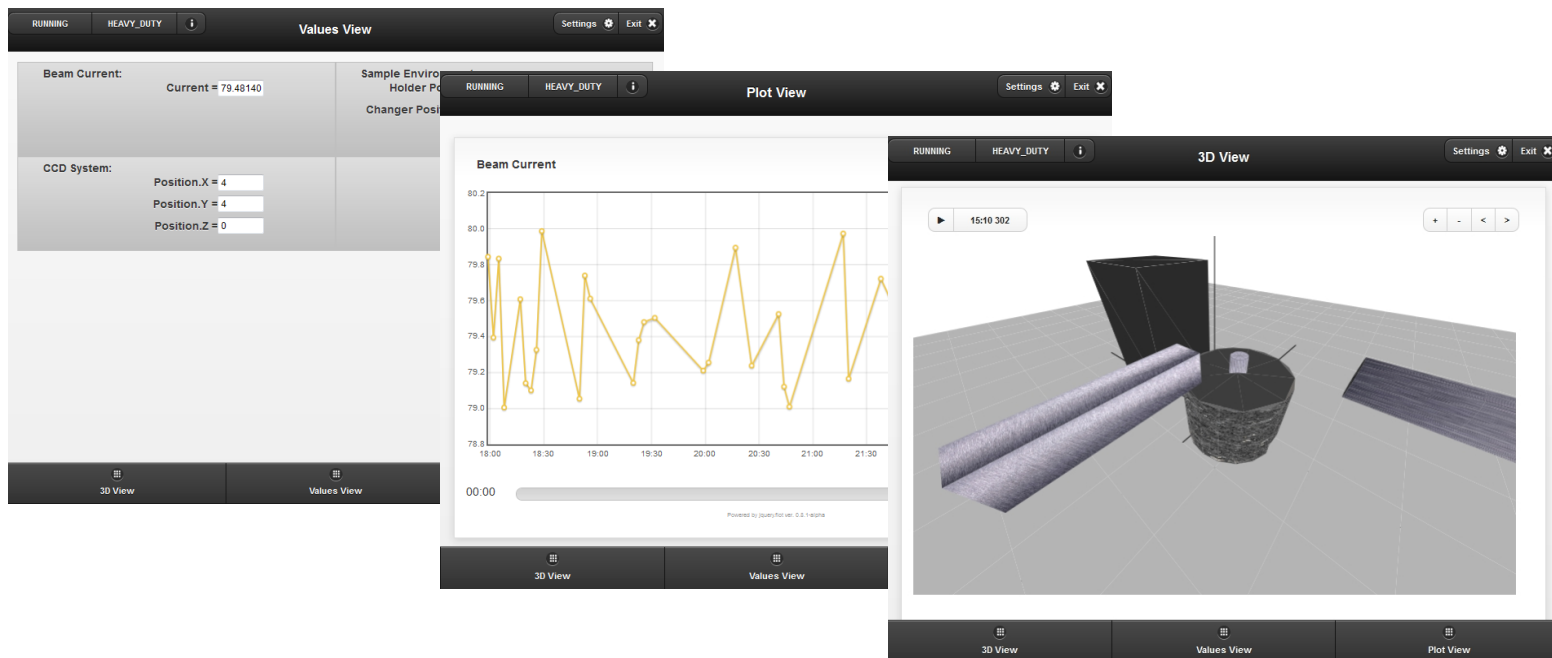


Motivation. Mobile StatusServer client

Idea:

- Monitor the ongoing experiment from a mobile device
- Review experiment when device is offline
- Configure easily for a variety of different instruments

Goals:



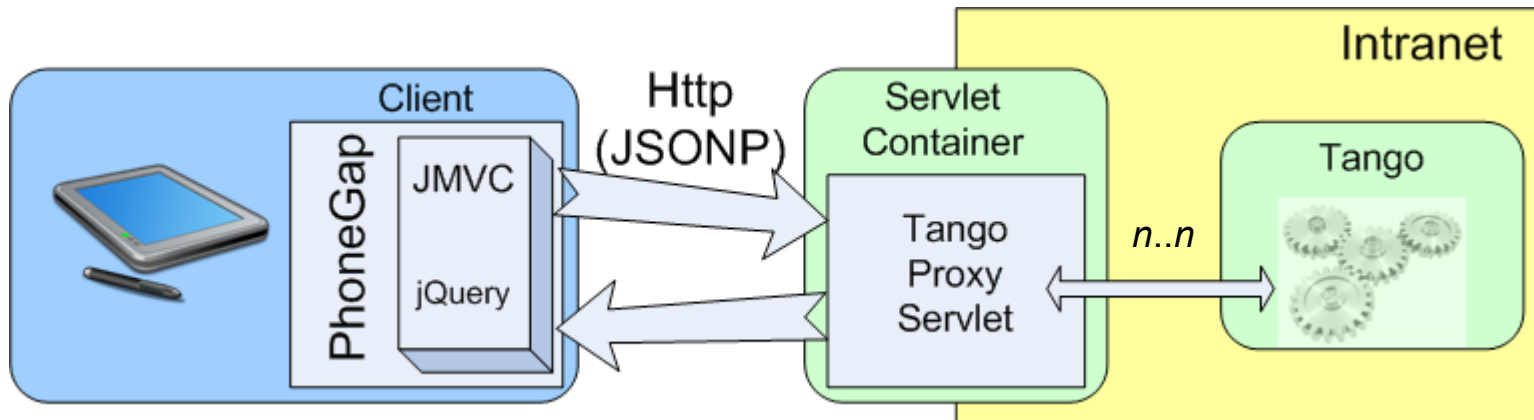
The client architecture overview

Client:

- Cordova (PhoneGap) Platform(s)
- JavaScriptMVC application
- JQuery mobile
- HTML + JavaScript + CSS

Server:

- Apache TomCat
- Java Tango Proxy Servlet(s)
- Remote Tango server(s)



Our Mobile Tango Application is an ordinary web application developed using HTML+JavaScript+CSS.

To simplify integration of all the mentioned frameworks and to give developers a convenient way to implement mobile applications.

We developed a

Mobile Tango Application SDK

- Provides everything in a single package
 - Provides a number of command line utilities that generate and manage jmvc application, generate Tango js stubs, add Tango Proxies, build everything and deploy
 - Contains mTangoTest application that demonstrates several techniques and examples of what and how can be done
 - Open source and freely available at <https://bitbucket.org/hzgwpm/mtango>
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Developing a “Mobile Hello World” application

Conclusions

In a hand we have the mobile StatusServer client which gives users a great experience of monitoring and reviewing the experiment*.

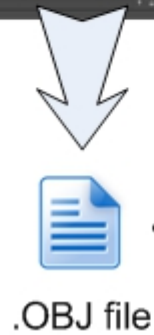
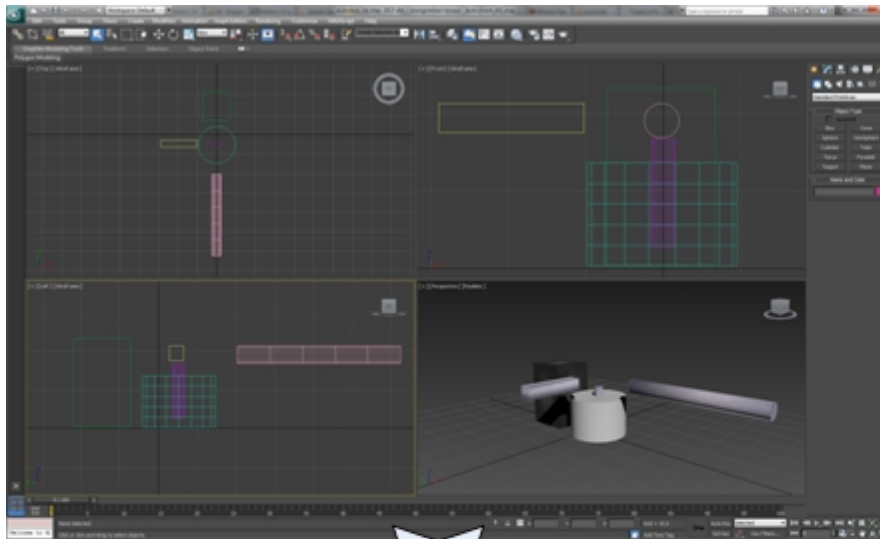
In another hand we have a mobile Tango applications SDK which can be used for developing applications based on communication with Tango servers.

* Not yet finished. Aprox. release date – end of June'13

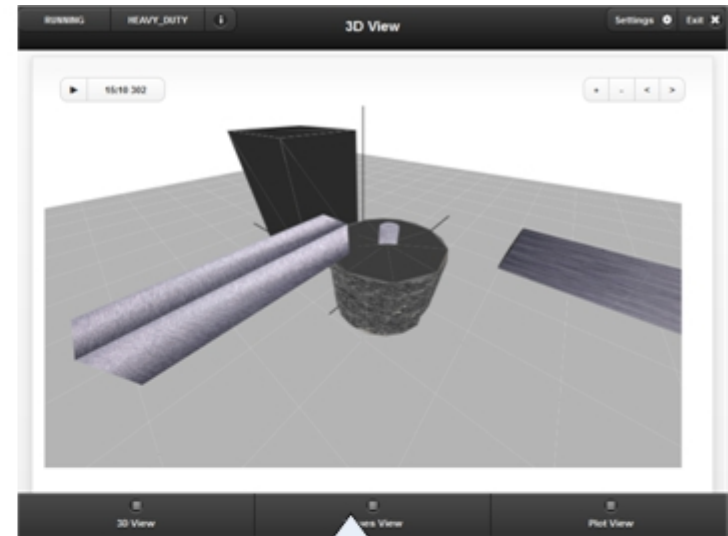
QUESTIONS?

THANK YOU!

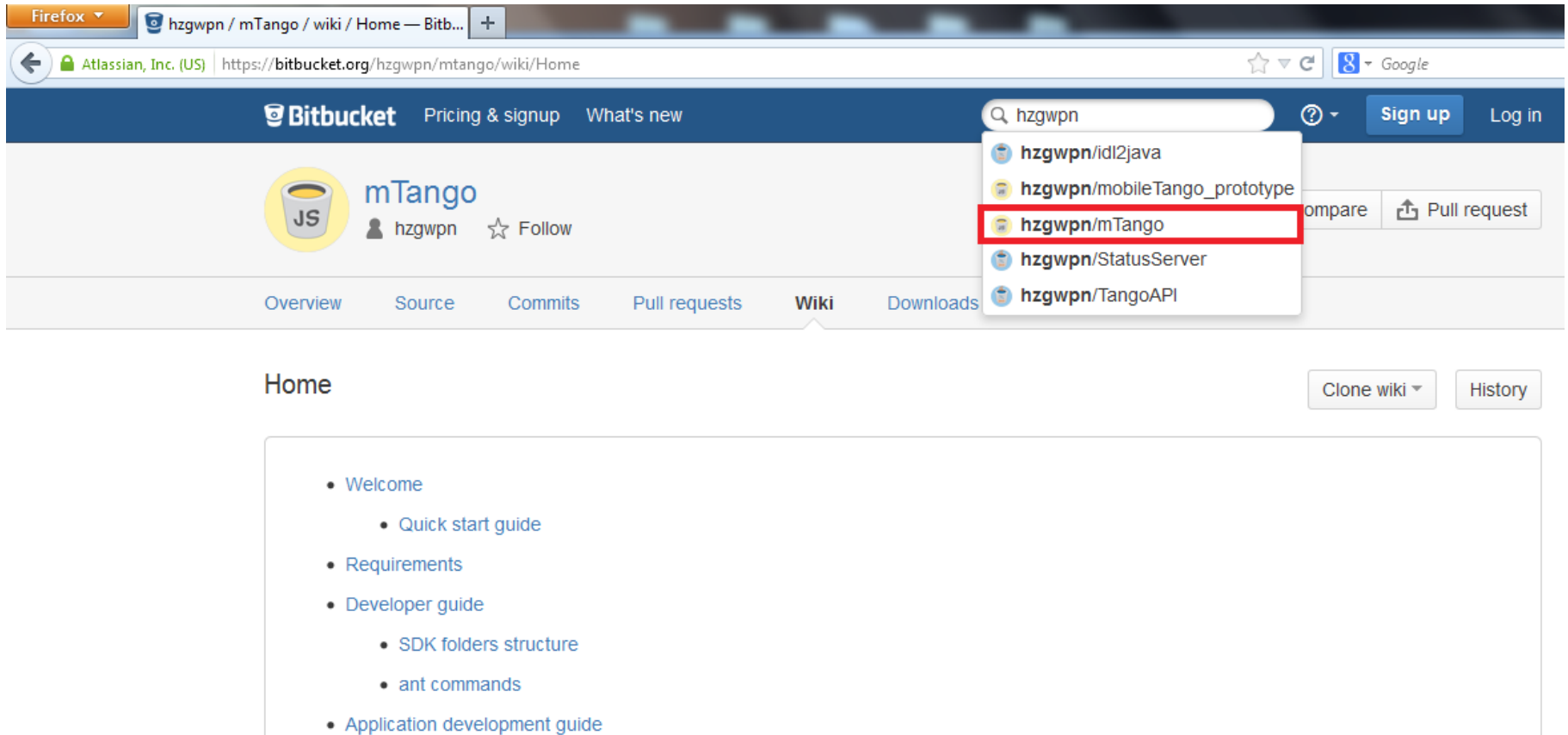
Integrating 3D models



three.js python converter



Project at bitbucket.org



The screenshot shows a web browser window displaying the Bitbucket project page for 'mTango'. The browser's address bar shows the URL 'https://bitbucket.org/hzgwpm/mtango/wiki/Home'. The Bitbucket navigation bar includes the logo, 'Pricing & signup', 'What's new', a search bar with 'hzgwpm' entered, and 'Sign up' and 'Log in' buttons. Below the navigation bar, the project name 'mTango' is displayed with a 'JS' icon, the user 'hzgwpm', and a 'Follow' button. A dropdown menu is open, showing a list of repositories: 'hzgwpm/idl2java', 'hzgwpm/mobileTango_prototype', 'hzgwpm/mTango' (highlighted with a red box), 'hzgwpm/StatusServer', and 'hzgwpm/TangoAPI'. The main content area is titled 'Home' and contains a list of links: 'Welcome' (with sub-links 'Quick start guide'), 'Requirements', 'Developer guide' (with sub-links 'SDK folders structure' and 'ant commands'), and 'Application development guide'. On the right side of the 'Home' section, there are buttons for 'Clone wiki' and 'History'.

Firefox hzgwpm / mTango / wiki / Home — Bitb...
Atlassian, Inc. (US) https://bitbucket.org/hzgwpm/mtango/wiki/Home
Bitbucket Pricing & signup What's new
hzgwpm
mTango JS hzgwpm Follow
hzgwpm
hzgwpm/idl2java
hzgwpm/mobileTango_prototype
hzgwpm/mTango
hzgwpm/StatusServer
hzgwpm/TangoAPI
Clone wiki History

- Welcome
 - Quick start guide
- Requirements
- Developer guide
 - SDK folders structure
 - ant commands
- Application development guide

The client architecture pros and cons

Pros

- Pure JavaScript+HTML+CSS solution
- JMVC organizes development cycle – development, testing, production
- Apache Cordova provides API to native functions (aka read/write to device's file system)
- Single codebase for many platforms
- Dedicated proxy servlets may optimize communication with Tango devices
- Security
- No need to adjust server side

Cons

- High complexity
 - Overall performance may suffer
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Status report on SDK development

Currently done:

1. First release have been made (supports only android development)
2. mTangoTest application demonstrates basic possibilities
3. A number of ant tasks implemented
4. Basic documentation is available on the projects wiki
5. Several tasks are defined for future release
6. Feedback is required to define further improvements

What is in the nearest future?!

1. Port to Linux
 2. Additional platforms will be included (WebOs, WinPhone)
 3. Cordova API wrappers for JMVC (Device lifecycle, simulate native API etc)
 4. JMVC integration with logging framework
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mTangoTest – a sample application

mTangoTest demonstrates the following possibilities:

1. Tango attributes read/write operations
 2. Tango commands execution
 3. Sample application (read attribute and draw plot accordingly)
 4. Read/write file into device's file system
 5. 3D graphics integration
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