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Jazz Extension Development Open Source Collaboration on GitHub

jazz-community.org | github.com/jazz-community

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Guido Schneider / Lukas Steiger, Nov., 2017

GitHub – What is it all about?



What is GitHub?

- Code hosting platform for version control and collaboration
- De facto standard for Open Source Projects
- Huge amount of (often free) third party integration
- Used by almost every company to publish their open source projects:



Bloomberg



Walmart

Impressive stats about GitHub: <https://octoverse.github.com/>

5.8M+
active users

331k+
active organizations

19.4M+
active repositories

Motivation to publish our work on GitHub



For the Jazz Community

- Share code / projects other may find useful
 - Not only talk about cool stuff we did for ourselves but also allow other companies to use it
- Document useful stuff IBM hasn't
- Evolve a platform where we could work on a cross company software collaboration project
(if some of us see a need for doing so)

For our team

- Improve our knowledge of Open Source technologies and methodologies
- Actively support our companies transition

What we did so far

- Create an Organization on GitHub
<https://github.com/jazz-community>
- Simple community web page published
<http://jazz-community.org>
- Prepare projects suitable to Open Source:
 - Remove company specific information
 - Reach certain level of Code Quality
 - Write a basic documentation
 - Get formal approval of Siemens for publication
 - Publish Projects to GitHub
- Motivate Ralph Schoon/IBM to publish the RTC Work Item Command Line Tool as Open Source
- 15 repositories available (+1 from Ralph)
- 34 releases published
- Written a comprehensive contribution guide (more on that later)



Today: Motivate other companies to join us ☺

Who is driving this so far?

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Guido Schneider
[@schneigu](#)



Lukas Steiger
[@innerjoin](#)



Pascal Hürlimann
[@SBI-](#)




Ralph Schoon
[@rsjazz](#)



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IBM

Jazz Community on GitHub



Jazz Community

Community driven software projects for use with IBM Rational Jazz Platform (<https://jazz.net>)

📍 Germany & Switzerland 🔗 <http://jazz-community.org>

📁 Repositories 16

👤 People 7

Pinned repositories

welcome

This repository shall help you to get started with the @jazz-community GitHub organization. It contains information on how to contribute to our projects and what repositories are available

🔗 1

rtc-workitem-bulk-mover-ui

Plugin enabling multiple RTC Work items to be moved to a new Project Area

🟡 JavaScript ★ 4 🔗 1

rtc-git-commit-picker

RTC extension for linking Git commits to Work Items

🟡 JavaScript ★ 4

work-item-command-line

RTC Work Item Command Line

🟤 Java ★ 3 🔗 2

rtc-statushistory-presentation

Work Item Status History presentation for RTC

🟡 JavaScript ★ 8

rtc-timeboxplanning

Rational Team Concert (RTC) extension for Timebox based Planning with SAFe support

★ 5



What is already there? **End User Extensions**

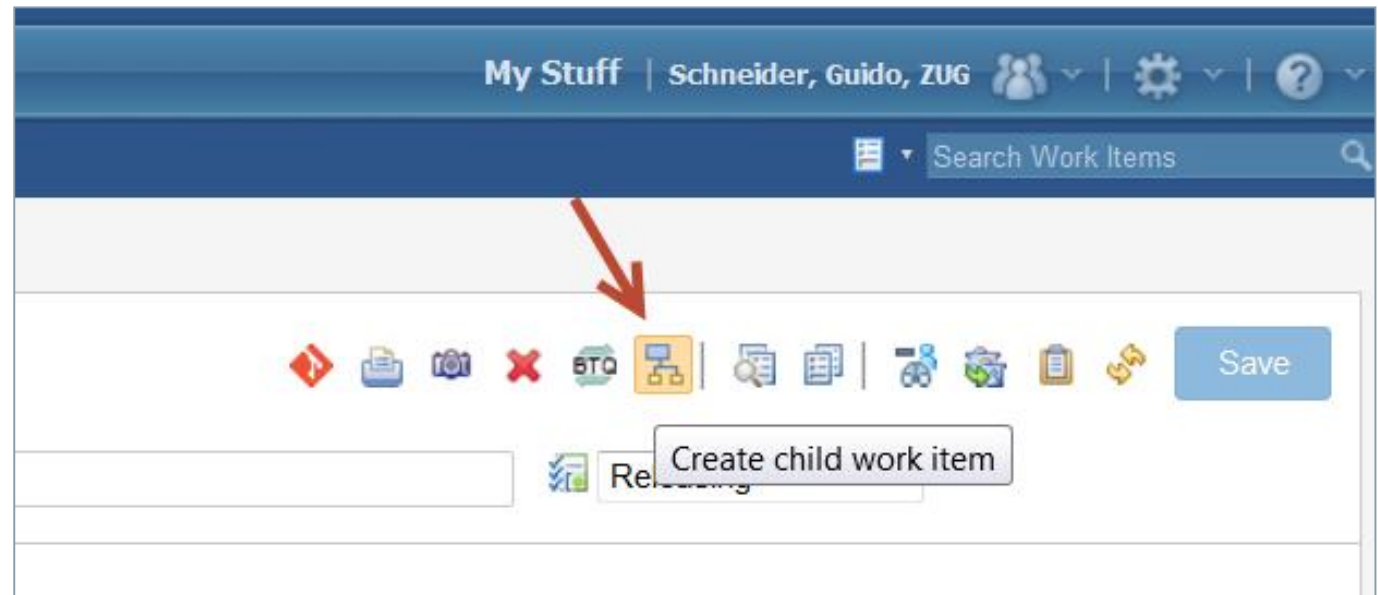
Creation of a Child Work Item is *no longer* Cumbersome

<https://github.com/jazz-community/rtc-create-child-item-plugin>

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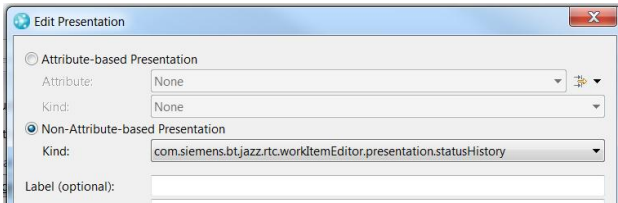


Single Click

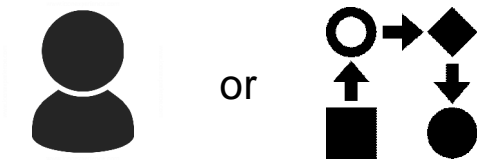


Show Status History of a Work Item

<https://github.com/jazz-community/rtc-statushistory-presentation>



Non-Attribute based
UI Presentation

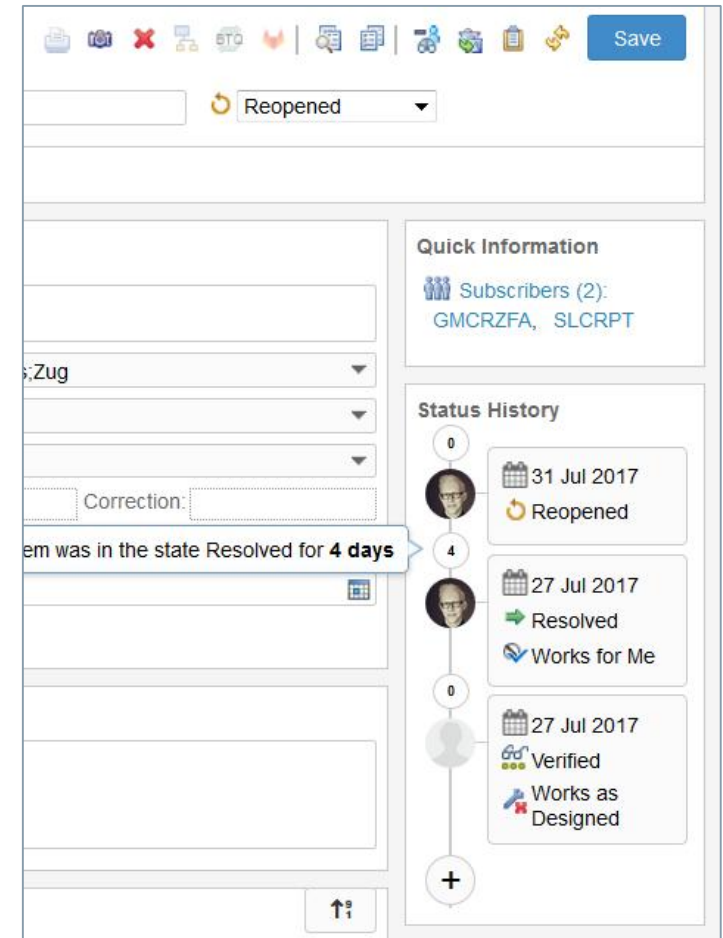


Different visualization modes
(User or Timeline)



Example How to write
own presentation

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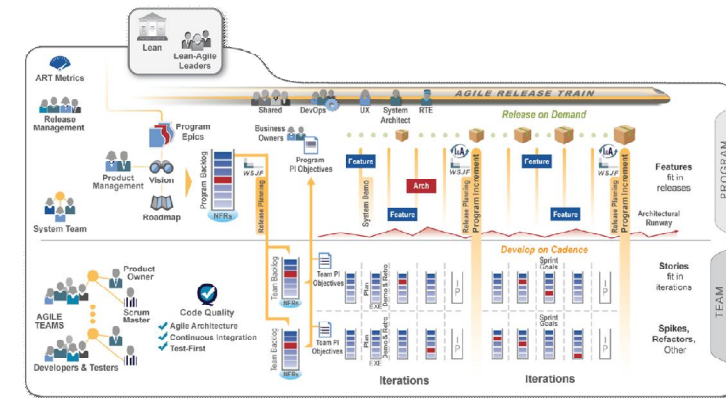


Recap - Scrum to SAFe Migration Issues

(Guido Schneider, 11. Oct. 2016, DACH Jazz User Group Meeting Frankfurt)



- With introduction of SAFe, there will be two new process templates:
 - SAFe Program and teams
 - SAFe Portfolio
- New project Areas will be created based on this templates (or based on a parent PA based on this templates)
- Existing SCRUM based Project Areas needs a way to migrate into SAFe Program and Teams. The solutions by IBM are:
 - Create new PA based on new template. Export / Import all needed Work Items
 - Modify existing Project Manual according to their SAFe cookbook step by step manually and upgrade the existing Work Items
- Both solutions have drawbacks
 - Loss of all comments/history etc.
 - Work Items get new IDs (Links won't work anymore)
 - Own process template may cause issues later and also with support

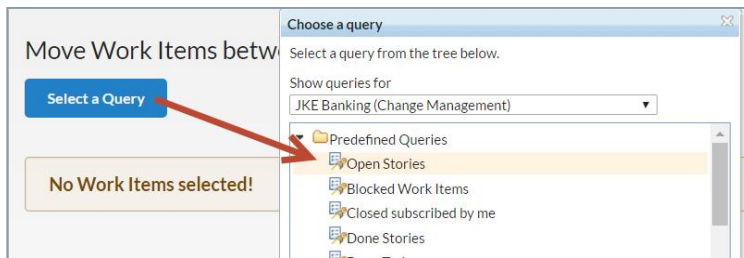


Solution: Work Item Bulk Mover Plug-In (1 / 2)

<https://github.com/innerjoin/rtc-workitem-bulk-mover-ui>



- Select a Work Item Query



- Review the Work Items returned by the query and select which ones to move
- Define the target project area
- Hit the Move Work Items button

Selected Query: 'Open Stories' Change

Work Items

allocat Q

	Id	Title
<input type="checkbox"/>	1006	Allocate dividends by amount and frequency
<input type="checkbox"/>	1015	Donor Dividend Allocation Criteria
<input type="checkbox"/>	1020	Allocate Dividends To Multiple Causes
<input type="checkbox"/>	1028	Allocate Dividends with Web Service
<input type="checkbox"/>	1031	Allocate Dividends to Nearby Charities

Target Project Area

JKE Banking 502 (Change Management) ▼

Move Work Items

Solution: Work Item Bulk Mover Plug-In (2 / 2)

<https://github.com/innerjoin/rtc-workitem-bulk-mover-ui>



- If a move is not possible, provide new values where no suitable counterpart value was found
- Then hit the Move Work Items button again

Your Work Items could not be moved automatically. Please provide the required Mapping Information

Value Mappings

Filed Against

Old Value	Suggested New Value	New Value	Affected Work Item
JKE/BRM	Unassigned	Timebox SAFe Demo Project	

Planned For

Old Value	Suggested New Value	New Value	Affected Work Item
Sprint 2		Sprint 2.2	

Move Work Items

- View the moved Work Items.
- History reveals fields changed

Field	Previous Value	Current Value
Severity	Normal	Moderate
Project Area	JKE Banking (Change Management)	Timebox Planning SA
Filed Against	JKE/BRM	Timebox SAFe Demo Project
Planned For	Release 1.0/Sprint 2	ART Green/ART Green PI 2/Sprint 2
Story Points	5 pts	L (5 pts)
Risk	Zero	<Unassigned>
Restricted Access	JKE Banking (Change Management)	Timebox Planning SA
Business Value	\$\$\$\$	<Unassigned>

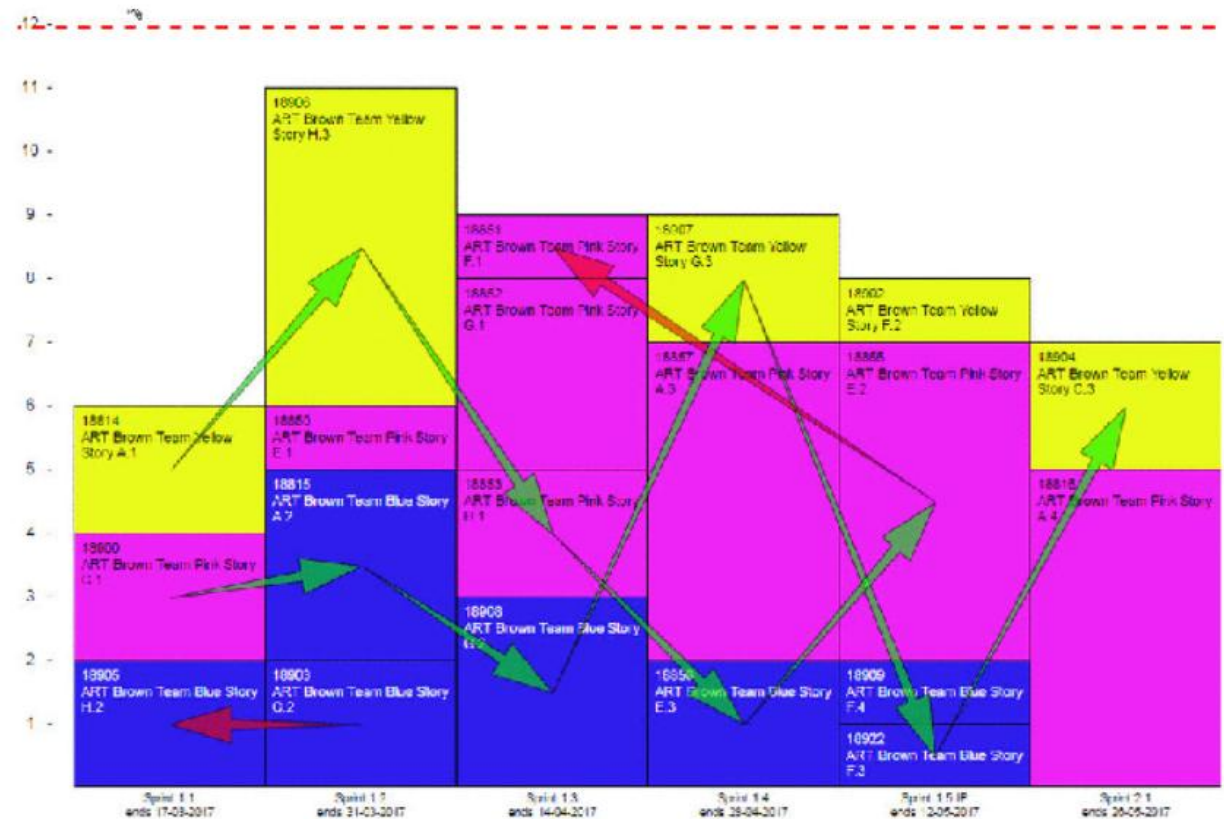
Timebox Planning

<https://github.com/jazz-community/rtc-timeboxplanning>

- Allows iteration/sprint planning of work items in a *Tetris-Like* way.
- Moved from [JazzHub](#) to GitHub
- Currently, only the documentation and binaries are published on GitHub

More info:

- [YouTube](#)
- [Blog](#)

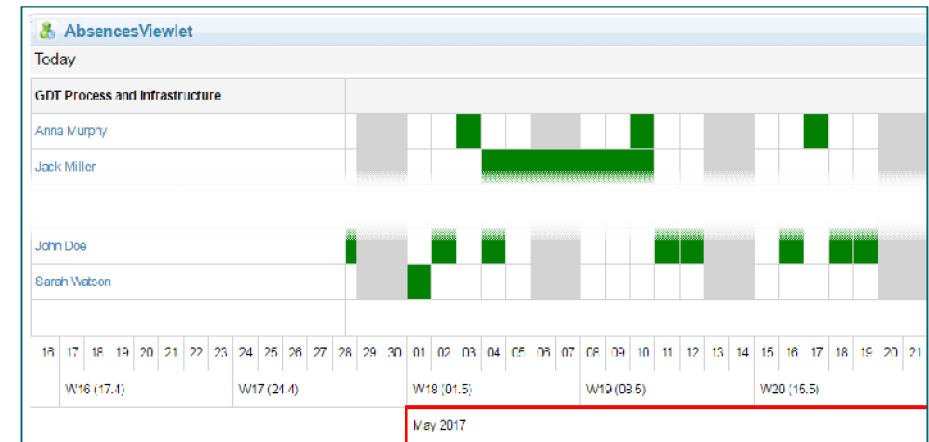


Absence Widget

<https://github.com/jazz-community/rtc-absence-widget>

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- Visualize Scheduled Absences of Jazz Users based on their team structure
- Covers the visualization only, automated import of Absence data not part of this project
- Currently, only the documentation and binaries are published on GitHub



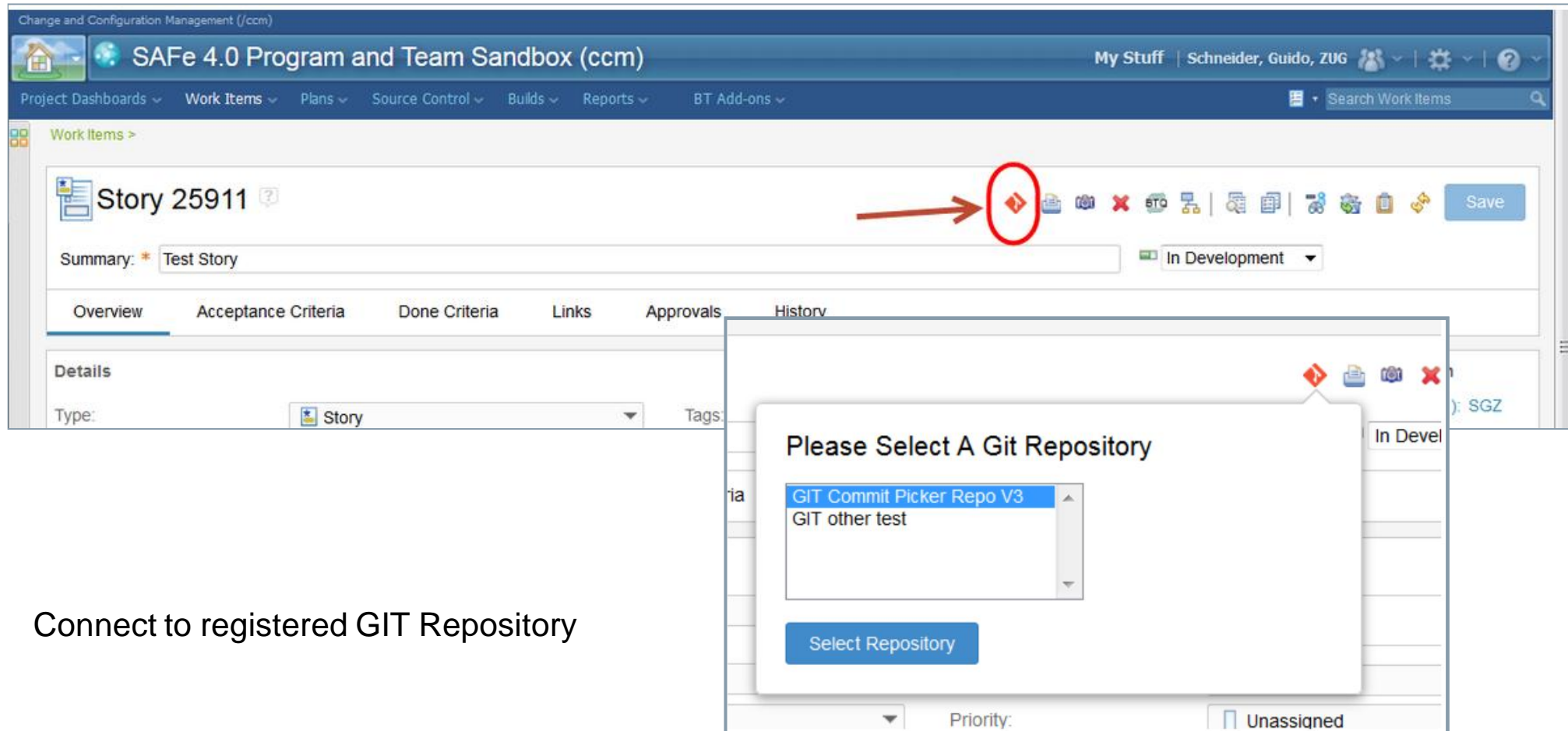
The screenshot shows the 'Scheduled Absences' section in the 'My Stuff' user interface for John Doe. The interface includes a sidebar with navigation links: Overview, Scheduled Absences (selected), Work Environment, Mail Configuration, and Social Network. The main content area displays a table of scheduled absences with columns for Summary, Date, and Actions. The table lists two absences: 'Feast of Corpus Christi - Public Holiday' on Jun 15, 2017, and 'Summer Vacation - Road Trip' from Jun 21, 2017, to Jul 9, 2017. A 'Create Scheduled Absence' button is visible in the top right corner.

Summary	Date	Actions
Feast of Corpus Christi - Public Holiday	Jun 15, 2017	
Summer Vacation - Road Trip	Jun 21, 2017 - Jul 9, 2017	

GIT Commit Picker (V1)

<https://github.com/jazz-community/rtc-git-commit-picker>

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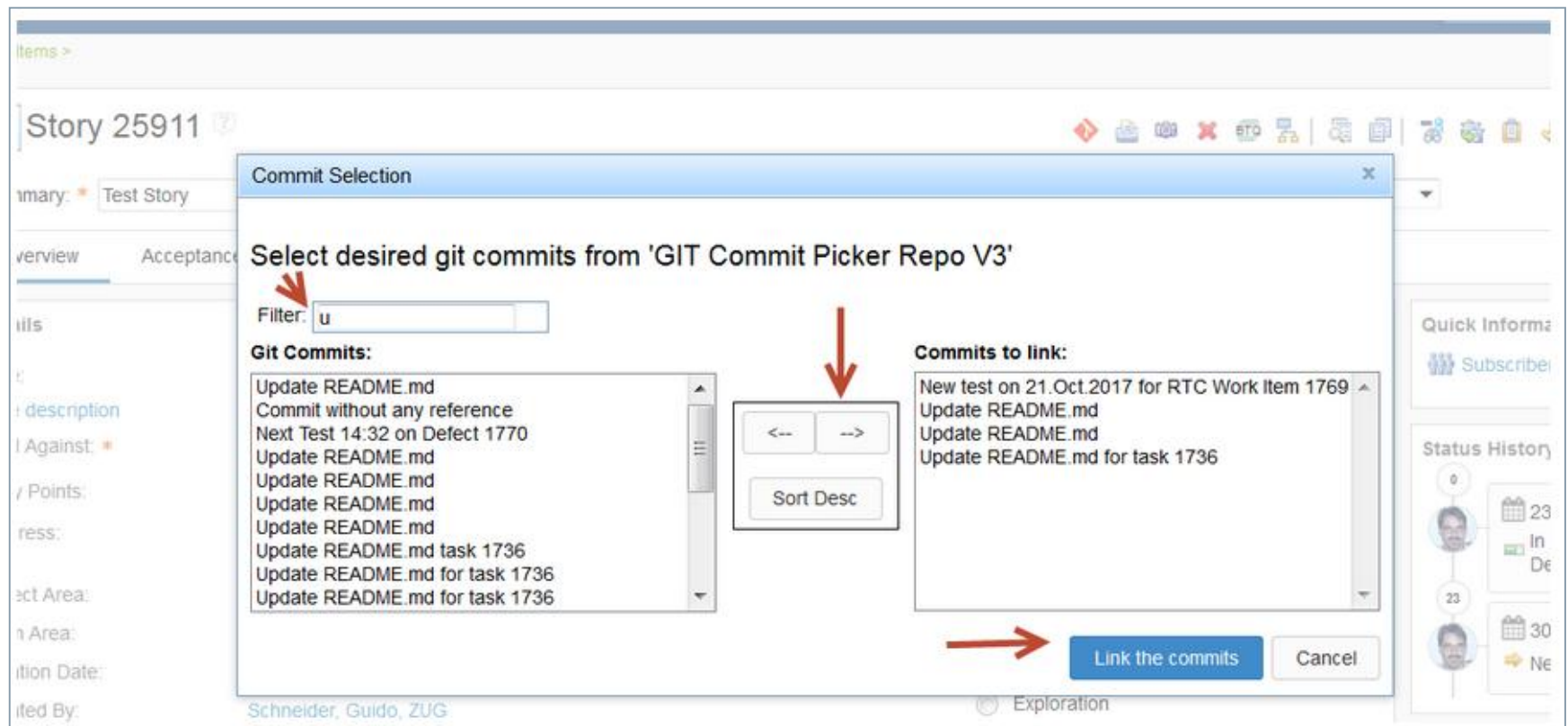


Connect to registered GIT Repository

GIT Commit Picker (V1)

<https://github.com/jazz-community/rtc-git-commit-picker>

Browse and select 1..n GIT Commits

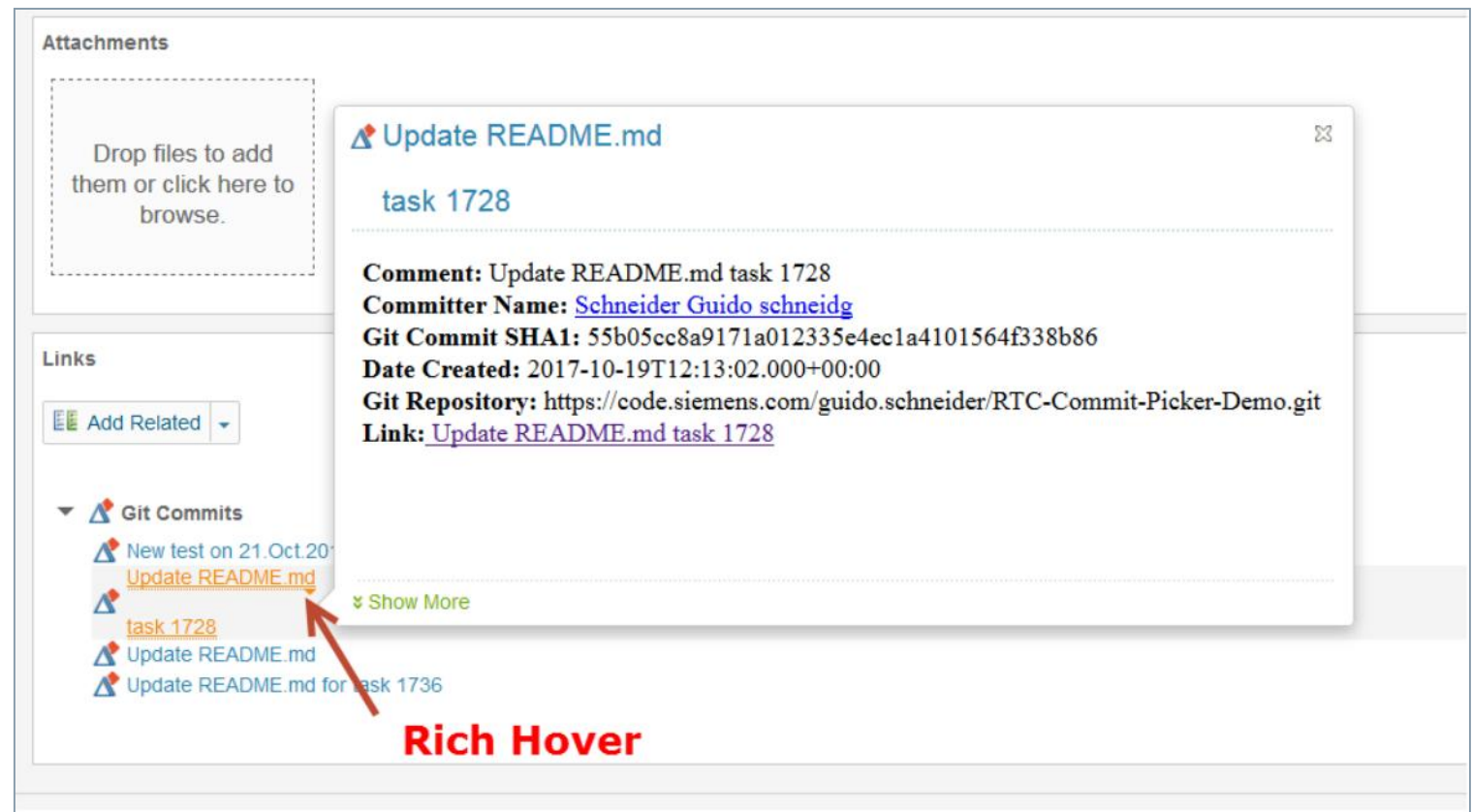


GIT Commit Picker (V1)

<https://github.com/jazz-community/rtc-git-commit-picker>



GIT Commit link added



WCL - Work Item Command Line

Create work items

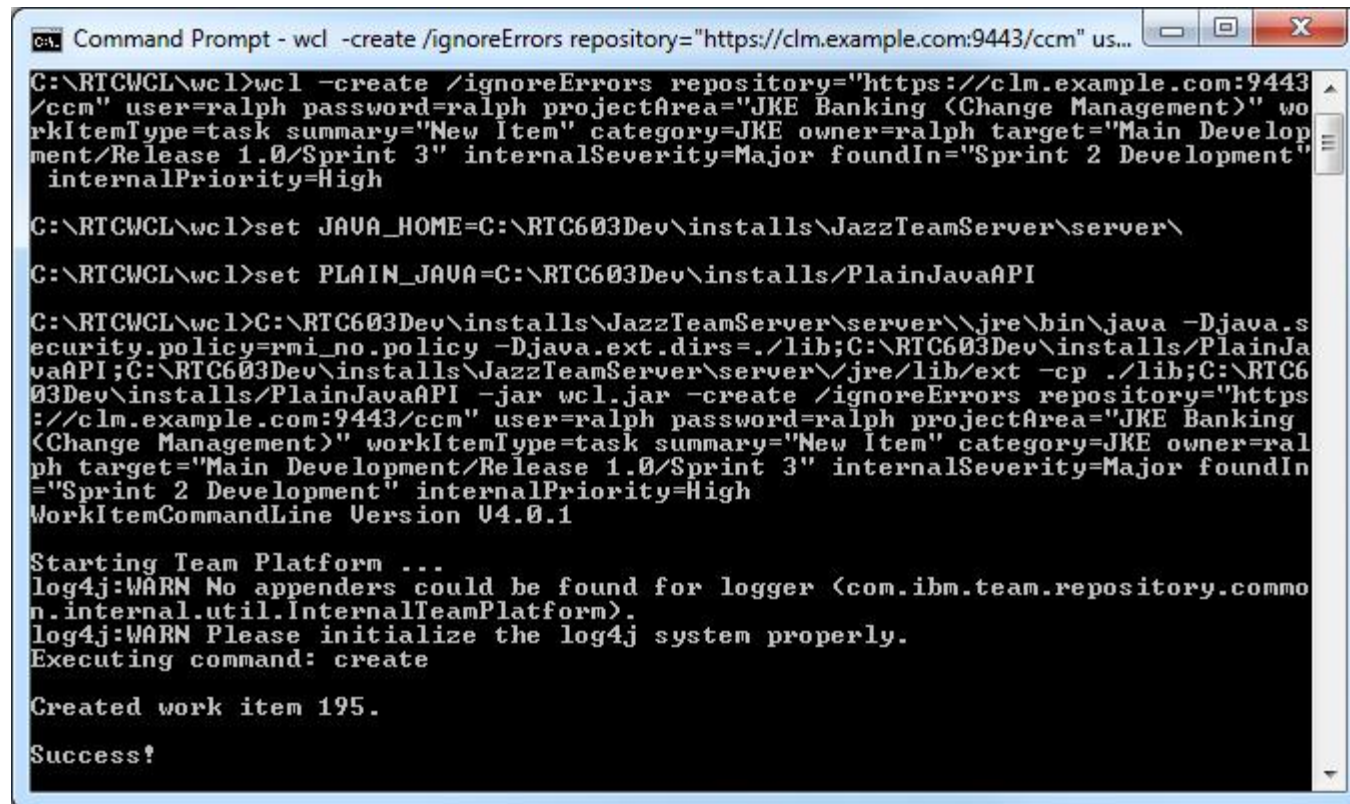
e.g. automatically during a build

Update work items

e.g. Build results

Export and import work items

e.g. external tools/companies



```
Command Prompt - wcl -create /ignoreErrors repository="https://clm.example.com:9443/ccm" us...
C:\RTCWCL\wcl>wcl -create /ignoreErrors repository="https://clm.example.com:9443/ccm" user=ralph password=ralph projectArea="JKE Banking <Change Management>" workItemType=task summary="New Item" category=JKE owner=ralph target="Main Development/Release 1.0/Sprint 3" internalSeverity=Major foundIn="Sprint 2 Development" internalPriority=High
C:\RTCWCL\wcl>set JAVA_HOME=C:\RTC603Dev\installs\JazzTeamServer\server\
C:\RTCWCL\wcl>set PLAIN_JAVA=C:\RTC603Dev\installs\PlainJavaAPI
C:\RTCWCL\wcl>C:\RTC603Dev\installs\JazzTeamServer\server\jre\bin\java -Djava.security.policy=rmi_no.policy -Djava.ext.dirs=./lib;C:\RTC603Dev\installs\PlainJavaAPI;C:\RTC603Dev\installs\JazzTeamServer\server\jre\lib\ext -cp ./lib;C:\RTC603Dev\installs\PlainJavaAPI -jar wcl.jar -create /ignoreErrors repository="https://clm.example.com:9443/ccm" user=ralph password=ralph projectArea="JKE Banking <Change Management>" workItemType=task summary="New Item" category=JKE owner=ralph target="Main Development/Release 1.0/Sprint 3" internalSeverity=Major foundIn="Sprint 2 Development" internalPriority=High
WorkItemCommandLine Version V4.0.1

Starting Team Platform ...
log4j:WARN No appenders could be found for logger <com.ibm.team.repository.common.internal.util.InternalTeamPlatform>.
log4j:WARN Please initialize the log4j system properly.
Executing command: create

Created work item 195.

Success!
```



Jazz Community on GitHub

Contributing & Community Management

How to become a contributor to the Jazz-Community?



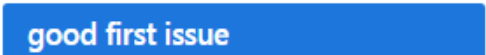
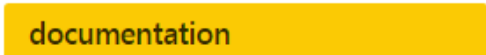
- We have put together all necessary information about the jazz-community organization here:

<https://github.com/jazz-community/welcome>

- You can learn how to contribute to any of our projects here:

<https://github.com/jazz-community/welcome/blob/master/CONTRIBUTING.md>

Many ways to contribute:

- Suggest enhancements 
- Report bugs 
- Submit pull requests that contain enhancements, bug fixes or documentation improvements
 - Contribute your first bug fix  
- Become a core contributor to any of our projects
- Start your own project and make it a part of the community

We are confident that every single one of you can contribute something useful 😊

People from our company would like to contribute, BUT...



... we have no experience with Open Source Software (OSS)

- There is a whole bunch of great resources about how to get started to contribute to OSS
- Start with something small (e.g. a GitHub issue tagged as 'good first issue')

... (we think that) we are not allowed to contribute to OSS projects

- Get in touch with your management and outline the benefits of contributing to an open source project
- Many companies today have an approval process for open source contributions
- Ask your colleagues and/or search the web to find projects where your company already is an active open source contributor. They can help you to get through the approval process

... we don't want to be reliable for any issues / we fear a lawsuit

- Always assign an appropriate license to your project that clearly states that the source code is provided as is and without any warranties (e.g. MIT license). Different countries have different rules
- Define basic quality requirements for your repository (four-eye-principle, code reviews, unit testing, ...)

... our competitors could benefit from our work

- Clearly state that (in terms of the Jazz Community) it is about infrastructure, not about the products you are earning money with.

Disclaimer: This information is provided "as is", without warranty of any kind



What is already there?
Developer Extensions

Jazz Debug Environment

<https://github.com/jazz-community/jazz-debug-environment>



The Challenge

How to set up a Development Environment for developing and debugging Jazz Extensions?

Ralph Schoon's RTC Extension Workshop

The **pros**

- Explanation in great detail
- You'll have a working environment at the end

The **cons**

- Working through it takes hours
- Creating the local Derby DB is a hassle
- It requires you to use Eclipse as your IDE / Editor
- Every developer does the same – for every release!

Conclusion

→ Takes too much time – time is money!

Our Solution (Jazz Debug Environment)

The **pros**

- Ready to go in two minutes!
If you already have downloaded JDK & Jazz SDK
- Creation of a dev database required only once
- Eclipse independent

The **cons**

- Still no automated DB creation
- Severe issues with 6.0.4 and 6.0.5

Conclusion (after 10 months)

→ Was worth the initial effort

We need a development environment that is easy to use and to maintain (see [Enhancement 438754](#))

Maven Archetype – Bootstrap Jazz Services in Minutes

<https://github.com/jazz-community/jazz-plugin-maven-archetype>



What are Jazz Services?

- Server side Java extension that do have full access to the RTC SDK capabilities
- Serves on <https://jazz-tld/app/service/your-service>
your-service is the identifying name of the service
- Allows to write more complex business logic

The challenge

Creation of our first service was quite difficult, due to the following reasons:

- Lacking documentation on how to do
- Extremely challenging Build automation

Maven Archetype – What's that?

Maven is a build automation tool used primarily for Java projects. [.. It] addresses two aspects of building software: first, it describes how software is built, and second, it describes its dependencies.

Archetype: In short, Archetype is a Maven project templateing toolkit. An archetype is defined as an original pattern or model from which all other things of the same kind are made.

Our solution

Our Maven archetype is a bootstrapper / generator to easily create Jazz based services

p2 Repository Converter

<https://github.com/jazz-community/jazz-p2-repository-converter>



The Problem

- RTC SDK required to Build a Jazz Service
- Downloadable RTC SDK is a simple Zip, but Maven requires it to be in a specific format (called **p2**)

Our Workaround

- Conversion script to create a p2 package out of the RTC SDK
- Upload this package to our company internal artifact storage (Artifactory)
- Allows us to build Jazz Services within our company, but still prevents to do so online (e.g. using Travis), as we can't release it publicly without violating the IBM license

IBM should provide the RTC SDK as a p2 repository on Maven Central
A P2 compliant package of the RTC SDK is in work ([Enhancement 422713](#))



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Open Discussion

Open Discussion



- 1 What is your first impression of our Community approach?
- 2 Do you see any existing projects on your side suitable for being open sourced?
- 3 Might there be any project we could do together? Things that all of us struggle with?
- 4 What do you think about the suggestions made regarding Access and Quality Management?
- 5 ... your great ideas

Get in Touch



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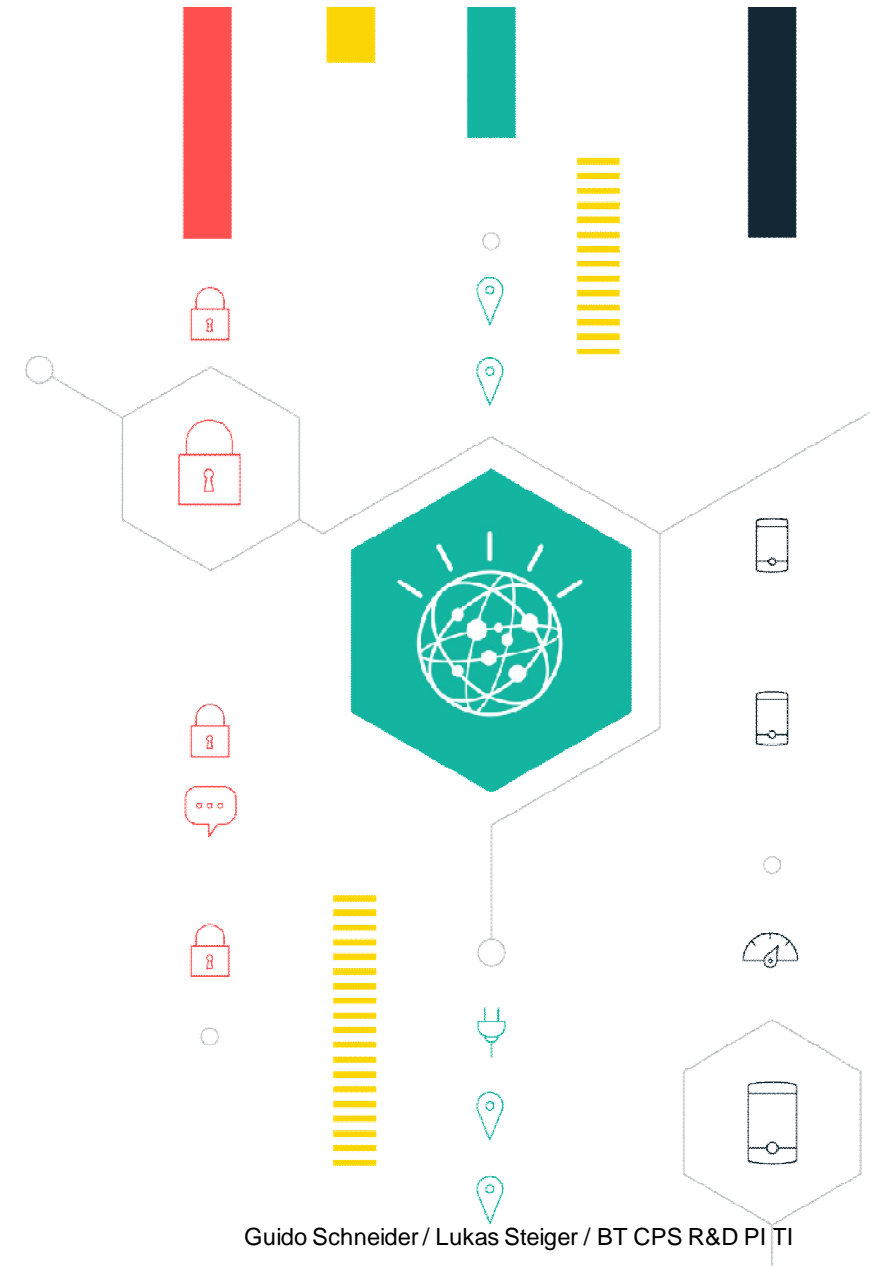
E-Mail: lukas.steiger@siemens.com

GitHub: <https://github.com/innerjoin>

LinkedIn: <https://linkedin.com/in/lukas-steiger/>

WCL – A RTC Work Item Command Line

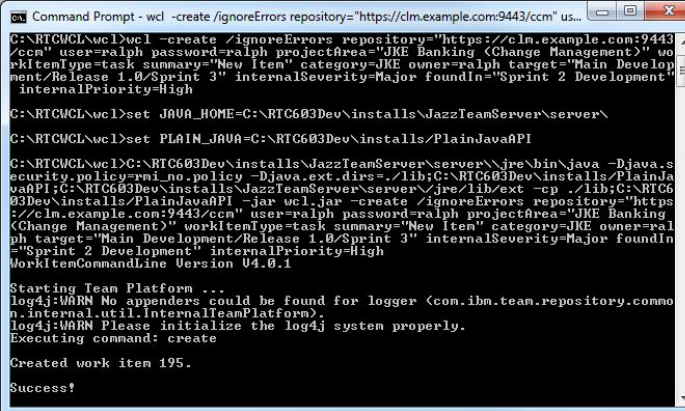
ralph.schoon@de.ibm.com
10/23/2017



Why a Work Item Command Line?

Similar to RTC SCM scripting / automation / command line is desirable as many [questions on Jazz.net](#) indicated; requested examples

- Create work items automatically during a build
- Update work items based on some automated process
- Export and import work items

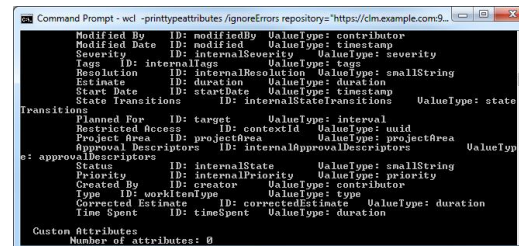


```
Command Prompt - wcl -create /ignoreErrors repository=https://clm.example.com:9443/ccm' us...
C:\RTCWCL\wcl>wcl -create /ignoreErrors repository=https://clm.example.com:9443/ccm' user=ralph password=ralph projectArea='JKE Banking <Change Management>' workItemtype=task summary='New Item' category=JKE owner=ralph target='Main Development/Release 1.0/Sprint 3' internalSeverity=Major foundIn='Sprint 2 Development' internalPriority=High
C:\RTCWCL\wcl>set JAVA_HOME=C:\RTC603Dev\installs\JazzTeamServer\server\
C:\RTCWCL\wcl>set PLAIN_JAVA=C:\RTC603Dev\installs\PlainJavaAPI
C:\RTCWCL\wcl>C:\RTC603Dev\installs\JazzTeamServer\server\jre\bin\java -Djava.security.policy=rai_no.policy -Djava.ext.dirs=.;lib;C:\RTC603Dev\installs\PlainJavaAPI;C:\RTC603Dev\installs\JazzTeamServer\server\jre\lib\ext -cp .\lib;C:\RTC603Dev\installs\PlainJavaAPI -jar wcl.jar -create /ignoreErrors repository=https://clm.example.com:9443/ccm' user=ralph password=ralph projectArea='JKE Banking <Change Management>' workItemtype=task summary='New Item' category=JKE owner=ralph target='Main Development/Release 1.0/Sprint 3' internalSeverity=Major foundIn='Sprint 2 Development' internalPriority=High
WorkItemCommandLine Version U4.0.1
Starting Team Platform ...
log4j:WARN No appenders could be found for logger (com.ibm.team.repository.common.internal.util.InternalTeamPlatform).
log4j:WARN Please initialize the log4j system properly.
Executing command: create
Created work item 195.
Success!
```

WCL started as a garage project reusing code created for customers and [rsjazz.wordpress.com](#) blog posts. It has finally been made available as [open source](#) under the [MIT license](#)

Supported Commands

- `printtypeattributes` – Prints the built in and custom attributes of a work item type
 - Provides attribute ID's and types needed for WCL create and update
- `create` – Creates a work item and sets provided attribute values
- `update` – Finds a work item by ID and updates provided attribute values
- `exportworkitems` – Export work items to a CSV file
- `importworkitems` – Import work items from a CSV file
- `migrateattribute` – Example on how to extend WCL that migrates a RTC 3.x list value attribute to a 4.x version transforming the value



```
Command Prompt - wcl -printtypeattributes /ignoreErrors repository="https://clm.example.com/9..."
Modified By ID: modifiedBy ValueType: contributor
Modified Date ID: modified ValueType: timestamp
Severity ID: internalSeverity ValueType: severity
Tags ID: internalTags ValueType: tags
Resolution ID: internalResolution ValueType: smallString
Estimate ID: duration ValueType: duration
Start Date ID: startdate ValueType: timestamp
State Transitions ID: internalStateTransitions ValueType: state
Transitions
Planned For ID: target ValueType: interval
Restricted Access ID: contextId ValueType: uuid
Project Area ID: projectArea ValueType: projectArea
Approval Descriptors ID: internalApprovalDescriptors ValueType:
Status ID: internalState ValueType: smallString
Priority ID: internalPriority ValueType: priority
Created By ID: creator ValueType: contributor
Type ID: workItemType ValueType: type
Corrected Estimate ID: correctedEstimate ValueType: duration
Time Spent ID: timeSpent ValueType: duration
Custom Attributes
Number of attributes: 0
```

Syntax examples

Examples ship as debug configurations with the code

- `-update repository=".." user=* password=* id=150 summary:add=" Plain Text Bold Text <i>Italic Text</i> External RSJazz Link @ralph Defect 3 "`
- `-update .. id=150 custom.string.list1=val1,val2,Val3`
- `-update .. id=150 custom.enumeration.list:add=$,$$,Unassigned`
- `-update .. id=150 duration:set="3 hours 30 minutes"`
- `-update .. id=150 contributor.list:set=al,deb,tanuj,bob`
- `-update .. id=150 contributor.list:add=ralph,myadmin`
- `-update .. id=150 contributor.list:remove=ralph,myadmin`
- `-update .. id=150 @attachFile="./Test.txt:Some Description:text/plain:UTF-8,,`
- `-update .. id=150 internalComments="This is a comment"`
- `-update .. id=287 @link_reportAgainstBuild=@_JX6ukX-oEeSHhcw_WFU6CQ|P20141208-1713 @link_includedInBuild=@_JX6ukX-oEeSHhcw_WFU6CQ`
- `-update .. id=150 @link_blocks=20|21 @link_parent=28 @link_child=130|131`

WorkitemCommandLine - Modify Work Item - Approvals add
WorkitemCommandLine - Modify Work Item - Approvals default
WorkitemCommandLine - Modify Work Item - Approvals remove
WorkitemCommandLine - Modify Work Item - Approvals set
WorkitemCommandLine - Modify Work Item - AttachFile add
WorkitemCommandLine - Modify Work Item - AttachFile default
WorkitemCommandLine - Modify Work Item - AttachFile remove
WorkitemCommandLine - Modify Work Item - AttachFile set
WorkitemCommandLine - Modify Work Item - Comment add
WorkitemCommandLine - Modify Work Item - Comment default
WorkitemCommandLine - Modify Work Item - Contributor list add
WorkitemCommandLine - Modify Work Item - Contributor list remove
WorkitemCommandLine - Modify Work Item - Contributor list set
WorkitemCommandLine - Modify Work Item - ContributorList default
WorkitemCommandLine - Modify Work Item - Custom attributes default
WorkitemCommandLine - Modify Work Item - Custom attributes default Boolean
WorkitemCommandLine - Modify Work Item - Description add
WorkitemCommandLine - Modify Work Item - Description default
WorkitemCommandLine - Modify Work Item - Description remove not supported
WorkitemCommandLine - Modify Work Item - Description set
WorkitemCommandLine - Modify Work Item - Duration set
WorkitemCommandLine - Modify Work Item - Duration set hours
WorkitemCommandLine - Modify Work Item - Duration set hours minutes
WorkitemCommandLine - Modify Work Item - Duration set minutes
WorkitemCommandLine - Modify Work Item - EnumerationList add
WorkitemCommandLine - Modify Work Item - EnumerationList default
WorkitemCommandLine - Modify Work Item - EnumerationList remove
WorkitemCommandLine - Modify Work Item - EnumerationList set
WorkitemCommandLine - Modify Work Item - Found In default
WorkitemCommandLine - Modify Work Item - HTML add
WorkitemCommandLine - Modify Work Item - HTML default
WorkitemCommandLine - Modify Work Item - HTML remove not supported
WorkitemCommandLine - Modify Work Item - HTML set
WorkitemCommandLine - Modify Work Item - Item Category add not supported
WorkitemCommandLine - Modify Work Item - Item Category default
WorkitemCommandLine - Modify Work Item - Item Category remove not supported
WorkitemCommandLine - Modify Work Item - Item Category set
WorkitemCommandLine - Modify Work Item - Item Category unassigned
WorkitemCommandLine - Modify Work Item - Item Contributor default
WorkitemCommandLine - Modify Work Item - Item error
WorkitemCommandLine - Modify Work Item - Item ItemList add
WorkitemCommandLine - Modify Work Item - Item ItemList default
WorkitemCommandLine - Modify Work Item - Item ItemList remove

Special design considerations

- Performance:
 - RMI Server Mode
 - Special mode that keeps the server connection in a RMI server process and performs the commands submitted by an RMI client saves around 8 seconds initialization per command
- Useability:
 - Simplify attribute modification especially for HTML/text, list and multi value attributes with a reasonable default
 - Different modes: set, add, remove, default (usually set)
 - Example: set the description or add to it, set the links or add or remove a link
 - Headless CSV export and import
 - In RTC compatible format
 - Custom format supports export and import of attachments and multiple passes during import to recreate work item links
- Extensibility
 - Framework makes it simple to add own commands

```

Command Prompt - wcd -printtypeattributes /ignoreErrors repository=https://clm.example.com:9...
WorkitemCommandLine Version 04.0.1

Starting Team Platform ...
log4j:WARN No appenders could be found for logger <com.ibm.team.repository.commands.internal.util.InternalTeamPlatform>.
log4j:WARN Please initialize the log4j system properly.
Executing command: printtypeattributes

Attributes of Work Item type: Task Type ID: task
  Built In Attributes
    Number of attributes: 34
    Archived ID: archived ValueType: boolean
    Custom Attributes ID: customAttributes ValueType: customAttribute
  te
    Filed Against ID: category ValueType: category
    Sequence Value ID: internalSequenceValue ValueType: small
  String
    Subscribed By ID: internalSubscriptions ValueType: subscriptions
    Comments ID: internalComments ValueType: comments
    Due Date ID: dueDate ValueType: timestamp
    Approvals ID: internalApprovals ValueType: approvals
    Summary ID: summary ValueType: mediumHtml
    Resolution Date ID: resolutionDate ValueType: timestamp
    Id ID: id ValueType: integer
    Found In ID: foundIn ValueType: deliverable
    Resolved By ID: resolver ValueType: contributor
    Creation Date ID: creationDate ValueType: timestamp
    Description ID: description ValueType: html
    Owned By ID: owner ValueType: contributor
    Modified By ID: modifiedBy ValueType: contributor
    Modified Date ID: modified ValueType: timestamp
    Severity ID: internalSeverity ValueType: severity
    Tags ID: internalTags ValueType: tags
    Resolution ID: internalResolution ValueType: smallString
    Estimate ID: duration ValueType: duration
    Start Date ID: startDate ValueType: timestamp
    State Transitions ID: internalStateTransitions ValueType: state
  Transitions
    Planned For ID: target ValueType: interval
    Restricted Access ID: contextId ValueType: uuid
    Project Area ID: projectArea ValueType: projectArea
    Approval Descriptors ID: internalApprovalDescriptors ValueType:
  e: approvalDescriptors
    Status ID: internalState ValueType: smallString
    Priority ID: internalPriority ValueType: priority
    Created By ID: creator ValueType: contributor
    Type ID: workitemType ValueType: type
    Corrected Estimate ID: correctedEstimate ValueType: duration
    Time Spent ID: timeSpent ValueType: duration

Custom Attributes
Number of attributes: 0
  
```

Built In Help

Built in help prints commands and required attributes

- Creates output based on framework information to support extensibility

WorkItemCommandLine Version V4.0.1

Starting Team Platform ...

log4j:WARN No appenders could be found for logger (com.ibm.team.repository.common.internal.util.InternalTeamPlatform).

log4j:WARN Please initialize the log4j system properly.

Error: Command not provided!

Usage (See <http://wp.me/p2DlHq-s9> for a more complete description) :

-command {switch} {parameter[:mode]=value}

Multiple parameter/value pairs and switches can be provided separated by spaces.

Commands might require specific parameters to be mandatory.

Switches influence the behavior of the operation.

The switch /ignoreErrors ignores errors such as attributes or values not available.

Available commands:

```
-update id="value" /enableDeleteAttachment repository="value" /skipEmailNotification /enforceSizeLimits /enableDeleteApprovals password="value" user="value" /ignoreErrors {parameter[:mode]=value}
-importworkitems /importmultipass /forcelinkcreation repository="value" importFile="value" /skipEmailNotification /enforceSizeLimits /importdebug projectArea="value" password="value" user="value" /ignoreErrors
-printtypeattributes repository="value" workItemType="value" projectArea="value" password="value" user="value"
-exportworkitems /headerIDs repository="value" query="value" /suppressAttributeExceptions projectArea="value" password="value" user="value" /asrtceclipse exportFile="value" /ignoreErrors [encoding="UTF_16LE"]
-migrateattribute targetAttributeID="value" sourceAttributeID="value" repository="value" workItemType="value" /skipEmailNotification projectArea="value" password="value" user="value" /ignoreErrors
-create /enableDeleteAttachment repository="value" workItemType="value" /enforceSizeLimits /enableDeleteApprovals projectArea="value" password="value" user="value" /ignoreErrors {parameter[:mode]=value}
```



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