ADB SAFEGATE

CORTEX ALCMS

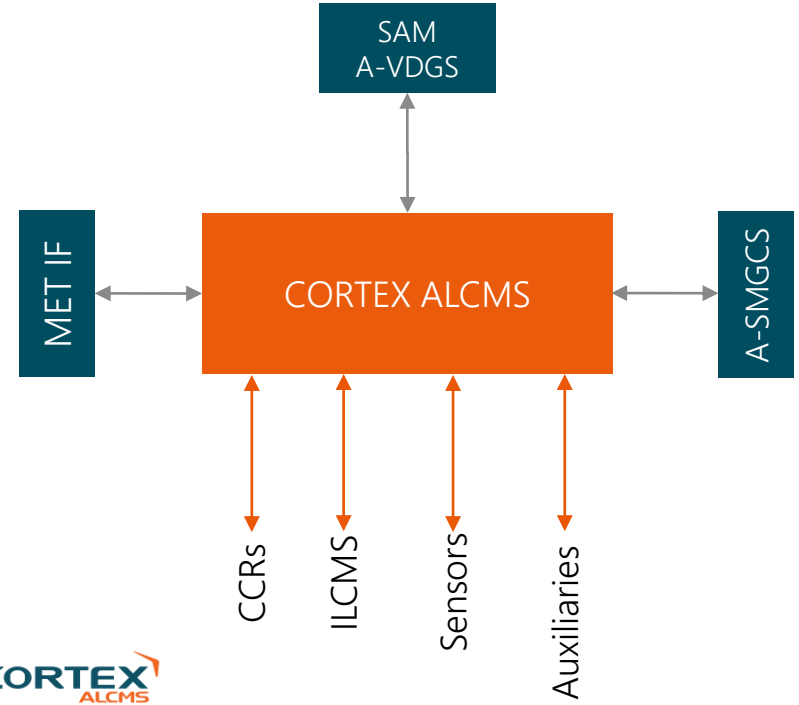
PORTFOLIO PRESENTATION

Agenda

- CORTEX ALCMS General Concept
- CORTEX ALCMS Compact - The Entry Solution
- CORTEX ALCMS Standard - A catalogue of functionalities
- CORTEX ALCMS Advanced – The High-End Solution
- Airside 4.0
- Executive Summary
- Q&A

CORTEX ALCMS GENERAL CONCEPT

CORTEX ALCMS High level concept



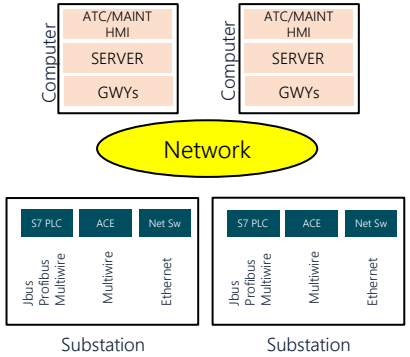
ALCMS is the traditional Airfield Lighting Control and Monitoring Solution supporting ATC and Maintenance in managing their visual aids.

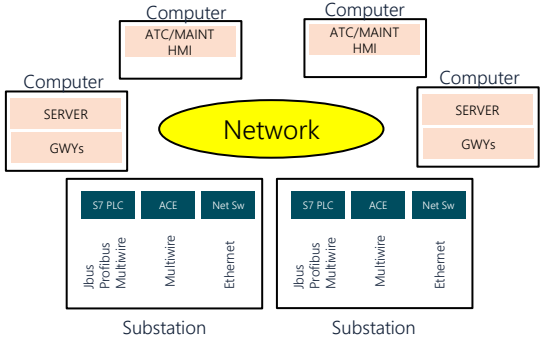
Typically composed by:

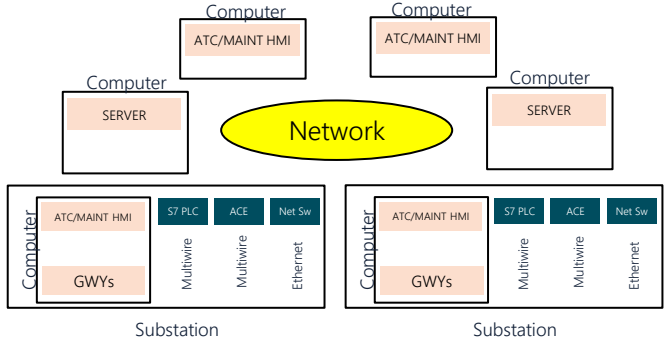
- A central processing ALCMS engine
- Several HMIs for the user interaction
- A set of interfaces to control and monitor the AGL equipment
- A set of interfaces allowing to interact with external systems.

CORTEX ALCMS Modular HW/SW Architecture

- Sever/Client Software solution, allowing for small to large size Solutions.
- Professional desktop or Industrial type Computers running the required software packages, same hardware can be used for all positions easing the Spare parts management.
- All the Solution components are linked together by standard ethernet increasing flexibility in architecture.
- All the Software components are running on one or distributed to multiple devices.







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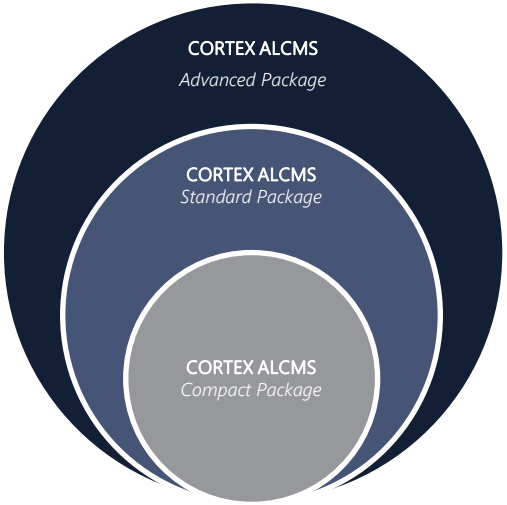
One ALCMS Platform for several Packages



Cortex ALCMS *Compact Package*

- Designed to be the most economical ALCMS package, made with as few components as possible allowing an easy deployment and reduced Maintenance.
- Targeting small single runway airports or heliports using mainly CCRs and Circuit Selectors for control of Airfield Lighting.
- The Package comes with a set of functionalities that provide the airport with traditional AGL control, typically replacing a push button panel with additional tools to support the maintenance operations.

Cortex ALCMS *Standard Package*

- Designed to be the functional ALCMS offering that would match most airport's needs, providing high functional quality, while still being affordable.
- Targeting all type of Airports from CAT I to III, including ILCMS, Sensors and external interfaces.
- Scalable to a large extend, from single to many substations and with no HMI workstations limitations.
- Includes many operational functions helping reducing the ATC and Maintenance workload.

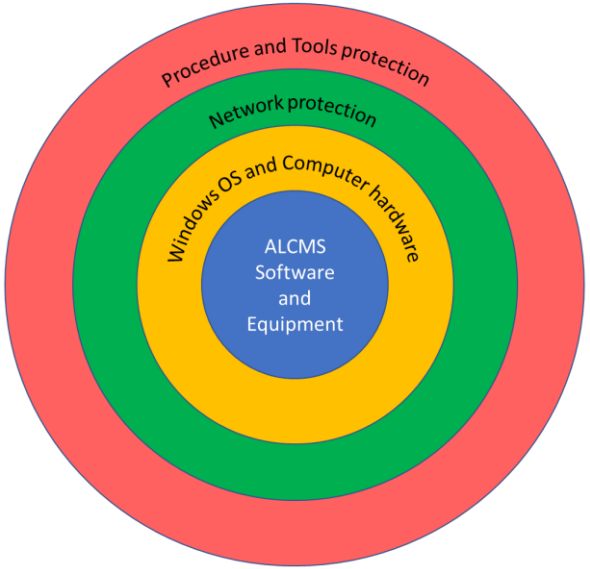
Cortex ALCMS *Advanced Package*

- The high end package allowing providing surveillance, semi-automated routing and guidance functions on top of all other standard functionalities.
- Designed to support Airports with complex layouts and busy peaks operations but not having the founding to invest in a complete A-SMGCS while still requiring advanced traffic control, this package provides Surveillance, Routing and Guidance services including follow the greens capabilities.

Cyber Security

Designed to Mitigate Cyber Threats, proactive measures are taken at all levels of the Solution.

When the Airport is requiring a cyber secured solution and after a thorough risk evaluation, a set of well-established measures are applied to protect the ALCMS infrastructure and software against the identified risks.



Network security

- Segmentation, segregation, whitelisting, disabling of unused ports, routers and VPN for external connection,…

Hardening of Endpoints

- Firewall, antivirus, blocking of USB, …

User access protection

- Login based access, role-based functionalities, event logs, domain controller

Encryption of communication and data

- Encryption of Communication, Configuration files, etc…

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CORTEX ALCMS COMPACT
THE ENTRY SOLUTION
ADB
SAFEGATE

Compact functional package

An Airport Control and Monitoring page with:

- A global control banner providing pre-configured scenarios depending on the background luminance (DAY-NIGHT) and Active Landing direction.
- An Airport overview, a representation of the airport giving the status of the AGL functions.
- An individual AGL function control providing the ability to adapt the intensity of the several AGL functions.

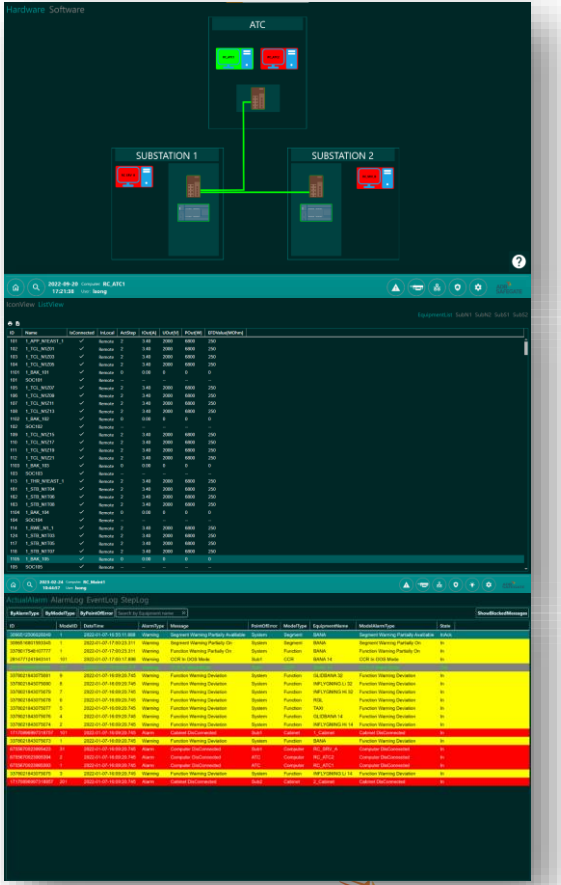
Compact functional package

1. A system overview providing the status of the ALCMS main components.

2. A tabular equipment view providing the actual status of each equipment monitored by the System, including:

   - Equipment identification
   - Actual intensity
   - Error messages
   - Analogue values provided by the equipment (e.g. Intensity, Voltage, Power, Isolation)

3. An operational alarm list providing error states of the AGL equipment and System components, level of details depends on the users, ATC only receives the major alarms affecting the operations.



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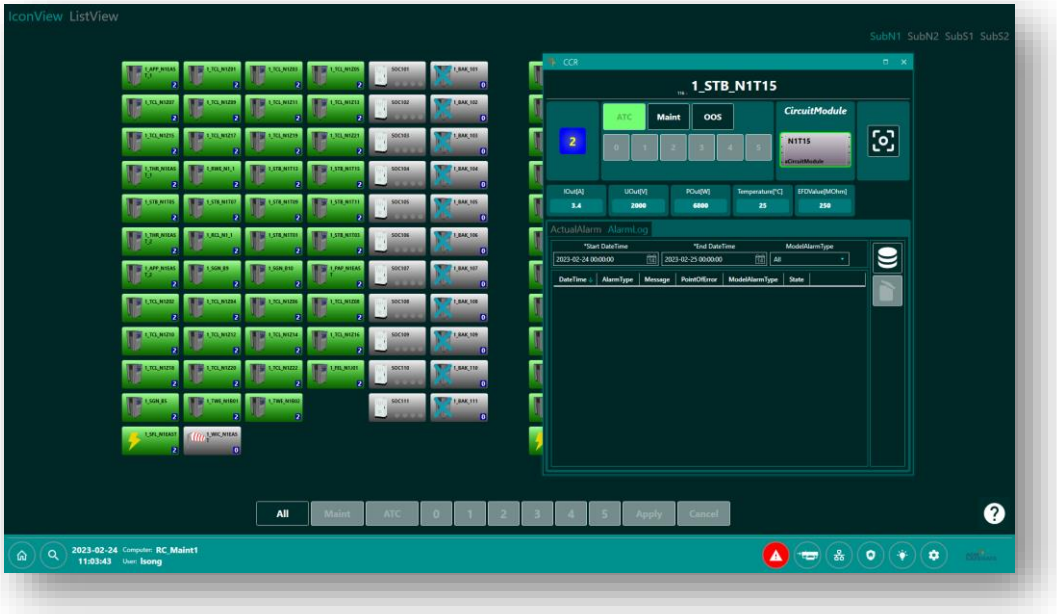
Compact optional Maintenance toolkit

The Cortex Compact ALCMS could be enhanced to increase the Maintenance support by adding the Substation Equipment view :

- Provides additional information regarding the state of the controlled and monitored AGL equipment using a graphical representation and icons helping understanding the actual situation immediately.
- Enables the Detailed Object Views which open, when clicking on an object, a pop-up window containing detailed information about the equipment and a set of tools easing the maintenance activities on the equipment.



Compact optional MET interface

The Cortex Compact ALCMS can provide the MET system with the current intensity of the runway edge and centerline, and the Landing Direction in use.

This option will enable the by dry contact interface exposing this information to the MET system.

CORTEX ALCMS STANDARD
A FUNCTIONAL CATALOGUE

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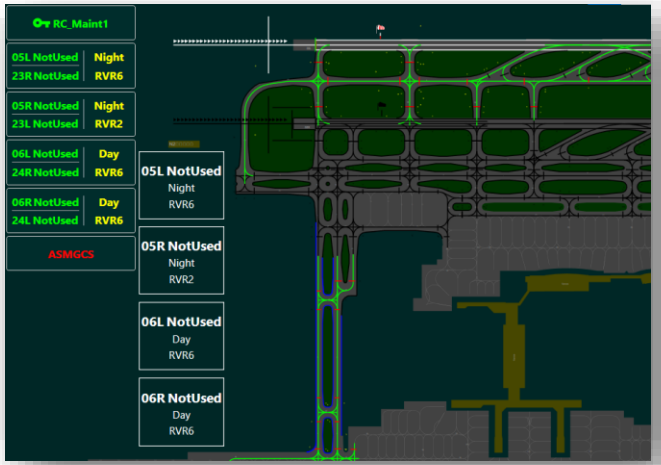
CORTEX ALCMS Standard
The additional functional catalogue

Enhance CORTEX ALCMS with a catalogue of functionalities to fit the product to the needs of the airport.

Additional ATC and Maintenance functionalities or interfaces with external Systems.

CORTEX ALCMS - Additional Functional Catalogue



- Extended Global Controls to Support Airport operations
- Area of Responsibility (AoR), dividing the airport in zones for multiple ATC controllers

CORTEX ALCMS

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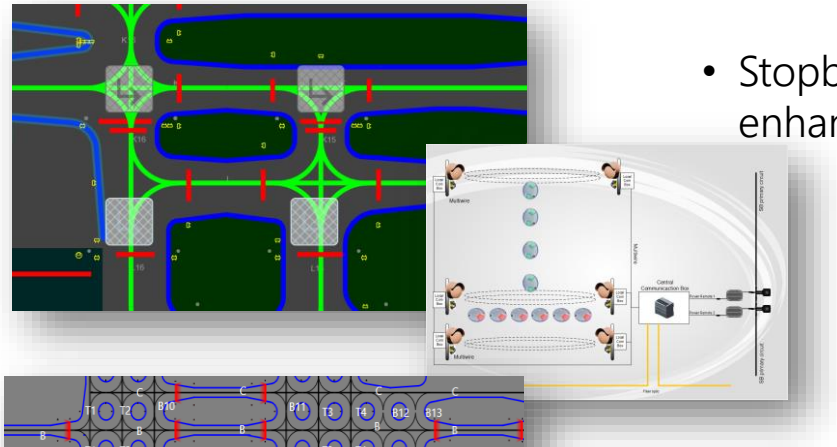
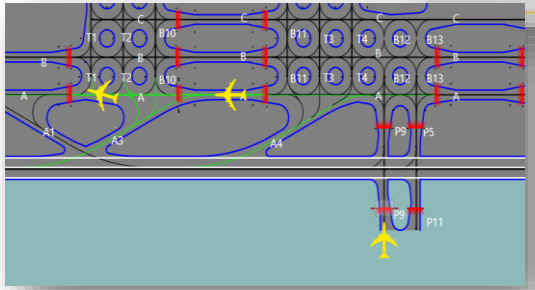
CORTEX ALCMS - Additional Functional Catalogue



- Stopbar Controls using Circuits, LINC360, enhanced with Sensors



- Preconfigured Landing/Take Off scenarios optimizing traffic and reducing conflicts and confusion.

CORTEX ALCMS

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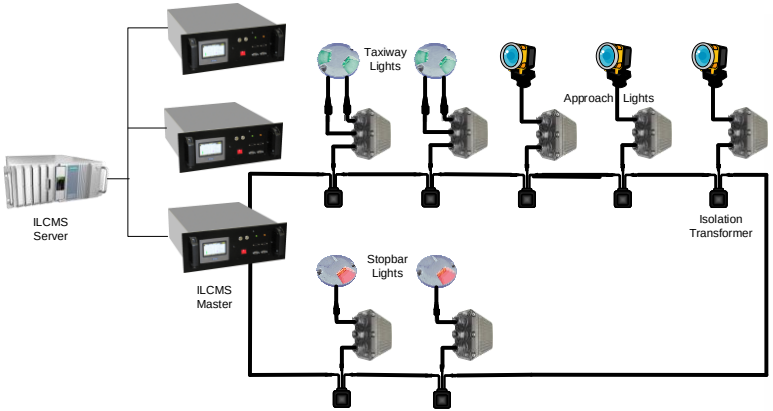
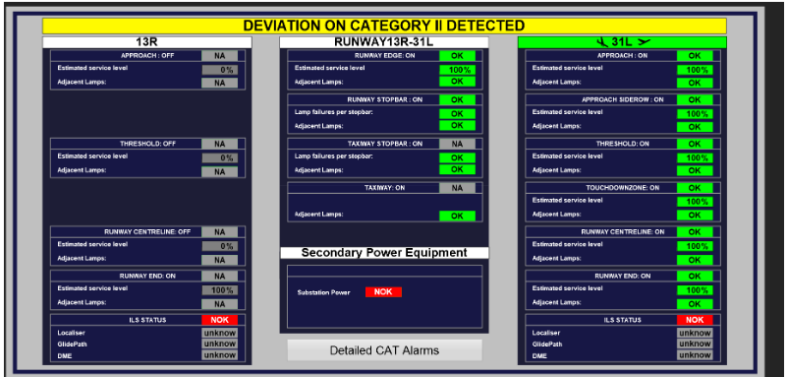
CORTEX ALCMS - Additional Functional Catalogue





Integration of LINC 360:
Enhancing monitoring of AGL status

Category monitoring:
Serviceability of AGL per Category of operation using LINC360

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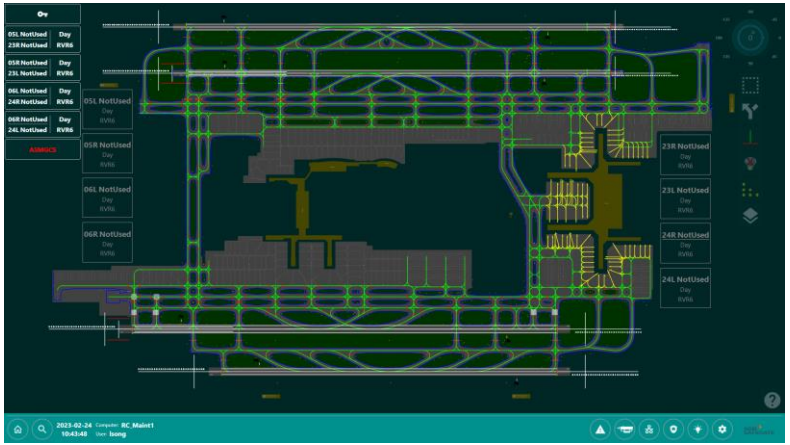
CORTEX ALCMS - Additional Functional Catalogue



On Scale Overview:
Geographically accurate overview of the AGL infrastructure based on Autocad import.

Individual Lamp monitoring:
Visualisation of status, detailed data, locator function.

CORTEX ALCMS

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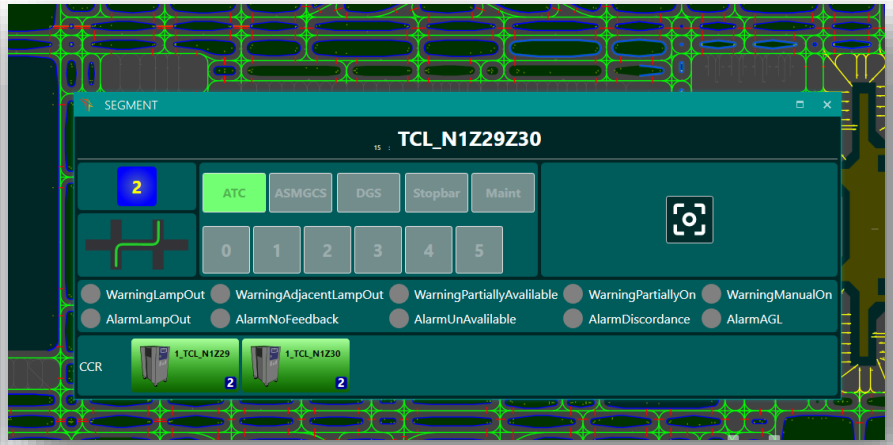
CORTEX ALCMS - Additional Functional Catalogue



Detailed Object Visualisation:

- Each object is clickable
- Provides status details easing maintenance activities

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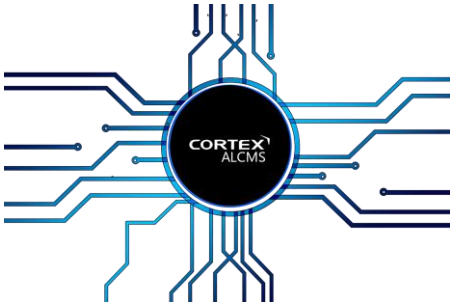
CORTEX ALCMS - Interfaces



- MET interface, automation of AGL configuration based on Visibility condition.
- SAM/AVDGS interface, control of lead in segments entering the gates.
- Open interface for 3rd party systems (A-SMGCS, ICWP).
- Network Time Protocol, time synchronisation of all clocks with Airport NTP Server.
- Other interfaces are possible on demand.

CORTEX ALCMS ADVANCED
THE HIGH-END SOLUTION
ADB
SAFEGATE

Advanced Situational Awareness

When interfaced with the Surveillance system through CAT11 or 62 Asterix protocol, the Cortex Advanced ALCMS provide a complete visual awareness of the Airside movements.

CORTEX ALCMS

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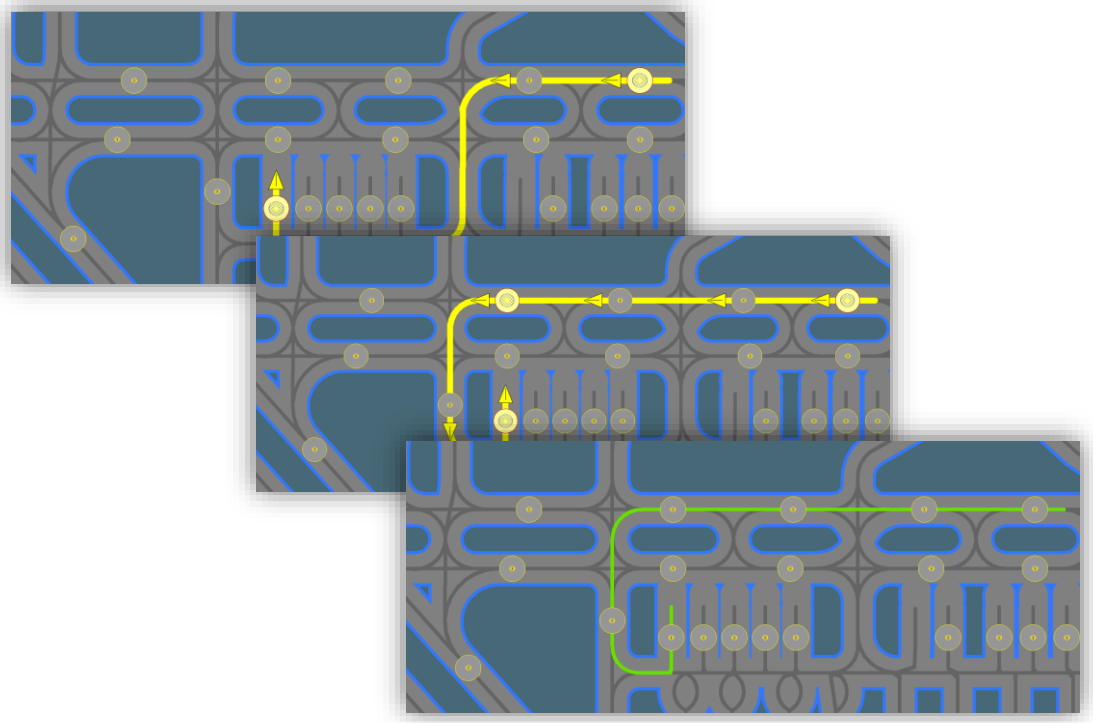
Advanced collective routing tool

A simple hotspots routing generators to generate collective guidance routes.
The best path is calculated "On the Fly" considering the actual Airport condition.



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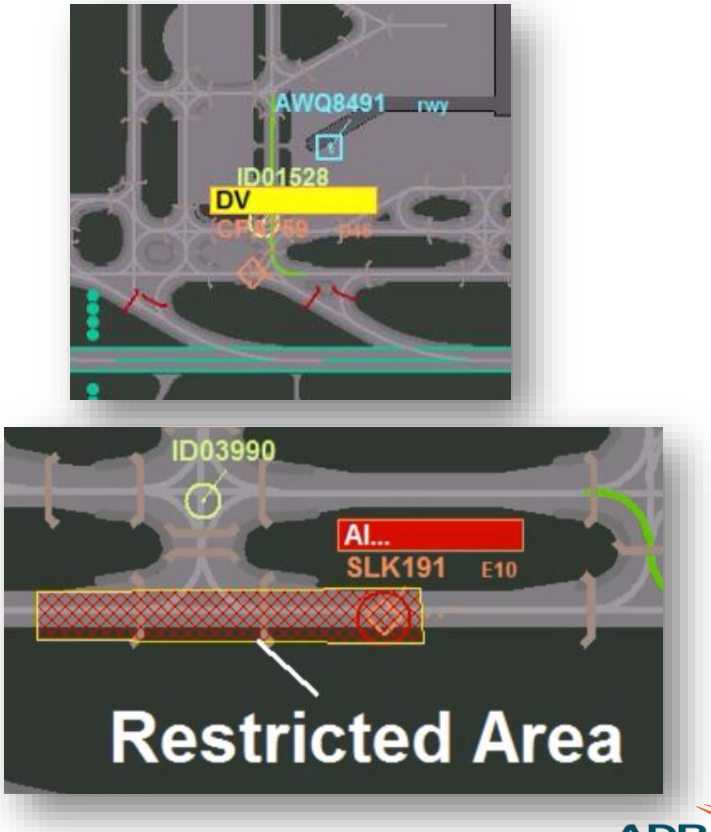
Advanced traffic alerts

The Cortex Advanced package provides within other advanced alerts:

- Route deviation alerts for guided Aircrafts.
- Restricted Area Infrigment.



Some Major References

- Schiphol International Airport
- Abu Dhabi International Airport
- Doha International Airport
- Istanbul New Airport
- Arlanda international Airport
- Helsinki International Airport
- Kuwait international Airport
- Rome International Airport
- Mumbai International Airport
- Bangalore International Airport
- Jeddah International Airport
- Melbourne Australia
- Bangkok International Airport (ongoing)
- Western Sydney (ongoing)

AIRSIDE 4.0

AIRSIDE 4.0

1910
Mechanization, Steam Power Weaving

Gooseneck Flares used kerosene to beacon the way for pilots to identify a landing strip

Airside 1.0

1920
Mass Production, Assembly Line, Electrical Energy

The transition from beaconing to signaling with lighting patterns and color coding emerging for pilots to safely land in varying weather and visual conditions

Airside 2.0

1969
Automation, Computers & Electronics

Led to the development of concepts like ASMGCS leveraging IT to control and monitor airfield assets to support greater safety and efficiency

Airside 3.0

2022
Internet of Things, Networks, Cyber-Physical-Systems

Utilizing the collection of physical and digital components that are integrated with each other to operate a process safely and efficiently

Airside 4.0

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End to End presence at the Airside

1 Airfield Power
Constant Current Regulators, Advanced Power Supply (APS) and Switchgear Regulator Systems (SGRS) Power Solutions

Airfield Lighting
Intelligent Airfield Lighting, Guidance Signs and Approach Systems

Weather
Automated Weather Observation System (AWOS)

2 A-VDGS
Advanced Visual Docking Guidance Systems

Apron Lighting
High Mast LED Apron Lighting

Apron Management
Apron Management Applications

3 Tower ICWP
Integrated Controller Working Position (ICWP)

ALCMS
Airfield Lighting Control and Monitoring System

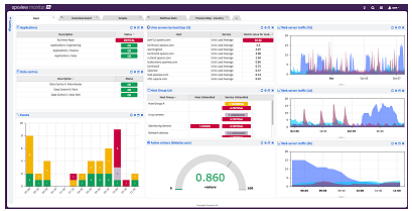
4 Cortex Cloud
Internet of Things (IoT) Data Ingestion, Processing and Analytics

CORTEX ALCMS supports AIRSIDE CLOUD

On Premise

CORTEX ALCMS

Secured Cloud GWY



On Cloud

POWER

LINC360
AXON

CORTEX Cloud technologies
- Dashboard
- Data Analytics
- Preventive Maintenance
- IoT

CORTEX ALCMS

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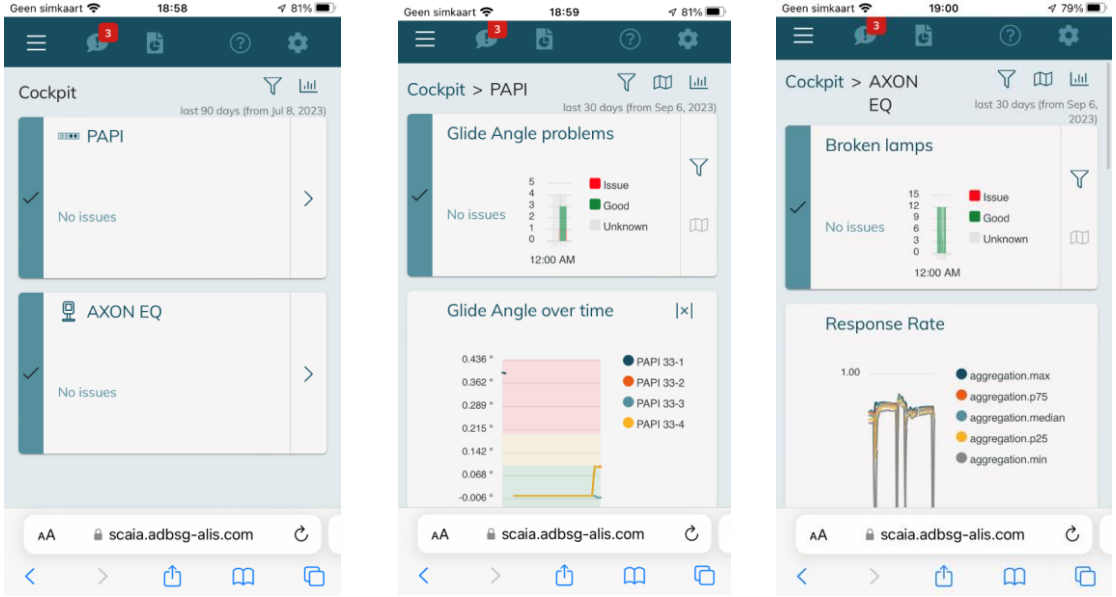
Enabled to be Action Oriented

Mobile monitoring App (Android & iPhone)



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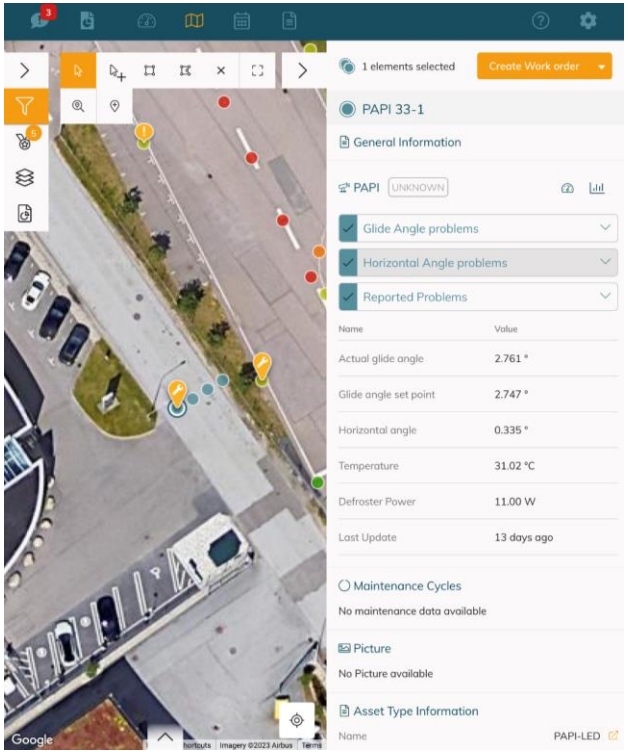
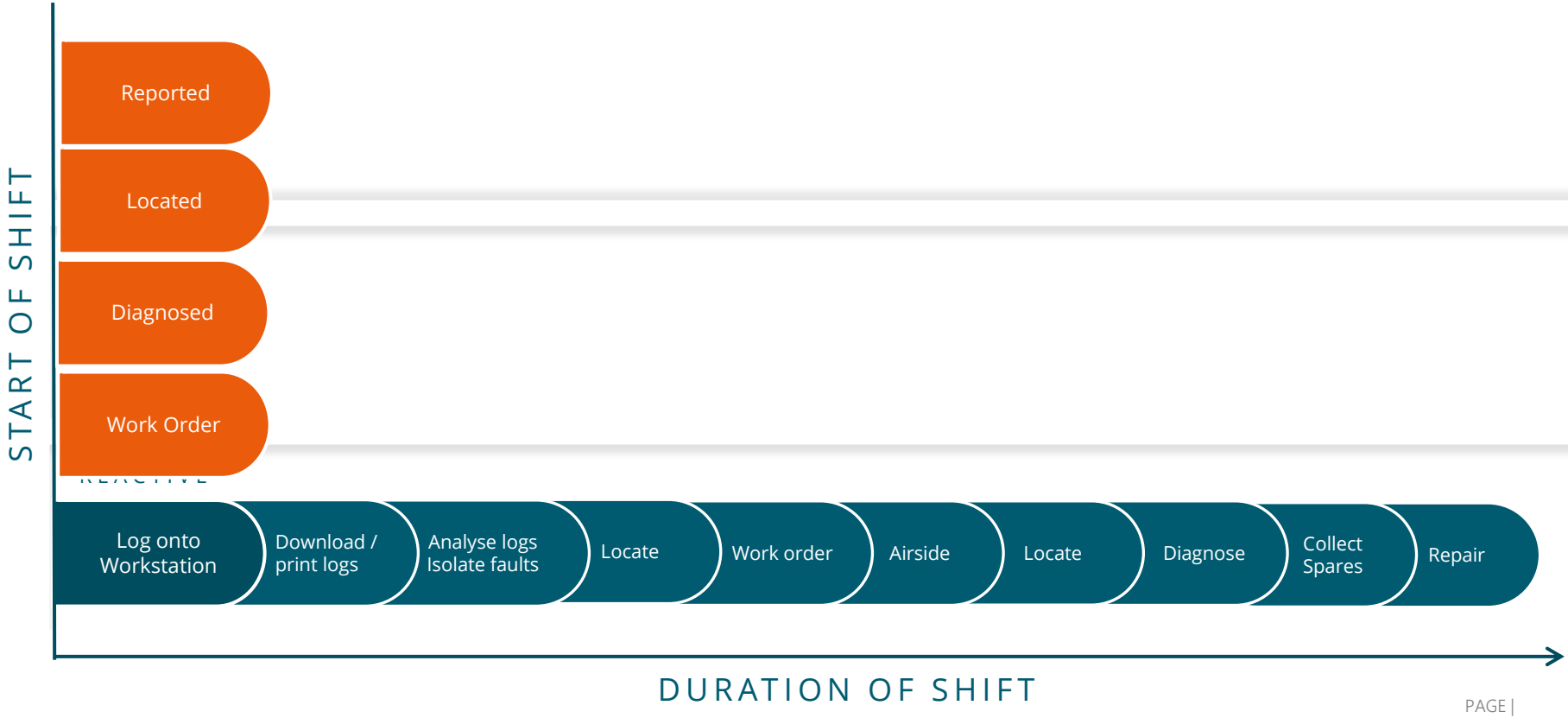


Traditional Maintenance vs Advanced Intelligent



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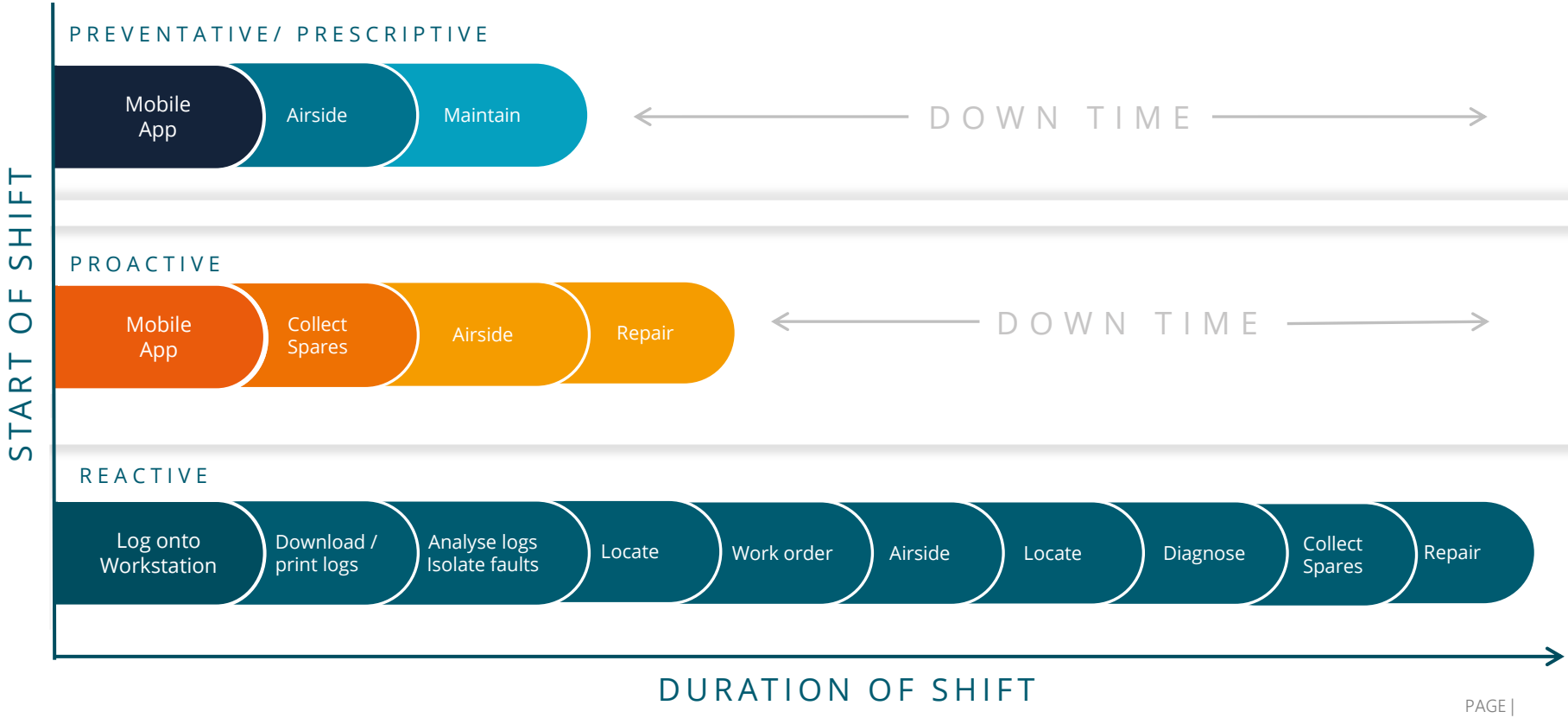

AIRSIDE4.0 The Future

As our IoT devices are deployed and gather data, we anticipate discovering additional use cases that we haven't considered yet. These potential discoveries may arise from:

USER FEEDBACK

TECHNOLOGICAL ADVANCEMENT

DATA ANALYSIS

Executive Summary

- Modular architecture complying with majority of tenders for an affordable investment.
- Cyber Security ready and addressing major threats.
- Flexible user interface with several possible look and feel capabilities.
- Business oriented Software ensuring fast and reliable operations following Regulation Bodies expectations.
- Continuous development of new functionalities to support future expectations, AGL products and operational concepts.
- Next generation of ALCMS paving the route to our AIRSIDE 4.0 strategy.

THANK YOU

for your attention

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