



# Answering Your Questions about Automated Testing

Open Source Test Suite by the InterUSS Platform



## **Ben Pelletier** (chairperson)

- Architect of InterUSS RID automated testing functionality
- Coordinator for many demonstrations of InterUSS technology

## **Michael Barroco**

- Architect of InterUSS SCD automated testing functionality
- Swiss Federal Office of Civil Aviation UAS Flight Authorisation Technical Working Group lead

# About InterUSS Platform and Linux Foundation



Linux Foundation provides governance for collaborative, open-source projects

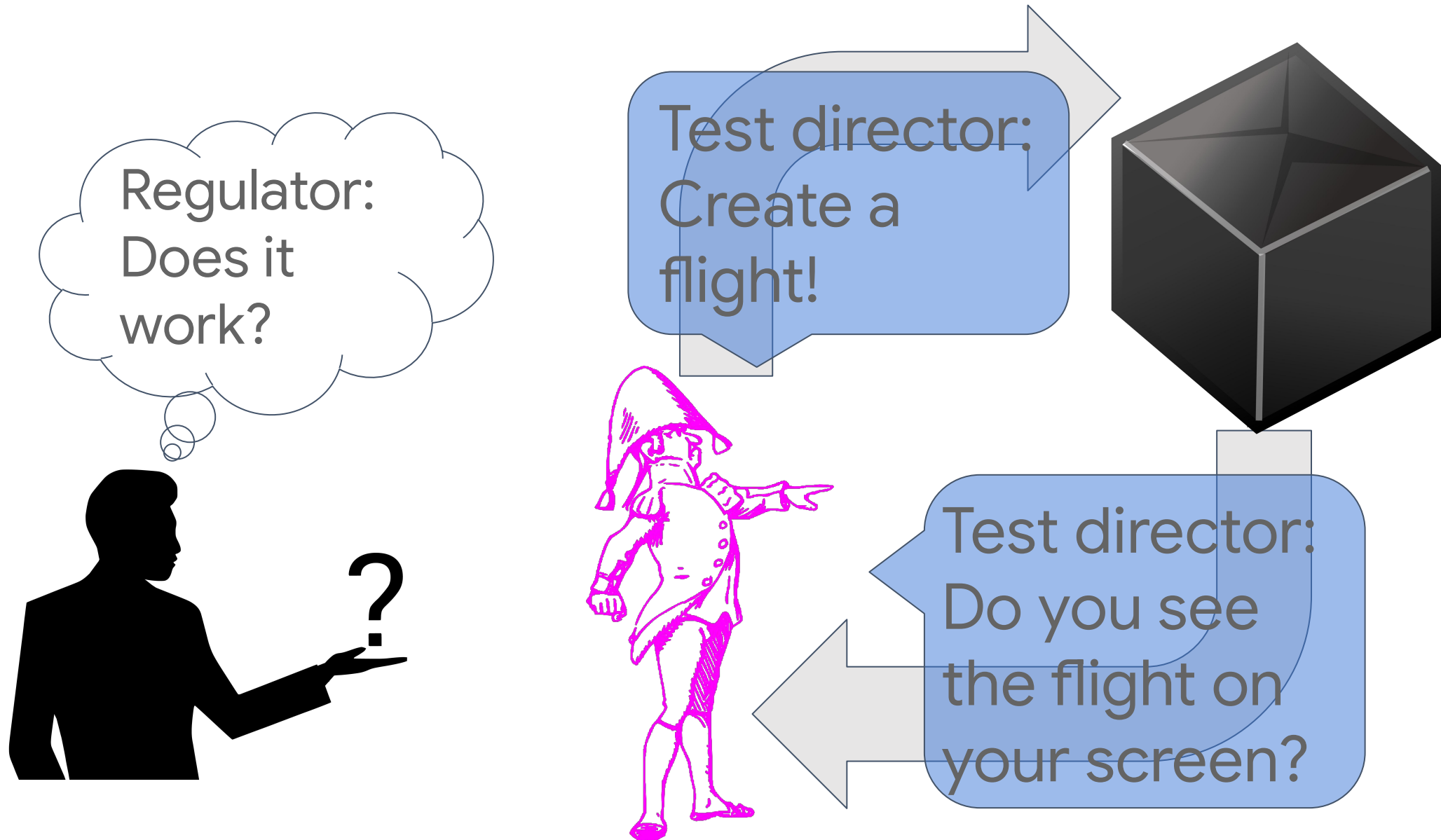
*“The mission of the Project is to develop open source, simple, secure and scalable interoperability between service providers. The Project strives to advance safe and efficient drone operations and satisfy needs for UTM and UAM”*

# Open-source test suite: Why?

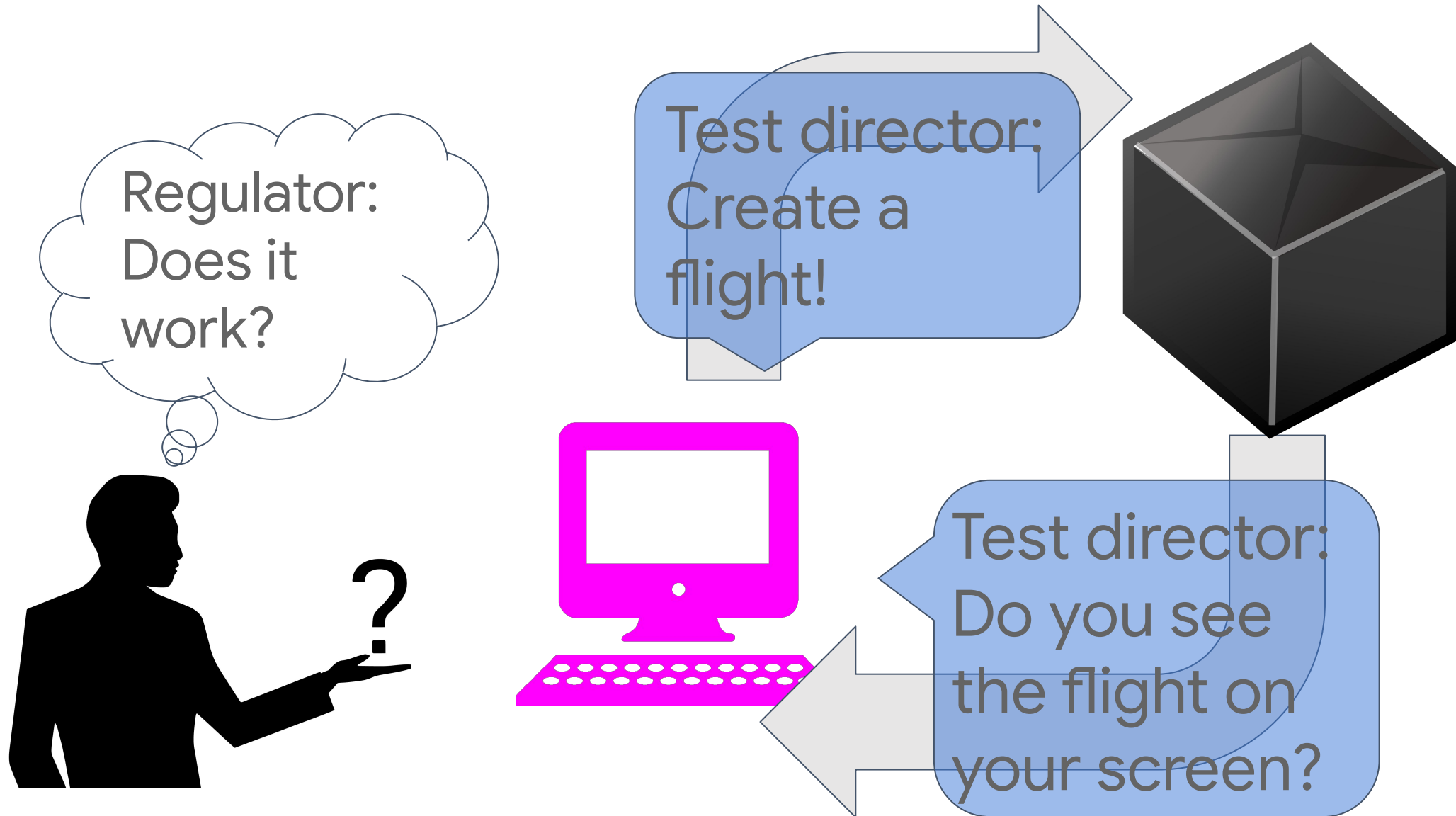


- Authority must **verify applicant compliance with requirements** before granting authorization to operate
- Manual checkouts are:
  - Difficult
  - Expensive
  - Unreliable
  - Do not effectively detect future regressions
- Automated tests are:
  - Exceptionally easy and inexpensive, after initial development
  - Therefore can be conducted frequently to detect future regressions

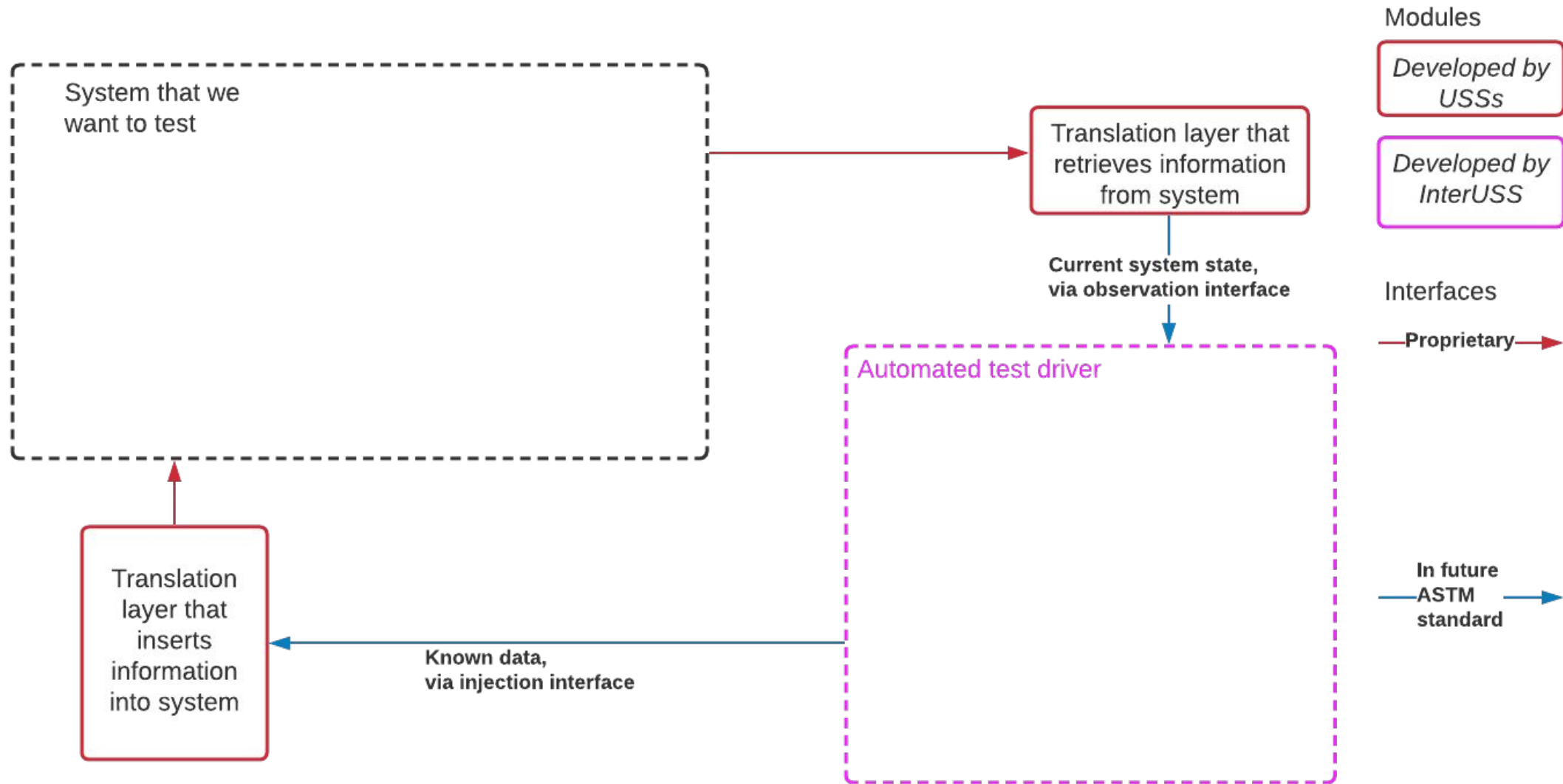
# Open-source test suite: What?



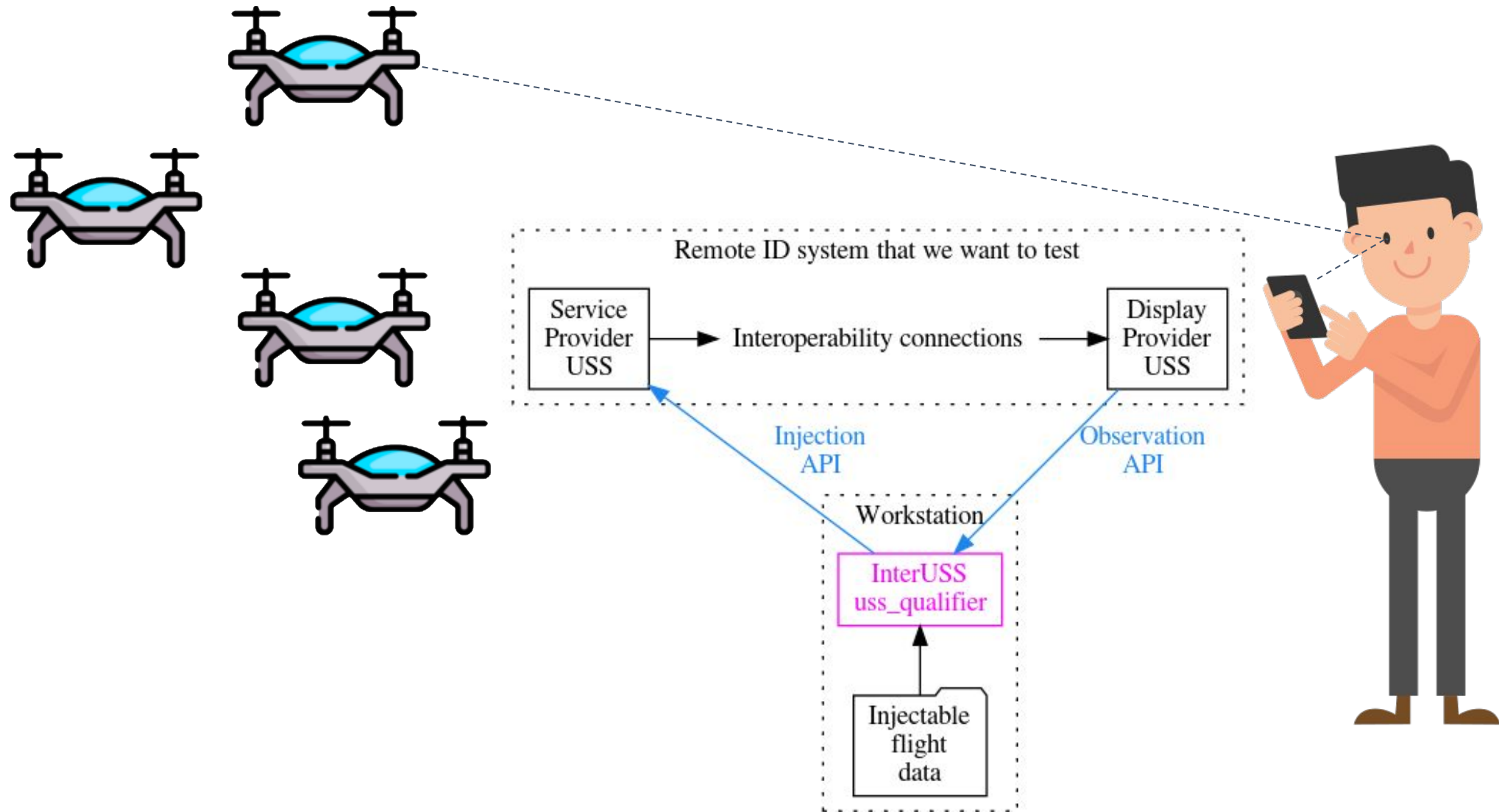
# Open-source test suite: What?



# Open-source test suite: How?



# Open-source test suite: How?





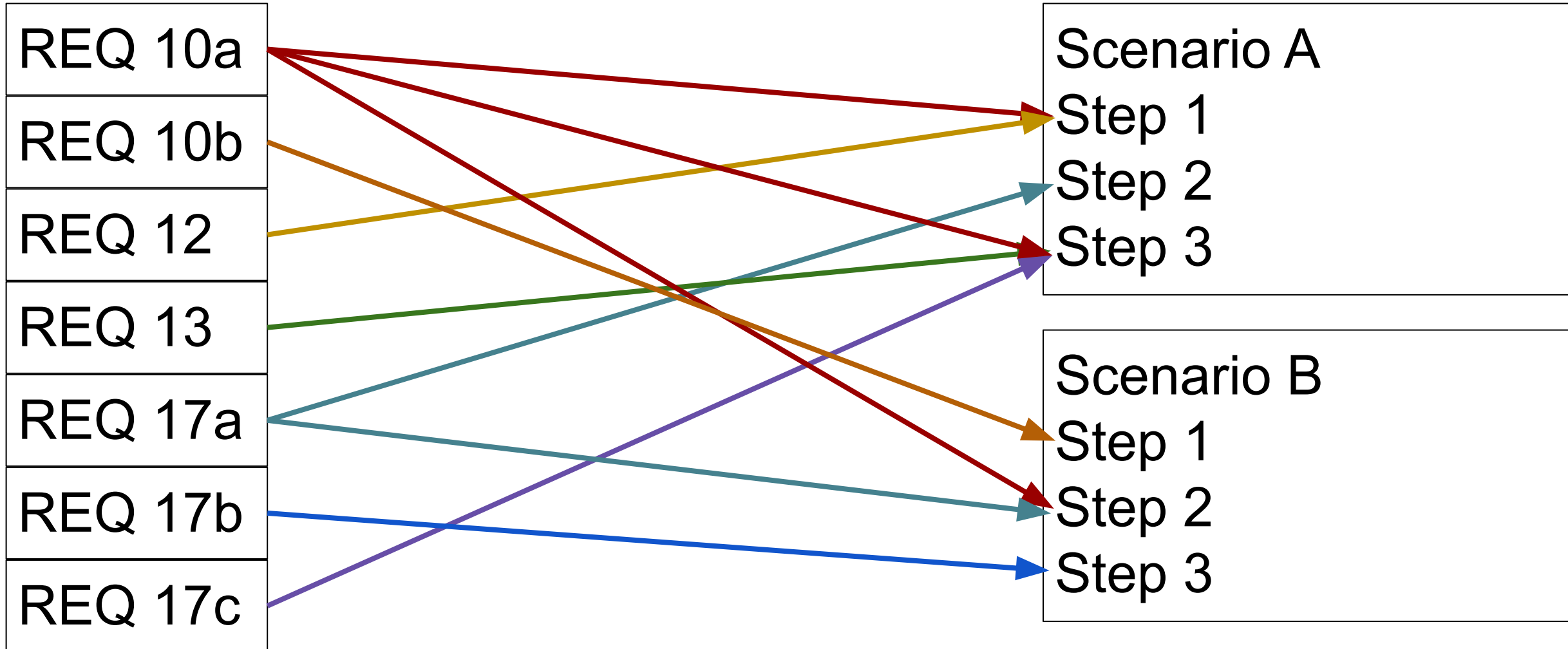
# Test coverage



Requirements

...checked in...

Test scenarios



# Test coverage (continued)



- Suites/test data customizable on per-country basis<sup>1</sup>
  - Supports regulator/per country review process as needed
- Community can propose updates
  - Building on aviation's history of sharing learnings to improve safety

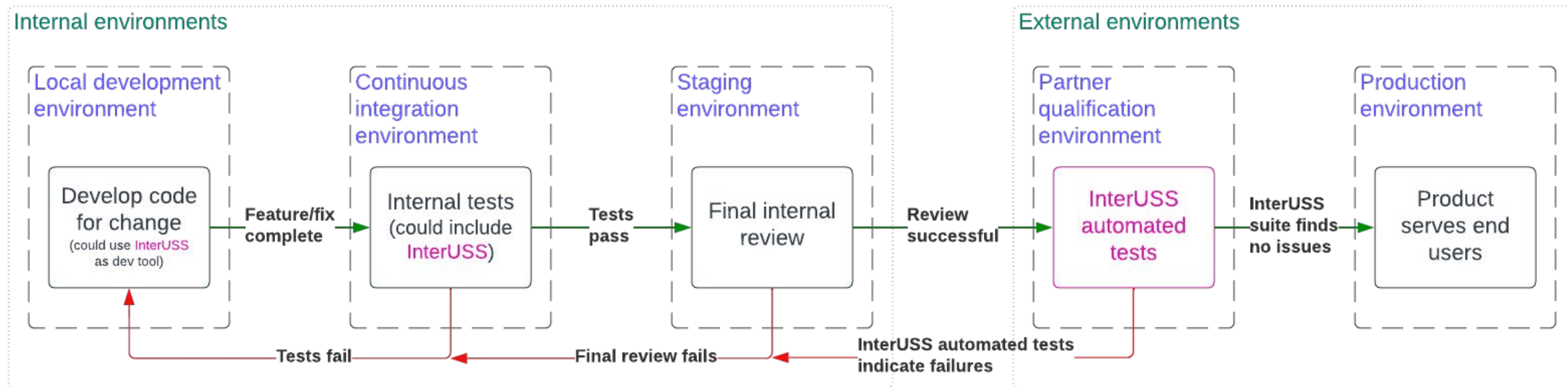
<sup>1</sup>e.g.: [https://github.com/interuss/dss/tree/master/monitoring/uss\\_qualifier/test\\_data/che](https://github.com/interuss/dss/tree/master/monitoring/uss_qualifier/test_data/che)

# Test report



```
1  {
2    "codebase_version": "interuss/monitoring/v0.0.0-95c425ce-dirty",
3    "configuration": {...},
72   "report": {
73     "test_suite": {
74       "name": "ASTM F3548-21",
75       "suite_type": "suites.astm.utm.f3548_21",
76       "documentation_url": "",
77       "start_time": "2022-12-08T21:04:52.560589Z",
78       "actions": [...],
17214    "successful": false,
17215    "end_time": "2022-12-08T21:05:08.846581Z"
17216   }
17217 }
17218 }
```

# Deployment process with automated testing



# Case studies



- Automated RID + SCD testing per Swiss regulator
- Automated DSS testing implemented and used by Wing and Skyguide
- Automated SCD testing in FAA's UAS Field Trials



Get the details at [interuss.org](https://interuss.org)

# Next steps



- Run `uss_qualifier` on your local machine
  - InterUSS deploys an entire mock UTM ecosystem on your system
- Help build InterUSS test suites currently in development for U-space compliance; contributors welcome!

For more information:  
To get involved:

[interussplatform.org](https://interussplatform.org)  
[github.com/interuss/dss](https://github.com/interuss/dss)



# InterUSS

Platform