



Co-operation of Collaborative tools and data Link for the Control

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What ?



- ◆ **EN-ROUTE control simulator including**

- cooperative tool : ERATO
- CPDLC

- ◆ **Current limits :**

- only ONE control working position
- reduced CPDLC
- no ground-ground coordination messages
- ...

Why ?



◆ Final goal :

CPDLC impact on a control working position

- HMI aspects
- task sharing
- safety, capacity, efficiency :-)

◆ Why ERATO :

paper stripless environment

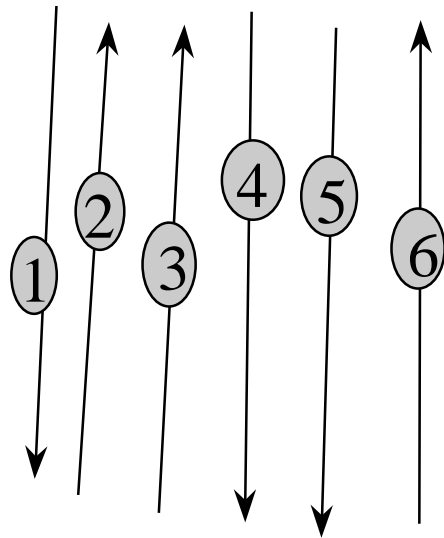
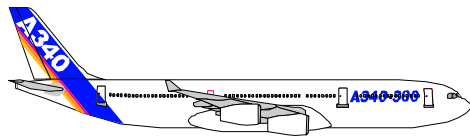
Developed services



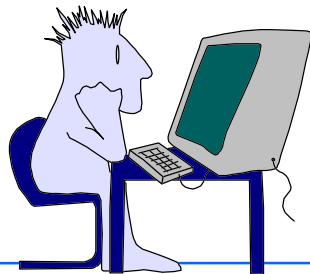
- ☑ Clearance and information communication (CIC)
- ☑ Transfer of communication (ACM - Reduced)
- ☑ Data Link Initiation Capability (DLIC)

The simulated traffic is mixed (DL and non DL equipped)

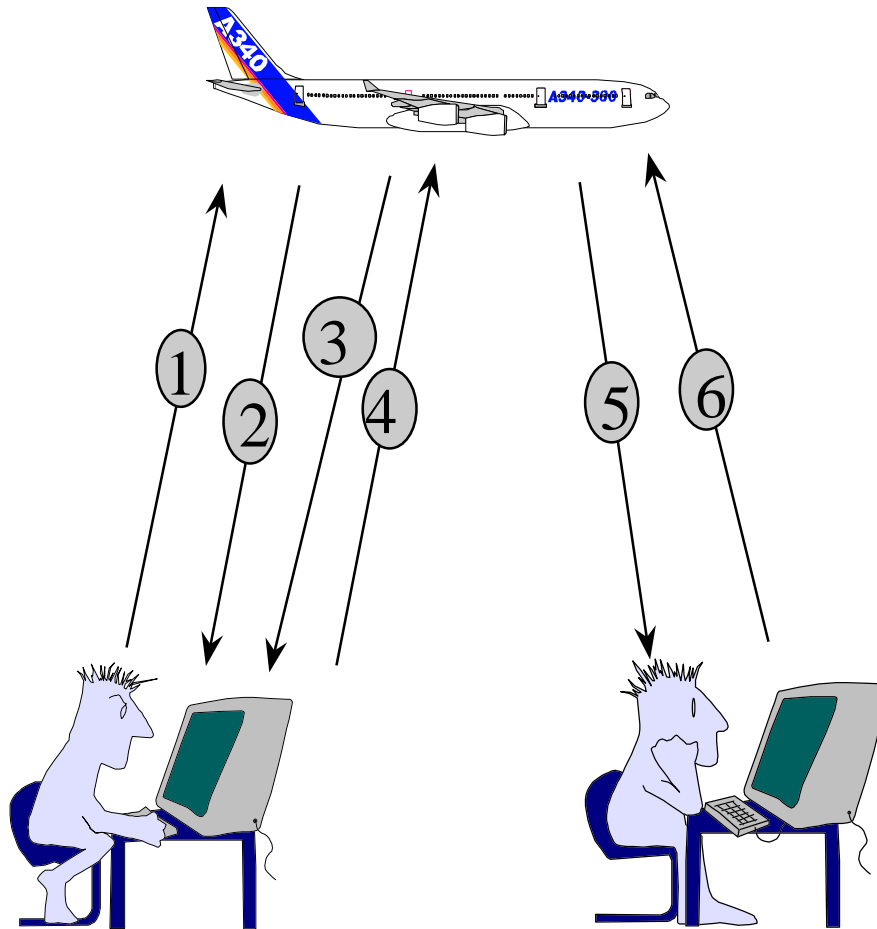
Clearance and Information Communication (CIC)



- 1 : Pilot clearance request
- 2 : Logical acknowledgement
- 3 : Controller response
- 4 : Logical acknowledgement
- 5 : Pilot response (*e.g. WILCO*)
- 6 : Logical acknowledgement.



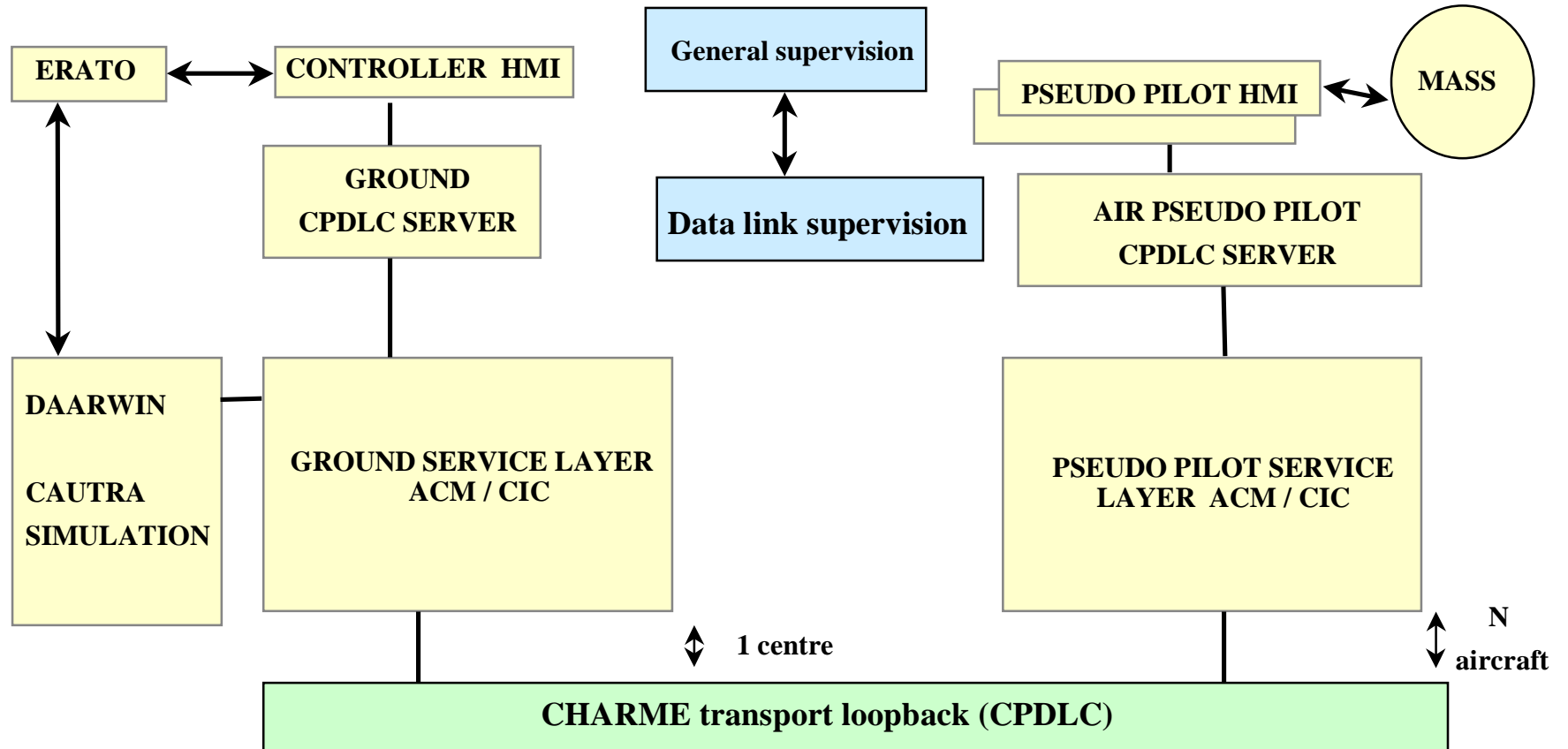
Transfer of communication (ACM)



- 1 : Voice Channel change
(*MONITOR [frequency]*)
- 2 : Logical acknowledgement
- 3 : Pilot acknowledgement
(*WILCO or UNABLE*) and CPDLC
link management
- 4 : Logical acknowledgement.
- 5 : Monitoring frequency
- 6 : Logical acknowledgement.



Detailed architecture



Controller HMI



Make «*Complex Things*» simple

- the system handles complex tasks to ease the controller's job
- information handling and updating on the controller position (executive / planning)
- consistency of data

The resulting HMI should appear natural for the controller