〉 Dr. Philipp Bouteiller

〉 26. März 2014

smart city expo WORLD CONGRESS

SMART CITIES
CHANGE THE WORLD

BERLIN TXL
THE URBAN TECH REPUBLIC

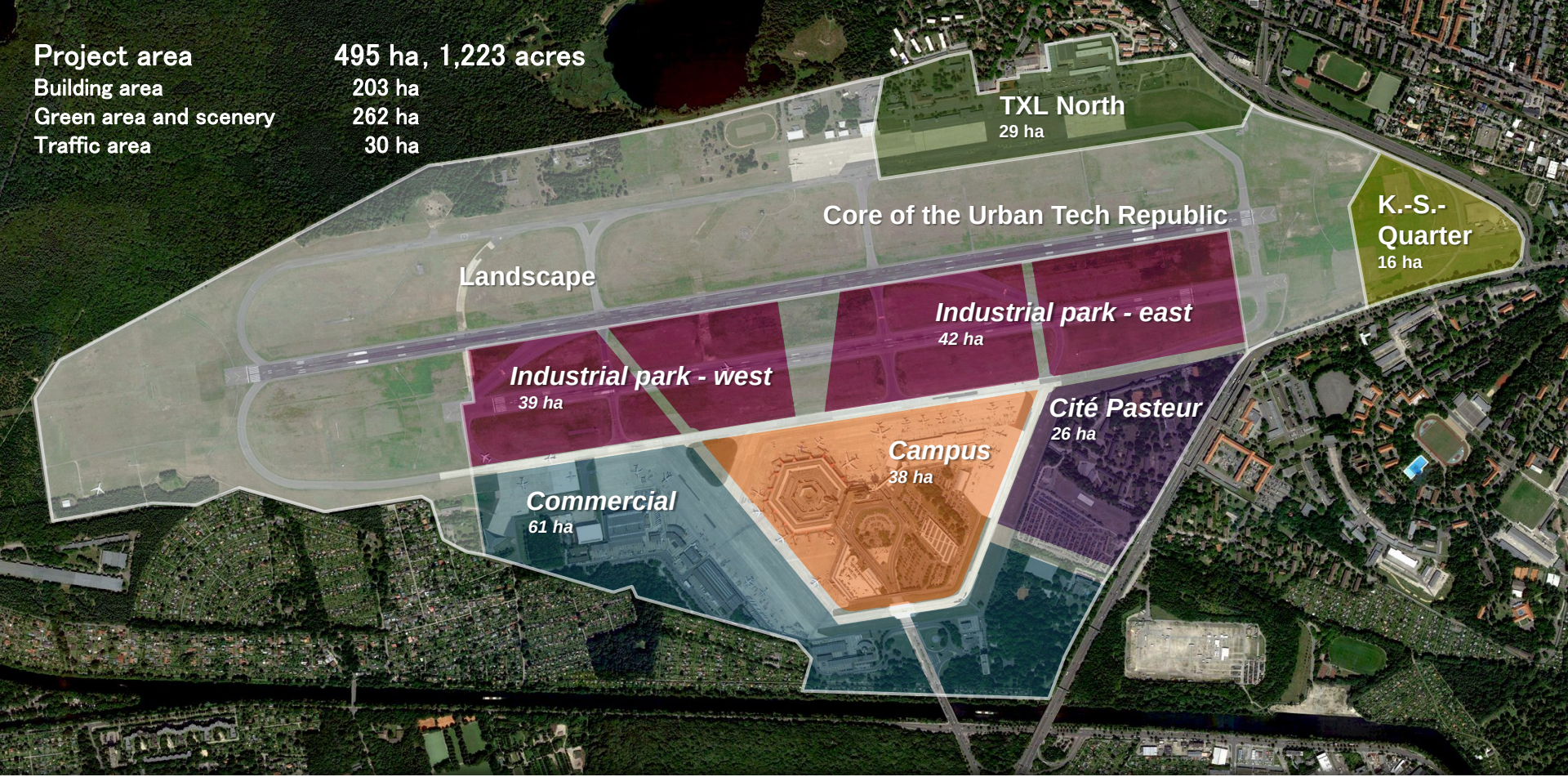
BERLIN TXL – THE URBAN TECH REPUBLIC

GERMANY: THE COUNTRY OF ENGINEERING

Smart Cities run on Urban Technologies

Berlin TXL will be the lighthouse project for Urban Technologies in Germany

BERLIN TXL THE URBAN TECH REPUBLIC



BERLIN TXL THE URBAN TECH REPUBLIC

SUBSPACES

Without scale

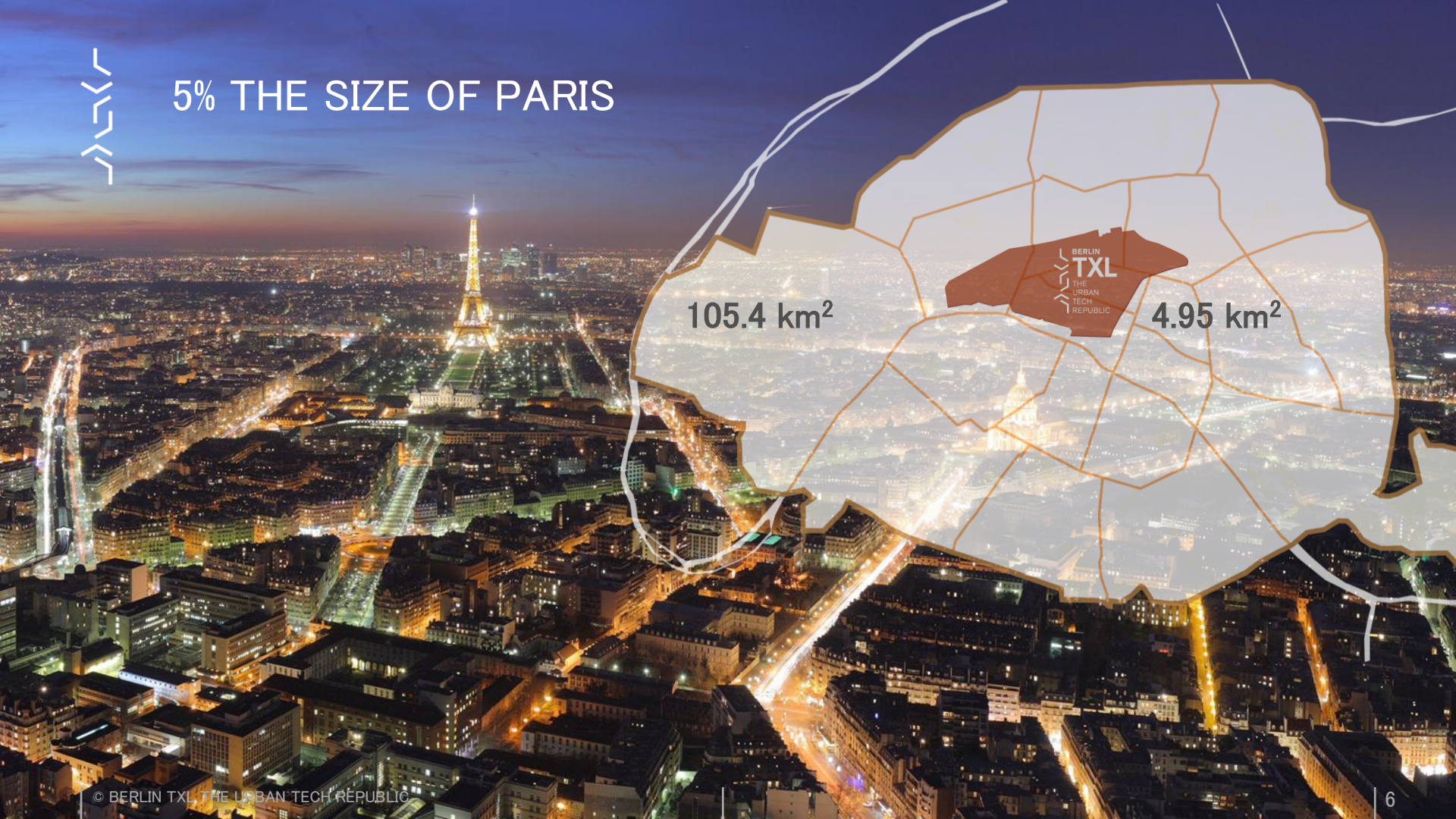
495 ha*

*1,210 acres

project area Berlin TXL.

THE FIRST PERSONAL COMPUTER WAS BUILT IN A GARAGE. WHAT COULD YOU DEVELOP IN A HANGAR?

5% THE SIZE OF PARIS



15 min

to federal government.

BERLIN IS AT THE HEART OF EUROPE.
AND TXL AT THE HEART OF BERLIN.

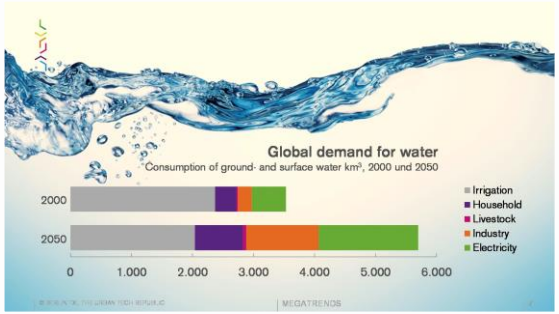
TXL	Motorway	1 min
TXL	Borsigharbour	5 min
TXL	Westharbour	10 min
TXL	Central Station	10 min
TXL	City & Government	15 min
TXL	Airport BER	25 min

SETTING

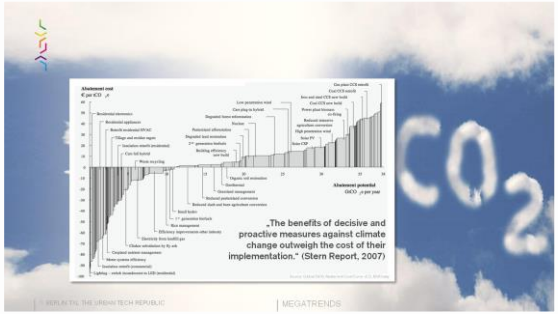
- INFRASTRUCTURE
- POLITICS
- UNIVERSITIES AND RESEARCH INSTITUTES
- COMPANIES

CHALLENGES OF THE 21ST CENTURY

Resource scarcity

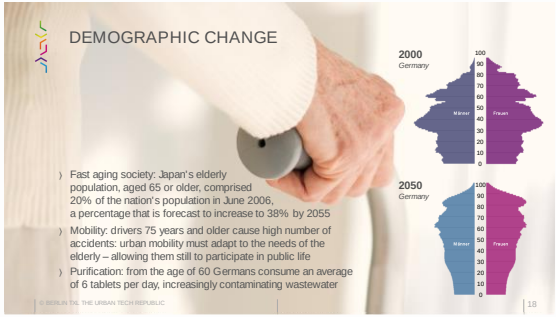


Climate change



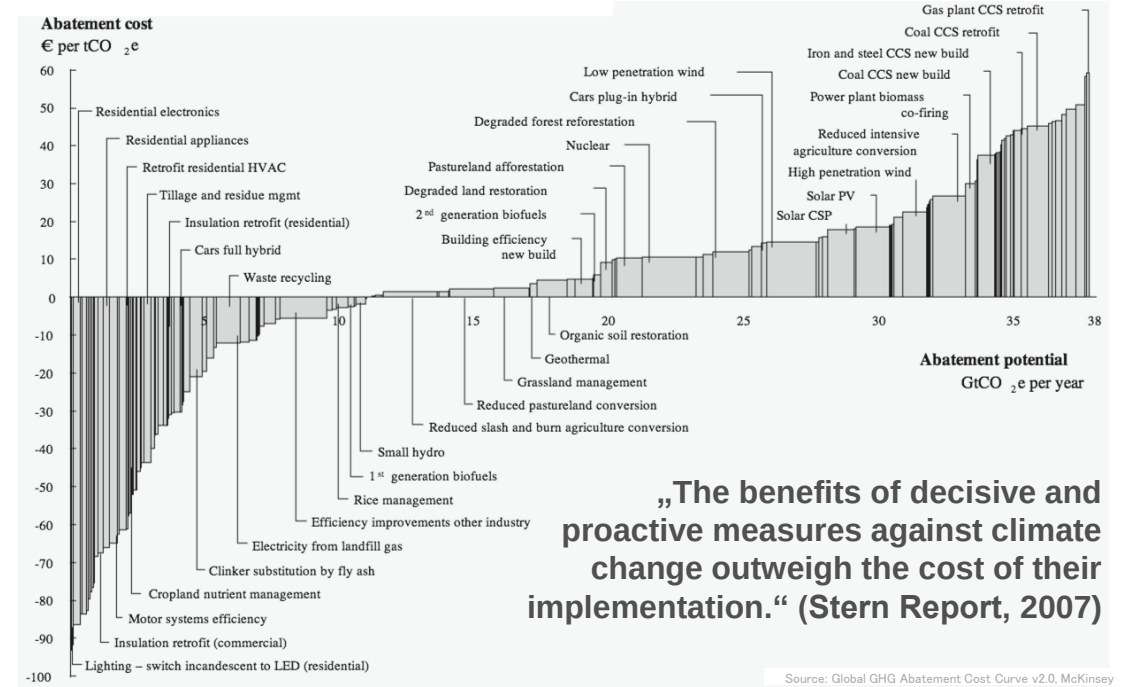
Energiewende

Demographic change



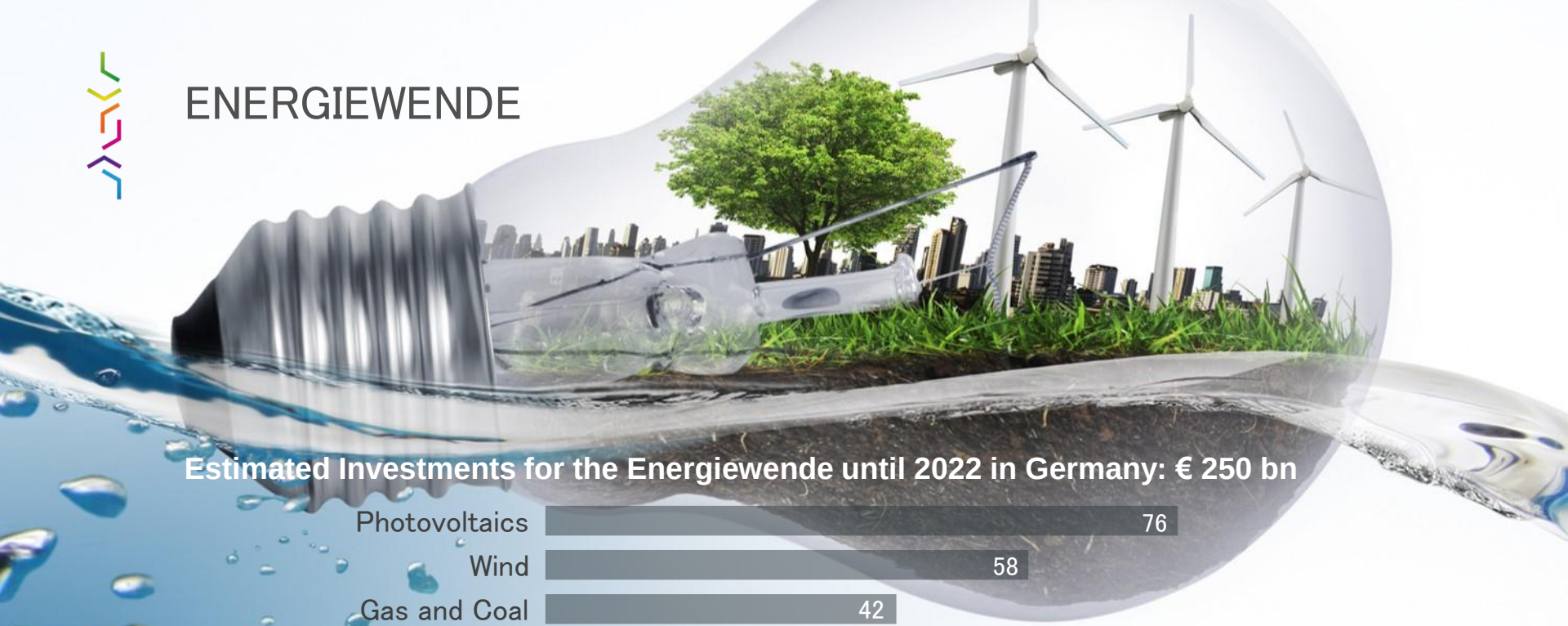
Urbanization

CLIMATE CHANGE



„The benefits of decisive and proactive measures against climate change outweigh the cost of their implementation.“ (Stern Report, 2007)

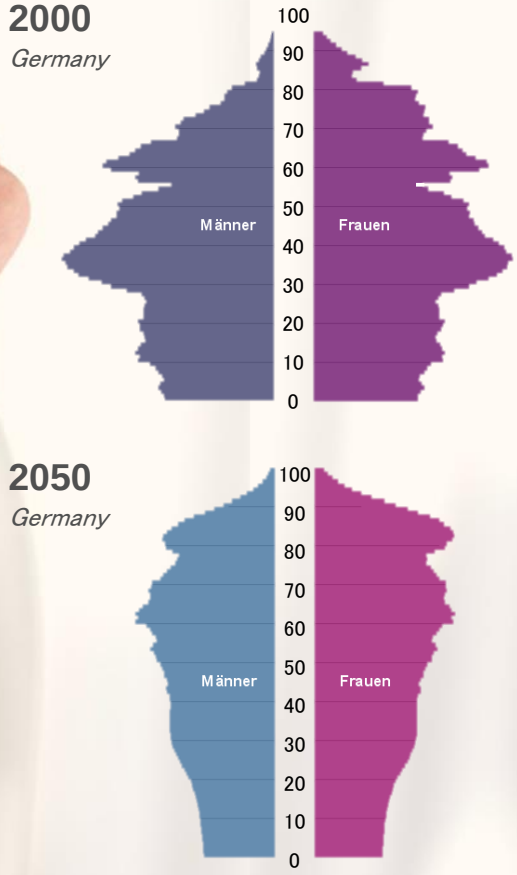
ENERGIEWENDE



Estimated Investments for the Energiewende until 2022 in Germany: € 250 bn

- The foundation for a post-fossil and post-nuclear age in Germany has been laid
- An estimated € 250 bn will be invested until 2022

DEMOGRAPHIC CHANGE



- Fast aging society: Japan's elderly population, aged 65 or older, comprised 20% of the nation's population in June 2006, a percentage that is forecast to increase to 38% by 2055
- Mobility: drivers 75 years and older cause high number of accidents: urban mobility must adapt to the needs of the elderly – allowing them still to participate in public life
- Purification: from the age of 60 Germans consume an average of 6 tablets per day, increasingly contaminating wastewater

URBANIZATION

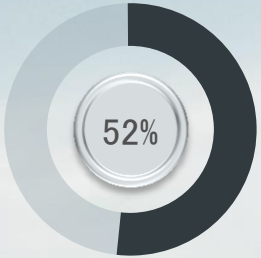
- Globally, 1.4 Million people move to cities every week
- Extrapolating current population trends, an estimated 3,000 new cities the size of Kyōto will need to be constructed globally within the next 50 years

INCREASING TRAFFIC IS A SERIOUS ISSUE

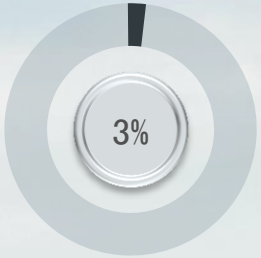
- The average resident of Shanghai commutes 5 hours every day – in 2011 a traffic jam on the China National Highway 110 lasted for more than 10 days
- 30 – 50 percent of traffic congestion in city centers is generated by drivers searching for parking space
- An estimated 7.2 billion liters of fuel were wasted because of traffic congestion in the US alone in 2011

CITIES: PROBLEM AND OPPORTUNITY

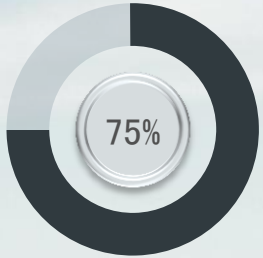
Global population



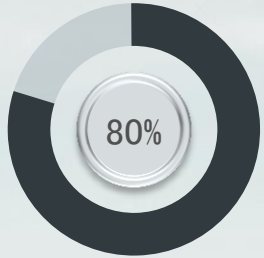
Earth's surface



Resource consumption



Global GDP creation



GLOBAL TREND SMART CITITES

UK
Siemens Sustainability Centre

Netherlands
Amsterdam Smart City

Denmark
Copenhagen Cleantech Park

Russia
Skolkovo Innovation Centre

China
Sino-German Ecopark

Germany
BERLIN TXL
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USA
Los Angeles Clean-tech

USA
NYC Urban Tech Innovation Center

Brazil
Smart City Rio

Chile
Smart City Santiago

Spain
22@Barcelona

Austria
Smart City Wien: Seestadt Aspern

India
Smart City Kochi

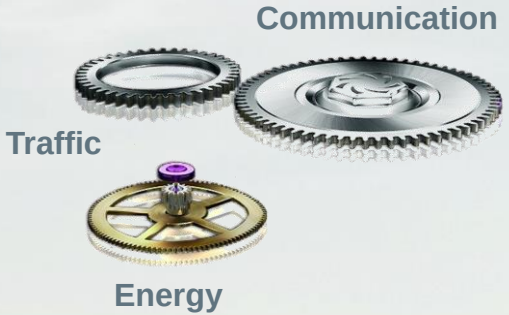
Abu Dhabi
Masdar City

SOME SUCCESS FACTORS FOR A SMART CITY INITIATIVE

THE VISION: AN INTERCONNECTED CITY

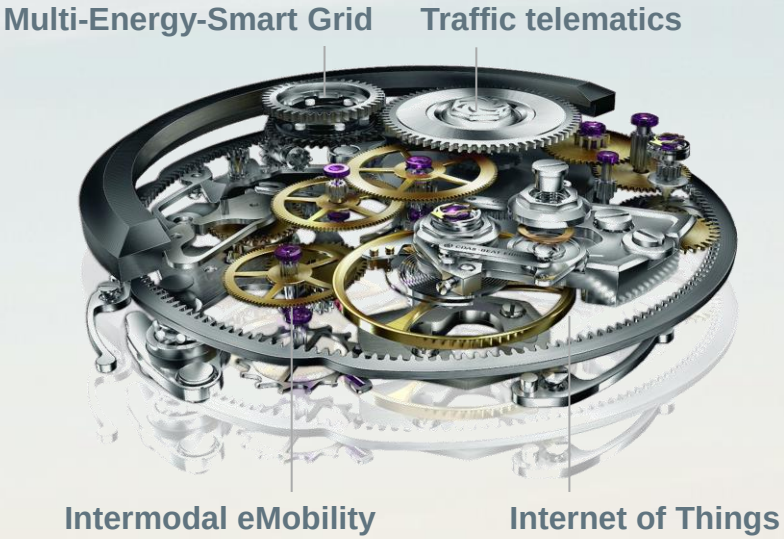
From …

the straightforward use of single, stand-alone technologies …



To …

demand-oriented, multi-disciplinary and intelligent integration of cross section technologies



2025: 4,400 bn

Euro market volume.

FUTURE TECHNOLOGIES ARE THE MARKET OF THE FUTURE. STARTING ANY TIME NOW.

URBAN TECHNOLOGIES ARE FUTURE-PROOF BUSINESS

Estimated global market volume, € bn

	2011	2025	Annual growth
Energy			
⟩ Renewable energies and energy storage	313	1,060	9%
⟩ Energy efficiency	720	1,230	4%
Materials	183	517	8%
Recycling economy	93	145	3%
Water/sewage	455	901	5%
Mobility	280	554	5%

Total global market volume

2011 € 2.0 tril

x2,2

2025 € 4.4 tril

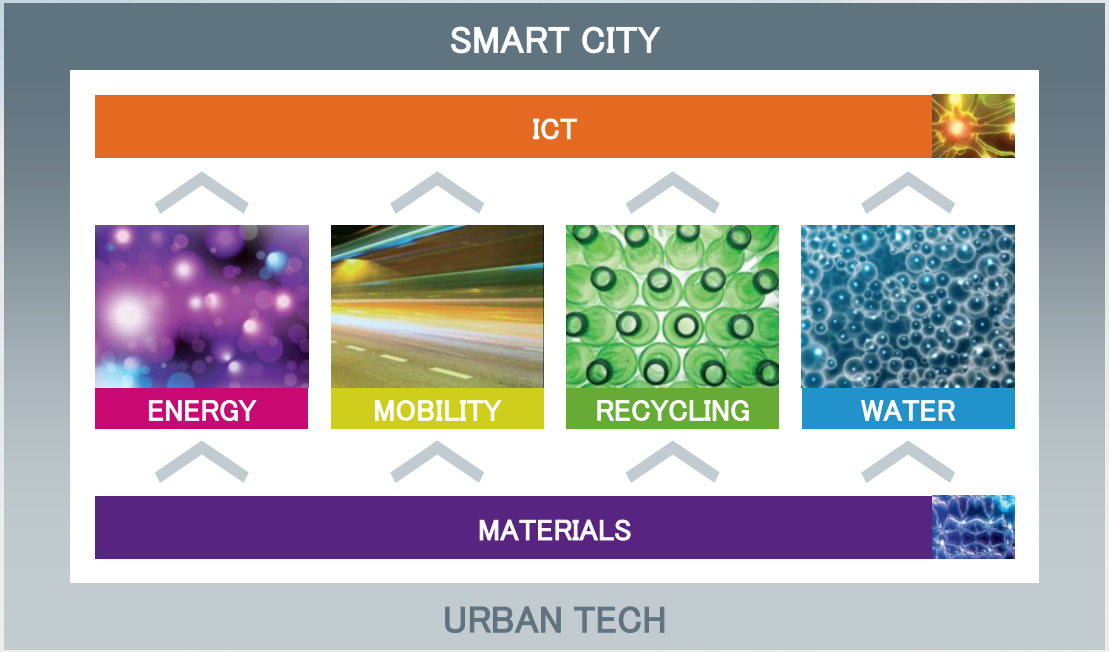
Source: Roland Berger (2011)

URBAN TECHNOLOGIES ARE THE KEY FOR FUTURE GROWTH – WHICH THE INDUSTRY HAS ALREADY RECOGNIZED

SMART CITIES ARE BUILT ON URBAN TECHNOLOGIES

APPLICATION
System

PRODUCTION
Components



BERLIN IS GERMANY ‘S CENTRE OF INNOVATION

Source: Arbeitskreis „Erwerbstätigenrechnung des Bundes und der Länder“, Statistisches Bundesamt

More than 40,000 companies founded in 2012

SMART GRID COMPONENT PROVIDERS? BERLIN ‘S GOT THEM ALL

Jonas & Redmann
The Automation Company

SIEMENS

ROLLS ROYCE

Younicos
Let the fossils rest in peace.

ALSTOM

DAIMLER

ubitricity

BAE

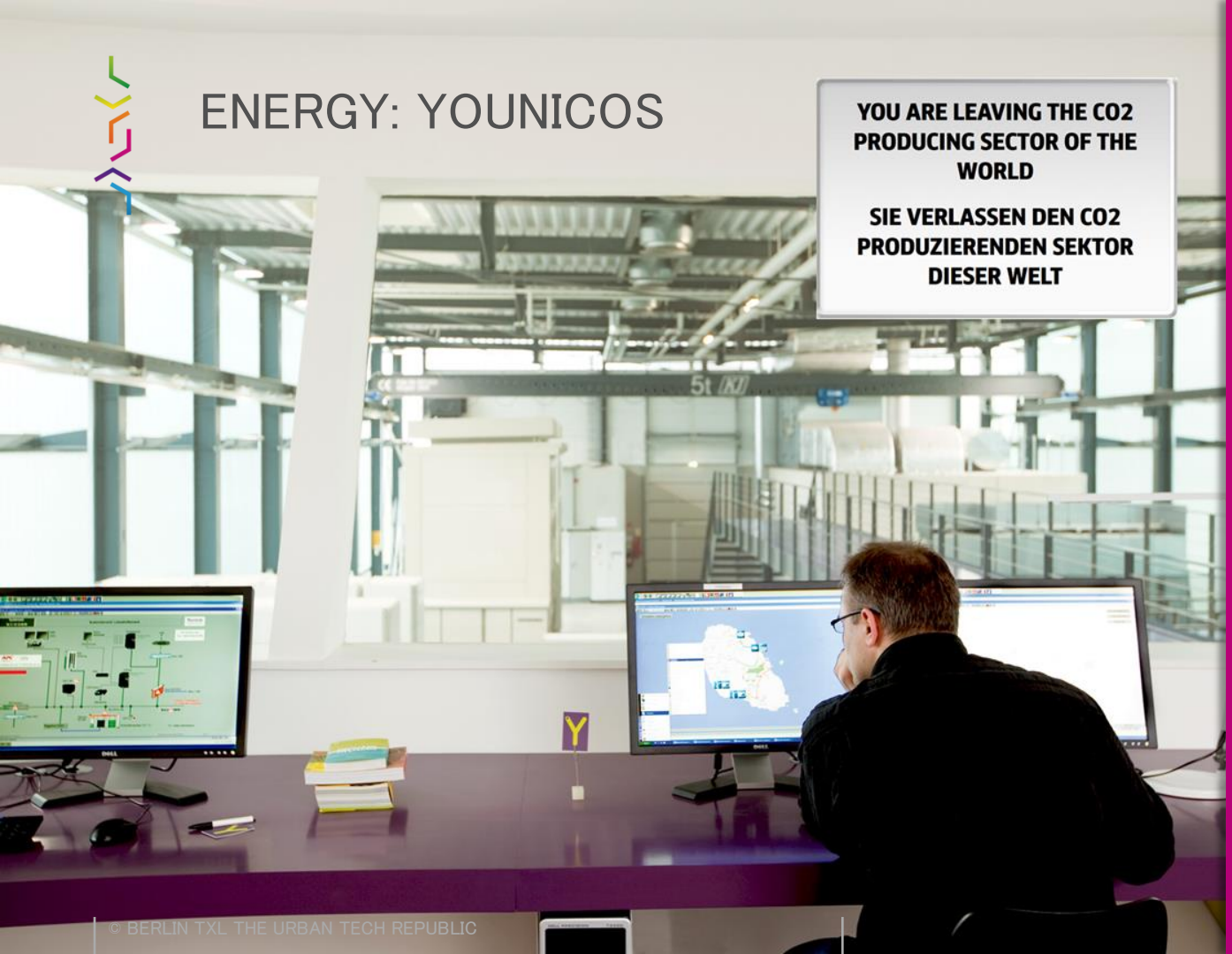
Continental

VATTENFALL

telecolumbus
fernsehen, internet, telefon.

Deutsche Telekom

ENERGY: YOUNICOS

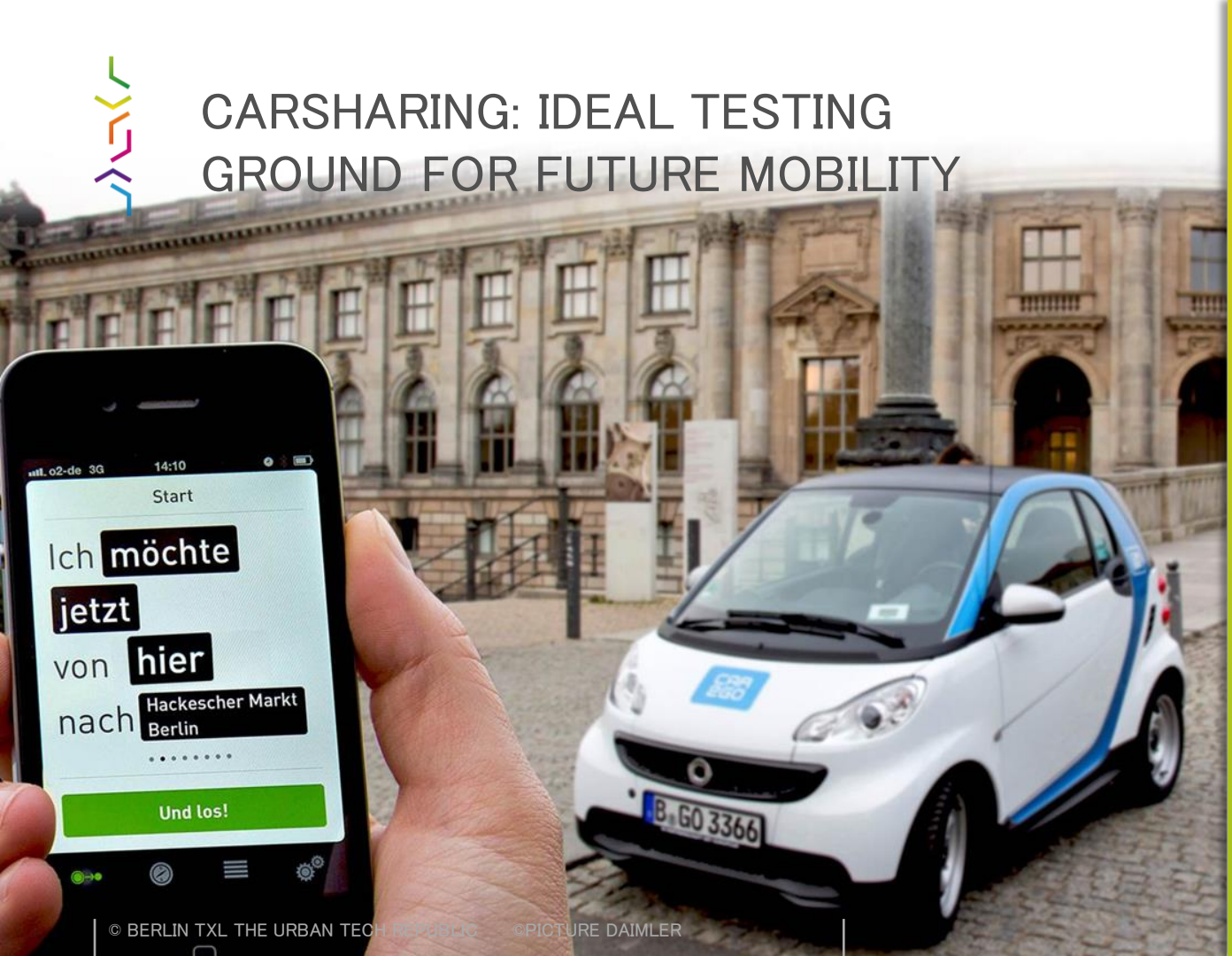


- Complex island simulation system combines various renewable energy sources, a large battery and a biofuel operated backup generator
- Goal: Enabling a reliable and 100% renewable energy supply system
- Implementation: Island of Graciosa, completion 2014

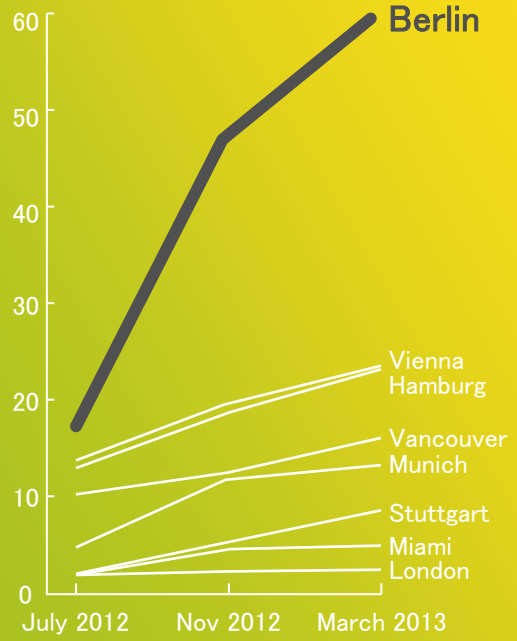
BIOGAS PLANT BERLIN RUHLEBEN

- Central collection of Berlin's biowaste and processing into biogas
- 50% of the collection fleet is already operated with this biogas

CARSHARING: IDEAL TESTING GROUND FOR FUTURE MOBILITY



Carsharing –
Bookings per week
thousand



Source: innoZ 2013

UBITRICITY

- Intelligent socket system replaces costly battery charging stations
- Lamp post system costs only €250 per installation instead of €6,000 – 8,000 for conventional charging stations
- Backwards compatible with all existing systems

AUTONOMOUS DRIVING: THE NEXT REVOLUTION

Experimental car in Berlin

Autonomous cars allow for

- Complete redesign of our cities
- Dramatically reduced number of injuries and deaths
- Much smaller vehicles
- Efficient traffic management (no more traffic jams!)
- Productive work time at the wheel

Source: www.autonomos-labs.com

INTERNET OF THINGS WILL CHANGE OUR LIVES

- Connected devices allow for much more efficient processes and higher level of comfort
- Drastically reduces requirement for human intervention
- Enables new production methods (Industry 4.0 – Cyber Physical Systems)
- Resource efficiency
- Enables low-cost production in Japan or Germany

SOURCE: DIGITALTRENDS.COM

EXPERIMENTAL FIELD FOR FUTURE MOBILITY

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TRAFFIC CONCEPT BERLIN TXL

KURT-SCHUMACHER-PLATZ

INTERSECTION KURT-SCHUMACHER-DAMM

INTERSECTION SAATWINKLER DAMM/BAB A111

- Road network
- Mobility hub
- Electro mobility
- People mover
- Bicycle highway
- Superordinate bicycle network
- Bicycle house
- Shared space

EXAMPLE MOBILITY HUB

EXAMPLE E-MOBILITY

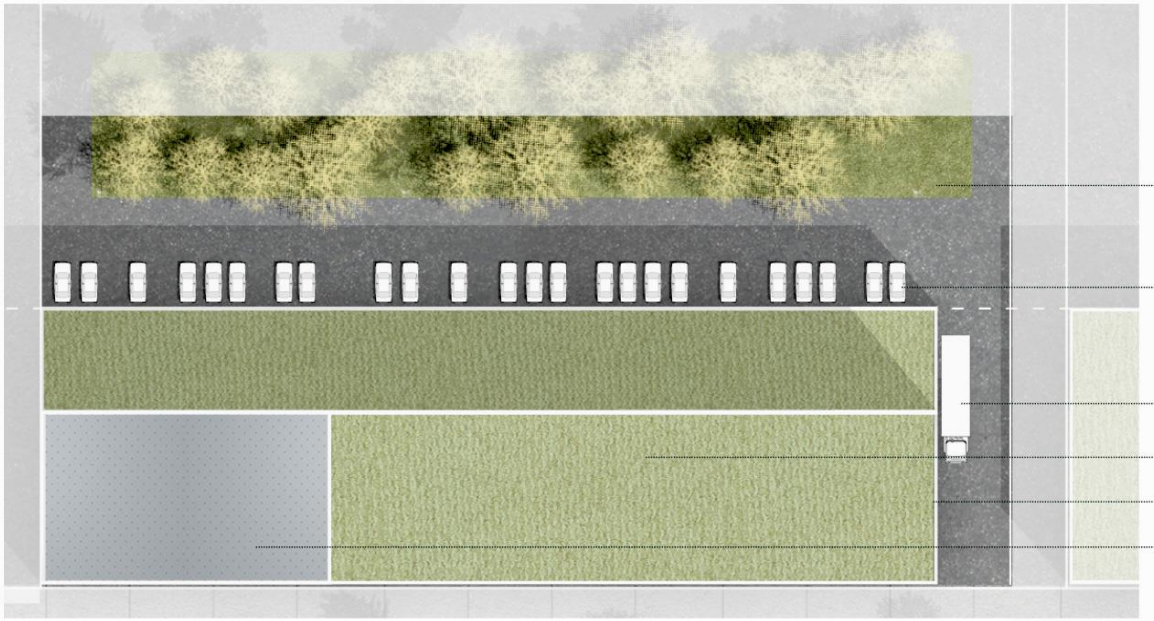
EXAMPLE PEOPLE MOVER

EXAMPLE BICYCLE HIGHWAY

EXAMPLE BICYCLE HOUSE

EXAMPLE SHARED SPACE


WHERE’S THE BEST PLACE TO START A PILOT PROJECT? AN AIRPORT, OF COURSE.



Parzelle A
3600 m²
70% Bebauung
20% Versieglung
10% Begrünung

Freifläche/Begrünung

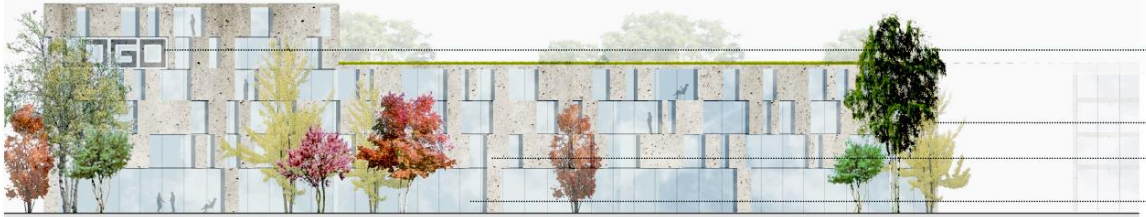
PKW-Stellflächen

Lieferzone

Dachbegrünung

Aufgelockerte Blockrandbebauung

Solarzellen



Logo in die Fassade integriert

Campus Baumsammlung

Betonfassade

Öffnungen mit einer einheitlichen Formsprache
90% des Erdgeschosses geöffnet

BERLIN TXL
THE URBAN TECH REPUBLIC

THOROUGH CITY PLANNING

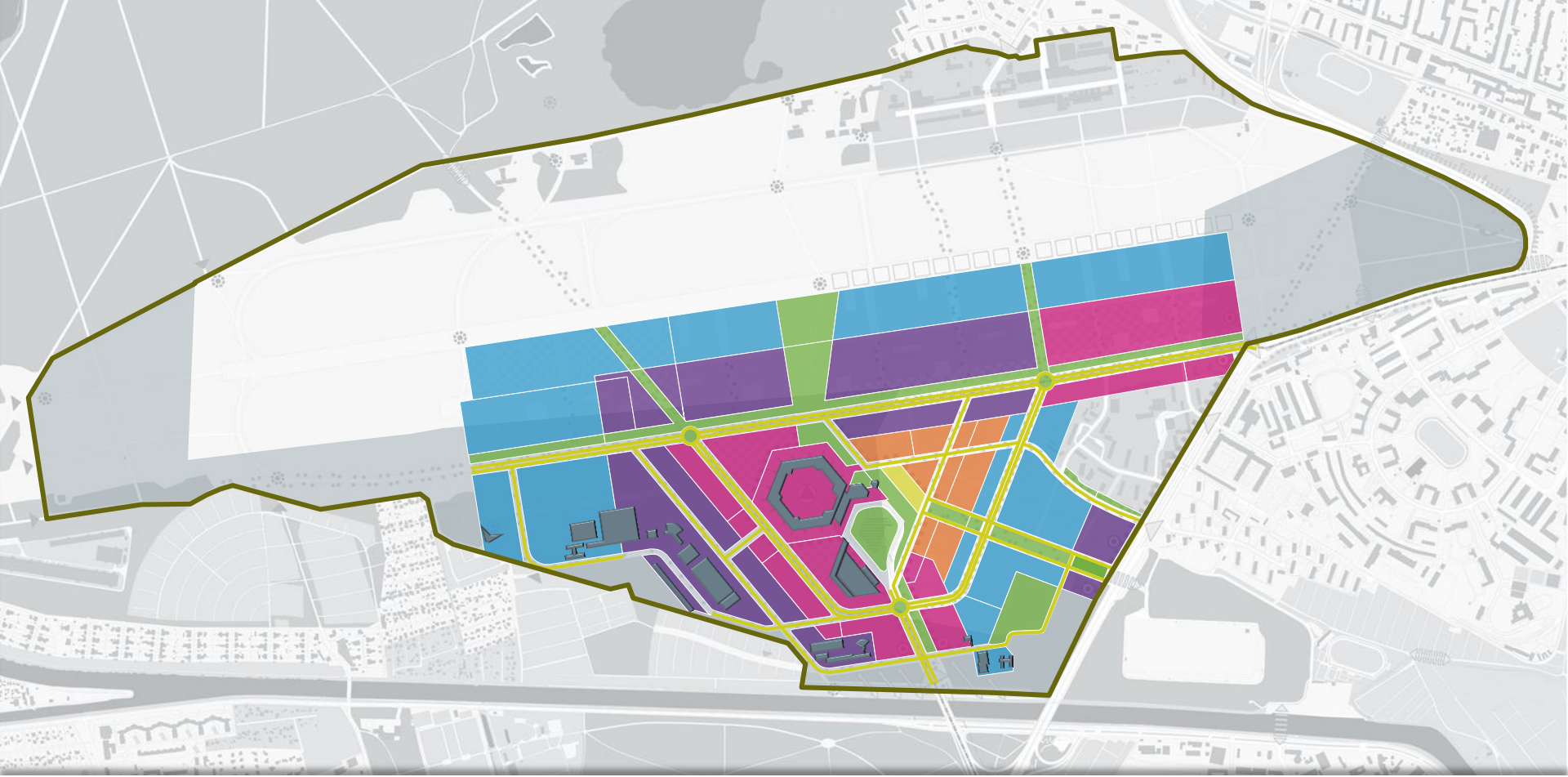
Winner competition – RHA Reicher Haase Associierte GmbH, Dortmund

150,000 m^2*

*1,600,000 sqf

Building stock.

CREATIVITY THRIVES IN OPEN SPACES. AND BERLIN TXL HAS MORE THAN ENOUGH SPACE TO GO ROUND.



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Phase 0: Development existing buildings

Phase 1: First construction phase

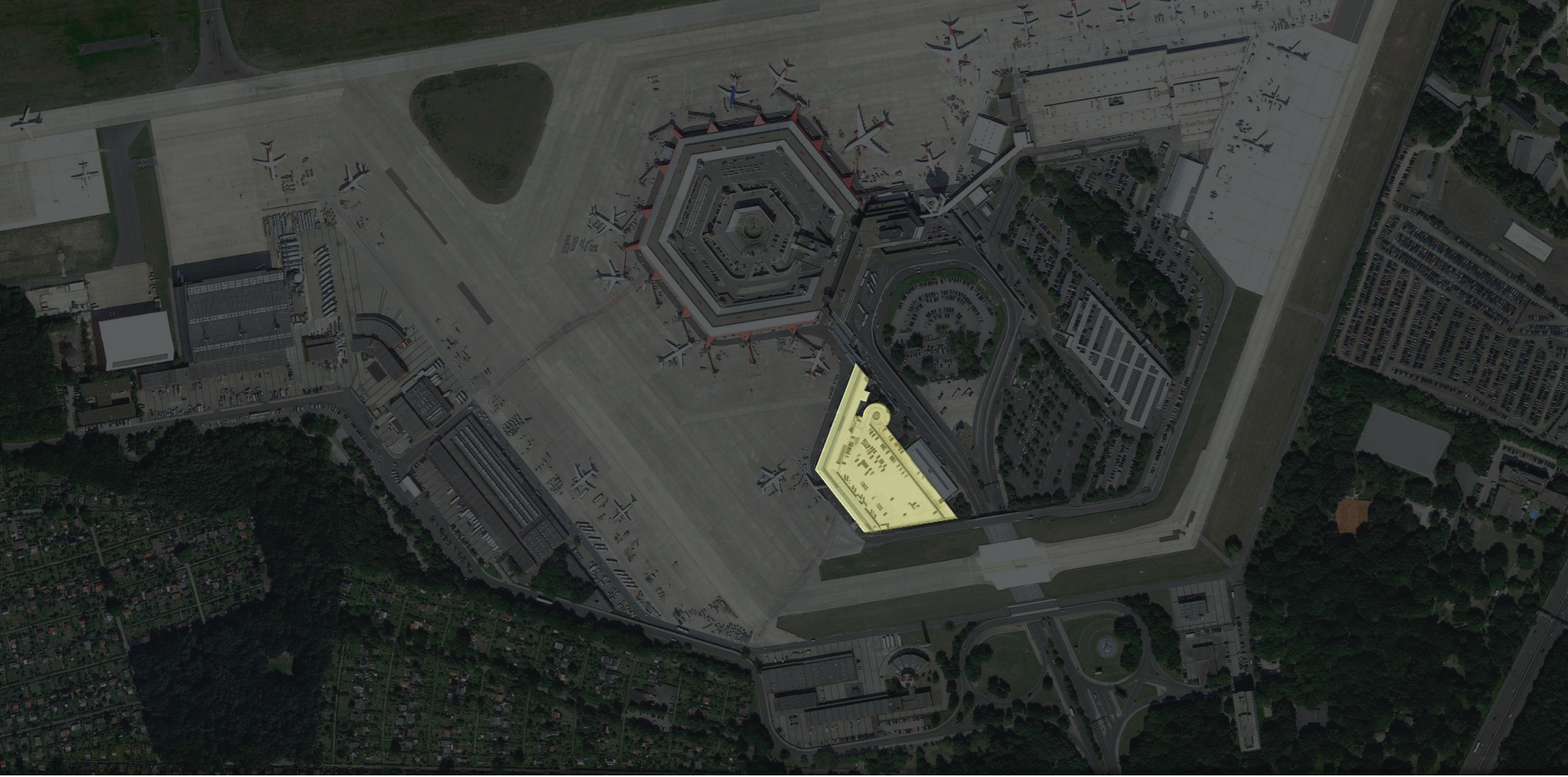
Phase 2: Second construction phase

Phase 3: Third construction phase

Phase 4: Fourth construction phase

PHASING

January 2014



BERLIN TXL
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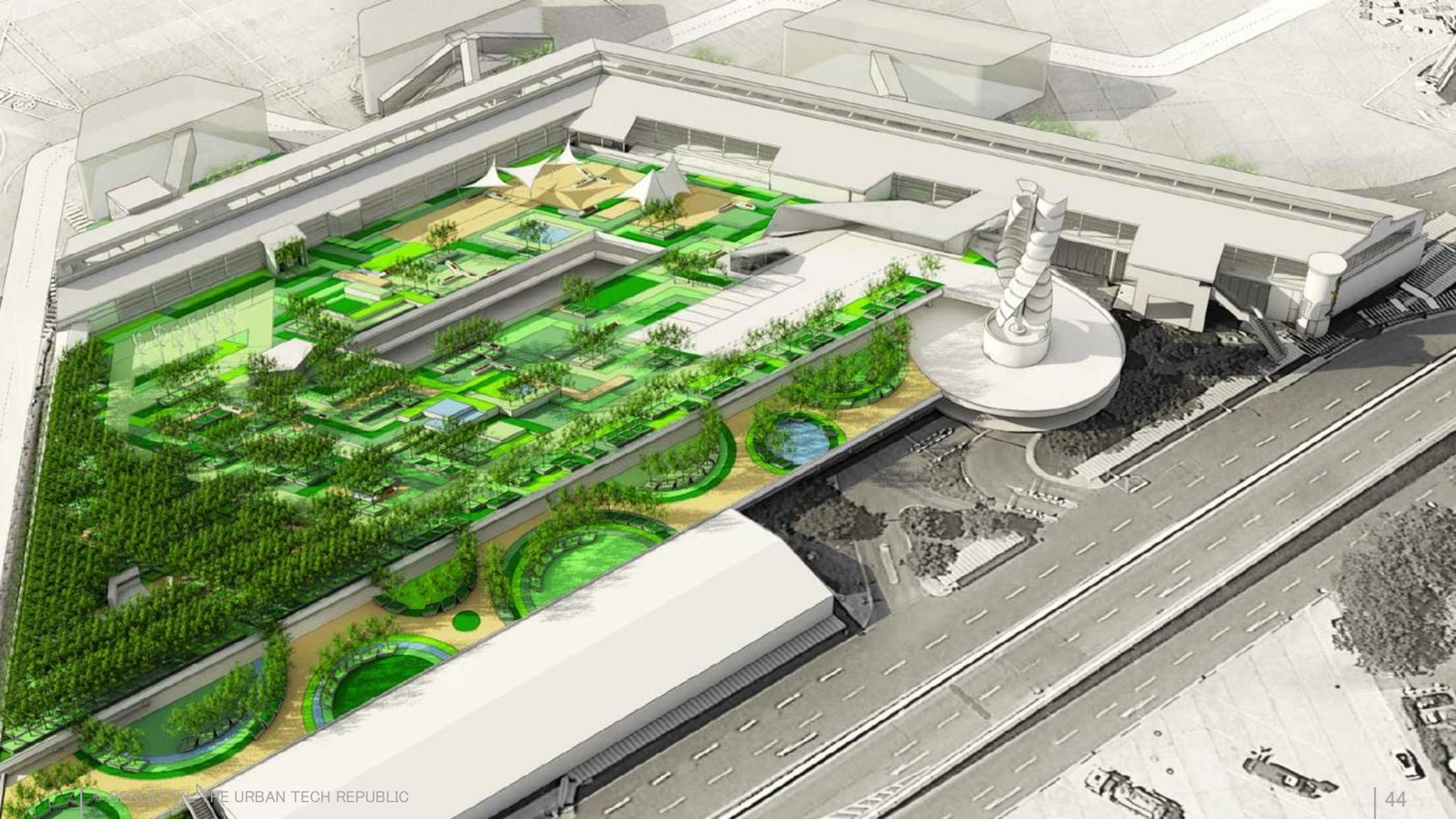
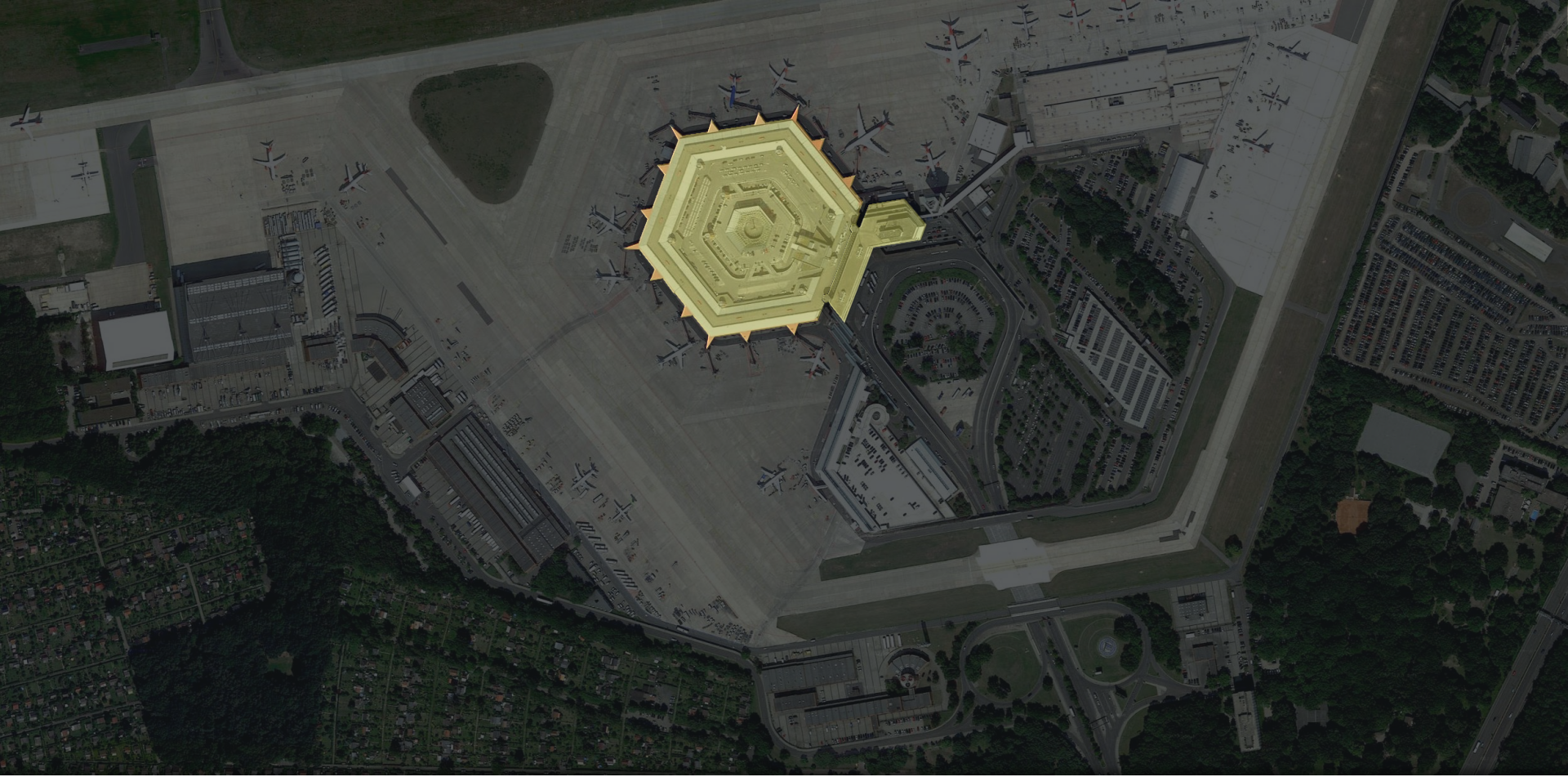
THE PLACE WHERE IT ALL BEGINS: TERMINAL D


21
GREEN
ROBOT
DESIGN

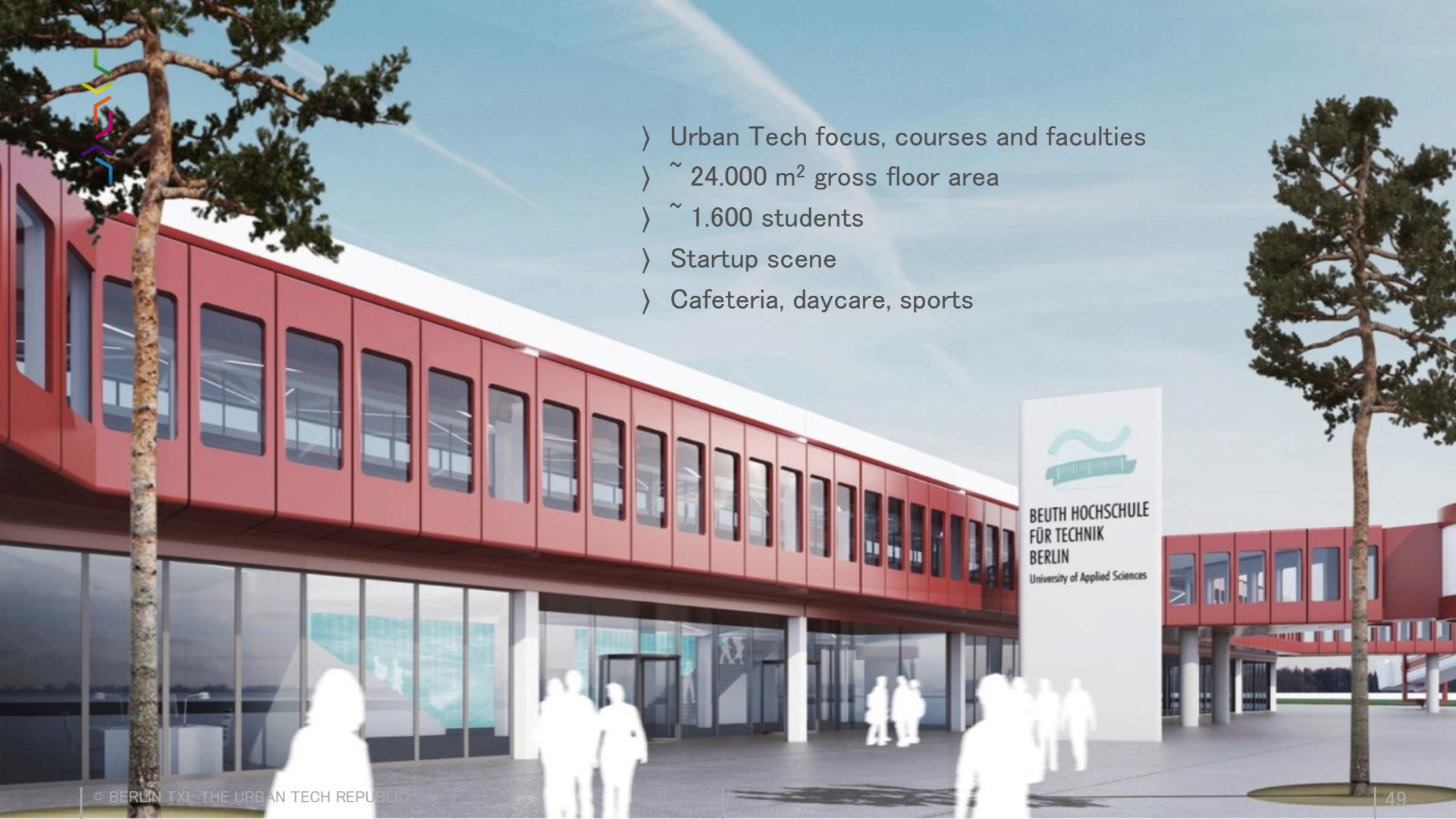

02|03
TXL


TXL






BERLIN-TEGEL

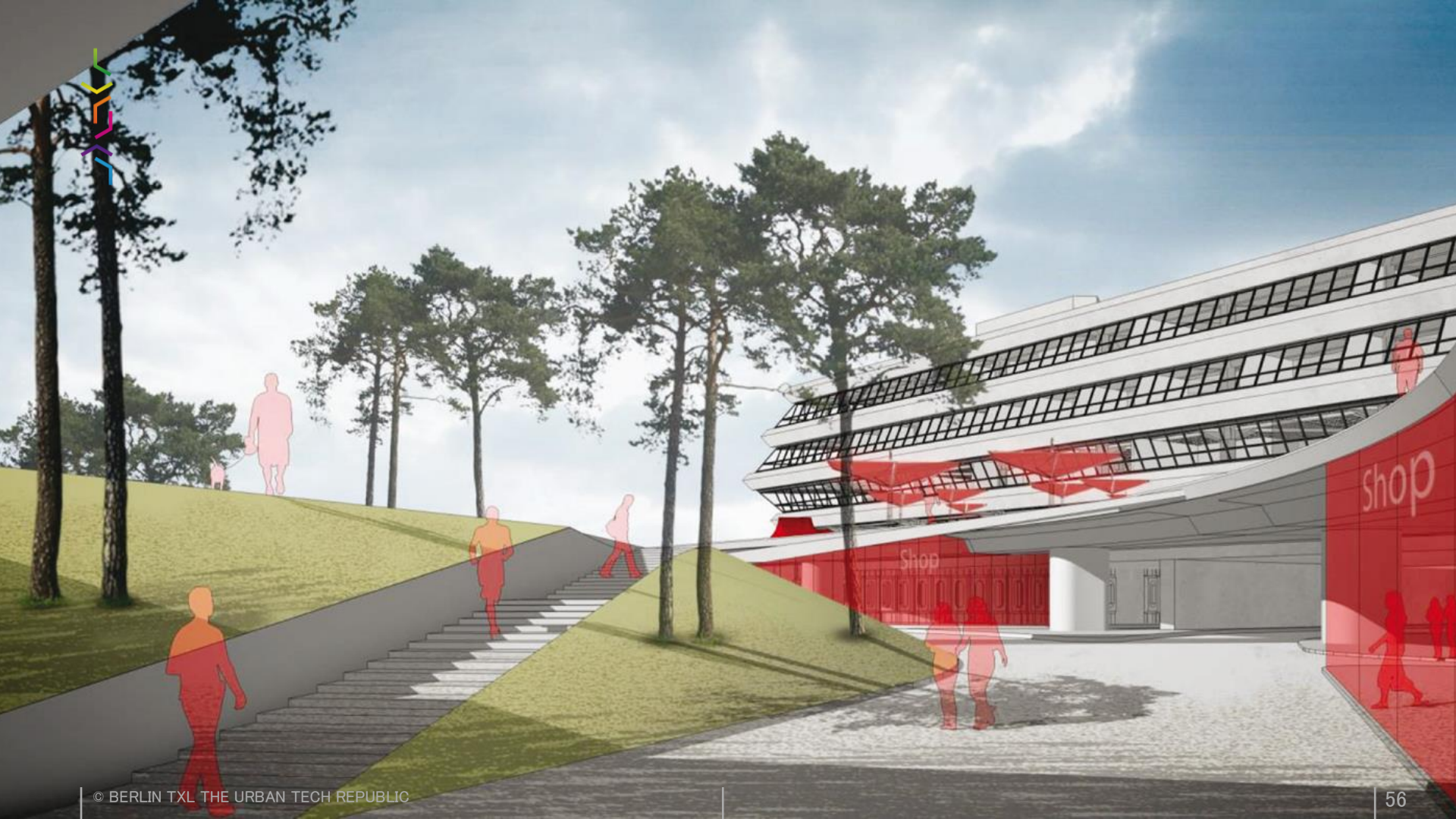


- Urban Tech focus, courses and faculties
- ~ 24.000 m^2 gross floor area
- ~ 1.600 students
- Startup scene
- Cafeteria, daycare, sports


BEUTH HOCHSCHULE
FÜR TECHNIK
BERLIN
University of Applied Sciences


SEMINAR 1
SEMINAR 2


SEMINAR 1
SEMI


shop
Shop


BERLIN
TXL
THE
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VISION BERLIN TXL 20 YEARS ON

- **1,223** acres project area
- **500** acres development area
- **25** acres experimentation sites
- **€ 2 bn.** in annual revenues
- **€ 180 mio.** in annual tax for state of berlin
- **800** companies, universities and research institutes
- **15,000** jobs on site
- **5,000** students

THE PROFILING OF THE URBAN TECH REPUBLIC STARTS TO GET INTERNATIONAL RECOGNITION


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