Avanseus
Predictive Maintenance

AI Based Operations | In the future of AI based Operations

2023

The future of Operations: the shift to Predictive Operations

Predictive Maintenance a must building block Intelligent Networks

Customer interaction

Impact & RCA identification

Incident management

SLA management

TRADITIONAL SUPPORT MODEL

Reacting to incidents once customer is already affected, **customer complains** storm

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RCA and Impact determined **by personal experience**, typically manually

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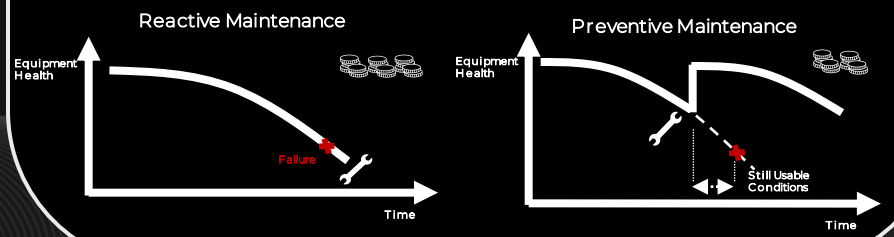
Expensive reactive field tickets, assets/teams to be available in few hours. **Multiple site visits** due to **imprecise RCA**.

In B2B, massive incidents generate escalations and costs (**SLA** related **Penalties**)



PREDICTIVE MAINTENANCE in INTELLIGENT NETWORKS

Incidents are **predicted** with DAYS in advance, act **before** any service degradation.

Automated predictive RCA, driving to the root of multiple avoided tickets. Learning from knowledge base, correlating what impossible by human beings

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Preventive tickets can be scheduled within days, saving costs and avoiding multiple visits

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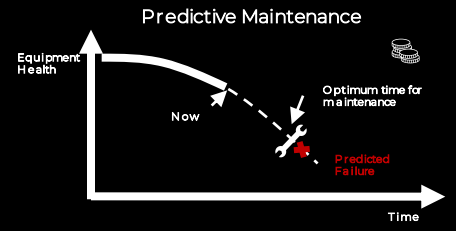
Predictive actions acted upon avoid Call centers overload, allow to keep **SLA in control**



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Why Avanseus for the future of Network Operations

We are an **AI Software** company specialized in solving **Industrial** challenges with a technology that scales across **Industry Verticals** applying **Machine Learning** and **Cognitive Computing** to bring you deep into **the future of Operations**

- **Unmatched** number of large scale Predictive Maintenance Telco **commercial deployments**
- Truly e2e, **Multi-Domain**, **Multi-Technology**, Closed loop
- **Actionable predictions** (in-depth RCA, recommended actions) with **Business Proven ROI**
- **Integrated** in Customer environment and with Customer business logic

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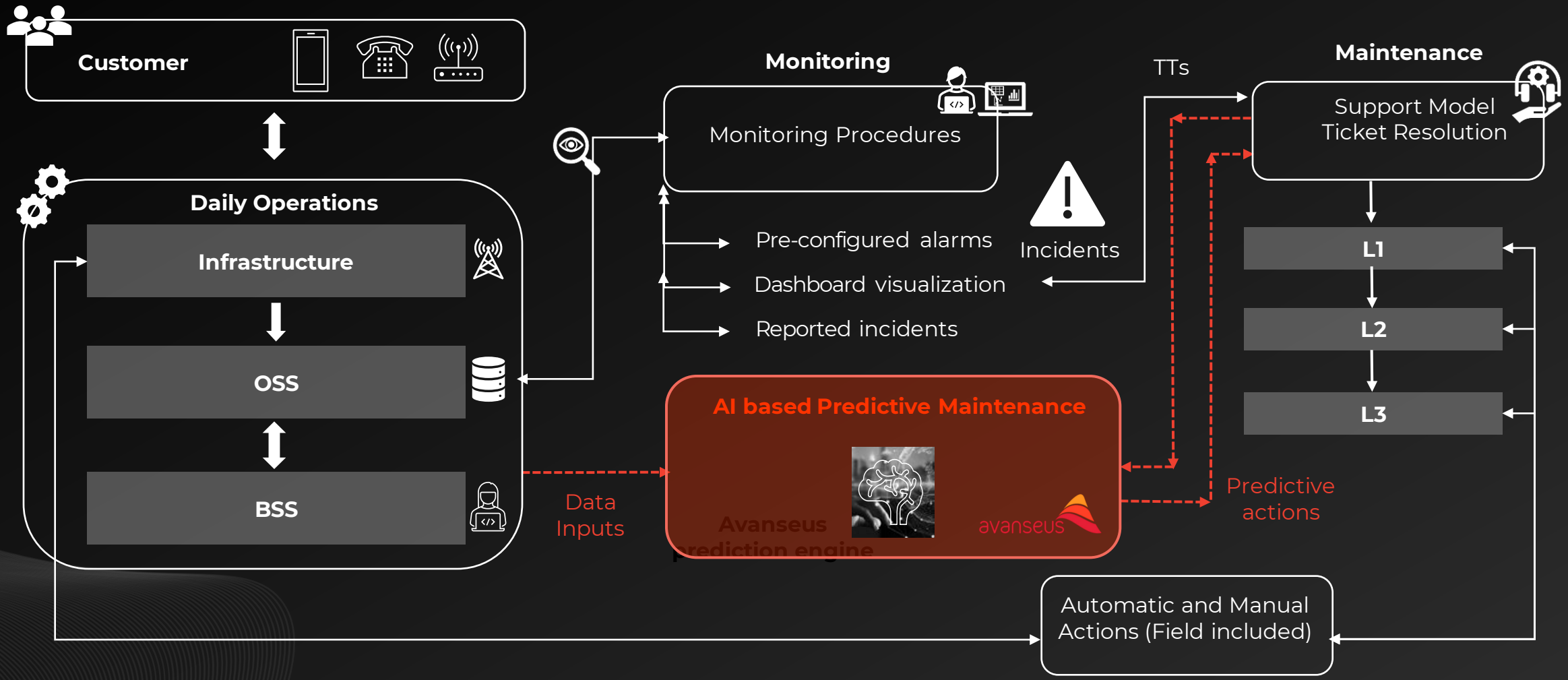
Avanseus Predictive Maintenance Augmenting Operations

Shift to Predictive Operations seamlessly into Customer workflow and enabling closed loop



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How Avanseus Predictive Maintenance delivers Customer value

Avanseus Augmented Operations

AI engine

Prediction

- **Faults** predicted in the next 7 days (e.g. daily)
- Typical prediction **accuracy is 70-80%,** reaching up to **95%** for high priority predictions

Prioritization

- **Top priority actionable predictions** with the greatest positive business impact
- Leveraging a configurable **Return of Effort** index integrating Customer Business policies and AI recommended weights

Root Cause Analysis

- Each prediction is automatically issued with **Service IMPACT and RCA** identifying real problems degrading the network performance
- Leveraging **Cross-Domain Correlations** and **Topology Discovery** capabilities

Recommended Actions

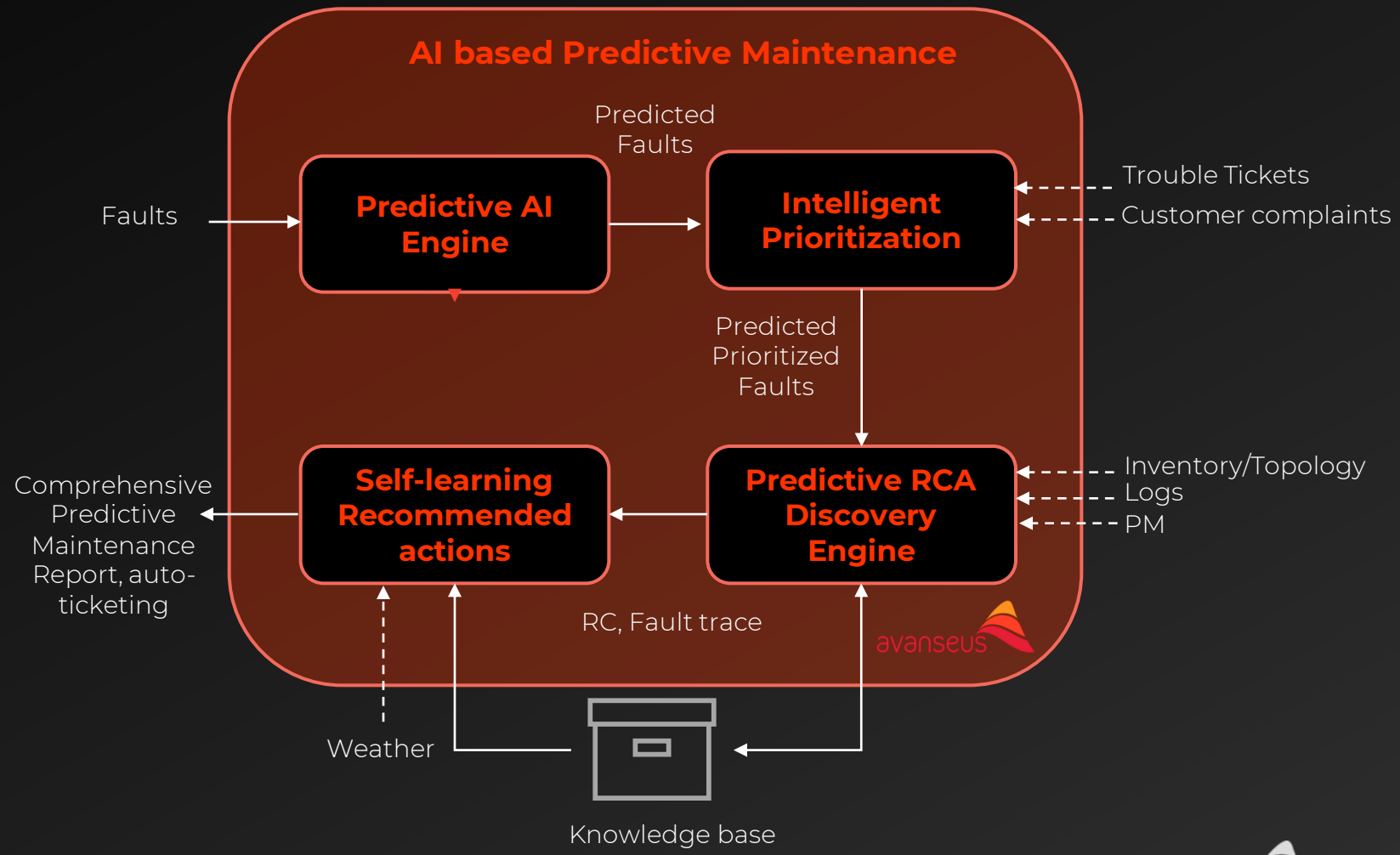
- **Automatically generated**, delivering unambiguous actioning, powered by **field learning** capability
- Delivered in local language
- Fitting into customer ticket handling systems

AI powered
(Productized, Trusted AI)

Avanseus Predictive Maintenance intelligence

AI based algorithms in all the stages, learning from Data and Subject Matter Expertise

- Predict **faults ahead of time** and accurately – based on history of earlier faults. Avanseus **Recurrent Neural Network** learns everything from Data continuously, works **off-the-shelf**, no need for hyper-parameter tuning in different domains
- **Intelligently prioritize** the predictive faults according to Customer Operational priorities (cost of operations, customer quality, network availability and/or a balanced mix). **Return on Effort (RoE)** index is a proprietary based prioritization mechanism, flexibly configurable, which leverages Predictive Engine intelligent insights to steer Predictive Operations
- **Automatically forecast the Root Cause** of the predicted faults, leveraging **enabling capabilities** (Fault Clustering Discovery, Cross-Domain Correlations, Parent & Child Fault Discovery, Topology Stitching and Discovery) which algorithmically trace and correlate faults and discover the deepest **cause-effect** in complex interconnected infrastructures
- Recommend associated actions refined continuously based on **learnings from field**



Avanseus Predictive Maintenance Multi-Vendor and Multi-Technology

Wireless Access Open RAN

O-RAN ALTIOSTAR MAVENIR

Fixed Network Elements DSLAM, Digital Loop Carrier (DLC), Access Aggregators, MUX

ERICSSON Alcatel·Lucent ECI TEJAS NETWORKS

Wireless Access 2G/3G/4G/LTE Nodes and Modules, Repeaters and In building Solutions, Antennas

NOKIA ERICSSON ZTE ALTAI Super WiFi HUAWEI Alcatel·Lucent KATHREIN Antennen · Electronic NETWORK ORANGE

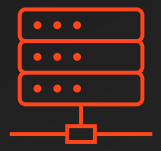
Transmission Equipment SDH, PDH, Microwave IDU ODU, LMDS, Fiber Nodes, MSPP, MW Antennas

NEC Alcatel·Lucent cisco JUNIPER NETWORKS ECI TEJAS NETWORKS Coriant UTSTARCOM

Core Elements SGW, MGW, IMS, MMEs, MSCs, SGSN, GGSN , BSC, RNC, STPs , Switches (Wireline/Wireless)

NOKIA ERICSSON ZTE NORTEL NETWORKS HUAWEI MOTOROLA

Data Equipment ATM, Ethernet Switches, MSPP, Access Points, Routers



Alcatel·Lucent NOKIA HUAWEI cisco ECI UTSTARCOM

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Avanseus Predictive Maintenance highly pre-integrated

To fit the Customer environment and workflow, enabling closed loop and Intelligent Networks

Inputs

Sensors

- Hewlett Packard Enterprise UIOT Platform
- DELL Edge Gateway 5000

KPIs

- Performance
- counters
- OSS data

Logs

- splunk>enterprise

Alarms

- Hewlett Packard Enterprise
- Tivoli Netcool

Incidents

- bmc Remedy
- servicenow
- IBM maximo

Other

- Weather forecast
- Inventory Data
- Topology

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Hosted in

- Microsoft Azure
- On prem & Private Cloud

Actionable Outputs

RPA SW

- RESOLVE
- cortex

Microservices APIs

Orchestrators

- ANSIBLE

Auto-ticketing

- bmc Remedy
- servicenow
- IBM maximo

Spare parts management

- ORACLE DATABASE
- Proprietary Customer Solutions

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Our Augmented Operations Benefits

Alarms Reduction

Tickets Reduction

Mean Time To Resolution Reduction

Maintenance Costs Reduction

Results may vary across different environments and settings

Data not representative of a single deployment. Results depend on input data quality and may vary across deployments in the same or different industries. Deployment refers to a single installation of our software at a site.


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Thank you