PowerCurve
Strategy Management

User Group EMEA

Webinar: Quality Assurance in PCSM

PowerCurve User Group EMEA

We are growing!

- We are already hosting client facing webinars since April this year
- Due to many different languages in our markets we are delivering the webinars in English language
- So far the webinar academy was dedicated only to Central and Eastern Europe, but - after receiving interest from other markets - we decided to open our running webinar series to clients across EMEA
- We plan to increase the number of webinars and offer a broader range of topics

Benefits for the attendees:

- Become confident/advanced PCSM user
- Gather ideas by sharing best practice PCSM usage
- Share insight into (more advanced) PCSM features and add-ons

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Quality Assurance

Best Practices in PowerCurve Strategy Management

Your speakers today

Advocates of Quality Assurance

- **Nikita Nalyutin**, Quality Assurance Manager (EMEA)
  - In QA since 2002, since 2012 with Experian
  - Ensuring quality for mission critical projects (e.g. Airbus, Thales Aerospace, Deutsche Bank)
  - Ph.D. in mission critical Software Engineering, author of books on QA and operating systems
- **Gottfried Steiner**, Business Consultant
  - With Experian since 2006
  - Built interactive test frameworks for several client projects
  - Working for more than two years as a QA manager in insurance and banking (~2003)

Agenda
Tools in PCSM for QA

- Goals and benefits of QA
- Set of best practices for quality assurance for PCSM strategies
- QA tools provided in PCSM with short demo
  - **Interactive Testing**
  - **Test Project**
  - **Batch Process Flow** (for test automation)
- Integration of PCSM QA tools in enterprise continuous testing process
  - **Example: Jenkins with Batch Process Flow**

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Why Quality Assurance

A focused QA helps to ensure a fast time to market and increase business value

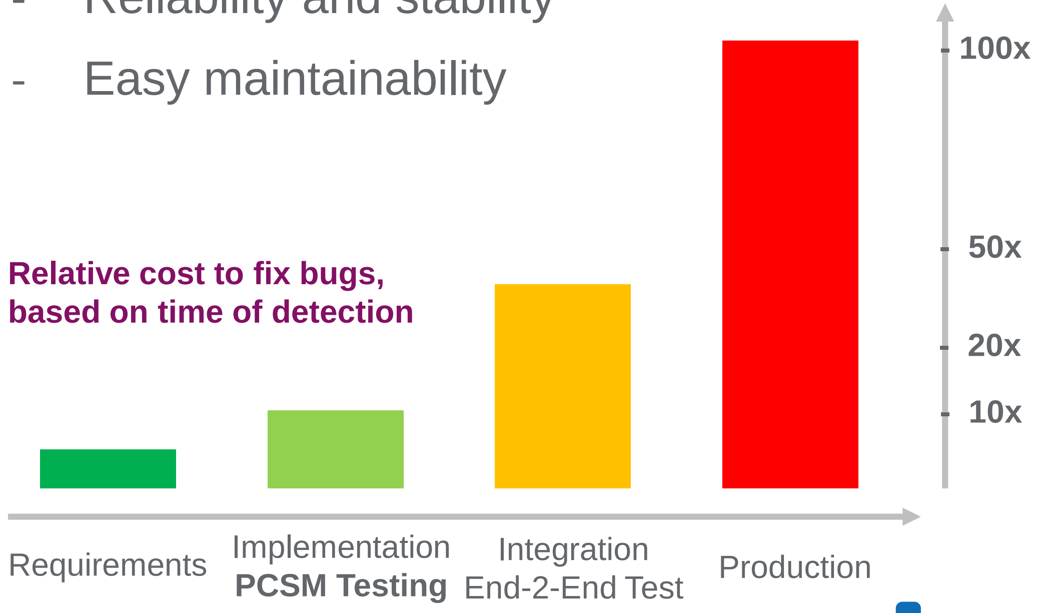
Goals of QA/Testing

- Detect and prevent bugs
- Check if requirements are met (business, technical, compliance, usability, performance, …)
- Optimize and speed up test process
- Ensure quality and reliability of strategies:
  - **Fast and full test coverage**
  - **Test reusability**
  - **Test automation**
  - **Structured and fast QA feedback loop**

Benefits of QA/Testing

- Less effort and cost for changes
- Short time to market
- Customer satisfaction
- Reliability and stability
- Easy maintainability

Relative cost to fix bugs, based on time of detection



Best practices for QA for decision strategies

Make sure to get the QA right in the early phases

QA method	Focus/Goal	When to apply
Review requirements and strategy design	Make sure new changes are in line with the overall strategy design/structure. Ensure long-term maintainability.	Before every strategy change which potentially does not perfectly fit the existing strategy design/structure
Peer review	Spotting flawed implementation approaches and look for best alternatives for implementation. Assess overall impact on strategy design and maintenance. Ensure maintainability and good documentation.	Before more complex changes based on specifications and after implementation by a strategy review.
Interactive Test (single component test, full strategy test, smoke test, simple regression test)	Ensure the newly created or changed component behaves correctly and delivers expected results. Ensure a strategy is testable and delivers expected results. Usually used with a smaller set of test cases with a broad test coverage	Once a component is created or changed (single component test). Before and after completing a change request or sprint (full strategy & regression test). For smaller data sets. Convenient execution and comparison of results.
Test Project (regression test)	Test with bigger and various data sets (e.g. extract of production data).	Before and after completing a change request or sprint. Regression test on large data sets (e.g. production data).
Batch Process Flow (regression test)	Increase degree of test automation. Helps to automate deployment, data preparation and testing process. Allows to run test sequences.	Automatically run regression tests on various strategies and data sets without manual interaction. For frequent test runs of complex strategies.
Assisted Strategy Design	Analyze business impact of strategy changes and run simulations (will be covered in a separate webinar).	When changes are made which are supposed to impact key business factors such as bad rate, acceptance rate, percentage of referrals, terms and conditions, decision time, …
Integration test	Make sure the deployed strategy still works in the test/production environment along with the surrounding systems.	When interface changes have been done or technical changes will affect the strategy integration (e.g. rename strategy, new alias, new environments or folder names, …)
UAT / end-to-end	Ensure the deployed strategy has replaced the old one and check that it delivers expected results, performance and experience.	After updating a deployed strategy in the test environment. For final go-live sign off.

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QA in PCSM

Find your best approach

* Functionalities integrated in PCSM

			Process tracking*	Visual comparison*	Auto comparison	Big data volume	Complex strategies	Test run via DA*	Test sequences*	Full automation	
PCSM Tools for QA	**Interactive Test**	Simple regression test based on generic test data or real data extract in csv format	🟩	🟩		🟨	🟨				**Minimal recommended approach** to QA in PCSM
	Test Project	Regression test on a regular basis based on bigger data sets available in DBs/marts or csv. Full production data or excerpts might be used. Includes performance profiling.			🟩	🟩	🟩	🟩			**Extended approach** to QA in PCSM with bigger data sets
	Batch Process Flow	For full regression tests with automated test sequences and data preparation. High degree of automation.			🟩	🟩	🟩	🟩	🟩		
+	**Test Framework**	Increase degree of automation: on top of PCSM to facilitate test runs, prepare data and test reporting; e.g. SoapUI, Jenkins			🟩	🟩	🟩	🟩	🟩	🟩	**Advanced approach**

Increasing degree of automation

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Demo

Interactive test

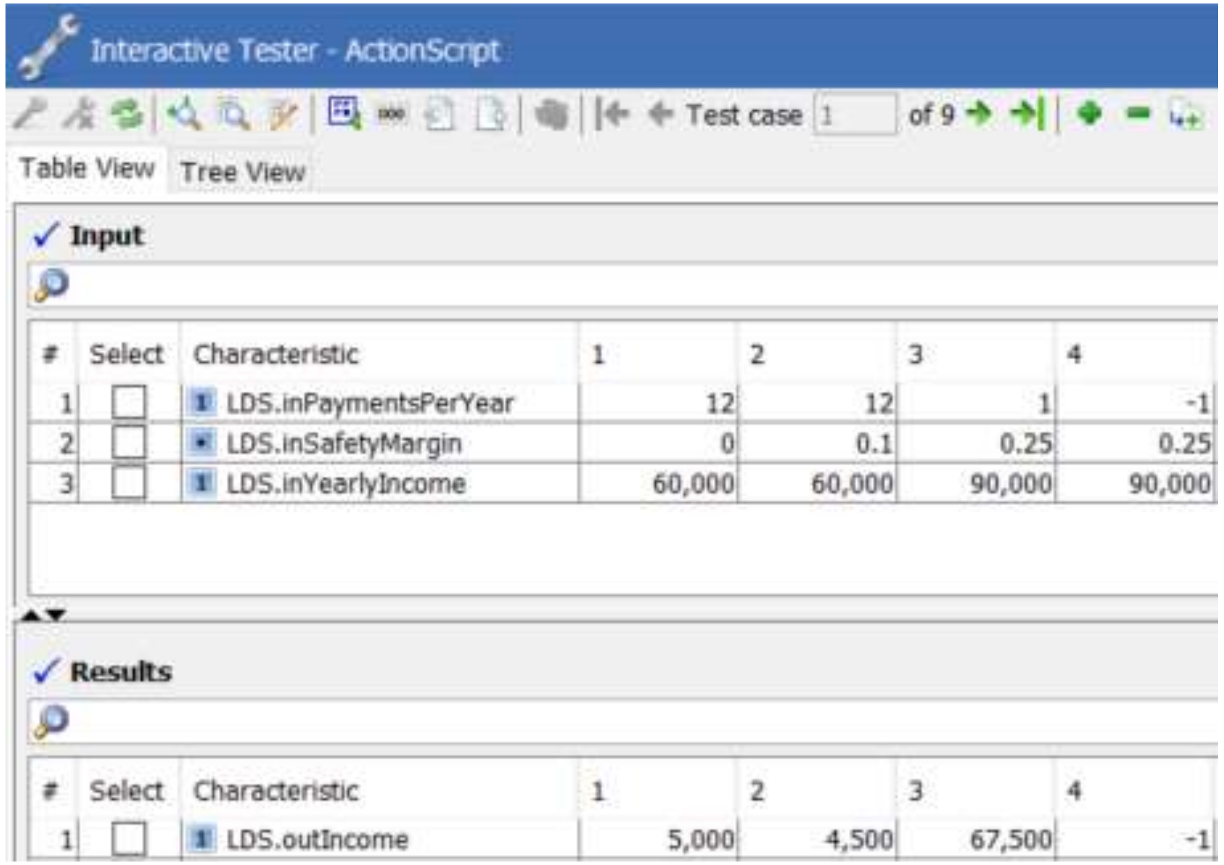
Basic and efficient

Pros

- Easy and convenient way to test whole strategy or specific component
- Single test cases or full set of regression test cases
- User can see input and output data with GUI
- All difference between actual and expected test results can be highlighted
- Tracking for error investigation

Cons

- Require manual work to compare test results between runs and versions
- May be limited when amount of test data is too big
- Not running via Decision Agent



Input

#	Select	Characteristic	1	2	3	4
1	☐	LDS.inPaymentsPerYear	12	12	1	-1
2	☐	LDS.inSafetyMargin	0	0.1	0.25	0.25
3	☐	LDS.inYearlyIncome	60,000	60,000	90,000	90,000

Results

#	Select	Characteristic	1	2	3	4
1	☐	LDS.outIncome	5,000	4,500	67,500	-1

Test project

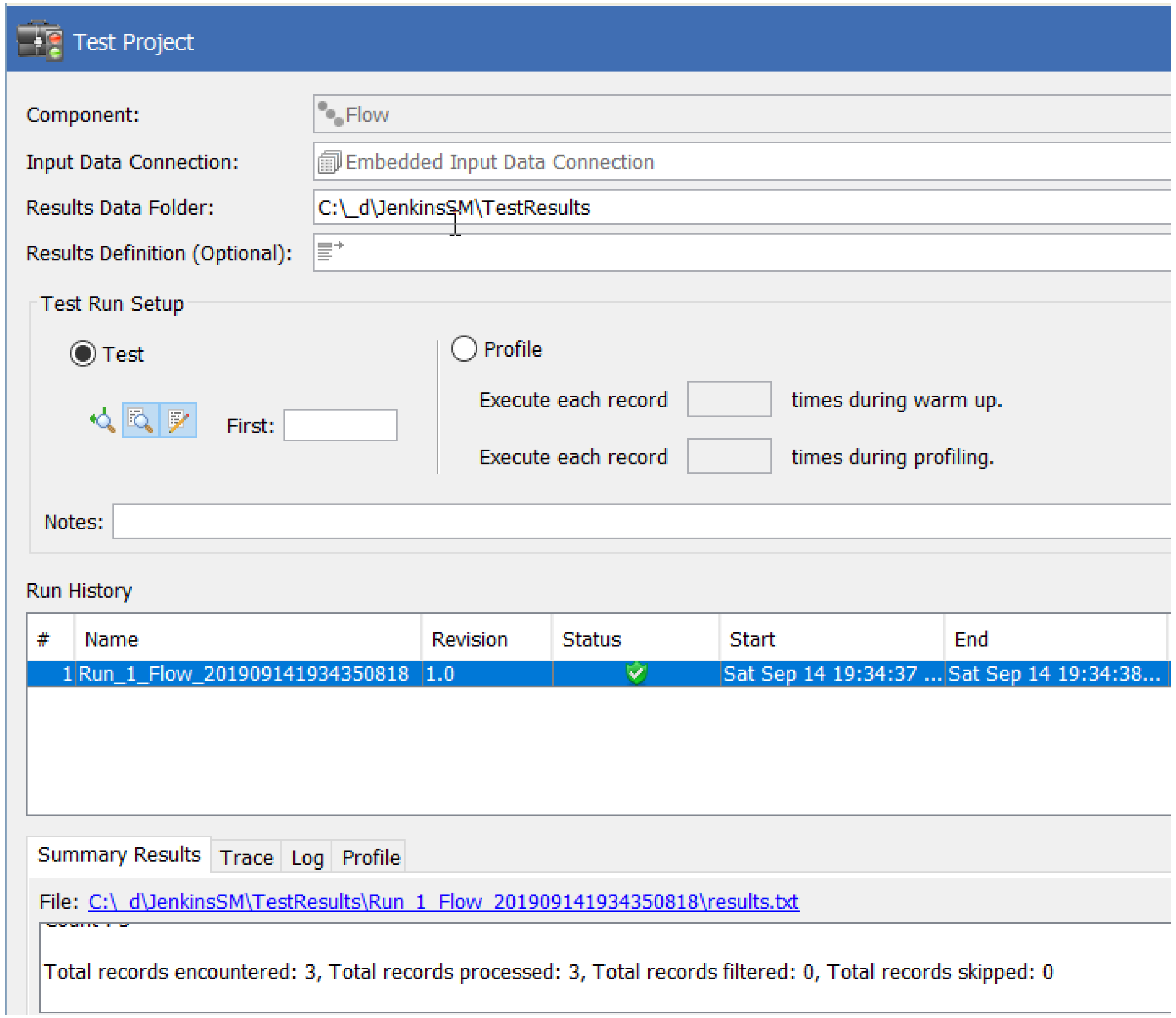
Reuse available data sets for testing

Pros

- Multiple test projects can be created to handle different data sets
- Tests are executed on the server (via Decision Agent)
- Large test data sets easily handled – in CSV or in database
- Performance profiling can be done

Cons

- Require manual work to compare test results between runs and versions (via separate tools)
- Defined per strategy (no test sequences on concatenated strategies)



Test Project

Component: Flow

Input Data Connection: Embedded Input Data Connection

Results Data Folder: C:_d\JenkinsSM\TestResults

Results Definition (Optional):

Test Run Setup

[✓ Test] Profile

First:

Execute each record times during warm up.

Execute each record times during profiling.

Notes:

Run History

#	Name	Revision	Status	Start	End
1	Run_1_Flow_201909141934350818	1.0	✓	Sat Sep 14 19:34:37 ...	Sat Sep 14 19:34:38...

Summary Results | Trace | Log | Profile

File: C:_d\JenkinsSM\TestResults\Run_1_Flow_201909141934350818\results.txt

Total records encountered: 3, Total records processed: 3, Total records filtered: 0, Total records skipped: 0

Batch Process Flow

Automate the full test process

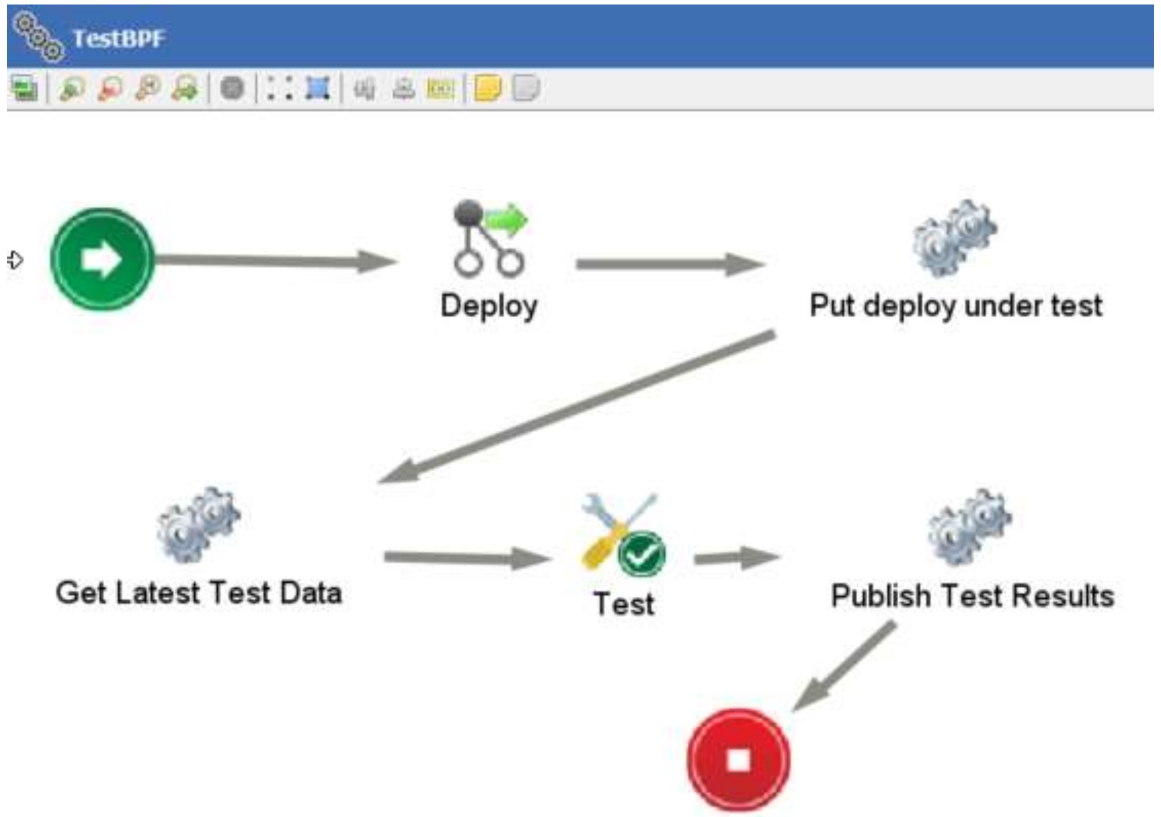
A batch process flow enables automated processing directly out of the design studio and allows to automate PowerCurve development pipeline. This component can be used for test automation as well: deployment, exports, test runs, external scripts calling.

Pros

- Complex scenarios with different strategies to be tested can be created
- Tests are executed on the server (via Decision Agent)
- Full automation possible (even on defined schedules)
- Once set-up, test runs require no manual effort, can be repeated frequently.

Cons

- May require operating scripting knowledge in some cases (BAT files, UNIX scripts)
- Initial set-up effort, but easily pays off for regular and bigger strategy changes.



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Jenkins

Example for fully automated test process

Continuous Integration, Continuous delivery server

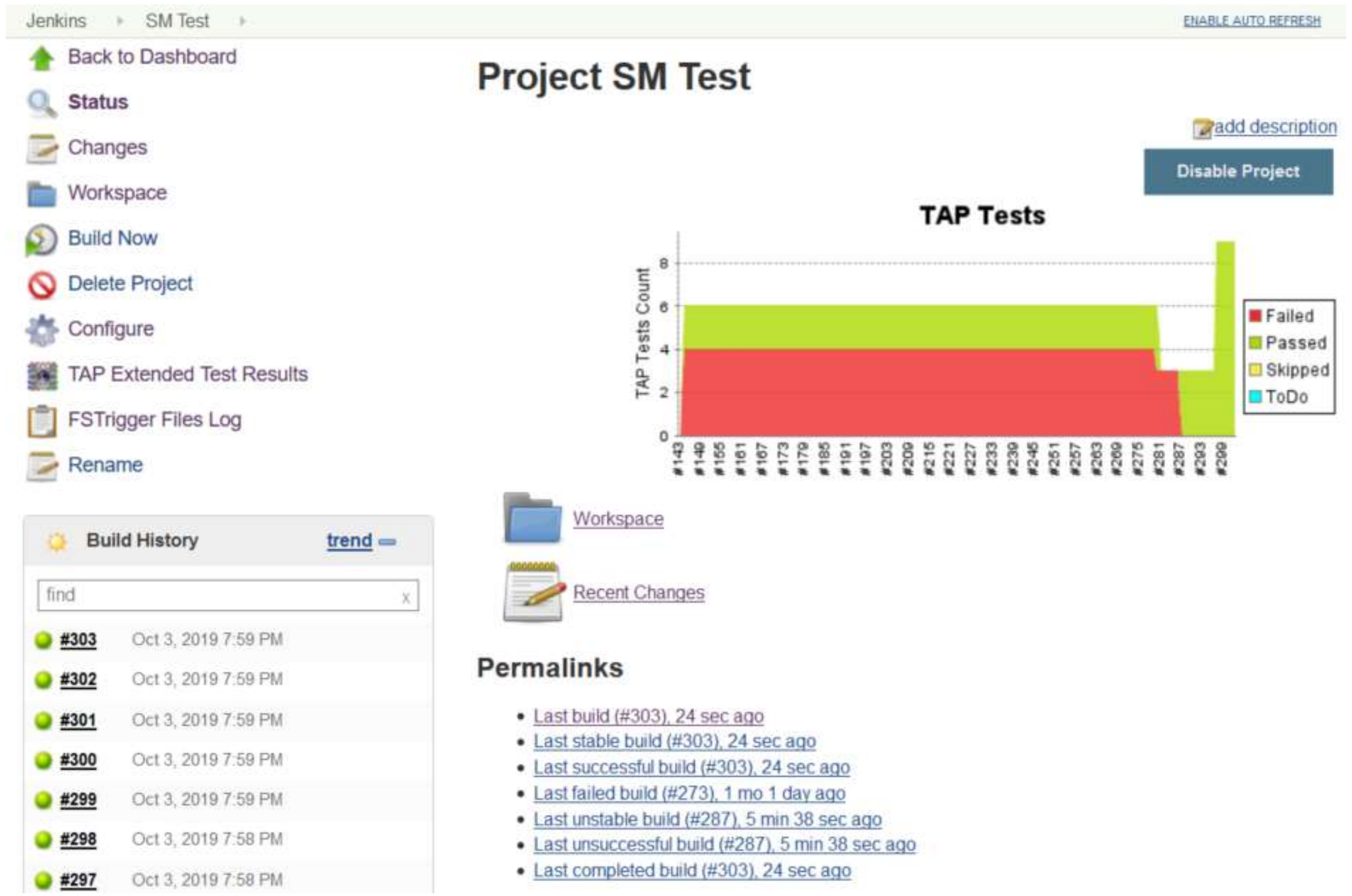
Can be integrated with PowerCurve products using Batch Process Flow

Pros

- Track test history execution
- Easy identification of points of failure in strategies updates

Cons

- May require DevOps knowledge to setup
- LEGO-like tool – some parts of the pipeline have to be developed by client to match strategies specifics



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Permalinks

- Last build (#303), 24 sec ago
- Last stable build (#303), 24 sec ago
- Last successful build (#303), 24 sec ago
- Last failed build (#273), 1 mo 1 day ago
- Last unstable build (#287), 5 min 38 sec ago
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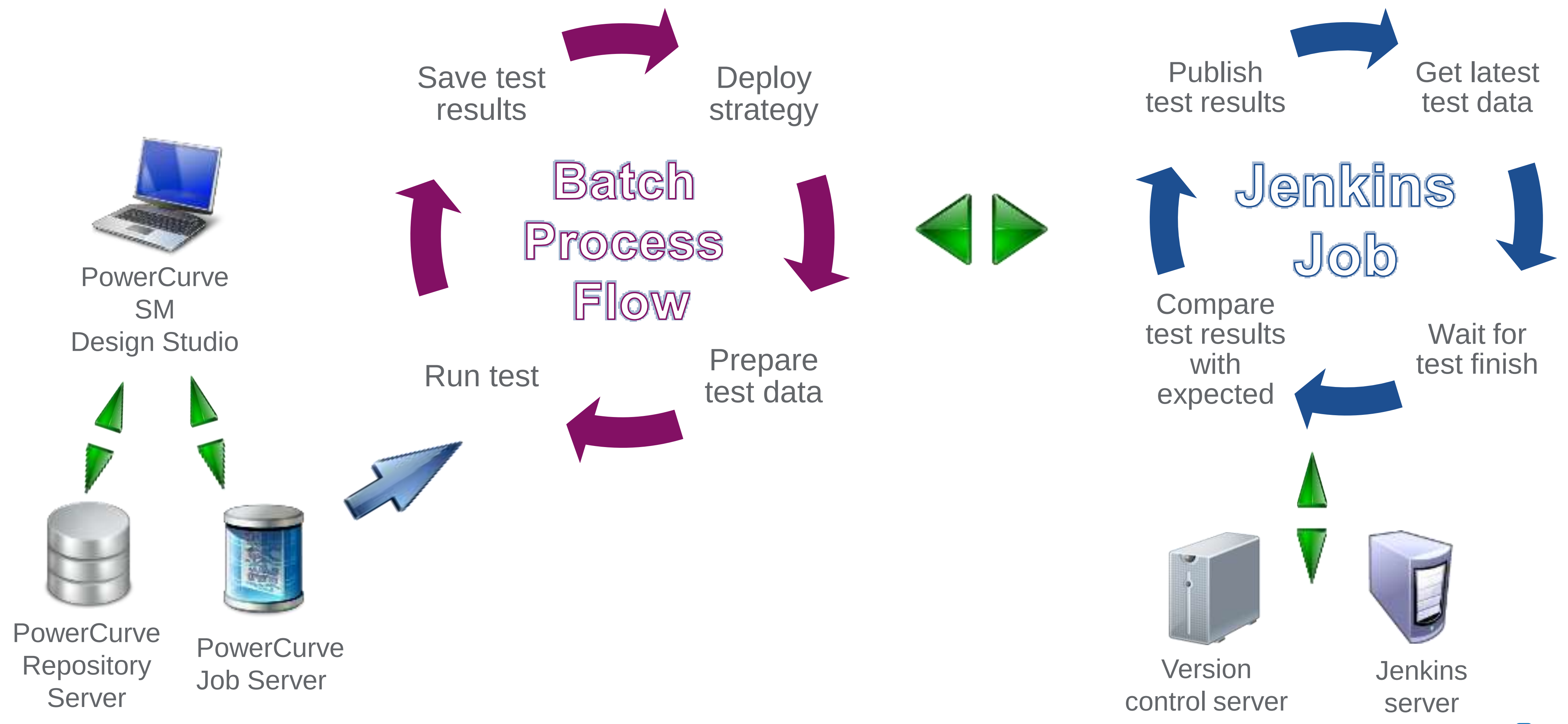
Jenkins Flow

Automate test process end-to-end



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