

# Telemetry/Observability architecture

## TOWARDS ZERO TOUCH

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# THE GOAL



- Telco's desire to automate their operations
  - Zero touch provisioning and life cycle management of VNFs/CNFs and cloud infrastructure
  - AI/ML to automate operations
  - Visibility into operating state of the resources is the key to automation
  - Visibility achieved through Monitoring/Telemetry



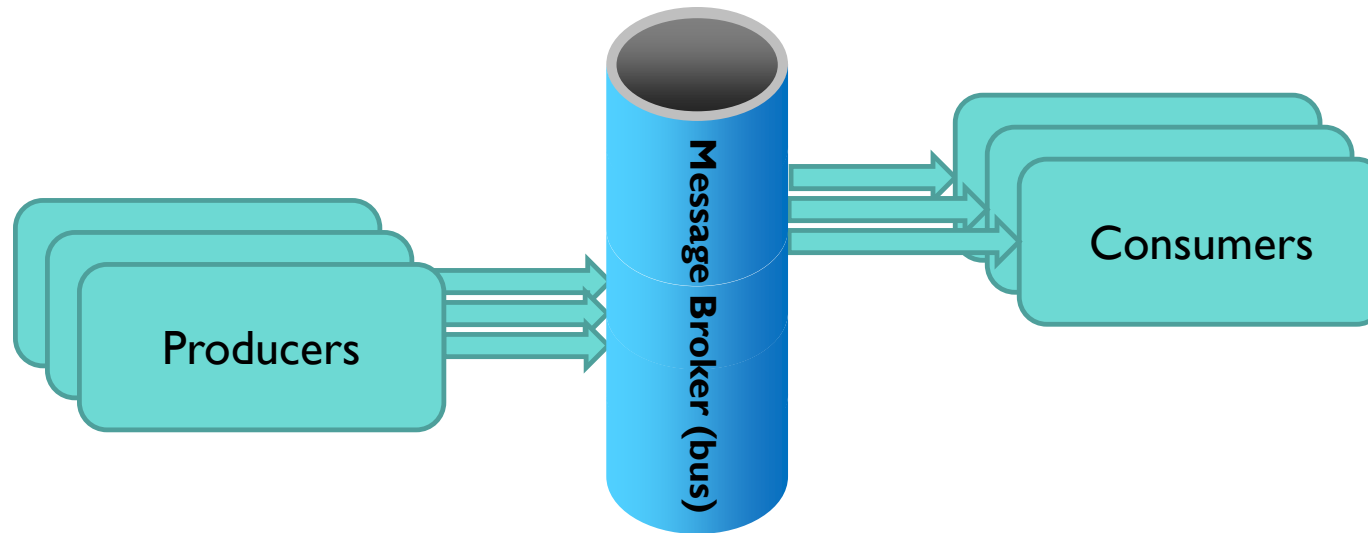
# ANUKET EBLRUS RELEASE



- Elbrus released EOM January 2021
- Telemetry and Observability is introduced in Reference Model
  - See [chapter 9 section 9.6](#)

# THE ARCHITECTURE CONCEPT - REFRESHER

- Push Model
- Message Broker



# BENEFITS OF CENTRALIZATION

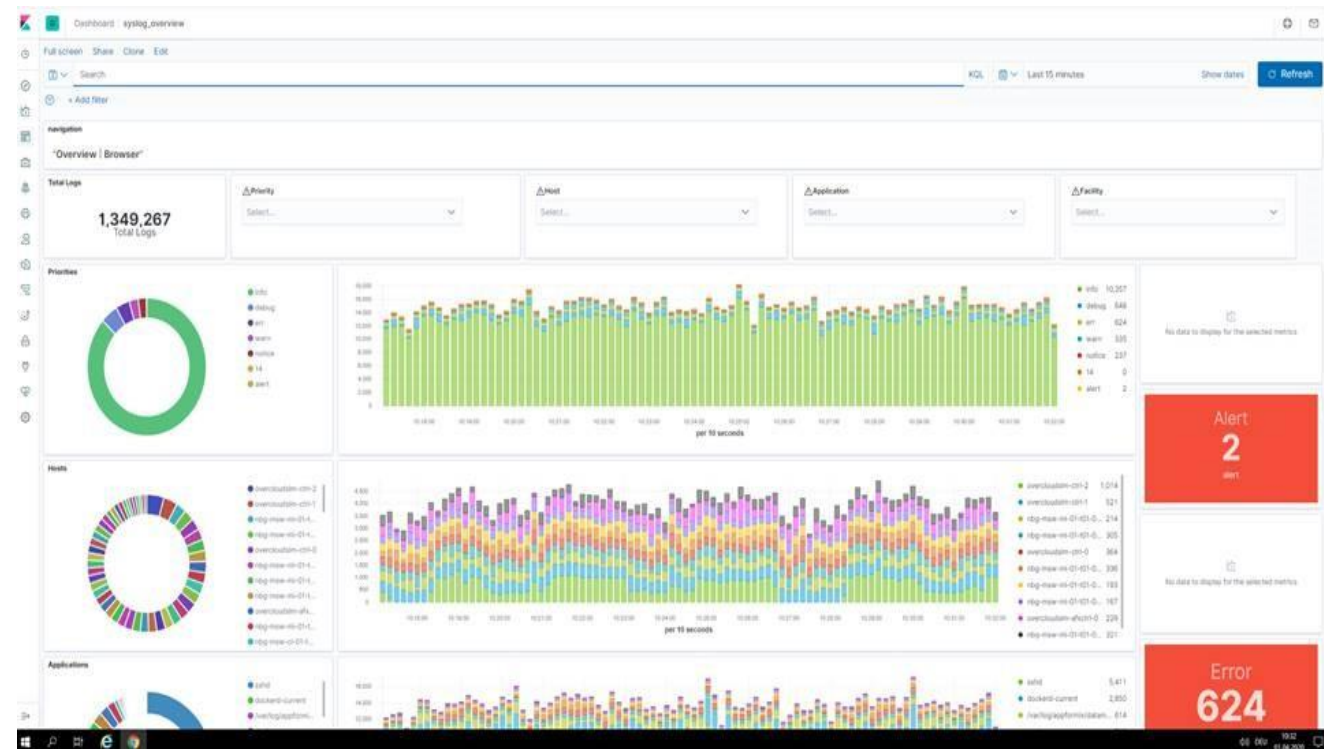
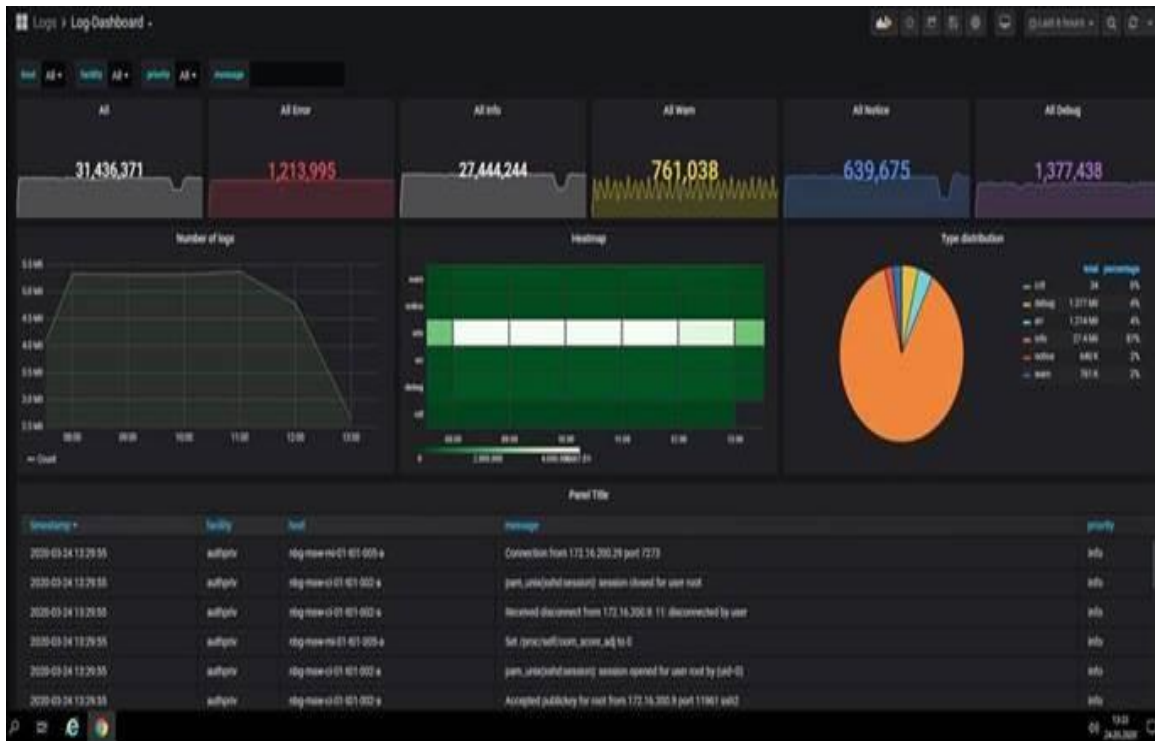


- Unified data
- From data usage perspective: acquisition is not our topic
- Easy to search large amounts of data
- Limitless possibilities for data correlations
- Visual representation of data
- Autonomic observing and problem solving

# CENTRALIZATION – VISUALIZATION EXAMPLE (I)



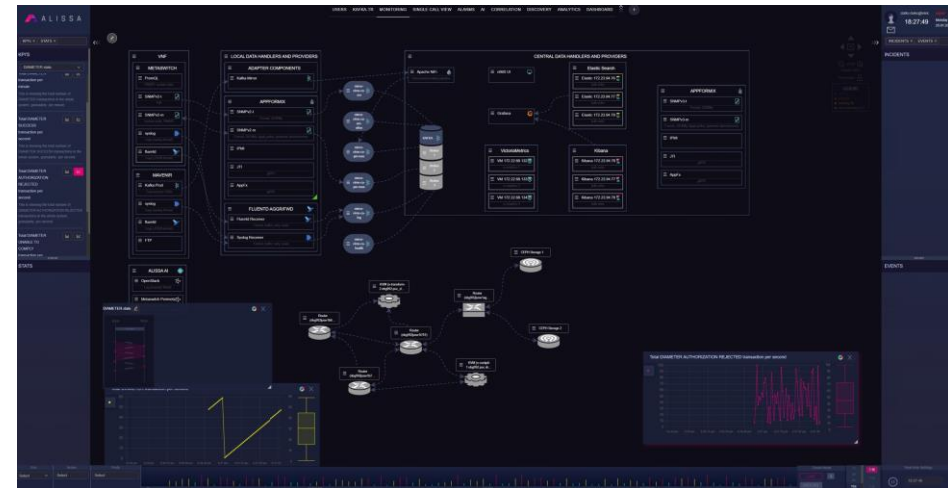
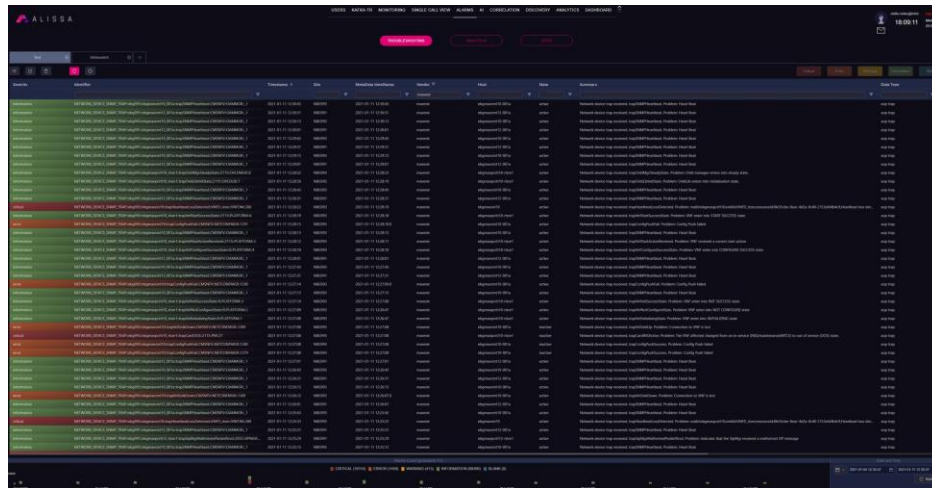
- Using open source tools



# CENTRALIZATION – VISUALIZATION EXAMPLE (II)



- Combining own tailor-made development with open source



# AUTONOMIC OBSERVING & PROBLEM SOLVING (I)

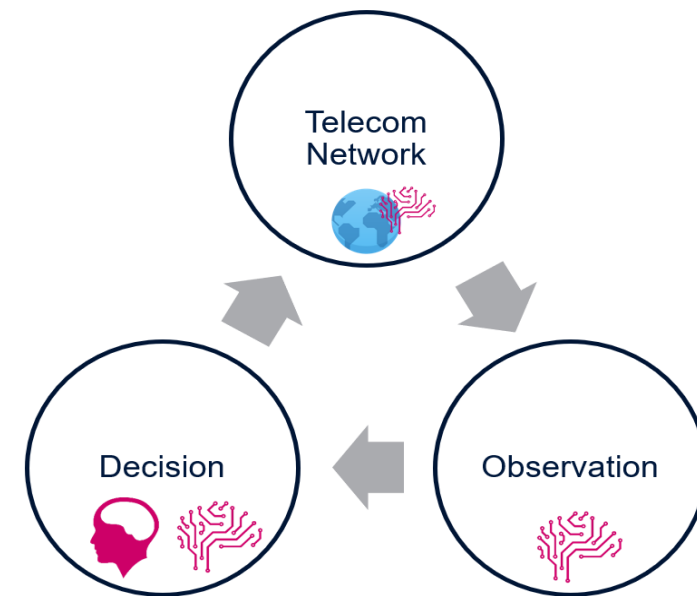


## Common Challenges

- Not “living inside Telco Cloud”
- Too much information to build proper mental image of the system
  - Metrics – several thousands of observed metric parameters
  - Alarms – Storm of useful and useless alarms makes it hard to recognize the issue
  - Logs - enormous amount of semi-structured human crafted information
- Prompt and proper reactions
- Predictions and preventions

## Autonomic Observability

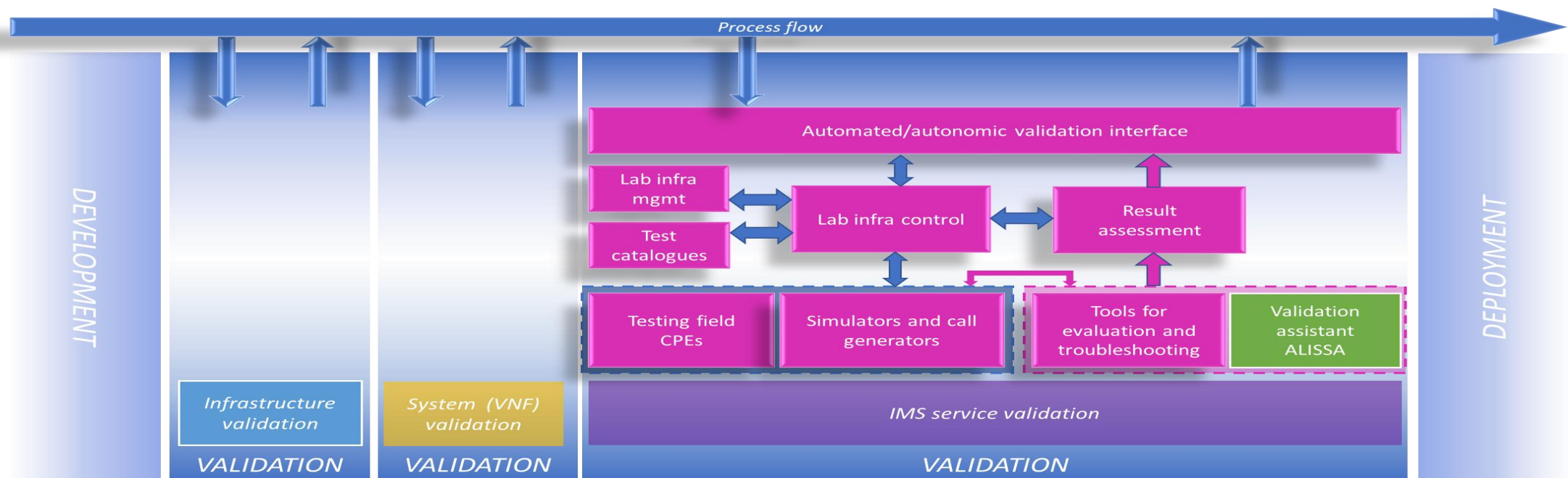
- Proposal for new coined term





# AUTONOMIC OBSERVING & PROBLEM SOLVING (II)

- Where is autonomic observation with problem solving needed?
  1. For validation in CI/CD chain - development -> deployment
  2. For operations - service providing perspective

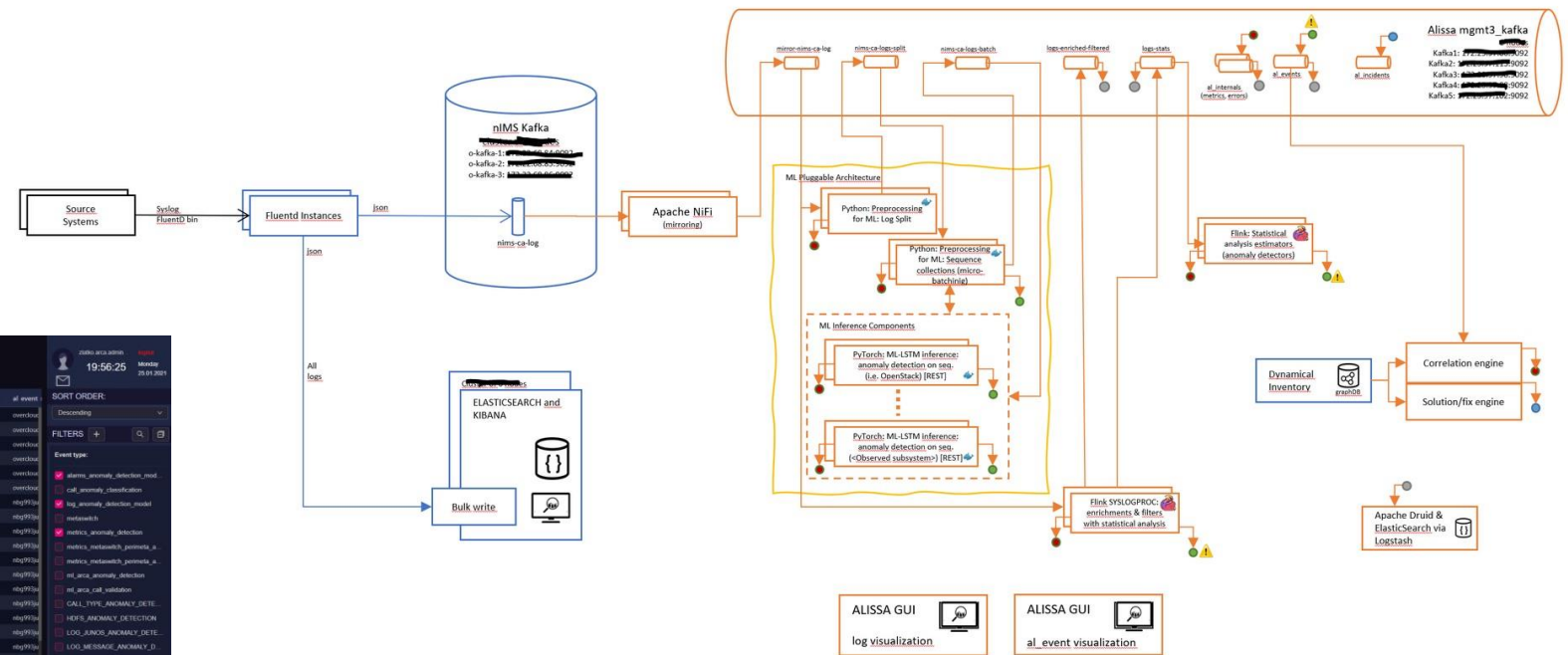




# CONCRETE USAGE IN DT (II)



- Anomaly detection on sequences (metrics, alarms, and logs)
- Using LSTMSs
- Correlation engine



The screenshot shows the ALISSA GUI interface. The main table displays test runs and anomaly detection results. The columns are: Actions, TIMESTAMP, al event description, al at class, al at model type, al at probability, al event source platform, and al event. The table contains multiple rows of data, including timestamps, event descriptions, and probabilities. The interface also shows a search bar, filters, and a log visualization section at the bottom.

Actions	TIMESTAMP	al event description	al at class	al at model type	al at probability	al event source platform	al event
Search	2021-01-12 12:44:09.929	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
TIMESTAMP	2021-01-12 12:44:09.929	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_event_description	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_at_class	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_at_model_type	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_at_probability	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_event_source_platform	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_log_message	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook
M_at	2021-01-12 12:43:35.526	Non Started Container	Non Started Container	Non Started Container	0.99872524	NBQ995	overlook

ALISSA GUI log visualization

ALISSA GUI al\_event visualization

# CLOSED LOOP USE CASE



- Detect/predict outage of Diameter links
- Data distributed via message broker – alarms in Kafka
- Alissa system reads sequences of alarms (sliding window size  $N$ ) and performance inference (LSTM on vCPU)
- Alissa provides output “incident” message on the message bus
- External system (currently implemented as a part of Alissa) triggering call to Ansible AWX to perform action – migrating traffic from one node to another

# THE SUMMARY



- Juniper and DT jointly put together this architecture
- The joint solution is implemented and deployed in production
- All Telcos need this in their desire to “zero touch” operation

Generic version of this architecture is introduced in Elbrus release of Anuket

- Win for Telcos
- Win for Vendors
  - VNF/CNF and NFVI vendors support this model/API
  - True multi-vendor solution
  - Simplifies VNF/NFVI integration
- No more silo'd solutions



# Anuket

