



>>>network.toCode()

Network Automation Architecture

ITNOG6

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Bologna, 16th September, 2022

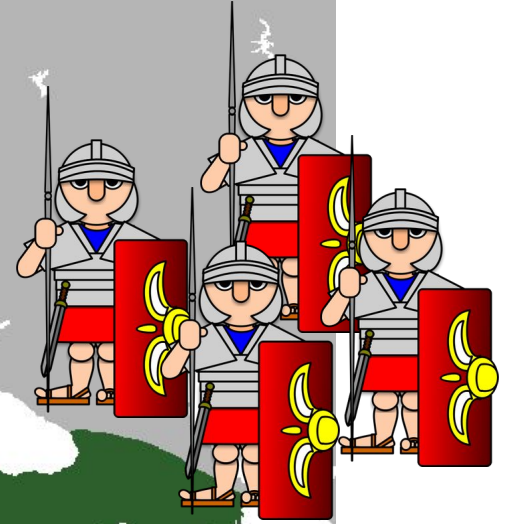
>>> How would you build a network automation “Empire”?



Network automation
TOOL



Network Architect

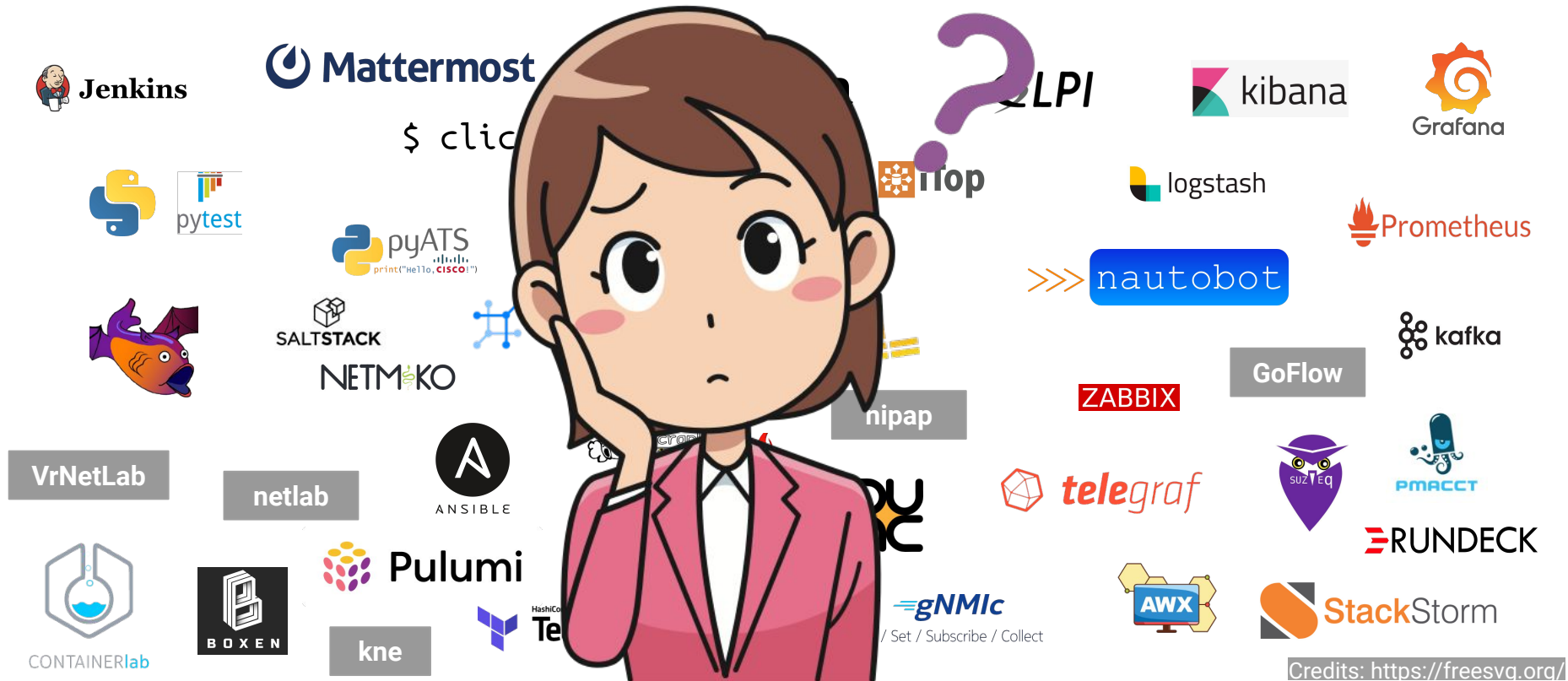


Network automation
PLATFORM

Credits:

<https://publicdomainvectors.org/>
<https://wikipedia.org/>

>>> Open Source options to build a network automation solution



Credits: <https://freesvg.org/>

>>> About me



Christian Adell

Network Automation Architect



@chadell0



*We are accelerating the adoption of
network automation through
community, technology,
partnerships, and education*



>>> Network Automation Architecture

>>> What is the goal?



OS Upgrades

Series of automation that allow the safe upgrading of network devices, firewalls, and wireless controllers.



Firewall Rule Automation

Deployment of firewall rules for from an ITSM tool or other automation system.



Switchport Configuration

Drive switchport configuration changes by updating the database and pushing configurations.



SoT Data Sync

Synchronize, unify, and enrich network data sources using the Single Source of Truth framework.



Pre-Post Change State Validation

Quickly determine when the operational state is not as intended.



Configuration Remediation

Automate the return to compliance of a non-compliant configuration.



ChatOps

Integrate automation to send outbound only chatbot requests. This allows for direct linking to automation system



Greenfield Site Builder

Simplify and automate new site deployments and tech refreshes codifying standard designs and integrating with your SoT.



Configuration Compliance

Quickly determine where the configuration on the device deviates from golden configurations.



Device Lifecycle Management

Gather data and generate reports about device out of maintenance or running old/unsecure software.



Circuit Maintenance Management

Manage circuit data and maintenance notifications dynamically in SoT.

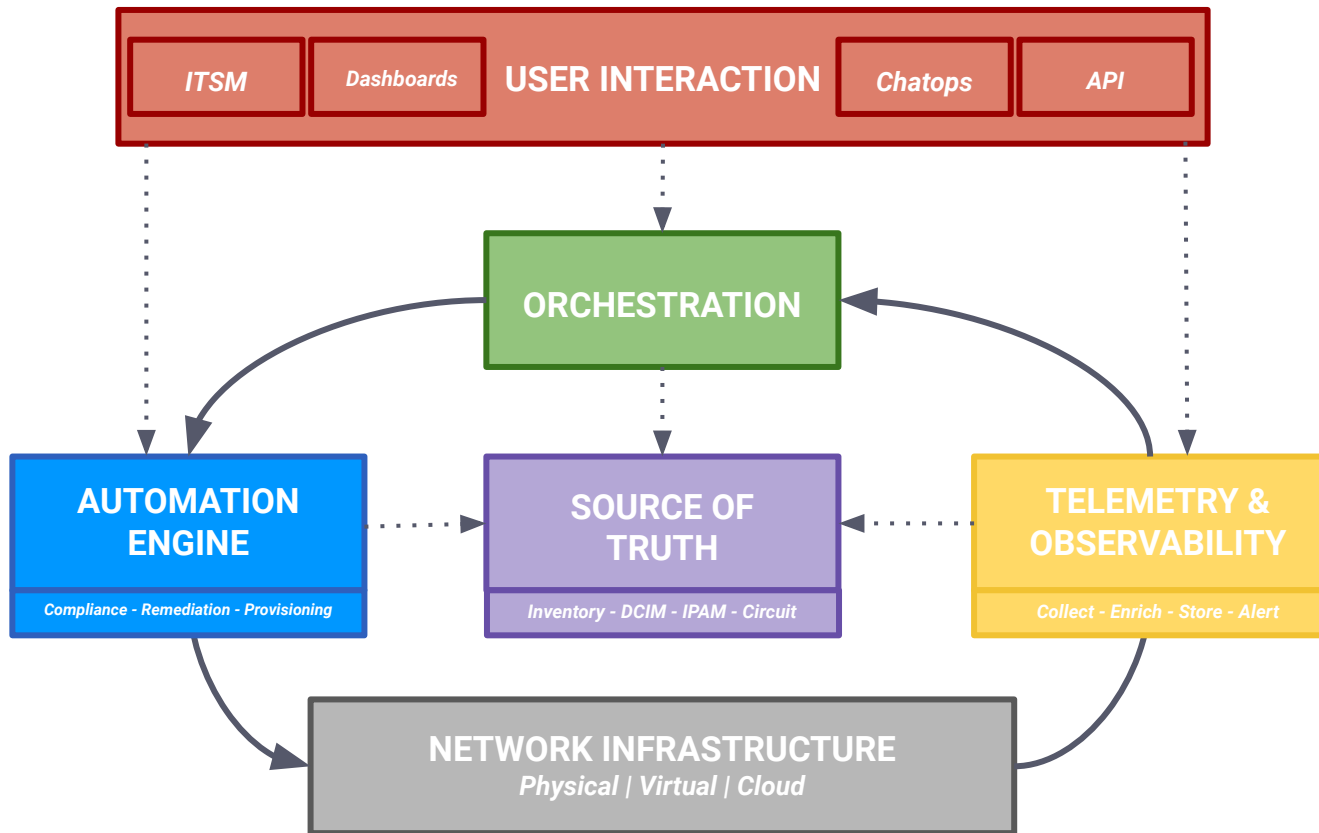


Telemetry Analytics

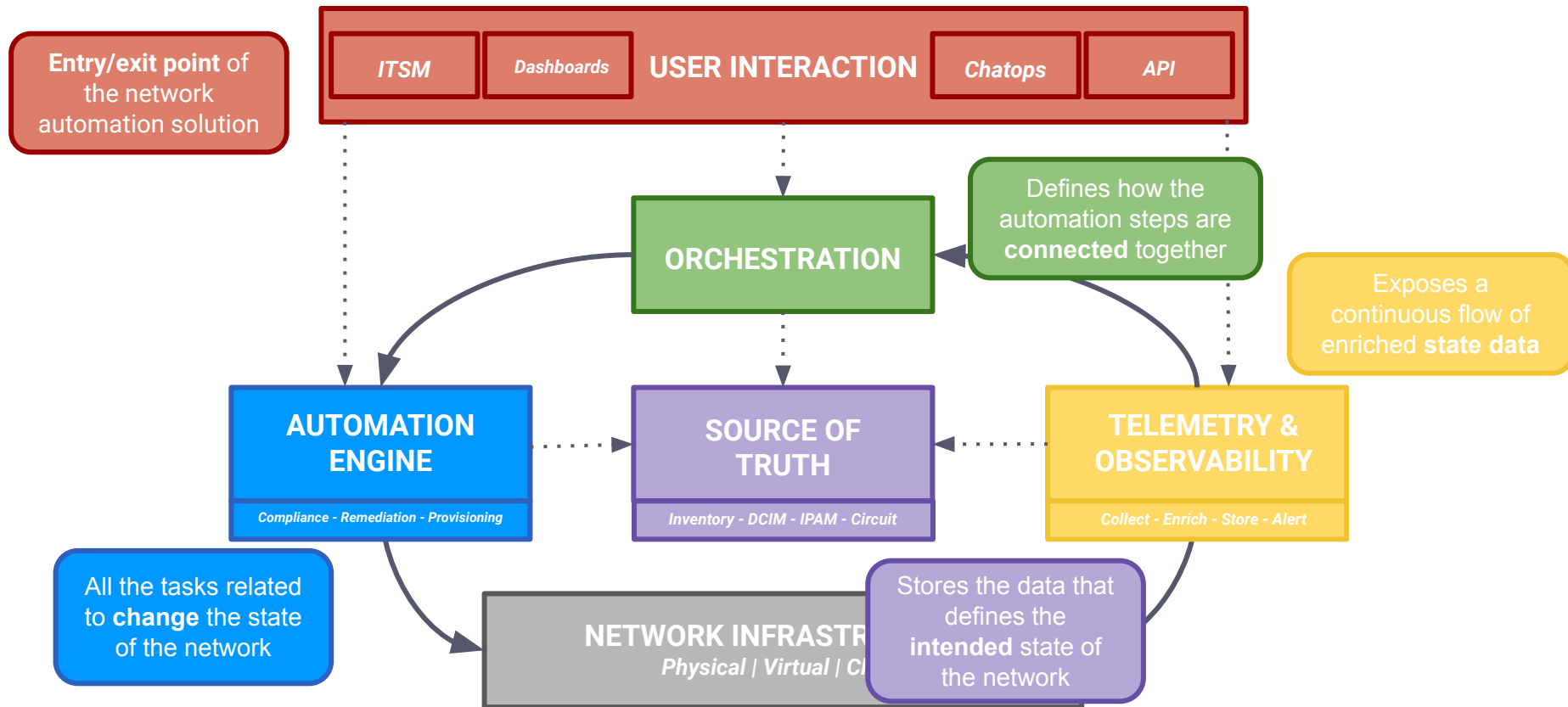
Extend visibility with real time data from multiple sources and enriched with metadata

Insert here YOUR own solution

>>> Architecture



>>> Architecture

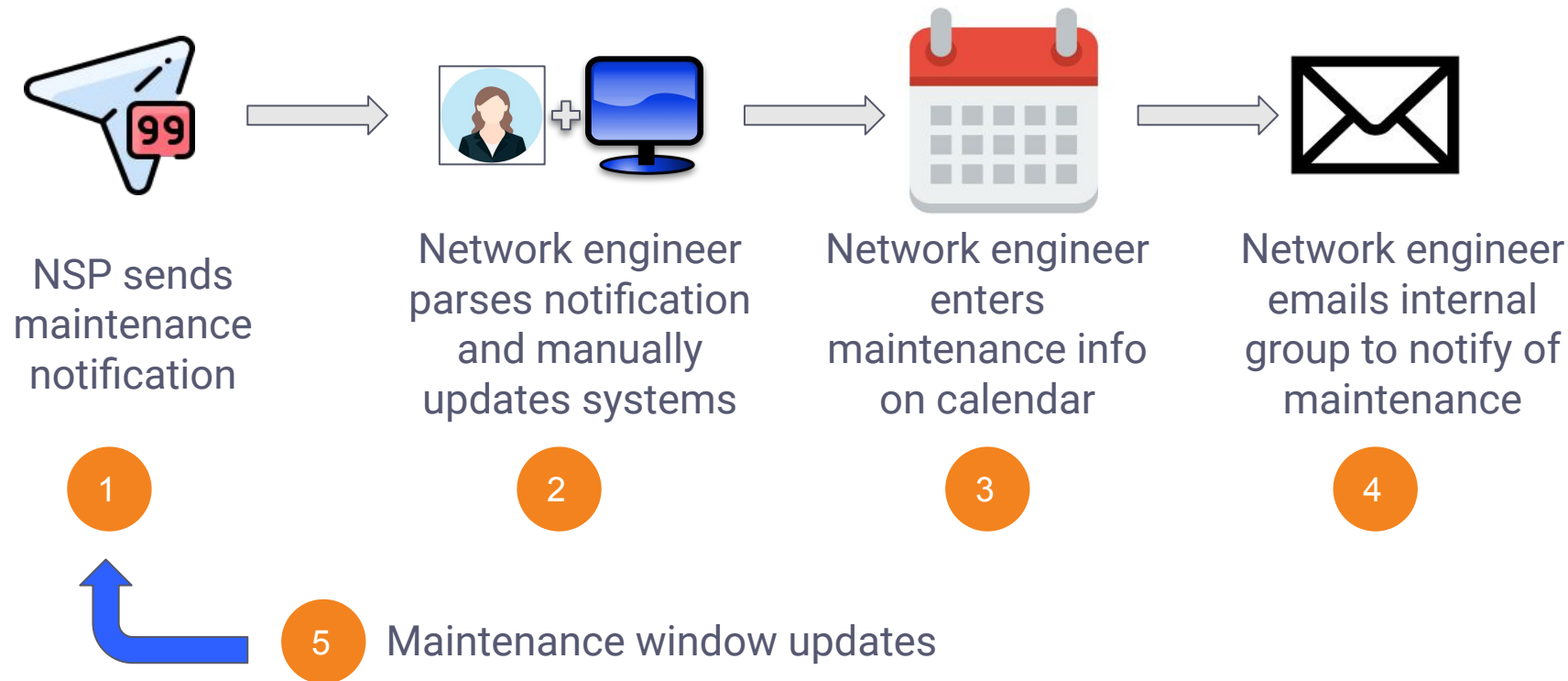




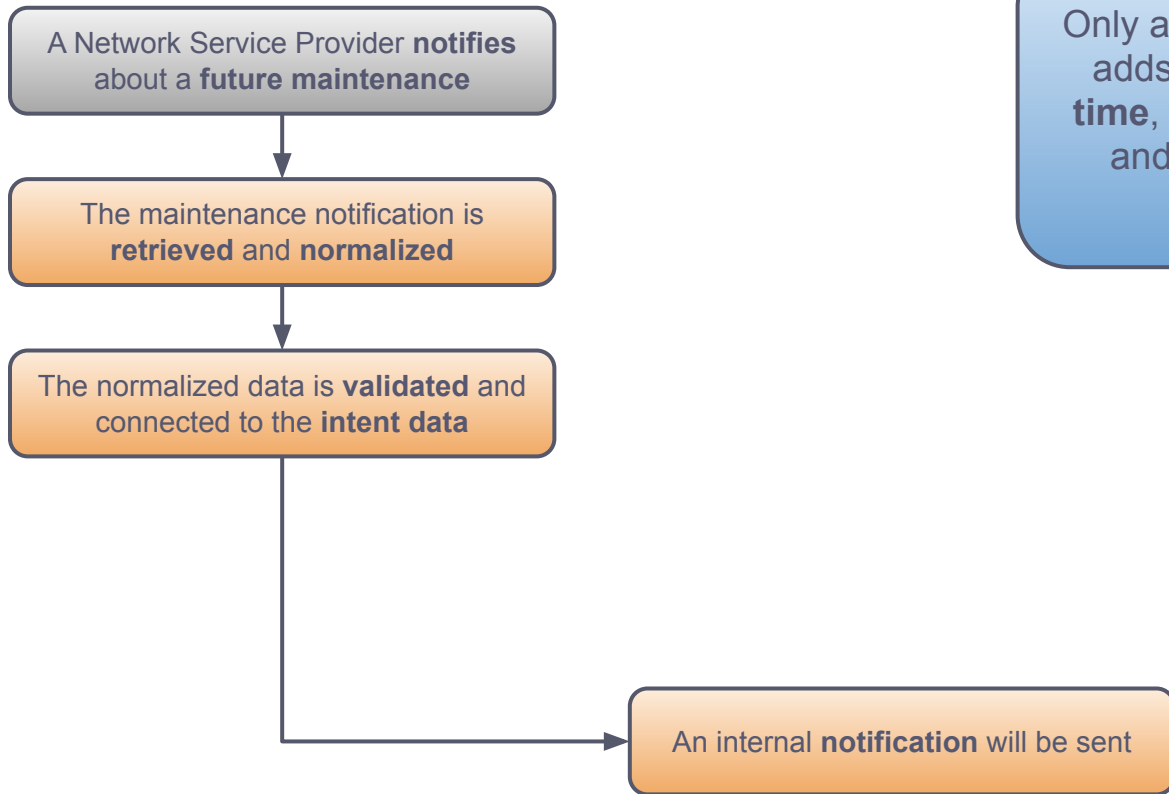
>>> Example

How to manage *Circuit Maintenances*, like a pro

>>> Manual input processing of a maintenance notification

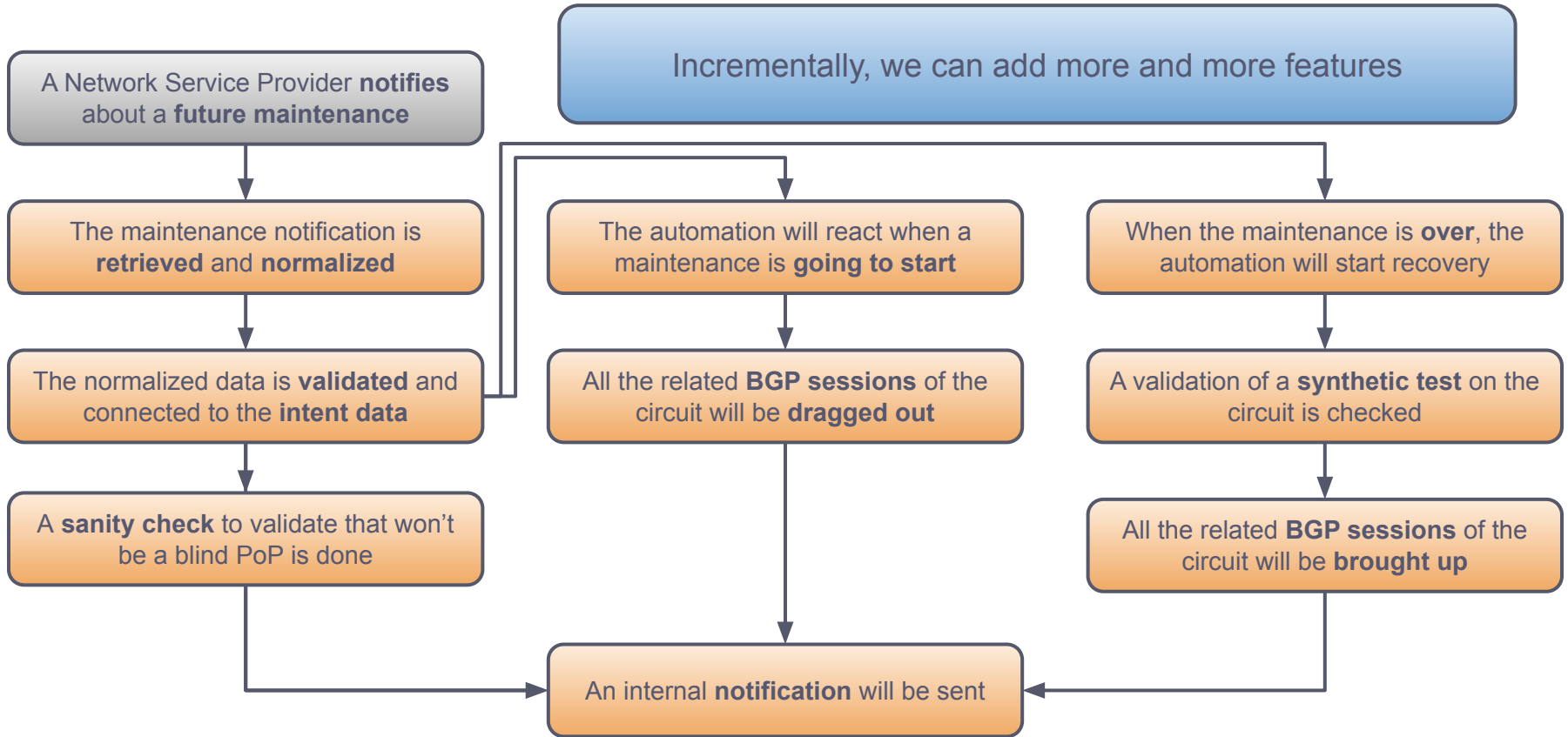


>>> An Automated Workflow

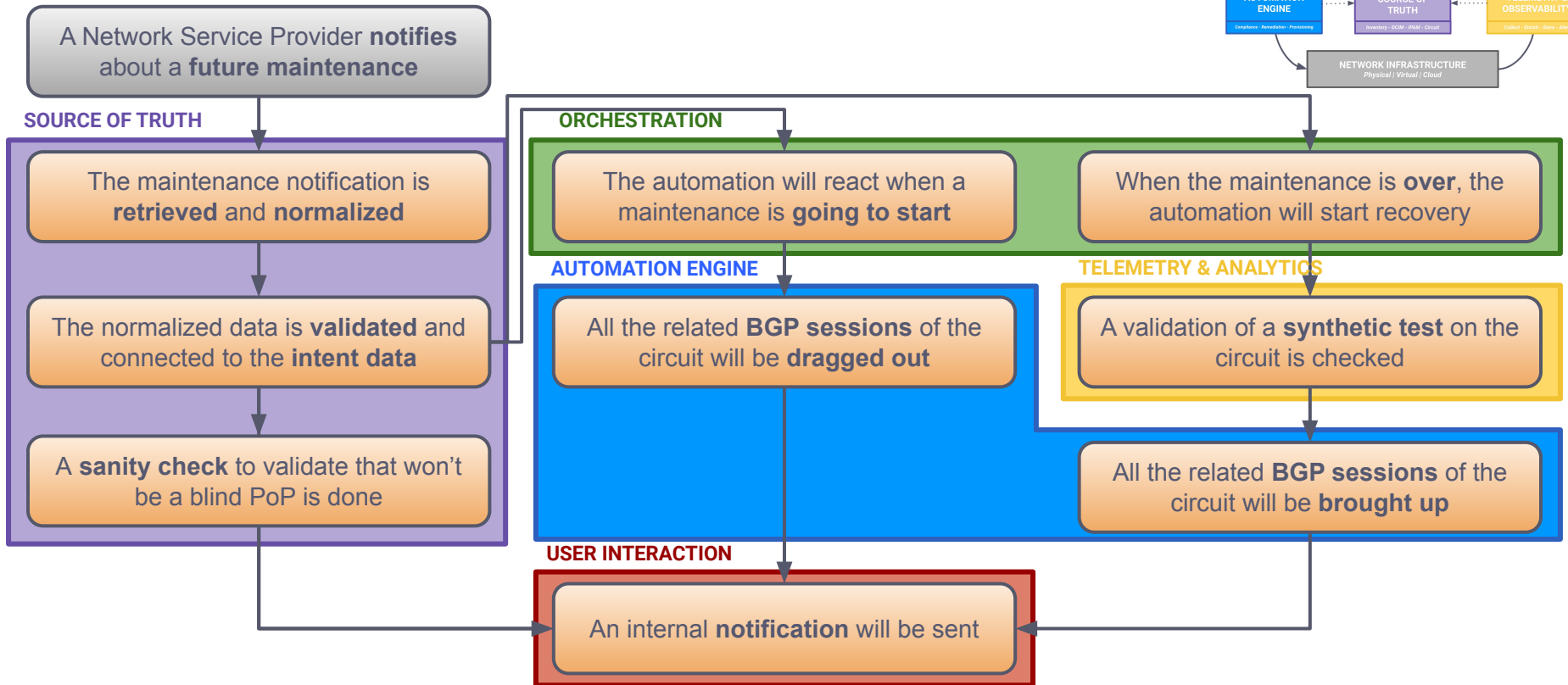


Only automating the very same workflow, adds value: almost **zero engineering time**, data is **normalized** and **validated** and **conveniently stored** for future consumption

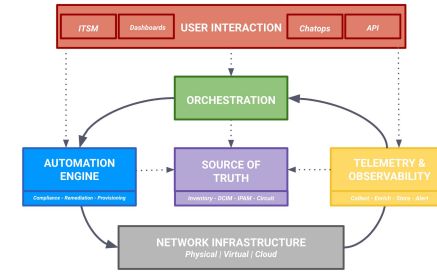
>>> An Automated **Workflow**, extended



>>> Mapping to the Architecture



>>> Mapping to open source Tools



SOURCE OF TRUTH



>>> nautobot

ORCHESTRATION



AUTOMATION ENGINE



ANSIBLE

TELEMETRY & ANALYTICS



USER INTERACTION





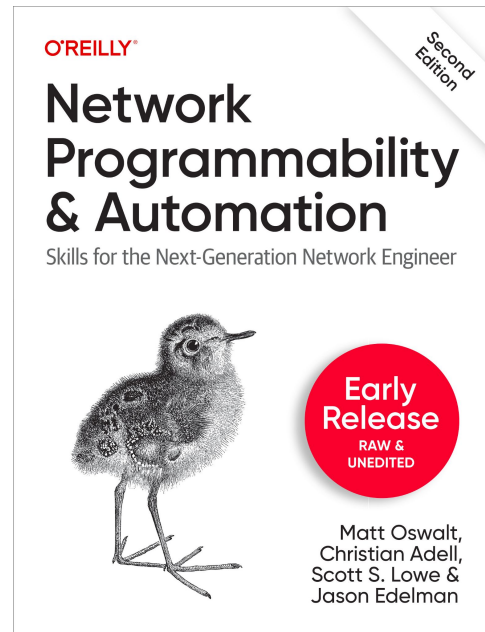
Wrap up

>>> Learn More

- **Network to Code Blog:** <https://blog.networktocode.com/>
 - In the works, a blog series about network automation architecture, keep tuned!
- **The Network Programmability and Automation Book, 2nd Edition**
 - Expect a specific chapter about Architecture

About Circuit Maintenance Automation

- **NANOG86** (Oct 17)
 - **Josh VanDeraa** session about Circuit Management automation
- **Network Field Day 27** - Automate Circuit Maintenances
 - https://www.youtube.com/watch?v=Wt_vxdGg_cs
- **RIPE 82** - How to Handle your Circuits Maintenances Proactively
 - <https://ripe82.ripe.net/archives/video/516/>



>>> Example References

- Nautobot
 - <https://github.com/nautobot/nautobot>
- Nautobot Circuit Maintenance Plugin
 - <https://github.com/nautobot/nautobot-plugin-circuit-maintenance>
- Circuit Maintenance Parser
 - <https://github.com/networktocode/circuit-maintenance-parser>
- AWX
 - <https://github.com/ansible/awx>
- Ansible
 - <https://github.com/ansible/ansible>
- Telegraf
 - <https://github.com/influxdata/telegraf>
- Prometheus
 - <https://github.com/prometheus/prometheus>
- Grafana
 - <https://github.com/grafana/grafana>
- Mattermost
 - <https://github.com/mattermost>



>>>network.toCode()

Grazie mille!

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