Story of a 4D contract

Antoine JOULIA, Onera
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Strategic planning

- Represents the strategic level of the overall traffic organization
  - Initiated during a given period of time
  - At a continental scale
- 4D contracts are generated

1. 4D contract requests
2. Constraints/capacity
3. Aeronautical information
4. 4D contracts

- 4D contracts are updated just before the flight
4D contract computation

Use of statistical meteo information
4D contract execution

Ground movement

- Gate-to-gate contract
  - Includes the ground movement of the aircraft
  - Off-blocks time optimization
During the flight, the aircraft must remain inside its Contract Bubble
  - Continuous speed or trajectory adjustment by the FMS

If it’s not possible any more
  - The aircraft asks the ATSM, via the global network, for a 4D contract update
  - A new 4D contract is computed by the ATSM, based on
    - The latest meteorological data available
    - The surrounding 4D contracts
    - The airports capacity/availability
  - The updated 4D contract is uploaded to the aircraft
4D contract execution

Difference between predicted and real wind

Risk of contract non-compliance
4D contract execution

Update request
4D contract update - computation

if no trajectory modification
4D contract update - computation
trajectory modification
4D contract execution
updated contract upload

Updated 4D contract
4D contract updated
4D contract execution

Arrival

- 4D contracts are calculated in order to optimize the runway throughput

- Taxiing until gate is also part of the 4D contract
EMERGENCY SITUATION

Example: depressurization
Emergency situation depressurization

1 - Emergency situation information
2 - Situation awareness
3 - Cooperative 4D contracts self-generation
Emergency situation

depressurization

Emergency trajectories information
Emergency situation
depressurization

Updated 4D contracts