



Federal Agency
for Public Safety
Digital Radio

The G20 Summit from a Public Safety Digital Radio Point of View

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Agenda

1. Introduction
2. Preparing a large-scale operation
3. A few impressions
4. Challenges of a large-scale operation
5. Organisational structure
6. Task Force for special operations
7. Communication planning in the “Hamburg City Centre” area of operations
8. Concrete measures before and during the operation
9. Summary

1. Introduction

Hamburg – Gateway to the world

- City-state within the Federal Republic of Germany
- 2nd largest German city with 1.8 million residents
- 5 million people living in the region
- Size: 755 km² (Berlin 892km²)
- 2302 bridges - more than Venice and Amsterdam combined



source:Wikipedia

The Public Safety Digital Radio Network BDBOS: Facts and figures



- World's largest TETRA network
- More than 4,570 base stations covering more than 99% of German territory
- More than 740,000 registered subscribers
- Some 50 million radio messages per month across Germany
- Availability of the digital radio network of about 99.95%



Elmau, 06/2015

G7 Meeting

25.000 PPDR Personnel

30.500 Terminals



Berlin, 11/2016

Visit of the former US

President

4.300 PPDR Personnel

4.100 Terminals



Hamburg, 07/2017

G20 Meeting

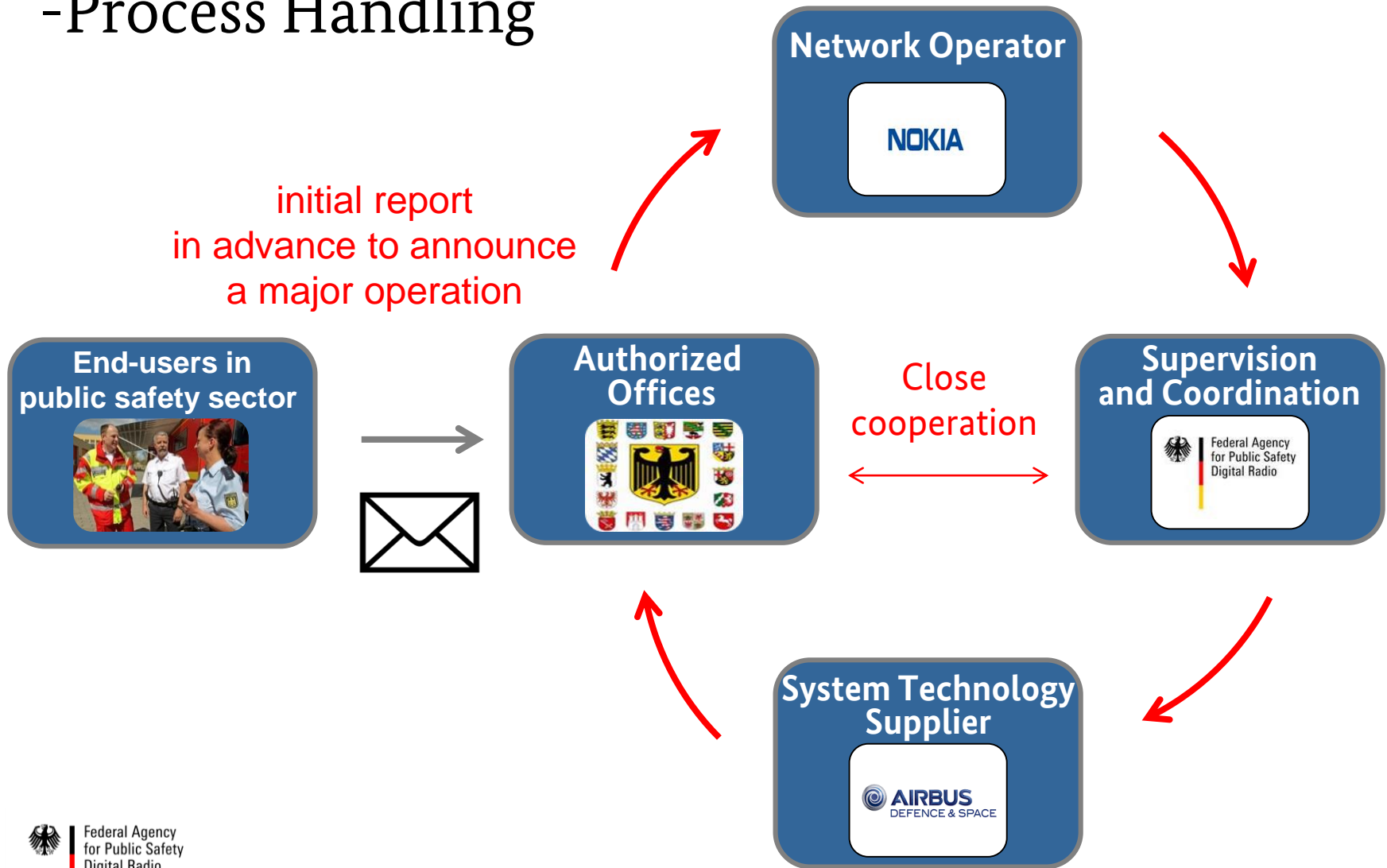
30.000 PPDR Personnel

30.000 Terminals

A close-up photograph of a control panel. In the foreground, a black, textured knob is visible. To its right, a small orange light is illuminated. The background is blurred, showing various mechanical components and a vertical rod with the word "ECCLES" embossed on it.

2. Preparing a large-scale operation Process Handling

Preparing a large-scale operation -Process Handling



3. A few impressions



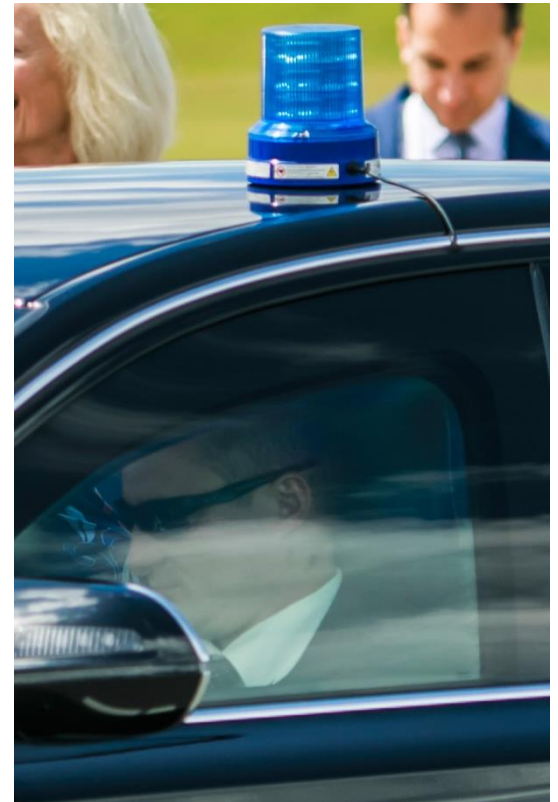
A few impressions



4. Challenges of a large-scale operation

Challenges of a large-scale operation

- High personnel requirement within a confined area
- Police units need a high degree of mobility
- 6,000 official summit participants
- High security level for 20 heads of state, heads of government etc.
- Trouble-free traffic routing for delegations before, during and after the summit required
- Securing and escorting of demonstrations with approx. 12,000 protesters



Traffic routing of 20 heads of state and government

5. Organisational Structure

Organisational Structure

Central Digital Radio Unit - Hamburg

Central Digital Radio Unit

Authorized Office

Coordinating Office

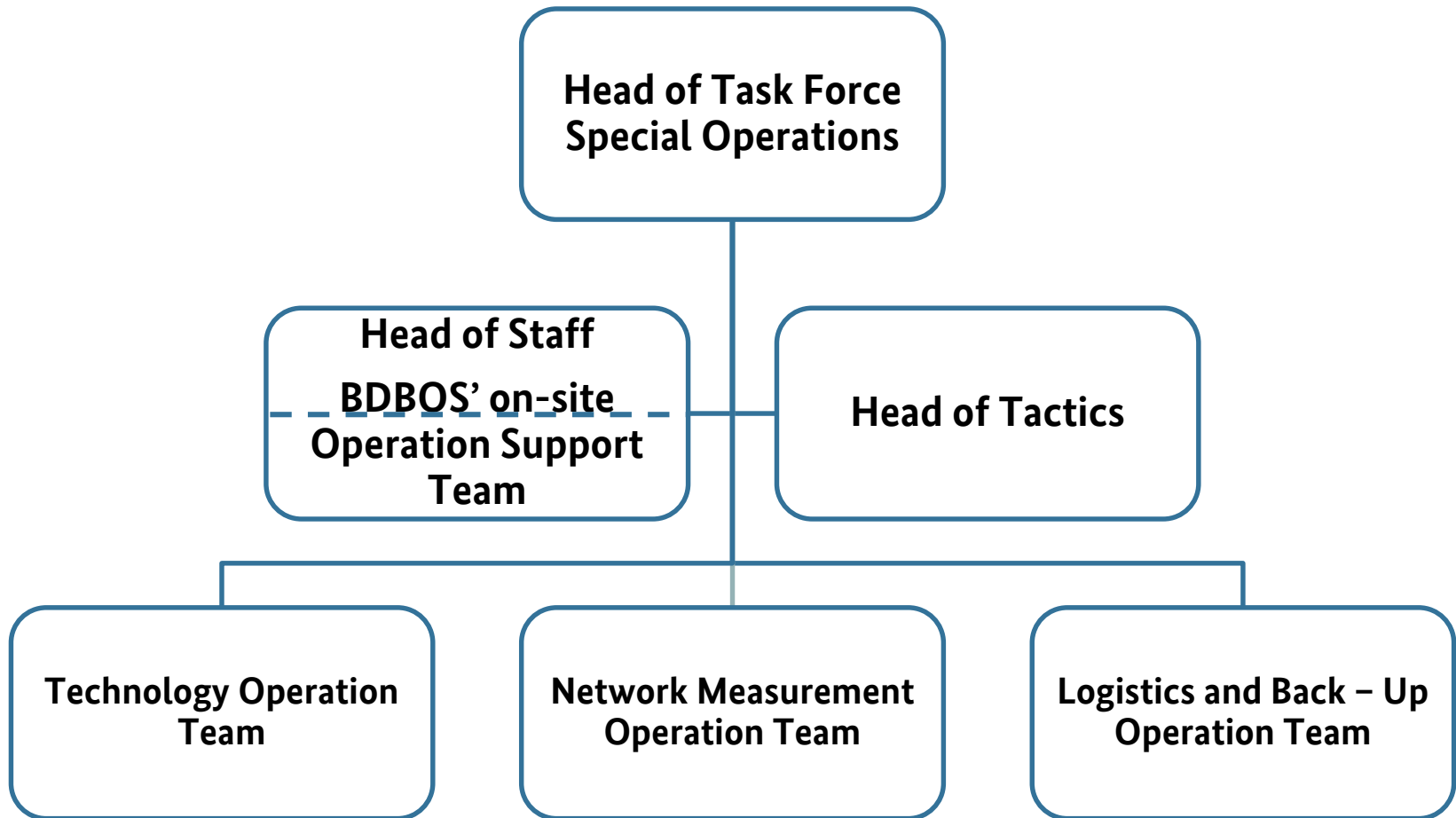
**Tactics and
Infrastructure**

Technology



6. Task Force for Special Operations

Task Force for Special Operations

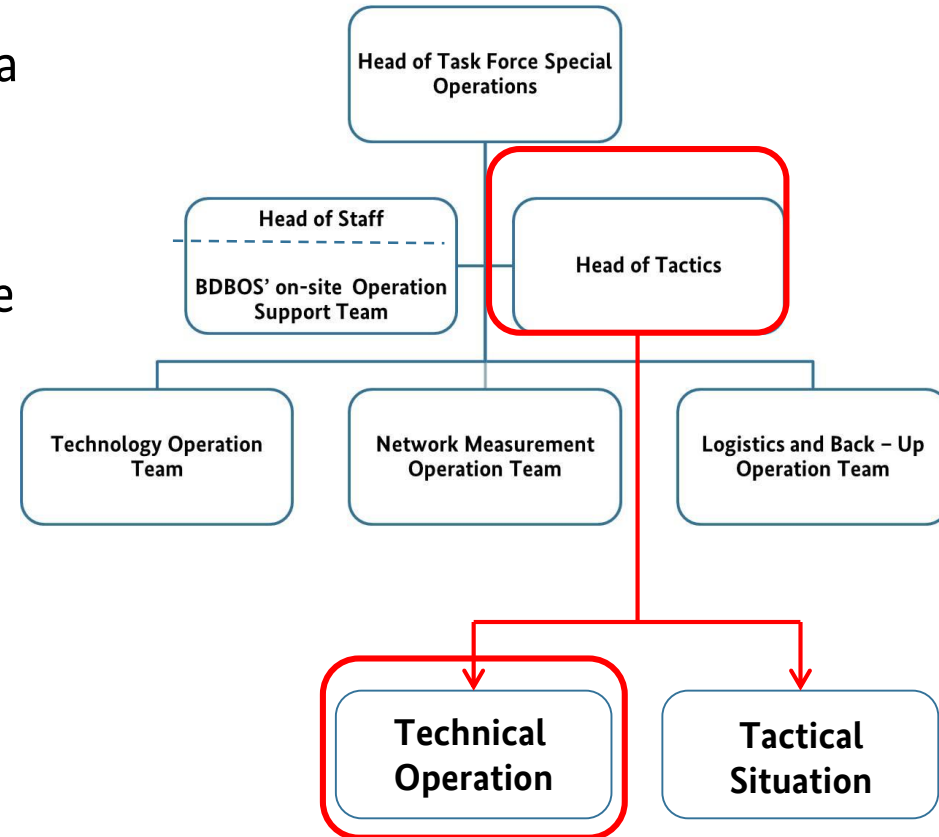


Task Force for Special Operations – Technical Operation

24h Service supported by Operator Nokia

Tasks:

- Operational Tools
- SPOC to Technical Operational Service of Authorized Office
- Configuration of Call Groups
- Permanent monitoring of relevant TBS in operational area
- Monitoring of other TBS outside the operational area if required*



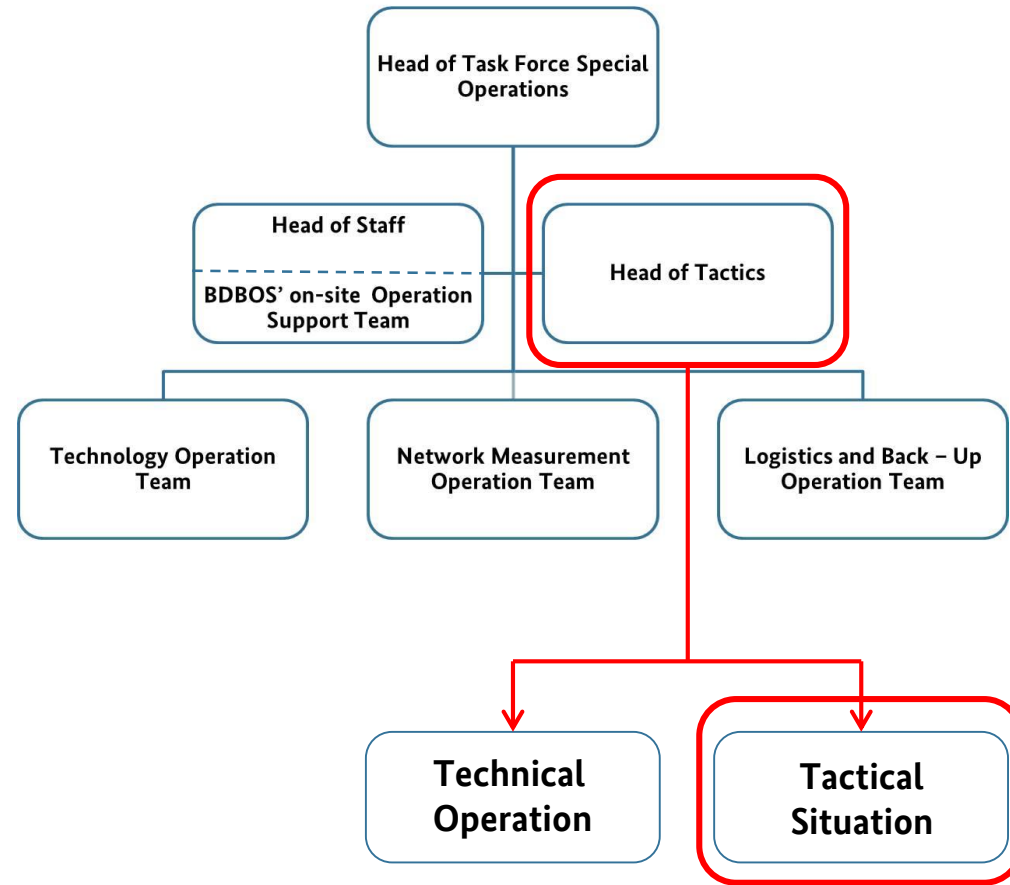
Task Force for Special Operations – Tactical Situation

24h Service (day and night shift)

Tasks:

Contact for:

- Official offices
- Authorized offices
- Public Safety organisations

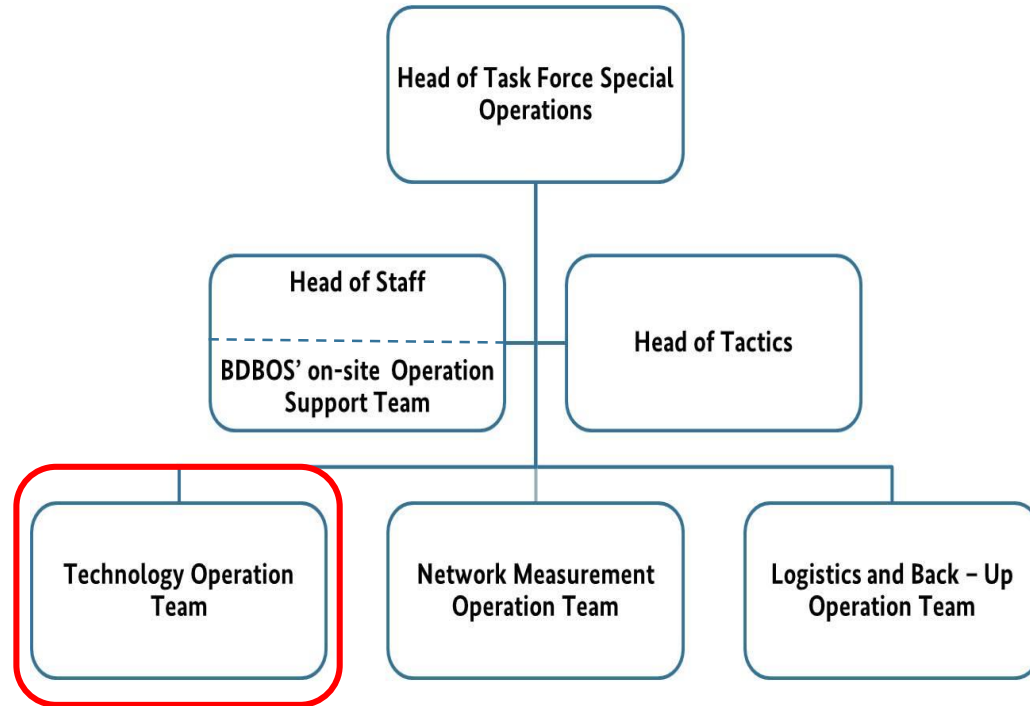


Task Force for Special Operations

– Technology Operation Team

Tasks:

- Local team on standby
- Cooperation with Technical Situation Department
- Pool of TBS and DXT spare parts
- Fixing technical issues
- Operate additional mobile TETRA Base Station (mTBS)
- Availability of mTBS on request/short notice
- Contact for Airbus to order maintenance team ad hoc

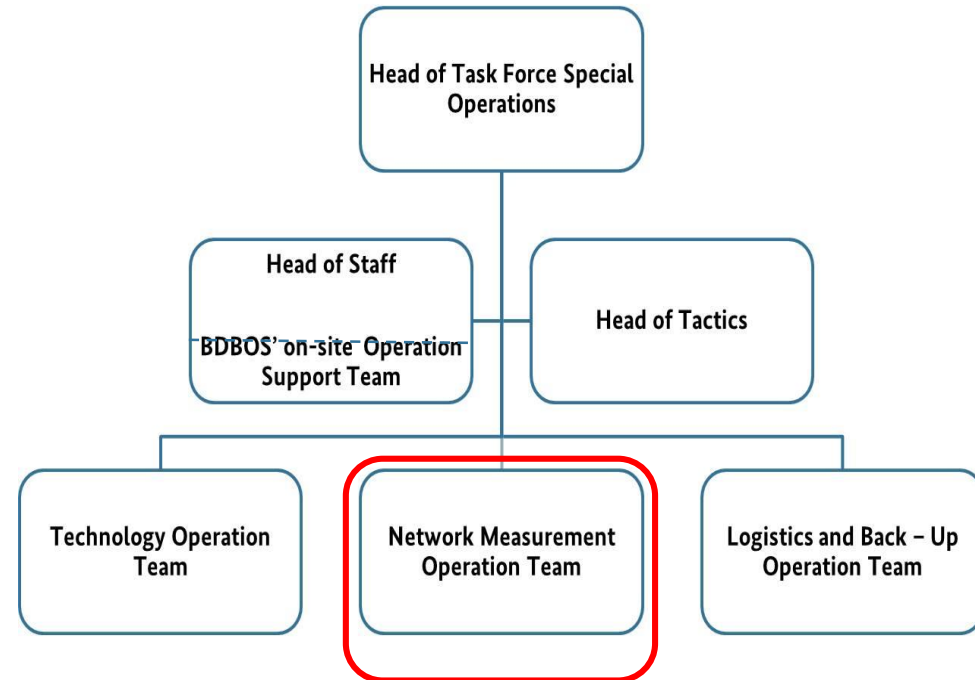


Task Force for Special Operations

– Network Measurement Operation Team

Tasks:

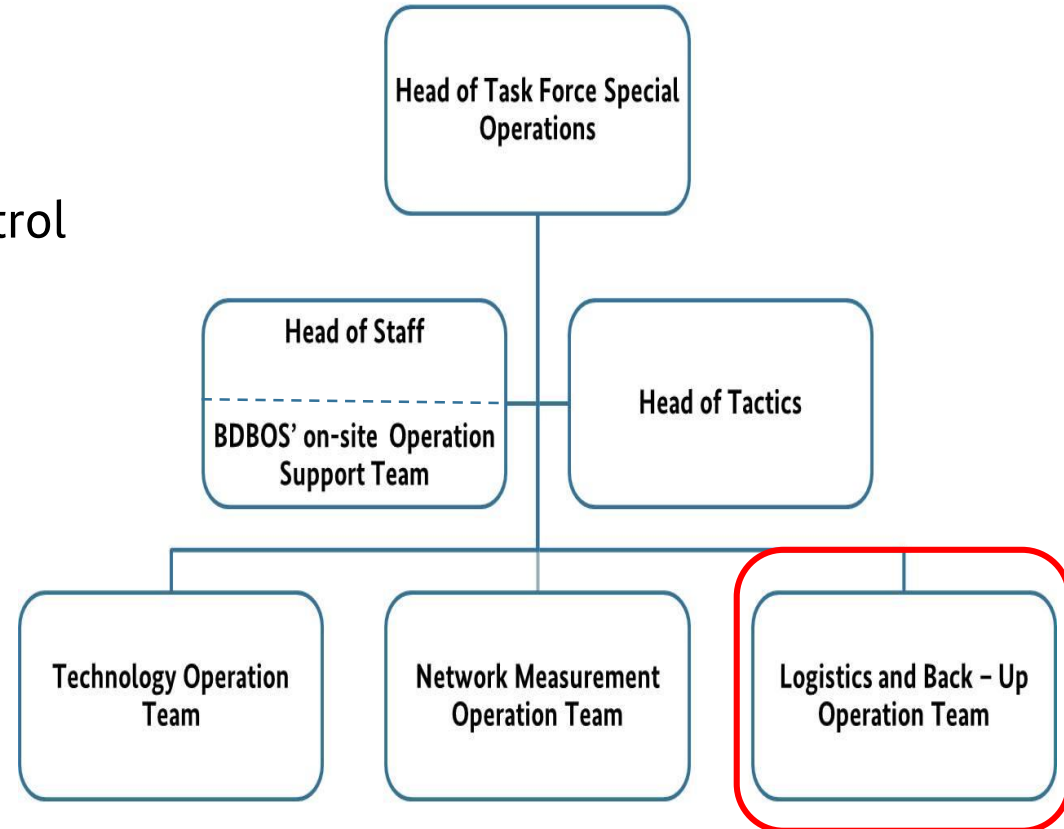
- Monitoring of
 - whole radio network and
 - used frequency spectrum
- Detection of
 - interferences and
 - jamming attacks
- Identification of interfered call groups
- Cooperate with Technical Situation Department



Task Force for Special Operations – Logistics and Back-up Operational Team

Tasks:

- Supply of deployed personnel
- Replacement of command, control and operational equipment
- Analysis of media information
- Provision of operational documentation
- Monitoring Authorized Office's mailbox

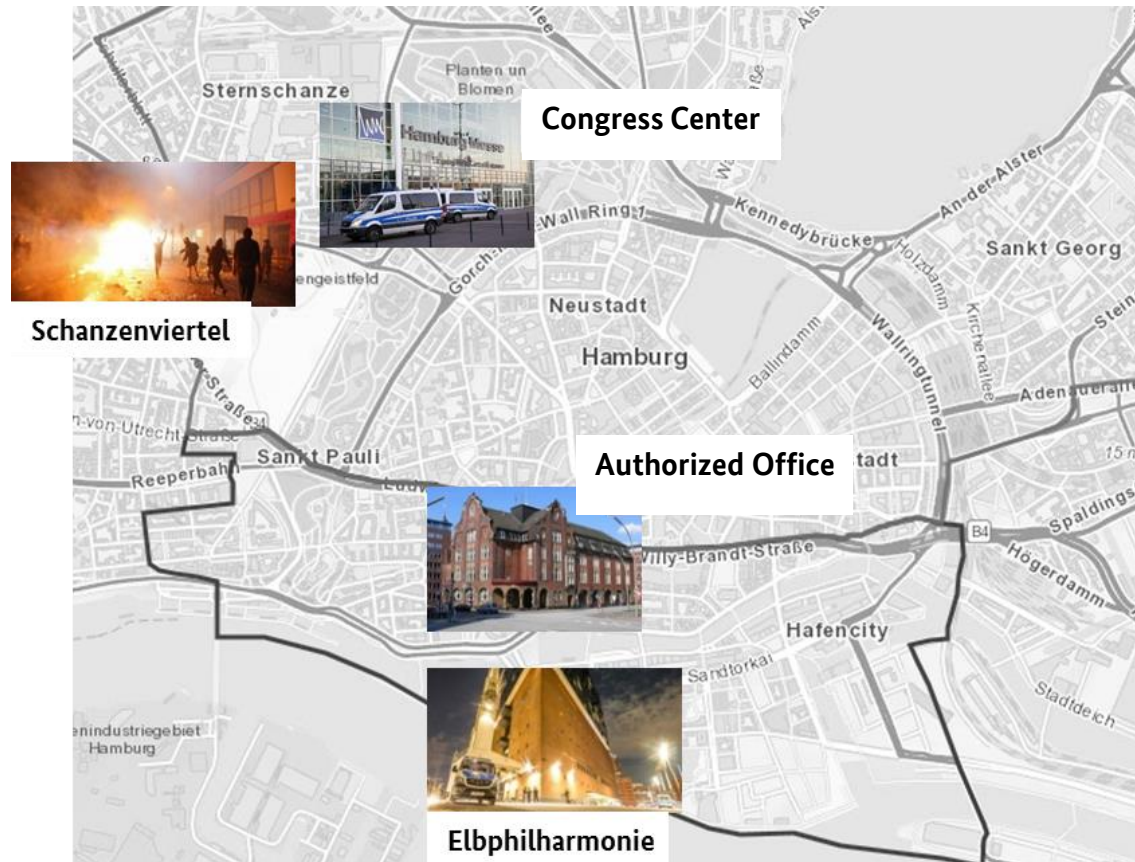





7. Communication planning in the area of operations - Hamburg City Centre

Communication planning in the area of operations - Hamburg City Centre

- approx. 30,000 radio terminals in use
- 128 TMO call groups
- 168 DMO call groups
- approx 25,000 police officers on duty
- approx. 5,000 staff from other public safety organisations



A close-up photograph of a radio microphone. The microphone is black and has a glowing orange light on its side. The background is blurred, showing what appears to be a person's hand holding the microphone. The text "8. Concrete measures - before and during the operation" is overlaid on the image in white font.

8. Concrete measures - before and during the operation

Preparatory measures

Part I

- Radio field analysis in advance
- Temporary capacity expansion - one TBS was extended by one TTRX for the duration of the operation
- Agreement with Airbus: Shorter time-to-repair Airbus DS + additional supply of spare parts for systems technology
- Hamburg's Authorized Office planned call groups with all involved security authorities and organisations



Event at Hamburg Port during the G20 Summit in Hamburg

Preparatory measures

Part II

- Relieved TMO through targeted use of DMO
- Additional mTBS was requested
- Audit of relevant network elements showed scheduled parameterisation and error-free operation
- Emergency switch for the DXT was prepared, including back-up and agreed sequence for ring connection



Installation of a mTBS

Measures during the ongoing operation

Part I

- Switch of Elbphilharmonie's TETRA indoor supply system from the predetermined TBS to another TBS outside the area of operations
→ increased capacity and better use of resources
- Operational Call Groups' follow-up time was reduced
→ reduced waiting queue improved system performance
- Third organisational channel was activated
→ significantly improved signalling capacity



Images of the G20 Summit operation

Measures during the ongoing operation

Part II

- Radio terminals which did not operate correctly were identified.
→ and barred from service to avoid further problems.
- Call groups were combined.
- Users were asked to only use call groups defined for this operation and to switch off their local call groups.

All these activities were served to reduce network load

9. Summary

Summary

Part I

- Successful BDBOS's On-Site Operational Support– in particular the operational, operational/tactical and legal decision-making
- Based on currently applicable standards, cooperation between Hamburg's Authorized Office, Nokia's Operational Unit and the BDBOS's On-Site Unit can be described as exemplary
- The exceptionally large number of personnel deployed meant individual radio cells were being pushed to their limits with up to 8 TTRX



Summary

Part II

- Communication between all deployed personnel was guaranteed throughout the operation via the highly available Public Safety Digital Radio network.
- However, the responsible Authorized Office shall conduct a survey of subjective user-friendliness.



Chancellor Merkel thanks all those involved



Thank you for your attention.

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