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ILNAS-EN 17350:2020

SCM - Scheduling and Commanding Message - Standard

SCM - Planungs- und Befehlsnachricht - Standard

SCM - Message de planification et de commande - Norme

08/2020

National Foreword

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This European Standard was approved by CEN on 17 May 2020.

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European foreword

This document (EN 17350:2020) has been prepared by Technical Committee CEN/CLC/JTC 5 “Space”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2021, and conflicting national standards shall be withdrawn at the latest by February 2021.

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0 Introduction

0.1 Document structure

Clause 2 provides an overview of the SCM.

Clause 3 describes the scope and general nature of the SCM.

Clause 4 describes the general format of the SCM standard.

Clause 5 describes the detailed syntax of SCM communications.

Clause 6 provides additional information about headers.

Annex A (informative) provides SCM background.

Annex B (informative) provides SCM examples.

Annex C (informative) describes the survey strategy types and related parameter requirements.

Annex D (informative) informs about the handling of filter requests.

0.2 Verbal conventions

The following conventions apply:

a) 'shall' implies a requirement;

b) 'should' implies a recommendation;

c) 'may' implies a permission; and

d) 'is', 'are', and 'will' denote factual statements.

1 Scope

1.1 Purpose

The “Scheduling and Commanding Messages” (SCM) specifies a standard format for observing system commanding and scheduling. This document aims to ease the planning and operation processes and to reduce the efforts from researchers that use several different observing systems and/or simulation software products.

The SCM establishes a common language for exchanging information on planning, scheduling, and executing observations of celestial objects. In the end this will:

a) Facilitate interoperability and enable consistent warning between data originators who supply celestial observations and the entities or researchers who use it; and

b) Facilitate the automation of observation processes.

1.2 Applicability

The SCM is applicable to ground-based activities related to the planning, scheduling, and execution of the observations of celestial objects. It is used by planning software, scheduling software, telescope commanding software. It is applicable for optical telescopes.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

• ISO Online browsing platform: available at https://www.iso.org/obp

• IEC Electropedia: available at http://www.electropedia.org/

3.1.1
Observing System Command File
“observation plan”
data file which is used to control an observing system (OS), which contains absolute information on actions the OS is due to perform, e.g. absolute times and sky coordinates for observations, and which is read by an OS control computer that still processes part of their content (e.g. conversion of equatorial coordinates to telescope hardware coordinates, execution of pre-defined standard routines for calibration processes that are called by a single entry in the command file, etc.) and sends commands to the hardware drivers

3.1.2
Observing System Scheduler Input File
"scheduler request"
data file providing input to an observation scheduler

Note 1 to entry: Opposed to Observing system command files, these files usually do not contain absolute information on when an OS is due to perform a certain action, but rather constraints that allow a scheduler to flexibly allocate the requested actions. The scheduler, on the other hand, can write command files which are subsequently passed on to an OS control computer.

3.1.3
Hardware Driver Input
commands that are produced by an OS control computer and are selectively sent to the according hardware drivers, e.g. the telescope mount drivers, dome drivers, etc.

3.1.4
Near-Earth Object
NEO
Solar System objects whose orbit brings them into close proximity with the Earth, which all have a perihelion distance < 1.3 astronomical units (the distance Sun - Earth, ~$149,6x10^6$ km), and which include near-Earth asteroids (NEAs), near-Earth comets, a number of solar-orbiting spacecraft, and meteoroids large enough to be tracked in space before striking the Earth

3.1.5
follow-up
term used in the NEO field, identical to 'tracking' in the SST field. It is a specific effort to obtain observations of an interesting object at times subsequent its discovery, with the goal of improving the knowledge of its orbit and the predictability of its future motion

Note 1 to entry: Follow-up telescopes are generally distinct from survey telescopes, and operate with a more close supervision of an observer, which selects the targets in need of follow-up. Survey telescopes may also observe known objects, thus providing follow-up observations, although these observations are often not the goal of the project.

Note 2 to entry: 'Tracking' is used in the SST field and identical to 'follow-up' in the NEO field.

3.1.6
range
radial distance between an observer and an object at a given instant of time, which is one of the direct observable that can be derived from a radar observation, by measuring the travelling time of a radio wave reflected from the object's surface, and which, since ground-based optical astrometry does not allow to directly determine radial distances, range measurements from radar are extremely powerful for orbital determination

3.1.7
survey
project operating telescopes designed to detect unknown moving objects in the sky, some of which will become new discoveries

Note 1 to entry: Surveys typically operate in a mostly automated way, and can detect and report measurements for thousands of objects every night.