ECMWF Data Services Future

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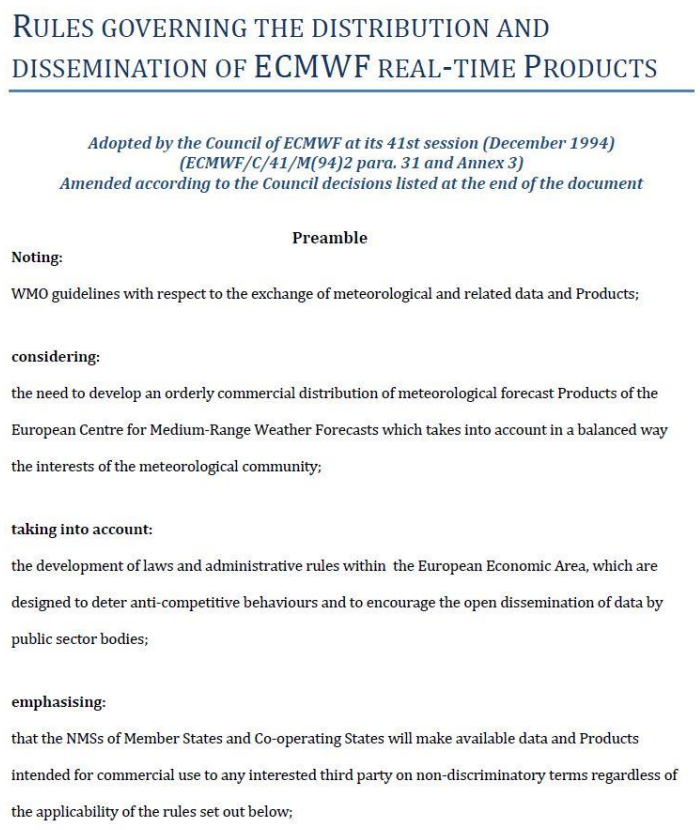
Outline

- Data policy developments
- Market developments
- Data delivery and its challenges
- Moving forwards

ECMWF data policy

- Current data policy has not fundamentally changed in more than 20 years
- We are revising rules for the distribution of real-time data, but it's more of a make over



RULES GOVERNING THE DISTRIBUTION AND DISSEMINATION OF ECMWF REAL-TIME PRODUCTS

Adopted by the Council of ECMWF at its 41st session (December 1994)
(ECMWF/C/41/M(94)2 para. 31 and Annex 3)
Amended according to the Council decisions listed at the end of the document

Preamble

Noting:

WMO guidelines with respect to the exchange of meteorological and related data and Products;

considering:

the need to develop an orderly commercial distribution of meteorological forecast Products of the European Centre for Medium-Range Weather Forecasts which takes into account in a balanced way the interests of the meteorological community;

taking into account:

the development of laws and administrative rules within the European Economic Area, which are designed to deter anti-competitive behaviours and to encourage the open dissemination of data by public sector bodies;

emphasising:

that the NMSs of Member States and Co-operating States will make available data and Products intended for commercial use to any interested third party on non-discriminatory terms regardless of the applicability of the rules set out below;

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ECMWF data policy: the assumptions

- Distribution of Value Added Services and original products is regulated
- When ECMWF was first established, the target was to recover 10% of the costs of the Centre through commercial applications
- Price is made of two components: information charge and handling charge

ECMWF data policy: price of data

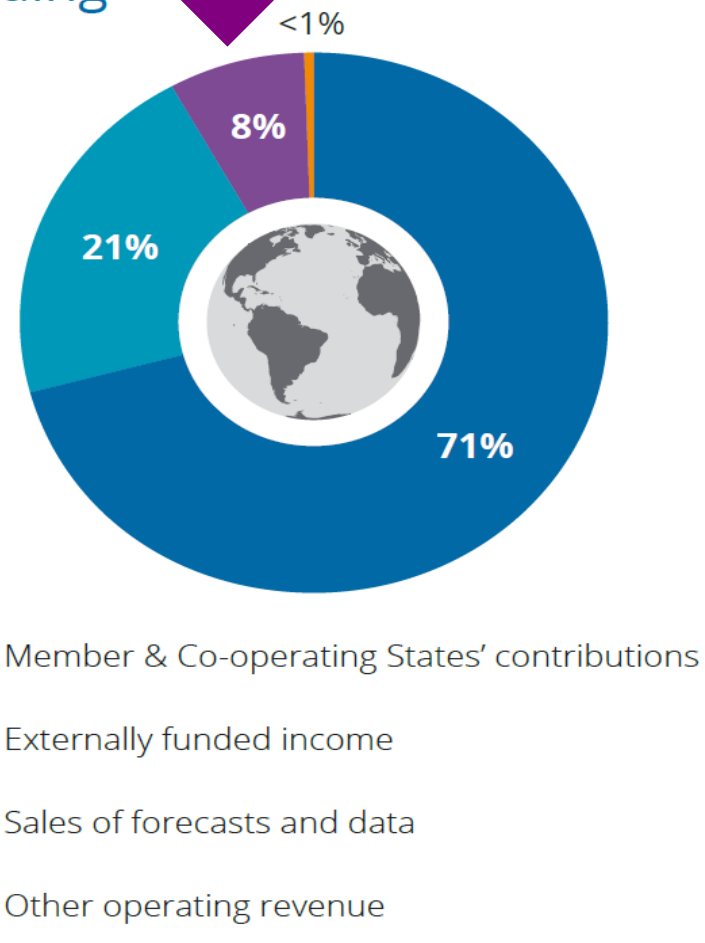
- Information charge based on a complicated formula, taking into account resolution, geographical area, type and number of meteorological fields
- Price increases rapidly. One global field at max resolution → **€ 140,000**
- Is a field at 0.1° resolution really worth ten times more than the same field at 1°? Why are forecast step all equally priced?
- To get a discount, a company needs to spend at least 1/9 of its turnover on ECMWF data alone
- Max charge subscription has become increasingly popular, thanks to inflation (price has not changed since 2004) and minimal bureaucracy

ECMWF data policy: sales and funding

Sales

Revenue from information charge only, excluding handling charge

Funding



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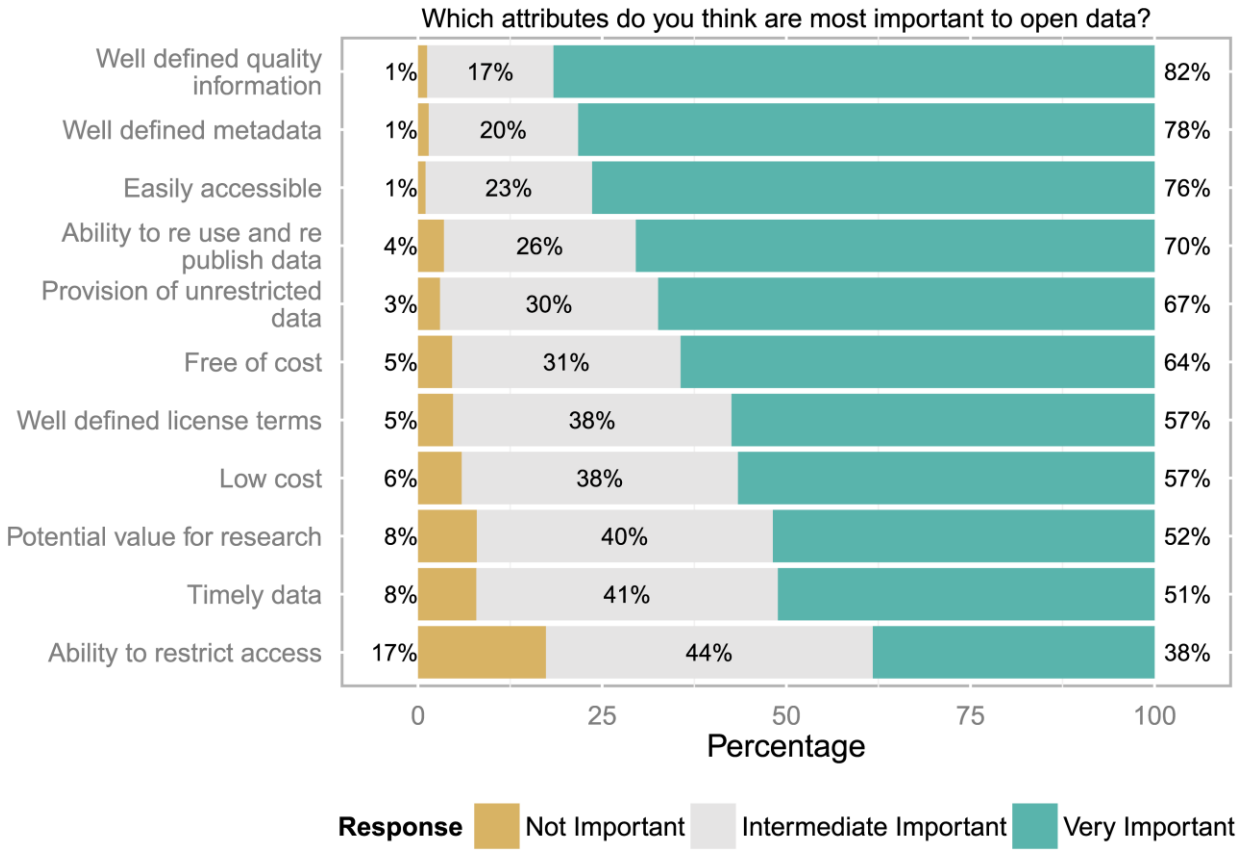
Data policy development: the EU PSI directive

- The 2013 PSI directive has been a game changer in Europe, by promoting re-use of public sector data and information
- It has been implemented at different speed in different Countries and possibly with different interpretations: data may be open and free, or provided at marginal cost or even provided above marginal cost

"The total income (...) from supplying and allowing re-use of documents over the appropriate accounting period shall not exceed the cost of collection, production, reproduction and dissemination, together with a reasonable return on investment"

- But is the "free of charge" aspect the most important one?

Data policy developments: what does “open” really mean?



Schmidt B, Gemeinholzer B, Treloar A (2016) Open Data in Global Environmental Research: The Belmont Forum’s Open Data Survey. PLoS ONE 11(1): e0146695. doi:10.1371/journal.pone.0146695

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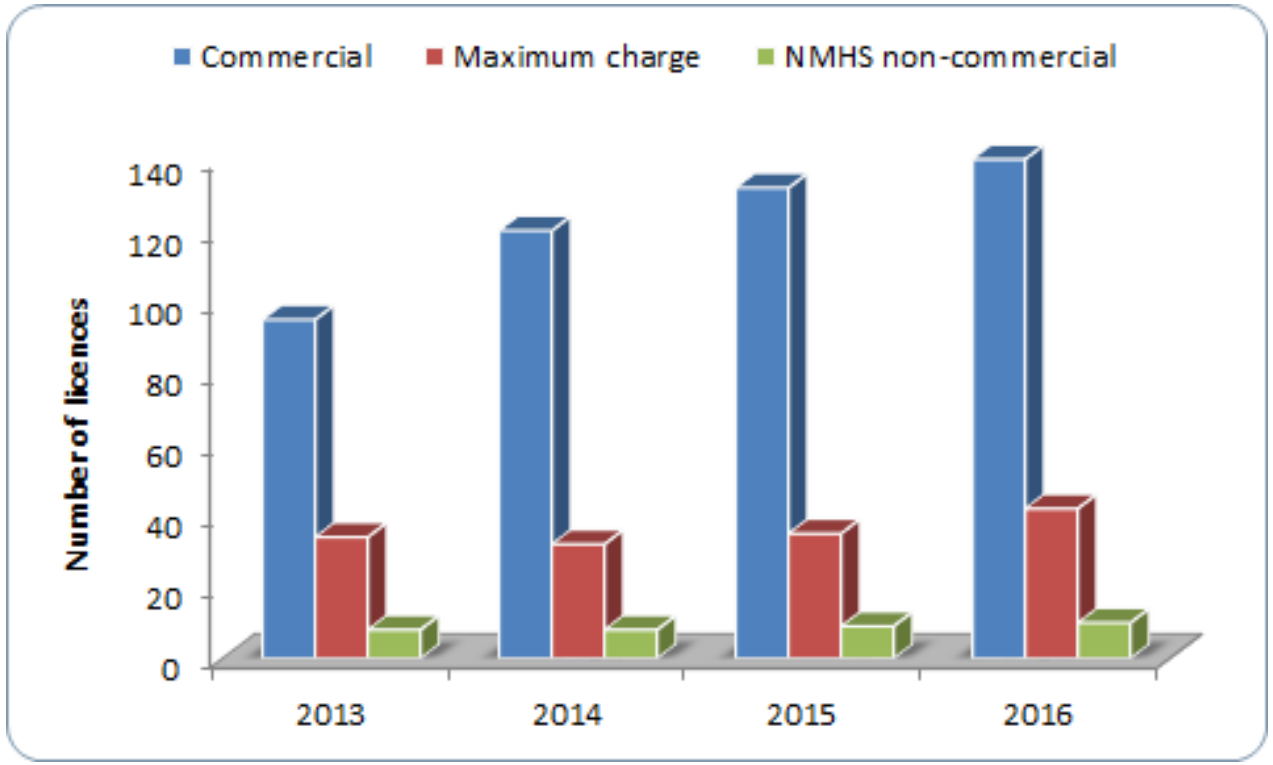
Market developments: number and type of customers



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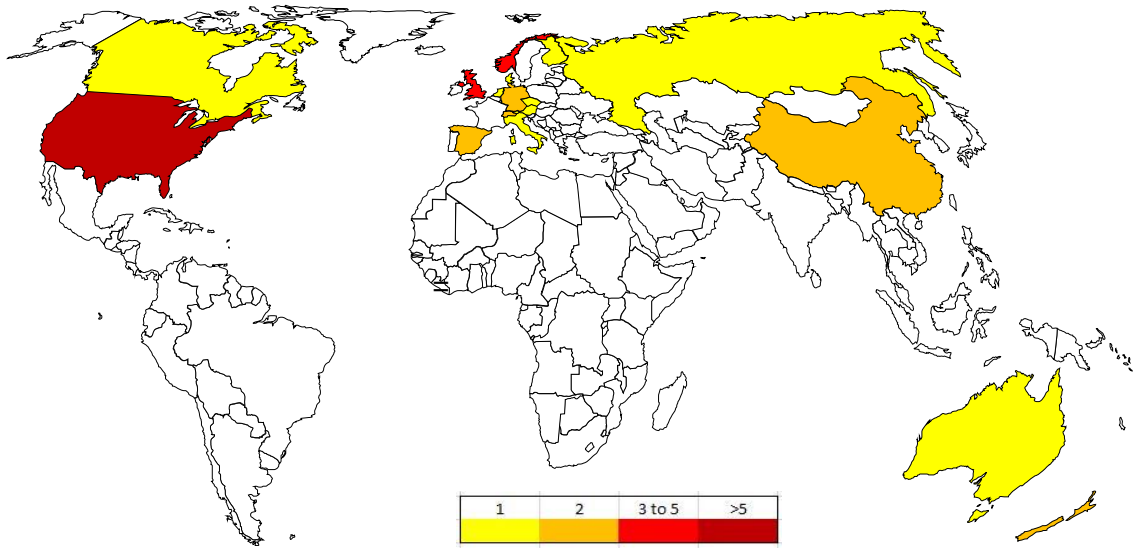
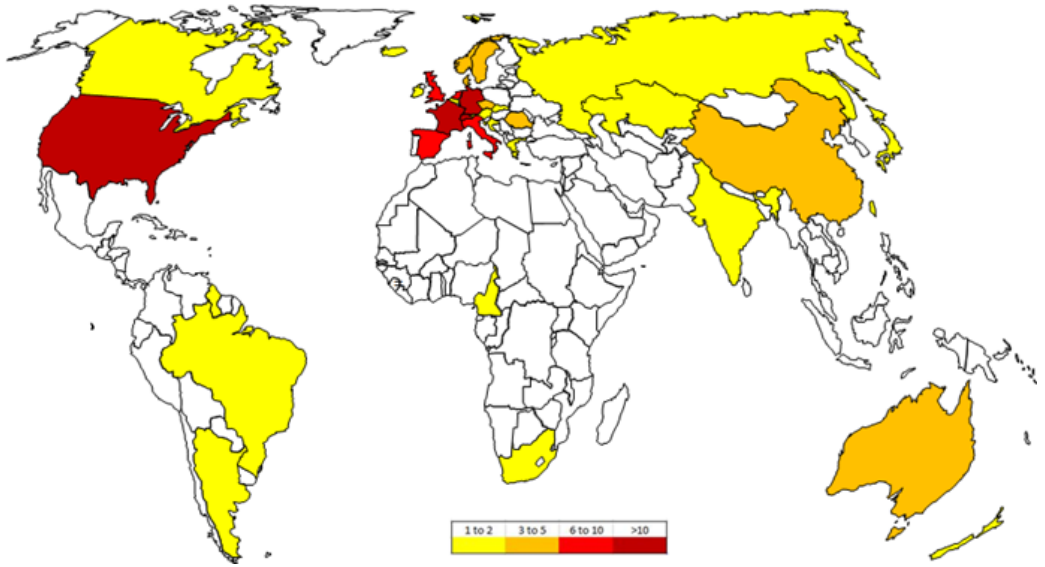
Market developments: where are the customers?



Maximum Charge Customers



Standard Commercial Customers

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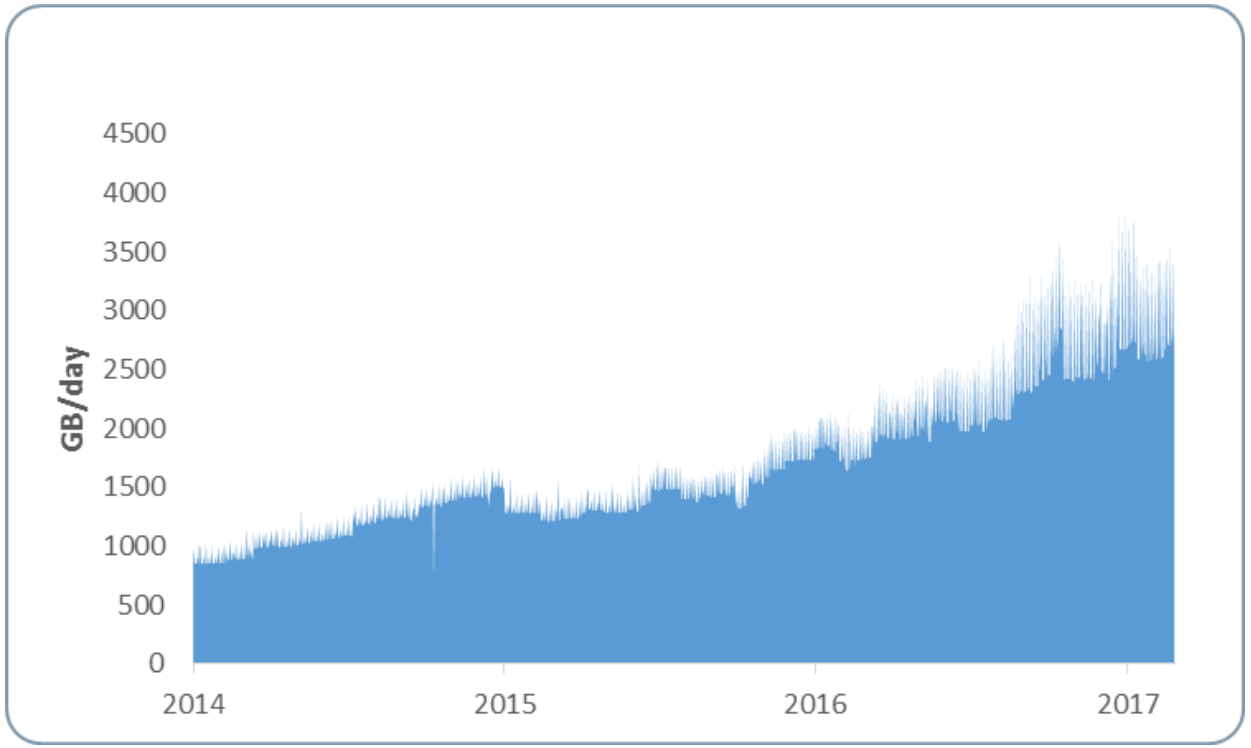
Market developments: volume of data distributed

- ECMWF currently produces between 25-35 TB/day of operational data



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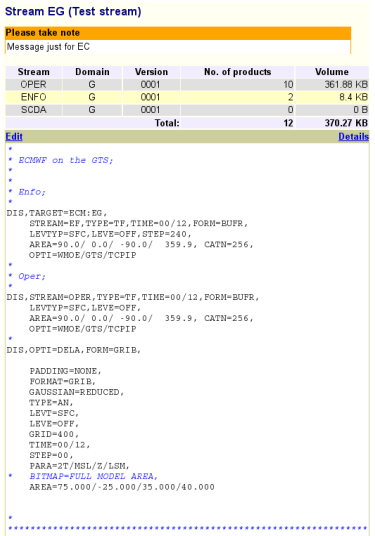
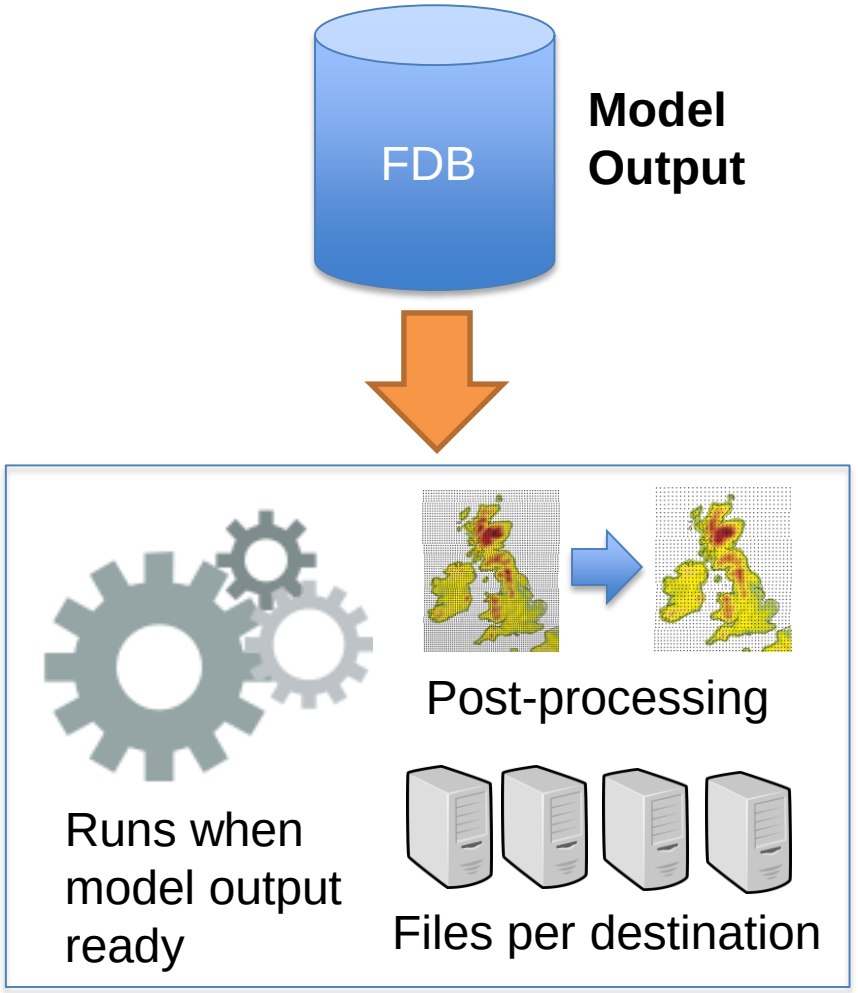
Data delivery and its challenges



Requirements Management



Product Generation

Product Delivery

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Data delivery and its challenges

- This architecture has worked successfully for a long time!
- Management of product requirements: limited to ECMWF analysts and expert users in Member States
- It does not implement automatically data policy restrictions
- Product requirements have to be defined before the Product Generation runs!

Moving forwards: a new Data Services model

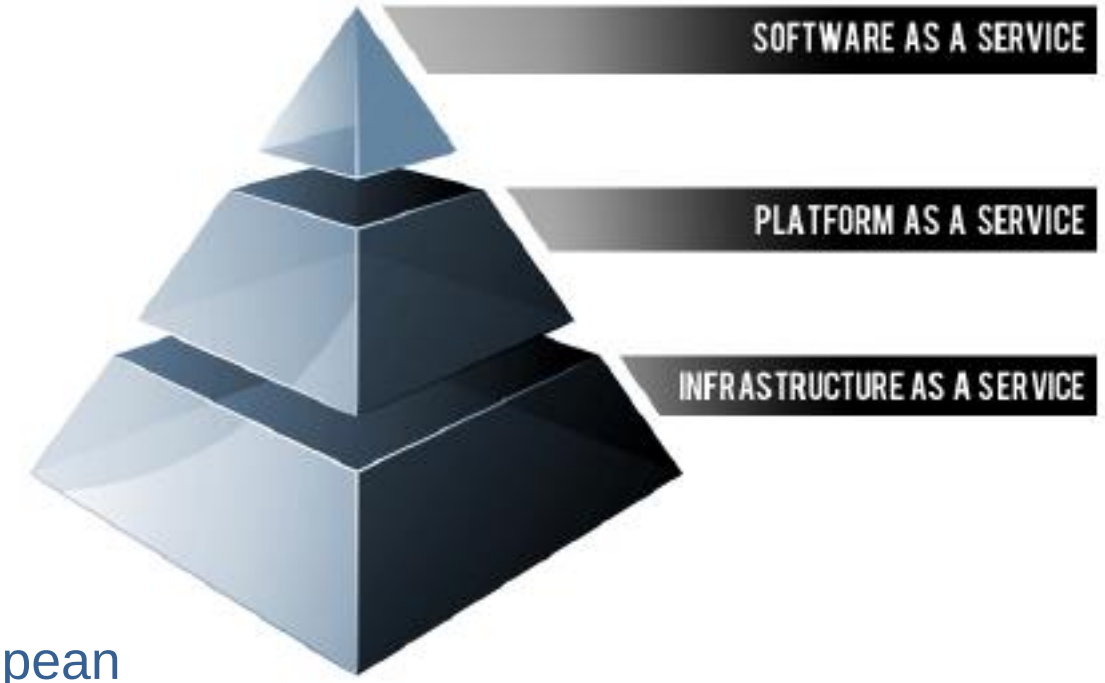
What should it be like?

- A model that still includes selection of tailored data
- Data selected and delivered outside of rigid dissemination schedules
- APIs for requesting data, which can be integrated into customers own applications
- Limit the transmission of large volumes of data over the internet
- Move to open data ... but do they have to be free of charge?
- Customers may still pay for the services provided (above marginal cost?)
- The pricing model could be based on the level of service, e.g. different levels of subscriptions based on data volume

Moving forwards: an infrastructure supporting the new model

Using Cloud Services? OK, but what does it really mean?

- Different types of Clouds:
  - Public
  - Private
  - Hybrid
- Different options:
  - Infrastructure as a Service
  - Platform as a Service
  - Software as a Service
- What does it mean:
  - For us?
  - For other players in the European Meteorological Infrastructure?
  - For the customers?



Moving forwards: a cloud based model

- Model 1
  - ECMWF customizes data locally, then damps products onto one or more public clouds ahead of the dissemination schedule
  - At dissemination time, data are already available from the clouds
  - Customers can move their operations to their cloud of choice, benefitting from transfers at LAN speed

Moving forwards: another cloud based model

- Model 2
  - ECMWF manages a private cloud
  - the cloud can be configured and tailored to suit ECMWF users demands
  - Customers can move their operations to the same cloud and can benefit from a tailored environment

Moving forwards: ...a Data Services strategy?

- The place we want to be in 5 years time
- How we get there, which may imply short-medium term changes
- Identify sustainable models for services we plan to provide
- Give ourselves a chance to experiment!
- Investigate the possibility of creating eco-systems of meteorological data, products and services with private companies and public agencies, particularly in Europe

Thank you

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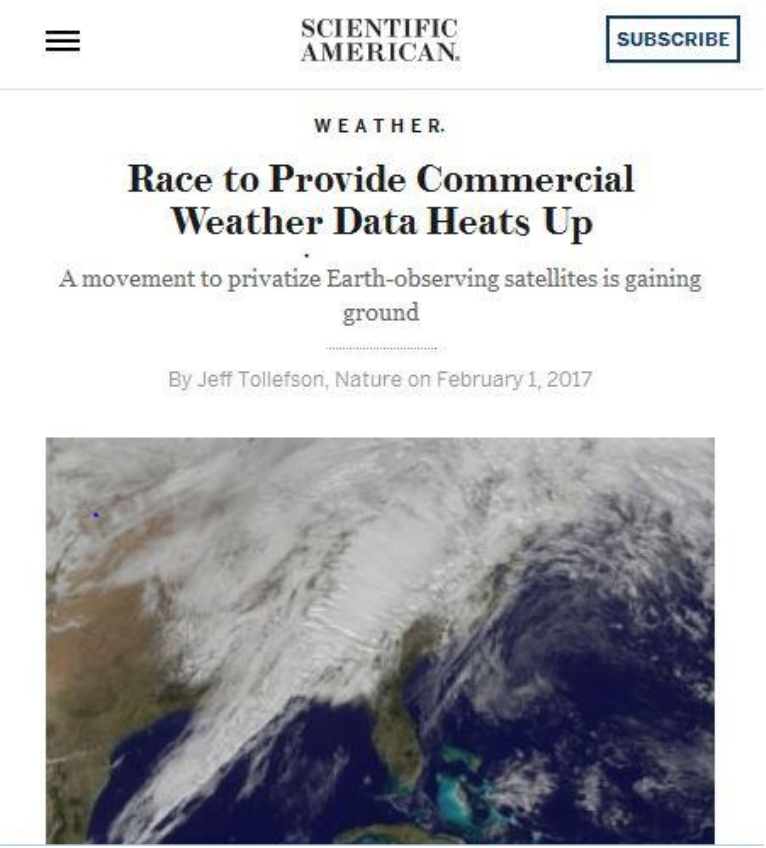
Moving forwards: data policy ... Free and Open?

"A looming question, however, is who will pay for the data. NOAA makes data from its weather satellites available at no cost, and agency officials have said that a World Meteorological Organization resolution would require them to do the same with commercial data that they receive [...]
The companies say that if NOAA were to purchase their data and give them away for free, it would have to pay enough to cover the firms' costs and ensure a profit. Or the companies could market the data independently to forecasting centres globally."


SCIENTIFIC AMERICAN.

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WEATHER.

Race to Provide Commercial Weather Data Heats Up

A movement to privatize Earth-observing satellites is gaining ground

By Jeff Tollefson, Nature on February 1, 2017

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