



# Checkmk Synthetic Monitoring



**Simon Meggle**

Product Manager Synthetic Monitoring  
Checkmk GmbH



# Synthetic Monitoring

Let's recap.

# “Synthetic” monitoring

What does that mean?

- “Synthetically” *mimic interactions of users with target systems*
- Insights
  - performance
  - functionality
  - availability

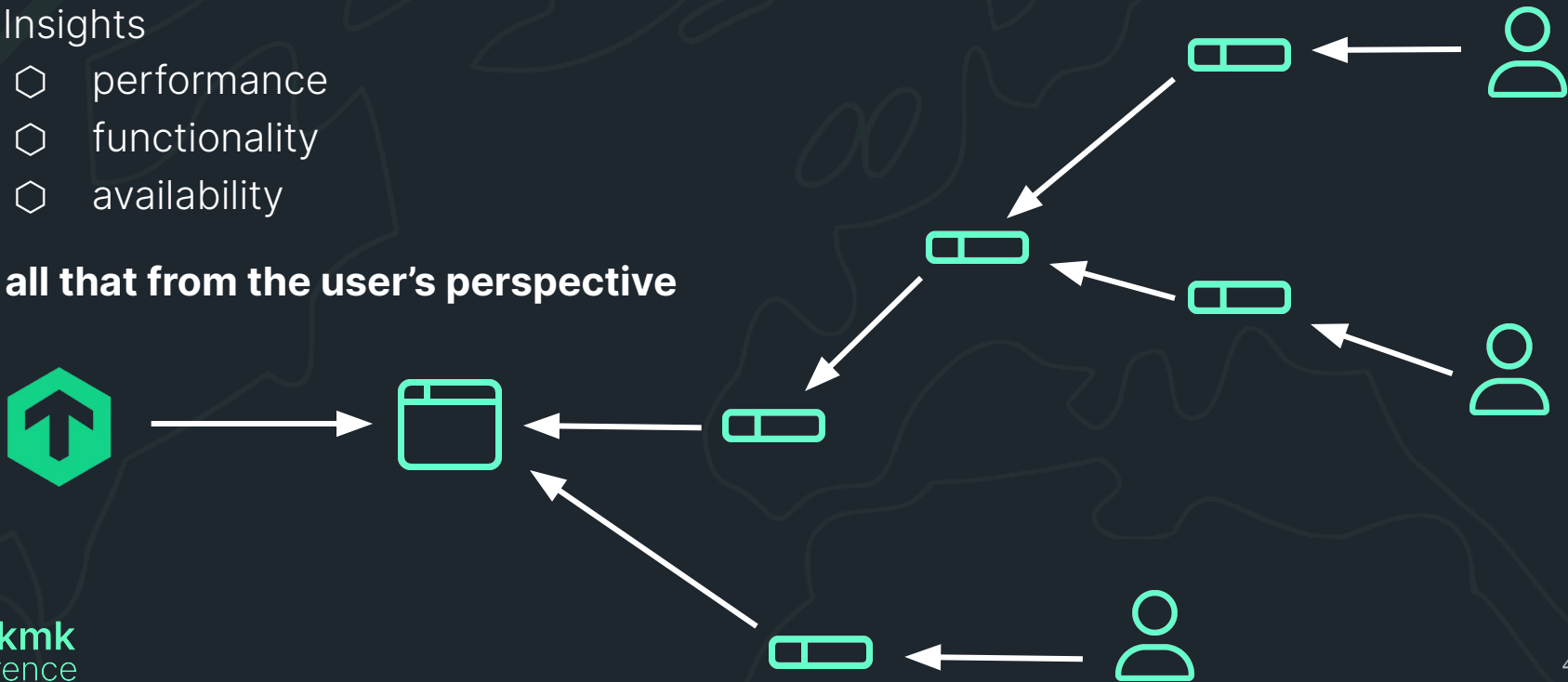


# “Synthetic” monitoring

What does that mean?

- “Synthetically” *mimic interactions of users with target systems*
- Insights
  - performance
  - functionality
  - availability

⇒ all that from the user’s perspective

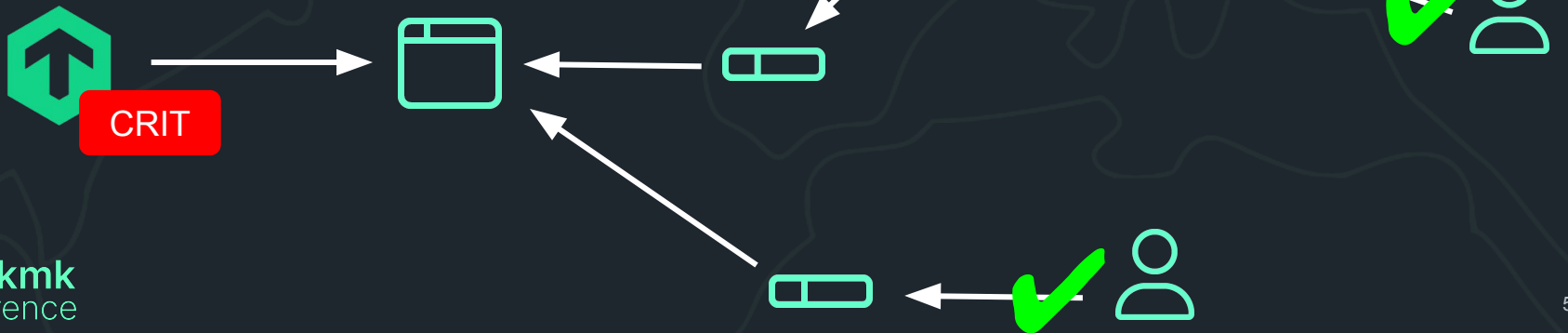


# “Synthetic” monitoring

What does that mean?

- “Synthetically” *mimic interactions of users with target systems*
- Insights
  - performance
  - functionality
  - availability

⇒ all that from the user’s perspective

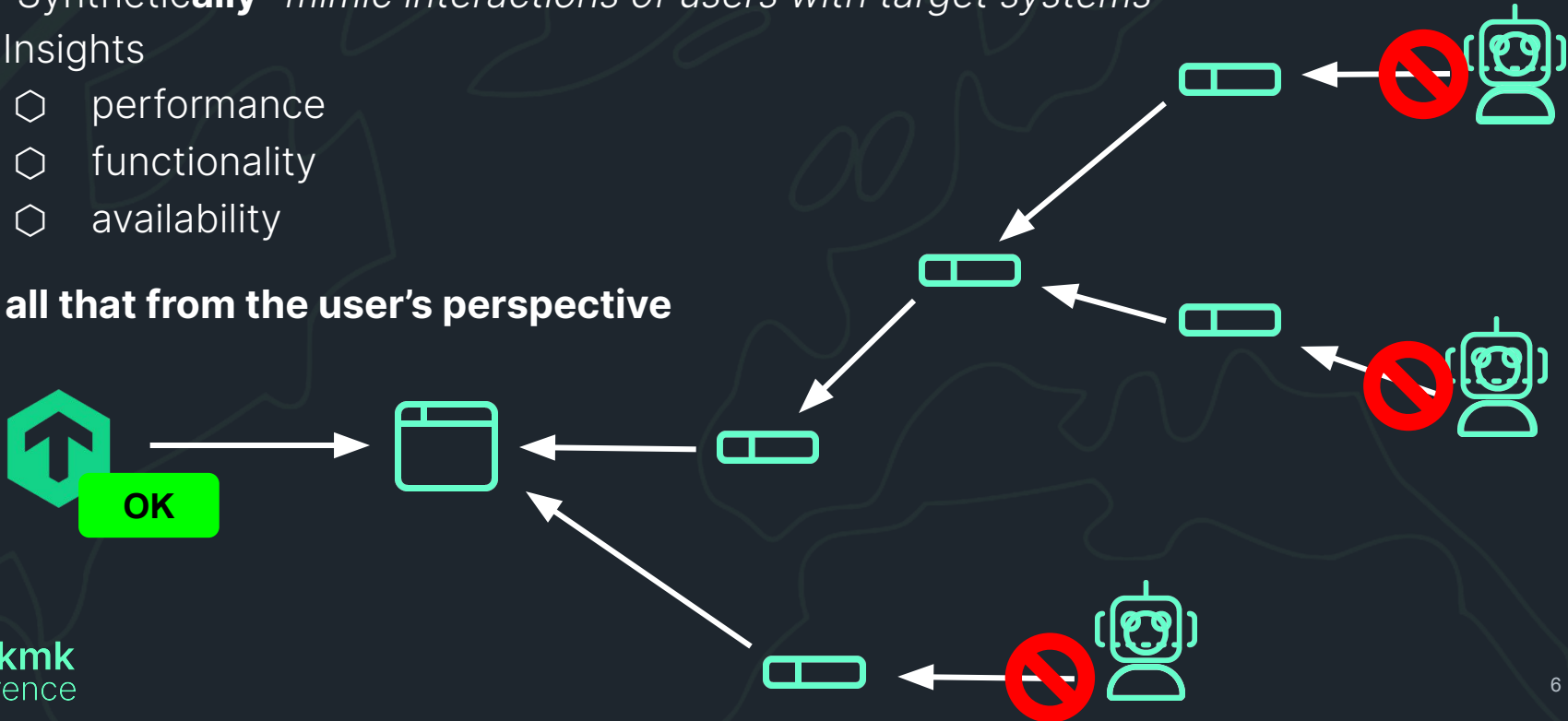


# “Synthetic” monitoring

What does that mean?

- ⬢ “Synthetically” *mimic interactions of users with target systems*
- ⬢ Insights
  - ⬢ performance
  - ⬢ functionality
  - ⬢ availability

⇒ all that from the user’s perspective

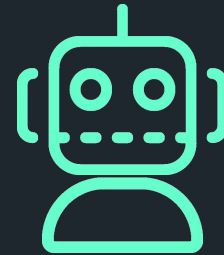


# Automation tools

## Selection criteria

An automation tool should...

- ...bring a **broad variety of test technologies**
- ...be open (source) and extendable
- ...have a big user base
- ...be flexible but easy to maintain



# Robot Framework

The “*lingua franca*” of test automation



- "Generic Test Automation Framework"
- Open Source
- Python based / wide range of libraries
- “Keyword driven” approach
- Huge community



[www.robotframework.org](http://www.robotframework.org)



```
1  *** Settings ***
2  Library                SeleniumLibrary
3  Suite Teardown        Close All Browsers
4
5  *** Variables ***
6  ${URL} =              http://www.seleniumeasy.com/test/basic-first-form-demo.html
7
8  *** Test Cases ***
9  Selenium Demo
10     Open Browser        ${URL}    chrome    service_log_path=null
11     Maximize Browser Window
12     Wait Until Element Is Visible  at-cv-lightbox-close  timeout=10  error=None
13     Click Element      at-cv-lightbox-close
14     Page Should Contain Selenium Easy Demo - Simple Form to Automate using
15     Input Text        user-message  Test Robot
16     Click Button      css:#get-input > .btn
17     Wait Until Element Contains  display  Test Robot  timeout=3  error="Testtext ko
```

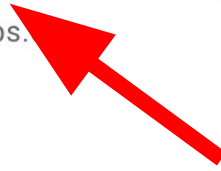


Pekka Laukkanen

Jun 20, 2008, 1:36:09 AM



to aa-...@yahoogroups.com, robotframe...@googlegroups.  
robotframe...@googlegroups.com



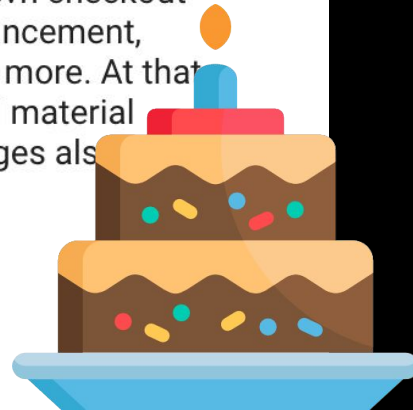
Hello all,

Robot Framework is a generic keyword-driven test automation framework. It's originally based on my Master's Thesis and it has been developed further at Nokia Siemens Networks where it currently has nearly 1000 users. This is also the framework Juha Rantanen and I presented at last year's AA-FTT workshop at Portland.

The framework is now, finally, publicly available at <http://robotframework.org> under Apache 2.0 license. An official release with distribution packages is still missing, but svn checkout works. This mailing list is the first to get a public announcement, but after the official release next week we'll send some more. At that time we hopefully also have some more getting started material available -- our user guide is pretty good but at 100+ pages also pretty heavy.

Comments and questions are very much welcome.

Cheers,  
.peke



# The Robot Framework Foundation



# Robotmk

## History

- Written by me 2020
- Great perception by the Checkmk and Robot Framework community
- Also lead to monitoring awareness in the RF community

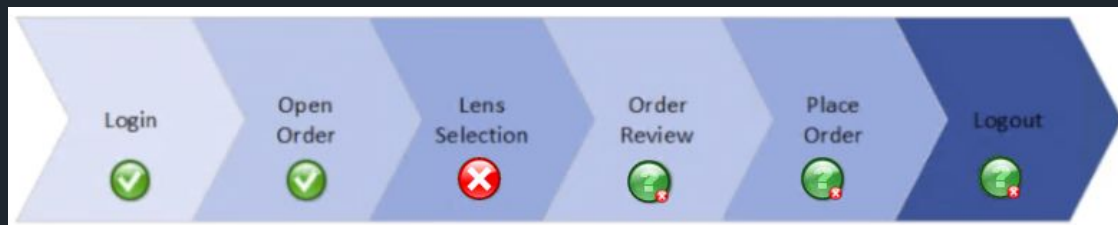


# Robotmk

Example: Carl Zeiss AG



|    |                                     |  |  |
|----|-------------------------------------|--|--|
| OK | E2E VISUSTORE - Close Order         |      | ----- □ [T] 'Close Order': PASS (last execution: 06/13 14:40:29)         |
| OK | E2E VISUSTORE - Enter Order Data    |      | ----- □ [T] 'Enter Order Data': PASS (last execution: 06/13 14:40:22)    |
| OK | E2E VISUSTORE - Lens Type Selection |      | ----- □ [T] 'Lens Type Selection': PASS (last execution: 06/13 14:40:26) |
| OK | E2E VISUSTORE - Login               |      | ----- □ [T] 'Login': PASS (last execution: 06/13 14:40:17)               |
| OK | E2E VISUSTORE - LogOut              |      | ----- □ [T] 'LogOut': PASS (last execution: 06/13 14:40:32)              |
| OK | E2E VISUSTORE - Open Order          |      | ----- □ [T] 'Open Order': PASS (last execution: 06/13 14:40:21)          |
| OK | E2E VISUSTORE - Order Review        |      | ----- □ [T] 'Order Review': PASS (last execution: 06/13 14:40:27)        |
| OK | E2E VISUSTORE - Place Order         |      | ----- □ [T] 'Place Order': PASS (last execution: 06/13 14:40:29)         |





# Robotmk

## Development in the past and today

- General **challenges in the past:**
  - Limited time for development
  - Customer-driven development does not lead automatically to a well designed product
  - Rather small specific optimizations
  - No budget for bigger changes
- **Cooperation with Checkmk** since mid 2022:
  - Ensures higher **code quality** in open source version
  - Paves the way for an **enterprise product** with a lot more features





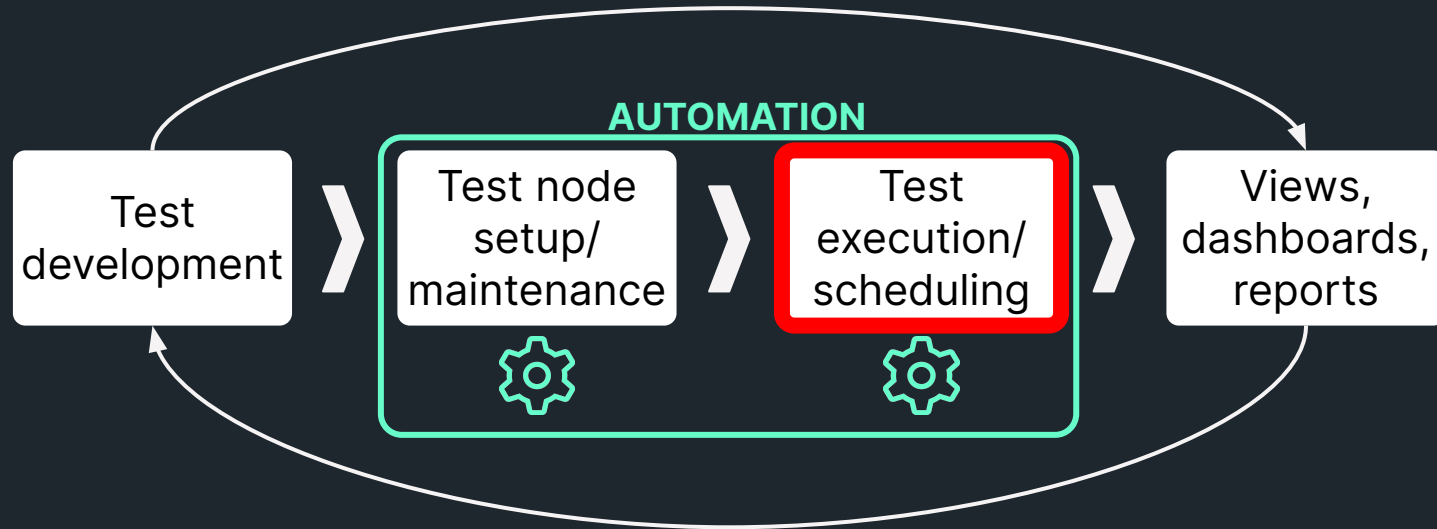
# Robotmk today

What we are focusing on.



ROBOTmk

# Daily business...

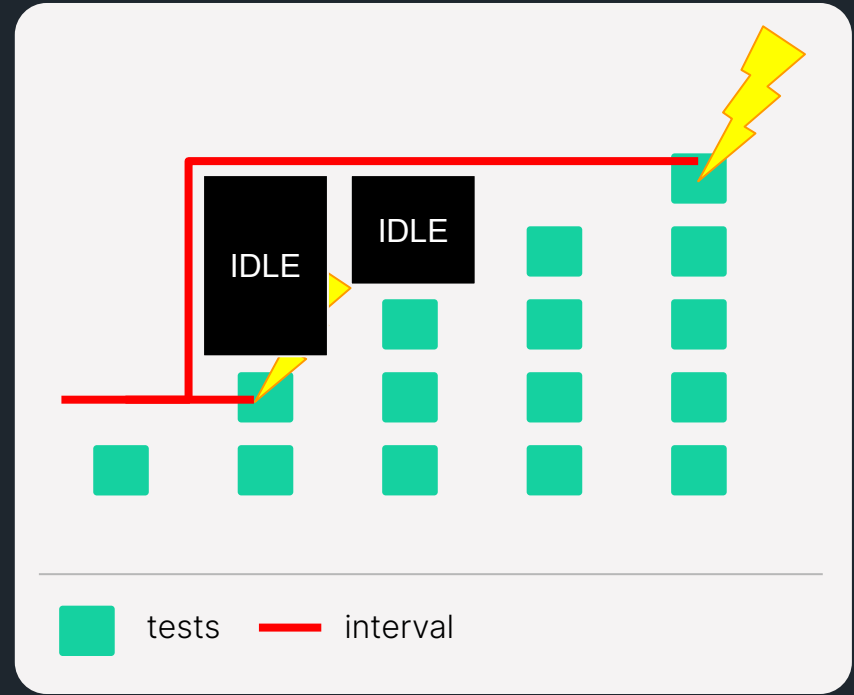




# Problem 1: test scheduling/execution

Manual adjustment/guessing of execution interval on agent

- One interval for all tests, no overlapping allowed
- Does not scale
- ⇒ “sweet spot” for best interval is difficult to adjust (idle time  $\leftrightarrow$  overlap)





# Considerations: test scheduling/execution

...start the suites as an async plugins?

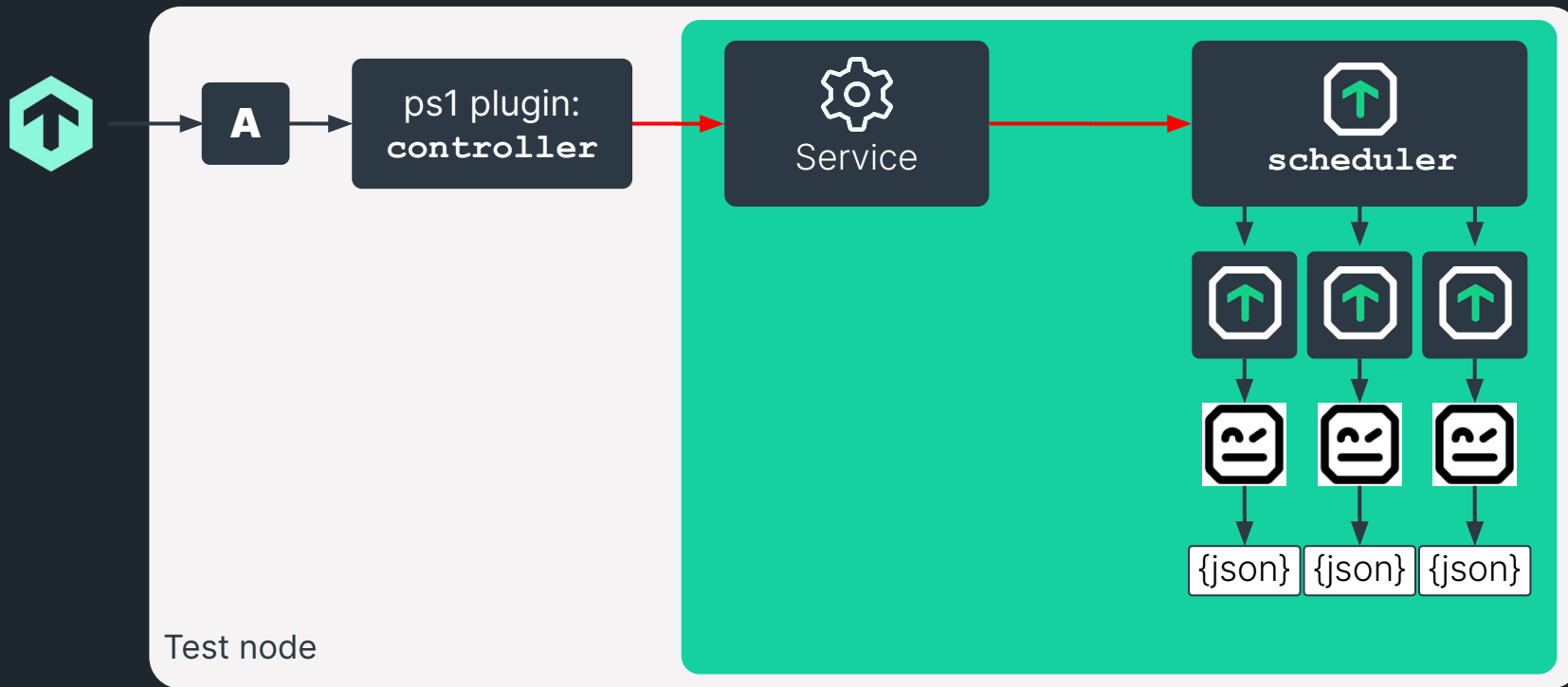
- ⬢ Agent plugins cannot be parameterized
- ⬢ Agent only starts one instance per plugin script
- ⬢ Killed plugins would lead to NO result at all - bad



⇒ **Decouple a scheduling component**

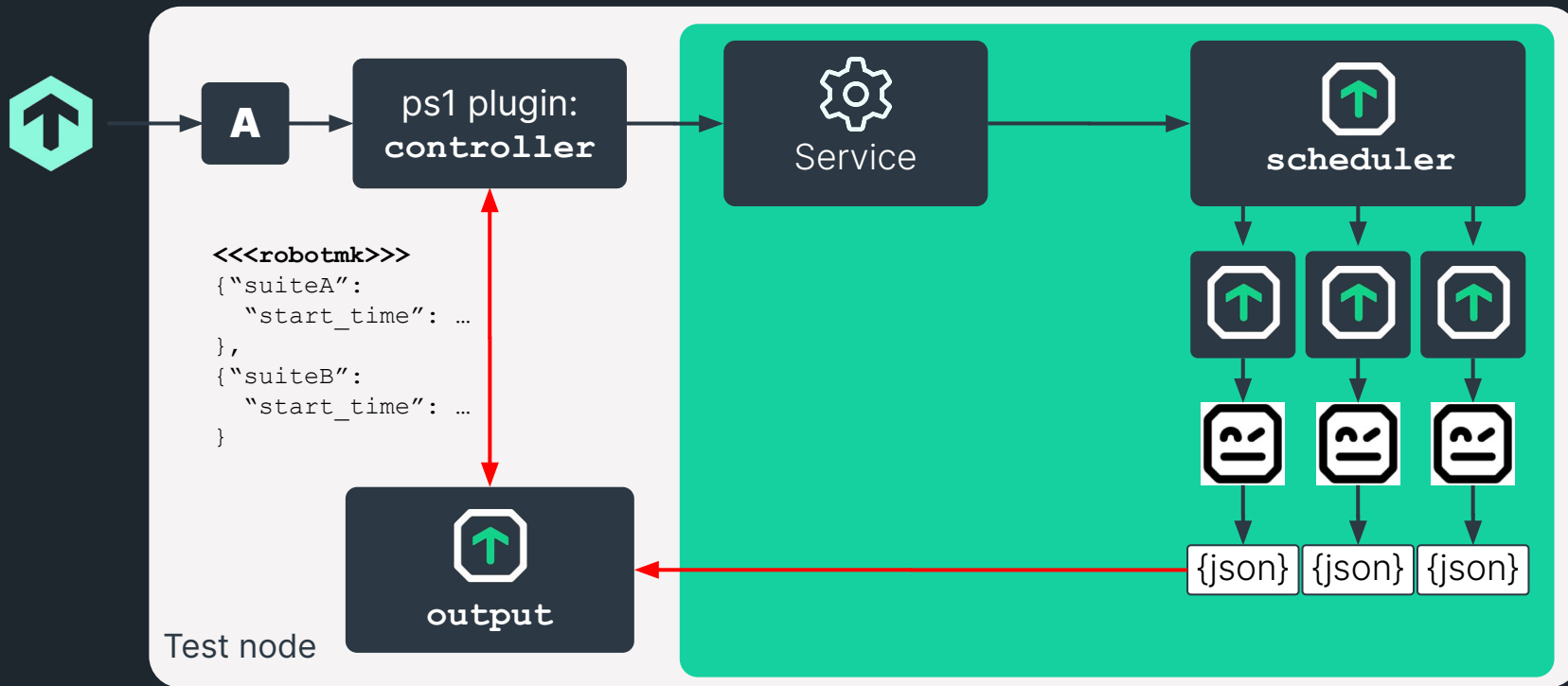
# Milestone 1: RMK Scheduler / Parallel execution

(Windows)



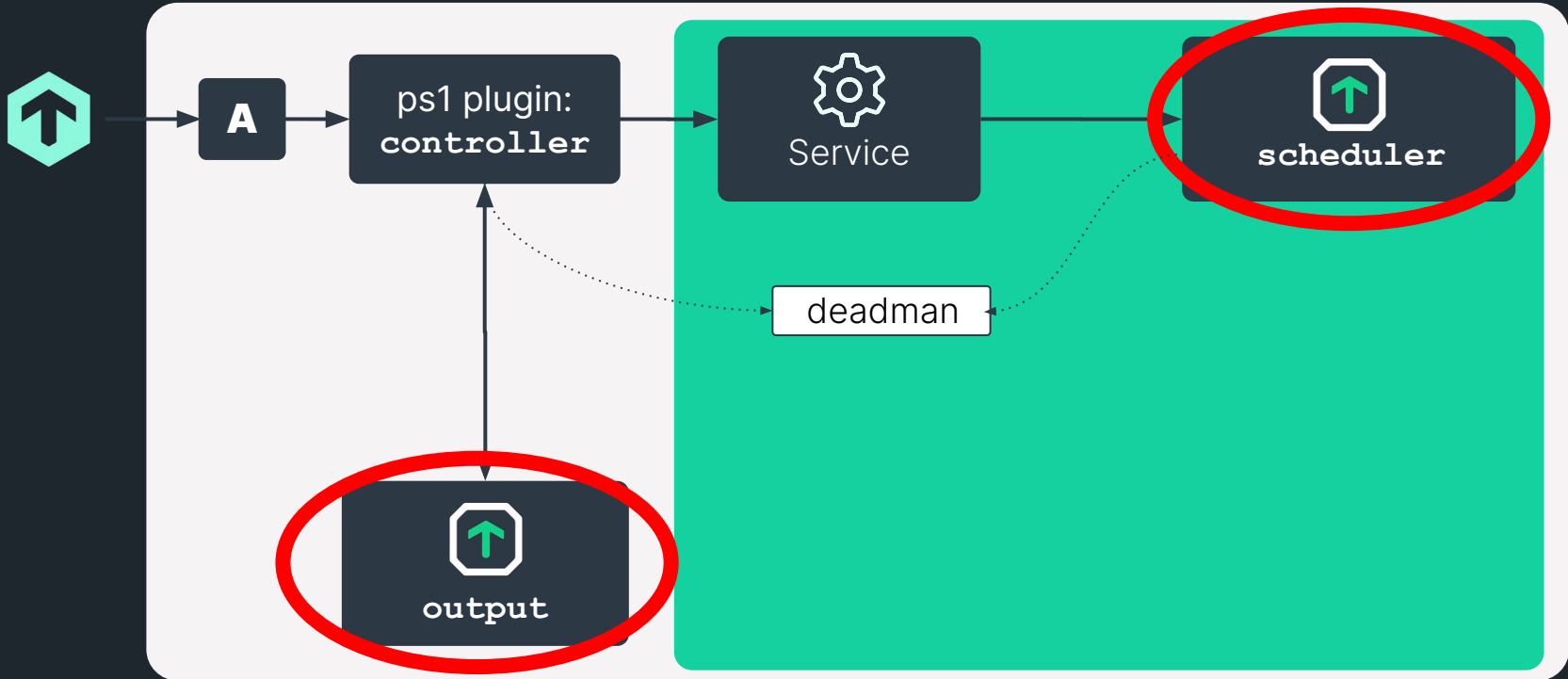
# Milestone 1: RMK Scheduler / Parallel execution

(Windows)

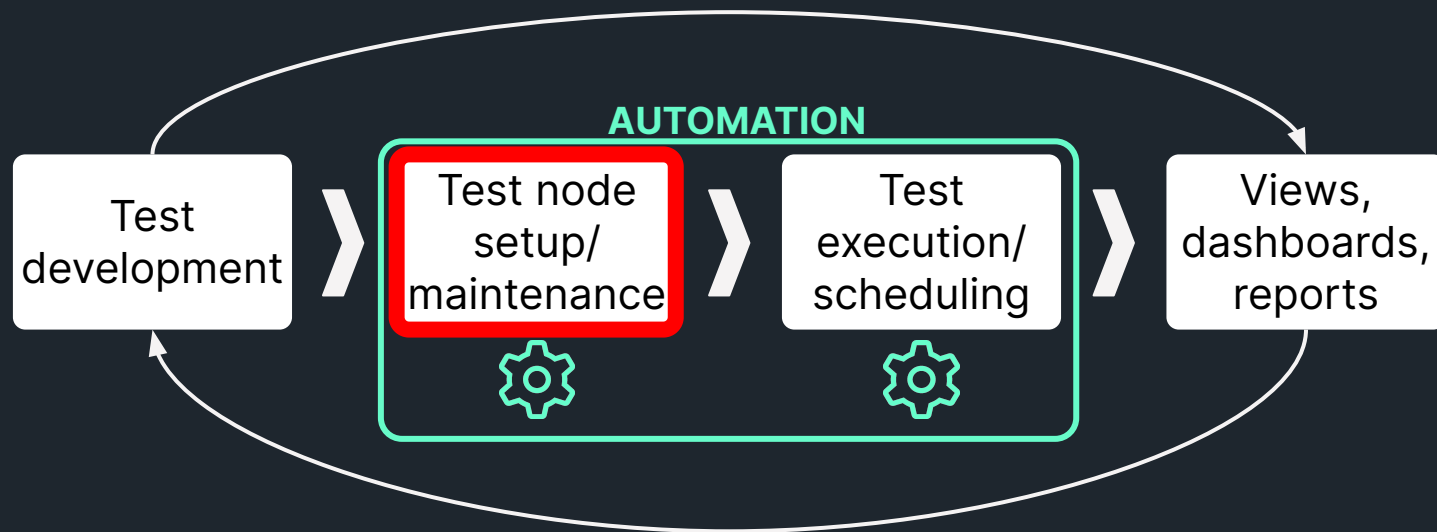


# Milestone 1: RMK Scheduler / Parallel execution

(Windows)



# Daily business...

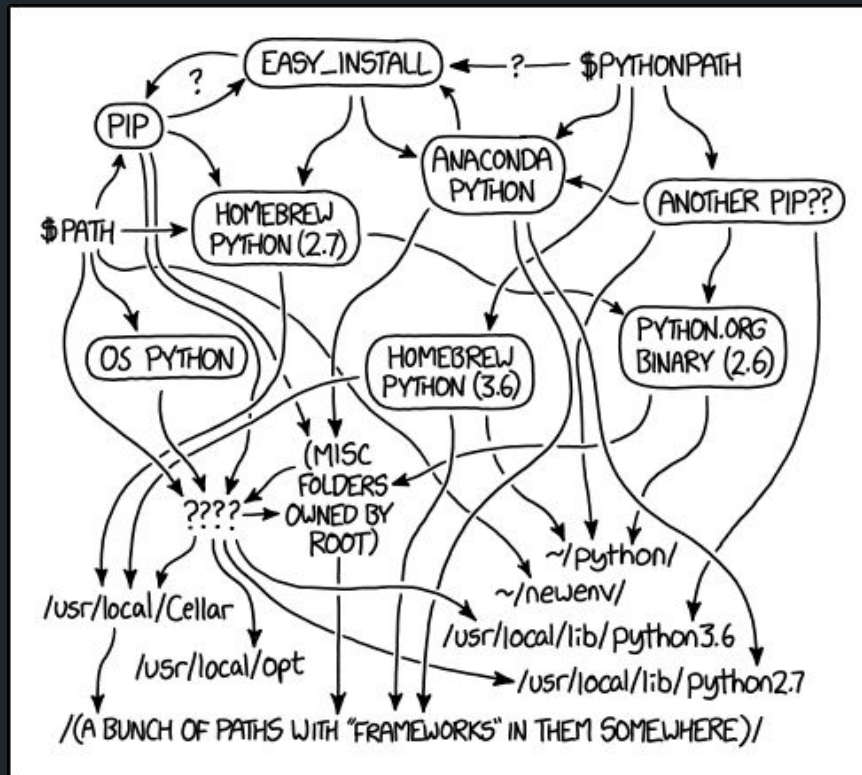


# Problem 2: Test node maintenance efforts



Main (manual) tasks on test nodes:

**Maintain Python + dependencies**



MY PYTHON ENVIRONMENT HAS BECOME SO DEGRADED THAT MY LAPTOP HAS BEEN DECLARED A SUPERFUND SITE.

# Problem 2: Test node maintenance efforts

Robotmk v1: One Python for all tests



1

```
pkgA==1.1  
pkgB==4.2
```



3.11

A  
1.1

B  
4.2



# Problem 2: Test node maintenance efforts

Robotmk v1: One Python for all tests



1

```
pkgA==1.1  
pkgB==4.2
```



2

```
pkgA==1.1  
pkgB==4.2  
pkgC==3.8
```



3.11




A  
1.1


B  
4.2

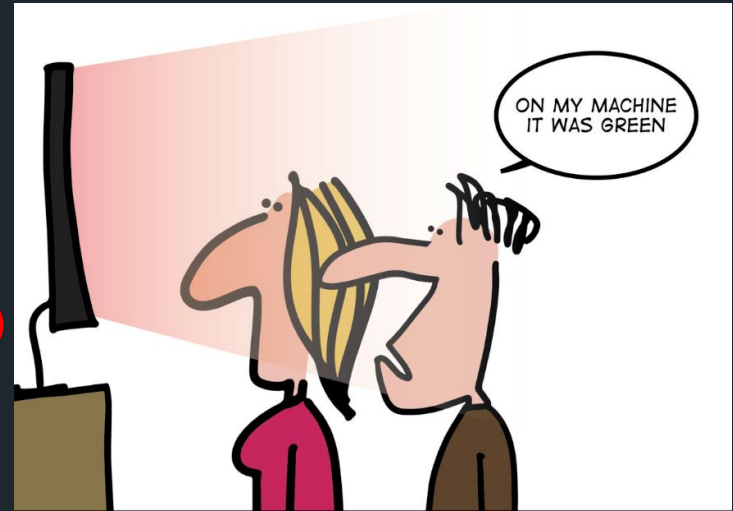
C  
3.8

# Problem 2: Test node maintenance efforts

Robotmk v1: One Python for all tests

|  |   |   |
|--|---|---|
| <br><b>1</b><br>pkgA==1.1<br><b>pkgB==4.2</b> | <br><b>2</b><br>pkgA==1.1<br><b>pkgB==4.2</b><br>pkgC==3.8 | <br><b>3</b><br><b>pkgB==3.3</b><br>pkgC==3.8 |
|--|---|---|

|   |                 |                 |                 |
|---|-----------------|-----------------|-----------------|
| <br>3.11 | <b>A</b><br>1.1 | <b>B</b><br>4.2 | <b>C</b><br>3.8 |
|---|-----------------|-----------------|-----------------|



<https://geek-and-poke.com>

# Problem 2: Test node maintenance efforts

Python and dependencies are **test**-specific!



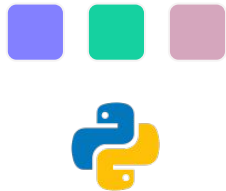
1

```
pkgA==1.1  
pkgB==4.2
```



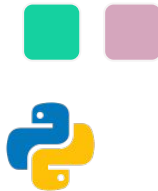
2

```
pkgA==1.1  
pkgB==4.2  
pkgC==3.8
```



3

```
pkgB==3.3  
pkgC==3.8
```





# Considerations: Test node maintenance efforts

...use **virtualenv**?

- ❖ Pip's `requirements.txt` does not describe **sub-dependencies**
- ❖ Tools like pipenv would exclude **Playwright** lib a priori (Node.js)
- ❖ We cannot make automation on user side a **pre-condition** for Robotmk
- ❖ **We can not dictate** users a specific automation tool to be used



⇒ **Test node setup must be automated transparently for the user**

# Milestone 2: Automated test node setup



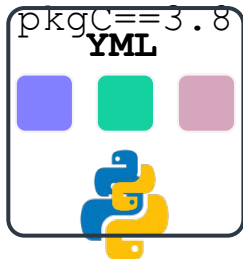
1

```
pkgA==1.1  
pkgB==4.2
```



2

```
pkgA==1.1  
pkgB==4.2
```



3

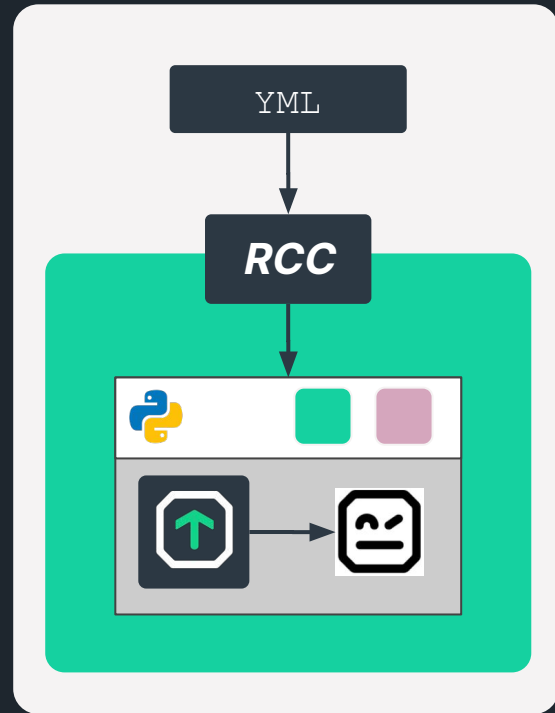
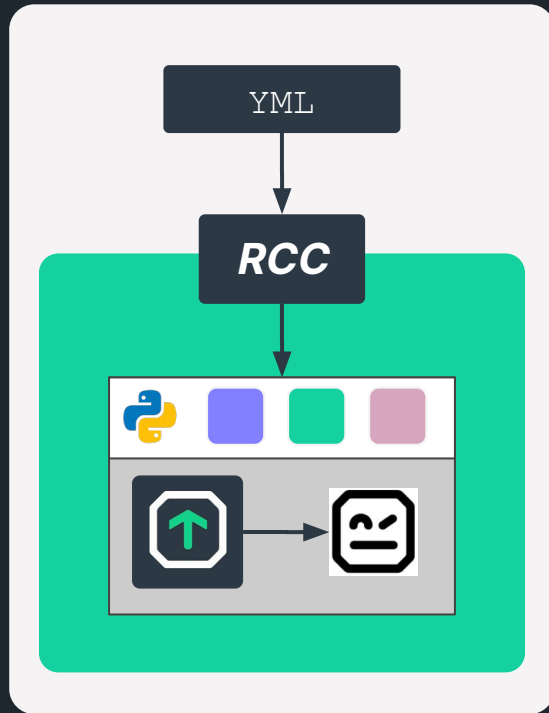
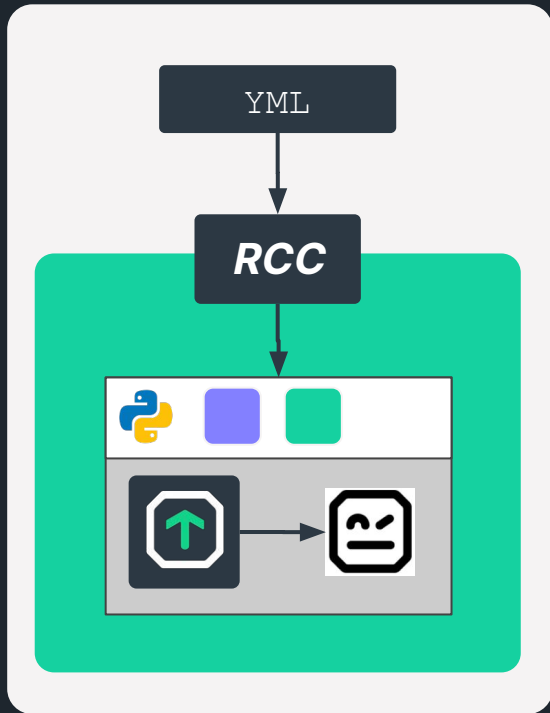
```
pkgB==3.3
```



```
channels:  
  - conda-forge  
dependencies:  
  - python=3.9.13  
  - nodejs=16.14.2  
  - pip=22.1.2  
  - pip:  
    - robotframework==6.0.2  
    - robotframework-browser==16.2.0  
rccPostInstall:  
  - rfbrowser init
```

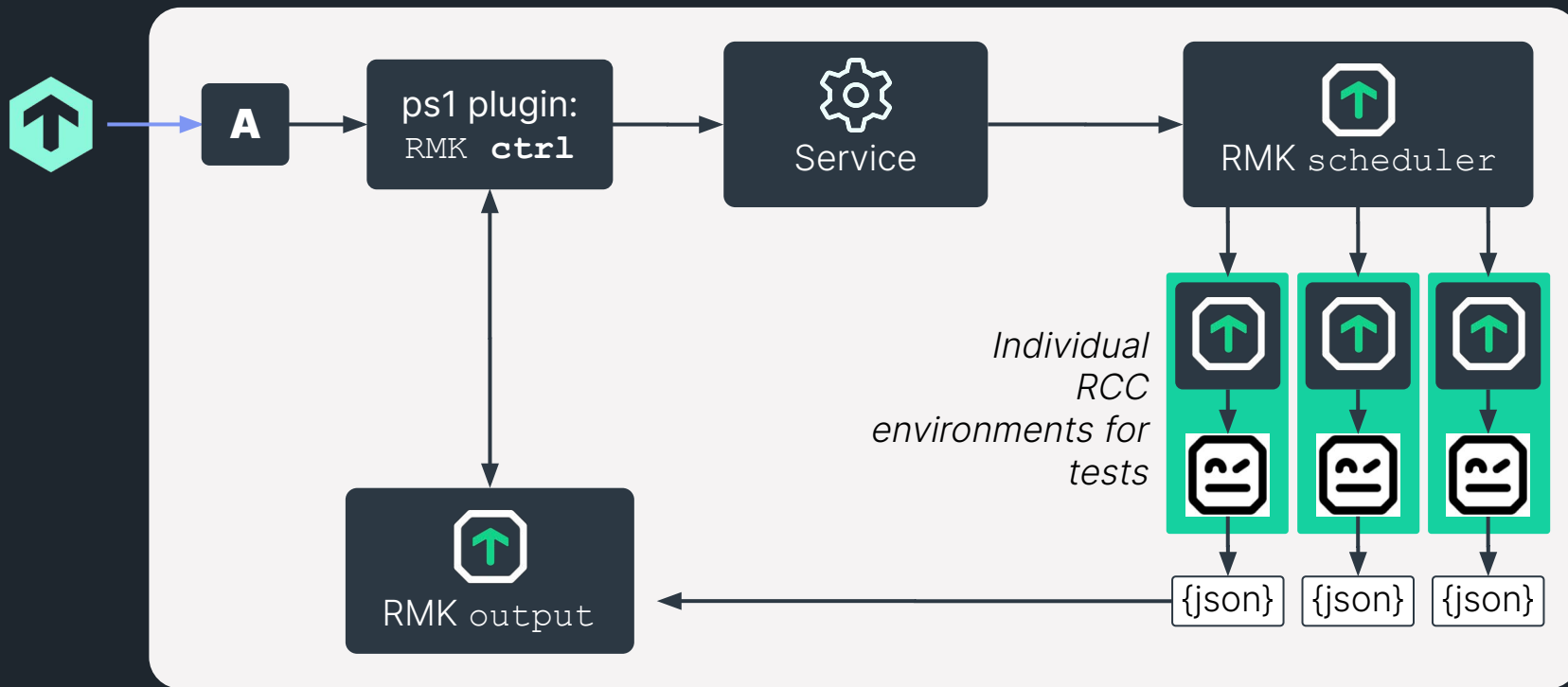
# Milestone 2: Automated test node setup

RCC makes the node setup a no-brainer



# Milestone 2: Automated test node setup

## RCC integration

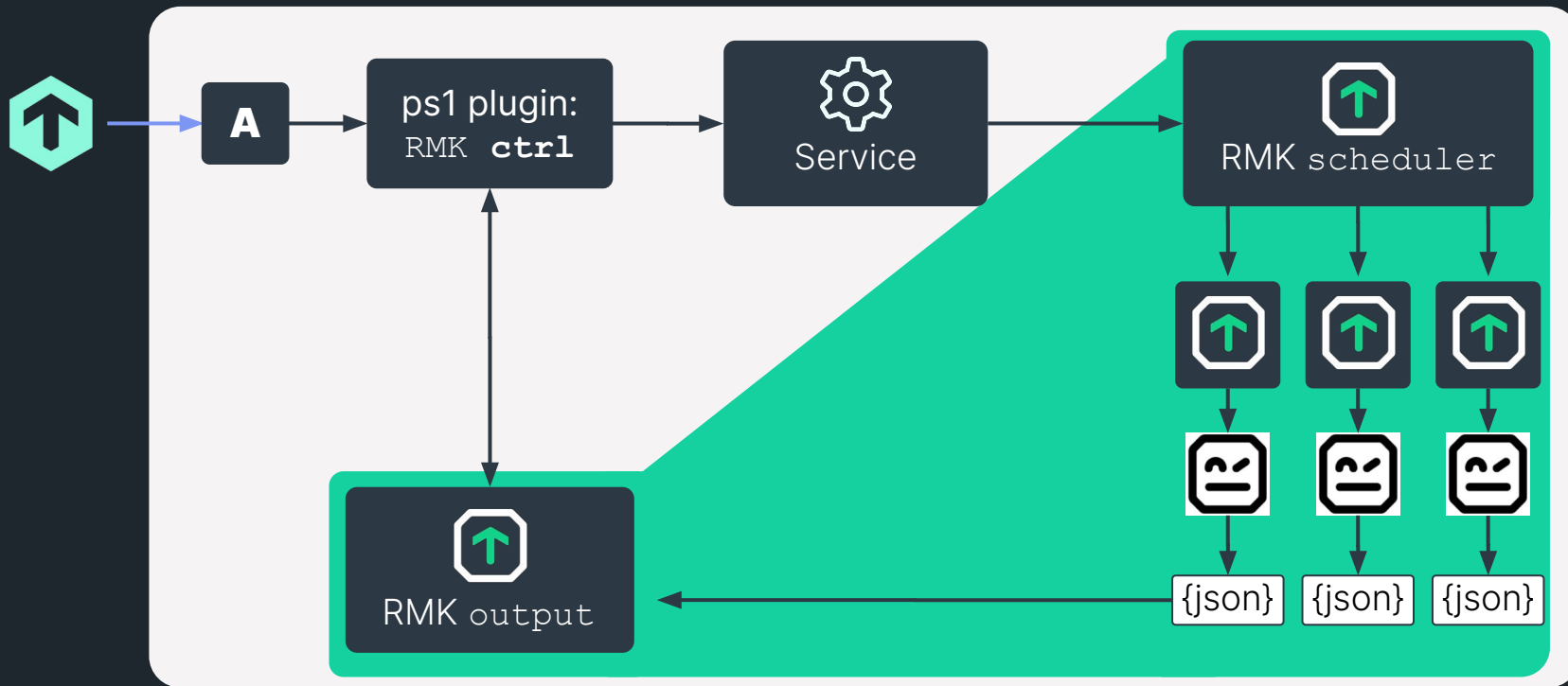






# Milestone 2: Automated test node setup

## RCC integration

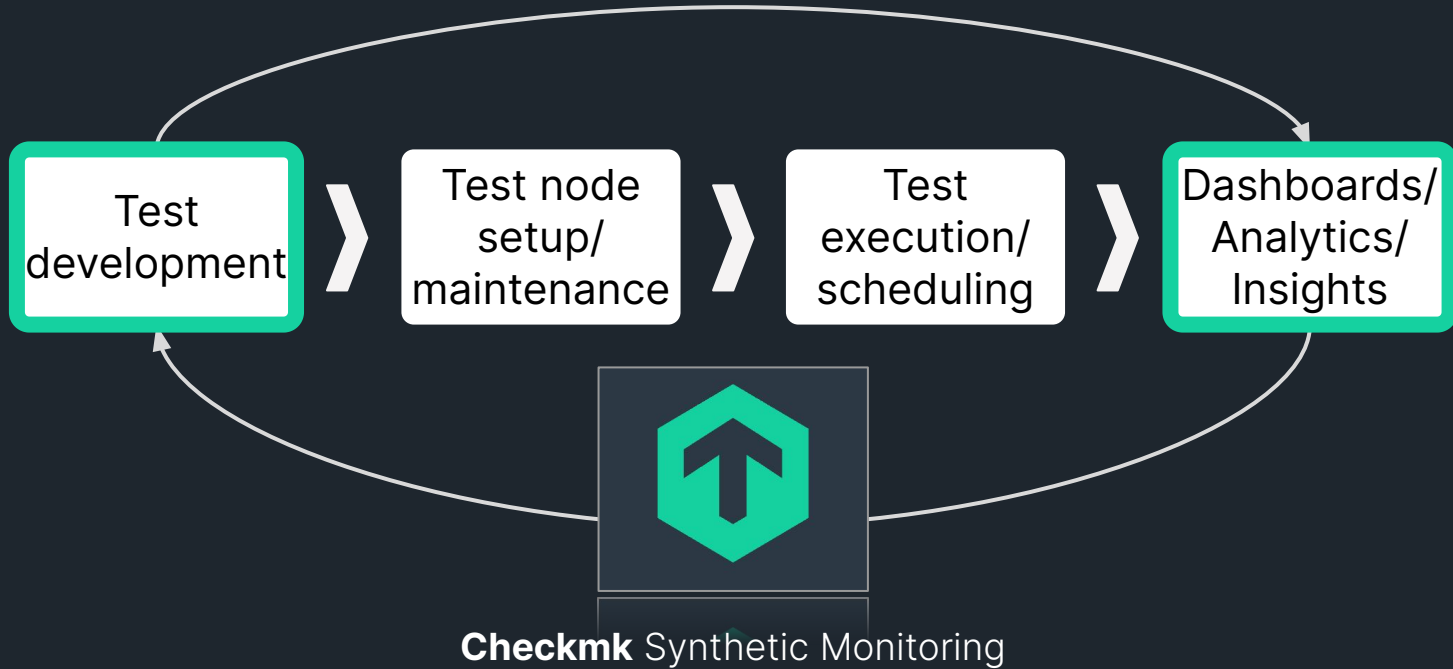


# Outlook

Our milestones 

# Outlook

Improve every step of your journey





Complex and critical systems  
with a multitude of individual states  
must be tested by defined sequences  
in order to ensure their  
internal functional interrelationships.

---



**Checkmk**  
Synthetic Monitoring

*powered by*



# Thank you!

Vielen Dank!



Checkmk GmbH  
Kellerstraße 27  
81667 München  
Germany

Web — [checkmk.com](https://checkmk.com)

E-Mail — [simon.meggle@checkmk.com](mailto:simon.meggle@checkmk.com)