

Performance Plan

Germany

Third Reference Period (2020-2024)

Status: Draft revised performance plan containing revised RP3 targets (Art. 3 of IR 2020/1627 & Art. 12 of IR 2019/317)

Date of issue: 15 December 2022

Signatories

Performance plan details	
State name	Germany
Status of the Performance Plan	Draft revised performance plan containing revised RP3 targets (Art. 3 of IR 2020/1627 & Art. 12 of IR 2019/317)
Date of issue	15 December 2022
Date of adoption of Draft Performance Plan	14 November 2022
Date of adoption of Final Performance Plan	15 December 2022

We hereby confirm that the present performance plan is consistent with the scope of Regulation (EU) No 2019/317 pursuant to Article 1 of Regulation (EU) No 2019/317 and Article 7 of Regulation (EC) No 549/2004.

Name, title and signature of representative	
Germany	
Marina Köster Ständige Vertreterin des Abteilungsleiters Luftfahrt Bundesministerium für Digitales und Verkehr	original version signed on 15 December 2022

Additional comments	<p>IMPORTANT: This file has been produced from a formerly consolidated FABEC PP having had inputs of combined efforts of the FABEC NSAs which contained formulas and links to automatically inserted or calculated information. Although significant care has been taken in developing this file, some of the links and formulas in this document may no longer work because they refer to other documents. Should any data appear missing or inconsistent, please contact WA@baf.bund.de</p> <p>Furthermore, several times there are references to FABEC committees and groups. These were in particular relevant during RP1 and RP2 as well as during the first years of RP3. And still, even though there is no FABEC PP anymore, the close cooperation and coordination in FABEC will remain and is therefore still referred to in this document.</p>
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Document change record		
Version	Date	Reason for change
0.1	19. Aug 21	Initial released version for stakeholder consultation
1.0	01. Okt 21	Adopted draft performance plan
1.2	17. Nov 21	Updated draft performance plan following completeness verification
2.0	13. Jul 22	Adopted revised draft performance plan containing revised cost-efficiency targets for Belgium and Luxembourg
2.1	03. Aug 22	Updated draft performance plan following completeness verification
3.0	02. Nov 22	Updated draft performance plan following assessment of formerly updated draft FABEC PP, now national level PP extracted from former FAB PP
3.1	14. Nov 22	Updated draft performance plan after PRB-review

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SECTION 1: INTRODUCTION

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1 - INTRODUCTION

1.1 - The situation

NSA responsible for drawing up the Performance Plan	German Federal Supervisory Authority for Air Navigation Services
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1.1.1 - List of ANSPs and geographical coverage and services

Number of ANSPs	3
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ANSP name	Services	Geographical scope
DFS	ATM	Germany
MUAC	ATM	Belgium, Luxembourg, The Netherlands, Germany (North-West)
Deutscher Wetterdienst (DWD)	MET	Germany

Cross-border arrangements for the provision of ANS services

Number CB arrangements where ANSPs provide services in an other State	2
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ANSPs providing services in the FIR of another State	
ANSP Name	Description and scope of the cross-border arrangement
DFS	ATC, FIS, alerting service for The Netherlands (LVNL) ATC, FIS, alerting service for France (DSNA) ATC, FIS, alerting service for Belgium (SKEYES) ATC, AIS, FIS, alerting service for Luxembourg (ANA) ATC, AIS, FIS, alerting service for Switzerland (Skyguide) ATC, alerting service for Poland (PANSA) ATC, AIS, alerting service for Czech Republic (ANS Czech) ATC, AIS, alerting service for Austria (AustroControl)
MUAC	ATS, FIS, alerting services in Luxembourg airspace above FL245 ATS, FIS, alerting services for Denmark ATS, FIS, alerting service for France ATS, FIS, alerting services for Germany

Number CB arrangements where ANSPs from another State provide services in the State	
ANSP Name	Description and scope of the cross-border arrangement
LVNL	ATS, FIS, alerting service for Germany (DFS)
ANA LUX	ATS, FIS for Germany (DFS)
DSNA	ATS (LFST) - ATS (LFSB) for Germany
SKEYES	ATS, FIS, alerting service for Germany (DFS)
SKYGUIDE	ATS, FIS, alerting service in Belgium airspace assigned to MUAC ATC, FIS, alerting service, AIS for Germany (DFS)

1.1.2 - Other entities in the scope of the Performance and Charging Regulation as per Article 1(2) last para.

Number of other entities	2	
Entity name	Domain of activity	Rationale for inclusion in the Performance Plan
German Federal Supervisory Authority for Air Navigation Services	Competent authority	Determined costs incurred in relation to the provision of air navigation services in accordance with the article 22(1) of Commission implementing regulation (EU) 2019/317
EUROCONTROL		Determined costs incurred in relation to the provision of air navigation services in accordance with the article 22(1) of Commission implementing regulation (EU) 2019/317

1.1.3 - Charging zones (see also 1.4-List of Airports)

En-route	Number of en-route charging zones	1
En-route charging zone	Germany	
Terminal	Number of terminal charging zones	1
Terminal charging zone	Germany - TCZ	

1.1.4 - Other general information relevant to the plan

This PP was formerly produced as a FAB PP, and was, after coordination with COM, in a accelerated procedure truncated to a national PP. The national German targets and inputs are the same as of Version 2.1 of the FABEC PP. There are no updated targets, just ANSP (MUAC+DFS) level targets produced to national targets. There are no additions as regards the national input. While in some regards to MUAC a split between the participating countries on PP level was not feasible (compare MUAC investments, pensions and interest rates) NSAs are aware of this situation. Possible redundancies will be taken into consideration on oversight level.

Relevant local circumstances with high significance for performance target setting and updated view on the impact of the COVID-19 crisis on the operational and financial situation of ANSPs covered in the performance plan

The Covid-19 pandemic affects performance and performance planning in a number of ways :

-> Practical issues

- **Financial impact**
- **Staff issues (protection, rostering,...)**
- **System implementation**
 - * distancing constraints and remote working requirements affect practical elements of development, testing, validation and training
 - * travel constraints limit presence and delivery by international suppliers
- **ATCO training and availability**
 - * distancing constraints limit training capacity
 - * increased pressure on simulators for training as well as currency
 - * lack of high load traffic levels in OJT
 - * working requirements following vaccination

-> Uncertainty and data availability

- **Ongoing pandemic**
- **Uncertainty and variability in traffic recovery**
- **short term volatility in traffic demand**

Further information is provided either directly in the individual chapters of this draft performance plan when relevant or, when additional relevant information has to be provided for a specific performance area, in the various national Annexes R or T referred to in the plan. It has also been presented and discussed in detail during the various consultation meetings held by the FABEC or national NSA and is reflected in the consultation material provided in Annex C.

Additional comments

1.2 - Traffic Forecasts

1.2.1 - En route

En route Charging zone

Germany

En route traffic forecast

Local forecast

Local Forecast	2017A	2018A	2019A	2020A	2021	2022	2023	2024	CAGR 2019-2024
IFR movements (thousands)	3.259	3.404	3.394	1.479	1.642	2.973	3.186	3.365	-0,2%
IFR movements (yearly variation in %)		4,4%	-0,3%	-56,4%	11,0%	81,1%	7,2%	5,6%	
En route service units (thousands)	14.304	14.932	15.132	6.792	7.563	13.644	14.863	15.858	0,9%
En route service units (yearly variation in %)		4,4%	1,3%	-55,1%	11,3%	80,4%	8,9%	6,7%	

Specific local factors justifying not using the STATFOR base forecasts
(provide justification below or refer to Annex D for more detailed explanation)

Germany did pursue the possibility to adjust the traffic forecast to the STATFOR Base Scenario that was published on 15 October 2021. Service Units above are corrected for 98.500 Service Units of OAT that are not within the cost structure of the performance plan.

NOTE: Section 1.3 (Stakeholder Consultation) should include details on the consultation with airspace users' representatives and ANSPs concerned on the rationale for not using the STATFOR base forecasts.

1.2.2 - Terminal

Terminal Charging zone

Germany - TCZ

Terminal traffic forecast

Local forecast

Local Forecast	2017A	2018A	2019A	2020A	2021	2022	2023	2024	CAGR 2019-2024
IFR movements (thousands) (departures only)	1.022,3	1.061,5	1.062,3	436,6	479,9	928,1	1.003,2	1.059,2	-0,1%
IFR movements (yearly variation in %)		3,8%	0,1%	-58,9%	9,9%	93,4%	8,1%	5,6%	
Terminal service units (thousands)	1.424,1	1.474,1	1.492,3	630,0	693,0	1.280,0	1.426,0	1.498,0	0,1%
Terminal service units (yearly variation in %)		3,5%	1,2%	-57,8%	10,0%	84,7%	11,4%	5,0%	

Specific local factors justifying not using the STATFOR base forecasts
(provide justification below or refer to Annex D for more detailed explanation)

Germany did pursue the possibility to adjust the traffic forecast to the STATFOR Base Scenario that was published on 15 October 2021; no data was provided for IFR movements.

NOTE: Section 1.3 (Stakeholder Consultation) should include details on the consultation with airspace users' representatives and ANSPs concerned on the rationale for not using the STATFOR base forecasts.

1.3.1 - FABEC Stakeholder consultation

1.3.1.1 - Overall outcome of the consultation of stakeholders on the performance plan

Description of main points raised by stakeholders and explanation of how they were taken into account in developing the performance plan
SAFETY: airspace users fully support the targets set by FABEC, but more transparency by NSA and ANSP is needed, in terms of information on the different ANSP targets.
ENVIRONMENT: the proposed KEA target in line with the reference value is strongly supported. ANSPs have to build an efficient airspace by reducing complexities. Moreover, greater focus should be put on improving vertical flight efficiency to reduce CO2 emissions.
CAPACITY: the FABEC targets, which are in line with the reference values, are supported. Mitigation measures shall be identified and planned to manage volatility, staff availability, rostering, training, new ATC system implementation.
INCENTIVE SCHEME: airspace users strongly advocated for a penalty-only scheme. The CRSTMP limitation is not supported. Furthermore, only the achievement of both FAB and ANSP targets would drive the changes required by airspace users.
Although stakeholders commented on the challenging nature of the targets, the targets in the areas of safety, environment and capacity are in line with EU-wide targets, as well as the incentive scheme is consistent with EU Regulation 2019/317 laying down a performance and charging scheme in the single European sky. Therefore, the FABEC Council decided not to alter the proposed targets and incentive scheme.
Additional Comments: Information provided in this sheet is of the FABEC consultation process since FABEC formerly submitted a FAB performance plan. Therefore, the operational targets for Germany were already presented to the stakeholders during this process for the safety, environment and en route capacity performance areas. Germany considers the consultation on FAB level as a complementary means to provide transparency.
The national consultations on cost-efficiency, investments and terminal capacity and related outcomes are presented in the following chapter.

1.3.1.2 - Specific consultation requirements of ANSPs and airspace users on the performance plan

Topic of consultation	Applicable	Results of consultation
Where applicable, decision to diverge from the STATFOR base forecast	Select	Not discussed at FABEC consultation; part of national level consultations.
Charging policy	Select	Not discussed at FABEC consultation; part of national level consultations.
Maximum financial advantages and disadvantages for the mandatory incentive scheme on capacity	Yes	maximum amount of bonus and penalty corresponding to 0,5% of the determined costs. Airspace User representatives strongly advocated for a penalty-only scheme. No bonus should be awarded unless there would be a significant improvement in CAP performance.
Where applicable, decision to modulate performance targets for the purpose of pivot values to be used for the mandatory incentive scheme on capacity	Yes	The FABEC en route incentive scheme will apply one point of the modulation mechanism as referred to the Annex XIII of the regulation IR (EU) 2019/317 to limit the scope of incentives to cover only CRSTMP delay causes. Airspace User representatives did not support the limitation of the scope to cover only CRSTMP delay causes.

Symmetric range ("dead band") for the purpose of the mandatory incentive scheme on capacity	Yes	The FABEC en route incentive scheme is elaborated with a dead band around the pivot value in recognition of the volatile nature of performance at current delay levels. Only penalising does not serve the purpose of improving performance. Airspace User representatives did not agree such a symmetric approach. They consider that only a penalty scheme should be developed to manage performance.
Establishment or modification of charging zones	Select	Not discussed at FABEC consultation; part of national level consultations.
Establishment of determined costs included in the cost base for charges	Select	Not discussed at FABEC consultation; part of national level consultations.
Where applicable, values of the modulated parameters for the traffic risk sharing mechanism	Select	Not discussed at FABEC consultation; part of national level consultations.
Where applicable, decision to apply the simplified charging scheme	Select	Not discussed at FABEC consultation; part of national level consultations.
New and existing investments, and in particular new major investments, including their expected benefits	Select	Not discussed at FABEC consultation; part of national level consultations.

1.3.1.3 - Consultation of stakeholder groups on the performance plan

#1 - ANSPs	
Stakeholder group composition	FABEC ATSPs (ANA Luxembourg, DFS, DSNA, LVNL, MUAC, skeyes and Skyguide)
Dates of main meetings / correspondence	General FABEC stakeholder consultation meeting, 2 September
Main issues discussed	See minutes of the meeting
Actions agreed upon	See minutes of the meeting
Points of disagreement and reasons	See minutes of the meeting
Final outcome of the consultation	See minutes of the meeting
Additional comments	

#2 - Airspace Users	
Stakeholder group composition	Air France, DLH, Ryanair, SWISS, Easyjet, Tuifly, IATA, A4E, ERAA
Dates of main meetings / correspondence	General FABEC stakeholder consultation meeting, 2 September
Main issues discussed	See minutes of the meeting
Actions agreed upon	See minutes of the meeting
Points of disagreement and reasons	See minutes of the meeting
Final outcome of the consultation	See minutes of the meeting

Additional comments

#3 - Professional staff representative bodies	
Stakeholder group composition	
Dates of main meetings / correspondence	
Main issues discussed	
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	

Additional comments

#4 - Airport operators	
Stakeholder group composition	ACI was invited to the FABEC stakeholder consultation meeting as representative body for the airports. No representative attended.
Dates of main meetings / correspondence	General FABEC stakeholder consultation meeting, 2 September
Main issues discussed	See minutes of the meeting
Actions agreed upon	See minutes of the meeting
Points of disagreement and reasons	See minutes of the meeting
Final outcome of the consultation	See minutes of the meeting

Additional comments
Not consulted by the NSA; consultation of staff is considered the responsibility of the ANSPs.

#5 - Airport coordinator	
Stakeholder group composition	
Dates of main meetings / correspondence	
Main issues discussed	
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	

Additional comments

#6 - Other (specify)	
Stakeholder group composition	
Dates of main meetings / correspondence	
Main issues discussed	
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	

Additional comments

1.3.2 - Germany Stakeholder consultation (10 Aug 2021 and 4 Nov 2021- virtual)

1.3.2.1 - Overall outcome of the consultation of stakeholders on the performance plan

Description of main points raised by stakeholders and explanation of how they were taken into account in developing the performance plan
<p>Consultation on the draft performance plan on 10 Aug 2021:</p> <p>1. Airspace user raised a comment regarding the adjustment to the DFS pension, which is only allowed when there is an unforeseeable cost to the ANSP, whether the change in accounting law or national law has affected the DFS pension cost. Conclusion: The complaint regarding the adjustment as mentioned by IATA was again reviewed by NSA and came up with the result that the adjustment is within the scope of the regulation.</p> <p>2. Regarding the traffic forecast, airspace users did not think that two months gap in publishing the forecast was crucial in deciding to use the STATFOR over the DFS forecast. The main aspect highlighted by the airspace user is also about the consistency of application and avoiding choosing the lowest forecast whenever beneficial. Conclusion: Ministry of Transport decided to apply DFS forecast after reviewing the recent traffic development. This forecast presents higher service units amounted to additional 2 million SU for Enroute and 0,35 million SU for Terminal for the total of RP3. This will lead to a lower chargeable unit rate applied for all years in the RP3.</p> <p>3. For allocation of carryover, airspace users demanded a justification for 5-year recovery and requested to apply 7 years option. Conclusion: NSA provided the regulation as a basis for the 5-year recovery. After extra review, NSA continued with this decision to avoid further liquidity risks incurs by the ANSP.</p>
<p>4. Airspace users requested NSA not to grant DFS applying Return on Equity on their asset-base. The same concern for DWD cost of capital (as a government institution with low risk) should not be included in the performance plan. Since it will further increase unit rates and risk for airlines. Conclusion: After reviewing the evaluation of the imputed interest rate and the risk covered by ANSP, the Ministry of Transport decided not to apply ROE on the asset-based for DFS and DWD for all years in the RP3. This exclusion will further contribute to a favorable rate for the airspace user.</p> <p>5. Airspace users considered the DDS project as not eligible to be brought up in performance planning, some arguments mentioned that the DDS project is a matter of national security. Conclusion: After an additional review of the benefit and legality concerning the inclusion of the DDS project into the performance plan, NSA opts to include it: The planned project is at the present stage only destined at detecting drones for the purpose of supporting air traffic control in order to prevent and accidents between aircrafts and drones and to enable a safe and orderly flow of traffic. Currently, it is not decided whether the information thus gathered will be made available to other authorities and for other purposes such as drone defense, law enforcement or criminal prosecution. However, such a sharing of the data is considered as an option to share the costs. In such a case, in line with the principles set out in the European Commission's letter dated 14th of June 2021 (Ares (2021) 3876111), Germany will ensure that the costs are split according to a transparent methodology approved by the National Supervisory Authority and will lower the terminal charges for the respective year in accordance with Art. 29 (6) IR (EU) 2019/317.</p>

6. Airspace user inquired MUAC to share the result of the GCE to the airspace user before the October submission.
 Conclusion: MUAC representative agreed to provide the requested information before the submission.

7. The airspace users requested an explanation of costs affiliated with the second charging zone. Airspace users did not yet understand the cost-sharing key of these small airports.
 Conclusion: As soon as NSA recognized the respective costs, airspace users will be provided with specific info about the NSA cost attribution between the first and the second charging zone.

Consultation in the course of the completeness check on 4 Nov 2021:

Stakeholders were invited to comment on the STATFOR Forecast as published on 15 October 2021.

Whereas airspace users commented very optimistically on the forecast, partly even suggesting to go beyond the STATFOR Base Scenario, ANSPs expressed their concerned and advocated for a scenario between the base and the low scenario, pointing out certain risks such the further development of the pandemic but also digitalisation and environmental awareness not sufficiently addressed by the forecast.

1.3.2.2 - Specific consultation requirements of ANSPs and airspace users on the performance plan

Topic of consultation	Applicable	Results of consultation
Where applicable, decision to diverge from the STATFOR base forecast	Yes - for some FAB Member States	Germany MoT decided to apply DFS forecast as of March 2021 after reviewing the recent traffic developments.
Charging policy	Yes	No changes to the consulted plan.
Maximum financial advantages and disadvantages for the mandatory incentive scheme on capacity	Yes	No changes to the consulted plan.
Where applicable, decision to modulate performance targets for the purpose of pivot values to be used for the mandatory Symmetric range ("dead band") for the purpose of the mandatory incentive scheme on capacity	No	
Establishment or modification of charging zones	Yes	No changes to the consulted plan.
Establishment of determined costs included in the cost base for charges	No	
Establishment of determined costs included in the cost base for charges	Yes	Airspace users have requested additional effort to lower the unit rate. A few adaptations were taken by Germany such as excluding RoE of the ANSPs and also changing the applied traffic forecast .
Where applicable, values of the modulated parameters for the traffic risk sharing mechanism	No	

Where applicable, decision to apply the simplified charging scheme	No	
New and existing investments, and in particular new major investments, including their expected benefits	Yes	Main concern from the airspace user is regarding DDS project. After an additional review of the benefit and legality concerning the inclusion of the DDS project into the performance plan, NSA opts to include it as the initial plan.

1.3.2.3 - Consultation of stakeholder groups on the performance plan

#1 - ANSPs	
Stakeholder group composition	DFS, DWD, MUAC
Dates of main meetings / correspondence	National consultation 10/08/2021, Follow up meetings 12/08/2021, 23/08/2021, 13/09/2021, 15/09/2021
Main issues discussed	National consultation is described in table 1.3.4.1. Follow-up meeting with regard to the pending decisions is concerning DFS and DWD RoE, Asset Base, and Traffic Forecast.
Actions agreed upon	Various.
Points of disagreement and reasons	Various.
Final outcome of the consultation	No RoE will be included in the performance plan and changes of STATFOR forecast scenario 2 to the DFS march forecast.

Additional comments

#2 - Airspace Users	
Stakeholder group composition	IATA, BARIG, BDF, Condor, Easyjet, Lufthansa, Ryanair, TUI-Fly
Dates of main meetings / correspondence	National consultation 10.08.2021
Main issues discussed	Described in table 1.3.4.1
Actions agreed upon	Described in table 1.3.4.1
Points of disagreement and reasons	Described in table 1.3.4.1
Final outcome of the consultation	Described in table 1.3.4.1

Additional comments

#3 - Professional staff representative bodies	
Stakeholder group composition	Air Traffic Controllers European Unions Coordination (ATCEUC)
Dates of main meetings / correspondence	National consultation 10.08.2021
Main issues discussed	Described in table 1.3.4.1
Actions agreed upon	./.
Points of disagreement and reasons	./.
Final outcome of the consultation	Described in table 1.3.4.1

Additional comments

#4 - Airport operators	
Stakeholder group composition	No airport operators responded to the invitation of the 10 Aug 2021 - consultation.
Dates of main meetings / correspondence	
Main issues discussed	
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	

Additional comments

#5 - Airport coordinator	
Stakeholder group composition	No airport operators responded to the invitation of the 10 Aug 2021 - consultation.
Dates of main meetings / correspondence	
Main issues discussed	
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	

Additional comments

#6 - Other (specify)	
Stakeholder group composition	Air Traffic Controllers European Unions Coordination (ATCEUC)
Dates of main meetings / correspondence	National consultation 10.08.2021
Main issues discussed	Described in table 1.3.4.1
Actions agreed upon	
Points of disagreement and reasons	
Final outcome of the consultation	Described in table 1.3.4.1

Additional comments

1.4 - List of airports subject to the performance and charging Regulation

1.4.1 - Airports as per Article 1(3) (IFR movements ≥ 80 000)

ICAO code	Airport name	Charging Zone	IFR air transport movements			
			2016	2017	2018	Average
EDDF	Frankfurt	Germany-TMZ	462.903	475.535	512.099	483.512
EDDM	Munich	Germany-TMZ	391.744	401.849	410.528	401.374
EDDL	Dusseldorf	Germany-TMZ	217.041	221.067	218.391	218.833
EDDT	Berlin-Tegel	Germany-TMZ	183.959	171.882	185.309	180.383
EDDH	Hamburg	Germany-TMZ	152.323	154.478	149.338	152.046
EDDK	Cologne/Bonn	Germany-TMZ	134.393	138.832	141.991	138.405
EDDS	Stuttgart	Germany-TMZ	119.023	117.993	128.323	121.780
EDDB	Berlin Brandenburg (formerly Berlin-Schönefeld)	Germany-TMZ	95.088	100.122	101.054	98.755

Additional comments

Berlin-Tegel Airport was finally closed on 5 May 2021 as a civilian airport; the ICAO code EDDB was reattributed to Berlin Brandenburg Airport that was opened in October 2021, incorporating the premises of former Schoenefeld-Berlin airport.

1.4.2 Other airports added on a voluntary basis as per Article 1(4)

c) Germany

Number of airports	8		
ICAO code	Airport name	Charging Zone	Additional information
EDDV	Hannover	Germany-TMZ	
EDDP	Leipzig	Germany-TMZ	
EDDN	Nürnberg	Germany-TMZ	
EDDW	Bremen	Germany-TMZ	
EDDC	Dresden	Germany-TMZ	
EDDG	Münster-Osnabrück	Germany-TMZ	
EDDR	Saarbrücken	Germany-TMZ	
EDDE	Erfurt	Germany-TMZ	

Additional comments

1.5 - Services Under Market Conditions

Number of services under market conditions	0
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1.6 - Process followed to develop and adopt a FAB Performance Plan

Description of the process
Not applicable

1.7 - Establishment and application of a simplified charging scheme

Is the State intending to establish and apply a simplified charging scheme for any charging zone/ANSP?	No
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SECTION 2: INVESTMENTS

2.1 - Investments - DFS

- 2.1.1 - Summary of investments
- 2.1.2 - Detail of new major investments
- 2.1.3 - Other new and existing investments

2.2 - Investments - MUAC

- 2.2.1 - Summary of investments
- 2.2.2 - Detail of new major investments
- 2.2.3 - Other new and existing investments

2.3 - Investments - DWD

- 2.3.1 - Summary of investments
- 2.3.2 - Detail of new major investments
- 2.3.3 - Other new and existing investments

Annexes of relevance to this section

ANNEX E. INVESTMENTS

NOTE: The requirements as per Annex II, 2.2.(c) are addressed in item 4.1.2

2.1 - Investments - DFS

2.1.1 - Summary of investments

Number of new major investments	9
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#	Name of new major investment (i.e. above 5 M€)	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation and cost of leasing; w/o cost of capital) (in national currency)					Lifecycle (Amortisation period in years)	Allocation (%)*		Planned date of entry into operation
				2020	2021	2022	2023	2024		Enroute	Terminal	
1	Drone Detection System	193.696.701	57.194.279	2.425	3.567	3.532	1.210.454	4.783.312	3-20	0%	100%	2023-2028
2	iCAS architecture project	53.918.000	37.631.000	0	0	0	0	0	8	100%	0%	01-12-2025
3	Data Center	27.651.659	16.151.889	6.987	30.354	428.886	1.501.242	2.056.173	3-15	80%	20%	DC Initial disassembly 01/23 and DC Scaling Services 01/25
4	PIPE2 – IP enhancement phase 2	27.505.000	18.905.000	0	48.750	302.187	961.250	1.889.375	5-8	80%	20%	2027
5	New construction of an office building at the DFS Campus in Munich	19.077.586	5.227.586	0	970	33.470	80.345	168.820	15-40	80%	20%	01.11.2028
6	iTEC V3	10.640.000	5.640.000	0	0	40.000	236.250	548.750	8	100%	0%	2028 ff.
7	ViTo-MUC - Virtual Tower Munich	6.439.974	5.189.861	0	0	41.142	218.674	437.024	3-40	0%	100%	2030
8	Program ADS-B	5.313.500	4.185.501	8.695	9.628	71.303	194.751	459.696	8	82%	17%	2023-2025
9	ADS-C	8.896.000	2.869.333	0	0	0	0	0	8	100%	0%	01.07.2029
Sub-total of new major investments above (1)		353.138.420	152.994.449	18.107	93.269	920.520	4.402.966	10.343.150				
Sub-total other new investments (2)		27.895.149	21.279.372	77.759	328.841	994.728	1.632.001	2.229.314		51%	42%	
Sub-total existing investments (3)				99.255.213	99.594.128	106.495.697	116.886.316	126.236.316				
<i>Experience-based DFS management correction <u>and</u> non-regulated services**)</i>				-12.145.485	-13.926.020	-13.865.609	-17.846.700	-21.654.392				
Total new and existing investments (1) + (2) + (3)		381.033.569	174.273.821	87.205.594	86.090.218	94.545.337	105.074.582	117.154.387				

* The total % enroute+terminal should be equal to 100%. Differences to 100% are attributed to non-regulated services.

** The Investment table above was extended by an experience-based DFS management correction to show reduced investment figures. This adaption is being made on the assumption of a conservative planning and the experience that the full amount normally will not be needed due to e.g. the application of more innovative and cost-effective systems and services, risks that do not occur or achievements of the purchasing department. Additionally there is a reduction of the non-regulated services.

2.1.2 - Detail of new major investments

NOTE: Section 1.3 (Stakeholder Consultation) should include details on the consultation with airspace users' representatives on new major investments.

Name of new major investment 1	Drone Detection System						Total value of the asset	193.696.701 €
Description of the asset	<p>DFS got the order by the Ministry of Transport to establish at all international airports a system to seek, recognize and identify all flight objects flying in the TMA that cause dangerous situations at international airports. Quick action to complete the project is required due to the misuse of drones and the number of drone sightings and threats in the vicinity of the airport with the known consequences. Such incidents and operational disruptions also result in loss of revenue, costs, and considerable damage to the image of the airports. With the installation of the Drone Detection System, all unmanned aircraft systems (UAS) that may pose a threat can be detected. This may include a risk-based scaled threat model (e.g., at a wider distance it is sufficient to detect only high-risk drones).</p> <p>The planned project is at the present stage only destined at detecting drones for the purpose of supporting air traffic control in order to prevent and accidents between aircrafts and drones and to enable a safe and orderly flow of traffic. Currently, it is not decided whether the information thus gathered will be made available to other authorities and for other purposes such as drone defense, law enforcement or criminal prosecution. However, such a sharing of the data is considered as an option to share the costs. In such a case, in line with the principles set out in the European Commission's letter dated 14th of June 2021 (Ares (2021) 3876111), Germany will ensure that the costs are split according to a transparent methodology approved by the National Supervisory Authority and will lower the terminal charges for the respective year in accordance with Art. 29 (6) IR (EU) 2019/317.</p>							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
Level of impact of the investment	Network	no impact						
	Local	no impact						
	Non-performance							
Quantitative impact per KPA	Safety	Reduces the risk of drone-induced collision significantly.						
	Environment	no impact						
	Capacity	Reduces the risk and the impact of drone-induced airport-closure.						
	Cost Efficiency	Reduces the risk and the impact of drone-induced airport-closure.						
Results of the consultation of airspace users' representatives	<p>After an additional review of the benefit and legality concerning the inclusion of the DDS project into the performance plan, NSA opts to include it as the initial plan. The DDS project is legally included based on regulation, in order to avoid any collusion at the terminal and it is not a matter of national security, but a project to ensure the safety of aviation. The cost of prosecution of infringements is not part of it and also not the cost of drone defense, it is just a surveillance system to uncover drones.</p>							
Joint investment / partnership	No							
Investment in ATM systems	No							
If investment in ATM system, type?	Click to select							
If investment in ATM system, Reference to European ATM Master Plan / PCP	Click to select							

Name of new major investment 2	iCAS architecture project						Total value of the asset	53.918.000 €
Description of the asset	Software licenses for the ATS-System. The new iCAS Architecture and peripheral systems will provide a more cost efficient and flexible mode of operation on Data Center Platforms, i.e. IaaS, CaaS cloud service models. It is in line with the EATM Masterplan.							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
Level of impact of the investment	Network	High impact, ATS systems can be operated more flexible, incl. Cross border.						
	Local	iCAS architecture will run on the Data Center infrastructure and therefore the number of technical installations will be reduced and the ATS system will provide more flexibility						
	Non-performance	n/a						
Quantitative impact per KPA	Safety	no impact						
	Environment	no impact						
	Capacity	no impact						
	Cost Efficiency	CBA shows positive impact through a reduction of IT infrastructure-, operating- and maintenance-cost						
Results of the consultation of airspace users' representatives	n/a							
Joint investment / partnership	Yes	Developments will be performed in coordination with iCAS and iTEC partners						
Investment in ATM systems	Yes							
If investment in ATM system, type?	Overhaul of	Data Center readiness for the iCAS ATS-System and peripheral components						
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	Contributes to Essential Operational Change 'Virtualisation of Service Provision' [European ATM Master Plan 2019, chapter 4.2.5]						

Name of new major investment 3	Data Center						Total value of the asset	27.651.659 €
Description of the asset	Platform to support cost efficient operation modes for ATS Systems, i.e. IaaS, CaaS							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
Level of impact of the investment	Network	no impact						
	Local	High impact, as operating costs will go down						
	Non-performance	n/a						
Quantitative impact per KPA	Safety	no impact						
	Environment	no impact						
	Capacity	no impact						
	Cost Efficiency	CBA shows positive effects through reduction of IT infrastructure-, operating- and maintenance cost, once all ATS systems are migrated into the Data Center platform.						
Results of the consultation of airspace users' representatives	n/a							
Joint investment / partnership	No							
Investment in ATM systems	Yes							
If investment in ATM system, type?	New system	replacement local IT-infrastructure by a central IT-infrastructure in Data Center						
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	(a) Data Center Initial disassembly and scaling services contribute to Essential Operational Change 'Virtualisation of Service Provision' [European ATM Master Plan 2019, chapter 4.2.5]; (b) Data Center initial disassembly is additionally indirectly linked to DVO (EU) 716/2014 because the IT-infrastructure changes are the precondition for realising the project TANGe which will fulfill the mentioned DVO.						

Name of new major investment 4	PIPE2 – IP enhancement phase 2						Total value of the asset	27.505.000 €
Description of the asset	<p>With the IP upgrading project for the radio and radar sites Phase 1, 144 sites were non-redundantly connected to the MPLS-A network. This is where phase 2 begins, with which the redundant connection to the locations from phase 1 as well as to all other remote locations will take place. In addition, the Voice-over-IP and Surveillance-over-IP functionality will be introduced throughout DFS.</p> <p>The aim is to use an integrated network design to connect the applications of the communication, navigation and surveillance domains in a uniform and future-proof manner with an All-IP network.</p>							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
Level of impact of the investment	Network	no impact						
	Local	The background to the project is the discontinuation of servicing for the multiplexers for 2027 and the replacement of ISDN lines (by mid-2020). Due to the age of the analogue modules of the radio interfaces Bremen and Karlsruhe, a secure function and the supply of spare parts is endangered. Servicing of the VCX at the Langen and Munich locations has been discontinued.						
	Non-performance							
Quantitative impact per KPA	Safety	The replacement is needed to secure the existing level of safety.						
	Environment	no impact						
	Capacity	The omission alternative can lead to failures in the data networks, reduce the availability of systems and thus could have a negative impact on capacity and flight profiles in the operational service.						
	Cost Efficiency	The impending technology change among telecommunications providers makes infrastructure renewal essential and a delay in the project may increase the cost of operation and reduce the availability of services.						
Results of the consultation of airspace users' representatives	n/a							
Joint investment / partnership	No							
Investment in ATM systems	No							
If investment in ATM system, type?	Click to select							
If investment in ATM system, Reference to European ATM Master Plan / PCP	Click to select							

Name of new major investment 5	New construction of an office building at the DFS Campus in Munich						Total value of the asset	19.077.586 €
Description of the asset	Due to legal requirements, the existing old ACC building would need to be extensively renovated. A CBA comparing the cost for option 1 (the demolition of that building with the construction of a new office building for only administrative functions) with option 2 (renovation of the old ACC building) proved option 1 being the less expensive one. By the end of the year the project was stopped in order to find out if it's also feasible to rent the required space. The current solution intends to rent for five years, demolish the old building in the meantime and restart the planning of the project in 2023.							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
Level of impact of the investment	Network	no impact						
	Local	no impact						
	Non-performance	n/a						
Quantitative impact per KPA	Safety	no impact						
	Environment	no impact						
	Capacity	no impact						
	Cost Efficiency	Yes The demolition of the old building and the new construction of the new office building are having a positive effect, as a refurbishment of the old building would be considerably more expensive than a demolition and new construction. The facility Management costs for the new and smaller building are less than for the current old building.						
Results of the consultation of airspace users' representatives	n/a							
Joint investment / partnership	No							
Investment in ATM systems	No							
If investment in ATM system, type?	Click to select							
If investment in ATM system, Reference to European ATM Master Plan / PCP	Click to select							

Name of new major investment 6	iTEC V3					Total value of the asset	10.640.000 €
Description of the asset	<p>Seven European ANSPs, organised in the iTEC Cooperation, intend to develop a common ATS system named iTEC OneSky. Based on harmonised requirements across all seven ANSPs iTEC OneSky will provide</p> <ul style="list-style-type: none"> - new way in sharing major cost (for development, training, operation, maintenance, etc.) , - an efficient way to keep ATM systems state-of-the-art and up-to-date, - a major technical step forward (e.g using cloud technology) - new possibilities of working seamless and harmonised (based in a common CONOPs). <p>Furthermore, it provides the opportunity for future business models (like ADSP) and improved cooperation between the ANSPs that are covering a major part of the European Airspace.</p> <p>iTEC OneSky Definition Phase has started to agree the common requirements for the iTEC OneSky systems. By end of 2022/beginning of 2023 iTEC ANSPs will decide based on improved business cases about the implementation of iTEC OneSky. Implementation Phase is foreseen to start mid 2023, a first deployment of iTEC OneSky at DFS will be possible not earlier than 2028.</p>						
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No	iTEC ANSPs have decided include FO-IOP in the scope of iTEC OneSky. iTEC Cooperation is putting a lot of effort in agreeing and defining the underlying standard with all European ANSPs (iTEC, Coflight and Coopans). It's expected that once the standard has been set it will be mandated.					
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability
Level of impact of the investment	Network	Cooperation with other partners improves the network impact					
	Local	Enables seamless coordination and transfer					
	Non-performance	n/a					
Quantitative impact per KPA	Safety	To keep the current level of safety is a must					
	Environment	Provides possibilities of improved coordination and optimized routing across European centres (e.g. FO-IOP)					
	Capacity	Provides possibilities of improved cooperation and optimizes use of airspace between European centres (e.g. FO-IOP)					
	Cost Efficiency	Possibility of sharing cost within iTEC partners and gaining additional synergies by sharing services between iTEC partners					
Results of the consultation of airspace users' representatives	n/a						
Joint investment / partnership	Yes	joint investment of seven ANSPs collaborating in the iTEC					
Investment in ATM systems	Yes						
If investment in ATM system, type?	New system	iTEC V3 is based on current components shared between iTEC partners. The result will be a new ATS System ready to be deployed at all "iTEC centres".					
If investment in ATM system, Reference to European ATM Master Plan / PCP	PCP	iTEC V3 will implement mandated functionality included in current CP1 (EU 2021/116 , former PCP) such as SWIM, Free Route, Extended Arrival Management.					

Name of new major investment 7	ViTo-MUC - Virtual Tower Munich					Total value of the asset	6.439.974 €
Description of the asset	<p>The Flughafen München GmbH (FMG) informed DFS, that the Tower building at the airport has to be renovated. The FMG owns the building used by DFS and others. The contract between DFS and FMG states the DFS has to bear a 47% share of the renovation costs. .</p> <p>The reductions compared to the Draft Performance Plan RP3-2019 result from the validation of an alternative approach with the aim of increasing the "Finance" KPI. During the validation, the renovation measures are limited to the bare minimum. Depending on the validation results, the implementation of the virtual approach or the renovation of the ATC tower will then take place after RP3.</p>						
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No						
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability
Level of impact of the investment	Network	n/a					
	Local	Modern technology improves local performance					
	Non-performance	n/a					
Quantitative impact per KPA	Safety	Modern technology ensures at least maintaining current safety levels.					
	Environment	n/a					
	Capacity	no impact					
	Cost Efficiency	Validation to investigate significant cost savings by modern technology and in the tower construction.					
Results of the consultation of airspace users' representatives	n/a						
Joint investment / partnership	No						
Investment in ATM systems	Yes						
If investment in ATM system, type?	New system						
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	ATM MP: SDM-0201 Remotely Provided Air Traffic Service for Single Aerodrome					

Name of new major investment 8	Program ADS-B						Total value of the asset	5.313.500 €
Description of the asset	The goal is to implement the surveillance system mix set forth in the Surveillance Strategic Architecture Plan and, as a result, to reduce the number of radar systems to be modernized, taking into account today's air situational requirements.							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)? Ref. to the Regulation and, if funded through Union assistance programmes, ref. to the relevant grant agreement.)	Yes							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
							1206/2011	
							1207/2011	
Level of impact of the investment	Network	Modern surveillance technology strengthens the network.						
	Local	Wherever possible, the DFS own sites with modernized infrastructure are used.						
	Non-performance	n/a						
Quantitative impact per KPA	Safety	Distance-independent accuracy of ADS-B position reports						
	Environment	A reduction of the radio field exposure (according to European Commission Single European Sky Surveillance Performance and Interoperability Implementing Rule, DVO (EU) 1207/2011))						
	Capacity	Range extensions that can be used for more flexible structuring of control sectors (especially across national borders) can be realized much more easily and cost-effectively through the use of ADS-B stations than through conventional radar technology.						
	Cost Efficiency	CBA shows positive effects through reduction of operating- and maintenance cost.						
Benefits for airspace users and results of the consultation of airspace users' representatives	The on-board data provided in accordance with DVO (EU) 1206/2011 and DVO EU 1207/2011 (incl. supplement DVO 587/2020) are received on the ground, processed and made available to the ATM services for the provision or demand-oriented extension of their services. The benefit generated for DFS can support the expectations of external customers regarding improvements in the provision of "direct routing" or use of individual codes. The internal customers of the positioning services, the CC and TWR divisions, will receive guaranteed availability of their positioning data coverage and quality as required by the OSR until beyond the year 2040.							
Joint investment / partnership	No							
Investment in ATM systems	Yes							
If investment in ATM system, type?	Overhaul of	Modification in the area of SDPS, CWP						
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)							

Name of new major investment 9	ADS-C					Total value of the asset	8.896.000 €
Description of the asset	<p>The goal of this project is develop and provide the necessary ADS-C systems and application software necessary to comply with EU Commission Implementing Regulation EU 2021/116 , part AF6 "Initial Trajectory Information Sharing". The AF6 mandates the support of ADS-C functions for airspace users and by all European ANSPs for all flight segments above FL285 from 31.12.2027 onwards. The project scope thus includes the ATS system development for DFS control centers in Karlsruhe and partially Munich.</p> <p>Based on existing validation findings regarding the potential operational benefits of ADS-C, the development of ADS-C applications for DFS lower airspace centers will also be analyzed, considering realization options and use cases beyond the current restricted ADS-C mandate for upper airspace.</p> <p>Note: Before operational deployment of the developed ADS-C systems and software, additional measures will be needed in the respective control centers, which will be conducted in the form of subsequent on-site projects.</p>						
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)? Ref. to the Regulation and, if funded through Union assistance programmes, ref. to the relevant grant agreement.)	Yes	mandated through IR EU 2021/116 part AF6 "Initial Trajectory Information Sharing"					
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability
						sub-AF 6.1.2 sub-AF 6.3.1	
Level of impact of the investment	Network	ADS-C mandated for entire European ATM Network (above FL285)					
	Local	ADS-C will be implemented as a set of functions integrated in the future DFS ATM System					
	Non-performance	n/a					
Quantitative impact per KPA	Safety	ADS-C improves safety, as flight planning in airborne systems and ground system will be automatically checked for consistency					
	Environment	ADS-C enables the realization of optimized 4D-trajectories and flight profiles, which will lead to lower CO2 emissions					
	Capacity	ADS-C enables more precise flight planning with lower uncertainty in ground systems, and thereby leverages a better use of available airspace capacity					
	Cost Efficiency	ADS-C enables improvements of 4D trajectory prediction in ground tools for ATCOs, such as conflict detection. This will support more efficient flight vertical profiles and increase productivity.					
Benefits for airspace users and results of the consultation of airspace users' representatives	Improved flight efficiency, capacity and safety.						
Joint investment / partnership	Yes	joint investment of iTEC ANSPs envisaged for major share of ADS-C functionality					
Investment in ATM systems	Yes						
If investment in ATM system, type?	New system	Several development and deployment options are analyzed, ranging from integration in existing platform to development as part of					
If investment in ATM system, Reference to European ATM Master Plan / PCP	PCP	CP1 (EU 2021/116), former PCP					

2.1.3 - Other new and existing investments

2.1.3.1 - Overall description and justification of the costs nature and benefits of other new and existing investments in fixed assets planned over the reference period

The main investments during RP3 will be the iCAS Programme (including the above described projects and the product management), MaRS, S-ATM Robusto and RASUM 8.33.

DFS is engaged in a total of up to 37 combined and separate deployment projects/ initiatives.

The Top Deployment Projects by investment volume are:

- iCAS System,
- Deploying New Radar Technologies (MaRS): Implementation of SES by Improving Performance, Interoperability and Modernizing ATM in Germany,
- Deploying a terrestrial European back-up for GNSS (incl. GALILEO) in-line with the European ATM Master Plan,
- Deploying Remote Tower (RTC): Implementation of SES by Improving Performance and Modernizing ATM for Tower Service Provision in Germany,
- Deployment of next Generation and VoIP Capable Centre Voice Communication System, and
- TANGe (Tower ATS-System Next Generation - project start in RP2)

Those investments have been described in detail, including the expected benefits per KPA, in the RP2 Performance Plan, Section 2 (Investments), except for Project S-ATM Robusto, which has been introduced as unplanned investment in the Reporting for 2015. Refinements on this detailed information have been and will be provided for each project in the context of the yearly Performance Monitoring Reports.

2.1.3.2 - Details of the main other new investments in fixed assets planned over the reference period

Number of new other investments	8
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#	Name of investment	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation, cost of capital and cost of leasing) (in national currency)					Description
				2020	2021	2022	2023	2024	
1	SWE iCAS Phase II KAR	4.900.000	2.600.000	0	0	0	0	162.500	As part of a cooperation between MUAC and DFS, a study is currently being conducted to determine whether a joint air traffic control system can be used in the future (MAKAN: MAastricht KARlsruhe Networks). The realisation of MAKAN would replace the planning of iCAS2.
2	iCAS Flight Object IOP	4.073.793	1.860.000	0	0	0	0	0	The iCAS Systemproject iCAS Flight Object IOP is currently in the planning phase due the changed IOP Strategy. The project will implement the necessary functionality in the future iTEC V3 ATM system to prepare the deployment of Flight Object interoperabilty as part of iSWIM in the DFS control centers. The assets reported here are preliminary and will be updated once the planning phase is completed.

3	A-SMGCS Leipzig	3.882.544	3.860.144	309	77.791	341.452	499.755	478.021	Implementing an A-SMGCS Level 2 (Phoenix-Ground-Situation-Display) including the necessary infrastructure (e.g. Sensor technology, Power, Data, HMI) at the international Airport Leipzig.
4	LIZ Rehosting	2.353.000	1.731.000	0	0	0	0	35.384	Migration of servers from current location and management to a central Data Center incl. software portation wherever necessary.
5	Future orientation AIM and Regulation	2.150.000	2.150.000	0	2.214	59.766	181.510	313.282	<p>The functional system in the context of AIM has undergone many changes in recent years and the change continues. The ZAAR project is intended to analyze the actual situation of the functional systems and the upcoming requirements. Based on this, a future-proof and efficient functional system in the context of AIM will be designed and implemented.</p> <p>In the functional system with AIM context, static (SDO) and dynamic (NOTAM, flight plan) data are created, processed, distributed and published. The AIM projects "EAD SDO Full Migration (ESFM)", "Aeronautical Data Quality (VO73/2010)" and "EAD AIM System Integration (EASI)" have changed and extended the system. Through EASI, the</p> <p>EAD has become a proportionate part of this functional system and since ADQ, static data is increasingly obtained from external sources (e.g., ADV). The ADQ regulation requires traceability for the processing and distribution of data. The requirements from these measures were based on the existing infrastructure, which increased its complexity. Optimization has not yet been possible due to time and resource constraints.</p> <p>Likewise, many newer regulations (EU VO 373/2017, KritisV, IT-Security, Amdt40 to ICAO Annex15, Open-Data, Inspire) affect the AIS area, which is additionally affected by the EU VO 373/2017 as part of the functional system of DFS. The functional system must therefore be aligned with</p>
6	Maintenance Solutions	1.208.675	988.675	558	51.312	136.299	212.418	240.834	Modern maintenance processes and technologies (e.g. Mobile Work & Asset Management, IIoT & Predictive Maintenance, Digital & Smart Logistics) based on a future-proof infrastructure.

7	Automation tools ATM	1.600.000	1.600.000	0	0	25.000	115.625	190.625	CATo, MET-IF, DZSA, future CWP
8	Measuring technology	2.600.000	1.950.000	0	0	32.500	97.500	162.500	Procurement, regular operation service and maintenance from several measuring technologies (hard- and software e.g. oscilloscope or high-precision test measurement station for TACAN and DME systems including software applications for monitoring and reporting).

2.2 - Investments - MUAC

2.2.1 - Summary of investments

Number of new major investments	6
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#	Name of new major investment (i.e. above 5 M€)	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation, cost of capital and cost of leasing) (in national currency)					Lifecycle (Amortisation period in years)	Allocation (%)*		Planned date of entry into operation
				2020	2021	2022	2023	2024		Enroute	Terminal	
1	New Voice Communication System	6.939.000	6.939.000	663.020	706.133	698.362	690.383	682.310	8 to 15	100%		Q4-2017
2	MeDUSA (MUAC Dual System Architecture)	13.500.000	13.500.000	0	0	0	0	0	8 to 15	100%		Q4-2025
3	Back up Voice Communication System	8.700.000	8.700.000	0	0	0	0	0	8 to 15	100%		Q4-2027
4	Data Centre Modernisation	7.103.000	7.103.000	0	0	0	511.890	507.438	15 to 20	100%		Q2-2023
5	IOP-G programme - First deployment	21.000.000	21.000.000	0	0	0	0	0	8 to 15	100%		Q2-2029
6	PHOENIX - New ops building (previously called New ATCO Consoles project)	34.375.000	34.375.000	0	0	0	0	0	8 to 50	100%		Q4-2026
Sub-total of new major investments above (1)		91.617.000	91.617.000	663.020	706.133	698.362	1.202.273	1.189.748				
Sub-total other new investments (2)		36.509.000	36.509.000	0	549.900	1.207.900	2.523.900	3.839.900				
Sub-total existing investments (3)				8.581.777	6.267.967	5.228.738	4.740.827	4.132.352				
Total new and existing investments (1) + (2) + (3)		128.126.000	128.126.000	9.244.797	7.524.000	7.135.000	8.467.000	9.162.000				

* The total % enroute+terminal should be equal to 100%.

2.2.2 - Detail of new major investments

NOTE: Section 1.3 (Stakeholder Consultation) should include details on the consultation with airspace users' representatives on new major investments.

Name of new major investment 1	New Voice Communication System		Total value of the asset	6.939.000 €
Description of the asset	ED-137 compliant VoIP Voice Communication System, including test system. The system supports the FABEC concept for inter-centre sectorisation.			
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No			
Level of impact of the investment	Network	Very limited on the short term. Positive impact on the network will arise once VoIP has been implemented across all ANSPs in Europe.		
	Local	None		
	Non-performance	None		
Quantitative impact per KPA	Safety	Current safety levels are maintained or improved. Improved radio coverage.		
	Environment	No impact		
	Capacity	The N-VCS can support more sectors than the old one and provides in addition more flexibility when switching from one sector configuration to another. Essential enabler for future CONOPS developments e.g. deeper integration with FDPS.		
	Cost Efficiency	Reduced communication maintenance costs		
Results of the consultation of airspace users' representatives	Covered in national consultation of BE, NL, GE and LUX. No specific comments were made.			
Joint investment / partnership	Yes	Common procurement with DSNA		
Investment in ATM systems	Yes			
If investment in ATM system, type?	Replacement investment			
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	Replacement of the Voice System, supporting VoIP for ground telephone; implementation objective COM11.1		

Name of new major investment 2	MeDUSA (MUAC Dual System Architecture)		Total value of the asset	13.500.000 €
Description of the asset	The MUAC Dual System Architecture (MeDUSA) project will provide an upgraded Fallback/system, which will support the necessary operational requirements for a safe transition from Primary high capacity to Fallback sustained capacity. Upgraded Fallback CWP-HMI with additional functionalities on top of the currently existing ones : identical look and feel as the PRI-CWP, datalink and outgoing OLDI. The project is currently in the initiation phase.			
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No			
Level of impact of the investment	Network	None		
	Local	Due to the similar HMI and features in both PRI and FLB, training effort will be less. In addition, the legacy fallback system is a potential blockage to future capacity gains. MEDUSA ensures that primary system capacity at MUAC can grow, due to the higher		
	Non-performance	None		
Quantitative impact per KPA	Safety	The project is in the initiation phase. It is too early to quantify it's impact.		
	Environment	No direct impact		
	Capacity	Positive impact as a) MEDUSA ensures that primary system capacity at MUAC can grow and b) When operating under fallback conditions, the new system will be able to cope with more flights than the current fallback system.		
	Cost Efficiency	No direct impact		
Results of the consultation of airspace users' representatives	Covered in national consultation of BE, NL, GE and LUX. No specific comments were made.			
Joint investment / partnership	No			
Investment in ATM systems	Yes			
If investment in ATM system, type?	Overhaul of existing system			
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	The upgraded Fallback System will provide for a new Fallback CWP-HMI, as well as a replacement of the current MUAC Fallback Flight Server		

Name of new major investment 3	Back up Voice Communication System		Total value of the asset	8.700.000 €
Description of the asset	Replacement of the current BVCS system introduced in 2008			
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No			
Level of impact of the investment	Network	None		
	Local	None		
	Non-performance	This is a replacement project, without direct impact on network or local performance.		
Quantitative impact per KPA	Safety	The project is in the initiation phase. It is too early to quantify it's impact.		
	Environment	No direct impact		
	Capacity	No direct impact		
	Cost Efficiency	With the migration to IP technology, the phase out of legacy telephony will start		
Results of the consultation of airspace users' representatives	Covered in national consultation of BE, NL, GE and LUX. No specific comments were made.			
Joint investment / partnership	No			
Investment in ATM systems	Yes			
If investment in ATM system, type?	Replacement investment			
If investment in ATM system, Reference to European ATM Master Plan / PCP	Master Plan (non-PCP)	Replacement of the Backup Voice System, supporting VoIP for ground telephone; implementation objective COM11.1		

Name of new major investment 4	Data Centre Modernisation	Total value of the asset	7.103.000 €
Description of the asset	The data Centre Modernisation project aims at the upgrade of the equipment rooms and their installations and facilities to the Uptime Institute TIER III level. Besides that, the project will deliver processes and tooling to efficiently plan the rack-space and administer the assets and their physical (network) interconnections.		
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No		
Level of impact of the investment	Network	No	
	Local	No	
	Non-performance	The upgrade of the infrastructure is needed in order to ensure that the platform remains capable to support current and future IT needs.	
Quantitative impact per KPA	Safety	Reduced risk of system interruptions	
	Environment	Improved energy consumption, fire protection and physical security	
	Capacity	Reduced risk of system interruptions	
	Cost Efficiency	No	
Results of the consultation of airspace users' representatives	Covered in national consultation of BE, NL, GE and LUX. No specific comments were made.		
Joint investment / partnership	No		
Investment in ATM systems	No		
If investment in ATM system, type?	Click to select		
If investment in ATM system, Reference to European ATM Master Plan / PCP	Click to select		

Name of new major investment 5	IOP-G programme - First deployment						Total value of the asset	21.000.000 €
Description of the asset	To comply with the Initial SWIM Implementing Rule 716/2014 of the Pilot Common Projects (PCP), MUAC is preparing the implementation of the Flight Object (FO), supported by the Blue SWIM Profile. The IOPG Programme comprises additional validations to complement the validations under SESAR1 & SESAR2020, the development and integration of the SWIM Node and Flight Object Manager (common project with iTEC) and the modifications to the							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)? Ref. to the Regulation and, if funded through Union assistance programmes, ref. to the relevant grant agreement.)	Yes							
Specify links to the PCP/CP1/Interoperability Regulations (add the sub-AF number(s) under each relevant box)	AF1	AF2	AF3	AF4	AF5	AF6	Interoperability	
					Family 5-6-2			
Benefits for airspace users and results of the consultation of airspace users' representatives	Access to common flight data can result in improved coordination in user-preferred route environments, safety, robustness and concepts of operation. Costs saving through common development of the Blue SWIN Node and Flight Object Manager with iTEC.							
Joint investment / partnership	Yes							
Investment in ATM systems	Yes							
If investment in ATM system, type?	New system							
If investment in ATM system, Reference to European ATM Master Plan / PCP	PCP	AF#5, family 5-6-2						

Name of new major investment 6	PHOENIX - New ops building (previously called New ATCO Consoles project)						Total value of the asset	34.375.000 €
Description of the asset	New operational building, flexibly locatable in a brighter OPS Room, including new consoles designed to modern ergonomic standards, improved training, test and locat contingency infrastructure, refurbished training, test & contingency environment. The Study Phase has been approved by the MCG; the outcome of the study will be presented in the MCG of Spring 2022.							
The investment is mandated by a SES Regulation (i.e. PCP/CP1/Interoperability)?	No							
Level of impact of the investment	Network							
	Local	The new building will provide additional CWPs to handle more traffic.						
	Non-performance							
Quantitative impact per KPA	Safety	The project is in the initiation phase. It is too early to quantify it's impact.						
	Environment	Sustainability will be a high priority for the new OPS building						
	Capacity	Additional CWPs will allow for a higher capacity and support the future CONOPS.						
	Cost Efficiency	No impact						
Results of the consultation of airspace users' representatives	Covered in national consultation of BE, NL, GE and LUX. No specific comments were made.							
Joint investment / partnership	No							
Investment in ATM systems	No							
If investment in ATM system, type?	Click to select							
If investment in ATM system, Reference to European ATM Master Plan / PCP	Click to select							

2.2.3 - Other new and existing investments

2.2.3.1 - Overall description and justification of the costs nature and benefits of other new and existing investments in fixed assets planned over the reference period

The **existing investments** with the highest significance in terms of operational and financial impact are : the MUAC building (9 M€ of depreciations over RP3), new FDPS which has been fully depreciated at the end of 2020 (3.7 M€ of depreciations in 2020), the data centre operations (3.1 M€ of depreciation over RP3), the Radio Direction Finder (1.2 M€ over RP3), the MUAC office Cloud operations OBS (1.1 M€ over RP3) and the BEEK transmitter station (0.6 M€ over RP3). The new investments with the highest significance are disclosed in section 2.7.1 . **Other new investment projects** includes among others , Maintenance of servers and workstations, the new Access Control system and increased automation in training (MUSE project).

2.2.3.2 - Details of the main other new investments in fixed assets planned over the reference period

Number of new other investments	3
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#	Name of investment	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation, cost of capital and cost of leasing) (in national currency)					Description
				2020	2021	2022	2023	2024	
1	Data Centre operations	7.321.000	7.321.000	620.000	620.000	620.000	620.000	620.000	Obsolescence : replacement of servers and workstations NOTE: Although the total value of this line is more than €5mln, the line covers a significant number of smaller replacement investments which are grouped here for convenience. All individual investments are well below the €5mln threshold.
2	New Access Control System	2.800.000	2.800.000				100.000	200.000	obsolescence of the existing access control system, acquire a new and state of the art access control system based on an integrated security platform which interconnects all required applications within an open architecture meeting the present regulations, expecting benefits are in user friendliness, IT security, capacity and possibilities of the new system, improvement of physical barriers, futureproof and reducing of maintenance costs
3	Automated/remote ATCO training, self training and scoring (MUSE)	1.708.000	1.708.000					600.000	Improvement of the real time simulation environment at MUAC and from home leading to workload reduction, self training for ab-initios

2.3 - Investments - Deutscher Wetterdienst (DWD)

2.3.1 - Summary of investments

Number of new major investments	1
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#	Name of new major investment (i.e. above 5 M€)	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation, cost of capital and cost of leasing) (in national currency)					Lifecycle (Amortisation period in years)	Allocation (%)*		Planned date of entry into operation
				2020	2021	2022	2023	2024		Enroute	Terminal	
1												
	Sub-total of new major investments above (1)	0	0	0	0	0	0	0				
	Sub-total other new investments (2)	1.805.000	495.000	209.710	209.710	255.151	255.151	255.151		80%	20%	
	Sub-total existing investments (3)			2.218.041	2.315.488	2.314.341	2.335.620	2.352.419		70%	30%	
	Total new and existing investments (1) + (2) + (3)	1.805.000	495.000	2.427.751	2.525.198	2.569.492	2.590.771	2.607.570				

* The total % enroute+terminal should be equal to 100%.

2.3.3 - Other new and existing investments

2.3.3.1 - Overall description and justification of the costs nature and benefits of other new and existing investments in fixed assets planned over the reference period

AutoMETAR:

The AutoMETAR project will aim at the German Weather Service to fully automate the airport weather declarations at international traffic airports on the basis of the requirements set out in ICAO Annex 3 and Doc 9837 N/454. Full automation will increase the medium term performance through rapid data integration and a fully automatic 24/7 service offer. Therewith, DWD follows the global trend in automatization of weather observation and will gain a high performance system for the required airport weather reports METAR and MetReport/Special based on ICAO Annex 3 and ICAO Doc 9837. The project started in 2014 and will end with a full automatization in 2022.

LLWAS:

DWD implemented a Low Level Windshear Alert System at the airports Frankfurt and Munich to improve the detection and warning of wind shear, strong winds, turbulence and wake turbulence. Using a LIDAR and a X-band Radar the system allows to detect hazardous wind situations in the terminal area. Following the recommendation of ICAO Annex 3, the system generates automatic wind shear alerts. In a first step the data and the alerts are used by forecasters at the meteorological watch offices. In case of wind shear the forecasters contact DFS air traffic controller. The goal is to bring the warnings directly to customers via ASDUV Systems and with a tool using geoweb services.

ASDUV:

ASDUV is the Automatic Weather Observing System (AWOS) working at all German international airports. The system processes all sensor data at the airports like temperature/dew point, QNH, wind, RVR, clouds, significant weather and provides the weather reports METAR/SPECI, MetReport/Special and other special data telegrams for ATS Systems and the air traffic controllers. Since 2016 the new ASDUV System is in operational use at all international airports. Due to new requirements of ICAO and the automatization of the weather observation (AutoMETAR) DWD has to invest into hardware and software developments.

RVR_E:

For all weather operations the runway visual range and the cloud base are significant meteorological parameters to be determined by DWD along the runways and at the thresholds / glide path. The visibility sensors have been replaced by new modern systems. The ceilometers to determine cloud amount and cloud base will be replaced as well soon. The newly implemented visual range method allows for an improved visual range determination at airports by a new sensor type and contributes more safety in the terminal area.

SESAR common projects (MET-GATE, Adverse Weather):

The provision of harmonised meteorological products and services contributes to the objectives from SES, notably in increasing aviation safety but also in minimising flight delays and thus increasing capacity. In the context of Adverse Weather, flight meteorological products from various national European meteorological services are brought together so as to produce a Europe-wide harmonised meteorological picture."

2.3.3.2 - Details of the main other new investments in fixed assets planned over the reference period

Number of new other investments	1
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#	Name of investment	Total value of the asset (capex or contractual leasing value)	Value of the assets allocated to ANS in the scope of the PP	Determined costs of investment (i.e. depreciation, cost of capital and cost of leasing) (in national currency)					Description
				2020	2021	2022	2023	2024	
1	AutoMETAR	1.805.000	495.000	209.710	209.710	255.151	255.151	255.151	The AutoMETAR project will aim at the German Weather Service to fully automate the airport weather declarations at international traffic airports on the basis of the requirements set out in ICAO Annex 3 and Doc 9837 N/454. Full automation will increase the medium term performance through rapid data integration and a fully automatic 24/7 service offer. Therewith, DWD follows the global trend in automatization of weather observation and will gain a high performance system for the required airport weather reports METAR and MetReport/Special based on ICAO Annex 3 and ICAO Doc 9837. The project started in 2014 and will end with a full automatization in 2022.

SECTION 3: PERFORMANCE TARGETS AND MEASURES FOR THEIR ACHIEVEMENT

3.1 - Safety targets

[3.1.1 - Safety KPI #1: Level of Effectiveness of Safety Management achieved by ANSPs](#)

3.2 - Environment targets

[3.2.1 - Environment KPI #1: Horizontal en route flight efficiency \(KEA\)](#)

3.3 - Capacity targets

[3.3.1 - Capacity KPI #1: En route ATFM delay per flight](#)

[3.3.2 - Capacity KPI #2: Terminal and airport ANS ATFM arrival delay per flight](#)

3.4 - Cost efficiency targets

[3.4.1 - Cost efficiency KPI #1: Determined unit cost \(DUC\) for en route ANS](#)

[3.4.2 - Cost efficiency KPI #2: Determined unit cost \(DUC\) for terminal ANS](#)

[3.4.3 - Pension assumptions](#)

[3.4.4 - Interest rate assumptions for loans financing the provision of air navigation services](#)

[3.4.5 - Restructuring costs](#)

[3.4.6 - Additional determined costs related to measures necessary to achieve the en route capacity targets](#)

3.5 - Additional KPIs / Targets

3.6 - Description of KPAs interdependencies and trade-offs including the assumptions used to assess those trade-offs

[3.6.1 - Interdependencies and trade-offs between safety and other KPAs](#)

[3.6.2 - Interdependencies and trade-offs between capacity and environment](#)

[3.6.3 - Interdependencies and trade-offs between cost-efficiency and capacity](#)

[3.6.4 - Other interdependencies and trade-offs](#)

Annexes of relevance to this section

ANNEX A. REPORTING TABLES & ADDITIONAL INFORMATION (EN-ROUTE)

ANNEX B. REPORTING TABLES & ADDITIONAL INFORMATION (TERMINAL)

ANNEX F. BASELINE VALUES (COST-EFFICIENCY)

ANNEX H. RESTRUCTURING MEASURES AND COSTS

ANNEX M. COST ALLOCATION

ANNEX J. OPTIONAL KPIs AND TARGETS

ANNEX O. JUSTIFICATIONS FOR THE LOCAL SAFETY TARGETS

ANNEX P. JUSTIFICATIONS FOR THE LOCAL ENVIRONMENT TARGETS

ANNEX Q. JUSTIFICATIONS FOR THE LOCAL CAPACITY TARGETS

ANNEX R. JUSTIFICATIONS FOR THE LOCAL COST-EFFICIENCY TARGETS

ANNEX U. VERIFICATION BY THE NSA OF THE COMPLIANCE OF THE COST BASE

SECTION 3.1: SAFETY KPA

3.1 - Safety targets

[3.1.1 - Safety KPI #1: Level of Effectiveness of Safety Management achieved by ANSPs](#)

- a) Safety national performance targets
- b) Detailed justifications in case of inconsistency between local and Union-wide safety targets
- c) Main measures put in place to achieve the safety performance targets

Annexes of relevance to this section

ANNEX O. JUSTIFICATIONS FOR THE LOCAL SAFETY TARGETS

3 - PERFORMANCE TARGETS AT LOCAL LEVEL

3.1 - Safety targets

3.1.1 - Safety KPI #1: Level of Effectiveness of Safety Management achieved by ANSPs

a) Safety performance targets

Number of Air Traffic Service Providers	2
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		2020A	2020	2021	2022	2023	2024
		<i>Actual</i>	Target	Target	Target	Target	Target
DFS	Safety policy and objectives	C	C	C	C	C	C
	Safety risk management	C	C	C	C	D	D
	Safety assurance	B	B	B	B	C	C
	Safety promotion	B	B	C	C	C	C
	Safety culture	C	C	C	C	C	C
Additional comments							

		2020A	2020	2021	2022	2023	2024
		<i>Actual</i>	Target	Target	Target	Target	Target
MUAC	Safety policy and objectives	C	C	C	C	C	C
	Safety risk management	D	D	D	D	D	D
	Safety assurance	C	C	C	C	C	C
	Safety promotion	C	C	C	C	C	C
	Safety culture	C	C	C	C	C	C
Additional comments							

b) Detailed justifications in case of inconsistency between local and Union-wide safety targets

** Refer to Annex O, if necessary.*

c) Main measures put in place to achieve the safety performance targets

There are different committees established within the FABEC as explained in the "FABEC Reference Guide", clearly highlighting the existing groups at ANSPs as well as Competent Authorities level and their responsibilities. For the KPA of Safety the ANSPs' committee installed is the Standing Committee Safety (SC-SAF) where all 7 ANSPs are represented.

On ANSP level the following measures for safety risk management were put in place.

DFS (Germany) decided to put in place following measures:

- Conduct a Safety Culture Survey;
- Conduct regular Local Safety Surveys;
- Conduct regular safety culture campaigns;
- Regular update of the Safety Plan.

MUAC decided to put in place following measures:

- Improving traceability between safety requirements;
- Creating an overall MUAC dashboard to steer the KPIs, including the safety aspect;
- Providing input to the FABEC working groups (SRAP and SPM).

Furthermore, all FABEC ANSPs jointly decided to put in place following measures to show their common spirit and to work together even closer:

- Identification of deviations / gaps to the requirements described in the RP3 EoSM-questionnaire, if any, and implementation of remedial measures accordingly;
- Retrieval of a better common understanding between ANSPs and Competent Authorities of EoSM-questionnaire requirements, where necessary;
- Maintenance of a FABEC dashboard. This is kept up-to-date by the SPM working group reporting to the SC-SAF. A yearly aggregation of SMI, RI and EoSM results is done under the leadership of the DSN and analysed both by SPM and SC-SAF. The publication on a website is foreseen in the near future.

Last mentioned measures emphasize the FABEC added value through an intense cooperation between the 7 ANSPs.

On the Competent Authority level, the compliance verification of Commission Implementing Regulation (EU) 2017/373 is considered an effective means by inspecting the current safety performance and thus also anticipating if a set target is endangered. As the EoSM results are directly linked to aforementioned regulation's compliance verification, this is clearly depicting an early indicator of EoSM maturity and its necessary improvement.

Further, FABEC Competent Authorities meet regularly (three times a year) in a dedicated working group, the Safety Performance and Risk Coordination Task Force (SPRC TF), to gather Safety Performance data, to compare the ANSPs' performance among each other and to jointly determine whether and where catch-up demand is necessary. Additionally, the SPRC TF has established cooperation with the Standing Committee Safety (SC-SAF) to guarantee a holistic approach including all 7 FABEC ANSPs.

** Refer to Annex O, if necessary.*

SECTION 3.2: ENVIRONMENT KPA

3.2 - Environment targets

[3.2.1 - Environment KPI #1: Horizontal en route flight efficiency \(KEA\)](#)

- a) National environment performance targets
- b) Detailed justifications in case of inconsistency between national targets and national reference values
- c) Main measures put in place to achieve the environment performance targets

Annexes of relevance to this section

ANNEX P. JUSTIFICATIONS FOR THE LOCAL ENVIRONMENT TARGETS

3.2 - Environment targets

3.2.1 - Environment KPI #1: Horizontal en route flight efficiency (KEA)

a) National environment performance targets

	2020A	2020	2021	2022	2023	2024
National reference values	2,37%	n/a	2,31%	2,30%	2,30%	2,30%
		2020 Target	2021 Target	2022 Target	2023 Target	2024 Target
National targets		2,37%	2,31%	2,30%	2,30%	2,30%

b) Detailed justifications in case of inconsistency between national targets and national reference values

N/A

* Refer to Annex P, if necessary.

c) Main measures put in place to achieve the environment performance targets

DFS	<p>The drastic decline of air traffic in 2020 due to the COVID-19 pandemic enabled ANSP to meet their challenging efficiency goals. Furthermore, the traffic downturn caused by the pandemic has been providing the opportunity to test and adopt best practise and implement procedures that lead to optimised flight profiles. Consequently, DFS is striving for meeting the goals even during rising and recovering traffic volumes.</p> <p>After optimizing ATS-routes in 2020 (e.g. the removal of more than 500 route restrictions previously imposed under RAD, followed by the removal of more than 150 flight level caps and 165 so-called eNM measures previously imposed to manage traffic during periods of high demand in FABEC airspace in 2021), DFS actually focuses intensely on finalizing the implementation of Free Route Airspace (FRA) to optimize the planning and tactical basis of traffic streams.</p> <p>Since 25 February 2021, the upper airspace in Germany under responsibility of Karlsruhe UAC is completely transferred into FRA. In addition, FRA Cells EDMM East, EDMM South and EDWW East are being provided during night (2230-0400 UTC) since 2018.</p> <p>The next level in optimizing FRA is foreseen to improve cross border operations with neighbouring states as Austria (2021), Czech Republic (2021/22), Poland, Switzerland, France, Belgium (Maastricht UAC) (all 2022).</p>
MUAC	<p>EUROCONTROL MUAC optimises airspace sectors to draw full benefit from free route airspace.</p> <p>On the AIRAC date 25 March 2021, EUROCONTROL's Maastricht Upper Area Control Centre (MUAC) successfully implemented a major overhaul of its airspace sector layout, which now better meets the European concept of free route airspace. The new airspace sector organisation is designed to better support higher traffic levels as soon as commercial schedules resume. Benefits include a reduction in flight planning restrictions and the creation of several shorter flight-plannable route options. Simulations predict that, on the basis of pre-pandemic traffic, the change will bring a weekly CO2 saving potential of 6,700 kg and offer flight-plannable gains of 280 NM. These savings are either directly achievable through explicit changes in the European Route Availability Document (RAD) or readily available thanks to improved alignment between sector boundaries and specific FRA trajectories. In order to help airspace users identify their individual saving potential, the MUAC AO AIRAC Brief highlights the explicit and also the implicit changes to flight plan routings within the improved MUAC sectorisation.</p> <p>The new sectorisation, with the alignment of flows and sector boundaries, also provides benefits for MUAC operations in terms of a reduction in airspace complexity and therefore enhanced capacity performance. Taking pre-pandemic traffic figures into account, simulations predict that the improved matching of flows and sectors can reduce delays by about 1%.</p> <p>Karlsruhe UAC and Maastricht UAC are currently involved in a project (COBRA) to optimise the interface between the two centres. This will, inter alia, allow the creation of two new flight plannable routes.</p> <p>A first route is for overflying traffic, above FL375, from SORAL to OBOKA. This route will only be flight plannable when the ED-R305 is not booked for military purposes.</p> <p>A second route is for arrivals to EDDF from VALEK or IBERA via PITES (FL250), then OBOGA to RAMOB. This route will be flight plannable under certain conditions regarding the ED-R305 and ED-R205.</p> <p>These changes are foreseen to be implemented on 7 October 2021.</p>

SECTION 3.3: CAPACITY KPA

3.3 - Capacity targets

3.3.1 - Capacity KPI #1: En route ATFM delay per flight

- a) National capacity performance targets
- b) Detailed justifications in case of inconsistency between national targets and national reference values
- c) Main measures put in place to achieve the target for en-route ATFM delay per flight
- d) ATCO planning

DFS

MUAC

3.3.2 - Capacity KPI #2: Terminal and airport ANS ATFM arrival delay per flight

- a) National performance targets
- b) Contribution to the improvement of the European ATM network performance
- c) Main measures put in place to achieve the target for terminal and airport ANS ATFM arrival delay per flight

Annexes of relevance to this section

ANNEX Q. JUSTIFICATIONS FOR THE LOCAL CAPACITY TARGETS

3.3 - Capacity targets

3.3.1 - Capacity KPI #1: En route ATFM delay per flight

a) National capacity performance targets

	2020A	2020	2021	2022	2023	2024
National reference values	0,18	n/a	0,22	0,27	0,27	0,27
		2020	2021	2022	2023	2024
		Target	Target	Target	Target	Target
National targets		3,45	0,22	0,27	0,27	0,27
	2020A	2020	2021	2022	2023	2024
Breakdown values	Actual	Value	Value	Value	Value	Value
MUAC contribution to GER target	0,01	0,95	0,00	0,15	0,15	0,15
DFS contribution to GER target	0,18	2,73	0,24	0,24	0,25	0,24
<p><i>Notice: National targets and MUAC breakdown values on national level in general were provided, upon request, by the Network Manager on 28 October 2022. 2021 values show the actuals as of the PRU DB on FIR, respectively AUA level. This was chosen as way of producing the data, since NM had issues with providing national target and MUAC breakdown values for the years 2020/2021. As a draft FAB PP was the basis in these two years and the years 2020/2021 were subject to the effects of the COVID-19 pandemic, Germany considered it reasonable to use actuals here. Reference values are in line with agreed Union wide targets. Proposed local targets are in line with reference values.</i></p>						

b) Detailed justifications in case of inconsistency between national targets and national reference values

Capacity targets for 2021-2024 are in line with the NM reference values.

Though targets remain challenging as staffing issues as seen during years 2018 and 2019 are planned to be progressively solved thanks to ongoing recruitments and supportive local working agreements. Staffing measures that were significantly slowed down by the COVID crisis due to the closure of the ATCO academy and the restricted training possible are resumed up to maximum level possible.

The new ATM systems implementation plan in German ACCs will also require temporary reduction of available capacity for training, validation, safety and commissioning phase purposes. However, training periods are selected in order to minimize operational impact.

During RP1, and at the time of developing RP2 plans, traffic growth was lower than forecasts and its future was uncertain. As a result, the main focus of all stakeholders was on cost-efficiency, and ANSPs aimed to control costs, i.a. through reducing or delaying recruitments and investments. In reality, German airspace - like the rest of Europe - has experienced unforeseen high traffic growth since 2015, as well as significant traffic shifts. Germany reacted to this but measures required to increase capacity in a structural manner need time to be implemented and become effective (e.g. hiring and qualifying new ATCO need 3 to 5 years), investment and related operational changes for additional capacity also need several years and may imply provisional capacity reduction for training and safe commissioning purposes. During RP2, Germany experienced high delays, while some major measures for capacity within DFS will be implemented during RP3 - but take time to deliver.

In the current context of the crisis and the resulting low traffic demand, ATCO training facilities were subject to COVID restrictions (where in some cases the maximum training capacity was already reached in some facilities). Licenced ATCOs were required to train high traffic load scenarios in simulators to keep proficiency, and on-the-job trainingspots for ab initio's were limited. As a result the capacity building measures were slowed down.

It is still expected that, in the next years, despite extensive efforts, some German ACCs could still be facing an imbalance between traffic and capacity (the targets are challenging and performance will also depend on the traffic evolution which is currently still very uncertain) or staffing issues. Although some good progress is being witnessed in some ACCs, measures enabling capacity to match the demand will be implemented during or till end RP3.

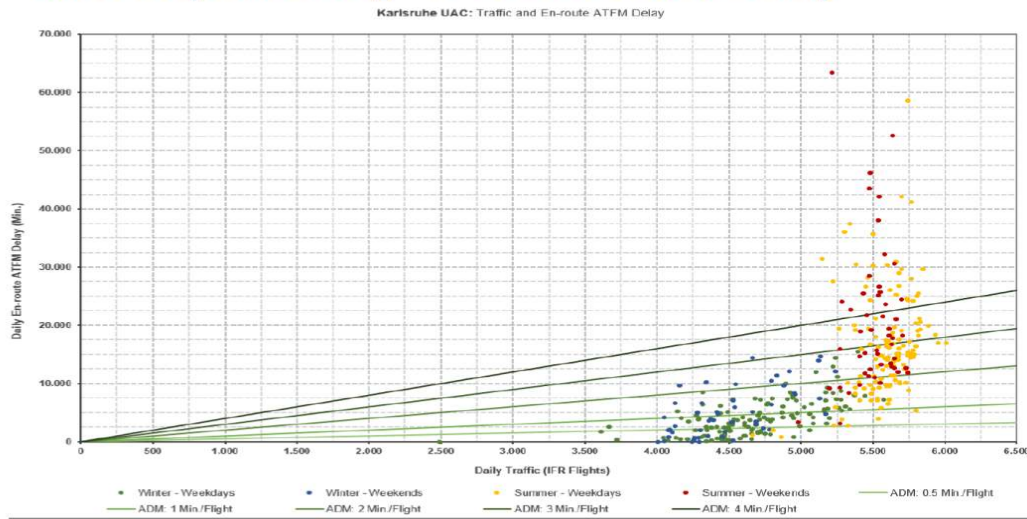
DFS has already planned major capacity enhancement measures for RP3 to remedy this situation, including implementing global and local individual ACCs measures agreed with the NM (see list of main contributive measures below and detailed individual measures in the latest NOP 2022 – 2024 edition).

The main drivers such as ATCO hiring and training will progressively deliver benefits during the period.

ICAS ATM system implementation will take place in 2022 in Munich, 2023 in Amsterdam, 2024 in Bremen and 2025 in Langen. Training phase for ATCO and transition plans for commissioning phase will impact local capacity provision.

Major uncertainties remain regarding further traffic development and volatility. It is important to consider that, if an ACC operates close to its capacity limits, minor variations in traffic levels can lead to significant changes in the amount of delay. The example below of Karlsruhe ACC, generated for traffic and delay of 2018, shows the exponential impact on delays of the traffic evolution. In some cases, even without more traffic in total, just a local traffic shift is enough to overload sectors and to create a large amount of delays.

Interdependency of Traffic and Delay



Other uncertainties must also be considered, such as the delayed implementation of ATCO hiring plans, the success conversion rates of ab-initios, the relatively high number of upcoming retirements, the outcomes of the next national or local social agreements and, the continuation and local impact of eNM measures/ANSPs summer if implemented.

* Refer to Annex Q, if necessary.

c) Main measures put in place to achieve the target for en-route ATFM delay per flight

Full set of detailed measures implemented by Germany and contributing to local capacity improvements will be listed in the European Network Operations Plan (NOP) 2022-2024 and updated in the Network Operations Plan 2022-2026 which elaboration work has now started. All ANSP capacity measures detailed in the NOP and in this performance plan and their impact on capacity provision, delay forecast, and target setting are based on values provided and calculated by the Network Manager and Eurocontrol in general. This is the case at national and ANSP level to ensure consistency: national and ANSP reference values are respectively calculated by NM at national and ANSP level and consistent with the EU-wide capacity targets. As the national and ANSP targets strictly stick to the NM reference values, consistency is ensured as well. The capacity profile computed in the NOP – and all the proposed associated measures - are based on the high traffic scenario of the STATFOR Forecast published mid-October 2021 (future versions of the NOP will be updated according to future STATFOR publications, this could increase the gap between the capacity profiles and the PP). In case of assessment of the Performance Plan based on the NOP, due consideration shall be given to the differences between the traffic forecasts. The main measures providing capacity enhancement planned to be implemented by the FABEC ANSPs to achieve the target are described here under.

Regarding DFS:

Compared to the original RP3 figure, the updated capacity targets and reference values have been reduced based on two assumptions:

- 1) Post-pandemic traffic levels will be significantly lower and it will take at least until 2024 to recover to 2019 level.
- 2) ANSPs have enough time during the pandemic to close the staff and capacity gaps, which caused important delays in 2018 and 2019.

Even though the first assumption is shared, it is important to understand that average annual traffic figures do not show the entire picture. Delays are mostly generated at local level during peak times. Traffic levels that bring sector capacity to its limit could already be reached in 2021 or at the latest in 2022.

With regard to the second assumption, ANSP have also been hit hard by the pandemic which has dramatically reduced their ATCO training capacities. Therefore, it will take longer than originally planned for DFS to close the gap in ATCO staff.

Another major challenge DFS faces in these current very uncertain times lies in the fact, that traffic predictability including those sudden occupancy-peaks decreases. Volatility increases simultaneously and has a negative impact on scheduling for ANSPs. On the other hand aircraft operators might need this flexibility in (short term) planning even more than in pre-COVID times.

Especially Karlsruhe UAC and Bremen ACC are subject to capacity bottlenecks linked with staff shortages during RP3. Karlsruhe UAC has not yet recovered from the shortages experienced in 2018 and 2019, whereas Bremen ACC has to prepare the implementation of the new ATS system iCAS II with a reduced number of available ATCOs.

For that Bremen ACC has developed a stabilization plan for the next few years to improve the capacity situation, especially in the context of the iCAS introduction. This includes various measures from a technical, operational and personnel point of view. The simulator has been increasingly used for training since summer 2020 and extra measures are being taken to optimize the simulator capacity. Flight profiles are being identified that can be relocated to reduce the demand, when required.

In Karlsruhe, measures to increase the number of staff will continue to be prioritized and training capacities will be used to the maximum. In addition, increased system support (e.g. complexity tool, post-ops analysis, expansion of CPDLC) will enable operations to use the available resources more efficiently and to reduce potential delays. Of course, in the next years operational staff will focus on operations relieving them of other activities and special tasks.

Taking into account these factors, it is realistic to assume that DFS could generate higher levels of ATFM delay compared to the updated reference values shown in the table above.

Regarding ATCO Staffing : reduced ATCO training capacities due to COVID-19 pandemic occurred:

- Due to the temporary closure of the DFS academy and the COVID-19 measures in place, in 2020 and 2021 the number of ATCO ab initio-trainees had to be reduced by approximately 60 trainees compared to the original plan. The training for the remaining ATCO trainees (approximately 150) had to be delayed by around eight months.

- Due to the reduced amount of traffic to be controlled during the pandemic, the on-the-job ATCO training could not take place as originally planned, leading to further significant training delays (OJT-Endurance in pre-COVID-times: 12 months; current delay another 12 – 18 months plus)

Regarding capacity relevant projects & measures, the following overview shows projects & measures until 2025 which might have an impact on capacity:

- Bremen ACC:
 - Training and transition for iCAS Phase II Bremen: significant capacity reduction expected in 2022 and 2023 in all sector families
 - iCAS Phase II Bremen (01/2024-03/2024)
- Karlsruhe UAC:
 - COBRA (Collaborative Optimization of Boundaries, Routes and Airspace) (Q1/2022)
 - Implementation of a Complexity Management Tool (2023)
 - Erlangen sector: vertical split into 3 sectors (capacity increase through a more flexible opening scheme) (2024)
- Langen ACC:
 - iCAS Phase II Langen (10/2025-03/2026)
- Munich ACC:
 - iCAS Phase II Munich (09/2022)

Regarding MUAC:

To provide the necessary staffing, MUAC is taking several measures, including training of new staff, cross training of ATCOs, a new agreement with the social partners for mitigating measures and (further) scrutinizing of involvement of operational staff in developments. Furthermore, a study is undergoing to reduce the number of sectors open during the night. Since the traffic downturn, a deal has been agreed with the social partner that allows for some of the surplus ATCO shifts from 2020 and Q1 2021 to be deferred. These days can be used at zero addition cost in the rest of the RP3 period.

Furthermore, MUAC has taken an active part in developing measures at network level aimed at safeguarding or increasing throughput while decreasing delay. MUAC sees further opportunities in this area in improved and harmonized ASM. Also the exclusion of short-duration high-workload flights is under investigation. MUAC has also been active in using some of the surplus ATCO shifts in 2020/2021 to accelerate some airspace design projects that should also provide additional capacity as the recovery materialises. Looking further ahead, MUAC is working on post-OPS analysis and business intelligence as a means of further fine-tuning and optimising daily operations. This is expected to deliver some additional capacity, as well as avoiding ATFM delays due to overregulation.

* Refer to Annex Q, if necessary.

**d) ATCO planning
DFS**

	Actual	Planning					
	2018	2019	2020	2021	2022	2023	2024
Bremen (EDWW ACC)							
# of additional ATCOs in OPS planned to start working in the OPS room (FTEs)	9,6	1,2	7,6	6,0	14,6	27,1	25,2
# of ATCOs in OPS planned to stop working in the OPS room (FTEs)	12,1	13,2	22,5	5,7	16,4	12,7	5,4
# of ATCOs in OPS planned to be operational at year-end (FTEs)	261,8	249,8	234,9	235,2	233,5	247,9	267,7

	Actual	Planning					
	2018	2019	2020	2021	2022	2023	2024
Karlsruhe (EDUU UAC)							
# of additional ATCOs in OPS planned to start working in the OPS room (FTEs)	8,8	9,4	42,7	36,3	63,1	33,6	22,6
# of ATCOs in OPS planned to stop working in the OPS room (FTEs)	27,4	17,2	59,1	11,8	21,2	7,2	9,9
# of ATCOs in OPS planned to be operational at year-end (FTEs)	404,2	396,4	380,0	404,4	446,3	472,7	485,4

	Actual	Planning					
	2018	2019	2020	2021	2022	2023	2024
Langen (EDGG ACC)							
# of additional ATCOs in OPS planned to start working in the OPS room (FTEs)	8,0	13,5	8,2	18,0	27,5	32,7	29,8
# of ATCOs in OPS planned to stop working in the OPS room (FTEs)	17,4	35,9	15,1	16,0	43,8	15,4	23,3
# of ATCOs in OPS planned to be operational at year-end (FTEs)	467,2	444,9	438,0	440,0	423,6	440,9	447,5

	Actual	Planning					
	2018	2019	2020	2021	2022	2023	2024
Munich (EDMM ACC)							
# of additional ATCOs in OPS planned to start working in the OPS room (FTEs)	0,0	3,4	2,0	8,2	7,7	24,6	6,3
# of ATCOs in OPS planned to stop working in the OPS room (FTEs)	16,0	13,1	11,8	7,0	14,3	15,9	1,7
# of ATCOs in OPS planned to be operational at year-end (FTEs)	297,3	287,6	277,8	279,0	272,4	281,1	285,7

MUAC

	Actual	Planning					
	2018	2019	2020	2021	2022	2023	2024
Maastricht (EDYY UAC)							
# of additional ATCOs in OPS planned to start working in the OPS room (FTEs)	2	2,2	0,5	6,4	19	16,8	9,8
# of ATCOs in OPS planned to stop working in the OPS room (FTEs)	2,5	2,5	6	3	0	10	8,5
# of ATCOs in OPS planned to be operational at year-end (FTEs)	292	291,7	286,2	289,6	308,6	315,4	316,7

Additional comments

En Route capacity target has strong interdependencies with Safety and Environment targets and with Cost-efficiency target. Those are addressed in Chapter 3.6 of this performance plan. The financial incentive scheme implemented by Germany regarding this En Route capacity target is fully described in chapter 5.2.1.

Regarding ATCO planning, it should be noted that there is no legal requirement for ATCO planning figures to be included in the performance plans for RP3. In addition, the NSA questions if ACC level is the right level of detail to be monitored by the EC. Technically the plans are and will always be subject to change, creating the unnecessary burden of tracking, supervising and explaining the figures within the SES performance scheme domain. In addition, the details of the planned evolution of ATCO numbers within an ANSP with several ACCs like DFS are socially sensitive.

However ATCO hiring and assignment is one of the major driver for current capacity and staffing issues solving. Nevertheless, they cannot be considered as a commitment due to the high level of uncertainties related to such ATCO recruitment plans management. These figures, even when provided on annual basis, can only be regarded as snapshot information, i.e. a situation at one point in time which does not guarantee a realistic view throughout the entire duration of RP3.

There are many factors with a high level of uncertainty that have an impact on the ATCO planning: first of all there are classical uncertainty factors of general staff planning like the actual rate of retirement, the absence rate of employees, as well as maternity and parent leave. Moreover, ATCOs mobility has become a severe issue recently, leading to high rate of unforeseen leaves.

Another factor which cannot be significantly mitigated further impacting the availability of ATCOs is the number of suitable applicants, the failure rate of the theoretical training at the academies and the success rate during the on-the-job training phases of trainees.

The final retirement age is firmly set by law, but in Germany, like in many other countries as well, employees may go earlier. DFS can only assume a certain amount of people opting out/in. It is common culture now that companies offer varying working hours to enable employees to adjust their work to different phases of their life. Again, ANSPs can only assume a certain amount of people opting in/out. On top of all that, future social agreements will significantly determine the ATCO availability per person and by that the total available FTE per ANSP.

It should also be considered that the demographic situation can also evolve and might require to hire to an extent not aligned to the traffic demand.

FTE refers to a different amount of working time per year/ANSP. FTE is not harmonised among ANSPs but are subject to national laws and labour regulations.

Before the planned ATCO FTE can reasonably be reported in a harmonised way, a revised specification for information disclosure is required, clearly describing how to count ATCOs partially working in projects (another uncertainty factor) and (very important) standardising the assumptions for the uncertainties mentioned above.

For an ANSP having more than one national ACC, ATCO hiring plan is managed at ANSP level but changes in traffic volumes or flows and volatility or local human resources factors can influence the assignment to different ACCs.

It should also be noted that some social agreements regarding numbers of additional ATCO to be recruited during RP3 and working conditions (salaries, extra hours, rostering) will be renegotiated after the submission of this FABEC performance plan. Outcomes of such negotiations, in which ANSP and unions but also Ministries of Finance or Public administration are involved, will have an impact on those figure.

Additional information regarding ATCO hiring plans and their impact on cost-efficiency for some ANSP is also provided in chapters 3.4 (cost-efficiency) & 3.6 (interdependencies) and in annexes of this Performance Plan.

3.3.2 - Capacity KPI #2: Terminal and airport ANS ATFM arrival delay per flight

a) National performance targets

	2020A	2020	2021	2022	2023	2024
	Actual	Target	Target	Target	Target	Target
National level	0,10	0,66	0,45	0,45	0,45	0,45
Additional comments	<p>In the context of the setting of a national target the following items were considered to ensure a comprehensible approach:</p> <ol style="list-style-type: none"> 1. Traffic of the previous years 2. Delay of the previous years 3. Traffic forecasts 4. Technical developments and probability of system failures 5. Potential influence of the COVID-Pandemic on capacity 6. Eventuality of "uncontrollable" or non-CRSTMP delays <p>These factors were particularly considered in the target calculation since these are the major factors influencing the overall national capacity value at airports for the upcoming years.</p> <p>EDDT has been legally decommissioned in May 2021, last departure in November 2020. Past data of EDDT was considered in the calculations for EDDB for the years 2021-2024 since it is expected that traffic of EDDT will be transferred to EDDB.</p> <p><i>The break-down values for the individual airports shown in the table below display mathematically calculated contributions to the national target and are based on the above mentioned items, especially traffic and delay of previous years.</i></p>					

Airport level	EDDF-Frankfurt	0,19	1,79	0,94	0,94	0,94	0,94
	Airport contribution to national targets						
	EDDM-Munich	0,08	0,90	0,49	0,49	0,49	0,49
	Airport contribution to national targets						
	EDDL-Dusseldorf	0,26	0,91	0,53	0,53	0,53	0,53
	Airport contribution to national targets						
	EDDT-Berlin-Tegel	-	-				
	Airport contribution to national targets	Airport closed					
	EDDH-Hamburg	0,03	1,06	0,38	0,38	0,38	0,38
	Airport contribution to national targets						
	EDDK-Cologne/Bonn	0,03	0,94	0,16	0,16	0,16	0,16
	Airport contribution to national targets						
	EDDS-Stuttgart	0,00	0,46	0,08	0,08	0,08	0,08
	Airport contribution to national targets						
	EDDB-Schoenefeld-Berlin	0,00	0,28	0,24	0,24	0,24	0,24
	Airport contribution to national targets						
	EDDV-Hannover	0,00	0,31	0,00	0,00	0,00	0,00
	Airport contribution to national targets						
	EDDP-Leipzig	0,14	0,76	0,14	0,14	0,14	0,14
	Airport contribution to national targets						
	EDDN-Nürnberg	0,00	0,26	0,01	0,01	0,01	0,01
	Airport contribution to national targets						
	EDDW-Bremen	0,01	0,86	0,09	0,09	0,09	0,09
Airport contribution to national targets							
EDDC-Dresden	0,00	0,92	0,00	0,00	0,00	0,00	
Airport contribution to national targets							
EDDG-Münster-Osnabrück	0,00	0,92	0,00	0,00	0,00	0,00	
Airport contribution to national targets							
EDDR-Saarbrücken	0,00	0,92	0,00	0,00	0,00	0,00	
Airport contribution to national targets							
EDDE-Erfurt	0,00	0,27	0,00	0,00	0,00	0,00	
Airport contribution to national targets							

b) Contribution to the improvement of the European ATM network performance

Low targets for arrival delay contributes significantly to the overall performance of the European ATM network performance as it provides for a high degree of predictability for both airspace users as well as en route ANSPs.

In addition, DFS participates actively in the "Airport Integration Taskforce" to assess conceptual changes of ATFCM based procedures to airports to integrate them as full part of the ATM Network.

* Refer to Annex Q, if necessary.

c) Main measures put in place to achieve the target for terminal and airport ANS ATFM arrival delay per flight

In order to maintain the low arrival delay at German airports, DFS continues its maximized training-efforts at the academy. In the context of scheduling, the Corona Collective Agreement (Corona-Tarifvertrag - CoronaTV) enables more short term-flexibility and supports the provision of additional capacity for the following years. As an extra capacity-buffer, the Kapazitäts-Tarifvertrag (Capacity-Collective Labour Agreement) remains valid for the remainder of RP3. Concepts to assist the unit training in low-traffic-times have been and are being prepared and additional simulation capabilities have been offered to the tower units. Supervisors are still being employed primarily in operations.

** Refer to Annex Q, if necessary.*

SECTION 3.4: COST-EFFICIENCY KPA

3.4 - Cost efficiency targets

3.4.1 - Cost efficiency KPI #1: Determined unit cost (DUC) for en route ANS

En Route Charging Zone #1

- a) RP3 revised cost-efficiency performance targets (IR 2020/1627)
- b) Information on the baseline values for the determined costs and the determined unit costs
- c) Detailed justifications for the adjustments to the baseline values
- d) Description and justification of the consistency between local and Union-wide cost-efficiency targets
- e) Where a deviation from the Union-wide performance targets is observed, please indicate if the NSA considers those deviations to be necessary and proportionate
- f) Main measures put in place to achieve the targets for determined unit cost (DUC) for en route ANS
- g) Findings of the verification by the NSA (under Art. 22(7) of IR 2019/317) of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. 550/2004 and Article 22 of IR 2019/317, and where applicable identification of

3.4.2 - Cost efficiency KPI #2: Determined unit cost (DUC) for terminal ANS

Terminal Charging Zone #1

- a) RP3 revised cost-efficiency performance targets (IR 2020/1627)
- b) Information on the baseline values for the determined costs and the determined unit costs
- c) Detailed justifications for the adjustments to the baseline values
- d) Description and justification of the contribution of the the local targets to the performance of the European ATM network
- e) Main measures put in place to achieve the targets for determined unit cost (DUC) for terminal ANS
- f) Findings of the verification by the NSA (under Art. 22(7) of IR 2019/317) of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. 550/2004 and Article 22 of IR 2019/317, and where applicable identification of

3.4.3 - Pension assumptions

3.4.3.1 Total pension costs

3.4.3.2 Assumptions for the "State" pension scheme

3.4.3.3 Assumptions for the occupational "Defined contributions" pension scheme

3.4.3.4 Assumptions for the occupational "Defined benefits" pension scheme

3.4.4 - Interest rate assumptions for loans financing the provision of air navigation services

3.4.5 - Restructuring costs

3.4.5.1 Restructuring costs from previous reference periods to be recovered in RP3

3.4.5.2 Restructuring costs planned for RP3

3.4.6 - Additional determined costs related to measures necessary to achieve the en route capacity targets

- a) Overall description of the measures necessary to achieve the en-route capacity targets for RP3, which induce additional costs
- b) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3
- c) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3 by nature by ANSP
- d) Demonstration that the deviation from the Union-wide targets is exclusively due to the additional determined costs related to measures necessary to achieve the performance targets in capacity

Annexes of relevance to this section

ANNEX A. REPORTING TABLES & ADDITIONAL INFORMATION (EN-ROUTE)

ANNEX B. REPORTING TABLES & ADDITIONAL INFORMATION (TERMINAL)

ANNEX F. BASELINE VALUES (COST-EFFICIENCY)

ANNEX H. RESTRUCTURING MEASURES AND COSTS

ANNEX M. COST ALLOCATION

ANNEX R. JUSTIFICATIONS FOR THE LOCAL COST-EFFICIENCY TARGETS

ANNEX U. VERIFICATION BY THE NSA OF THE COMPLIANCE OF THE COST BASE

NOTE: The following requirements as per Annex II, 3.3 are addressed in the Annexes A and B:

Point 3.3 (d) on cost-allocation;

Point 3.3 (e) on the return on equity and cost of capital;

Point 3.3 (f) on assumptions for pension costs and interest on debt for other entities, inflation forecast and adjustments beyond IFRS;

Point 3.3 (g) on adjustments to the unit rates carried over from previous reference periods;

Point 3.3 (h) on costs exempt from cost-sharing;

Point 3.3 (k) reporting tables and additional informations.

3.4.1 - Cost efficiency KPI #1: Determined unit cost (DUC) for en route ANS

En Route Charging Zone 1 - Germany

a) RP3 revised cost-efficiency performance targets (IR 2020/1627)

En route charging zone Name of the CZ	Baseline 2014	Baseline 2019	RP3 revised cost-efficiency targets (determined 2020-2024)				2024 D	2024 D
	2014 B	2019 B	2020/2021 D	2022 D	2023 D	2024 D	vs. 2014 B	vs. 2019 B
Total en route costs in nominal terms (in national currency)	1.068.542.098	1.027.726.243	1.935.358.410	977.377.632	1.010.116.017	1.033.552.160	-3,3%	0,6%
Total en route costs in real terms (in national currency at 2017 prices)	1.086.860.315	1.000.348.119	1.858.018.400	921.276.788	940.629.654	949.671.536	-12,6%	-5,1%
Total en route costs in real terms (in EUR2017) ¹	1.086.860.315	1.000.348.119	1.858.018.400	921.276.788	940.629.654	949.671.536	-12,6%	-5,1%
YoY variation			85,7%	-50,4%	2,1%	1,0%		
Total en route Service Units (TSU)	12.825.352	15.155.120	14.354.543	13.643.500	14.862.500	15.857.500	23,6%	4,6%
YoY variation			-8,5%	-18,2%	13,3%	11,8%		
Real en route unit costs (in national currency at 2017 prices)	84,74	66,01	129,44	67,52	63,29	59,89	-29,3%	-9,3%
Real en route unit costs (in EUR2017) ¹	84,74	66,01	129,44	67,52	63,29	59,89	-29,3%	-9,3%
YoY variation			102,9%	-39,4%	-9,9%	-9,7%		

National currency	EUR
¹ Average exchange rate 2017 (1 EUR=)	1,00

b) Information on the baseline values for the determined costs and the determined unit costs

En route charging zone Name of the CZ	Baseline 2014	Baseline 2019	Actuals 2014	Actuals 2019	2014 Baseline	2019 Baseline
	2014 B	2019 B	2014 A	2019 A	adjustments	adjustments
Total en route costs in nominal terms (in national currency)	1.068.542.098	1.027.726.243	1.015.641.838	889.361.603	52.900.261	138.364.640
Total en route costs in real terms (in national currency at 2017 prices)	1.086.860.315	1.000.348.119	1.032.791.537	866.438.129	54.068.778	133.909.990
Total en route costs in real terms (in EUR2017) ¹	1.086.860.315	1.000.348.119	1.032.791.537	866.438.129	54.068.778	133.909.990
Total en route Service Units (TSU)	12.825.352	15.155.120	12.806.143	15.132.422	19.209	22.699

c) Detailed justifications for the adjustments to the baseline values

c.1) Adjustments to the 2014 baseline value for the determined costs

Number of adjustments	3
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Adjustment #1	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Change in the interest rate for the DFS pension scheme	DFS	ANSP	Staff	44.500.000	45.482.964	45.482.964
Description and justification of the adjustment						
<p>When computing the costs of occupational pension schemes, a so-called imputed model is used. This model aims at calculating a predictable and stable unit rate as well as a complete funding of pension. It is based as much as possible on the IFRS standard and other IFRS norms but deviates from IFRS on the following points:</p> <ul style="list-style-type: none"> •The interest rate in the future will no longer be oriented to an abstract IFRS interest rate but rather to the prospective, expected, return on assets that can be achieved in the long term for the reserves underlying the occupational pension scheme (“imputed unit rate”) •Deviations between the assumed and actual interest rate reached are checked after each reference period. Pension obligations and plan assets are evaluated and netted with the “imputed unit rate”, taking into account the conversion costs from the changeover of the external reporting from HGB to IFRS. •Any differences are charged to the airspace users over a 15 year period in a rolling fashion. The period correspond to the average remaining service time of DFS staff according to IFRS. <p>It is not possible to split costs of pension schemes into regulatory capable and non-capable. Capital market-related changes of interest rate levels have a crucial influence on service and interest costs.</p> <p>For RP2 the interest rate was lowered from 4.65 % (RP1) to 3.54 % (RP2), as a result of the general development of interest rates on the market, which lead to higher costs in RP2.</p>						

Adjustment #2	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Transfer of costs for tax compensation into MUAC cost base	MUAC	ANSP	Other operating	5.611.461	5.735.413	5.735.413
Description and justification of the adjustment						
<p>In EUROCONTROL, the remunerations of active staff are subject to an internal tax, while the pensions of retired staff are subject to national taxes in the countries where they reside. Pensioners receive a compensation for local income taxes, depending on where they live, to ensure all pensioners receive the same net pension. In 2005, the EUROCONTROL’s Pension Fund was created whereby the net pensions (net amounts paid to the pensioners) are financed through this Fund (from employer and employee contributions) and the tax compensation on pensions is financed on a pay as you go basis from the budget.</p> <p>In 2016, an agreement was made between the 4 MUAC States and the other EUROCONTROL Member States whereby the 4 States were given more autonomy over MUAC while in exchange the pension tax compensation related to MUAC is progressively (over a period of 7 years from 2016 to 2022) borne by the 4 States. The agreements were embedded in Decision n°128 and n°129 of the Permanent Commission. In accordance with the Declaration of the National Contracting Parties to the Maastricht Agreement dated 19-04-2016, these costs have been included since 2016 in a Special Annex (to the general budget of EUROCONTROL) in a staggered approach (10% in 2016, 20% in 2017, 30% in 2018, 40% in 2019, 60% in 2020, 80% in 2021). These costs will be included at 100% in MUAC (Part III) General Budget and thus the MUAC Cost Base once the new Maastricht Agreement has been ratified by all four States, which is assumed to happen before the end of 2021.</p> <p>In 2014, the total overall Eurocontrol tax compensation on pension and ancillary cost in 2014 was 38,326,507.28 €. The proportion for MUAC was 31.5 % or 12.072.849,79 EUR. The German share within MUAC for 2014 was 46,48 %.</p> <p>In order to provide for a baseline that makes future costs comparable to the situation in 2014, the MUAC cost base is adjusted accordingly.</p>						

Adjustment #3	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Transfer of costs for HQ costs into MUAC cost base	MUAC	ANSP	Other operating	2.788.800	2.850.402	2.850.402
Description and justification of the adjustment						
<p>Under the same discussions between the 4 MUAC States and the 41 EUROCONTROL Member States, an agreement embedded in Decision n° 128 of the Permanent Commission was concluded as relates the allocation to Part III (MUAC) of the costs for support services delivered by other units of the Agency to MUAC. Similarly, the 4 states agreed to include these costs in a Special Annex (Part IV), in accordance with the Declaration of the National Contracting Parties to the Maastricht Agreement dated 19-04-2016. There is no progressive approach for these costs and they are supported directly at 100% by the 4 MUAC states. As from 2022 these costs will be included at 100% in MUAC (Part III) General Budget.</p> <p>In 2014, the HQ support costs amounted to around 6.000.000 EUR, included by 100% into the MUAC Special Annex (Part IV); the German share within MUAC for 2014 was 46,48 %.</p> <p>In order to provide for a baseline that makes future costs comparable to the situation in 2014, the MUAC cost base is adjusted accordingly.</p>						

Total adjustments to the 2014 baseline value for the determined costs	Costs nominal NC	Costs real NC	Costs EUR2017
	52.900.261	54.068.778	54.068.778

c.2) Adjustments to the 2014 service units

Impact of transition to actual route flown	Coefficient M2/M3	Source	Service units
	0,15%	CRCO correction factor May 2019 (on 12 months)	19.209

Other adjustment to the 2014 service units	No
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Total adjustments to the 2014 service units	19.209
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c.3) Adjustments to the 2019 baseline value for the determined costs

Number of adjustments	4
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Adjustment #1	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Corporate action in RP2	DFS	ANSP	Exceptional items	89.381.000	86.503.379	86.503.379
Description and justification of the adjustment						
In RP2 the Federal Republic of Germany decided to undertake a corporate action for the years 2015-2019 for strengthening DFS and to bring down the unit rate over RP 2. This action ended in 2019. The figure above refers to the corporate action in year 2019.						

Adjustment #2	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Change in the interest rate for the DFS pension scheme	DFS	ANSP	Staff	38.805.000	37.555.673	37.555.673
Description and justification of the adjustment						
<p>When computing the costs of occupational pension schemes, a so-called imputed model is used. This model aims at calculating a predictable and stable unit rate as well as a complete funding of pension.</p> <p>It is based as much as possible on the IFRS standard and other IFRS norms but deviates from IFRS on the following points:</p> <ul style="list-style-type: none"> • The interest rate in the future will no longer be oriented to an abstract IFRS interest rate but rather to the prospective, expected, return on assets that can be achieved in the long term for the reserves underlying the occupational pension scheme (“imputed unit rate”) • Deviations between the assumed and actual interest rate reached are checked after each reference period. Pension obligations and plan assets are evaluated and netted with the “imputed unit rate”, taking into account the conversion costs from the changeover of the external reporting from HGB to IFRS. • Any differences are charged to the airspace users over a 15-year period in a rolling fashion. The period corresponds to the average remaining service time of DFS staff according to IFRS. <p>It is not possible to split costs of pension schemes into regulatory capable and non-capable. Capital market-related changes of interest rate levels have a crucial influence on service and interest costs.</p> <p>For RP3 the interest rate was lowered from 3.54 % (RP2) to 2.85 %, as a result of the general development of interest rates on the market. The result of the change in the discount rate are higher pension costs.</p> <p>Discounting when calculating the costs of occupational pension schemes takes into account the fact that a company can invest the necessary financial resources on the capital market until the pension obligation is payable. In this connection the following applies: the lower the interest rate, the higher the expenses for retirement provision. Due to the lower interest rate a company needs more capital to provide the promised service. From an economic point of view there are actuarial losses.</p> <p>This exogenous factor “interest rate risk” leads to higher personnel costs in RP3, which, due to the changed interest rate, cannot be compared with the personnel costs in RP2.</p> <p>However, in order to establish a comparability and thus a connection between RP2 and RP3, an increase in the baseline value is necessary / appropriate. In doing so, it is pretended that the interest rate of 2.85 percent used in RP3 had already been used in RP2 - with otherwise unchanged parameters. As described above, this leads to higher personnel costs and therefore to a higher baseline value.</p>						

Adjustment #3	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Integration of costs for tax compensation into MUAC cost base	MUAC	ANSP	Staff	8.096.548	7.835.879	7.835.879
Description and justification of the adjustment						
<p>In EUROCONTROL, the remunerations of active staff are subject to an internal tax, while the pensions of retired staff are subject to national taxes in the countries where they reside. Pensioners receive a compensation for local income taxes, depending on where they live, to ensure all pensioners receive the same net pension. In 2005, the EUROCONTROL's Pension Fund was created whereby the pensions (amounts paid to the pensioners) are financed through this Fund (from employer and employee contributions) and the tax compensation on pensions is financed on a pay as you go basis from the budget.</p> <p>In 2016, an agreement was made between the 4 MUAC States and the other EUROCONTROL Member States whereby the 4 States were given more autonomy over MUAC while in exchange the pension tax compensation related to MUAC is progressively (over a period of 7 years from 2016 to 2022) borne by the 4 States. The agreements were embedded in Decision n°128 and n°129 of the Permanent Commission. In accordance with the Declaration of the National Contracting Parties to the Maastricht Agreement dated 19-04-2016, these costs have been included since 2016 in a Special Annex (to the general budget of EUROCONTROL) in a staggered approach (10% in 2016, 20% in 2017, 30% in 2018, 40% in 2019, 60% in 2020, 80% in 2021). These costs will be included at 100% in MUAC (Part III) General Budget and thus the MUAC Cost Base once the new Maastricht Agreement has been ratified by all four States, which is assumed to happen before the end of 2021.</p> <p>In 2019, the tax compensation amounted to 17.553.719 EUR, 40% of which were attributed to the MUAC special annex (EUROCONTROL Part IV) and 60% thereof to the EUROCONTROL General Budget (Part I); the German share within MUAC for 2019 was 46,1244 %.</p> <p>In order to provide for a baseline that makes future costs comparable to the situation in 2019, the MUAC cost base is adjusted accordingly.</p>						

Adjustment #4	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Integration of HQ costs into MUAC cost base	MUAC	ANSP	Other operating	2.082.092	2.015.059	2.015.059
Description and justification of the adjustment						
<p>Under the same discussions between the 4 MUAC States and the 41 EUROCONTROL Member States, an agreement embedded in Decision n° 128 of the Permanent Commission was concluded as relates the allocation to Part III (MUAC) of the costs for support services delivered by other units of the Agency to MUAC. Similarly, the 4 states agreed to include these costs in a Special Annex (Part IV), in accordance with the Declaration of the National Contracting Parties to the Maastricht Agreement dated 19-04-2016. There is no progressive approach for these costs and they are supported directly at 100% by the 4 MUAC states. As from 2022 these costs will be included at 100% in MUAC (Part III) General Budget.</p> <p>In 2019, the HQ support costs amounted to 4.514.080 EUR, included by 100% into the MUAC Special Annex (Part IV); the German share within MUAC for 2019 was 46,1244 %.</p> <p>In order to provide for a baseline that makes future costs comparable to the situation in 2019, the MUAC cost base is adjusted accordingly.</p>						

Total adjustments to the 2019 baseline value for the determined costs	Costs nominal NC	Costs real NC	Costs EUR2017
	138.364.640	133.909.990	133.909.990

c.4) Adjustments to the 2019 service units

Impact of transition to actual route flown	Coefficient M2/M3	Source	Service units
	0,15%	CRCO correction factor May 2019 (on 12 months)	22.699
Other adjustment to the 2019 service units	No		
Total adjustments to the 2019 service units			22.699

d) Description and justification of the consistency between local and Union-wide cost-efficiency targets

With the current proposed draft performance plan, Germany is reaching and in fact also overachieving the Union-wide cost-efficiency targets. In fact, this result is achieved even without taking into account a technical reduction of the cost base due to additional capacity measures (see 3.4.6).

In addition, it has to be highlighted that a consistency between local and Union-wide cost-efficiency over RP3 is not only ensured by taking into account the more optimistic traffic scenario provided for by DFS in March 2021 but also by referring to the STATFOR forecast May 2021, scenario 2.

** Refer to Annex R, if necessary.*

e) Where a deviation from the Union-wide performance targets is observed, please indicate if the NSA considers those deviations to be necessary and proportionate under:

Additional costs of measures necessary to achieve the capacity targets for RP3	Yes	Detailed in part 3.4.6 of the performance plan
Restructuring costs planned for RP3	No	

f) Main measures put in place to achieve the targets for determined unit cost (DUC) for en route ANS

DFS:

Among the key elements contributing to the target achievement, there are the following measures:

1. During RP3, the number of FTE will be reduced in the administrative areas (thus with relevance both to the Terminal and En Route charging zone) from 2448 in 2020 to 2227 in 2024, which corresponds to an overall reduction of 10% (compared to 2021 a reduction of 3% in 2022, 6% in 2023 and 9% in 2024).
2. The other operating costs will be reduced by 1% per year (based on an inflation of 2%, they are planned not to increase more than 1% p.a.)
3. There will be no RoE for RP3.

** Refer to Annex R, if necessary.*

g) Findings of the verification by the NSA (under Art. 22(7) of IR 2019/317) of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. 550/2004 and Article 22 of IR 2019/317, and where applicable identification of corrections applied to the cost base as a result of this verification

The German NSA did perform an in depth verification of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. (EU) No 550/2004 and Article 22 of IR (EU) 2019/317. This verification process included numerous virtual meetings as well as an extensive email-exchange which were conducted in a very constructive and efficient manner. Where applicable, the German NSA identified corrections to be applied to the cost base as a result of this verification. The draft performance plan as handed in is as a result in compliance with the applicable rules.

** Refer to Annex U, if necessary.*

3.4.2 - Cost efficiency KPI #2: Determined unit cost (DUC) for terminal ANS

Terminal Charging Zone 1 - Germany - TCZ

a) RP3 revised cost-efficiency performance targets (IR 2020/1627)

Terminal charging zone Name of the CZ	Baseline 2019	RP3 revised cost-efficiency targets (determined 2020-2024)				2024 D vs. 2019 B
	2019 B	2020/2021 D	2022 D	2023 D	2024 D	
Total terminal costs in nominal terms (in national currency)	291.970.427	583.637.570	294.376.034	304.847.292	326.799.431	11,9%
Total terminal costs in real terms (in national currency at 2017 prices)	283.521.994	559.340.146	276.938.178	283.248.502	299.291.923	5,6%
Total terminal costs in real terms (in EUR2017) ¹	283.521.994	559.340.146	276.938.178	283.248.502	299.291.923	5,6%
YoY variation		97,3%	-50,5%	2,3%	5,7%	
Total terminal Service Units (TNSU)	1.492.294	1.323.000	1.280.000	1.426.000	1.498.000	0,4%
YoY variation		-11,3%	-3,3%	11,4%	5,0%	
Real terminal unit costs (in national currency at 2017 prices)	189,99	422,78	216,36	198,63	199,79	5,2%
Real terminal unit costs (in EUR2017) ¹	189,99	422,78	216,36	198,63	199,79	5,2%
YoY variation		122,5%	-48,8%	-8,2%	0,6%	

National currency	EUR
¹ Average exchange rate 2017 (1 EUR=)	1,00

b) Information on the baseline values for the determined costs and the determined unit costs

Terminal charging zone Name of the CZ	Baseline 2019	Actuals 2019	2019 Baseline adjustments
	2019 B	2019 A	
Total terminal costs in nominal terms (in national currency)	291.970.427	222.772.427	69.198.000
Total terminal costs in real terms (in national currency at 2017 prices)	283.521.994	216.551.824	66.970.170
Total terminal costs in real terms (in EUR2017) ¹	283.521.994	216.551.824	66.970.170
Total terminal Service Units (TNSU)	1.492.294	1.492.294	

c) Detailed justifications for the adjustments to the baseline values

c.1) Adjustments to the 2019 baseline value for the determined costs

Number of adjustments	2
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Adjustment #1	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Change in the interest rate for the DFS pension scheme	DFS	ANSP	Staff	12.112.000	11.722.054	11.722.054
Description and justification of the adjustment						
<p>When computing the costs of occupational pension schemes, a so-called imputed model is used. This model aims at calculating a predictable and stable unit rate as well as a complete funding of pension.</p> <p>It is based as much as possible on the IFRS standard and other IFRS norms but deviates from IFRS on the following points:</p> <ul style="list-style-type: none"> •The interest rate in the future will no longer be oriented to an abstract IFRS interest rate but rather to the prospective, expected, return on assets that can be achieved in the long term for the reserves underlying the occupational pension scheme (“imputed unit rate”) •Deviations between the assumed and actual interest rate reached are checked after each reference period. Pension obligations and plan assets are evaluated and netted with the “imputed unit rate”, taking into account the conversion costs from the changeover of the external reporting from HGB to IFRS. •Any differences are charged to the airspace users over a 15 year period in a rolling fashion. The period correspond to the average remaining service time of DFS staff according to IFRS. <p>It is not possible to split costs of pension schemes into regulatory capable and non-capable. Capital market-related changes of interest rate levels have a crucial influence on service and interest costs.</p> <p>For RP3 the interest rate was lowered from 3.54 % (RP2) to 2.85 %, as a result of the general development of interest rates on the market, which leads to higher costs in RP3.</p> <p>Discounting when calculating the costs of occupational pension schemes takes into account the fact that a company can invest the necessary financial resources on the capital market until the pension obligation is payable. In this connection the following applies: the lower the interest rate, the higher the expenses for retirement provision. Due to the lower interest rate a company needs more capital to provide the promised service. From an economic point of view there are actuarial losses.</p> <p>This exogenous factor “interest rate risk” leads to higher personnel costs in RP3, which, due to the changed interest rate, cannot be compared with the personnel costs in RP2.</p> <p>However, in order to establish a comparability and thus a connection between RP2 and RP3, an increase in the baseline value is necessary / appropriate. In doing so, it is pretended that the interest rate of 2.85 percent used in RP3 had already been used in RP2 - with otherwise unchanged parameters. As described above, this leads to higher personnel costs and therefore to a higher baseline value.</p>						

Adjustment #2	Entity name	Entity type	Nature	Costs nominal NC	Costs real NC	Costs EUR2017
Corporate action in RP2	DFS	ANSP	Exceptional items	57.086.000	55.248.116	55.248.116
Description and justification of the adjustment						
<p>In RP2 the Federal Republic of Germany decided to undertake a corporate action for the years 2015-2019 for strengthening DFS and to bring down the unit rate over RP2. This action ended in 2019. The figure above refers to the corporate action in year 2019.</p>						

Total adjustments to the 2019 baseline value for the determined costs	Costs nominal NC	Costs real NC	Costs EUR2017
	69.198.000	66.970.170	66.970.170

c.2) Adjustments to the 2019 service units

Adjustment to the 2014 service units	No
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d) Description and justification of the contribution of the the local targets to the performance of the European ATM network

Ambitious cost planning by DFS and DWD and the postponement of recruiting within the German NSA lead to a realistic and efficient cost structure in the German terminal charging zone. With such a cost structure, Germany lays the basis for determined unit costs that reflect the high quality and ambition within the charging zone and thus contribute to keeping costs to a minimum within the European ATM network.

** Refer to Annex R, if necessary.*

e) Main measures put in place to achieve the targets for determined unit cost (DUC) for terminal ANS

DFS:

Among the key elements contributing to the target achievement, there are the following measures:

1. During RP3, the number of FTE will be reduced in the administrative areas (thus with relevance both to the terminal and en route charging zone) from 2448 in 2020 to 2227 in 2024, which corresponds to an overall reduction of 10% (compared to 2021 a reduction of 3% in 2022, 6% in 2023 and 9% in 2024).
2. The other operating costs will be reduced by 1% per year (based on an inflation of 2%, they are planned not to increase more than 1% p.a.)
3. There will be no RoE for RP3.

** Refer to Annex R, if necessary.*

f) Findings of the verification by the NSA (under Art. 22(7) of IR 2019/317) of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. 550/2004 and Article 22 of IR 2019/317, and where applicable identification of corrections applied to the cost base as a result of this verification

The German NSA did perform an in depth verification of the compliance of the cost base for charges with the requirements of Article 15(2) of Reg. (EU) No 550/2004 and Article 22 of IR (EU) 2019/317. This verification process included numerous virtual meetings as well as an extensive email-exchange which were conducted in a very constructive and efficient manner. Where applicable, the German NSA identified corrections to be applied to the cost base as a result of this verification. The draft performance plan as handed in is as a result in compliance with the applicable rules.

Concerning the DFS Drone Detection System, the German NSA did in particular investigate the purpose of the system as well as its capabilities and ensured it's compliance with the respective communication with the European Commission (MOVE.DDG2.E.3/AH/Im Ares(2021) 4324503).

** Refer to Annex U, if necessary.*

SECTION 3.4.3: Pension assumptions

3.4.3: Pension assumptions

3.4.3.1 Total pension costs

3.4.3.2 Assumptions for the "State" pension scheme

3.4.3.3 Assumptions for the occupational "Defined contributions" pension scheme

3.4.3.4 Assumptions for the occupational "Defined benefits" pension scheme

[DFS](#)

[MUAC](#)

3.4.3 - Pension assumptions - DFS

3.4.3.1 Total pension costs (in nominal terms in '000 national currency)

Pension costs	2020A/D	2021D	2020/2021D	2022D	2023D	2024D
Total pension costs	290.323	304.366	594.690	250.045	250.536	254.099
En-route activity (state pension scheme + defined benefit)	204.573	211.541	416.114	172.056	174.427	177.559
Terminal activity (state pension scheme + defined benefit)	60.507	65.357	125.863	54.028	54.126	54.604
Other activities	25.244	27.469	52.713	23.961	21.983	21.936

Explanation

The total pensions costs as reported in table 3.4.3.1 above represent the total pension costs of DFS regarding the three segments "En-route activity", "Terminal activity" and "Other activities". The segment "Other activities" mainly affects pension costs related to OAT/VFR. These costs include the DFS contributions to the state pension scheme, to the defined benefits pension scheme, IFRS conversion effects and some minor obligations (i.e. early retirement or part time contracts for older employees). The cost allocation to the three segments in table 3.4.3.1 is just an approximate estimation. Due to the internal planning system the DFS contributions to the state pension scheme are allocated to the total staff costs (number 1.1 in reporting table 1). The current planning system does not make it possible to deduct these contributions to the state pension scheme from the total staff costs. For this reason, line 13 in reporting table 1 just includes the DFS contributions to the defined benefit pension scheme and some minor obligations as described before (see also additional information on the reporting tables). For these obligations, a separate presentation on basis of actuarial reports is easily possible. Furthermore, in Reporting Table 1 IFRS conversions effects always are shown in the position "exceptional items" (number 1.5). To preserve comparability, no change should be made to that disclosure.

3.4.3.2 Assumptions for the "State" pension scheme (in nominal terms in '000 national currency)

Are there different contribution rates for different staff categories? If yes, how many? No

	2020A/D	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies	348.426	364.500	712.927	381.979	388.854	398.160
Employer % contribution rate to this scheme	9,30	9,30		9,30	9,35	9,35
Total pension costs in respect of this scheme	32.404	33.899	66.302	35.524	36.358	37.228
Number of employees the employer contributes for in this scheme	5.312	5.366		5.400	5.361	5.330

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3

Financed using contributions of for example 18,6% in 2020, split equally between employees and employers (annual contribution assessment ceiling of EUR 82.800 in 2020). Early retirement is possible from 63 years of age subject to contributions for a minimum of 35 years and deduction of up to 14,4% for retiring 48 month before the recommended retirement age. No changes are expected in RP3.

Additional remarks: The figures included in the tables above show the pension assumptions on DFS level. A distinction between en-route and terminal is not done on contract level.

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs

Financed using contributions of 18,6% in 2020 up to 18,70% in 2024, split equally between employees and employers (annual contribution assessment ceiling (Beitragsbemessungsgrenze) of EUR 82.800 in 2020 up to EUR 92.400 in 2024).

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the unforeseen change on the costs to be passed on to airspace users

To manage the risk of the state pensions ex-ante is not possible. Therefore we use best estimates from the experts from the HR-department.

3.4.3.3 Assumptions for the occupational "Defined contributions" pension scheme (in nominal terms in '000 national currency)

Are there different contribution rates for different staff categories? If yes, how many? Select

<Staff category name>	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies			-			
Employer % contribution rate to this scheme						
Total pension costs in respect of this scheme			-			
Number of employees the employer contributes for in this scheme						

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the unforeseen change on the costs to be passed on to airspace users

3.4.3.4 Assumptions for the occupational "Defined benefits" pension scheme

Does the ANSP assume liability for meeting future obligations for the occupational "Defined benefits" scheme?	Yes
Is the occupational "Defined benefits" pension scheme funded?	Yes

	2020A	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies	585.684	601.089	1.186.773	618.929	632.703	646.570
Total pension costs in respect of this scheme	257.920	270.468	528.387	214.521	214.178	216.871
- in respect of regular pension costs	n/a	n/a	n/a	n/a	n/a	n/a
- in respect of non-recurring deficit repair	n/a	n/a	n/a	n/a	n/a	n/a
- reported as staff costs (in reporting tables)	184.130	191.058	375.188	192.946	194.637	197.435
- not reported as staff costs (in reporting tables): please use comment box	73.789	79.410	153.199	21.575	19.541	19.436
Actuarial assumptions (plan)						
% discount rate	2,85%	2,85%		2,85%	2,85%	2,85%
% projected increase in benefits	n/a	n/a		n/a	n/a	n/a
% annual increase in salaries	2,50%	2,50%		2,50%	2,50%	2,50%
% expected return on plan assets	2,85%	2,85%		2,85%	2,85%	2,85%
Net funding surplus / deficit	78.262	78.349	156.611	78.851	79.554	79.148
Number of employees the employer contributes for in this scheme	8.741	8.990		9.180	9.340	9.510

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3
The schemes for pensions are defined benefit schemes. There are various forms of pension provision available to the employees of DFS, which are largely governed by collective agreements.
Additional remarks: A split of the total cost per pension scheme in "regular pension costs" and "non-recurring deficit repair" is not possible, because the appointed actuary does not calculate these figures.

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs
Under the collective agreement covering pensions, employees who began employment by 31 December 2004 receive old-age, disability and surviving dependant's pensions. These are defined benefits linked to the respective final salary of the employee. However, employees who entered service from 1 January 2005 receive benefits under the collective agreement covering pensions which are linked to average career earnings. Under this system, each year a pension component is calculated based on the respective income and the old-age pension is determined based on the sum of the annual pension components (Versorgungstarifvertrag - "VersTV").
Air traffic controllers and flight data specialists receive transitional retirement benefits based on the final salary to cover the period from the end of their operational activity until the receipt of the statutory pension as well as the pension as explained above (Übergangsvorsorgungstarifvertrag - "ÜVerSTV").
DFS pays an increased employer contribution for health insurance for the employees who were previously employed as established civil servants with the former Federal Administration of Air Navigation Services (Bundesanstalt für Flugsicherung - BFS) / the Federal Aviation Office (Luftfahrtbundesamt - LBA). This compensates over the entire active period of employment and in retirement for the fact that this staff is no longer covered by the German Civil Service welfare provisions for healthcare (Krankentarifvertrag - "KTV").

Where, in the Reporting Tables, some occupational "defined benefits" costs (e.g. interest expense related to pensions) are reported in other cost item(s) than staff costs, the cost item(s) should be indicated here below along with corresponding explanations.
--

For the year 2020 and 2021 the position "not reported as staff costs" contains IFRS conversion effects charged to the airlines on a pro-rata basis and pension costs that belong to other cost objects (e.g. OAT). From 2022 onwards the position only contains pension costs that belong to other cost objects (e.g. OAT).

IFRS conversion effects are charged to the airlines on a pro-rata basis. Following the change of the accounting system to IFRS, these IFRS conversion effects are proportionally spread up to 2021 according to Article 7 of Regulation (EU) No. 391/2013. From 2022 onwards pension costs will be only reported as staff costs.

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the unforeseen change on the costs to be passed on to airspace users
Controlling the risk is difficult. Above data has been prepared under the support of a national actuary providing an opinion on the expected interest rates on plan assets in the years 2020-2024.

3.4.3 - Pension assumptions - MUAC

3.4.3.1 Total pension costs (in nominal terms in '000 national currency)

Pension costs	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total pension costs	12.805	13.562	26.367	35.410	37.830	40.067
En-route activity	12.805	13.562	26.367	35.410	37.830	40.067
Terminal activity			-			
Other activities			-			

3.4.3.2 Assumptions for the "State" pension scheme (in nominal terms in '000 national currency)

Are there different contribution rates for different staff categories? If yes, how many? Select

<Staff category name>	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies			-			
Employer % contribution rate to this scheme						
Total pension costs in respect of this scheme			-			
Number of employees the employer contributes for in this scheme						

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3
 MUAC does not have a "State" pension scheme.

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the

3.4.3.3 Assumptions for the occupational "Defined contributions" pension scheme (in nominal terms in '000 national currency)

Are there different contribution rates for different staff categories? If yes, how many? Select

<Staff category name>	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies			-			
Employer % contribution rate to this scheme						
Total pension costs in respect of this scheme			-			
Number of employees the employer contributes for in this scheme						

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3
 MUAC does not have a "defined contributions" pension scheme.

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the unforeseen change on the costs to be passed on to airspace users

3.4.3.4 Assumptions for the occupational "Defined benefits" pension scheme

Does the ANSP assume liability for meeting future obligations for the occupational "Defined benefits" scheme?	Yes
Is the occupational "Defined benefits" pension scheme funded?	Yes

	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total pensionable payroll to which this scheme applies	163.014	167.049	330.063	197.297	207.720	215.899
Total pension costs in respect of this scheme	12.805	13.562	26.367	35.410	37.830	40.067
- in respect of regular pension costs			-			
- in respect of non-recurring deficit repair			-			
- reported as staff costs (in reporting tables)	12.805	13.562	26.367	35.410	37.830	40.067
- not reported as staff costs (in reporting tables): please use comment box			-			
Actuarial assumptions						
% discount rate						
% projected increase in benefits						
% annual increase in salaries						
% expected return on plan assets						
Net funding surplus / deficit			-			
Number of employees the employer contributes for in this scheme	750	750		750	750	750

Description on the relevant national pension regulations and pension accounting regulations on which the assumptions are based, as well as information whether changes of those regulations are to be expected during RP3
 MUAC employees are eligible for membership in the EUROCONTROL defined benefit pension scheme. This scheme is the first and unique pillar for the employees. Contributions from the employees and the employer are paid to the EUROCONTROL pension fund. The pension costs reported in this section relates to 2 different elements : the employer contribution (expressed as a percentage of the basic salary -17.5% in 2021) and the tax compensation on pension. Following a decision from the MUAC Member States, this tax compensation on pensions is gradually recognised over RP3 as pension costs in the MUAC costbase. This explains the substantial increase of pension costs as from 2022.

Description of the assumptions underlying the calculations of pension costs comprised in the determined costs
 One of the main assumptions is the percentage of the employer contribution which is set at 17.5% of the basic salary in 2021. According to actuarial studies, this percentage is expected to increase up to 20% during RP3. Another assumption relating to the tax compensation on pension (accounted on a Pay as You Go basis) is the mortality and taxation pressure in the countries were pensioners reside.

Where, in the Reporting Tables, some occupational "defined benefits" costs (e.g. interest expense related to pensions) are reported in other cost item(s) than staff costs, the cost item(s) should be indicated here below along with corresponding explanations.
 Not applicable.

Describe the actions taken ex-ante to manage the cost-risk (cost increase) associated with this item, as well as the actions taken to limit the impact of the unforeseen change on the costs to be passed on to airspace users
 Increase of pension age of ATCOs and non ATCO staff. Review of benefits. New HR policy limiting access to permanent contracts of employment.

SECTION 3.4.4: Interest rate assumptions for loans financing the provision of ANS

3.4.4 - Interest rate assumptions for loans financing the provision of air navigation services

[DFS](#)
[MUAC](#)

3.4.4 - Interest rate assumptions for loans financing the provision of air navigation services - DFS

Select number of loans							6
Interest rate assumptions for loans financing the provision of air navigation services (Amounts in nominal terms in national currency)							
Loan #1	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Schuldscheinanleihen (loan against borrower's note/debenture loan under German law) - maturity date in 2023.						
Remaining balance (end of year)	110.000.000	110.000.000		110.000.000	-	-	
Interest rate %	2,308%	2,308%		2,308%	2,308%	0,000%	
Interest amount	2.538.800	2.538.800	5.077.600	2.538.800	2.538.800	-	
Loan #2	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Schuldscheinanleihen (loan against borrower's note/debenture loan under German law) - maturity date in 2020.						
Remaining balance (end of year)	0	-		-	-	-	
Interest rate %	3,007%	0,000%		0,000%	0,000%	0,000%	
Interest amount	2.631.125	-	2.631.125	-	-	-	
Loan #3	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Schuldscheinanleihen (loan against borrower's note/debenture loan under German law) - year of payment 2020.						
Remaining balance (end of year)	99.500.000	99.500.000		99.500.000	99.500.000	99.500.000	
Interest rate %	0,000%	0,500%		0,500%	0,500%	0,500%	
Interest amount	0	497.500	497.500	497.500	497.500	497.500	
Loan #4	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Schuldscheinanleihen (loan against borrower's note/debenture loan under German law) - year of payment 2020.						
Remaining balance (end of year)	132.000.000	132.000.000		132.000.000	132.000.000	132.000.000	
Interest rate %	0,000%	0,650%		0,650%	0,650%	0,650%	
Interest amount	0	858.000	858.000	858.000	858.000	858.000	
Loan #5	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Schuldscheinanleihen (loan against borrower's note/debenture loan under German law) - year of payment 2020.						
Remaining balance (end of year)	268.500.000	268.500.000		268.500.000	268.500.000	268.500.000	
Interest rate %	0,000%	0,850%		0,850%	0,850%	0,850%	
Interest amount	0	2.282.250	2.282.250	2.282.250	2.282.250	2.282.250	
Loan #6	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description	Geldmarktkreditaufnahmevertrag (money market loan) - maturity date in 2020.						
Remaining balance (end of year)	0	-		-	-	-	
Interest rate %	0,350%	0,000%		0,000%	0,000%	0,000%	
Interest amount	10.549	-	10.549	-	-	-	
Other loans	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Description							
Remaining balance (end of year)							
Average weighted interest rate %	-	-		-	-	-	
Interest amount							
Total loans	2020D	2021D	2020/2021D	2022D	2023D	2024D	
Total remaining balance	610.000.000	610.000.000		610.000.000	500.000.000	500.000.000	
Average weighted interest rate %	0,849%	1,013%		1,013%	1,235%	0,728%	
Interest amount	5.180.474	6.176.550	11.357.024	6.176.550	6.176.550	3.637.750	

Additional information: Interest expenses for loans are part of the cost basis, the payment date is independent of this. Interest is calculated on the exact day for the period of utilisation and paid on the contractually stipulated due date. According to the loan agreement, interest is payable annually retrospectively on the date of the signature of the agreement. At the end of the term, the total amount of the loan is to be repaid; there are no repayments during the term.

3.4.4 - Interest rate assumptions for loans financing the provision of air navigation services - MUAC

Select number of loans	4
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Interest rate assumptions for loans financing the provision of air navigation services (Amounts in nominal terms in '000 national currency)						
Loan #1	2020D	2021D	2020/2021D	2022D	2023D	2024D
Description	Bullet loans with KBC contracted in December 2020 for 60 million € up to 31 Dec 2027 at variable rate (IRS Swap Curve + 0.4%)					
Remaining balance (end of year)	60.000	60.000		60.000	60.000	60.000
Interest rate %	0,40%	0,40%		0,40%	0,40%	0,40%
Interest amount	0	240	240	240	240	240
Loan #2	2020D	2021D	2020/2021D	2022D	2023D	2024D
Description	Loan with KBC contracted in 2017 for 40 million € at variable rate (EURIBOR 1 to 9 months + 0.40%) maturing in December 2025					
Remaining balance (end of year)	25.000	20.000		15.000	10.000	5.000
Interest rate %	0,40%	0,40%		0,40%	0,40%	0,40%
Interest amount	120	100	220	80	60	40
Loan #3	2020D	2021D	2020/2021D	2022D	2023D	2024D
Description	Loan with BNP contracted in 2017 for 30 million € at variable rates (EURIBOR + 0.40%) maturing in December 2025					
Remaining balance (end of year)	18.750	15.000		11.250	7.500	3.750
Interest rate %	0,40%	0,40%		0,40%	0,40%	0,40%
Interest amount	90	75	165	60	45	30
Loan #4	2020D	2021D	2020/2021D	2022D	2023D	2024D
Description	Loan with KBC contracted in 2014 for 70 million € at variable rate (EURIBOR 1 to 9 months +0.58%) maturing in December 2022					
Remaining balance (end of year)	17.500	8.750		-	-	-
Interest rate %	0,58%	0,58%				
Interest amount	152	102	254			
Other loans	2020D	2021D	2020/2021D	2022D	2023D	2024D
Description						
Remaining balance (end of year)						
Average weighted interest rate %	-	-		-	-	-
Interest amount			-			
Total loans	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total remaining balance	121.250	103.750		86.250	77.500	68.750
Average weighted interest rate %	0,30%	0,50%		0,44%	0,45%	0,45%
Interest amount	362	517	879	380	345	310

SECTION 3.4.5: Restructuring costs

3.4.5 - Restructuring costs

3.4.5.1 Restructuring costs from previous reference periods to be recovered in RP3

3.4.5.2 Restructuring costs planned for RP3

Annexes of relevance to this section

ANNEX H. RESTRUCTURING MEASURES AND COSTS

3.4.5 - Restructuring costs

3.4.5.1 Restructuring costs from previous reference periods to be recovered in RP3

Restructuring costs from previous reference periods approved by the European Commission?	No
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3.4.5.2 Restructuring costs planned for RP3

Restructuring costs foreseen for RP3?	No
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Additional comments

SECTION 3.4.6: Additional determined costs related to measures necessary to achieve the en route capacity targets

3.4.6 - Additional determined costs related to measures necessary to achieve the en route capacity targets

- a) Overall description of the measures necessary to achieve the en-route capacity targets for RP3, which induce additional costs
- b) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3
- c) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3 by nature by ANSP
- d) Demonstration that the deviation from the Union-wide targets is exclusively due to the additional determined costs related to measures necessary to achieve the performance targets in capacity

[Germany](#)

Annexes of relevance to this section

-

3.4.6 - Additional determined costs related to measures necessary to achieve the en route capacity targets - Germany

Additional costs of measures necessary to achieve the capacity targets for RP3?	Yes
If yes, number of en route charging zones concerned	1

German charging zone

a) Overall description of the measures necessary to achieve the en-route capacity targets for RP3, which induce additional costs

MUAC: GCE packages, post-ops analysis and business intelligence initiatives
DFS: Increase of ATCOs (difference between e.g. retiring ATCOs and additional ATCOs)

b) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3

Number of capacity measures, which induce additional costs	3
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Measure #1	2020D	2021D	2020/2021D	2022D	2023D	2024D
Associated additional costs (nominal terms in '000 national currency)	2.987	4.102	7.089	4.244	2.071	1.009

Description and justification of the additional determined costs of the measure

MUAC: GCE Package : The measure aims to increase ATCO availability in order to mitigate the gap between staff availability and traffic demand. Key measures of the proposal include: an increase in annual working time for newly recruited ATCO staff; the replacement of stand-by shifts (where staff are off duty but on call) by flex shifts (where the shifts have to be worked within a certain time window); the possibility to contract additional working days for staff currently in post; more flexible working time planning on an annual basis; the possibility to transfer leave days to a lifetime working time account, freeing up additional working days in the short to medium term; the possibility to increase working time with the consent of the ATCO, including extension of the retirement age to 60 years; and an increase in the basic salary scales of O grades by 10.75% over a two-year period.

Measure #2	2020D	2021D	2020/2021D	2022D	2023D	2024D
Associated additional costs (nominal terms in '000 national currency)	480	699	1.179	72		

Description and justification of the additional determined costs of the measure

MUAC: Post-OPS Analysis and BI (PABI): the scope of this project consists of enhancing the Post-OPS Analysis process and tooling at MUAC, in order to further optimise the planning of daily operations, and in this context to develop Business Intelligence facilities that not only allows the efficient creation of KPI monitoring and reporting workflows and dashboards, but also allows users to perform data mining in a self-service manner. The additional insights gained from properly consolidated MUAC performance data will improve the cost-efficiency not only of the ATM operations directly, but also of the ATM system and operational concepts development strategies, thereby securing the stability and long-term sustainability of MUAC services. In accordance with OPS ATFCM requirements timeline, PABI is estimated to provide a slight amount of additional capacity and some CRSTMP delay reduction by avoiding over-regulation, and a better determination of the necessary amount of excess ATCOs to cover the unforeseen.

Measure #3	2020D	2021D	2020/2021D	2022D	2023D	2024D
Associated additional costs (nominal terms in '000 national currency)			-	8.186	10.873	12.348

Description and justification of the additional determined costs of the measure

DFS: Compared to the actual number of ATCOs by the end of 2019, there will be an increase of 168 FTE between 2022 and 2024 to contribute to the capacity target achievements, corresponding to a staff cost increase of 31,4 Mio. € (incl. 2% salary increase).

	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total additional costs of measures ('000 national currency)	3.467	4.801	8.268	12.502	12.944	13.357

c) Detailed information on the additional costs of measures necessary to achieve the capacity targets for RP3 by nature by ANSP

**Additional costs of measures necessary to achieve the capacity targets for RP3
(nominal terms in '000 national currency)**

MUAC						
	2020D	2021D	2020/2021D	2022D	2023D	2024D
Staff	2.987	4.102	7.089	4.244	2.071	1.009
of which, pension costs	239	328	567	340	166	81
Other operating costs	480	699	1.179	72	0	0
Depreciation			-			
Cost of capital			-			
Exceptional items			-			
Total additional costs of measures	3.467	4.801	8.268	4.316	2.071	1.009
DFS						
	2020D	2021D	2020/2021D	2022D	2023D	2024D
Staff			-	8.186	10.873	12.348
of which, pension costs			-			
Other operating costs			-			
Depreciation			-			
Cost of capital			-			
Exceptional items			-			
Total additional costs of measures	-	-	-	8.186	10.873	12.348

	2020D	2021D	2020/2021D	2022D	2023D	2024D
Total additional costs of measures ('000 national currency)	3.467	4.801	8.268	12.502	12.944	13.357

Additional comments

d) Demonstration that the deviation from the Union-wide targets is exclusively due to the additional determined costs related to measures necessary to achieve the performance targets in capacity

No deviation from the EU-wide target.

SECTION 3.5: ADDITIONAL KPIS / TARGETS

[3.5 Additional KPIS / Targets](#)

Annexes of relevance to this section

ANNEX J. OPTIONAL KPIS AND TARGETS

3.5 - Additional KPIs / Targets

Number of additional KPIs	Click to select number of additional KPIs
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SECTION 3.6: DESCRIPTION OF KPAS INTERDEPENDENCIES AND TRADE-OFFS INCLUDING THE ASSUMPTIONS USED TO ASSESS THOSE TRADE-OFFS

3.6 - Description of KPAs interdependencies and trade-offs including the assumptions used to assess those trade-offs

[3.6.1 - Interdependencies and trade-offs between safety and other KPAs](#)

[3.6.2 - Interdependencies and trade-offs between capacity and environment](#)

[3.6.3 - Interdependencies and trade-offs between cost-efficiency and capacity](#)

[3.6.4 - Other interdependencies and trade-offs](#)

3.6 - Description of KPAs interdependencies and trade-offs including the assumptions used to assess those trade-offs

3.6.1 - Interdependencies and trade-offs between safety and other KPAs

a) Do the measures to reach the targets in the different KPAs require changes in the ANSP functional system that have safety implications? If yes, which mitigation measures are put in place?

Other KPAs may require changes directly impacting the ANSP functional system. Some changes have already been identified e.g. new procedures for greener routes or modernization of systems to comply with Common Project 1 (CP1) requirements (KPA environment), additional changes may be identified at a later stage.

Improving and maintaining a mature SMS (for example human resources / staff requirements) does also have an indirect impact on other KPAs (especially KPA cost efficiency). An important effort is required to train, maintain and operate experience feedback mechanisms (investigators, local and corporate safety committees, automatic loss of separation detection tools, improved runway alerting systems like ASMGCS) as well as functional system changes' analysis (development of safety barrier models etc.).

In all cases, changes are subject to Commission Implementing Regulation (EU) 2017/373 including its detailed requirements for changes to the functional system.

On the ANSPs level, the current safety management processes requested by aforementioned Common Requirements do ensure that safety levels are not compromised when implementing airspace changes or changes to the ATM/ANS functional system. Changes to the ATM/ANS functional system could be required to reach the targets in the different KPAs. A mitigation layer exists as these changes will require approval from the Competent Authorities.

Furthermore, changes might also be necessary on the organisational level (i.e. safety training or safety culture initiatives).

On the Competent Authority level, the changes to the ANSP functional system are closely supervised. The precise changes' scope as well as interfaces are challenged during this process to ensure that all essential information is available to avoid any unacceptable safety implications right from the start of the change management procedure. The combination of changes due to measures to reach the targets in the different KPAs may not have any negative safety implication and overall safety should improve in line with the safety targets. Furthermore, change management procedures and any change thereto require prior approval by the Competent Authority. These procedures are also inspected by EASA in the frame of the ongoing standardisation (STD) visits. Besides, the Competent Authority oversees the Safety Management requirements covered by Commission Implementing Regulation (EU) 2017/373 Part.ATM/ANS and Part.ATS specifically. That ensures a high standard of safety performance management.

b) What are the main assumptions used to assess the interdependencies between safety and other KPAs?

Safety constitutes the highest priority and its attainment cannot be compromised by adverse interdependencies with other key performance areas. Thus, it is always part of any other KPA's consideration. The achievement of an acceptable level of safety has the highest priority. Safety will naturally be balanced with other strong requirements linked to environment, production pressure and finances. In all change paths undertaken, this balance is addressed and ensured to guarantee that this balance stays acceptable. Sometimes this leads to a non-acceptance of change proposals, based on one of these requirements. FABEC ANSPs have a safety target for their operations, that, if quantifiable, helps to establish a bottom line for safety.

On the Competent Authority level, the mitigation measures described in a) address the assumptions used to assess the interdependencies between safety and other KPAs.

c) What metrics, other than those indicators described in the Regulation, are you monitoring during RP3 to ensure targets in the KPAs of capacity , environment, and cost-efficiency are not degrading safety?

DFS, together with other FABEC ANSPs has defined own (K)PIs to monitor their performance by means of other ad-hoc and flexible indicators than those described in Commission Implementing Regulation (EU) 2019/317. These are also crossing the KPAs to highlight the interface and interdependency between safety and other KPAs. FABEC ANSPs have a dashboard including safety data as well as lagging and leading indicators. For instance: there is an indicator that monitors the number of runway crossings at a certain crossing to ensure achieving the safety objective(s). These indicators could typically indicate production pressure. Similarly, there are parameters for the driving direction of runway inspections, separation on final, etc. Besides, there is a common FABEC dashboard which is kept up-to-date by the SPM working group reporting to the SC-SAF. A yearly aggregation of SMI, RI and EoSM results is done under the leadership of the DSN and analysed both by SPM and SC-SAF. The publication on a website is foreseen in the near future.

Moreover, FABEC ANSPs also hold performance board meetings to monitor indicators relevant to their Integrated Safety Management System (Safety, Security, Quality, Environment). Indicators, issues and possible trade-offs are discussed, explained and sorted out by board members under the leadership of the ANSPs' management.

On the Competent Authority level, the Safety Management System's components as described in Commission Implementing Regulation (EU) 2017/373, Part-ATS, ATS.OR.200 are subject to the ongoing oversight. These are: Safety policy and objectives, safety risk management, safety assurance and safety promotion.

d) Do targets allow trade-offs in operational decision making to managing resource shortfalls in order to preserve safety performance? Do targets restrict the release of staff for safety activities, such as training?

In terms of resources normally the operational staff is the bottleneck. Of course, the acceptable safety performance is priority 1, second is safety training, third is the change management of changes to the functional ATM system(s). No non-safety target will be able to restrict safety or safety activities.

Operational safety trade-offs (day to day operations at unit level) are very different in nature and content to safety performance trade-offs at organisational level. Operational safety is the main driver but consequences of corporate decision making is also tracked and monitored. Specific processes are required to manage the operational HR's needs that must be maintained independent of the different size of FABEC ANSPs. Furthermore, budget issues are scrutinized because of civil service specific norms and rules.

e) Have the States reviewed the ANSP financial and personnel resources that are needed to support safe ATC service provision through safety promotion, safety improvement, safety assurance and safety risk management after changes introduced to achieve targets in other KPAs? Please, explain.

On the ANSPs level, DFS, as well as the other FABEC ANSPs has committed itself by declaring to have sufficient resources to perform the required safety activities in their day-to-day operations. Most FABEC ANSPs, and so is DFS, are state-owned and hence these FABEC states oversee the financial and personnel plan to ensure all necessary activities are carried out.

On the Competent Authority level, the Safety Management System's components as described in Commission Implementing Regulation (EU) 2017/373, Part-ATS, ATS.OR.200 are subject to the ongoing oversight. These are: Safety policy and objectives, safety risk management, safety assurance and safety promotion.

Besides, the Management System requirements for ATS providers laid down in Commission Implementing Regulation (EU) 2017/373 Part.ATM/ANS and Part.PERS are strictly overseen by the Competent Authority. These include, but are not limited to, the following aspects: providing appropriate human and financial resources by the senior management, ensuring sufficient resources allocated to the compliance monitoring function and safety manager function, allocation of appropriate resources to achieve the planned safety performance by the safety review board, appropriate resources covered in the Stress Management and Fatigue Management policies. Apart from this, the Competent Authority supervises the annual plan, the resulting annual report and the (5 years) business plan to ensure that financial and personnel resources are dealt with proportionally.

Furthermore, the mitigation measures described in a) address the assumptions used to assess the interdependencies between safety and other KPAs.

3.6.2 - Interdependencies and trade-offs between capacity and environment

Following traffic increases, the FABEC KEA indicator increased between 2014 and 2016. From 2017 onwards the KEA performance has stabilised as a balance has occurred between continued strong traffic growth and the introduction of operational changes such as FRA, but this may also be related to a change in the KEA calculation method. In 2020 KEA has decreased with the massive drop of traffic as from the outbreak of the COVID-19 pandemic.

KEA achievements are clearly influenced by traffic level and volatility (the yearly profile is clearly influenced by seasonality and number of flights). ATCOs can offer more direct routing with low traffic and facing no capacity issues. Nevertheless, with the capacity and staffing issues incurred by DFS in the core area, delays increased significantly during RP2, deteriorating flight efficiency.

In addition NM summer initiatives introduced as from 2018 summer introduced massive rerouting which have impacted FABEC flight efficiency in order to mitigate capacity issues. As stakeholders put priority on reducing delays, this comes at a cost to environmental performance.

3.6.3 - Interdependencies and trade-offs between cost-efficiency and capacity

As it has been described in chapter 3.3.1, main capacity improvements during RP3 and following RP4 will be provided through measures such as:

- Implementation new ATM systems or upgrades of legacy systems enabling new concepts of operations or introducing new ATC tools such as ICAS
- ATCO hiring plans;
- More flexible rostering and new working conditions for ATCO.

All these measures have an impact on the costs bases of ANSP: on staff costs for additional recruitments or social agreements, on depreciation costs and costs of capital regarding new investments.

Detailed interdependencies between cost-efficiency and capacity are addressed in chapter 3.4.

3.6.4 - Other interdependencies and trade-offs

Regarding Environment performance, capacity is not the only performance area influencing KEA achievement; many other factors, some of them out of the full scope of responsibility of ANSPs, can impact a good flight efficiency.

Among the main factors can be listed:

- Further implementation of FUA in the airspaces most affected by military activities is expected to bring a certain improvement of flight efficiency. However, the current ERNIP edition includes only a few project (out of around 300) focusing on FUA improvement. In addition, benefits from FUA implementation will only be significantly perceivable if the level of military activity/training will remain unchanged in the years to come. Increase of military activity has an impact on flight efficiency. Nevertheless, FABEC has set up a FUA harmonization and implementation initiative with its ANSPs through a permanent joint CIV-MIL task-force.

- Weather has been becoming more extreme and unpredictable; and so has its impact on air traffic (to reflect the real situation the TMA cylinder should be extended from 40NM to 200NM, therefore excluding the constraints set for arrival and departure from the calculation of en-route flight efficiency).

- Structure of the traffic: more overflights automatically means a better HFE. FABEC area, however, contains the busiest European airports (FRA, CDG, AMS), and Heathrow in close proximity.

- In contrast to the aim to minimise emissions, Airspace users are not obliged to fly the shortest route. One example of a reason why they might not do this is when longer but cheaper route is available due to different unit rates across Europe. Neither are they obliged to provide a reason for not flying the shortest route. In addition the new En Route charging calculation according to actual flown route could have an impact on Airspace users choice regarding routes, which will influence flight-efficiency in a magnitude which is still unknown.

- The NM and the ANSPs have optimized their operations with respect to rolling UUP and Procedure 3, bringing more flexibility and more options for AOs to fly shorter routes. Unfortunately, the major part of AOs are not able to seize these opportunities because they file their flight plans more than 6-7 hours in advance. As a consequence, when a TRA is released only 3 hours in advance, they are not able to update their flight plans. As long as the flown track follows the flight plan trajectory, this lack of AOs' reactivity has a negative impact on flight efficiency and potentially on capacity (for instance if several flight plans are filed in a region with a capacity bottleneck whereas if these flight plans were updated, the corresponding flights would be rerouted outside this area).

More in general, we note that the performance scheme does not cover all KPAs and indicators that are relevant to ANS performance, and indeed to air transport as a whole. Performance areas such as security, sustainability, business continuity, etc are also important, and activities undertaken to address performance in these areas can affect performance in relation to the KPIs and targets included in this plan, e.g. improving security will come at a cost. Similarly, within the KPAs of safety, capacity, environment and cost efficiency there are (both local and European) issues or priorities that require action even without target setting - compare the PIs included in the performance and charging regulation. As an example, it may be necessary to invest in detecting and/or preventing runway incursions or airspace infringements. This will also affect cost efficiency but it will not contribute to meeting any of the targets in this plan.

SECTION 4: CROSS-BORDER INITIATIVES AND SESAR IMPLEMENTATION

4.1 - Cross-border initiatives and synergies

[4.1.1 - Planned or implemented cross-border initiatives at the level of ANSPs](#)

[4.1.2 - Investment synergies achieved at FAB level or through other cross-border initiatives](#)

4.2 - Deployment of SESAR Common Projects

4.3 - Change management

[DFS](#)

[MUAC](#)

Annexes of relevance to this section

ANNEX N. CROSS-BORDER INITIATIVES

4.1 - Cross-border initiatives and synergies

4.1.1 - Planned or implemented cross-border initiatives at the level of ANSPs

Number of cross-border initiatives	10
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Note: menu will only allow selection of a maximum of 10 initiatives, however, 13 initiatives are listed below.

Initiative #1	
Name	iCAS deployment collaboration
Description	DFS and LVNL develop and deploy common iCAS system. The German and Dutch Air Navigation Service Providers DFS and LVNL have signed contracts for the development and commissioning of the air traffic management system iCAS (iTEC Center Automation System) at the control centers in Germany and at the Amsterdam center in the Netherlands. iTEC is a highly advanced air traffic management system based on 4-dimensional trajectory-based flight management that provides major savings in terms of time and fuel, resulting in a reduction of both CO2 emissions and costs for airlines, in addition to increasing the total capacity of the system.
Expected performance benefits	SAF+ CAP+ CEF+ ENV+

Initiative #2	
Name	Collaboration for Flight Object Interoperability (FO IOP)
Description	Maastricht Upper Area Control Centre (MUAC), DFS and LVNL will jointly develop components that will enable interoperability between their respective Air Traffic Management systems and help deliver a Single European Sky.
Expected performance benefits	CAP+ CEF+

Initiative #3	
Name	The 14 ACCs of FABEC are internally benchmarked with the focus on sector level capacity
Description	The study explores factors influencing capacity provision at all 14 FABEC ACCs. In contrast to available benchmark reports this is done on a unusual detailed level and unusual large data set. Local supervisors, ATCOs and ATFM experts along with FABEC performance experts analyse the operational environment, the technical environment as well as staff planning routines to provide a deeper understanding of performance differences and to identify and exchange best practices.
Expected performance benefits	CAP+

Initiative #4	
Name	Framework for Cross-Border Business Continuity / Contingency
Description	Establish the appropriate framework at FABEC level supporting the development of cross-border business continuity or contingency procedures. FABEC ANSPs will check the requirements to support each other with bilateral arrangements in case of outages of an ACC (e.g. frequency outage, power failure, etc.). Some procedures are already in place. Langen ACC can deliver/ take over traffic at the border directly to/ from Liège Approach in case of an outage at Brussels ACC. The same is done with DSNA and Charleroi Approach.
Expected performance benefits	SAF+ CAP+ CEF+ ENV+

Initiative #5	
Name	Harmonisation of regulator framework for unmanned aircraft systems
Description	Initiative to harmonise separation standards to unmanned aircraft systems (UAS/ drones). In the framework of the initiative any kind of factors are analysed that may impair safety and operational performance. The objective is to avoid procedure diversification within FABEC and prepare a consolidated regulatory approach.
Expected performance benefits	CEF+

Initiative #6	
Name	RAD Optimisation Workshops
Description	The Route Availability Document (RAD) is a common reference document containing the policies, procedures and description for route and traffic orientation. The RAD is part of the European Route Network Improvement Plan (ERNIP). It also includes route network and free route airspace utilisation rules and availability. The RAD is also an Air Traffic Flow and Capacity Management (ATFCM) tool that is designed as a sole-source flight-planning document, which integrates both structural and ATFCM requirements, geographically and vertically. FABEC's CRM group organises regular meetings to optimise and harmonise the documents. Airspace users, NM representatives and FABEC's RAD coordinators optimise and harmonise RAD restrictions and increase understanding on users side. During the second half of 2021 a 'Dynamic RAD Progress' trial will take place with, amongst others, DSNA and Skyguide.
Expected performance benefits	CAP+ ENV+

Initiative #7	
Name	Joint States/ ANSPs FUA Task Force
Description	The Task Force of State and ANSP experts, referred to as the joint FUA Task Force (JTF), supports the work of the Airspace Committee in developing an harmonised application of the ASM/FUA concepts within FABEC and in providing guidance to FABEC ANSPs on an harmonised application of FUA Level 2 and Level 3. The tool sub-group is focussing on the usage of available tools. The JTF is established with the general objectives of providing ASM/ FUA expertise to the AC and performing tasks for the AC in the area of ASM/FUA, with the end goal to develop proposals for the harmonisation of the application of ASM/ FUA concept at all three levels, in order to enhance airspace utilisation and contribute to performance and network improvements in particular in the FABEC core area and in cross-border areas of the FABEC airspace.
Expected performance benefits	CAP+ ENV+

Initiative #8	
Name	FABEC/Network Manager Airspace Design Coordination Group (FABEC/NM ADCG)
Description	For the mid-term, the NM Action Plan aims to tackle existing bottlenecks, address future capacity, and flight efficiency challenges, with a renewed airspace structure, in particular for the FABEC. The Airspace Design Coordination Group (ADCG) has been set up with the objective to make the link between the FABEC States and ANSPs bodies/structures (AC, SC OPS and ODG) and the NM RNDSG in charge of conducting the airspace study, on a seamless approach basis regardless of national borders. The new airspace structure will address current and future structural airspace bottlenecks and will include the new airspace requirements, which had to been declared by the States no later than May 2019. The implementation plan was postponed several times due to the COVID crisis but all potential projects are now included in the 'Airspace Catalogue', as annex to ERNIP part 2, even though with a status 'proposed'.
Expected performance benefits	CAP+ ENV+

Initiative #9	
Name	The Cooperative Optimisation of Boundaries, Routes and Airspace (COBRA)
Description	The two upper area control centres in Karlsruhe (DFS) and Maastricht (Eurocontrol) have launched an initiative to optimise the transfer of flights at the boundary of their areas of responsibility. The project is developing measures in the Central, East and West modules for the adjacent sectors along the geographical borders between Germany, Belgium, Luxembourg and France. The objective of the planned modifications is to reduce the complexity of air traffic in these airspaces for controllers. This will in turn optimise workflows, which will increase safety and airspace capacity as well as shorten the routes.
Expected performance benefits	SAF+ CAP+ ENV+

Initiative #10	
Name	New German-Swiss interface
Description	a set of permanent new procedures will improve the interface between Germany and Switzerland. Airspace users can remain at fuel-efficient cruising heights for longer, reach higher altitudes earlier across international boundaries and have more shortened routes available.
Expected performance benefits	CAP+ ENV+

Initiative #11	
Name	Extended Arrival Management (XMAN)
Description	With the need to focus on activities which are directly answering current operational needs and the heavy constraints which the still ongoing COVID-19 crisis imposes on all ANSPs, FABEC ANSPs were forced to re-prioritise their FABEC XMAN Activities. As it remains an important initiative for when traffic recovers, most ANSPs continue with implementation as planned or with minor postponement. The maximum benefit for Airlines is therefore still expected to be substantial.
Expected performance benefits	CAP+ ENV+ CEF+

Initiative #12	
Name	Free Route Airspace (FRA)
Description	The project work on Direct Routings and Free Route is in a rolling status with a yearly update of the implementation report and implementation plan. The four involved FABEC ANSPs (MUAC, DFS, DSN and Skyguide) will have FRA 24h by end 2025. Additional FRA improvements are also planned with several cross border operations for e.g. Karlsruhe/Munich/Zurich, Karlsruhe/MUAC, Karlsruhe/Vienna and Geneva/Zurich.
Expected performance benefits	CAP+ ENV+

Initiative #13	
Name	Preparing for Dutch Airspace Redesign
Description	<p>The essence of the redesign programme is that closer collaboration between civil and military aviation will allow for more efficient use of airspace capacity. This will result in shorter ATS routes, and in shorter routes to and from airports, thus reducing fuel consumption as well as CO2 and airborne nitrogen deposits. In addition, faster climbing and descending aircrafts will also reduce noise impact.</p> <p>The main elements of the redesigned Dutch airspace includes expansion of the existing military training zone in the northern part of the Netherlands which will allow for the closure of the existing training area in the south-east. The area that will thus become available can be adapted for civil air traffic. The northern zone will enable efficient training with the new generation of fighter aircraft, such as the F-35. The aim is to incorporate this training area into a cross-border Dutch-German training zone. A feasibility study for a cross-border training area is being carried out in cooperation with the German organisations DFS, Luftwaffe, Ministry of Transport and Ministry of Defence. The study phase will be followed by the initiation of the implementation phase, which will continue beyond RP3.</p>
Expected performance benefits	CAP+ ENV+

Additional comments
<p>Notwithstanding the submission of national performance plans for RP3, the FABEC States are working strongly together. Therefore, Germany and the other FABEC States are focusing their work in order to ensure that FABEC airspace management aims at supporting both the performance of operations within FABEC airspace, in particular defined RP3 targets, and the Military Mission Effectiveness achievement.</p> <p>The functional airspace block worked as facilitator for not just the abovementioned larger undertakings but also to many more smaller initiatives. Many initiatives are born when the CEOs, OPS directors, technical directors, the Head of ACC group or performance experts plan jointly future performance in their regular meetings. Studies, tests and deployment then, usually starts with one or two collaborating ANSPs and if successful are joined by the FABEC partners. FABEC offers a more comprehensive picture on Operational planning on this site: https://www.fabec.eu/opmap/</p>

4.1.2 - Investment synergies achieved at FAB level or through other cross-border initiatives

Details of synergies in terms of common infrastructure and common procurement
<p>Generally speaking, it has to be noted that the financial impact of such common procurement or common infrastructure is hard to determine as soon as an alliance starts to act.</p> <p>Practically, on a yearly basis, FABEC SC TECH SYS collects the investment plans for CNS equipment of the FABEC partners in order to investigate possibilities for a common procurement. This already resulted in cooperation between FABEC partners on many technical projects and investment synergies are achieved.</p> <p>Such technical synergies are listed in chapter 4.1.1 above.</p>

4.2.2 - Common Project One (CP1)

Germany

CP1 ATM Functionality (CP1-AF) / Sub functionality (CP1-s-AF)	Recent and expected progress
CP1-AF1 - Extended AMAN and Integrated AMAN/DMAN in High-Density TMAs	
CP1-s-AF1.1 AMAN extended to en-route airspace	
Berlin Brandenburg Airport	Activities halted till Q3/2022
Düsseldorf International	Activities halted till Q3/2022
Frankfurt International	Activities halted till Q3/2022
Munich Franz Josef Strauss	Activities halted till Q3/2022
CP1-s-AF1.2 AMAN/DMAN Integration	
Berlin Brandenburg Airport	- MP Obj ATC19: current progress 0% (source LSSIP 2020)
Düsseldorf International	- MP Obj ATC19: current progress 0% (source LSSIP 2020)
CP1-AF2 - Airport Integration and Throughput	
CP1-s-AF2.1 DMAN synchronised with predeparture sequencing	
Berlin Brandenburg Airport	-MP Obj AOP05 Airport CDM - Implementation of A-CDM is completed. -MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) – Not Applicable (source LSSIP 2020)
Düsseldorf International	-MP Obj AOP05 Airport CDM - At Duesseldorf Airport, implementation of A-CDM is completed since April 2013. -MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) – Current completion percentage is 28%. Implementation planned for the end of 2024. (source LSSIP 2020)
Frankfurt International	-MP Obj AOP05 Airport CDM - At Frankfurt Airport, implementation of A-CDM is completed since January 2013. -MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) – Current completion percentage is 25%. Implementation planned for the end of 2024. (source LSSIP 2020)
Munich Franz Josef Strauss	-MP Obj AOP05 Airport CDM - At Munich Airport, A-CDM is fully operational since 7th June 2007. -MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) – Current completion percentage is 25%. Implementation planned for the end of 2024. (source LSSIP 2020)
CP1-s-AF2.2.1 Initial airport operations plan (iAOP)	
Berlin Brandenburg Airport	-MP Obj AOP11: completed (source LSSIP 2020)
Düsseldorf International	-MP Obj AOP11: Completion is planned in 2021. Current percentage of completion is 43% (source LSSIP 2020)
Frankfurt International	-MP Obj AOP11: Completion is planned by the end of 2023. Current percentage of completion is 34% (source LSSIP 2020)
Munich Franz Josef Strauss	-MP Obj AOP11: Completion is planned by the end of 2022. Current percentage of completion is 48% (source LSSIP 2020)
CP1-s-AF2.2.2 Airport operations plan (AOP)	
Berlin Brandenburg Airport	work in progress
Düsseldorf International	work in progress
Frankfurt International	work in progress
Munich Franz Josef Strauss	work in progress
Hamburg	-MP Obj AOP11: Completion for iAOP is planned by the end of 2023. Current percentage of completion is 28% (source LSSIP 2020)
Stuttgart	-MP Obj AOP11: Completion for iAOP is planned by the end of 2023. Current percentage of completion is 30% (source LSSIP 2020)
CP1-s-AF2.3 Airport safety nets	

Berlin Brandenburg Airport	-MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) - Not Applicable (source LSSIP 2020)
Düsseldorf International	-MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) - Implementation of runway and airfield safety with ATC clearances monitoring is scheduled to be finished by 2024. Current percentage of implementation is 25%. (source LSSIP 2020)
Frankfurt International	-MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) - Implementation of runway and airfield safety with ATC clearances monitoring is scheduled to be finished by 2024. Current percentage of implementation is 28%. (source LSSIP 2020)
Munich Franz Josef Strauss	-MP Obj AOP12 Improve Runway and Airfield Safety with Conflicting ATC Clearances (CATC) Detection and Conformance Monitoring Alerts for Controllers (CMAC) - Implementation of runway and airfield safety with ATC clearances monitoring is scheduled to be finished by 2024. Current percentage of implementation is 25%. (source LSSIP 2020)
CP1-AF3 - Flexible Airspace Management and Free Route Airspace	
CP1-s-AF3.1 Airspace management and advanced flexible use of airspace	- MP Obj AOM19.1 ASM Support Tools to Support Advanced FUA (AFUA) - The implementation of ASM support tools to support A-FUA was finished in January 2019. - MP Obj AOM19.2 ASM Management of Real-Time Airspace Data - The implementation of ASM Management of Real-Time Airspace Data has started and is planned to be finished in 2023. Current percentage of completion is 30%. - MP Obj AOM19.3 Full Rolling ASM/ATFCM Process and ASM Information Sharing - The implementation of full rolling ASM/ATFCM process and ASM information sharing is planned to be finished by the end of 2021. Current percentage of implementation is 25%. - MP Obj AOM19.4 Management of Pre-defined Airspace Configurations - The implementation of the management of pre-defined airspace configurations is planned to be finished by the end of 2021. Current percentage of implementation is 40%. (source LSSIP 2020)
CP1-s-AF3.2 Free route airspace	- MP Obj AOM21.2 Free Route Airspace - The implementation of Free Route Airspace is ongoing for FABEC and expected to be completed by the end of 2021. Civil and military stakeholders are involved, however Air Traffic Services for OAT flights in Germany were provided by DFS. Current percentage of implementation is 55%.1132 (source LSSIP 2020)
CP1-AF4 - Network Collaborative Management	
CP1-s-AF4.1 Enhanced short-term ATFCM measures	- MP Obj FCM04.1 Short Term ATFCM Measures (STAM) - Phase 1 - The implementation of Short Term ATFCM Measures (STAM) - phase 1 is completed since December 2016. -MP Obj FCM04.2 Short Term ATFCM Measures (STAM) - Phase 2 - The implementation of Short Term
CP1-s-AF4.2 Collaborative NOP	- MP Obj FCM05 Interactive Rolling NOP (source LSSIP 2020)
CP1-s-AF4.3 Automated support for traffic complexity assessment	- MP Obj FCM06 Traffic Complexity Assessment - A Local Traffic Load Management tool is planned to be implemented by 2021. The evaluation and validation of the tool has started. DFS systems receive, process and integrate EFD provided by Network Manager. Expected completion date is the end of 2021
CP1-s-AF4.4 AOP/NOP integration	work in progress
CP1-AF5 - SWIM	
CP1-s-AF5.1 Common infrastructure components	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.C136
CP1-s-AF5.2 SWIM yellow profile technical infrastructure and specifications	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.
CP1-s-AF5.3 Aeronautical information exchange	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.
CP1-s-AF5.4 Meteorological information exchange	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.
CP1-s-AF5.5 Cooperative network information exchange	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.

CP1-s-AF5.6 Flight information exchange (yellow profile)	- MP Obj INF08.1 Information Exchanges using the SWIM Yellow TI Profile - Implementation activities are ongoing at DFS, with implementation date expected by the end of 2024. Current percentage of completion is 4%.
CP1-AF6 - Initial Trajectory Information Sharing	
CP1-s-AF6.1 Initial air-ground trajectory information sharing	- MP Obj ITY-AGDL Initial ATC Air-Ground Data Link Services - Data link functions are provided in accordance with DLS IR. The respective ATS system is upgraded accordingly. (source LSSIP 2020)
CP1-s-AF6.2 Network Manager trajectory information enhancement	work in progress
CP1-s-AF6.3 Initial trajectory information sharing ground distribution	work in progress

MUAC

CP1 ATM Functionality (CP1-AF) / Sub functionality (CP1-s-AF)	Recent and expected progress
CP1-AF1 - Extended AMAN and Integrated AMAN/DMAN in High-Density TMAs	
CP1-s-AF1.1 AMAN extended to en-route airspace	- MP Obj ATC15.1 - The interface with Amsterdam ACC was implemented in 2011. Implementation with additional partners is expected to take place depending on their readiness and operational needs. Due to its unique position, MUAC is piloting the integration with multiple AMAN implementations as input
CP1-s-AF1.2 AMAN/DMAN Integration	n/a
CP1-AF2 - Airport Integration and Throughput - n/a	
CP1-AF3 - Flexible Airspace Management and Free Route Airspace	
CP1-s-AF3.1 Airspace management and advanced flexible use of airspace	Implemented (AOM19.1, AOM19.2, AOM19.3 and AOM19.4)
CP1-s-AF3.2 Free route airspace	Implemented (AOM21.2)
CP1-AF4 - Network Collaborative Management	
CP1-s-AF4.1 Enhanced short-term ATFCM measures	Implemented (FCM04.2)
CP1-s-AF4.2 Collaborative NOP	B2B services will be implemented upon their availability and added value. (FCM05)
CP1-s-AF4.3 Automated support for traffic complexity assessment	implemented
CP1-s-AF4.4 AOP/NOP integration	B2B services will be implemented upon their availability and added value. (FCM05)
CP1-AF5 - SWIM	
CP1-s-AF5.1 Common infrastructure components	Preparatory steps have been taken. Services are in place in some areas, in other areas they are being planned. (INF08.1)
CP1-s-AF5.2 SWIM yellow profile technical infrastructure and specifications	The infrastructure for Yellow SWIM profile is in place and used for some initial services such as the B2B connection with NM of the ATM Portal. New services are being developed
CP1-s-AF5.3 Aeronautical information exchange	implemented
CP1-s-AF5.4 Meteorological information exchange	MUAC is planning an upgrade of the meteorological data feed in the coming year(s), before December 2024
CP1-s-AF5.5 Cooperative network information exchange	partially implemented
CP1-s-AF5.6 Flight information exchange (yellow profile)	implemented
CP1-AF6 - Initial Trajectory Information Sharing	
CP1-s-AF6.1 Initial air-ground trajectory information sharing	MUAC is operational with data Link (DLS/IR scope = ATN-B1) since 2003. MUAC plans an operational introduction of the two CP1 AF#6 ADS-C/EPP (ATS-B2) functionalities, display of the EPP and a discrepancy warning, early 2022.
CP1-s-AF6.2 Network Manager trajectory information enhancement	n/a
CP1-s-AF6.3 Initial trajectory information sharing ground distribution	MUAC is partner in the ADS-C Common Service prototype definition and validation under SESAR2020 PJ38 and will implement the service when it becomes available for operational use (around 2025?).

4.3 - Change management

Change management practices and transition plans for the entry into service of major airspace changes or for ATM system improvements, aimed at minimising any negative impact on the network performance

DFS

In the context of the planned development/implementation of major airspace changes as well as new/revised ATM systems, the rules of the relevant project structure foresee as one essential element a dedicated change management process.

DFS has a team of experts who support change projects with the help of various tools and methods in different topic areas and especially in operational projects. The objective is the planned management of change processes from an initial state to a target state, especially in order to minimize the impact on day-to-day business/operational processes and to loose fear against future changes.

Change management is the framework created to enable a successful implementation of a project



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Change is unique depending on the situation, habits and experiences of staff and managers. Accordingly, there is no one-size-fits-all solution for change management. Rather, the change management expert team works in a constant exchange to create a common understanding of the relevant hard and soft factors, the goals and the change process.

Change projects are divided into three phases:

1. In the first phase, the so-called analysis phase, the change project is being defined in a job clarification meeting. This can be, for example, the introduction of an (operational) system, a reorganisation, a change in working methods or team development. During this discussion it is clarified what consequences and effects the change will have for the employees and managers and what support is needed during this change process. In a further discussion, goals, conditions and a budget are set together, roles are defined and initial ideas are generated.

Tools for this analysis phase are:

- Clarification of the assignment: Questions for clarification of the assignment that help to better understand the situation and the change process of the client.
- Systemic questioning techniques: Questioning techniques that help to describe the target state in more detail, give the change facilitator more information and create a common understanding
- Change checklist: Checklist that helps the client to find answers when analysing the change
- So called "Force field analysis": Analysis that describes the facilitating and inhibiting forces of the goal.

2. In the second phase, the planning and organization phase, a stakeholder analysis is carried out and a change architecture is developed. This change architecture consists of a rough milestone plan from which the detailed planning of the change measures per field of action (leadership, participation, communication & dialogue, information and evaluation) is derived.

Tools for this analysis phase are:

- Stakeholder analysis: Analysis of the stakeholders in the change process and their influence and attitude towards the change project. Development in workshops, interviews and surveys.
- Impact analysis: Presentation of the individual changes and their impact on employees. Developed in workshops, interviews and surveys.
- Project environment analysis: Analysis of the project environment including the relationships between the protagonists.
- Risk analysis: Presentation of the risks in the change process.
- Vision work and development of a change story: Formulation of the current state and the target state of the change and consideration of the "why" (why is the program or the change necessary, what advantages will it create for which group, what disadvantages will it create and how do we handle/ cope with them).

3. The implementation of the planned change measures takes place in the third phase. The change architecture or change roadmap defined in phase 2 is continuously implemented. Stakeholders, progress and changing framework conditions are kept in mind in order to regularly review measures, adjust them if necessary and record lessons learned.

Tools for this analysis phase are:

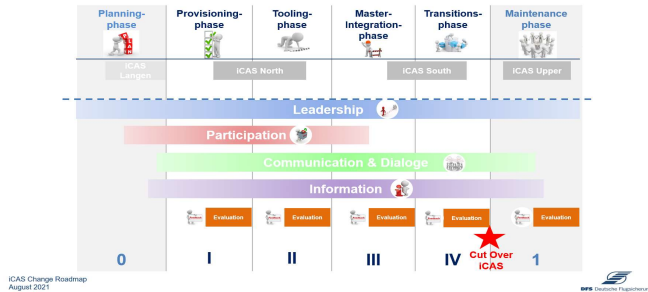
- Continuous development and evaluation of the change roadmap
- Change agent: development of a change agent network
- Sounding Board: Concept for building a "sounding board" Feedback from staff and managers from the organisation about developments in die Programm/ Project and the change activities
- Pulse Check: Evaluation tool to measure the phases in the change process
- Change Barometer: Short-term survey instrument among managers and staff on specific issues (interim measurements)
- Lessons learnt: Working out lessons learnt from past projects
- Anonymous online survey: About the perception of the change, atmosphere, necessary information etc.

In addition to this internal part of change management within the respective project, the process also includes the assessment of all the changes and potential impacts to different functional systems generated by this change, safety- and risk assessments, as well as the approval by the German NSA.

Currently, the DFS team of experts supports e.g. operational projects like iCAS, ZAAS with projects like implementation of a Data Center, iCAS Architecture project as well as Tower NextGeneration ATS Systems (TANGe), virtual tower Munich (ViTo MUC).

Following there is an example a general overview about the Change Management process within the iCAS project of the DFS:

General overview of the change management phases with focus on the process within the iCAS project



MUAC

Depending on its size, risk and/or exposure, a change may be managed as a project. In such a case, Strategy & Performance Management triggers the project initiation by an approved Idea Sheet (IDS), committing resources for this first stage, and approves the Project Management Plan (PMP) to allocate the necessary resources for the project execution.

In the event that a technical change (internally or externally triggered) would risk a negative impact on the network, the aim is to minimize the impact on Network Performance. For the vast majority of changes, the goal is always for airspace changes to have a positive network impact.

SECTION 5: TRAFFIC RISK SHARING ARRANGEMENTS AND INCENTIVE SCHEMES

5.1 - Traffic risk sharing

[5.1.1 Traffic risk sharing - En route charging zones](#)

[5.1.2 Traffic risk sharing - Terminal charging zones](#)

5.2 - Capacity incentive schemes

5.2.1 - Capacity incentive scheme - Enroute

5.2.1.1 Parameters for the calculation of financial advantages or disadvantages - Enroute (DFS)

5.2.1.1 Parameters for the calculation of financial advantages or disadvantages - Enroute (MUAC)

5.2.1.2 Rationale and justification - Enroute

5.2.2 - Capacity incentive scheme - Terminal

5.2.2.1 Parameters for the calculation of financial advantages or disadvantages - Terminal

5.2.2.2 Rationale and justification - Terminal

5.3 - Optional incentives

Annexes of relevance to this section

ANNEX G. PARAMETERS FOR THE TRAFFIC RISK SHARING

ANNEX I. PARAMETERS FOR THE MANDATORY CAPACITY INCENTIVES

ANNEX K. OPTIONAL INCENTIVE SCHEMES

5.1 - Traffic risk sharing

5.1.1 Traffic risk sharing - En route charging zones

Germany			Traffic risk-sharing parameters adapted?		no	
			Service units lower than plan		Service units higher than plan	
	Dead band	Risk sharing band	% loss to be recovered	Max. charged if SUs 10% < plan	% additional revenue returned	Min. returned if SUs 10% > plan
Standard parameters	±2,00%	±10,0%	70,0%	5,6%	70,0%	5,6%

5.1.2 Traffic risk sharing - Terminal charging zones

Germany - TCZ			Traffic risk-sharing parameters adapted?		no	
			Service units lower than plan		Service units higher than plan	
	Dead band	Risk sharing band	% loss to be recovered	Max. charged if SUs 10% < plan	% additional revenue returned	Min. returned if SUs 10% > plan
Standard parameters	±2,00%	±10,0%	70,0%	5,6%	70,0%	5,6%

5.2 - Capacity incentive schemes

5.2.1 - Capacity incentive scheme - Enroute

5.2.1.1 Parameters for the calculation of financial advantages or disadvantages - Enroute (DFS)

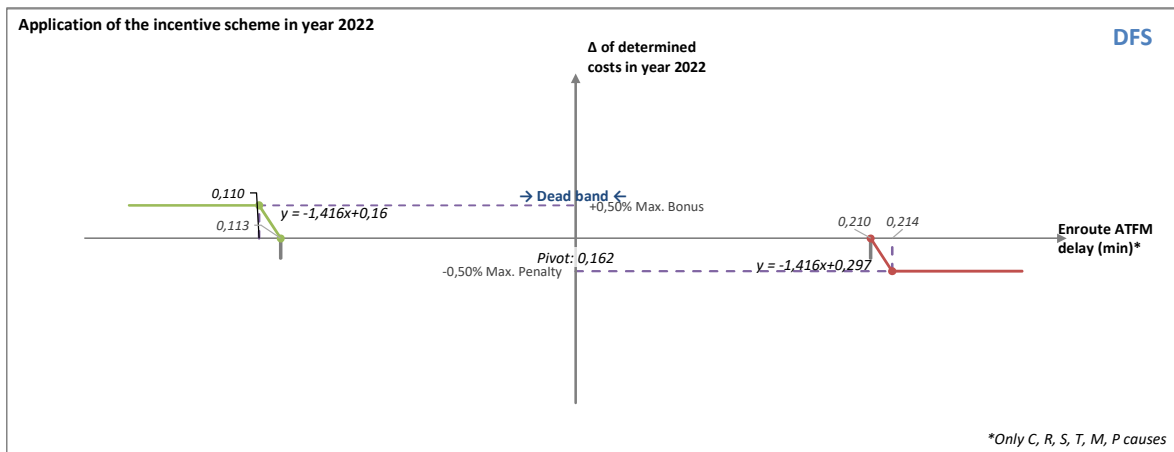
DFS	Expressed in	Value
Dead band Δ	%	±30,0%
Max bonus (≤2%)*	% of DC	0,50%
Max penalty (≥ Max bonus)*	% of DC	0,50%
The pivot values for RP3 are*	modulated	CRSTMP

* These values are defined at FAB level and apply to all ANSPs and for the whole duration of RP3

	2020	2021	2022	2023	2024
<i>Ref. values (mins of ATFM delay/ flight) as per NM Mail of 28.10.2022</i>			0,24	0,25	0,24
Alert threshold (Δ Ref. value in fraction of min)			±0,052	±0,053	±0,052
Performance Plan targets (mins of ATFM delay per flight)			0,24	0,25	0,24
Pivot values for RP3 (mins of ATFM delay per flight)**			0,162	0,168	0,162
Delay ranges for the calculation of financial advantages / disadvantages	Dead band range		[0,113-0,21]	[0,118-0,219]	[0,113-0,21]
	Bonus sliding range*		[0,11-0,113]	[0,116-0,118]	[0,11-0,113]
	Penalty sliding range*		[0,21-0,214]	[0,219-0,221]	[0,21-0,214]

* Bonuses only apply if ATFM delay per flight in year n at FAB level is within the 'Bonus range' for year n as shown in Section 5.2.1.1 and penalties only apply if ATFM delay per flight in year n at FAB level is within the 'Penalty range' for year n as shown in Section 5.2.1.1.

** When modulation applies, these figures are only indicative as they will be updated annually on the basis of the November n-1 NOP and the methodology described in 5.2.1.2.a2. The pivot values for year n have to be notified to the EC by 1 January n.



5.2.1.1 Parameters for the calculation of financial advantages or disadvantages - Enroute (MUAC)

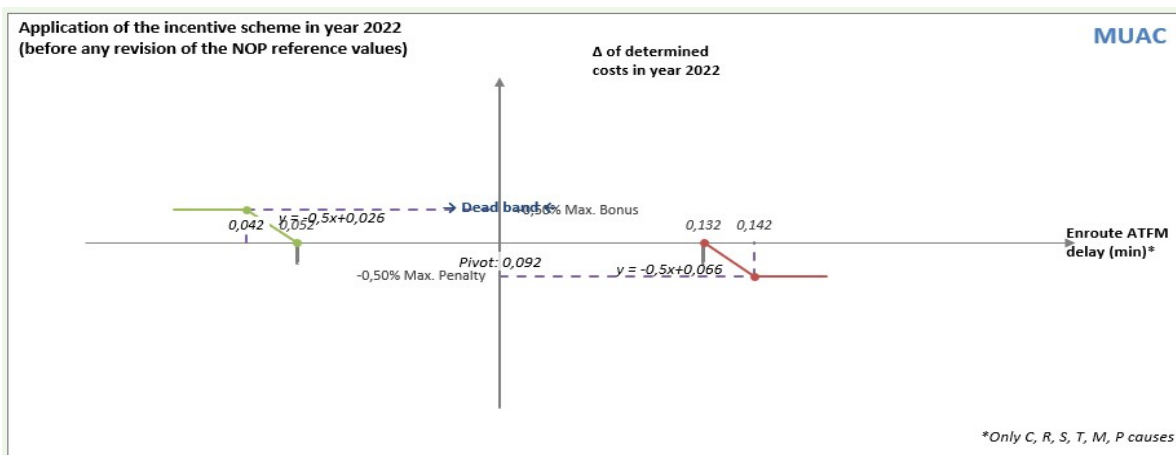
MUAC	Expressed in	Value
Dead band Δ	fraction of min	±0,040 min
Max bonus (≤2%)*	% of DC	0,50%
Max penalty (≥ Max bonus)*	% of DC	0,50%
The pivot values for RP3 are*	modulated	CRSTMP

* These values are defined at FAB level and apply to all ANSPs and for the whole duration of RP3

	2020	2021	2022	2023	2024
<i>Ref. values (mins of ATFM delay/ flight) as per NM Mail of 28.10.2022</i>			s	0,15	0,15
Alert threshold (Δ Ref. value in fraction of min)			±0,050	±0,050	±0,050
Performance Plan targets (mins of ATFM delay per flight)			0,15	0,15	0,15
Pivot values for RP3 (mins of ATFM delay per flight)**			0,092	0,092	0,092
Delay ranges for the calculation of financial advantages / disadvantages	Dead band range		[0,052-0,132]	[0,052-0,132]	[0,052-0,132]
	Bonus sliding range*		[0,042-0,052]	[0,042-0,052]	[0,042-0,052]
	Penalty sliding range*		[0,132-0,142]	[0,132-0,142]	[0,132-0,142]

* Bonuses only apply if ATFM delay per flight in year n at FAB level is within the 'Bonus range' for year n as shown in Section 5.2.1.1 and penalties only apply if ATFM delay per flight in year n at FAB level is within the 'Penalty range' for year n as shown in Section 5.2.1.1.

** When modulation applies, these figures are only indicative as they will be updated annually on the basis of the November n-1 NOP and the methodology described in 5.2.1.2.a2. The pivot values for year n have to be notified to the EC by 1 January n.



5.2.1.2 Rationale and justification - Enroute

The scope of the incentives is limited to delay causes related to ATC capacity, ATC routing, ATC staffing, ATC equipment, airspace management and special events with the codes C, R, S, T, M and P of the ATFCM user manual. If yes, provide below a justification for this decision and an explanation of how the pivot values are calculated. Yes

The incentive scheme for the en route ATFM delay per flight KPI has been established in accordance with the requirements of Implementing Regulation (EU) 2019/317 of 11 February 2019 laying down a performance and charging scheme in the single European sky as well as Implementing Regulation (EU) 2020/1627 of 3 November 2020 on exceptional measures for the third reference period (2020-2024) of the single European sky performance and charging scheme due to the COVID-19 pandemic.

The incentive scheme is based on the en route ATFM delay causes related to the codes C, R, S, T, M and P of the ATFCM user manual. It was already decided to focus on these delay causes in RP2 because ANSPs are supposed to be responsible for them and can influence them; though the reason for respective ATFM-delay might be considered irrelevant by the airspace users, Germany is convinced that rewarding or penalising ANSPs for performance that is outside their influence does not incentivise good ANSP performance and might - in case of e.g. good weather - lead to windfall bonuses for ANSPs.

In order to assure the correct application of the ATFM-coding, Germany continues to apply a post-operation procedure, checking the correct application yearly on a sample basis.

Considering the ratio of en route ATFM delay CRSTMP causes, the historical data of the previous reference period (RP2 - 2014-2019) shows that about 67% and respectively 61% for MUAC of en route ATFM delay within the relevant ANSPs can be considered to be under the responsibility of the ANSPs (CRSTMP reasons). Therefore, the pivot values represent 67%/61% of the DFS/MUAC capacity targets.

**** Refer to Annex I, if necessary.**

Justification for the set up of the incentive scheme

According to article 11 paragraph 3 lit. a of the Implementing Regulation (EU) 2019/317, the incentive scheme on capacity shall be proportionate to the level of ATFM delay and consist of financial advantages and financial disadvantages having material impact on revenue at risk.

The above schemes were set up taking into account local circumstances with known bottlenecks as well as the current pandemic in general, where a major goal for all stakeholders of the SES is to recover in a still volatile environment, with peaks overshooting pre-2020 levels while the average stays still below.

In line with the incentive scheme applied in RP2, it was decided to apply a symmetric incentive scheme, with a maximum bonus or penalty set at 0.5%. In addition, it was decided to apply a large dead band.

During the preparation, there had discussions with both the Performance Review Body and PRB support on the definition of materiality of the impact of such an incentive scheme. It was outlined by PRB support that there was neither a mathematical calculation nor a rationale provided to determine a value at which a material impact can be assured. In addition, PRB support informed that in 2019 there were € 9.9 Mio bonuses and -€ 9.8 Mio penalties calculated for SES. In fact, -€ 7.2 Mio of that SES penalties did apply to FABEC ANSPs with an incentive scheme with max. bonus/penalty value of 0.5%.

In our view, a symmetric scheme provides for the best incentive in a situation where the precise traffic forecast is not clear and where particular flexibility is needed on the side of the ANSPs. In the same sense, the large dead band is set to avoid on the hand windfall bonuses in case traffic is lower than expected - but also to provide for a considerable margin in case traffic increases faster than expected.

The level of bonus and malus is considered as material for DFS and MUAC, in particular in case of the present uncertainties. This uncertainty in regards of traffic is once again highlighted by the fact of a lately published (15 October 2021) updated traffic forecast with considerably higher traffic figures than provided by the May 2021 STATFOR forecast. With traffic picking up and thus putting pressure on the bottleneck, Germany considers the capacity targets as very ambitious - thus expecting strong efforts (including expensive overtime) in order to avoid missing the targets and thus entering into the malus zone. Taking into account the financial impact of the pandemic on ANSPs including tight cost planning for the upcoming years, a 0,5% bonus or penalty is indeed considered to a very material impact on their financial situation. The financial impact can also be seen by the fact that the ANSPs have rather low or even no return on investment in their cost planning for RP3 which puts even more pressure on the ANSPs since there is no financial risk mitigation given and every loss of revenue is forefeit.

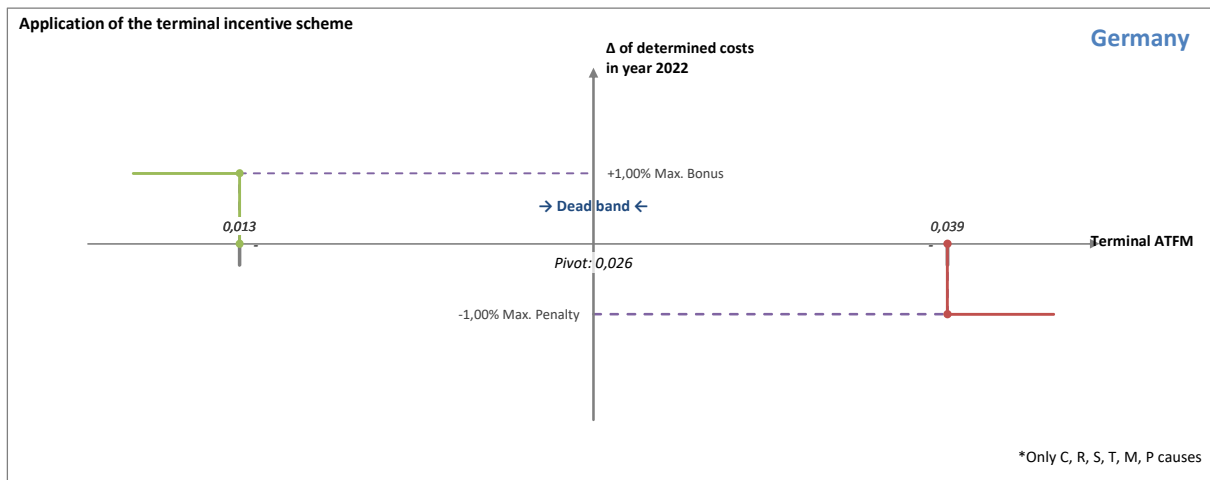
5.2.2 - Capacity incentive scheme - Terminal

5.2.2.1 Parameters for the calculation of financial advantages or disadvantages - Terminal

Germany - Terminal	Expressed in	Value
Dead band Δ	%	$\pm 50,0\%$
Bonus/penalty range (% of pivot value)	%	$\pm 50\%$
Max bonus	% of DC	1,00%
Max penalty	% of DC	1,00%
The pivot values for RP3 are	modulated	CRSTMP

	2020	2021	2022	2023	2024
Performance Plan targets (mins of ATFM delay per flight)			0,45	0,45	0,45
Bonus/penalty range Δ (in fraction of min)			$\pm 0,013$	$\pm 0,013$	$\pm 0,013$
Pivot values for RP3 (mins of ATFM delay per flight)*			0,026	0,026	0,026
Financial advantages / disadvantages	Dead band range		[0,013-0,039]	[0,013-0,039]	[0,013-0,039]
	Bonus sliding range		[0,013-0,013]	[0,013-0,013]	[0,013-0,013]
	Penalty sliding range		[0,039-0,039]	[0,039-0,039]	[0,039-0,039]

* When modulation applies, these figures are only indicative as they will be updated annually on the basis of the methodology described in 5.2.1.2.a below. The pivot values for year n have to be notified to the EC by 1 January n.



5.2.2.2 Rationale and justification - Terminal

Explain how the bonus and penalties are going to be apportioned between the different terminal charging zones and ANSPs providing services in each of them**

There is only one terminal charging zone and only one ANSP providing services in it. Thus, no apportionment does take place.

** Refer to Annex I, if necessary.

Indicate which of the principles below will be applied for the modulation of the pivot values for the whole RP3:

a) The pivot value for year n is modulated in order to enable significant and unforeseen changes in traffic to be taken into account and is based on the principles explained below:**

No

b) The scope of the incentives is limited to delay causes related to ATC capacity, ATC routing, ATC staffing, ATC equipment, airspace management and special events with the codes C, R, S, T, M and P of the ATFCM user manual. If yes, provide below a justification for this decision and an explanation of how the pivot values are calculated.

Yes

The scope of the incentive scheme is limited to CRSTMP codes of the ATFCM user manual since these are the delay reasons for which ANSPs can be considered as being directly responsible. The average value for CRSTMP delays during the regulated years of RP1, RP2 and the first year of RP3 (2012-2020) was 0,026 min/arrival. For those mentioned reasons the value for RP3 CRSTMP delays is set at 0,026 min/arrival.

** Refer to Annex I, if necessary.

5.3 - Optional incentives

Total maximum bonus for all optional incentives (≤2%):	0,0%
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Total maximum penalty for optional incentives (≤4%):	0,0%
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Number of optional incentives	Click to select
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SECTION 6: IMPLEMENTATION OF THE PERFORMANCE PLAN

[6.1 Monitoring of the implementation plan](#)

[6.2 Non-compliance with targets during the reference period](#)

6 - IMPLEMENTATION OF THE PERFORMANCE PLAN

6.1 Monitoring of the implementation plan

Description of the processes put in place by the NSA to monitor the implementation of the Performance Plan including the yearly monitoring of all KPIs and PIs defined in Annex I of the Regulation and a description of the data sources

Monitoring processes exist at FABEC and national level, and vary between different KPAs.

Capacity and environment performance is reported by the FABEC ANSPs' Performance Management Group (PMG) on a monthly basis. Reports are presented to the States' Financial and Performance Committee (FPC) consisting of members of each FABEC State which meets approximately 6 times per year.

Monitoring of the safety KPI is limited to the annual monitoring process described below. Monitoring of PIs is done at national level.

Monitoring of cost efficiency and investments is performed at national level.

For the annual monitoring process, Germany will continue to use most elements of the the process applied during RP2. In this context, the NSA coordinates with:

- the FABEC ANSPs' Performance Management Group (PMG) on gathering operational performance information (capacity, environment)
- the FABEC States' Safety Performance and Risk Coordination (SPRC) Task Force and the ANSPs' focal points for EoS for gathering and verifying safety performance data; If necessary, the ANSPs' Standing Committee on Safety will be consulted.

In all areas, identification of the main drivers for performance and in particular for deviations from planned performance will be part of the monitoring process.

6.2 Non-compliance with targets during the reference period

Description of the processes put in place and measures to be applied by the NSA to address the situation where targets are not reached during the reference period

Germany is thoroughly investigating and reporting on deviations from the values set in the performance plan. In that way, Germany is committed to both develop and publish an understanding especially where either internal and external effects caused higher costs in certain areas, challenging targets or not. In addition, the German NSA is closely monitoring the internal management reporting of both DFS and MUAC in order to have an early insight into cost changes with frequent exchanges with both the working and management level if necessary. Furthermore, the NSA is well aware of the opportunity and willing to use the instrument of audits in case it sees that targets are not reached or the financial strength is jeopardised.

Union-wide safety targets for the end of RP3 i.e. 2024 given by Commission implementing decision (EU) 2021/891 of 2 June 2021 are always born in mind by the NSA through the yearly monitoring process. The ANSPs individual targets for 2021-2023 are checked every year within the NSA assessment of the ANSPs self-assessment. Subject matter experts gather data during January each year and will counteract instantly in case an intermediate target is not reached and thus a non-compliance identified. For that purpose close cooperation between NSAs (SPRC TF / NSAC) and ANSPs (SC-SAF) has been established.

For capacity and environment performance, FABEC has developed the 'OPS performance process' which requires ANSPs to propose measures to improve performance if performance is not in line with targets. Remedial measures are initially proposed to the FPC, which will assess the proposals and provide advice to the FABEC Council to either accept the proposed remedial measures or request further improvements.