

# Proactive Safety- Looking for things that go right

Christoph Peters, DFS

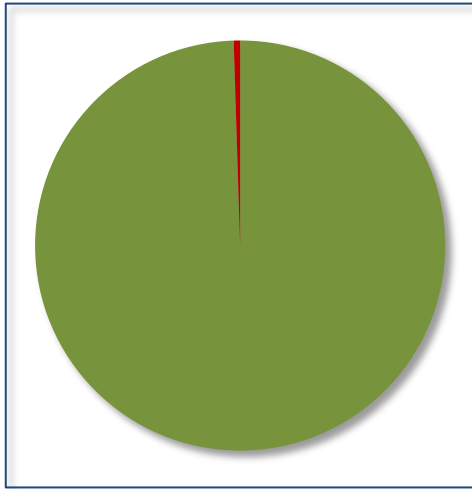
Day 2, 27.09.2013



**DFS** Deutsche Flugsicherung

# Things go right in many cases...

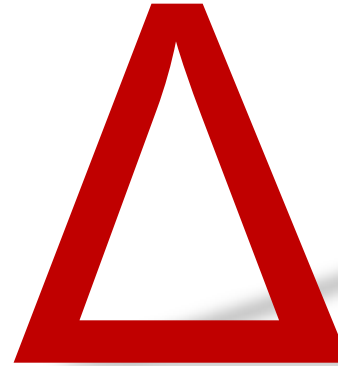
- Incidents vs. IFR movements in 2012



$$\frac{146}{2993866} = 0,0000488$$

„Work as imagined“

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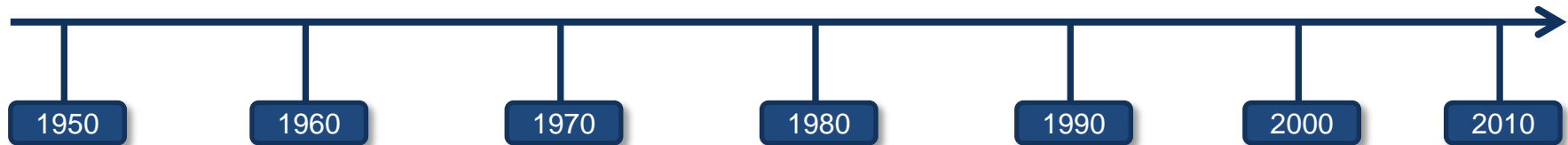
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„Work as actually done“

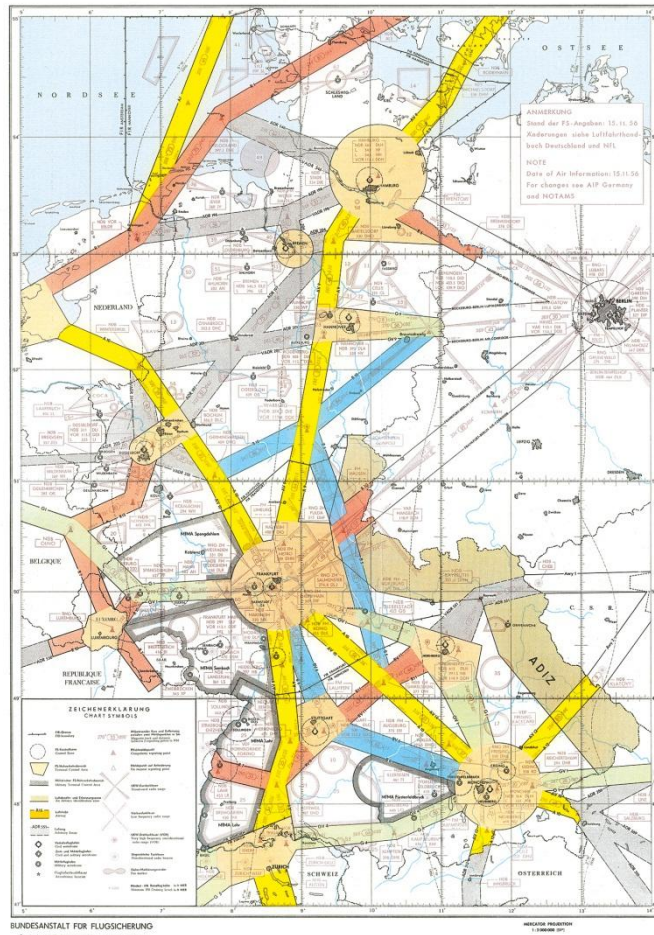
# Here is the quick answer: Humans

## Humans: “Still vital after all these years of automation”

(Parasuraman & Wickens, 2008)

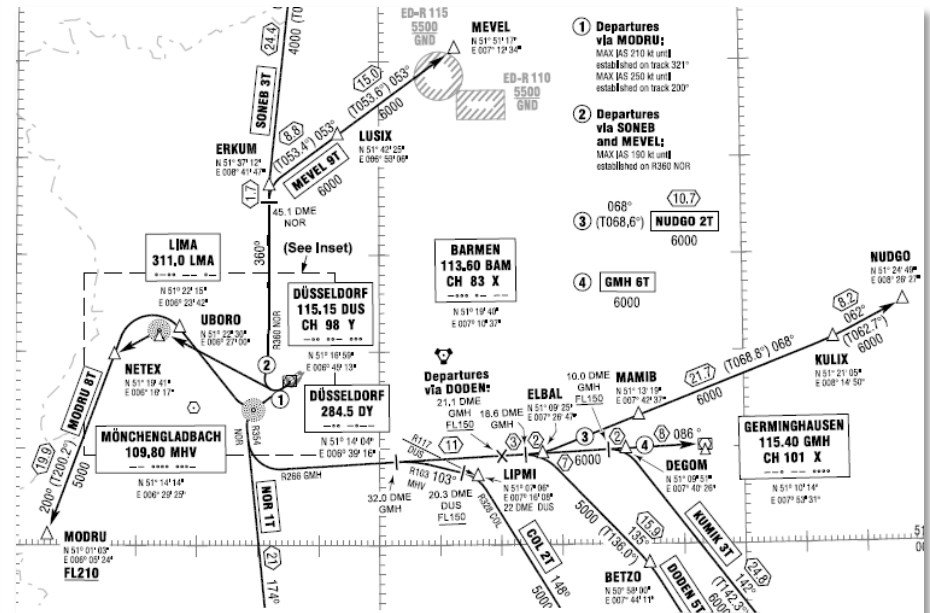
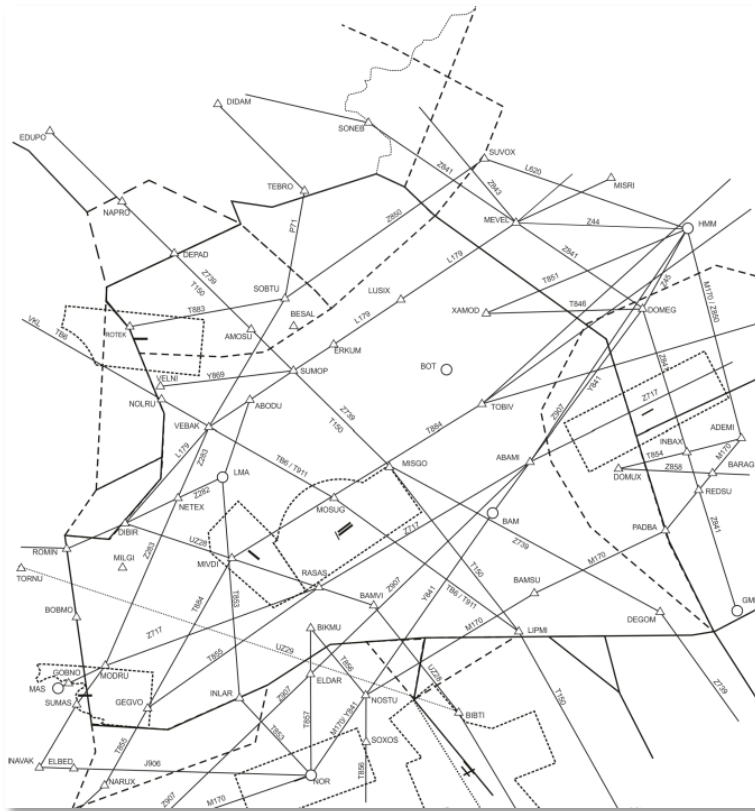


# The world is changing...



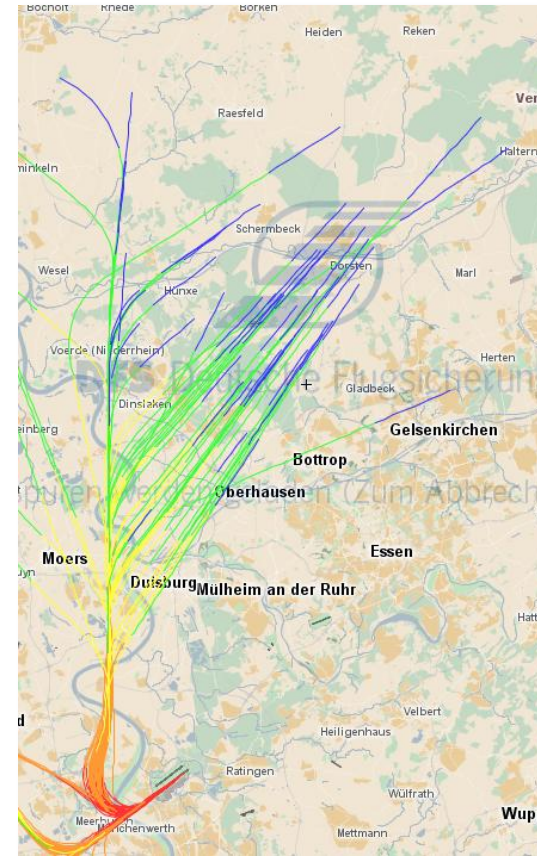
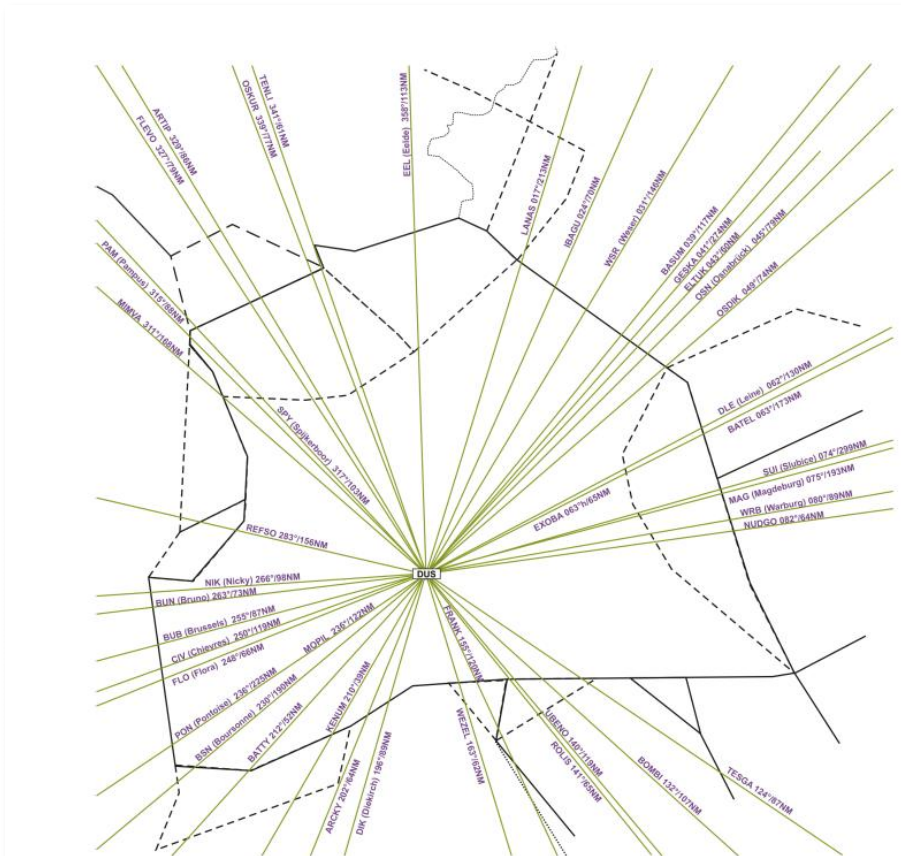


# Routes around EDDL



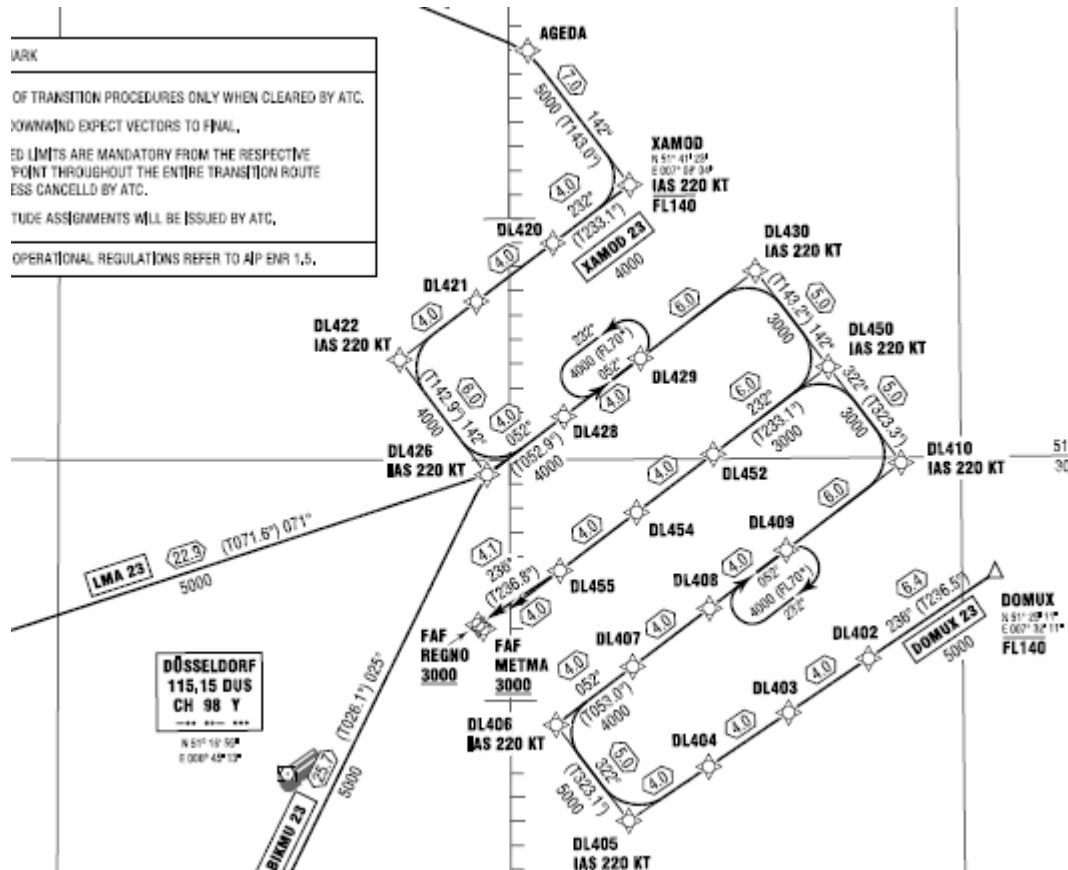
- 22 Departure Routes (RWY 05|23)
- Dozens of intersections, airways, airspace boundaries, etc.

# What turned out well?



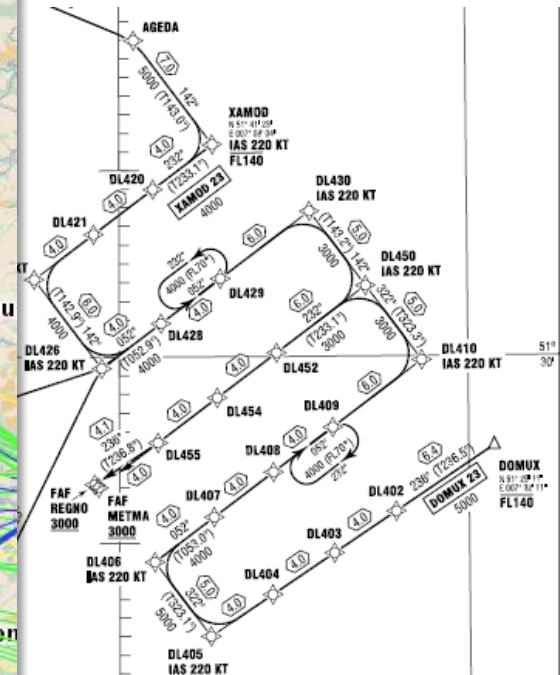
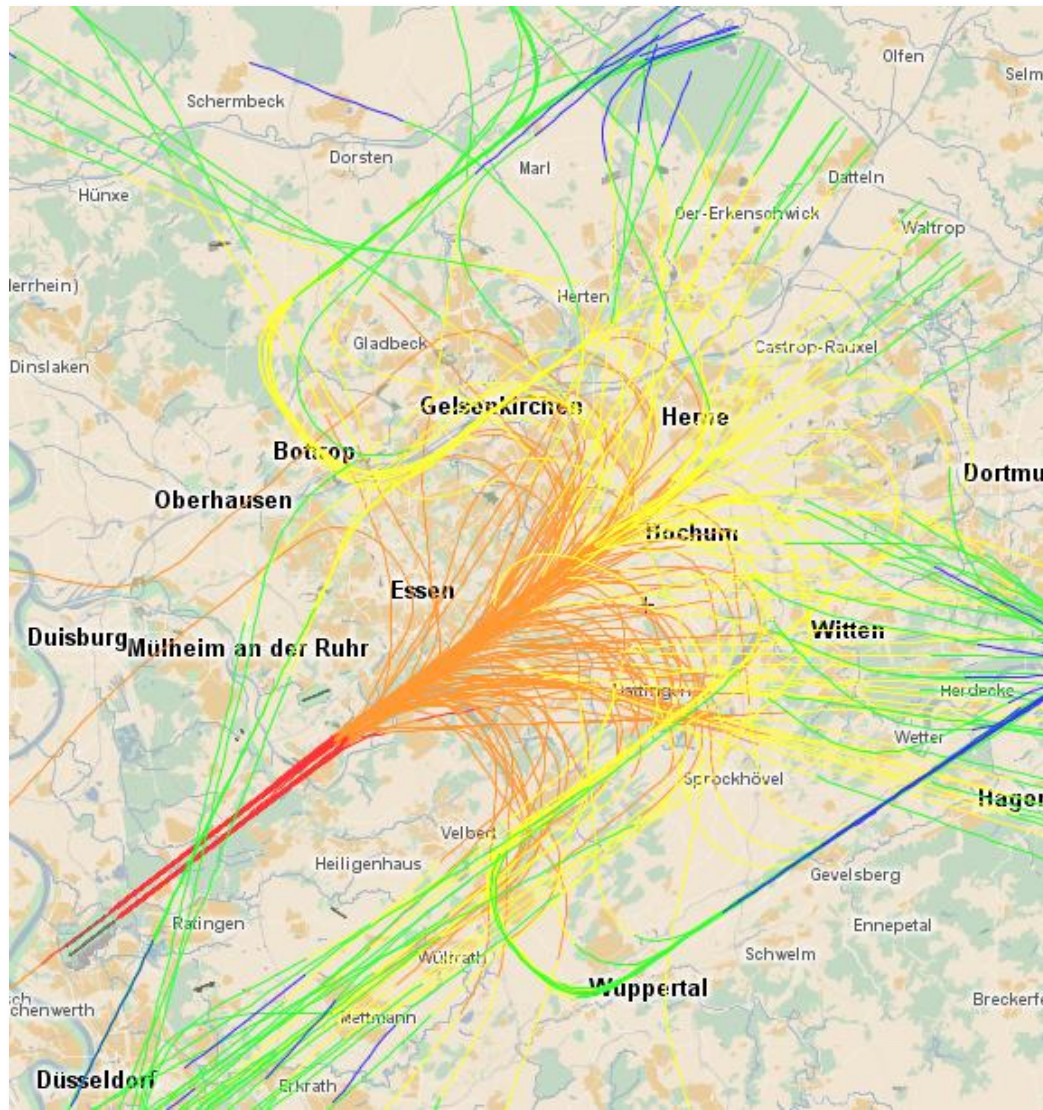
- Passing on of information which proved to be helpful
- Use of the (remaining) degrees of freedom

## Approach EDDL (Wasl)





# Approach EDDL (WaDo)





# Flight progress strips

## **WasI**-principle:

- Every sector will be provided with the relevant data
- A correct number of flight progress strips will be produced for every single flight

## **WaDo**-principle:

- There is a huge amount of irrelevant data
- Filter out as soon as possible

# „Strip graveyard“ #1



# „Strip graveyard“ #2

+DL D	090	090	BE9L	L	EDLE EBBR 1220 10
1220 ENOST			DIFHI	L	KENUM PODAT LNO
NOR			2575		**
			ZN	210	DLA
					23
BAM SU	090	090	BE9L	L	EDLE EBBR 1220 10
1210 +DL D			DIFHI	L	D-> NOR KENUM
ENOST			2575		PODAT LNO **
			ZN	210	DLA
					20
BAM SU	090	090	BE9L	L	EDLE EBBR 1220 10
1210 +DL D			DIFHI	L	D-> NOR KENUM
ENOST			2575		PODAT LNO **
			ZN	210	DLA
					20
VFR	090	090	BE9L	L	EDLE EBBR 1220
BAM SU			DIFHI	L	NOR KENUM PODAT
NOSTU			2575		LNO **
			ZN	210	DLA
					20
VFR	090	090	BE9L	L	EDLE EBBR 1220
BAM SU			DIFHI	L	NOR KENUM PODAT
NOSTU			2575		LNO **
			ZN	210	DLA
					20

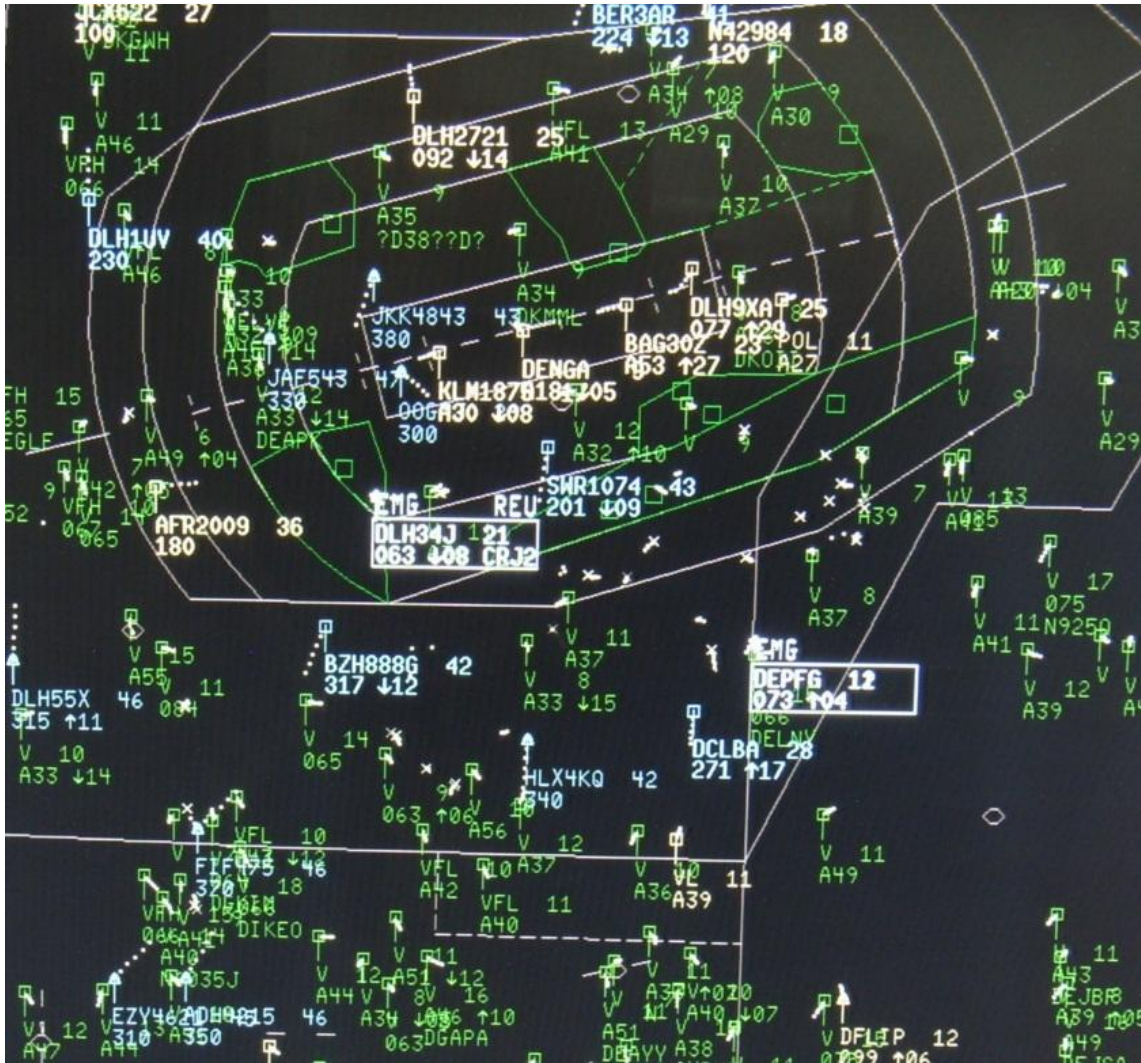


# Imagined...

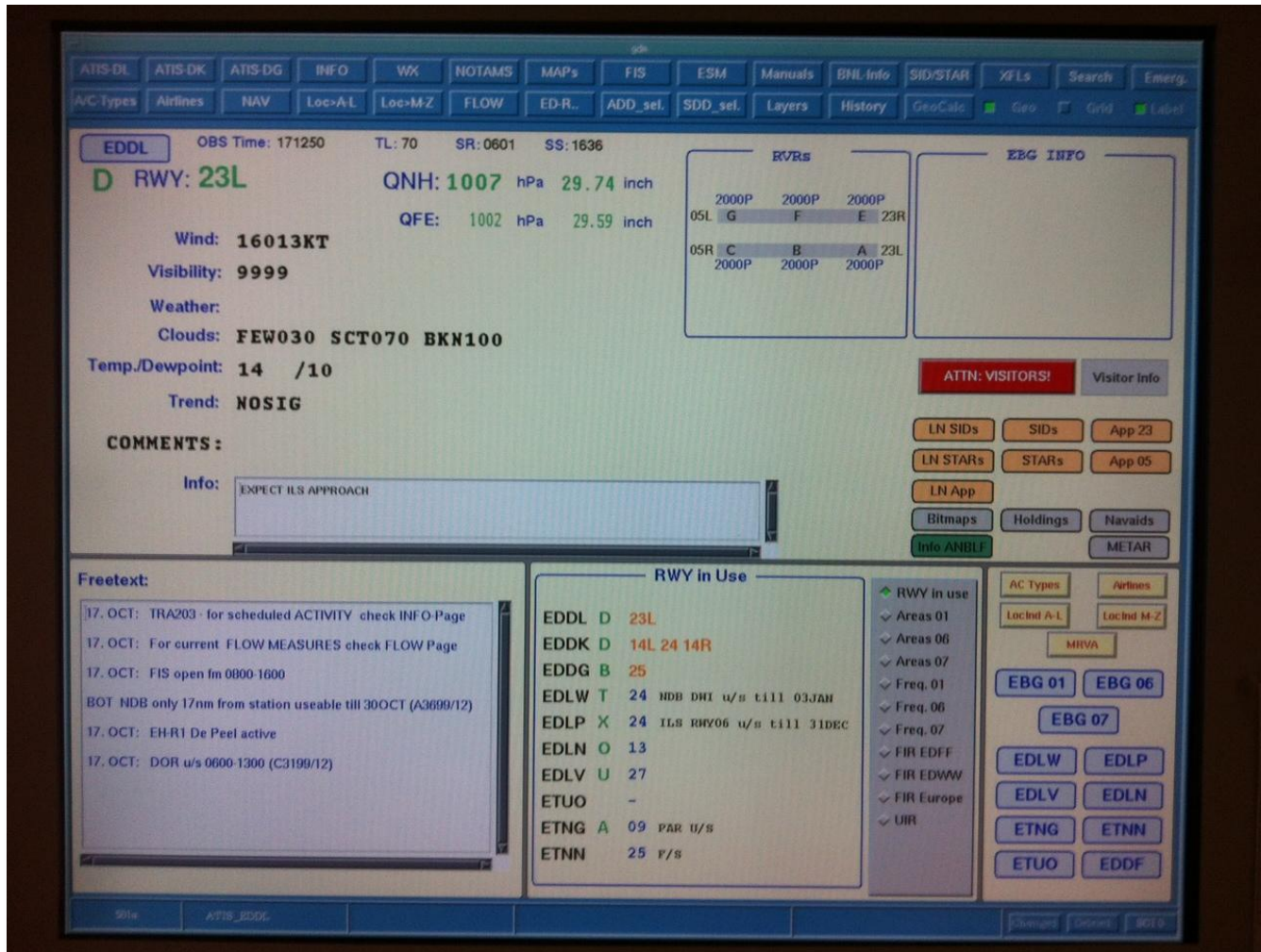




# Actually carried out...



# Air Traffic Controller „support“ system



# Up to date ?

- 111.4 In the event of different interpretations of the German and English versions, the German text shall prevail.
- 111.5 Operational staff shall be familiar with all regulations of the manuals, as far as applicable.
- 111.6 Operational staff are expected to exercise their best judgement if they encounter situations which are not covered by the regulations of the manuals.

# Up to date ?

## Betriebsanordnungen Center Langen

[ZURÜCK](#) ... [bis 2004](#) ... [2005](#) ... [2006](#) ... [2007](#) ... [2008](#) ... [2009](#) ... [2010](#) ... [2011](#) ...

### Jahrgang

#### 2012

- ▶ [2012/001 Relief after infringement of separation minima](#)
- ▶ [2012/002 Simultaneous Training Sector Family 10](#)
- ▶ [2012/003 BAO zum LoA Giebelstadt INFO](#)
- ▶ [2012/005 Procedures for Consolidation of Functions in ATC \(SSO\)](#)
- ▶ [2012/008 Additional Procedures for Coordination of EDQG Arrivals](#)
- ▶ [2012/009 Nutzung des Internetzugangs am DIFI Rechner](#)
- ▶ [2012/010 Acrobatics Restrictions RLP](#)
- ▶ [2012/015 Handling of Parachute Descents & Aerobatics](#)
- ▶ [2012/016 Control and Coordination Procedures SF 01.06.07.21/25 \(ungültig ab 18.10.2012\)](#)
- ▶ [2012/016 Control and Coordination Procedures SF 01.06.07.21/25 \(gültig ab 18.10.2012\)](#)
- ▶ [2012/017 Operational Procedures PHOENIX](#)
- ▶ [2012/018 Operational Procedures P1 DUS and FRA Systems\)](#)
- ▶ [2012/019 Glider Operations in TMZ Dortmund](#)
- ▶ [2012/020 Zusatzvereinbarung zur Nutzung der ED-R135 Hammelburg](#)
- ▶ [2012/021 Glider Operations in Airspace C EDDF](#)
- ▶ [2012/022 ATCISS Visitor Button](#)
- ▶ [2012/023 BAO zum LoA AOCS Nieuw Milligen ATC](#)
- ▶ [2012/024 BAO zum LoA Beek ATC](#)
- ▶ [2012/025 TRAMON Service by TACCS for TRA205/302 \(gültig bis 31.12.2012\)](#)
- ▶ [2012/031 Allocation of SID SOBRA.L \(EDDF\)](#)
- ▶ [2012/032 Glider Operations in TMZ Luxemburg](#)
- ▶ [2012/033 Continuous Descent Operations \(CDO\) Trial EDDF](#)
- ▶ [2012/034 TRAMON Service by TACCS for TRA203](#)
- ▶ [2012/035 DFS STCA Procedures](#)
- ▶ [2012/037 Noise Abatement Procedures SFam 01/06/07](#)
- ▶ [2012/042 HPA Anflugverfahren EDDF](#)
- ▶ [2012/043 BAO zum LoA Egelsbach TWR](#)
- ▶ [2012/044 Statistik über Erteilung von Verkehrsinformationen \(gültig bis 30.09.2012\)](#)
- ▶ [2012/045 Monitoring of Frequencies \(ungültig ab 18.10.2012\)](#)
- ▶ [2012/047 Military exercise CROSS SERVICING EXERCISE \(gültig 16.-26.10.2012\)](#)
- ▶ [2012/048 Noise Abatement EDDF - Raise of ILS Glide Path Angle 25R/07L \(gültig ab 18.10.2012\)](#)
- ▶ [2012/049 IFR Procedures EDDF APP \(gültig ab 18.10.2012\)](#)
- ▶ [2012/051 Monitoring of Frequencies \(gültig ab 18.10.2012\)](#)

### Anfahrt

### Campus Gastronomie

### Monza Park Gastronomie

### Fit auf dem Campus

### Flughafen-Info

### Mitarbeitervertretungen

### Niederlassung Mitte

#### Niederlassungsleitung

#### Betrieb

#### Wir über uns

AIP - Luftfahrthandbuch  
MIAIP - Militärisches  
Luftfahrthandbuch  
BA-FVD - Betriebsanweisung  
Flugverkehrsdienste  
Anweisungen der  
Niederlassungsleitung  
BAO - Betriebsanordnungen

BAO EDDF APP bis 2004

BAO 1997-2004

BAO 2005

BAO 2006

BAO 2007

BAO 2008

BAO 2009

BAO 2010

BAO 2011

#### BAO 2012

Sektoren- und  
Rollenbeschreibungen  
LOAs - Letters of Agreement  
Betriebsbestimmungen /  
Mitteilungen  
Betriebsinformationen

Electronic Briefing System

ePEP

Ausbildung

PROKOM

CBT PATOS

CISM

Forum der AG EBG 03

Forum der AG EBG 07

Supervisor im Center Langen

Safety

Technik

Qualitätsmanagement

Personalmanagement



# “Smart” mechanisms

- Rules of thumb / heuristics
- Locally shared information
- Exchange of planner & executive controller
- Informal / „undocumented“ procedures
- „Heading of the day“

# A day in the life of a controller...

On June 20-06-2013 a severe weather situation developed around the airport and the surrounding cities...

EDDK 20**0650**Z VRB02KT 9000 BKN017 22/18 Q1013 TEMPO BKN013

EDDK 20**0720**Z VRB02KT 8000 BKN016 23/18 Q1013 TEMPO BKN013

EDDK 20**0750**Z VRB02KT 8000 BKN016 22/18 Q1014 TEMPO BKN013

EDDK 20**0820**Z VRB01KT 7000 -RA VCTS FEW017CB OVC130 22/19  
Q1013 TEMPO TSRA

EDDK 20**0850**Z 36015KT 6000 TSRA FEW015 FEW025CB BKN130 21/19  
Q1009 BECMG NSW

EDDK 20**0950**Z 26010KT 3700 -RA VCTS BR FEW015CB BKN150 21/19  
Q1012 TEMPO 20020G35KT TSRAGR BKN009 SCT015CB

# Weather gets closer to the airport...

EDDL 201020Z 25011KT 4500 –RA BR SCT013 BKN020 22/20

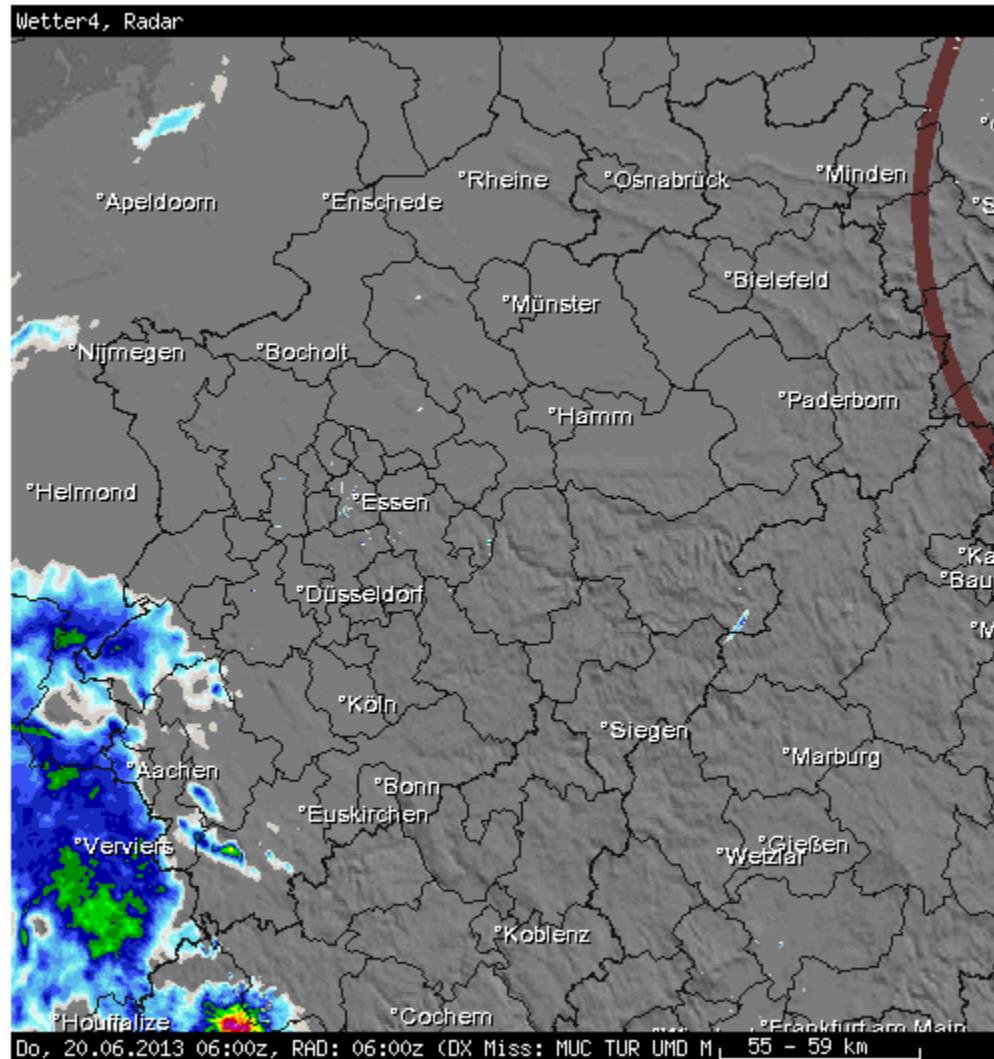
EDDL 201120Z 27012KT 6000 –SHRA VCTS SCT015CB BKN045 21/18

EDDL 201150Z 20012KT 3500 TSRA SCT015CB BKN020 20/18

EDDL 201220Z V30006KT 240v320 9999 TSRA FEW008 SCT015CB  
BKN050 19/17

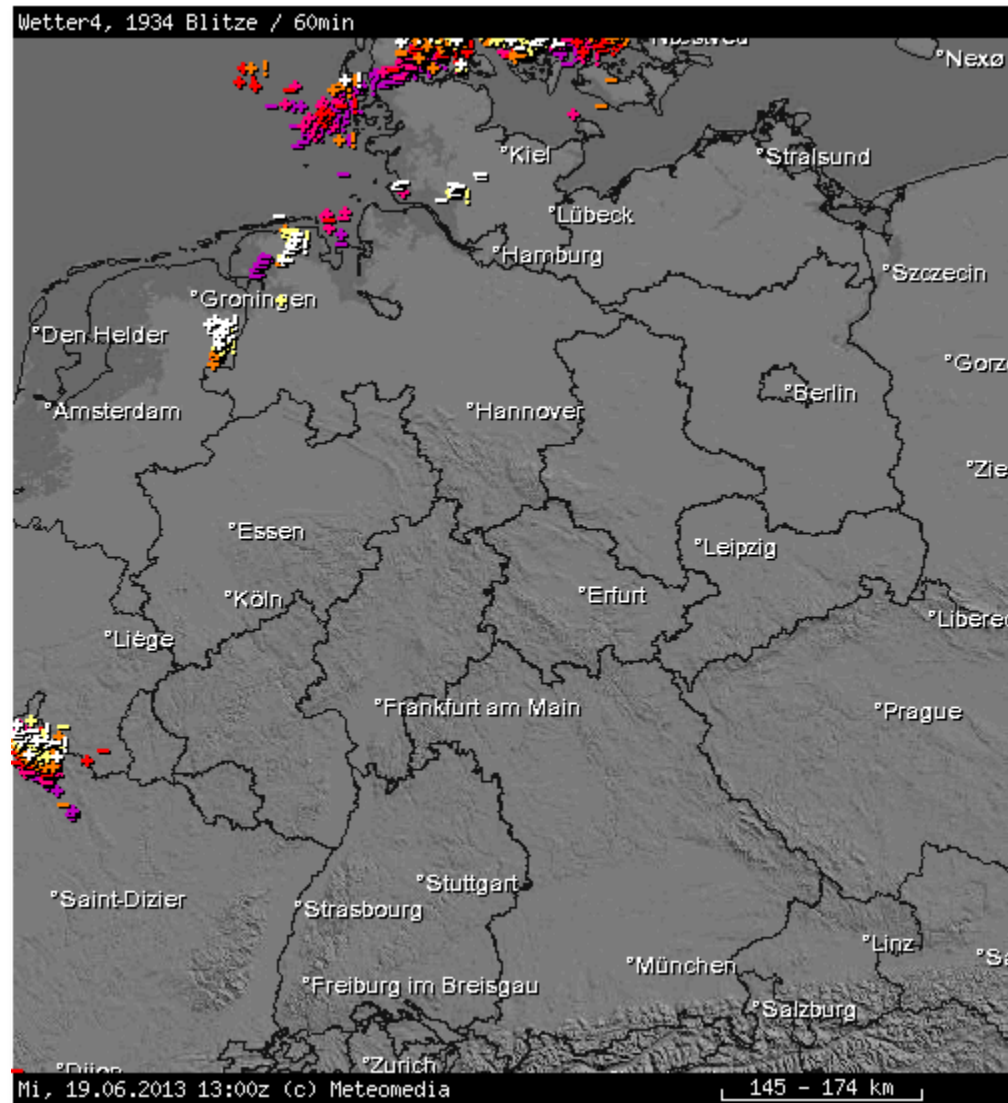
EDDL 201250Z 260015KT 9999 VCTS RA FEW008 FEW015CB BKN120  
19/17

# Weather during June 20<sup>th</sup> 2013





# Weather during June 20<sup>th</sup> 2013



# Weather during June 20<sup>th</sup> 2013



# Erfstadt (near Cologne), 10.01 UTC



# Wermelskirchen (near Wuppertal), 10.55 UTC





# Düsseldorf, 11.45 UTC



# Hagen, around 12:00 UTC





# After the weather was gone

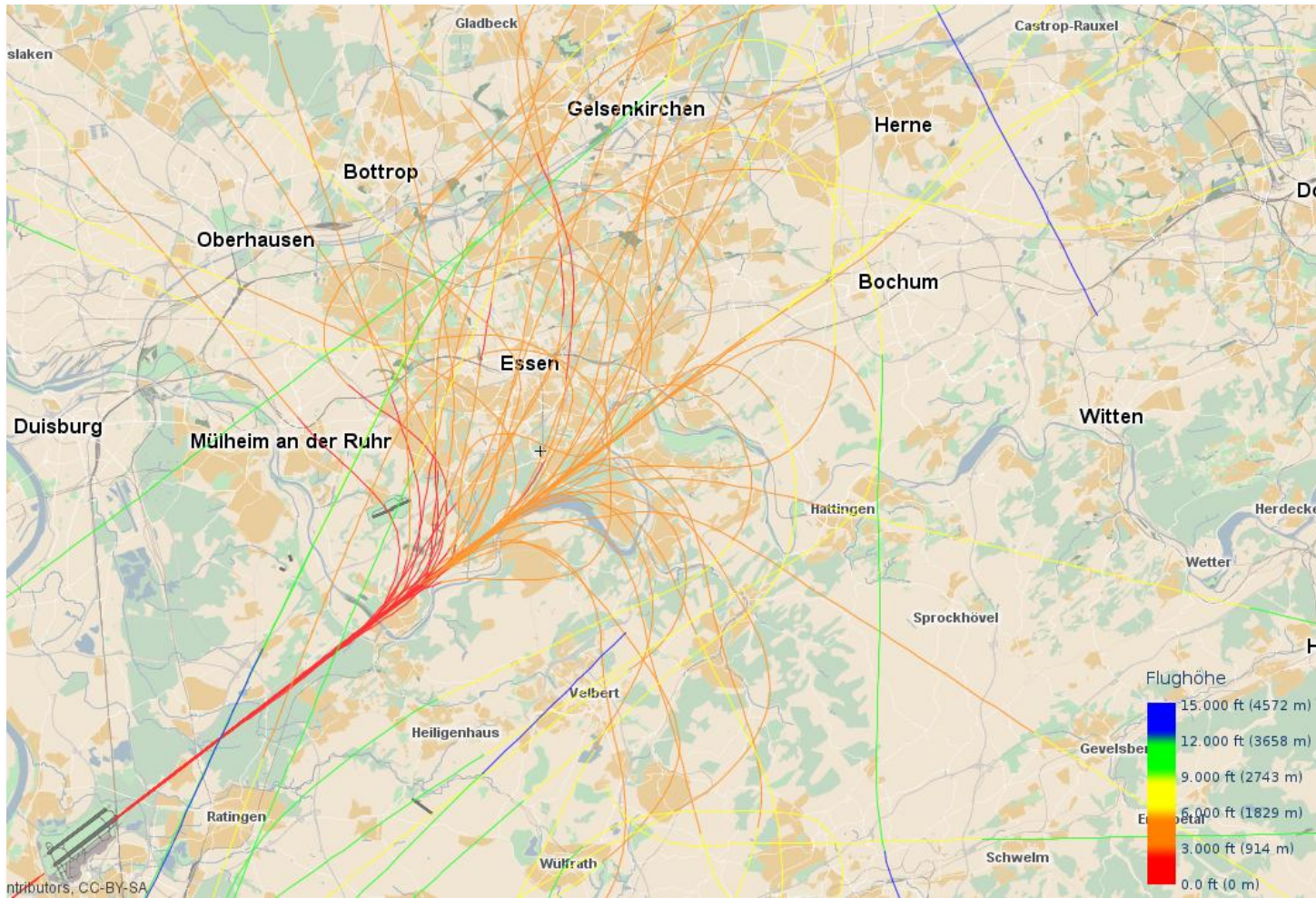


# After the weather was gone





# 20.06.2013 Inbounds (1200-1500)





# Weather and departures



„Request  
HDG 130  
to avoid“

# Why did it go right? #1

„Squawk Box“:



# Squawk Box



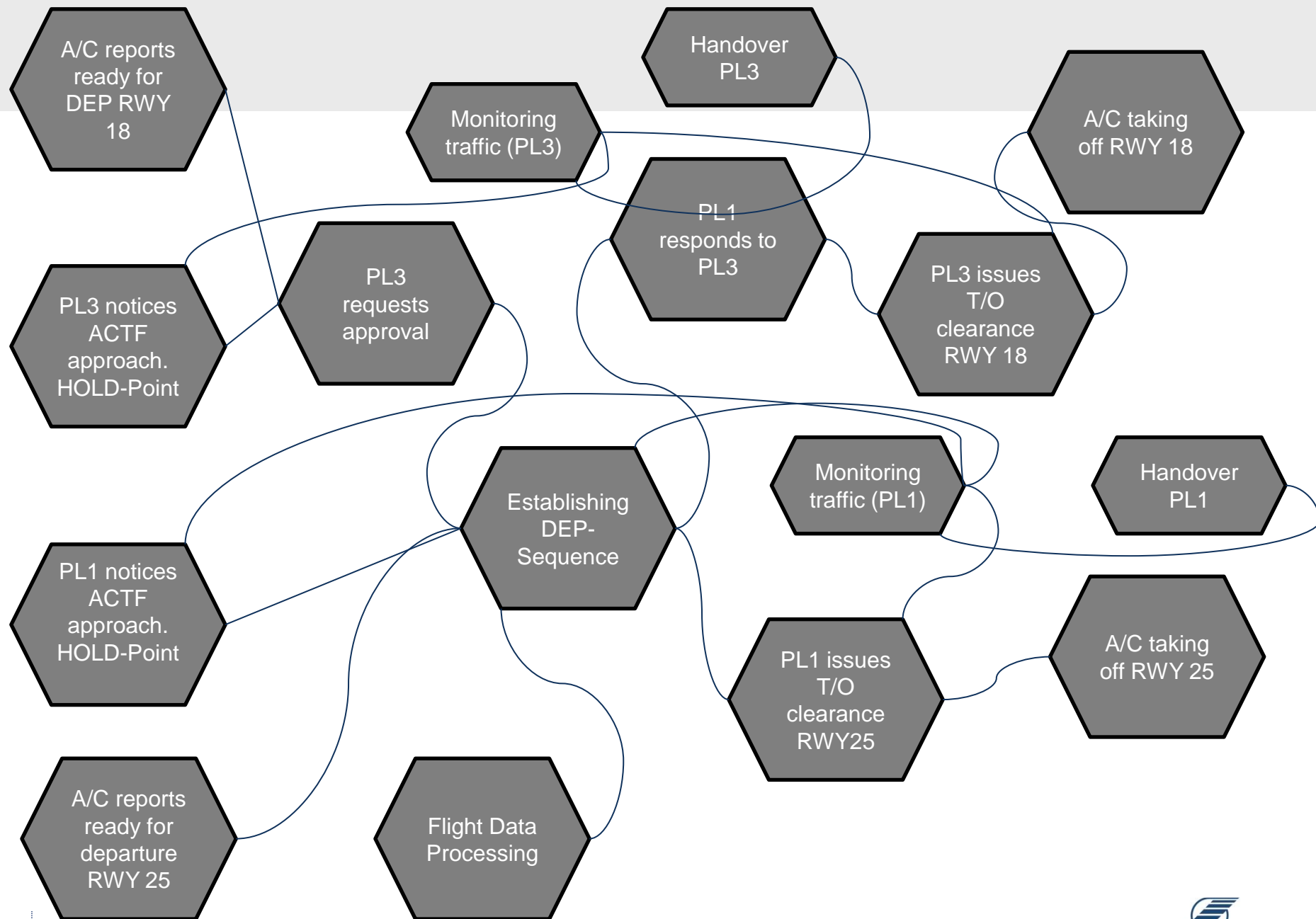
# Why did it go right? #2

- Operating outside the boundary for a limited time only
- Anticipation of bottlenecks (traffic flow)
- Interaction between operational personal
- Integration of data (weather, traffic flow, etc.)
- Communication between pilots and controllers (non standard RT)
- Coordination between ATC (opening/closing of sectors)

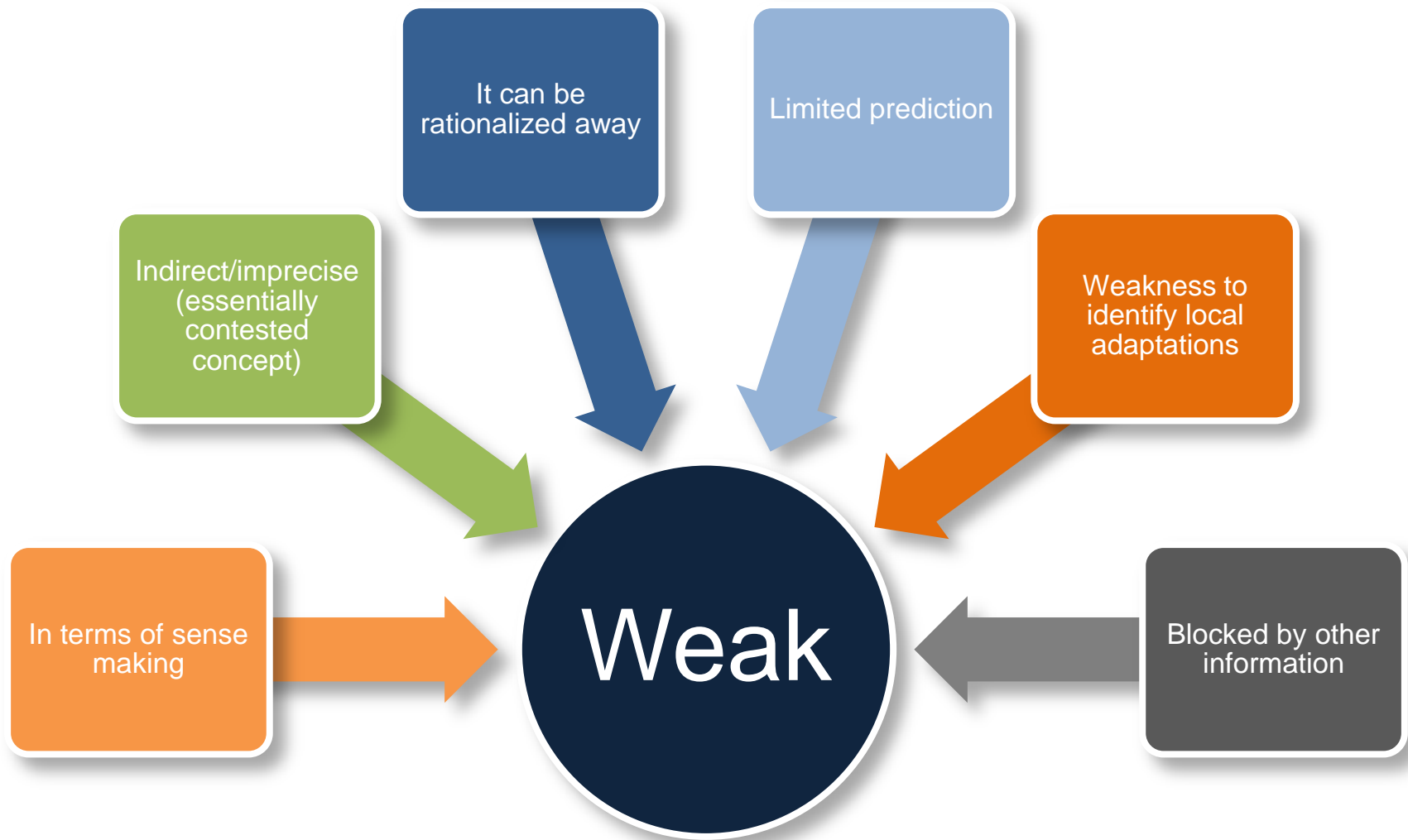


# What are we doing as (proactiv) safety management?

- Design Process Guide
- Project „Weak Signals“
- Collaboration on FRAM



# What makes a signal „weak“?



# Any questions?

„If you hit a wrong note, it's the next note that you play that determines if it is good or bad“

- Miles Davis -

