SAFNWC/GEO Development: MTG

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Madrid

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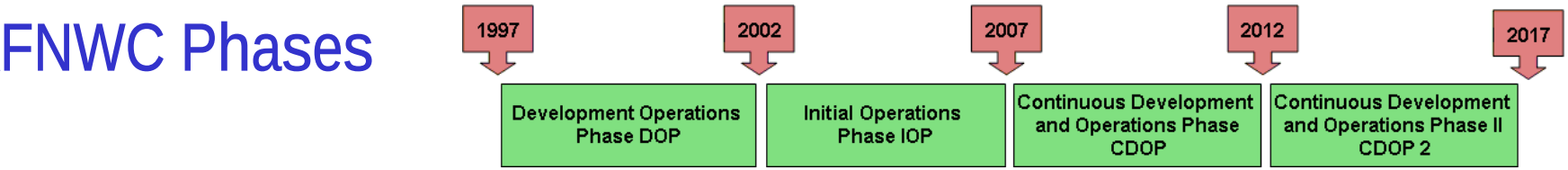
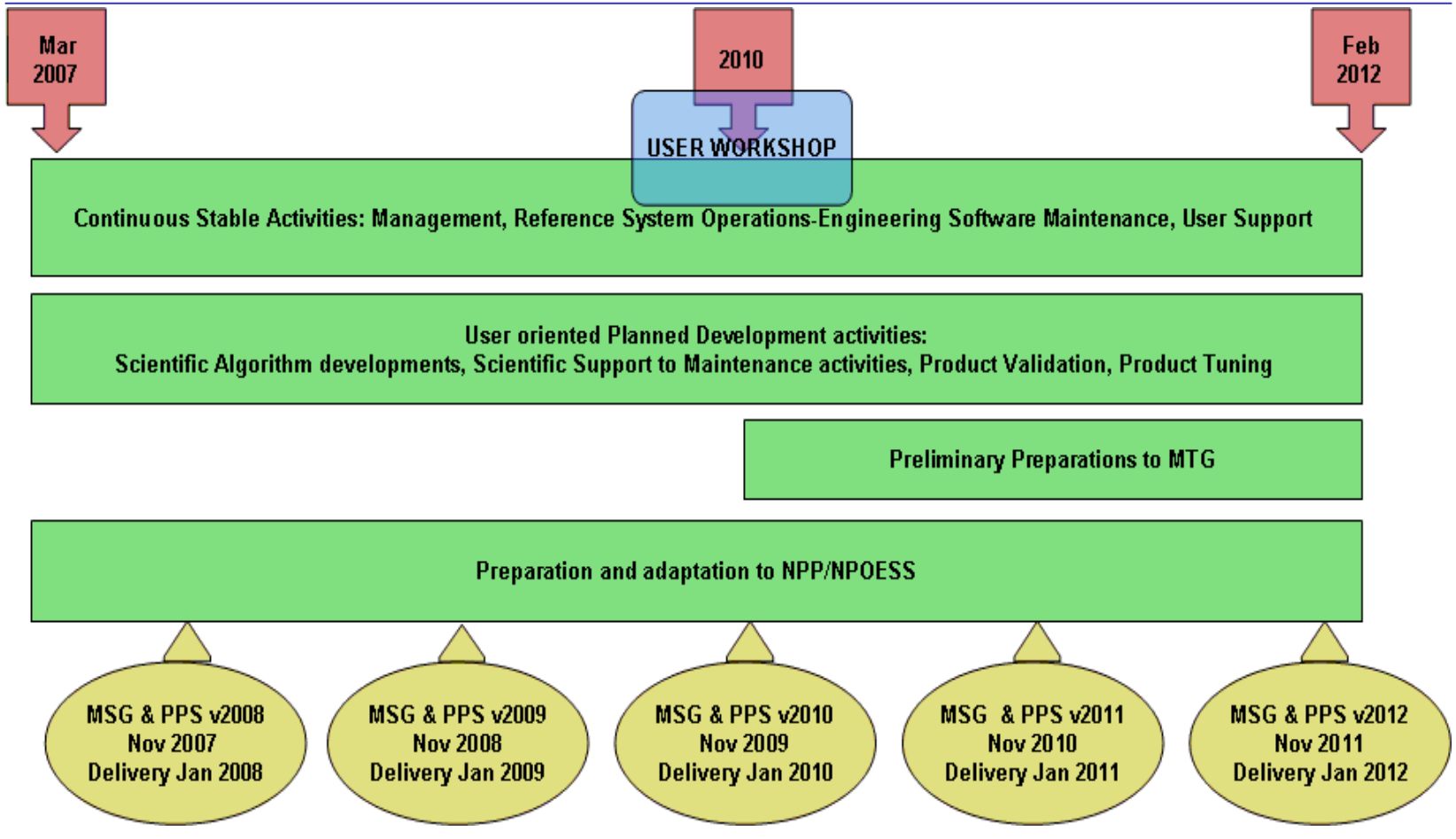
SAFNWC Phases





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- NWCSAF CDOP-2 Preparations Task Force
  - Consortium discussions for elaboration of Proposal for CDOP-2 project
  - Outcomes of Intermediate Discussion Presented at:
    - 2nd Workshop for CDOP-2 Preparations
      EUMETSAT - 3-4 December 2009
    - 3rd Workshop for CDOP-2 Preparations
      EUMETSAT - 24-25 March 2010

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- 2nd Workshop: SWOT Analysis - I
- Strengths
  - 1.User-friendly, flexible, stable MSG package
  - 2.Variety of operational products
  - 3.Well validated
  - 4.Very good user service via Help Desk
  - 5.Recognition of NWCSAF
  - 6.Competent cooperative team of reasonable size

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- 2nd Workshop: SWOT Analysis - II
- Weakness
  - 1.Some products are not much used
  - 2.Duplication with MPEF
  - 3.Precipitation products evolution needed
  - 4.Missing products (CI, Fog)
  - 5.PGE coherence
  - 6.Additional work on user's site needed

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- 2nd Workshop: SWOT Analysis - III
- Opportunities
  - 1.MTG improvements
  - 2.Technical improvements, Web Map Services, formats, common libraries
  - 3.Making use of the time dimension
  - 4.Extended package operability to other satellites
  - 5.Possible federations: precipitation, micro phys. parameters, validation
  - 6.Cooperation outside, inside EUMETSAT-between SAF
  - 7.Integration MSG/PPS software

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- 2nd Workshop: SWOT Analysis - IV
- Threats
  - 1.Competition within EUMETSAT or SAF (products)
  - 2.Nowcasting evolution (?) and data assimilation
  - 3.Funds amount available (competition with EUMETSAT SAFs)
  - 4.Other products available outside SAF and EUMETSAT
  - 5.Unrealistic requirements
  - 6.Delays in satellite launch and commissioning

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- 2 Separate Platforms

- Imager Satellites - MTG-I (4)
  - MTG-I1 Launch: 2017, Ops: 2018
  - FCI: Flexible Combined Imager
  - LI: Lightning Imager

- Sounder Satellites – MTG-S (2)
  - MTG-S1 Launch: 2018, Ops: 2019
  - IRS: Infrared Sounder
  - UVN

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- Imaging Satellites - MTG-I
  - Flexible Combined Imager - Full Disk High Spectral resolution Imagery (FDHSI) Mission
  - Repetition Cycle: 10 min
  - 16 channels at spatial resolution of 1 km (8 solar channels) and 2 km (8 thermal channels)

  - Aerosols: 0.444 µm and 0.51 µm channels (especially over land).
  - Total Precipitable Water: 0.91 µm channel (daytime, over land surfaces).
  - Very Thin Cirrus Detection: 1.375 µm channel.
  - Cloud Microphysics: 2.26 µm channel.

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- Imaging Satellites - MTG-I
  - Lightning Imagery Mission (LI)
  - Global scale (80% of Full Disk)
  - detecting continuously optical events linked to
  - cloud-to-cloud and cloud-ground discharges with a
  - detection efficiency between DE=90% (night) and DE=40% (sun overhead thick clouds)

  - Thunderstorms surveillance (RDT product)
  - Improvements in Precipitation product (CRR in particular)

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- Sounder Satellites – MTG-S
  - InfraRed Sounding Mission (IRS)
  - Global scale (Full Disk)
  - Repetition Cycle: 30 min over Europe
  - Spatial resolution of 4 km
  - Providing hyperspectral soundings at 0.625 cm-1 sampling in two bands, a Long-Wave-IR (LWIR: 700 – 1210 cm-1) and a Mid-Wave-IR (MWIR: 1600 – 2175 cm-1)

  - METEOROLOGICAL DREAM

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- 3rd Workshop: Proposal Elements - I
  - Continue doing software, not production
  - Unique SW to process GEO satellites (MSG, MTG, GOES, MTSAT....)
  - Aiming to provide library functions to all SAF for MTG-I
  - Joint use of GEO + LEO for some products; Easily input LEO<->GEO products
  - Unified information model and metadata standard for LEO and GEO products – complying to community standards
  - Synergy in library functions LEO/GEO

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- 3rd Workshop: Proposal Elements - II
  - Develop both MTG-I and MTG-S SW during the CDOP-2
  - Develop as much as possible common elements
  - Alternative format input to NWCSAF instead of HRIT
  - Additional/alternative output formats
  - Common visualization tool (inter SAF - EUMETSAT)
  - To freeze the MSG developments and to focus on MTG, but …
  - To implement MTG improvements in MSG if possible
  - Common validation data base and software (inter SAF - EUMETSAT);
  - Common validation tasks (NWC SAF – EUMETSAT)

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- 3rd Workshop: Proposal Elements – III: Uncertain
  - Provided that developing a Cloud Mask (and other products) for MTG-I and MTG-S is a need, we have the following uncertainty:
    - Some products have to run only in the imager as sounder is not there
    - If we keep different SW we duplicate products for Imager and Sounder

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- CLOUDS
  - SAFNWC/GEO/Cloud1/CMA: Cloud Mask (continuous PGE01)
  - SAFNWC/GEO/Cloud1/DUST: Dust Cloud Detection (continuous PGE01)
  - SAFNWC/GEO/Cloud1/ASH: Volcanic Ash Detection (continuous PGE01)
  - SAFNWC/GEO/Cloud2/CT: Cloud Type (continuous PGE02)
  - SAFNWC/GEO/Cloud2/CMIC: Cloud Microphysics (continuous PGE02)
  - SAFNWC/GEO/Cloud3/CTTH: Cloud Top Temperature and Height (continuous PGE03)

Satellites: MSG, MTG-FCI, MTG-IRS (at least Cloud Mask)

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- CLEAR AIR
  - SAFNWC/GEO/ClearAir1/THP: T/H Profiles (continuous PGE13 + evolution IRS)
  - SAFNWC/GEO/ClearAir1/SKT: Skin Temperature (continuous PGE13 + evolution IRS)
  - SAFNWC/GEO/ClearAir2/STIN: Stability Indexes
  - SAFNWC/GEO/ClearAir2/PW: Precipitable Water
  - SAFNWC/GEO/ClearAir3/PW: Precipitable Water (New FCI-NIR)

Satellites: MSG, MTG-FCI, MTG-IRS

Different Approach for MTG-IRS than for SEVIRI, FCI

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- WINDS
  - SAFNWC/GEO/Dynamic1/HRW: High Resolution Winds (continuous PGE09)
  - SAFNWC/GEO/Dynamic1/HRW: AMV Winds (evolution IRS)
  - SAFNWC/GEO/Dynamic2/MC: Moisture Convergence (New)
  - SAFNWC/GEO/Dynamic3/NCI: Nowcasted Imagery (New)

Satellites: MSG, MTG-FCI, MTG-IRS

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- PRECIPITATION
  - SAFNWC/GEO/Rain1/RP: Probability of Precipitation (evolution PGE04) (New)
  - SAFNWC/GEO/Rain2/CRR: Convective Rainfall Rate (continuous PGE05)
  - SAFNWC/GEO/Rain2/CRA: Convective Rainfall Accumulated (continuous PGE05)

Satellites: MSG, MTG-FCI, MTG-LI

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- CONVECTION DIAGNOSIS
  - SAFNWC/GEO/Convection1/CI: Probability of Convection Initiation for low cloud (New)
  - SAFNWC/GEO/Convection2/PCZW: Pre Convection Zonal Warning (New)
  - SAFNWC/GEO/Convection2/CW: Convection Warning (continuous PGE11)
  - SAFNWC/GEO/Convection3/CC: Convection Climatology (convective trajectory) (continuous PGE11)

Satellites: MSG, MTG-FCI, MTG-LI, MTG-IRS

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- MET SYSTEMS
  - SAFNWC/GEO/Met.Systems1/ASII: Automatic Satellite Image Interpretation (continuous PGE10)
  - SAFNWC/GEO/Met.Systems2/ASII-NG: Automatic Satellite Image Interpretation Next Generation (New)

Satellites: MSG, MTG-FCI

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- The NWCSAF Products can be classifies at least into two levels:
  - Basic Products
  - Post-Processed products having the basic ones as input (near the final use)
- The aim is to avoid duplicated processes in the product generation
- The presented product structure is a first approach needed to be consolidated
- USER FEEDBACK --- THIS 2010 NWCSAF WORKSHOP