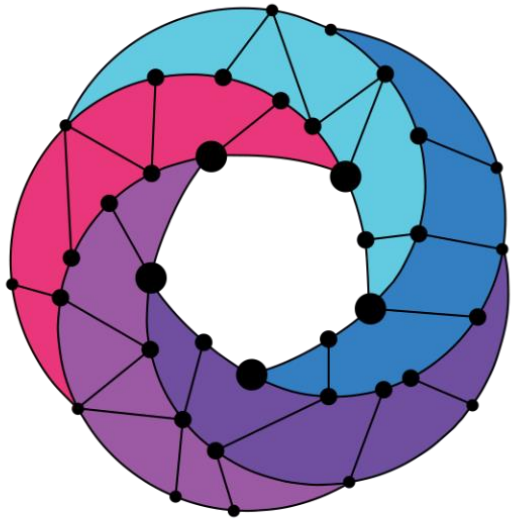


Open Source
MANO

OSM#9 Ecosystem Day
Delivering Closed Loop Operations

Subhankar Pal (Altran)

ETSI

Let us simplify the network !

Open Source MANO

> The definition of genius is taking the complex and making it simple.
>
> - Albert Einstein

Autonomous Network Vision

Open Source MANO

Network with a brain, that -

Self Learns

continuously learn from past anomalies an predict and prevent future failures

Self Protects

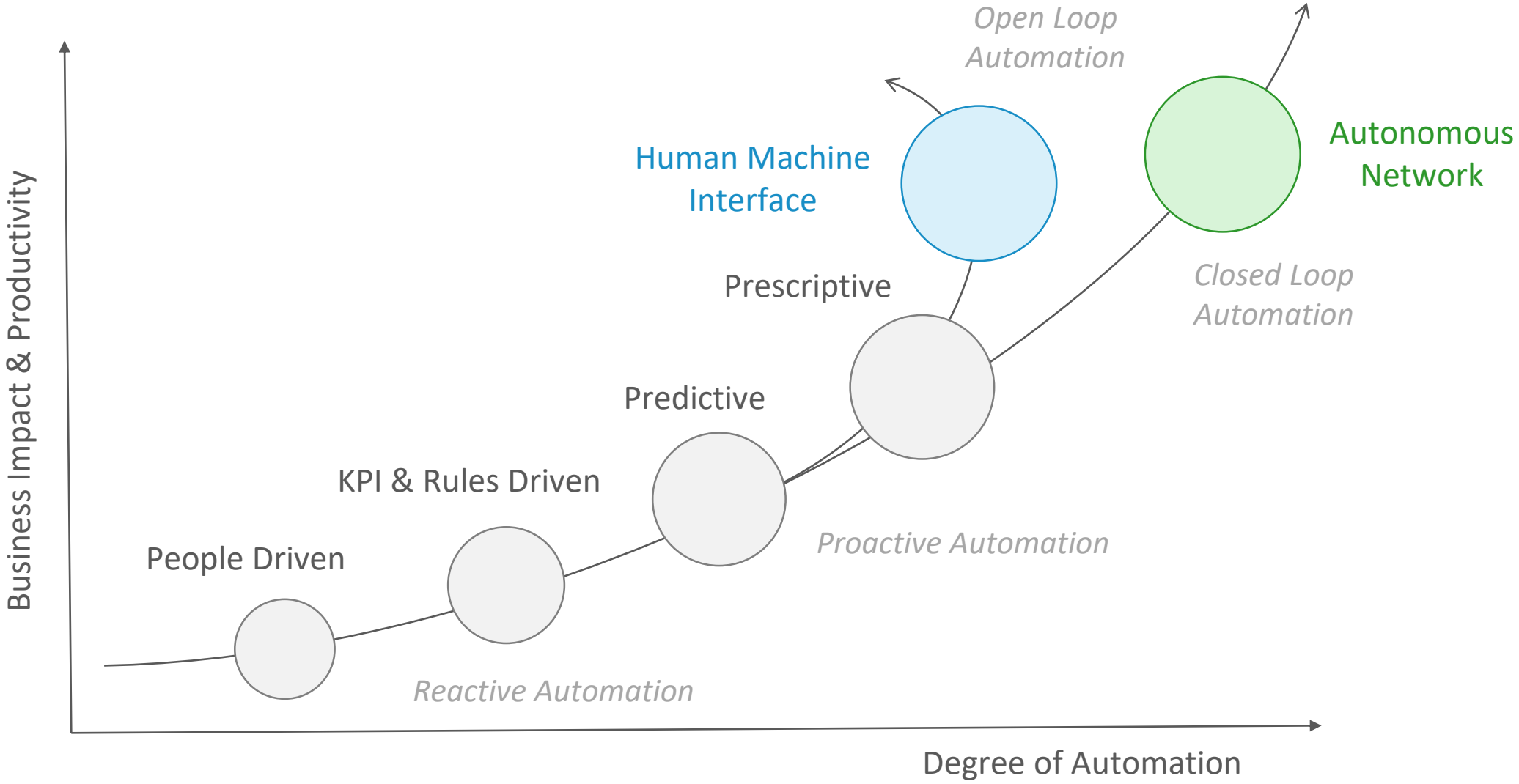
constantly look for security attacks and shied the system before any harm is caused

Self Optimize

constantly adapt to the network dynamics to provide a superior end user experience

Autonomous Network

Journey to Autonomous Network



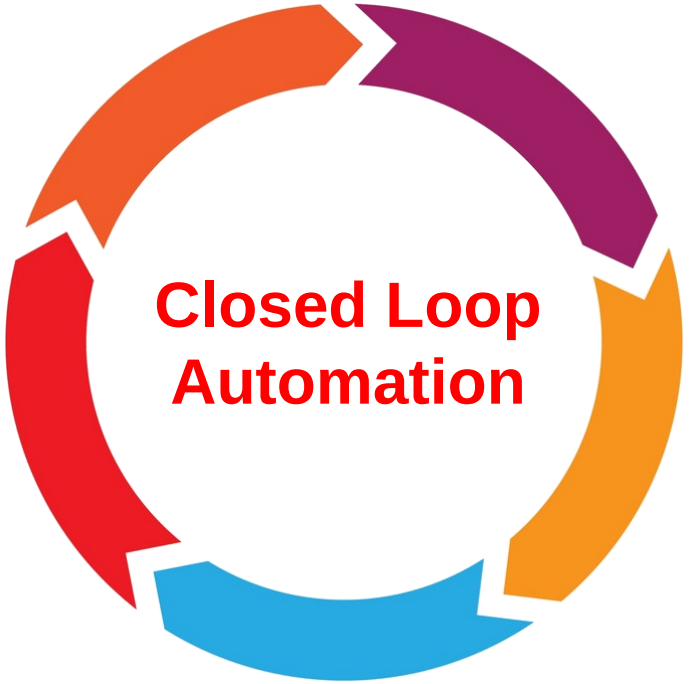
What is Closed Loop Automation?

Open Source MANO

Closed-loop automation powers autonomous networks.

1. Observe

Collect network metrics through streaming telemetry interfaces.



2. Decide

Processes collected metrics to determines the network status, and decides action to be taken based on network policies. This phase is not responsible for executing the action.

3. Act

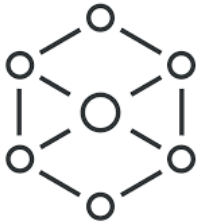
Acts upon orchestrated object and implements given lifecycle action.

Use Cases of Closed Loop Automation

Open Source MANO

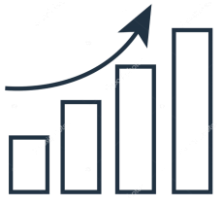
Autonomous Network Planning

Intelligent radio & fiber optics network planning



Autonomous Service Rollout

Zero touch service or network rollout



Autonomous Network Operation

Automated root cause analytics (RCA) & guided diagnostics

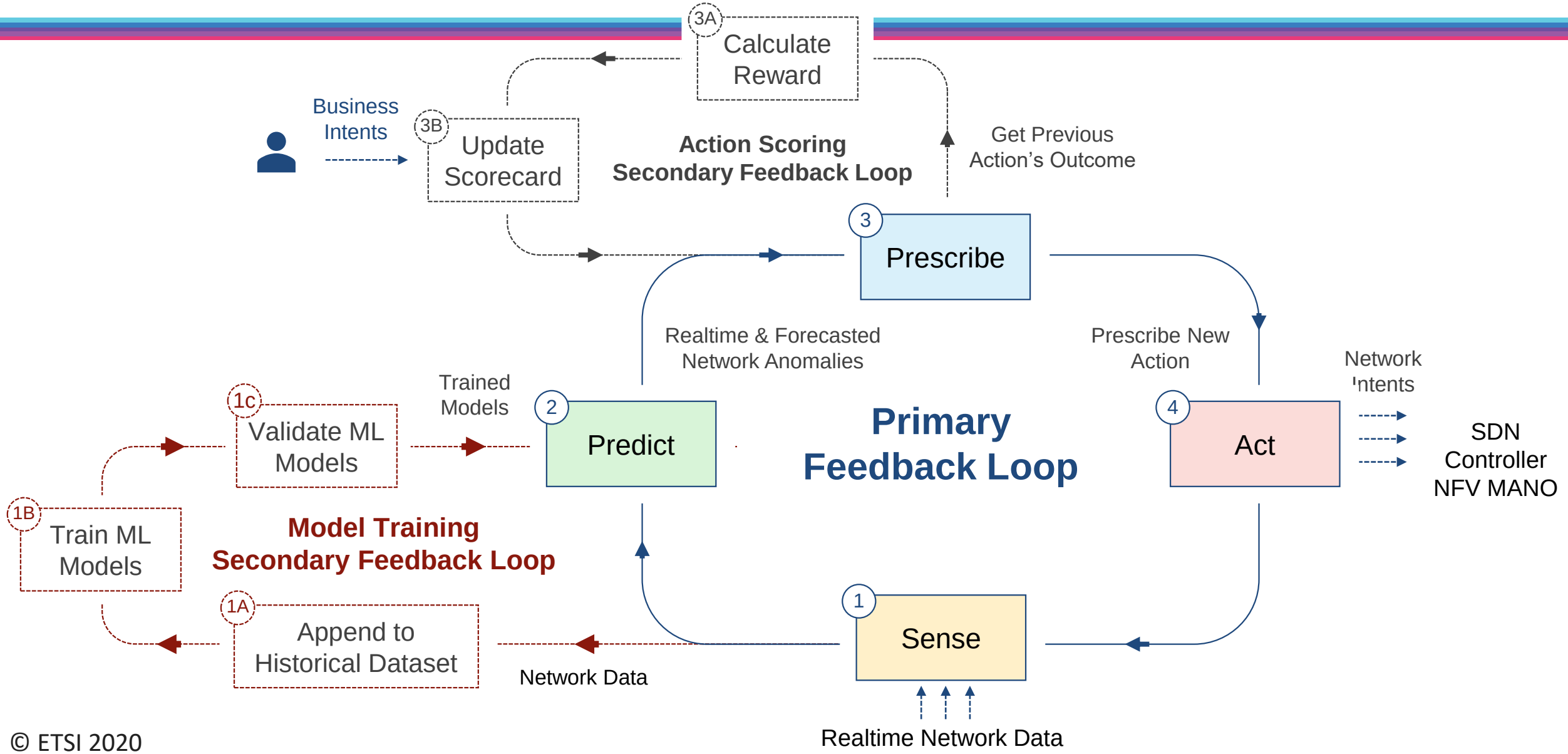
Autonomous Network Security

DDoS attack and BotNets prevention

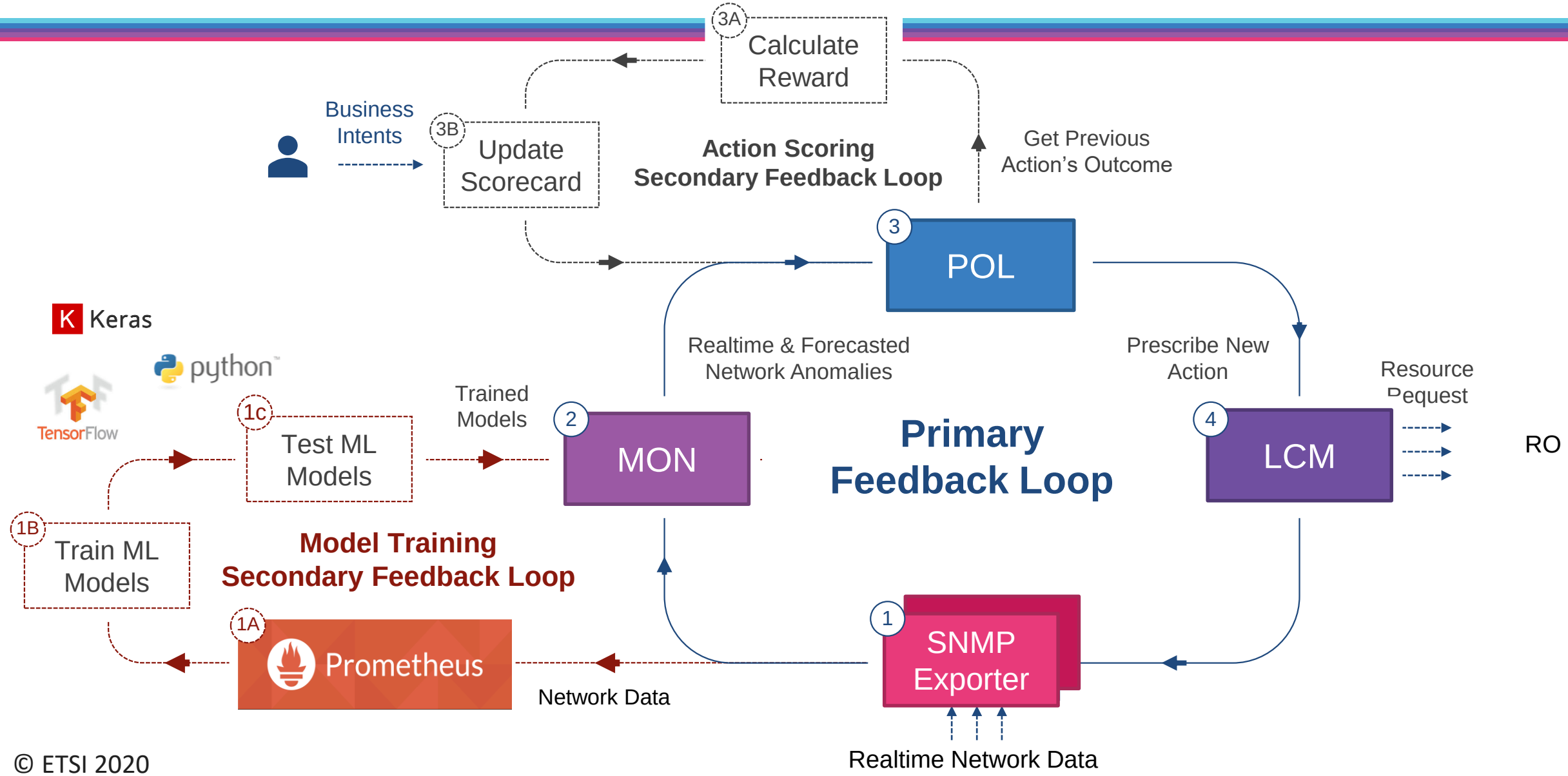
Predictive Maintenance

Prevent complex faults & performance issues

What Is Needed to Build a Robust CLA?



Mapping with OSM Service Assurance Components



First step is already there !!

Open Source MANO

Auto Scaling

- Auto scaling allows to automatically scale VNFs with a VDU granularity and based on any available metric.
- Scaling descriptors can be included and be tied to automatic reaction to VIM/VNF metric thresholds.
- Supported metrics are both VIM and VNF metrics.

Alarms

- An internal alarm manager has been added to MON through the 'mon-evaluator' module, so that both VIM and VNF metrics can also trigger threshold-violation alarms and scaling actions

Road to Cover !!

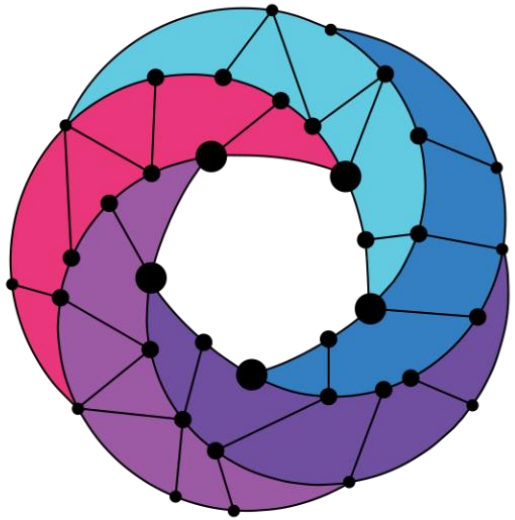
Open Source MANO

What is available today?

- MON - Covers the basic monitoring, with a solid architecture to expand them easily.
- POL - Designed around basic auto scaling & alerting
- Static thresholds for alerting policies
- No correlation of metrics

What is required?

- Advance streaming telemetry like gRPC
- Long term storage of data
- Replace threshold based alerts with ML based advanced anomaly detections.
- ML based predictive alerting
- Recommendation engine
- Continuous improvement with feedback loop



Open Source MANO

Find us at:

osm.etsi.org
osm.etsi.org/wikipub