

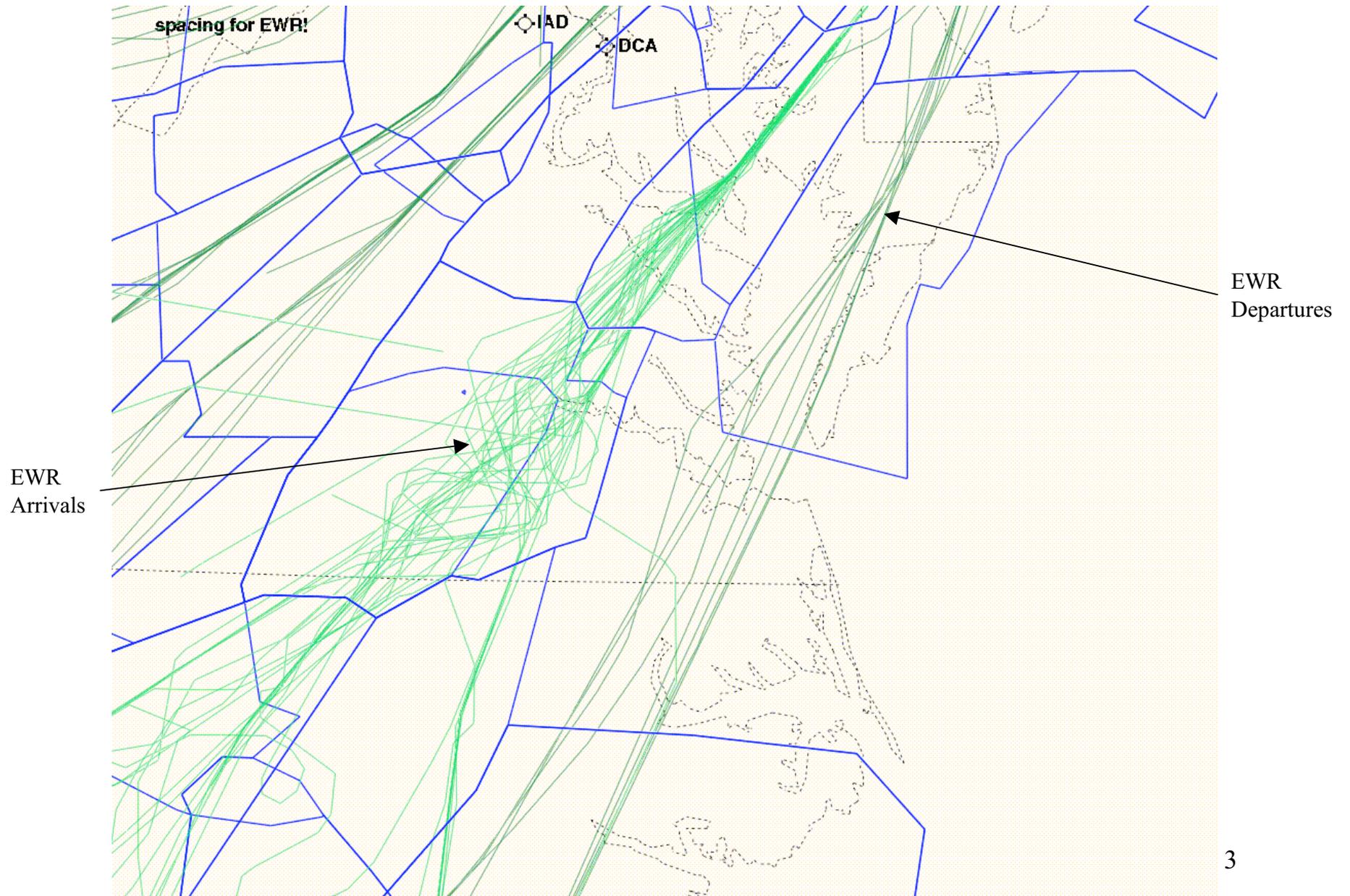
En route & TFM Operational
Evolution Plan
Framework In Context

Steve Bradford

Agenda

- Review of current state and understanding
- Opportunities for change
- Role of Research
- RMP process

Spacing for EWR in ZDC



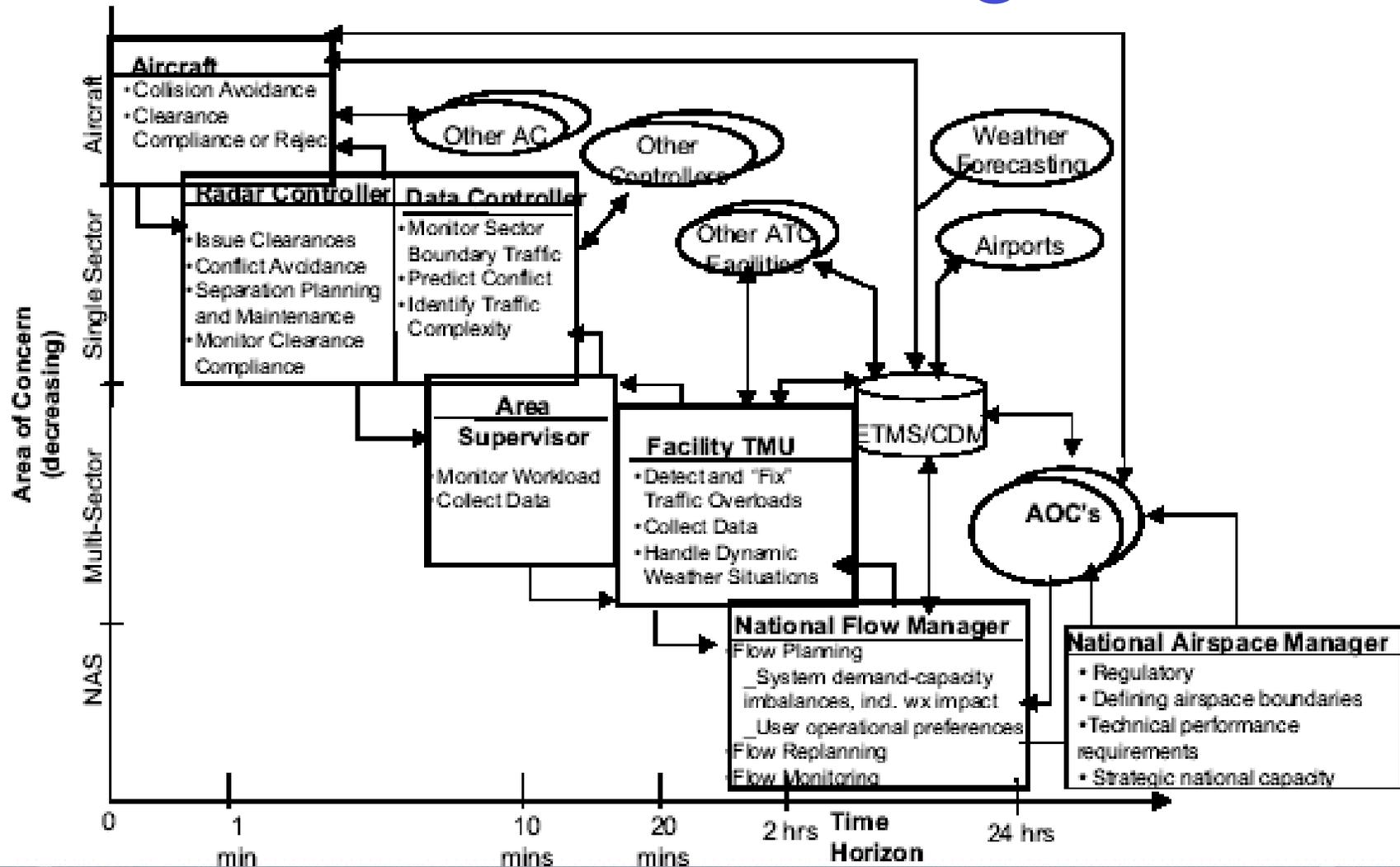
Eurocontrol Review of US ATM

Therefore, the organisation of the American traffic is strongly influenced by the tactical ATFM measures taken by the Command Centre (CC) and by the actors in the process as a whole, including the sector controllers. In addition to the **basic route structure that enables an excellent distribution of flights in the airspace normally available in the US and the south of Canada,** it seemed to us that tactical flow control measures contributed both to:

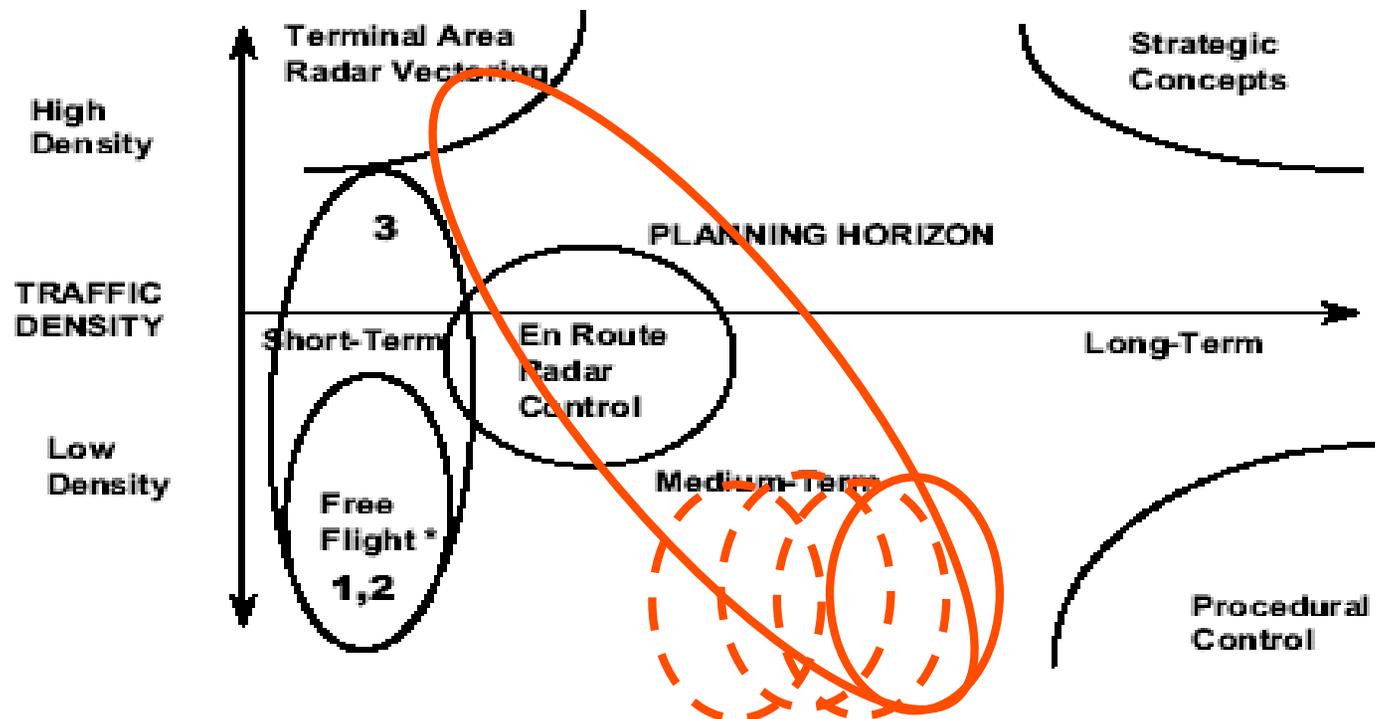
The best use of the resources available in real time (airspace, airports, staff, airlines,...) and

A reduction in the complexity of the traffic,

Time Horizon – Boeing/Metron

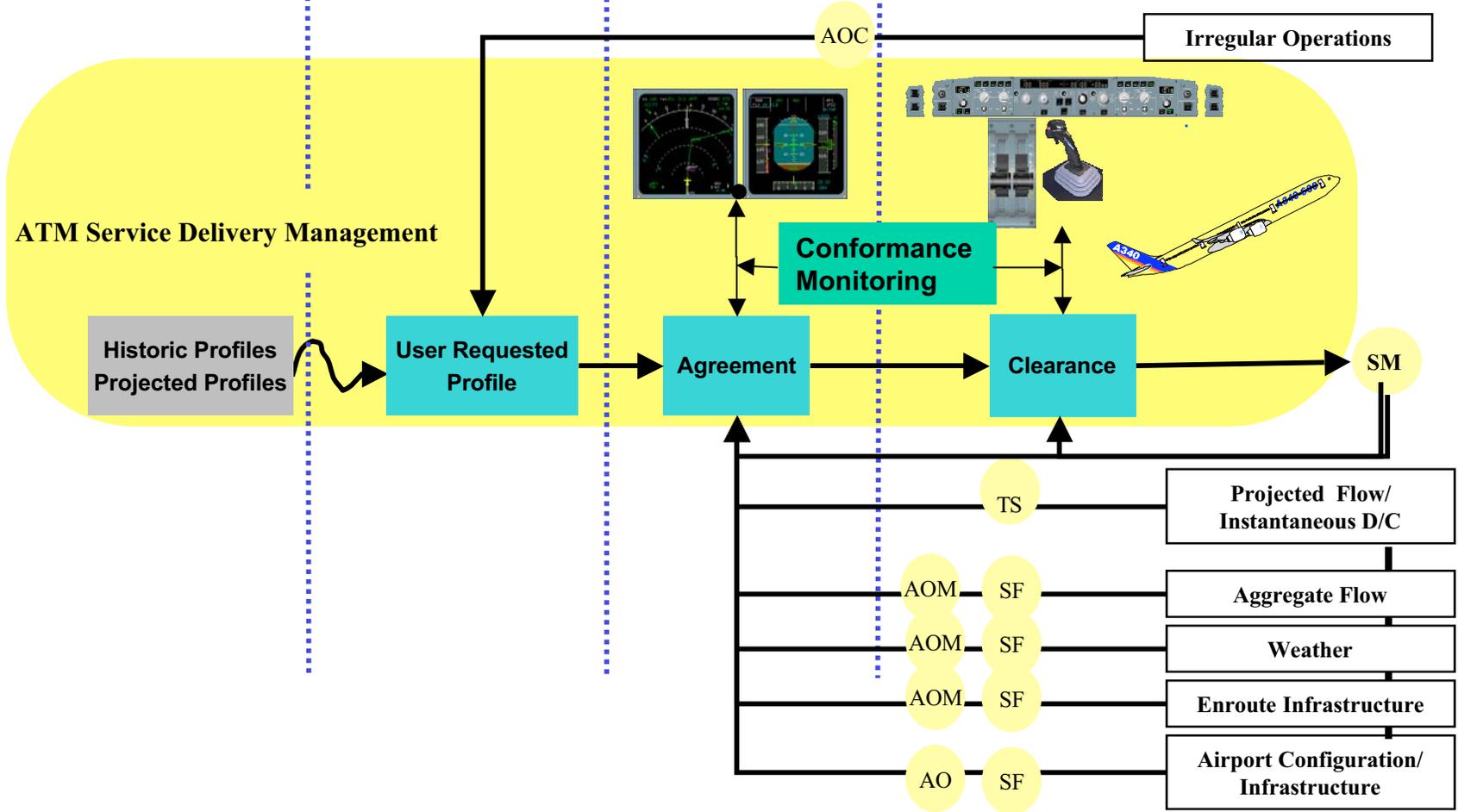
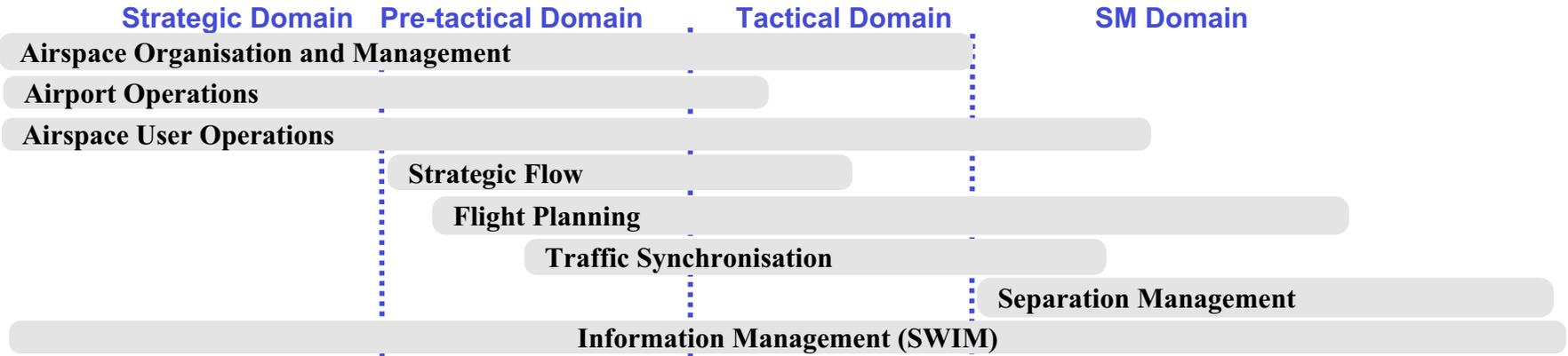


Separation Mgmt – Boeing/Metron



* Free Flight:

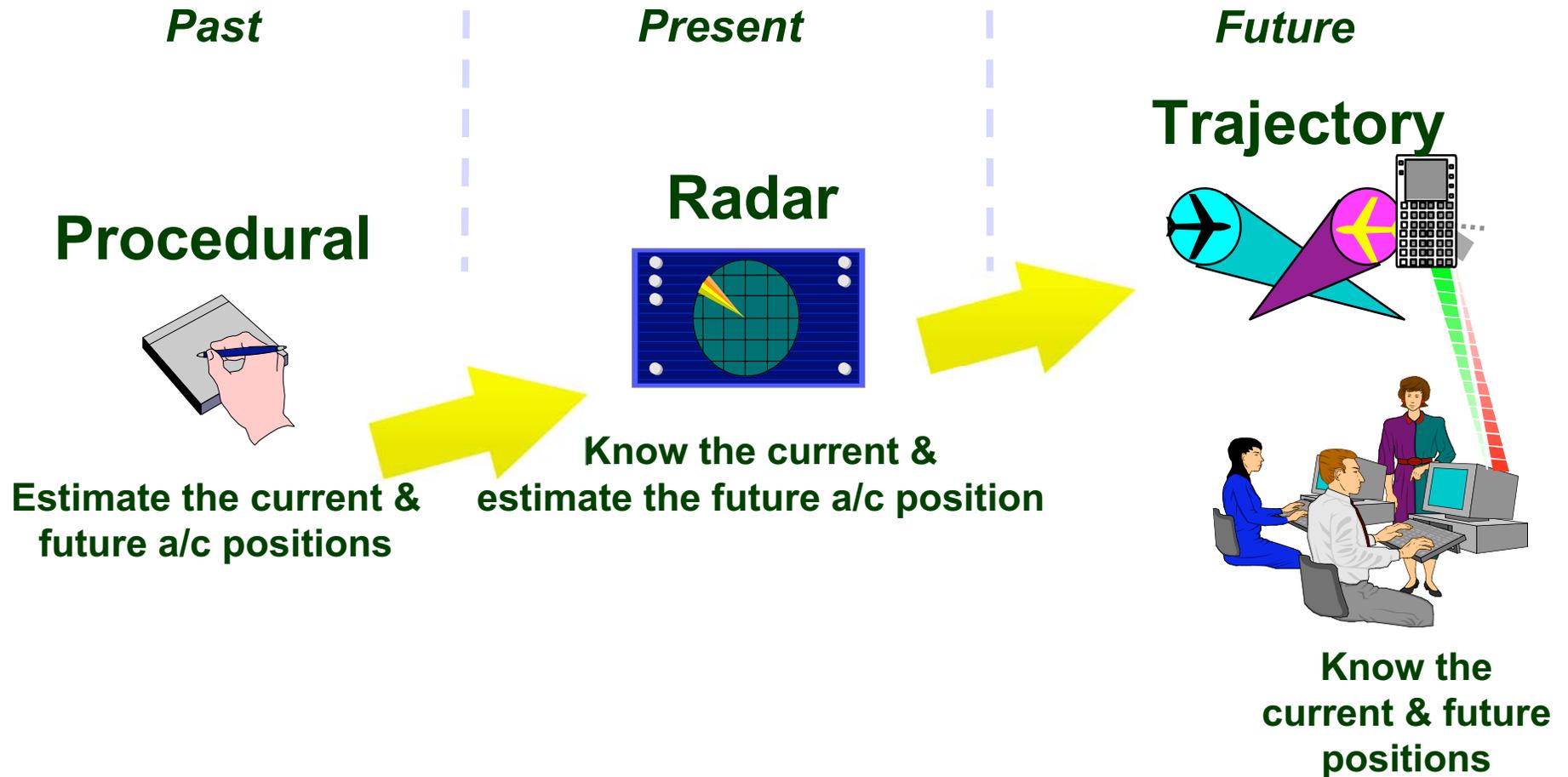
1. The ability to operate without a flight plan, except where flow restrictions may be imposed
2. The ability to operate without constraints, given suitable traffic densities
3. The Provision of Airplane-Based Separation Assurance



Key - Shift in Information

- The current roles and responsibilities are based on the decentralization of information. This decentralization met the needs to manage separation and flow in an environment with more limited computational and exchange capability.
- The future is about real-time access to all NAS information.
- Information provided is dependent on the role assigned rather than the role being dependent on the ability to provide and manage the information.

Management by Trajectory



Challenge

- Balance performance & technology with what can be done by the actors
 - Human remains the center of ATM beyond 2020
 - Human recognition, cognition, relay and execution remain the major timing components in the control loops
 - Map the information performance requirements to the automation, avionics and to the link(s)

Opportunity

- The Operational Evolution Strategy starts anew the process initiated by the **ATS 2005 Concept and Strategic Vision for the Provision of Air Traffic Services**
- The Level II Concept for Enroute & TFM lets the operational people tell the engineers the possibilities to evolve the NAS.
- Causes a switch from engineers analyzing the current operations and determining how to /automate the current jobs – here the operator tells the engineers how the jobs will evolve and the support requirements are derived from that mission.

Why should you care?

- Results will be directly used in integrated planning for en route and traffic flow management
 - In research
 - In validation through simulation and test
 - In requirements for systems
 - In the architecture to drive the CIP and budget formulation
 - In the business units as they seek to provide best value at lowest unit cost.

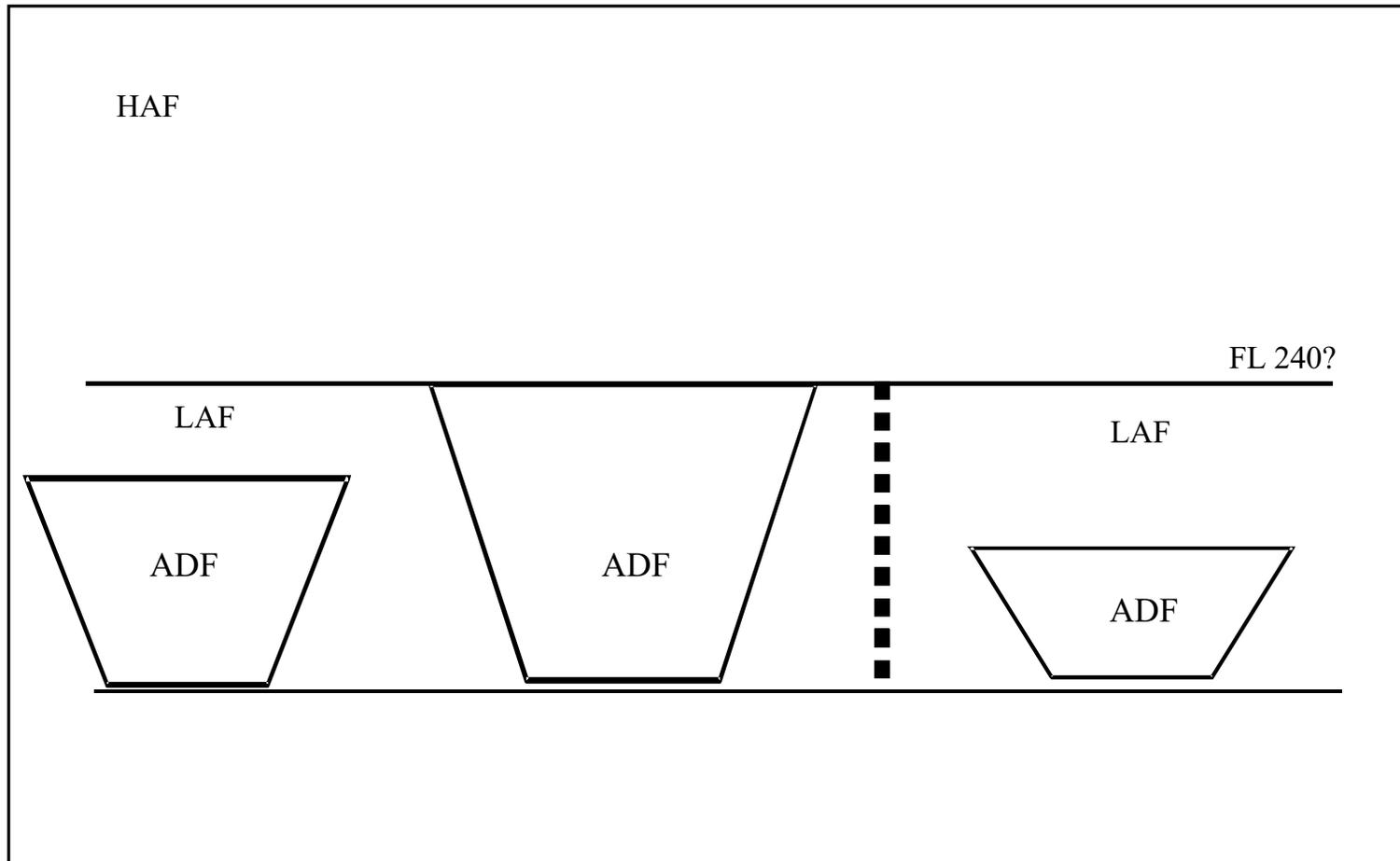
Level II Concept of Operations (CONOPS)

En Route & TFM

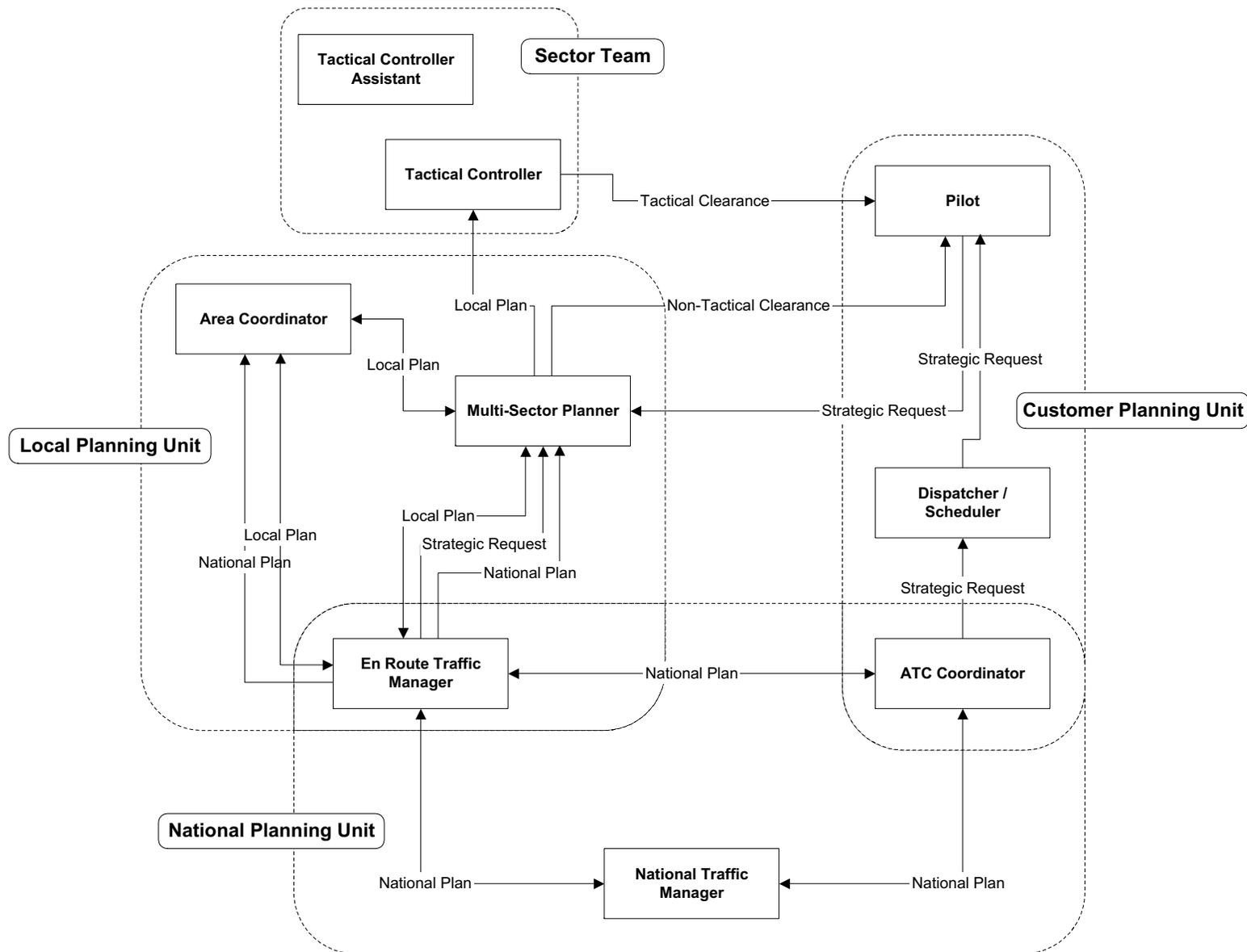
Contents

- Assumptions & Operating Environment
- Scenarios
- Research Areas/Topics Supporting Validation of the CONOPS
- Planning Activities
- Implementation

Strategic Vision



Planning, Coordination and Communication Flow – Future Service Providers



Operational Positions

- Tactical Controller
 - Tactical Controller Assistant
- Multi-sector Planner
- Area Coordinator
- Enroute Traffic Manager
- National Traffic Manager
- For each Position
 - Functional Description
 - Responsibilities
 - Tasks (information requirements)

Research Areas/Topics Supporting Validation of the CONOPS

- Information Presentation
- Decision aiding and automation/optimization techniques
- Distributed decision making and computer supported collaborative work
- Organizational structure
- Validation, verification, and system sensitivity analysis
- Dynamic systems research issues

Planning Activities

- Validation Processes
- Virtual En Route Research Management Process
- Prioritization of Research Needs

Dimensions of System Evolution

