JOint Nowcasting Applications & Services (JONAS) Steering Committee

JONAS Strategic Plan

1. Background

1.1 In light of the need for nowcasting services clearly identified in the 2006 PWS Survey on Severe Weather Warning Services, the Expert Teams under CBS OPAG explored various prospects of promoting and maximizing the benefits of increasingly mature nowcasting techniques for applications in the PWS domain. Subsequently, the PWS Workshop on Warnings of Real-time Hazards by Using Nowcasting Technology was conducted in Sydney, Australia in October 2006 (hereafter called the Sydney Workshop). The Sydney Workshop drafted a PWS Nowcasting Applications Framework with an overall mission to increase the capacity of NMHSs to deliver reliable nowcasts to enable informed decision-making in mitigating the effects of high-impact weather (e.g. heavy precipitation, high winds, low visibility, anomalous temperatures) and disasters. The Draft Framework aims to: (i) identify gaps and needs of PWS nowcasting services; (ii) promote new and existing possibilities for maximizing the end-to-end application of nowcasting systems within PWS; (iii) facilitate the generation of new or improved PWS products for the benefit of community; and (iv) undertake capacity building to promote the transfer of relevant nowcasting processes and technology, in particular from developed to developing countries.

1.2 Meanwhile the 5th Session of the WWRP SSC, noting the importance of effective warning of high-impact weather, established a Nowcasting Working Group (NWG) to promote scientific progress in the area of nowcasting. Over the years, NWG has been developing plans and programmes for the advancement of nowcasting techniques and systems.

1.3 As a follow-up to the Sydney Workshop and for synergy effects, a Joint PWSP-WWRP meeting on Nowcasting Applications was convened at the WMO Headquarters in Geneva in April 2007. The meeting recognized that a collaborative medium would need to be established through which nowcasting system designers, operational forecasters, PWS product developers, disaster managers and users can readily interact and explore ways forward. Within the scopes covered by WWRP and PWSP, from R&D to service delivery, there would inevitably be areas of overlap where the two programmes should interact and develop joint activities. To meet such challenges, a Strategic Plan was proposed and a JOint Nowcasting

Applications and Services (JONAS) Steering Committee (see Appendix A for Terms of Reference) comprising experts from both WWRP and PWSP was established to oversee the implementation of the Plan.

2. Objectives

2.1 Based on the discussion in the Geneva meeting, it is imperative that the JONAS Strategic Plan should work towards the following objectives:

(a) exploring the potential use of nowcasting information as PWS products and identifying users' expectations and demands;

(b) promoting the implementation of end-to-end nowcasting systems, including the adoption of latest nowcasting and information technology, that would effectively relay nowcasting information and products to the users;

(c) establishing good practices and guidelines for the transmission of highly perishable nowcasting information and products, including the role played by human forecasters and mass media;

(d) facilitating regional exchange of nowcasting information and experience sharing for the early warning and mitigation of high-impact weather; and

(e) transferring knowledge and technology relating to the applications of nowcasting information as PWS products to NMHSs in the developing countries.

3. Strategic Target Areas and Results (STAR)

3.1 To achieve the stated objectives, the following work areas and results are targeted for strategic development:

STAR 1 - Target area: Study of specific users' demands for nowcasting information in different regions and for different applications (in particular flood forecasting, energy and water resource management, transport industry, sport and recreational activities, disaster mitigation and hazards management).

- Target result: A comprehensive inventory of PWS

Nowcasting Products specifications, stratified according to regional needs and application needs.

STAR 2 - Target area: Consolidation and sharing of successful experience, including the promotion and demonstration of operational nowcasting systems with proven PWS application potential.

- Target result: A growing number of NMHSs running operational nowcasting systems for increasingly diverse applications, as reflected by regular CBS GDPFS surveys and as updated on JONAS web site.

STAR 3 - Target area: Review and evaluation of prevailing nowcasting processes, facilitating the transfer of research findings into operational systems and ensuring the effective use of latest information technology.

- Target result: More timely and reliable nowcasting information and products, as measured and reported by system owners, NMHSs and information users.

STAR 4 - Target area: Identification and sharing of information or data on common weather elements of interest for operational nowcasting and warning needs among NMHSs of neighbouring regions.

- Target result: A growing number of bilateral or regional collaborative initiatives successfully developed or established via JONAS activities.

STAR 5 - Target area: Creation of opportunities and identification of resources for NMHSs in developing countries to acquire relevant nowcasting knowledge and technology and to explore the use of nowcasting information for PWS applications.

- Target result: A growing number of NMHSs in the developing world running operational nowcasting

systems for specific application needs, as reflected by regular CBS GDPFS surveys and as updated on JONAS web site.

4. Proposed STAR Activities

4.1 Nowcasting Applications Testbed (NAT) (activity relevant to: STAR 1, 2, 3, 4 and 5)

The objective of the NAT is to accelerate science and system implementation in an end-to-end setting involving system developers, forecasters and end-users. The NAT is essentially a focus for activities encompassing both RDP and FDP (e.g. Sydney 2000 and Beijing 2008) philosophies, and at the same time serving as a show window for proven systems to demonstrate their PWS application potentials to prospective users. Given the range of nowcast issues and varying climatic regimes, it is expected a NAT will have a regional focus with well-identified or established user groups. The NAT should make use of existing opportunities in various countries that have a particular focus, interest and infrastructure to support long-term research and operational testing on application of nowcasting techniques, as well as short-term operational application of existing techniques in places where they have not been used effectively. High quality observational networks covering the areas where the meteorological phenomena of interest have high probability of occurrence would typically be required. Essentially, a NAT will involve a host organization (supported by an NMHS) with a willingness to undertake a long-term commitment to the project and involve international partners in the activity.

4.2 Collaboration Initiatives in Nowcasting Applications and Services (CINAS) (activity relevant to: STAR 2, 4 and 5)

CINAS is an activity area in which an arrangement may be set up within a closed group of NMHSs to address specific operational nowcast issues of mutual concern (e.g. PWS products for landslip forecasting of a selected area) with emphasis on “learning–through-action”. Nowcasting systems can be set up and run in the target country to generate PWS products for specific users with assistance from an advisor/consulting team from a “champion” NMHSs with experience on the relevant nowcasting application. This approach enables a thorough examination of the whole end-to-end process for nowcasting services in the target country.

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4.3 Nowcasting Fellowship and Training (activity relevant to: STAR 5)

Regular training opportunities and attachment programmes, similar to the ESCAP/WMO Typhoon Committee Research Fellowship Scheme, may be set up in conjunction with system owners and/or NAT hosts to allow young scientists, particularly those from NMHSs in the developing countries, to acquire nowcasting knowledge and skills. Effective training for optimizing the use of nowcasting systems in critical decision-making process can take the form of mentoring of trainees by experts through a "Displaced Real-Time Simulation (DRTS)" approach (i.e. actual events, including false alarm and null cases, captured say in NATS are replayed in simulated real-time environment for training purposes).

4.4 Nowcasting Applications and Services (NAS) Website (activity relevant to: STAR 1, 4 and 5)

Information on operational nowcasting techniques and systems as gathered by JONAS, including in-feed of such information from other related WMO programmes (e.g. GDPFS), will be posted onto the PWSP website as a portal on nowcasting applications and services for general reference. Updates of information will be facilitated by a web template to be completed and submitted by existing as well as new system owners. Along with the development of the NAS website, a technical guideline on nowcasting practices will also be compiled and made available as reference material.

4.5 Meetings (Conferences, Seminars, Workshops, Users' Focus Groups and Familiarization Visits) (activity relevant to: STAR 1, 2, 3, 4 and 5)

Such activities may be specifically initiated and organized by JONAS, but could also be non-JONAS activities identified by JONAS for attendance or liaison if they are considered relevant to JONAS STARs. They also offer opportunities to establish useful contacts with potential partners and sponsors (e.g. IT service providers, media representatives, funding agencies, etc.). Meetings of users' focus groups, to be gradually set up over time, will also be organized to assess users' requirements and gauge users' feedbacks.

5. Modalities

5.1 It is envisaged that the JONAS Steering Committee will meet once every two years to review and update the Strategic Plan, monitor progress of various JONAS activities, and promote new initiatives. The opportunity will also be taken to: (a) assess resource support required in the time frame of 2 – 5

years for the implementation of various activities; (b) identify projects for funding bids to WMO DCR Department, external funding agencies or commercial sponsors; (c) consolidate or establish linkages with other WMO programmes, such as collaboration with WWRP/NWG, CBS/GDPFS and other groups or projects to develop or to set requirements for nowcasting systems through test bed or other activities; and (d) coordinate with relevant PWS Expert Teams on the development of IT support, including the establishment of format standards and linkage to the WMO information system, for effective dissemination of nowcasting information and specific application products to targetted user groups.

5.2 JONAS projects such as NAT (para. 4.1) or CINAS (para. 4.2) will be overseen by designated JONAS members in conjunction with host organizations, relevant system owners and other JONAS partners.

5.3 In addition, activities such as NAS website (para. 4.4) will be managed and maintained by WMO Secretariat, with input as required from JONAS members and from other relevant WMO programmes. Activities relating to fellowships (para. 4.3) and meetings (para. 4.5) that require planning on an annual basis may be handled through email correspondence among JONAS members.

APPENDIX A

Terms of Reference for the JONAS Steering Committee:

i) to facilitate the identification of user needs and the engagement of users for nowcast applications in PWS;

ii) to promote the operational use of end-to-end nowcasting techniques, processes and systems as a critical component in an effective PWS framework with emphasis on DPM applications and decision-making by users;

iii) to provide guidance material on nowcasting applications in PWS, including establishing an inventory of existing operational nowcasting tools, processes and capabilities;

iv) to provide recommendations to PWSP on the endorsement and priority of projects that: (a) promote and enhance capability for end-to-end nowcasting activities; (b) undertake capacity building activities for transferring technologies to developing and emerging nations; (c) facilitate regional multi-national collaboration, demonstration projects and other initiatives;

v) to provide a link between PWSP and WWRP, and to liaise with other related WMO programmes as appropriate;

vi) to report to PWSP and WWRP the progress made in projects and the use of nowcasting products among WMO Members; and

vii) to facilitate the assessment of the societal and economic benefits of nowcasting applications in PWS.