THE INTERNATIONAL TERRESTRIAL REFERENCE SYSTEM (ITRS) AS A GLOBAL STANDARD

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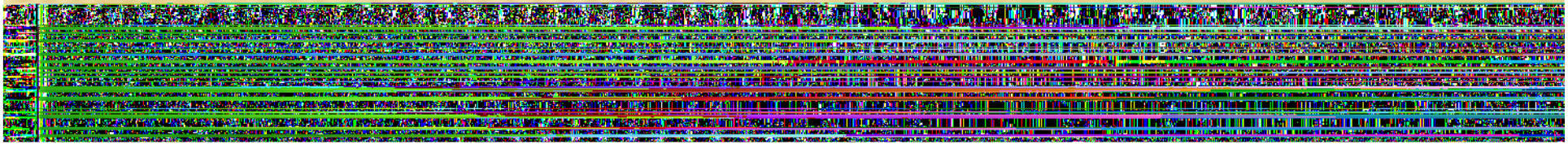
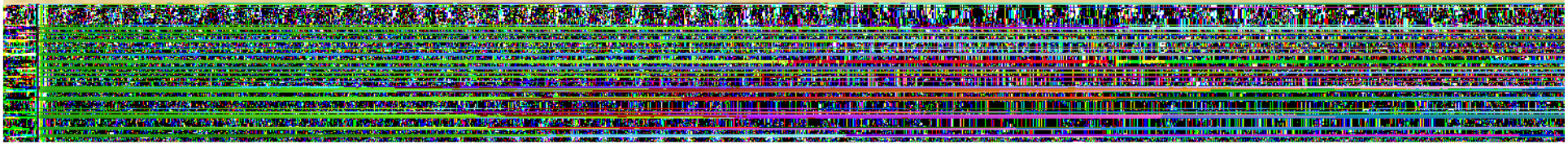
IAG



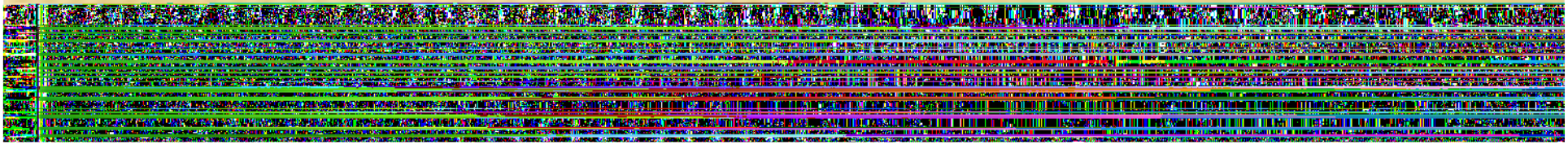
OBJECTIVES OF THE PRESENTATION

- To give some background information related to ITRS for the ICG-4 meeting
- To contribute to the overall understanding by the various ICG members (GNSS providers, GNSS user communities, technical experts..)
- To provide specific input for the Task force on Geodetic references which may help to propose proper recommendations



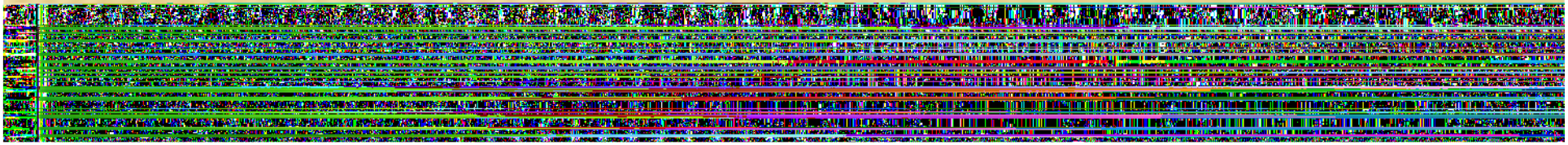
DOMAIN

- Terrestrial Reference System as Earth-fixed Earth-centered geometric reference frame
  - Its motion in inertial space is relevant for astronomy, celestial mechanics, astrodynamics
  - It provides a unified frame to study the various components of the Earth system (solid Earth, oceans, atmosphere..)
  - It provides a frame to define coordinate systems for geo-referencing and navigation
- Object of interest for numerous communities:
  - Astronomy
  - Astrodynamics
  - Geodesy
  - Earth sciences
  - Geomatics, cartography
  - Navigation (aircraft, marine, land...)
  - Space techniques (satellites, space probes...)
  - ...



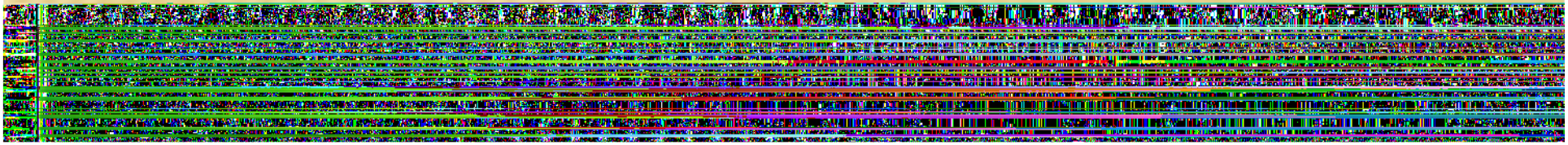
CONTEXT

- IUGG/IAG activities since 1984: 25 years!
- Task force (AR-07-03) in the Global Earth Observation (GEO) organization, gathering 77 countries and 56 international organizations
- Recognition of ITRS under consideration by the General Conference on Weights and Measurements (CGPM) (see presentation by Wodek Lewandowski)
- Plan to publish an ISO standard about ITRS (see below)



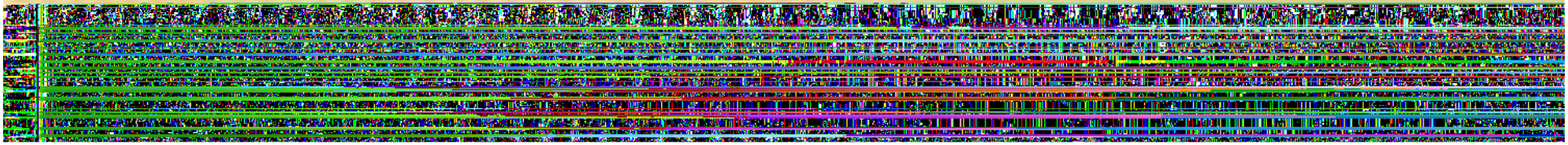
INTERNATIONAL TERRESTRIAL REFERENCE SYSTEM (ITRS)

- Defined by the international geodetic scientific community: International Association of Geodesy (IAG)
- Since 1984 a series of constantly improved fundamental realizations of ITRS were achieved by a best effort of the international community (IERS) (see presentation by Zuheir Altamimi)
- Adopted by the astronomical (IAU) and Earth Science scientific communities (IUGG)
- Formally defined and recommended by IUGG (Resolution Perugia 2007)



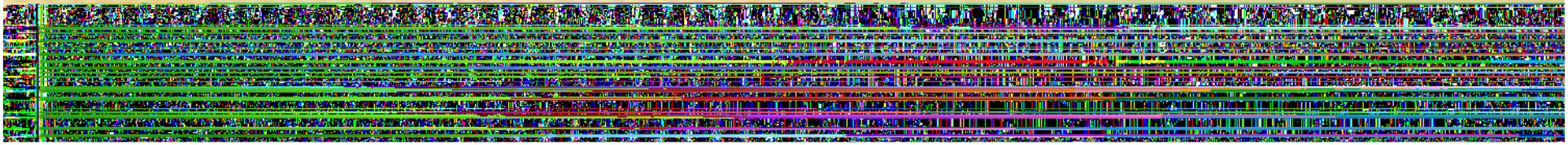
ISO STANDARD ON ITRS

- Objectives: to establish an ISO standard
  - Containing basic recommended terminology
  - Providing a definition of ITRS in agreement with IUGG
  - Describing the ways ITRS is realized
    - Primary realization by IERS (ITRF)
    - Specific realizations by GNSS providers
    - Regional and national realizations by geodetic and mapping agencies
- Procedure : to establish an ISO Project Committee for that purpose
  - France is ready to fund the secretariate of this PC



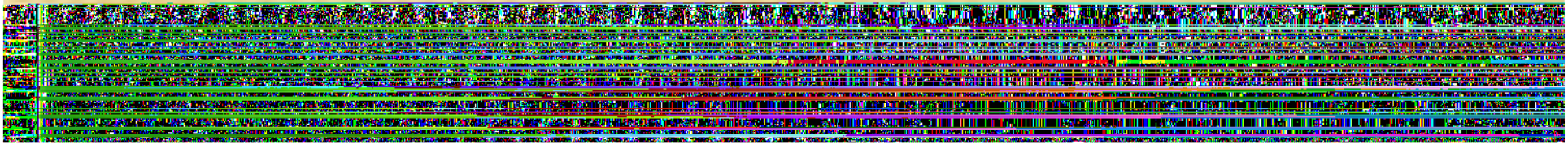
PC MEMBERSHIP

- Country representatives, through their national standardization agency, which can settle its own national mirror committee to collect input from all interested organizations from the country
- Representatives of ISO Technical Committees (e.g. TC 20 on aerospace or TC211 on geographical information)
- Representatives from international organizations (IUGG, IAU, IAG, IERS, IGS, BIPM, ICAO, IMO, ICA,CEOS…)



RECOMMENDED TERMINOLOGY

- Terrestrial Reference System (TRS)
  - Earth-fixed geometric frame (origin, orientation, scale)
- Terrestrial Reference Frame (TRF)
  - Realization of a TRS by a set of physical objects with related coordinates. Usually a network of points on the surface of the Earth
- ITRS
- ITRF
  - Primary realization of ITRS by a specific TRF produced by IERS
- Alignment of TRF to TRFo
  - No significant transformation parameter between TRF and TRFo



CONCLUSION

- Need for approval of proposals (ITRS, terminology) by all ICG actors
- Participation to the ISO PC
  - Support the proposal during its submission to ISO through the national standardization agencies
  - Active participation to the ISO PC (if established by ISO)
- Need for a specific ICG recommendantion?