

Global Data Processing and Forecasting System: Implementation Plan

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Vision of future seamless DPFS

EC-68 endorsed a Vision for a future S/GDPFS with the following characteristics:

It will be a flexible and adaptable ecosystem of independent centres that will expand and strengthen prediction of the environment, making impact-based forecasts and risk-based warnings accessible, thus enabling Members and partners to make better-informed decisions;

It will facilitate partnerships and collaboration globally and regionally among jurisdictions, academia and the private sector to access and make available related information of relevance to the mandate of WMO across all timescales and domains of the Earth system;

It will, as much as possible, share authoritative weather, water, climate and related environmental data, products and services freely and openly and in a viable and sustainable way, ensuring no Members are left behind.



A seamless approach

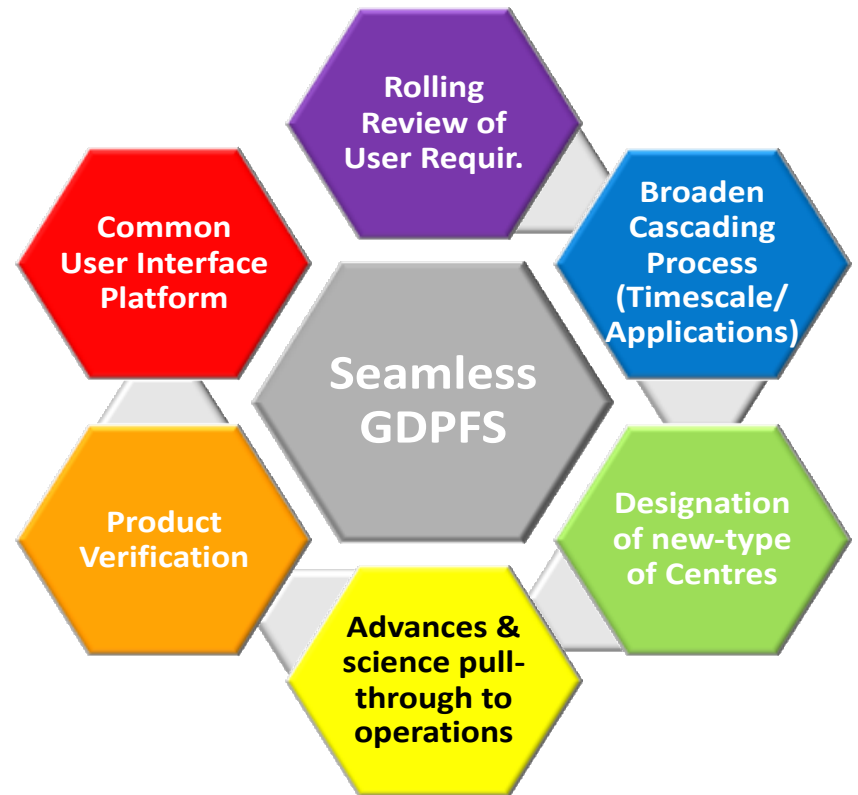
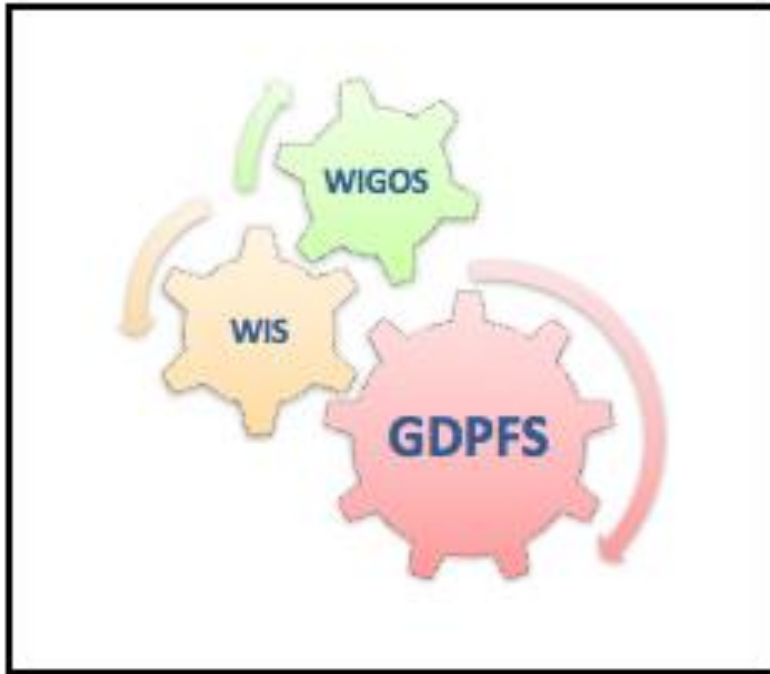
Expresses the need for information for users, stakeholders, decision makers that is smooth and consistent despite originating from different observing systems, models, compartments of the earth system, time and space scales, etc.

Seamless Definition

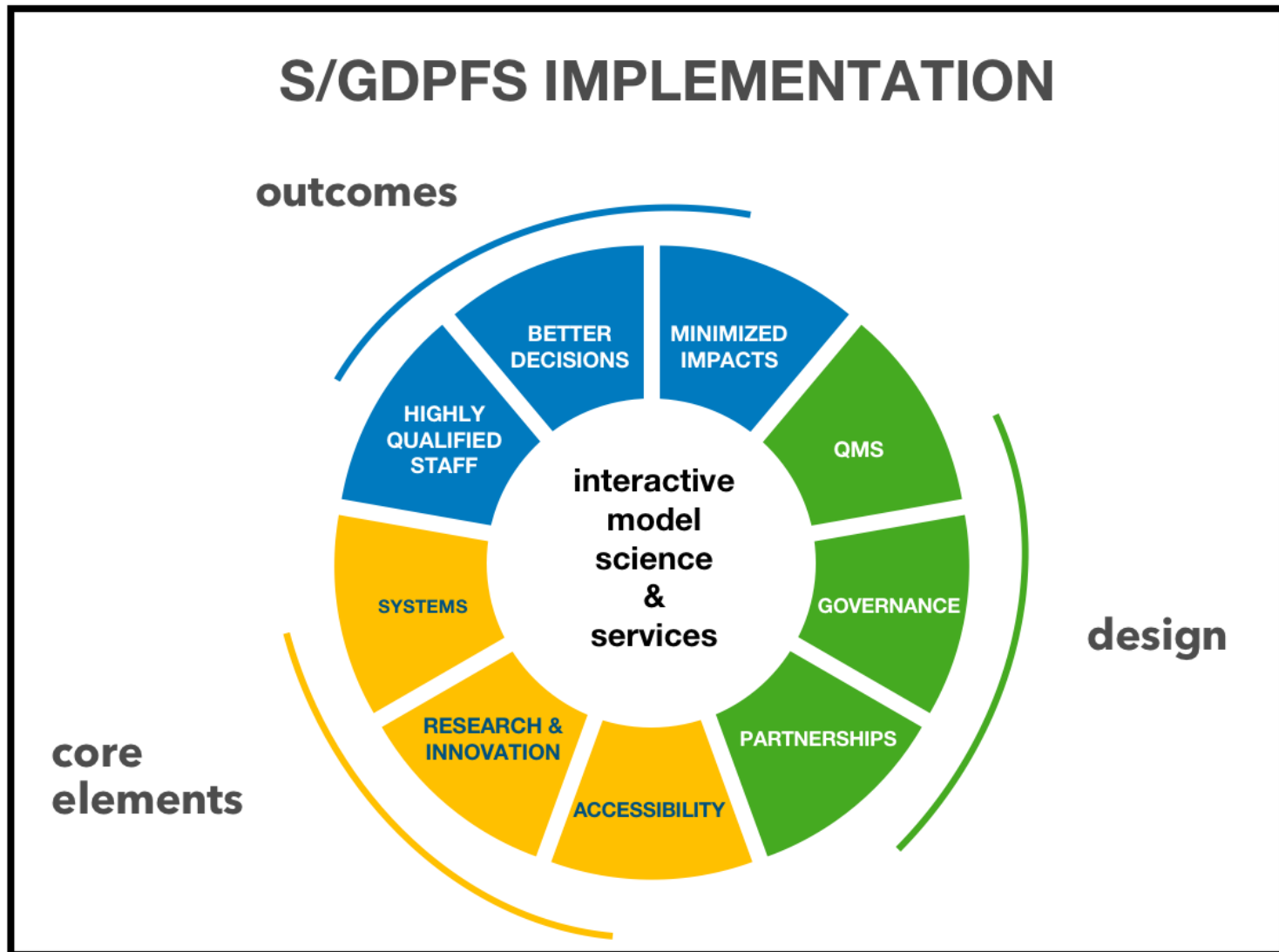
In the context of WMO, seamless prediction considers not only all compartments of the Earth system, but also all disciplines of the weather–climate–water–environment value chain (monitoring and observation, models, forecasting, dissemination and communication, perception and interpretation, decision-making, end-user products) to deliver tailor-made weather, climate, water and environmental information covering minutes to centuries and local to global scales.



WMO Infrastructure to enable service delivery



Implementation Plan Components





Action Plan

- Priority Actions have been identified for each of the core elements Systems, Research & Innovation and Accessibility
- Importance of pilot project, benchmarks, testbeds for the ongoing implementation
- Initial pilots can be low hanging fruit
- Need to identify priorities and develop pilots to address these



Design elements

- A GDPFS Business Model and Governance
 - flexibility, sustainability and long-term relevance
 - Win-win solutions between regional, global, national and transnational partners
 - fill internal gaps in capabilities, avoid proliferation and duplication, and sharpen the WMO designation process
- Quality Management System
 - meeting user requirements, user feedback mechanisms
- Partnership and resources
 - Key sectors of the “Earth System “enterprise
 - Co-design
 - Leverage resources
- Training and Educational Activities

Systems

An Integrated and Customized System across multiple time and space scales, addressing broader spectrum of user needs, applying an Earth system approach, generating tailored products for specific user needs

Systems

- **Interoperability:**
 - The future S/GDPFS will be able to exchange and use data from a variety of sources, including vulnerability and exposure data to facilitate impact-based forecasting and risk-based warnings across different disciplines
- **Coordination and Regulations:**
 - The future S/GDPFS will benefit from a higher level of coordination internally, with other WMO systems and with external agencies and organizations.



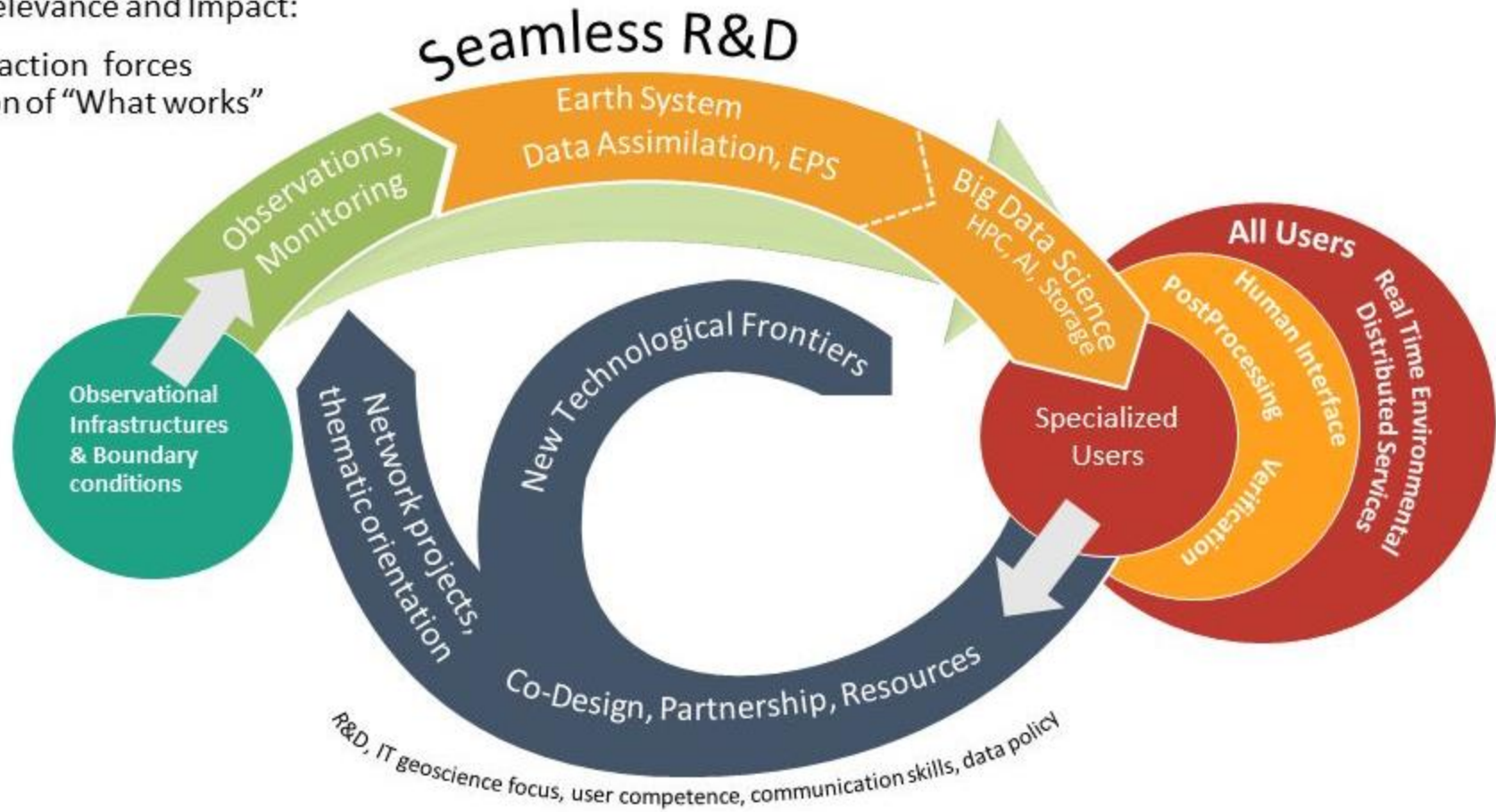
Research & Innovation

Strengthen science linkages among compartments of Earth system, allow development of novel operational products, exploit predictability on all time and space scales, promote socio-economic research.

A value cycle approach

Quality, Relevance and Impact:

User Interaction forces exploration of "What works"



Research & Innovation

- **Science for Services**

- Implement value cycle approach to set research priorities
- Co-design operational projects that rely on research advances
- Integrated approach for research programmes
- Engage with funding agencies
- Ensure availability of data/models/tools for research

- **Seamless Prediction**

- Deliver underpinning science for Earth System prediction
- Facilitate research across relevant disciplines for benefit of users, stakeholders and decision makers
- Contribute to development of observing system
- Demonstrate benefit of advances in seamless prediction



Accessibility



Accessibility of data products and services from S/GDPFS complemented by future plans for the federated WMO Information System. Address challenges of growing data volumes, providing familiar interfaces and applications, combining meteorological data with data from other agencies / socio-economic data.

Accessibility

- **Availability and Visibility**
 - The system will provide access to data, models and products in a user-friendly manner, ensuring interoperability and integration with other systems, geospatial reference data, metadata and advanced standards and documentation. Technological aspects such as federated nodes and bandwidth issues will be considered and linked to WIS development. The whole S/GDPFS infrastructure will be visible and easy to identify.
- **Usability**
 - Software infrastructure will produce web-tools for handling data and creating on-demand products based on core requirements; the maintenance of metadata and infrastructure will be clarified in collaboration with WIS & WIGOS. The usability of the future S/GDPFS will be enhanced significantly, considering aspects such as authenticity of the source, quality of access and cost effectiveness. Focus areas are providing tools/documentation on how to combine / interpret multiple datasets, providing guidance on seamless products (Help desk services), developing integrated web-tools for tailoring information, ensuring local ownership and developing downstream statistics.





The Interactive model

Connecting Science and Services

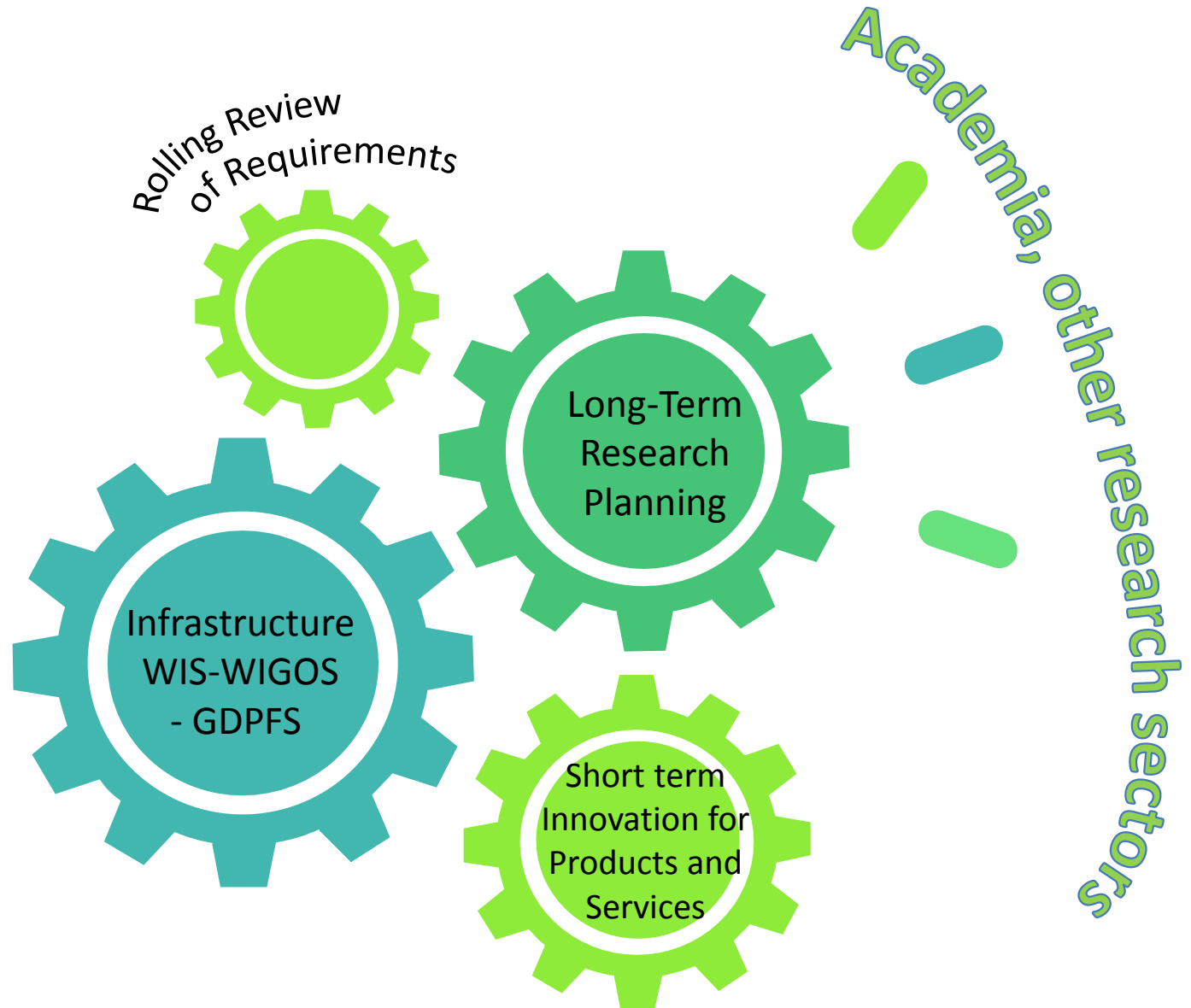
A new interactive model for integrating science and services will increase the effectiveness of research to operations knowledge transfer to provide improved weather, climate, water and environmental services to Members and include multiple interactions between the research and operational communities to address the needs of users, stakeholders and decision-makers



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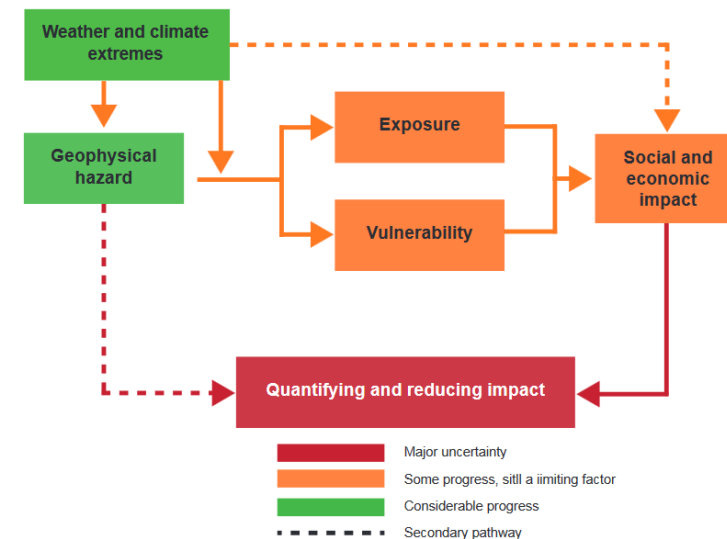
Interactive model & Co Design

National and International drivers



Impact-Based Forecasts and Role of Forecaster

- Translate natural hazard risk into impact services
- Validation to assess service benefits and performance
- Capture, exchange and integrate information on vulnerability & exposure and impact observations
- Transition of traditional role of forecaster: new disciplines and stronger advisory role
- Forecasters / product developers working with researchers
- Critical value of training



Concrete Activities



A key part of the implementation of the future S/GDPFS will be the definition and carrying out of benchmarks, pilot projects and test beds (to be tested in a research or quasi-operational setting). Currently a number of potential activities have been identified around:

- Developing and strengthening regional partnerships;
- Seamless prediction at the weather-climate interface;
- Seamless prediction from minutes to hours;
- Developing Public-Private Partnerships;
- Developing Integrated Air Quality Prediction and Forecast Systems in Africa;
- Developing probabilistic hydro-meteorological products; and
- Assessing future multiscale requirements.

**Need to identify gaps and develop /
prioritise pilots in these areas!**

Thank you Merci



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