

## Domain Engineering for Weather Information Services

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Weather affects people's livelihoods. Accurate weather services can lead to improved living conditions for communities. Accessibility to reliable weather information is vital for informed decision making in various socio-economic sectors. This is to enhance productivity and safety. The Uganda National Meteorological Authority (UNMA) is mandated to monitor weather and provide weather forecasts and advisories to the government and other stakeholders.

UNMA disseminates weather information via news bulletins on radio and television, Internet, print media, tailored mobile weather alerts for fishermen and farmers (SMS), stakeholder workshops, the National Media Center, non-governmental organizations, and through the Ministry of Agriculture early warning unit. The disseminated weather information is additionally translated into some local dialects to make it easier to understand.

Despite translation into local dialects, the weather information remains complex, written in technical language and mainly published in English. There is limited access to, and no control over the information. Some farmers cannot use weather information in print media due to low literacy. A long standing bias regarding the accuracy and timeliness of the weather information also leads to a disregard of the information. Weather services are critical but the modes of communication are ineffective and not optimised.

Specifically, we note that there is a diversity in the stakeholders interested in weather information, their purposes for interest vary, they are interested in different parameters of the weather elements with variations in levels of detail, possible actions to undertake with the information, and a myriad of ways to disseminate this information exist.

We therefore, seek to improve the techniques used to disseminate appropriate weather information with stakeholders through the capabilities Information and Communication Technologies offer. We are interested in contextualization of weather information dissemination using software domain engineering. We seek to extend the software domain engineering approach by formalizing the weather information dissemination domain. Through this, we hope to streamline and standardize weather information dissemination and make it relevant to the communities through personalizing weather information services. This will be done specifically by:

- Defining a domain model that captures the vocabulary, stakeholders and concepts of weather information dissemination
- Defining a domain specific language (DSL) to support development of weather information dissemination products
- Developing a prototype for a weather information dissemination system that provides personalized weather information, based on the DSL.
- Validating the prototype with targeted stakeholders

We hope the new techniques will complement existing efforts by UNMA, lead to better decisions and improve living conditions in Uganda.