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MED POL Information System

2007/2008 Implementation Discussion Brief

(prepared by INFO/RAC)

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1. INTRODUCTION

The following summarizes the progress made with regards to the MED POL Info System and describes the proposed implementation process to be undertaken in order to plan and prepare for the first release of the MED POL Info System during 2008.

The MEDPOL Info System aims at improving the overall reporting and monitoring, management and analysis of all monitoring data received by MEDPOL. Data management being an integral part to the MEDPOL Programme, the need to support and manage an ever increasing volume of data relies on the use of modern technologies and tools. This is essential if MEDPOL is to improve its capacity to help formulate the appropriate actions and policies needed to reduce and eliminate pollutant discharges into the Mediterranean Sea.

Over the past year MED POL has been engaged in a collaborative effort to begin looking at improving and upgrading its information systems to support its evolving information management needs. INFO/RAC has been assisting MED POL in these efforts; providing the technical capacity necessary to advance and upgrade MED POL to a more modern open internet-base environment.

Significant progress has been made in developing a prototype to help demonstrate a 'proof of concept' offering a working model of a Portal infrastructure, graphical interface, and some key components and features.

The MED POL Info System has reached an important stage in its implementation requiring stakeholders' involvement and user feedback. Assessing the system's capacity and readiness to be fully operationally deployed and made available to the intended users, within an institutional framework of defined policies, procedures, and reporting obligations, is critical to the next stage of the implementation, from the sustainability, management, and maintenance aspect of the system.

This paper aims at stimulating discussions and highlight key areas of management activities during 2007/2008 in order to help identifying roles of responsibilities, management and institutional capacities, and linkages/partnerships with regional initiatives (i.e. Horizon 2020) to help prepare for the operational deployment of the first release of the MED POL Info System.

2. BRIEF HISTORY

The following briefly summarize the progress made since late 2004 when MED POL and INFO/RAC began to engage in close cooperation in the implementation and development of the MED POL Info System

Significant progress has been made since the initial concept for a web-based MED POL Info System was proposed in March 2005. A prototyping bottom-up approach was taken to evolve the concept further in developing a 'proof of concept'

By mid-2006 Phase I of the prototype implementation was complete. A Portal Infrastructure with a Graphical Interface to a MED POL data repository was built. The functional features included where mainly limited to user profiles, administrative functionalities, user preferences settings, and basic content uploading/browsing.

A training workshop followed introducing MED POL Officers (Athens) to the new platform providing an opportunity to identify suggested improvements.

The Report Submission Module was identified as an important component to further improve and develop the prototype. This module, part of Phase II of the prototype implementation, allows for the uploading and submission of Report Files; checking conformance and consistency with the MED POL reporting format and providing users (and relevant user groups) a confirmation log file including notification of success or failure of the data submitted.

The development (i.e. programming) stage of Report Submission Module has now been completed (Q1 2007).

3. HOW TO PROCEED? 2007/2008 IMPLEMENTATION PROCESS

The prototyping approach has allowed MED POL to incrementally develop the MED POL Info System by focusing on and building upon the core base elements (ie infrastructure), continually refining and improving the prototype through the additions of new features such as the Report Submission Module.

An important stage in the implementation has been reached whereby stakeholder involvement and user feedback is critical in order to determine whether the prototype is sufficiently refined, robust, and functionally ready to support MED POL's information management needs.

A number of management elements focusing on key areas of the implementation have been identified. These are aimed not only at further advancing the prototype into a fully operational system but also to begin preparing the groundwork to ensure the new online system is sustainable as well as institutionalized into the MED POL Programme over the longer-term (2009+).

The key focus areas of the MED POL Info System implementation include:

- Usability and Quality Assurance Testing
- Acceptance Testing and Finalising first release of system
- System Documentation
- Operational & Maintenance Procedures –Management issues
- Training & Capacity Building
- Reporting obligations –Institutional framework of define policies and procedures
- Preparatory Assistance & System Deployment
- Advanced Features & Modules –Monitoring & Reporting

Each of theses involve a host of activities, highly interdependent and related, all of which will need to be implemented at some level, if the MED POL Info System is to be made operational before the end of 2008.

INFO/RAC will continue engaging in close cooperation with MED POL providing the technical management lead and development (ie programming) capacity throughout the implementation. MED POL's ability and capacity to operate and handle the system will continually to build and strengthen through training and capacity building.

During this process, partnerships and linkages with other environmental initiatives in the region such as Horizon 2020, for example will be strengthened.

It is envisaged that once MED POL switches into a fully online system of monitoring and reporting, INFO/RAC will take on a more support management role ensuring that the system and its physical infrastructure (hardware/software) is properly managed and maintained. This will also include implementing future system enhancements and the resolving of programmatic errors or system bug that may arise.

The following briefly describes each of the elements of the implementation process:

1.1 Usability and Quality Assurance Testing:

Usability and Quality Assurance Testing is seen as the next important step in the MED POL Info System implementation process. Gaining user feedback on the overall system design, functionality, performance and usability is vital in determining whether the new platform developed, complies with user requirements and management and stockholders' expectations.

This stage of the implementation will require coordinated planning and preparatory work in organizing stakeholders' involvement. This will include defining the acceptance testing criteria, and the development of guidelines and procedures to help those involved to thoroughly test the system, and provide the necessary user feedback.

Up until now, no comprehensive systematic quality assurance testing involving a wide-audience has been undertaken. The testing performed has largely been narrow in focus and limited in scope, involving only those directly engaged in the development process. Involving a wider audience in the process will help improve the overall quality assurance and reliability of the system as well as help guide future development.

Suggested improvements and resolving system bugs highlighted and identified during this phase will then need to be incorporated into the system in order to conclude this phase of the implementation.

The usability testing will need to be rigorous and thorough ensuring that all aspects of the portal infrastructure and its various components are systematically tested, both from a user's and system's point of view -security, database integrity, functional robustness, user friendliness, configuration settings, and overall usability, etc. A wide diverse set of users will need to be involved each examining the system from their perspective and role within the MED POL programme.

1.2 Acceptance Testing in Finalizing First Release of the MED POL Info System:

For the MED POL Info System is to be operationally deployed and made available to its partners (and users), it is important that a sufficient level of system completeness and functional maturity is reached, before being able to release the first working version of the system -switching to a full online system.

This will very much depend upon the intended audience required to make use of the system; making sure that sufficient functionalities and features are included, to support and facilitate their work, at least at a minimum level.

Countries providing data, for example, will need adequate tools to facilitate the uploading, correcting, and submission of MED POL reporting files. MED POL Officers (Athens) on the other hand, will require appropriate functionalities in order to process, interpret, analyze, and summarize the data for decision-making and monitoring & reporting purposes.

This will require stakeholders to assess whether the MED POL Info System can support the priority users in order to help finalize the first release of the system. Features (and functions) deemed essential, but presently missing or inadequate, will need to be identified in order to enhance the MED POL system accordingly. These enhancements would have to follow the industry-standard software development cycle –requirement specification, programming, usability & quality testing, and final user acceptance. More 'nice-to-have' features would be implemented later as part of the future improvements of the system.

If it is found that little enhancement is needed in finalizing the first release, preparation to plan for the switching to online system can begin in order to ensure that the conditions and requirements necessary for system deployment, described further in the document, are met.

It should be emphasized that much of the MED POL Info System implementation has been focused primarily on the portal infrastructure and a few core elements. How well and adequately they comply and support the priority users' requirements will need to be determined to qualify for user acceptance.

1.3 System Documentation:

The importance and value of good documentation cannot be overemphasized. Documentation is seen as an integral part to the development and implementation of the MED POL Info System.

While much of the prototyping has been focused on development (i.e. programming) in order to demonstrate a 'proof of concept', little by way of documentation has been compiled apart from a basic User Manual and a preliminary System Design Document.

More emphases and resources will be required to be committed to the efforts of documentation. The inadequacy of documentation risks not having any institutional knowledge and system comprehension, in supporting the future maintainability and enhancement of the MED POL Info System. This important but often neglected activity has a direct adverse and costly affect on the sustainability and upkeep of a system.

System documentation explains how to operate and use the system. An Architecture System Design Document, for example, provides greater insight into the architectural design and inner workings of the MED POL IS system such as, defining the hardware and software architecture/configurations, information/work flows, data/reporting, and the logical & physical design of the components, modules, interfaces, and databases making up the system. User Manuals assists users on the operating aspects of the system –System Administrative Guide, User Guide, and Technical Support Guide, while Marketing Brochures provide Product Briefs and Promotional Material.

Compiling good system documentation is therefore essential, if assurances are to be given that the new online platform satisfies MED POL's stated requirements and that MED POL will be able to operate and maintain the system in a sustainable and manageable manner.

1.4 Operational & Maintenance Procedures –Management Issues:

In order to be able to manage and maintain the MED POL Info System effectively, a set of clearly defined guidelines and procedures will need to be established.

These are essentially methods or procedures for performing certain routines and specific tasks that cover both technical and administrative operational/maintenance aspects of the system. Guidelines and procedures come in the form of standard operating procedures, maintenance procedures, and user guidelines for specific routine tasks.

These help ensure conformance with organizational practices, providing users the guidance to perform a specific routines in a consistent manner thereby ensuring a certain level of quality and integrity. So whether it's establishing procedures that control user access, scheduling the weekly backup of the system, a routine to upload and verify conformity of MED POL data submitted, or simply running a batch process to extract and exchange certain yearly monitoring indictors, guidelines and procedures are needed.

Defining the roles and outlining the responsibilities of the various user groups, who intend to manage and administer the system, will be important for the maintainability and sustainability of the system.

1.5 Training & Capacity Building:

Training and Capacity Building is an important element to the MED POL implementation process. It helps ensure that all those involved and participating in the MED POL programme acquire and retain the necessary knowledge, skills, and competencies levels in order to be able to become self-sufficient in the operation, management, and maintenance of the new system.

Various training curriculum material will need to be compiled and maintained during the different implementation stages; aimed at the different sets of users and the various components making up the system. A database administrator, for example, responsible for maintaining the database system, the integrity of the data and the efficiency and performance of the system, requires a different set of training and curriculum material to the end-user who simply uploads MED POL data into the system.

A number of training programs will need to be organized and conducted using a variety of delivery methods, from hands-on training to distance e-learning. Targeting the different sets of users, both at the administrative and end-user level will be important to help strengthen the core competencies and build up the necessary skills.

Users (and stakeholders) not receiving the appropriate and adequate training can result in delaying the initial MED POL Info System deployment. If those supporting or operating the system are not properly trained, they may cause the system not to work correctly by doing something harmful to the system, or they may be unable to resolve minor issues that lead to a major problem.

1.6 Reporting Obligations –Institutional Framework of Define Policies & Procedures:

Reliable and harmonized data quality is fundamental prerequisite for the regional assessment of marine pollution. This very much depends upon the provision of reference material, standard solutions, and guidelines constituting the MED POL Reporting Formats governed within an institutional framework of defined policies, procedures, and reporting obligations.

The templates for the various Reporting Formats will need to be revisited.

Ensuing there is full and comprehensive supportive documentation is essential; providing a clear set of guidelines and procedures for completion, descriptions and specifications for the parameters, format, and structure of each of the elements, as well as emphasize on dependencies, precedence, or relationships amongst the content elements that may exist.

While MED POL have been working towards this, much work is still needed to ensure these reporting formats are standardized and the rules and policies that govern their use and completion are inclusive. It is important to incorporate this into the MED POL Info System to ensure compliancy with MED POL policies, procedures and reporting obligation, if reliable and harmonized data quality is to be realized.

As part of this process, the MED POL Info System will be developed as an integral part to the ongoing development of the MED POL information and communication strategy (MED POL Phase IV)

1.7 Preparatory Assistance & System Deployment:

In order for the MED POL Info System to be fully deployed and made available to the MED POL partners (and users), a deployment strategy is needed to help prepare and manage the rollout and deployment efforts.

Whether the new system will run in parallel with the existing system or there will be a cutover (switch to full online system) within a specified time period, is something that will need to be determined and planned for. This will very much depend on the progress made with regards to the overall implementation in the technical and management areas outlined throughout this document –training, maturity of system, supportive documentation, procedures and policies implemented, etc.

Either way, there will be implications of data synchronization, temporary system adaptation, user inertia, legacy system dependencies, resources requirements, and possible system downtime.

Migrating and synchronizing of data from the old system to the new, ensuring accuracy of translation and insertion, while maintaining the currency of data up-to-date, will play an important part in the preparation efforts.

Assigning and assuming management and maintenance responsibilities, will require the adoption and implementation of the policies and procedures governing the administrative and operational aspects of the MED POL Info System. This will need to be supported by service level agreements, support and maintenance contracts, etc agreed between MED POL and its partners.

For the MED POL system to be sustainable and institutionalized into the framework of the MED POL Programme, issues of operational and maintenance costs, staffing, future system enhancement and upkeep of the system will need to be considered before switching to online system.

1.8 Advanced Features & Modules –Monitoring & Reporting:

To support MEDPOL's efforts in better understanding the state of the marine environment and formulate the appropriate actions to address the issues of pollution; expanding and enhancing the MED POL Info System to include monitoring and reporting functionalities will be important.

Providing data mining, reporting, trend analysis, and visualization tools will help strengthen MED POL's ability and capacity to process and analyze the data received. This in turn will allow MED POL to better assist Mediterranean countries in the formulation and implementation of pollution-assessment programmes and improve the overall monitoring of their effectiveness and the actions and policies taken.

While much of the development efforts have been focused on the inputting (ie receiving) of data, little in the way of analysis and reporting has been included. The Reporting 'Data Plotting' Module and the GIS/Mapping Reporting Module are two components identified as essential elements to the MED POL Info System.

The *Reporting 'Data Plotting' Module* aims at generating graphical charts (bar and pie) and plotting trends of pollutants over time for comparative and analytical purposes, while the *GIS/Mapping Reporting Module* aims at providing basic mapping functionality for visualization and overall purposes.

Being able to exchange and share information in a useful and meaningful way with other environmental systems and programmes in the region will be of great benefit to MED POL and

a requirement for Horizon 2020. This will require the MED POL IS system to be interoperable and comply with specific international standards and exchange protocols.

Addressing the issue of interoperability will be important. This can be done by widen the partnership network and working more closely with others in the region such as Horizon 2020, Coastal Water Monitoring programme, GEF-SP-LME, InfoMAP, UNEP, and EEA's EIONET/Reportnet, for example.

Proposed MED POL Info System (2007/2008) Implementation Elements

Year	*2007*									*2008*											
Month	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
Usability and Quality Assurance Testing																					
Acceptance Testing and Finalising First Release of System																					
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Operational & Maintenance Procedures – Management issues																					
Training & Capacity Building																					
Reporting Obligations – Institutional Framework of Define Policies and Procedures																					
Preparatory Assistance & System Deployment																					
Advanced Features & Modules –Monitoring & Reporting																					
Milestones						***A***					***b***					***B***					***C***

Note: *The timelines are estimated and depend upon resources (financial and human) and stakeholder involvement during the implementation process*

Milestones:

A - Prototype Phase II complete. Acceptance Testing and finalizing First Release of MED POL IS to begin

B - Deployment preparation begins for First Release of MED POL Info System. This could happen much earlier depending on outcome of Acceptance Testing (***b***) which would bring all other activities and milestones forward.

C – MED POL Info System operational and available to priority users with some aspects of the advanced features & modules already included. However, further enhancement is foreseen during 2009 before the *Reporting 'Data Plotting' Module & the GIS/Mapping Module* is fully functional