



Information Exchange and Information Management

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FAA



Federal Aviation
Administration

Increasing Imperative for Change



Why a Single Track Through the Bay in All Weather Conditions is Critical to Success



ATC issues and pilots fly the same track every time, predictable and stabilized
STAR connects to all approaches, continues the 3 degree glideslope, no level-offs or vectors

Trajectory Operations: Transformation

Procedural Based Control:

Control on Where We Think the Aircraft Is



Landmark Navigation
Radio Beacons
Position Reports

Surveillance Based Control:

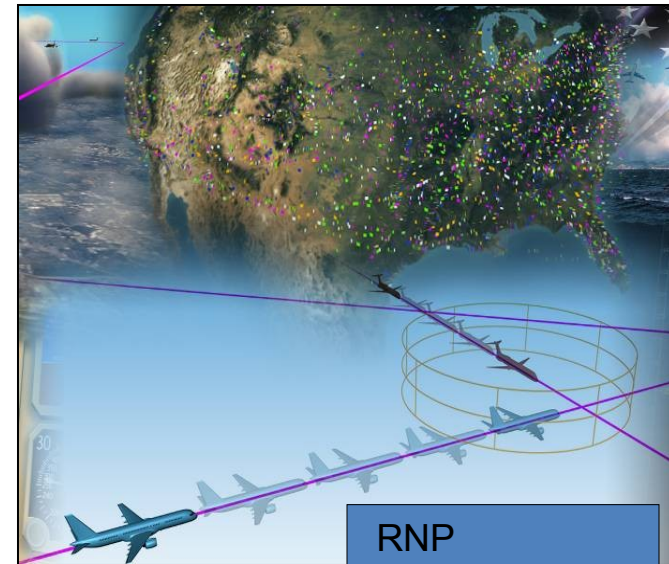
Control on Where We Know the Aircraft Is



VOR/DME
RADAR

Trajectory Based Control:

Control on Where We Know the Aircraft Will Be



RNP
ADS-B
DataComm

Trajectory Timeline

Separation
Management



Trajectory
Management



Flow
Management

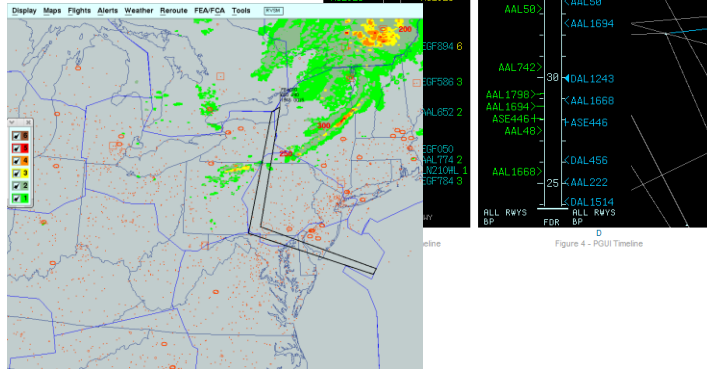
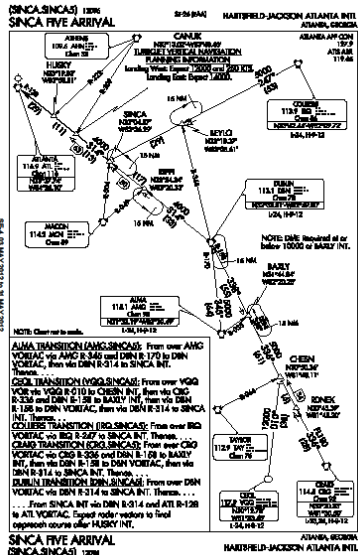


Figure 4 - PDU Timeline

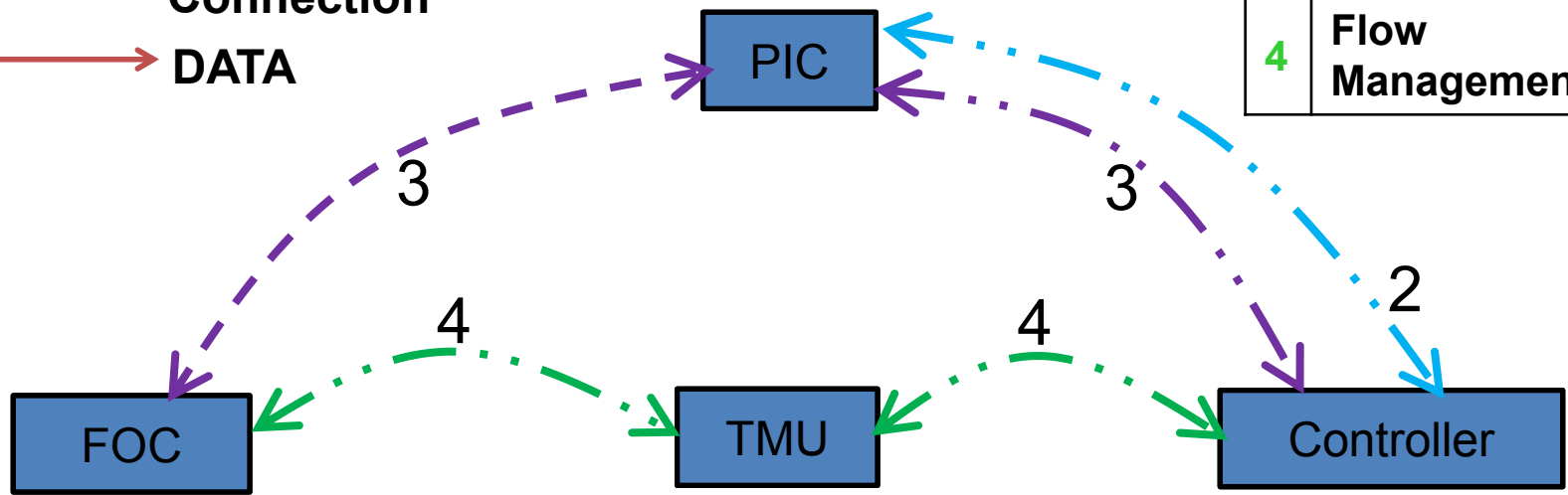
Airspace
Management



Historical Interactions

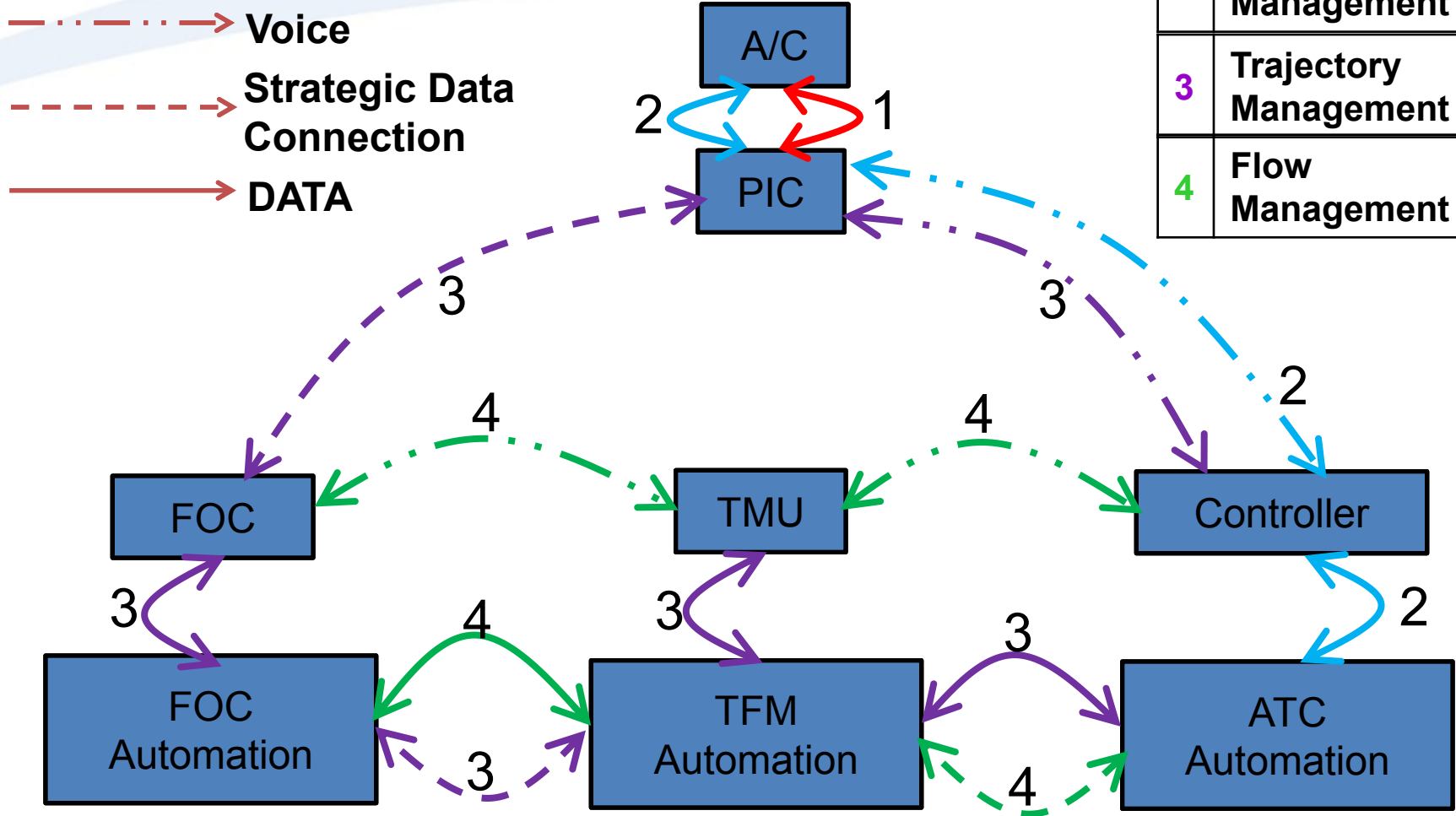
1	Collision Avoidance
2	Separation Management
3	Trajectory Management
4	Flow Management

 Voice
 Strategic Data Connection
 DATA



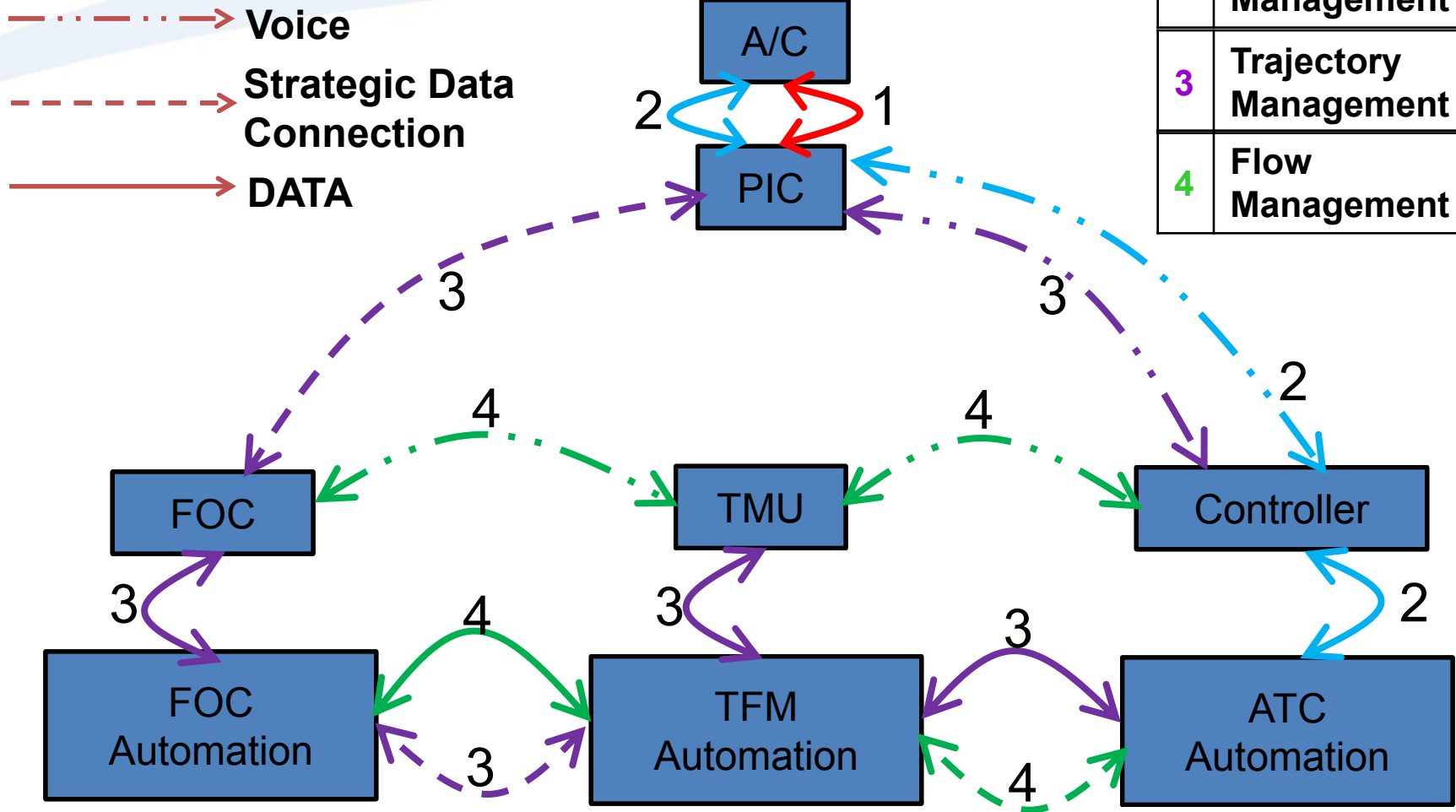
Current Interactions

1	Collision Avoidance
2	Separation Management
3	Trajectory Management
4	Flow Management



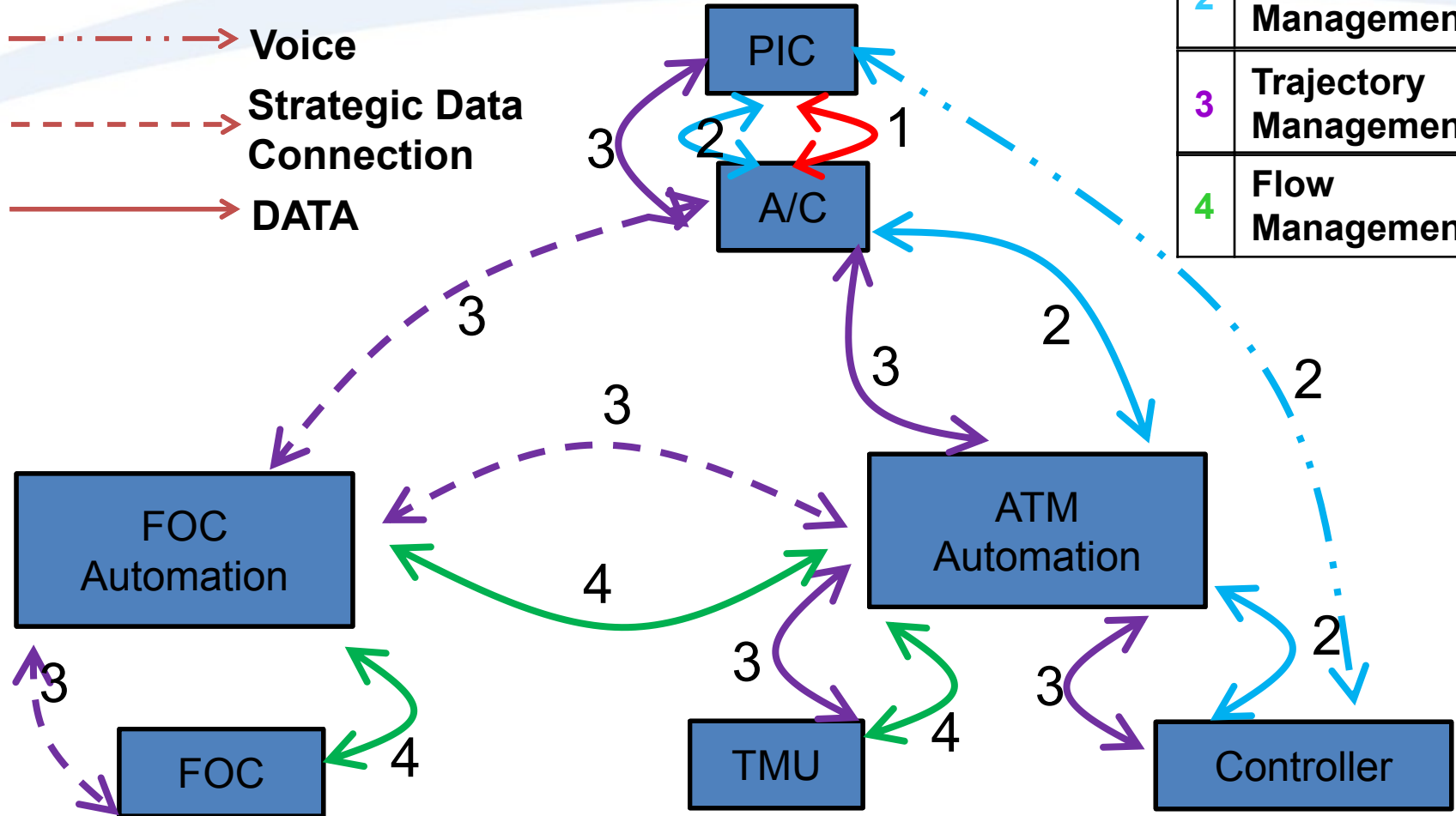
Future Interactions

1	Collision Avoidance
2	Separation Management
3	Trajectory Management
4	Flow Management



Future Interactions

1	Collision Avoidance
2	Separation Management
3	Trajectory Management
4	Flow Management



Three ways to respond to the data exchange increase

- Extend current data messages
 - ✦ ICAO 2012
 - Already talking about ICAO 2014
- Special Purpose Messages
 - ✦ Low risk for implementing programs
 - ✦ Antithesis of SOA - replacing point-to-point communications with point-to-point messaging
 - Only sustainable in the US due to the size of our internal operations
- Moving to information management & exchange

Information Management & Exchange

- The commercial world has been moving from data to information with success for a long time – lowering costs for all users
 - ✦ HTTP
 - ✦ Banking networks
- Information exchange gives us the ability to be extensible for the future and be globally harmonized right now

So where are we?

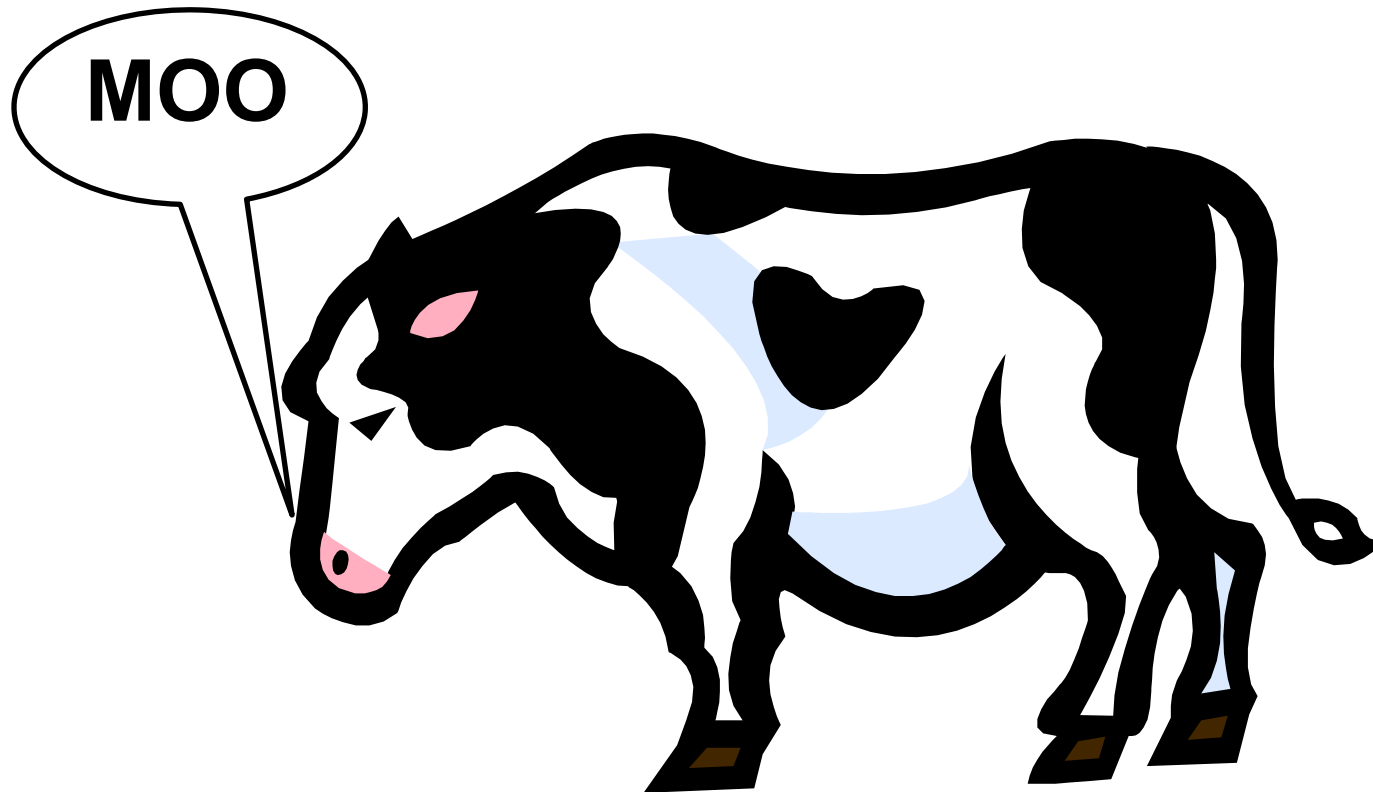
- We are not moving to a System of Systems
 - ✦ We have always been one
- We are not moving to the **EVALUATOR** – the machine of God
 - ✦ We remain a system of independent actors and human – centered
 - ✦ Knowledge-based versus rule-based
- We need to move from the data age into the Information Age

Information Management – rehabilitation course

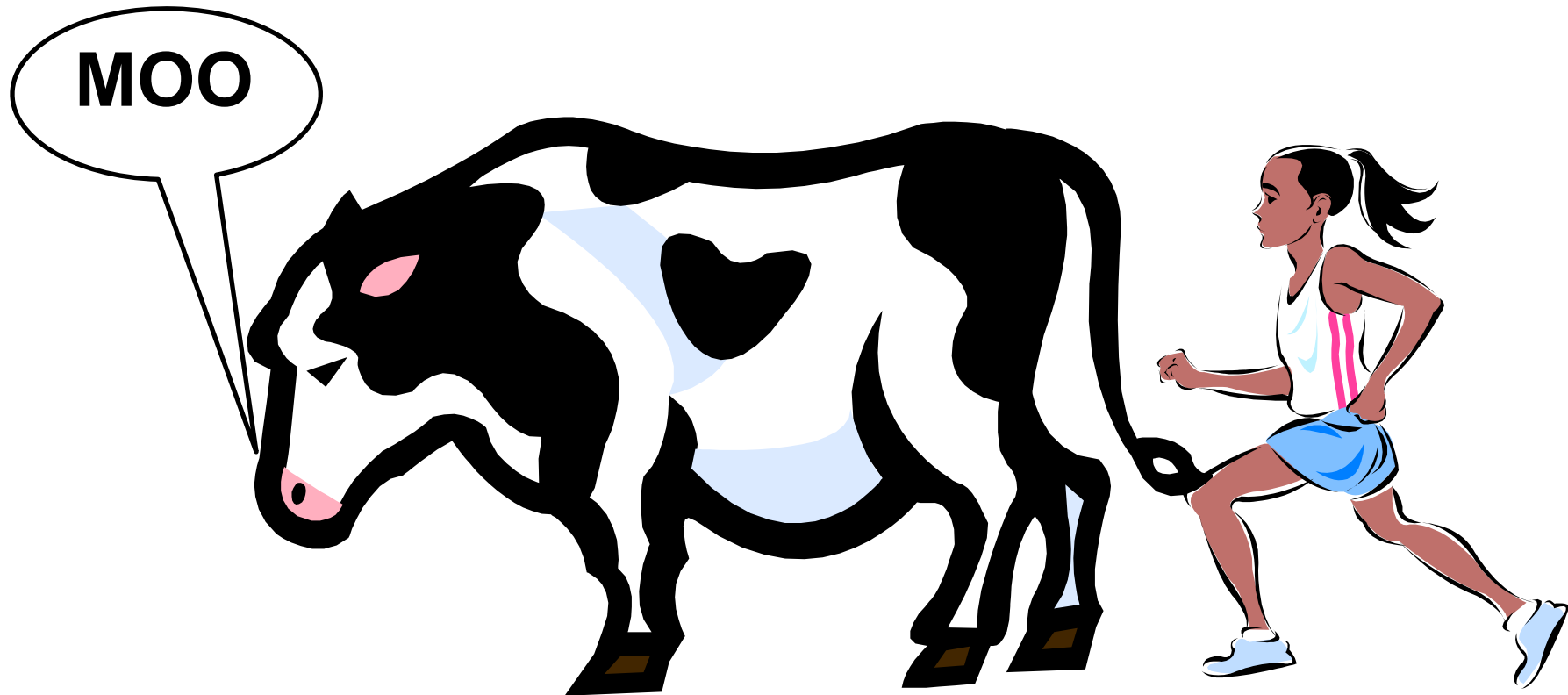
Differentiating between
Authoritative Source for Data and
Business Information Steward



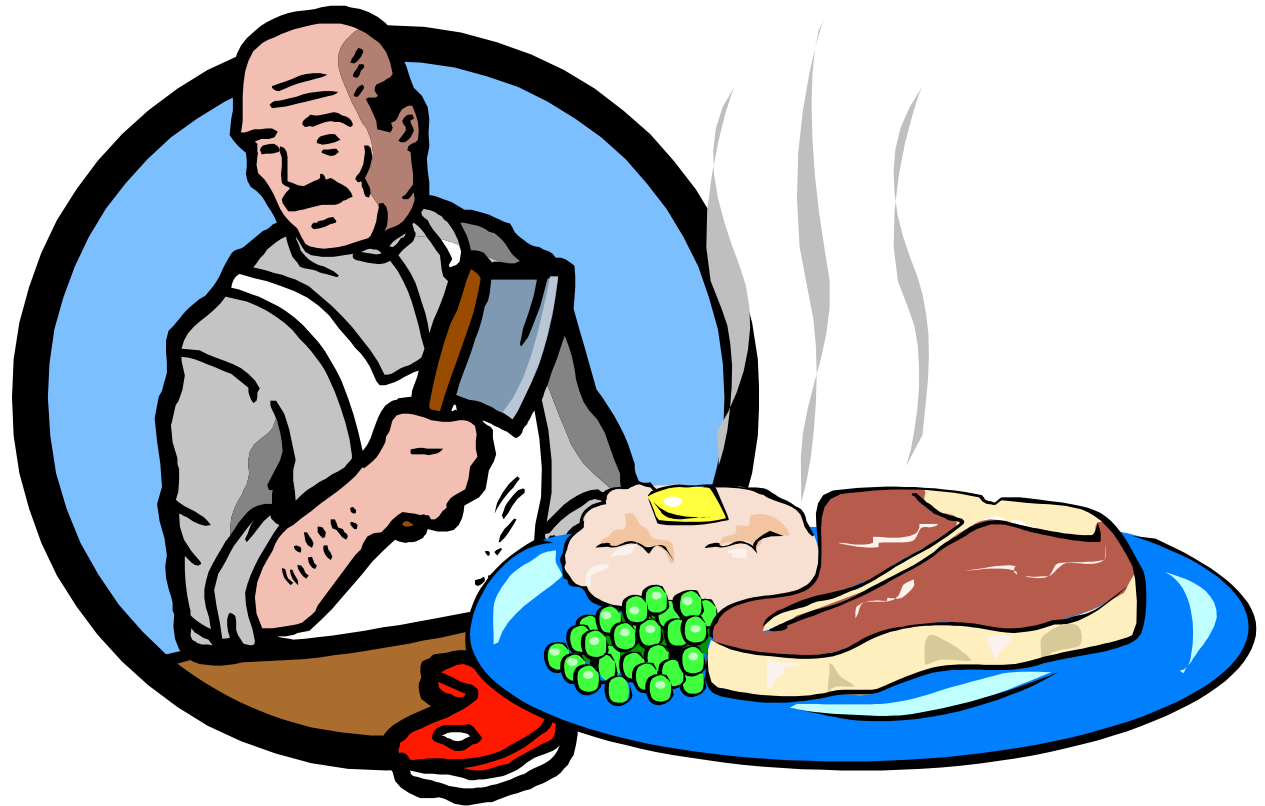
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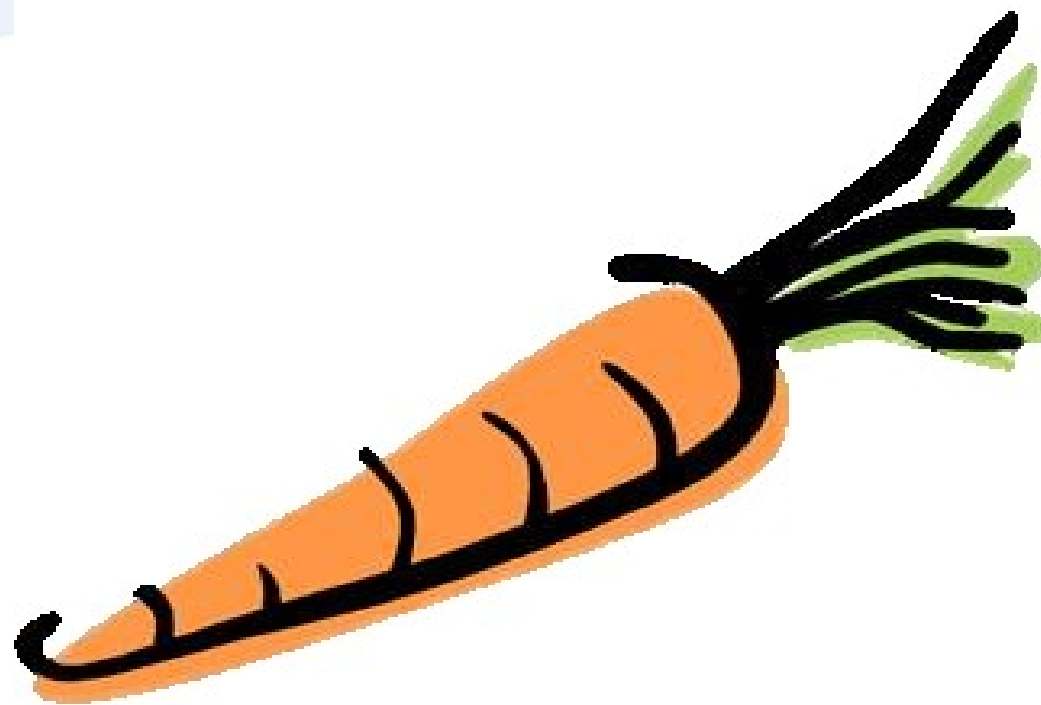


Authoritative Source for Data



Business Information Steward





Are we eating the Red Meat?

Exchange Standards ≠ Information Management

Publication Is Not The End
– No Implementation – No Success

Over the New Standards Hump

- We need to move forward to the integration of ***information*** and standards into our systems
- Exchange standards is only one critical step towards the modern age of SOA and Information Management
- The community has to put the effort into overcoming the reluctance to use a new standard

What that means for the FAA?

- FAA will require all future demonstrations and pre-implementation activities to integrate AIXM, WXXM, or FIXM
- Examples
 - ✦ Airborne Access to SWIM
 - ✦ UAS Integration into NAS
 - ✦ Enroute Reroutes – Datacomm
 - ✦ Mini-global - FIXM exchange with Europe and Asia...