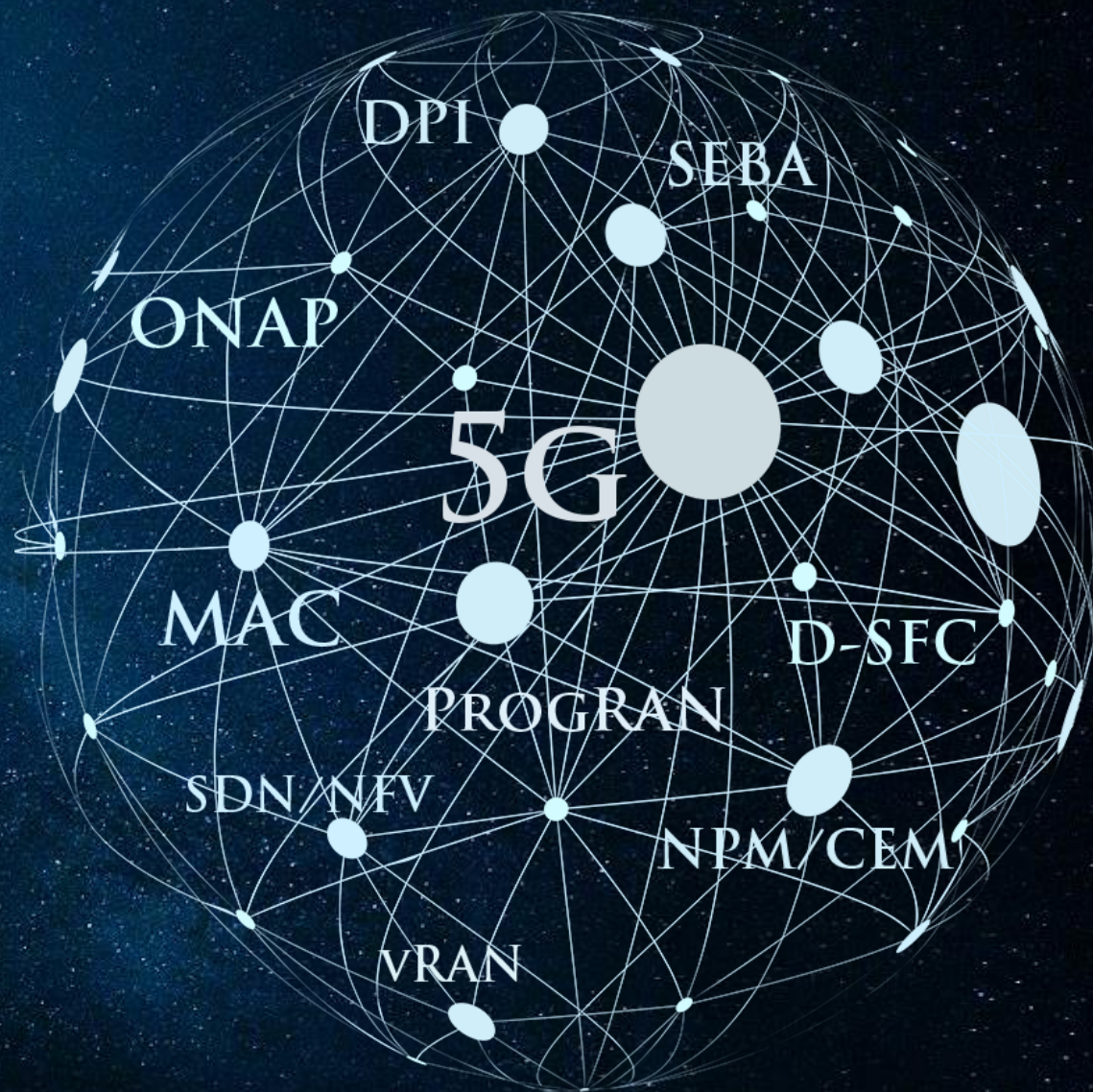


ARGELA

NWDAF in 5G SA Networks



About Argela

- Global technology company focusing on R&D for 5G and beyond,
- Customized solutions for telecom operators
 - Network & Customer Analytics Suite
 - Multi Access Edge Cloud – vRAN/RIC & SEBA (SDN Enabled Broadband Access)
 - Virtualization & Orchestration
- Open-source and standardization activities through Netsia (ONF, LNF, O-RAN, etc)
- R&D arm of Türk Telekom Group



ARGELA
ISTANBUL



ARGELA
ANKARA



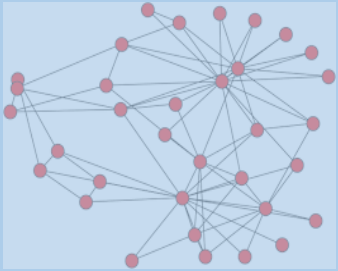
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IZMIR



NETSIA
Silicon Valley, USA

- Cloud Network Infrastructure (Service Based Architecture)
- Edge Computing
- E2E Network Slicing (Core, Transport and RAN Slicing)
- New Verticals (Connected Cars, improved manufacturing, Smart Cities, AI/ML Gaming, etc.)

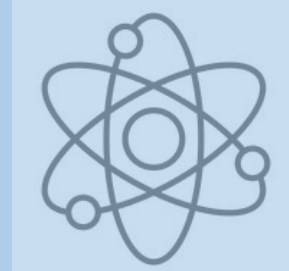
**Cloud based
architecture increases
Complexity of the
network**



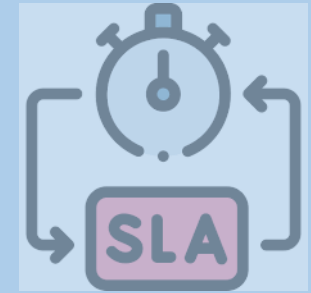
**Difficulty of
monitoring and
automation of Edge
Cloud**



**Need quick alignment
of network and slices
with the dynamically
changing conditions**



**High and strict SLA
requirements of the
new business
verticals**

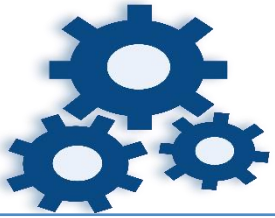


Key Drivers for NWDAF



Monitoring

- Need for continuous monitoring of 5G Network, Service Quality



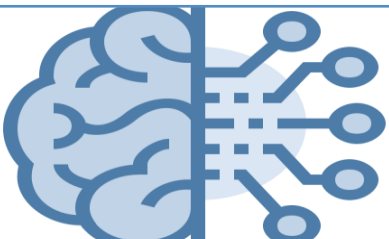
Automation

- Need for self automation of network and services to adapt dynamically changing conditions



Scaling

- Need for auto-scaling of cloud based network infrastructure
- Need for quick alignment of the network and slices with the dynamically changing service/network/customer requirements and conditions

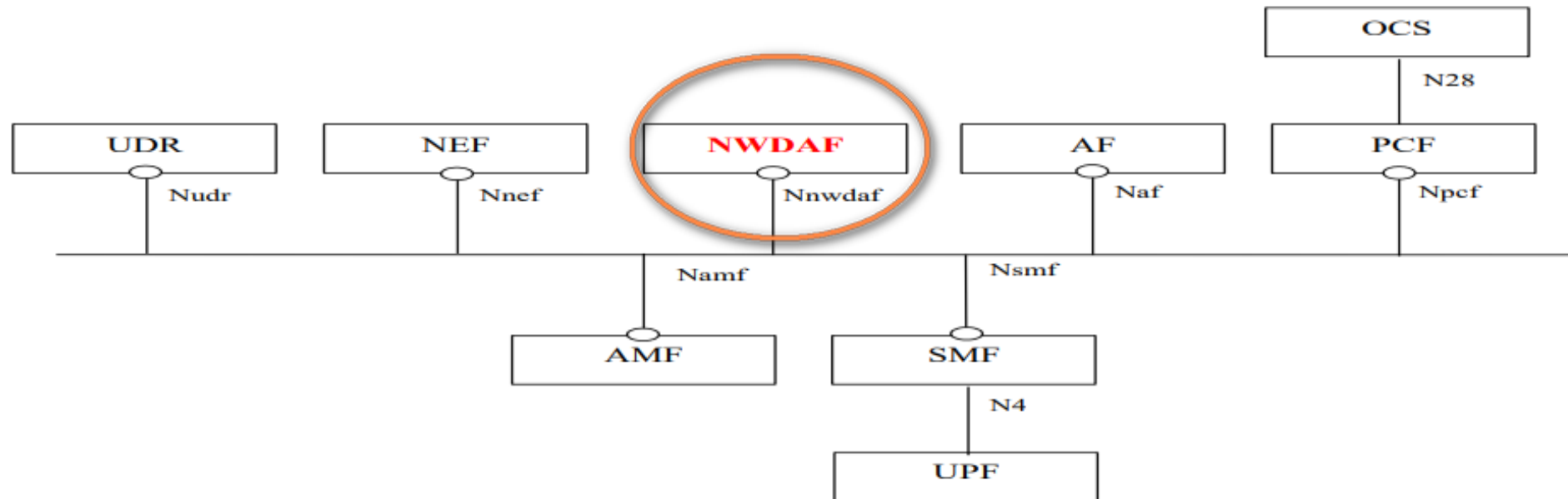


Network Intelligence

- Need for prediction information in order to optimum utilization of the radio and network resources

What is NWDAF?

- **Definition:** NWDAF (NetWork Data Analytics Function) is a Virtual Network Function in 5G SA network. It is used to make performance, usage and quality analysis and predictions based on the real time collected data from the other nodes.
- NWDAF has been introduced in the 5G System Architecture in 3GPP SA2#119 meeting, FEB. 2017



Objectives of NWDAF

- NWDAF aims to standardize the analytics, performance management and prediction use cases and procedures

Standardization



- NWDAF aims to enable automation of network, infrastructure optimization and configuration with the performance and quality analytics and prediction information

Automation

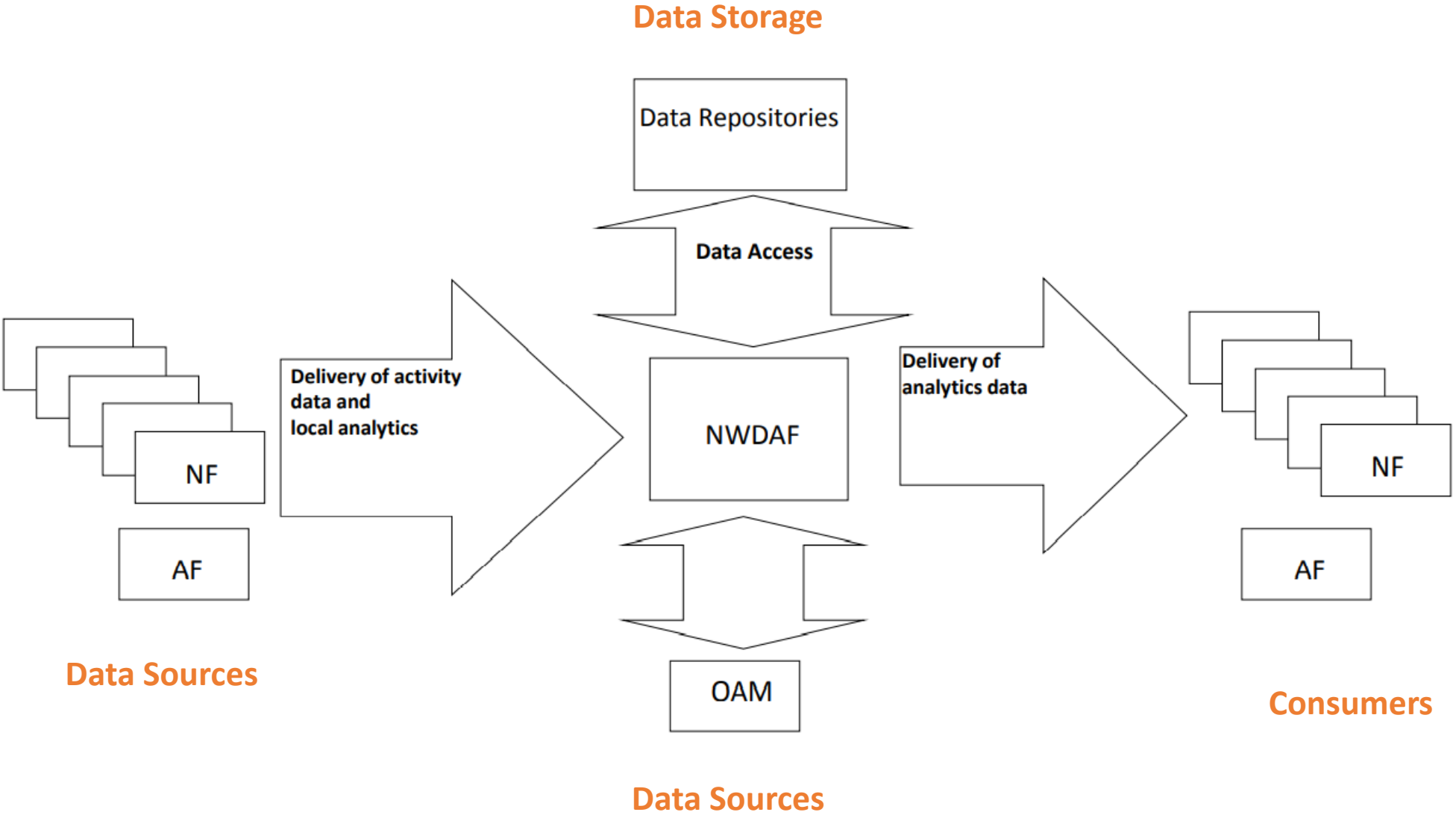


- NWDAF aims to provide visibility of the network, slices and services delivered over a complex IT based virtualized infrastructure of 5G SA and radio (MEC) network

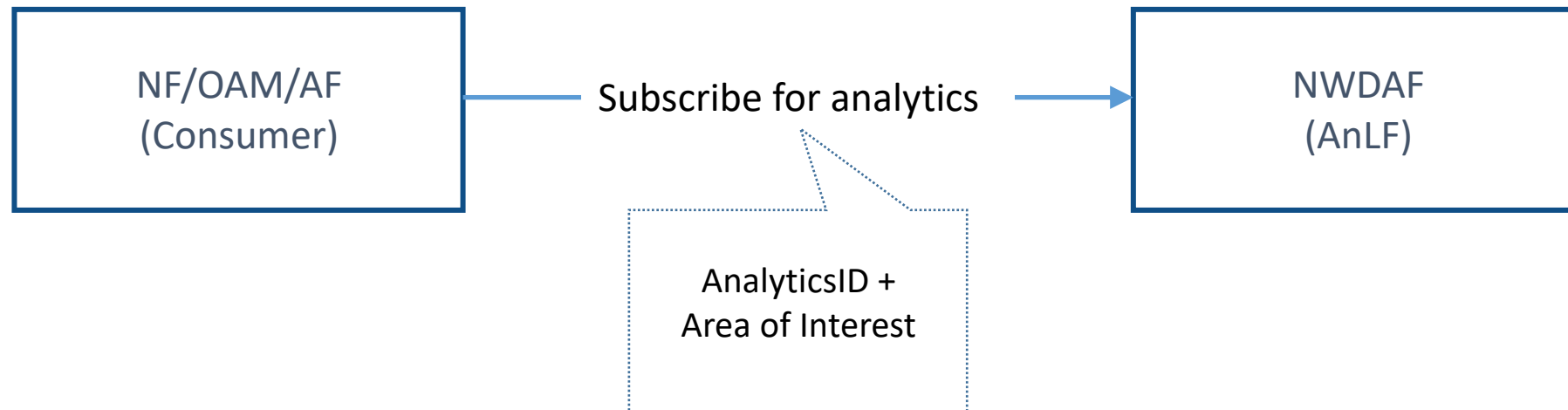
Visibility



NWDAF Framework Architecture

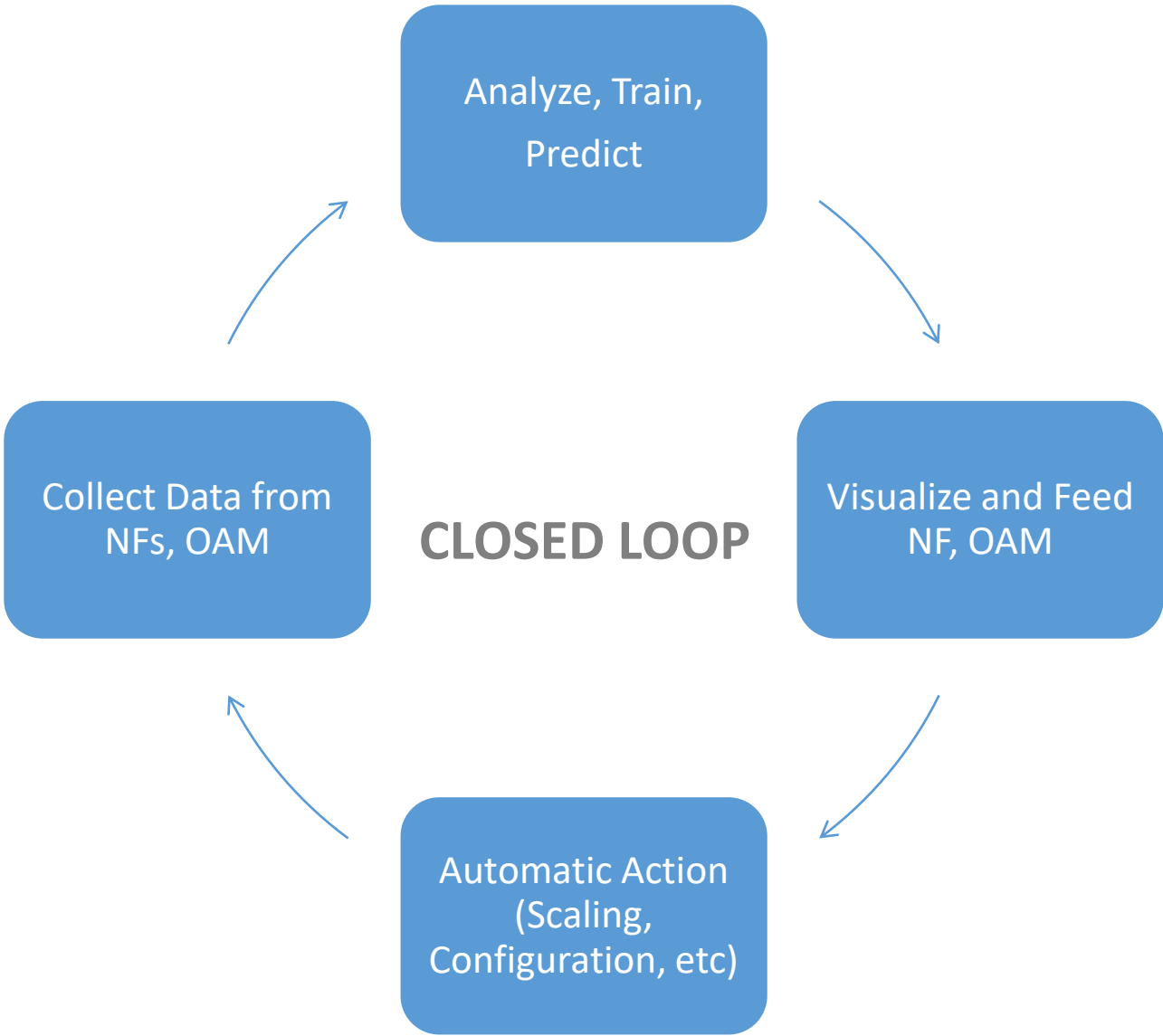


- Services offered by the NWDAF to other NFs
 - *Subscription to offered analytic services*
 - *Retrieval of analytic service outputs*
- *Services offered by other NFs to NWDAF*
 - *Subscription to offered metrics provided by the related NF*
 - *Retrieval of metric info provided by the related NF*



- Network Data Analytics Function (NWDAF) History in 3GPP
 - Release 15
 - Only definition of analytic service function (29.520) but no architectural proposal
 - Only presented for PCF and NSSF
 - Release 16
 - Uses cases (23.791) and architecture enhancements (23.288) come along
 - AMF, SMF, NEF, UDM, AF, OAM, CEF are added as the consumers of the service
 - No definition for coordination of data
 - Release 17
 - Machine Learning and Artificial Intelligence Model provisioning function is added to NWDAF
 - Data Management among services is defined but for now only as recommendation not mandatory
 - DCCF, ADRF, MFAF
 - And still workgroup is working on data management interfaces and methods it is not completed yet

5G Analytics and Automation Cycle with NWDAF



Network & Slice Performance Monitoring

- Load level computation & prediction
- Network performance - current & prediction
- Congestion information – current & prediction
- Anomaly detection

Service Quality Monitoring

- Service experience computation & prediction
- Mobility management optimization
- SLA measurement for MNOs

Device Monitoring

- Mobility analytics & behavior prediction
- Abnormal behaviour



Get in touch to find out how Argela can help your business

- [Argela.com](https://argela.com)
- contact@argela.com