ATS Interfacility Data Communication (AIDC)

by

Aeronautical Radio of Thailand Ltd.

(AEROTHAI)

December 2001, Chiangmai, Thailand

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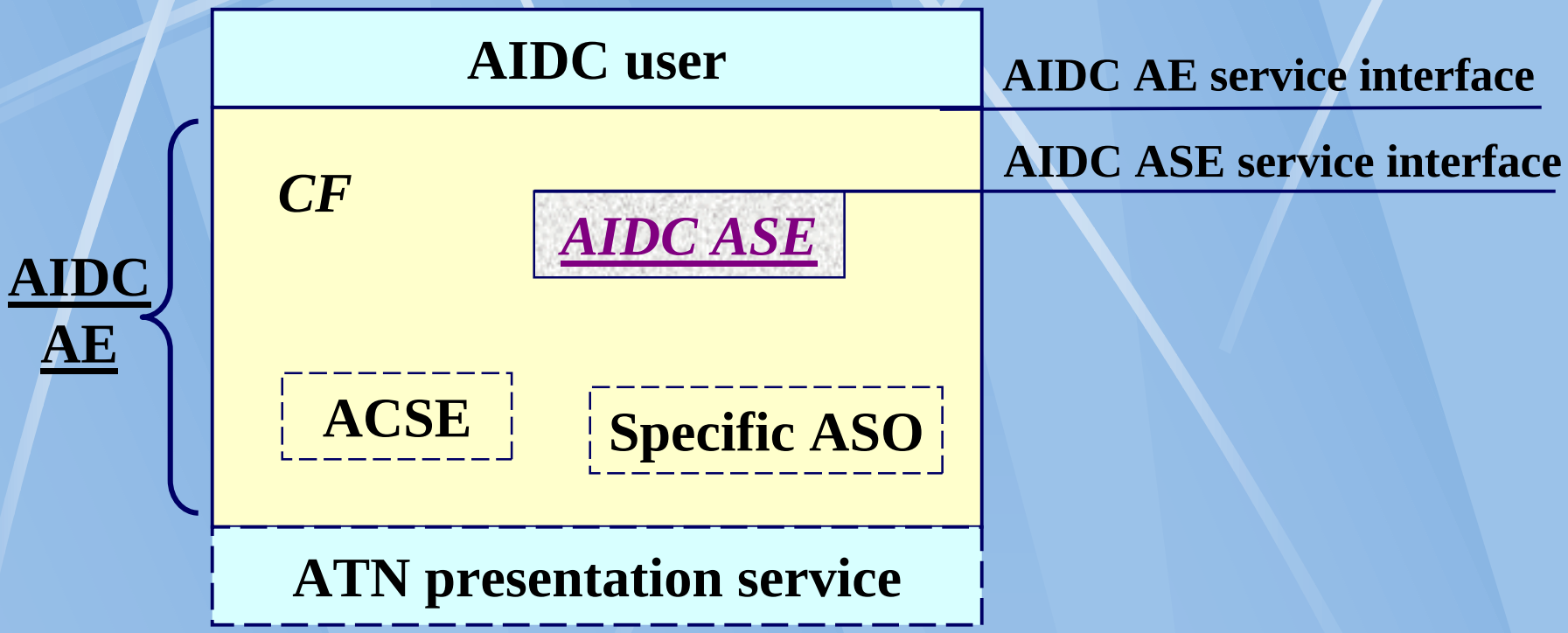
Ground-Ground Controller Coordination

A C-ATSU requires to coordinate for active flights with one or more D-ATSUs. Each coordination consists of multiple services classified to be within each of the following phases:

- Notify phase
- Coordinate phase
- Transfer phase

ATN AIDC Application



ATN AIDC Application – User services

Notify phase	• Notify service
Coordinate phase	• Coordinate-start service • Coordinate-end service • Coordinate-negotiate service • Coordinate-standby service
Transfer phase	• Transfer-initiate service • Transfer-request service • Transfer-conditions-proposal service • Transfer-conditions-accept service • Transfer-control service • Transfer-communication service • Transfer-communication-assume service
Common services	• User-confirmation service • Info-transfer service • End service • User-abort service

ATN AIDC Application – User services

User services defined in ATN AIDC SARPs support only a single pair of coordination. When a C-ATSU is in need of coordinating a single flight with several D-ATSUs, separate instances of AIDC application for each pair of ATSUs, must be invoked.

User services that support coordination among more than two ATSUs without having to invoke several AIDC application instances are, e.g.:

- Coordinate-ready
- Coordinate-commit
- Coordinate-rollback

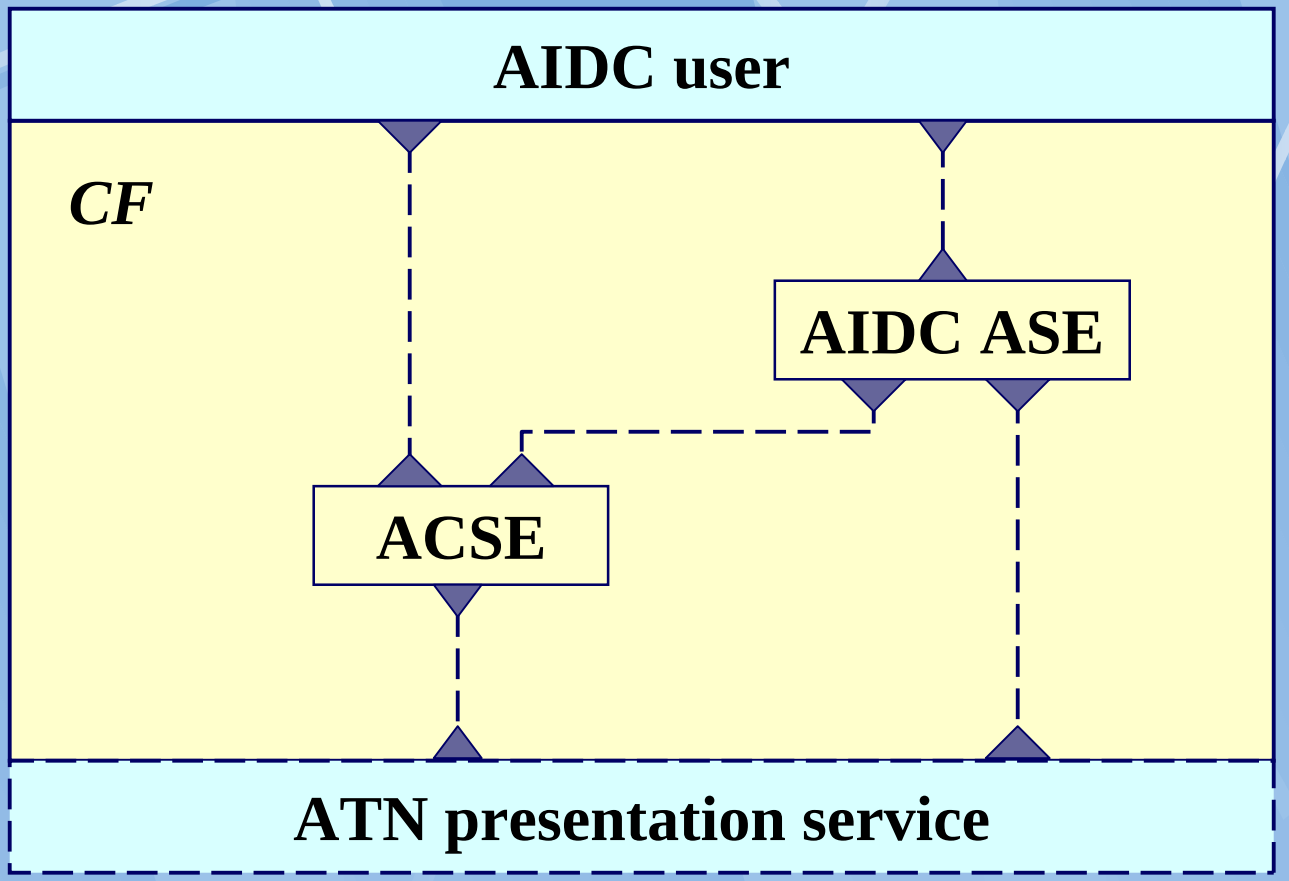
which are mentioned in ATN guidance material but still not present in ATN AIDC SARPs.

ATN AIDC Application – CF

CF performs service primitives mappings:

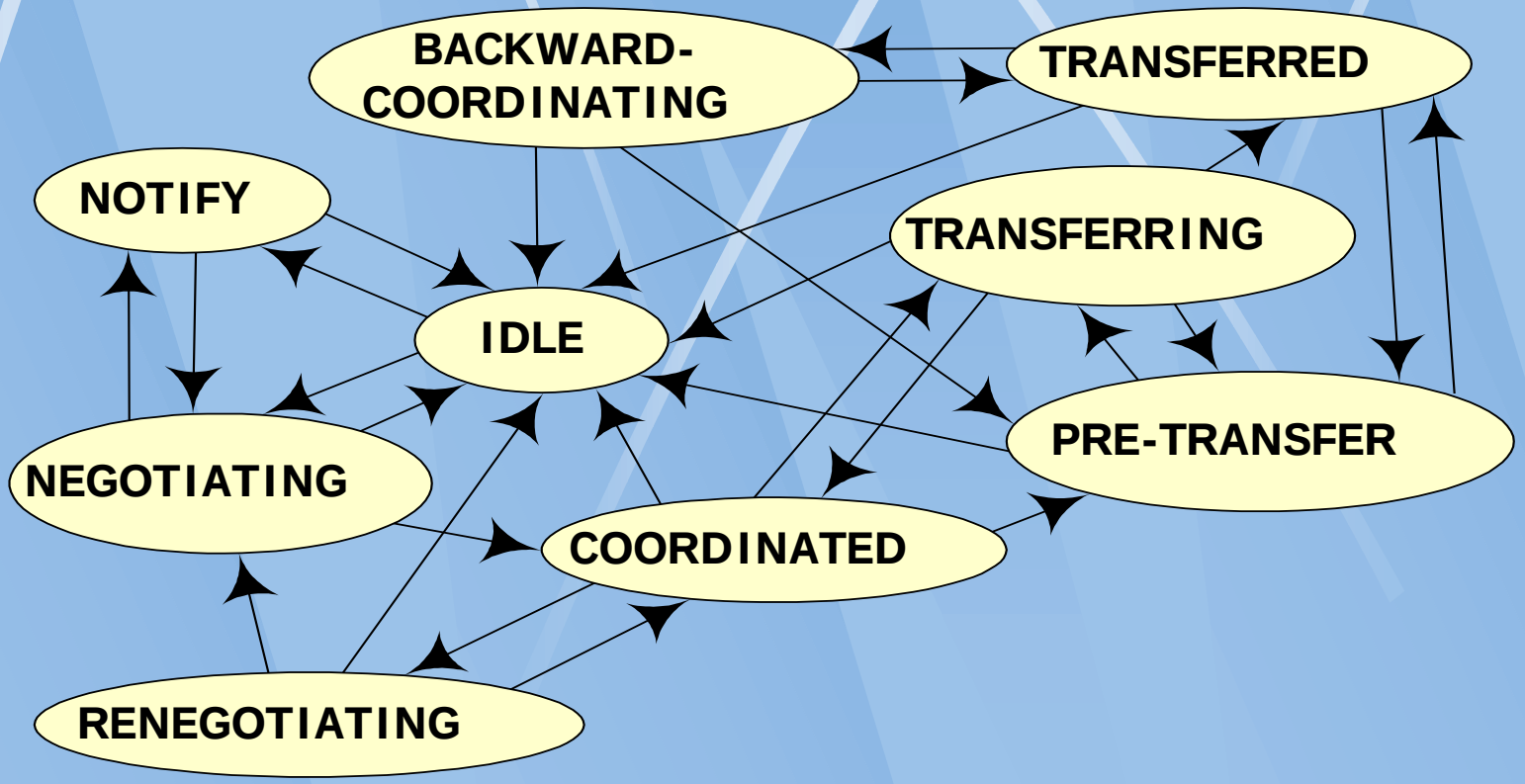
- AIDC user services primitives submitted to the CF
  –—> mapped to either AIDC-ASE or ACSE services
- AIDC-ASE services primitives delivered to the CF
  —-> mapped to AIDC user services
- AIDC-ASE services primitives submitted to the CF
  -—> mapped to either ACSE or presentation services
- ACSE services primitives delivered to the CF
  —-> mapped to AIDC user services
- ACSE services primitives submitted to the CF
  —-> mapped to presentation services
- Presentation services primitives delivered to the CF
  —-> mapped to either ACSE or AIDC-ASE services

ATN AIDC Application – CF



ATN AIDC Application – ASE protocol definition

ATN AIDC SARPs defines 9 states for AIDC-ASE protocol machine. Transition between states is set off by the transmission or reception of an AIDC-ASE service primitive or a service primitive supporting AIDC-ASE.



AEROTHAI AIDC implementation

In Thailand, AIDC has been implemented primarily for the purpose of coordination inside the country, especially among area and approach control centers. Its AIDC messages are thus still different from those in ATN SARPs. They are the result of the agreement among AEROTHAI controllers. For instance, comparison of the mandatory fields of the contents of *Notify* message in AEROTHAI AIDC system (which were specified by AEROTHAI controllers) and ATN AIDC SARPs may be shown as follows:

"Notify" message contents

AIDC in AEROTHAI	ATN AIDC SARPs
Callsign	Callsign
	Aircraft type
	Departure airport
Boundary fix	Boundary fix
Crossing time	Crossing time
Crossing level	Crossing level

SAMUI sector – Approach control center, AEROTHAI headquarter

Recommendations for Practical Implementation

In many countries, a controller working position having voice as the existing communication means is equipped with other several automation components, e.g., RADAR/ADS surveillance display, FDP system.

Therefore, the addition of new data communication technologies (AIDC, CM, CPDLC, PDC, ADS, ARF) should be performed in the manner that will not give additional workload to the controllers but make use of automation capabilities to simplify air traffic control operation.

Such data communication functions have been found embedded into FDP system in some countries and are invoked automatically with minimal human intervention.

In Thailand, in-house developed AIDC system has been set up as a separate communication device inside a controller working position, which seems to add more work for the controller.

However, its primary purpose is to make the controllers be familiar with changing face of communication technologies. Such AIDC system shall become secondary (backup) communications equipment with respect to automatic coordination by means of AIDC-embedded FDP system.

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