ATNTTF/6 –WP/7A

ATN Performance

ATN Transition Task Force Meeting

Bali, Indonesia
Apr. 26-30, 2004
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1.Background

ATN Performance — Draft: Chiang Mai , 2001

Document Version 1 — Mumbai, 2002

Air-Ground Sample Dropped Monitoring Added

Document Version 2 — Phuket, 2003

Minor Additions to Monitoring

Document Version 3 — Bali, 2004

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2. Activities related to the Performance

Why performance matters?

Requirements — Interoperability, seamless, etc

Aeronautical Telecommunication Functionality Specifications (SARPs, Regional ICD)

Implementation / Operation

Any Performance Requirements?

Poor Performance!
Unreliable
Too Slow

Aeronautical Telecommunication Performance

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2. Activities related to the Performance

Performance related activities

Performance Requirements Specification

Documenting Performance Requirements Specification — Form/Template

Deriving Performance Requirements — Contents

Defining Performance — Terminology

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2. Activities related to the Performance

Performance related activities

Defining Performance — Global Activity

Air Space Complexity

Services Provided

Deriving Performance Requirements

Regional/Area Activity

Documenting Performance Requirements Specification

Template: Global, Documents: Regional/Area

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. Definition of Aeronautical Telecommunication Performance
3.1 Characteristics of Aeronautical Telecommunication
Air-Ground , Ground-Ground, Air-Air

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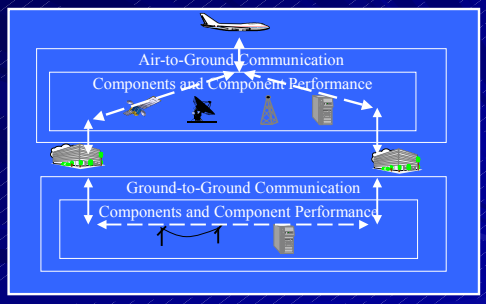
3.1 Characteristics of Aeronautical Telecommunication
Operational/Technical/Component Performance



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3.2 Required Communication Performance

RNP (Required Navigation Performance)

RNP -x

RNP-(x) RNAV. **A designator used to indicate the minimum navigation system requirements needed to operate in an area, on a route or on a procedure (e.g., RNP-1 RNAV, RNP-2 RNAV)**

RCP (Required Communication Performance)

RCP -x

RCP-(x) **A designator used to indicate the minimum communication system requirements needed to operate in an area, on a route or on a procedure (e.g., RCP-180)**

Mainly Air-Ground

What about Ground-Ground Comm. and others?

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3.2 Required Communication Performance

The RCP (Required Communication Performance) is the operational framework to express the communication performance necessary for operation within a defined airspace or to perform a specified operation.

Operational Framework (OPLINKP)

Technical Framework

Operation within a defined airspace

To perform a specified operation

RCP (Required Communication Performance)

RCP-120 for RNP-10, NOPAC, 30/30 Separation

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3.2 Required Communication Performance

RCP-120 | RCP-x | is called | RCP Type

Parameters of RCP Type

Time (Delay)

Transaction Expiration Time (ETRCP)

95% Transaction Time (TT95)

Reliability

Continuity (CRCP)

Availability (ARCP)

Availability(AProvision)

Integrity (IRCP)

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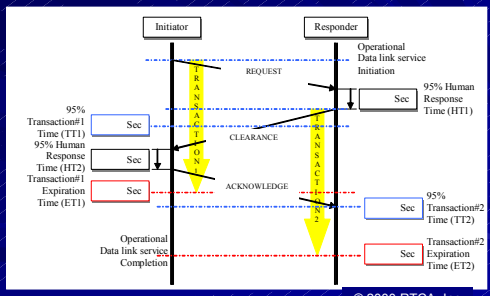
3.2 Required Communication Performance



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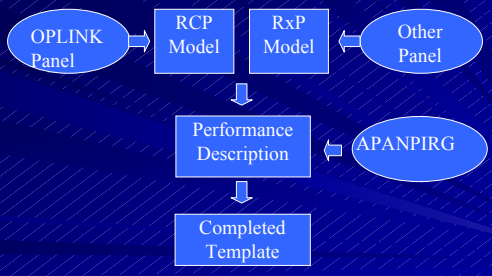
3.2 Required Communication Performance RCP parameter values sample

	Performance Parameters	Strategic
	RCP Type	500
1	Transaction Expiration Time	500 sec
2	95% Transaction Time	300 sec
3	Continuity	0.99
4	Availability of Use	0.99
5	Availability of Provision	0.9999
6	Integrity	10^{-5}

4. Planning Communication Performance 4.1 Deriving Performance Requirements



4.2 Stating Performance Requirements Sample

Operational Services and Environment Definition
OPERATIONAL CHARACTERISTICS

	Primary	Supplemental
ATC Data Link means:		
ATC Voice means:		
Flight Phases:	Yes	No
Oceanic/Remote:		
Offshore:		
En route/Domestic:		
Terminal:		
Takeoff:		
Approach:		
Landing:		
Airport Surface:		

4.2 Stating Performance Requirements Sample (Continued)

Air Traffic Complexity: Yes No
- Altitude transition:
- Crossing traffic:
- Speed management:

Route Configuration: Yes No
- Fixed Tracks:
- Flexible Tracks:

Type of Control: Yes No
- Procedural:
- Tactical:

Other: Yes No => If yes, qualify constraints
- FIR and ATC sector structure
- Multiple Sectorization: Special Use Airspace:
- Topographic Constraints:
- Weather Constraints:

Separation Minima
- Lateral: Nautical Miles
- Longitudinal: Nautical Miles
- Vertical: Feet

4.2 Stating Performance Requirements Sample (Continued)

TRAFFIC CHARACTERISTICS (Anticipated for traffic growth over capability life cycle)

Aircraft Throughput	Aircraft per Sector per Hour
Track Occupancy	Aircraft on Same Track per Controller
Sector Traffic Density	Aircraft per Sector
Navigation Requirements (RNP)	Surveillance Requirements

For each type of aircraft, provide the following information:
- CNS equipment of aircraft:
- Aircraft performance:
- Speed:
- Altitude:
- Climb/descent

4.2 Stating Performance Requirements Sample (Continued)

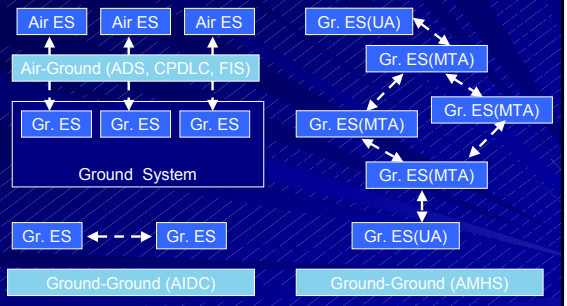
TECHNICAL CHARACTERISTICS

Network Data Architecture: Yes No
- ACARS Based:
- ATN Based:

Sub-network Coverage: Totally Partially / None
- VHF Data:
- SATCOM data:
- HF data:
- Mode S:
- HF Voice:
- VHF Voice:
- UHF Voice:
- SATCOM Voice:
- Other:

4.4 Planning for Monitoring, Evaluating and Improving Performance

Topological differences



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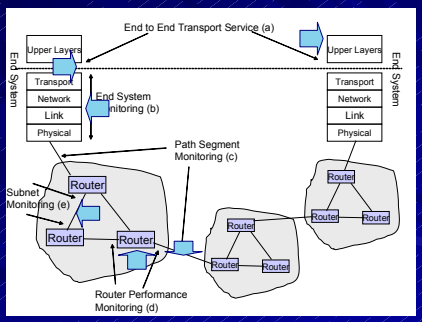
4.4 Planning for Monitoring, Evaluating and Improving Performance

what to monitor?



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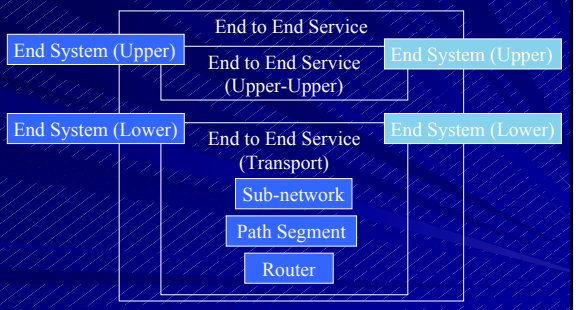
4.4 Monitoring, Evaluating and Improving Performance

what to monitor?



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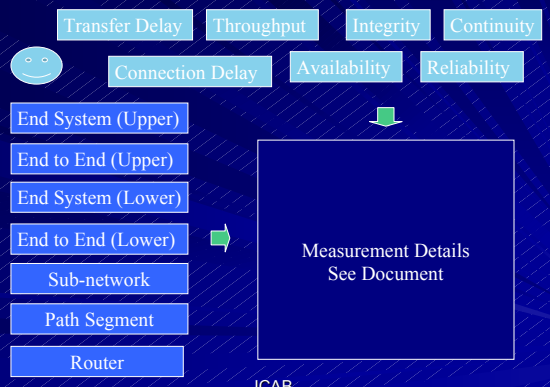

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