

Developer Productivity: Industrialising the WebSphere Message Broker Build Process

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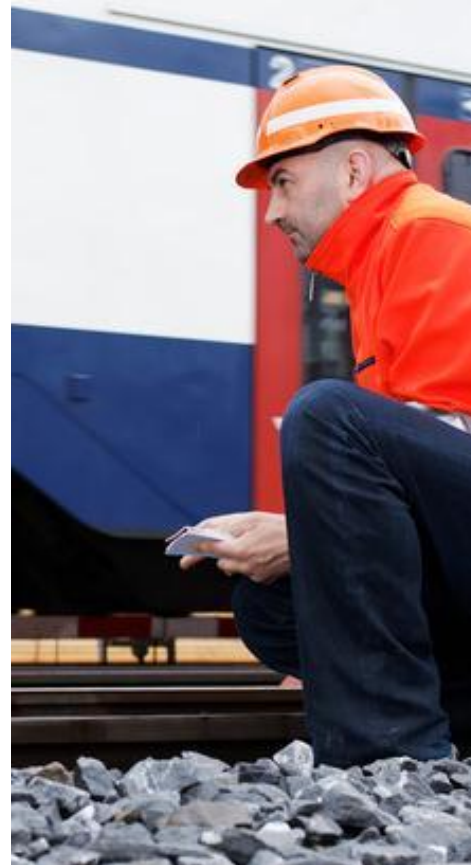


Agenda

1. SBB Overview
2. Integration Landscape
3. Standardising the Build Process
4. WebSphere Message Broker & Apache Maven

Switzerland's largest Transport Company

↔ SBB CFF FFS



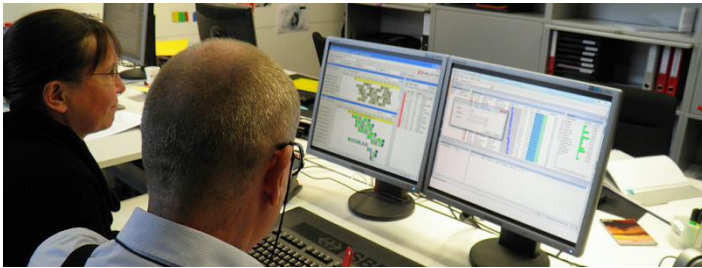
Persontransport
1 000 000+
Passengers/Day

SBB Cargo
195 000 t
Cargo/Day

Infrastructure
3500 km Track
5 Power Stations
Telecom Provider

Real Estate
3500+ Buildings

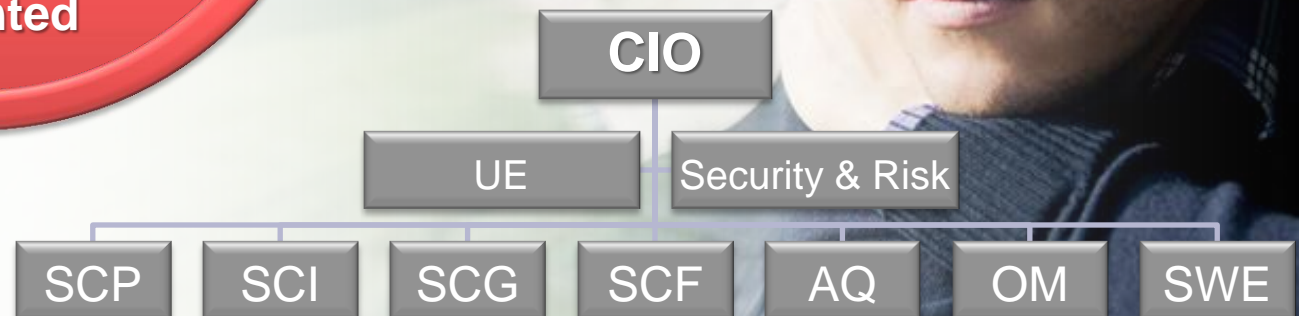
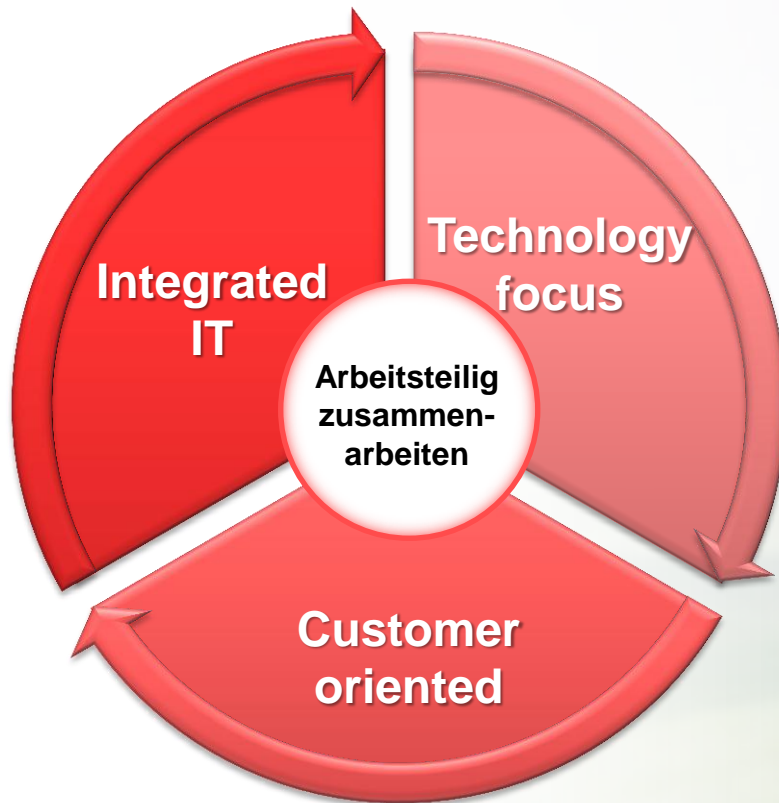
SBB IT in Numbers (2012)



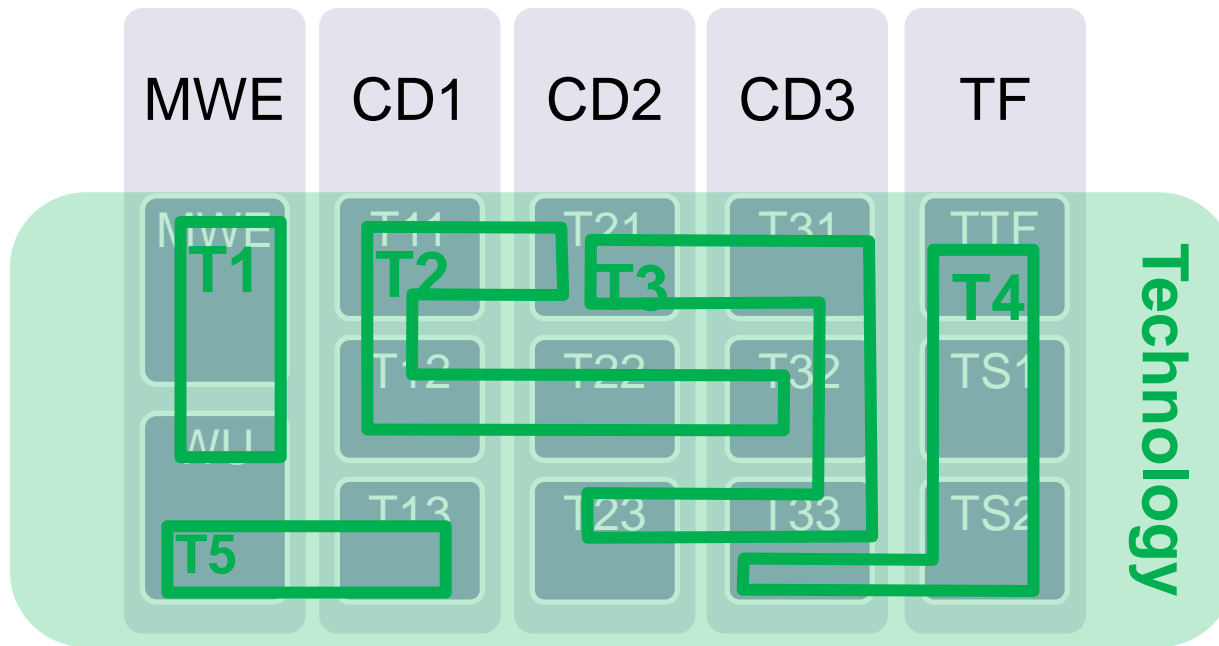
- 850 internal Employees
- 250 external Employees
- Financial Turnover: 560 MCHF
- Outsourcing: ~250 MCHF
- Operations Management:
Outsourcing – Swisscom &
T-Systems Switzerland

Organisation

Arbeitsteilig zusammenarbeiten (Work Sharing, Working together)



Software Engineering

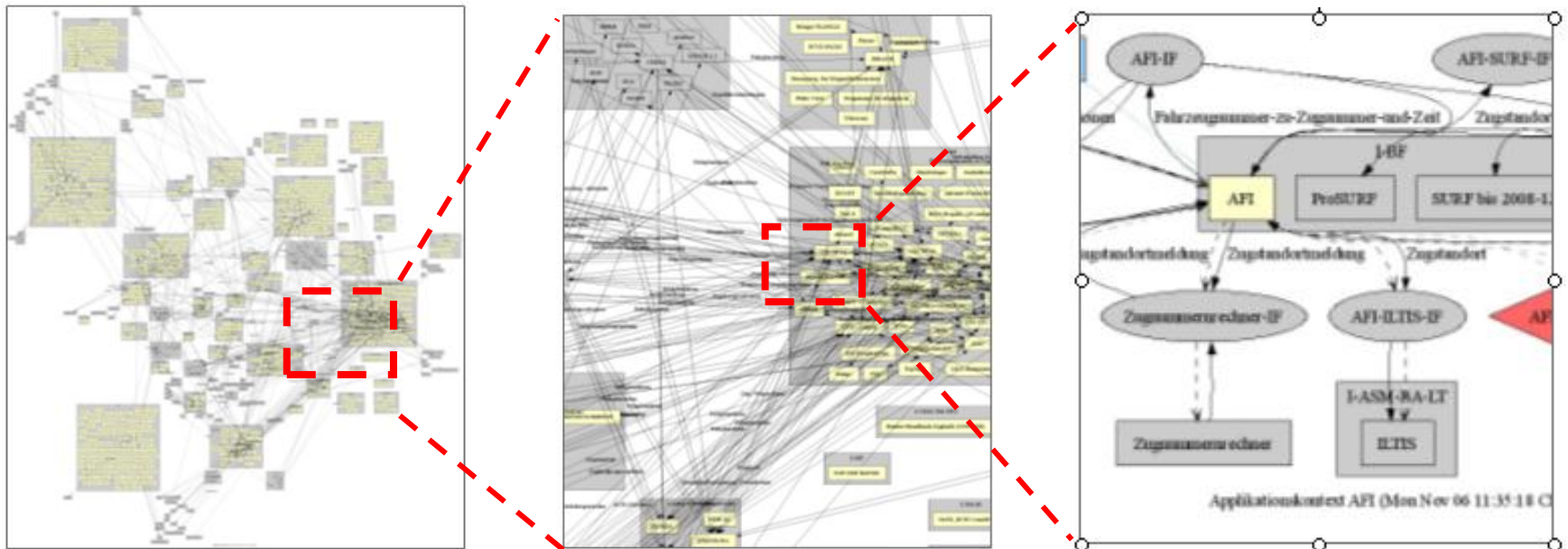


- SWE has two main goals - Resource Pool and Technological Expertise
- ~140 internal + ~180 external Developers and Architects
- $4 + 2 + 4 = 10$ (4.5 FTE) WebSphere Message Broker Developers

The current IT Landscape ist very complex

~1200 Applications with some duplication and many dependencies

2'800+ (known) Integration Interfaces



Integration – until now

- Buy before Customise before Make, however no applications are independent
- Point to Point integration since 20+ years, often implemented with WebSphere MQ
- Data replication as standard integration approach
- WebSphere Message Broker in use since 2010
 - 23 productive Integration Applications
- No re-use & little standardisation

Integration – the future

- IT Management decision – Middleware must be used
 - WMB, SAP-PO, Informatica Power Center (ETL)

- ~200 IT projects per year

- Increased interest in external, fixed-price projects

- Standards, Process, Quality



Java Development Standards

- Subversion – Version Control
- Maven – Dependency Management & Build Automation
- Jenkins – Continuous Integration, automated Unit und Integration Testing
- Sonar - Coding Standards, Architecture Compliance
- Nexus – Artifact Repository

Message Broker Development Standards

- Subversion – Version Control
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Apache Maven

- Standardised Project Structure
- Consistent Build Approach
- Dependency Management
- Multi-module builds
- Automated Releases (trunk, tags, branches)

Maven WMB Projektarten

→ (User Defined Extensions)

→ wmb-src

- Filter
- Package

→ wmb-java

- Filter
- Compile
- Test
- Package

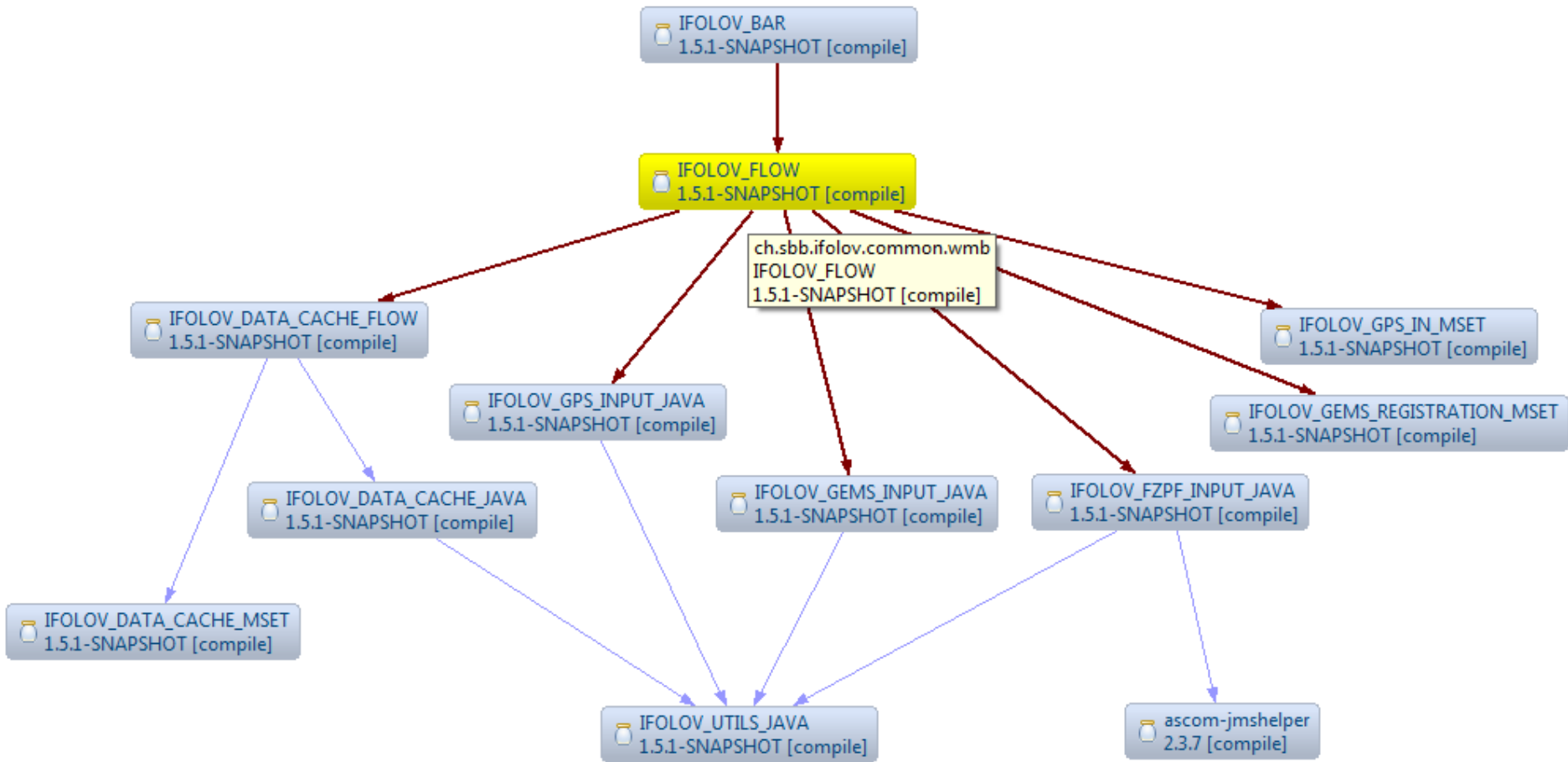
→ wmb-bar

- Filter
- Create bar
- Validate Properties
- Apply Bar Overrides
- Package

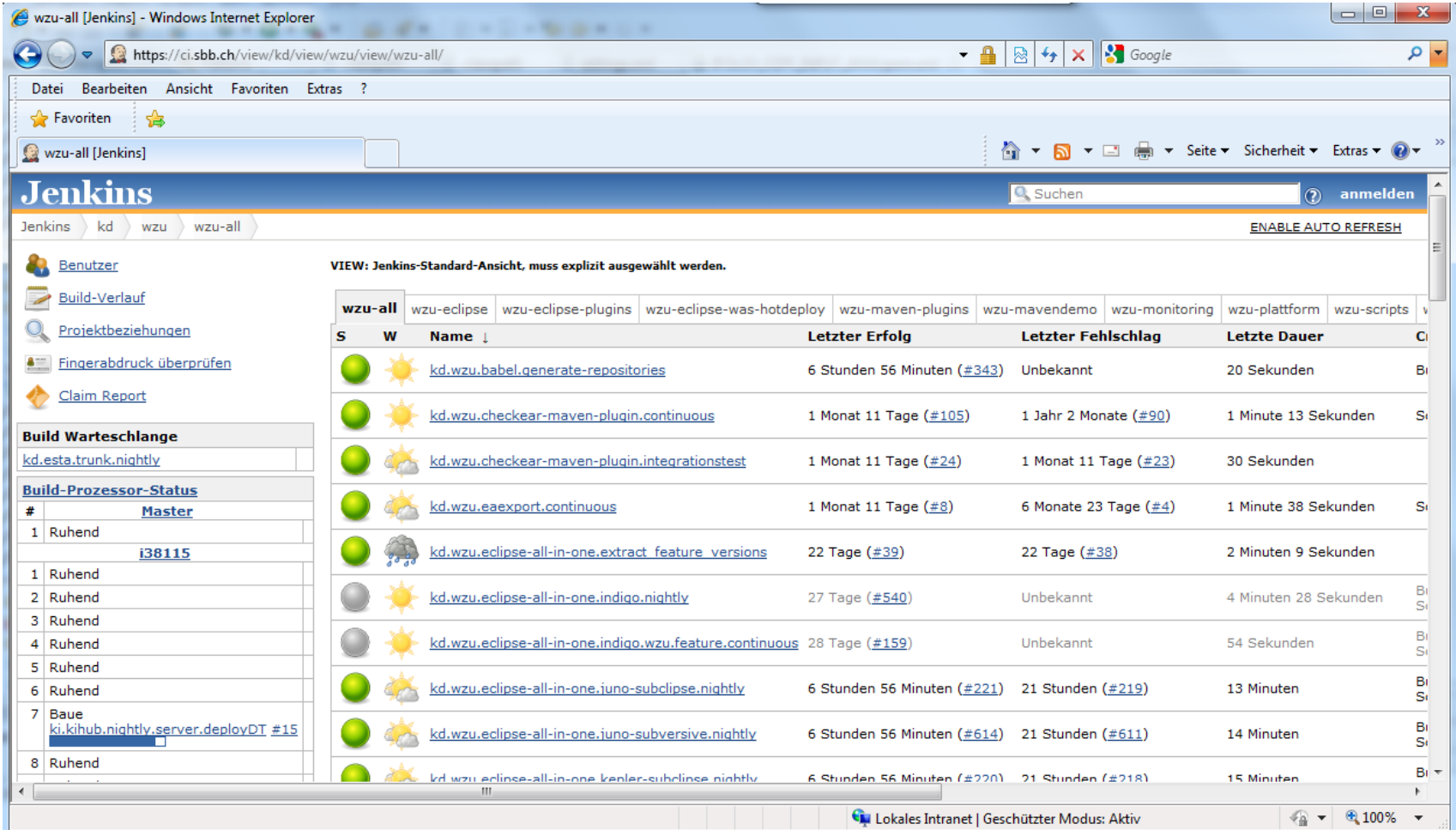
→ wmb-classloader

- Package

Dependency Management



Continuous Integration

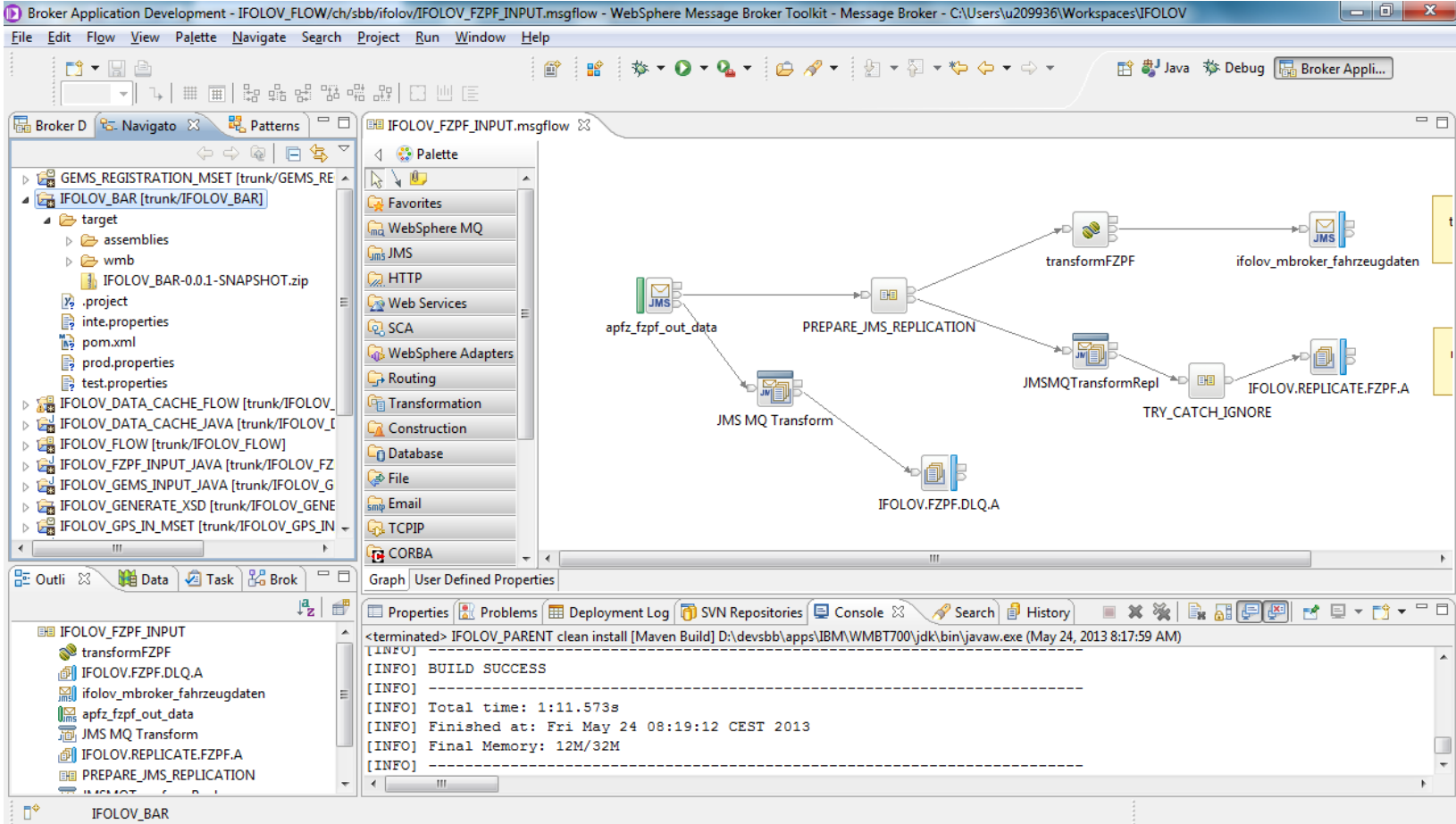


The screenshot shows the Jenkins web interface in a Windows Internet Explorer browser. The address bar displays the URL `https://ci.sbb.ch/view/kd/view/wzu/view/wzu-all/`. The Jenkins dashboard includes a search bar, a user profile, and navigation tabs for 'kd', 'wzu', and 'wzu-all'. A sidebar on the left contains links for 'Benutzer', 'Build-Verlauf', 'Projektbeziehungen', 'Fingerabdruck überprüfen', and 'Claim Report'. Below this, there are sections for 'Build Warteschlange' and 'Build-Prozessor-Status'.

The main content area displays a table of build history for the 'wzu-all' job. The table has columns for 'S' (Success), 'W' (Warning), 'Name', 'Letzter Erfolg' (Last Success), 'Letzter Fehlschlag' (Last Failure), and 'Letzte Dauer' (Last Duration). The table shows several builds, including 'kd.wzu.babel.generate-repositories', 'kd.wzu.checkear-maven-plugin.continuous', and 'kd.wzu.eclipse-all-in-one.extract_feature_versions'.

S	W	Name ↓	Letzter Erfolg	Letzter Fehlschlag	Letzte Dauer
		kd.wzu.babel.generate-repositories	6 Stunden 56 Minuten (#343)	Unbekannt	20 Sekunden
		kd.wzu.checkear-maven-plugin.continuous	1 Monat 11 Tage (#105)	1 Jahr 2 Monate (#90)	1 Minute 13 Sekunden
		kd.wzu.checkear-maven-plugin.integrationstest	1 Monat 11 Tage (#24)	1 Monat 11 Tage (#23)	30 Sekunden
		kd.wzu.eaexport.continuous	1 Monat 11 Tage (#8)	6 Monate 23 Tage (#4)	1 Minute 38 Sekunden
		kd.wzu.eclipse-all-in-one.extract_feature_versions	22 Tage (#39)	22 Tage (#38)	2 Minuten 9 Sekunden
		kd.wzu.eclipse-all-in-one.indigo.nightly	27 Tage (#540)	Unbekannt	4 Minuten 28 Sekunden
		kd.wzu.eclipse-all-in-one.indigo.wzu.feature.continuous	28 Tage (#159)	Unbekannt	54 Sekunden
		kd.wzu.eclipse-all-in-one.iuno-subclipse.nightly	6 Stunden 56 Minuten (#221)	21 Stunden (#219)	13 Minuten
		kd.wzu.eclipse-all-in-one.iuno-subversive.nightly	6 Stunden 56 Minuten (#614)	21 Stunden (#611)	14 Minuten
		kd.wzu.eclipse-all-in-one.kepler-subclipse.nightly	6 Stunden 56 Minuten (#220)	21 Stunden (#218)	15 Minuten

Demo



The screenshot displays the IBM WebSphere Message Broker Toolkit interface. The main window shows a message flow diagram for 'IFOLOV_FZPF_INPUT.msgflow'. The flow starts with an input connector 'apfz_fzpf_out_data' (JMS) which connects to a central transformation node 'PREPARE_JMS_REPLICATION'. From this central node, the flow branches into three paths:

- One path goes to a 'transformFZPF' transformation node, which then connects to an output connector 'ifolov_mbroker_fahrzeugdaten' (JMS).
- Another path goes to a 'JMS MQ Transform' transformation node, which connects to an output connector 'IFOLOV.FZPF.DLQ.A' (File).
- The third path goes to a 'JMSMQTransformRepl' transformation node, which connects to a 'TRY_CATCH_IGNORE' transformation node, which finally connects to an output connector 'IFOLOV.REPLICATE.FZPF.A' (File).

The left sidebar shows a project tree with folders like 'GEMS_REGISTRATION_MSET' and 'IFOLOV_BAR'. The bottom console window shows the following log output:

```
<terminated> IFOLOV_PARENT clean install [Maven Build] D:\devsbb\apps\IBM\WMBT700\jdk\bin\javaw.exe (May 24, 2013 8:17:59 AM)
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1:11.573s
[INFO] Finished at: Fri May 24 08:19:12 CEST 2013
[INFO] Final Memory: 12M/32M
[INFO] -----
```


Current Status

→ maven-wmb7-plugin

- Version 1.9

→ iib-maven-plugin

- Version 1.0
- Support for IIB 9+
- Currently only ported WMB7 functionality

Open Sourcing

→ maven-wmb7-plugin

- Version 1.9

→ iib-maven-plugin

- <https://github.com/SchweizerischeBundesbahnen/iib-maven-plugin>
- Version 1.0

→ IBM SupportPac??

Possible Future Developments

- Focus on iib-maven-plugin
- MQ Definitions (Queues, Aliases, Subscriptions, etc.)
- Execution Group/Bar Mapping
- Configurable Services
- LDAP (JMS Adressen)
- ODBC.ini
- Coding Standards

- Fully Automated Deployments
- Automated Unit Testing of Flows



Fragen?