



## Outline of Japan Schedule Coordination (JSC)



To alleviate the congestion at busy airports !



Japan Schedule Coordination (JSC)  
Japan Aeronautic Association (JAA)

# Service Outline of Japan Schedule Coordination (JSC)

## 1. Service Outline

Increasing demand for air transport services implies that all facilities at an airport will remain under constant pressure to expand. The problems associated with expansion are complicated by the fact that the expansion needs a consensus from local communities, requires a large investment and takes a long time for construction. This causes demand peaks in certain seasons of the year, on certain days of a week and at certain hours of a day.

Without an expansion in capacity or resolution of the problem by other means, an airport becomes congested at certain times. This occurs when the demand for one or more of its limiting components exceeds capacity in a certain time period. To resolve the situation, governments, airport and Air Traffic Control (ATC) authorities and the airlines must continuously find the means to develop the capacity of each of their own systems in order to satisfy public demand.

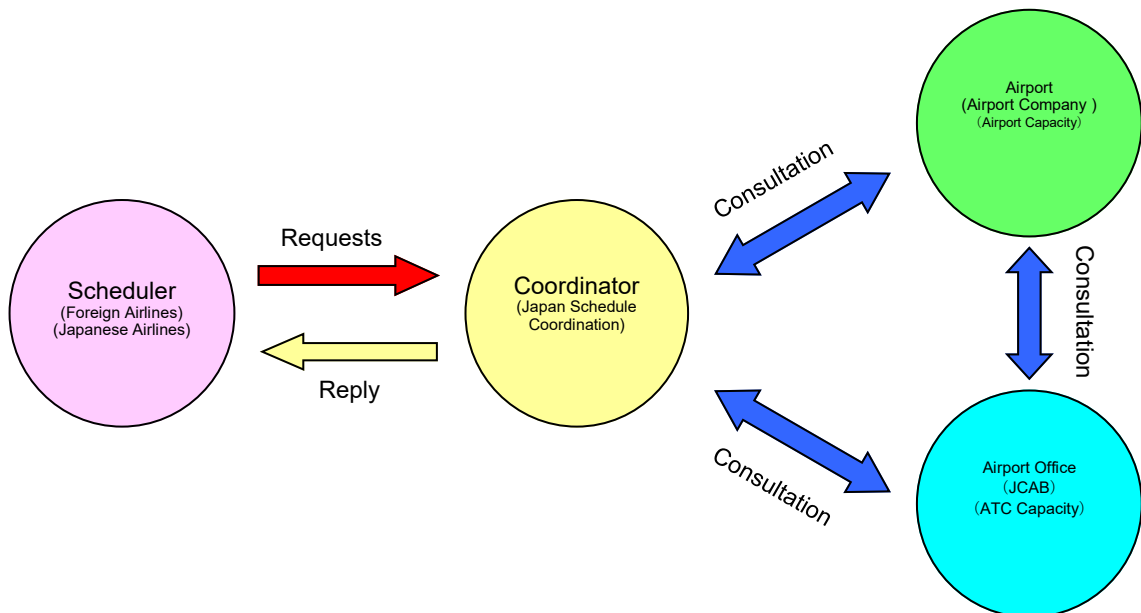
IATA has developed and maintained various global guidelines that airlines schedulers, coordinators and facilitators have to follow for slot allocation and schedule facilitation along with WWACG and ACI. The coordinators and facilitators should act in accordance with global guidelines as well as local guidelines set for specific airport to balance the demands of airlines and available capacity of airports to alleviate the airport congestions.

## 2. Organizational Relationship

The relationship between airlines' scheduler, coordinator, facilitators, airport company and airport office (JCAB) can be described in the following diagram.

Airlines' schedules data such as flight number, operation days, arrival time, departure time and aircraft type, etc. are requested to schedule coordinators or facilitators by internet network in a standardized format. When all those data are accumulated, it becomes obvious that the airlines' demands create several peaks on certain days of a week or certain hours of a day at congested airport.

The coordinators and facilitators adjust those requests within airport capacity limit as well as Air Traffic Control capacity limit, trying to accommodate timings as close as possible to their requests according to both global guidelines and local ones in a neutral, non-discriminatory and transparent manner.





Narita International Airport



Kansai International Airport

## Establishment of Japan Schedule Coordination (JSC)

### 1. Background

Japan Aeronautic Association (JAA) established the schedule coordination office for Narita International Airport (NRT) and Kansai International Airport (KIX) in 2008. In addition, the schedule coordination service for Tokyo International Airport (Haneda) (HND) was added to this office in 2010. In adding Haneda's service, the name of this office was changed to Japan Schedule Coordination (JSC). As the schedule coordination service for New Chitose Airport (CTS) was added in 2012 and for Fukuoka Airport (FUK) in 2015, JSC is now dealing with five busy airports in Japan.

Schedule coordination services have now become a part of JAA's activities, thus ensuring that the schedule coordination process continues to be conducted in a neutral, non-discriminatory and transparent manner. Under JAA's management, JSC follows a fair and open mechanism in line with Worldwide Airport Slot Guidelines (WASG) published jointly by Airports Council International (ACI), the International Air Transport Association (IATA) and the Worldwide Airport Coordinators Group (WWACG) .

### 2. Japan Aeronautic Association (JAA)

JAA is a national foundation originally established for the purpose of promoting the development of aeronautics and astronautics in Japan and internationally. The association is financially independent, gaining most of its income from operating its own building, the Aviation Building ("Koku Kaikan"). In this context, JAA is therefore self-supporting, which allows it more discretion to evaluate aviation issues without prejudice or external influences.

Initially founded in 1913, JAA is now the only nationally recognized organization in this field and is proud of its long and distinguished history in the Japanese aviation world. JAA has three main departments consisting of Administration, Publication and Research, and Aviation Sports Services.

### 3. Future Prospect

For 2020 Tokyo Olympic Games, the capacity of Narita International Airport and Tokyo International Airport (Haneda) was increased dramatically. To support the recovery from COVID-19, as well as to support the national program to attract 40 million international visitors by 2020 and 60 million by 2030, Japan Schedule Coordination (JSC) will continue to provide the coordination services in a neutral, non-discriminatory and transparent manner at not only Metropolitan airports but also regional trunk airports.



Tokyo International Airport (Haneda)



New Chitose Airport



Fukuoka Airport



# Global Standards and Guidelines

## 1. International Air Transport Association (IATA)

IATA is an international trade body, created some 60 years ago by a group of airlines. Today, IATA represents some 300 airlines comprising 83% of scheduled international air transport. The head office of IATA is located in Montreal, Canada and the executive office is located in Geneva, Switzerland. Japan Airlines (JAL), All Nippon Airways (ANA), Nippon Cargo Airlines (NCA) and Japan Transocean Air (JTA) are the members of IATA in Japan.

IATA's aim is to help airlines by simplifying processes and increasing passenger convenience while reducing costs and improving efficiency. Moreover, safety is IATA's number one priority, and IATA's goal is to continually improve safety standards, notably through IATA's Operational Safety Audit (IOSA). Another main concern is to minimize the impact of air transport on environment.

IATA ensures that people and goods can move around the global airline network as easily as if they were on a single airline in a single country. IATA also seeks to improve understanding of the industry among decision makers and increase awareness of the benefits that aviation brings to national and global economies. While IATA has developed many standards and guidelines for an industry, there exist following guidelines and manuals concerning slot allocation and schedule facilitations.

## 2. Worldwide Airport Slot Guidelines (WASG)

The policy, principles and process that airlines schedulers, coordinators and facilitators have to follow are defined in this guidelines. The following items are defined in this WASG.

### (1) The definition of airport level

The airports are categorized into three levels according to the degree of congestion.

- **Level 1:** The airports capacities are adequate to meet the demands of users. Such airports are recognized from a schedule clearance viewpoint as **non-coordinated**;

- **Level 2:** The airports where, due to demand, a more formal level of co-operation and schedule adjustment is required to avoid exceeding scheduling parameters. These airports are referred to as **schedules facilitated**;

- **Level 3:** The airport demand exceeds capacity during the relevant period and it is impossible to resolve the serious problems in the short term. In this scenario, formal procedures have been implemented at the airport to allocate slots. Airports with such high levels of congestion are referred to as **coordinated**.

### (2) The policy, principles and process

The policy, principles and process that include the role of airlines, airports, coordinators and facilitators, the priorities of schedule facilitation, slot allocation, and 'Use It or Lose It' rule, etc. are defined in this WASG.

## 3. Standard Schedules Information Manual (SSIM)

The schedule coordination services are conducted among airlines schedulers, coordinators and facilitators by exchanging the flight schedule data through the internet communication network. Therefore, the unification of message type, message format, aircraft code, airline code and airport code is necessary to exchange the message correctly and smoothly. The following items are defined in this SSIM.

### (1) Information Required for Standard Schedules

### (2) Standard Schedules Message Procedure

### (3) Airport Coordination/Schedule Movement Procedures

### (4) Presentation and Transfer of a Schedule Data Set



## Outline of Airports Concerned

There are five airports that JSC deals with for schedule facilitation and slot allocation. Narita International Airport (NRT), Tokyo International Airport (HND), Fukuoka Airport (FUK) and Kansai International Airport (KIX) are Level 3 airport. New Chitose Airport (CTS) is Level 2 airport. The Level 3 designation of KIX is from NW21.

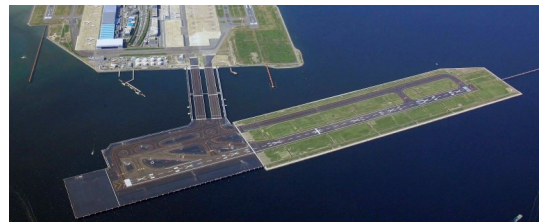
### **1. Narita International Airport (NRT)**

Take-offs and landings from 24:00 to 6:00 at NRT are prohibited to alleviate noise problems. In addition, the number of take-offs and landings per week is limited to 6,500. Further, the number of take-offs and landings at every 30 minutes are limited because of ATC capacity. There exist complicated constraints for both A+B Runways.



### **2. Tokyo International Airport (HND)**

HND is 24 hours operational. However, there is a severe capacity limitations for international flights since it is full with the domestic flights during day time. International flights are limited to 266/day during day time and 90/day during night time. In addition, the flights for 5, 10, 15, 30 and 60 minute is designated for ATC capacity.



### **3. Kansai International Airport (KIX)**

There is no restriction on the number of take-offs and landings per day. In addition, KIX became completely 24 hours operational after the opening of second runway. The addition of parking stands for cargo solved the cargo congestion. The second terminal exclusive for LCC was constructed in 2012 and expanded in 2017 with more demand of LCCs.



### **4. New Chitose Airport (CTS)**

Though located inland, CTS is 24 hour operational. There is no restriction on the number of take-offs and landings per day, but the number of movements is limited to 30 from 22:00 to 6:55 for environmental protection. New international terminal was inaugurated in 2010 and expanded in 2019 to cope with the sharp increase of international passengers.



### **5. Fukuoka Airport (FUK)**

Located in residential area, the aircraft operation from 22:00 to 6:55 is restricted. Since the airport capacity is reached to saturated level, the construction of second runway is in progress to increase the runway capacity.



# Airport Constraints

## 1. Airport Constraints (Local Guidelines)

There are certain constraints at airports to assure the safety and regularity of flights taking into account of following items. The coordinators adjust the airlines' demands to meet those constraints.

- (1) Environmental Constraints for Airport Vicinity
  - Curfew (no aircraft operation for late at night and early morning)
  - Noise restrictions (limit of take-offs and landings)
- (2) Physical Constraints at Airport
  - Runways (runway length, limit of aircraft weight, high-speed taxiway)
  - Parking stands (aircraft types, the number of passenger, cargo and night stay stands)
  - Passenger Terminal (passenger flow limit, check-in counter, baggage handling, CIQ)
- (3) Physical Constraints from Air Traffic Control (ATC)
  - Air Space (en-route, terminal, standard departure/arrival routes, restricted airspace)
  - ATC (ATC capacity for Aerodrome and Terminal, SID, STAR)

## 2. Constraints Over The Coordination System (SCORE)

Following constraints can be set over the current coordination system (SCORE) at JSC.

Factor	Parameter	Contents	Example
Environmental Constraints	Movement Limit	A limit on the total number of movements in a specified period (eg. day, week, season or year) imposed for environmental reasons.	HND: 1,276/day NRT: 6,500/week
	Noise Quota	A limit on the total number of 'noise points' in a specified period (eg. day, week, season or year) imposed for environmental reasons.	26 points/night
	Night Curfew	Certain hours of night where aircraft operations are totally banned at the airport to protect local communities.	NRT: 24:00-05:55
	Reduced Operation	Hours where capacity is limited for environmental reasons, typically during late night and early morning at the airport to protect local communities.	NRT: 22:00-23:55
ATC Constraints	Movements	The maximum number of aircraft movements in certain period, typically expressed as a number of Arrivals, Departures and Total movements.	NRT: 36/30min KIX: 45/hour
	Sliding Scale	The possible combinations of arrival and departure movement limits are specified on a sliding scale.	Dep: Arr: Total: 25 31 50
	Rolling Factor	Fixed constraints calculated at the same time interval of the constraint (eg. 60min limit calculated every 15min).	10/15min with a rolling of 5min
Parking Constraints	Aircraft Type/Stand Size	The size of aircraft which can be parked on a particular stand and/or the number of stands available by each size.	CodeF:A380,B748 CodeE:B747,B777
	Minimum Break Time	The time between the block out time and the block in time on the same parking stand.	KIX: 20min CTS: 30min
Terminal Constraints	Terminal Allocation	Flights are allocated to terminals (eg. T1, T2, GA/BA) and sub-terminals (eg. domestic and international).	T1: International T2: Domestic
	Load Factors (LF)	Assumed LFs used to convert aircraft seats into passengers, typically based on historical data.	Dom=70% Int=80%
	Pax Flow Limits	Maximum passengers per time period. Passengers are calculated from aircraft seats and assumed LFs.	T60=2000PAX T120=3600PAX
	Check-in Counters	Explicit calculation of desks required, based on check-in desk opening profiles (eg. for 100-150 seat aircraft, 2 desks from STD-180min to STD-30min)	2 Desks for 100-150 seat aircraft

# Principles of Coordination

## 1. Coordination Period

The international flight schedules are revised twice a year for summer and winter seasons. The summer scheduling season begins on the date of Daylight Saving Time (DST) introduction in European Union (EU) countries, which currently takes place on the last Sunday in March. The winter scheduling season commences on the date DST ends in EU countries, which currently takes place on the last Sunday in October.

- (1) Summer Schedule - 7 months from the last Sunday in March to the Saturday prior to the last Sunday in October  
(Coordination starts from September and Slot Conference in November in previous year)
- (2) Winter Schedule - 5 months from the last Sunday in October to the Saturday prior to the last Sunday in following March  
(Coordination starts from April and Slot Conference in June)

Airlines try to finalize their scheduled flights for summer and winter scheduling seasons through the IATA Slot Conference (SC) which is held twice a year in June for winter season and in November for the following summer season. In April and September, schedule coordination office becomes very busy with sending out and confirming historical data, gathering the airlines' requests and making initial allocation. This preparatory work is very sensitive while airlines try to maximize the usage of their fleets, the coordinators and facilitators try to balance between the airlines' demands and the available capacity at the airports.

## 2. Principles of Coordination

The schedule coordination services are conducted between airlines schedulers, coordinators and facilitators with the use of coordination system in accordance with global guidelines and local guidelines. The close contacts are always maintained among them during the coordination process and the coordination is conducted on neutral, non-discriminatory and transparent basis. There is a big difference in principle between Level 3 airport and Level 2 airport.

### (1) Level 3 Airport

Coordinators allocate the slots based on the series of slot notion which is a minimum of 5 slots to be applied for historic precedence. The core of the slot allocation principles is the use of historic precedence. This precedence applies only to equivalent, and not to consecutive scheduling periods (e.g. Summer to Summer scheduling periods), and is limited to the equivalent period and days of operation. This principle entitles an airline to claim a series of slots within the same coordination parameter in the next equivalent scheduling period, provided that at least 80% of the slots were operated by the airline as cleared by the coordinator. This 80/20% rule is called 'Use It or Lose It' (U/L) rule.

### (2) Level 2 Airport

There is no notion of the series of slots, historic precedence or U/L rule at Level 2 airport. However, facilitators make schedule adjustment based on the services operated from the previous equivalent season.





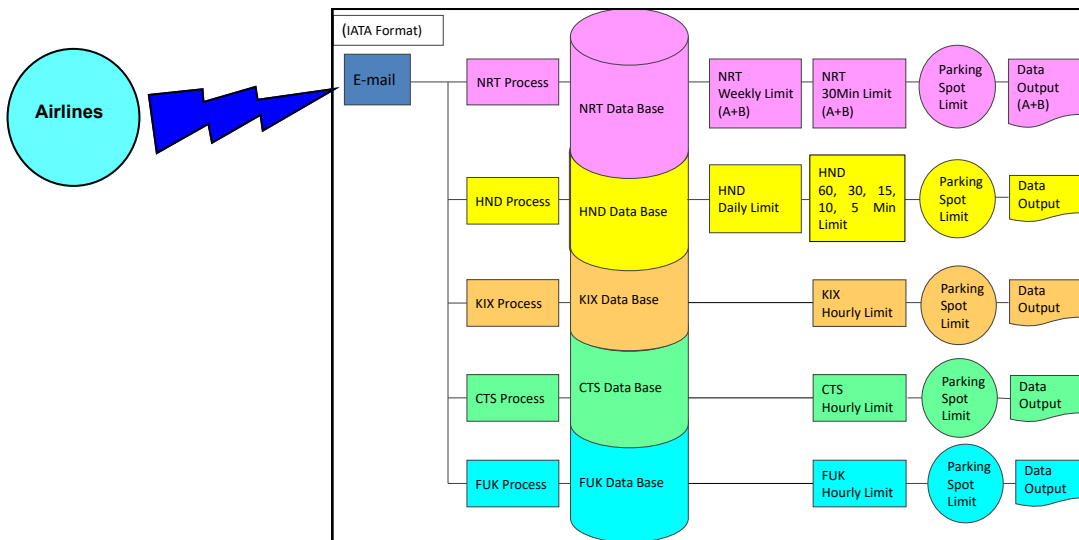
# Slot Coordination and Reporting (SCORE) System

## 1. Slot Coordination and Reporting (SCORE) System

The Japan Schedule Coordination (JSC) utilizes the Slot Coordination and Reporting (SCORE) System which was developed by Prolog Development Center (PDC) in Denmark. The SCORE system is utilized over 46 countries with 450 airports worldwide and now it is a de facto standard.

## 2. Outline of SCORE System

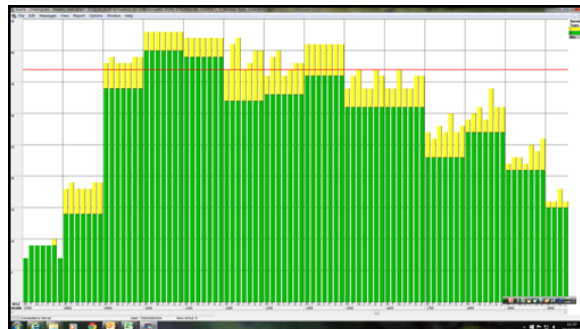
The software module of SCORE system is shown below. Japanese and foreign airlines submit their requests in a standard format (SCR) through internet network to SCORE system. SCORE system automatically receives the requests and store them in each airport database. Coordinators try to accommodate the requests considering the constraints set for each airport.



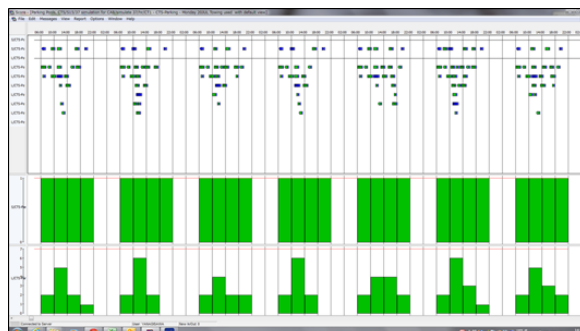
## 3. Graphic Presentation of SCORE System

SCORE system provides coordinators with many graphic presentation in allocating the slots. Following is the example of graphic presentation of slot chart and spot assign chart at each hour.

(slot chart at each hour)



(spot assign chart at each hour)





# IATA Slot Conference (SC)

## 1. IATA Slot Conference (SC)

The schedule coordination services are usually being provided by coordinators and facilitators to airlines schedulers through the internet network in accordance with the WASG and SSIM. IATA organizes the Slot Conference twice a year where airlines schedulers, coordinators and facilitators meet face to face.

At this conference, coordinators and facilitators at about 85 busy airports designated by IATA and about 230 airlines from IATA and non-IATA airlines get together to coordinate their planned seasonal schedules with respect to declared airport capacity limitations.

- (1) June conference (Winter Scheduling season),  
November conference (Summer Scheduling season in the following year)
- (2) Conference duration is 3 days (Winter), and 4 days (Summer)
- (3) Conference place is selected by IATA considering the geographical balance

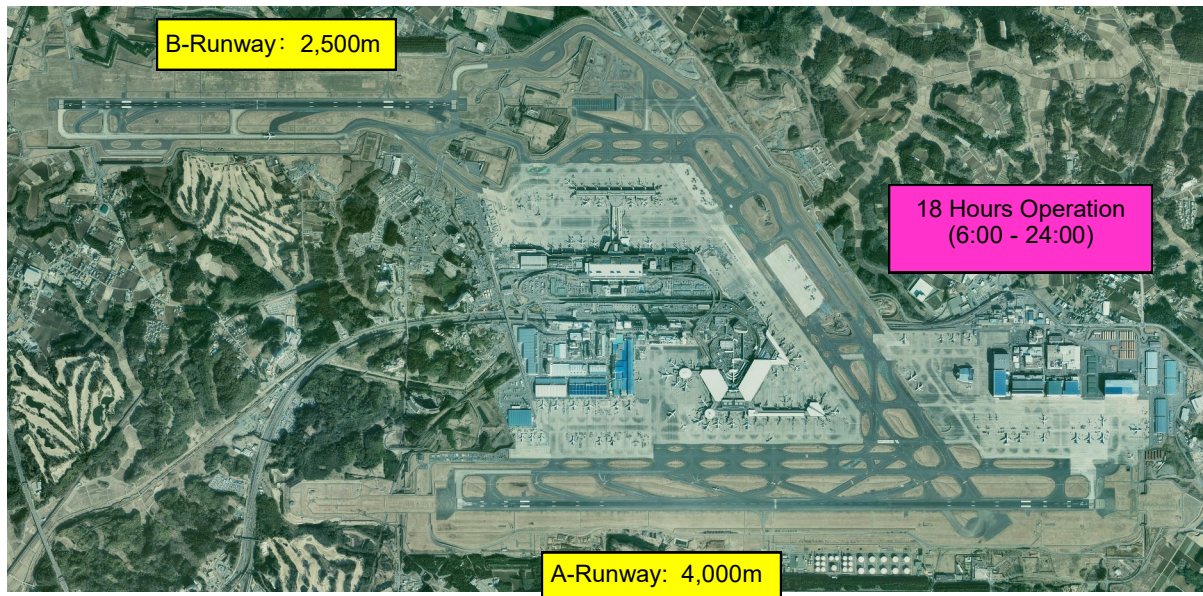
## 2. Outline of Conference

- (1) Individual interview between schedulers and coordinators (15 minutes per airline)
- (2) Explanation of reasons why airlines requests are not met, or information exchange for airport expansion programs
- (3) Various committees or working groups listed below are in session in parallel with SC
  - Schedules Information Standards Committee (SISC)
  - Worldwide Airport Coordinators Group (WWACG)
  - Asia/Pacific Airport Coordinators Association (APACA)
  - Slot Policy Working Group (SPWG)
  - Worldwide Airport Slot Board (WASB)

## 3. Current and future status of SC

- (1) SC151 (held in November 2022, Melbourne, Australia)
- (2) SC152 (held in June 2023, Dublin, Ireland)
- (3) SC153 (held in November 2023, Dubai, United Arab Emirates)
  - Airlines: 735 people from 255 airlines
  - Coordinators: 276 people from 87 coordination offices
  - Exhibitors: 293 people from 91 organizations
- (4) SC154 (to be held in June 2024, Singapore City, Singapore)





# Constraints at NRT

## 1. Weekly Aircraft Movements

		Weekly
A+B Runways		6,500
Break Down	Scheduled International	-
	Scheduled Domestic	-
	Spare	-

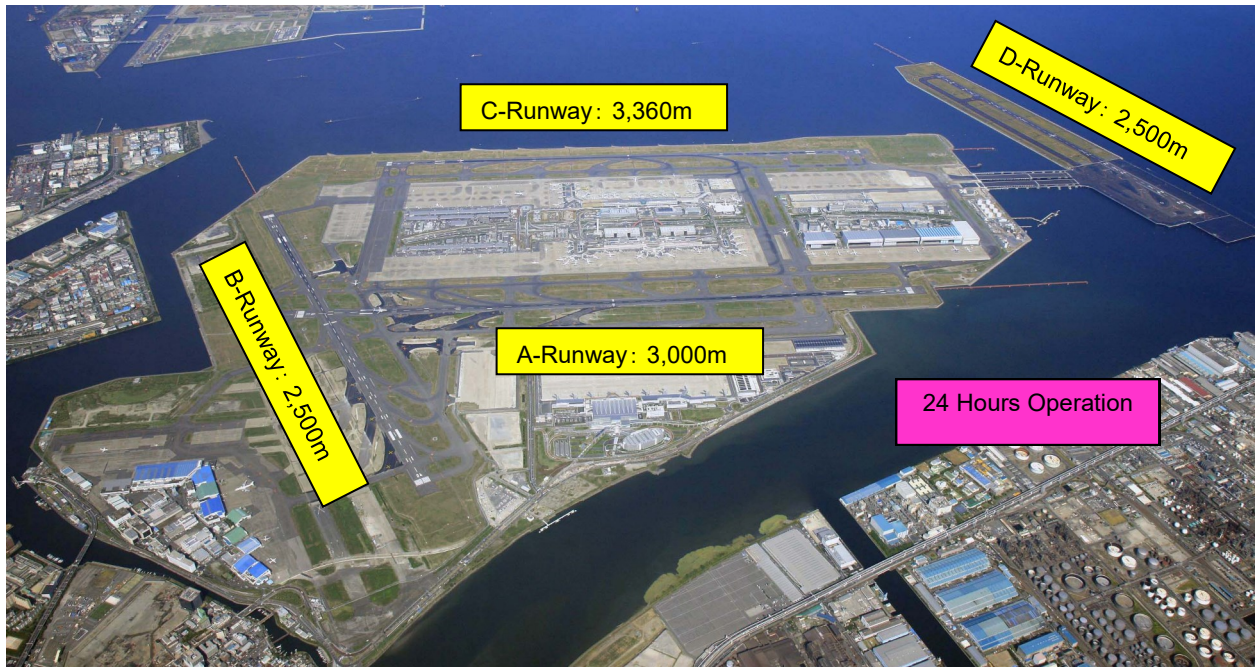
## 2. ATC slot limit (per 30 minutes)

- (1) During 06:00 - 21:55, the maximum of 36 for 30 minutes with the combination of departures and arrivals for A + B Runways
- (2) During 22:00 - 22:55, the maximum of 23 for 30 minutes with the combination of departures and arrivals for A + B Runways
- (3) During 22:00 - 23:55, the maximum of 17 for 30 minutes with the combination of departures and arrivals

## 3. Implementation of Fire Break

- (1) Buffer time zone to absorb flight delays
- (2) Two fire breaks, 12 or 13 o'clock (to absorb the morning delay) and 19, or 19:30-20:25 (to absorb the afternoon delay)
- (3) The maximum number of movements is set 28 (maximum 22 for arrival) per 30 minutes





## Constraints at HND

### 1. Daily Aircraft Movements

		Daily
A + B + C + D Runways		1,276
Break Down	Scheduled International (Day time)	266
	Scheduled International (Night time)	90
	Scheduled Domestic	930

### 2. ATC slot limit (per 60 minutes)

- (1) 06:00-06:55: Departure 43, Arrival 10
- (2) 07:00-07:55: Departure 51, Arrival 30
- (3) 08:00-10:55: Departure 50/ Arrival 38 (With Sliding Scale)
- (4) 12:00-14:55: Departure 42/ Arrival 41 (With Sliding Scale)
- (5) 16:00-17:55: Departure 46/ Arrival 44 (with Sliding Scale)
- (6) 00:00-05:55: Departure max 20/ Arrival max 14 (With Sliding Scale)

### 3. ATC slot limit (per 30 minutes)

- (1) 11:00-11:25: Departure 25/ Arrival 19 (With Sliding Scale)
- (2) 11:30-11:55: Departure 20/ Arrival 21 (With Sliding Scale)
- (3) 15:30-15:55: Departure 23, Arrival 22

### 4. Rolling factor (per 30, 15, 10, 5 minutes)

- (1) 15, 10, 5 minutes constraints exist

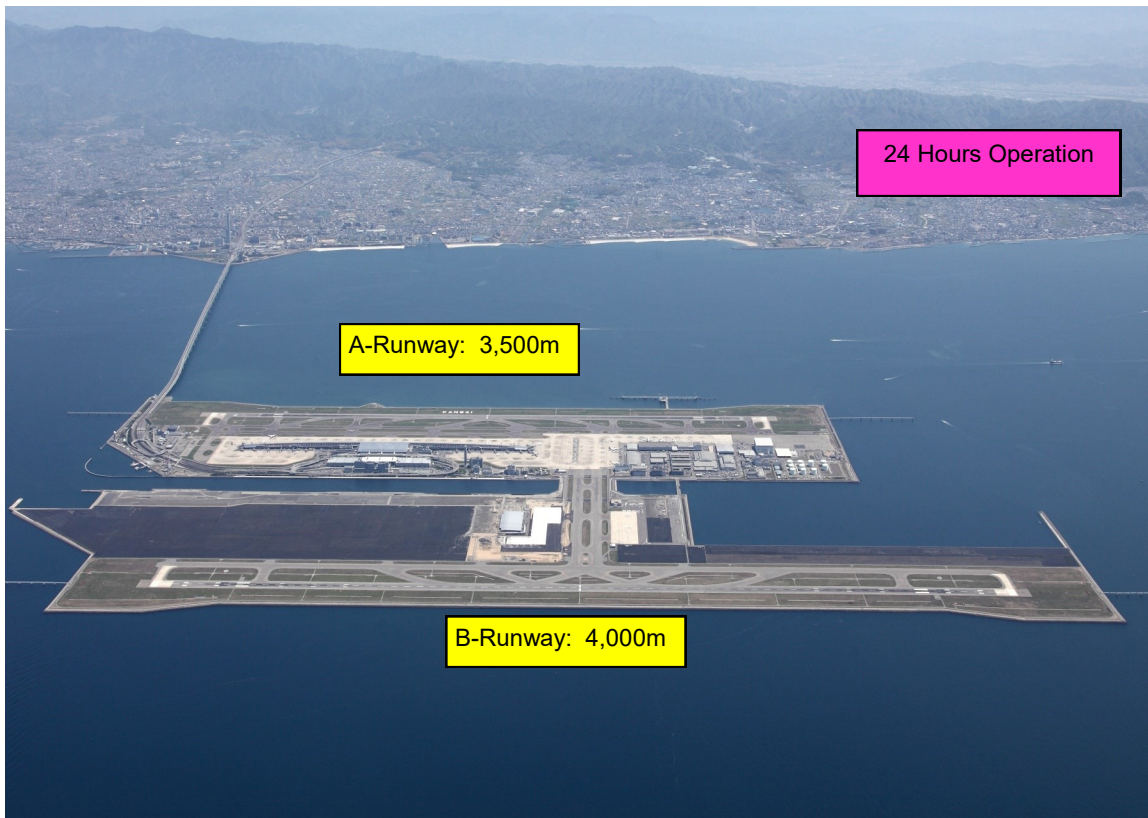
### 5. Implementation of Fire Break

- (1) Buffer time zone to absorb flight delays
- (2) Reduce 8 for departure and arrival per day (06:00-22:55)
- (3) Reduce 15 for departure and arrival per day for governmental operations (06:00-22:55)

### 6. Terminal Flow Capacity

- (1) Departure max 17. Arrival max 21 (60 minutes)





## Constraints at KIX

### 1. Daily Aircraft Movement

- (1) There is no limit on daily take-offs and landings
- (2) There is no restrictions on take-offs and landing due to runway maintenance at night (after the opening of second parallel B-Runway (inaugurated on August 2nd in 2007))

### 2. ATC slot limit (per hour)

- (1) Up to 45 per hour for both runways
- (2) Departure max 32, Arrival max 25

### 3. Implementation of Fire Break

- (1) Buffer time zone to absorb flight delays
- (2) Two fire breaks a day
- (3) Limit the number of take-offs and landings to 36 per hour for both runways





## Constraints at CTS

### 1. Daily Aircraft Movement

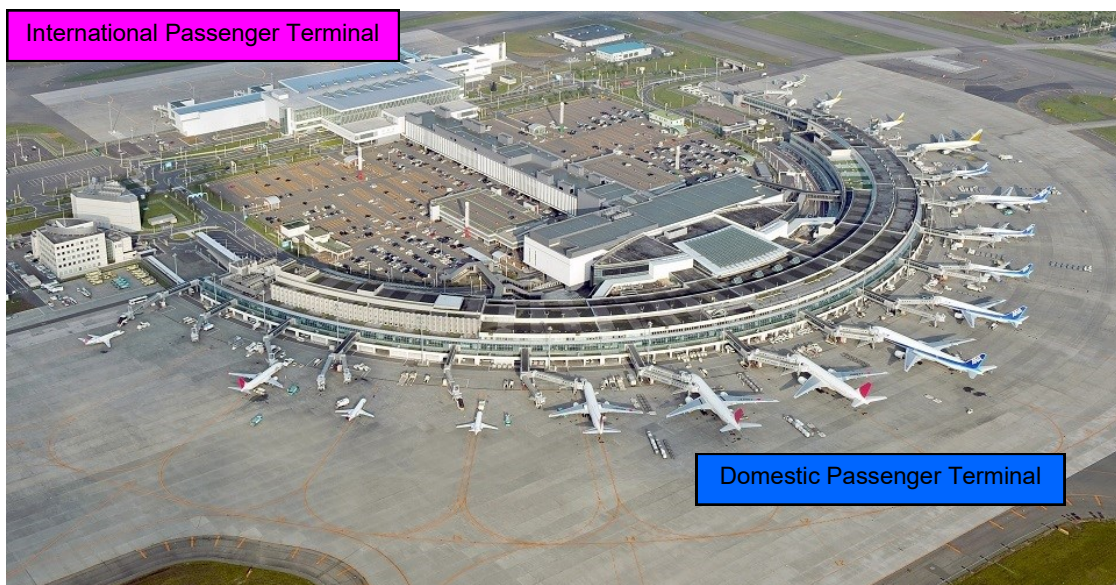
- (1) There is no limit on daily take-offs and landings
- (2) 22:00 - 06:55 maximum of 30 movements is allowed for environmental protection
- (3) 00:00 - 05:55 maximum of 6 movements is allowed for environmental protection

### 2. ATC slot limit (per hour)

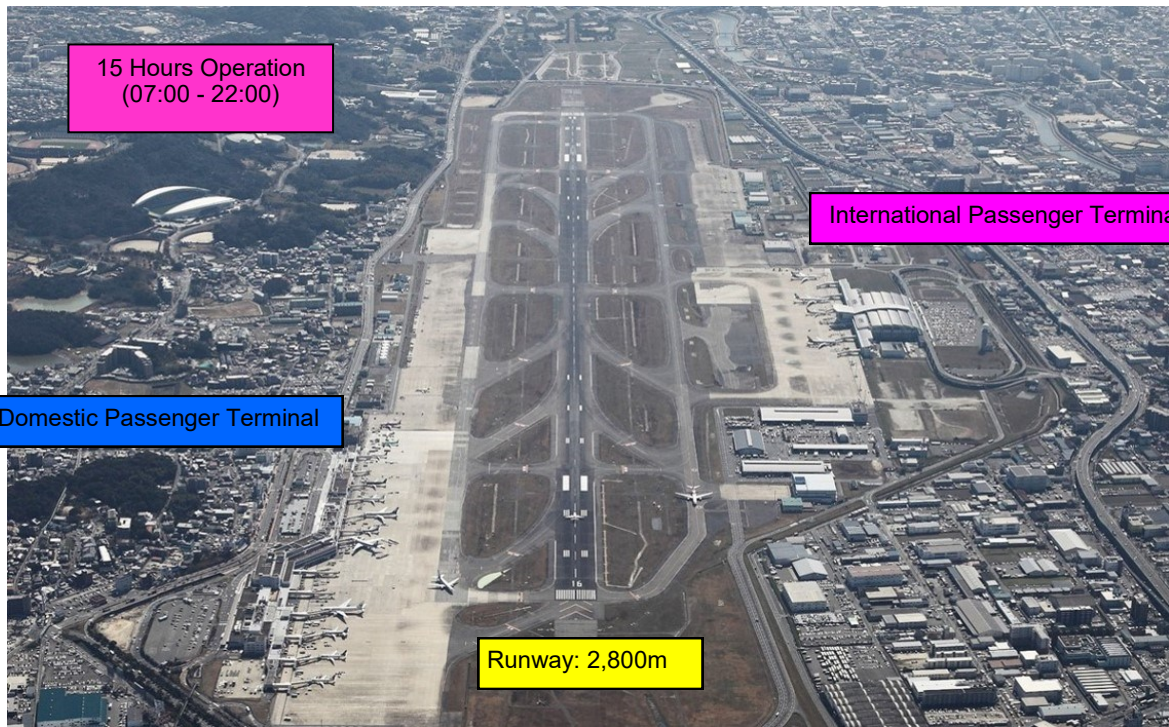
- (1) Up to 50 per hour (07:00 - 21:55)
- (2) Up to 20 per hour (22:00 - 06:55)

### 3. International Parking Stands

- (1) Up to 24 international parking stands







## Constraints at FUK

**1. Daily Aircraft Movement**

- (1) There is no limit on daily take-offs and landings
- (2) 22:00 - 06:55 no aircraft operation is allowed for environmental protection
- (3) 21:30 - 21:55 maximum movement is limited to 10

**2. ATC slot limit**

- (1) Up to 38 per hour
- (2) Maximum of 20 for arrival per hour

**3. Implementation of Fire Break**

- (1) Buffer time zone to absorb flight delays
- (2) Two fire breaks a day
- (3) Limit the number of take-offs and landings to 28 per hour

**4. International Parking Stands**

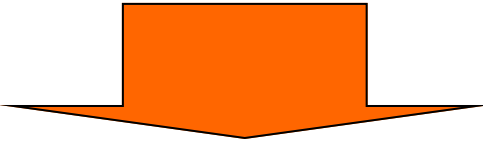
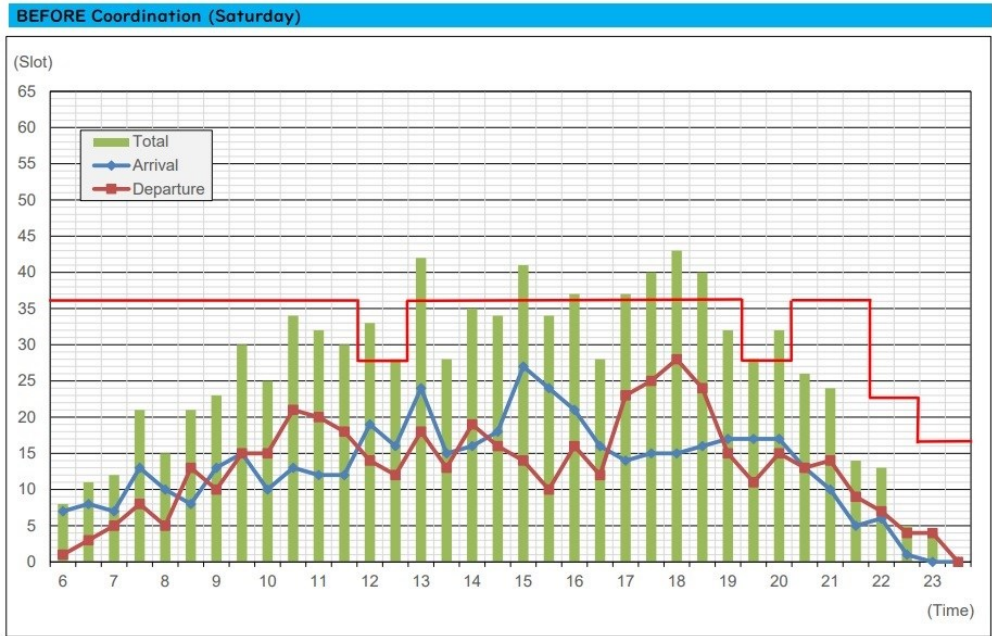
- (1) Up to 14 international parking stands



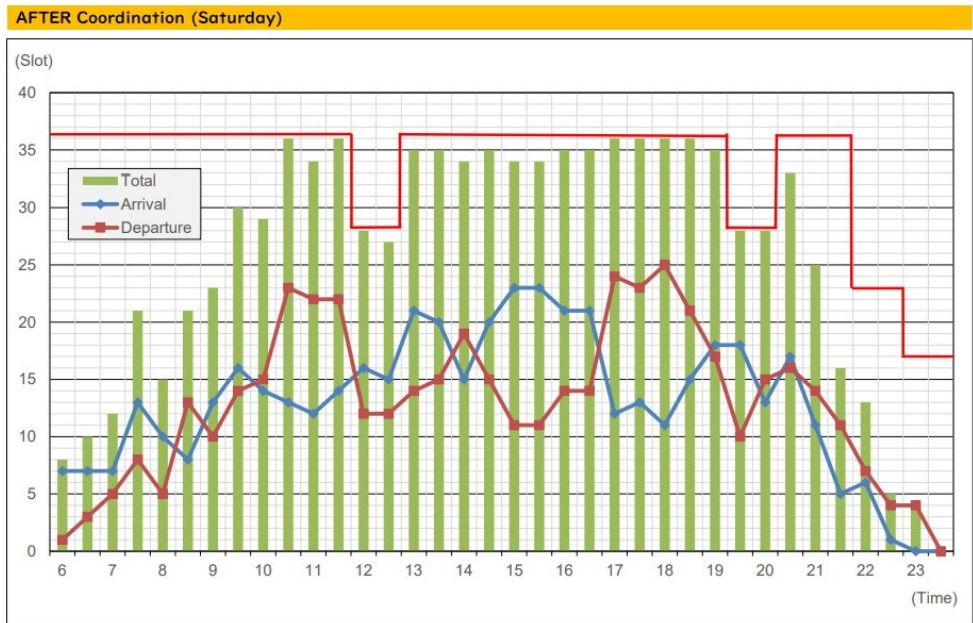


# Before Coordination at NRT (Arrival & Departure)

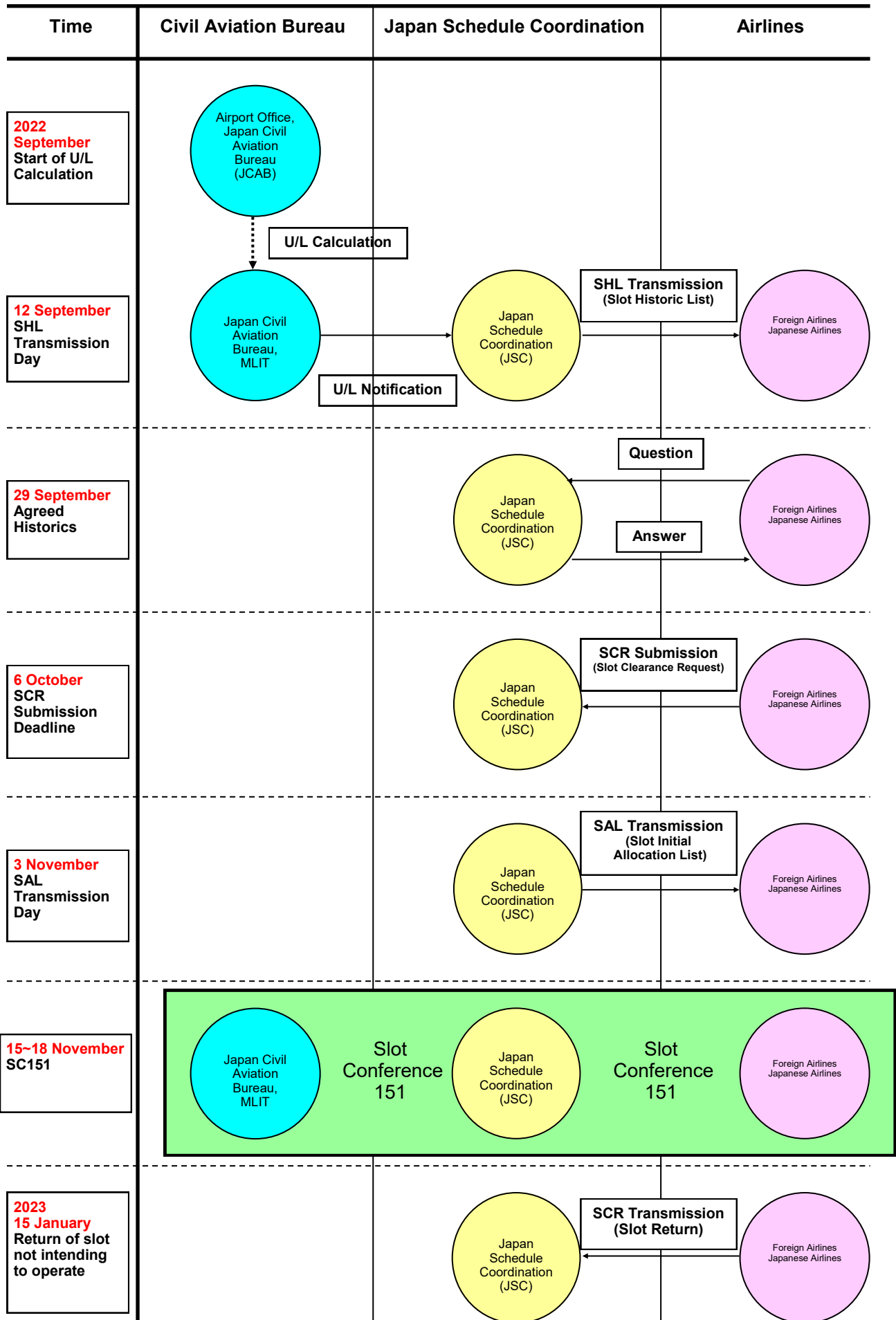
## Example of S22 Saturday



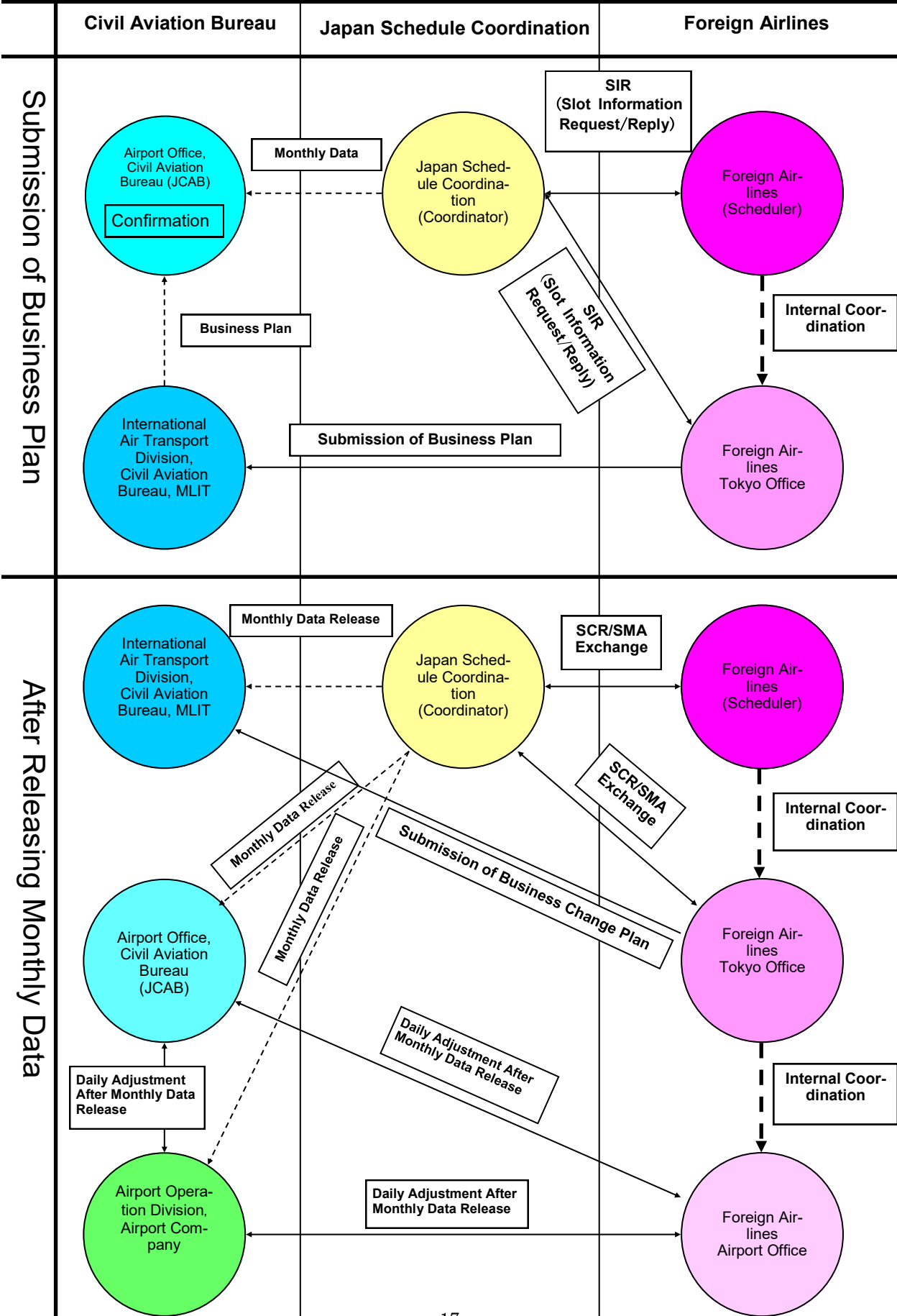
# After Coordination at NRT (Arrival & Departure)



# Time Flow of Coordination Process (S23 as example)



# Relationship between foreign airlines, JCAB and JSC





## IATA Message Format (IATA SSIM Chapter 6)

Message Identifier (SMI)	The meaning of the message
SAL	Slot Initial Allocation List Message
SAQ	Slot/Schedule Availability Query Message
SCR	Slot Clearance Request/Reply
SHL	Slot Historic List Message
SIR	Slot/Schedule Information Request/Reply Message
SMA	Schedule Movement Advice/Reply
WCR	Waitlist Change/Reply Message
WIR	Waitlist Information Request/Reply Message

	Example of basic SCR message
Message Identifier (SMI)	SCR
Creator Reference	//LT
IATA Season	W21
Date of Message	10AUG
Clearance/Advice Airport	NRT
Incoming Message Reference	REYT/REFER
Schedule Information Data Line	<u>HAF800</u> <u>AF801</u> <u>26OCT28MAR</u> <u>1234567</u> <u>32077W</u> <u>CDG0900</u> <u>1100CDG</u> <u>JJ</u> 1    2    3    4    5    6    7 8    9    10    11 12 13 <b>1: Action Code</b> , 2: Arr. Flt. No, 3: Dep. Flt. No, 4: Starting Date, 5: Ending Date, 6: Days of Operation, 7: Seat, 8: Acft. Type, 9: Origin, 10: Arr. Time, 11: Dep. Time, 12: Destination, 13: Transport Type
Additional Schedule Information Data Line	SI PLZ ADV IF OFFER ACCEPTABLE
Footer	GI BRGDS

Action Code (SCR message)	Meanings to be used by coordinators
H	Holding
K	Confirmation
O	Offer
P	Pending (action or advice)
T	Allocated subject to conditions
U	Refusal
W	Unable to reconcile flight information
X	Cancellation

Action Code (SCR message)	Meanings to be used by airline schedulers
A	Acceptance of an offer - no further improvement desired
B	New entrant
C	Data to be changed for an operational reason or towards the initial requested time of airline
D	Delete data
E	Eliminate data
F	Historics
I	Revised data (continuation from previous adjacent season)
L	Revised data (No offer acceptable)
M	Data or Waitlist to be changed for reason other than under Action Code C
N	New request
P	Acceptance of an offer - maintain on the waitlist
R	Revised data (Offer acceptable)
V	New entrant with year round status
Y	New request (Continuation from previous adjacent season)
Z	Decline offer

## Outline of airlines flying to Japan

### 1. The number of airlines flying to Japan

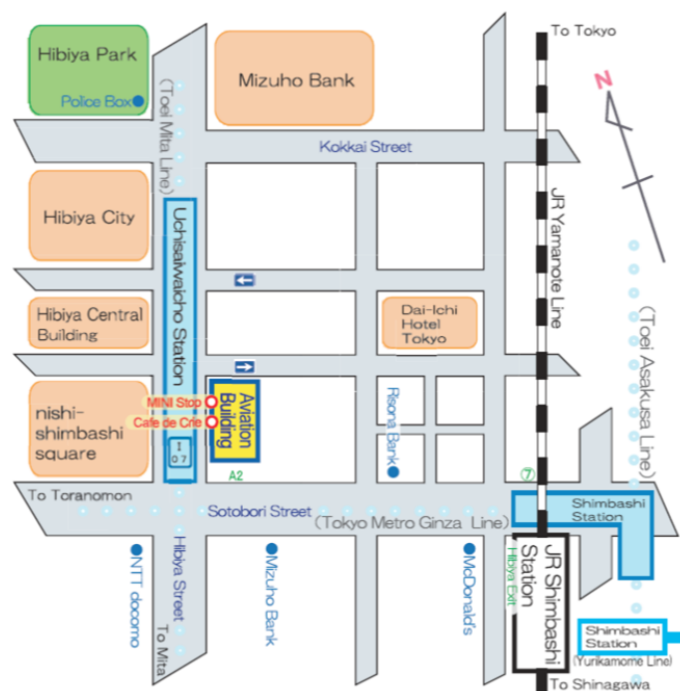
The number of airlines JSC is currently dealing with at each airport is shown in the table below categorized by the regions which they belong to.

Region	Narita International Airport	Tokyo International Airport	Kansai International Airport	New Chitose Airport	Fukuoka Airport
Japan	8	7	6	9	13
North America (Canada, Mexico)	12	5	6	1	2
Europe	15	8	6	1	1
Asia/Pacific	69	26	60	30	40
Others (Middle East, Africa)	7	3	3	0	0
<b>Total</b>	<b>111</b>	<b>49</b>	<b>81</b>	<b>41</b>	<b>56</b>



Japan Schedule Coordination (JSC)  
Japan Aeronautic Association (JAA)

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