ATN Applications and Application Entities



CM	->	Context Management
ADS	->	Automatic Dependent Surveillance
CPDLC	->	Controller/Pilot Data Link Communications
FIS	->	Flight Information Services
AIDC	->	Aeronautical Interfacility Data Communications
MHS	->	Message Handling Systems

Conclusion

- ATN Upper Layers provide
 - A simple architecture for maximising commonality
 - A set of message formats to support each Application
 - A standardised set of encoding/decoding functions for application data





CPDLC allows two way communication between pilot and controller, but using data link rather than voice







CPDLC Functions

- Creation of a dialogue between pilot and controller, ground or air initiated
- Passing messages selected from ICAO standard list
- Ability to use free text if required
- Freedom to communicate with a non-controlling authority for the purposes of getting future clearances

Transfer of communication between control authorities by data link, rather than voice

Compatibility with Voice Phraseology

'The CPDLC Application must include a set of clearance/information/request message elements which correspond to voice phraseology employed by ATC procedures'



Compatibility with Voice Operations



Controllers and Pilots will use CPDLC in conjunction with existing voice communications

CPDLC Messages

A CPDLC Message is composed of -

a. The Message Header, plus

- b. Message Element 1, plus (optionally)
- c. Message Element 2, plus (optionally)
- d. Message Element 3, plus (optionally)
- e. Message Element 4, plus (optionally)
- f. Message Element 5.



Controller-Pilot Message Exchange Function

> Transfer of Data Authority Function

> Down Stream Clearance Function

> Ground Forward Function



- > CPDLC-start service
- DSC-start service
- > CPDLC-message service
- > CPDLC-end service
- DSC-end service
- > CPDLC-forward service

Sample CPDLC Messages

- Roger (No Parameters)
- > WILCO (No Parameters)
- > Affirm (No Parameters)
- > AT [time] EXPECT CLIMB TO [level]
- CLEARED [route clearance]
- > SQUAWK MODE CHARLIE

REPORT REMAINING FUEL AND PERSONS ON BOARD





Next Data Authority Operations





Benefits from use of CPDLC

- To improve **SAFETY** by -
 - Reducing risk of controller-aircrew misunderstandings
 - **Reducing** congestion on voice channels
 - **Reducing** risk of failure in the transfer of information
- To improve **ATM EFFICIENCY** by -
 - Increasing controller/aircrew productivity
 - Enabling automation
 - Providing concise and precise exchanges between controller and aircrew
 - **Reducing** the voice communication workload