Data…
Data Cen…
Data Centres…
Data Centres in…
Data Centres in Ukraine.

Building a Modern Data Centres Industry in Post-War Ukraine.

sparkbird

WZMH

CONTENT

Introduction

Following the conflict, Ukraine is emerging with new ambitions, looking to become a digital powerhouse in the region. Some key aspects underline its potential.

Ukraine's strides in digitizing its government and finance sectors emphasize its capability and vision, which makes the country a potential digital leader on the global stage.

Ukraine promises green and consistent nuclear power energy

Ukraine's strategic location

The significant role of AI in demining

Ukraine plans to build "smart cities"

Post-war reconstruction offers a chance to introduce advanced infrastructure

To increase a reliable digital basis for data operations

Data Usage in Europe

As technology continues to shape our lives, Europe is expected to see a surge in data usage in the coming decades. This means we'll need more places to store and manage this data. The following is why data use will increase and how it's going to impact the construction of Data Centres.

DIGITAL TRANSFORMATION

MANY INDUSTRIES IN EUROPE ARE UNDERGOING DIGITAL TRANSFORMATION, MOVING THEIR OPERATIONS, SALES, AND MARKETING ONLINE. THE INTERNET OF THINGS (IOT) IS GROWING, WITH MORE DEVICES BEING CONNECTED TO THE INTERNET, RANGING FROM HOUSEHOLD APPLIANCES TO INDUSTRIAL EQUIPMENT.

CONTENT CREATION

WITH THE RISE OF SOCIAL MEDIA, VIDEO STREAMING, AND GAMING PLATFORMS, CONTENT CREATION AND CONSUMPTION HAVE SKYROCKETED. 4K, 8K, AND EVEN VIRTUAL REALITY CONTENT DEMAND SIGNIFICANT DATA STORAGE AND BANDWIDTH.

CLOUD ADOPTION

THE ADOPTION OF CLOUD SERVICES IS INCREASING, BOTH FOR BUSINESSES SHIFTING TO CLOUD INFRASTRUCTURES AND FOR CONSUMERS USING CLOUD-BASED APPS AND STORAGE.

Impact on Data Usage in Europe (Construction of Data Centres)

Due to the rapid growth of data usage in Europe, there's a rising need to build more data centres. This is essential to efficiently store and manage all that information. The reasons behind this trend and how it's influencing the construction of new data centres across the continent are summarized below:
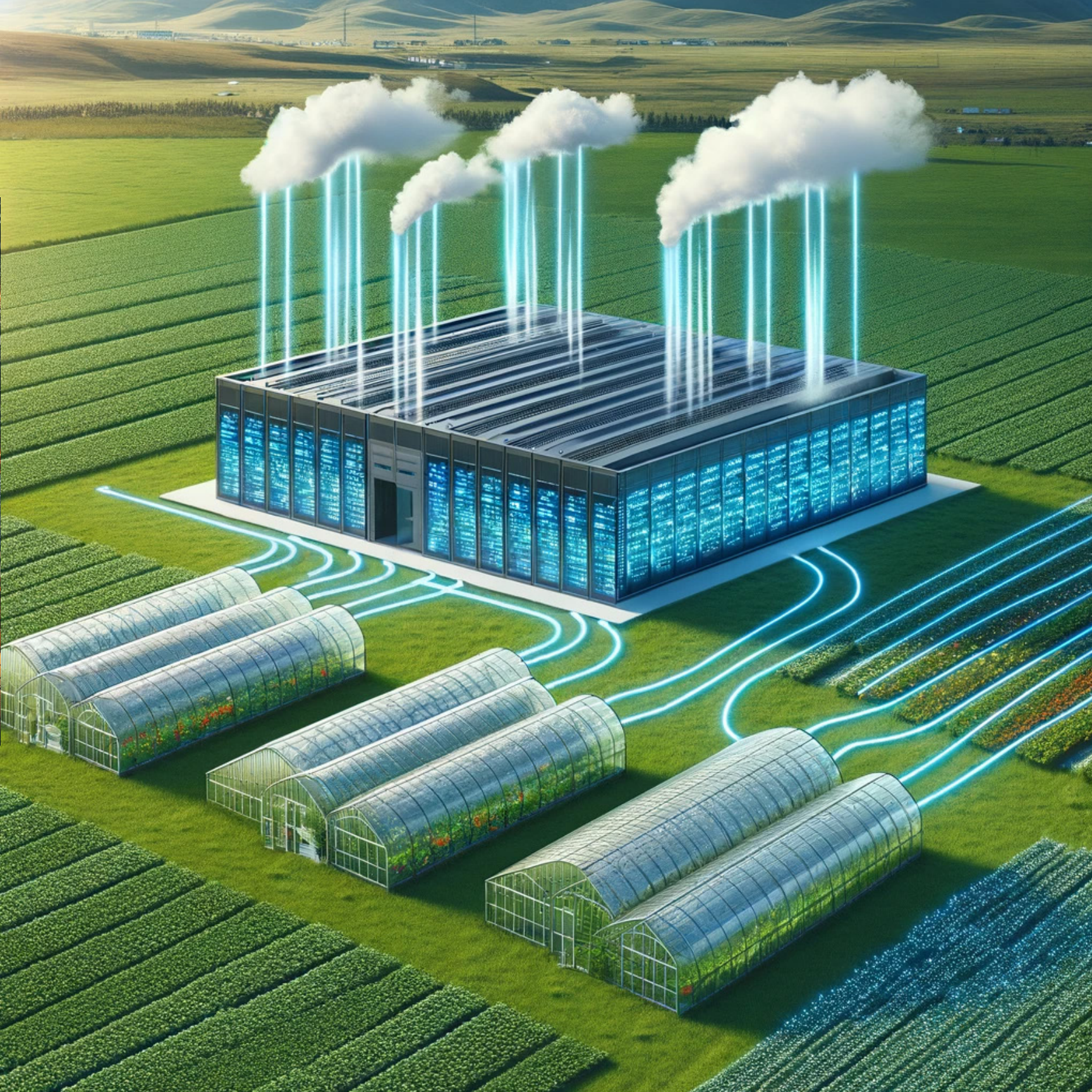

Investment in Infrastructure

WITH MORE DATA CENTRES, THERE WILL BE A NEED FOR IMPROVED INFRASTRUCTURE, INCLUDING POWER SOURCES, NETWORKING CAPABILITIES, AND PHYSICAL SECURITY.

Increased Demand

A NATURAL OUTCOME OF DATA GROWTH WILL BE INCREASED DEMAND FOR DATA CENTRES TO STORE AND MANAGE THIS DATA.

Impact on Data Usage in Europe (Construction of Data Centres)

Focus on Sustainability

EUROPE HAS BEEN AT THE FOREFRONT OF ADVOCATING FOR SUSTAINABLE PRACTICES. AS ENERGY CONSUMPTION IS A SIGNIFICANT CONCERN FOR DATA CENTRES, WE CAN EXPECT A PUSH TOWARDS MORE ENERGY-EFFICIENT DATA CENTRE DESIGNS, THE USE OF RENEWABLE ENERGY, AND ADVANCED COOLING TECHNIQUES.

Land and Location Challenges

HIGH DEMAND MIGHT RESULT IN CHALLENGES RELATED TO FINDING SUITABLE LAND FOR DATA CENTRES, LEADING COMPANIES TO EXPLORE INNOVATIVE SOLUTIONS LIKE UNDERWATER DATA CENTRES OR REPURPOSING OLD INDUSTRIAL SITES.

Distributed Architecture

EDGE COMPUTING, WHICH INVOLVES PROCESSING DATA CLOSER TO THE LOCATION WHERE IT'S GENERATED RATHER THAN IN A CENTRALIZED DATA CENTRE, WILL LIKELY DRIVE THE CONSTRUCTION OF SMALLER, DISTRIBUTED DATA CENTRES. THIS IS PARTICULARLY USEFUL FOR APPLICATIONS LIKE IOT, WHERE LOW LATENCY IS CRUCIAL.

Data Sovereignty and Regulation

EUROPEAN REGULATIONS LIKE GDPR EMPHASIZE DATA PROTECTION AND SOVEREIGNTY. THIS MIGHT DRIVE COMPANIES TO STORE DATA WITHIN EUROPEAN BORDERS, FURTHER FUELING THE DEMAND FOR DATA CENTRES WITHIN THE REGION.

SPEEDSTAC Data Centres: The Fast, Secure Solution for Mission-Critical Facilities

Designed by Canadian and Ukrainian Architects: WZMH Architects (Canada) and Oleksandr Fil (Ukraine)

HRA

SPEEDSTAC Data Centre Design

QUICK DEPLOYMENT: ASSEMBLE A ROBUST AND RESILIENT DATA CENTRE IN JUST 2-3 WEEKS.

PREFABRICATED DESIGN: MODULAR, REINFORCED CONCRETE MODULES FOR EASY STACKING AND ASSEMBLY.

**EFFICIENT LAYOUT:** ACCOMMODATES ALL ESSENTIAL COMPONENTS LIKE RACKS, GENERATORS, AND ELECTRICAL EQUIPMENT.

INNOVATIVE COOLING SYSTEM: FEATURES A SERVICE SANDWICH FOR EFFECTIVE COOLING AND HOT-AIR RETURN.

ENHANCED SECURITY: CONCRETE CONSTRUCTION AND STRUCTURAL SCREENS OFFER PROTECTION AGAINST BALLISTIC THREATS.

RAPID INSTALLATION: ON-SITE SETUP IN HOURS, WITH UP TO 3 MODULES INSTALLED DAILY.

SCALABLE CAPACITY: A 12-MODULE DATA CENTRE CAN BE OPERATIONAL SHORTLY AFTER ON-SITE ARRIVAL.
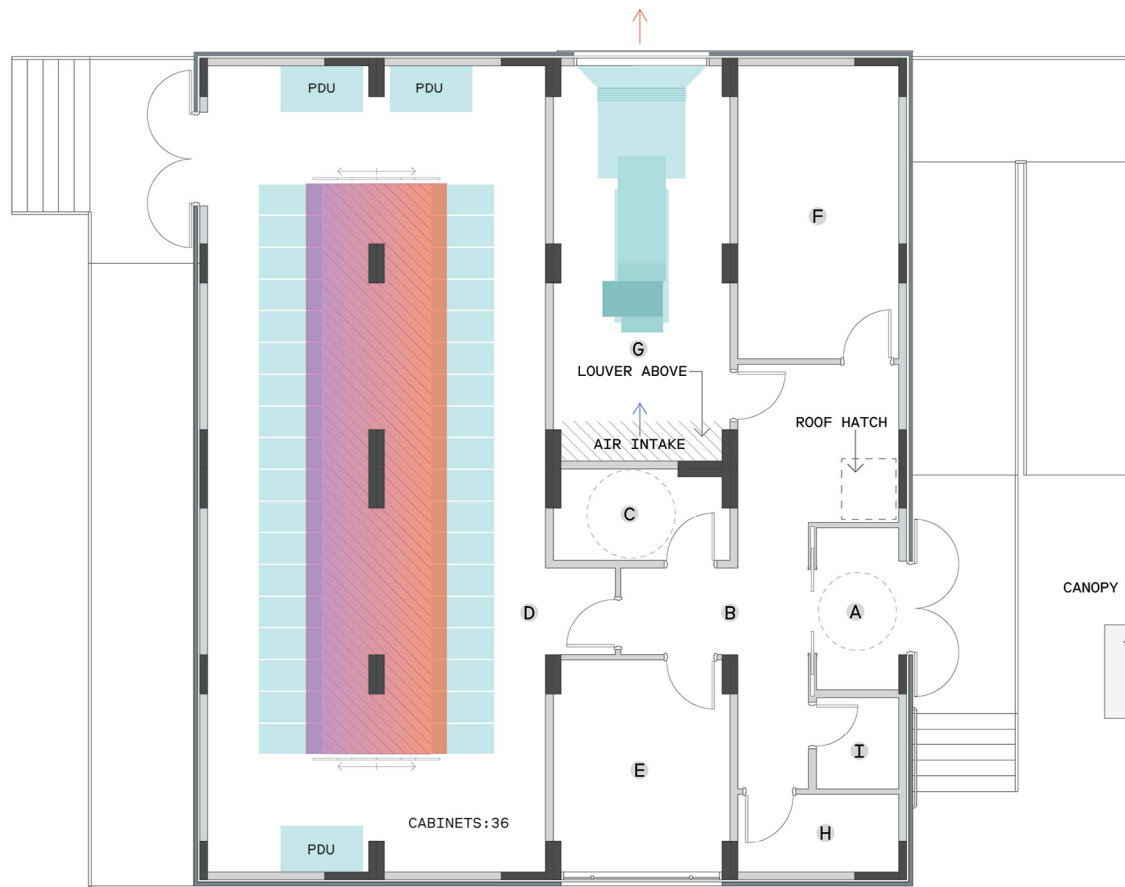
A SECURITY VESTIBULE
B CORRIDOR
C WASHROOM
D DATA HALL
E OFFICE
F UPS/ELECTRICAL ROOM
G GENERATOR ROOM
H FIBRE ROOM
I ROOFTOP EQUIPMENT

PDU
PDU
PDU
CABINETS:36
LOUVER ABOVE
AIR INTAKE
ROOF HATCH

CANOPY BELOW
RTU
RTU
RTU
RTU
J
CANOPY BELOW

DC3ZUB-1

SITE LAYOUT: Ideal for small sites in dense urban areas where future expansion is not required.
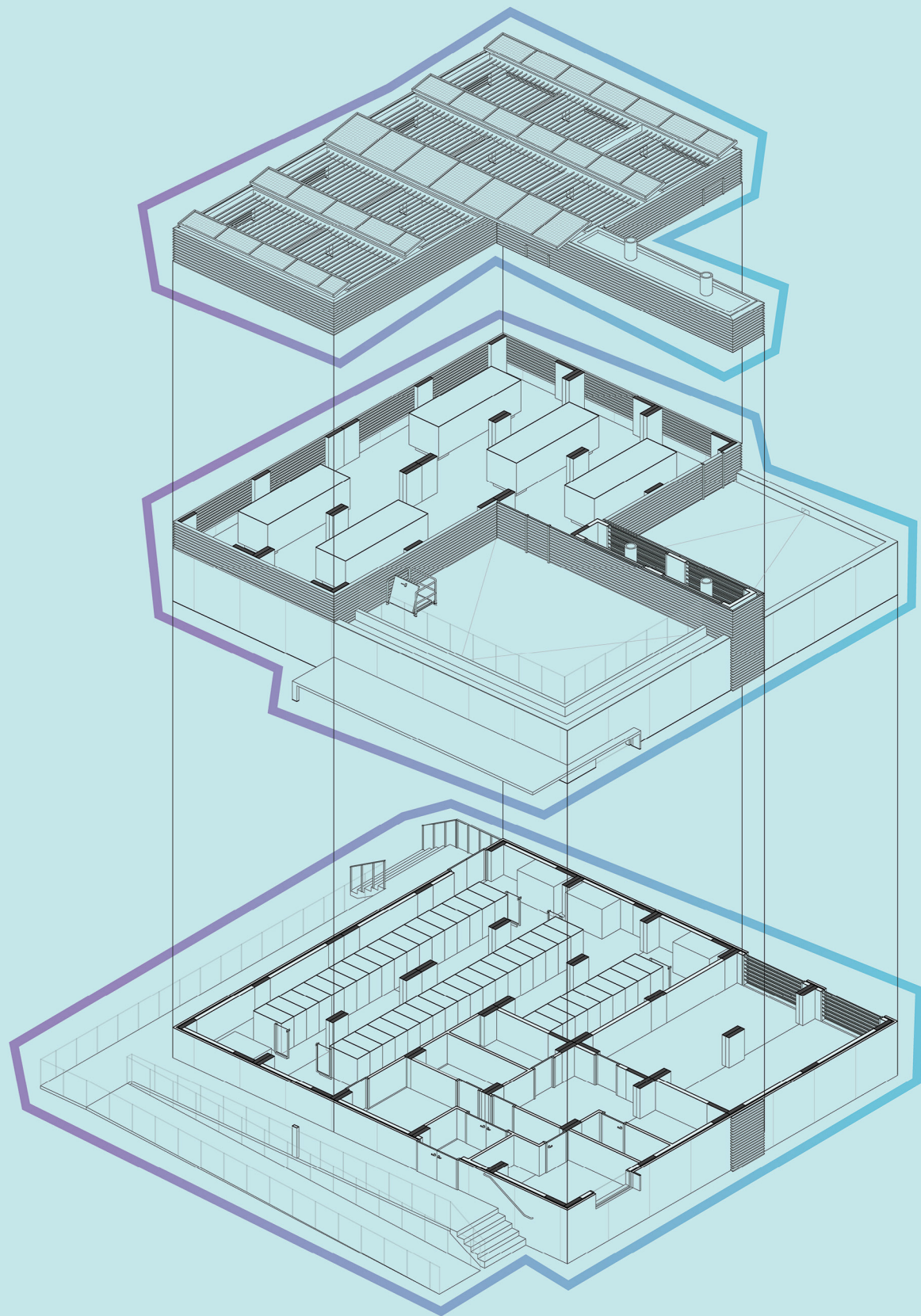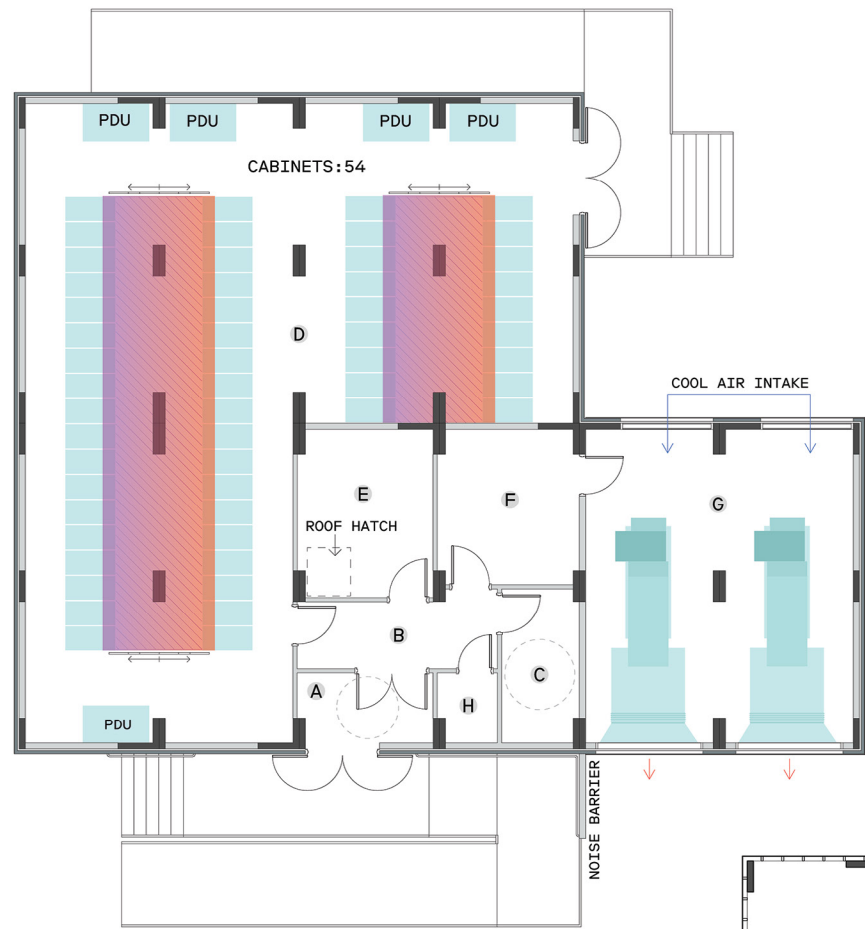
DATA HALL: 36 cabinets/racks (610mm x 1220mm)

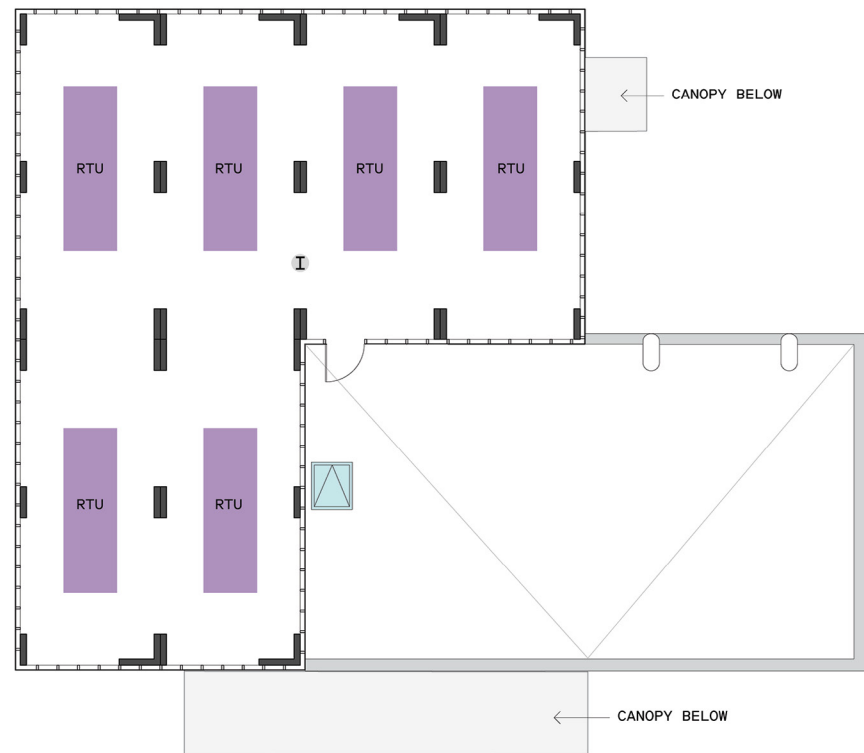**COMPACT DESIGN:** Features 8 modules on the ground level, plus 4 additional open modules on the second/roof level.

QUICK INSTALLATION: On-site setup completed within 2 weeks.

FAST COMPLETION: Entire facility fully operational in just 4 weeks.
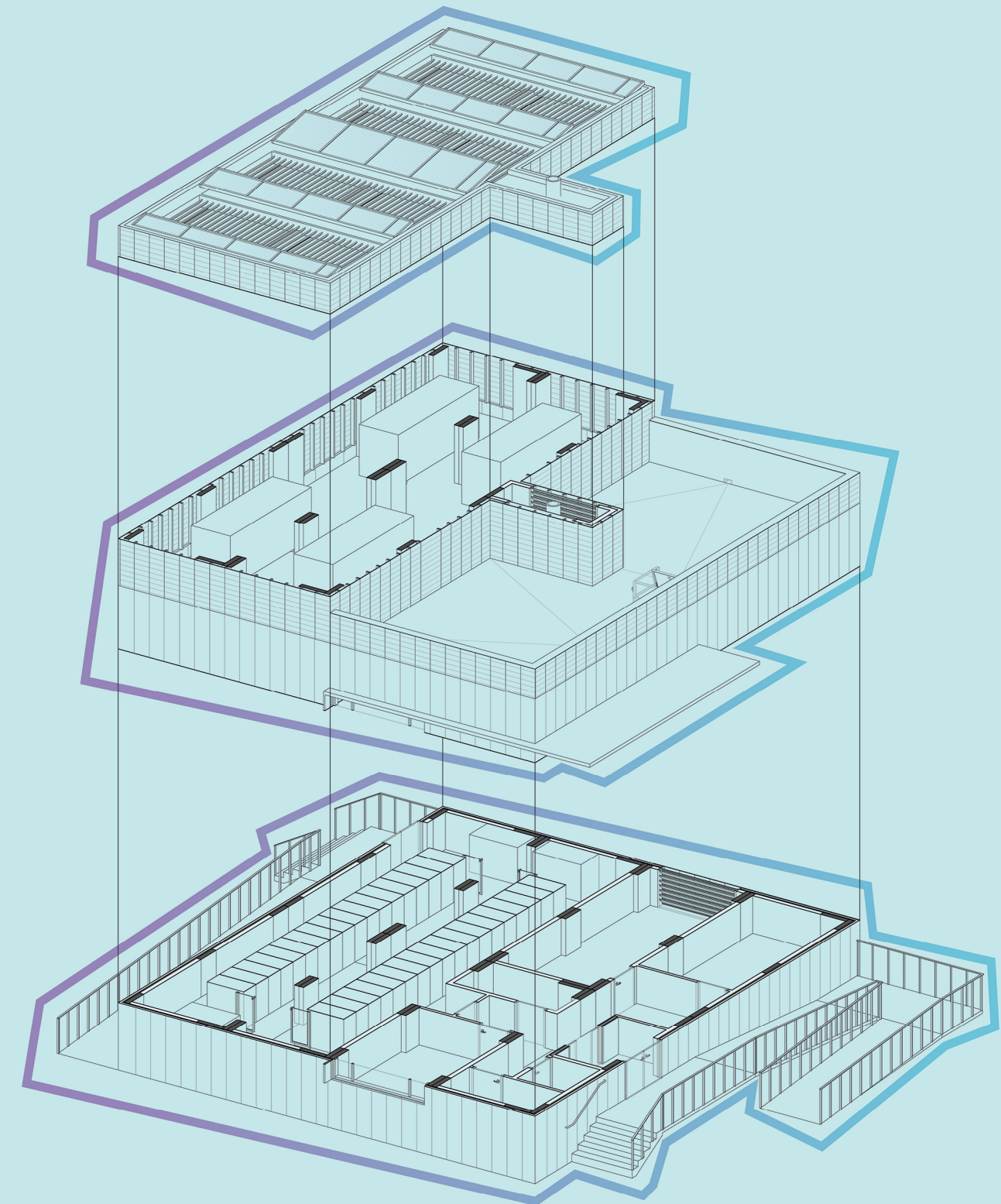
Ø   1m   5m   10m

A SECURITY VESTIBULE
B CORRIDOR
C WASHROOM
D DATA HALL
E OFFICE
F UPS/ELECTRICAL ROOM
G GENERATOR ROOM
H FIBRE ROOM
I STORAGE
J ROOFTOP EQUIPMENT

PDU   PDU   PDU

CABINETS:45

D

G

AIR INTAKE   LOUVER ABOVE

I

F

C

H

← ROOF HATCH

B   A   E

CANOPY BELOW

RTU   RTU   RTU

J

RTU   RTU

GREEN ROOF

CANOPY BELOW

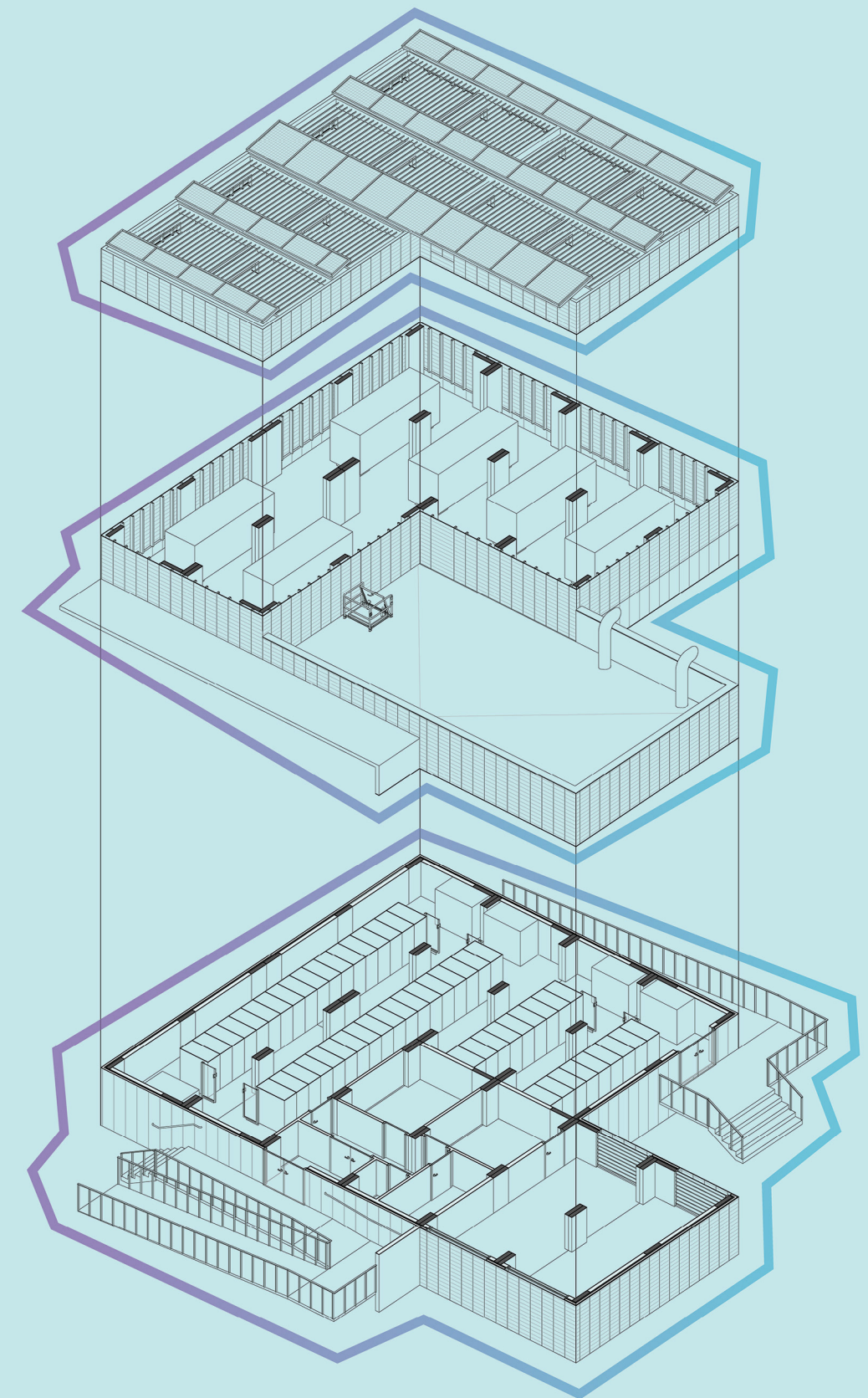Ø   1m   5m   10m

DC3ZUB-2

SITE LAYOUT: Ideal for small sites or where future expansion is desired.

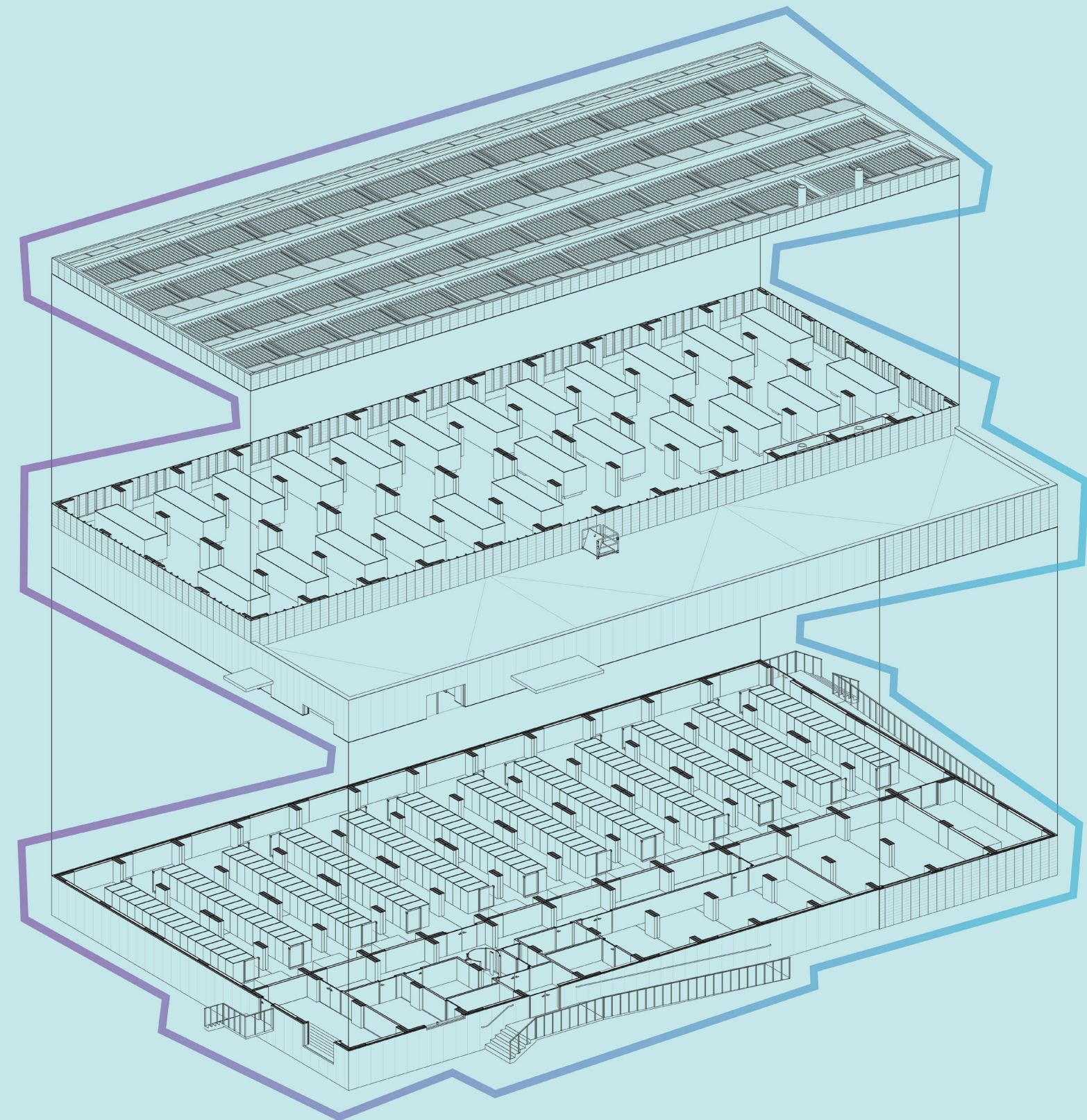**DATA HALL:** 45 cabinets/racks (610mm x 1220mm)

COMPACT DESIGN: Features 10 modules on the ground level, plus 5 additional open modules on the second/roof level.

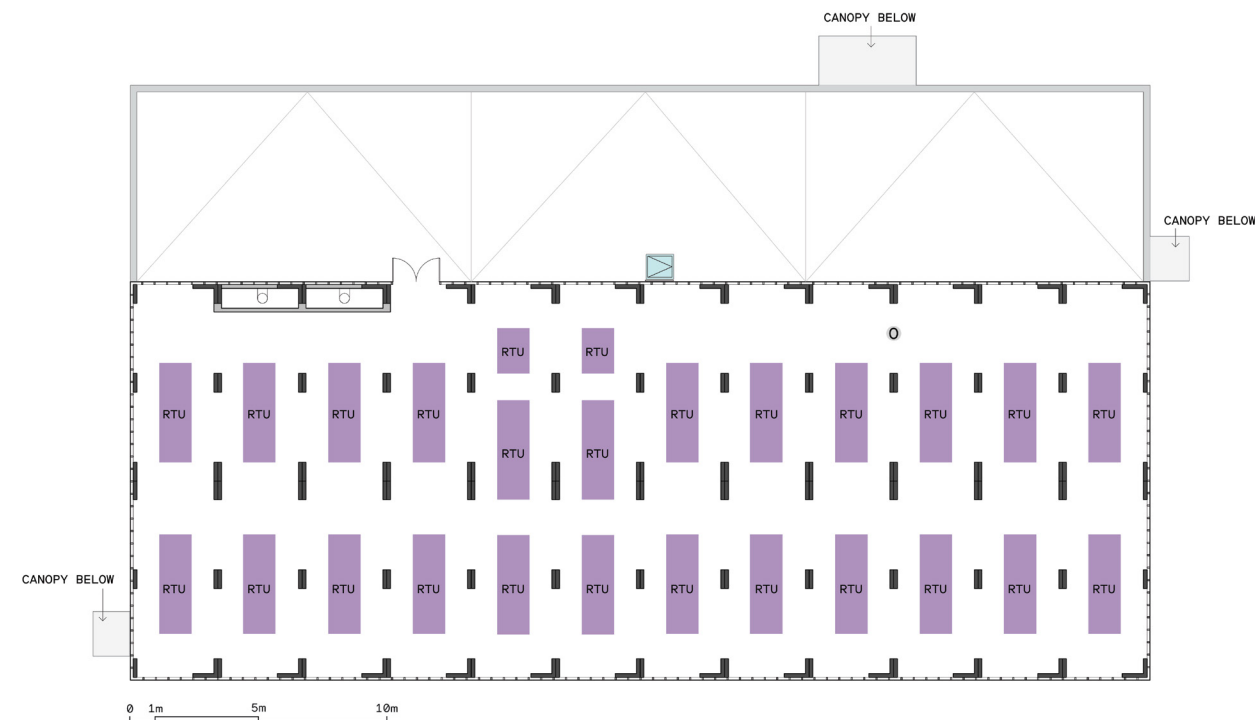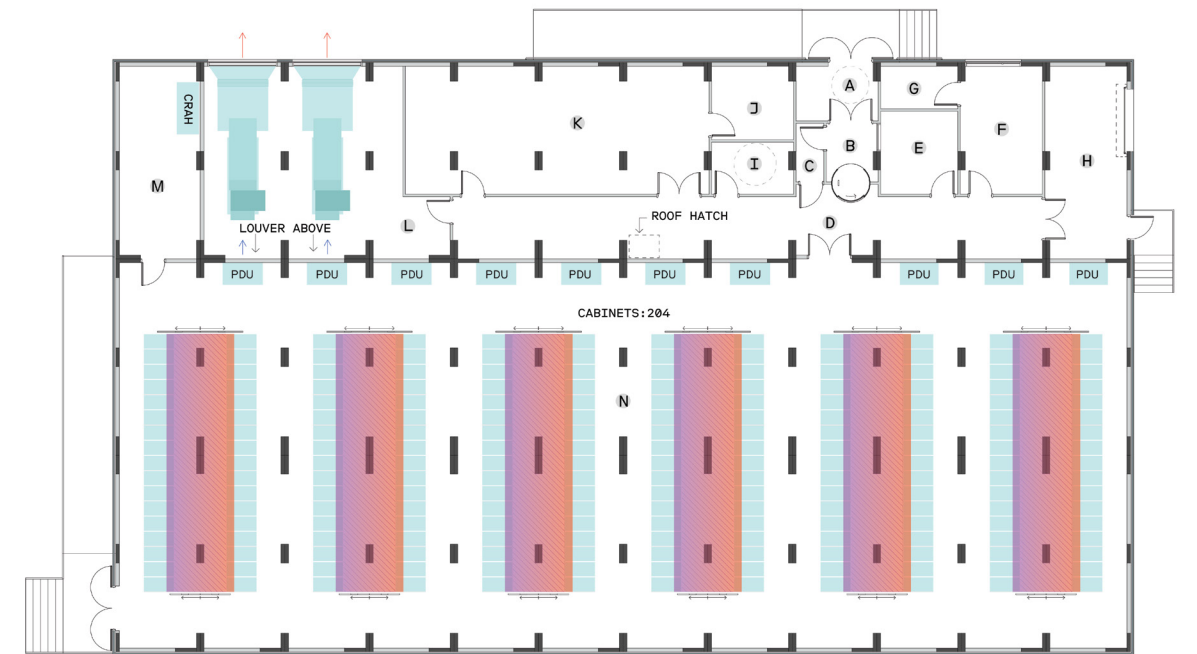**QUICK INSTALLATION:** On-site setup completed within 3 weeks.

FAST COMPLETION: Entire facility fully operational in just 5 weeks.

PDU **PDU** **PDU** **PDU**

CABINETS:54

D

COOL AIR INTAKE

E

F

G

ROOF HATCH

B

A

H

C

PDU

NOISE BARRIER

A SECURITY VESTIBULE
B CORRIDOR
C WASHROOM
D DATA HALL
E OFFICE
F UPS/ELECTRICAL ROOM
G GENERATOR ROOM
H FIBRE ROOM
I ROOFTOP EQUIPMENT

Ø 1m 5m 10m

CANOPY BELOW

RTU RTU RTU RTU

I

RTU RTU

CANOPY BELOW

DC3ZUB-3

SITE LAYOUT: Ideal for small sites or where future expansion is desired.

DATA HALL: 54 cabinets/racks (610mm x 1220mm)

COMPACT DESIGN: Features 10 modules on the ground level, plus 6 additional open modules on the second/roof level.

QUICK INSTALLATION: On-site setup completed within 3 weeks.

FAST COMPLETION: Entire facility fully operational in just 5 weeks.

A SECURITY VESTIBULE
B SECURITY LOBBY
C PERSON TRAP
D CORRIDOR
E SECURITY
F OFFICE
G FIBRE ROOM
H STORAGE/LOADING
I WASHROOM
J MECHANICAL ROOM
K UPS ROOM
L GENERATOR ROOM
M ELECTRICAL ROOM
N DATA HALL
O ROOFTOP EQUIPMENT

DC3ZUB-4

SITE LAYOUT: Ideal for larger sites in industrial parks and where sufficient land area is available for loading area and future expansion.
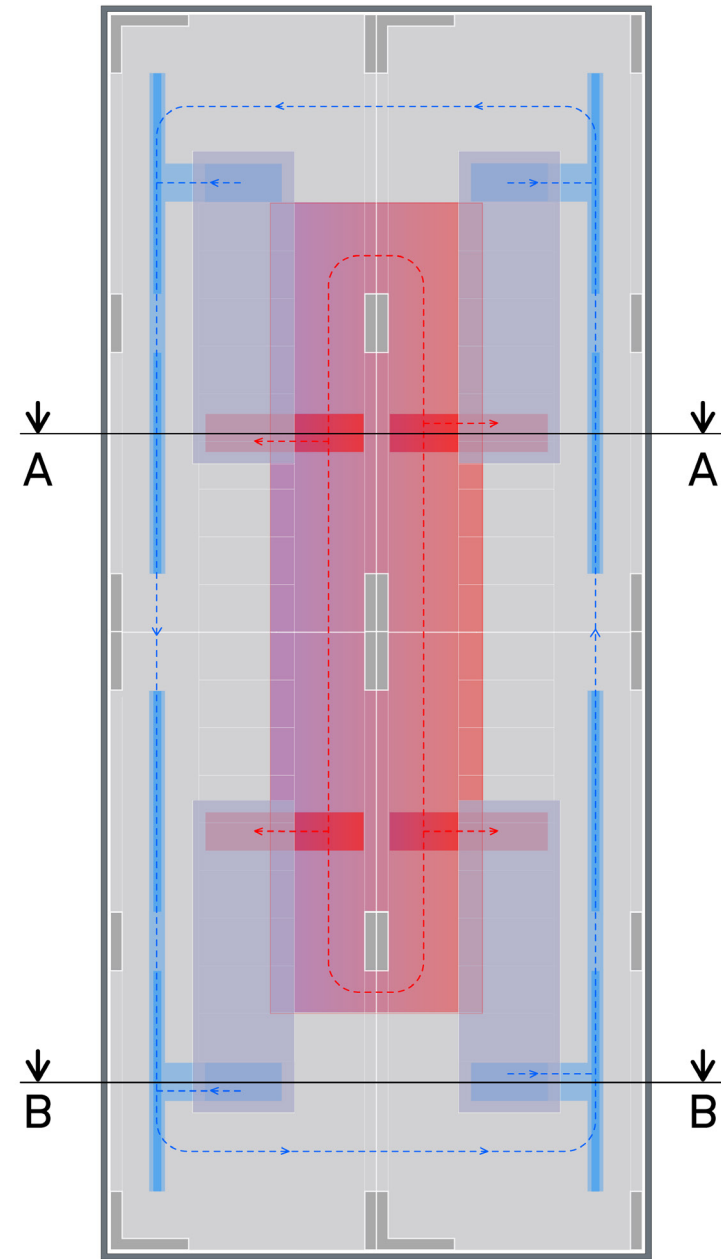
DATA HALL: 204 cabinets/racks (610mm x 1220mm)

DESIGN: Features 36 modules on the ground level, plus 24 additional open modules on the second/roof level, a dedicated security and loading area.

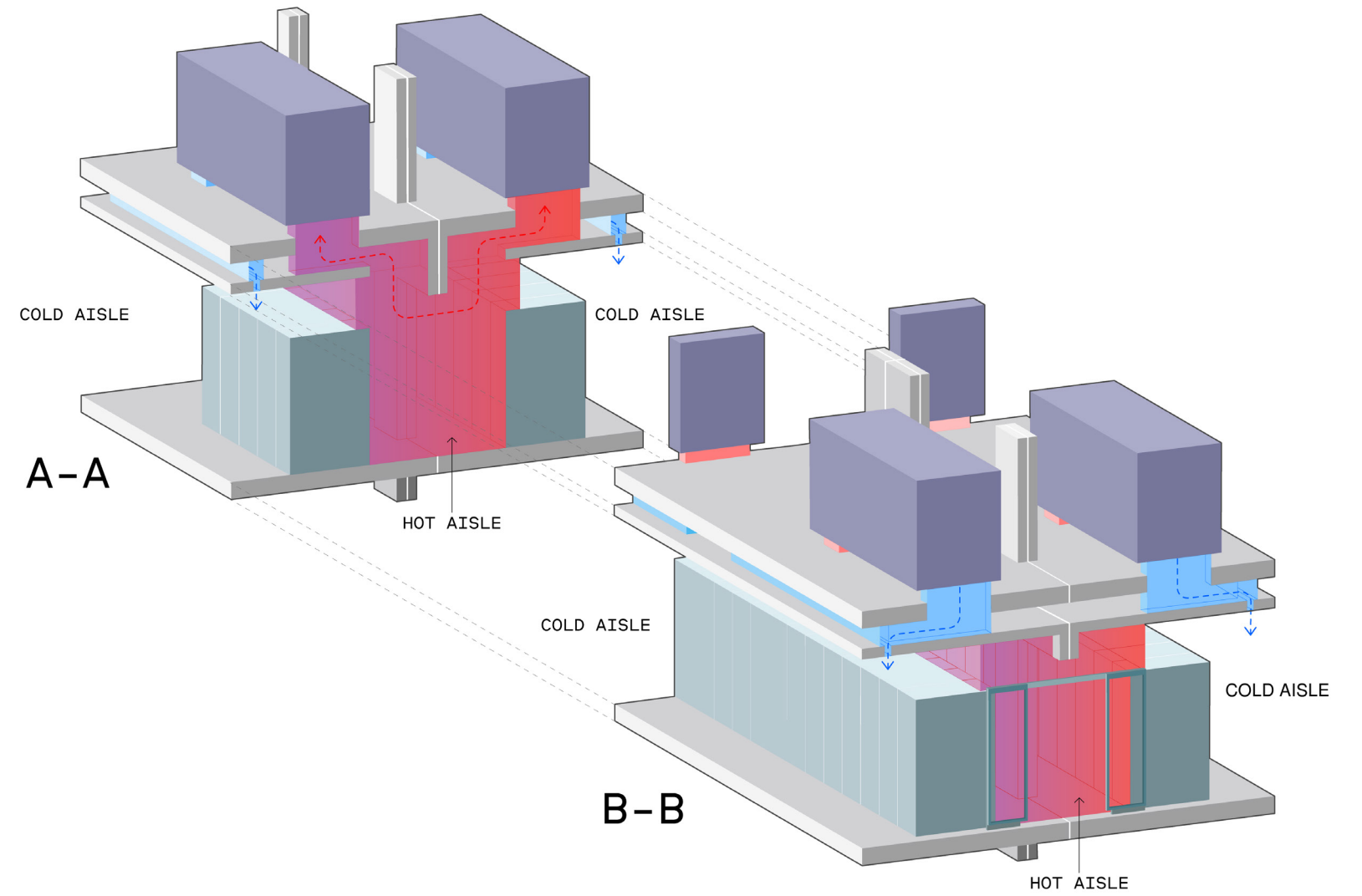**QUICK INSTALLATION:** On-site setup completed within 6 weeks.

FAST COMPLETION: Entire facility fully operational in just 8 weeks.

Cooling Solution

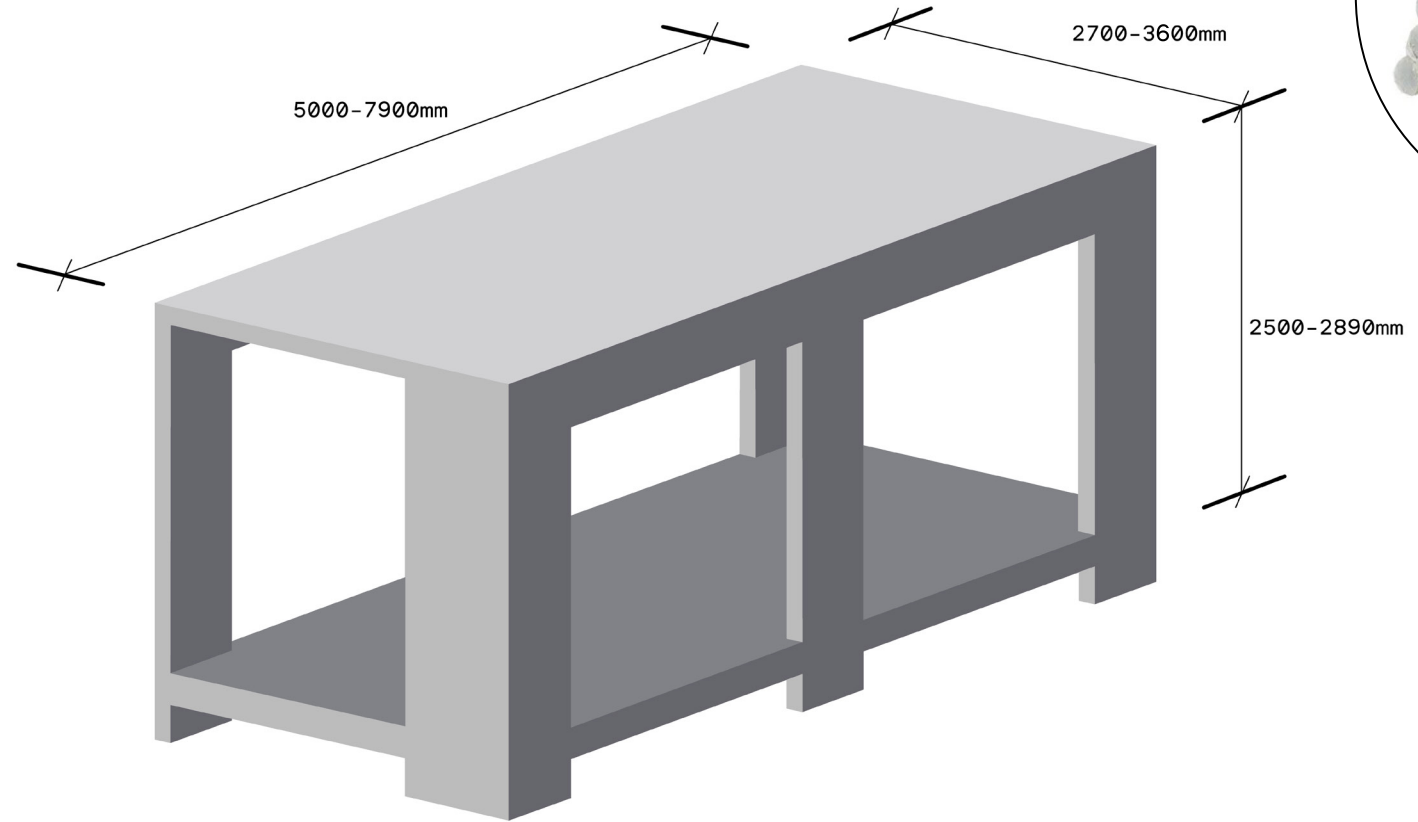FLOOR PLAN (SANDWICH BETWEEN GROUND FLOOR & ROOF MODULE)

COLD AISLE

COLD AISLE

A-A

HOT AISLE

COLD AISLE

COLD AISLE

B-B

HOT AISLE

AXONOMETRIC CIRCULATION OF HOT/COLD AIR

SPEEDSTAC Module Options

The data centre solutions can be constructed of either concrete or mass timber.

5000-7900mm

2700-3600mm

2500-2890mm

CONCRETE

MODULES CONSTRUCTED OF CONCRETE (LIGHT-WEIGHT AND OR CARBONCURE WITH STEEL OR FIBRE REINFORCED PLASTIC REINFORCING (AS PART OF A MONOLITIC FORM).

CARBON CURE.

NAIL LAMINATED TIMBER

NLT IS MADE OF DIMENSION LUMBER STACKED TOGETHER ON ITS EDGE AND FASTENED TOGETHER WITH NAILS OR SOMETIMES SCREWS TO FORM A SOLID STRUCTURAL ELEMENT. COLUMNS AND BEAMS CAN BE CONSTRUCTED OF GLUE-LAMINATED LUMBER.

Option-1 (Wood)

Option-1 (Wood)

Option-2 (Metal)

As Europe considers reducing its technological ties with Russia, Ukraine emerges as a potential hub for data centres. Situated strategically between Europe and Asia, with affordable costs and a skilled IT workforce, Ukraine offers compelling advantages. The following are the key reasons why building a data centre industry in Ukraine might be a strategic move for Europe.

Geographical Proximity

1

WITH MORE DATA CENTRES, THERE WILL BE A NEED FOR IMPROVED INFRASTRUCTURE, INCLUDING POWER SOURCES, NETWORKING CAPABILITIES, AND PHYSICAL SECURITY.
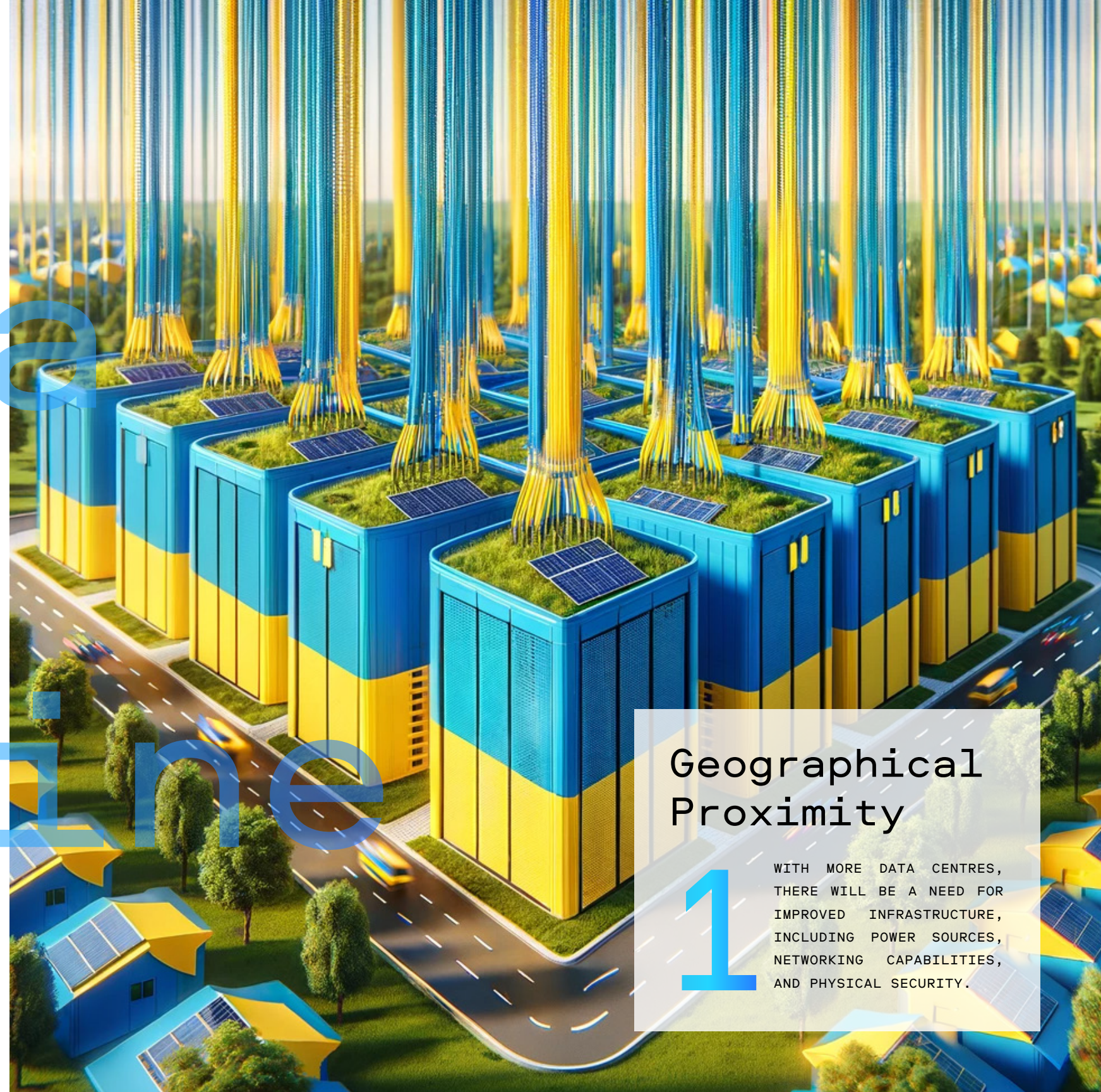
Nuclear Energy Advantage

UKRAINE HAS A SIGNIFICANT PORTION OF ITS ELECTRICITY GENERATED FROM NUCLEAR POWER. THIS SOURCE OF ENERGY IS NOT ONLY RELIABLE, BUT ALSO EMITS LOW GREENHOUSE GASES COMPARED TO FOSSIL FUELS. HARNESSING NUCLEAR ENERGY FOR DATA CENTRES COULD PROVIDE A SUSTAINABLE AND CONSISTENT POWER SUPPLY, MAKING UKRAINE AN ENVIRONMENTALLY CONSCIOUS CHOICE FOR LARGE-SCALE DIGITAL INFRASTRUCTURE.

2

Cost-Efficiency

HISTORICALLY, THE COST OF LABOR AND LAND IN UKRAINE HAS BEEN MORE AFFORDABLE COMPARED TO WESTERN EUROPEAN COUNTRIES. THIS CAN LEAD TO MORE COST-EFFECTIVE OPERATIONS FOR COMPANIES SETTING UP DATA CENTRES.
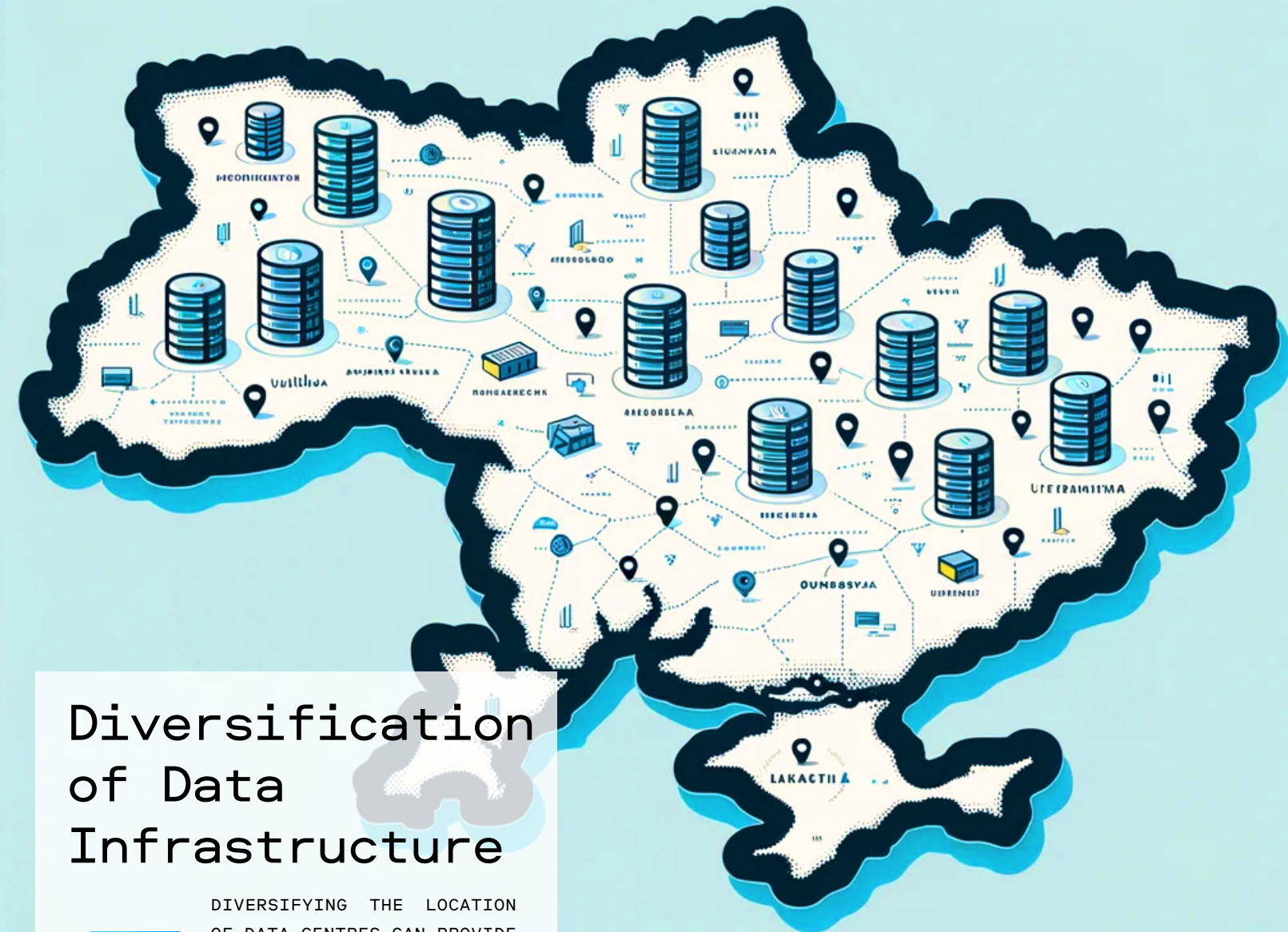
3

Political and Economic Considerations

4

IF EUROPE SEEKS TO DISTANCE ITSELF FROM RUSSIA, SUPPORTING UKRAINE BY INVESTING IN INFRASTRUCTURE COULD ALSO SERVE AS A GEOPOLITICAL MOVE, STRENGTHENING TIES WITH UKRAINE.

Diversification of Data Infrastructure

5

DIVERSIFYING THE LOCATION OF DATA CENTRES CAN PROVIDE REDUNDANCY, ENSURING THAT IF ONE REGION FACES OUTAGES OR ISSUES, DATA SERVICES CAN CONTINUE WITHOUT SIGNIFICANT DISRUPTIONS.

Black Sea Connectivity Advantage

UKRAINE'S STRATEGIC POSITION ON THE BLACK SEA OFFERS A DISTINCTIVE ADVANTAGE FOR GLOBAL CONNECTIVITY. WITH THE BLACK SEA COASTLINE, THERE'S POTENTIAL TO LAY NEW FIBRE OPTIC CABLES UNDERWATER, ESTABLISHING FASTER AND DIRECT DIGITAL ROUTES TO OTHER PARTS OF THE WORLD, INCLUDING NORTH AFRICA, THE BALKANS, AND EVEN EXTENDING TOWARDS THE MIDDLE EAST. THIS SEA-BASED CONNECTIVITY CAN GREATLY ENHANCE DATA TRANSFER SPEEDS AND REDUCE LATENCIES, POSITIONING UKRAINE AS A PIVOTAL HUB IN THE GLOBAL DIGITAL NETWORK.

6
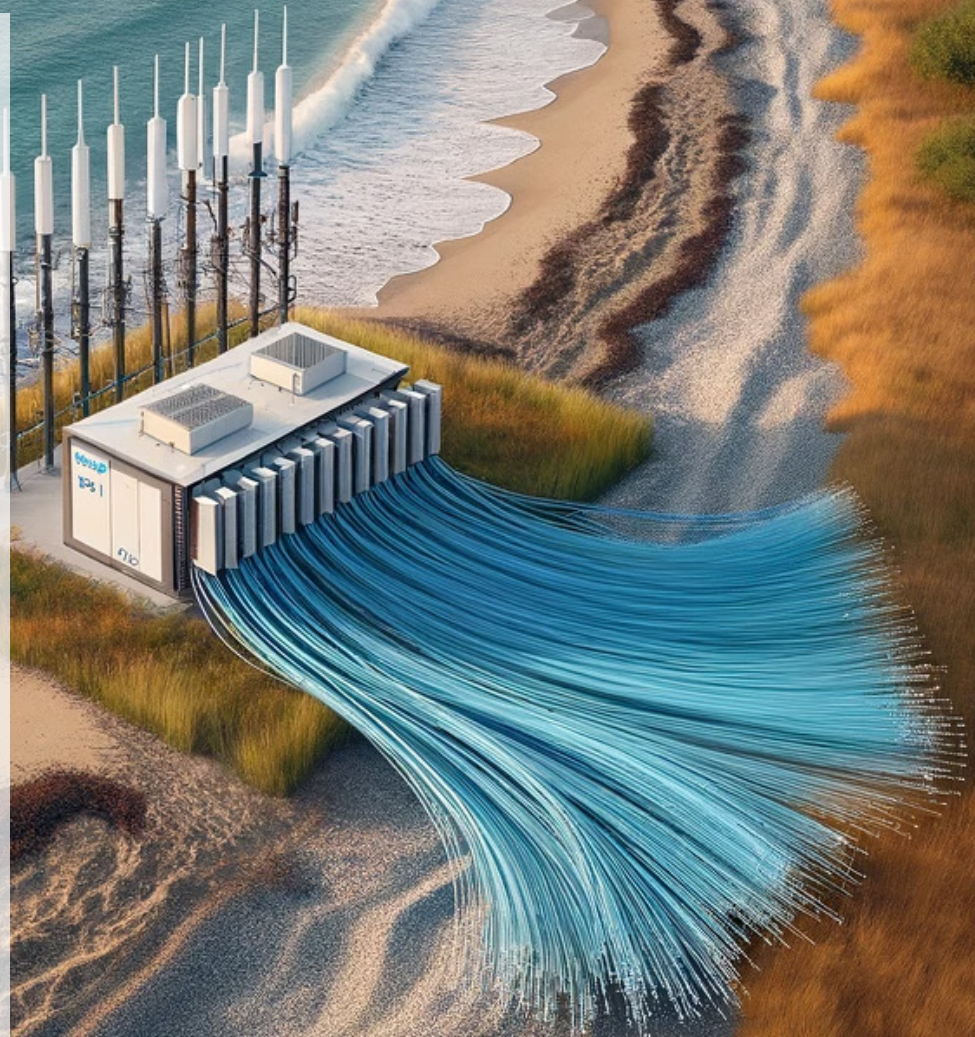
Highly Skilled Workforce

7

UKRAINE HAS A ROBUST IT AND TECH SECTOR, WITH A LARGE POOL OF SKILLED PROFESSIONALS. THIS HUMAN RESOURCE CAN BE TAPPED INTO FOR EFFICIENT AND INNOVATIVE DATA CENTRE OPERATIONS.

Post-War Rebuilding Opportunities

After the conflicts in Ukraine, there's an ongoing rebuilding and modernization process. This presents a unique opportunity to lay state-of-the-art infrastructure tailored for the digital age. Building from the ground up can ensure the integration of new fibre optic lines, advanced electrical transformer stations, an upgraded electrical grid, and other necessary facilities. This fresh start can enable data centres in Ukraine to operate on a cutting-edge, robust, and efficient infrastructure, ensuring high reliability and performance.
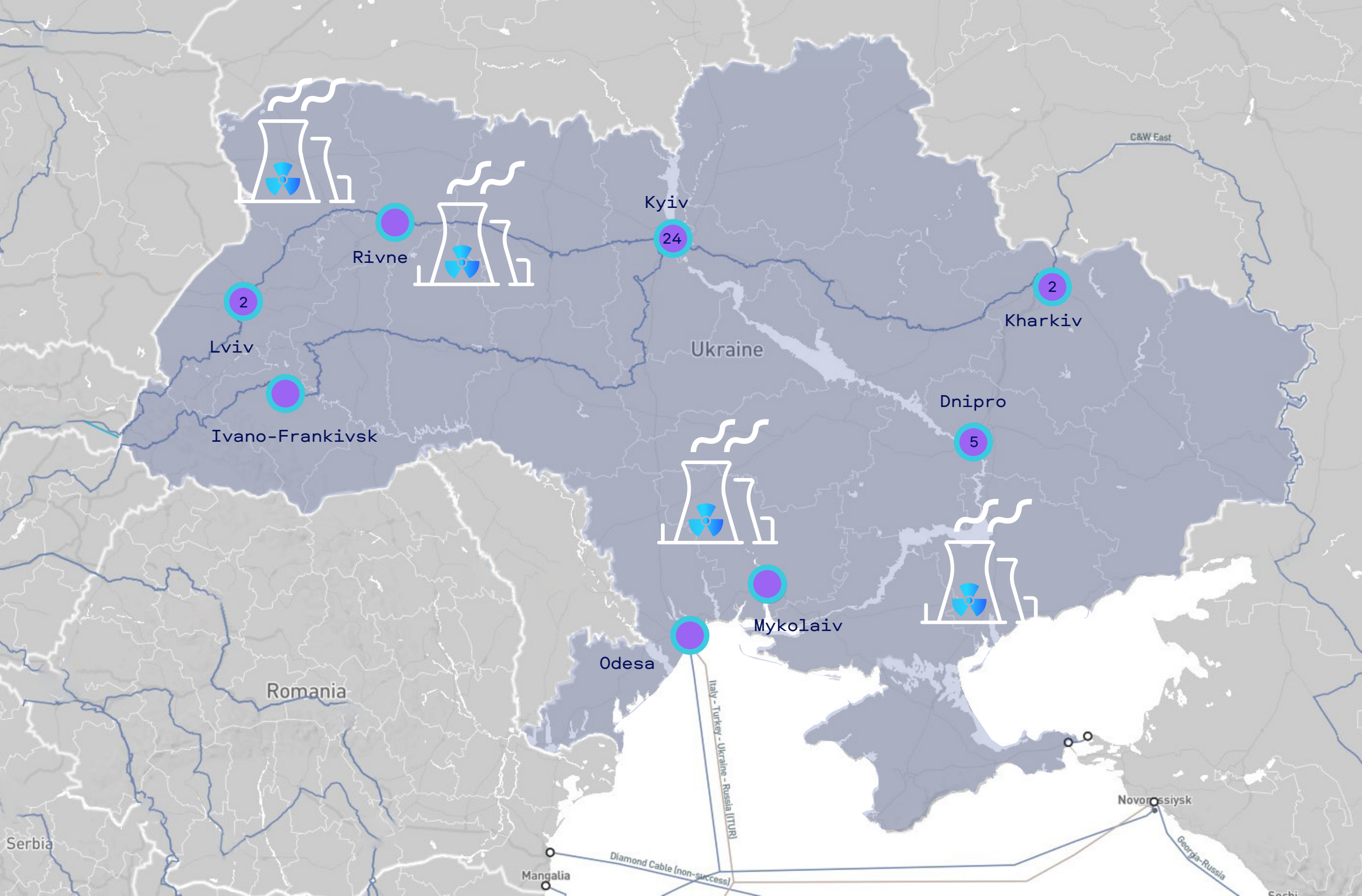
Data Centre Strategy for Ukraine

As the world evolves, Ukraine's data centre strategy - the right vision, substantial investments, and global synergy - will be at the forefront, propelling economic development, techno-logical innovation, and global integ-ration.

Existing Data Centres in Ukraine

Labels on map:
- Lviv — 2
- Ivano-Frankivsk
- Rivne
- Kyiv — 24
- Kharkiv — 2
- Dnipro — 5
- Mykolaiv
- Odesa
- Ukraine
- Romania
- Serbia
- Mangalia
- Novorossiysk
- Sochi
- C&W East
- Italy - Turkey - Ukraine - Russia (ITUR)
- Diamond Cable (non-success)
- Georgia-Russia

Legend:
- EXISTING DATA CENTRES
- TERRESTRIAL NETWORKS
- SUBSEA CABLES
- NUCLEAR POWER PLANTS

Map of Ukrainian Railway Routes

UKRAINE'S STRATEGICALLY ADVANTA-
GEOUS GEOGRAPHICAL LOCATION CAN
FACILITATE THE GROWTH OF DATA CEN-
TRES AND THE DEVELOPMENT OF FIBER
OPTIC CONNECTIONS. THE COUNTRY'S
EXTENSIVE RAILROAD NETWORK,
WHICH OFTEN CROSSES DIVERSE TER-
RAIN, OFFERS AN IDEAL ROUTE FOR
FIBER OPTIC LINES. THESE LINES
CAN CONNECT MAJOR URBAN CENTRES,
INDUSTRIAL HUBS, AND UNDERSERVED
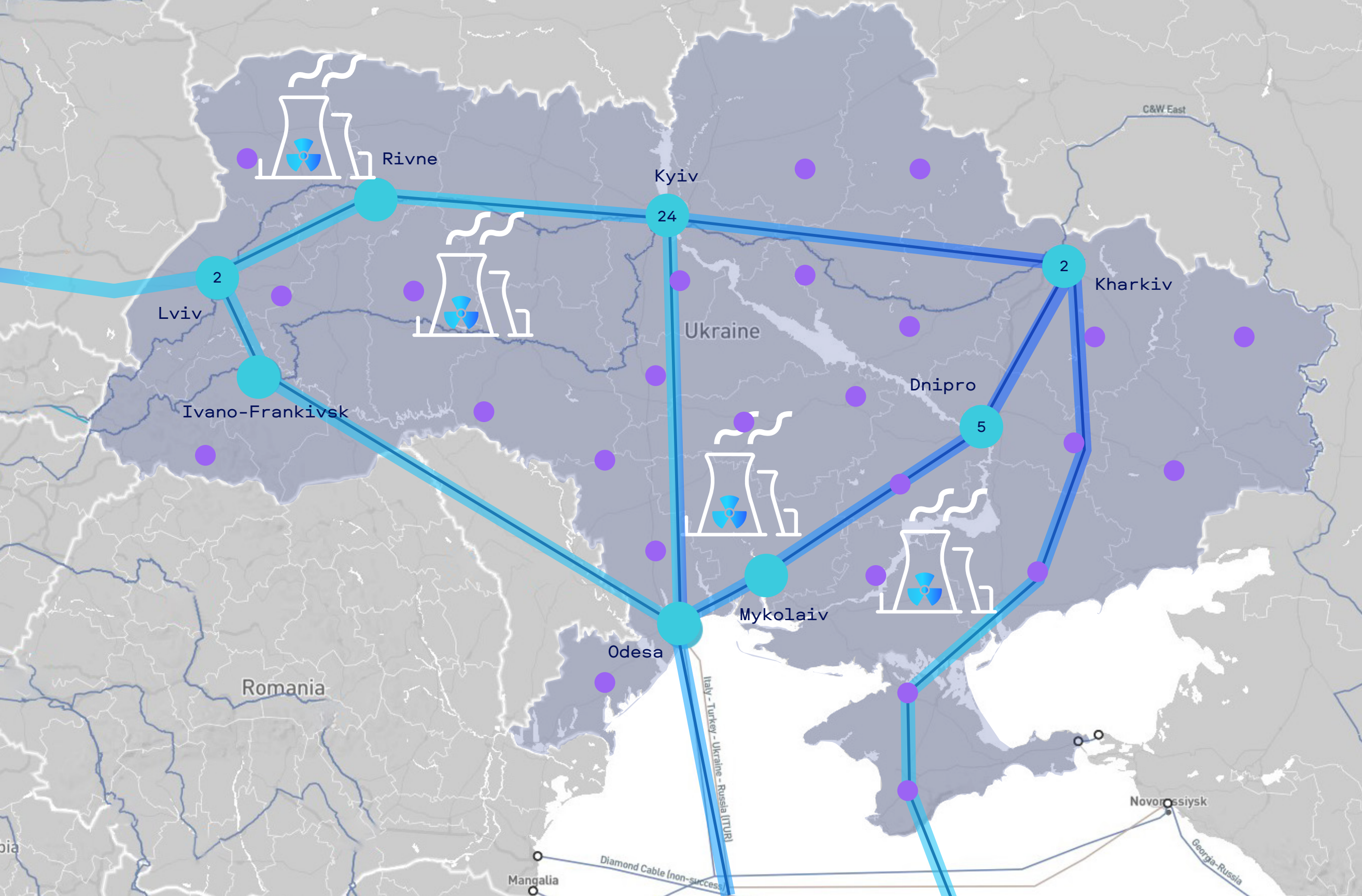REGIONS, EXPANDING ACCESS TO
BROADBAND ACROSS UKRAINE.
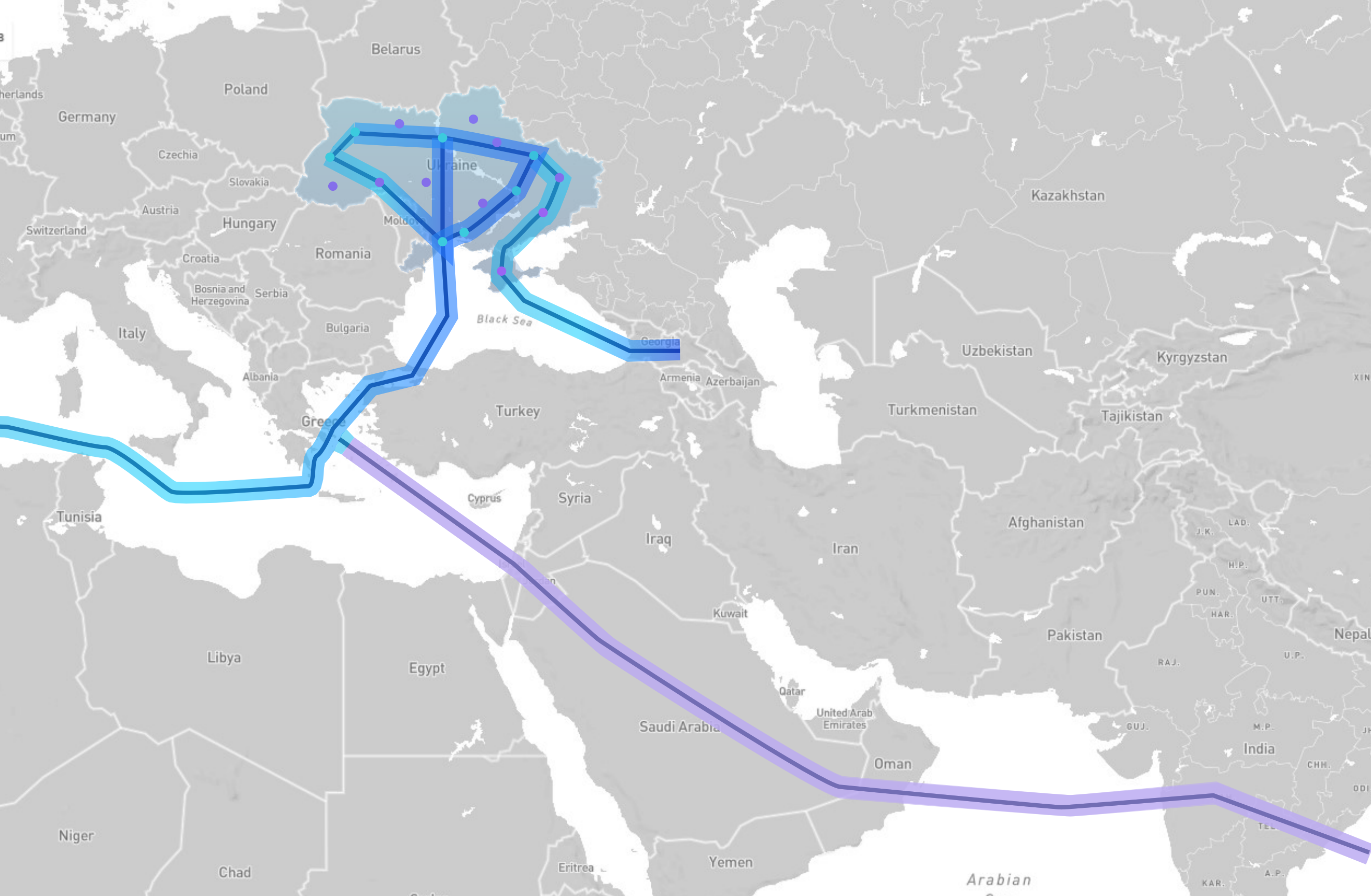
—— TERRESTRIAL NETWORKS

Potential Data Centres in Ukraine

IN LIGHT OF THE CURRENT SITUATION IN UKRAINE AND GLOBAL TRENDS IN DATA CENTRE CONSTRUCTION, THE MOST EFFECTIVE APPROACH FOR UKRAINE IS NOT TO FOCUS EXCLUSIVELY ON BUILDING LARGE DATA CENTRES LOCATED PRIMARILY IN THE WEST AND CENTRE OF THE COUNTRY, WHERE NUCLEAR POWER PLANTS ARE BASED. INSTEAD, ADOPTING A DISTRIBUTED MODEL BY BUILDING MANY MODULAR DATA CENTRES ACROSS THE COUNTRY MAY BETTER MEET THE NEEDS OF SECURITY, RESILIENCY, AND EFFICIENT DATA DISTRIBUTION IN TODAY'S DYNAMIC DATA LANDSCAPE.

Legend:

- EXISTING DATA CENTRES
- TERRESTRIAL NETWORKS
- POTENTINAL MODULAR DATA CENTRES
- POTENTIONAL FIBER OPTIC LINES
- SUBSEA CABLES
- NUCLEAR POWER PLANTS

Map labels: Rivne, Kyiv, Lviv, Ukraine, Ivano-Frankivsk, Kharkiv, Dnipro, Mykolaiv, Odesa, Romania, Novorossiysk, Mangalia, C&W East, Italy - Turkey - Ukraine - Russia (ITUR), Diamond Cable (non-success...), Georgia-Russia

Unlocking Potential

UKRAINE'S GEOGRAPHIC LOCATION PROVIDES A UNIQUE ADVANTAGE FOR INTERNATIONAL CONNECTIVITY. ACROSS THE BLACK SEA, UKRAINE SERVES AS A VITAL LINK IN DATA BACKBONE THAT COULD CONNECT EUROPE AND INDIA. ONE OF THE POTENTIONAL OPTIONS OF DATA TRANSMISSION ROUTES IS TO PASS THROUGH THE BLACK SEA AND CONNECT UKRAINE WITH ISRAEL, JORDAN, SOUTH ARABIA, OMAN, AND INDIA, FURTHER STRENGTHENING ITS ROLE AS A KEY TRANSIT CORRIDOR FOR DATA TRAFFIC BETWEEN THESE REGIONS. THIS STRATEGIC POSITIONING NOT ONLY BENEFITS UKRAINE'S DATA INFRASTRUCTURE, BUT ALSO STRENGTHENS ITS POSITION IN THE GLOBAL DIGITAL LANDSCAPE.

EXISTING DATA CENTRES

POTENTIONAL MODULAR DATA CENTRES

POTENTIONAL FIBER OPTIC LINES

TO BE CONTINUED

If You Want to Learn More
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