Future WMO Information System (FWIS)

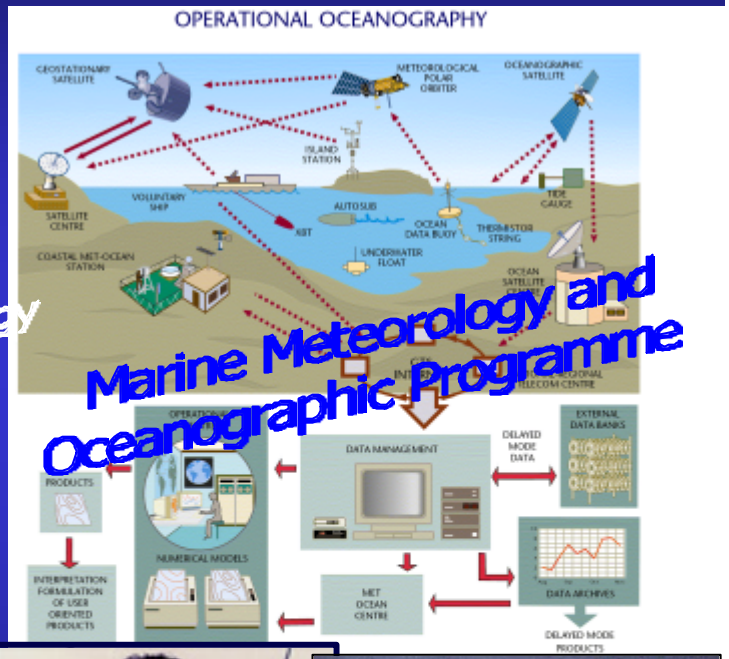
Hiroyuki Ichijo (Japan Meteorological Agency)

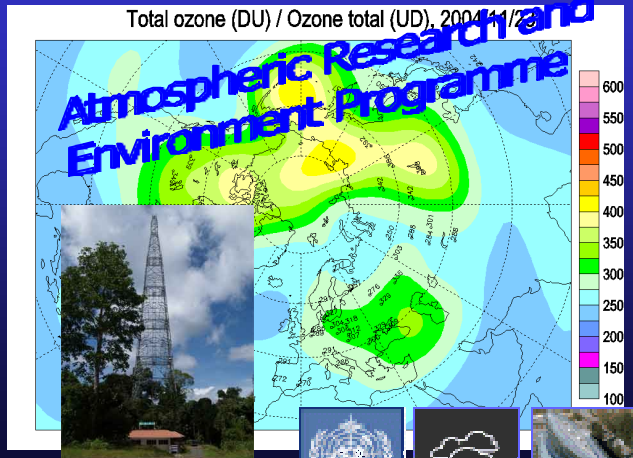
world summit on the information society
Geneva 2003 - Tunis 2005

WMO/WSIS Session on Reducing Natural Disaster Risk through Technical Opportunities of Information Society -Applications of ICT in Natural Disaster Risk Reduction (Kobe, Japan, 21 January 2004)

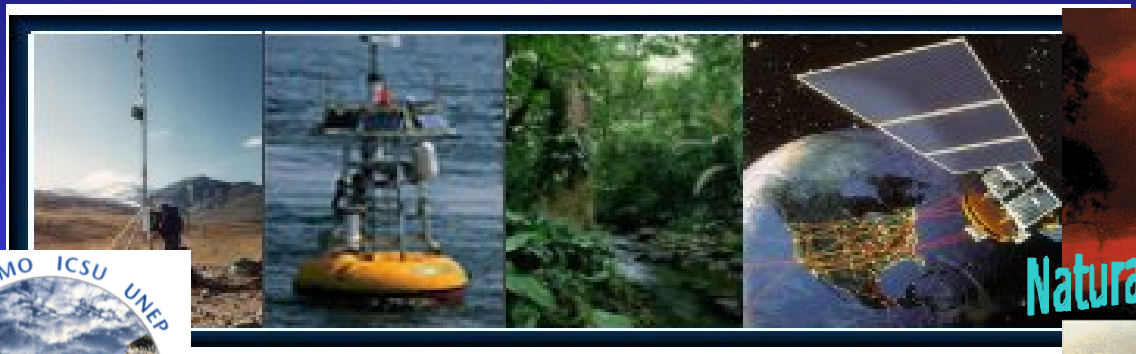
Introduction

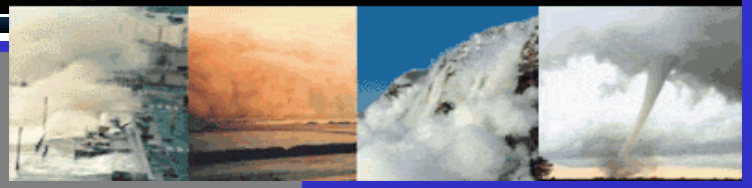
There are various WMO programmes. Each programme has traditionally worked independently with each information system.



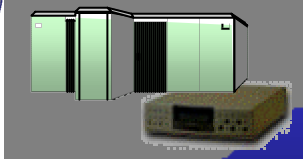


However the needs of a coordinated common system rapidly expanded because of demerits of system multiplicity and emerging new crosscutting programmes.





World Climate Programme



Furthermore evolving technology accelerated the needs.

On the background, the innovative FWIS project was born in 1999.

1. Vision

The Future WMO Information System (FWIS) will be a single coordinated global infrastructure for collecting and sharing information to support all WMO and related international programmes.

The FWIS will meet information exchange requirements of all WMO programmes without information incompatibilities, inefficiencies, duplication of effort, limitation in sharing valuable information and higher overall costs.

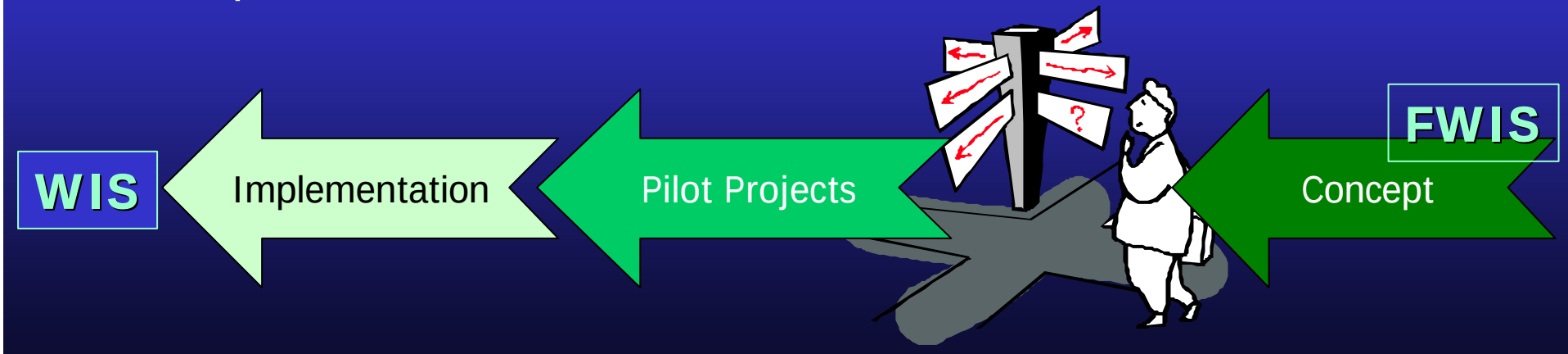
The FWIS will provide a flexible and extensible structure that allows National Meteorological or Hydrological Services (NMHSs) to enhance their capabilities as their national and international responsibilities grow.

2. Roadmap

With the latest breakthroughs in Information Communication Technology (ICT), the FWIS concept has been developed. The concept provides a common roadmap to guide the orderly evolution of the information system functions performed by current WMO Programmes into an integrated system.

Currently various pilot projects on promising technologies with prototype evaluation are under progress towards early implementation.

Renaming from “FWIS” to “ WIS (WMO Information System)” is expected.



3. Main challenges

Interoperability of information systems

- Providing online catalogue and metadata of all information
- Standardization/Harmonization of information formats
- Providing functions to discover and share information in distributed information sources
- Supporting real-time, quasi real-time and non-real-time information exchange

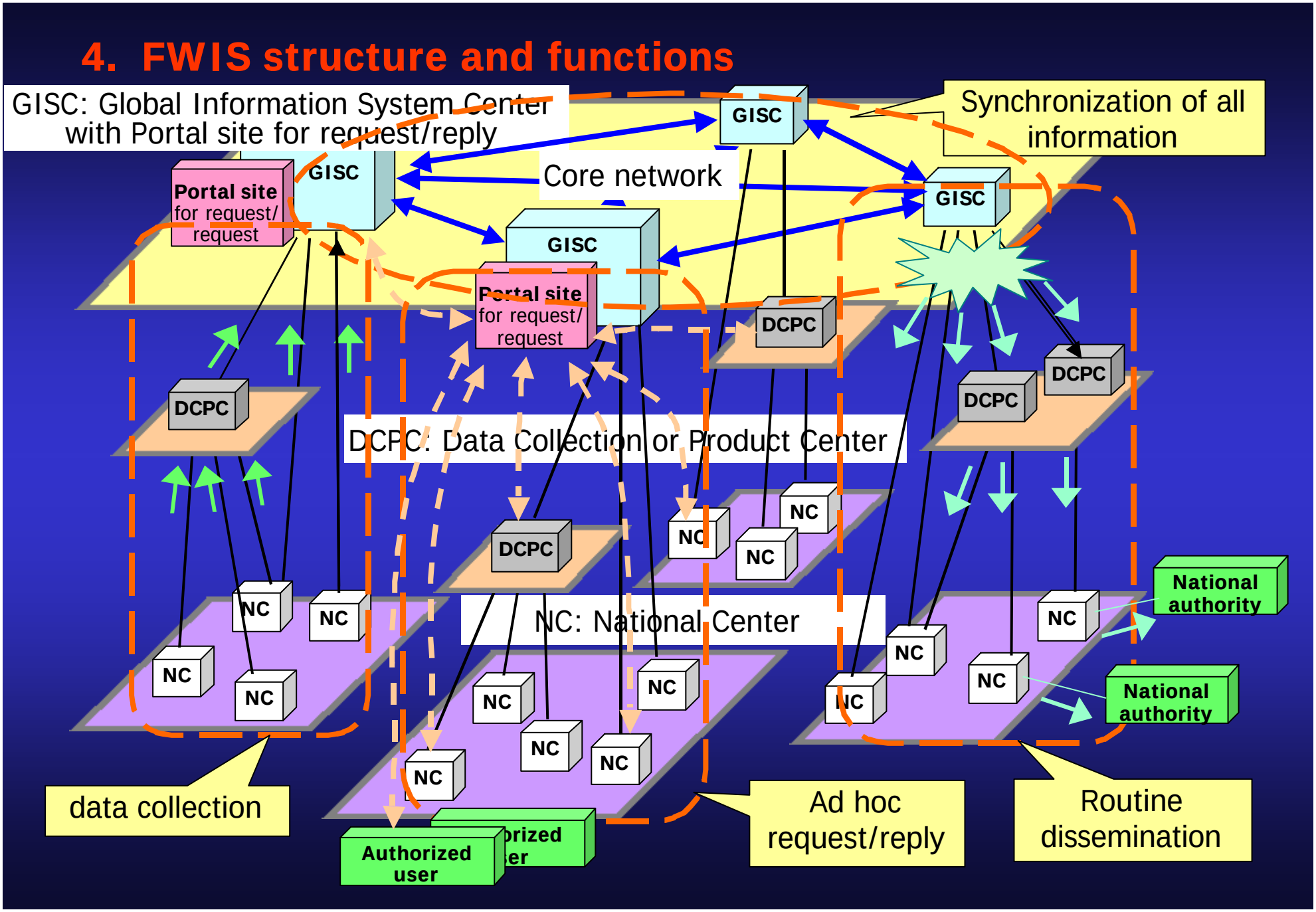
Smooth and coordinated transition

- Building upon the most successful components of existing WMO systems

Scalable and sustainable system

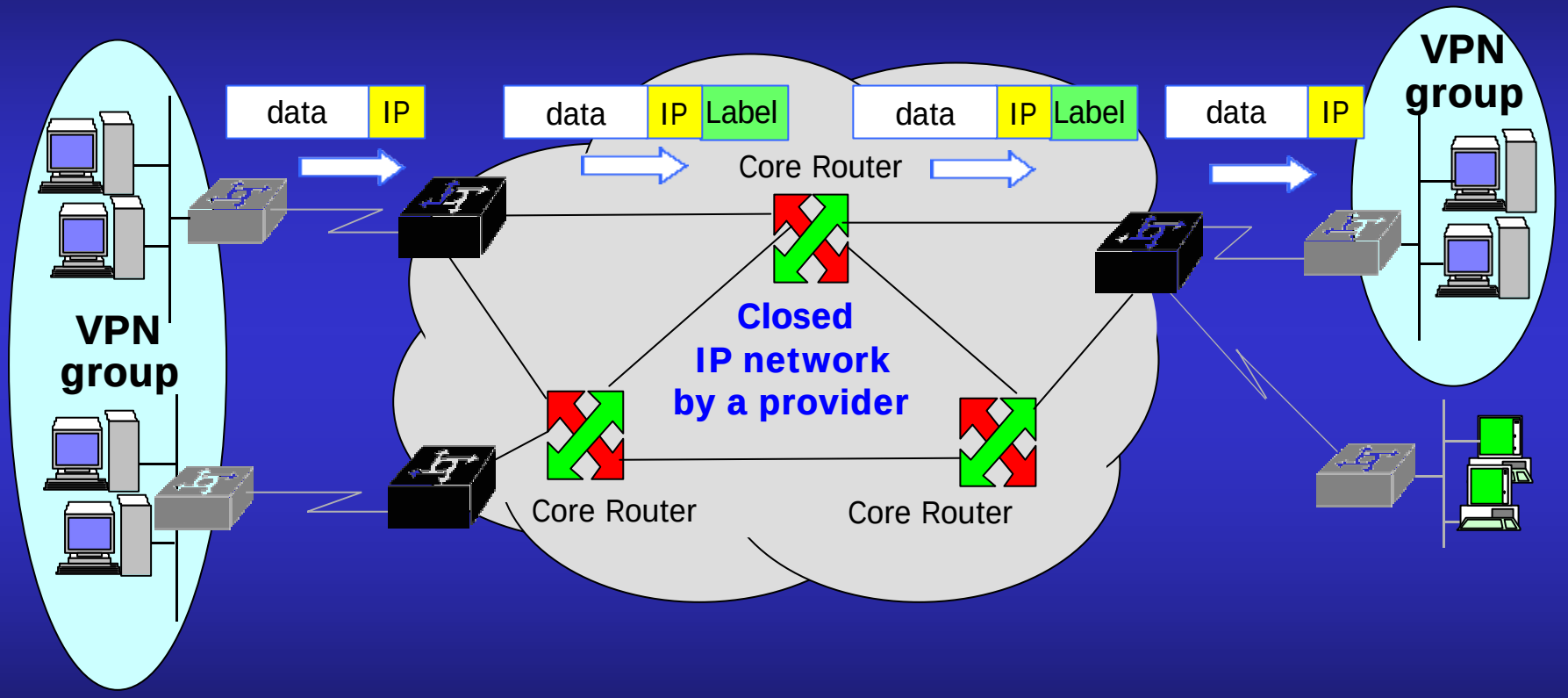
- Supporting various standard communication protocols and links
- Using international industry standards and off-the-shelf hardware and software systems

4. FWIS structure and functions



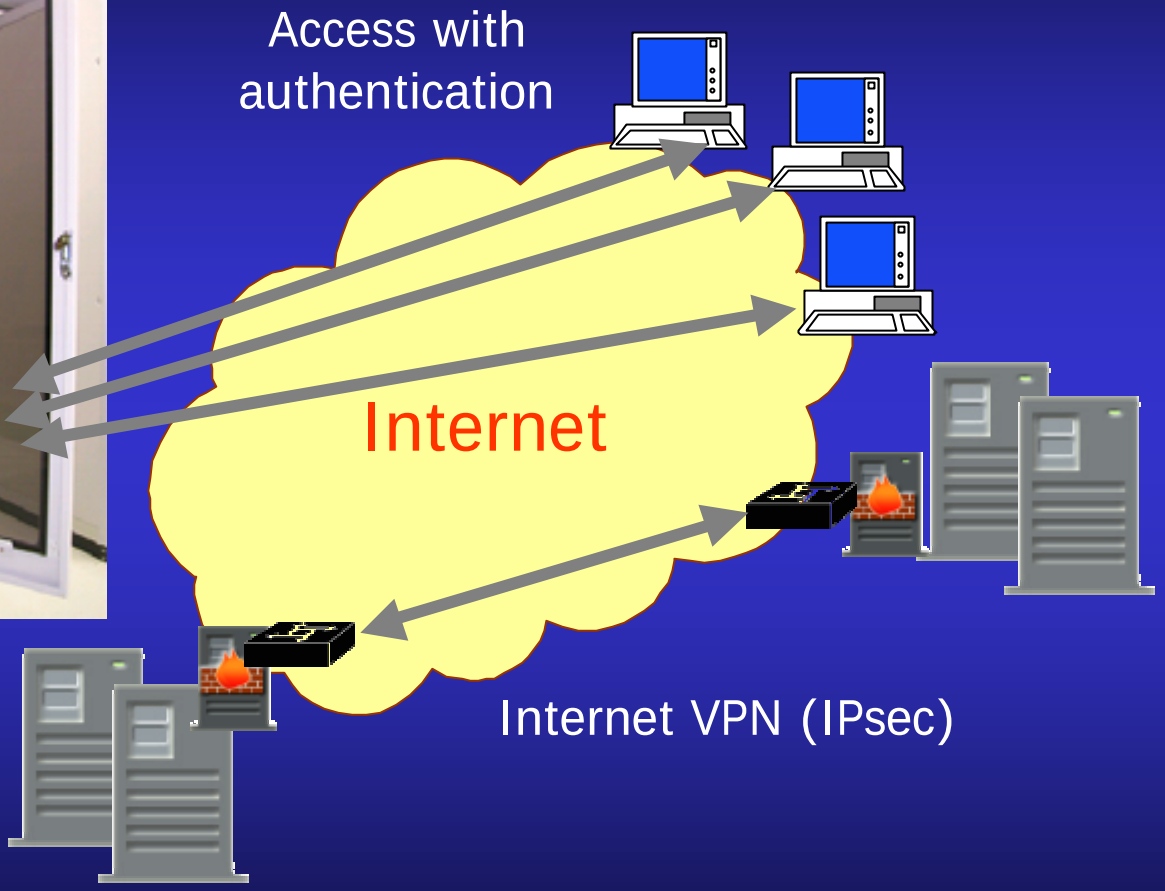
5. Promising technologies

IP-VPN with MPLS : Virtual Private Network (VPN)
over a managed network by a single provider



IP-VPN with MPLS provides any to any connectivity within a VPN group, a guaranteed quality of service, reliability, scalability of capacity and full security.

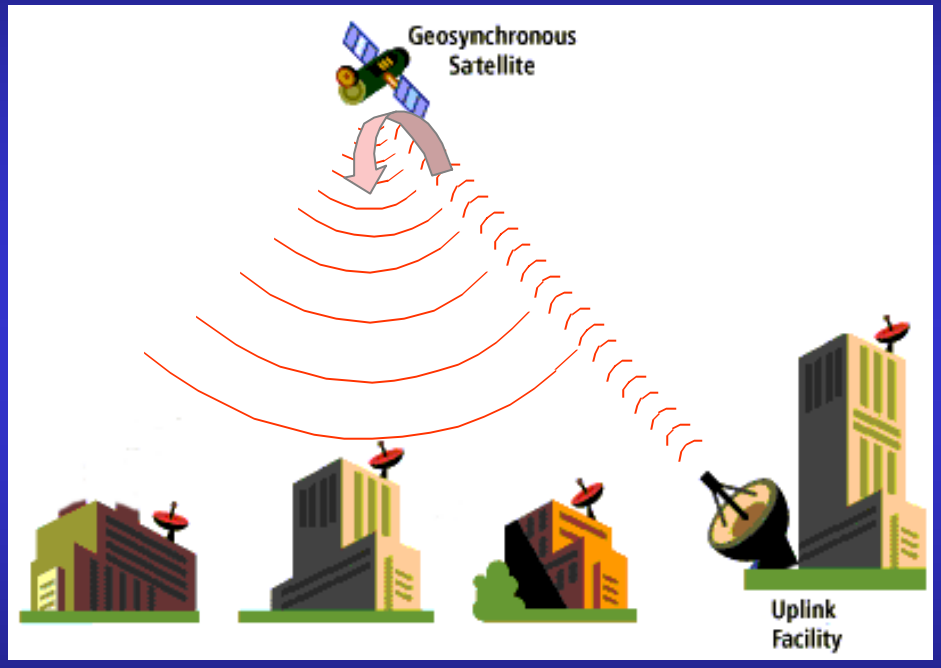
Internet VPN : Virtual Private Network (VPN) over the Internet



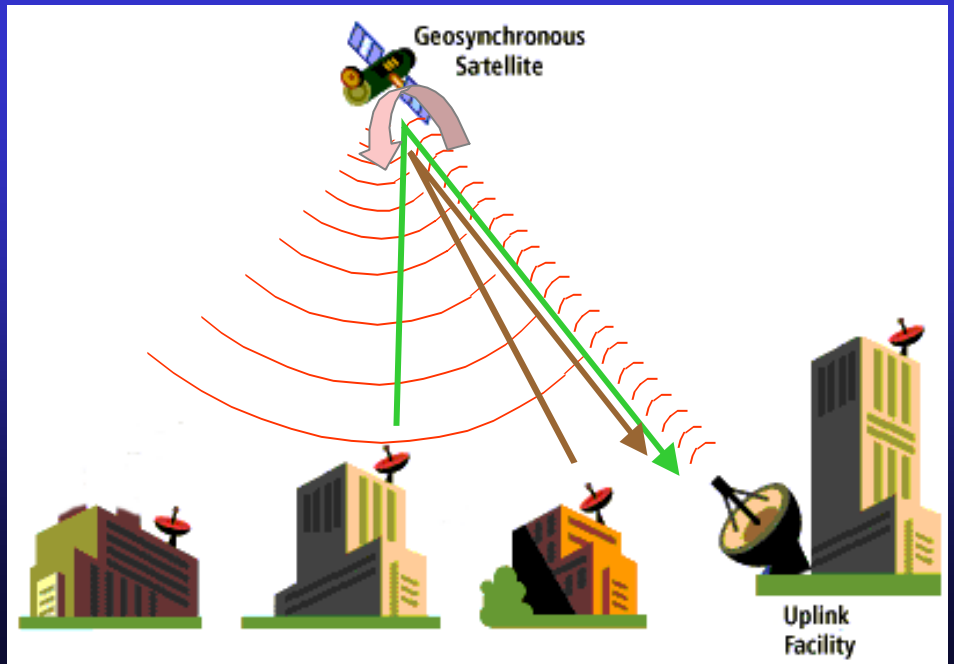
Internet VPN provides cost-effective connectivity with moderate security.

Satellite-based telecommunications

VSAT (Very Small Aperture Terminal)
DVB (Digital Video Broadcast)
DAB (Digital Audio Broadcast)

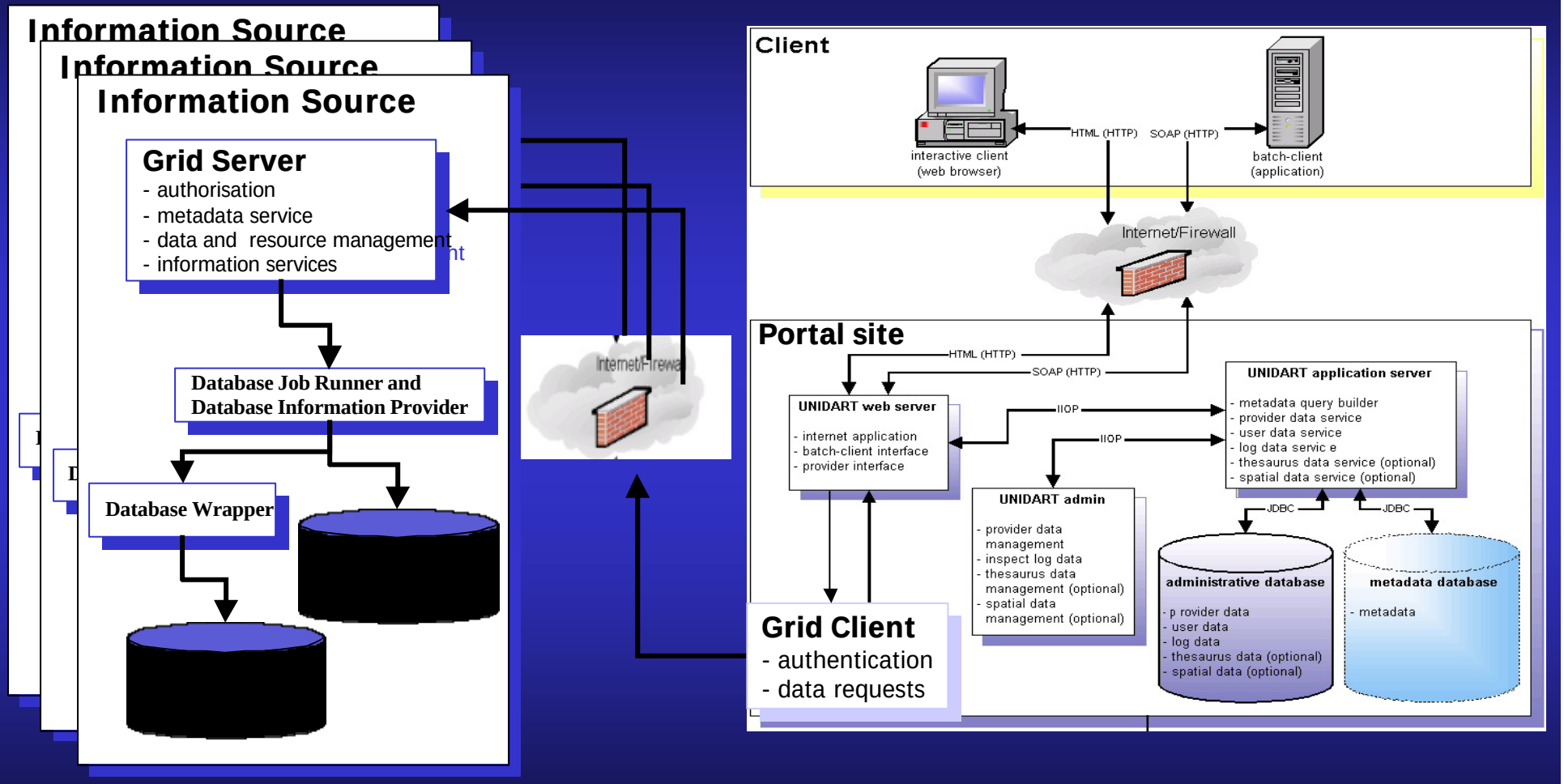


One Way VSAT system is used for broadcast/multicast.



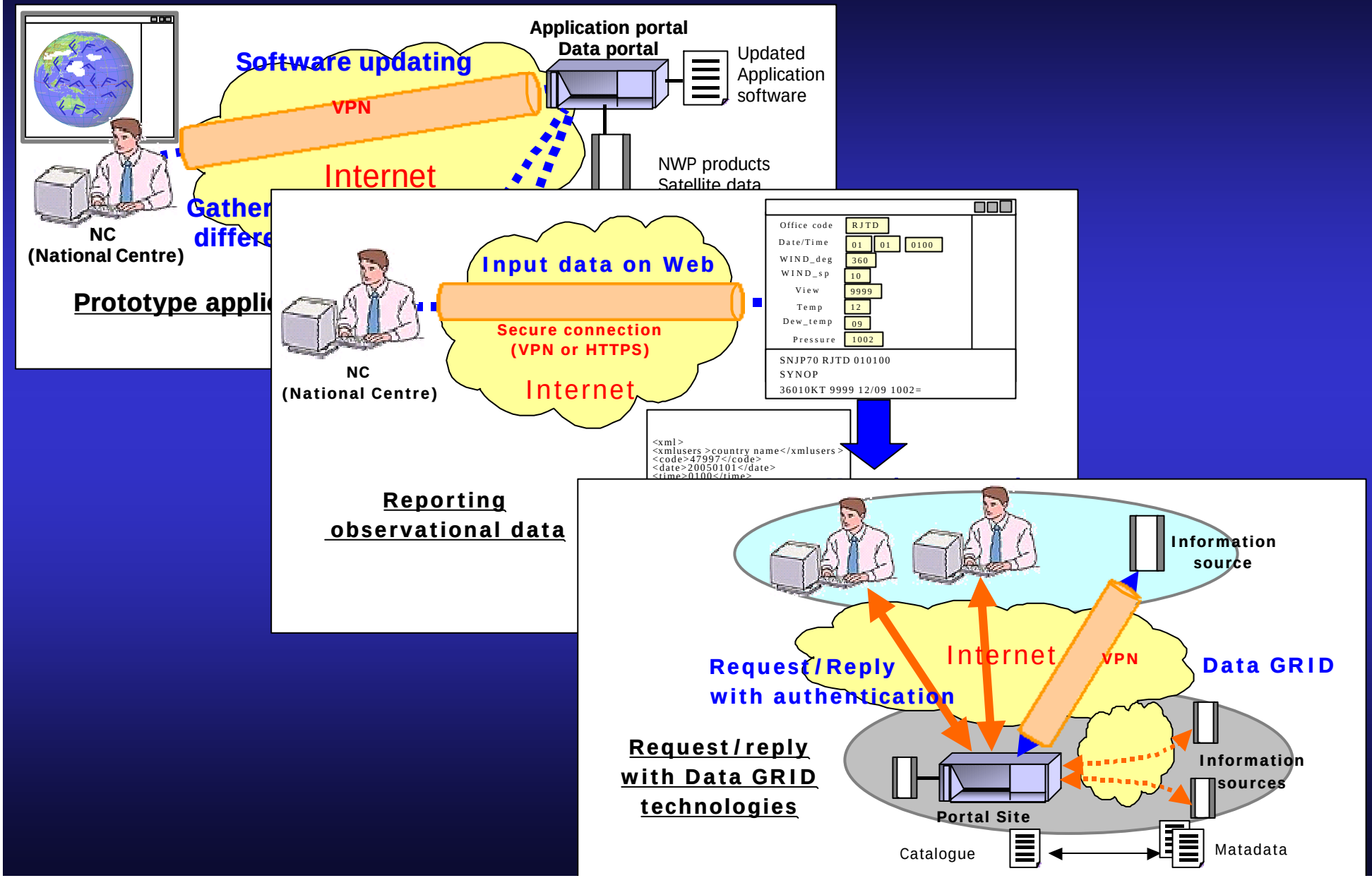
Two Way VSAT system is used for combination broadcast/multicast and peer-to-peer communications.

Data GRID : uniform and integrated access to heterogeneous and distributed information sources



Data GRID provides secure access to distributed information sources.

6. Examples of pilot projects



7. Benefits of FWIS

	Information management	Information exchange/access	Security	Cost aspect
For WMO programmes	• Expanding of provision and use of potential information • Collaboration between programmes	• Meeting requirements on timeliness (time-critical), reliability, and traffic volume.	• Coordinated full security under FWIS security policy	• Great cost benefit • Reducing development cost and human resources
For NMHSs (and national disaster prevention authorities linked with NMHSs)	• Improvement of information discovery and availability • Easy handling of standardized information	• Strengthening mission-critical exchange (e.g. WWW operation. and distribution of emergency information) • Consolidation of exchange procedures	• Coordinated full security under FWIS and/or national security policies	• Further cost-effective operation with saving recurrent costs • Reducing development cost and human resources
For authorized users (e.g. academic and research communities)	• Improvement of information discovery and availability • Easy handling of standardized information	• Flexibility in communication options • Simple access procedures	• Appropriate security mechanism under security policies of FWIS and/or each information source	• Availability of convenient services for minimum costs