The WMO Strategy for Service Delivery and Its Implementation Plan

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Weather • Climate • Water

WORLD METEOROLOGICAL ORGANIZATION

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THE WMO STRATEGY FOR SERVICE DELIVERY AND ITS IMPLEMENTATION PLAN

PREFACE

The WMO Strategy for Service Delivery (the Strategy), which is aligned to the WMO Strategic Plan, was approved by the Sixteenth World Meteorological Congress. The Strategy explains the importance of service delivery; defines the four stages of a continuous cyclic process for developing and delivery of services and the six elements necessary for moving towards a more service-oriented culture; and describes practices that can strengthen service delivery across the entire WMO. The Strategy is contained in Part I of this Technical _Document. The Strategy is considered essential reading to fully appreciate the content and direction of the Implementation Plan, presented as Part II.

The Implementation Plan has been developed to guide National Meteorological and Hydrological Services (NMHSs) in the assessment of their current service delivery performance and to assist in the development of plans to improve service delivery in line with their strategic objectives. Improving levels of service delivery will provide direct benefits to service users, and, as a consequence, stronger community support for the institutions of the NMHSs.

The core business of NMHSs is built around their public good responsibility to provide essential weather, climate and related information to the community at large. In all forms of business, it is vital to put the user[†] first and the provision of weather, climate, water and environmental services is no different. Only by fully understanding why users need our services and how they use them in their decision-making can we provide services that are fit for purpose. By striving to provide services that fully meet the needs of users, NMHSs ensure that they discharge their statutory obligations, and, as a consequence, are held in high regard by the public, their owners and users.

Within WMO we will develop mechanisms to provide assistance to NMHSs in order that they may implement The WMO Strategy for Service Delivery.

All Members are encouraged to use the Implementation Plan for The WMO Strategy for Service Delivery to assess where they currently stand in regard to levels of service delivery and to continue the work towards achieving ever higher standards.

[†] See Appendix 3 – “Glossary” for definition

EXECUTIVE SUMMARY

WMO Members recognize the importance of high quality in service delivery by the providers of weather, climate, water and environmental services. WMO provides international coordination and sets standards for meteorological and hydrological products and provides guidance for service delivery, and indeed some great success has been achieved in delivering services. However, Members have agreed that a more uniform and structured approach for WMO on service development and delivery is required, and hence approved The WMO Strategy for Service Delivery at the Sixteenth Session of the World Meteorological Congress (Cg-XVI, May-June 2011), and requested the Secretary-General to arrange for the preparation of an Implementation Plan for the Strategy. The Implementation Plan was subsequently prepared under the guidance of the WMO Executive Council Working Group on Service Delivery (ECWG-SD) and was approved by the Sixty-fifth Session of the Executive Council (EC-65, Geneva, Switzerland, May 2013).

The **goal** of The WMO Strategy for Service Delivery (herein referred to as "the Strategy") is to help National Meteorological and Hydrological Services (NMHSs) raise standards of service delivery in the provision of products and services to their users. The Implementation Plan provides a flexible methodology to assist Members in evaluating their current service delivery practices and to serve as high level guidance for developing more detailed methods and tools for improving their service delivery process.

The Strategy itself is adaptable to the unique needs of Members both developed and developing regardless of who the users are and whether providers deliver public or commercial products† and services†. The role of the WMO Secretariat and WMO constituent bodies in the implementation of the Strategy is to serve both as a facilitator and coordinator.

Meeting the needs of "users"† with "fit for purpose"† products and services is vital to the success of Members as service providers. As the needs of users evolve, the capabilities of service providers should also adapt over time. Methods of distributing products and services are subject to change, especially in the modern information technology era. It is important that Members are agile and able to respond to these changes.

WMO Members that have already implemented a formal Quality Management System (QMS) are likely to be focused on meeting user needs as a key aspect of service delivery. For Members that have not introduced QMS, implementing a service delivery strategy along the lines described here will be an excellent step towards improved organization-wide quality management.

Those Members that provide services on a commercial basis, where there are contractual obligations, are no doubt acutely aware of the need for high service delivery standards. But equally, the practices of quality service delivery should be applied to weather, climate, water and environmental services provided to the public and to government agencies and departments.

Benefits that can be derived by users sensitive to the impacts of weather and climate, from high quality services that fully meet their needs are wide ranging. Members with high levels of service delivery through their Public Weather Services (PWS) are likely to be viewed by their users

† See Appendix 3 - "Glossary" for definition

and by the organizations that provide their funding as returning value for investment of public funds. This can help to ensure sustainability for the PWS.

The Strategy describes a continuous cycle of four stages, which define the framework for service delivery, and identifies six elements which detail the activities required for high quality service delivery.

The **four stages** of a continuous, cyclic process for developing and delivering services are:

(1) User engagement and developing partnerships;

(2) Service design and development;

(3) Delivery; and

(4) Evaluation and improvement.

The **six elements** necessary for moving towards a more service-oriented culture are:

(1) Evaluate user needs and decisions;

(2) Link service development and delivery to user needs;

(3) Evaluate and monitor service performance and outcomes;

(4) Sustain improved service delivery;

(5) Develop skills needed to sustain service delivery; and

(6) Share best practices and knowledge.

In order to achieve quality performance in service delivery, the focus and commitment of the leaders of service providers are vital to ensure that it is achieved throughout their organizations.

The Implementation Plan for the Strategy has been developed to help all Members assess and improve their service delivery irrespective of their current level and capacity.

Assessment of the current level of service delivery can be undertaken either by self-assessment, or with external assistance. The assessment should be made against a progress model which shows the type of activities and behaviours that are appropriate for service providers with a certain level of service delivery development. A Service Delivery Progress Model (SDPM) is included in this Implementation Plan to guide Members to the actions and activities that are required over short-, medium- and long-term in order to progress to higher levels of service delivery.

Milestones for the implementation of the Strategy are being set for short-term (two (2) years), medium-term (six (6) years) and long-term (ten (10) years).

The **Key Deliverables** resulting from the implementation of the Strategy over the short-term will be: (1) the assessment of the current level of service delivery; (2) putting in place the necessary Action Plan which should include strengthening user interaction through for example surveys, focus groups, and workshops for each user group to start improving the service delivery level; and (3) the assessment of required resources to implement the Action Plan. Over the medium-

term, the Implementation Plan aims to facilitate access by a certain percentage of Members to at least one level higher in their service delivery development than their current level and, the documentation of processes and sharing of lessons learnt with other Members. After ten years the implementation of the Strategy aims to develop or strengthen a service culture and facilitate the mainstreaming of service delivery in the programmes and activities of Members' service providers, resulting in tangible improvement of user perception of their services.

The WMO ECWG-SD will have the overall responsibility for monitoring progress and facilitating the implementation of the Strategy by NMHSs.

PART I:
THE WMO STRATEGY FOR SERVICE DELIVERY

PART I: THE WMO STRATEGY FOR SERVICE DELIVERY

PURPOSE OF THIS DOCUMENT

The purpose of this document is to propose the World Meteorological Organization (WMO) Strategy for Service Delivery (the Strategy) will assist National Meteorological and Hydrological Services (NMHSs) in the provision of weather-, climate- and water-related services to the public and decision-makers. The Strategy incorporates assessment of user needs and the application of performance metrics.

While there is no prescriptive way to provide services, the Strategy serves as a foundation to improve service delivery by sharing best practices, supporting mutually agreed upon guidelines, and by increasing user engagement throughout the delivery process, recognizing the many differences in cultures, structures, operational practices, resource and development levels across NMHSs.

This Strategy, which is at once broad yet flexible, seeks to do two things, to serve: (1)as a tool for evaluating current service delivery practices; and (2) as high-level guidance for developing more detailed methods and tools for better integrating users into the service delivery process. It is adaptable to the unique needs of providers in both developed and developing countries, regardless of who the users are and whether providers deliver public or commercial products and services. The role of the WMO Secretariat in the implementation of this Strategy is to serve as facilitator and coordinator.

CHAPTER 1: INTRODUCTION

The bottom line for most government organizations is their mission. To achieve the mission, organizations need resources, but resources are often in short supply and must be shared among competing organizations. This competition for scarce resources requires NMHSs to demonstrate their value by realizing cost efficiencies while delivering high-quality, useful products and services. Policy-makers and the public continually assess the effectiveness of NMHSs based on their ability to meet the service delivery standards of the nations they serve. By incorporating the role of users and customers in day-to-day operations, those customers and users are more likely to receive services that meet their needs.

The ability of NMHSs to meet national service needs is put to its most critical test when an extreme hydrometeorological event occurs. Even the best forecast, issued on time, is no defense if, for various reasons, it did not generate the desired response from those at risk. In other words, the forecast had little impact. Most of the utility of weather-, climate-, and water-related information occurs in communicating the information to users and the response of those users based on information received. Ultimately, the utility of weather-, climate-, and water-related information is the degree to which it has a beneficial impact on societal and economic outcomes. If the currently available information is underutilized, value can be increased by improving the forecast, improving communication, and by improving the decision-making process. Effective service delivery, then, is about providing products and services that bring utility to users and customers.

Much has been done for service delivery by WMO through various international and regional institutions, programmes and structures, such as World Meteorological Centres (WMCs) and Regional Specialized Meteorological Centres (RSMCs), to prepare and provide products to serve as a basis for NMHSs to use in the provision of services. Similarly, at the national level, many NMHSs have focused significant efforts on improving service delivery by building relationships with various user communities to better understand and respond to their needs.

The present Strategy seeks to build upon and institutionalize such practices to strengthen service delivery across the entire WMO by describing key strategy elements and activities related to a service-oriented culture. The Strategy focuses on understanding the users' value chain to gain knowledge about

users, the decisions they must make, and how weather-, climate-, and water-related information is applied to minimize risk and realize benefits not only to a specific user group but also to society as a whole. With this knowledge, service providers are able to develop, produce and deliver services that are useful, relevant and responsive. NMHSs are able to measure the value of their information to society and continually evaluate and improve upon services. Adopting a more collaborative approach provides everyone in the service delivery process – providers, users, and partners – with a clear understanding of service needs.

CHAPTER 2: LINK TO THE WMO QUALITY MANAGEMENT SYSTEM (QMS) FRAMEWORK

WMO encourages NMHSs to implement Quality Management Systems (QMS) and has defined a Quality Management Framework (QMF) to provide advice on development and use of QMS relevant to meteorological and hydrological organizations. The ultimate goal of a QMS is to encourage and to support the continual improvement of product and service quality, focusing on quality control, quality assurance and quality improvement.

Quality management assesses not only the final product or service but the series of steps or operations that occur for the final product or service to be produced and delivered in a manner that satisfies the customer. The insight gained through quality management allows NMHSs to find, fix, and prevent failure that might lead to a faulty product or service. In the context of weather services, for example, the processes that make up a weather forecast and service delivery are:

- Data collection and analysis;
- Modeling for prediction;
- Model interpretation and forecast production;
- Dissemination of products and services received by users; and,
- Understanding and use of forecasts.

To improve the quality of weather products and services, NMHSs must assess and analyze each step and sub-steps of the forecast process to determine where root problems may exist and how better to correct them. For example, QMS processes may find that a high-quality product is of marginal use because it is not received by the user in time for decision-making.

Improvements in service delivery, then, are a natural consequence of using QMS. The WMO Strategy for Service Delivery may be viewed as a supplement to the WMO QMF. Even if NMHSs have no internal or external requirement to apply QMS, this strategy stands alone as a useful tool to improve overall effectiveness of products and services and customer/user satisfaction.

AN EXAMPLE OF BASIC APPROACH TO QMS

The Malaysian Meteorological Service (MMS) has implemented a process-based QMS at the Kuala Lumpur International Airport (KLIA) Forecast Center as a means of institutionalizing effective service delivery. The MMS implemented a QMS to improve the provision of consistent products and services that meet customer requirements; to improve customer satisfaction through continuous process improvement; and to establish quality metrics to measure, review, and control the forecasting processes.

The top management of the MMS is responsible for the QMS processes and is constantly upgrading its effectiveness through:

- Identifying customer needs and ensuring customer/client satisfaction through questionnaires, feedback, and reviews;
- Regular communication with Regional Forecast Offices to ensure and fulfil customer satisfaction achieved through various avenues like meetings, staff discussions, training, etc.;
- Determining the quality policy and objectives;
- Conducting management reviews; and
- Identifying and ensuring availability of resources like skilled personnel, infrastructure, finances, training and internal audit teams.

CHAPTER 3: WHAT IS SERVICE DELIVERY?

Defining service delivery first requires a common definition of service, which this Strategy defines as a product or activity that meets the needs of a user or can be applied by a user. To be effective, services should possess these attributes:

- **Available and timely:** at time and space scales that the user needs;
- **Dependable and reliable:** delivered on time to the required user specification;
- **Usable:** presented in user specific formats so that the client can fully understand;
- **Useful:** to respond appropriately to user needs;
- **Credible:** for the user to confidently apply to decision-making;
- **Authentic:** entitled to be accepted by stakeholders in the given decision contexts;
- **Responsive and flexible:** to the evolving user needs;
- **Sustainable:** affordable and consistent over time; and
- **Expandable:** to be applicable to different kinds of services.

Service delivery, then, is a continuous, cyclic process for developing and delivering user-focused services. It is further defined in four stages:

- **Stage 1: User Engagement and Developing Partnerships** - identifying users and understanding their needs, as well as understanding the role of weather, climate, and water-related information in different sectors;
- **Stage 2: Service Design and Development** - process between users, providers, suppliers, and partners of creating, designing, and developing services, ensuring user needs are met;
- **Stage 3: Delivery** - producing, disseminating, and communicating data, products and information (i.e., services) that are fit for purpose and relevant to user needs; and
- **Stage 4: Evaluation and Improvement** - process to collect user feedback and performance metrics to continuously evaluate and improve upon products and services.

Specifically related to weather-, climate- and water-related services the following four principles embody effective service delivery:

- User engagement and feedback are essential in designing and delivering effective services;
- Sharing best practices leads to effective and efficient service design and implementation;
- Partnership with other international and regional organizations also engaged in delivering services is essential in maximizing the use of weather, climate and water information for decision-making; and,
- The concepts and best practices of service delivery are applied to all WMO activities and accepted by the entire WMO.

AN EXAMPLE OF COLLABORATION AMONG DIFFERENT AGENCIES

The National Oceanic and Atmospheric Administration (NOAA) and the National Science Foundation in the United States developed the Communicating Hurricane Information Program (CHI) to focus on advancing the understanding by decision makers (e.g., emergency managers, elected officials) and the general public of hurricane outlooks, forecasts, watches, and warnings. The program illustrates how national agencies can partner to support integrated weather-society work that advances fundamental understanding and addresses agencies' needs in fulfilling their missions.

CHAPTER 4: MOVING TOWARD A SERVICE-ORIENTED CULTURE

This Strategy defines six elements and associated high-level activities necessary for moving towards a more service-oriented culture. The elements should assist providers

in identifying current areas of success, which may be shared as best practices across WMO, and areas where improvements are needed. The elements and suggested activities described below serve as a framework to guide the development of implementation plans that provide more detailed processes, methodologies, and tools.

WORKING WITH USERS IN DESIGNING AND DEVELOPING PRODUCTS - THE LEARNING THROUGH DOING (LTD) PROJECT OF CHILE

Since 2008, the Meteorological Service of Chile (DMC) has been working with the Public Weather Services Programme (PWSP) of WMO to implement the Learning Through Doing (LTD) project with the objective of enhancing Service Delivery to the fisheries, agriculture and transport sectors. The Project is based upon engaging users from these sectors with a view to determining their needs and requirements, and to design and produce improved products to meet those needs. It also focuses on enhancing the dissemination and communication channels to ensure that the users access products easily. Multidisciplinary teams have been formed between DMC and the user sectors to steer the implementation of the project.

For example, regarding the transport sector, services target the Los Libertadores Border Complex which serves daily flow of traffic between Argentina, Brazil, Paraguay, Uruguay and Chile. Users for meteorological products and services include the public transport services, tourists, freight transportation companies, and passengers. The needs of each of these users are different, which requires different products and services to meet their specific needs.

The new line of products designed, consists of daily weather forecasts and weather warnings. The full report including all the sectors is available at:
http://www.wmo.int/pages/prog/amp/pwsp/Activities_and_Reports_en.html

As of 2010 the project had developed 22 new meteorological products and services; improved professional and technical skills in designing and implementing products and services improvements; and enhanced dialogue and cooperation between users with the DMC, resulting in increased uptake of meteorological products and services.

4.1 Strategy Element 1. Evaluate User Needs and Decisions

At the core of effective service delivery is the user of weather-, climate- and water-related information. Users take many forms – from the general public to government ministries, military, and private industry. Many NMHSs serve customers and users in government, including disaster management, agriculture, transportation, health, and tourism. NMHSs may also engage with intermediaries, such as the media, who represent a user group or who further develop products and services for end-users. The role of the provider is to identify those users, including intermediaries, understand what they need, and how NMHSs can meet those needs, either individually or in partnership with other providers and partners. The evaluation of user needs is not a one-time requirement but a continuous and collaborative part of the service delivery process.

Key Activities for Accomplishing

Depending on the user group, the provider should develop regular opportunities to engage with users to discuss needs, and performance. These are opportunities for the provider to better understand the user's business, including: their mission and goals; the types of decisions made on a regular basis; how risk is managed; and how the provider's services may contribute.

Typical questions to ask of any user or customer are:

- What is your mission?
- How do you do it?
- What are your goals and how can we contribute?
- How do you use our services?
- How can we make it work better?
- What types of decisions do you have to make?
- What would help you make better decisions?
- How do you measure success?

Providers should facilitate communication and use of weather-, climate-, and water-

related information, and in some cases, provide training on specific products and services. User engagement is also a good opportunity to discuss, promote, and facilitate interdisciplinary research and development efforts for user-specific products and services.

How to engage users will vary by user group and by country. Interactions may be formal or informal, in-person or virtual, and may occur through user forums, focus groups, workshops, meetings, conferences, surveys, correspondence, or face-to-face with individual users. Frequency will vary, but must be ongoing and most likely more than once a year. Engagement should include not only the users, but also partners, such as private sector organizations and the media, and other government organizations as necessary.

AERONAUTICAL METEOROLOGICAL SERVICES

Customer focus is the first and foremost of the quality management principles to be adopted by aeronautical meteorological service providers. Customer requirements are documented through relevant ICAO and national regulatory bodies, and the quality of services as perceived by the customers is monitored. The means to achieve this include verification and evaluation processes, the conduct of regular customer satisfaction surveys, liaison group meetings with representatives of the customers (e.g., pilots, dispatchers, air traffic personnel, civil aviation regulators, etc.) and visits to the operation facilities of airlines and to meteorological offices. User suggestions and feedback are formally recorded and followed up. A formal response is given to the user before a suggestion or feedback is considered closed. Specific to aviation, the liaison group meetings also provide a forum for considering and documenting agreements on local arrangements in the provision of the aeronautical meteorological services as stipulated in ICAO Annex 3 / WMO Technical Regulations [C.3.1]. This user engagement process also goes a long way in satisfying the audit requirements of the Quality Management System and aviation safety oversight.

Services for airports could be considered an area for improvement. These are not covered by ICAO regulations except for Terminal Area Forecasts (TAFs) and basic warnings, and have to be agreed between airport operators and service providers. This can lead to difficult situations when airports experiencing serious disruptions by weather elements are either not relying on meteorological information at all in their operations, or receive them from independent service providers which are not coordinated with the services for airlines and air traffic management.

NMHSs should leverage existing WMO guidance and tool kits (see Appendix), as well as new guidance and best practices coordinated by the WMO Secretariat to build a core set of service delivery criteria. NMHSs should develop methods and tools to document and validate user needs and expectations and to communicate them within the organization and to other partners as necessary. User needs should then be converted into requirements to be met by existing or new products and services.

User requirements should be evaluated to ensure that they fall within the mission of NMHSs and that NMHSs have the capability to meet those requirements. Evaluating user needs for such purposes is what this Strategy calls *fit for purpose*. NMHSs should not evaluate user needs in isolation, but do so collaboratively with users, providers, and partners. *Fit for purpose* demonstrates an agreement, either implicitly or explicitly, among all involved and acknowledges some or all of the following:

- Current and evolving user needs;
- Provider capabilities, including strengths and limitations;
- What services will be provided and how they will be provided;
- How services will be used;
- Expectations of acceptable outcomes and provider performance;
- Acceptable cost or level of effort; and,
- Risks inherent in applying information to decision-making.

TEMPLATE FOR BASIC COMPONENTS OF A SERVICE LEVEL AGREEMENT

ARTICLE I. PARTIES
Describe the parties involved in the SLA

ARTICLE II. SCOPE

SECTION 2.01 SCOPE
Describe the purpose and extent of the SLA

SECTION 2.02 ASSUMPTIONS
Define any assumptions that underlie the defined scope

SECTION 2.03 GOALS AND OBJECTIVES
Describe what the parties are expecting to accomplish with the SLA

ARTICLE III. ROLES AND RESPONSIBILITIES
For all parties involved in the SLA, describes the role of each party and the responsibilities for supporting the SLA and delivering the products and services defined within

ARTICLE IV. EFFECTIVE DATE AND TERM
The date the agreement is effective its duration

ARTICLE V. DELIVERY AND PERFORMANCE
Describe in detail what each party is responsible for delivering and the key performance indicators to ensure compliance

ARTICLE VI. REPORTING, REVIEWING AND AUDITING
Describe oversight and reporting on the agreement; when the agreement should be reviewed, and reporting points of contact

ARTICLE VII. COST / FUNDING AND PAYMENT
Document costs associated with the SLA, who is responsible for paying, or funding, and when payment should occur. Cost may be broken down by specific line-items, such as labor, supplies, equipment, travel, training, etc.

ARTICLE VIII. CHANGES AND MODIFICATIONS
Describe the process by which changes or modifications will be made to the SLA and who is responsible for making changes

ARTICLE IX. TERMINATION
Describe terms for termination of the SLA and the process for terminating

NMHSs have limited resources and capacity, and therefore cannot be expected

to provide everything to everyone. A clear *fit for purpose* understood by all parties sets clear expectations and minimizes risk for NMHSs while achieving the best possible solution for users. If appropriate, NMHSs may want to explicitly outline the agreement reached with the user in a service level agreement. Agreements with other suppliers or partners may be documented in operating level agreements. Such agreements should be prepared in such a way as to reflect the current scientific uncertainties associated with forecasting weather, climate and hydrological events.

Effective user engagement throughout the entire service delivery process builds knowledge of user needs. It also builds an understanding of the impact of weather-, climate-, and water-related information on protecting life and property, sustaining the environment, and promoting economic development and prosperity. This knowledge leads to more effective products and services that are better aligned with external demands with a clear *fit for purpose*.

4.2 Strategy Element 2. Link Service Development and Delivery to User Needs

Building knowledge of users is of marginal utility if such knowledge is not integrated into the design, development and delivery of services. NMHSs with service-oriented cultures produce products and services with the user at the center of the development process. This means that NMHSs need processes and tools for translating requirements into tangible products and services and then validating that user needs and expectations are met.

WORKING WITH THE CUSTOMER TO OPTIMIZE FLOOD WARNINGS

Flood forecasting methodology, developed by Schröter et al[1]. (2008) was applied to two small river basins in Austria and Spain. The methodology was based on an assessment of the effectiveness and efficiency of Early Warning Systems (EWS) for flash floods. It focused on the development of optimal alerts through the analysis of trade-offs between the benefits of an increased lead time and the simultaneous decrease of warning reliability associated with the longer lead time. Determining the ability to reduce flood damage was based on a survey of users. The approach considered that the increase in lead time provided valuable opportunity for preparedness and prevention; whereas, the decease of warning reliability would cause economic loss in the case of false alarms. The assessment concluded that increasing lead time for flash flood events does not produce the maximum societal benefits due to the decreasing reliability (i.e., increasing false alarm rate). In fact, to maximize damage avoidance and minimize production loss due to false alarms, the optimal lead time is not the longest lead time. In the Besòs basin in Spain, for example, the optimal warning lead time was two hours. In practice, this is the time where a “watch” becomes a warning.

1 Schröter, K., M. Otrowski, C. Velasco, H.P. Nachtnebel, B. Kahl, M. Beyene, C. Rubin M. Gocht, 2008: Effectiveness and Efficiency of Early Warning Systems for Flash-Floods (EWASE). First CRUE ERA-Net Common Call – Effectiveness and Efficiency of Non-structural Flood Risk Management Measures, 132pp. Available from www.crue-eranet.net

Linking service development and delivery to user needs necessitates an operating model that delivers forecasts and information when and how the user specifies and provides users with the necessary support. Users will have different requirements so the key is to develop an operating model that is flexible and adaptable to wide-ranging and evolving user demands. This includes workforce, systems, technical and physical infrastructures.

One approach is to create a model in the form of a real or virtual co-location of meteorologists and users of weather-, climate- and water-related information who work together to deliver products and services. This approach integrates hydrometeorological information with user-specific data to determine impacts on the public and industry, such as: energy grid management; construction; flood control and urban inundation; hospitals and health practitioners, emergency preparedness and response; transportation; and so forth. Meteorologists may have temporary (short-term) or permanent assignment that enables them to work side-by-side with road management and maintenance specialists, public health experts, emergency responders, and others. The benefit to users is an operational network that evolves to meet specific user needs, forecasts systems targeted to user decisions and an integrated system that aligns weather-, climate- and water-related information with societal and economic impacts and user-specific information.

PUBLIC WEATHER SERVICE PLATFORM - METEOROLOGICAL SERVICE DELIVERY IN THE MEGA CITY OF SHANGHAI

The Shanghai Meteorological Service (SMS) of the Chinese Meteorological Administration (CMA) established an Integrated Public Weather Services (PWS) operations platform in 2009 to strengthen the integration between SMS, other agencies and specialized users. The goals of the Platform are: to transform PWS delivery into routine work by specialized duty officers; and to provide highly targeted and tailored services to a variety of institutional, governmental, specialized users and the public.

Under the direction of the Chief Service Officer (CSO), the Platform develops products for decision-making for 26 sectors which include government departments, emergency response agencies, the public, and weather sensitive users. The daily forecasts and warnings dissemination mechanisms for the PWS Platform include SMS (Short Message Service), television, radio, newspapers, magazine, the Web; Basic Grid Unit management system, electronic screens, telephone and fax.

Key Activities for Accomplishing

NMHSs should develop and improve upon processes and tools to document and communicate user requirements to all parties involved, including the research community, developers, partners, budget and finance officials, and others. Users should be brought in at various stages of the design and development process to evaluate and test products and services to ensure that they meet requirements and allow for optimal decision-making.

Processes should be monitored and evaluated. (See Strategy Element 3 for more details on evaluation and monitoring).

To implement this strategy element, consideration should be given by WMO to leverage existing guidance and best practices to develop a minimum set of standards and benchmarks for the design, development and delivery of products and services that integrate users throughout the process. Using the standards and benchmarks as a basis for evaluation, NMHSs should conduct a current assessment of their service design, development and delivery practices to identify gaps between current practices and WMO standards. NMHSs should use structured problem solving and process improvement methods (see Appendix) to develop and implement plans to close service design, development, and delivery gaps. WMO Members are strongly encouraged to share results and experiences obtained through these activities.

4.3 Strategy Element 3. Evaluate and Monitor Service Performance and Outcomes

Service delivery does not stop once the product or service has been delivered. User outreach and engagement must continue to ensure that services are received and acted upon and full benefit is achieved by the user. NMHSs should have a core set of metrics to measure the end-to-end-to-end service delivery process and its outputs. Each metric should only measure a specific aspect of the process but collectively, the metrics should enable an organization to demonstrate its

strengths and identify its areas for improvement in terms of effectiveness, efficiency, impact, satisfaction, and value to its stakeholders, customers, users, partners, and employees. Specifically, metrics should possess the following attributes:

- **Specific** – Metrics are specific and targeted to the area being measured. For example, a good metric for customer satisfaction would be direct feedback from customers on how they feel about a service or product. A poorer metric would be the number of customer complaints because it is not specific nor a direct correlation to customer satisfaction and, as such, can be misleading;
- **Measurable** – Ability to collect data that is accurate and complete;
- **Actionable** – Metrics are easy to understand, interpret, and act upon;
- **Relevant** – Measure only those things that are important and relevant to an organization's goals and objectives. A common mistake is to measure everything, which is time consuming and produces meaningless results;
- **Timely** – Metric data can be collected when it is needed;
- **Agreed Upon** – Externally-based metrics should be agreed upon by the NMHSs and customers, users, or partners. As discussed under strategy element one, agreeing upon acceptable levels of performance is part of the evaluation of user needs, or fit for purpose;
- **Owned** – Metrics should have clearly identified owners. Ideally these owners should be individuals with the ability, influence and resources to take action to ensure targets are met; and,
- **Consistent** – Any two given metrics should not promote conflicting behaviors.

The following are examples of the types of metrics important for evaluating and monitoring service performance:

Forecast Accuracy

A service-oriented culture demands use of accuracy measure from the perspective of the user, which differs from some of the accuracy measures widely applied within the Numerical Weather Prediction (NWP) community. A service-oriented organization should use forecast parameters which have direct impact on users' activities and operations. Accuracy of warnings and of temperature predictions are good examples of 'service-oriented' accuracy metrics. Specific examples currently in use include:

- Rolling average of percentage of forecast maximum and minimum temperatures for today and tomorrow lying within 2 degrees Celsius of actual values; and,
- Measure of Storm-based Tornado False Alarm Rate.

Customer Satisfaction

User engagement is at the heart of a service delivery culture, and measurement of customer, or user, satisfaction is both necessary and hugely useful in assessing performance and areas for future development.

User surveys are already in widespread and regular use within WMO. Surveys may have several levels of formality, scope and standardization, ranging from frequent customer liaison visits or user workshops, to bulk information gathering exercises using standardized surveys via e-mail, the web or by telephone. Both formal and informal methods for gathering user feedback are appropriate and useful. Surveys may be undertaken at routine intervals, or following a significant weather event. Satisfaction is often situational (environmental or economic) or influenced by public or media perceptions. These external factors can be minimized by using large and representative samples, longer periods of investigation or multiple events. Small-scale and highly-specific

customer survey results are best used alongside larger survey results from which statistically valid conclusions can be more easily drawn. Further, customer satisfaction results can prove important when viewed alongside accuracy metrics, highlighting differences between customer perception and technical performance. Specific examples currently in use include:

- Telephone customer satisfaction surveys conducted immediately after a severe weather event has occurred or has been forecast;
- Yearly measure of customer satisfaction as measured on an external benchmarking scheme by an external assessor of public-sector organizations; and,
- Annual mail surveys to external users on quality of web services.

Customer Service

Customer service metrics are related to customer satisfaction, but tend to deal with monitoring the effectiveness of the processes designed to allow continuous feedback from users and customers, rather than the content of the feedback itself. They can also be used to measure various aspects of the contract between NMHSs and their customers. Customer service metrics of these types tend to be well-defined and can be simple to formulate, at least initially, though there should be regular checks for relevance and the targets may need to be finely tuned to ensure they are realistic. Specific examples currently in use include:

- Respond to correspondence from all quarters within a maximum of 5 working days, and answer with courtesy all telephone calls within a maximum of 2 minutes;
- 95% or more of annual average of complaints answered within 28 days; and,
- 85% or more of annual average of all calls to be answered within 20 seconds.

Compliance, Timeliness & Resilience

Metrics of this kind are designed to measure the details of service quality away from conventional measures such as accuracy. These metrics may measure user requirements, mandates, or internal requirements for producing and disseminating data and information. Specific examples currently in use include:

- 100% of Australian Tsunami Bulletins issued from the Joint Australian Tsunami Warning Centre (JATWC) are available to emergency services and the public within 40 minutes of a significant event in the Pacific or Indian Ocean; and,
- Monthly measurement of percentage of METAR and TAF bulletins issued on time.

Reach

As this Strategy identifies, effective services must be available, timely, and useful. Measuring the reach of services demonstrates how well NMHSs deliver products and services that users are aware of and can access. In the case of public weather services, there has traditionally been a reliance on the “push” of information to the wider public via the media – usually television and radio. It is necessary to measure the effectiveness, or reach, of this communication route, and the growing importance of other media, such as the Web, to reach the public. Specific examples currently in use include:

- Percentage of telephone survey responders who affirmatively responded to seeing or hearing a warning for a specific severe weather event;
- Number of referrals to the website from external sites; and,
- Maintain full functionality of public website over 99.5% of the time (three month rolling average).

WORKING WITH THE USERS – KENYA METEOROLOGICAL DEPARTMENT (KMD)

The Kenya Meteorological Department (KMD), through its Public Weather Services (PWS) Division serves the general public and a cross section of specialized users which includes the media, the disaster community, agriculture, energy and health sectors. In order to serve these users effectively, it has taken steps to understand their specific needs and to organize its service delivery operations to respond optimally to such needs. It has accomplished this through carrying out user surveys and increasing interaction with them in training workshops and through the meetings of multidisciplinary teams which have been created for the service delivery improvement.

Over the years, the scope of user groups has expanded and the demand for new products increased. A good example is a recent request by the Kenya National Examination Council (KNEC) for monthly weather forecasts and weekly updates to help them with the logistics of transporting examination papers to remote places using roads that could quickly be rendered impassable by heavy rains. New methods of weather dissemination options such as the RAdio InterNET (RANET) community radio stations have evolved too, serving areas that are highly prone to extreme weather such as flooding and drought. The community radios have been very effective in issuing warnings and forecasts in local languages.

KMD has also focused on public education and outreach through activities such as radio and television discussion programmes and organizing school visits to KMD facilities, in order to prepare the public to respond adequately to warnings.

Impact

Measuring forecast accuracy, timeliness, and reach do not tell the complete story of service delivery effectiveness. Measuring the impact of a product or service demonstrates the value or benefit received, often measured in terms of societal or economic impact. Measuring impact tells NMHSs whether or not their products and services are useful and relevant. Measuring impact may require a significant cultural shift within an organization because it typically uses more subjective methods based in social science. Effective impact metrics should be based on the input and collaboration from users and partners, including those in the social science community, such as economists and sociologists, who have expertise in measuring social and economic impacts and human behavior. Specific examples currently in use include:

- Decrease in weather-related aviation delays; and,
- Cost avoidance from unnecessary evacuations.

Internal Processes

Good service delivery is reliant on insight into the organization's internal processes. Effective and efficient internal processes have direct impact on the quality of service delivery, the value of products and services, and the cost effectiveness of an organization's day-to-day operations. Measurement of an organization's internal processes should be driven largely by the QMS used, and the key processes defined therein. Specific examples currently in use include:

- Internal and external audits to review ISO9001 capabilities; and,
- Periodic review of research activities by an external committee from the research community.

Milestones

Milestones are also an internal metric often associated with project and programme management. Milestones measure the delivery of a product, service or system, or the completion of a phase, or step, in the delivery of a product, service, or system. They should refer to specific, in-year activities, with new milestones defined and agreed for the new review period. Examples include:

- Provide location forecasts, observations and mountain weather hazards in local languages by end of the fiscal year; and,

- Begin deployment of next generation radar capability in quarter XX of fiscal year YY.

Key Activities for Accomplishing

Once measures are collectively identified and a methodology defined for how data will be collected, NMHSs should collect baseline performance data. Baseline data informs both providers and users of current ability and capacity and serves as input when determining reasonable but stretch targets for future performance. Performance measurement data should be collected and reviewed at regular intervals by everyone in the value chain. NMHSs should use this data to reward and promote success, as well as to modify the service delivery process if performance is not meeting targets.

Care must be given in the design of any performance monitoring system to minimize the number of metrics to the extent possible, and to select metrics that provide the best measurement of service-related outcome. This is often not a simple process and the benefits of such measuring are best realized if the metrics are stable over a reasonably long period. Before implementing a system of performance metrics Members are encouraged to review the experiences of those Members who already have in place such monitoring.

4.4 Strategy Element 4. Sustain Improved Service Delivery

Service delivery should continuously evolve, along with user demands and changing external drivers, such as new technologies or science advancements, changing users, and evolving user capacity. For example, if the aviation sector improves its ability to avoid weather systems, thus becoming more weather resilient, the original services to the aviation sector must evolve. Likewise, if a sector becomes more weather sensitive, such as the energy sector, then the services should also reflect that evolution. Evolution of services may also mean that a specific product or service should be retired because it is no longer required by the user, or can be provided more efficiently and effectively by another provider.

Key Activities for Accomplishing

The role of NMHSs is to ensure users are able to reap full benefit of services by promoting, facilitating and coordinating improvements in interdisciplinary research, observing networks, modeling, and technology. NMHSs should keep users informed of new opportunities and advancements – first to validate that user needs continue to be met, but also to increase user knowledge. This can be achieved through various education, outreach and communication activities and should be part of ongoing user engagement described in element one. NMHSs also have a role in institutionalizing service delivery processes internally and among partners to achieve and maintain service excellence. The application of QMS is an effective tool for institutionalizing processes.

NEW TECHNOLOGIES IN THE SERVICE OF USERS

The Hong Kong Observatory (HKO) has evolved its service delivery by implementing mobile platform and social networking services in 2010. HKO developed an iPhone application named MyObservatory to take advantage of the iPhone's communication capability and its geo-positioning function. In addition to providing weather forecasts and warnings, MyObservatory automatically provides the latest location-specific weather conditions, such as temperature, wind, and weather photos from the weather stations closest to the user. MyObservatory proved hugely popular and was on the top of free download lists for months. HKO also began experimenting with social networking services in 2010 by launching a Twitter service, http://twitter.com/hkobservatory, to issue weather warnings and disseminate information. The number of HKO's Twitter "followers" grew from a few hundred to thousands in a couple of months and continues to increase. By evolving their service delivery methods to meet changing user demands and expectations, HKO found new, cost-effective ways to reach a greater number of people.

4.5 Strategy Element 5. Develop Skills Needed to Sustain Service Delivery

To achieve the elements above and succeed in user-focused service delivery, NMHSs must identify and develop the required capacity. The WMO Secretariat should also identify and develop the ability to facilitate and support service delivery. Capacity includes developing the necessary skills, processes, and technologies that enable, support, and sustain a service-oriented culture. Much of this Strategy has already described needed processes and tools that will enable service delivery. Cross-cutting across the entire Strategy and critical to its success is the development and enhancement of workforce skills.

Key Strategies for Accomplishing

Efforts should be made to identify the necessary skills relevant to an organization's operating model and objectives and then conduct a gap analysis to discover what skills are lacking within the organization and how those gaps can be bridged through a combination of training, employee development, and recruiting. The WMO Secretariat, in collaboration with the relevant technical commissions, is in the process of identifying requirements for specific competencies within NMHSs and the associated education and training needs for service delivery tasks. NMHSs must ensure their workforce has the necessary mix of technical skills to meet societal demands and user needs. Additionally, NMHSs need skills that enable effective service delivery. Such skills include, but are not limited to: communication; customer service; management, problem solving; and performance management.

DEVELOPING SKILLS TO SUSTAIN SERVICE DELIVERY

The China Meteorological Administration (CMA) has made every effort to cultivate a culture of service delivery by reforming an operational-based system into a service oriented one. It has paid much attention to team-building, interdisciplinary research, outreach, application of new technology, and utilization of social resources in service delivery. It takes special measures to encourage employees to communication more effectively with users. CMA was authorized by the central government to host a number of training courses on disaster prevention and mitigation each year with the nationwide participation by city mayors. It also regularly trains the voluntary weather information deliverers at grass-root level. A specific example is township leader training programme which was initiated as a pilot project in 2010.

4.6 Strategy Element 6. Share Best Practices and Knowledge

A second cross-cutting strategy that will enable a service-oriented culture is sharing and applying best practices and knowledge across WMO – a strategy already highlighted earlier in this document. The WMO Secretariat should enable sharing of practices, approaches and tools. What works in one country may not meet the user needs in another country, but service delivery is a collaborative process where providers, partners, suppliers, and users can all learn from one another.

CHAPTER 5: IMPLEMENTATION APPROACH

Implementing this Strategy requires more detailed action plans for developing the processes, methodologies, and tools to enable each of the strategy elements of the four phases of service delivery.

The maturity and formality of service delivery among NMHSs varies significantly. Further, NMHSs operate differently due to a combination of internal and environmental factors. For example:

- Some NMHSs are completely government owned and offer services only to other areas of government and the public. Some are fully privatized and offer commercial services. Many lie somewhere between these extremes;
- Some NMHSs act as data suppliers to private forecast providers, while some undertake fully commercial operations in direct competition with these private organizations. Some play both of these roles;
- Some NMHSs use their own NWP models and forecasting and production systems. Others use those supplied by external organizations; and,
- Most NMHSs only provide services to their own country, whilst other NMHSs may offer to provide services to others.

The bottom line is that a one-size-fits-all implementation approach will not be effective. Members need flexibility for developing their own unique approaches. How to implement this Strategy within NMHSs will depend on service priorities as well as current service delivery capacity.

One approach would be to develop implementation plans that focus on creating, growing, or sustaining a service delivery culture based on the maturity and formality of NMHSs' current capacity. The idea of creating a service delivery culture may at first seem overwhelming to some NMHSs and so they may wish to start incrementally by focusing on a particular service area that is an organizational or governmental priority. NMHSs may want to engage with the WMO Secretariat to identify and implement service delivery pilot projects that can easily demonstrate value and be replicated across other service areas, or even by other NMHSs.

Additionally, WMO Members should seek opportunities to transfer knowledge through advanced capacity-building approaches, such as engaging in regional partnerships and documenting best practices. All implementation approaches and plans should factor in QMS practices and processes.

APPROACH TO SERVICE DELIVERY IMPLEMENTATION IN THE TAJIK HYDROMETEOROLOGICAL SERVICE

As part of the modernization of the Tajik Hydrometeorological Service, specific investments are being made to enhance service delivery. Tajik Hydromet recognizes the importance of service delivery as an element of modern meteorological service. The nascent sectors have new and emerging needs for meteorological services and in many cases, it is important for the NMS staff to have sufficient training in the user sector to be able to communicate effectively with those clients, resulting in a more collaborative approach to service delivery. The approach taken is to invest in training for both the Tajik Hydromet staff and the technical personnel from the weather-sensitive sectors in line with the four stages of the service delivery system.

In the Republic of Tajikistan, the particularly important users are energy sector, agriculture and disaster reduction. For example, under this approach staff of the Emergency Management Committee (EMERCOM) local divisions will receive meteorological training to raise awareness of weather hazards and facilitate better utilization of hydrometeorological information in EMERCOM operational activities. The training will enhance EMERCOM capacity to disseminate hydrometeorological information about severe weather conditions to the regional and local branches of the Committee, and zone the country based on the probability of occurrence of hazardous hydrometeorological events.

PART II:
THE IMPLEMENTATION PLAN FOR THE STRATEGY

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CHAPTER 1 : INTRODUCTION

1.1 Background

WMO Members have recognized the importance of quality service delivery for all products and services provided to users and that guidance on how to improve levels of service delivery is required. WMO provides international coordination and sets standards for meteorological and hydrological products and provides guidance for service delivery and indeed some great success has been achieved in delivering services. However, Members have agreed that a more uniform and structured approach for WMO on service development and delivery is required and hence approved The WMO Strategy for Service Delivery (the Strategy) at the Sixteenth session of the World Meteorological Congress (Cg-XVI, May-June 2011). Following the approval of the Strategy, Congress requested the Secretary-General to arrange for the preparation of an Implementation Plan to assist Members in adapting and applying the Strategy in their own service delivery strategies and plans[2]. The Implementation Plan for the Strategy was subsequently prepared under the guidance of the Executive Council Working Group on Service Delivery (ECWG-SD) and was approved by the Sixty-fifth Session of the Executive Council (EC-65, Geneva, Switzerland, May 2013).

The Strategy serves as a foundation to improve service delivery by sharing best practices and supporting mutually agreed upon guidelines and by increasing user engagement throughout the delivery process, recognizing the many differences in cultures, structures, operational practices and resource and development levels across WMO Members as service providers.

The **objective** of the Implementation Plan is to lay out a path forward that will guide WMO constituent bodies and Members in realizing the goal of the Strategy, thereby improving service delivery to users. There is an expectation that this will result in increased uptake and use of their products and services, thus leading to greater user satisfaction and growth in the products and services provided and the ensuing socio-economic benefits.

The WMO ECWG-SD has the oversight responsibility for the Strategy and has been tasked with monitoring its implementation[3].

The Strategy describes **four stages** which define the continuous cyclic process for service delivery and identifies **six elements** which detail the activities required for high quality service delivery.

The **four** stages of service delivery are shown in Figure 1 below.

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[2] *Abridged Final Report with Resolutions of the Sixteenth Session of the World Meteorological Congress* (Cg-XVI, Geneva, Switzerland, 16 May–3 June 2011; WMO-No. 1077): ftp://ftp.wmo.int/Documents/PublicWeb/mainweb/meetings/cbodies/governance/congress_reports/english/pdf/1102_Part1_en.pdf

[3] *Abridged Final Report with Resolutions of the Sixty-fourth Session of Executive Council* (EC-64, Geneva, Switzerland, 25 June–3 July 2012; WMO-No. 1092, page 19)

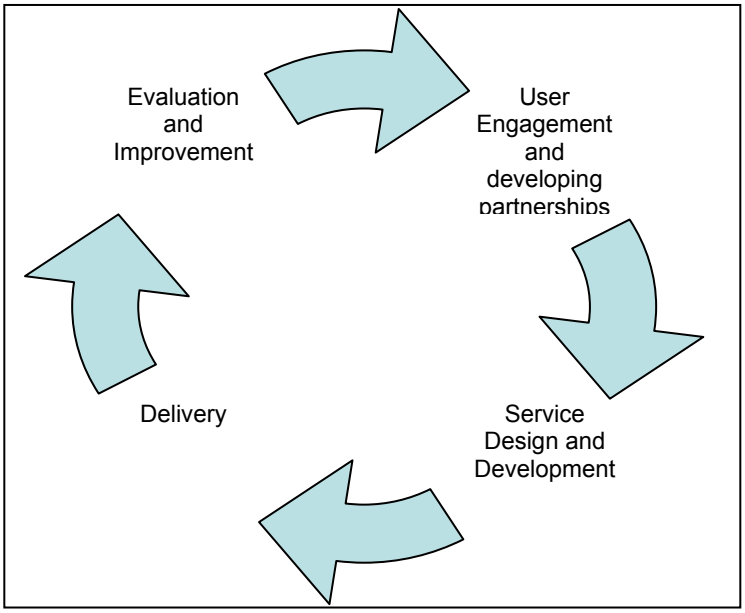

Figure 1. The four stages of service delivery

The **four stages** of a continuous, cyclic process for developing and delivering services are:

(1) User engagement and developing partnerships;

(2) Service design and development;

(3) Delivery; and

(4) Evaluation and improvement.

The six elements necessary for moving towards a more service-oriented culture are:

(1) Evaluate user needs and decisions;

(2) Link service development and delivery to user needs;

(3) Evaluate and monitor service performance and outcomes;

(4) Sustain improved service delivery;

(5) Develop skills needed to sustain service delivery; and

(6) Share best practices and knowledge.

Each of the stages and the elements is described in detail in the Strategy document, which is essential reading to understand the Implementation Plan.

Definitions of key terms used in the Strategy and the Implementation Plan are provided in the glossary in Appendix 3.

The distinction between a "User" and a "Customer"

In the context of the Implementation Plan, for clarity a distinction is made between user and customer. As noted in the glossary (see Appendix 3), a user is the person or the organization that receives the product or service and accepts it as an input to a defined process. For example, a member of the public may receive a tropical cyclone warning and proceed to prepare his/her house to withstand high winds and heavy rain. This **user** of the warning would not have paid the service provider for the service. A **customer** is the person or organization that pays for the warning service and specifies how it will be provided. In this tropical cyclone warning example the **customer** is the government that specifies the type of warning services it will fund the service provider to provide.

It is possible for both the user and customer to be the same person or organization. One example could be a farmer who requires a specific weather forecast service for crop spraying or harvesting that is not part of the public weather services of the service provider, and so purchases the service from a commercial provider. This farmer then becomes both the user and the customer for the service rendered.

1.2 Purpose of the Implementation Plan

It is widely recognized that great advances have been made in the sciences of meteorology, climatology and hydrology through the quality and volume of observational data and improvements in numerical prediction. However, it is less apparent that the benefits from these advances have been fully realized in terms of improvements by service providers to the users of products and services.

A main purpose of the Strategy is to ensure that the services provided by Members are fully utilized by the users in various sectors. The Implementation Plan for the Strategy has therefore been developed to assist the service providers of Members to enhance the quality and usefulness of meteorological and hydrological services so that the full benefit of these advances can be realized by users.

To achieve its purpose, the Implementation Plan outlines an approach that can be followed by National Meteorological and Hydrological Services (NMHSs) to convert the growing awareness of the importance of high quality service delivery into actions. A key component of the Implementation Plan is therefore a progress model (see Appendix 1). This provides a means to assess the current level of service delivery and how to improve it where it is considered cost effective to do so. By comparing their current service delivery situation against the levels articulated in the model, NMHSs will be able to identify the actions and activities required to move from the current level to a higher one.

The Implementation Plan also describes a role for the WMO constituent bodies to initiate, support and monitor the progress of Members in improving the quality of their service delivery.

1.3 Benefits derived from improved service delivery

As noted in 1.2. above, there is significant room for improvement to translate the full benefit of the advances in meteorology, hydrology and related technologies into services that meet user needs. However, the link between improved levels of service delivery and benefits to users of meteorological and hydrological services is being recognized. For example, an obvious benefit of improved warnings of severe weather will be a reduction in the risk to lives and adverse impacts upon economies. Usable, understandable and relevant services will benefit many weather-sensitive social

and economic sectors such as health, agriculture, water resource management, transport, tourism and energy, through enabling informed decision-making. Surveys of users of services can be conducted to determine the benefits they derive from the service provided and how that benefit can be increased by improved service delivery.[4, 5]

As a result of improved service delivery, the users will have more confidence in the capability of NMHSs, leading to improved relations and increased demands for services. In addition, better services to government agencies and departments will lead to greater recognition of NMHSs as providers of vital services supporting the economy and society. This would enable NMHSs to make more convincing cases for investment to sustain and further improve the range and quality of services.

As the Strategy is implemented by Members with the assistance of WMO's constituent bodies, more examples of successful user experience and derived benefits will become available and these should be included in the reporting process.

[4] http://www.wmo.int/pages/prog/amp/pwsp/documents/PWS_23_ROE-1_en.pdf
[5] http://www.wmo.int/pages/prog/amp/pwsp/SocioEconomicMainPage.htm

CHAPTER 2: IMPLEMENTATION APPROACH

The approach to the implementation of the Strategy should be regarded on three different levels: Global, Regional and National.

2.1 Implementing the Strategy at the Global Level

At the global level, the responsibilities for the Strategy fall within the mandates of:

1. Congress (Cg), which approved the Strategy, and which will have the ultimate responsibility to help develop the capacity for Members to implement it;

2. Executive Council (EC), which through its Working Group on Service Delivery, will exercise the oversight role;

3. The technical commissions (TCs), which are expected to provide technical advice and guidance for mainstreaming service delivery into their programmes and activities; and

4. The WMO Secretariat, which has the coordination responsibility and can facilitate the collection, aggregation and dissemination of best practices.

More specifically, the ECWG-SD will set out the means by which WMO will guide Members and WMO constituent bodies in the implementation of the Strategy, monitor and track progress and report to the Executive Council and ultimately to Congress.

2.2 Implementing the Strategy at the Regional Level

At the regional level, the responsibility for the Strategy is focused on regional associations (RAs) to recognize and acknowledge service delivery among their main priorities. The RAs are expected to facilitate the implementation of the Strategy by their respective Members through the establishment of subsidiary bodies such as regional Working Groups or Expert Teams to address specific aspects of service delivery improvement. Such groups or teams could address activities such as conducting socio-economic studies and evaluations, improving media relations, designing and implementing pilot and demonstration projects and establishing twinning mechanisms either intra- or inter-regionally to assist less developed Regions or sub-regions with emphasis on the Least Developed Countries (LDCs).

2.3 Implementing the Strategy at the National Level

There are many differences in the structures and operating models of Members' NMHSs both in the types of meteorological and hydrological services they provide and the users they support. The implementation approach has been developed so that it can be adapted and applied by Members and their NMHSs, regardless of their operating model, to guide them in meeting the attributes of effective service delivery identified in the Strategy. A three step process is proposed in the Service Delivery Progress Model; (i) determine a Member's current levels of service delivery; (ii) target where they wish to be in the future; and (iii) develop tactics to get there.

To help illustrate how service delivery could be improved, examples of different levels of service delivery and lessons learnt are provided in Appendix 5.

2.4 The Service Delivery Progress Model (SDPM)

A key component of the Implementation Plan is the Service Delivery Progress Model (SDPM), presented in Appendix 1. The SDPM addresses the implementation of the Strategy at the National Level. It describes the activities, actions and behaviours expected in NMHSs at a particular level of service delivery development with respect to each of the six elements of the Strategy. The SDPM defines five possible levels of service delivery capabilities: (1) Undeveloped; (2) Development Started; (3) Development in Progress; (4) Developed; and (5) Advanced.

The SDPM also includes a number of questions and answers associated with each element of the Strategy that will assist NMHSs to determine their current level of service delivery capability and to show the types of activities, actions and behaviours that will enable them to move to higher levels of service delivery.

Assessment of performance against the SDPM could be undertaken by NMHSs themselves, by other NMHSs in a twinning role, or by some other external body. It is also likely that NMHSs will discuss with key users and customers their level of satisfaction with services to help them decide what level of service delivery development is appropriate for the future.

2.5 Advancing to Higher Levels of Service Delivery

For each of the six elements of the Strategy outlined on page 11, there will be actions that can be taken to improve levels of service delivery and thereby progress through the levels of the SDPM. In addition to the service level descriptions and the self assessment questions posed, the SDPM provides detailed explanations of actions that can be undertaken by NMHSs to advance their service delivery performance (see Appendix 2).

CHAPTER 3: FROM STRATEGY TO IMPLEMENTATION NATIONALLY

This part of the Implementation Plan lays out an approach to be applied by "service providers" at the national level with particular focus on NMHSs. All NMHSs are different to some extent and it is not straightforward to recommend a simple model that will be fully applicable and clear to all of them. The Strategy recognizes that there is no prescriptive way to provide services to users; however, the following steps are intended to help NMHSs to review their current service delivery practices and to take actions to implement the Strategy.

Service providers

In the context of the Implementation Plan for the Strategy, the term NMHSs is used as a generic term applied to the national authorities that are the provider of meteorological and/or hydrological services. It is recognized that in particular areas of meteorology and hydrology, other entities could, under commercial contract, or through mandate provided by their government, provide public good services.

3.1 Steps to implement improved service delivery

Step 1 – Identify a Service Delivery Champion[†]

Taking a decision to improve levels of service delivery may require a culture change amongst the personnel in a National Meteorological or Hydrometeorological Service (NMS)[†]. All staff in the NMS should recognize that they are making a contribution to a service that is provided to a user and the needs of the user must be understood and considered at all times. Linked to this culture change is a fundamental need to move from a focus on internal processes to one where meeting the needs of users is the key objective. The culture change will only succeed if it is led and driven through the NMS by its leaders, thus the need to appoint a Service Delivery Champion as the change agent. The Service Delivery Champion, who should be a respected senior manager, will need to articulate the benefits of improved service delivery across the NMS and to key stakeholders such as those in government whose commitment will be essential to secure the necessary investment to improve service delivery. Staff of the NMS are likely to become more motivated when they see and benefit from the value users gain from their use of high quality meteorological and hydrological services.

Step 2 – Assess the current level of service delivery using the SDPM

Assessment of the current level of service delivery is best achieved by a systematic review of all current practices against the definitions within the SDPM. Evidence should be sought to justify the level chosen. Twinning with other NMHSs could be an effective approach to secure an objective analysis. The assessment should be documented in a report that describes the NMHSs' state of development for each element including an answer to each question posed in the SDPM with specific evidence wherever possible.

Step 3 – Create an Action Plan with short-, medium- and long-term goals

[†] See Appendix 3 - "Glossary" for definition

Changes to improve service delivery within an NMS require a structured approach, laid out in a clearly articulated Action Plan (see Appendix 7) that includes milestones and identifies the appropriate level of resources. By managing these changes as projects or programmes, the impact of the change on the efficiency of internal processes and on users can be fully analyzed, understood and managed. The changes can then be linked to achieving the desired outcomes. As more significant changes are made with greater impact, staff with specialist skills in project or programme management may be required to deliver the changes.

Some of these changes may be implemented quickly with only limited effort. Examples include change of formats of products, use of simpler language and avoidance of use of jargon, change of the time of broadcasts based on user surveys. Other changes may require a series of actions over medium or longer timescales, so it is important that they are documented and tracked through to completion. **Milestones** for the implementation of the Strategy can be set for short-term (two (2) years), medium-term (six (6) years) and long-term (ten (10) years).

Key Deliverables resulting from the implementation of the Strategy over the short-term will be the assessment of the current level of service delivery, putting in place the necessary Action Plan which should include strengthening user interaction through for example surveys, focus groups, workshops for each user group, to start improving the service delivery level and; assessment of required resources to implement the Action Plan. Over the medium-term, the Implementation Plan aims to facilitate access by a certain percentage of Members to at least one level higher in their service delivery development than their current level, the documentation of processes and sharing of lessons learnt with other Members. After ten years the implementation of the Strategy aims to develop or strengthen a service culture and facilitate the mainstreaming of service delivery in the programmes and activities of Members' service providers, resulting in tangible improvement of user perception of their services.

Step 4 – Allocate resources to implement the agreed actions

It is clear that effort and resources will be required for improving levels of service delivery. While it is recognized that this may be difficult for some NMHSs where there is great pressure on existing resources, it may be that with recognition of the benefits that can result from improved service delivery, prioritization within NMHSs could be made to reallocate resources for this purpose.

The specific resources required for achieving a defined level of services (in terms of quality, range, accuracy, timeliness, detail, delivery method) need to be assessed very carefully and compared objectively to the expected benefits for the customer and user. Many examples exist of cost-benefit analysis for different user sectors where estimates of achievable user benefit have been demonstrated to clearly exceed the required resources for planning, implementing and providing the services for a foreseeable time[6]. This is another area where twinning between developed and less developed NMHSs can provide guidance and assistance on the application of such analysis. However, if this proves difficult to do, suitable adjustments will need to be made to the service level, in consultation with users.

NMHSs which have a high level of service delivery will have dedicated staff responsible for ensuring that all the stages and elements of the Strategy are addressed for the services provided. For NMHSs in the early stages of service delivery development, this may not be possible, but the SDPM can be adapted to allow NMHSs to focus on stages or elements where development of effective

[6] http://www.wmo.int/pages/prog/amp/pwsp/documents/PWS_23_ROE-1_en.pdf

service delivery is required and where benefits can be delivered quickly. This may help to minimize the impact on resources required in the early stages of development.

Finally, in those situations where the relationship with the customer involves a formal service agreement, it is advisable that before entering into such an agreement to ensure the availability of resources in accordance with Step 4. Strict budgetary control and evaluation of the development of user benefits in line with development costs need to be maintained throughout the process. Customer commitment must also be assured to avoid wasted investment for services that may be discontinued by the customer.

Step 5 – Review progress of actions against the Action Plan in conjunction with regular reviews of level of service delivery

Continuous monitoring of progress against the Action Plan, clear internal financial accounting and regular meetings with the user/customer will ensure that the services developed are fit for purpose and, in the case of formal service arrangement, compliant with the service agreement, which could be a Memorandum of Understanding (MOU), Customer Supplier Agreement (CSA) or Service Level Agreement (SLA). This will also give the user confidence that their needs are being met and that they will get the service they expect. As part of the monitoring and evaluation process, appropriate Key Performance Indicators (KPIs) need to be developed based on the SDPM and the detailed questions contained therein. Examples of such indicators could be the number of service agreements with user groups and the number of user satisfaction surveys carried out.

Step 6 – Share best practice and knowledge between NMHSs

The sharing of experience, knowledge and best practice between NMHSs with the assistance of WMO's constituent bodies and the Secretariat can help to ensure that NMHSs are able to focus limited resources on areas which deliver maximum benefit. An example of sharing best practice and subsequent Action Plan is provided in Appendix 7 to help illustrate the steps described above.

Step 7 – Report progress as recommended by ECWG-SD

In order to demonstrate the effectiveness of the resources being utilized to improve service delivery, monitoring and reporting of progress are essential. The ECWG-SD will establish a reporting process to track the cumulative progress of WMO Members.

CHAPTER 4 : STRATEGY TO IMPLEMENTATION IN WMO CONSTITUENT BODIES

Although it is intended that the Implementation Plan for the Strategy be simple to use, many Members may need assistance to achieve the best results. It is certain that within their coordinating and facilitating functions, RAs and TCs, with the assistance of the Secretariat will have key roles in helping and encouraging Members to implement the Strategy and improve their levels of service delivery.

4.1 Role of the Executive Council Working Group on Service Delivery (ECWG-SD)

The ECWG-SD has been assigned the overall responsibility for the implementation of the Strategy. In addition to developing and providing guidance to NMHSs, the ECWG-SD will monitor the progress of Members, provide annual reports to EC and provide a final report to WMO Congress.

4.2 Role of regional associations (RAs) and technical commissions (TCs)

WMO constituent bodies recognize already the importance of high-quality service delivery as a means to sustain or even develop an NMS's potential. Experts and Management Groups of these bodies should participate in the development of recommendations on how Members can improve the value of the services provided to users. The Executive Council has requested TCs to ensure that the Strategy is infused into all the Programmes of WMO whose mandate includes service delivery[7].

While there is no prescriptive way to do this, RAs and TCs will be expected to develop mechanisms that are fit for purpose in their areas of responsibility including the identification of a Service Delivery Champion to aid in communicating examples of best practice. TCs can each help to contextualize service delivery improvement in their area of technical expertise. For example, the Commission for Basic Systems (CBS) could establish an Expert Team to document and share best service delivery practices for public weather services; the Commission for Hydrology (CHy) could develop guidelines specific to excellence in the delivery of hydrologic services; the Commission for Climatology (CCl) could ensure that service delivery practices are well enunciated in the implementation plans for the Global Framework for Climate Services (GFCS) and the Commission for Aeronautical Meteorology (CAeM), Commission for Agricultural Meteorology (CAgM) and Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) could each incorporate service delivery improvement initiatives in their work plans focused on service delivery to aviation, agriculture and mariners, respectively.

In the case of reporting procedures, it is important to avoid the situation where the task of providing a report can be more time consuming than the activity being reported on. However, some level of monitoring, evaluation and reporting will be required to demonstrate that the Strategy is being implemented, that improvement is being achieved and that benefits are being delivered and measured. The timetable for these activities will depend upon the differing requirements of Members, RAs and TCs, but it is recommended that reports should be provided on at least an annual basis.

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[7] *Abridged Final Report with Resolutions of the Sixty-fourth Session of Executive Council* (EC-64, Geneva, Switzerland, 25 June–3 July 2012; WMO-No. 1092, page 8)

4.3 Role of the Secretariat

A number of WMO Programmes have a service delivery dimension. The departments of the Secretariat that manage these programmes have a responsibility to promote the Strategy and advocate its implementation as described in this plan through the activities (including training and capacity development activities) of their respective programmes. Encouraging and supporting Members, through these programmes (including the Regional Programme and the Education and Training Programme), will be essential to achieving the first expected result of the WMO Strategic Plan which states as its goal, “Enhanced capabilities of Members to deliver and improve access to high-quality weather, climate, water and related environmental predictions, information, warnings and services in response to users’ needs, and to enable their use in decision-making by relevant societal sectors”.

4.4 Assessment Reports

As part of the short-term (two (2) years) milestone of this Implementation Plan, the recommended first step for Members is to conduct an assessment of service delivery development to determine their current level and provide a report to the ECWG-SD advising the WG on the analyzed level and if plans and targets are in place for further improvement. The ECWG-SD will provide guidance on how to approach such assessment reports as the implementation of the Strategy is tested in a number of NMHSs.

The information contained in the assessment reports will be used by ECWG-SD to track the implementation of the Strategy. Examples are provided below of those elements that ECWG-SD will monitor:

(a) The number of NMHSs that have conducted an initial review of service delivery status;

(b) The number of NMHSs that have an Action Plan in place to improve their level of service delivery;

(c) The number of NMHSs that have achieved improvements in their level of service delivery; and

(d) Examples of good practice that can be communicated more widely.

To ensure that as many reports as possible are provided by Members, it is expected that RAs and TCs will have a key role in encouraging and assisting Members in the preparation of reports. This could be achieved by including this responsibility within the terms of reference of one of the regional Working Groups or Expert Teams.

For the implementation of the Strategy to be a success, exchange of knowledge and information amongst NMHSs and WMO’s constituent bodies will be crucial. Timely and accurate reports to ECWG-SD will help to ensure that relevant knowledge and information can be sent to other NMHSs and constituent bodies. RAs and TCs can also assist the flow of information and the exchange of knowledge and best practice. Twinning and mentoring will be important activities in achieving progress and RAs in particular will have an important role in facilitating these activities.

4.5 Milestones to Measure Progress of the Implementation Plan

The high level objective of the Implementation Plan is to improve the levels of service delivery within NMHSs through their implementation of The WMO Strategy for Service Delivery. So that progress against this high level objective can be quantified, a number of targets and milestones are proposed.

4.5.1 *The Short-Term (2-year) Time Frame*

Within three months of approval of the Implementation Plan, the ECWG-SD will develop and distribute to Members a questionnaire that will facilitate the assessment of their current level of service delivery. The results of this questionnaire will be analyzed and form a baseline against which progress will be assessed. A second questionnaire will be administered two years after Implementation Plan approval and Members will be asked to submit an assessment report.

Over those first two years it is expected that:

(a) 70% of Members, with a portion from each of the six Regions, will have undertaken and completed the assessment of their current level of service delivery against the SDPM;

(b) 50% of Members will have decided which level is appropriate for them as a future target;

(c) 40% of Members will have decided which are the most important priority target user groups and will have conducted consultations with these groups to gather information on their requirements and decision-making processes;

(d) 30% of Members will have developed an Action Plan based on user input and their own service level assessment, to achieve their selected target level for service delivery and will have carried out an assessment of required resources to implement the Action Plan;

(e) At least 25% of Members will provide a report to the ECWG-SD; and

(f) At least 50% of RAs will have included service delivery Expert Teams or Working Groups in their working structures and have started to develop activities e.g., pilot projects and twinning arrangements within their Regions (and with other Regions).

4.5.2 *The Medium-Term (6-year) Time Frame*

Every two years after approval of the Implementation Plan, the ECWG-SD will administer a follow up survey and request updates of the Members' assessment reports as a means to monitor the progress.

By the end of four years it is expected that:

(a) 80% of Members will have undertaken and completed the assessment of their current level of service delivery against the SDPM;

(b) 70% of Members will have decided which level is appropriate for them as a future target;

(c) 60% of Members will have decided which are the most important priority target user groups and will have conducted consultations with these groups to gather information on their requirements and decision-making processes;

(d) 50% of Members will have developed an Action Plan based on user input and their own service level assessment, to achieve their selected target level for service delivery and will have carried out an assessment of required resources to implement the Action Plan;

(e) At least 60% of Members will provide a report to the ECWG-SD; and

(f) 100% of RAs will have included service delivery Expert Teams or Working Groups in their working structures and have started to develop activities e.g., pilot projects and twinning arrangements within their Regions (and with other Regions).

After six years, it is expected that:

(a) 40% of Members will have established intra or inter-regional twinning or mentoring arrangements;

(b) 50% of Members have achieved advancement of at least one level in their service delivery; and

(c) All 50% have documented the processes and can share lessons learnt with other NMHSs.

4.5.3 *The Long-Term (10-year) Time Frame*

The ECWG-SD will monitor progress over the long term through periodic, progressive questionnaires and requests for updated assessment reports. After ten years, it is expected that the implementation of the Strategy will have resulted in the development or strengthening of a service culture and facilitation of the mainstreaming of service delivery in the programmes and activities of Members' service providers, resulting in tangible improvement of user perception of their services.

Thus the aim of the long-term time frame would be that:

(a) Al Members having developed or strengthened their service culture;

(b) At least 70% of Members having mainstreamed service delivery in the programmes and activities of their service providers; and

(c) At least 60% of Members being able to show improvement in user perception of their services.

CHAPTER 5: LINKAGES WITH OTHER INITIATIVES AND ACTIVITIES

5.1 Linkages to WMO initiatives and activities

Service delivery is not a separate programme activity within an NMS; rather it should be seen as a critical component of everything that it does. A culture of continuous improvement in service delivery benefits staff, the NMS and its customers. Improved capabilities thus have a positive impact on the perception of the NMS by the users of meteorological and hydrological services. The goal is to ensure that mutual benefits are accrued by both the NMS and the users. Examples of WMO initiatives and activities where there is strong synergy with the Strategy follow.

5.2 Linkages to the WMO Strategic Plan

The WMO Strategy for Service Delivery stems from the WMO Strategic Plan and in particular the Strategic Thrust which focuses on improving service quality and service delivery. This Strategic Thrust recognizes the benefits that can flow to society from improvements in the quality and delivery of meteorological and related environmental services. Furthermore, the Strategic Thrust emphasizes that this will require collaborative efforts involving the providers and users of information to ensure that the needs of the users are integrated into the development of products and to enhance feedback between the providers and users of information to make continuous improvements. The expected result that deals with this Strategic Thrust addresses the rapidly changing paradigm for providing meteorological, hydrological and environmental services, which requires service providers to: (i) understand how the information is used so that it can be tailored to the users' needs, for example through effective rolling reviews of user needs for products and services; and (ii) integrate meteorological, hydrological and environmental information and products into decision-making (see Reference 4, Appendix 8).

5.3 Linkages to Global Framework for Climate Services (GFCS)

The need for high levels of quality in service delivery is equally applicable to the development of climate services. The requirement for user engagement is recognized in the User Interface Platform (UIP), one of the five central pillars of the GFCS. Dialogue with users, obtaining feedback from them and developing monitoring and evaluation measures in order to meet user needs, are closely aligned with the Strategy Elements. The close synergy with the Strategy has been highlighted in the GFCS Implementation Plan which recognizes the opportunity to create efficiency by aligning the UIP, in particular, with the Strategy (see Reference 5, Appendix 8).

5.4 Linkages to Quality Management System (QMS)

A QMS is defined as the organizational structure, procedures, processes and resources needed to develop and successfully implement management for the delivery of the organization's products and services[8]. Effective service delivery and compliance with QMS standards are complementary and if an organization has high service delivery standards, it will be well-positioned to meet the broader QMS standards. High levels of quality in service delivery and compliance with QMS standards are both essential if NMHSs wish to improve their outcomes.

During the last decade, a strong requirement for quality assurance, quality control and quality management practices in the provision of meteorological services for specific sectors has

[8] http://www.wmo.int/pages/prog/hwrp/chy/chy13/documents/awg3/Doc6_2-Quality_Management.pdf

emerged. In particular, the provision of meteorological services for safe, economic and efficient air navigation is carried out under a global regulatory framework jointly developed by the International Civil Aviation Organization (ICAO) and WMO. There is now required, as a standard, a properly organized system for the quality management of the meteorological information by all service providers. It should be noted that this requirement applies not only to meteorological service providers but to all providers of air navigation services (e.g., aeronautical information services (AIS), airport ground services, air traffic control (ATC), etc.). Thus, the needs are industry-driven and NMHSs and other providers of meteorological services to aviation should implement a quality system that is in conformity with the ISO 9000 series of quality assurance standards.

Other sectors are following the aviation example and it is anticipated that QMS requirements for the provision of services in hydrology and marine transportation may be required. Noting that the ISO 9000 family of standards related to QMS is designed to help organizations ensure that they meet the needs of customers and other stakeholders while meeting statutory and regulatory requirements related to the product, The WMO Strategy for Service Delivery is closely related to the gradual introduction of the QMS principles in all areas of services provided by NMHSs. It is very encouraging to note that some NMHSs have already achieved ISO 9000 certification not only for their aviation services but for the organization as a whole. Notwithstanding the necessary investment (financial and human resource) for obtaining and maintaining the ISO certificate, the experience of these NMHSs shows definitely a very positive impact on the quality of services and management practices, as well as on the user/customer attitude and perception.

A QMS should be supporting the stages and elements of the Strategy, complementing the SDPM as a guide to service delivery development. The WMO guidelines “A Guide for the Implementation of a Quality Management System for National Meteorological and Hydrological Services” (Reference 6, Appendix 8) provides advice and information to all NMHSs who wish to adopt a quality management approach to the delivery of services. Twinning and mentoring have been recognized by WMO as a method of assisting those Members requiring expertise, advice and assistance in the implementation of QMS[9]. A similar twinning and mentoring framework should be established to enable those NMHSs with well developed levels of service delivery to assist other NMHSs to improve levels of service delivery. The twinning and mentoring framework should also encourage interaction in an informal manner, or through bilateral visits and exchanges between NMHSs. It is expected that RAs will have a key role to play in establishing an effective framework for twinning and mentoring within and between the Regions.

5.5 Linkages to training

Training in all aspects of service delivery should be incorporated into relevant training events. For example, forecasting courses should include a module on service delivery where students are instructed on the competencies and behaviours required for quality service delivery. Such training should also include information concerning the users of the forecast information, their decision-making processes and how they apply meteorological or hydrological information in their decision-making. It is also highly desirable to train the users and customers of meteorological and hydrological services in how to use those products and services to achieve maximum benefits and to fully understand the capabilities of NMHSs.

5.6 Linkages to capacity development

Capacity development activities will often have the biggest impact when they focus on services and service delivery as the main objective and then consider the infrastructure, human and

[9] www.wmo.int/pages/meetings/ptc/2012/documents/PTC_2012_d03_3.doc

institutional capacities that are required to enable the delivery of the services. NMHSs will be able to make a more effective contribution to the development plans of their countries if the services they provide are developed with the needs of the user in mind. This will help to ensure that the services are valued by the users and that the meteorological and hydrological services are sustained and improved.

This approach is in line with the WMO Capacity Development Strategy (CDS)[10] which aims to facilitate a holistic and integrated approach to sustainable capacity development of NMHSs especially in developing countries, through: advocacy, education and training, outreach, partnerships and resource mobilization, demonstration and pilot projects, service delivery and research. The WMO CDS focus on improved quality in service delivery rather than the more traditional approach of enhancing meteorological infrastructure has proved to be very successful in a number of countries. For example, several projects to install Media Weather Presentation Systems in African NMHSs resulted in an immediate increase in the profile of the NMS with ministers and the public. A second example concerns the implementation of a Severe Weather Forecasting Demonstration Project (SWFDP) where the benefits of investing in improved service delivery to the public, founded on investments in science and technology, have been shown through increased lead time and accuracy in warnings to mitigate the impacts of severe weather. The WMO Guide to Role, Operations and Management of NMHSs[11] has a strong focus on service delivery and highlights many of the challenges that NMHSs face, including meeting national needs for meteorological and related data and services. It should be kept in mind that a pre-critical condition for delivering effective services is the capacity of the underpinning operational structure of NMHSs for the provision of accurate and timely products, based on sound scientific grounds.

5.7 Linkages to the Madrid Action Plan (MAP)

The International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services, was organized by WMO in Madrid, Spain in 2007. The purpose of the Conference included, among others, fostering increased awareness in both the current and potential user communities of the availability and value of the full range of existing, new and improved services; and initiating and promoting new approaches to the evaluation of the social and economic benefits of meteorological and related services in the research, education and applications communities. The Conference reiterated that, among others, the role of NMHSs is to provide the information and services that enable governments and other stakeholders to minimize the costs of natural disasters, protect and strengthen the weather-, climate- and water-sensitive sectors of the economy and contribute to the health, welfare and quality of life of the public. The result of the Conference, known as the Madrid Action Plan[12] clearly recognizes the need to be able to quantify the benefits within the various socio-economic sectors supported by NMHSs with the goal of strengthening their service delivery capacity.

[10] http://www.wmo.int/pages/prog/dra/CDS.html
[11] http://www.wmo.int/pages/prog/dra/linkedfiles/2011ECWG-CDd05.2.3GuideOutlinev16.docx
[12] http://www.wmo.int/pages/themes/wmoprod/documents/madrid07_ActionPlan_web_E.pdf

CHAPTER 6: CLOSING REMARKS

The mainstreaming of The WMO Strategy for Service Delivery Implementation Plan represents an important milestone in strengthening the service orientation of NMHSs. The Plan describes practices that can strengthen service delivery across the entire WMO by providing a flexible methodology that is useful to NMHSs in both developed and developing countries. It provides NMHS's decision-makers with the tools required to fully understand the use of their services in the decision-making processes in various socio-economic sectors and make them fit for purpose whether they be for public good or commercial gain. The first steps require a commitment from Members to evaluate their current level of service, to adapt the Plan to their needs and to interact closely with each other, their regional association and relevant WMO technical commissions as a part of an overall quality management system.

On behalf of the WMO Executive Council Working Group on Service Delivery, it is hoped that the management of NMHSs will find the Strategy and its Implementation Plan both informative and useful to furthering their national goals. The Working Group commits to help facilitate the implementation of the Strategy and monitor its progress to measure achievement of higher levels of service over the next two to ten years. Raising the standards of service delivery to users is a vital ingredient to the success of Members as service providers to enhance the visibility of NMHSs and attract new resources to strengthen their capacity.

APPENDIX 1: SERVICE DELIVERY PROGRESS MODEL (SDPM)

This model can serve both as a tool for assessing the level of development of NMHSs and also for developing an action plan for improving service delivery.

	Elements from the Strategy:	**Undeveloped:**	**Development Initiated:**	**Development in Progress:**	**Developed:**	**Advanced:**
1	Evaluate user needs and decisions.	No knowledge of the users or their requirements for products or services.	Users are known, but no process for user engagement exists. User requirements for service delivery are not well defined.	Users are able to contact NMHSs and their feedback is recorded. There are some formal processes for using the feedback received in development of services. User requirements are defined with limited documentation.	NMHSs seek input on an ad hoc basis from users to inform development of services. Requirements are defined in documents agreed with the customer, but are not routinely updated.	A consistent ongoing dialogue is maintained with users in respect of their needs and the services they receive. Requirements are defined in documents agreed with the customer and routinely updated using feedback from users.
The answers to the following questions will allow NMHSs to assess where their current service delivery processes lie on the SDPM						
Q1a	Who are the users of the products and services you deliver?	There is no knowledge of the users of the service and products.	Some or all of the users are known, but this information is not captured in a formal document	A Memorandum of Understanding (MOU), Customer Supplier Agreement (CSA) or Service Level Agreement (SLA) is in place with some users, but is often incomplete or out of date, and, as a consequence, it is unlikely to be utilized.	An MOU, CSA or SLA is in place for each user but is not routinely assessed and updated.	An MOU, CSA or SLA is in place for each user and is routinely assessed and updated as necessary to ensure it contains current information. The information contained in the document is used to inform the development of products and services.

Q1b	What processes do you have in place for engaging with your users?	There are no processes in place for engaging with users.	No proactive engagement with users. Users are able to contact NMHSs on an ad hoc basis, but no formal record of this contact is kept and action is rarely taken as a result.	Irregular proactive engagement is undertaken, which can be in the form of surveys or user workshops.	Regular workshops or other similar mechanisms are used to gain feedback from users on how services can be improved. A user feedback log is maintained and action to improve service delivery is taken.	A range of mechanisms is used that are appropriate to the user community. Outcomes are communicated back to the users.
Q1c	How do your users contact you?	There is no mechanism for contact with users.	Mechanisms for user contact are in place, but are unreliable e.g., poor Internet access results in e-mails regularly going unanswered.	Users are able to contact NMHSs using a variety of means e.g., e-mail, telephone and post.	Users are encouraged to contact the NMHSs through a variety of means. User contact is managed on an ad hoc basis.	User contact is managed by a designated individual or team.
Q1d	How are user requirements gathered and documented to inform products and services?	User requirements have not been captured and documented.	There is an understanding of users needs, but these are not described in the form of user requirements and with little detail.	Outline user requirements have been captured but documentation is limited.	Requirements are defined in documents agreed with the customer, but are not routinely updated.	Requirements are defined in documents agreed with the customer and routinely updated using feedback from users.

	Elements from the Strategy:	**Undeveloped:**	**Development Initiated:**	**Development in Progress:**	**Developed:**	**Advanced:**
2	Link service development and delivery to user needs.	No concept of service, just products issued.	Services do not respond to changing user needs and new technology. Products are documented with limited descriptive information.	Services are developed and changed as technology allows, but engagement of users is ad hoc. Products and services are documented and this information is used to inform management of changes.	User feedback is used to inform changes and developments to services. Products and services are consistently documented. SLAs are defined.	Users are consulted to inform development of products and services. The service defined in the SLA is agreed with the Customer based on User consultation.
The answers to the following questions will allow an NMS to assess where their current service delivery processes lie on the SDPM						
Q2a	What documentation do you maintain to define the products and services you deliver?	There is no documentation related to products or services.	Some information has been captured for a small number of services and products in a document such as Work Instruction or SLA, but this is not routinely updated.	Information has been captured for a small number of services and products in a document such as Work Instruction or SLA and these are routinely updated.	Information has been captured for most services and products in a document such as Work Instruction or SLA and these are routinely updated.	All products and services are described in documents such as Work Instructions and SLAs and these are routinely updated.
Q2b	How users are kept informed when products and services are changed?	There is no mechanism for informing users when products and services are changed.	Some users are informed ahead of time on an ad hoc basis when products and services are changed.	All users are informed when the products and services they receive are changed.	A formal process is followed to ensure that users are well prepared for any changes to services and products they receive.	Users are involved in identifying new requirements and making changes to products and services and new technologies are considered when changes are planned.

	Elements from the Strategy:	**Undeveloped:**	**Development Initiated:**	**Development in Progress:**	**Developed:**	**Advanced:**
3	Evaluate and monitor service performance and outcomes.	No measures of performance for either accuracy or service delivery are in place.	Some Developing measures are in place. The verification of accuracy and/or service delivery takes place, but no systematic process exists to use this information to improve the service.	Measures of verification and service delivery are in place but are not informed by user requirements.	User requirements inform the measures of performance. Findings are used to identify areas for improvement. Subsequent actions are undertaken in an ad-hoc manner.	Measures of performance are based on user need, reported regularly and are consistently used to inform decisions on improvements.
The answers to the following questions will allow an NMS to assess where their current service delivery processes lie on the SDPM						
Q3a	How do you verify the accuracy, quality and, effectiveness of the products and services you deliver to users?	There are no measures of the accuracy, quality or effectiveness of the products and services delivered.	Some measures are used in an ad hoc manner to determine the accuracy and timeliness of products and services.	Some measures are used for verifying accuracy and quality of service delivery routinely. Some of these measures may be based on user requirements.	Measures are used for accuracy, quality of service delivery and effectiveness based on user requirements. The measures are defined in the SLA.	Measures are routinely reviewed to reflect changes to user needs. The SLA is updated in line with changes.
Q3b	How are the outcomes of the verification of accuracy, quality and effectiveness and service delivery quality used to improve the products and services you deliver to your users?	There are no outcomes as there are no measures.	Some outcomes are recorded in an ad hoc manner or for internal purposes and may be used to improve some of the products and services delivered.	Outcomes are routinely recorded for some products and services and some analysis is undertaken.	Analysis of the outcomes is used to identify areas for improvement; actions are undertaken in an ad-hoc manner.	Areas for improvement are documented and actions undertaken routinely. Plans are produced and progress against targets is monitored routinely.

	Elements from the Strategy:	**Undeveloped:**	**Development Initiated:**	**Development in Progress:**	**Developed:**	**Advanced:**
4	Sustain improved service delivery.	No concept of service delivery principles.	The concept of service delivery has been introduced and an assessment of current status has been undertaken.	An Action Plan has been created to improve the level of current service delivery and resources have been identified to implement it.	The Action Plan is being implemented to improve service delivery, the outcomes are being monitored.	The status of service delivery is reviewed on a regular basis. The Action Plan evolves in response to the outcome of the reviews.
The answers to the following questions will allow an NMS to assess where their current service delivery processes lie on the SDPM						
Q4a	Have you documented your service delivery processes?	No documentation to describe the service delivery process exists.	Some documentation to describe service delivery processes exists, but not in the format of a QMS.	A QMS exists for most service delivery processes. Monitoring of compliance is ad hoc.	A QMS exists to cover all service delivery processes and compliance is monitored. Some actions are undertaken to improve processes.	A QMS exists and a process for continual improvement is undertaken that includes input of feedback from staff, customers and users.
Q4b	How do you use developments in science and technology to improve service delivery?	Developments in science and technology are not reviewed.	Some developments in science and technology are identified but no plans exist to utilize them.	Developments in science and technology are identified with some plans in place to utilize them.	Plans are routinely updated to benefit from developments in science and technology.	Developments in science and technology are embraced and plans are in place to maximize benefit from them.
Q4c	How do you communicate changes in your service delivery process to your customers and users?	Changes are not communicated to customers or users.	Some changes are communicated but with some consideration of impacts on customers or users.	All changes in service delivery are communicated to customers or users as appropriate.	A formal communication process is followed to ensure that customers and users are well prepared for any changes in service delivery.	Customers and users routinely contribute to developing service delivery processes and the subsequent communication of changes.

	Elements from the Strategy:	**Undeveloped:**	**Development Initiated:**	**Development in Progress:**	**Developed:**	**Advanced:**
5	Develop skills needed to sustain service delivery.	No concept or communication of service delivery principles.	No formal service delivery training in place, though informal communication of service delivery principles exists.	Most members of NMHSs are aware of the importance of service delivery. Some formal training is provided.	All members of staff are fully aware. Formal training is provided. There is an ad-hoc process for staff to provide ideas for improvements to service delivery.	There is a culture of providing best possible service delivery. Innovative ideas form a routine input to the Continual Service Improvement process.

The answers to the following questions will allow an NMS to assess where their current service delivery processes lie on the SDPM						
Q5a	Who is the Service Delivery Champion within your NMS?	There is no Service Delivery Champion within the NMS.	The process of identifying a Service Delivery Champion has been started but is not yet complete.	A Service Delivery Champion has been identified but does not have appropriate support from all levels of the NMS to deliver improvements to Service Delivery.	A Service Delivery Champion has been identified but does not have all the appropriate resources to deliver improvements.	A Service Delivery Champion at an appropriately senior level has been given the training, resourcing and mandate to deliver improvements in service delivery.
Q5b	What mechanisms are in place to enable your staff to be educated in the principles of service delivery?	There are no mechanisms in place.	Informal communication of service delivery principles takes place between staff and management.	Mechanisms such as training workshops are regularly carried out for all staff and management. Available material on the subject is used.	Regular communication and training, which has been built on available material, occurs for all staff and management.	Ongoing training is carried out for all staff and there is regular communication between all levels of staff and management regarding service delivery.
Q5c	What mechanisms are in place for documenting the roles of staff and their individual training requirements?	Staff have no documented Job Description or training plan.	Most staff have a Job Description but there is no correlation between them.	All staff have a Job Description that is coherent and consistent across the NMS.	Staff are reviewed against their Job Descriptions and areas for development are identified. Individual training plans are created based on development needs.	Training plans are reviewed to identify NMHSs' training requirements. Training is delivered using a variety of methods.

Q5d	How do you engage staff in improving service delivery?	There is no mechanism for staff to provide suggestions on how to improve service delivery.	An informal process for staff suggestions exists but is rarely used.	A process for staff suggestions exists; implementation of suggestions is ad-hoc.	Staff suggestions are encouraged and implemented as appropriate. Improvements to service delivery are communicated internally.	Staff suggestions are considered at a senior level and implemented as appropriate. Feedback is provided to staff on the impact of their suggestions.
6	Share best practices and knowledge	This activity is a key function of the WMO Secretariat Programmes that have a role in service delivery with assistance from the Education and Training Programme. NMHSs are encouraged to share best practice in service delivery, through formal training, twinning and mentoring etc.				

APPENDIX 2: ACTING ON THE STRATEGY ELEMENTS

For each of the six elements of the Strategy, there will be actions that can be taken to improve levels of service delivery enabling the service provider to advance through the levels of the SDPM. Some of these actions are described in the following paragraphs, with greater detail provided in the SDPM.

Strategy Element 1 – Evaluate User Needs and Decisions recognizes that as the first step in the process of service delivery, it is vital to know the users of meteorological and hydrological products or services and their decision-making and planning processes in relation to those products and services. Getting to know the user will very much depend on the category of the user and different methods will need to be applied in the case of each category. The media and disaster management as well as humanitarian organizations can be defined as both users of the service and partners of NMHSs in the delivery of the service to other end users and decision-makers. Socio-economic sectors such as agriculture, health, energy, transport and tourism form a different group of users who may be using NMHSs' service and products to provide services either as public good to the end users or as part of a commercial arrangement. The most diverse user group is the public. Surveys are most appropriate for gathering information on the requirements of the public as a major user group. While surveys may also initially be used in the case of other user categories, they may be followed by more in-depth workshops or interviews with individual users in those categories. Having established the different categories of users of NMHSs' products and services, there must be an open and honest dialogue with them, so that there is a clear understanding of their requirements for meteorological and hydrological products and services, NMHSs' capability to provide them, means of delivery, the way in which the services will be used, costs (if applicable), etc. The Implementation Plan for the Strategy will clearly define for each level of the SDPM, the service to be provided, as well as how it is provided and monitored. In the case of well defined and well structured user groups, the development of a Memorandum of Understanding (MOU)[†*], Customer Supplier Agreement (CSA)[†*]or Service Level Agreement (SLA)[†*] is a key activity in service delivery. Regular meetings with the users are essential to ensure that issues with service delivery are resolved and that changing requirements and capability are understood. In the case of the public where services clearly take the form of public good, undertaking such formal agreements with individual members of the public is not possible. However, in some countries, the requirements of the public may be represented through an organization or representative body. Where this is not the case, different channels such as regular surveys, web feedback and social media should be used for gathering information from the public on their requirements, level of satisfaction with the services of NMHSs and areas where action is needed to improve service delivery.

Strategy Element 2 – Link Service Development and Delivery to User Needs recognizes that users should be able to see that a service has been developed and delivered with their particular needs in mind, rather than being provided with a generic product, or one developed for another purpose. It is important that the user/customer is fully aware of the capabilities of the NMS, so that there are not unrealistic expectations over what products and services can be provided. A number of documents can be used to assist with the implementation of this element. For example, a Product Catalogue[†*] will define the range of data, products and services delivered by NMHSs and a Process Description Document[†] can be used to ensure that an individual service fits into NMHSs' process for supporting service delivery. A Work Instruction[†] will ensure that all those involved in producing the product or service are aware of precisely what is required to ensure a consistent and branded output. In addition, risk assessment should be carried out to

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[†] See Appendix 3 - "Glossary" for definition

[*] See Appendix 4 – "Documents and Templates" (http://www.wmo.int/pages/prog/amp/pwsp/documents/Appendix-4.doc)

ensure that the risks preventing quality and reliable service development and delivery could be identified and properly managed.

Strategy Element 3 – Evaluate and Monitor Service Performance and Outcomes requires NMHSs to monitor a number of metrics related to the services they provide. These include: accuracy, timeliness, responses to issues raised by the user and user/customer satisfaction. However, it is important that the metrics are agreed with the user and customer and that regular reports are provided on the end-to-end performance of the services. These metrics play an important role in identifying areas where the product or service can be improved. A number of forms and documents will be required to effectively implement this strategy element. For example, a Feedback Log* to track feedback from users, an Action Tracker* to ensure that agreed actions are implemented and documents to define and report on verification statistics. Descriptions of these documents and links to templates to enable staff from NMHSs to create them are provided in Appendix 4[13].

Strategy Element 4 – Sustain Improved Service Delivery recognizes that user needs evolve and NMHSs' capability will change as scientific developments are implemented and technology changes. The constant dialogue with the user that is required as part of Strategy Element 1 will ensure that these changes are identified and that the benefits of the improvements are delivered to the user. The MOU, CSA or SLA is not a static document, but should be reviewed and updated as the user's need evolves, in agreement with the user/customer. By sustaining improved service delivery NMHSs will also improve their standing and reputation which helps support their role as the authoritative body for the provision of meteorological and hydrological services with particular emphasis on services for public good. The Process Description Template* can be used to show how Strategy Element 4 fits into NMHSs' overall process for service delivery.

Strategy Element 5 – Develop Skills Needed to Sustain Service Delivery recognizes that new or improved skills to effectively communicate and interact with users and customers may be required to implement the Strategy. While technical knowledge and capabilities to develop products and services are needed, other skills such as communication, presentation, consultation with and analyzing user/customer needs will also be required, which may not have been the traditional areas of development for staff in NMHSs. These new skills required by staff working in service delivery should be clearly defined in required competencies as part of their Job Description. The WMO Public Weather Services Programme has developed competency requirements for NMHSs staff working in product and service development and delivery (see reference 4). A gap analysis of existing competencies should be used to identify training needs, leading to the development of standard training modules to ensure that all staff has the opportunity to learn and develop these skills.

Strategy Element 6 – Share Best Practices and Knowledge, recognizes the excellent work done by WMO in the past in ensuring that best practice and knowledge are transferred throughout NMHSs and it is essential that this continues. Twinning arrangements and mentoring between developed and less developed NMHSs to foster the exchange of experiences, technical know-how, best practice models and guidance, are highly encouraged to improve service delivery. Such arrangements can be facilitated by the Secretariat.

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* See Appendix 4– "Documents and Templates"

[13] See Appendix 4 – "Documents and Templates" (http://www.wmo.int/pages/prog/amp/pwsp/documents/Appendix-4.doc)

APPENDIX 3: GLOSSARY

These definitions are based on ITIL standards related to IT Service Management, where indicated. Some additional definitions are also included in this glossary, which are not based on ITIL standards. Further information on these standards can be located at the following Website: http://www.itil-officialsite.com.

Accuracy	The degree to which a forecast parameter matches the observed value (e.g. on 9 days out of 10, the forecast maximum temperature issued at mid-day the previous day was within the agreed target compared to the observed maximum temperature on the following day. This gives a measure of accuracy of 9/10 * 100 = 90%).
Collaborating Organization/Partner	An organization or entity (e.g., a university, a specialized non government centre, a relevant government agency) of a WMO Member that provides complementary/additional weather, climate or water information to NMHSs or directly to users, under terms and conditions that have been mutually agreed.
Commercial service	A product or service provided to a customer on a fee-paying basis. Normally the price of the product or service will be determined by the cost of producing it plus an element of profit.
Compliance	Adherence to standards, regulations and other requirements.
Component	A part of a product, for example in the form of a graph, data or text.
Coordinator	An organization or entity that facilitates or coordinates the delivery of products and services. For this Strategy the WMO Secretariat serves in this role. Working closely with Members, the Secretariat sets standards for weather-, climate- and water-related products and supporting services. This includes observations, data quality and telecommunications. The data underpinning meteorological and related products require international coordination and validation to guarantee that they meet the needs of the product generating centres. The communication systems that move data and products globally are coordinated through the Secretariat. The assessment, and objective verification of products that are generated by one country and used by others may also be coordinated by the Secretariat and the results shared and used in the process of improving the quality of products for all.
Customer	The person or organization which pays for products and services and agrees the specification for delivery through the Customer Supplier Agreement (CSA) or Service Level Agreement (SLA). The Customer may or may not be the User.
Customer Supplier Agreement (CSA)	A document defining the services or products to be delivered by one party to another. Roughly analogous to a contract, but customarily made use of between different parts of government.
Effectiveness	The degree to which the service or product benefits the user. This measure tries to capture the actions taken by users as a result of the service they have received and consequently the tangible benefit of that service or product.
Fit for Purpose	The product or service should be suitable for the intended purpose and results from collaboration and dialogue among users, providers, suppliers, and partners and demonstrates a clear agreement, either implicitly or explicitly, among all involved. A clear fit for purpose acknowledges: • Current and evolving user needs;

	• Provider capabilities, including strengths and limitations; • What services will be provided and how they will be provided; • How services will be used; • Expectations of provider performance; and, • Risks inherent in applying information to decision-making..
Memorandum of Understanding (MOU)	A document outlining the responsibilities of different parties in respect to a service or relationship where a formal contractual agreement cannot be entered into.
NHS	A National Hydrological Service.
NMHSs	National Meteorological Services (NMSs) and National Hydrological Services (NHSs) (always used in the plural).
NMS	A National Meteorological or Hydrometeorological Service
On Time In Full (OTIF) Score	A measurement of delivery performance in a supply chain and looks at deliveries from the point of view of the customer. It measures how often the customer gets what they want at the time they want it.
Operating Level Agreement	An agreement among providers, suppliers, and partners detailing how a service or group of services would be delivered.
Process Description Document	A document which forms part of the QMS documentation library. In the context of the Strategy it describes the process of service delivery within a National Meteorological or Hydrometeorological Service (NMS).
Product	Basic information such as observations and datasets, or information that is created by an analysis or forecast process, that the user will base actions upon.
Production Unit	The group responsible for creation of the products delivered as part of the service.
Providers	Individuals or entities that produce or acquire weather, climate or water information or products that are then supplied in support of users' needs in this regard. Providers may include NMHSs, partners, other meteorologically relevant agencies and the private sector
Quality	A measure to indicate to what extent a set of intrinsic characteristics of a product or service meets customer requirements.
Service	A product that is delivered, including the activities associated with the people, process and Information Technology required to deliver it, or activity that is carried out (advice, interpretation, etc.) that meets the needs of the user or can be applied by a user.
Service Delivery	A continuous process for developing and delivering user-focused services, defined by user engagement, service design and development, delivery and evaluation and improvement.
Service Delivery Champion	An individual at an appropriately senior level who is responsible for improvements in service delivery. This individual will require the support of senior management, along with adequate training and resourcing, in order to deliver and sustain these improvements.

Service Level Agreement (SLA)	A non-technical document agreed between the provider of a product or service and the customer defining exactly what is required from both parties.
Service Priority	This can be described in different ways and with different definitions for the level of priority, with the normal being High, Medium or Low. An example of High priority would be those products which are used to minimize risk to life and limb.
Technical Support Group	The Technical Support Group is responsible for ensuring that the equipment such as the Information Technology and communication networks required to support service delivery is available to meet the SLA. Within a support group there may be different levels of support: 1st Line - initial support level responsible for developing user issues act as the users' first point of contact. 2nd Line - more in depth technical support to assist in resolving issues that cannot be resolved by 1st Line. 3rd Line - expert support level, undertaking more in depth analysis to resolve problems that cannot be resolved by 1st or 2nd Line support.
Timeliness	A measure of the ability to have delivered the product by the time agreed with the Customer in the SLA, this should take account of the delivery time from provider to user. It is unreasonable to expect the provider to be accountable for any breakdowns of the infrastructure required to deliver the product that is outside of the NMHSs' responsibility.
User	The individual, organization or intermediary who receives the product and service and takes action based on it. In the context of the PWS, members of the public will ideally have their needs considered by an organization or representative body, although in reality this is often done in an ad hoc manner based on different methods of information gathering such as surveys, or focus groups, with little direct contact with individual members of the public.
Work Instruction	A document provided to the individual producing the product or service, defining exactly what is required by the user (see template provided in Appendix 4[14]).

[14] See Appendix 4 – "Documents and Templates" (http://www.wmo.int/pages/prog/amp/pwsp/documents/Appendix-4.doc)

APPENDIX 4: TOOLKIT OF DOCUMENTS AND TEMPLATES (A-M)

This table provides the list of the documents and templates referred to within the Implementation Plan with a brief description and guidance on which strategy element they support.

The documents and templates themselves are included in this appendix in the order of listing in the table.

	Document/Template:	Description:	Related to Strategy Element:
(A)	Memorandum of Understanding (MOU)	An agreement between parties. It is often used in cases where parties either do not imply a legal commitment or in situations where the parties cannot create a legally enforceable agreement.	1
(B)	Customer Supplier Agreement (CSA)	A top level document typically used between an NMS and a government customer, usually at departmental level. It encapsulates the relationship between the NMS and the customer. A CSA is similar in structure to a contract or MOU. However, a CSA is more customer-focused and more 'contractual' in the language it uses. Note that government bodies cannot normally contract between themselves, so neither MOUs nor CSAs are contracts in the legal sense.	1
(C)	Service Level Agreement (SLA) Template	A non-technical document agreed between the provider of a product or service and the customer defining exactly what is required from both parties.	1
(D)	Feedback Log	A document used to record user and customer feedback on the products and services provided. This document should also be used to provide reference to any actions being taken to respond to the feedback.	1
(E)	Action Tracker	A document to track the actions being taken based on user, customer and staff feedback on ways to improve service delivery.	1

(F)	Product Catalogue	A document to log the products (and services) provided to users to give a point of reference for other documents related to products and services, for example a CSA. The Product Catalogue ensures visibility of the total portfolio of products and service provided.	2
(G)	Work Instruction Template	A document to describe in detail how an individual product is produced, the templates for the product and the inputs/information used to generate the product to ensure consistency of output. Any targets such as delivery times should also be included.	2
(H)	Service Report Data Gathering	A document to ensure consistent collection of data to support a service delivery report.	3
(I)	Service Report Template	A template for reporting service delivery performance, timeliness, compliance with product description and accuracy.	3
(J)	Service Delivery Compliance Checklist Example	An example of a compliance checklist that can be used to inform service delivery performance, it shows how compliance against a product description might be checked.	3
(K)	Service Delivery Action Plan	The document generated after assessment of the level of service delivery using the SDPM. The Action Plan records the short, medium and long term actions, action owners and milestones with dates.	4
(L)	Process Description Template	A template for describing a process as part of the QMS for service delivery.	4
(M)	Job Description	A document to describe the activities undertaken as part of an individual's or a team's job and the skills, qualifications or experience required to undertake the job.	5

DOCUMENT/TEMPLATE (A)

MEMORANDUM OF UNDERSTANDING (MOU)

between

[insert name]

and

[insert name]

THIS MEMORANDUM OF UNDERSTANDING (MOU) is dated the _____ day of [20__]

BETWEEN

A. THE PARTICIPANTS:

(1) [insert name]

(2) [insert name]

B. BACKGROUND:

(a) [Name of National Meteorological or Hydrometeorological Service (NMS) Participant] is recognized as the NMS responsible for providing essential weather, climate and related information to the community at large in [insert country].

(b) [Name of User Participant/User Representative] has a requirement for weather and climate services.

(c) The Participants wish to enter into an MOU to document the understandings reached on the provision of weather and climate services.

1. DEFINED TERMS AND INTERPRETATION

The definitions and rules of interpretation in this paragraph 1 apply in this Memorandum.

Intellectual Property Rights (IPR)	Intellectual Property Rights (IPR) of all kinds, regardless of the form or medium on which they are stored, including all patents, rights to inventions, copyright and related rights, moral rights, trade marks and service marks, trade names and domain names, rights in get-up, rights to goodwill or to sue for passing off or unfair competition, rights in designs, rights in computer software, database rights, rights in classified information (including know-how and trade secrets) and any other rights in the nature of IPR, in each case whether registered or unregistered and including all applications (or rights to apply) for, and renewals or extensions of, such rights and all similar or equivalent rights or forms of protection which subsist or will subsist now or in the future in any part of the world together with all rights of action in relation to the infringement of any of the above;
Memorandum (MOU)	means this MOU and any future variations to it which may be agreed between the Participants from time-to-time; and
Services	means the services to be delivered by [insert name] to [insert name] and set out in Annex A of this MOU.

2. DURATION

This MOU will come into effect upon signature of both Participants and will continue until terminated under the provisions of paragraph 10.

3. PURPOSE AND SCOPE

3.1 The purpose of this MOU is to set out the arrangements agreed between the Participants in respect of the Services.

3.2 The scope of this MOU is limited to the Services only and no other activities carried out by the Participants.

4. [PARTICIPANT PROVIDING THE SERVICES] COMMITMENTS

[insert name of Participant] will carry out the Services described in Annex A.

5. [PARTICIPANT 2] COMMITMENTS

[insert name of Participant] will:

(a) [pay the charges for the Services as set out in paragraph 7];

(b) [respond to any reasonable request made by [insert name of Participant providing services] in respect of the delivery of the Services].

6. PERFORMANCE OF THE SERVICES

6.1 The Participants will form a [insert name of body] which will comprise [insert details of number/name of representatives].

6.2 [insert name of body] will be responsible for monitoring the performance of the Services.

7. FINANCIAL MATTERS

7.1 The charges for the Services are [ ].

7.2 Payment will be within [ ] days of receipt of a correctly completed invoice.
[enter any other financial arrangements here].

8. INTELLECTUAL PROPERTY RIGHTS (IPR)

8.1 This MOU does not affect the ownership and control of a Participant's IPR that existed prior to the date of this MOU. No license to use any IPR is granted or implied unless expressed in this MOU.

8.2 Each Participant will grant the other Participant a license to use such of its pre-existing IPR as necessary for the purpose of performing the Services.

8.3 [Name of Participant providing the services] hereby grants [receiving Participant] a non-exclusive, royalty free license to use [add description] for the purpose of [insert purpose].

[enter any other provisions relating to IPR here with regard to use of IPR]

9. CONFIDENTIALITY

9.1 Each Participant will treat as confidential all confidential information and will not divulge such confidential information to any person (except to such party's own employees and then only to those employees, or government (including Parliament), or audit bodies who need to know the same) without the other Participant's prior written consent. This paragraph will not extend to

information which was rightfully in the possession of such Participant prior to the commencement of this MOU which is already public knowledge or becomes so at a future date (otherwise than as a result of a breach of this paragraph) or which is trivial or obvious. Each Participant will ensure that its employees are aware of and comply with the provisions of this paragraph.

10. TERMINATION

10.1 The Participants may terminate this MOU by mutual consent subject to the [insert name of body identified in paragraph 6] approval.

10.2 [Name of receiving Participant] may terminate this MOU on 30 days' written notice if [name of Participant providing the Services] persistently fails to perform the Services in accordance with the description set out in Annex A.

11. REVIEW OF THE MOU

11.1 This MOU will be reviewed every [XX] years, with the first review to take place no later than [XX] from the commencement date, which is the date at the head of this MOU. In addition, a review may take place where there are any significant changes to policy or legislation, or where there has been a change in the office of Chief Executive or equivalent of either of the Participants' organizations.

12. DISPUTE RESOLUTION

12.1 The Participants will use all reasonable endeavours to resolve any dispute amicably and in good faith in accordance with the procedures laid down in this paragraph 12.

12.2 In the event that any dispute and question of any nature arise between the Participants in relation to this MOU or any matter relating to the affairs of the Participants or the rights, duties or liabilities of any Participant, then:

(a) the [insert agreed governance body] will discuss the dispute as soon as reasonably possible, with a view to reach a resolution; and

(b) if the [insert agreed governance body] is unable to resolve the dispute after 28 days or within a longer period as the Participants may agree, the matter will be referred to senior management for resolution.

12.3 In the event that senior management is unable to resolve the matter then the matter will be referred to a mediating body acceptable to both Participants for resolution.

13. VARIATION

No variation to this MOU will be effective unless agreed in writing and signed by an authorized representative from each Participant.

14. CONTACT INFORMATION

[Participant 1]

Technical contact:

Name:
Position:
E-mail address:
Tel.:

Administration:

Name:
Position:
E-mail address:
Tel.:

[Participant 2]

Technical contact:

Name:
Position:
E-mail address:
Tel.:

Administration:

Name:
Position:
E-mail address:
Tel.:

15. LEGAL STATUS

This MOU is not intended to be legally binding, however, it will be interpreted in accordance with the laws of [insert] and both Participants are expected to meet the commitments made under it.

Signed by: [insert name]	)	[signature here]
For and on behalf of:	)	
	)	
Job Title:	)	
Date:	)	

Signed by: [insert name]	)	[signature here]
Job Title:	)	
Date:	)	

Annex: Service Description

[insert here details of the services being provided and service levels]

DOCUMENT/TEMPLATE (B)

CUSTOMER - SUPPLIER AGREEMENT (CSA)

Reference: *The NMS* CSA

Subject: The strategic framework governing the trading relationship between *[the customer*] and *the NMS*.

Date Agreement comes in to effect:

CUSTOMER-SUPPLIER AGREEMENT

This document sets out the overarching arrangements that will apply to trading between *the customer* - the Customer and *the NMS* – the Supplier with effect from *[add date].*

SIGNED IN DUPLICATE

Date:	Date:

Signature for *the Customer:*	**Signature for *the NMS:***
Signed:	Signed:
Name:	Name:
Job Title:	Chief Executive Officer

CONTENTS

CUSTOMER-SUPPLIER AGREEMENT (CSA)

1. INTRODUCTION (THIS WILL NEED REFINING IN LINE WITH THE NATIONAL CIRCUMSTANCES IN EACH SITUATION)

The National Meteorological or Hydrometeorological Service (NMS) is a government entity. It provides services to the public and the commercial sector. Its core role in its services to the public is to deliver the public weather service. *The NMS* uses weather related information and its expertise to assist government departments to achieve their high-level objectives.

The *customer* is a *Department, etc.,* required to *[add description of customer remit]*

The CSA might also contain a number of Service Definition Annexes (SDAs), detailing specific services/outputs/work packages provided by *the NMS* with other Schedules and Appendices providing additional information. The CSA and associated Schedules and Appendices also set out how we work together to deliver the services the customer requires. The Schedules give extra or more detailed information to that provided in the CSA; the information, however, forms part of the Agreement. This is different to information provided in the Appendices which informs and supports the Agreement as a whole, but does not form part of the Agreement itself.

2. CSA (CONTENTS)

Below is presented the minimum information required for a CSA. Other specific requirements and conditions relevant to all SDAs can also be included.

Scope of Requirement

Introduction

Include general information about what is covered by the Agreement and how it is structured; e.g.;

This overarching Agreement and associated SDAs establishes the framework for the Services supplied by *the NMS* to *the customer.*

The Agreement comprises; the main document, Schedules to the Agreement which will include Service Definitions and Appendices which include information supplementary to the main Agreement.

Shared Strategic Aims and Priorities

Include information about the customer's strategic aims, responsibilities, governance and/or legislative responsibilities.

Provision of Services/Scope of the Agreement *(delete as necessary)*

General overview of services as set out in detail in the SDA; e.g.

Each Annex will describe: the Requirement; Programme/Service - Drivers, Objectives, Direction, Deliverables and supporting output pricing information.

The duration of each service will be appropriate to the nature of the services supplied as specified in the appropriate SDA.

Individual SDAs may be amended using the agreed change pro forma at *Appendix* (currently 2).*

Conditions

Definitions

Explanation or meaning of words and expressions used in the CSA; e.g.

"Data" and/or "Information"	Meteorological, environmental, hydrological or oceanographic data (whether historical or otherwise) and/or software, graphs, graphics, drawings, documents trade marks, know-how or any other material provided (in whatever medium) as part of the Services or Consultancy Services.
"Intellectual Property Rights"	Any Intellectual Property Rights, including, but not limited to copyright, moral right, database right, patent, trade mark, domain name trade secret or design right (whether registered or unregistered) or where relevant any application for any such rights in any jurisdiction.
“SDA’s”	Service Definition Annexes giving detailed descriptions of the services to be provided, how when and full costing.
“Working Day”	Working Day means Mondays to Fridays except for bank holidays and public holidays. A Working Day will consist of up to eight working hours unless otherwise specified.

Period of Agreement

This Agreement comes into effect on _____ and will run for an indefinite term but is subject to a formal annual review where any amendments to this CSA will be agreed between both parties.

The aim is to develop indefinite or long-term Agreements, subject to formal annual review. Longer term Agreements attract lower mark-ups due to decreased risks.

Legislative requirements

Both *the NMS* and the Customer will always comply with all international, national and local regulations and legal requirements.

Pricing

Pricing arrangements must be agreed with the customer. The NMS aim is to move to incentivised pricing. If this is not agreeable to the customer, a fixed price must be agreed. Longer term Agreements attract lower mark-ups due to decreased risks than shorter term Agreements. Some possible wording to pick and mix from may be:

Specific projects or services provided by *the NMS* will be the subject of individual agreement with clear outputs and an agreed price.

The basis upon which services are priced will be agreed individually for each project based on a *fixed price/maximum price/target cost incentive fee.*

The intention for larger value services is to investigate the possibility of developing these arrangements such that *the NMS* is incentivised appropriately to deliver increasing value to customers.

The NMS will provide a full breakdown of prices as appropriate and allow access to *the customer,* or other representatives of the customer, to review such information as the customer may reasonably require.

The above arrangements do not preclude *the NMHS* from pricing on a different basis when tendering in open competition.

Termination

Termination arrangements need to be agreed with the customer but may include:

This Agreement may be terminated after a mutually agreed period of notice which must be agreed in writing. If a period cannot be agreed upon then the date will be ** *years* from the date of notice or the fulfilment of the last project whichever is later.

This Agreement may be terminated by either party should the status of *the NMS* or *the customer* change.

Where the Agreement is terminated by *the customer* the customer will indemnify *the NMS* against loss or damage that *the NMS* reasonably assesses as a result of the termination.

Invoicing and Payment

Include information on how frequently payments will be made (monthly, quarterly, etc.); how invoices will be submitted and to whom, where payment will be made and how promptly (usually within 30 days of receipt of invoice). Note all invoices will be subject to VAT. Possible wording for inclusion may be:

Invoices will be submitted by *the NMS* to *the customer* for payment authorization monthly unless otherwise agreed in the SDAs.

Payment will be made by *the customer* within 30 days of receipt of properly completed and authorized invoices. Payment may be withheld pending resolution, only in respect of the elements of services or supplies under dispute.

Reporting

The NMS will agree with *the customer* appropriate performance indicators for service delivery, together with the frequency, format and content of reports on the progress against services and products. The SDAs will detail the agreed level of performance and reporting structure.

Amendments to Agreement

To be agreed with the customer, but may include:

Proposed amendments to the CSA will be discussed and agreed at the Annual Review with changes being made in writing via an amendment letter issued by *the customer*.

Individual SDAs must be amended using the change pro forma at *Appendix* (currently 2)*

Intellectual Property Rights

A decision will need to be made on whom controls/manages it and the usage requirements.

Points of Contact

*Appendix * (currently 1)* details the points of contact for the CSA. Individual SDAs will separately detail their relevant points of contact.

Delete if not needed and insert generic points of contact for all parts.

Dispute Resolution

The customer and *the NMS* will use their best endeavours to resolve any dispute under the Agreement through consultation and negotiation at a working level. In the event of failure to resolve the dispute it should be referred to *[insert customer representative]* acting as the overarching customer and the Chief Executive of *the NMS* for joint resolution.

Warranties

To be agreed with the customer, but are usually;

The NMS excludes all warranties, conditions, terms undertakings and obligations whether expressed or implied by statue or otherwise fully permitted by law.

The NMS warrants that the data provided under this CSA is either owned by us or we have the necessary licensing authority to sub-licence this data to you.

Limitation of Liability

To be negotiated between the NMS and the customer. The NMS liability does not usually exceed 200% of the amount paid or is payable for that part of the services from which the claim for loss arises.

Notices

To be agreed with the customer, but will include agreement on how any notice in connection with the Agreement shall be made (in writing, post, etc.) or may be:

Any notice given under the agreement shall be in writing in English and may be sent by hand, by post, by recorded delivery service or transmitted by facsimile service to the address shown in the agreement or to such other address as *the customer* may have subsequently notified us of, shall be deemed effectively given on the day when in the ordinary course of means of transmission it would first be received by the addressee in normal business hours.

3. CSA APPENDICES

These are likely to include the following as a minimum:

Appendix 1: Points of Contact/Responsible Officers

Appendix 2: Change Pro Forma

Appendix 3: Standing Agenda for Annual CSA review meeting

Appendix 4: *The NMS* and the Customer's shared vision and for the trading relationship

4. SCHEDULES (OUTLINE CONTENTS)

Schedule A: Summary of Services and Prices

This is only necessary if there are multiple services (and therefore SDAs) covered by the Agreement. An example of a possible layout is below.

Summary of Services and Prices

Schedule ref	SDA	Period of Agreement	Services	Price Yr1	Price Yr2	Price Yr3	Price Yr4
			Total				

Appendix 1

CUSTOMER-SUPPLIER AGREEMENT

Points of Contact/Responsible Officers

The NMS

Contractual Contact:

Technical Contact:

Customer Details:

Note: The name, e-mail address, telephone number and job title of the Points of Contact/Responsible Officers will be subject to change from time to time. Where such a change occurs the other party will be notified and the Appendix can be automatically amended without recourse to the Amendments to the Agreement process applicable to the CSA.

Appendix 2

CUSTOMER-SUPPLIER AGREEMENT

Change Pro Forma

This Change Pro Forma is to be used by the *the NMS* and *the customer* to record changes to the SDAs when agreed by all relevant parties. The Form is to be signed by an appropriate authorized person by all relevant parties. Changes agreed via the Change Pro Forma will automatically be included in the appropriate SDA unless specified otherwise.

<table>
<tr><td>Change No. (000/FY):</td><td>Contract No:

SDA Reference:</td></tr>
<tr><td colspan="2">Detail of change:</td></tr>
<tr><td>Signature:</td><td>Signature:</td></tr>
<tr><td>ForNMS:
Job Title:

Date:</td><td>For the customer:

Date:</td></tr>
</table>

Distribution: Add necessary people that need to be aware

Appendix 3

CUSTOMER-SUPPLIER AGREEMENT

Standing Agenda for Annual CSA Review Meeting

Suggested start point for agreeing the agenda

- Review of the procedures and processes enshrined in the CSA;
- Proposals from the customer on amendments to the CSA and issues to be addressed in the coming year;
- Proposals from the supplier on amendments to the CSA and issues to be addressed in the coming year; and,
- Agreement of Actions.

Appendix 4

CUSTOMER SUPPLIER AGREEMENT

The NMS **and** ***the Customer's*** **Shared Vision and for the Trading Relationship**

This should give details of how the two parties will work together to achieve their aims and objectives, both individual and shared, now and in the future. Some possible phrases for inclusion are below:

_____

DOCUMENT/TEMPLATE (C)

TEMPLATE FOR THE BASIC COMPONENTS OF A SERVICE LEVEL AGREEMENT (SLA)

ARTICLE I. - PARTIES
Describe the parties involved in the Service Level Agreement (SLA).

ARTICLE II. - SCOPE

Section 2.01 - Scope
Describe the purpose and extent of the SLA.

Section 2.02 - Assumptions
Define any assumptions that underlie the defined scope.

Section 2.03 - Goals and Objectives
Describe what the parties are expecting to accomplish with the SLA.

ARTICLE III. - ROLES AND RESPONSIBILITIES
For all parties involved in the SLA, describes the role of each party and the responsibilities for supporting the SLA and delivering the products and services defined within.

ARTICLE IV. - EFFECTIVE DATE AND TERM
The date the agreement is effective its duration.

ARTICLE V. - DELIVERY AND PERFORMANCE
Describe in detail what each party is responsible for delivering and the key performance indicators to ensure compliance.

ARTICLE VI. - REPORTING, REVIEWING AND AUDITING
Describe oversight and reporting on the agreement; when the agreement should be reviewed, and reporting points of contact.

ARTICLE VII. - COST/FUNDING AND PAYMENT
Document costs associated with the SLA, who is responsible for paying, or funding, and when payment should occur. Cost may be broken down by specific line items, such as labour, supplies, equipment, travel, training, etc.

ARTICLE VIII. - CHANGES AND MODIFICATIONS
Describe the process by which changes or modifications will be made to the SLA and who is responsible for making changes.

ARTICLE IX. - TERMINATION
Describe terms for termination of the SLA and the process for terminating.

———————

DOCUMENT/TEMPLATE (D)

FEEDBACK LOG

Introduction

This diagram is intended to illustrate the flow of feedback from users.	
User Feedback ==>	Questions raised ==> Answers provided by nominated person
	+
	Issues raised ==> Change proposed

Change Control:

Version:	Author:	Date:	Comments:

FEEDBACK LOG EXAMPLE

USER COMMENTS, ISSUES AND QUESTIONS RAISED							
Feedback Reference: Unique reference for each piece of feedback	**Source of feedback:** Direct user feedback/survey/phone/e-mail/face-to-face etc	**Category:** Stakeholder /Customer/User /Staff	**Type of feedback:** Question/Complaint/ Compliment/ Feedback	**Comment:** Record the feedback received as provided.	**Specific Product Reference:** (if appropriate)	**Action Reference applicable:** Taken from Action Tracker one action can be used for more than one Feedback.	
FBL0001	E-mail	Stakeholder Minister	Feedback	It would be useful to have the issue time and creation time on each forecast produced.	P0001_TAF P0002_PLRF	ACT001	Example

DOCUMENT/TEMPLATE (E)

ACTION TRACKER

Introduction

Actions are recorded based on information from User feedback, service reports or staff feedback with the objective of improving Service Delivery.
The purpose of this spreadsheet is to enable the tracking of analysis related to user feedback.

Change Control:			
Version:	**Author:**	**Date:**	**Comments:**

ACTION TRACKER EXAMPLE

ACTIONS RAISED AGAINST USER FEEDBACK						
Action reference:	**Source references this action is against.** (List all that are appropriate) This may be from the feedback log or service report.) FBL = Feedback Log SR = Service Report	**Date Raised:**	**Action to be taken:**	**Action owner:**	**Progress/Status:** **Provide date against each comment so progress can be tracked.** **Final status is CLOSED**	
ACT_001	FBL001	17/05/2012	Update template to include creation time and issue time.	Service Delivery Manager	17/5/12 IN PROGRESS Task raised with operations to update template	Example

DOCUMENT/TEMPLATE (F)

PRODUCT CATALOGUE

Product Reference:	Name of Product:	Link to Work Instruction:	Link to SLA:	Production Unit:	Actions in Feedback Log:
P0001_SIGMET	SIGMET	Provide link to WI	Provide link to SLA	Aviation Bench	ACT_001
P0002_PRF	PWS Regional Forecast	Provide link to WI	Provide link to SLA	PWS Bench	ACT_001

DOCUMENT/TEMPLATE (G)

WORK INSTRUCTION TEMPLATE

WORK INSTRUCTION

PRODUCT NAME

SLA Reference:	

Service Delivery Manager:	
Times/Days of issue:	
Transmission details:	
Back-up details:	
Template name(s):	
Service start date:	
Service end date:	
Service priority:	
Production time:	

Change history for Document:			
Version:	Date:	Author/Reviewer:	Notes on Change Instruction:
1.0		A	
		R	

Service description

location/forecast area:
Local Production Detail:
Site:
Position: **Template name:**
Purpose of Service:

What do they get: 1. Service element ‘a’ 2. Service element ‘b’ 3. Service element ‘c’ 4. Service element ‘d’	
Production methodology:	
1. Service element ‘a’	
Service name:	
Template name:	
Deadlines:	
Amendment criteria:	
Delivery method:	
Back-up details	
2. Service element ‘b’	
Service name:	
Template name:	
Deadlines:	
Amendment criteria:	
Delivery method:	
Back-up details	
3. Service element ‘c’	
Service name:	
Template name:	
Deadlines:	
Amendment criteria:	
Delivery method:	
Back-up details	
4. Service element ‘d’	
Service name:	
Template name:	

Deadlines:
Amendment criteria:
Delivery method:
Back-up details

DOCUMENT/TEMPLATE (H)

SERVICE REPORT DATA GATHERING

Product Delivery

Product:	**Timeliness:**	**Compliance:**	
Product 1	97	95	Timeliness and Compliance are based on the specification set out in the Work Instructions for each product. This should include a time/day by which the product is to be delivered by (based on customer requirements) and the content of the product.
Product 2	91	87	
Product 3	89	93	
Reported Figures this Month			
Timeliness	92		
Compliance	92		
OTIF	85		

Record of Previous Months	Month -1	Month - 2	This Month		
Timeliness	86	90	92		
Compliance	92	93	92		
OTIF	79	84	85		
Rolling Average	79	82	83		

SERVICE REPORT DATA GATHERING

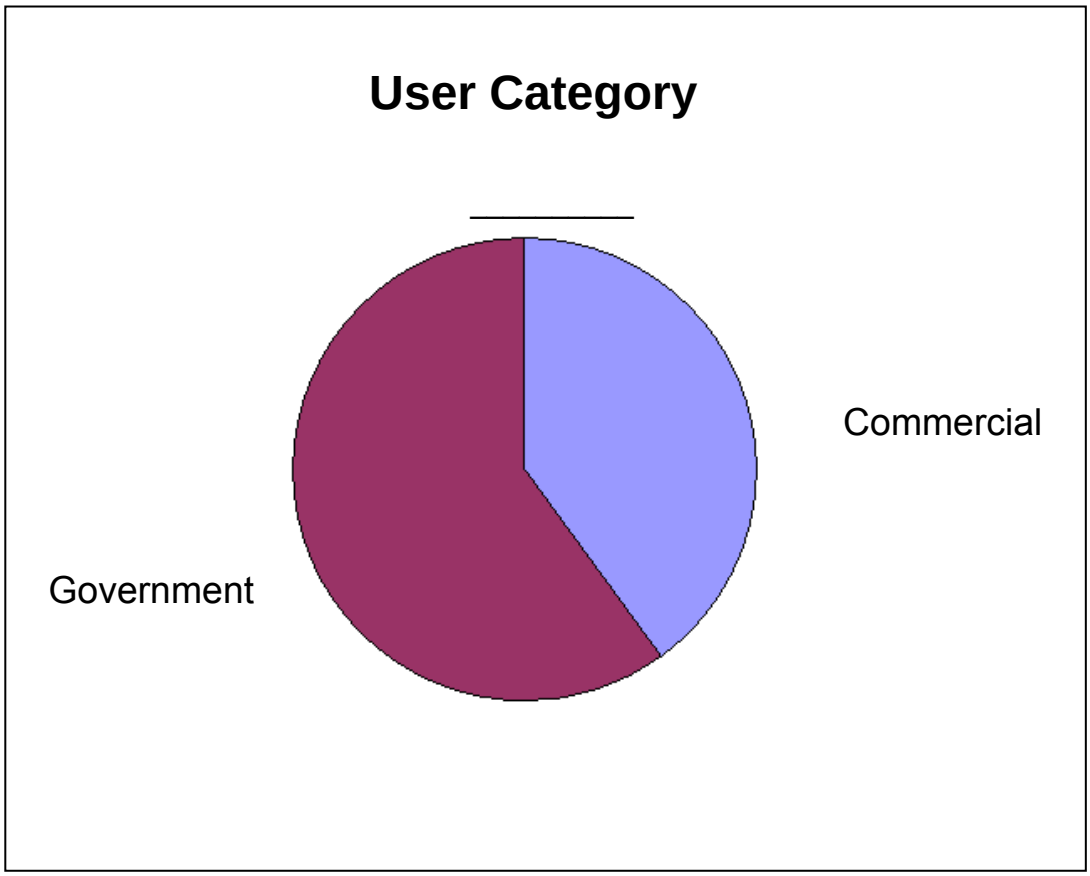
Product Accuracy

	Description:	Accuracy achieved:	Target Accuracy:	Target Met:	
Product 1	% forecasts where temperature forecast was within 2 degrees of observed at day 2	72	70	Yes	If Accuracy achieved is greater than target accuracy then Target is met.
Product 2	% forecasts where windspeed forecast was within 5 knots of observed at day 2	68	70	No	
Product 3	% warnings issued that were correct. (Hits/False alarms + misses)	52	50	Yes	
Reported figure this month:					
% Products meeting Accuracy Target		67			
Record of previous months:					
		Month -2	Month -1	This month	
% Products meeting Accuracy Target		57	62	67	

SERVICE REPORT DATA GATHERING

User Type

Commercial:	36
Government:	64
This information should be based on the categorization of the customers being supplied.	



DOCUMENT/TEMPLATE (I)

SERVICE REPORT TEMPLATE

1. SERVICE REPORT

Reporting Period from: ____DD/MM/YY_____ to: ___DD/MM/YY_____ .

[All targets should be based on customer requirements. If the customer does not require 100%, then this should not be the target. It is likely a period of reporting without targets will be required before an appropriate target can be set. Targets should always be challenging, but not impossible.]

You may find that including graphs provides a useful visual presentation of the results.

1.1. Product Delivery – Actual

[Data gathered using the Service Report Data Gathering Spreadsheet]

Reference:	Measure:	Month - 2 [Month before Last]:	Month - 1 [Last month]:	This Month [State Month]:
M1	% Products on time	86	90	92
M2	% Products meeting specification	92	93	92
M3 (M1xM2)	On Time In Full (OTIF) Score	79	84	85

1.2. Rolling Average of OTIF

Until you have achieved 12 months, report the average of the scores so far. Once you have reported for 12 months, use the last 12 months dropping off the oldest month and adding in that months score each month.

This will show trends and smooth out any peaks and troughs.

Month:	M - 2:	M - 1:	M:										Target:
OTIF Score:	79	84	85										
Rolling Average:	79	81	83										80

1.3. Summary of Product Delivery performance

Provide a summary of the reasons if 100% delivery on compliance with specification or timeliness is not met.

1.4. Product Accuracy performance

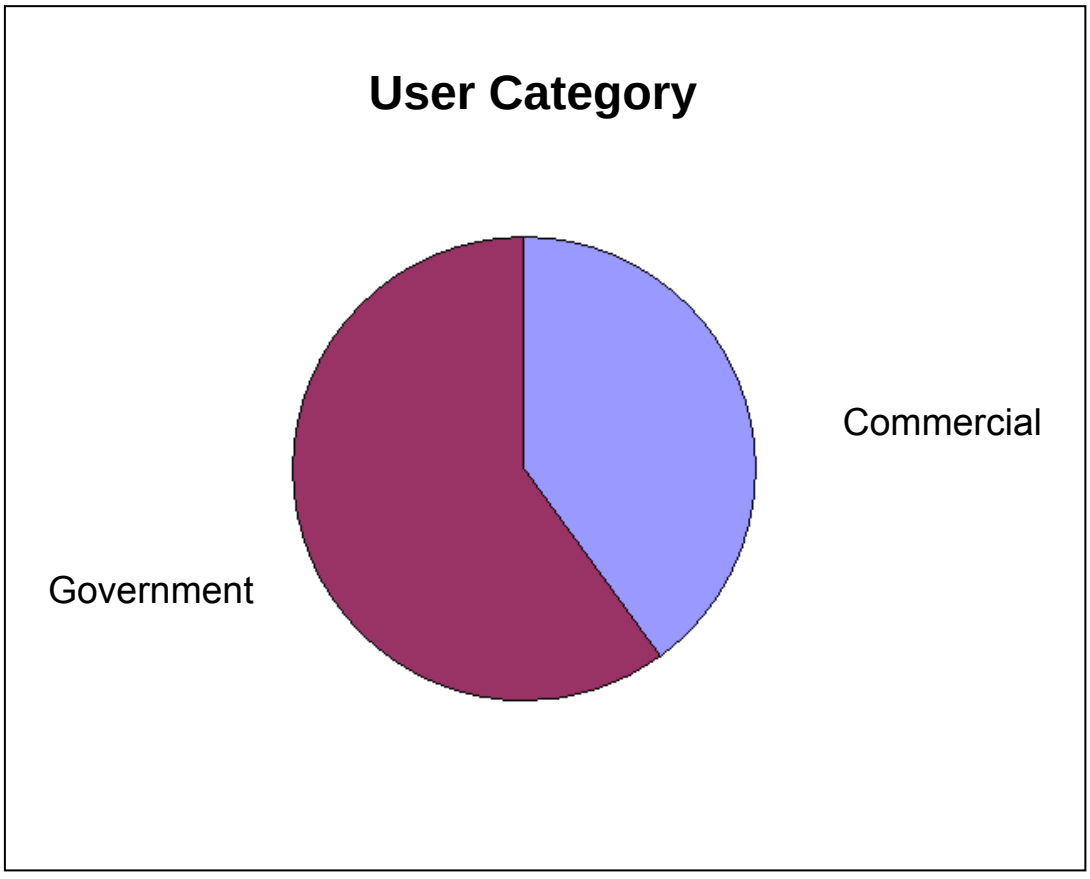
This table can be used once you have set targets for accuracy for your products. If you have no targets, then report the actual accuracy for each product, until you have enough information to set a target.

Reference:	Measure:	Month - 2 [Month before Last]:	Month - 1 [Last month]:	This Month [State Month]:	Target:
M1	% Products meeting accuracy target	57	62	67	80

1.5. Summary of Product Accuracy performance

Provide a summary of the reasons why target not met or accuracy lower than normal.

1.6. Summary of Customers Type



1.7. Summary of User Feedback

A summary of the user feedback received and the actions being taken.

Version Control

Version:	Date:	Author:	Comment:
V0.1	DD/MM/YY	A. Author	First Draft

V1.0	DD/MM/YY	A. Author	Comments on Draft included. First Issue.

DOCUMENT/TEMPLATE (J)

SERVICE DELIVERY COMPLIANCE CHECKLIST - EXAMPLE

A checklist should be produced based on the Work Instruction for the specific product. The aim of the checklist is to enable an examination of any product to determine if the contents match the specification.

Where tabulated data, graphical or text are combined they should be consistent within the product, hence compliance has two parts, content (confirming that the requested components have been included) and consistency (e.g., confirming that the different parts of the product are telling the same story).

The suggested Sample rate for products is 1 in 12, but this will depend on the number of products being produced, where only low numbers of the same product are being produced this sample size could change.

A strict pass or fail should be employed; omission of any element and a lack of consistency within the product will result in a failure for the entire sample period.

For example, if the product is produced hourly throughout a 24-hour period, two of the products should be selected at random to check.

If one meets the specification and one fails then there is a 50% pass rate for the day. Over a month of 30 days, the sample is 60 out of 720, which could be considered a more statistically valid sample size.

For each day the number of passes should be recorded against the number of product produced, at the end of the reporting period the percentage of passes against products produced is used to generate a single On Time In Full (OTIF) score.

An example of check list use, against a product, is contained in Annex A.

ANNEX A

24-Hour Standard Text		Date			
CONTENT:					
Colour State: present or missing?		□			
Ice: Y or N? and conf. H or L?		□			
Hoar Frost: Y or N? and conf. H or L?		□			
Snow: Y or N? and conf. H or L?		□			
Fog: Y or N? and conf. H or L?		□			
Strong Wind: Y or N? and conf. H or L?		□			
Rain: Y or N? and conf. H or L?		□			
Min Air temp: present or missing?		□			
Min RST: present or missing?		□			
Wind: present or missing:		□			
Weather summary: present or missing?		□			
CONSISTENCY:					
Colour State: does this tie in with min RST and likelihood of frost/ice/snow?		**X**			
Extent and timing of Ice/Frost: does this tie in with the forecast of frost/ice and forecast time of roads below freezing?		**X**			
Timing, height and accumulation of Snow: does this tie in with the forecast of snow and forecast time of roads below freezing?		**X**			
Weather Summary: does this tie in with the colour state and forecast of frost/snow/ice?		□			

SAMPLE OF PRODUCT RELATED TO CHECKLIST

24 HOUR FORECAST FOR COMPANY X

Valid from noon on Sunday 06 April 20XX to noon on Monday 07 April 20XX

Readiness Colour:	**RED**

Weather Summary:		
Element(s);	**Y/N:**	**Conf.:**
Ice	Y	L
Hoar Frost	N	L
Snow	Y	H
Fog	N	H
Strong Wind	Y	H
Rain	Y	L

Minimum Temperatures Summary:		
	Temp (C):	**Period Sub-zero:**
Air	ZERO	N/A
All Roads	PS01	N/A

Rain:	>=2mm/hr for any hours over the 24 hours.
Strong Wind:	>=25mph gusts
Fog:	Visibility less than 200 metres.

Wind (mph):	Northwesterly around 10 mph, becoming northerly and increasing to around 15mph by midnight. Easing off again into tomorrow morning. Gusts up to around 30 mph between midnight and 0800 hours, otherwise not expected to exceed 25 mph.

Ice/Hoar Frost - Extent and Timing:
Ice: Icy patches possible where damp roads freeze. Frost: N/A

Snow - Timing, Height and Accumulation:
Snow showers likely at times this afternoon, however no significant accumulations expected. A more persistent band of rain and snow expected overnight between around 2100 and 0500, although only expected to leave temporary accumulations of 1 or 2 cms.

24-Hour Weather Summary
Isolated snow showers expected at times this afternoon, with some possible brighter spells at times. Further wintry precipitation will push down from the north this evening, dying out as it slowly pushes south into the early hours of tomorrow morning. A brighter start to the day tomorrow, staying dry through the morning.

Comments:
Nil

Readiness Colour Coding:	
GREEN	Road surface temperatures are expected to remain above freezing with no ice/hoar frost/snow accumulations. Confidence HIGH.
AMBER	Road surface temperatures are expected to fall close to or below freezing. Confidence is LOW regarding ice and/or hoar frost and/or snow accumulations.
RED	Road surface temperatures are expected to fall to or below freezing with ice and/or hoar frost and/or snow accumulations likely. Confidence HIGH.

Note: This example is from the UK Met Office.
Forecaster:
Transmitted by the Met Office on 6 April 20XX at 07:58 UTC

DOCUMENT/TEMPLATE (K)

SERVICE DELIVERY ACTION PLAN

Action identification number:	Action(s):	Who is responsible for the implementation?	When should the action be complete?

DOCUMENT/TEMPLATE (L)

PROCESS DESCRIPTION TEMPLATE

SERVICE DELIVERY PROCESS DESCRIPTION

[***NAME OF ORGANIZATION***]

AUTHOR [***NAME OF PERSON WRITING DOCUMENT***]

DOCUMENT LOCATION [***WHERE THE DOCUMENT IS FILED***]

CHANGE RECORD

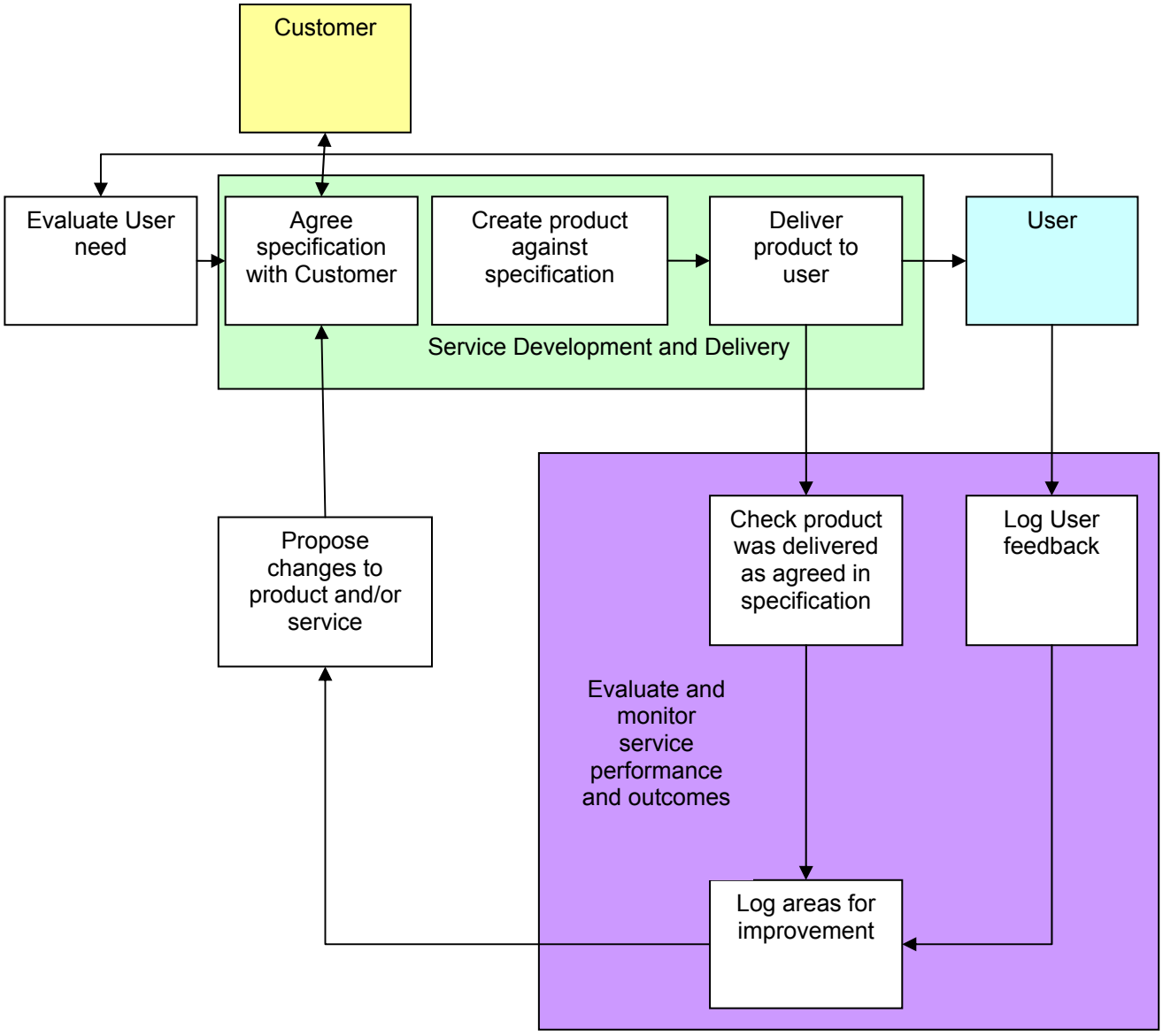
Issue / Rev:	Date:	Pages:	Description of Change:	Author:	Checked By:
1	*DD/MM/YY*	*Number of the pages changed*		*Name of person who made the change*	*Name of person(s) who reviewed the changes*

CONTENTS

1. PURPOSE OF THIS DOCUMENT

The purpose of this document is to describe the processes to be used to support Service Delivery and is part of the overarching QMS.

A high level process model to demonstrate how an organization might operate 'Sustained Improvement in Service Delivery' is shown below; each organization is likely to have their own version based on their own organizational processes.



2. ORGANIZATION STRUCTURE

Provide a diagram of the people within the organization and the reporting structure.

3. PRODUCTION ENVIRONMENT

The Service Delivery Processes are used to describe what happens within the Production Centre. At a high level this diagram shows the inputs and outputs to the Production Centre. There may be a number of processes with inputs and outputs occurring within the Production Centre to produce the outputs.

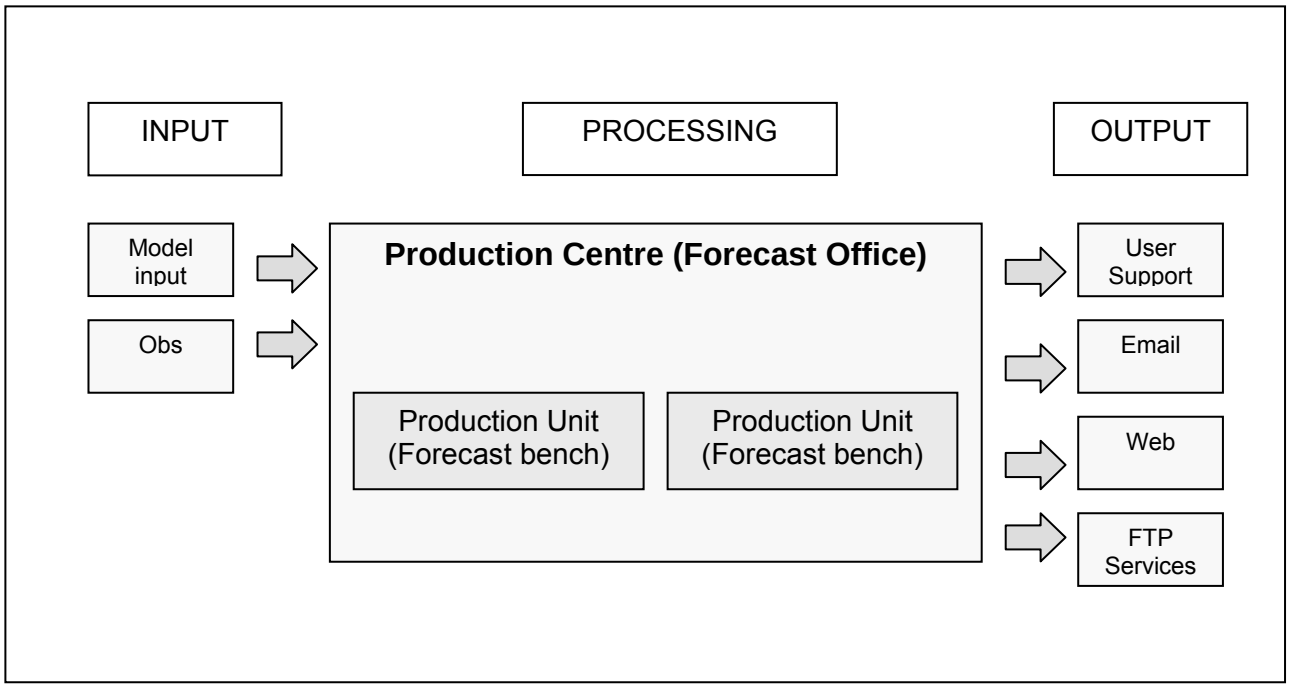


Figure 2. Schematic of the Service Delivery environment showing inputs and outputs.

4. PROCESS DESCRIPTIONS

EVALUATE USER NEEDS

Describe how you evaluate and manage user needs related to your Service Delivery.

How do you establish who your users are and how to get input from them?
What methods do you use to ask for feedback or to gain information?
How do you log User Input?
Provide information on: - Who is responsible? - How do you log the information? - What categories of users do you have? [Stakeholder / customer / user] - What mechanisms for receiving data do you have? [survey / phone / e-mail, etc.]
What do you do with the User Feedback?
Describe the steps you take to analyze the information and make decisions on changes to make based on the information available.
How do you provide updates on the actions to Users?
Describe how you communicate the actions you are taking based on the feedback from the Users?

SERVICE DEVELOPMENT AND DELIVERY

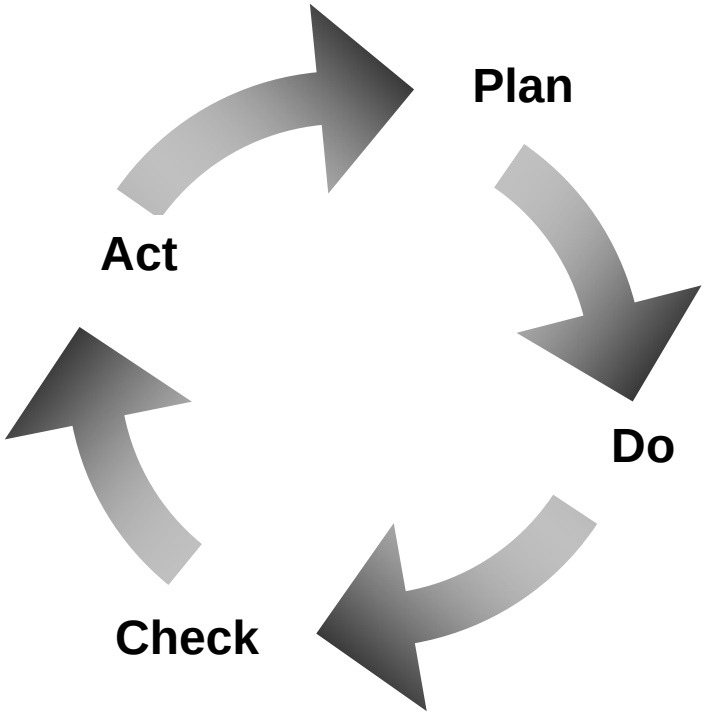
Describe how you develop services and products and how you manage the delivery of them.

How do you decide what a product or service will provide?
Describe what can influence the need for a new service or for changing an existing product or service. Provide information on how you describe the service or product to be delivered. Provide information on who you consult with to agree the description of the service or product. Provide information on how you breakdown the description of the product or service. Provide information on how you communicate with your users and customers about new and changed products and services. Provide information on how you decide what level of service is required, in terms of accuracy and timeliness, compliance and effectiveness.
How do you describe your products and services?
Provide information on how you document the products and services you deliver to ensure a consistent standard of output? Provide information on how you describe what standards are expected or what targets you have set against products and services that are delivered.

EVALUATE AND MONITOR SERVICE PERFORMANCE AND OUTCOMES

How do you monitor the delivery of your products and services?
Provide information on what you monitor [time of delivery / accuracy of forecast / quality of content against specification / effectiveness of output in terms of user benefit] Provide information on how you decide what to monitor. Provide information on how you record the results of your monitoring. Provide information on who undertakes the monitoring. Provide information on when monitoring is undertaken. Provide information on how you get agreement on what to monitor and any targets that may be set.
How do you report the performance of the delivery of your products and services?
Provide information on how you report the performance of the services delivered. Provide information on who you provide the report to. Provide information on what action you take based on the report.

SUSTAIN IMPROVED SERVICE DELIVERY



How do you ensure you make improvements in Service Delivery?
Provide information on how you log problems with your service delivery. Provide information on the process you use for recording improvements to be made. Provide information on what you do with the ideas for improvements.
How do you know that the improvements have worked?
Provide information on how you find out if the improvements have worked. Provide information on how this influences decisions in the future
How do you share the knowledge about improvements?
Provide information on who you tell about improvements made. Provide information on how you tell people. Provide information on what you tell them and when.

5. PEOPLE AND ROLES

Use this table to state what roles you have within the service delivery organisation, what they do and why, you should also include a summary of essential skills or experience they require to undertake the role.

Table 1. Roles for people in the Service Delivery

Role name:	Role Description and Purpose:	Essential skills and experience:
Forecaster	Responsible for taking model output to create the products based on the product specification.	Able to interpret forecast model data. Able to use tools required to produce forecast. Able to speak to Customers about products.

DOCUMENT/TEMPLATE (M.)

JOB DESCRIPTION

Job Title:	

<u>Background</u> (set out the context, why the job exists, the position of the job in the structure, etc.)

<u>Job Purpose</u> (Summarize the overall required output or outcome of the job in a single sentence)

<u>Job Responsibilities</u> (Example layout below; put in priority order, start with the most important)

Action Verb(s):	**Object:**	**Result:**
Prepare, monitor and control . .	the annual programme budget . . .	to ensure expenditure is in line with the programme plan.

1.	
2.	
3.	
4.	
5.	
6.	

PERSON SPECIFICATION

Qualifications, Skills & Abilities

<u>Essential Criteria</u> (describe what the candidate must have and be able to do, in order of importance. Each criterion should describe just <u>one</u> distinct skill that is necessary for effective performance in this particular job)

1.	
2.	
3.	
4.	
5.	
6.	

<u>Desirable Criteria</u> (and ideally the candidate would also have . . .)

1.	
2.	
3.	
4.	

Additional Supplementary Information (e.g., development opportunities)

APPENDIX 5: SERVICE DELIVERY EXAMPLES

A number of examples of effective service delivery are included within the Strategy. Below are some more examples of effective service delivery and some of less effective service delivery where changes were needed to improve levels of service delivery. As the implementation of the Strategy progresses, many more examples of effective practice will become apparent as will areas where problems have been identified and action plans put in place to improve service delivery. It is intended that these will be communicated through the reporting process.

Examples of Effective Service Delivery

1.) A National Meteorological Service or Hydrometeorological Service (NMS) identifies the need for and develops, a specialist advisor role, embedded within and working alongside those accountable for emergency response. The advisors interpret forecasts and warnings for these key users/customers and provide support in both scenario-based training and in real incidents. They are also able to form a clear understanding of user/customer needs through continuous dialogue, which helps the NMS assess its performance and to plan service improvements.

2.) An NMS runs a series of regional workshops for professional users of its severe weather warnings. Based on the feedback gained, it redesigns its warning service, moving away from set meteorological thresholds towards more relevant and flexible warning criteria based on impacts and thresholds for user/customer actions.

3.) An NMS undertakes an online user/customer satisfaction survey of its products and services. The results are discussed with a user group selected from key stakeholders. This group is empowered to recommend changes to products, set targets and to influence the Service's strategic plans. As an example, a customer requirement to see web-based and near real-time evaluation of recent forecasts is quickly acted upon and the necessary changes implemented.

Examples of Less Effective Service Delivery

1.) Following a period of severe flooding, a government report highlights a lack of co-ordination of the overall flood forecasting process. According to their own measures, the NMS and the National Hydrological Service (NHS) responsible for weather warnings and flood warnings are both performing well. Yet lack of ownership and accountability for the performance of the end-to-end process means that flood forecasting is not as effective as it could be, with a potential risk to safety and a large socio-economic cost to the nation.

2.) An NMS lacks contact with its end users. Forecasts and warnings only reach officials in ministries and are not communicated further.

3.) The business division within an NMS wishes to exploit a new forecasting technique recently developed by scientists within the Service. But the product's capabilities and expected levels of performance remain largely un-documented and its design has not incorporated user's needs. It is poorly understood by business staff, who are unable to explain it and sell it to potential customers.

4.) An NMS designs a web-based suite of forecast products for the aviation sector. The system comprises a combination of graphical output from deterministic and probabilistic models alongside charts and text created by forecasters. The data

are often not internally consistent and these inconsistencies go unexplained, thus presenting a confusing and ambiguous picture to users.

5.) A service provided to a government department is produced by forecasters on a roster such that up to 8 different forecasters may produce the forecast.
The terminology used in the forecast is inconsistent, resulting in the user of the forecast being unable to understand and use the forecast effectively.

APPENDIX 6: AN EXAMPLE OF SHARING BEST PRACTICE BETWEEN NMHSS

Case study on the implementation of the WMO Strategy for Service Delivery

The Director of Meteorological Service A (MSA) has been asked by the Director of the neighbouring Meteorological Service B (MSB) to share some of her expertise and knowledge of service delivery. His/Her Service has recently demonstrated their value to their government and citizens by implementing The WMO Strategy for Service Delivery and delivering dramatically improved levels of service. This has led to a significant boost in their profile and increased level of funding for the next five years. The Director is very happy to help and nominates his/her Head of Forecasting, who is also the Service Delivery Champion, to spend a few days at the head office of the MSB.

The Head of Forecasting begins with a general discussion with the Director and uses the questions within the SDPM to determine the level of service delivery currently operational within MSB. What follows is a summary of their discussions around two of the elements and an indication of the level MSB is operating at for each one.

Element 1: Evaluate User needs and decisions

"The main users of our forecasts are farmers in rural districts of the country. We work with the Ministry for Agriculture to ensure that our forecasts are understood by the agricultural extension workers who meet regularly with the farmers on the ground and we supply them with training leaflets to help them understand the services we produce. As MSB is part of the Ministry of Transport we have recently signed a Memorandum of Understanding (MOU) with the Ministry for Agriculture and this has helped us to ensure that we understand the needs of our users in the farming community.

We also provide forecasts to the international airport and to the disaster management committee in each district. We often receive telephone calls from the disaster management committee when we forecast heavy rain that may cause flooding and we make sure to record this feedback as soon as it is received. We have not yet formalized our relationship with the International Airport as they are also part of the Ministry of Transport, but we intend to do so in the not too distant future.

Our website is the main way that our users can find information about us and our forecasts and we have an email address and telephone number that is regularly monitored."

Comments on Element 1:

Most of the users of the services and products can be identified and there are some formal documents describing what is delivered.

There is a range of contact methods used and a feedback log is being maintained.

Current Level: MSB is currently operating at the Developing level.

Element 5: Develop skills needed to sustain service delivery

"When we train new forecasting staff we have an informal process of on the job training to help them to understand the importance of excellent service delivery. Our staff say that they find it useful, but that it is difficult to apply in the real world as they have little contact with our users. Our staff is encouraged to give us their ideas of how we can improve service delivery, but we have received few suggestions.

One idea we are exploring is that of identifying a member of senior staff who will be given the responsibility for developing improved service delivery, a Champion, who will also be given a budget and some staff to help them. At the moment we are deciding who would be best placed to take on this role."

Comments on Element 5:

It is clear that the Director of MSB understands the importance of effective service delivery and wants to ensure that it is embedded within his/her NMS.

At the moment there is a little training that takes place and this could be improved, but the intention to identify a Service Delivery Champion should be applauded.

Current Level: MSB is currently operating at the Started level.

Action Plan

Once the discussions were complete, the MSA Service Delivery Champion and the Director of the MSB formulated an Action Plan that would enable them to improve their service delivery. The aim was to identify actions that would allow the MSB to demonstrate at least a Developing level of service delivery for all elements. This process could then be repeated after a period of time, with an ongoing Action Plan enabling steady progress through the different levels of the SDPM.

Action identification number:	Action:	Who is responsible for implementation?	When should the action be complete?
A1.1 -	MSB should take steps to define all their users in a Customer Service Agreement (CSA) or MOU, whichever is most appropriate.	Director of Forecasting	6 months time
A1.2	The use of the feedback log should be encouraged for all feedback received and a clear action associated with each piece of feedback.	Director of Forecasting	3 months time
A1.3	A variety of additional ways for users to contact the MSB such as SMS or fax should be introduced and the new contact methods widely advertised.	Chief Communications Officer	3 months time
A5.1	Regular training workshops on service delivery should be introduced for all staff.	Chief of Training	6 months time
A5.2	The appointment of a Service Delivery Champion should be concluded as soon as possible, with the individual being given the level of resource appropriate to deliver.	Director of MSB	3 months time
A5.3	An improved process for gathering staff suggestions should be developed in consultation with staff and implemented.	Director of Human Resources	6 months time

APPENDIX 7: ACTION PLAN OUTLINE

This Implementation Plan does not propose a rigid template for a service delivery action plan as each NMS or service provider will be at a different stage of development and activity. Nevertheless, the following provides some guidance on the elements that should be included in such an Action Plan.

a) Current assessment of service delivery progress;

b) Identification of gaps for each element; and

c) Identification of specific actions which will be undertaken to reduce each gap. For each action the identification should include:

- Relative priority of that action;
- Target date for completing the action (with appropriate interim milestones and review points);
- Evidence that will be available to demonstrate success on the action;
- Senior manager accountable for completing the action;
- Resources that will be directed to the action; and
- Anticipated future actions to advance to a higher level of the service delivery progress chain.

There are a variety of ways that an action plan containing these elements could be structured. Below are two examples:

Action Plan Example 1

Scope – *identification of the organization, including the specific components of the organization covered by the Action Plan (it may not be the entire organization) and the timeframe covered by the plan (the term).*

Responsibility – *identification of the Service Delivery Champion.*

Current Assessment and Gap Identification – *using the organization's Assessment Report, state the development level as per the SDPM (i.e., Undeveloped, Development Started, Development in Progress, Developed or Advanced) for each of the six strategy elements. Identify the development level the organization intends to achieve over the term of the action plan and indicate the relative priority of addressing each element.*

Strategy Element:	Current Level:	Target Level (by end of term of the Action Plan):	Priority to Address:
Evaluating user needs and decisions			
Linking service development and delivery to user needs			
Evaluating and monitoring service performance and outcomes			
Sustaining improved service delivery			
Developing skills needed to sustain service delivery			
Sharing best practices and knowledge			

Actions to be Undertaken – *a listing of projects or activities to be undertaken over the term of the Action Plan. For each project or activity there should be a cross reference to which elements and target levels identified above it will address. There should also be an identification of the lead manager for the project or activity and as detailed as possible listing of the resources that will be assigned to it.*

Project (or Activity):	Service element(s) addressed:	Lead manager:	Supporting resources (people and funding):	Target completion date including interim milestones:
Project 1				
Project 2				
Project 3				

Anticipated Next Steps – *identification of future intentions to advance the organization to a higher level of service delivery capability. This could include the identification of longer-term projects that will allow the organization to move beyond the target levels covered by this Action Plan.*

Action Plan Example 2

Scope – *identification of the organization, including the specific components of the organization covered by the Action Plan (it may not be the entire organization) and the timeframe covered by the plan (the term).*

Responsibility – *identification of the Service Delivery Champion.*

Current Assessment, Gap Identification and Action – *using the organization's Assessment Report, for each of the six strategy elements state the development level as per the SDPM (i.e., Undeveloped, Development Started, Development in Progress, Developed or Advanced), followed by an analysis of the gap between the current level and the level the NMS intends to achieve over the term of the action plan, i.e., what is missing between where the organization is today and where it wants to be by the end of the term of the action plan and identify a project or activity to be undertaken to address the gap. For each project or activity there should be an identification of the lead manager for the project or activity and as detailed as possible listing of the resources that will be assigned to it.*

Strategy Element:	**Current Level:**	**Gap:**	**Actions to be Undertaken to Address Gap:**	**Lead manager:**	**Resources:**
Evaluating user needs and decisions					
Linking service development and delivery to user needs					
Evaluating and monitoring service performance and outcomes					
Sustaining improved service delivery					
Developing skills needed to sustain service delivery					
Sharing best practices and knowledge					

APPENDIX 8:
FURTHER READING AND LINKS TO OTHER DOCUMENTS

(1) Information concerning the "Proceedings of the WMO Regional Association VI (Europe) Conference on Social and Economic Benefits of Weather, Climate and Water Services, Lucerne, Switzerland (PWS-23/ROE-1 (2012)":

a. http://www.wmo.int/pages/prog/amp/pwsp/documents/PWS_23_ROE-1_en.pdf (publication);

b. http://www.wmo.int/pages/prog/dra/eur/RA6_SEB_Conference.php (Website).

(2) Public Weather Services Socio-Economic Benefits of Weather, Climate and Water Services Webpage: http://www.wmo.int/pages/prog/amp/pwsp/SocioEconomicMainPage.htm

(3) Link to the WMO Strategic Plan: http://www.wmo.int/pages/about/documents/1069_en.pdf .

(4) Link to the Global Framework for Climate Services Implementation Plan: http://www.wmo.int/pages/gfcs/ip_en.php .

(5) "A Guide to the Implementation of a Quality Management System for National Meteorological and Hydrological Services" WMO/TD-No 1100 http://www.bom.gov.au/wmo/quality_management.shtml

(6) Capacity Development Strategy: http://www.wmo.int/pages/prog/dra/CDS.html

(7) The "Madrid Conference Statement and Action Plan", as adopted by the International Conference on Secure and Sustainable Living: Social and Economic Benefits of Weather, Climate and Water Services, Madrid, Spain, 19-22 March 2007: http://www.wmo.int/pages/themes/wmoprod/documents/madrid07_ActionPlan_web_E.pdf

(8) WMO/TD-No. 1256, "*Guidelines on Quality Management Procedures and Practices for Public Weather Services,*" (http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm)

(9) WMO/TD-No. 1023, "*Guidelines on Performance Assessment of Public Weather Services*" (http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm)

(10) WMO/TD-No. 1103, "*Supplementary Guidelines on Performance* Assessment *of Public Weather* Services*"*, (http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm

(11) For more information on survey designs and examples, see: http://www.wmo.int/pages/prog/amp/pwsp/surveys.htm .