Public Private Engagement - Private Perspective

MICHAL NAJ MAN member of the board of PRIMET CEO & Founder of METEOPRESS



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Presentation concept

- Introduction
- Business models in HWpurchase (Dr. Michael Staudinger)
- Private perspective on each BM
- PPE Case study ZAMG Meteopress (5 years of PPE)
- Controversial slides
- Appeasement slides







Introduction





METEOPRESS WEATHER RADARS & AI NOWCASTING

Meteopress's mission is to protect the people around the world against the effects of climate change and dangerous weather.

We offer innovative and top quality weather radars that are significantly more affordable than anything comparable on the market.

A disruptor in the radar industry, C-band, S-band, and Xband dual-polarization Doppler weather radars are the most important division of the company with more than 35 radars deployed in the last 7 years.



METEOPRESS WEATHER RADARS & AI NOWCASTING

Company facts:

- est. 1992 30 years of history
- 40+ highly skilled employees
 - 15 meteorologists
 - 10 HW&Radar developers
 - 10 SW&AI developers
- company principles:
 - Build-Measure-Learn
 - Innovate Or Die
 - Freedom: No Rules Rules











Business models



- **1. Fully public**: Fully State/NMHS owned and operated GBON infrastructure
- 2. Public-Private: State/NMHS owned and Private Partner operated
- 3. Public-Private: State/NMHS and Private Partner owned
- **4. Fully Private**: owned and operated by a private partner with a direct contract with the State/NMHS

Source: Dr. Michael Staudinger

Presentation at HydrometAFRICA 2022





Model 1: Fully State/NMHS owned and operated GBON infrastructure

- •State has full control of the hydromet services
- •System and data ownership as well as operation and maintenance lie with the NMHS
- •Single components of the observing system can be outsourced to the private sector
- •Private sector can access data for commercial purposes as per the GBON and WMO data policy conditions



Model 1: Fully State/NMHS owned and operated GBON infrastructure

Private Perspective:

Upsides:

- legal safety local legal framework & WMO Guidelines exist
- managerial safety proven model
- operational safety independence only light connection to the "health" of the Supplier

Downsides:

- waterfall approach requires genius & complex tender specs
- overpriced (price are inflated by suppliers and local integrators for safety and margins)
- high skill workers necessary (high costs on small networks)
- maintenance contracts expire (dozens of radars around the world not in operation)
- limited upgrades, extra costs for spares
- vendor lock-in (no open interchangeable formats manufacturers not motivated)
 PPE not possible

Model 2: State/NMHS owned – Private Partner operated

•NMHS is responsible for the design

•**Private partner constructs** and **operates** the basic observations infrastructure – fully publicly funded

•Private partner in charge of **operation and maintenance**

•Data ownership is with the State/NMHS, but data are in the public domain without usage fees

•Commercial use of data by the contracted partner is possible

•At the end of the contract, the NMHS is free to enter new types of contracts and might extend the operating and maintenance period with the contractor.



Model 2: State/NMHS owned – Private Partner operated - Private Perspective:

Upsides:

- legal safety local legal framework & WMO Guidelines exist
- operational safety (HW in the experienced hands)
- economies of scale (shared costs of maintenance personnel vs. travel costs)

Downsides:

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Model 3: State/NMHS and Private Partner owned

•NMHS and private partner jointly design the system (Design-Build-Operate)

•Private partner contributes to the initial investment.

- •Private partner contracts and operates the system.
- •Data ownership is with the private partner.

•State pays the private partner to make data available in the public domain free of charge.

After the contract ends, the ownership of the system is transferred to the NMHS. However, the NMHS is free to enter new types of contract after this period if resources are limited.



Model 3: State/NMHS and Private Partner co-owned - Private Perspective:

Upsides:

- agile (Build-Measure-Learn)
- lower cost of deployment & operation (Private motivated to build economically)
- long-term partnership, upgrades and operability
- economies of scale (maintenance, joint devs, spares)
- revenue sharing possible PPE!
- engages both groups Public & Private

Downsides:

- legal safety local legal framework & WMO Guidelines do not exist
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- connected to financial health of the supplier





Model 4: Fully owned and operated by a private partner

•The private partner builds, operates and owns the system.

•Data ownership is with the private partner.

•An agreement describes how the NMHS can access the data and allows usage of data in the public domain free of charge as per WMO data policy.

•Data can be used by the private partner to provide commercial services.



Model 4: Fully owned and operated by a private partner - Private Perspective:

Upsides:

- agile (Build-Measure-Learn)
- lowest cost of deployment & operation (Private motivated to build economically)
- flexibility and customer-supplier long term model (high-level SLA)
- long-term partnership, upgrades and operability
- economies of scale (maintenance, joint devs, spares) role fulfilled with
- revenue sharing possible PPE! (currently the future of business models in Private)
- engages both groups Public & Private

Downsides:

- cash-flow heavy on Supplier
- outside of the box approach / change of paradigms
- "critical infrastructure" country rules problem
- operational safety private partner can end contract
- managerial safety model being explored
- connected to financial health of the supplier





Case study: ZAMG & Meteopress PPE



ZAMG&Meteopress PPE



Radar Business model in a nutshell

AUSTRIA

Joint Radar network development

- shared interest
 - radar coverage of Austria
- shared costs
 - equal financial contribution
- shared results
 - data are shared equally

Benefits on both sides

Result for ZAMG:

- One C-band radar and three X-band radars network with 1-2 more planned for next 2-3 years.
- Total cost at 30 % of usual budget
 - 50:50 contribution
 - lower budget overall compared to known tenders
- Zero maintenance and operational exp. for ZAMG
- agile and gradual upgrades with very modest budgets

Benefits for Meteopress:

- data from Austrian Coverage
- joint R&Dand feedback
- future project expansion







Technical Aspects of the ZAMG Network

- Network consists of Meteopress C-band and Xband Solid-State weather radars based on one modular platform (upgradable)
- C-band 5kWSolid-State, 1 deg beam:
 - equivalent to 250kWmagnetron
 - low attenuation more data when it really matters
 - high quality data (incl. Dual-Pol., Doppler, ...)
 - ultralight construction 1deg beam antennas with weight below 750kg/1500lbs.
 - low power consumption, low infrastructure needs

X-band - 1.6 kWSolid-State, 1 deg beam All available as Meteopress RadarCrate



AI-REN: Radar Echo Nowcasting





-10 min

Example above: 2021-06-24 Tornado Situation - prediction & warning

AI-REN: Automatic Severe Storms Warning

Predicts radar cells with a defined reflectivity.

Prediction: position + probability





Next Stage - RadarCrate







Meteopress RadarCrate v1.0

- fully integrated solution
- no dependency on local energy or internet providers
- 2 standard shipping containers contain full radar solution including tower, security fence & cameras, power source, internet.
 operationable within 1 week from delivery



Island Electricity System

- Low Power Consumption = independency on local power supply
- Solar and wind power system fully capable of running the radar system
- Back-up batteries (UPS) possible to run the radar for up to 30 days without source of power
- Cost-effective and reliable under any condition
- Easy installation (3 day install)
- Low maintenance
- Sustainable solution with minimal ecological impact





Extras



Harsh realities of the radar business

- real tenders do not exist
 - ok, some might, but they are very very rare
- you pay double or triple the prices you should
 - innovation saves costs
- dissuasion of smart &brave state employees
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- adversity to innovation:
 - robust outdated technology preferred
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- barriers to business entry
 - references
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Result: Fewer RADARS - Less SAFETY- Lots of people left behind



Bureau of Meteorology Australia: Solid-State C-band



BOMAustralia: Comparison of Cappi 1500m:



Meteopress Solid-State C-band (2.5kW, 2.4m ant.)

Leonardo Meteor 1500 S-band (1000kW, 8.5m ant.)
Where is the UTOPIA- define the ideal of PPE



Be the Role Model



Only you can:

Enable innovation

Encourage people

Partner with Private

(find strengths and help the world together)





Be like Michael & Andreas (ZAMG) ♥







METEOPRESS

Radars & AI Nowcasting

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