

CAPITAL
MARKETS
DAY 2024

#DTCMD24

Technology & Innovation

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Key messages

01

Differentiation

We delivered our CMD 2021 commitments. At the same time, we've invested for years into our capabilities creating a unique differentiation around: Global Scale, Sovereignty, Autonomous Networks and AI@T. Overall gross financial impact ~ €1 bn¹.

02

Global Scale

We scale product and technology platforms for fast introduction of products with great CX across regions. And ~ €0.2 bn network savings.

03

Sovereignty

We drive disaggregation and build own software solutions like RAN management. To control cost and experience in a volatile world.

04

Autonomous Networks

We move towards minimum-to-none human intervention. For lower cost, higher quality and energy efficiency – contributing to stable consumption, and B2B growth.

05

AI@T

We drive AI and automation, data informed, across all our processes, and for our customers. With significant impact on productivity and Customer experience. Gross financial impact ~ €0.8 bn.

¹ Full impact by 2027e, share of Capex: ~ €200 mn

Review 2020–2024e

We created a leading market position

DRIVING GREEN & LEGACY TRANSFORMATION

~ -9% Lower energy consumption¹

~ -€0.2 bn IT spend reduction

LEADING IN AUTOMATION

~ 70% Automated ticket resolution

~ 1 min rack provisioning from 1 day to 1 min

~ 75% of routers can be managed remotely

UNMATCHED NETWORK LEADER

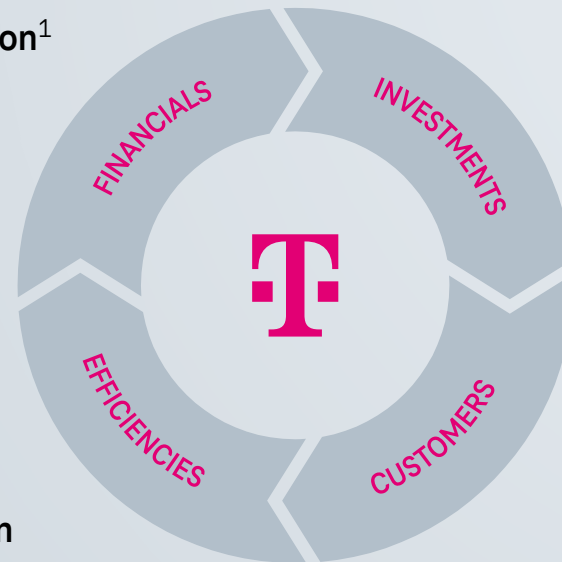
#1 Leading 5G networks

#1 Bitsight security rating

STRONG CUSTOMER EXPERIENCE

> 45 mn Customers use T Life/OneApp across our Group

#1 Best customer service Chatbot for years



¹ Electricity region GER & EU



Unmatched network leader for our customers



5G EXPERIENCE

- ✓ ~ 98% 5G Coverage
- ✓ ~ 78% 5G Coverage
- ✓ ~ 98% 5G Coverage
- ✓ **Leading Customer experience¹** in GER, EU (EU: 8/9 countries) & US



5G INNOVATION

Leveraged 5G for speed leadership and more efficient data production

Commercial products, e.g.

- Live video production

Network-as-a-service

- 23 NW & CPaaS APIs live
- Venture with leading partners



FIBER-ENABLED HOMES

- ✓ ~ 10.3 mn FTTH HH²
 - ~ +8.2 mn HH vs 2020
- ✓ ~ 10.3 mn FTTH HH
 - ~ +4.7 mn HH vs 2020



ESG

- ✓ ~ -9% lower energy consumption³
- ✓ **#1 Security Rating** better than 97% of the peer group in Germany⁴

¹ GER: Based on Q2 2024 B2C TRI*M; EU: 12M avg. as of Q2 2024 (EU excl. RO), NPS for TMUS; ² Homes passed in total (incl. GF+); ³ Electricity region GER & EU; ⁴ According to bitsight

Assessment of 2021 commitments



Scaling products with strong CX across regions

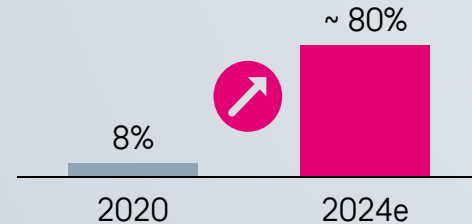
DIGITALIZATION ENABLED SCALING...

We've built **common digital enablers**

- Started practical (router, app) for high CX
- Agreed on common cloudified architecture
- Built APIs for local integration


Global scale while local adaptation


Cloudified IT Applications




...CX ADVANTAGES ACROSS REGIONS





 > 50% use **T Life/OneApp** monthly, incl. TMUS

 ~ 12 mn **RDK** router

 ~ 75% **routers** can be managed remotely

 **#1 Best Chatbot** for years

 > 4 mn customers experience **Magenta Moments** monthly

 ~ 3 mn active customers on future proven **OneTV** ecosystem

Leading in automation, especially in Germany



AUTOMATION

Voice production

- Radically automated and cloudified
- Industry first
- > 17 mn voice customers

Fraud detection

- Automated for 30k attacks per minute

T Cars

- For automated Fiber planning

Cloud HW

- Capacity extension: from 6–12 months to **1 min**
- Rack provisioning: from 1 day to **1 min**

First line

- ~ **95%** automated ticket creation
- ~ **70%** automatic ticket resolution
- ~ **27%** less downtime



CLOUDIFICATION

~ **66%** cloudified workloads 

~ **+57 pp** vs 2020

~ **44%**¹ cloudified workloads 

~ **+37 pp** vs 2020



DISAGGREGATION

Fixed: Disaggregated BNG² 

- Roll out to ~ **150/900** central office sites by end of 2024

Mobile: ORAN  

- First multi-vendor cluster live and expanding
- Yet, industry evolved more slowly than expected

¹ Excl. RO; ² Broadband Network Gateway

What differentiates us

OUR CAPABILITIES

Tech people

- Best team in industry
- ~ 6,000 digital experts¹

Technology foundation

- Automation, AI & data solutions, and **product scale** in place
- **Co-creation** with partners
- Setting **industry standards**

Human-centered Technology

- **Ethical AI** guidelines
- **Human-centered Technology** commitment

TO ADDRESS



BUSINESS DRIVERS

- 1 **Scale** across regions matters
- 2 A volatile world requires more **technological sovereignty**
- 3 Leaders are pioneers in **autonomous networks**
- 4 **AI must** deliver business value and be trusted

**FOR ALL
OUR CUSTOMERS!**

¹ In Board area Technology & Innovation: e.g. SW engineers, data/AI experts

Overview CMD 2021 commitments: We largely delivered

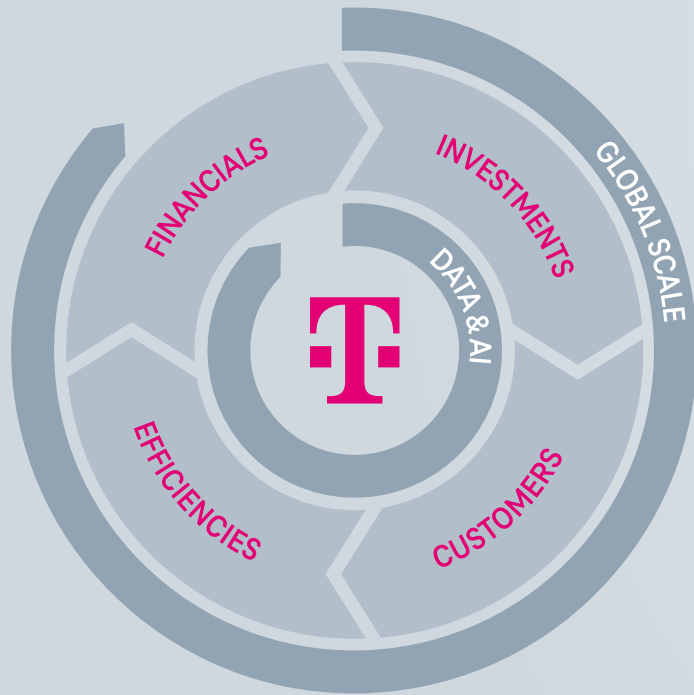
	Time frame	Ambition	Achievements 2024e
Technology leadership	2024e	<ul style="list-style-type: none"> Commitment to Fiber rollout GER: ~ 10 mn HH passed¹ 	~ 9.5 mn HH passed
	2024e	<ul style="list-style-type: none"> EU: ~ 10 mn HH passed² 	~ 10.3 mn HH passed
	2024e	<ul style="list-style-type: none"> 5G PoP coverage & network leadership GER: ~ 97% 	~ 98%
	2024e	<ul style="list-style-type: none"> EU: > 75% 	~ 78%
	2024e	<ul style="list-style-type: none"> Further enhancing 5G innovation leadership & Consumer experience 	achieved
	2020–2024e	<ul style="list-style-type: none"> IT spend reduction: > €0.2 bn 	~ -€0.2 bn
Value transformation	2024e	<ul style="list-style-type: none"> Time-to-market GER: 2.0 months 	~ 1.9 months
	2024e	<ul style="list-style-type: none"> Agile share of development: 100% Increase degree of cloudified production 	~ 100%
	2024e	<ul style="list-style-type: none"> NT: GER 67%; EU 42% cloudified workloads 	GER ~ 66%; EU ~ 44% ³
	2024e	<ul style="list-style-type: none"> IT: 80% cloudified applications 	~ 80%
	2020–2024e	<ul style="list-style-type: none"> Technology energy consumption (Region GER & EU): stable 	~ 3.8 (TWh)/~ -9%

¹ Excl. GF+; ² AT, CZ, GR, HR, HU, ME, MK, SK (excl. RO & PL; FTTH/B & Docsis 3.1); ³ Excl. RO

Strategy 2023–2027

Our differentiating priorities

**GROSS FINANCIAL
IMPACT 2027**



Scaling Product and Tech Platforms

- For fast introduction of products with great CX across regions
- For cost reduction

IMPACT: ~ €200 mn¹



Aiming for more sovereignty

- For cost and experience control in a volatile world



Pioneers in Autonomous Networks

- For cost, quality energy efficiency
- Contributing to stable consumption
- For B2B growth

IMPACT: ~ €800 mn¹



Driving AI@T

- For productivity across field and customer service, SW development
- For reduction of IT-legacy spend
- For trusted Customer experience

¹ Share of Capex in total amount: ~ €200 mn

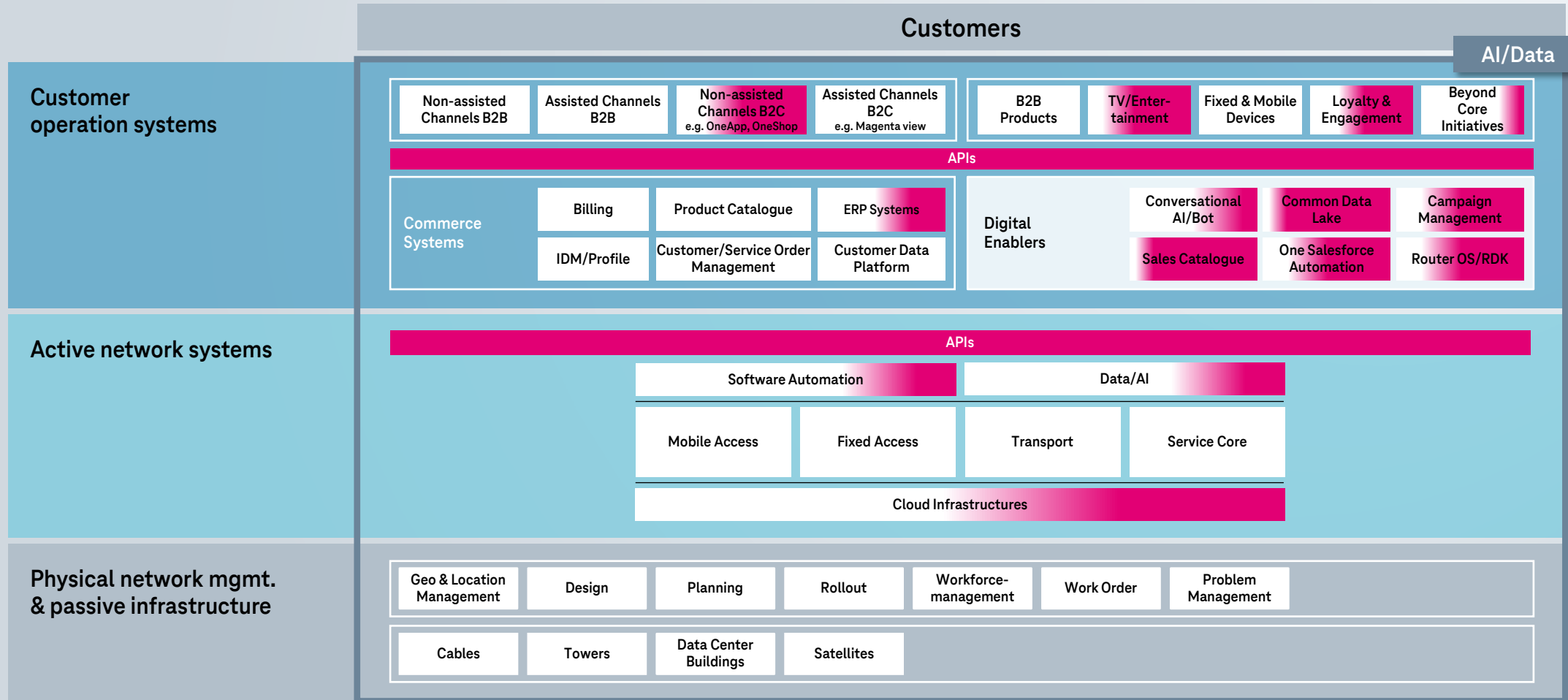


We have scaled product and tech platforms...

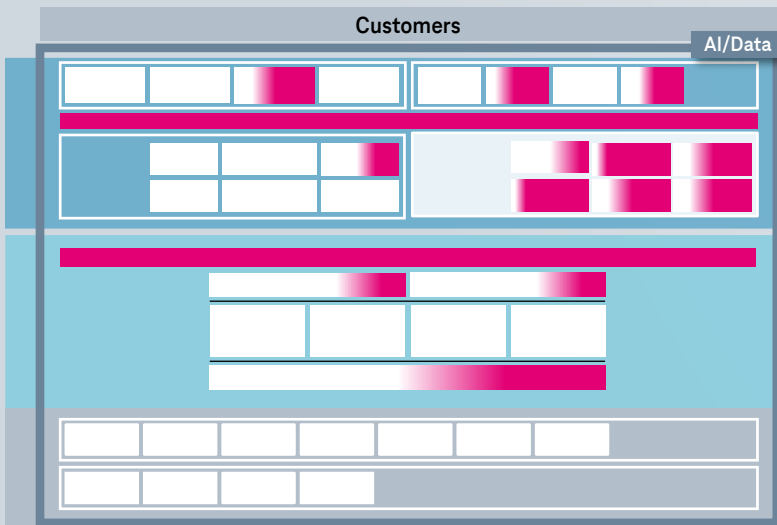


Our Architecture Framework

■ Common TDG/EU 2024
■ Local



...with proven examples for scale by 2024, also with TMUS



Customer operation systems

- Revvl/T Phone → # devices p.a.
- T Life/One App → penetration
- Magenta Moments → # of customers (MAU)
- RDK Ecosystem → routers in field
- OneTV → # of customers

USA	Germany	EU

Active network systems

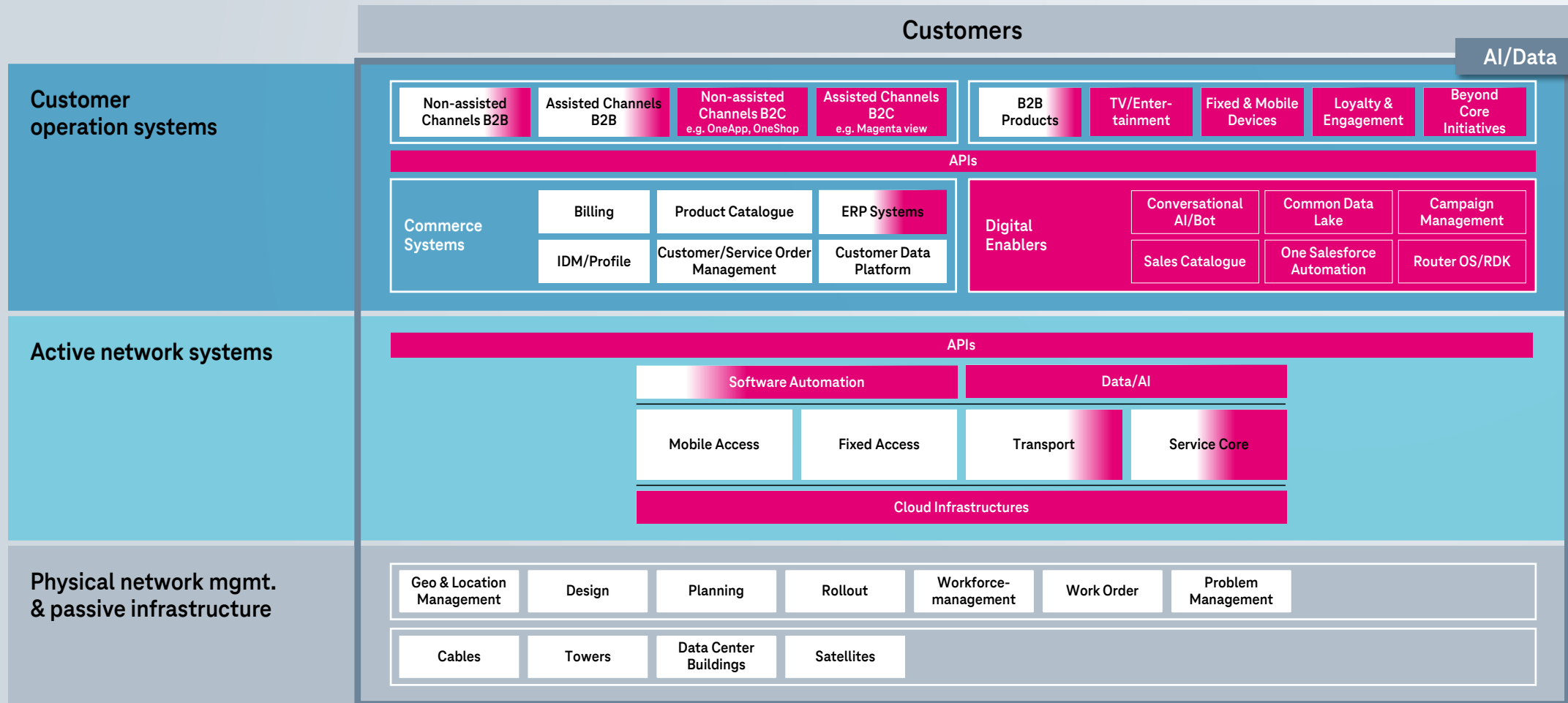
- Selected Automation Tools →

CICD; API Gateway

We double down on scale until 2027...



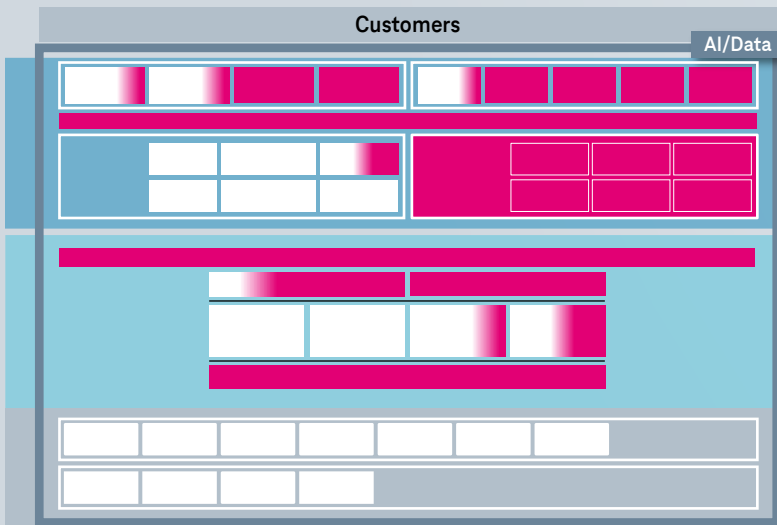
■ Common across TDG/EU 2027
 □ Local



¹For EU: Common Operating Model



...with clear aspirations for 2027



Further scale products and touchpoints with great CX

- Revvl/T Phone # devices p.a.
- T Life/One App penetration
- Magenta Moments # of customers (MAU)
- RDK Ecosystem routers in field
- OneTV # of customers
- Beyond the core



+ Extend collaboration with TMUS in selected projects

- Especially routers, app, IoT

Realize ~ €200 mn scale value in networks with broader scope

- SW Automation, e.g. RAN automation
- Common multi-cloud
- Common Operating Model in EU

+ Extend collaboration with TMUS in selected projects

- T Challenge, engineering collaboration, network APIs

Additional upside potential from scaling operations across group



SCALING POTENTIAL

Addressable costs

- Common architecture
- Common production
- Common operation
- Common development
- Procurement
- Common automation use cases
- Customer care
- Digitalization
- Faster AI deployment

Non-addressable costs

- Physical network build
- Customer connections
- Leases
- Local Shops and Marketing
- Bad debt



OPEX/CAPEX BASE DT GROUP 2023

Addressable Spend

~ 30%

Non-addressable Spend

**1% Savings on addressable base
~ €250 mn**

More sovereignty with smart RAN transformation

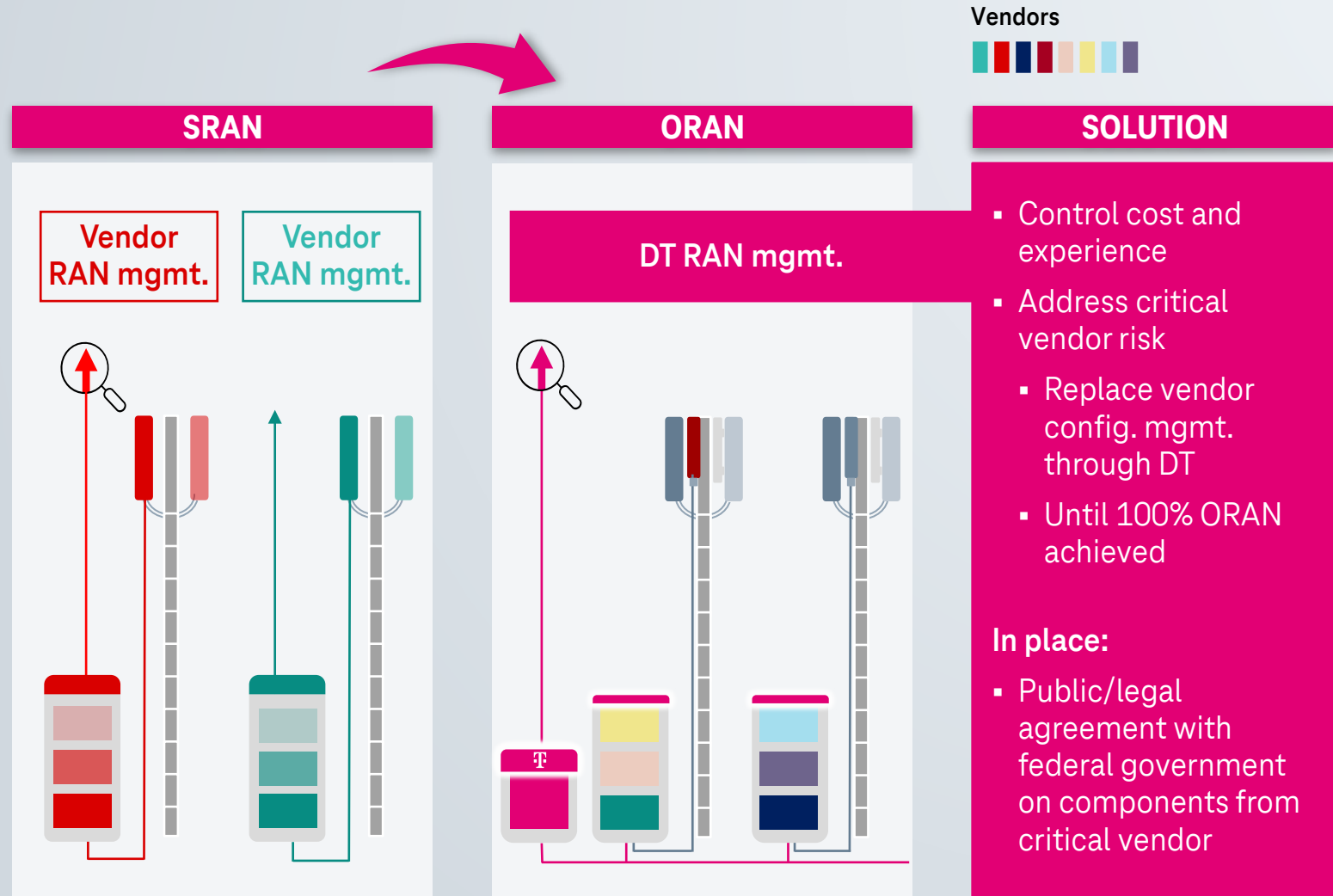


Industry challenge

- SRAN: low vendor choice
- ORAN: more choice, more complexity

Required capabilities

- Procurement on (sub)system level
- SW engineering, integration & automation



Ambition 2027e

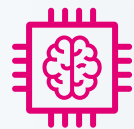
- > 3,000 ORAN sites live
- DT Configuration mgmt. developed

Autonomous networks applied to DT



AUTONOMOUS NETWORK OPERATION

Unlocking human potential
for innovation



AI-assisted ticket resolution
for
~ **90%** of the tickets



SELF-HEALING RADIO NETWORKS

Predict and prevent issues before
customers notice

AI-based anomaly detection
and automated change
execution

We aim for “minimum-to-none” human intervention



AUTONOMOUS NETWORKS – INFUSED BY ADVANCED ANALYTICS AND AI

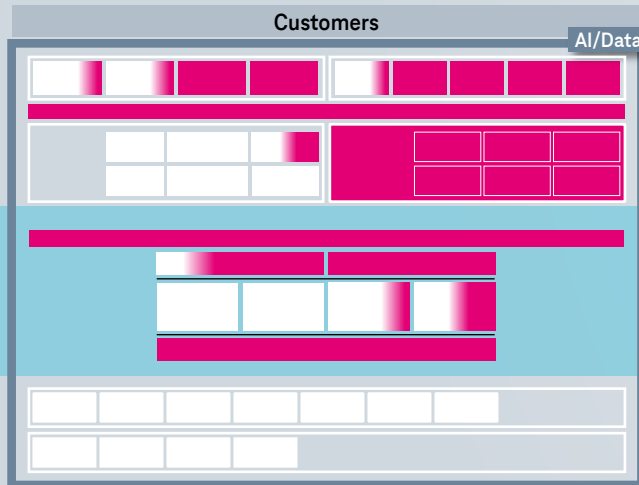
Less downtime: self-healing mechanisms predict and mitigate issues before they impact customers

Less complex: automated routine tasks and troubleshooting with integrated AI and ML

Less energy intense: intelligently steered energy consumption and network utilization

Less risk of cyber attacks: enhanced security features and automated policy enforcement

Less static: capabilities that optimize the network and adapt to tailored customer needs



Ambition 2027e



Towards **zero outage:**
Qualify incidents within 15 min
and resolve it within 1 h



~ **20–30% productivity increase**
in field service and ~ **15% in DevOps**



Networks designed for
“**zero bit, zero watt**”, e.g. ~ +5%
energy efficiency in RAN



Best and most secure network
e.g. with Magenta OnNet Security



~ **€100 mn revenues** on network
capability exposure

Proven efficiency measures keep our energy consumption flat



EFFICIENCY MEASURES COMPENSATE TRAFFIC-DRIVEN GROWTH ...

Global data traffic volume growth (in %, 2023 vs 2027)¹:

13.8 mn PB  ~ +60%

Mobile sites:

 36.5k  ~ +18%

 45k  ~ +8%

3.x GHz rollout:

 3.5k  ~ x2.3

 2.3k  ~ x4

Energy efficiency measures (exemplary)

Retire

- 3G, 2G
- SDH/PDH
- Copper (initial steps)
- Data Center consolidation

Modernize

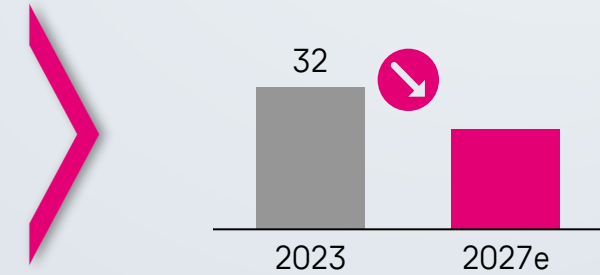
- MSAN & Central office consolidation
- Network sharing
- Network modernization

Innovate

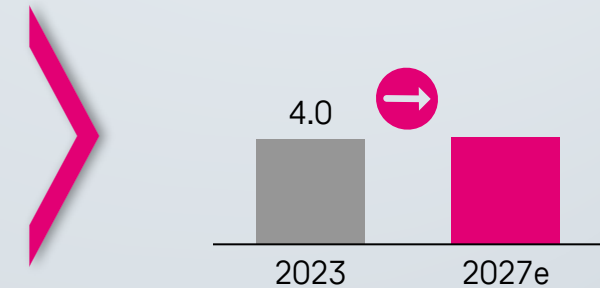
- AI-based power saving

... TRANSLATE INTO STABLE CONSUMPTION & LOWER INTENSITY

Energy Intensity (in kWh per TB)²:



Energy Consumption (in TWh)³:



¹ Analysys Mason Worldwide Fixed and Mobile Data Traffic Forecast (June & July 2024); ² Ratio Energy Consumption to IP Data Volume (GER + EU); ³ GER + EU

Significant impact with automation and AI, data informed



CREATING VALUE ...

Significant productivity increase across entire value chain

- Labor productivity
- Energy efficiency
- IT legacy spend

estimated 2027
gross financial impact:
~ €800 mn



AI protects us.

e.g. against 30,000 attacks per minute.



AI can save lives.

e.g. with fire forest detection.



AI makes us faster.

e.g. with T Cars and FTTH chatbot.



AI reduces bureaucracy.

e.g. with law monitor, document summary.



AI creates excitement.

e.g. with askT, AI@T

...WITH SMART COLLABORATION

- **Buying** selected market leading solutions (e.g. Glean for askT)
- **Co-creating** in selected bets (e.g. Global Telco AI Alliance)
- **Building** own solutions when strongly positioned (e.g. fraud detection)

Global Telco AI Alliance



Impacting productivity and CX across entire value chain



Ambition 2027e

Context aware sales, service and engagement

~ **-15%** service calls
~ **-15%** avg. handling time

e.g. FragMagenta for Hotline 2.0

AI-optimized networks across planning and operations

+20-30% productivity

e.g. AI support for field technicians

Intelligent and attractive workplace

~ **+10%** in efficiency in relevant areas, faster knowledge access

e.g. askT employee bot

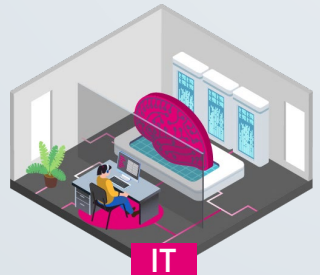
Sales & Service



Products



Network



IT



G & A

AI enablers e.g. own TelcoLLM via Global Telco AI Alliance

Personalized AI-for-All consumer products

~ **10 mn** monthly active users

e.g. AI@T with Perplexity in OneApp

AI-superpowered software engineering

+20-30% productivity

e.g. AI for coding/operations

Demo today



Experience Demo



Sales & Service
FragMagenta next-level



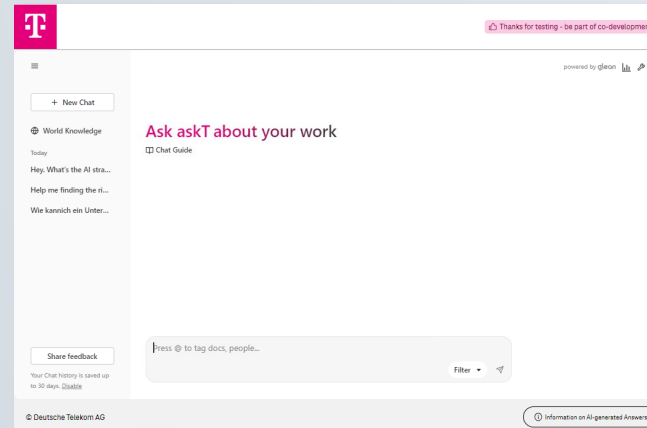
G&A
askT for Employees



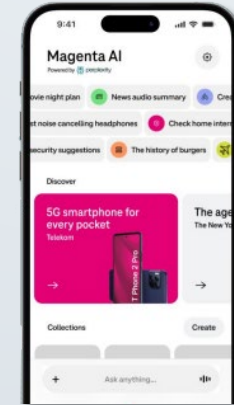
Products
Consumer AI



#helpcustomersfaster



#makeworkbetter



#democratizeAI



**Midterm
ambition level**

2023–2027e: Our differentiation creates tangible benefits

STRONGER FOUNDATION



SUPERIOR EXECUTION



ACCELERATION



VALUE CREATION



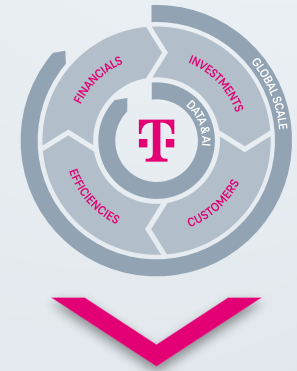
- Tech people
- Technology foundation
- Human-centered Technology



- We **scale** product and tech platforms
- We aim for more **sovereignty**
- We are pioneers in **autonomous networks**
- We drive **AI@T**



- **Global scale**
 - Fast product introductions across regions
 - Network scale value
 - Upside to our commitments
- **Data, automation & AI**
 - Focus on business value
 - Smart collaboration
 - Trust anchor



Estimated gross financial impact¹
~ €1 bn

FOR ALL OUR CUSTOMERS!

¹ Full impact by 2027e, share of Capex: ~ €200 mn



Our midterm commitments

KPI	Midterm ambition level	Year
Automated/AI-based fault resolution rate in NT	> 90%	2027e
Monthly active users on own and partner GenAI services	~ 10 mn	2027e
% of systems connected to common API gateway (Consumer/Provider)	~ +25%/~ +14%	2023–2027e
Reduction in service calls/calls deflected (FragMagenta) ¹	~ -15%	2023–2027e
Non-issue resolution time/Avg. call handling time reduction (Agent Assist) ¹	~ -15%	
Software developer productivity	20-30%	2023–2027e
Reduce share of legacy cost in IT Spend	~ -40%	2023–2027e
ORAN sites in live network	> 3,000	2027e
Total Energy Consumption	Keep stable	2027e

Estimated gross financial impact²:

~ €1 bn
(2027e vs 2023)

¹ Only in Germany; ² Full impact by 2027e, share of Capex: ~ €200 mn