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**DIFFERENT AIR TRAFFIC MANAGEMENT UNIT HAS DIFFERENT
DEMANDS FOR AERONAUTICAL METEOROLOGY SERVICE**

CHINA

MET Users in ATM

- **Air traffic management (ATM).** The dynamic, integrated management of air traffic and airspace including air traffic services, airspace management and air traffic flow management — safely, economically and efficiently — through the provision of facilities and seamless services in collaboration with all parties and involving airborne and ground-based functions.(Doc. 4444)
 - ATS
 - ASM
 - ATFM

AMS for ATM

- Considerations
 - The ability of Aviation weather science and technical
 - ATM organization structure
 - CDM/ATM process and procedures
 - ATM infrastructures

ATM DEMANDS FOR MET

ASM

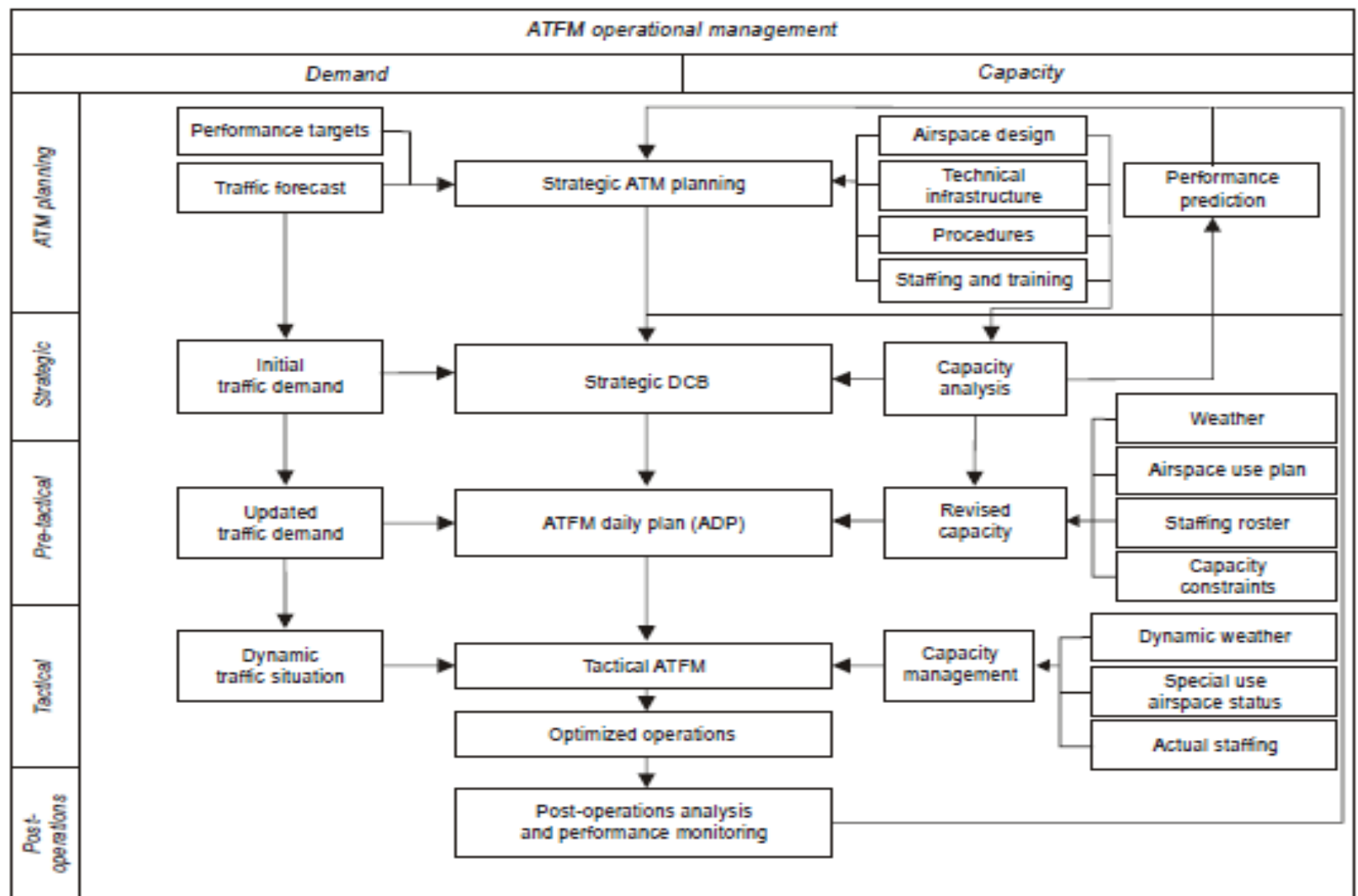


Figure II-4-3. ATFM operational management

Traffic flow management

- A⁻

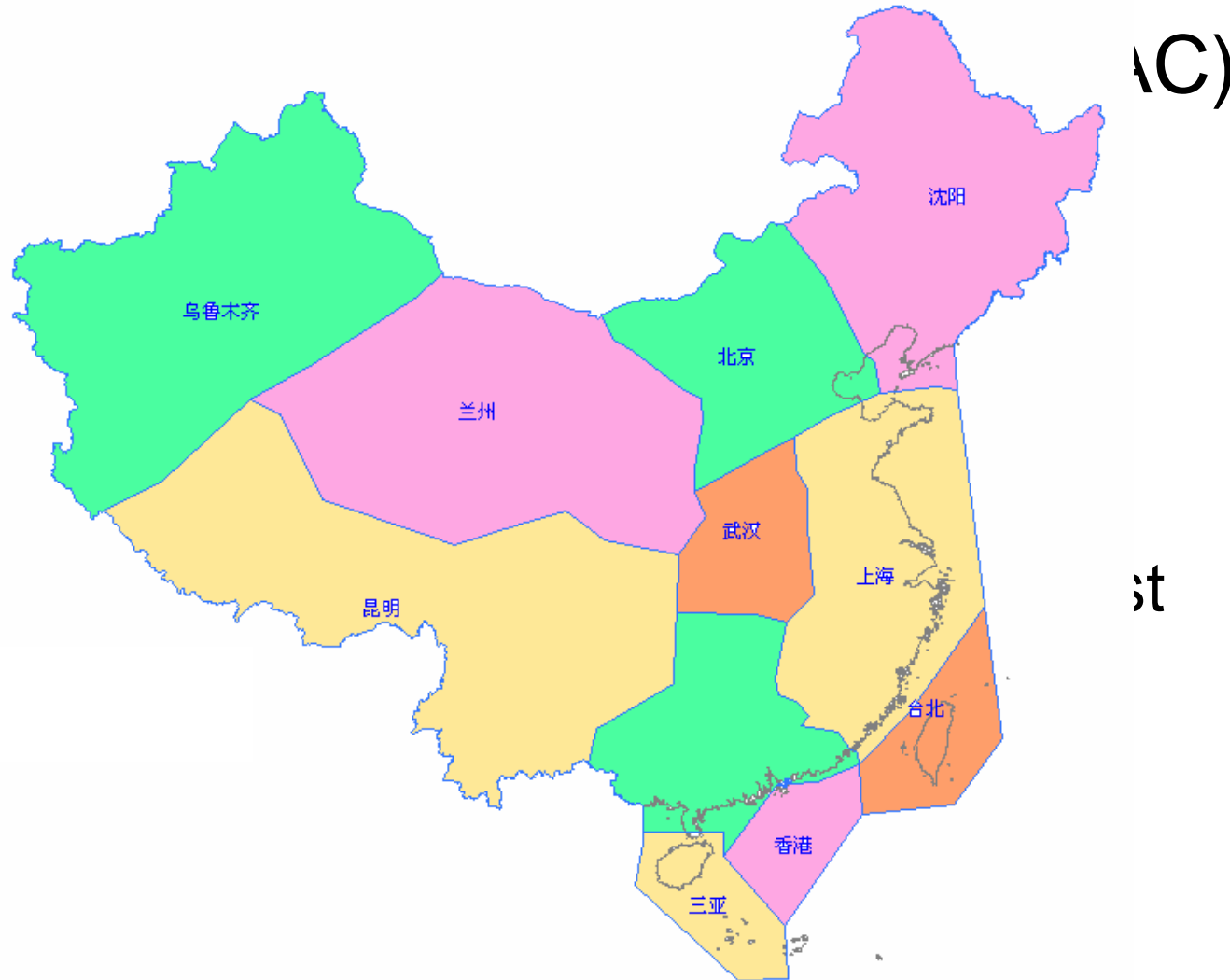
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- A⁻

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Traffic flow management Measures

ATFM measures			
	Strategic	Pre-tactical	Tactical
Vertical			Re-routing (level capping scenarios)
Lateral	Collaborative trajectory options	Collaborative trajectory options	Fix balancing Re-routing (mandatory or alternative) Level capping scenarios Collaborative trajectory options
Longitudinal			Miles-in-trail Minutes-in-trail Minimum departure intervals
Time	Ground delay programme Airborne holding	Ground delay programme	Slot swapping Ground delay programme Ground stop Airborne holding

Figure II-6-1. ATFM measures

ATFM organization structures(CAAC)



National level demands for MET

- Responsible for traffic flow management across the regional FIRs boundaries.
- Flight operation time span is usually over two hours, so national level should usually focused on systemic weather trend more than 2 hours at busy airports and routes.
- Weather information within two hours for them is not enough.

Regional level demands for MET

- Responsible for traffic flow management in regional FIR areas.
- Flight operation time span is usually less than 3 hours, so regional level should usually focused on weather trend at busy airports and routes within 3 hours in their responsibility areas.

Reginal level demands for MET

- Responsible for traffic flow management in their control area.
- Flight operation time span is usually less than 2 hours, so terminal level should usually focused on weather trend at busy airports and routes within 2 hours in their responsibility areas.

Terminal level demands for MET

- Responsible for traffic flow management in their control area.
- Flight operation time span is usually less than 2 hours, so terminal level should usually focused on weather trend at busy airports and routes within 2 hours in their responsibility areas.

Post operation analysis

- After operation. This stage also need to consider the impact of aeronautical meteorological factors and the process to deal with the situation caused by weather, so as to improve the air traffic flow management process.

ATC service

- Air traffic control services include tower, approach and area control services. They usually requires accurate and timely meteorology information, such as weather radar information and AWOS etc.

How aeronautical meteorology affects air traffic management process.

- Aeronautical weather factors will impact air traffic control capacity.
- Significant weather will affect the operation direction and operating modes of an airport, it can affect the size of the available airspace, affect the available time of the airspace, thus affect the air traffic control capacity.

How to determine the air traffic control capacity

- In China, each airport and ATC sector has a capacity baseline, when the weather impact is expected to occur, the flow management positions(FMP) will make their decisions about capacity according to the weather forecast and their experience.
- Each FMP's ability and experience is different and weather forecast has certain probability, how to make a good decision about the capacity value and ensure the safety and efficiency of air traffic is hard for the air traffic controllers, we need some theory\methods\rules in addition to the long-term accumulation of experience.

The gap in ATFM service

Preplanning

Think ahead

**ATFM
Measures**

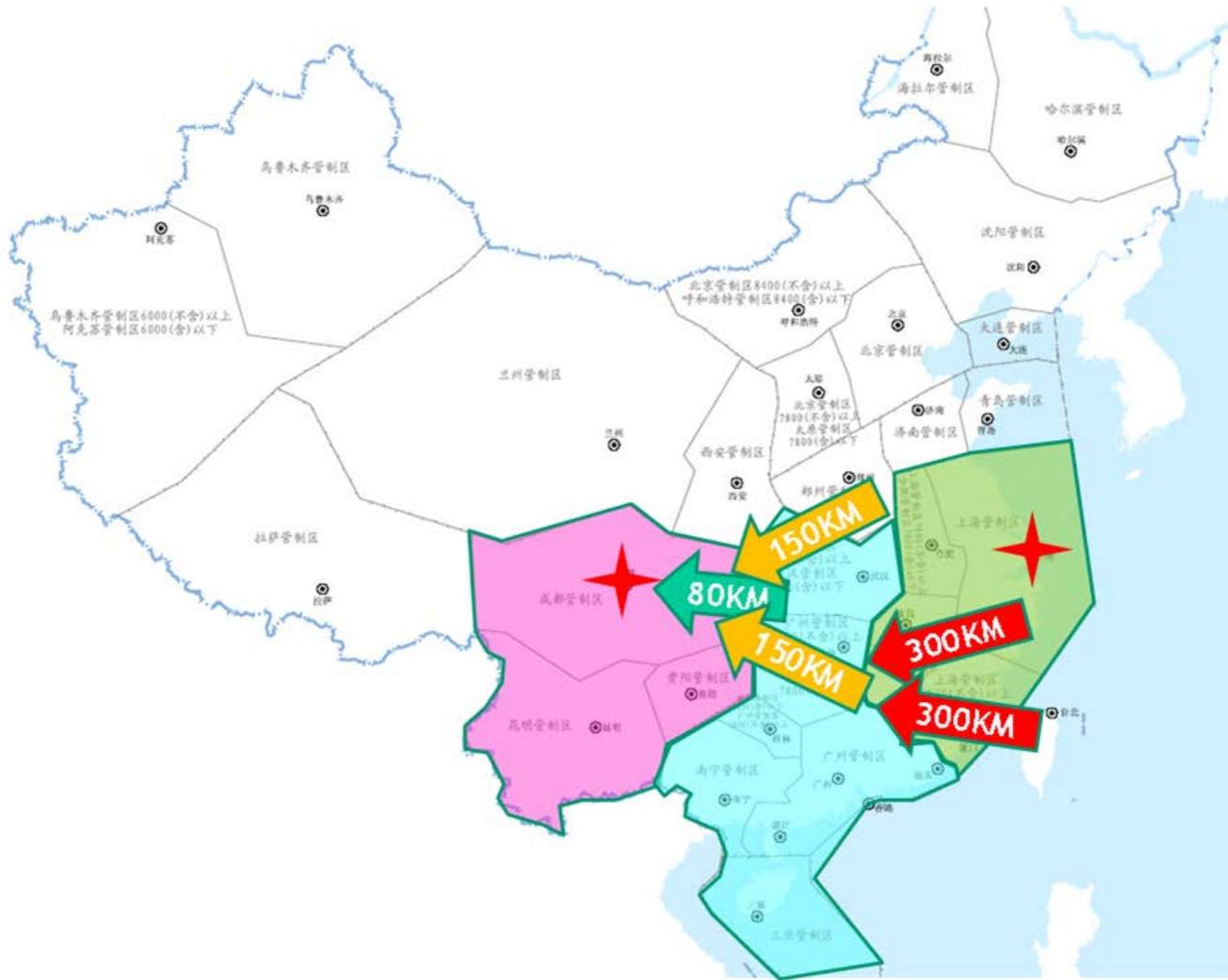
**Information
Sharing**

Massive delay reduction system

通告名称	当前状态	通告时间	预警级别	预警区域	预期响应	
昆明长水机场航班延误黄色预警	解除	2014/11/13 8:30:00		昆明/长水	长水机场航班延误黄色响应	详细
首都机场航班延误预警	终止	2014/11/10 18:21:00		北京/首都国际	请持续关注保障任务影响情况，提前制定保障预案。	详细
首都机场航班延误预警	终止	2014/11/8 18:25:00		北京/首都国际	请持续关注保障任务影响情况，提前制定保障预案。	详细
南京机场航班延误预警	终止	2014/10/23 18:06:00		南京/禄口国际	0600开始响应	详细
青岛机场航班延误黄色预警	终止	2014/10/22 20:45:00		青岛/流亭国际	黄色响应	详细
青岛机场航班延误预警	终止	2014/10/21 19:00:00		青岛/流亭国际	请持续关注活动影响情况，提前制定保障预案。	详细
青岛机场航班延误预警	终止	2014/10/21 18:59:00		青岛/流亭国际	请持续关注活动影响情况，提前制定保障预案。	详细
青岛机场航班延误预警	终止	2014/10/21 18:51:00		青岛/流亭国际	请持续关注活动影响情况，提前制定保障预案。	详细
青岛机场航班延误黄色预警	解除	2014/10/21 18:57:00		青岛/流亭国际	青岛机场航班延误黄色响应	详细
西安咸阳机场航班延误预警	终止	2014/10/20 18:31:00		西安/咸阳国际	0500启动响应	详细

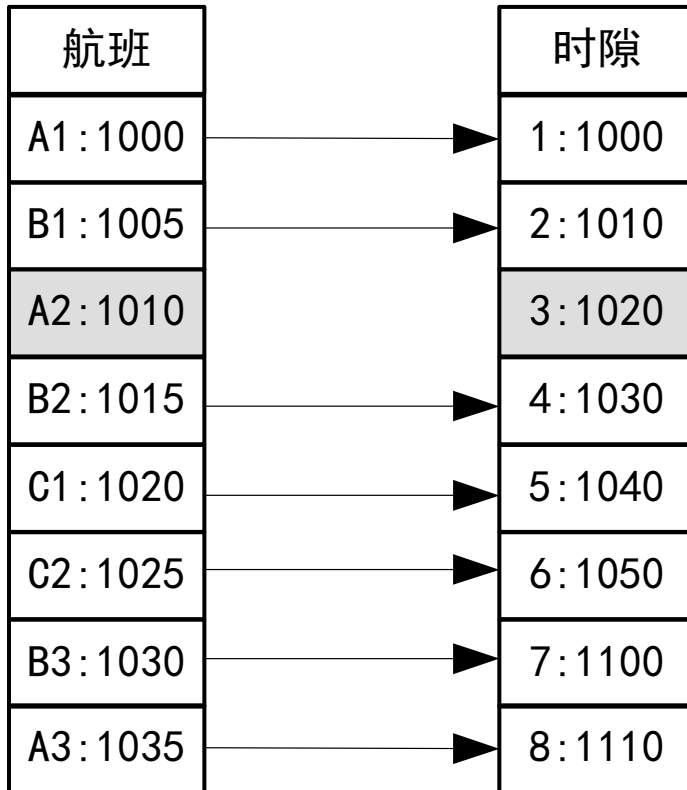
ATM DEMANDS FOR MET

Traditional ATFM measures

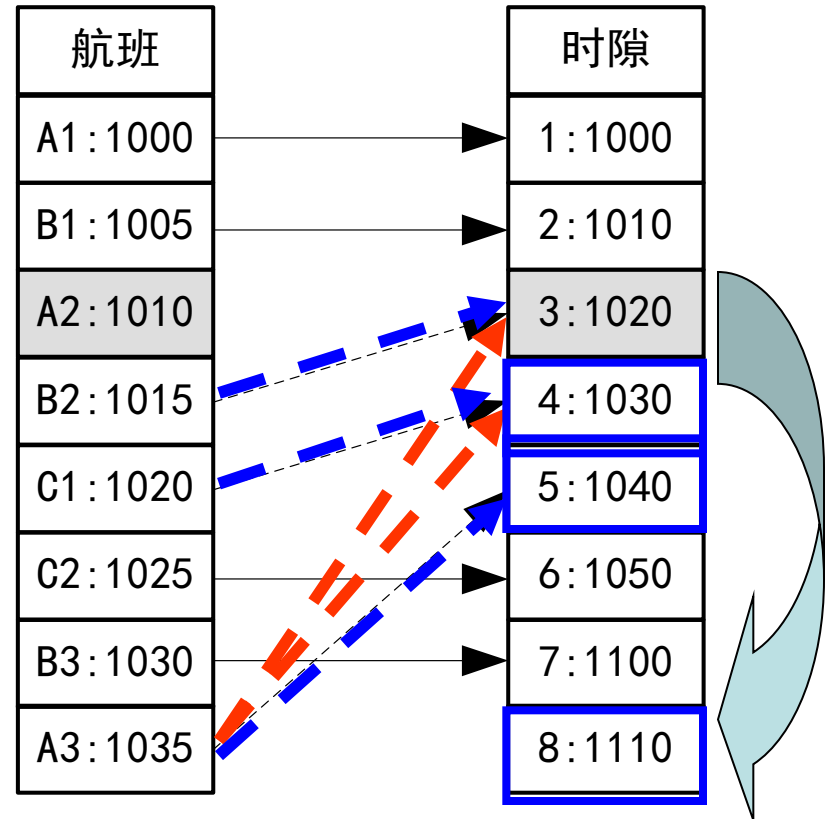


collaborative arrival slot management process

初次分配



压缩分配



information sharing format in domestic


- `<?xml version="1.0" encoding="utf8"?>`
- `<MSG>`
- `<META>`
- `<!消息头,每条消息消息头具有相同的标签集合>`
- `</META>`
- `<Data>`
- `<Item>`
- `<!消息正文>`
- `<Block></Block>`
- `...`
- `<Block></Block>`
- `</Item>`
- `</Data>`
- `</MSG>`

information sharing format in domestic

- `<?xml version="1.0" encoding="utf8"?>`
- `<MSG>`
- `</META>`
- `<Data>`
- `<Time>20121011T17:46:30</Time>`
- `<To>KG</To>`
- `<From>HDKG</From>`
- `<Action>PUSH</Action>`
- `<MSGID />`
- `<MSGType />`
- `<RequestID />`
- `</Data>`
- `</MSG>`

Visualized weather forecast product we like

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Thank you!