International Civil Aviation Organization

THE FOURTH MEETING OF IONOSPHERIC STUDIES TASK FORCE (ISTF/4)

New Delhi, India, 05 – 07 February, 2014

Agenda Item 4a): Review of progress of tasks and related action items, Task 1 – data collection

COORDINATION OF SCINTEX FORMAT BETWEEN ICAO/ISTF AND ITU-R

(Presented by Japan)

SUMMARY

This paper reports the current status of coordination of two different SCINTEX formats proposed by ICAO/ISTF and ITU-R with the Chairman of ITU-R WP-3L.

1. INTRODUCTION

1.1 In the Agenda Item 2 of ISTF/3, Japan briefly reported a meeting of Working Group 3L-3 (transionospheric propagation) of ITU-R held in Geneva from 19 to 26 June 2013. The Chairman's report of c included "SCINTEX" format (see Table 1).

1.2 The SCINTEX proposed in the ITU-R (ITU-R SCINTEX) was first proposed by Orus-Perez et al. at the ION GNSS meeting 2011. This is a just a draft proposal, but different from the SCINTEX format proposed in the ICAO/ISTF2 (see Table 2) though they have the same name and similar concept.

1.3 Requirement to coordinate with the Chaiman of ITU-R WP-3L for the formats of scintillation data with the same name "SCINTEX" was listed as the action item 3/1 of the ISTF/3.

2. DISCUSSION

2.1 Drs. Tsugawa and Saito, Japan have contacted with Dr. Roberto P. Cerdeira, ESA (Roberto.Prieto.Cerdeira@esa.int), the Chairman of ITU-R WP-3L, and started discussions about SCINTEX format to merge both SCINTEX format into a new and better SCINTEX format. Some documents related with ITU-R SCINTEX format have been provided by Dr. Cerdeira.

3. ACTION BY THE MEETING

3.1 The meeting is invited to do the following:

a) note the information presented in this paper; and

b) discuss any relevant matters as appropriate.

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TABLE 1

SCINTEX format proposed in the Chaiman of ITU-R WP-3L.

scintex_example.11s (~\My Documents\ESA\Congres-meetings\Galileo Colloquium 2011) - GVIM

File Edit Tools Syntax Buffers Window Help

```
     1.0            SCINTILLATION DATA  MIX                  SCINT VERSION / TYPE
scintex_sept_v0     ESA                 28-aug-11 15:39      PGM / RUN BY / DATE
scintex file containing scintillation information            COMMENT
ESTE                                                         MARKER NAME
Unknown                                                      MARKER NUMBER
Unknown             Unknown                                  OBSERVER / AGENCY
9999999             Septentrio PolaRxS  0.0.0                REC # / TYPE / VERS
Unknown             Unknown                                  ANT # / TYPE
  5760940.0104 -1556238.7358  2276652.7023                   APPROX POSITION XYZ
        0.0000        0.0000        0.0000                   ANTENNA: DELTA H/E/N
E   18 SS41 S4C1 SPH1 CNO1 LKT1 CCD1 SCD1 SS47 S4C7 SPH7    SYS / # / OBS TYPES
CNO7 LKT7 CCD7 SCD7 TECI DTEC ELEV AZIM                      SYS / # / OBS TYPES
G   18 SS41 S4C1 SPH1 CNO1 LKT1 CCD1 SCD1 SS42 S4C2 SPH2    SYS / # / OBS TYPES
CNO2 LKT2 CCD2 SCD2 TECI DTEC ELEV AZIM                      SYS / # / OBS TYPES
S   11 SS41 S4C1 SPH1 CNO1 LKT1 CCD1 SCD1 TECI DTEC ELEV    SYS / # / OBS TYPES
AZIM                                                         SYS / # / OBS TYPES
    60.000                                                   INTERVAL
  2011     8    28    21    11    0.0000000     GPS         TIME OF FIRST OBS
  2011     8    28    21    59   59.0000000     GPS         TIME OF LAST OBS
    21                                                       # OF SATELLITES
                                                             END OF HEADER
> 2011 08 28 21 11  0.0000000  0 21
E10 0.04  0.04    0.00 49.10  187.00   -0.10    0.10    0.03 0.03  0.00  51.30  187.00     0.
E19 0.04  0.04    0.00 48.60  311.00  -88.39   87.65    0.03 0.03  0.00  50.80  311.00   -90.
E12 0.04  0.04    0.00 49.20  185.00 -123.46  143.93    0.03 0.03  0.00  51.40  185.00     0.
E11 0.04  0.03    0.00 49.70  257.00    0.09    0.10    0.03 0.03  0.00  51.90  257.00     0.
E06 0.04  0.04    0.00 48.70  196.00  -11.36   22.57    0.03 0.03  0.00  50.90  196.00     0.
E07 0.86  0.04    0.00 47.60  194.00  -13.79   56.72    0.86 0.03  0.00  49.80  194.00     0.
E25 0.04  0.04    0.00 48.60  228.00    0.21    0.20    0.03 0.03  0.00  50.80  228.00     0.
E26 0.31  0.03    0.00 49.30  226.00  -61.96  115.60    0.31 0.03  0.00  51.50  225.00     0.
E27 0.74  0.04    0.00 48.40  224.00    0.25    0.18    0.74 0.03  0.00  50.60  223.00     0.
E08 0.53  0.04    0.00 48.20  266.00  -62.16  115.70    0.53 0.03  0.00  50.40  266.00     0.
G26 0.28  0.04    0.00 48.00  333.00    0.01    0.06    0.00 0.00  0.00   0.00    0.00     0.
G07 0.04  0.05    0.00 46.50  381.00    0.01    0.06    0.00 0.00  0.00   0.00    0.00     0.
G08 0.51  0.04    0.00 47.20  380.00    0.01    0.08    0.00 0.00  0.00   0.00    0.00     0.
G10 0.72  0.05    0.00 46.50  380.00    0.02    0.08    0.00 0.00  0.00   0.00    0.00     0.
G27 0.11  0.04    0.00 46.90  332.00    0.20    0.06    0.00 0.00  0.00   0.00    0.00     0.
G28 0.05  0.04    0.00 47.60  332.00    0.20    0.05    0.00 0.00  0.00   0.00    0.00     0.
G21 0.04  0.05    0.00 46.80  302.00    0.21    0.06    0.00 0.00  0.00   0.00    0.00     0.
G15 0.84  0.05    0.00 45.80    0.00   -0.17    0.17    0.00 0.00  0.00   0.00    0.00     0.
G24 0.04  0.04    0.00 46.90  299.00    0.19    0.06    0.00 0.00  0.00   0.00    0.00     0.
S20 0.14  0.04    0.00 48.30 3407.00    3.57    0.59    0.00   +0.00+41.00+121.00
S24 0.14  0.05    0.00 46.20 3379.00    0.01    0.75    0.00   +0.00+39.00+124.00
> 2011 08 28 21 12  0.0000000  0 21
E10 0.04  0.03    0.00 49.40  247.00   -0.09    0.09    0.03 0.03  0.00  51.10  247.00     0.
E19 0.04  0.04    0.00 48.90  371.00 -148.47  141.90    0.03 0.03  0.00  50.60  371.00     0.
```

TABLE 2

Example of SCINTEX proposed in the ICAO ISTF/2.

(Filename: syo12670.12_SNT)

```
----|---1|0---|---2|0---|---3|0---|---4|0---|---5|0---|---6|0---|---7|0---|---8|
     2.10           OBSERVATION DATA    G (GPS)             SCI   VERSION / TYPE
autosci ver1.23     NICT, JAPAN         12SEP24 00:46       PGM / RUN BY / DATE
                                                            COMMENT
                                                            COMMENT
SYO1                                                        MARKER NAME
NICT, JAPAN         NICT                                    OBSERVER / AGENCY
NYM10210012         GSV4004B            9.140S43            REC # / TYPE / VERS
NAE10300032         GPS-702-GG                              ANT # / TYPE
  1766253.5812  1460032.8828 -5932342.9801                  APPROX POSITION XYZ
   -69.0081808    39.5780543       46.1490                  POSITION LAT,LON,HGT
     TYPES OF OBSERV  = W : S4 index                        COMMENT
                        X : sigma phase index               COMMENT
                        S : signal strength                 COMMENT
        0.0000        0.0000        0.0000                  ANTENNA: DELTA H/E/N
     6   S1    X1    S1    W2    X2    S2                  # / TYPES OF OBSERV
    60.000                                                  INTERVAL
  2012     9    23    15    40    0.0000000     GPS         TIME OF FIRST OBS
  1766253.5812  1460032.8828 -5932342.9801                  COMMENT XYZ
   -69.0081808    39.5780543       46.1490                  COMMENT LLA
### indices recorded below do not correspond to raw ###     COMMENT
                                                            END OF HEADER
 12  9 23 15 40  0.0000000    10G25G29G23G31G30G32G 2G20G 4G12
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
         0.034           0.032          42.032           0.032           0.032
        42.032
12  9 23 15 41  0.0000000    10G25G29G23G31G30G32G 2G20G 4G12
         0.034           0.032          42.032           0.032           0.032
        42.032
```

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