Design-Driven Automation

The complete lifecycle

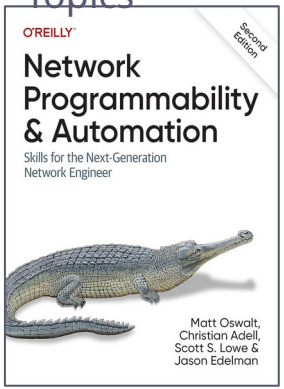
Christian Adell at ESNOG32 (Oct 2024)

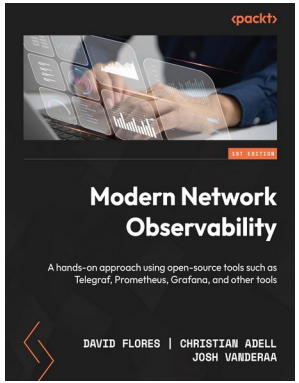
About me

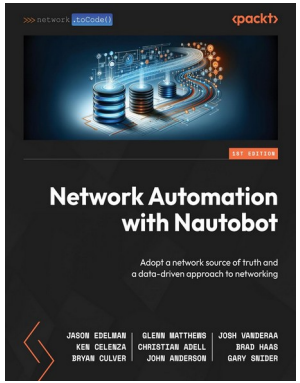
Working as Network Automation Engineer at

network .toCode()

Writing about Network Automation Topics





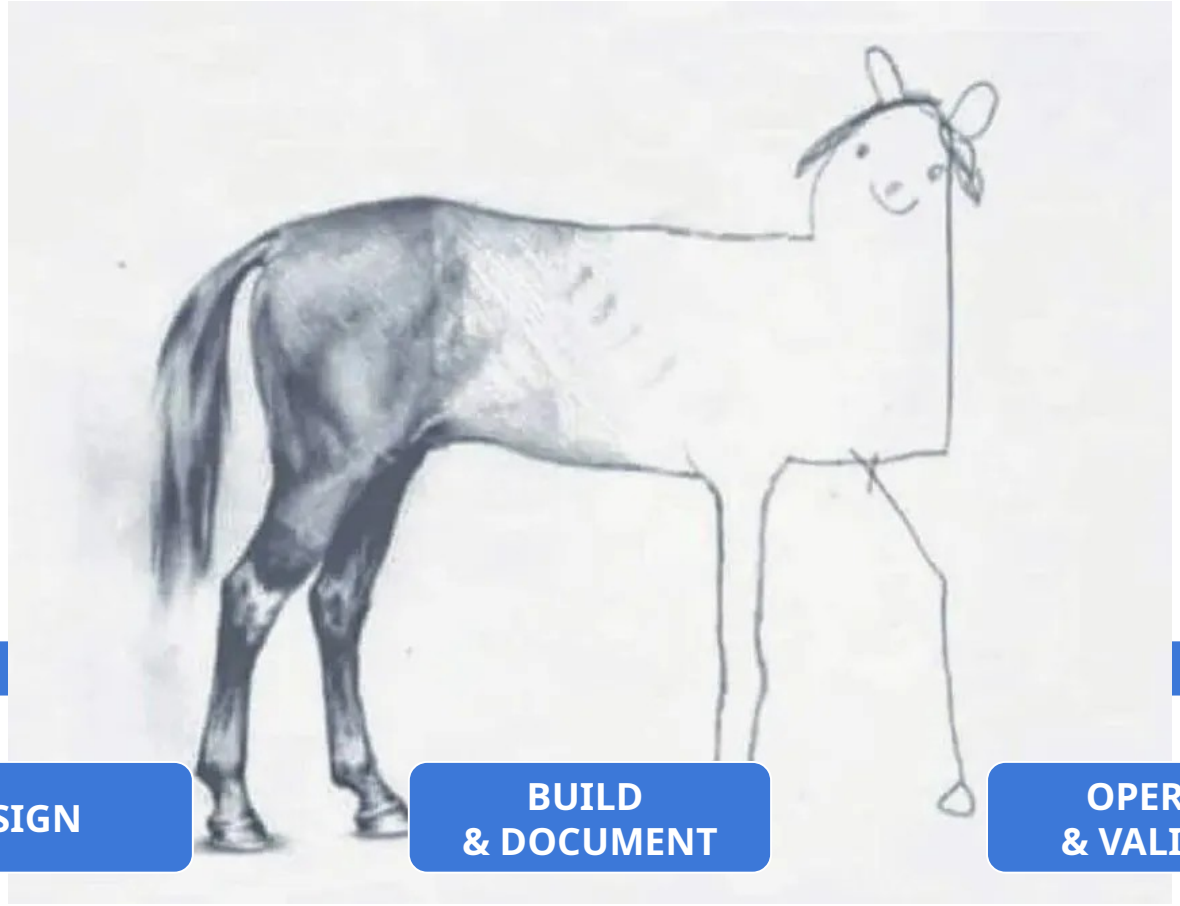


Promoting **Community** Events at

NetBCN

https://events.netbcn.nog.community/

>>> The Infrastructure Life Cycle, from Design to Operation



DESIGN

BUILD & DOCUMENT

OPERATE & VALIDATE

Agenda

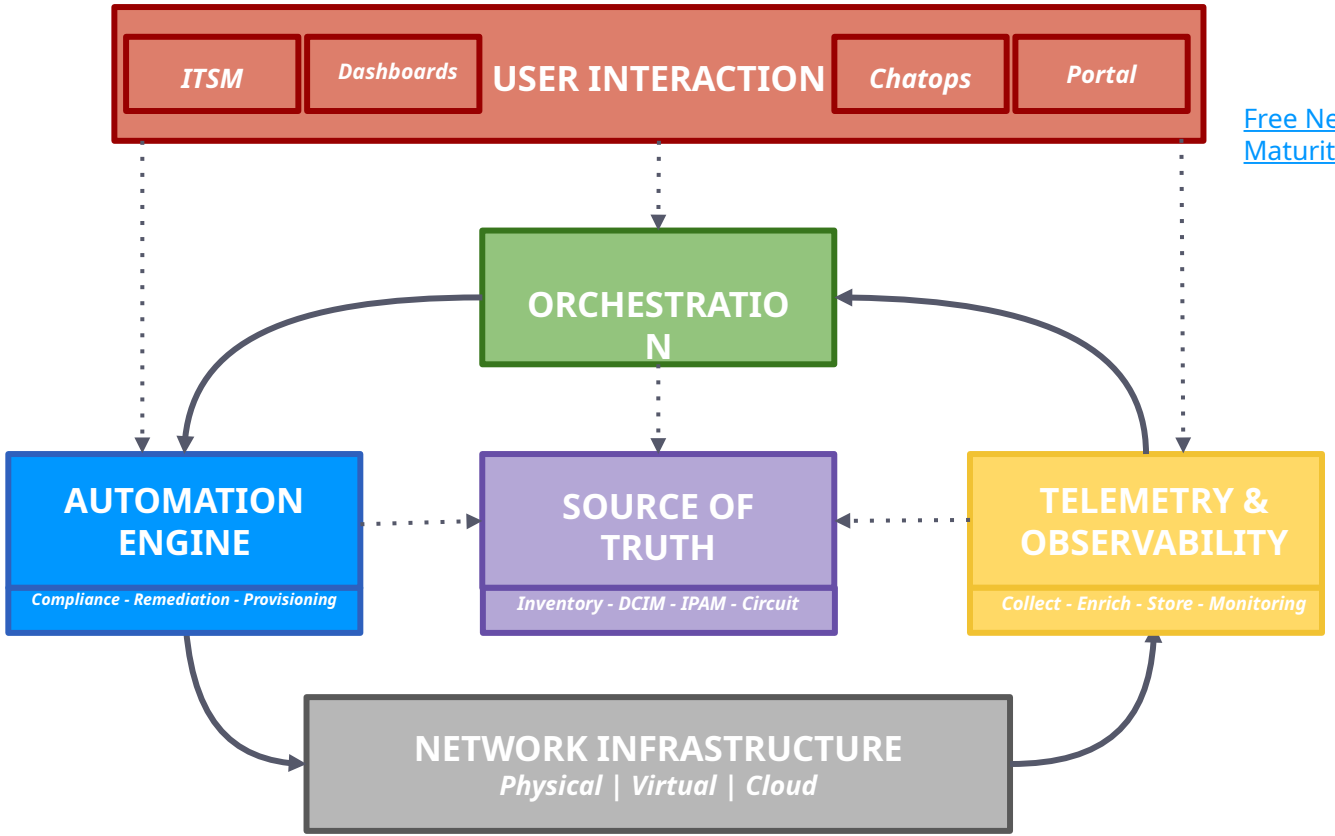
Recap about Network Automation

A Design-Driven Source of Truth

A real example with Nautobot

Recap about Network Automation

>>> Network Automation Architecture



[Free Network Automation Maturity Assessment]

Ref: https://blog.networktocode.com/post/network-automation-architecture-part-01/

>>> The network-related roles

***NOTE**: there are more roles involved, these are just a few of the most relevant*

Network Architect

Defines how the network should be built

Network Manager

Oversees the network team and the strategy

End User

Requests and accepts network service changes

Network Operator

Manages the network

Security Engineer

Ensures compliance of security rules

>>> The roles **BEFORE** network automation

Network Architect
Creates golden configurations and network diagrams

Network Manager
Ask for reports to the team members

End User
Sends an email or service request, and wait

Network Operator
Translates the idea from architects into network CLI configurations

Security Engineer
Incident response and best-effort review of compliance

>>> The roles **WITH** network automation

Network Architect

Codifies the design into data validation rules and creates templates to render configuration artifacts

Network Manager

Interacts with the automation APIs to get the necessary information

End User

Creates a service request and expects the result in an almost self-service way

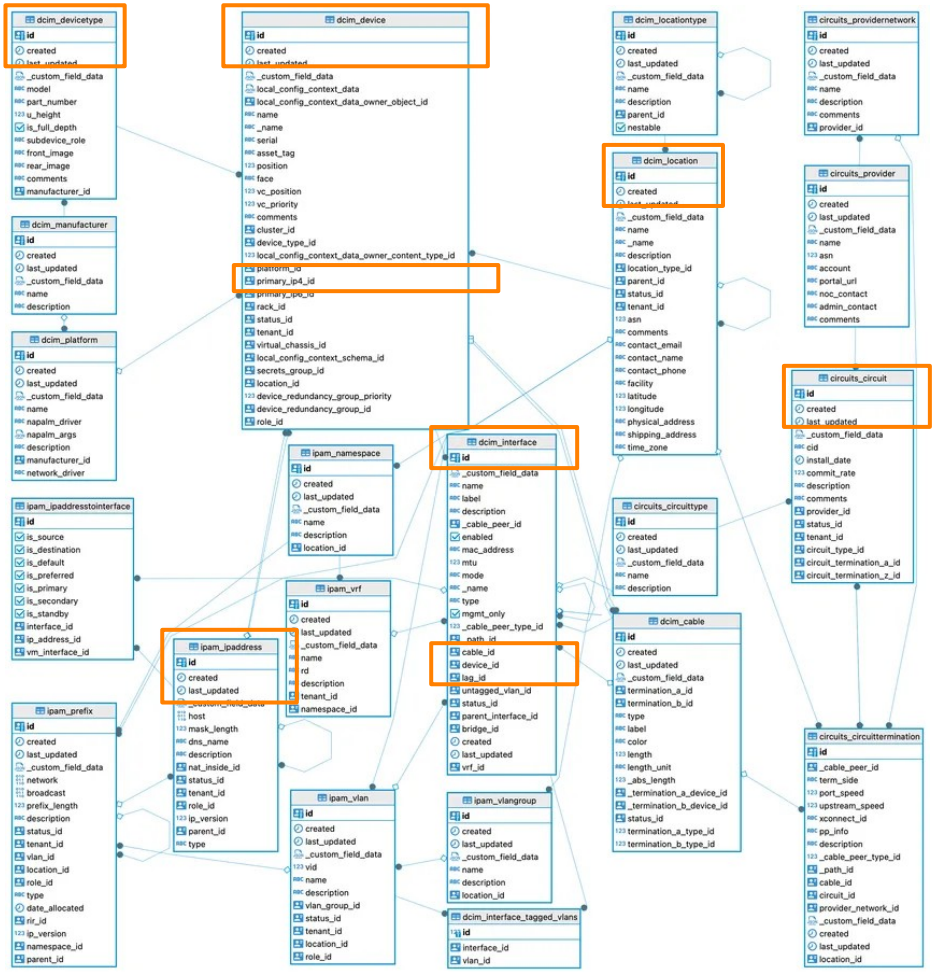
Network Operator

Leverages the Source of Truth to define the network state

Security Engineer

Define compliance rules that are in effect all the time

What could we do better?



A Design-Driven Source of Truth

>>> Pie on the Sky

01

Data input is simpler and valid because is abstracted and enforced by the design

02

Tracking the life cycle of a service is easier because the related **data is connected** together

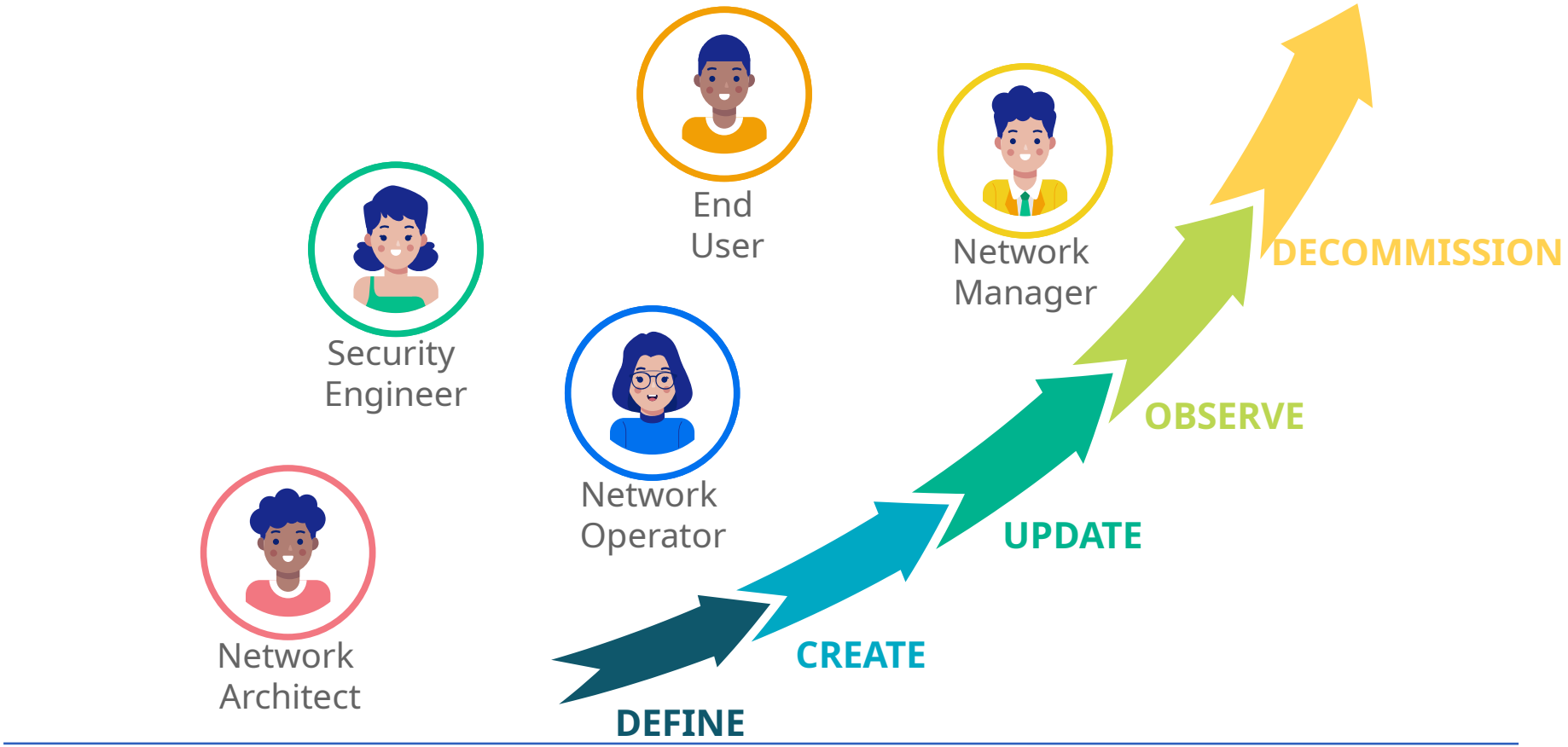
03

The networks are more **reliable and predictable** by enforcing standardization

04

Data consumption is more efficient because it exposes what is needed

>>> A Design-Driven Life Cycle



The Design-Driven Automation

Network Architect

Security Engineer

Network Operator

End User

Network Manager

Defines the abstract designs

Ensures the designs are secure

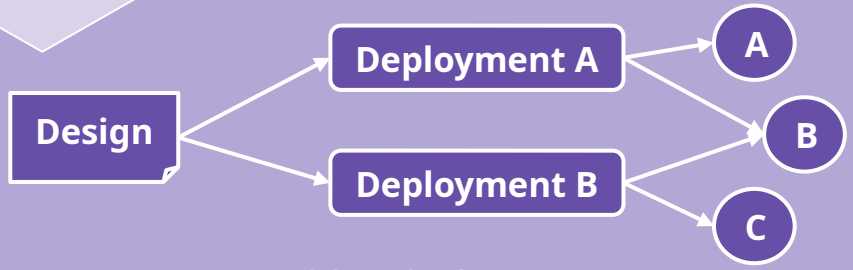
Manage design deployments life cycle

Get data from network services, related BOM, physical, etc.

USER INTERACTIONS

What data do we need to update the network status for a specific Design Deployment?

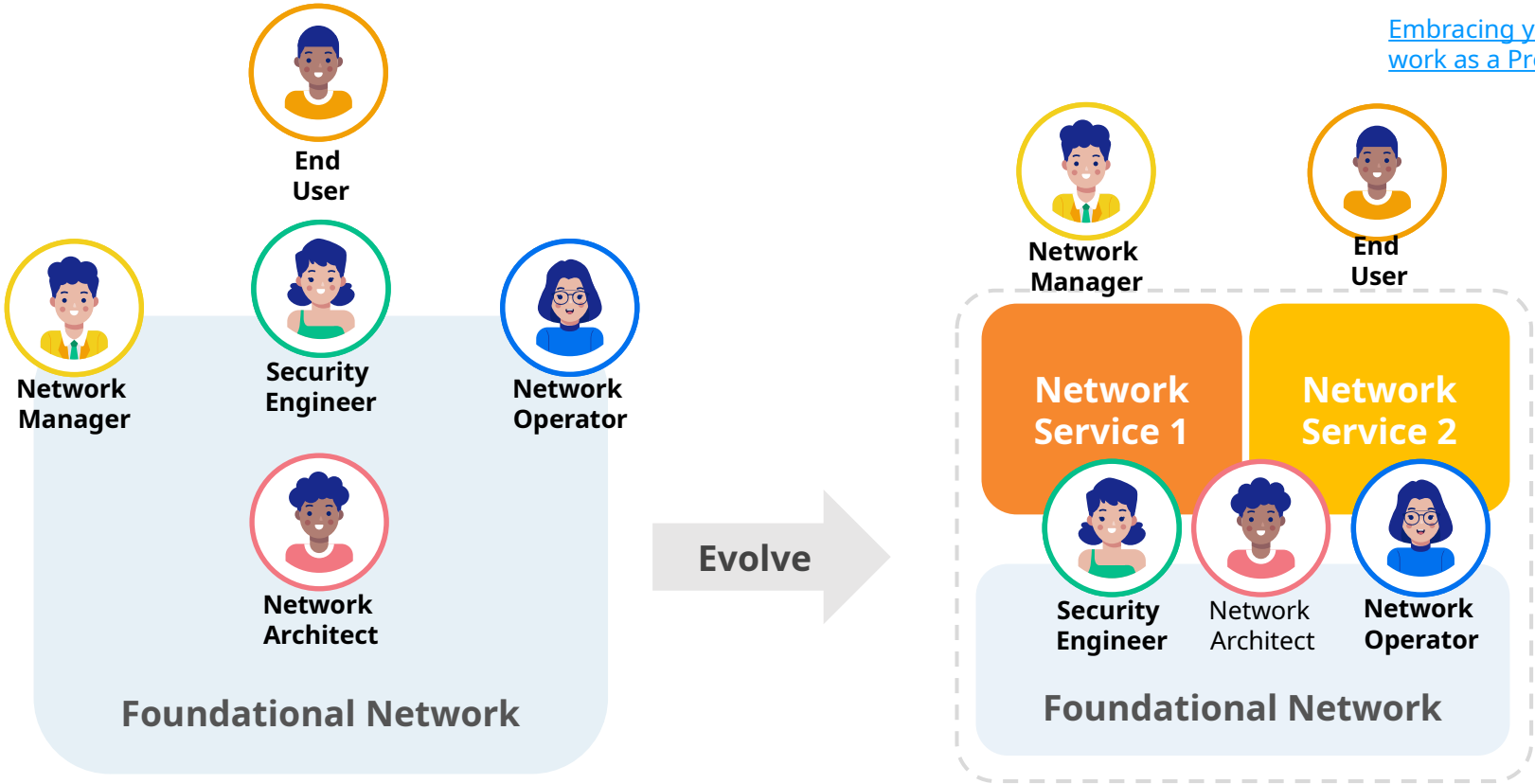
AUTOMATION ENGINE



What shall we check for a specific Design Deployment?

TELEMETRY & OBSERVABILITY

Network as a Product



[Embracing your Network as a Product]

Just words or something up and running?

Demo

Using Nautobot Design Builder App

https://blog.networktocode.com/post/design-builder/


>>> network .toCode()
Thanks for your time!