

Planning of Meteorological Operational Systems

(S. Mildner, WMO Geneva)

1. Background

Nearly 25 years ago in 1963 the WWW concept was approved by Cg-IV. Since then the WWW Plan and Implementation Programme has experienced its sixth iteration. The WWW concept introduced a systems approach to operational meteorology (later expanded by inclusion of hydrology) and provided a global frame for the absorption of advances in meteorological science and technology. This coincided with a phase of rapid expansion due to the developments in Numerical Weather Prediction (NWP) and the availability of meteorological satellites which opened new dimensions of meteorological research and operational services. Since then the speed of development has steadily increased to a degree that realistic planning for longer periods became more and more difficult.

This fact needed compensation in the form of adequate programme flexibility and frequent updating of conceptual positions on the basis of yearly status reports on the implementation and operation of the WWW.

In 1979 Cg-VIII initiated, at the request of the Commission for Basic Systems, (CBS) the WWW Integrated System Study (ISS) as a major effort to improve the WWW after the FGGE had revealed a number of serious deficiencies in the key components of the WWW. The ISS was carried out over a period of five years and ended 1985 with the formulation of the WWW Plan and Implementation Programme to the year 2000, an ambitious look into the future which, in a modified form, was subsequently incorporated in the Second WMO Long-Term Plan 1988-1997. It should be noted here that with the ISS the old perception of a three column structure of the WWW is slowly being replaced by a concept of an integrated WWW system with a layered structure of various data management functions.

2. The WMO Long-Term Plan (SLTP)

The concept of long-term planning was introduced in WMO by Cg-IX in 1983 by the adoption of the first ten-year plan for the period 1984-1993 and an updating rhythm of four years. Whereas the First WMO Long-Term Plan consisted only of a document on Overall Policy and Strategy, the Second WMO Long-Term Plan (SLTP) was developed to its full maturity containing detailed descriptions of all WMO programmes and their interaction. The WWW Programme is considered as the most important one in the SLTP since its implementation forms the basis of operational meteorological and hydrological services. In addition most of the other technical programmes of WMO depend heavily on WWW and the functioning of its major components.

Cg-X has defined the status of the SLTP with the following key words:

- Guidance on programmes and organizational structures;
- Framework for commitment;
- Collection of objectives.

The WWW Programme (SLTP, Part II Volume I) differs in its lay-out slightly from other technical programmes. It contains five major parts

- (i) Present state of WWW implementation;
- (ii) Major trends of development;
- (iii) Objectives for the period 1988-1997;
- (iv) Programme for the Tenth Financial Period 1988-1991;
- (v) Time-line charts of WWW Programme activities.

It should be noted that the SLTP strongly emphasizes the programmatic aspects and provides detailed information on specific actions relating to the various projects under each of the programmes. This holds particularly true for the programme activities planned for the tenth financial period 1988-1993 which correspond directly to the WMO budget for the intersessional period between Cg-X and Cg-XI.

### 3. General WWW planning principles and objectives

The WWW can be considered as a functioning and continuously developing system which is planned, implemented and operated by WMO Members in accordance with the following principles:

- Consensus regarding policy and objectives and national and/or multinational commitments for co-operation
- Equality on the basis of mutual interdependency
- Flexibility to ensure co-ordinated development and programme updating
- Free Exchange of meteorological data and products
- Optimization regarding system configuration and use of resources.

The main objective of the WWW Programme is to provide the basic meteorological systems needed on a global, regional and national scale to meet the requirements of national Meteorological and Hydrometeorological Services for data and products as well as those of other relevant technical programmes inside and outside WMO.

### 4. Structural Aspects

The WWW structure shows traditionally three levels, namely the global, regional and national level. It reflects primarily the scale of meteorological tasks and indicates the need for co-operation and concentration of capabilities.

In accordance with the above WWW planning principles the WWW structure supports the following objectives:

- Maximum benefit for all Members;
- Full participation and involvement;
- Sharing of workload and responsibilities;
- Transfer of technology and know-how;
- Improvement of services, e.g. disaster mitigation; increase of food production; environment protection, etc.

#### 5. Co-operation

The WWW is based on co-operation within a fairly complex organizational structure. It is noteworthy that the WWW structure is continuously influenced by the developments in science and technology. It is therefore necessary to define and regularly update the basic factors influencing the co-operation between Members within the framework of the WWW system in order to ensure general consensus. This necessitates periodically

- reconfirmation of commitments;
- review and updating of positions;
- definition of common goals;
- demonstration of benefits;
- demonstration of capabilities to implement, maintain and operate the WWW system.

WMO provides the mechanism for these activities through its constituent bodies (Congress, EC, Technical Commissions and Regional Associations).

#### 6. WWW Implementation Aspects

Perhaps the most important clause of the Congress resolutions on the WWW states the responsibility of Members, either individually or as a group, to implement and maintain the WWW system. Members have committed themselves to contribute to the WWW system by their initiatives at the national and/or international level. The latter relate to co-operative efforts such as jointly operated system components or bilateral assistance projects. WMO supports and co-ordinates Member's initiatives through its constituent bodies and its technical co-operation projects. The WWW Programme provides the framework and basis for Member's initiatives by:

- Specification of requirements;
- Performance monitoring;
- Identification of deficiencies.

#### 7. Facts of life

Meteorological operational systems, despite all efforts to overcome existing difficulties in a planned and globally co-ordinated manner, to achieve standardization and bridge technology gaps, have to live and will continue to live with different stages of development which must be taken into consideration in the planning process but can hardly be eliminated fully.

Inhomogeneities exist in regard to networks, equipment, qualified manpower, technology, methodology and requirements.

Limitations are clearly visible in relation to resources, capabilities, and ability to co-operate, but also regarding technical interest, imagination and political support.

Inertia hampers the process of decision making, evolution and structural development, innovation and implementation of systems and procedures.

Planners recognize these facts of life and attempt continuously to strike the balance between realism and utopia.

#### 8. Mechanism for Planning

In WMO - different from other international organizations - the global planning is a recognized necessity. This holds particularly true for the WWW Programme where systems approach and integration form the conceptual basis for planning.

The constituent bodies of WMO Congress, Executive Council, Technical Commissions and Regional Associations provide the main input to the formulation of the Programme. In WWW the CBS has of course a leading role. The importance of input from Regional Associations has recently been stressed by Congress. Guidelines provided by the constituent bodies are followed-up, where necessary, by input from expert groups dealing with specific items and projects of the WWW Programme.

The WMO Secretariat has a relatively modest part in the planning process.

#### 9. Monitoring of implementation and operation of WWW

The WWW Monitoring occupies an increasingly important part of the planning process. WWW status reports have been issued regularly since the inception of the programme and, by tradition, form an important item in the agenda of most constituent body meetings.

With the adoption of the WMO SLTP the discussion on a suitable programme monitoring has been intensified. Efforts are now being made to develop procedures to monitor the implementation of the SLTP with a view to obtaining relevant information for the updating of the existing programme and the development of the Third WMO Long-Term Plan. Programme monitoring means, in connection with WWW:

- monitoring by objectives;
- monitoring by projects and activities, and
- monitoring of implementation and operation of the WWW system.

The latter is now the subject of a fundamental revision by CBS with a view to obtaining better and more meaningful information on the status of the WWW and existing deficiencies.

10. Goals and objectives of the WWV Programme

The WWV Programme and associated planning will be based on a number of objectives the most important of which can be summarized under following headings:

- Optimization of networks and structures;
  - Integration of WWV system components and functions;
  - Standardization of technology and methodology;
  - Flexibility in responding to new requirements and to challenges in science and technology.
-