



Air Traffic Alliance

A New Way Of Thinking

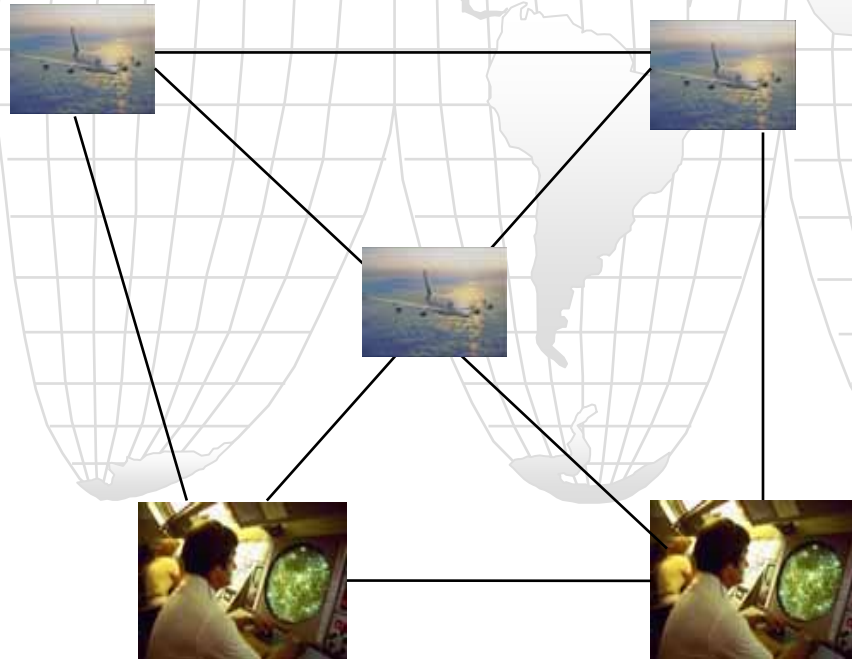
New ATM challenges
for the
Air Transport Supply industry

*Aeronautics Days
Vienna – Austria, 19-21 June 2006
Jean-Claude RICHARD
Executive Director Industrial Partnerships
Air Traffic Alliance*

What is going to change with future ATM systems...?

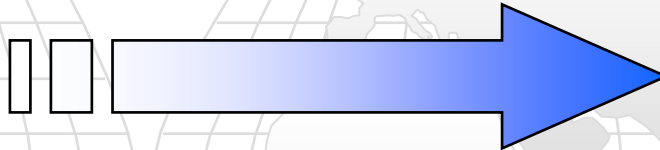


An Aircraft will probably not be anymore an isolated flying object controlled from the ground but one element of a « flying network »



- **A Global Picture is needed**
A Network needs to operate according to common rules, known, recognised and agreed by everyone

The necessary Migration



From Fragmentation to Integration at 2 levels:

- ATM Stakeholders needs (operational definition)
- Ground/Air System (technical definition)



The Air Transport Industry Challenge

■ Air transport industry faces a complex growth challenge:

- Number of stakeholders: Airlines/Users, Airports, ANSPs, military, manufacturers, regulators, ...
- Diverging objectives (except safety)
- Disparate systems: Aircraft, avionics, satellites, ATC centres and Towers, comm. networks, airports and airlines operations



Our challenge: How to define and implement infrastructure changes?

ATM Stakeholders needs:

What is going wrong with the today situation ...

● **Air and Ground have developed sophisticated but independent functionalities**

- ✓ Airlines :Flight Operations optimisation through the Airlines operations control functionalities (AOC)
- ✓ ANSP's : Tactical and Strategic tools for aircraft separation and flow optimisation
- ✓ Airports : Surface Movement optimisation tools
- ✓ Aircraft and Avionics manufacturers: On board systems for flight profile optimisation (FMS)

● **The Air and Ground actors have different goals with different constraints**

- ✓ Airlines want to optimise globally their flights ops network given economical constraints
- ✓ ANSP's want to optimise the Airspace given separation and global safety constraints
- ✓ Airports want to optimise gates, apron, taxiways and runways usage
- ✓ Aircraft want to optimise the way to fly from point A to point B given their own constraints (platform safety, Fuel, Wind, Temp,Wx)

**B
U
T**

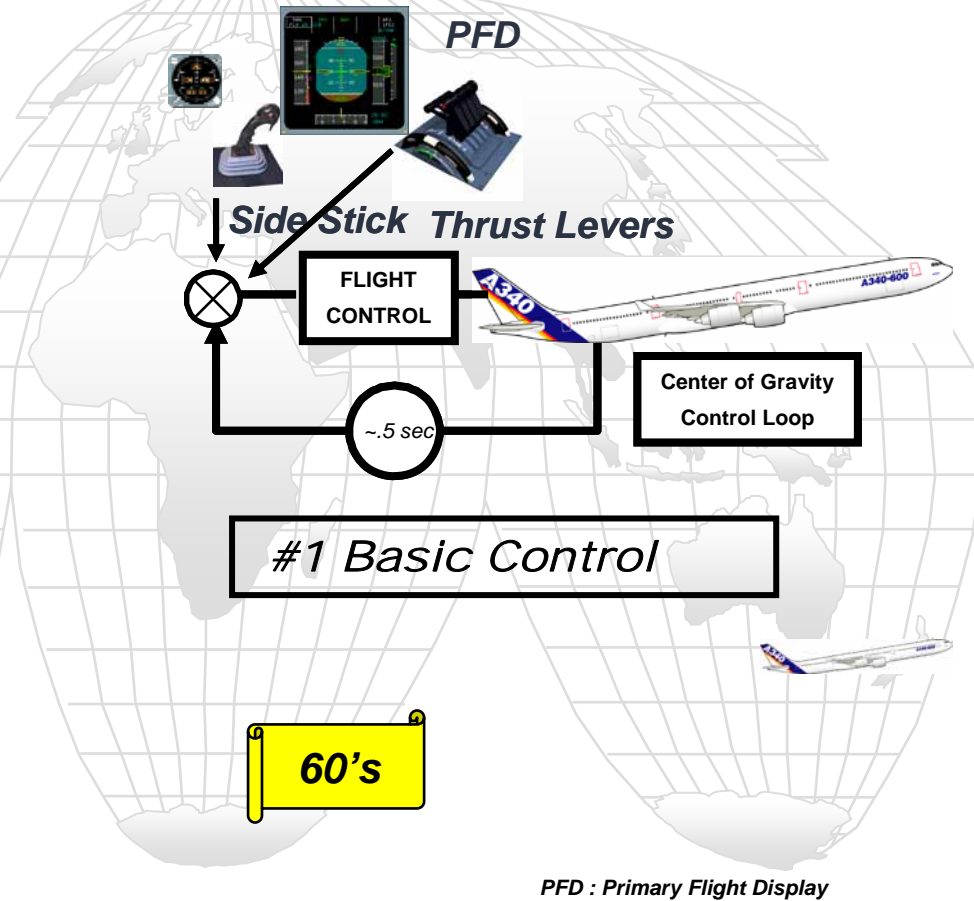
The actors are using roughly the same primary data but having different goals they may reach different conclusions

What is the technological situation now?

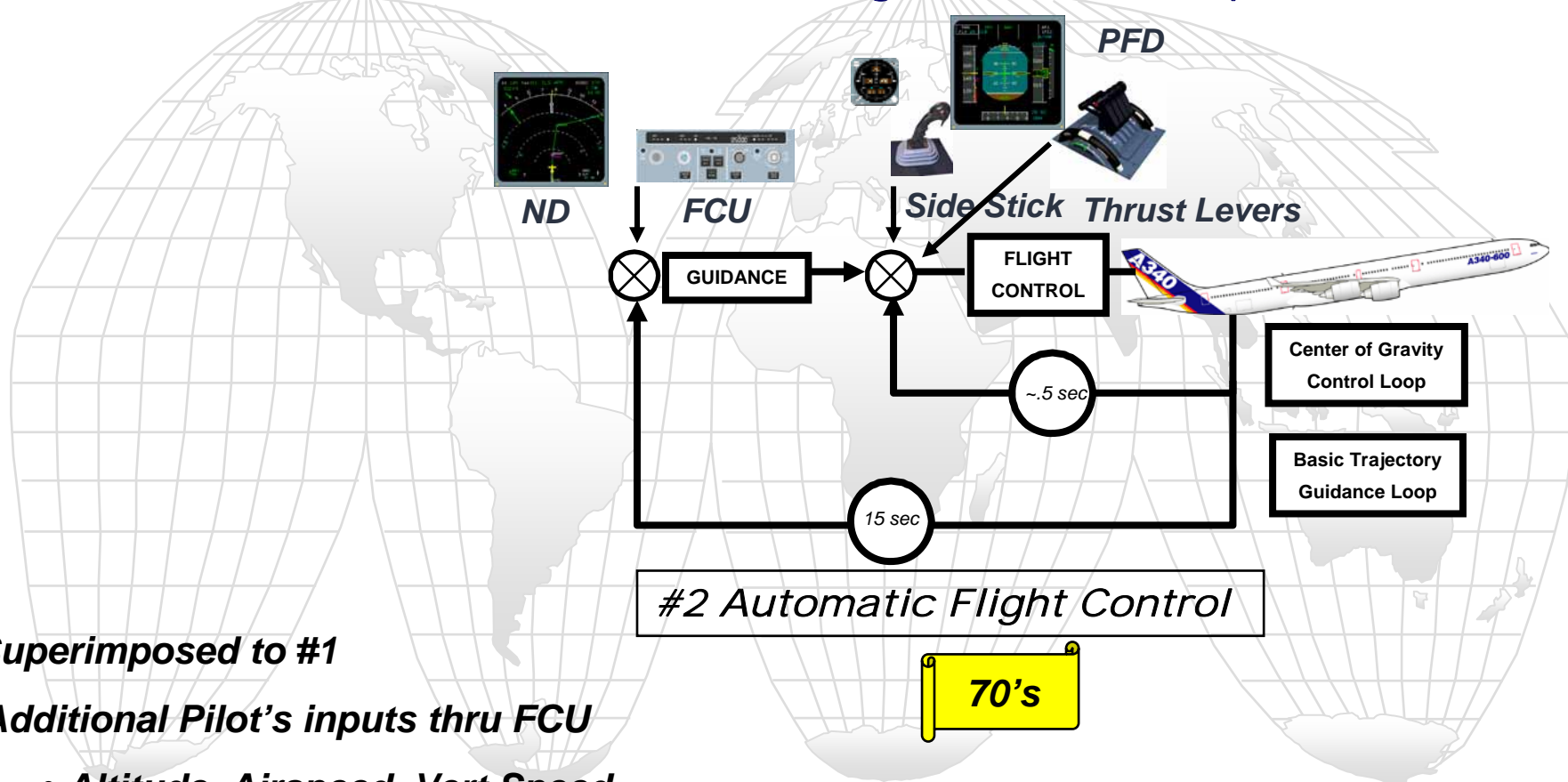
- **A little bit of aviation history at first**

The 4 Flight Control Loops

- **Mainly Human centered**
- **Pilot's inputs**
 - **Side Stick or Control Column**
 - **Thrust levers**
 - **Flaps/Slats**



The 4 Flight Control Loops

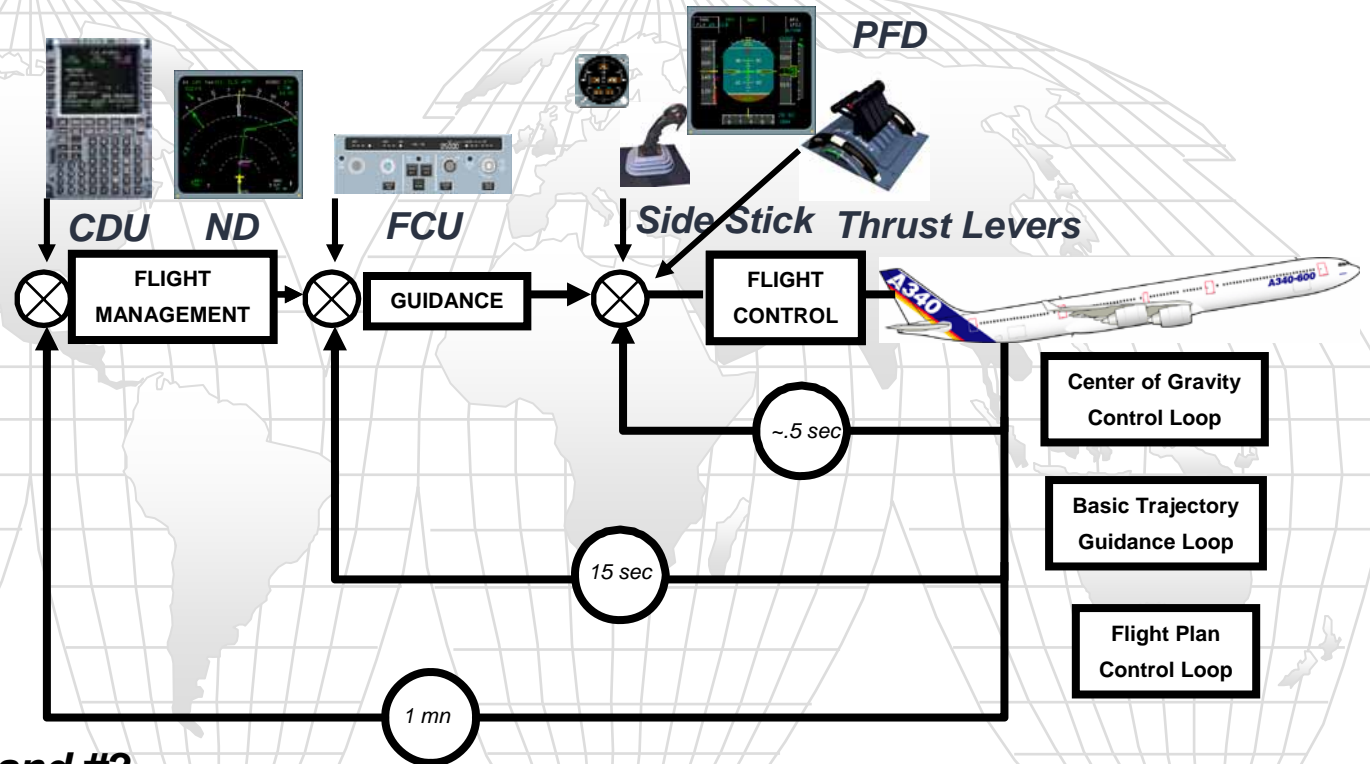


PFD : Primary Flight Display
 FCU : Flight Control Unit
 ND : Navigation Display

- **Superimposed to #1**
- **Additional Pilot's inputs thru FCU**
 - **Altitude, Airspeed, Vert Speed**
 - **Heading**

For parameters acquisition & hold

The 4 Flight Control Loops



- **Superimposed to #1 and #2**
- **Additional Pilot's inputs thru MCDU**
 - **Routes selection and control**
 - **Horizontal NAV (WP's)**
 - **Vertical NAV**

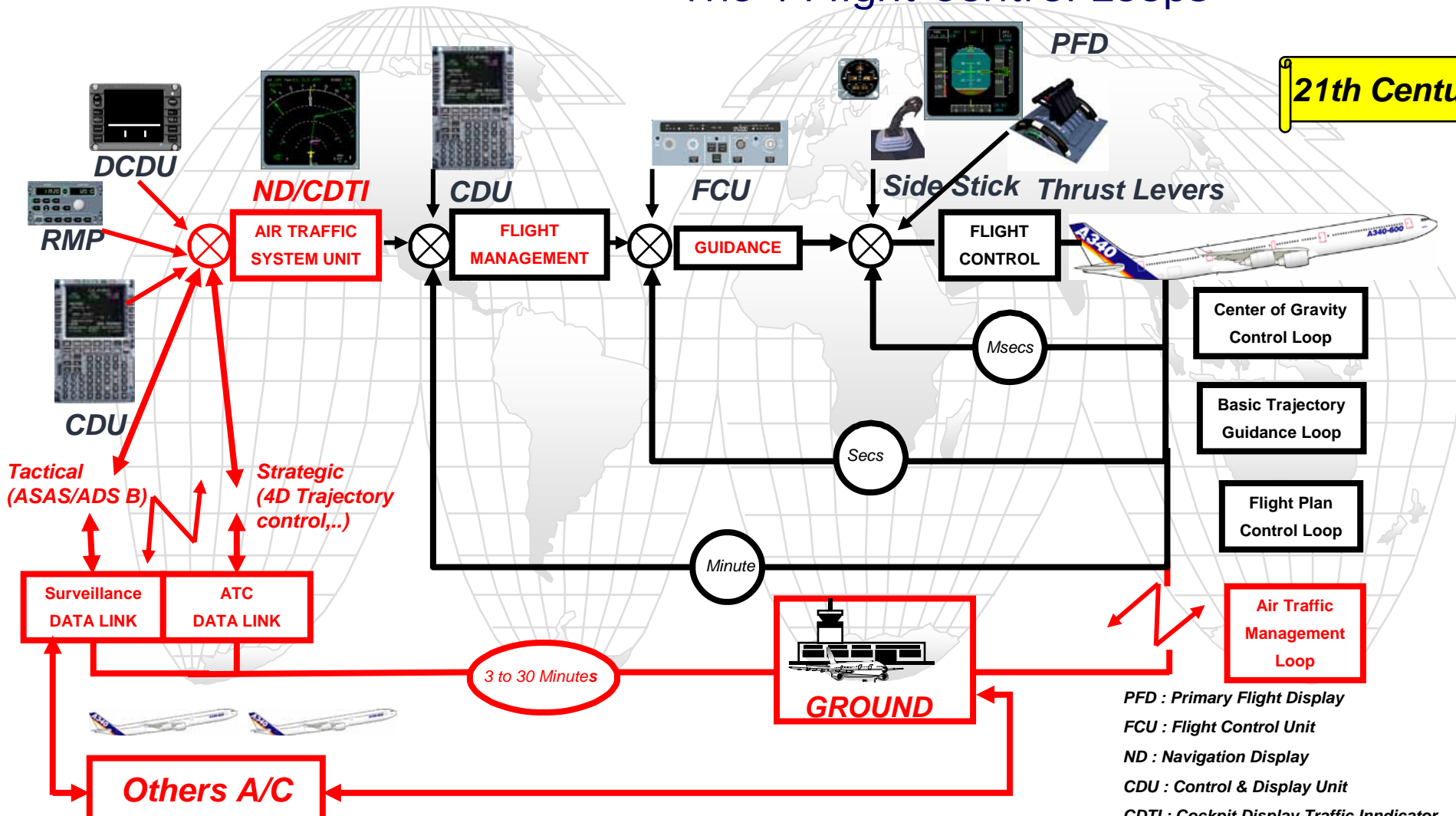
#3 Flight Plan Management

80's

PFD : Primary Flight Display
FCU : Flight Control Unit
ND : Navigation Display
CDU : Control & Display Unit

The 4 Flight Control Loops

21st Century



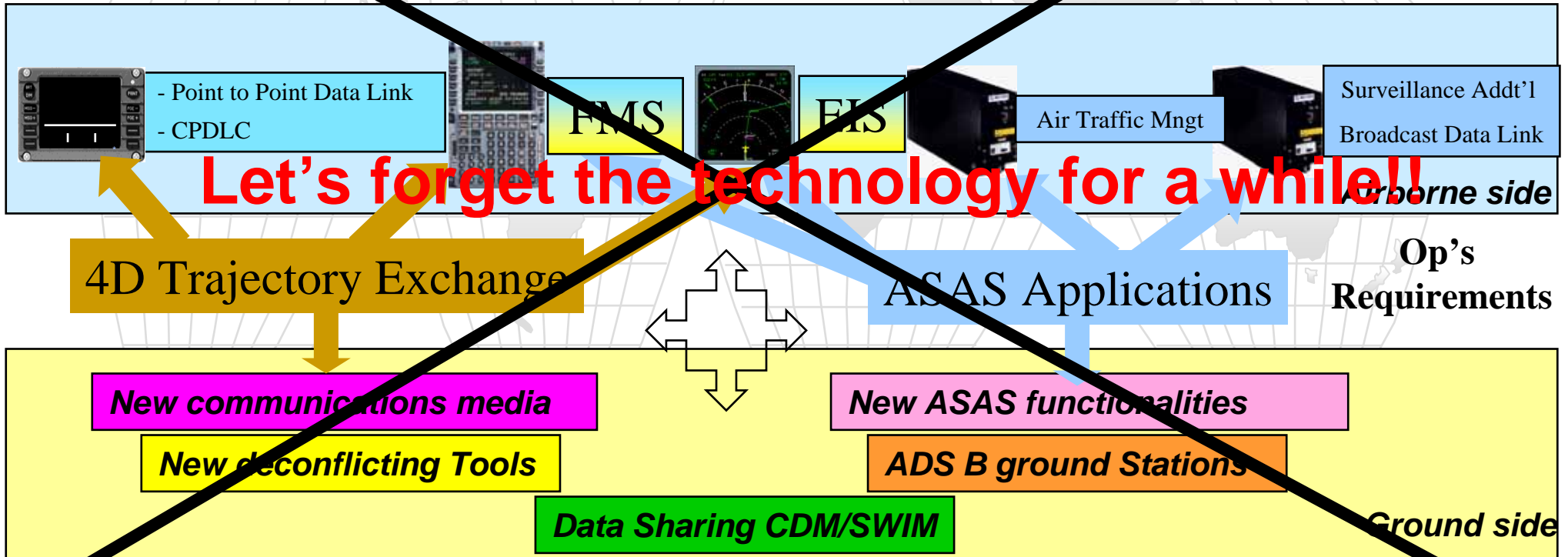
- PFD : Primary Flight Display
- FCU : Flight Control Unit
- ND : Navigation Display
- CDU : Control & Display Unit
- CDTI : Cockpit Display Traffic Indicator
- DCDU : Data link Control & Display Unit
- RMP : Radio Management Panel

#4 Air Traffic Management

Loop #4 : Impact on Ground and Airborne functionalities

Strategic functionalities

Tactical functionalities



What is the point?

- **Technology is reasonably available**
- BUT**
- **What are the actual operational needs ?**
 - ✓ How to use the technology
 - ✓ What is the necessary system layer to put on top of technology
 - ✓ How to improve/prove global safety and certifying complex distributed systems
- **What is the time frame ?**
 - ✓ For Systems definition
 - ✓ For Development
 - ✓ For Implementation including Transition
- **What is (are) the Business Model(s) and the price targets ?**
- **What are the financing mechanisms ?**

More than ever, the Industry key questions are:

- **Time to Invest**
- **Time to Market**
- **Time to Deliver**

So What?

The most important issues are **NOT** technology driven !!

What is missing...

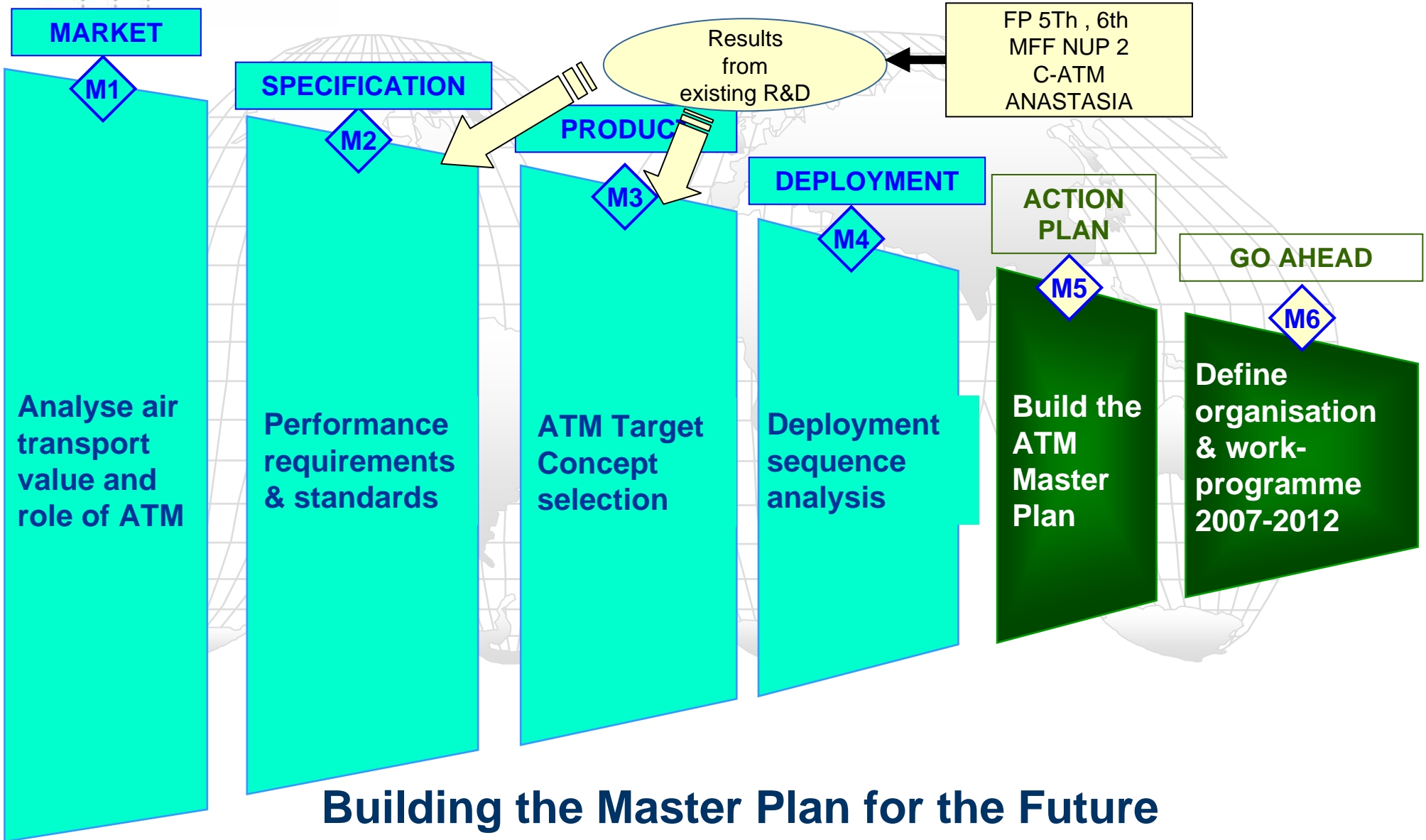
What is needed

- **Operational vision consensus**
- **Aeronautical Stakeholders simultaneous and complementary commitments**
- **Regulatory and economical situation assessment**
- **Interoperability definition**
 - ✓ Worldwide vs Regional vs National
 - ✓ Several solutions may co-exist as far as interoperable
 - ✓ Transition scenarios

- **Concept of operations identified and blessed by all Parties**
- **Global ATM Master Plan transition from CONOPS to implementation and certification phase**
- **Global ATM Master Plan definition**
 - ✓ Accurate results
 - ✓ Correlated to implementations scenarios (correlated to potential markets and multi States financing plans)



The SESAR Project Milestones



Building the Master Plan for the Future

How this can happen !!

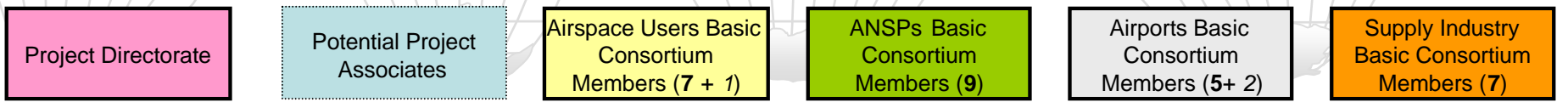
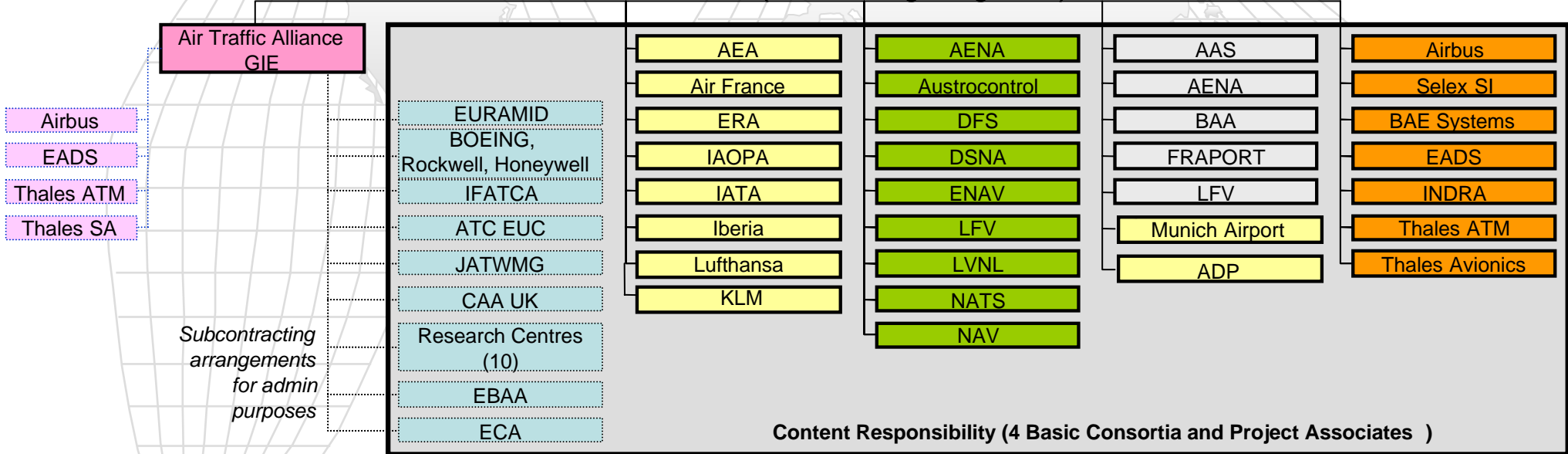
Only through a general « Buy In » from all the Stakeholders

The SESAR Consortium: a way for achieving a global « buy in

PROJECT EXECUTIVE COMMITTEE (10 voting rights)



GLOBAL CONSORTIUM (co-contracting arrangements)



+ EUROCONTROL



**SESAR : a major European initiative
for the 21th century ATM**



Air Traffic Alliance

A New Way Of Thinking

Thank You

www.airtraffic-alliance.com

