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Airport Operations Centre & A-CDM

... Tear Down the Walls

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Agenda

- Considerations when planning an airport operations centre
- Identification of internal, external and remote stakeholders (and the ones you miss)
- Creating individual business cases for each stakeholder
- Mission critical: it's not what you expect

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The Project

- Real Case: A remote Airport Operations Center (APOC) to manage **multiple** airport in a group.
- Advantage: Using the same idea as "remote tower", managing airports that often are interconnected.
- Application of basic Arrival and Departure Planning, considering heavy winter conditions for usually six months/year.
- Strong Expectations. Realistic?



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Stakeholders



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Stakeholders

The improvements have been demanded by local dominating (hub) carrier

Air Traffic Control:

- ✈ NMOC not A-CDM ready
- ✈ Local ATC considered bottleneck
- ✈ First come – first served = Very long departure queues, unnecessary delays, chaos on the taxi-way causing further problem

Airlines

- ✈ Large dominating carrier with based aircraft
- ✈ Evolving Hub Management
- ✈ OCC vs. APOC?

Airport Company / Ground Handling

- ✈ Ground handling is managed by airport subsidiary (internal stakeholder)
- ✈ Winter operations is managed by ground handler (internal stakeholder).
Using 100% CDF/Pad deicing

Additional Requirements

- A-CDM style milestone management with external status feed
- Departure Management: Deicing as a Resource
- Secure high speed, Airports-to-Center IT-Network
- Industry Standard Communication
- Expectation: 100% Uptime (full Fallback)
- Using Existing Technologies...



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Additional Requirements

Based on ideas gained from initial looks at A-CDM, the airport has added additional requirements that were later decided to be taken into the common requirements for the overall development and to be addressed later.

A main requirement was by the airport's IT department to develop everything in-house, which is simply not reasonable as they neither have the know-how, nor the access to the IT systems in question.

Expectations



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Expectations

Very typical expectations airport executives voice when discussing A-CDM developments are rather unrealistic.

100% uptime of the technology and 100% on-time operations, improvement on apron and taxi-way situation, substantial and immediate cost savings, operational improvements. Holodeck like virtual reality and a complete, instant and flawless situational awareness including understanding of the future.

All that with microscopic changes, use existing processes and technologies. A Panacea, a cure-all for all existing problems. At virtually no cost and especially no to very little investment.

That these expectations as such have nothing to do with reality is clear, but it must be addressed! Everything *is* possible. But it comes with a price tag...

Kick-Off

EXPECTATION:

- Identifying the Status Quo
 - Processes in place (workflow + data)
 - Software used. Age, use, effects.
 - Interfaces?

- Definition of the Common Goal
 - Common situational awareness
 - New Processes + Workflow
 - IT supporting automatic response to adverse situations (IT workflow + automatic check-lists)



PANACEA

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Kick-Off

During the kick-off meeting, the agenda was to identify the status quo and define the common goal and timeline.

It became immediately evident that the stakeholders expected a panacea, preferably at no cost and not touching the existing infrastructure and processes.

Questions identified in the event already exceeded the understanding of the participating stakeholders. Which did not then include representatives of the airlines aside the hub carrier or any ground handlers, nor secondary stakeholders like ATC or border security.

Reality Check



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The Reality Check

... immediately confirmed the use of outdated technology (partially older than 20 years!).

It also showed that the stakeholders themselves had not been prepared to collaborate but the common idea was to extend the own control to the others but not relinquish any of the own control or provide the means of sophisticated interfaces to share data.

No sharing mindset!

Existing Tools were identified old, outdated (10-20 years!) and without necessary interfaces being Silo solutions.

Questioned, the participating stakeholders admitted virtually no communication inside the stakeholders hierarchies, application of the Blame Game: It's always the others "responsible" for the problems. Uncoordinated "counter measures" known to be worsening the situation.

Adding more stakeholders in the process faced immediate opposition, though was later agreed to be a necessity.

Key Issues

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Key Issues

Initial discussions led to the question about who should, could and would have a seat in the “stakeholder meetings”. Especially, how to manage the ones who were deemed “unnecessary”.

The psychological aspect to allow one in and the other one out was identified as highly political, as such a top priority became the need to identify and manage the stakeholders as well as the “non-participants”.

As a side issue of this, it was identified that certain stake-holders were expected to play a false game, by seeking own benefit and undermine the goals of the development. That included expressly internal and external stake-holders, including the core group attending the kick-off event.

Another issue was to specify space availability and requirements for a central airport operations center managing multiple airports from a central location.

Initially meant to be at one of the airport with visual access to the apron, it was quickly clear that only a downtown location would make sense.

Key Issue: Space

Stakeholder Mapping The Power Interest Matrix

POWER	KEEP SATISFIED	KEY PLAYERS
	MINIMAL EFFORT	KEEP INFORMED
		LEVEL OF INTEREST

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With limited space at the airport to allow for the necessary infrastructure beyond the mere “control room”, it was quickly understood that space was to be a major constraint.

With more than 300 “managers” initially specified at the five airports in question as well as the central airport operator’s head office (off-airport), a small center, requiring much stronger filtering. A Mapping into a matrix helped to identify the “really necessary” stakeholders for such a space restricted center.

APOC Case Study

Central APOC

+2500 workers
+300 “managers”
5 Airports / Locations

Window To Apron Window

Video Wall

Ground 1 Handling Ground 2 Handling Ground 3 Handling Stand / Gate Mngmt Terminal Mngr

Deicing Coord Follow Me + Busses Airline 1 OCCrep Airline 2 OCCrep Airlines Liaison

Airport 1 Liaison Airport 2 Liaison Airport 3 Liaison Apt 4+5 Liaison

Center Management (2x) ATC Apron Security / Border Control Gov Liaison

Security Door Service Room

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Following the decision on which functions were expected in the Central Control Center (customer called it CCC), the software needed for each working position got defined.

That point is still in the process of decision making as several of the intended, in use software solutions have not yet confirmed their ability to be used in such an environment and very frequently the software is not ready to be integrated into such a working environment, only having interfaced to other solutions from the same software provider or to a limited number of other, proprietary solutions.

The airport operator’s approach to enable seamless links between all stakeholders for all vital data at this time is stalled thanks to software silos from the stakeholders, as well as the major players, commercial and administrative alike. The airport operator decided to start the development of the center, understanding the limitations of today’s technology and the administrative, commercial and technical silos.

APOC Room Layout



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APOC Room Layout

As shown here, an initial APOC design based on an available “office wing” enables access to all three “vital” rooms only available through the APOC.

An additional security door for the conference room is to the aisle.

A backup space is necessary as i.e. during winter ops or potential emergencies sometimes staff may have to overnight on-site and it was deemed vital to enable space within the secured area to avoid security contamination.

Technical Case Study



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Technical Case Study (work in progress)

Approving the space to develop a CCC at the initially suggested location, the main stakeholders had to confirm their agreement (two months targeted, in the end four needed).

As soon as the CCC-positions were approved, we could start developing first plans for the CCC, taking into account space as well as technological requirements, options and possibilities.

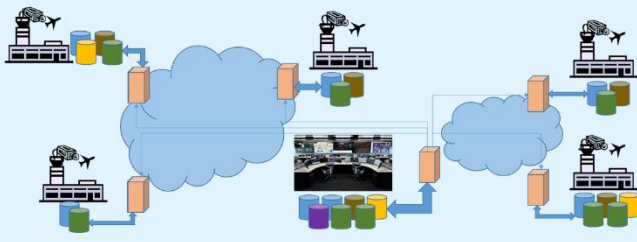
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The airport operator’s approach to enable seamless links between all stakeholders for all vital data at this time is stalled thanks to software silos from the specialists, as well as the major players, commercial and administrative alike.

The airport operator nevertheless meanwhile decided to start the development of the center, understanding the limitations of today’s technology and the administrative, commercial and technical silos.

“You have to start or you will never move”.

Technical Case Study



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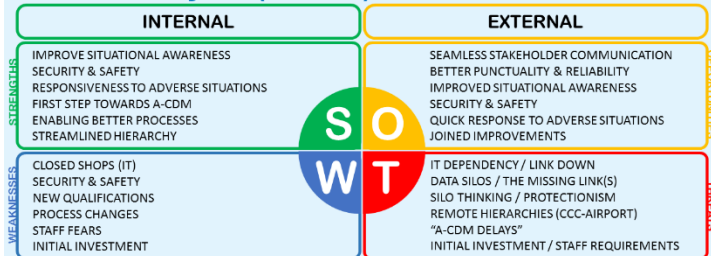
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A major setback

Another mission critical bottleneck was identified as for all locations, there was but a single existing data “cable” from the national Telco-network to the airport, as well as the head office as the CCC location. The (national) Telco to date has not confirmed the reliability of the own network connection within their “cloud” beyond 99%, the required 100% uptime being an issue. As the center was required a 24/7 no-outage operations, it was decided to plan the vital systems with a fully mirrored backup plus a separate test system on site, plus backups at each airport location for the vital data.

Further the investment to establish physically independent back-up data links to support not just voice but full video bandwidth from each airport to the CCC was approved.

SWOT Analysis (extract)



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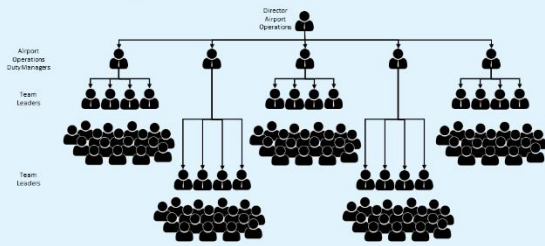
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SWOT Analysis

Following the initial work on the Technical Case Study and functional specification and requirements document, the (meanwhile grown) working group worked out a SWOT analysis as part of the management summary required.

This is an extract of the SWOT analysis originally compiled in a brain storming together with the airport operator and the working group.

Streamlining the Hierarchies



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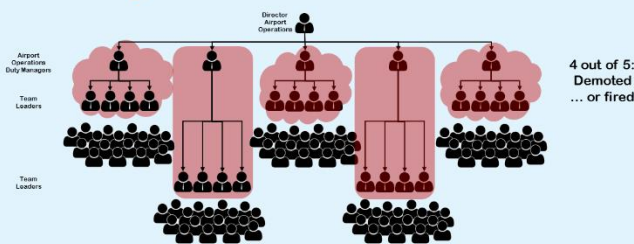
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Streamlining the Hierarchies

Showing on the next three slides is a visualization of the stakeholders originally intended CCC staff structure and it's place in the hierarchy. This original hierarchy was intentionally kept flat to speed up decision making processes.

As part of the work in progress, we quickly identified an unnecessary overhead in the third main level, where each airport was meant to have a representative in the CCC who then was supposed to work with the respective airports.

Streamlining the Hierarchies



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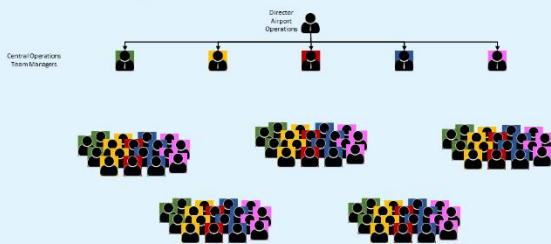
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Instead it was quickly deemed necessary (not just nice to have but a necessity) to replace the old airport-focused structure by a functional one. With the CCC getting directional authorization over all airports, four out of five functions out of that level alone were understood to become obsolete.

This caused a major and time-consuming discussion to overcome pre-designated assignments, a highly political issue, causing major loss of time and many meetings to put oil on the troubled waters.

Streamlining the Hierarchies



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A lesson learned: This is a very important example and lesson learned by the stakeholders:

Fear of job loss is a reality. Streamlining the processes and hierarchies with a focus on flat reporting structures logically results in higher efficiency and the chance that existing processes and routine works become obsolete.

As such it becomes vital to understand the fears to be valid and the need of change management to consider severance schemes to give everyone "a future". As such, HR has to be part of the work groups.

Mission Critical

- Link Down Fall Back
- Technology – mainly: Seamless Interfaces between the different software solutions.
- Personal emotions opposing the project
- Emotional USP for **all** stake holders
- Severance Scheme – some stakeholders rendering themselves obsolete!
- Carrot and a Stick, Benefits and Penalty



During phase 1 of the CCC specification work, the main problems turned out to be to overcome “unexpected” technological shortcomings, faced as missing or insufficient interfaces between the tools of the different stakeholders. In fact very often the tools have not been built to allow seamless communication as needed to support APOC processes.

The national Telco’s inability to provide fail-save connectivity is met by likewise “limitations” of other providers that were originally deemed an alternative but that were found to also use the national Telco’s last mile.

The understanding of the stakeholders, even at that early a phase has proven to be a major cause for ongoing delays. Airline management being more focused to require permanent prioritization of “their” flights, the look at their micro cosmos instead of the greater picture. As such, ongoing work specifies the emotional USP, case scenarios and preparation of training sessions to convince the stakeholders not only on local but on a senior management level of understanding that was considered “existing”.

ACI/CANSO promoting A-CDM as “strategic” obviously has not yet resulted in the stakeholders understanding of A-CDM (often in fact there is misperception of A-CDM if there is any understanding of the concept(s) at all.

Summary: Tear Down the Walls

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Summary

Three issues we found to be vital for the success to start such a project:

1. A sound reality check (hire a “neutral” from outside!)
2. Software Interfaces.

It is vital to tear down the walls between software silos. Not limited to the ones between the stakeholders. It is surprising, how many data silos existed within each and every of the stakeholders companies!

Tear down those walls!

3. Silo Thinking

Such a project is not a singular effort, but it’s a journey. Trying to break down the prejudices, protectionism and small-minded, self-centered thinking to achieve a real collaboration and sharing of ideas, processes, risks, investments and tasks is clearly a strategic necessity, but very hard on many managers and decision makers. To let go. And to ***tear down those walls!***

THANK YOU

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