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IPv6 R&D project for German public administration

Tahar Schaa (Cassini) on behalf of
Bundesministerium des Innern
Referat IT I.5

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Content

- **Why?**
- **What are the results?**
  - **Papers**
  - **Simulation**
  - **New IPv6 horizons**

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Support was urgently needed

- detailed IPv6 specs for procurement
- best practices adapted for German public administration
- IPv6 guidelines
- training materials
- routing concepts and routing simulation
- analysis and concepts for IPv6 and IoT

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IPv6 supporting documents

Procurement support

- IPv6 profile
- IPv6 profile description

Migration support

- IPv6 transition guide
- IPv6 workshop slides
- IPv6 transition checklists

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Bundesverwaltungsamt – Bundesstelle für Informationstechnik –

Fraunhofer FOKUS

cassini TECHNOLOGY GUIDANCE

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Available in English

IPv6 profile

IPv6 transition guide

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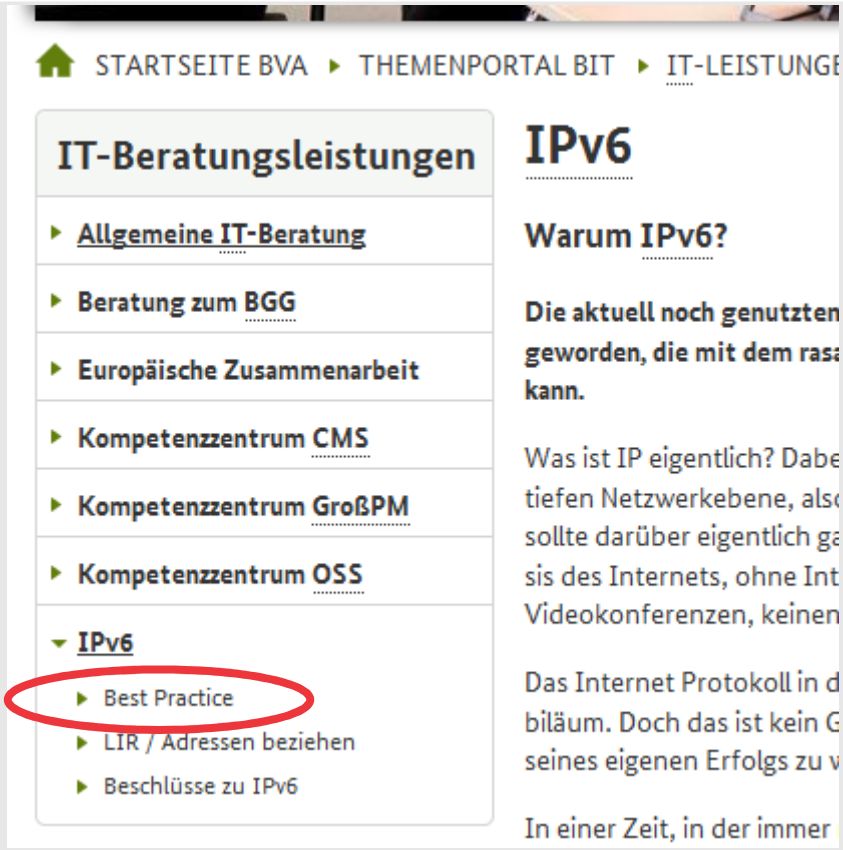
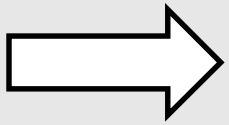
Where to find

www.lir.bva.bund.de

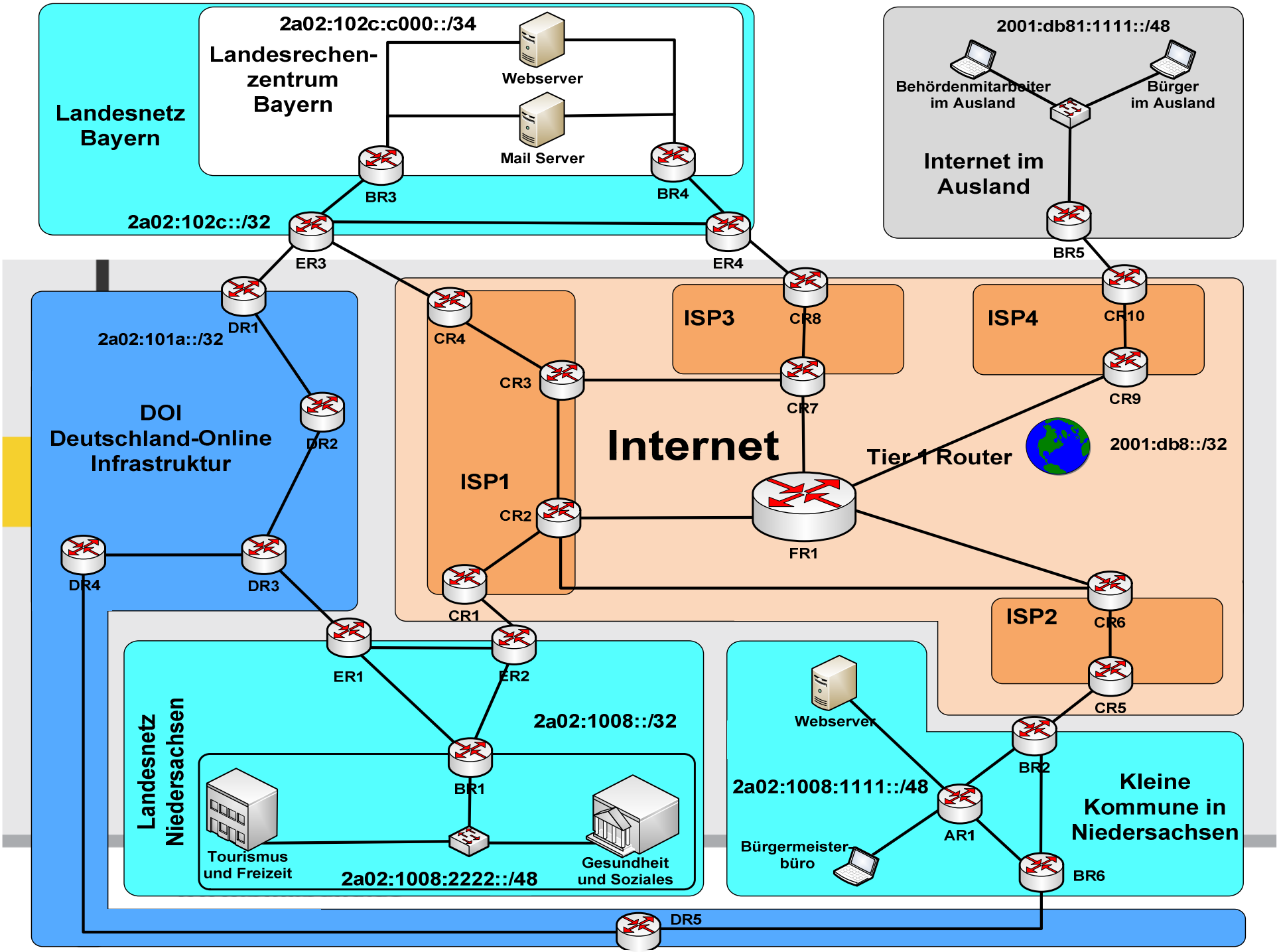


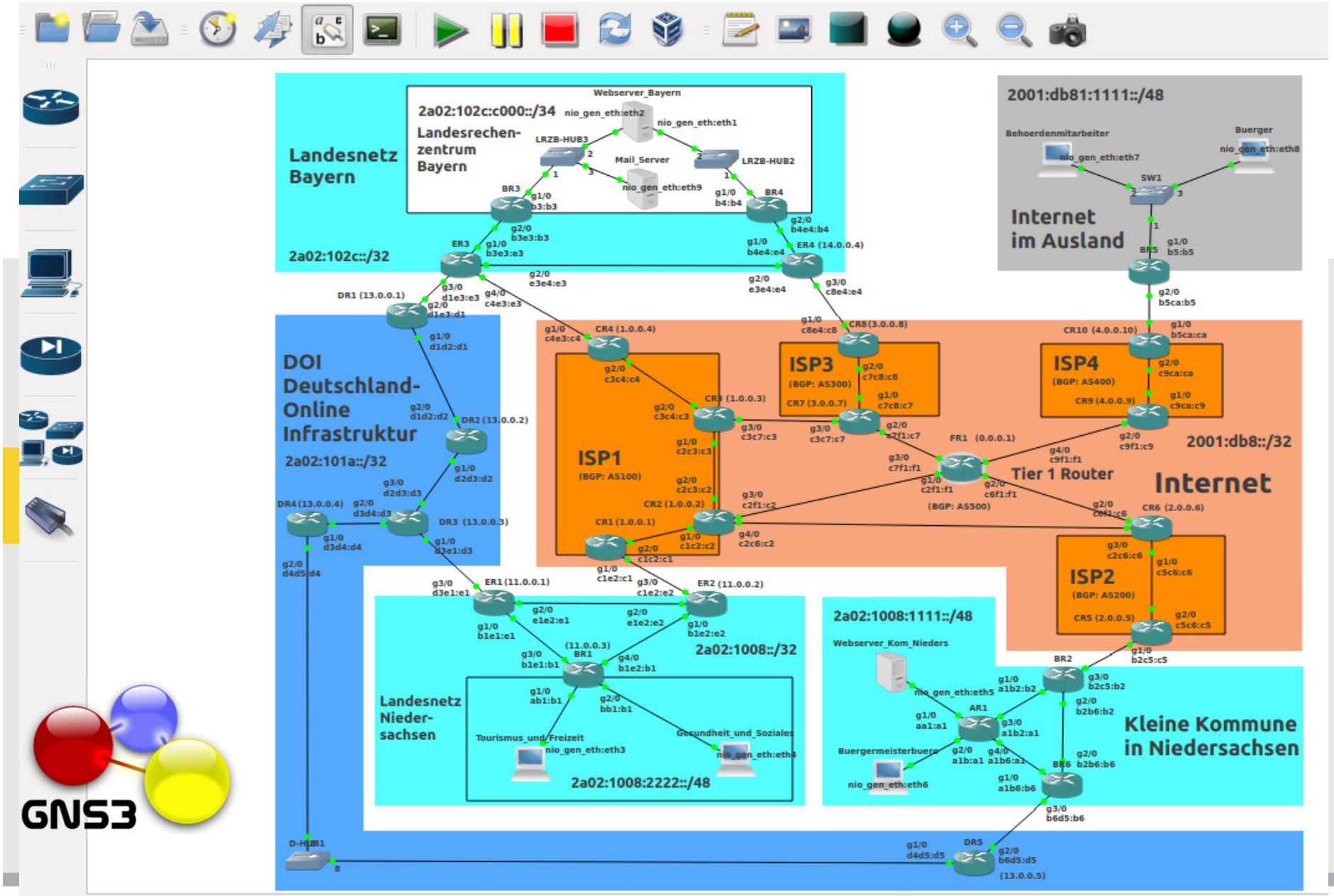
IPv6 routing

- NAT is gone!
- Routing will be more interesting
- What concepts?
- Will they work?
- How to ensure this?



Let‘s simulate

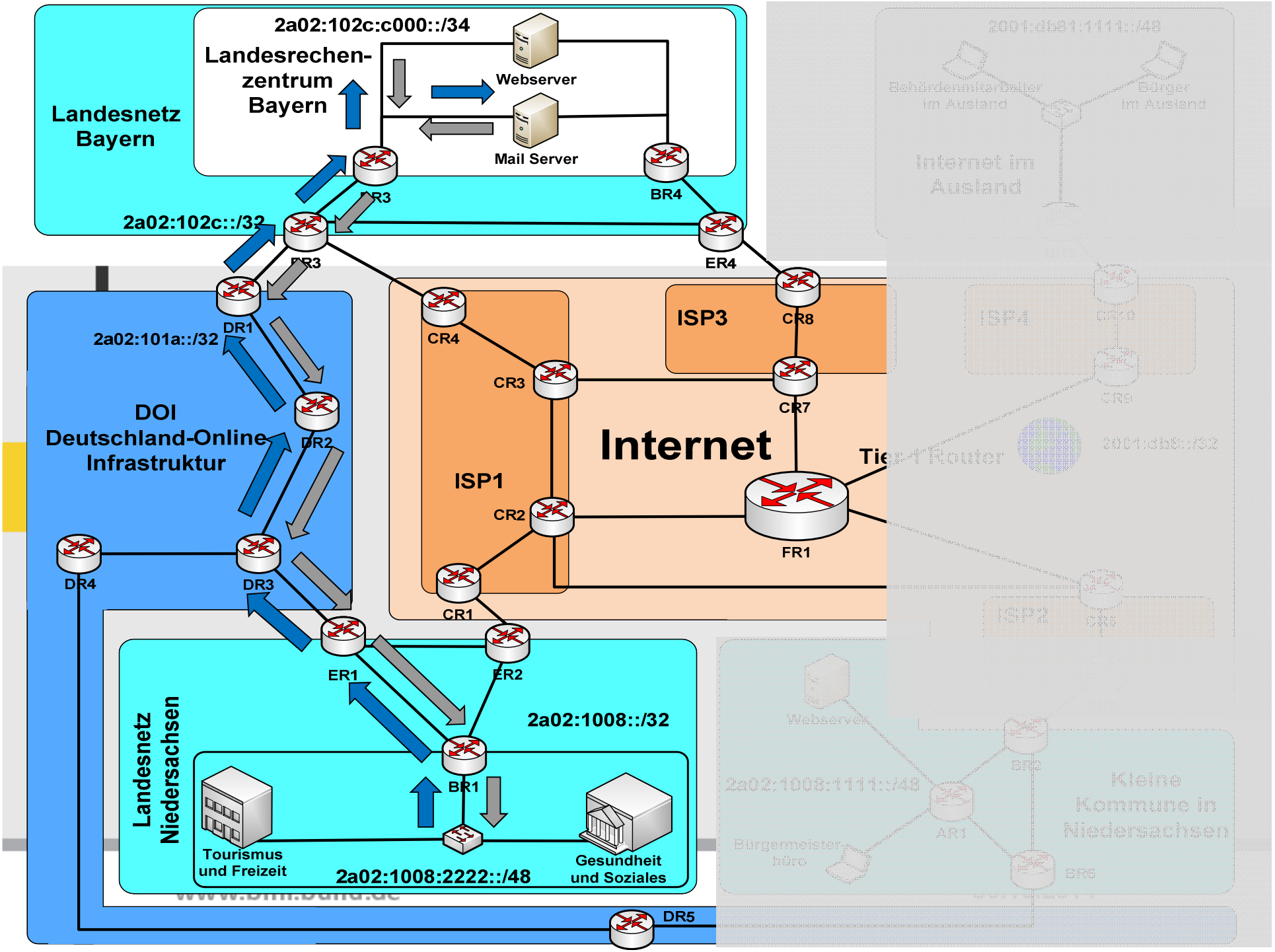

Landesnetz Bayern
2a02:102c:c000::/34
Landesrechen-zentrum Bayern
Webserver
Mail Server
BR3
BR4
2a02:102c::/32
ER3
ER4
2001:db81:1111::/48
Behördenmitarbeiter im Ausland
Bürger im Ausland
Internet im Ausland
BR5
DR1
2a02:101a::/32
DOI Deutschland-Online Infrastruktur
DR2
DR4
DR3
CR4
CR3
ISP3
CR8
CR7
ISP4
CR10
CR9
Internet
ISP1
CR2
FR1
Tier 1 Router
2001:db8::/32
CR1
ISP2
CR6
CR5
ER1
ER2
Landesnetz Niedersachsen
2a02:1008::/32
BR1
Tourismus und Freizeit
2a02:1008:2222::/48
Gesundheit und Soziales
Webserver
BR2
2a02:1008:1111::/48
AR1
Kleine Kommune in Niedersachsen
Bürgermeister-büro
BR6
DR5



GNS3

Console

GNS3 management console. Running GNS3 version 0.8.5.
Copyright (c) 2006-2013 GNS3 Project.


2a02:102c:c000::/34
Landesrechen-
zentrum
Bayern
Webserver
Mail Server
Landesnetz
Bayern
BR3
BR4
2a02:102c::/32
ER3
ER4
DR1
2a02:101a::/32
DOI
Deutschland-Online
Infrastruktur
DR2
DR4
DR3
CR4
CR3
CR2
CR1
ISP3
CR8
CR7
ISP1
Internet
FR1
ER1
ER2
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Landesnetz
Niedersachsen
BR1
Tourismus
und Freizeit
2a02:1008:2222::/48
Gesundheit
und Soziales
DR5

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The usual future IPv6 node

- IPv6 is the basis for industry 4.0
- Much more embedded nodes with M2M communication
- IPv6 office systems, home and mobile device will be the minority

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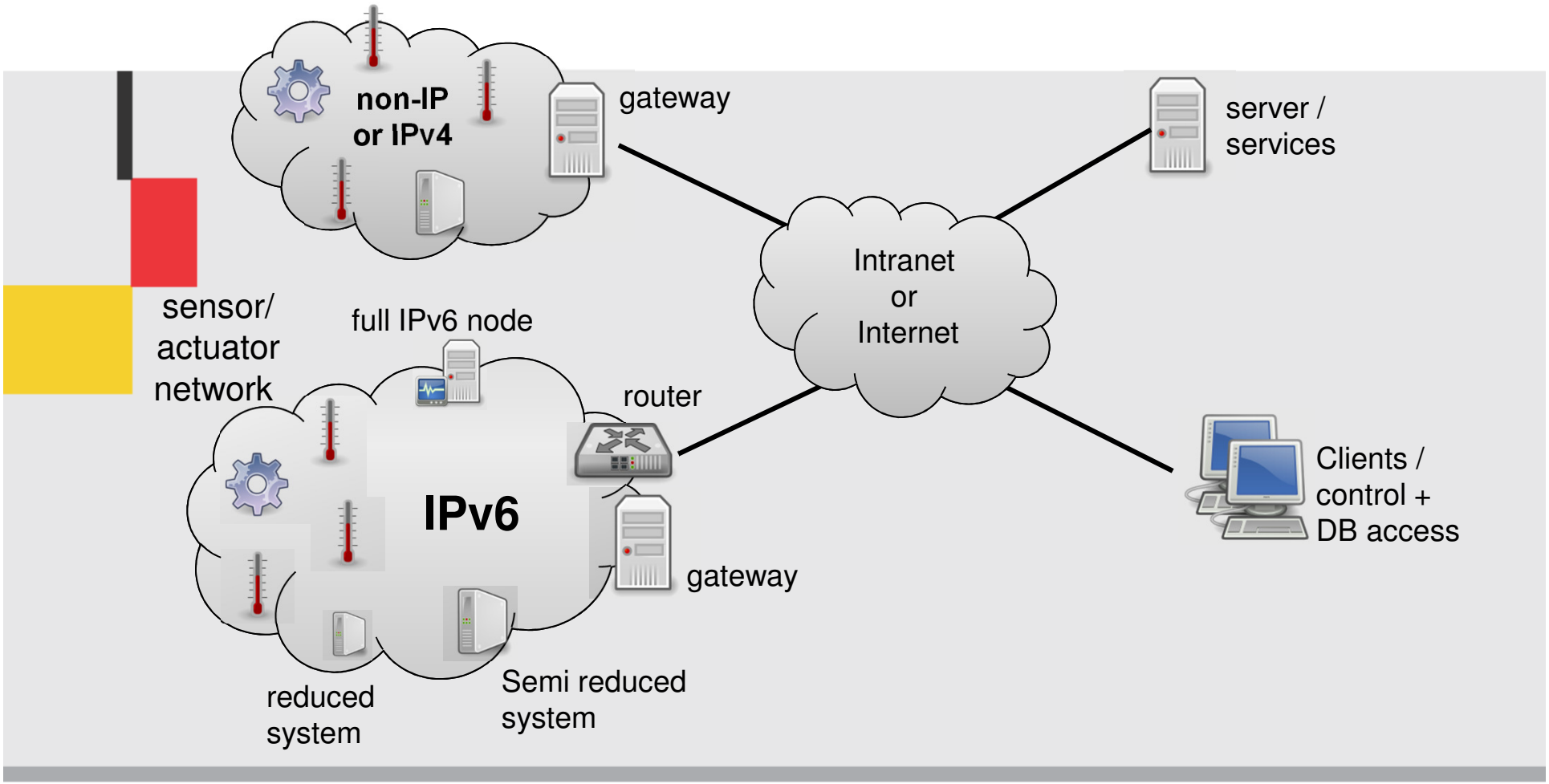
Scenario for IPv6 and IoT



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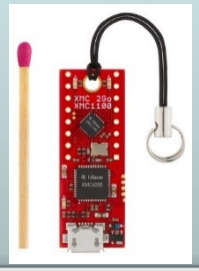
Different node classes different profiles

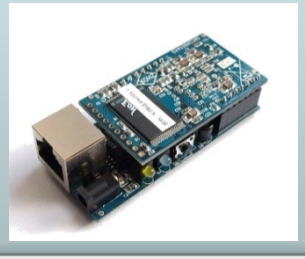
Mini

- µ-controller
- 8-24MHz
- 8-32 KB RAM
- adaptation layer 6LoWPAN



Reduced

- embedded Sys.
- 100-1000 MHz
- 16-512 MB RAM
- full IPv6 stack



Full

- Core i7
- DIN rail
- full IPv6 node incl. security functions

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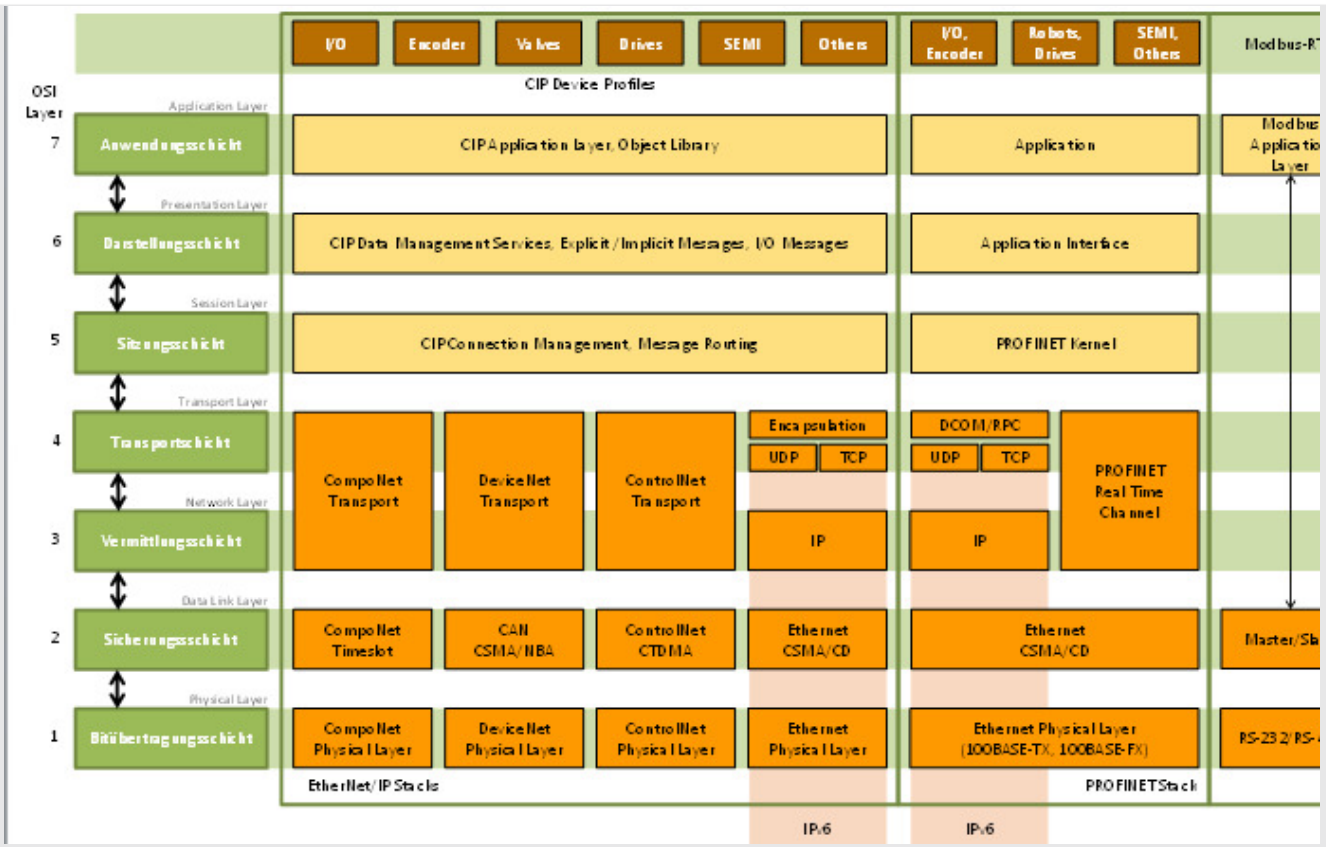
So many different stacks to migrate



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Thank you for your attention!

Dipl. Ing. Tahar Schaa

Mail **constanze.buerger@bmi.bund.de**