

Air Traffic Service Performance

CNS/ATM Focused Team

April 29, 1998

The ATSP Focus Group

*Facilitate airline consensus on
the standards for evaluating
ATS performance.*

The Purpose of Metrics

- Define ATS elements of importance to airlines.
- Help develop a common basis for assessing the performance of the ATM system.
- Form common basis for predicting benefits and making decisions on CNS/ATM issues.

The Business Side of ATS

- Airlines' Product - ***The Flight Schedule***
- ATS Products - Safety and Traffic Services
- Airline Networks
 - What is the **value** of Air Traffic Services?
- Dynamic Economic Equilibrium
 - Market Demand Elasticity
 - Product Pricing
 - Costs of Services

High-Level Framework

- Outcome = results achieved from airline perspective.
- Output = services, procedures, S/W functions, etc.
- Processes = activities, programs, work, etc.
- Inputs = funding, staffing, data, etc.

Target Concepts of Outcome

- Delay
- Predictability
- Flexibility
- Efficiency
- Access
- Cost of Service

The Value of Time

Time Frame Target Concept Metric

2-5 years	Delay, Predictability, Access
1-2 years	Delay, Predictability
2-3 months	Delay, Predictability Efficiency, Access
30 days	Flexibility, Delay
90 minutes	Flexibility, Efficiency, Access
30 minutes	Flexibility
Departure	Flexibility
En Route	Flexibility, Access
Arrival	Flexibility, Predictability
Post Flight	Delay, Predictability, Flexibility
Ongoing	Cost of Service

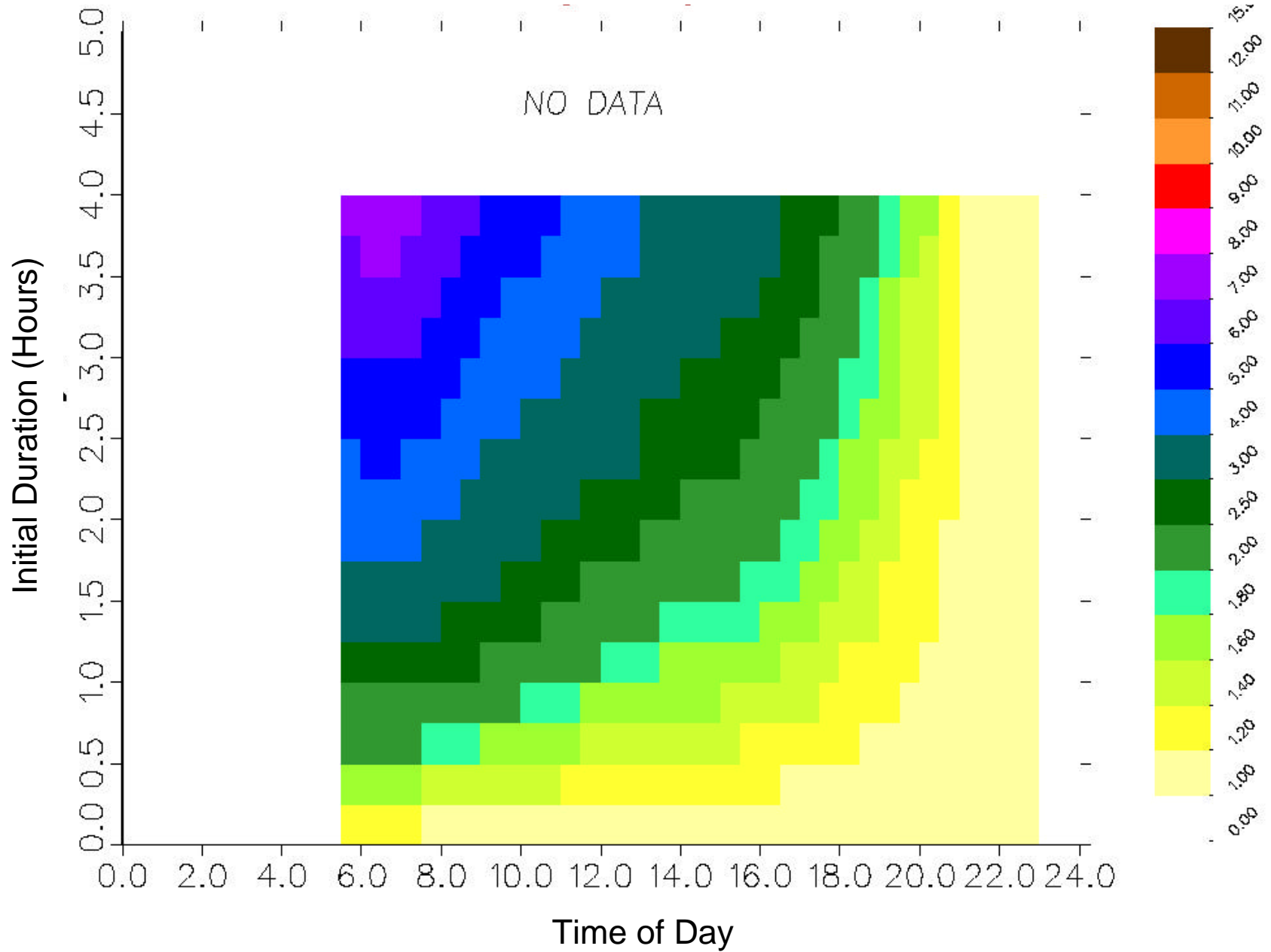
Airline Processes

Capital Planning Decisions (fleets, facilities)
Resource Planning (manpower, training)
Schedule Planning, Capacity Management
Schedule Planning, Capacity Management
Schedule Adjustment, Resource Adjustment
Flight Planning, Load Planning, Gate Usage
Systems Control (dispatch)
Flight Operations (aircraft management)
Flight Operations, Systems Control
Flight and Airport Operations (passenger, ramp)
Operations Analysis (cost, block performance)
Financial Analysis (profitability, cost)

Delay

- Measuring Delay
 - Compare to *optimum*, not scheduled time
 - Establish baseline assumptions.
- Value related to airline network impact
 - Example: Delay Value Multipliers
 - Duration of Event
 - Time of Day

Delay Value Multipliers



Predictability

- Variance from Expected Performance
 - Example: Actual Flight Time / Scheduled Flight Time
 - How well the system delivers what is expected of it.
- Value related to airline network productivity
 - Example: Reducing delay variance.
 - Capital assets.
 - Manpower resources.
- Planning vs. Operational Value
 - Higher value when developing the airline schedule.
 - Lesser operational value (i.e., low fuel diversions).

Flexibility

- ATS system's ability to accommodate change
 - Example: Number Denials / Number of Change Requests
- Value in operational network “Trade-Off” decisions
 - Maintain airline network integrity.
 - Slot swapping and substitutions
 - Airline “Flow Control” actions.
 - Collaborative Decision Making (Data Sharing).
 - Flight Planning Decisions

Efficiency

- Efficiency of the flight path trajectory
- Single-flight perspective
- Value in reduced direct operating costs
 - High-Frequency short-haul stage lengths
 - Low-Frequency long-haul stage lengths

Access

- Access to ATS services or airport slots
- Access to Military or Special-Use Airspace
- Value from avoiding congestion and path efficiency
 - Eliminate circumnavigation bottlenecks
 - Planning vs. Operational value

Cost of Service

- Airline perspective is a **VALUE** issue.
- All ATS “productivity” costs become “user” costs.
 - Route Charges
 - Ticket Tax
 - Airport Landing Fees
 - Passenger Facility Charges
- The Core Metric: **Quality of Service / Cost**
- **Cost of Service** is the common denominator to all CNS/ATM proposals that will improve one or more of the airline target concepts (measurable outcome).

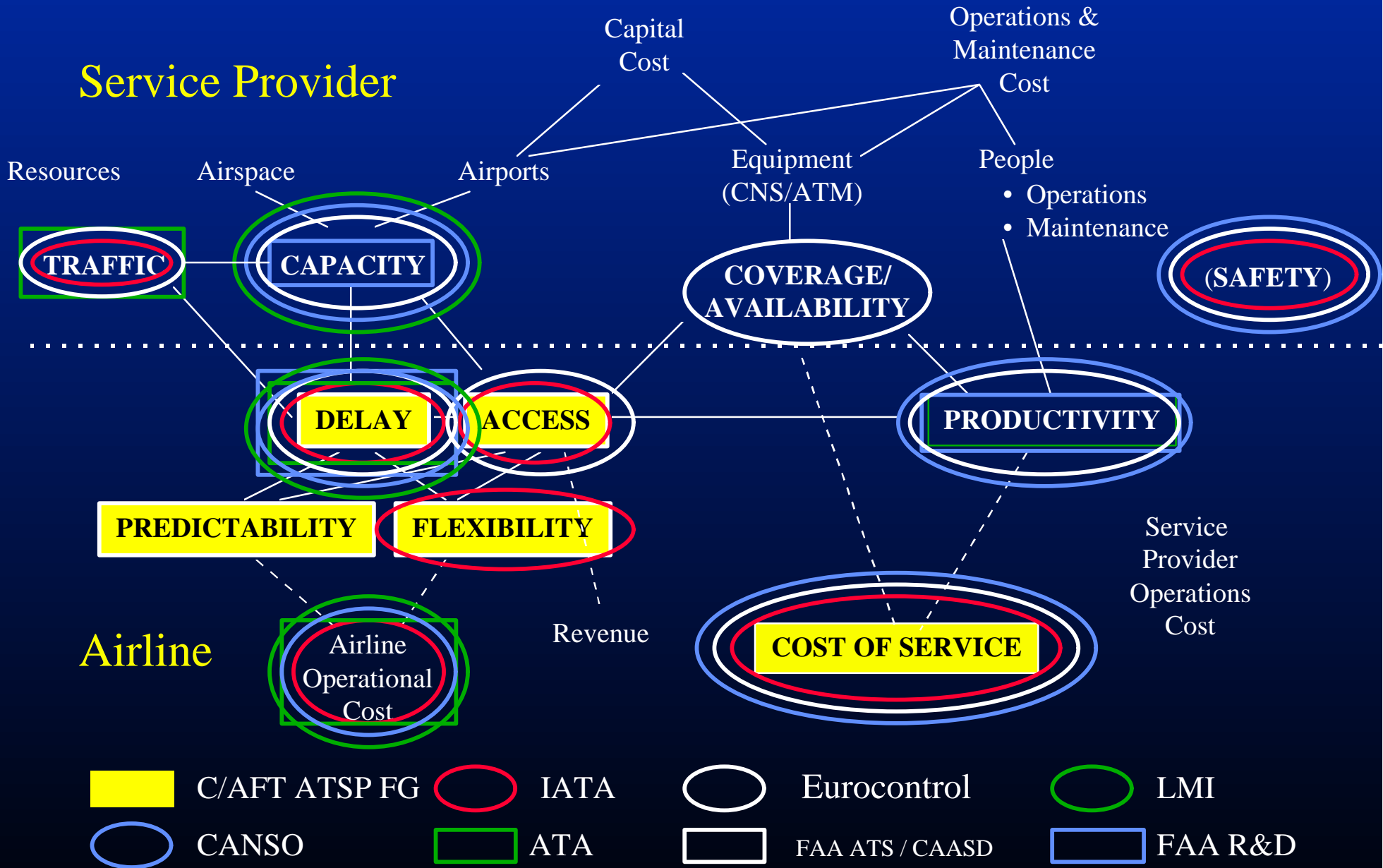
Secondary Metrics

- Output, Processes, and Input
- Service Provider Perspective
 - Traffic (Demand)
 - Capacity
 - Productivity
 - Coverage/Availability
 - Capital Costs
 - Labor Costs
- Safety
 - Incident Categories

Focus Group Accomplishments

- Collected metrics from known global organizations.
- Consolidated metrics into comprehensive list.
- Established high-level perspective framework.
- Established airline target *outcome* categories.
- Mapped metrics into primary *outcome* categories and secondary *output, process, and input* categories.
- Established metric relationships and dependencies.
- Completed initial Focus Group review and comment.
- Completed preliminary *draft* report for distribution to all airlines for review and comment.

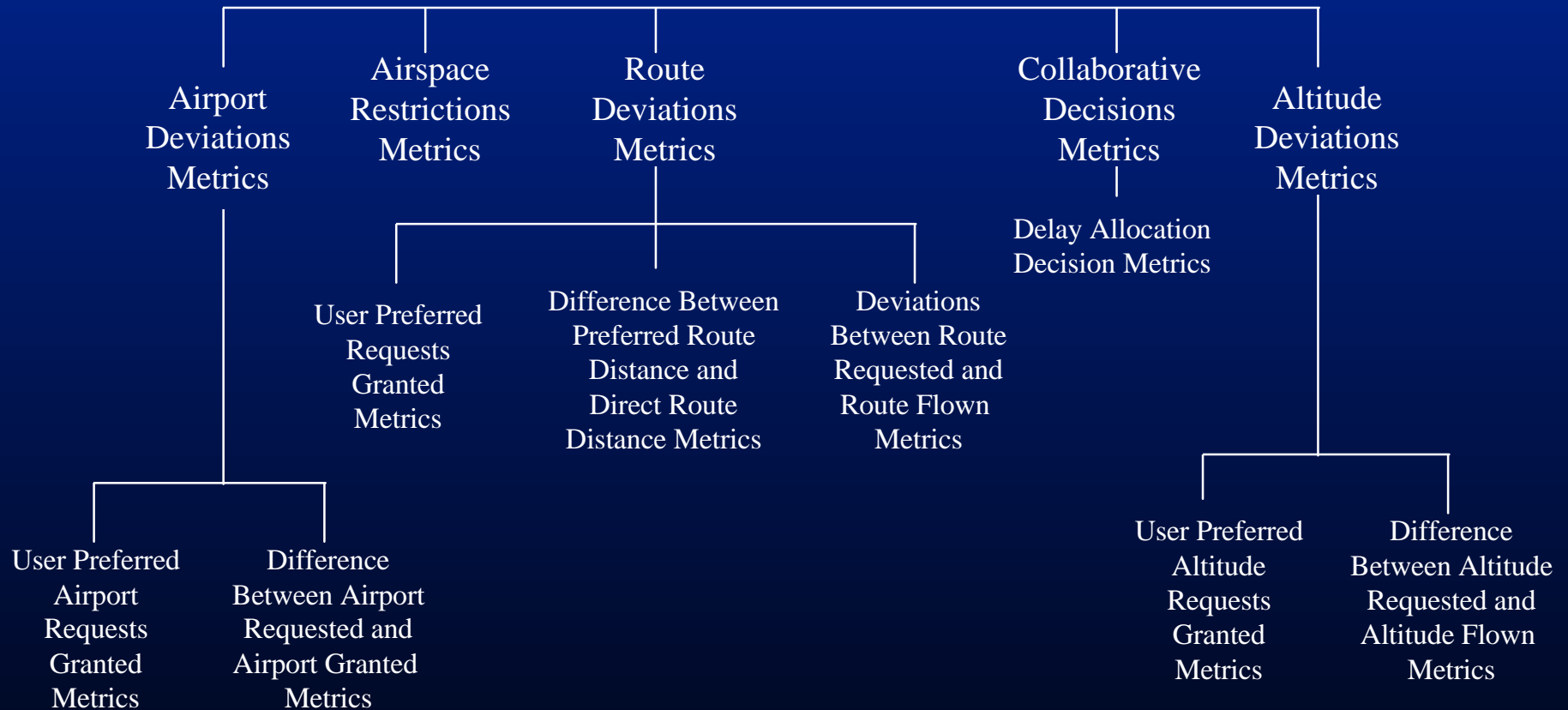
Consolidated Relationships



Evaluating Metrics

- Does the metric enable us to measure/compare the expected benefits from the various existing CNS/ATM Plans?
- Do we have the data to measure this metric? If yes, can the data be collected within a reasonable cost?
- Is the metric really doing what it is supposed to be doing?
- Is the metric reasonable?
- Does the metric provide a basis or reference or benchmark?
- Can measurement of the metric be repeated?
- Do the metrics being proposed relate to one another and if so, how? (We don't want to be collecting data just for the sake of collecting data.)
- Do the metrics provide coverage of most of the important concerns?
- Is there any redundancy among the metrics?
- Can the metrics be applied in different regions (Europe, U.S., Asia)

Establishing Relationships to Value Flexibility Example



Next Steps

- Post final version of preliminary report on web site.
- Distribute to airline trade associations for review and comment by all member airlines.
- Consolidate and incorporate final comments.
- Prepare final report for Core C/AFT approval.
- Distribute final report at next C/AFT All-Airline meeting in November 1998.

C/AFT Web Address

www.boeing.com/caft