Ministry of Land Infrastructure Transport and Tourism
CIVIL AVATION BUREAU OF JAPAN

ATFM/CDM in JAPAN

ATFM/SG/3
10 – 14 March 2014

(Fukuoka ATMC)
Japan Civil Aviation Bureau

Air Traffic Flow Management

ATFM forms a proper traffic flow in controlled airspace. Through cooperation with airspace users, route coordination and flow control implementation are applied to balance traffic demand with system capacity.

☆Management and coordination of flight plan route

Establish the preferred routes, and coordinate the routings with the airlines to avoid traffic congestion or bad weather.

☆Management of the airspace and the airport capacity

Set up the capacity in consideration with weather and ATC operational status.

Issue the ATM OP (operations plan) which describes saturated airspace conditions and flow control planning.

☆Implementation of air traffic flow control

Carry out the appropriate initiatives (delay assignment, etc) to balance air traffic demand with system capacity.

ATMC ATC. JAPAN

History

～1994 Tactical ATC

- Flow control restrictions as occasion demands were taken by ACCs to cope with air traffic congestion.
- No computer system to support proper judgment.
- Unnecessary delay and concentration of traffic in major airports.

1994 ～ ATFM Center

- The ATFMC was established and began modern operation by introducing computer system.
However, those function was quite limited. It was only providing air traffic flow management services.

2005 ～ ATM Center

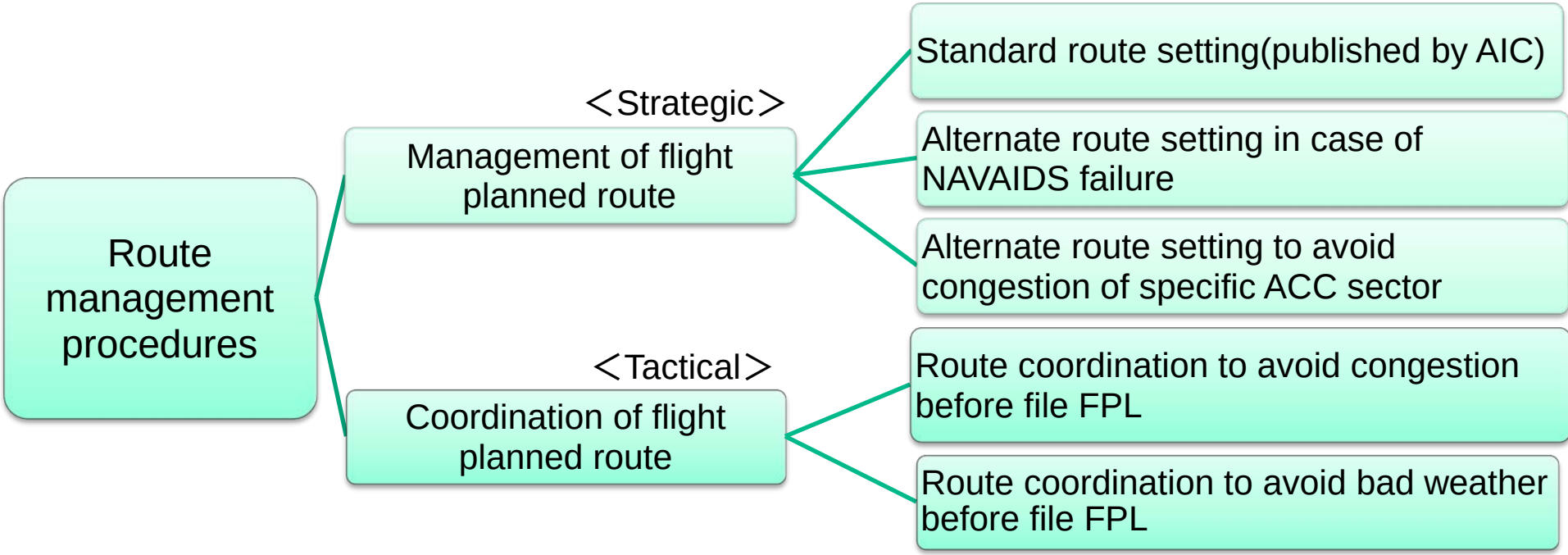
- In order to respond to a further increase in air traffic volume, the ATFMC was upgraded to the ATMC by adding a full-scale ASM function and the oceanic ATM function. By tightly linking these three functions based on the concept of CDM, the ATM center developed a comprehensive ATM service.
- Tokyo and Naha FIR were integrated into Fukuoka FIR.

ATMC ATC. JAPAN

Route management procedures

Designing tracks and Route management need…

- To have efficient flow of air traffic with maximum airspace capacity
- To know operator needs and trends of route usage



Flow control initiatives 1

On the ground

- EDCT (Expected Departure Clearance Time)
- Minutes in-trail (Departure interval)
- Ground Stop

Airborne

- Expand Miles in-trail
- Speed adjustment
- Airborne Holding
- SCAS (Specifying CFDT for Arrival Spacing Program)
- Entry Suspend
- Re-routing

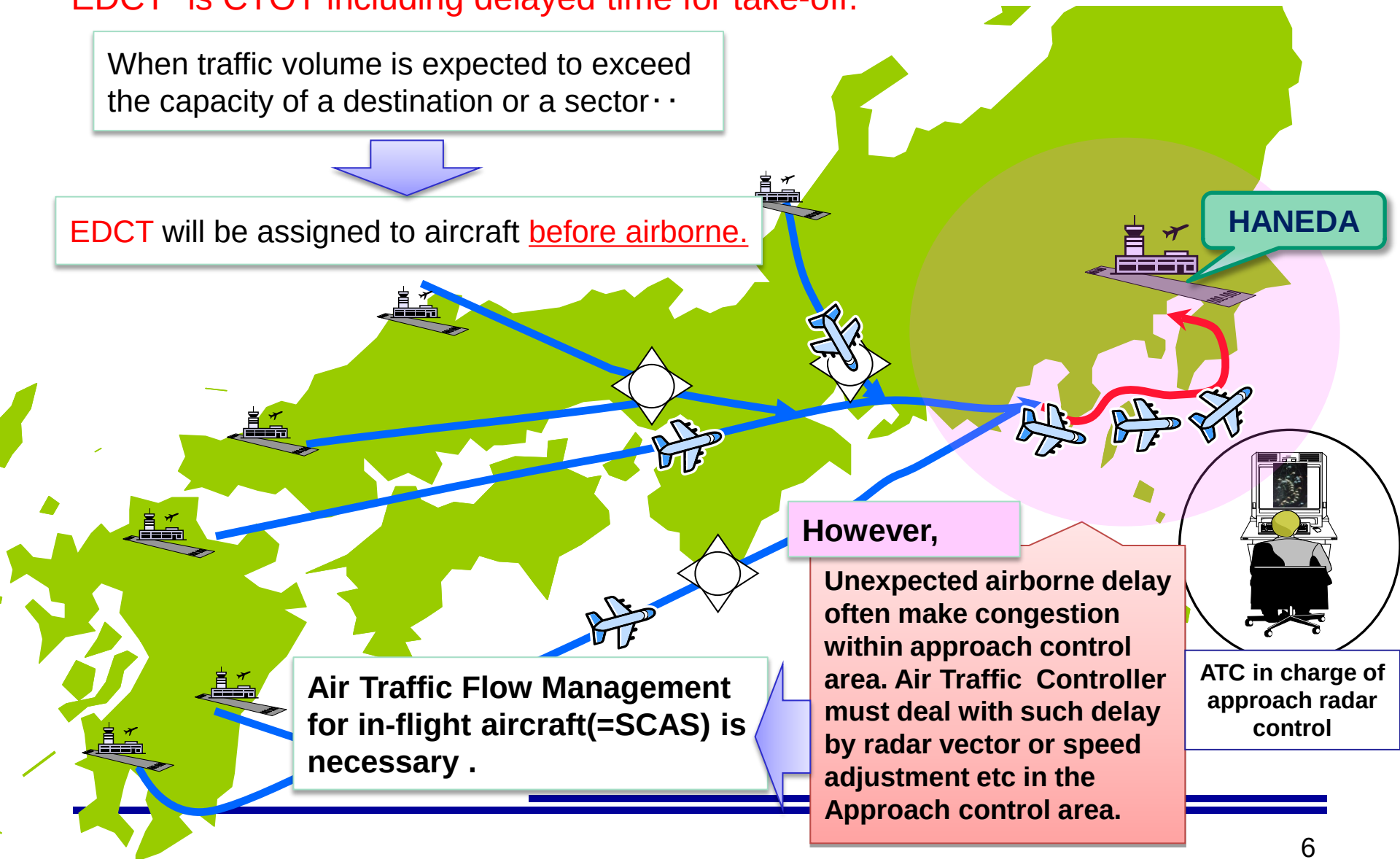
※CFDT: Calculated Fixed Departure Time

Flow control initiatives (EDCT)

"EDCT" is CTOT including delayed time for take-off.

When traffic volume is expected to exceed the capacity of a destination or a sector‥

EDCT will be assigned to aircraft before airborne.



However,

Unexpected airborne delay often make congestion within approach control area. Air Traffic Controller must deal with such delay by radar vector or speed adjustment etc in the Approach control area.

Air Traffic Flow Management for in-flight aircraft(=SCAS) is necessary .

ATC in charge of approach radar control

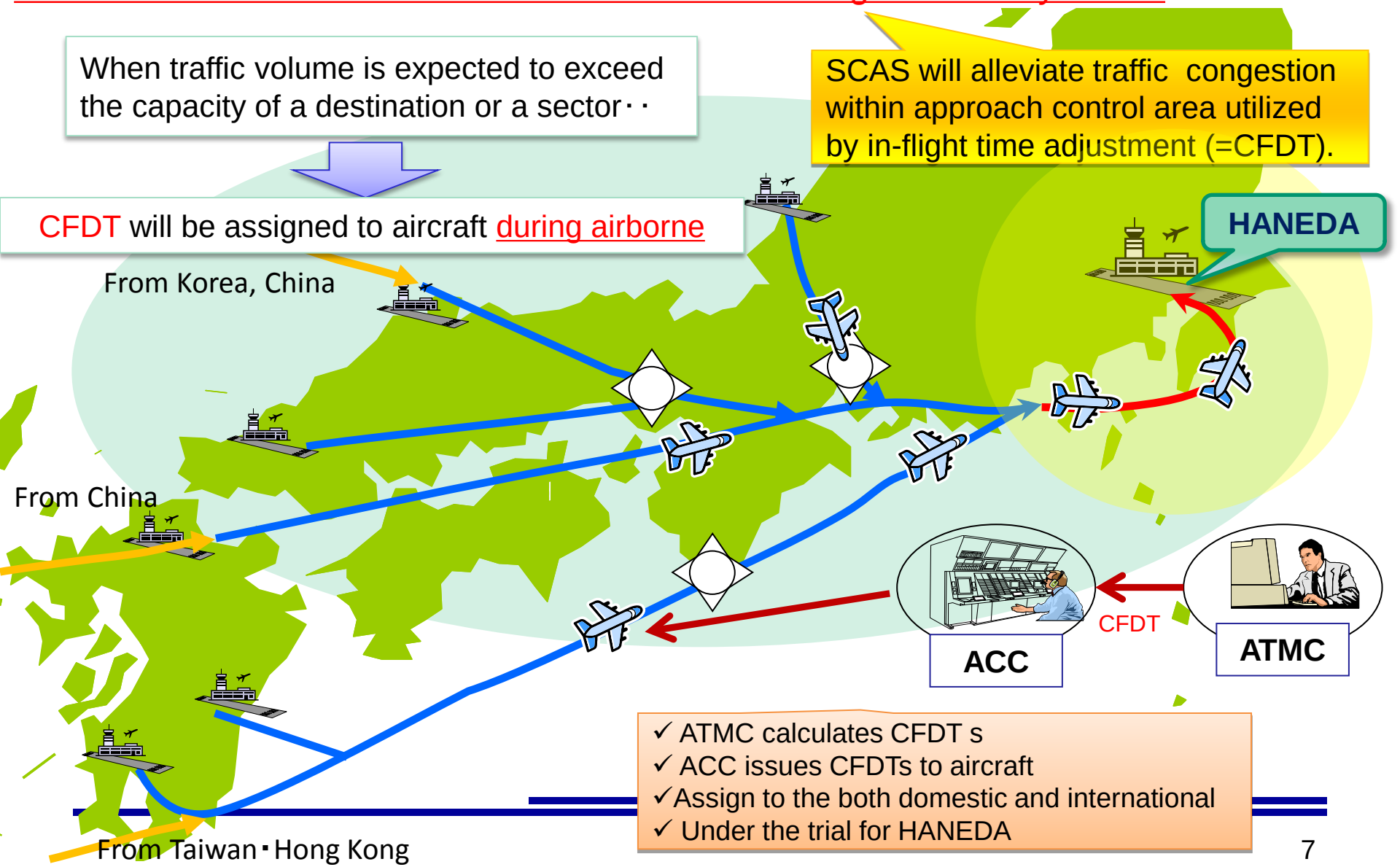
Flow control initiatives (SCAS)

"SCAS" is one of function to achieve flow control during en-route by CFDT.

When traffic volume is expected to exceed the capacity of a destination or a sector・・

CFDT will be assigned to aircraft during airborne

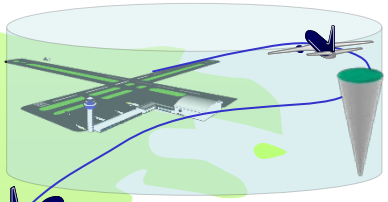
SCAS will alleviate traffic congestion within approach control area utilized by in-flight time adjustment (=CFDT).



- ✓ ATMC calculates CFDT s
- ✓ ACC issues CFDTs to aircraft
- ✓ Assign to the both domestic and international
- ✓ Under the trial for HANEDA

Flow control initiatives (SCAS)

Procedures of SCAS (for HANEDA)

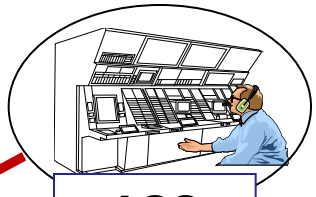


Tokyo International Airport (HANEDA)

Pilots shall cross the specified fix at CFDT by adjusting speed etc.

CFDT will be issued about 30-80 min before ETA of HANEDA.

FIX



ACC

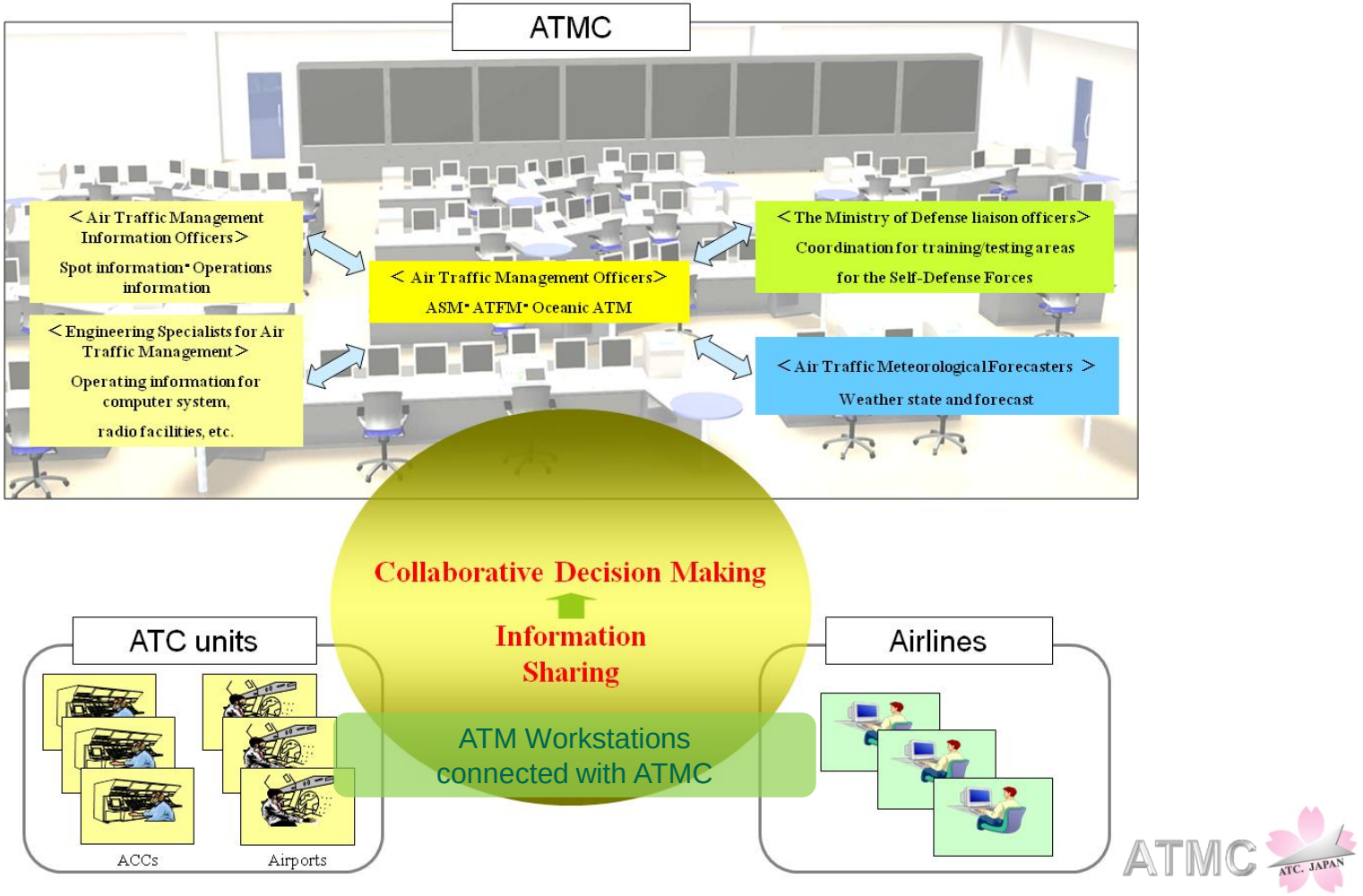
1.CFDT

2.Response

1.ACC : Issue CFDT
"Cross <FIX> at <CFDT> due to flow control."
2.PILOT : Response
Pilot read back the CFDT.

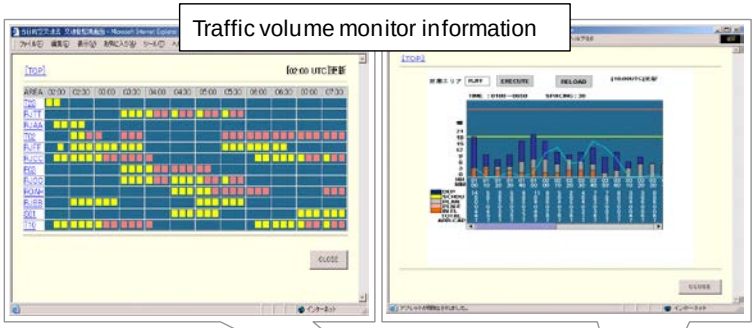
If not pilots unacceptable……
Pilots shall report acceptable time closest to the CFDT. ATMC re- calculates new CFDT, then ACC issues the new one
Note: this process is under consideration in this trial

Collaborative Decision Making

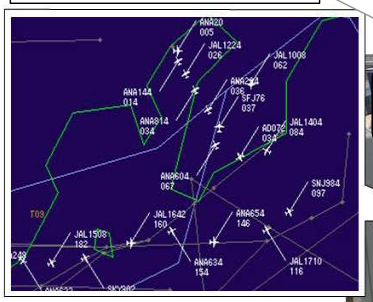


CDM Tools 1

Traffic volume monitor information



Aircraft position information



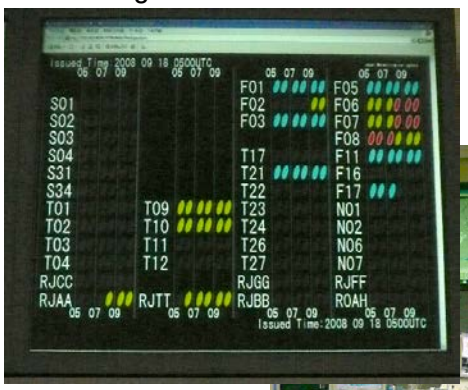
ATM workstation

Flight plan data

STS	C/S	TYPE	DEP	EOBT	ETD	SDL	ETDP	DLA	EDCT	ATD	EIT	ETA	SPCE
I	ANA144	B772	RJBB	0055	0104	-	----	-	----	0114	0157	0213	
I-E	ANA814	A320	RJOH	0055	0108	-	----	6	0106	0106	0201	0217	
I-E	ANA294	A320	RJOR	0100	0108	-	----	5	0113	0114	0204	0220	
I-E	AD072	B734	RJCM	0030	0039	-	----	15	0054	0054	0203	0220	
I	ANA3201	F50	RJAA	0100	0115	-	----	-	----	0126	0154	0230	
I-E	SFJ76	A320	RJFR	0045	0050	-	----	2	0052	0057	0206	0222	
I-E	ANA604	A320	RJFM	0045	0056	-	----	8	0104	0107	0212	0228	
I-E	JAL1404	A306	RJOT	0115	0119	-	----	11	0130F	0130	0215	0231	
I-E	JAL1008	B748	RJCC	0100	0113	-	----	7	0120F	0121	0215	0232	
I-E	JAL1710	B772	RJFF	0100	0105	-	----	7	0112	0116	0210	0234	
I-E	SNJ984	B734	RJFU	0045	0054	-	----	9	0103	0104	0220	0236	
I-E	ANA654	B772	RJOB	0120	0130	-	----	10	0140F	0140	0222	0238	
I-E	ANA634	B772	RJOT	0115	0119	-	----	11	0130F	0135	0222	0238	
I-E	JAL1642	MD90	RJDC	0105	0113	-	----	10	0123F	0124	0224	0240	

Traffic flow control information

Meteorological Information



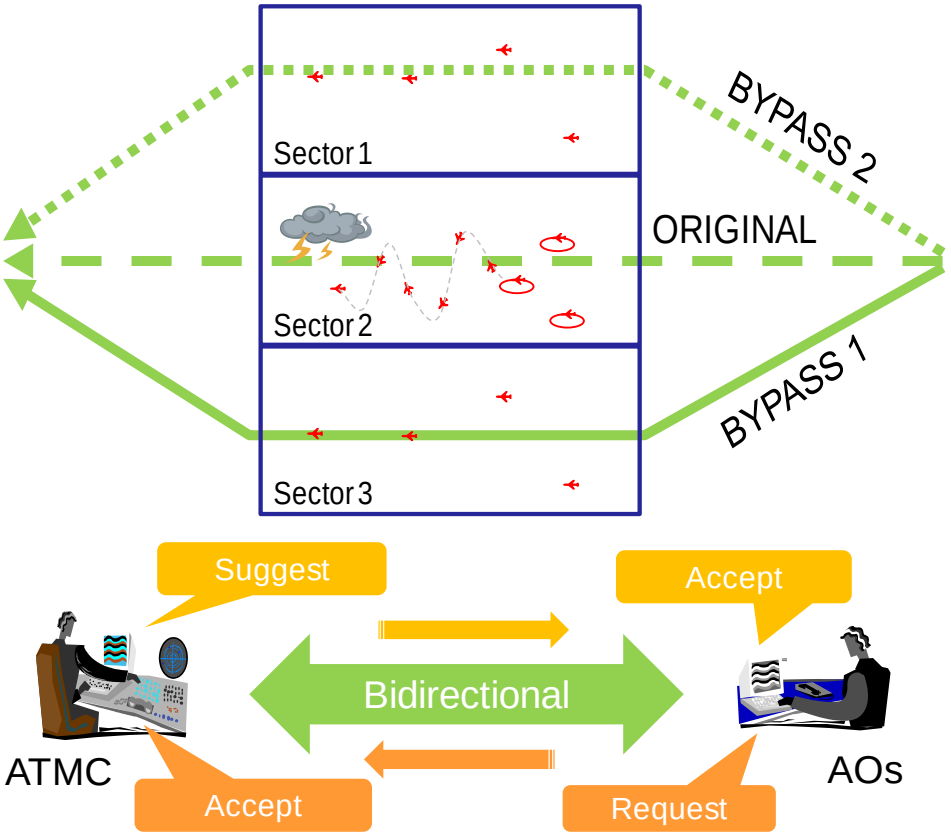
Chronological forecast

Alert classification is shown by colored symbol

Large 8 Displays

CDM Tools 2

ROUTE COORDINATION



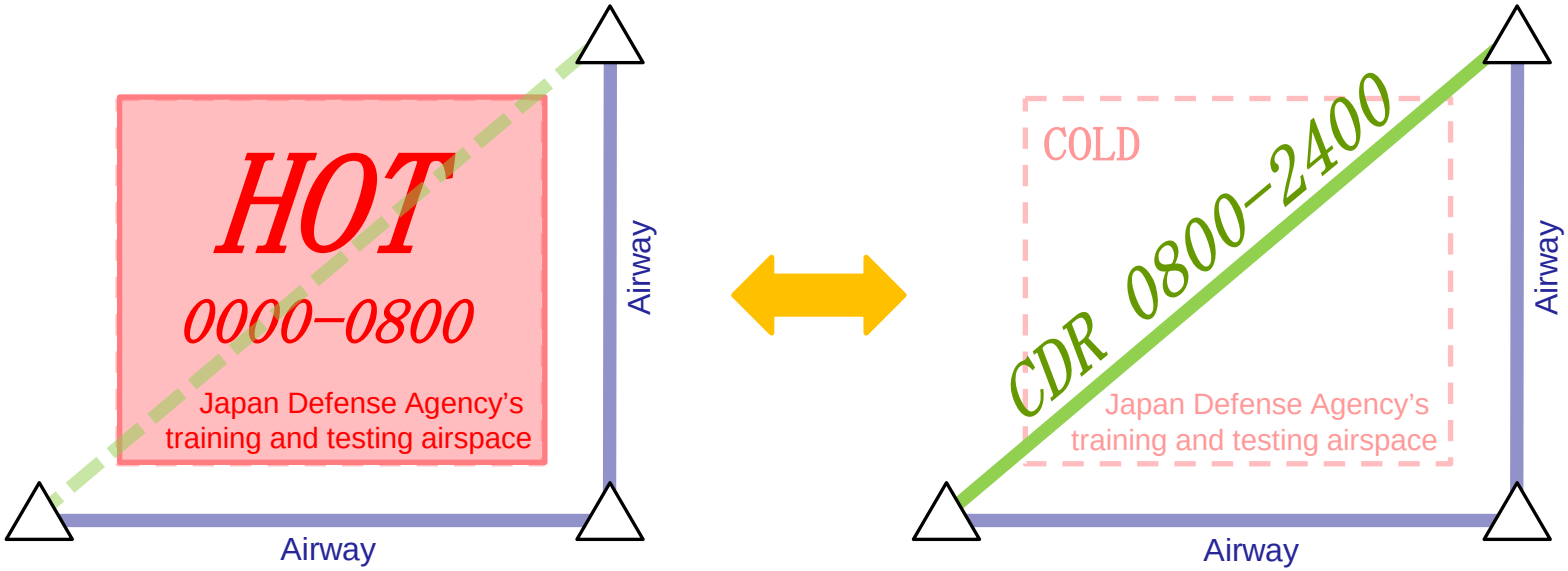
TIME FRAME CORDINATION

ETA	
✈ 0700	AAA001
✈ 0703	BBB001
✈ 0706	CCC001
✈ 0709	AAA002
✈ 0712	AAA003
✈ 0715	BBB002
✈ 0718	BBB003

CDM Tools 3

CDR(Conditional Route) Operation

Reduction of Fright Planed Distance



Jan. 2013 Japan

CDR1 (1 route) : Notified by AIP

CDR2 (12 routes) : Notified by NOTAM

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CDM Tools 4

OP（Operations Plan ）

Hold the regular (twice a day) CDM conference to share the situation for 6 hours.

＊Using the internet TV conference system

CDM conference

＜ATMC＞
- Operational situation of airspace and airport
- Correspondence form the view of ATFM

＜ATMetC＞
Weather condition and explanation of forecast

- Providing information from each parts
- Investigating and coordinating about the correspondence

＜ATC Facilities＞
- Supplementing the situation of air traffic control operation
- Supplementing a effective matter for air traffic controlling

＜Airline operators＞
- Judging the weather
- Operational situation and plan

Sharing information of the actual condition・Promoting cooperative action

Issuing OP

＊Example of OP

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***ATM OPERATIONS PLAN***

VALID 2010/0201/2345 THRU 0545

- CAPACITY(GAPA) & CONSTRAINTS -
RJTT : 0200-0300  GAPA=14  FLTCK
T03  : 0030-////  GAPA=07  DEV (GB)

- INITIATIVE -
RJTT : 2330-0130  EDCT
T12  : 2300-0005  3MINIT DEP FM RJAA/RJTT
<POSSIBLE>
RJAA : 0330-0500  15NM IN-TRAIL @ ALL APPROACH FIX

- OTHER -
NEXT CDM CONFERENCE 2010/0202/0620
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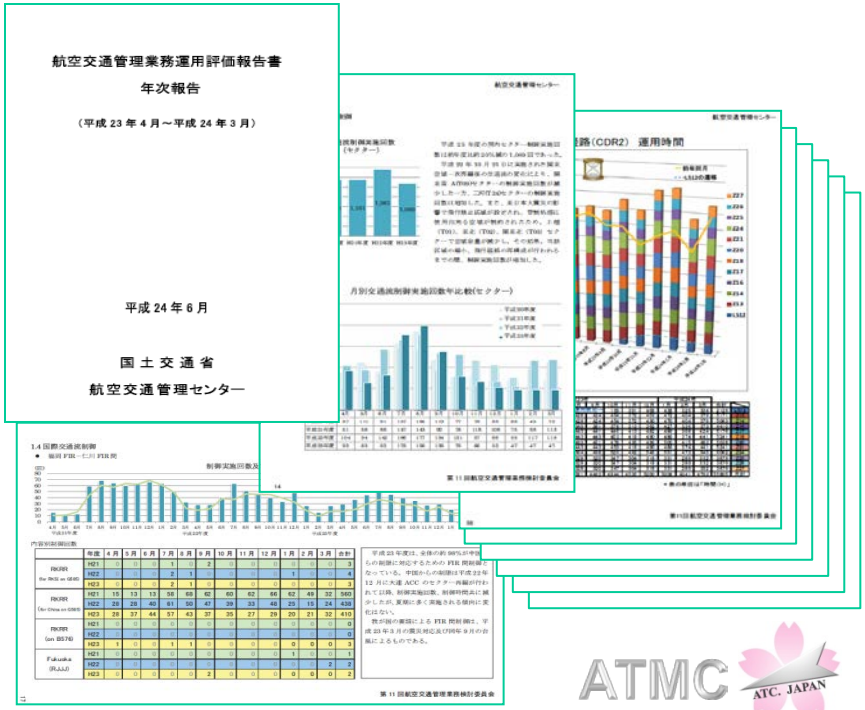
CDM Conference
- Participants
ATMetC, ACCs, Terminals, AOs(ANA,DAL,JAL), ATMC
- Regular Conference
(Twice a day)
- Extra Conference
(As necessary)

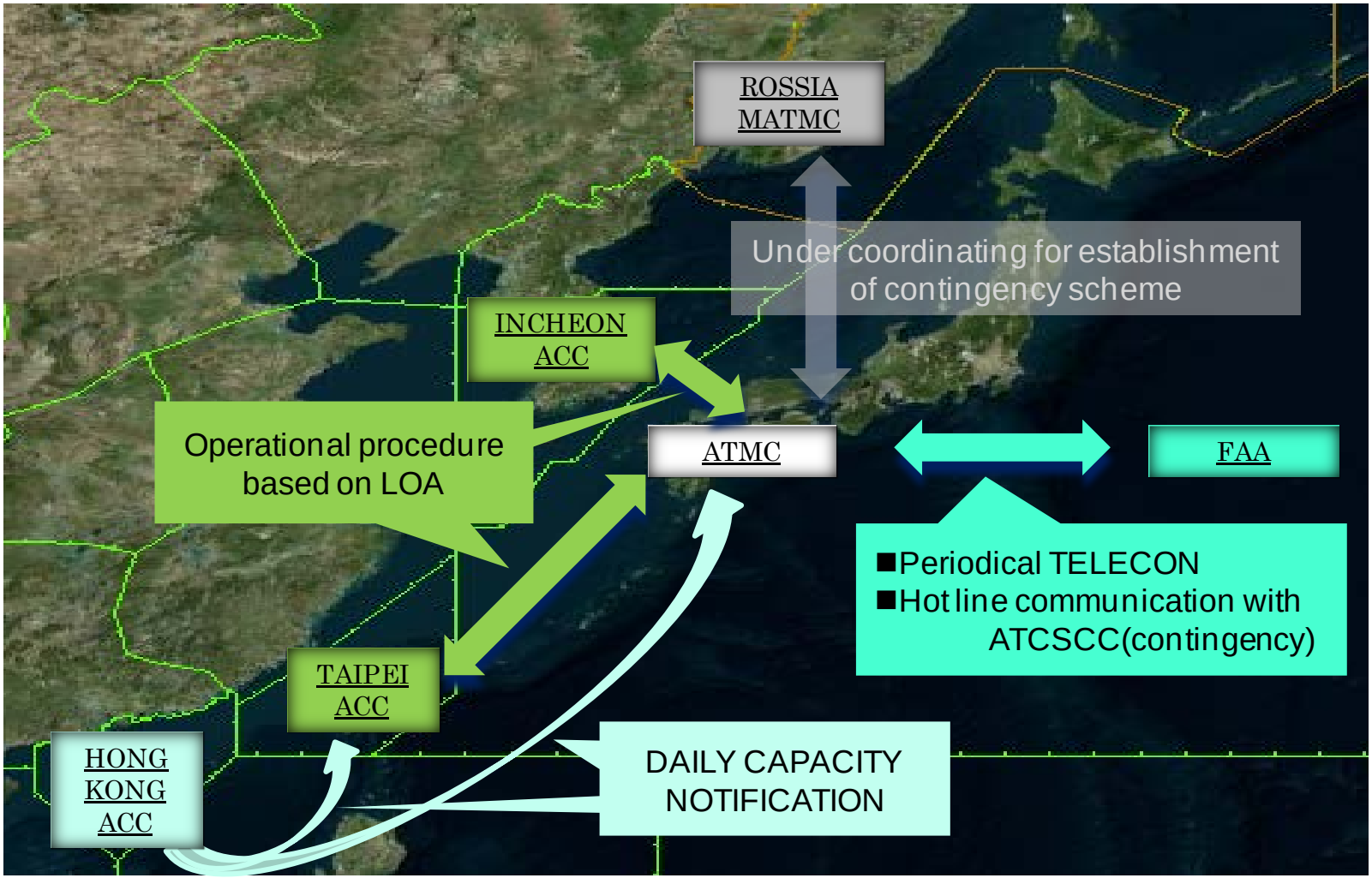
ATMC ATC. JAPAN

ATM Service Conference

- MEMBER: JCAB, JMA, MOD/JASDF,CDM AIRLINEs
- TWICE A YEAR
- ATM SERVICE OPERATIONAL ANNUAL REPORT
- ANALYSIS, EVALUATION AND DEVELOPMENT FOR ATM OPERATION



Sharing Information with Neighboring Facility



THANK YOU