

WG2
Data Management and Visualisation



WG2 - Graphical Workstations and Data Management

- **Joint session: two years ago, the two working groups came with similar recommendations (i.e. investigate OGC standards)**
- **Google is providing users with very high expectations:**
 - They have access to very large amount
 - Response time are nearly instantaneous
- **Analysing/visualising large amount of meteorological data interactively**
 - What are the requirements from graphics/UI point of view
 - Features and functionalities
 - Usability and performance
 - How can data be organised to fulfil these requirement?

WG2 - Discussions - Outline

- **Cataloguing**
- **Performances**
- **Service Oriented Architecture**
- **Know your users**

Cataloguing and discovery

- **Need to publicise one's data and products.**
- **Also WMO mandate use of ISO19115, there does not seem to be a lot of uptake by the community**
- **Forecaster workstation could use GISC catalogue to provide forecaster with information about data availability for certain area of interest**
 - **This should be considered as a backup. Operations cannot be based on remote data only.**
- **CSW (Catalogue Service for Web, OGC – Hierarchical structure) should be considered for cataloguing ISO19115 records**

WG2 – Service Orientated Architecture

- **Front-end (UI) disconnected from backend.**
 - Can use high-end WS for visualisation
 - Can use cheap servers for data storage and rendering.
- **SOA allows staged migration of legacy code into services**
 - Allow different deployment according to constraints
- **Troubleshooting in a SOA is hard**
- **Following standards helps training of developers**
- **Do not underestimate security and its implications**
- **Vulnerable to network outages...**
- **... but SOA systems can be deployed on a single computer**

WG2 - Performances

- **Efficient data management is the key of good visualisations.**
- **Hardware may be the limiting part (disks).**
- **Large database may be a bottleneck. Replicated database may hit network bottleneck.**
- **Good Indexing is essential (meta indexing)**
- **Multiple organisation of the data, to optimise response time, but costly in terms of disk space.**
- **Choose the format that fit your requirements, use standards when exporting.**

WG2 - Performances (cont.)

- **Intelligent pre-processing (e.g. clusters, means, ..) is necessary to present large amount of data (e.g. EPS) to the forecaster.**
- **The gaming industry**
 - **They achieve speed at the cost of accuracy. Not suitable for our community.**
 - **On the other hand, tests shows that Doom scan line algorithm is very fast and can be used for polygon detection**

WG2 - Know your users

- **No “one-size fits all” solutions.**
- **Two ends of the spectrum:**
 - Small amount of users (forecasters) with access to large data, high interactivity
 - Large amount of users (mass), access to pre-processed data.
- **Mass market (Web access)**
 - Pre-process as much as possible. Do the minimum on-the-fly.
 - When generating on-the-fly, parallelise and cache
 - Use data throttling
 - More caching
- **Special users (e.g. forecasters)**
 - Specialised clients (Workstations).
 - Access to more data, more functionality.
 - Provide the right styles to limit customisation requirements.

WG2 - Know your users (cont.)

- **Mass market**

- Pre-canned products
- Highest volume for severe weather (hit rates)
- Products should be simple (Umbrella? yes/no)

- **Scientist/Researcher**

- Retrieval speed is not essential, visualisation speed matters
- Ability to have access to very large access of data

- **NWP**

- Speed is essential. Large amount of data retrieved.

WG2 - Know your users (cont.)

● Decision makers

- Pre-canned products are OK
- Part of the interpretation done upstream by a forecaster
- Speed matters. Update frequency is important.
- Each decision makers have their own requirements (yes/no decision, probabilities,...)

● Traders

- Focus on lead time
- Fast availability more important than accuracy.

WG2 - Know your users (cont.)

● Operational Forecaster

- Information available below 3s (even 1s)
- Delays would interrupt thought process
- Must be accurate
- Pre-canned products are OK for making overall idea
- More interactivity is needed for further investigation
- Task oriented UI/Role based Workflow tools will improve efficiency.
- Monitoring/Alert system should be made available.