



CIVIL AVIATION BUREAU of JAPAN



Collaborative Decision Making at JCAB ATMC

First Meeting of Asia/Pacific ATFM Steering Group
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Why CDM?

principles to CDM:

- ✓ The facilitation of better information exchange among ATM stakeholders will lead to better decision making.
- ✓ Tools and Procedures need to be in place to enable among the various ATM stakeholders to more easily respond to changing conditions.



CDM at JCAB ATMC

- is the framework which enables ATM stakeholders to make better decisions based on sharing the same information in order to derive successful achievement. ATMC builds up and develops CDM as effective operational procedures to manage airspace resources.



Air Traffic Management Officers

- Air Traffic Flow Management
- Airspace Management
- Oceanic ATM

Air Traffic Information Specialists

- Spot Management and Planning
- The Engineering Specialists for Air Traffic Management
- CNS Operation Coordination

Air Traffic Meteorological Center Specialist

The Air Self-Defense Force Liaison

Information Sharing

CDM

Other ATM Facilities



Area Control Centers



Terminal ATC Facilities

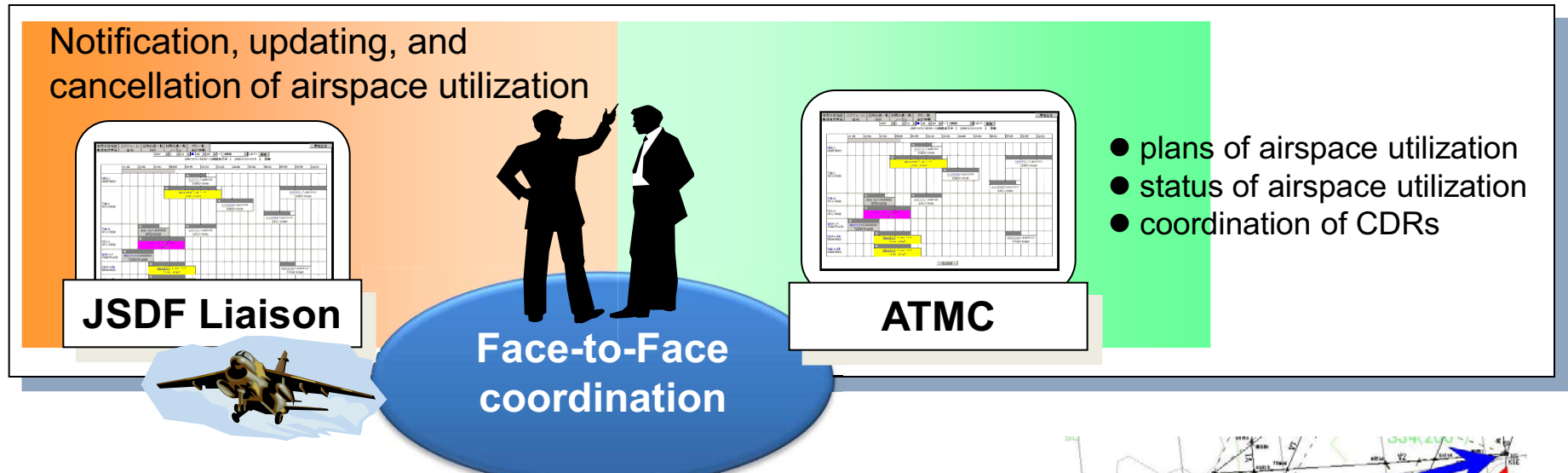


Aircraft Operators

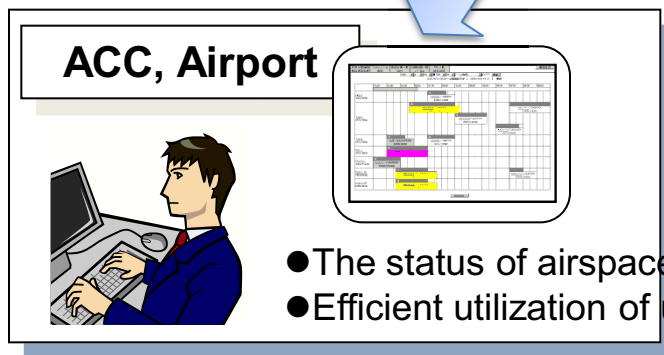


Cooperation with Japan Self-Defense Force

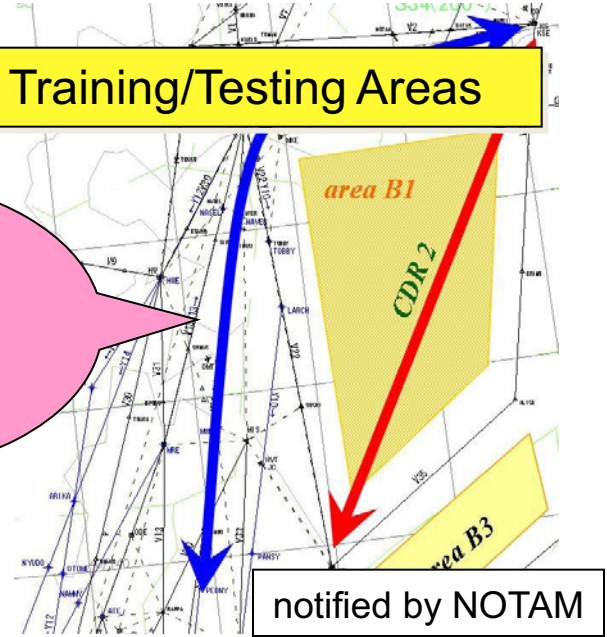
Civil Aviation Bureau of Japan



Coordination of the Self-Defense Force's High Altitude Training/Testing Areas



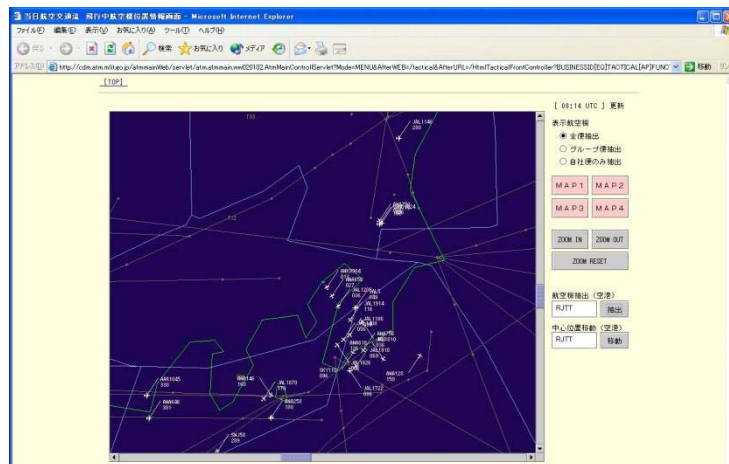
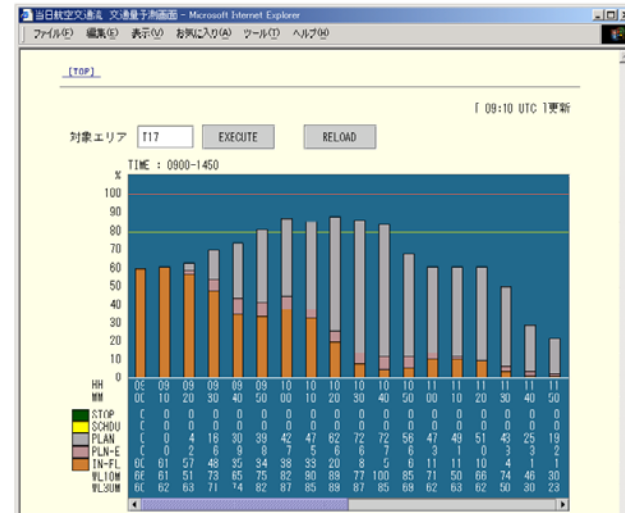
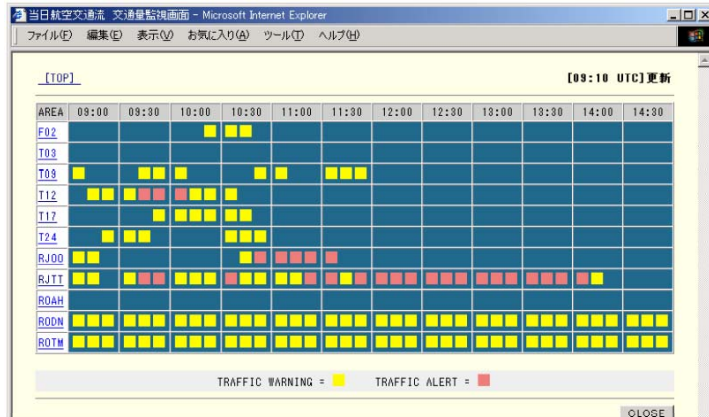
Having released area B1, we'll set CDR2.
Thanks man!



ATW (Air Traffic Management Workstation)

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ATW is a graphical display related to the status of ATM operation in Fukuoka FIR, which provides CDM information, and makes CDM partners to assist their decision making on operations and their coordination on rerouting and arrival time frame.



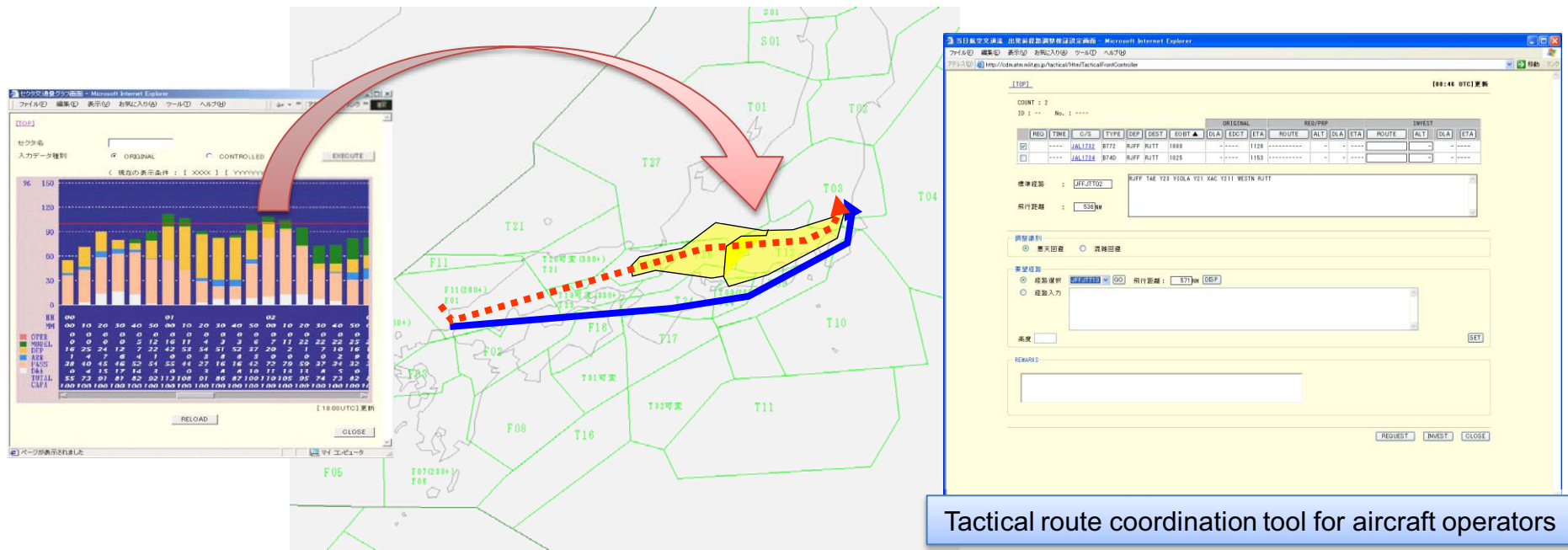
Flight plan list

STS	C/S	DEF	DEST	EOBT	UEDT	TK	ETD	SDL	ETDP	DLA	EDCT	OEDT	初級対象空域
P-E	ANA808	RJNT	RJTT	0806	0826	10	0815	0	088	76	1033	----	RJTT
P-E	ANA78	RJCK	RJTT	0810	0830	8	0815	0	045	80	1045	----	RJTT
P-E	JL1110	RJEC	RJTT	0810	0830	7	0817	0	080	78	1030	----	RJTT
P-E	JAL1728	RJFF	RJTT	0815	0835	5	0820	0	004	74	1034	----	RJTT
P-E	JL1734	RJFB	RJTT	0820	0840	3	0824	0	045	76	1045	----	RJTT
P-E	JL1410	RJOT	RJTT	0820	0840	4	0824	0	047	89	1047	----	RJTT
P-E	JL1524	RJOD	RJTT	0820	0840	11	0833	0	059	86	1059	----	RJTT
P-E	ANA24	RJCC	RJTT	0830	0850	3	0833	0	040	81	1040	----	RJTT
P-E	ANA84	RJOD	RJTT	0830	0850	5	0835	0	085	80	0935	----	RJTT
P-E	ANA78	RJCK	RJTT	0835	110848	11	0848	0	015	27	1015	----	RJTT

Route Coordination

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- ✓ Strategic - a few months before operation
 - standard routes for major city pairs to ensure safe, orderly and efficient traffic flow
 - collaborative rerouting to specified flights for specified period to avoid expected saturation of sector
- ✓ Pre-tactical - a day before operation
 - collaborative rerouting based on schedule to avoid expected saturation of sector
- ✓ Tactical - day of operation
 - collaborative rerouting based on flight plan to avoid congested sector or adverse weather



Tactical route coordination tool for aircraft operators

Time Frame Coordination

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Substitution

ETA
 A-air01 --- 0800
 B-air02 --- 0802
 C-air03 --- 0804
 B-air04 --- 0806
 B-air05 --- 0808
 C-air06 --- 0810
 A-air07 --- 0812
 C-air08 --- 0814

ETA
 A-air01 --- 0800
 B-air02 --- 0802
C-air06 --- 0804
 B-air04 --- 0806
 B-air05 --- 0808
C-air03 --- 0810
 A-air07 --- 0812
 C-air08 --- 0814

Compression

ETA
 A-air01 --- 0800
 B-air02 --- 0802
 C-air03 --- 0804
 B-air04 --- 0806
 B-air05 --- 0808
 C-air06 --- 0810
 A-air07 --- 0812
 C-air08 --- 0814

ETA
 A-air01 --- **CNL**
 B-air02 --- **0800**
 C-air03 --- **0802**
 B-air04 --- **0804**
 B-air05 --- **0806**
 C-air06 --- **0808**
 A-air07 --- **0810**
 C-air08 --- **0812**

Arrival slot swapping at destination airport is available for aircraft operators through ATW under the condition of flow control for airport.

The screenshot shows a web-based interface for flight information. The main table displays flight details for various airlines and routes. The columns include: STS (Flight Status), C/S (Carrier/Service), TYPE (Aircraft Type), DEP (Departure), EORT (Original Arrival), ETD (Estimated Time of Departure), STL (Standard Time Limit), ETD (Estimated Time of Arrival), DLA (Delay), NDLA (No Delay), EDCT (Estimated Delay Control Time), EIT (Estimated In-Flight Time), ETA (Estimated Time of Arrival), SPOE (Slot Position), ELOG (Estimated Log), and CHANGE (Action Buttons). The table is sorted by arrival time, and the current time is 10:55 UTC.

STS	C/S	TYPE	DEP	EORT	ETD	STL	ETD	DLA	NDLA	EDCT	EIT	ETA	SPOE	ELOG	CHANGE
P-E	ANA820	A320	RJOH	1050	1057	0	1109	12	-	1100T	1156	1212		41216	PRESS
P-E	SFJ88	A320	RJFR	1030	1040	0	1055	15	-	1055	1158	1214		41218	RELEASE
P-E	ANA670	B74D	RJFU	1025	1036	0	1052	16	-	1052	1200	1216		41220	RESET
P-E	ANA76	B74D	RJCC	1025	1039	0	1058	19	-	1058T	1201	1218		41222	
I	JAL8834	B743	RKSS	1030	-----	-----	-----	-----	-----	-----	1202	1218		61224	
P-E	ANA40	B773	RJOO	1120	1132	0	1134	2	-	1134	1204	1220		61226	
P-E	JAL386	MD81	RJFR	1040	1050	0	1110	20	-	1110	1212	1228		41232	
P-E	SMJ62	B734	RJFM	1030	1038	0	1103	25	-	1103	1210	1226		41230	
P-E	JAL1170	B773	RJOH	1045	1055	0	1115	20	-	1115	1211	1229		51234	
P-E	JAL1282	B763	RJMK	1130	1140	0	1140	0	-	1140	1216	1232		61238	
P-E	SKY116	B738	RJBE	1100	1108	0	1130	22	-	1130	1216	1232		41236	
P-E	JAL1878	B773	RJFK	1040	1049	0	1111	22	-	1111	1218	1234		61240	
JAL												1222			
P-E	ANA270	B772	RJFF	1050	1055	0	1116	21	-	1116	1220	1236		61242	
P-E	AD038	B734	RJEC	1030	1037	0	1057	20	-	1057	1220	1238		61244	
P-E	SMJ42	B734	RJFU	1040	1051	0	1109	18	-	1109	1224	1240		61246	
I-E	JAL4684	B772	ROAH	0945	0958	-----	-----	23	-	1021	1224	1242		61248	
P-E	JAL342	A306	RJFF	1055	1100	0	1120	20	-	1120	1226	1242		61250	
P-E	SKY226	B738	RJCC	1045	1058	0	1119	21	-	1119	1226	1244		61252	
P-E	SKY024	B763	RJFF	1100	1105	0	1124	19	-	1124	1230	1246		61254	

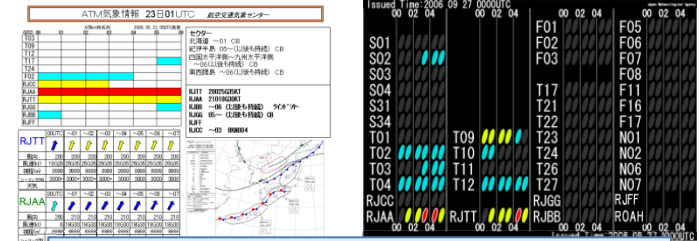
CDM conference

Civil Aviation Bureau of Japan

Web conference through ATW take place twice a day on regular basis or ad-hoc convocation with members involved to share information regarding ATM operation such as weather, ATC operation, flow control and flight operation, and to have a common situational awareness.



- Members
ATMC, AOC (ANA, JAL),
ATMetC, ATC facilities (TMC)
- twice a day, ad-hoc



example of sharing information
- weather products specialized for ATM



ATM OPERATIONS PLAN

VALID 2009/0701/2345 THRU 0545

-CAPACITY(CAPA) & CONSTRAINTS-

RJCC : 2100-0300 CAPA=04-06△ LOW VIS

RJTT : 0200-0300 CAPA=10 RWY 34L/16R CLSD (0200-0245 CONST)

0300-//// CAPA=14 FLTCK (ILS RWY22)

S01 : ////-0200 CAPA=96▼ DEV (CB)

T01 : 0130-//// CAPA=92-97 DEV (CB)

-INITIATIVE-

RJCC : 0010-0150 5MINIT DEP FM RJTT

RJTT : 2330-0140 EDCT

T12 : 2300-0005 3MINIT DEP FM RJAA/RJTT

G585 : 0130-UFN 8MINIT @ SAPRA RGDLS OF ALT WB FOR MONGOLIA, RUSSIA, EUROPE <POSSIBLE>

RJAA : 0330-0500 15MIT, 250KT @ MELON, MAMAS

RJTT : 0300-//// EDCT

T24 : 0540-//// EDCT FOR ACFT DEST RJOO VIA OHDAI

-OTHER-

RJAA : 2340-//// 夕イハ-ト対応体制

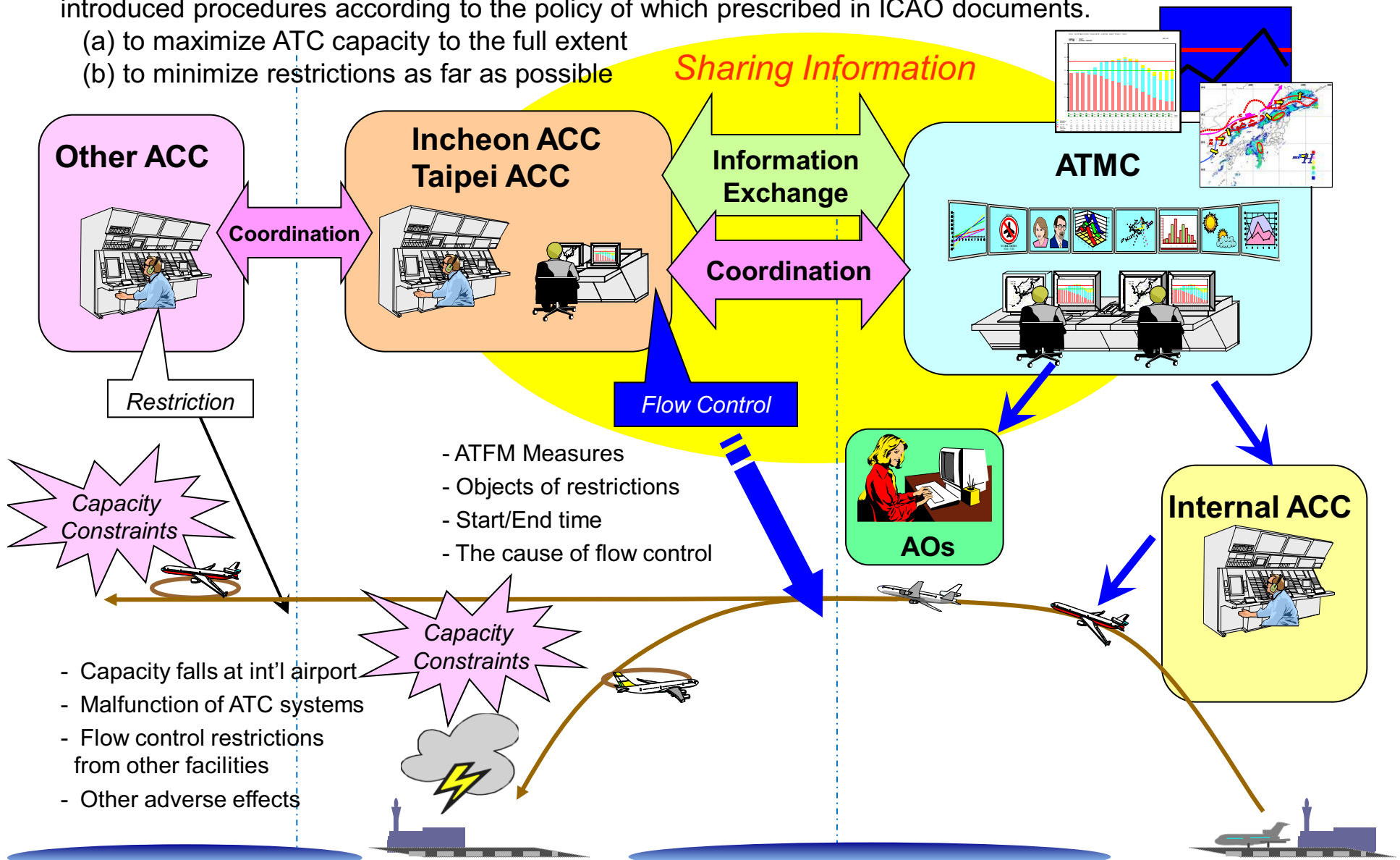
NEXT CDM CONFERENCE 2009/0702/0620

International ATFM

Civil Aviation Bureau of Japan

introduced procedures according to the policy of which prescribed in ICAO documents.

- (a) to maximize ATC capacity to the full extent
- (b) to minimize restrictions as far as possible



Information sharing

● When ATMC or ----- ACC recognizes an event which affects or might affect orderly traffic flow between the FIRs, the facility shall provide the other facility with the information, and both facilities shall keep sharing information while the traffic flow is affected by the event. Events of which information shall be shared mutually are as follows:

(1) Capacity falls at defined international airports, caused by:

- a. runway closure;
- b. severe weather; or
- c. other adverse effects;

(1) Malfunction of ATC systems, such as radar, flight data processing system (FDP), radar data processing system (RDP), or communication systems;

(3) Flow control restrictions at the responsible facility's request on aircraft destined for other FIR; or

(4) Other adverse effects on international traffic flow.

● Information is not necessarily provided with flow control coordination, but would be rather provided at the possible phase of flow control. Information provision should be made timely when the event is predicted and/or has begun/changed/dissolved.

Flow control application and coordination

- Both facilities are able to implement flow control in the events previously cited and besides when:
 - a. excessive airborne holdings arise or are predicted; or
 - b. necessary to ensure the safety of aircraft operations.

- Flow control is implemented by specifying some of the following restrictions at the FIR boundary to the aircraft destined for the affected airport(s) or airspace:
 - a. Minimum longitudinal interval by time or distance at the same altitude;
 - b. Minimum longitudinal interval by time or distance regardless of altitude; or
 - c. The number of aircraft which is acceptable in a specific time frame.

- Flow control coordination shall involve the following items:
 - a. The cause of flow control implementation;
 - b. Flow control restrictions;
 - c. Fixes or airways where restrictions are applied to;
 - d. Objects of restrictions (Objects of restrictions shall be only the aircraft which are destined for the affected airport or airspace.);
 - e. Start / end time (Effective time at paragraph (c)); and
 - f. Expected time of next coordination (if possible).

- Information provision or coordination should be periodically made while the flow control is applied.

- If urgent action is not necessary, flow control shall be requested at least sixty (60) minutes prior to the time when the restriction becomes effective to ensure that the accepting facility makes necessary coordination with other relative ATC facilities.

Air Traffic Flow Management

Civil Aviation Bureau of Japan

Promoting safe and orderly flow of air traffic

Strategic Planning

- Demand (schedule)
- Route Coordination

Pre-Tactical Planning

- Demand (schedule)
- Airspace Utilization
- Route Coordination

Tactical Coordination

- Capacity and Demand (FPL)
- Airspace Utilization
- Weather information
- Flow Control
- Re-routing

MONITOR

ANALYSE

EVALUATE

IMPLEMENT



Ground Delay Program

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- Expected Departure Clearance Time (EDCT) is calculated by ATM system, and distribute as a message to aircraft operators.

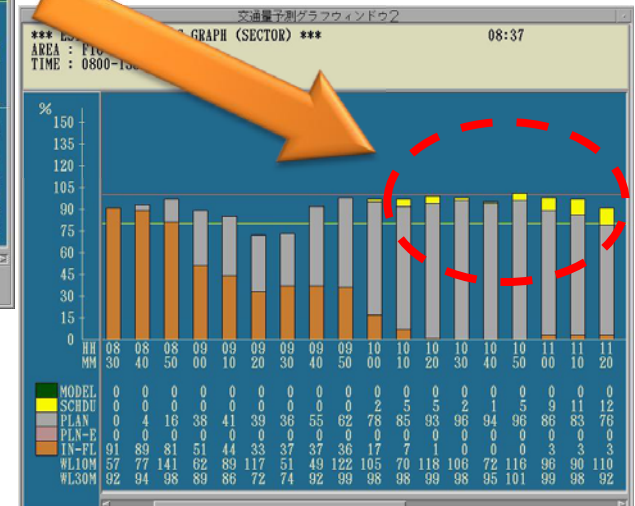
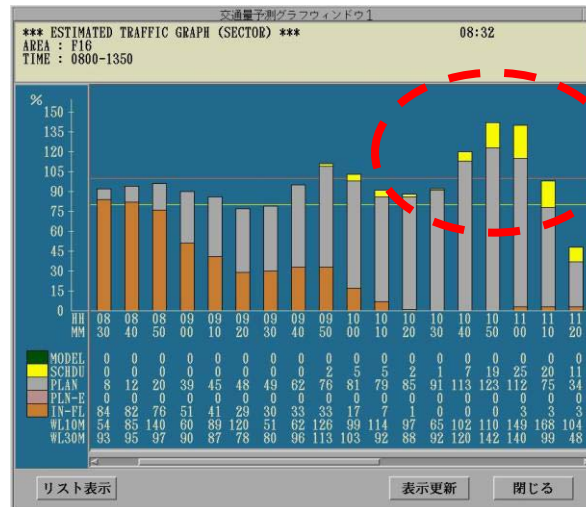
Calculation of available entering time into sector and/or available landing time of airports



Allocation of necessary ground delay to aircraft



$$EDCT = EOBT + \text{taxiing time} + \text{necessary ground delay}$$

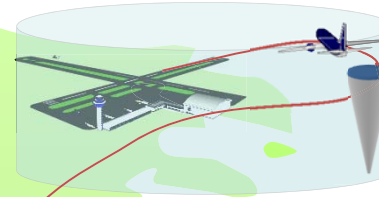


Near-Term Plan

Civil Aviation Bureau of Japan

Time Based Flow Management for Congested Airports will be available in 2011. TBFM will make a contribution to the harmonization of domestic and international traffic flow, and to the efficiency enhancement in aircraft operations.

TOKYO INT'L A/P



speed control, altitude change, radar vectoring to comply assigned CFDT

Ground delay (EDCT) will be assigned to departures from domestic airport

Image of notification to Air traffic controller

<CFDT LIST> XMC
JAL1234 0250 +01
ANA1234 0253 +02

JAL1234
• 370A
G54 JTT
XMC +01

* CFDT : Calculated Fix Departure Time