



>>>network.toCode()

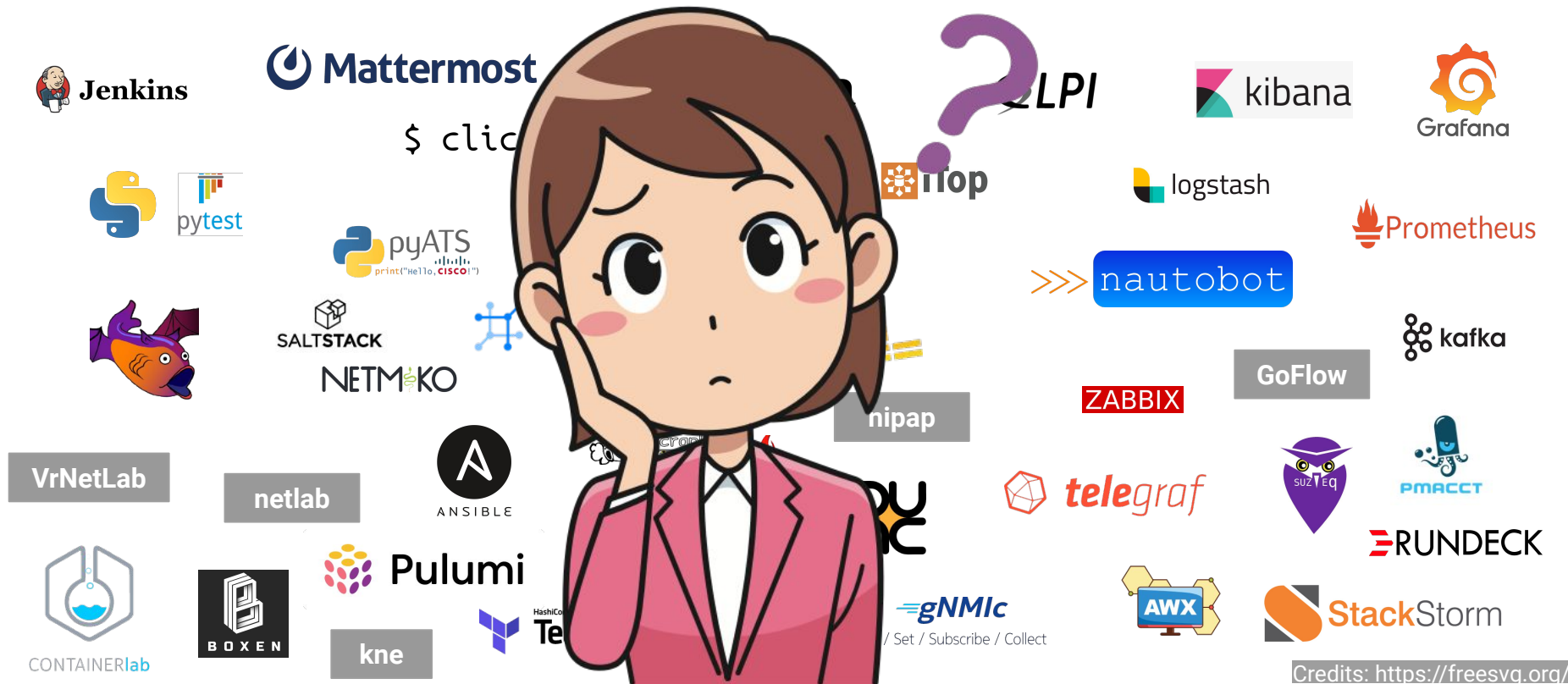
# Adopting a Network Automation Mindset

GRNOG13

Christian Adell Querol

Athens, 29th September, 2022

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



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



Credits: Matrix movie

## >>> About me



**Christian Adell**

Network Automation Architect



@chadell0



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

# >>> 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

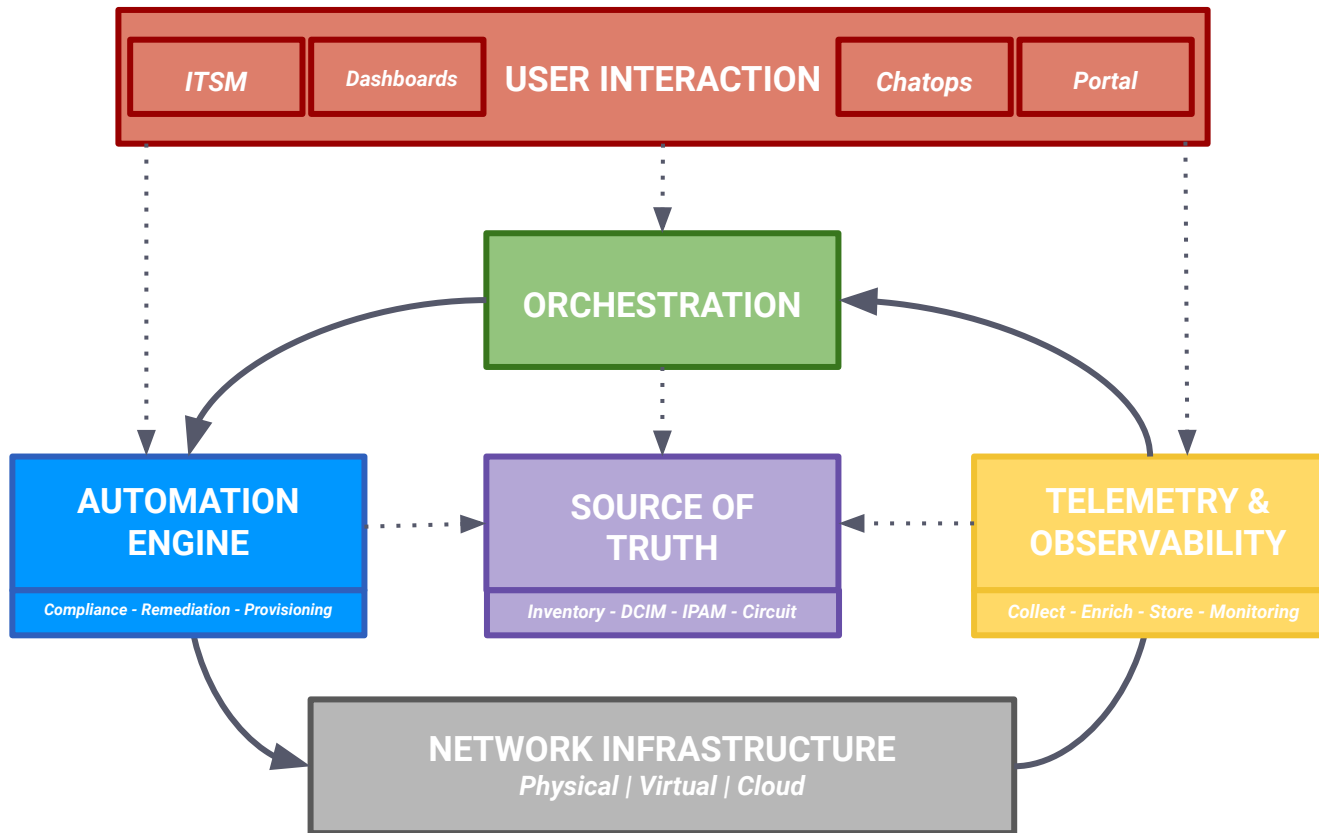
Insert here YOUR own solution



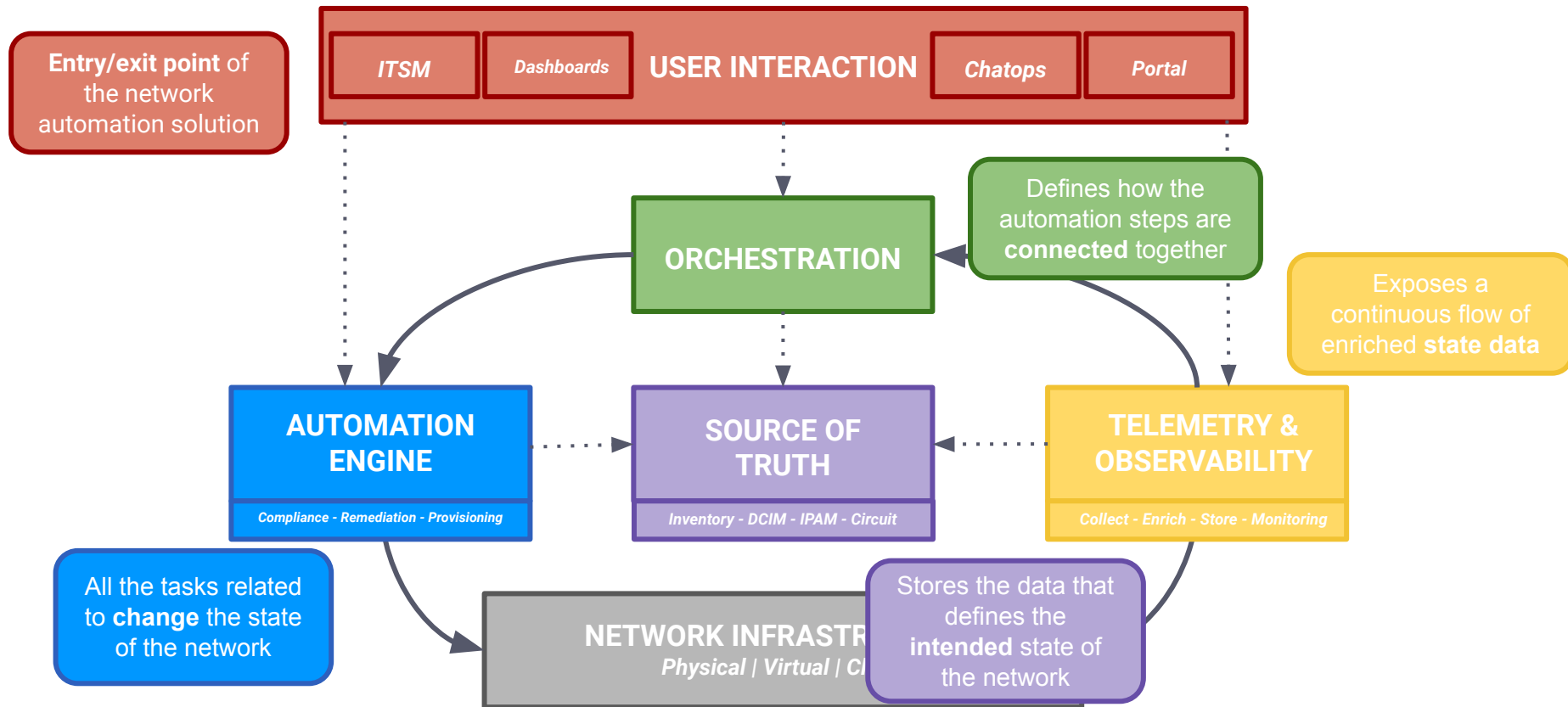


# >>> Network Automation Architecture

# >>> Architecture



# >>> Architecture



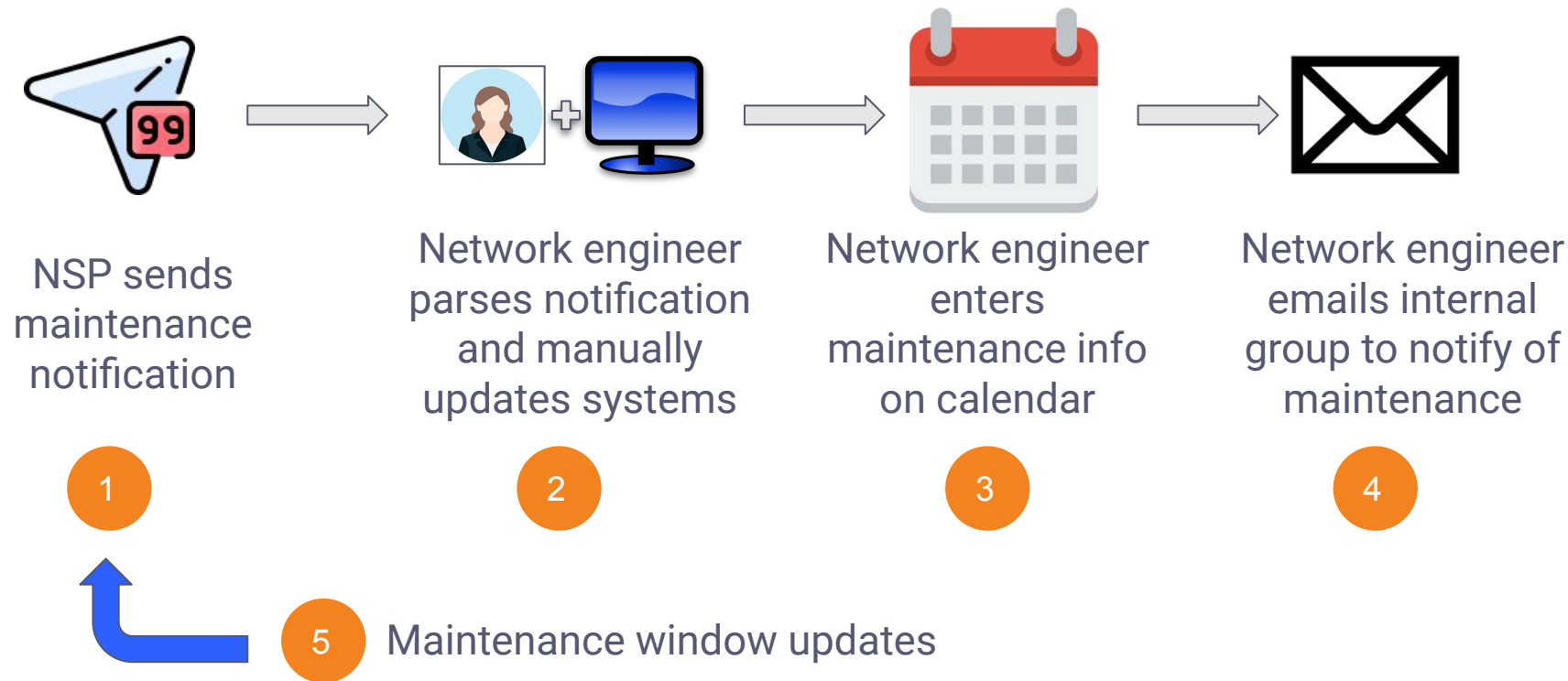




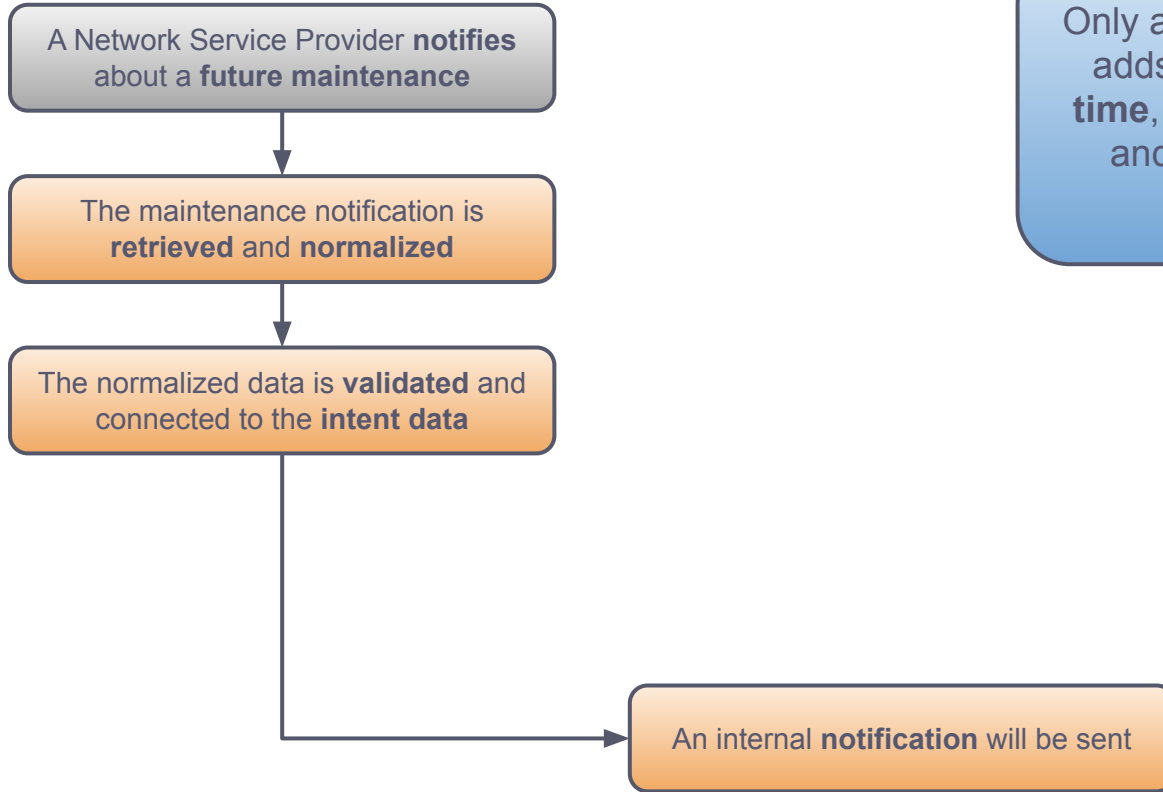
# >>> Example

How to manage *Circuit Maintenances*, like a pro

## >>> Manual input processing of a maintenance notification

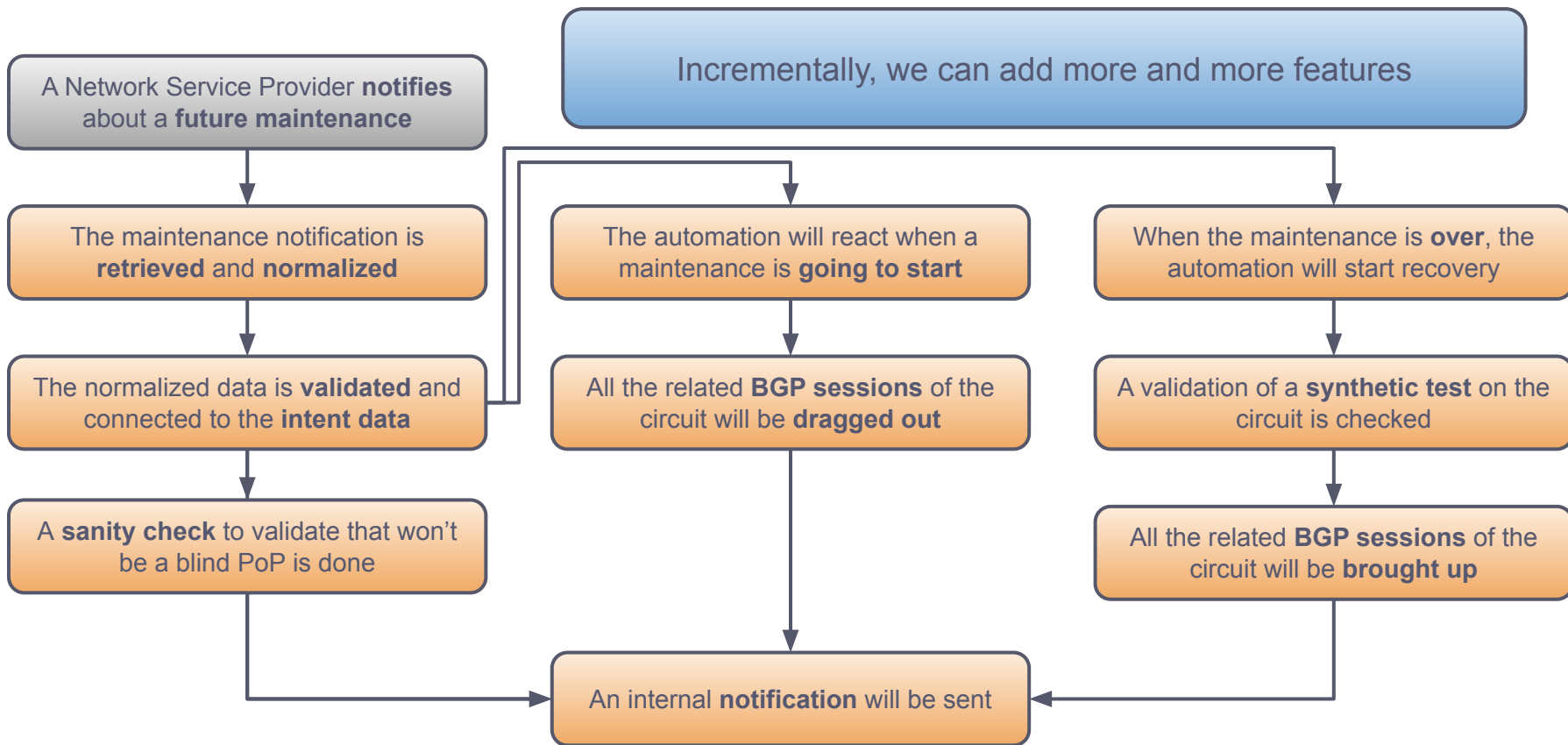


## >>> An Automated Workflow

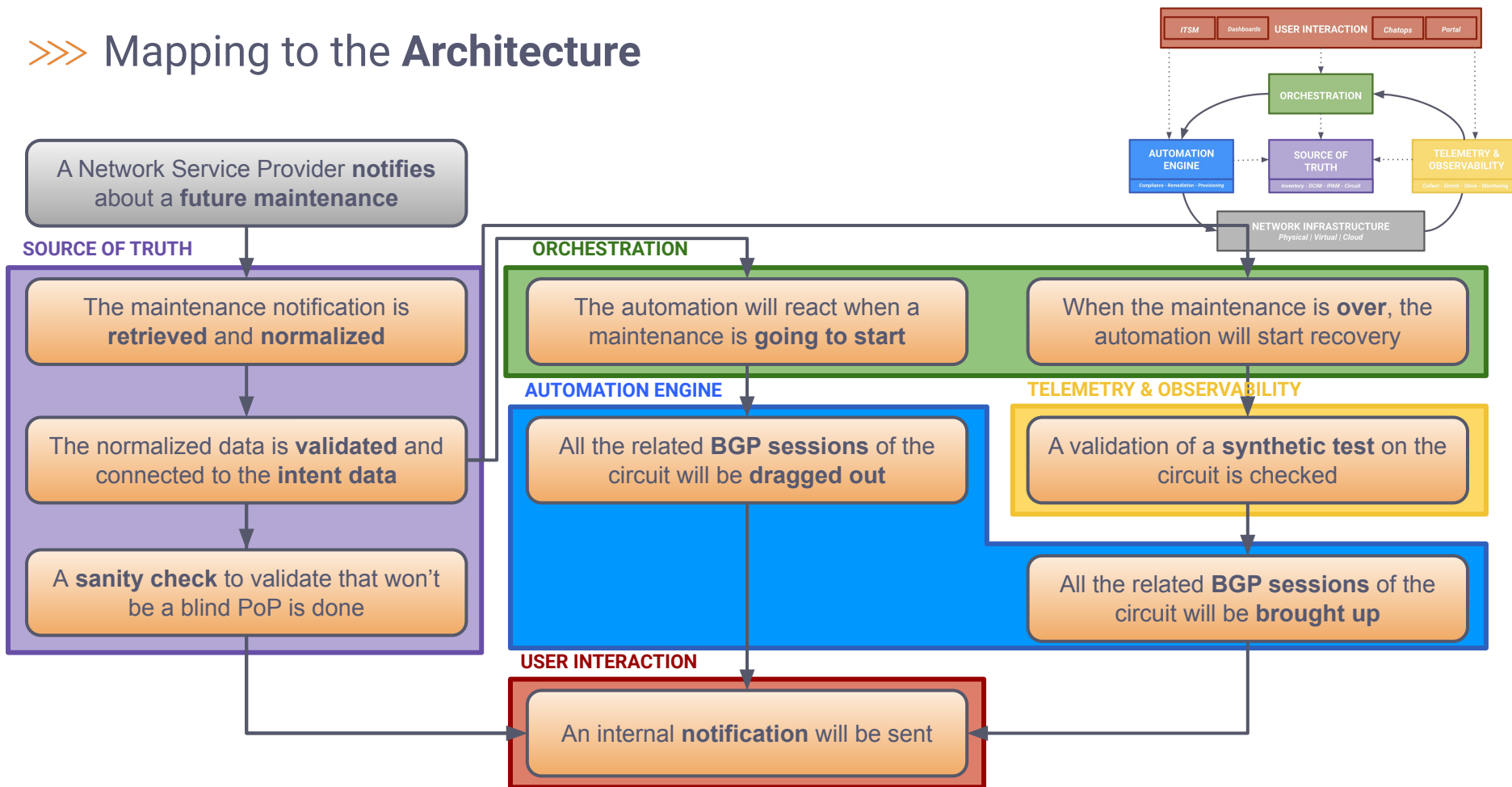


Only automating the very same workflow, adds value: almost **zero engineering time**, data is **normalized** and **validated** and **conveniently stored** for future consumption

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

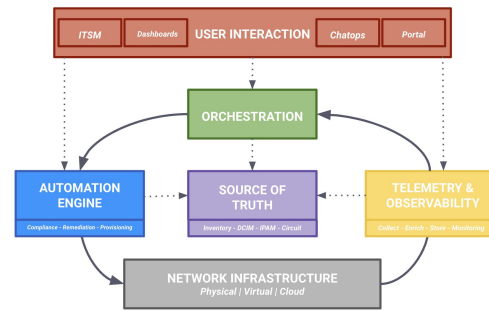


# >>> Mapping to the Architecture





# >>> 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\\_vxdGq\\_cs](https://www.youtube.com/watch?v=Wt_vxdGq_cs)
- **RIPE 82** - How to Handle your Circuits Maintenances Proactively
  - <https://ripe82.ripe.net/archives/video/516/>

## NTC Blog

Network to Code's blog sharing thoughts, ideas, and tips all about network automation.

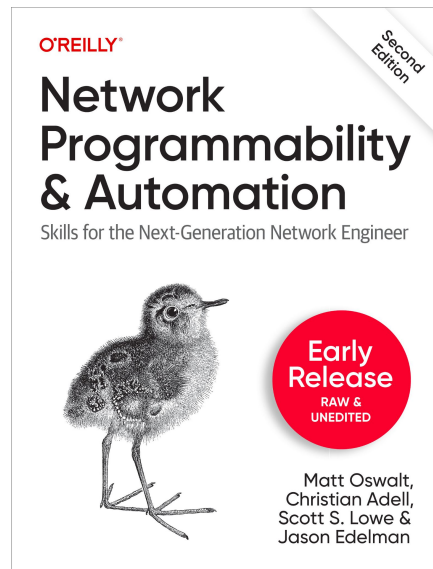
### Introduction to Python Classes - Part 1

SEPTEMBER 15, 2022 | - NICHOLAS DAVEY

In this blog series we are going to provide an introduction to Python classes. The first blog will look at what classes are and how we can create and use a custom class. The second blog will explain the Python approach to private methods and variables

#### Archive

» 2022 (57)  
» 2021 (97)  
» 2020 (43)  
» 2019 (33)



## >>> 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>



# >>> Hacktoberfest & Hackathon - October 2022

*NTC Community - Two Events, One Month*

## Hacktoberfest

- Full month of October
- Awards based on collective contributions during the time period
- Participate as an individual



>>> network.toCode()



- Collab on submission with NTC advisors
- Join **#hacktoberfest-2022** in NTC Slack ([slack.networktocode.com](https://slack.networktocode.com) to signup) for more details

## Hackathon

- October 14th & 15th
- Presentation submissions open from October 17th through 24th
- Participate as an individual or as a team

- Contribute to Network to Code and/or Nautobot GitHub organizations
- Win NTC & Nautobot Swag & Prizes!!!
  - Top Hack Prizes & Most



>>>network.toCode()

Σας ευχαριστώ πάρα πολύ!

@chadell0



christianadell

