



The Route to Automate Businesses

Mgr. Ivo Bek, Product Manager
Mgr. Marian Macik, Quality Engineer

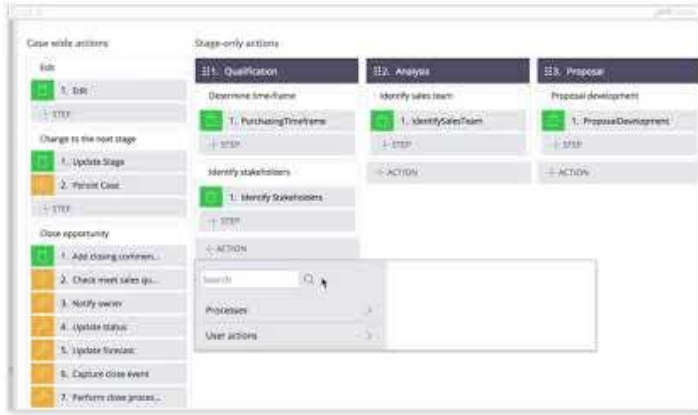
April 2019

AGENDA

- ❑ BPM products and where to find them
- ❑ Business automation? What, why and for whom?
- ❑ Common needs for business automation solution
- ❑ Demo - Send an SMS map from my process
- ❑ Tools for integrated business automation
- ❑ Lab #1 - Git, custom services
- ❑ Lab #2 - DMN, business rules

BPM PRODUCTS

from Gartner analyst report 2019



Pega: No code demo



BUSINESS AUTOMATION

What do we need to automate?

Decisions

- Approval decisions
- Eligible number of vacation days
- Loan calculation

Tasks

- Update a spreadsheet
- Scan and send a form

Processes

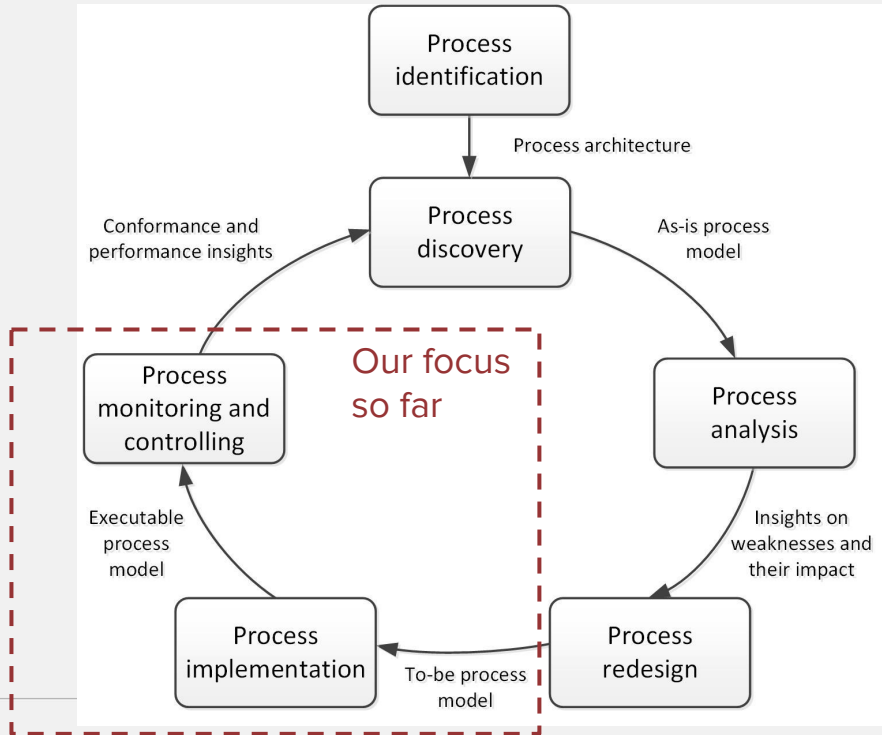
- Payment process
- Customer onboarding
- Rent car process
- Service requests

Schedules

- Manufacturing / assembly line
- Employee shift scheduling (hospital, school)
- Deliveries (VRP)

RETURN ON INVESTMENTS (ROI)

Why we need to automate some part of business?



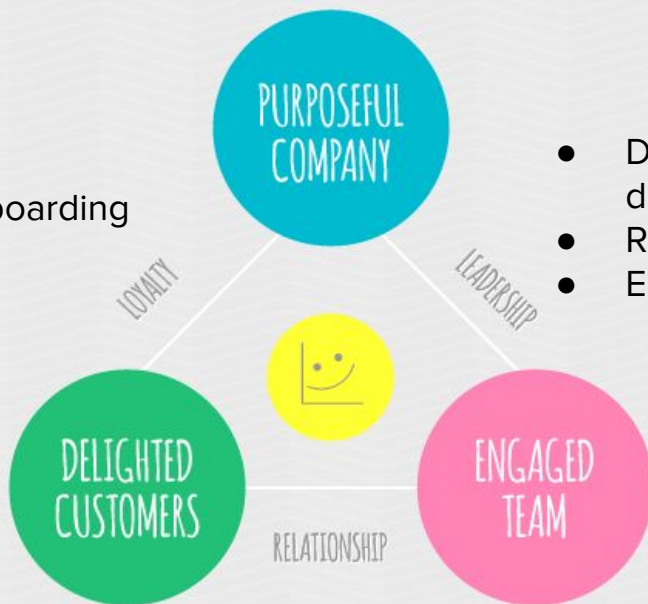
Frequency
Size and complexity
Diversity (actors, systems, rules)
Speed (SLAs)

Time (spent on a single manual task) x
Frequency (of performing a task per month) x
Cost (per hour) x 12 (months) = **Yearly Savings**

THE ULTIMATE GOAL

- Shorten response time
- Streamline customer onboarding
- Improve cost/value rate
- Strengthen branding

HAPPINESS AS A BUSINESS MODEL

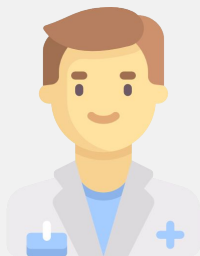


- Deal with waste tasks (repetitive, duplicate)
- Risk mitigation and elimination
- Enforce state and business policies

- Routing and escalating events (CRM)
- Regular communication about the news and future plans

BUSINESS AUTOMATION

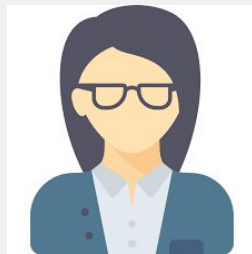
Who are the target users?



Practitioner

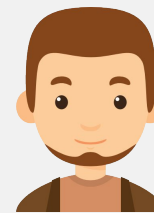
Knowledge Worker

- Fill in data
- Make a decision
- Start a process
- Complete tasks
- Delegate a task



Process Manager

- Model a new process
- Update a rule in a decision
- Reassign a task
- Monitor overdue processes



Process Administrator

- See process logs and errors
- Retrigger process nodes
- Bulk process instance migration

BUSINESS AUTOMATION

Common needs

- ❑ Fit into customer tech stack and project lifecycle
- ❑ CI/CD pipeline across multiple environments

DEV >> INT >> TEST >> PROD

- ❑ Roles and groups management
- ❑ Project and asset versioning
- ❑ Cross-team collaboration between analysts, managers, and developers - use of many tools and interchangeable formats
- ❑ No down time, scaling, automatic backups - run in cloud HW - AWS, Azure
- ❑ Task and process events / data integration with business data

DEMO

Send an SMS Map from My Process

IFTTT

- ❑ **If This Then That**, <https://ifttt.com>
- ❑ If Trigger Then Action(s)
- ❑ Simple tool for automation and integration
- ❑ Applets
- ❑ platform.ifttt.com
 - ❑ Allows more than one action
- ❑ Simple guide how to configure an Applet
 - ❑ Point no. 3 in

<https://github.com/business-applications/sample-ifttt/blob/master/README.md>

IFTTT

Tools for Integrated Automation

JENKINS

CI/CD pipeline across multiple environments

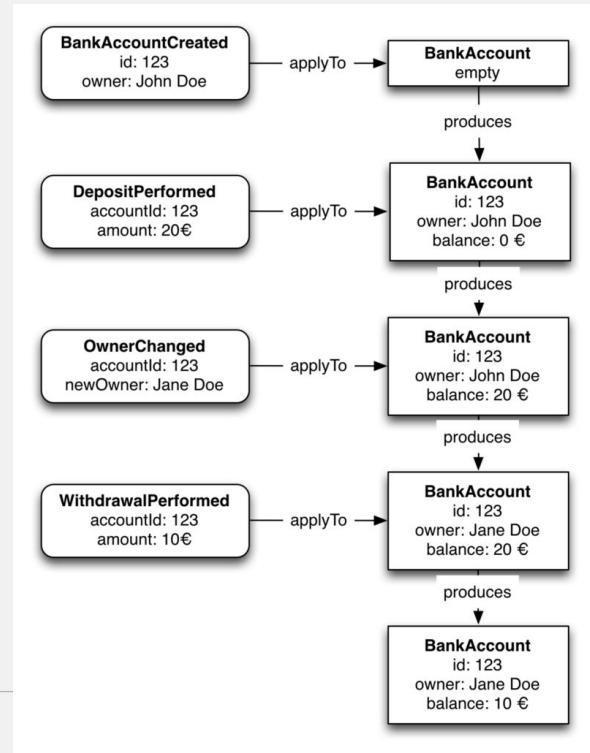
	build	test: integration-&-quality	test: functional	test: load-&-security	approval	deploy: prod
Average stage times: (Average full run time: ~5s)	836ms	20min 43s	9ms	7ms	89ms	5ms
#17 Sep 22 15:05 No Changes Retry Download	538ms	10s	10ms	8ms	72ms <small>(paused for 7s)</small>	4ms
#16 Sep 22 15:04 No Changes Retry Download	479ms	6s	9ms	9ms	74ms <small>(paused for 6s)</small>	5ms
#15 Sep 22 15:03 No Changes Retry Download	922ms	6s	10ms	9ms failed		
#14 Sep 22 15:03 No Changes Retry Download	1s	8s	12ms	9ms	80ms <small>(paused for 5s)</small>	5ms
#13 Sep 22 15:02 No Changes Download	942ms	9s	13ms failed			
#12 Sep 22 15:02 No Changes Retry Download	1s	6s	13ms	11ms	111ms <small>(paused for 5s)</small> aborted	

ActiveMQ, RabbitMQ, Apache Kafka

Event Sourcing and Command Query Responsibility Segregation (CQRS) Pattern

- ❑ Audit trail - Full history of the state of the system
- ❑ Integration with other subsystems - Notify interested subsystems of changes to the application's state
- ❑ CQRS - Commands vs Queries

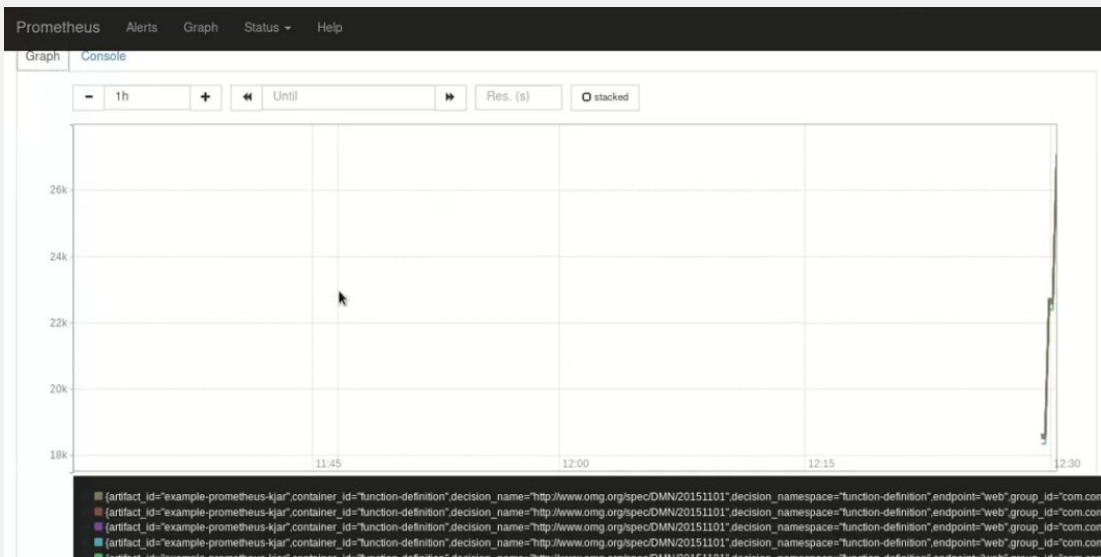
- ❑ ProcessStarted
- ❑ TaskCompleted
- ❑ TimerTimeout
- ❑ ProcessSignalSent



PROMETHEUS

Real-time metrics monitoring and alerts

❏ `avg_over_time(dmn_evaluate_decision_nanosecond_bucket[5m])`



DMN Evaluation time histogram
DMN Number of evaluations failed

UIPATH

Robotic Process Automation (RPA)

RPA is any capability (software and services) that allows you to transact in any IT application or website, typically in the same way a human would, to automate complex, rule-based work.

Broad Classification:

- ❑ Probots: process data, following simple repeatable rules
- ❑ Knowbots: gather and store data
- ❑ Chatbots: act as virtual agents and respond to customer queries in real time

Business Processes in which RPA can be used



Take over repetitive tasks that employees carry out **50-60** times a day



Periodic reporting, data entry and **data analysis**



Mass email generation, archiving, extracting



Conversion of data formats and graphics



ERP transactions



Process lists and **file storage**

APACHE SPARK MLLIB

Artificial Intelligence (AI)

"IBM's attempt to promote its supercomputer programme to cancer doctors (Watson for Oncology) was a PR disaster" says Vyacheslav Polonski, Ph.D., UX researcher for Google and founder of Avantgarde Analytics. "The problem with Watson for Oncology was that doctors simply didn't trust it."



Explainable Artificial Intelligence (XAI)

Users need to be able to understand and validate models as well as explain why decisions were made.



Random forests combine many decision trees in order to reduce the risk of overfitting (model learning too many details and noise).

Find loyal and fraud bank customers

Identify the disease by analyzing the patient's medical records

Recommend the next steps (customers usually buy these 2 products together)

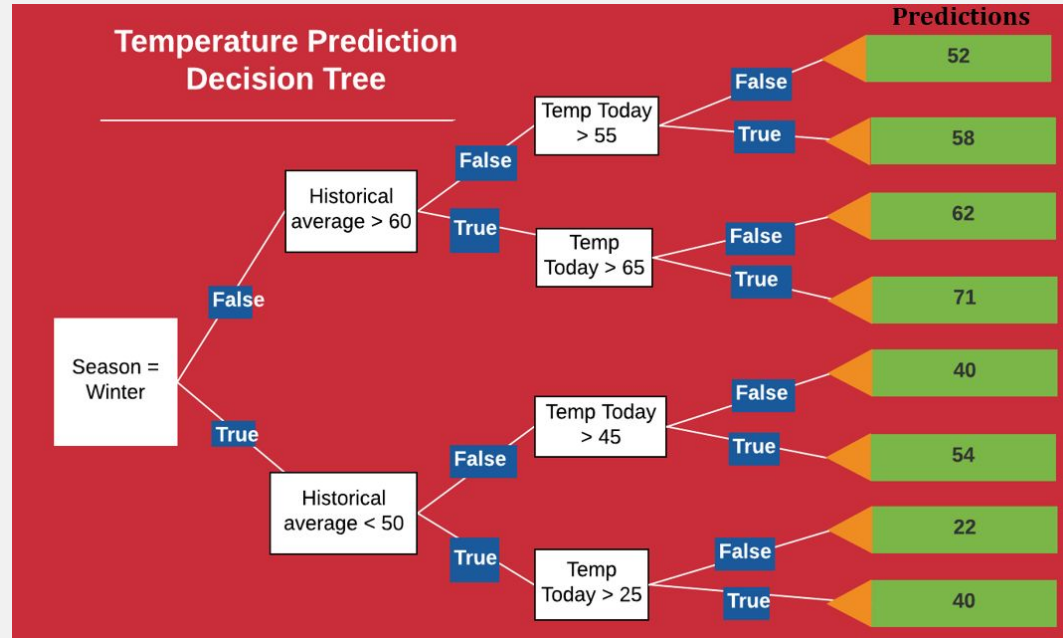


User

- Why did you do that?
- Why not something else?
- When do you succeed?
- When do you fail?
- When can I trust you?
- How do I correct an error?

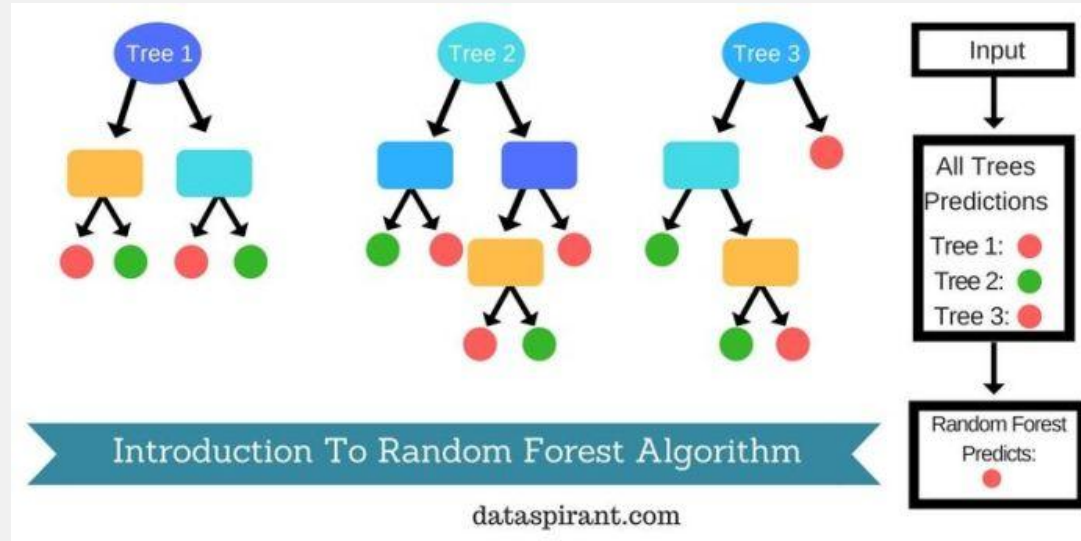
DECISION TREES

- ❑ Each node is a simple question with answers true/false
- ❑ 2 types of problems:
 - ❑ Regression
 - ❑ Classification



RANDOM FOREST ALGORITHM

- ❑ Higher the number of trees in the forest, higher the accuracy of results
- ❑ Each tree covers only a subset of features



HUMAN TASKS AUTOMATION

- ❑ AI (e.g. random forests) can be used to automate human tasks, originally designed for humans
- ❑ Pros:
 - ❑ Speeds up work
- ❑ Cons:
 - ❑ Can influence human decisions

Car rental approval

Prediction: Approve

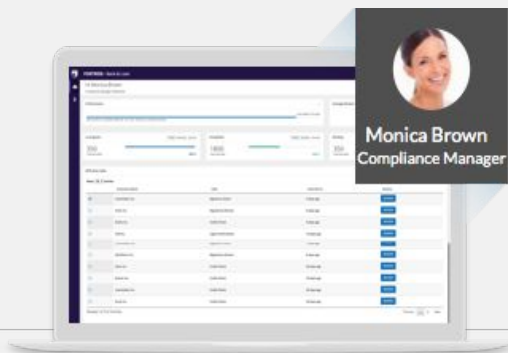
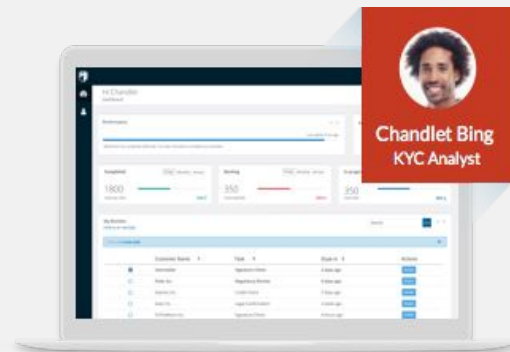
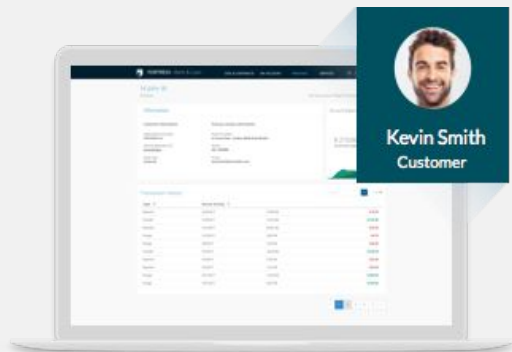
Confidence: 96%

Approve

Reject

ENTANDO APP BUILDER

UX platform for modern applications





THANK YOU



plus.google.com/+RedHat



facebook.com/redhatinc



linkedin.com/company/red-hat



twitter.com/RedHatNews



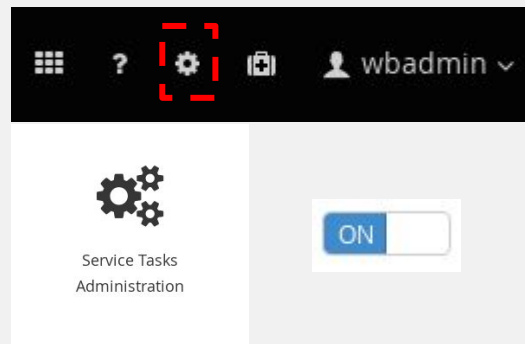
youtube.com/user/RedHatVideos

LABS

Work items and handlers
Team collaboration using Git

WORK ITEMS INSTALLATION

- ❑ First, you have to enable work item for whole Business Central.
 - ❑ Click on the wheel in the upper right corner.
 - ❑ Select **Service Tasks Administration**.
 - ❑ Enable the service task you want.
- ❑ Some work items are enabled and available by default:
 - ❑ BusinessRuleTask
 - ❑ DecisionTask
 - ❑ Email
 - ❑ JMSSendTask
 - ❑ Rest
 - ❑ ServiceTask
 - ❑ Webservice



WORK ITEMS INSTALLATION

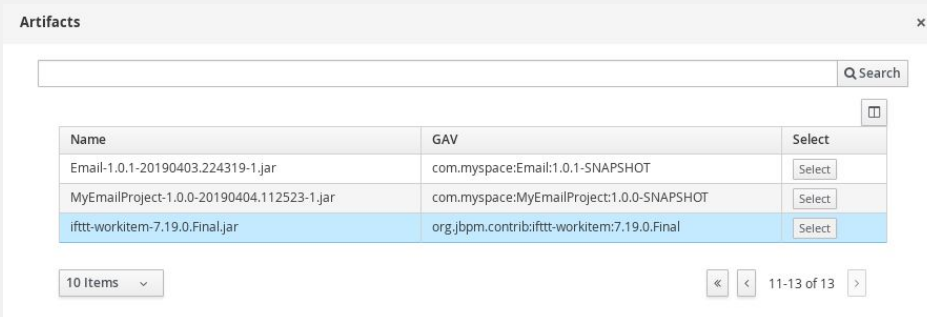
- ❑ Now you can install it to your project.
 - ❑ In project **Settings/Service Tasks**, click on Install button.
 - ❑ Fill in needed parameters, they vary with each work item.
 - ❑ **Don't forget to save it.**

The screenshot shows a web interface for project settings. At the top, there are tabs for 'Assets 3', 'Contributors 2', 'Metrics', and 'Settings'. The 'Settings' tab is active, and a sidebar on the left lists various settings categories: 'General Settings', 'Dependencies', 'KIE bases', 'External Data Objects', 'Validation', 'Service Tasks' (highlighted), 'Deployments', and 'Persistence'. At the bottom of the sidebar are 'Save' and 'Reset' buttons. The main content area is titled 'Service Tasks' and contains the text 'Service tasks available to be installed in the project'. Below this is a table of service tasks:

Icon	Task Name	Description	Action
⚙️	BusinessRuleTask	Execute a business rule task	Install
⚙️	DecisionTask	Execute a DMN decision task	Install
⚙️	Email	Send email	Uninstall
⚙️	IFTTCall	Trigger an IFTTT endpoint	Uninstall
⚙️	JMSSendTask	Send JMS Message	Install

WORK ITEMS INSTALLATION

- ❑ You should see your work item handler declared in **Settings/Deployments/Work Item Handlers**.
- ❑ In case you have enabled and installed a work item which is not a default one, you will have to add it as a dependency for your project.
 - ❑ In **Settings/Dependencies**, click on **Add from Repository**.
 - ❑ Select the work item dependency, e.g. `org.jbpm.contrib:ifttt-workitem:7.19.0.Final` for IFTTT work item.
 - ❑ Dependencies should be added to your project.
 - ❑ **Don't forget to save it.**



Artifacts

Q Search

Name	GAV	Select
Email-1.0.1-20190403.224319-1.jar	com.myspace:Email:1.0.1-SNAPSHOT	Select
MyEmailProject-1.0.0-20190404.112523-1.jar	com.myspace:MyEmailProject:1.0.0-SNAPSHOT	Select
ifttt-workitem-7.19.0.Final.jar	org.jbpm.contrib:ifttt-workitem:7.19.0.Final	Select

10 Items

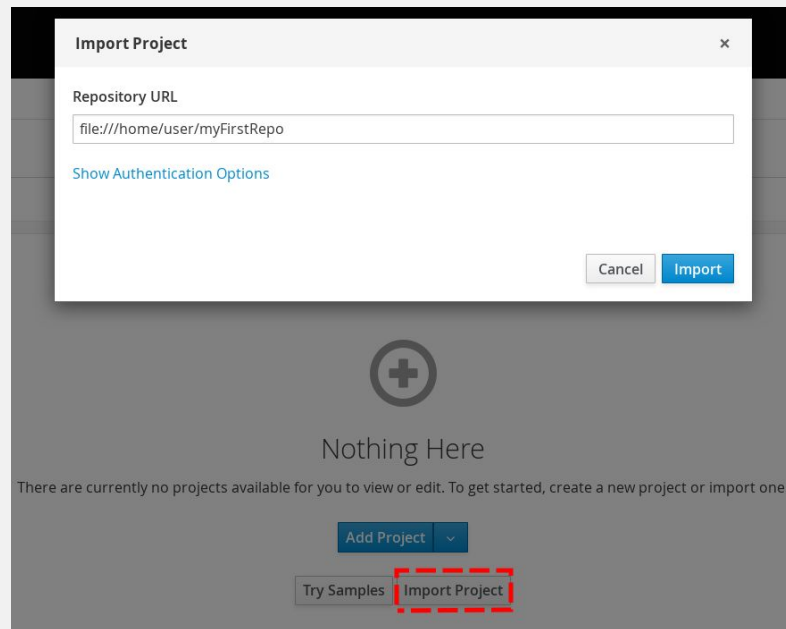
11-13 of 13

EMAIL WORK ITEM CONFIGURATION

- ❑ Configuration for GMail:
 - ❑ `new org.jbpm.process.workitem.email.EmailWorkItemHandler("smtp.gmail.com", "587", "testMail@gmail.com", "testPassword", "true")`
 - ❑ Don't forget the last parameter "true". This will instruct Business Central to use secure TLS connection, which is needed for GMail.
 - ❑ In GMail account, don't forget to [enable access for less secure apps](#).
- ❑ Configuration for [MailSlurper](#):
 - ❑ Change **wwwPort** to **8180** (or any other available port on your system) so it doesn't clash with Business Central 8080 port
 - ❑ Create [credentials](#)
 - ❑ `new org.jbpm.process.workitem.email.EmailWorkItemHandler("localhost", "2500", "user", "password")`

TEAM COLLABORATION VIA GIT

- ❑ Requires only basic Git skills
- ❑ Pull your business assets from Business Central
 1. **git remote add business-central ssh://wbadmin@localhost:8001/MySpace/<projectName> ***
 2. **git pull business-central master**
 3. password wbadmin
- ❑ Push your business assets for example to GitHub
 1. **git push github master**
- ❑ Import your business assets to another Business Central either by pushing to it or by cloning whole repository from UI



* URL can be found in **Settings/General Settings** of your project, just prepend it with **wbadmin@**