EUROCONTROL Digital NOTAM Project

Industry Requirements for Digital NOTAM Submission
Washington, 29 August 2007

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EUROCONTROL

Content

- Why Digital NOTAM
- What is a Digital NOTAM
- Implementation plans in Europe

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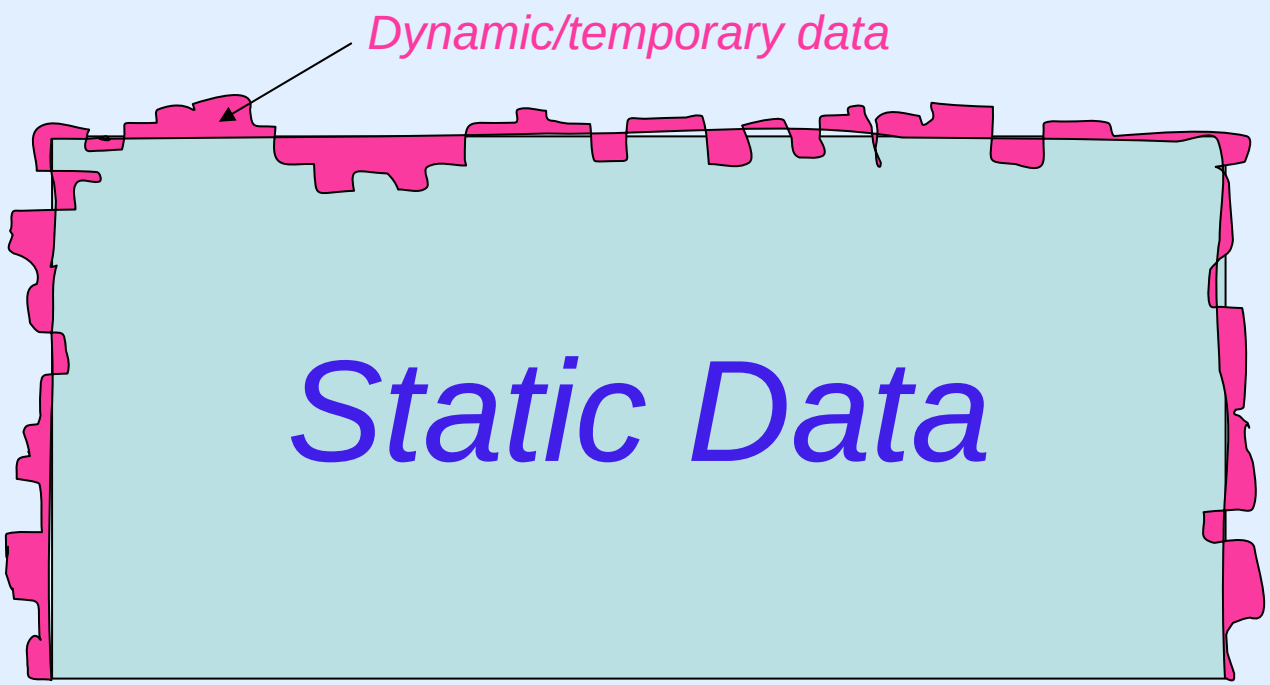
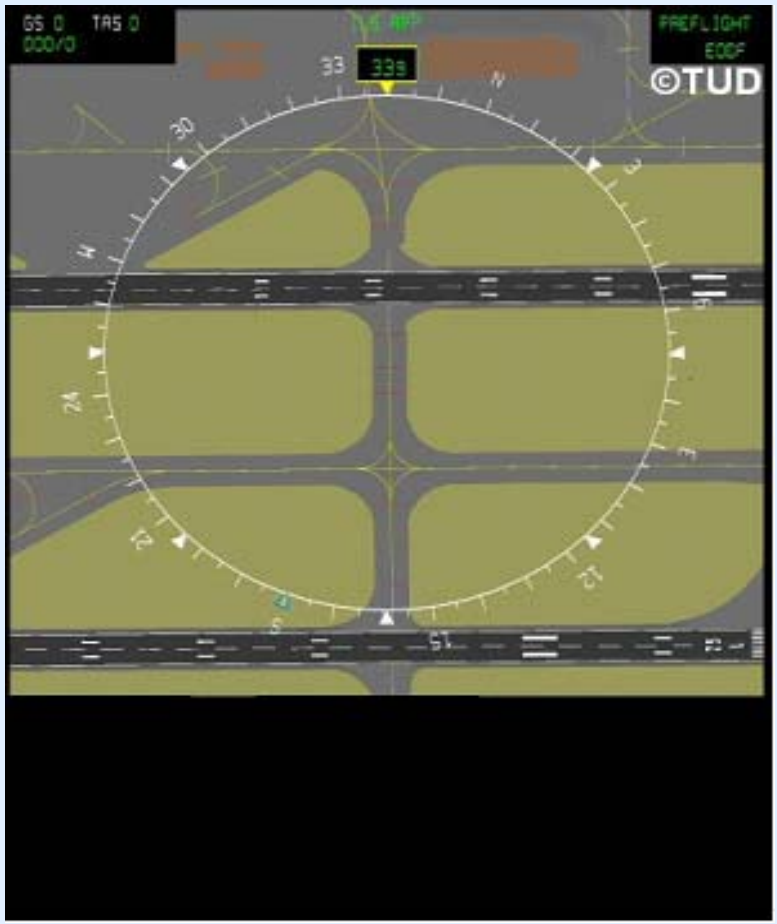
Aeronautical Information

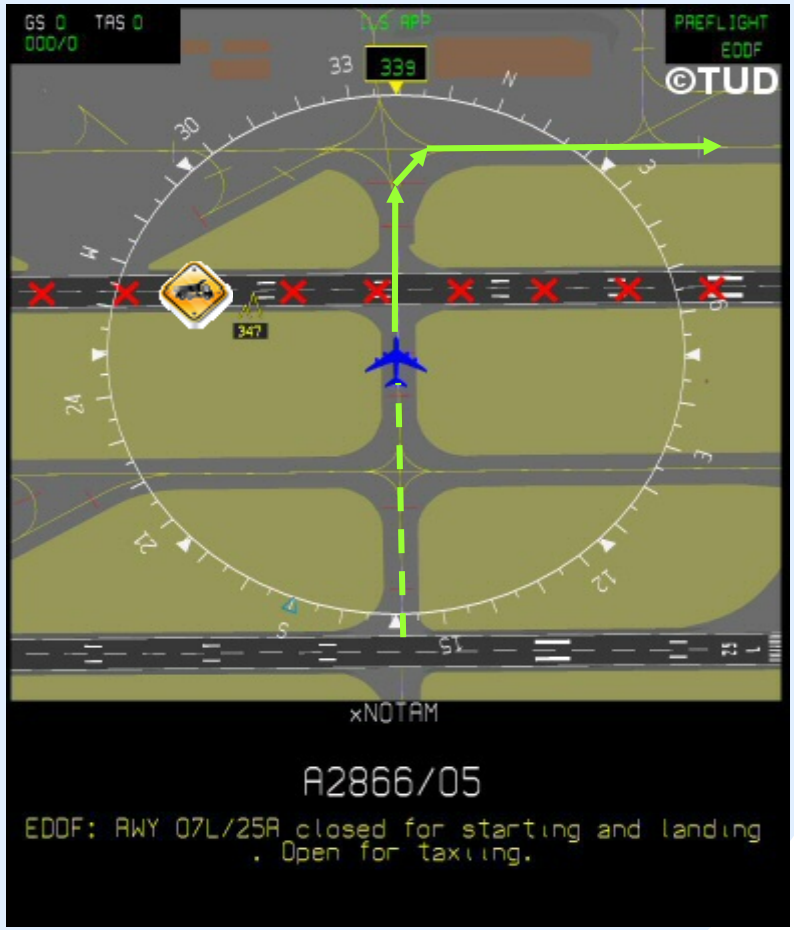


Digital Aeronautical Data

static



static + *dynamic*



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Digital NOTAM can improve safety

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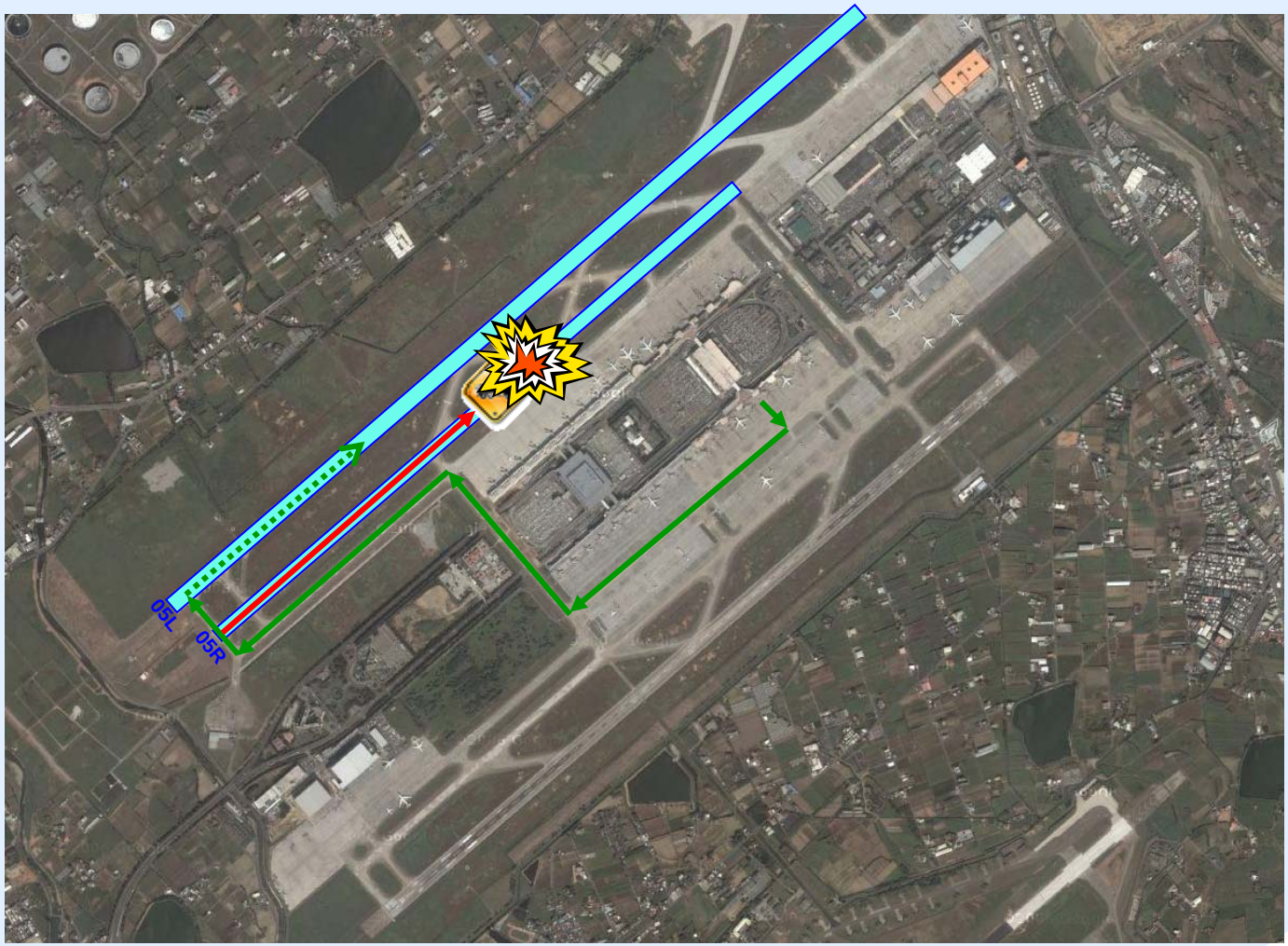
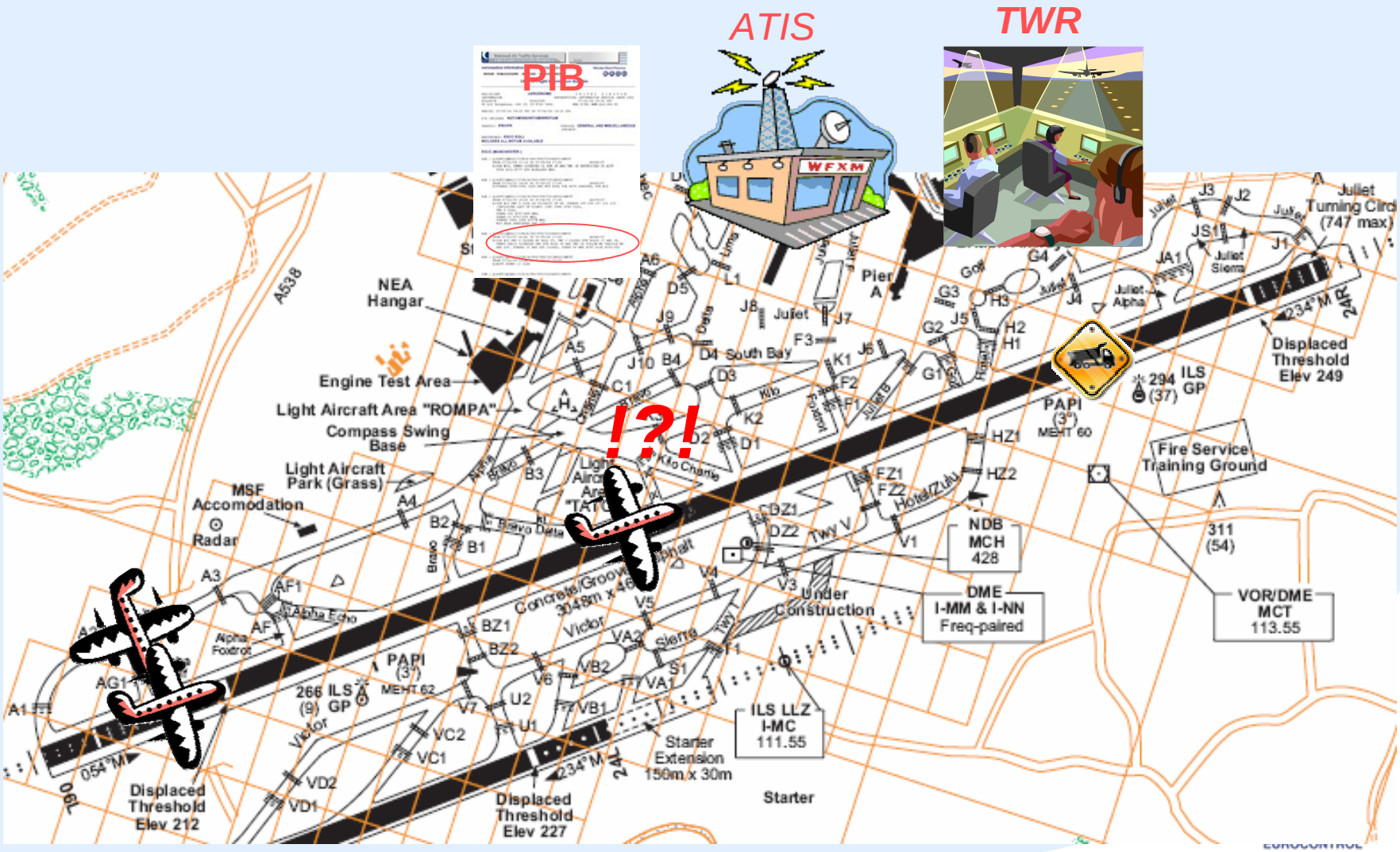
Closed runway example



Work on the runway



Work on the runway

56 feet

AIR TRANSPORT

NCIS / SINGAPORE

tes 777 in runway near-miss

New Zealand investigators say pilots failed to heed warning that usable length was shortened by repair work

An Emirates Boeing 777 nearly collided with a truck and other equipment at the end of the main runway at Auckland airport, New Zealand on take-off last month. The investigator says the pilots had failed to take note of information that the published usable length had been reduced because the far end of the runway was under maintenance.

New Zealand's Transport Accident Investigation Commission (TAIC) has disclosed that it is investigating the incident, which occurred at about 16:15 on 22 March.

The TAIC says: "The 777...was taking off from the main runway, which had been shortened due to repair works under way at one end," but evidently the crew were not aware of this. "[The pilots] had to increase power to maximum thrust during the take-off when they noticed the machinery working at the end of the runway," says the TAIC.

It adds that "the aircraft cleared the work area by the permitted margin [and] nobody was injured".

Equipment in the work area included a truck and a car, TAIC air accident investigator Peter Williams told Flight's online news service *Air Transport Intelligence*.

Williams says that for normal full-length operations on the runway in use, 05R, the declared accelerate-stop distance available is 3,623m (11,900ft), but the distance "from taxiway A10 at the time of the incident was 2,170m".

He adds that the runway work at the airport was scheduled to take place between 19 March and 8 April and information about it was included "in the [airport's broadcast] automatic terminal information service, NOTAMs [notices to airmen] and the operator's briefing package".

Maintenance mishaps from the past

On 16 July 2003 a UK-based Excel Airlines Boeing 737-800 with 197 people on board took off over the top of heavy vehicles carrying out scheduled end of runway maintenance at Manchester airport. The crew began the take-off with de-rated power assuming the full length would be available, but lifted off safely by slamming on full power as they topped the mid-runway rise and saw the vehicles. In October 2000 a Singapore Airlines Boeing 747-400 collided disastrously with construction equipment in poor visibility, while attempting take-off from a runway that was closed for maintenance at Taipei, Taiwan, resulting in 83 deaths.

ACCIDENT KIERAN DALY / LONDON

LIGHTING

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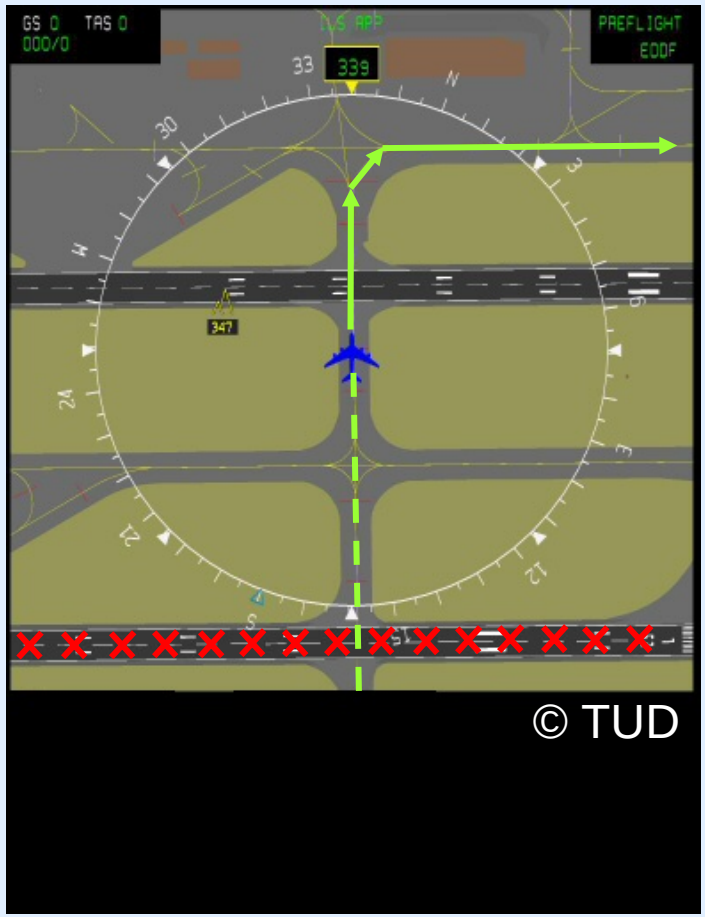
Developments/Projects that could prevent such events

- On-board moving maps
  - airport layout
  - own ship position
- Graphically displayed taxi route/clearance
- Also needed
  - actual operational status of airport movement area elements
  - requires “digital NOTAM”



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What is a “digital NOTAM”

- Example - TWY closure
  - Today, published as NOTAM

A0874/03 NOTAMN Q) EBBU/QMXLC/IV/M/A/000/999/5054N00429E005 A) EBBR B) 0308250500 C) 0310271600	<OK for computers>
E) TAXIWAYS OUTER 7 AND E6 CLSD	<not OK for computers>

Digital NOTAM = Fully data modelled NOTAM

- intended for computers
- using the **Aeronautical Information Exchange Model** (AIXM) version 5

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What is a “digital NOTAM”

- Instead of

  ```
  <text>TAXIWAYS OUTER 7 AND E6 CLSD</text>
  ```

- Use explicit feature properties
  - For example…

    ```
    <taxiway>
      <name>OUTER 7</name>
      <status>CLOSED</status>
    </taxiway>
    <taxiway>
      <name>E6</name>
      <status>CLOSED</status>
    </taxiway>
    ```

  - This is a much more closer to a truly digital NOTAM
    - … and the goal of AIXM 5

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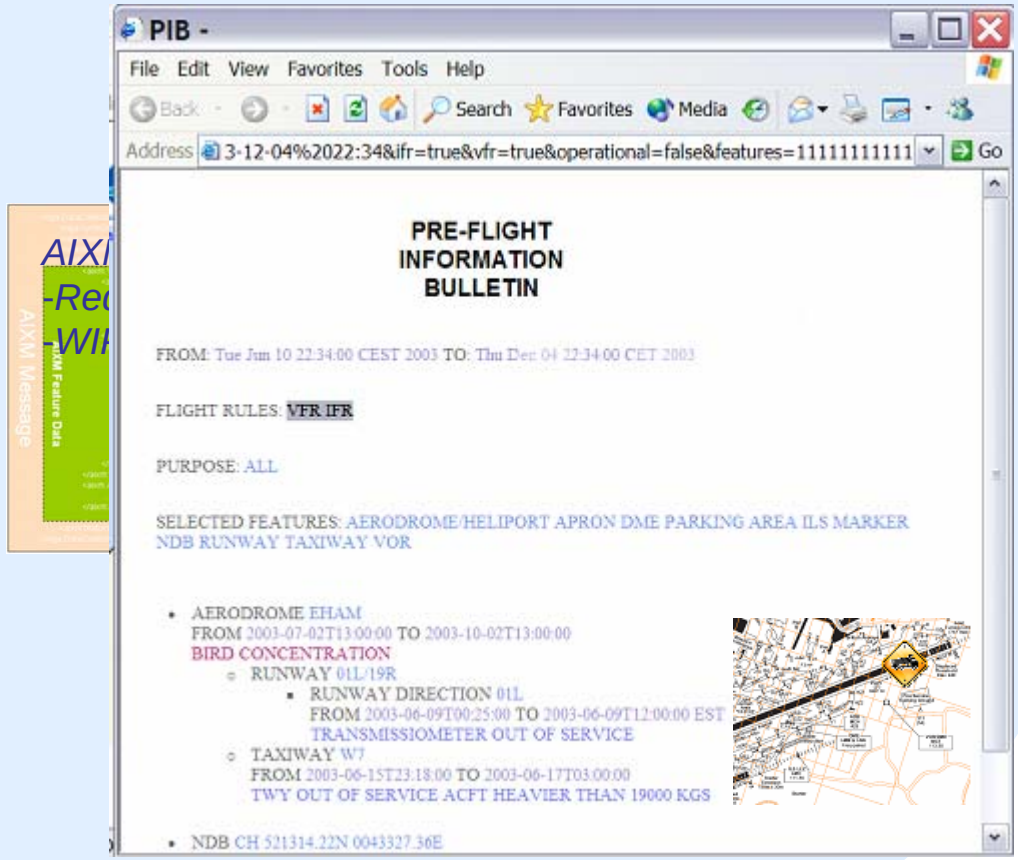
What digital NOTAM could change

- Improved Pre-flight Information

Current text PIB

```
        ABOVE RULES ARE AS SPECIFIED BELOW:
                    ARRIVALS    DEPARTURES
        MONDAY      0600-2255   0600-2055
                                2200-2225
        TUESDAY     0600-2255   0600-2055
        WEDNESDAY   0600-2255   0600-2055
                                2200-2255
        THURSDAY    0600-2255   0600-2055
        FRIDAY      0600-2255   0600-2255
        SATURDAY    0600-1755   0700-1555
                                1700-1755
                                2200-2255
        SUNDAY      0600-2255   0800-2255

AGA : Q)EGTT/QMRXX/IV/NBO/A/000/999/5129N00028W005
      FROM 07/02/16 18:38 TO 07/03/31 07:00                A0428/07
      E)RWY 09R/27L. DUE WIP RWY ENTRY/EXIT NB10 CLOSED.

AGA : Q)EGTT/QMXLC/IV/NBO/A/000/999/5129N00028W005
      FROM 06/09/05 05:00 TO 07/04/30 05:00                A2243/06
      E)DUE WIP TWY B SOUTH CLSD BTN 'F' AND 'R'.
        TWY 'R' CLSD BTN 'A' AND 'B' AND DIVERTED VIA NEW GREEN CL AND BLUE
        EDGE LGT. ADZ CTN

COM : Q)EGTT/QIWAS/I/NBO/A/000/999/5129N00028W005
      FROM 06/12/16 08:39 TO 07/12/31 23:59 EST            A3175/06
      E)MLS RWY 27R U/S, MAY RADIATE ON TEST.

RAC : Q)EGTT/QPACH/I/NBO/A/000/999/5129N00028W005
      FROM 06/07/14 08:14 TO PERM                          A1785/06
      E)STAR VIA OCKHAM (NORTH AND WEST): GENERAL INFO NOTE 7 AMEND TO READ
        EN-ROUTE HOLDING: DURING PERIODS OF CONGESTION IN THE LONDON TMA, TFC
        VIA OCK IF MAY BE REQUIRED TO HOLD AT OKESI (CPT VOR/DME R268/31.7NM,
        INBOUND TRK 106 DEG MAG, TURNING LEFT AT OKESI, OUTBOUND LEG TIME 1
        MIN 30 SEC)

RAC : Q)EGTT/QSTXX/IV/BO/A/000/999/5129N00028W005
      FROM 07/02/05 11:00 TO 07/04/20 23:59 EST            A0326/07
      E)TELEPHONE/FAX NUMBERS CHANGED, NEW NUMBERS -
        TEL 020 8745 3326 (NATS LTD)
        TEL 020 8745 3163 (NATS LTD FBU)
        FAX 020 8745 3491/3492 (NATS LTD FBU)
        UK AIP AD 2-EGLL-1-1 2.2 AND AD 2-EGLL-1-21 PARA 8E REFER

NAVW: Q)EGTT/QWCLW/IV/M/AW/000/000/5129N00020W001
      FROM 07/02/12 08:45 TO 07/03/02 12:15                H0310/07
      D)0845-1215
      E)AUS 07-02-0159/AS5
        CAPTIVE HELIUM BALLOON 5129N 00020W (ISLEWORTH, WEST LONDON).
        CONTACT 020 8583 2984.
      F)SFC G)80FT AGL

OTH : Q)EGTT/QPATT/I/NBO/A/000/999/5129N00028W005
      FROM 06/07/10 10:14 TO 07/07/10 09:00 EST            A1734/06
      E)TRIAL P-RNAV STAR, AIP SUP S14/04 REFERS

OTH : Q)EGTT/QOBCE/IV/M/A/000/999/5129N00028W005
      FROM 06/12/19 14:23 TO 07/12/31 23:59                A3210/06
      E)MULTIPLE CRANES IN TERMINAL 5 CONSTRUCTION SITE ADJOINING RWY 09L
```



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What digital NOTAM could change

- Virtual AIP
  - Dynamic ENR tables for a flight trajectory

(HE) A16			
12:01 ▲ RASDA 330600N 0305700E	171° 351° 119 KM	FL250 FL055 FL060	Cairo ACC FREQ: 127.700 MHz or 126.6 MHz
12:18 ▲ MILAD 320201N 0310406E	172° 352° 56 KM		
12:24 ▲ BALTIM VOR/DME BLT 313144N 0310721E	169° 349° 162 KM		AVBL for TFC Landing "AXD" INTL FLT to cross "AXD" FL100 or above
12:45 ▲ CAIRO VOR/DME CVO 300532N 0312318E			
(LC) A411			
12:51 ▲ MENU 294701N 0315206E	124° 304° 58 KM	FL250 FL090 FL085	LC D03 ACTIVATED FL070 FL050
13 :02 ▲ KAMIS 291701N 0323606E	125° 305° 90 KM		

- Support innovative devices

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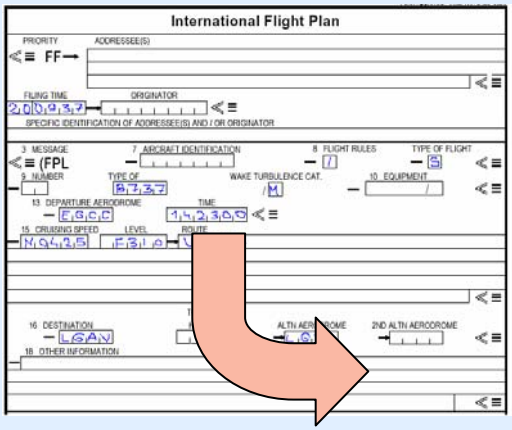
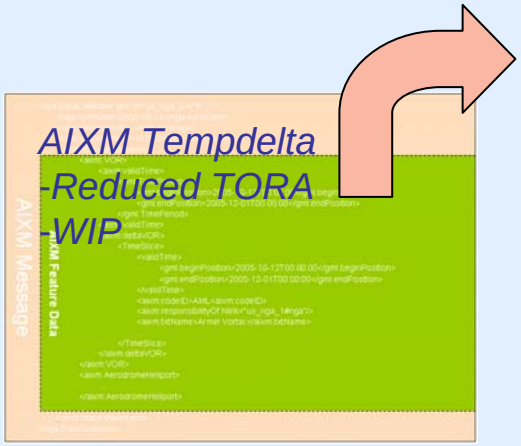
What digital NOTAM could change

- Support “ATC safety nets”





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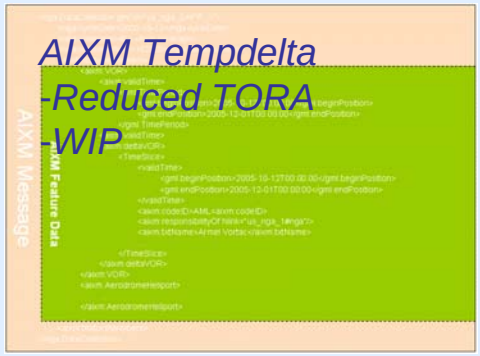
What digital NOTAM could change

- Improve crew awareness / on-board “safety nets”



Screenshot from digital NOTAM trial using AIXM 5 (by TUD)

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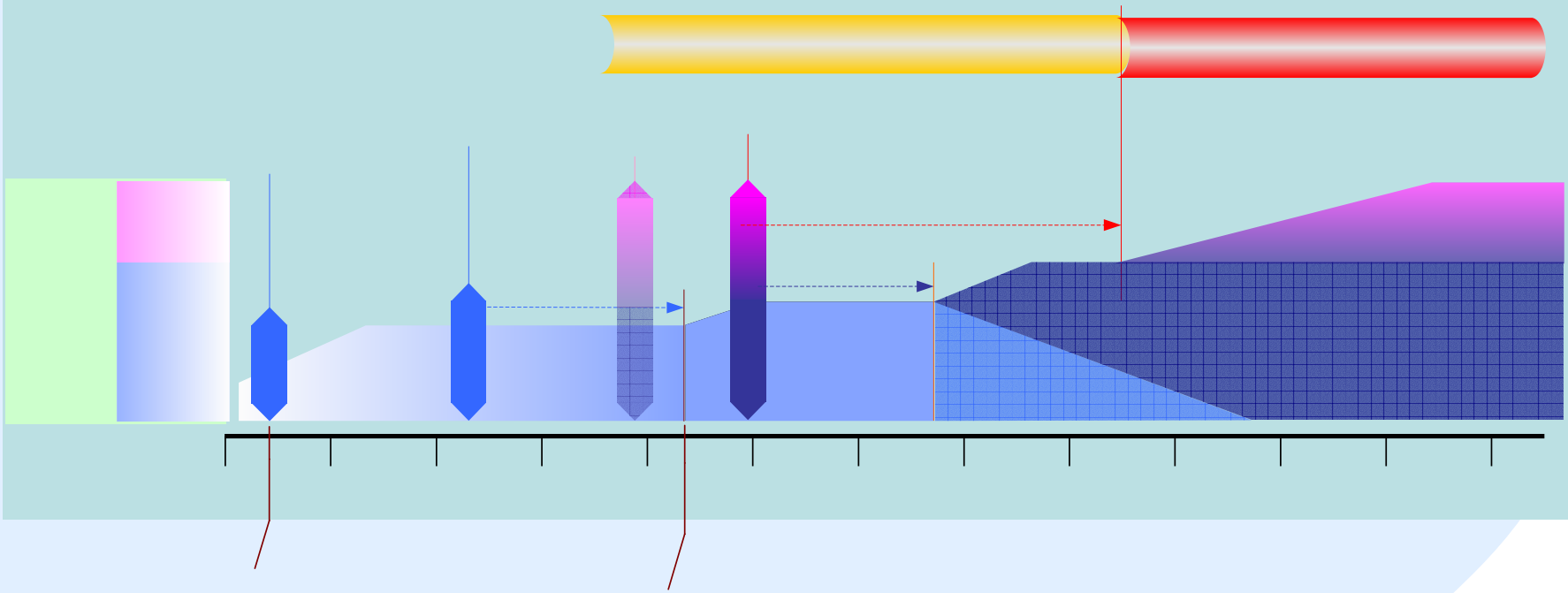
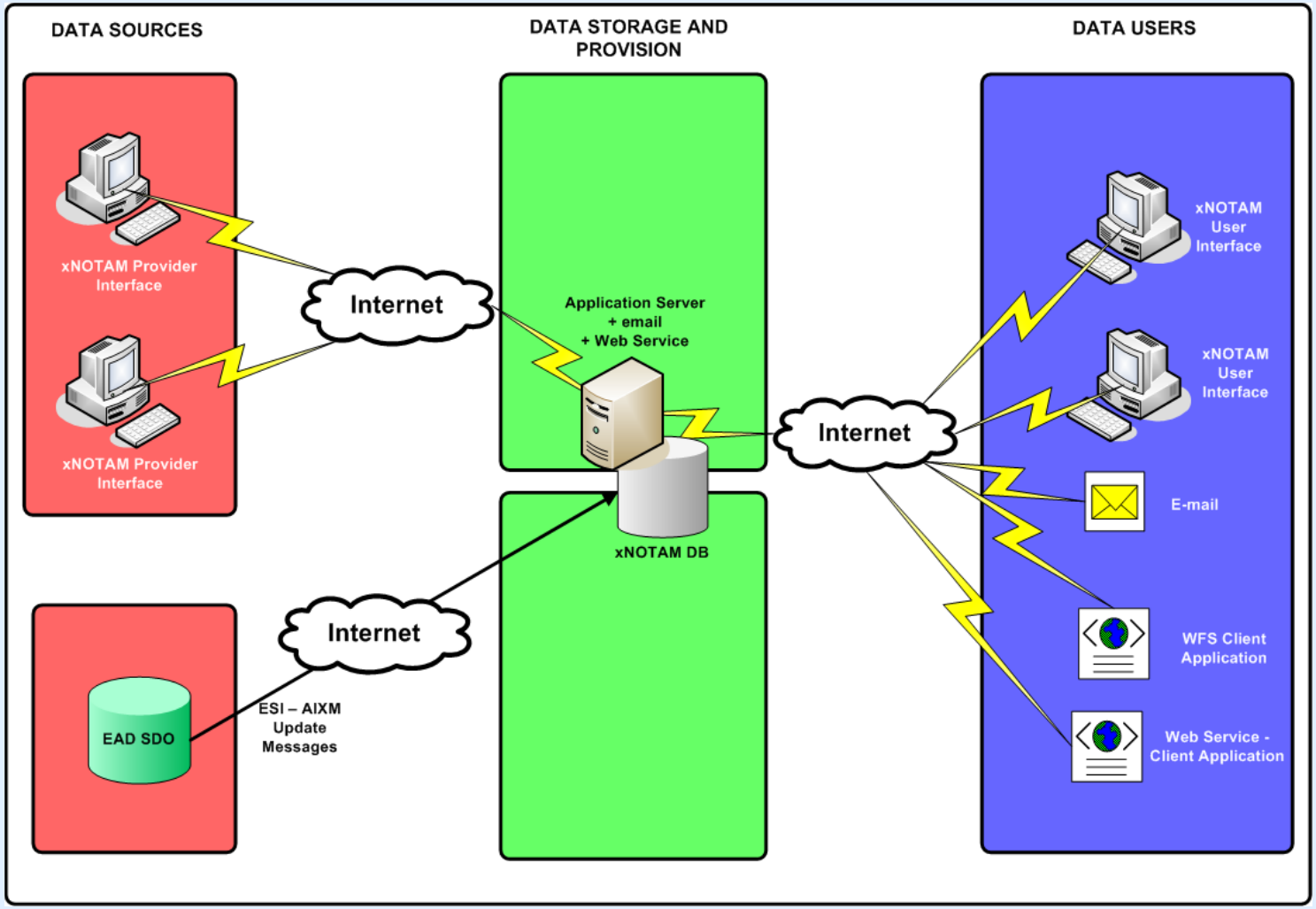
Implementation plans

More about AIXM -> www.aixm.aero



2007-2008: Digital NOTAM Trial



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Conclusion

Digital NOTAM Implementation

The European approach

We need global coordination!

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