Aeronautical Meteorological Service Provision

Governance and Business Models

“the times, they are changing”

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Aeronautical Meteorological Service Provision:

- Governance
- Business models
- Cost recovery
- Meteorological core infrastructure
Governance of aeronautical meteorological services

Regulatory framework by ‘sister’ UN agencies ICAO and WMO

Basis for Member countries to establish their national service provision programs in a highly coordinated and interoperable manner.

Note: Member countries and as such not only the NMHS
• Annexes to the Chicago Convention containing Standards, Recommended Practices and guidance material
• Documents containing Specific Regional procedures, facilities, services etc.
  • Regional Supplementary Procedures
  • Air Navigation Plans (Basic Plan & FASID)
  • Regional guides
• Documents containing detailed guidance on a specific subjects
  • Global Manuals
  • Regional guides
• Technical Regulations containing Standards, Recommended Practices and guidance material
• Manuals containing specific details, practices & procedures
• Guides & Technical documentation containing (detailed) guidance on specific subjects
• Quality Management System (QMS)

• Competency Assessment for aeronautical meteorological personnel

• Safety Management (SMS) → different views → at least a Management System has to be in place
• Single European Sky (SES)

• Certification and designation of Air Navigation Service Provider (ANSP) for Meteorology (or MET ANSP)

• Function separation → transparency, checks and balances
  • Regulator
  • Oversight
  • Service Provision

European rule making and oversight:
• So far so good! Nothing to worry about, or not?

• SES II+ unbundling support services → from monopoly provider to normal procurement rules and transparent selection

• ICAO GANP/ASBU

• Introduction of ICAO RHAWCs

• FABs – pan-European service provision

• Fragmentation and duplication

• Cost reduction targets RP2 ~2,5% per year

  Note: focus as well on added value of meteorological services to aviation, in line with SES II+ customer focus

• What about business models and cost recovery?

• Let us look at the current situation → EUMETNET
• Grouping of 34 European National Meteorological Services

• WG AVIMET – MET ANSPs

• Aviation survey – preliminary results
Provider(s) of aeronautical MET Service Provision in your State & organization type?

**MET ANSP part of:**

- NMHS 70%
- ATM 30%

- 22 MET ANSPs are part of the National Meteorological Institute (NMS)
- 10 MET ANSPs are part of the ATS ANSP (Austria, Belgium, Bulgaria, Croatia, Luxembourg, Malta, Romania, Serbia, Montenegro, FYROM)
- 1 not known
ICAO regulated services, based on ICAO Annex 3, can be categorized in the following functions:

<table>
<thead>
<tr>
<th>Function</th>
<th>Abbreviation</th>
<th>Example of provided products</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Area Forecast Centre</td>
<td>WAFC</td>
<td>Gridded global forecasts</td>
</tr>
<tr>
<td>Tropical Cyclone Advisory Centre</td>
<td>TCAC</td>
<td>Advisory information</td>
</tr>
<tr>
<td>Volcanic Ash Advisory Centre</td>
<td>VAAC</td>
<td>Advisory information</td>
</tr>
<tr>
<td>Meteorological Watch Office</td>
<td>MWO</td>
<td>AIRMET/SIGMET, Area forecasts</td>
</tr>
<tr>
<td>Aerodrome Meteorological Office</td>
<td>AMO</td>
<td>TAF, TREND, warnings</td>
</tr>
<tr>
<td>Aeronautical Meteorological Station</td>
<td>AMS</td>
<td>(AUTO) METAR, local routine and special reports</td>
</tr>
</tbody>
</table>
- There is no organization providing all functions.

- France (MF) provides all functions but without WAFC.

- UK (UKMO) provides all functions but without AMS and TCAC.

- 11 organizations provide all the AMS, AMO and MWO functions in their country. No mention is made of a military service.

- 12 organizations provide all the AMS, AMO and MWO functions in their country. The Military also provides AMS and AMO services.

- 4 organizations provide all the AMO and MWO functions in their country.

- Luxembourg provides the AMS and AMO functions.
In some States several ICAO Annex 3 functions are (also) provided by other entities:

- In the UK the AMS function is being provided by aerodromes and ATS ANSP. In Sweden AMS function is also being provided by aerodromes, ATS ANSP and Military.

- In Denmark, Estonia, Ireland, Czech Republic and Finland the AMS function is also being provided by Aerodromes.

- In Belgium, Czech Republic, Finland, Germany, Netherlands, Poland, France, Sweden and Portugal the Military also provides AMS and AMO services.

- In Norway, Hungary and Latvia the AMS function is also being provided by the ATS ANSP.
To summarize, ICAO regulated services are provided by several types of organizations:

- NMHS
- ATS ANSP
- Aerodrome operator

In a country it can either be one or multiple organizations providing the services. All of these organizations can be commercial or non-commercial.

- Military

- Private companies (commercial)
  - SES II+: *meteorological services could be organised under market conditions.... ensuring a high level of safety...*

- Conclusion: already today a complex landscape of different organizations providing several ICAO regulated functions

- Commercial services beyond ICAO regulated services are not taken into account
Meteorological service provision can be cost recovered via en-route and terminal charges.

- More than 50% of Members have a 100% cost recovery system in place based on determined costs.
- For 5 Members the cost recovery is less than 100% and ranges from 55/65% and 80/90%.
- For 9 Members the cost recovery percentage is unknown.
- Note that in Finland observations are not cost recovered.

Conclusion: cost recovery based on determined costs is in place, but at least in 15% of the countries not all costs are being recovered.
Satellite costs in Europe: EUMETSAT

Expenditure in 2014: M€ 338

Financed by Member States
Satellite costs allocated to aviation

- Allocation is not known for 15 Members.
- One Member pays for the catalogue costs of the data only.
- The allocation ranges from 0% (Open Data) till 55% and shows a significant spread.
- Let us suppose that, based on these figures, 10% of EUMETSAT costs is allocated to aviation. That results in an annual cost of 34 M€ in the overall cost base of MET Service Provision.
- The annual EUMETSAT costs of 338 M€, and the foreseen increase related to MTG, have a significant impact on the costs of aeronautical meteorological service provision.
Infrastructure costs - a few thoughts

Satellite costs (EUMETSAT) are allocated to aviation, a few questions:

- Allowed? Yes, fair share of core costs can be allocated to users. (see WMO Doc. 904)
- Fair share? (variety in approaches ranging from 0% till 55%)
- Are aviation users annually consulted on these costs?
- Do aviation users have a say in the governance of EUMETSAT?
- Are other user groups or transport modalities (equally) being charged?
- Is there a level playing field?
- What if a commercial service provider would provide the aviation services?
  - In that case the EUMETSAT Data Policy would apply
  - The amount would be the same for a provider for a FAB or pan-European service
  - But who picks up the bill for the Member State?

- What about weather radar, Numerical Weather Prediction capability, etcetera?
• En-route ANS costs SES States 2014 (prognosis): 6.640 M€ (in M€ 2009)
• MET costs (estimated 5% of En-route costs): 332 M€
• Total MET costs (estimated 80% En-route and 20% Terminal): 415 M€
• Suppose: EUMETSAT costs are not allocated to aviation
  • annual cost reduction of 34 M€ or 8%
  • enabler to achieve RP2 cost reduction target of 2.5%
  • opportunity to invest in SESAR deployment, new services for ATM, innovation etc.
Future Service Provision  KNMI perspective

Cooperation

↓

Harmonization of services

↓

Development of new common services

↓

Standardization of services

↓

Centralization of services

Niche solutions by Service Providers

Cost containment and improved added value
Conclusions

- Complex MET ANSP landscape
- Not all costs of MET ANSPs are cost recovered
- Differences in cost allocation
- Allocation of core MET infrastructure to aviation service provision is becoming under pressure
- Annual RP2 Performance cost reduction target of 2.5%
- Change is on its way (SES II+, GANP/ASBU, SWIM, IWXXM, FABs, local, regional and sub-regional services, and so on)
- ECMA 2015 – an opportunity to shape the future
Thank you for your attention.

Questions?
Governance

ATM vs ANS

air navigation services

air traffic management

air traffic services

communication service

navigation service

surveillance service

meteorological service

aeronautical information service

navigation data services

airspace design services

airspace management

air traffic flow management

governing

task

market

need

offering

demand
Best practices KNMI

- Weather has a significant influence on the capacity of Mainport Schiphol and users demand better services and higher quality.

At the same time there is a continuous pressure on cost reduction.

As a result the Aviation Service Provision of KNMI is continuously developing and perceived as innovative.

- Recent developments:
  - Centralised forecasting office in De Bilt (weather room).
  - Meteorological Advisor Schiphol (MAS) present at ATC ops room in Schiphol Oost when it is expected that weather will have an impact on capacity.
  - Automated weather observations at Rotterdam The Hague Airport, Groningen Airport Eelde and Maastricht Aachen Airport, the so-called AUTO METAR system.
  - Introduction of probabilistic weather forecasts to deal with uncertainty and to be used in decision support systems.