The Ionosphere Prediction Service Project

Filippo Rodriguez (1), Roberto Ronchini (1), Stefano Di Rollo (1), Giorgiana De Franceschi (2), Claudio
Cesaroni (2), Luca Spogli (2), Vincenzo Romano (2), Marcio Aquino (3), Sreeja Vadakke Veettil (3), Francesco
Berrillil (4), Dario Del Moro (4), Michael Hutchinson (5), and Osman Kalden (6)

(1) Telespazio, Satellite systems and operation - science and navigation, Italy (filippo.rodriguez@telespazio.com), (2) Istituto
Nazionale di Geofisica e Vulcanologia, (3) University of Nottingham, (4) University tor Vergata, (5) Nottingham Scientific
Ltd, (6) Telespazio Vega Deutschland

The Ionosphere Prediction Service (IPS) project funded by European Commission and currently ongoing, will
provide a prototype for a monitoring and prediction service of potential ionosphere-related disturbances affecting
GNSS user communities, to help these communities cope with the effects of the ionosphere and mitigate the
related effects for the specific GNSS-based application/services.

The aim of the IPS project is to design and develop a prototype platform able to translate the prediction and
forecast of the ionosphere effects into a service customized for specific GNSS user communities. The objective is
to alert the GNSS users in due time of an upcoming ionospheric event potentially harmful for GNSS and for the
related operations in the given application field.

The project team is composed of Telespazio (coordinator), Nottingham Scientific Ltd, Telespazio Vega DE, The
University of Nottingham, The University of Rome Tor Vergata and the National Institute of Geophysics and
Volcanology.

The IPS development is conceived of two concurrent activities: the design and development of the prototype
service and the research activity that will run along the whole project.

The IPS products are fine-tuned to match the different needs of the communities (aviation, mass market, critical
infrastructures monitoring etc.) to which the service is targeted. The design and development of the service is
organized in four phases: the user requirements collection, the architecture specification, the implementation and
validation of the prototype. A sub-activity analyses also the integration feasibility in the Galileo Service Center,
located in Madrid.

The nowcasting and forecasting tools of IPS will be based on the outputs of the research activity that represents
the scientific backbone of IPS and it will provide the models and algorithms for the forecasting products.

The main products will be related to Solar and Space-Weather Monitoring, Ionosphere weather monitoring and
forecasting and receivers performance monitoring and they are complemented with specific aviation related
receiver performance figures.

The core of the IPS platform is the Central Processing and Storage Facility (CPSF) that manages the output of a
chain of processors capable to describe and forecast the Space-Weather phenomena from the Sun to the Ionosphere
affecting the receiver performance.

The service will be available through a web portal during the 2018.

In this paper, we describe the IPS project, the whole service chain and an overview of the available products.