TILEYARD EDUCATION

Business Proposal

5G Campus Networks - Antoine Marcel

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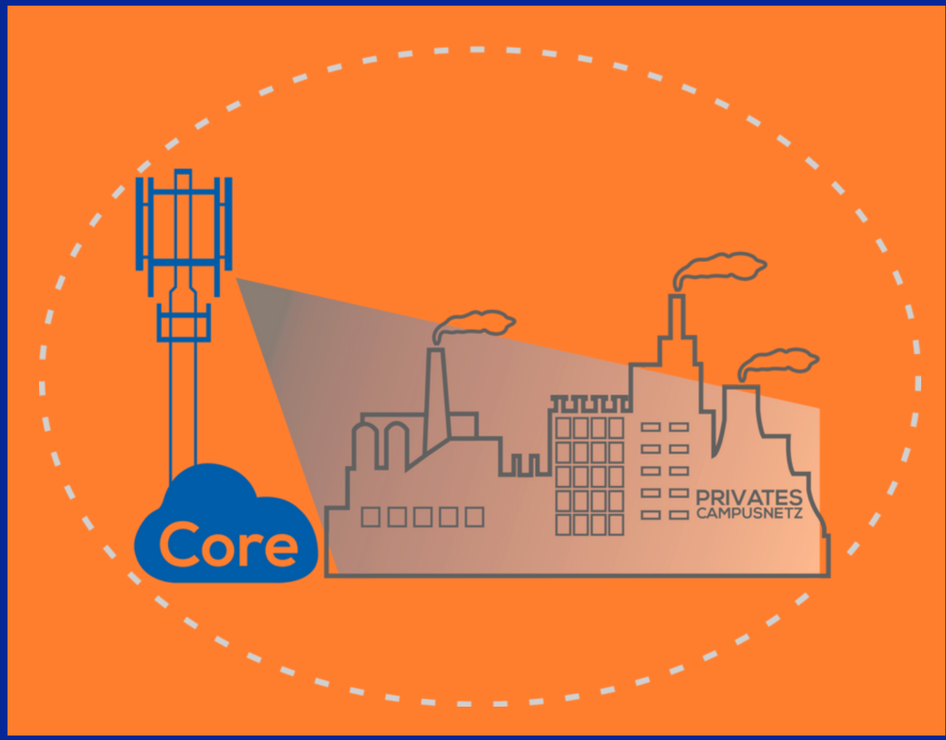
What is a 5G Campus Network ?

A 5G campus network is an advanced wireless technology that brings fifth-generation connectivity to specific locations like campuses, industrial sites, and cities, offering high-speed, low-latency, and reliable communication.



5G vs 4G

What 5G is improving

- Faster download and upload speeds.
- Lower latency, providing quicker response times.
- Higher capacity, enabling more devices to connect simultaneously.
- Enhanced reliability for uninterrupted communication.
- Support for a wide range of IoT devices and applications.
- Advanced network slicing for customised services.
- Better energy efficiency, reducing power consumption.
- Enhanced security with stronger encryption and authentication methods.
- Potential for revolutionary use cases like AR, VR.

Major Improvement

SPEED

Higher frequency bands.

It uses larger bandwidths and multiple antennas, enabling data to be transmitted and received much faster than previous generations of mobile networks.

BANDWIDTH

The wider bandwidth in 5G networks enables it to support more devices and applications simultaneously, leading to a more seamless and efficient user experience with minimal delays or buffering.

SECURITY

5G employs stronger encryption algorithms, making it more difficult for unauthorized access and data breaches. Additionally, 5G utilizes improved authentication methods to ensure that only trusted devices and users can connect to the network.

Private Network

- Owned and operated by a single organisation or entity.
- Restricted access, typically limited to employees or authorised users.
- Offers higher security and control over data and network resources.
- Tailored to meet specific needs and requirements of the organisation.
- Suitable for use cases like corporate campuses, industrial facilities, and government agencies.

EX: University of Glasgow, Scotland

Public Network

- Operated by telecommunication service providers and accessible to the general public.
- Open access for anyone with compatible devices and subscriptions.
- Offers widespread coverage in urban areas.
- Shared resources and data with less control over network management.

EX: London City Airport

Legal Requirements for a Private Campus Network

- Obtain necessary spectrum licenses from regulatory authorities.
- Comply with local data protection and privacy laws.
- Adhere to relevant telecom regulations.
- Secure permits and approvals for infrastructure deployment.
- Ensure compliance with local zoning and land use regulations.

Market Analysis

1.45 Billion $ → Projected to reach → **41.80 Billion $**

In 2021 — In 2030

Compound annual growth rate (CAGR) of 49.7%.

Market Analysis

Largest Markets

- North America
- Europe
- Asia-Pacific

Growing Markets

- Latin America
- Middle-East
- Africa

North America: United-States/Canada

Europe: Germany/United-Kingdom/France

Asia-Pacific: China/Japan/South Korea

Market Analysis

Market leaders

- **Deutsch Telekom**
- **Juniper Networks**
- **AT&T**
- **Verizon Communication**
- **Huawei Technologies Co.**
- **BT Group**

Germany

5G Personal Licenses:

- **BMW**
- **Bosch**
- **Siemens**
- **Volkswagen**
- **Lufthansa**

*33 personal 5G Licenses were allocated in Germany in 2021

Strengths

- Improved Connectivity
- Advancement in technology
- Industry Transformation
- Economic Growth

Weaknesses

- Infrastructure Upgrade
- Compatibility Issues
- Spectrum Availability

Opportunities

- Innovation and new services
- Industry Disruption

Threats

- Security risks (Public Campus)
- Challenges with regulation and Government
- Digital Divide

iconec

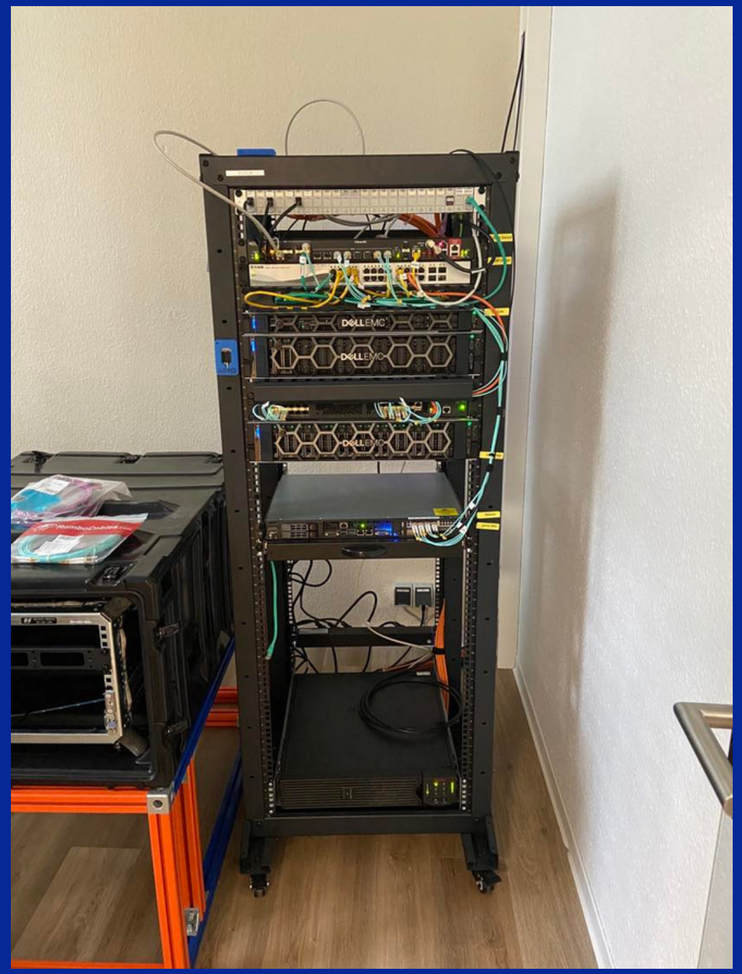
Olav Liebing, Thomas Neukam, Matthias Goltz

The Products

Private Campus Network

Public Campus Network

5G in a Box



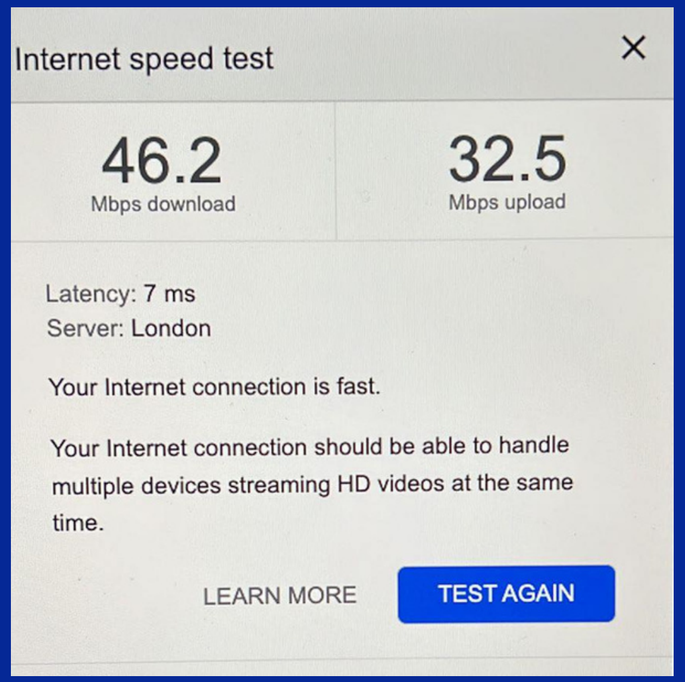
Fixed Setup
Campus Network

5G in a Box

5G in a Box

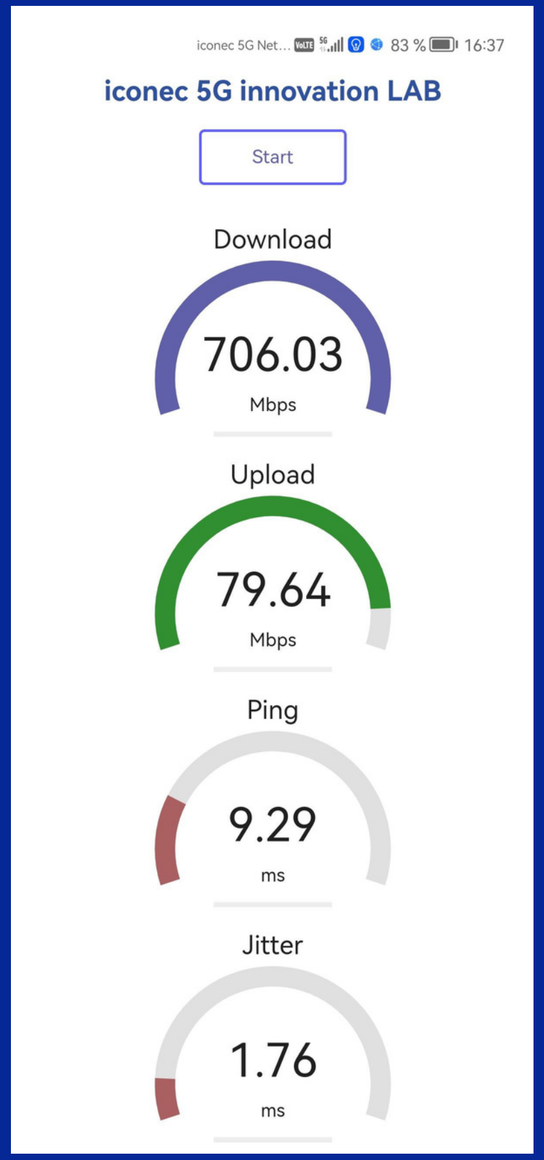
- "5G in a Box" refers to a compact and portable solution that provides 5G network capabilities.
- It offers a flexible and quick deployment option for temporary or remote locations.
- 5G in a Box is suitable for scenarios like events, emergency response, and trials for 5G applications.
- The "Box" concept facilitates easy transport and installation, making it a versatile solution for various use cases.

SpeedTest



Tileyard's Network

Campus Network

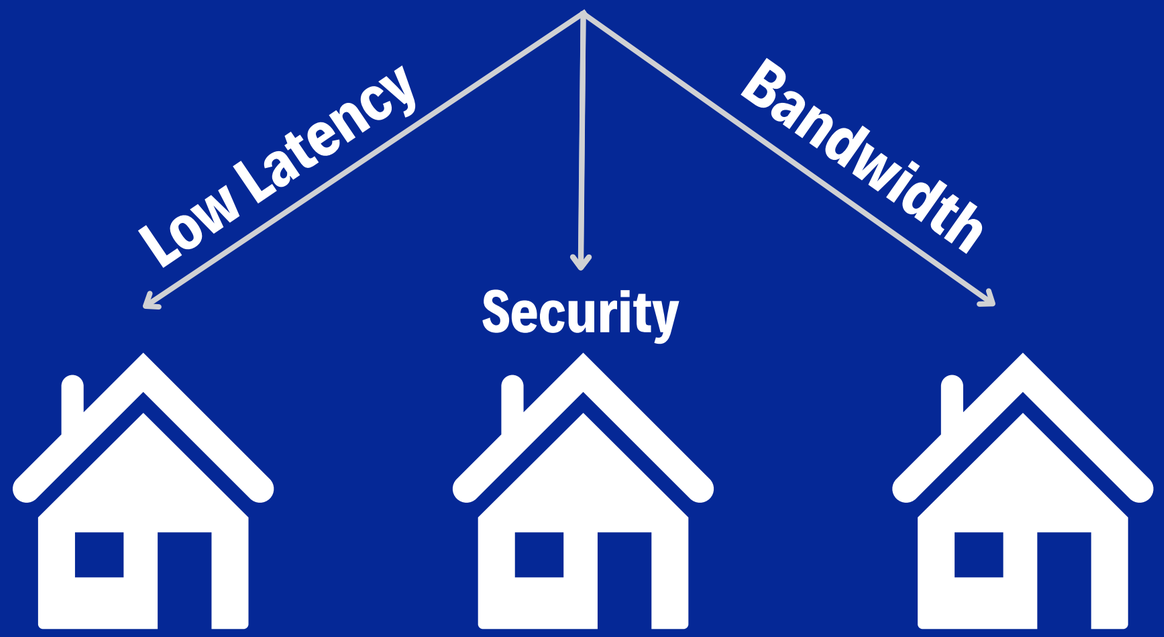


15x Faster Download

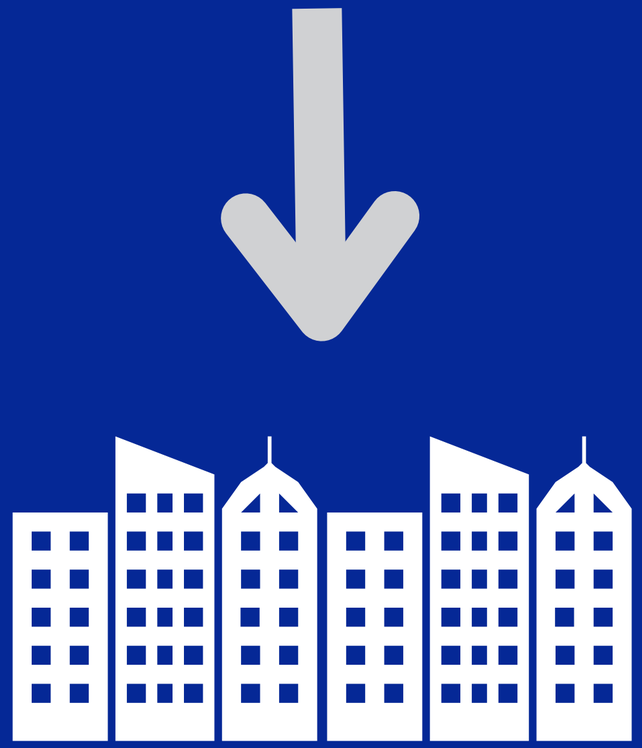
2,4x Faster Upload

Core Server Optimisation

Slicing



Bandwidth



The Business Model

Marketing

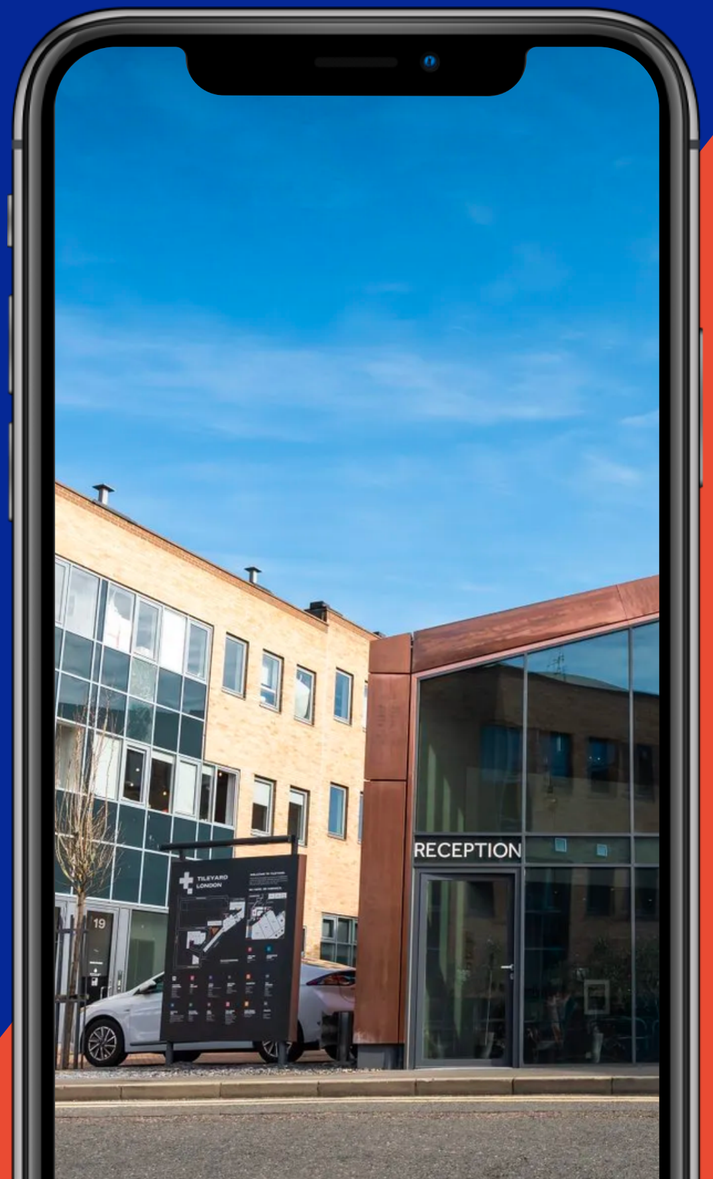
- Strong Online Presence
- Development of a new website
- Strong content on social media with 3-4 posts /week
- Search Engine Optimisation (SEO)

	A	B	C	D
1				
2	**Keyword**	**Suchvolumen**	**cpc in $**	**Keywordschwierigkeit**
3	5g-campusnetz	200	8,55	26
4	campusnetze	90	2,24	31
5	5g campus	100	5,38	28
6	5g campus network	70	10,12	29
7	5g-technologie unternehmen	90	1,95	25
8	private 5g	90	9,09	31
9	wer baut 5g in deutschland	80	1,91	31
10	industrienetze	30	1,8	15
11	industrie 4.0	20 500	3,14	43
12	smart factory	2 700	15,32	31

*search volume/Cost per Clic/keyword difficulty

Proof of concept

Tileyard London



Tileyard

- More than 250 businesses
- Wide Range of creative businesses
- Modern Recording Studios
- Community and co-working spaces
- Event Location

Tileyard

Music Studios

- Streaming/Downloading important files
- Communication with other musicians

Game Production

- Multiplayer Testing
- Downloading Game assets and update
- Interaction with gaming communities
- Cloud Based development tools and resources

Tileyard

Cinema/TV

- Cloud-based rendering services
- Perform remote collaborations with clients and talent
- Upload or download high-resolution video files

Marketing/PR

- Secured Network
- Data Analysis
- Process Automation

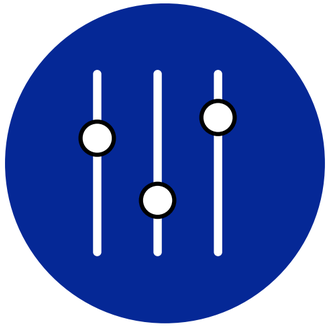
Tileyard

Tech Entrepreneurs

- Creation of software
- Creation of Apps
- Online Platforms
- Robot Automation

Why Tileyard ?

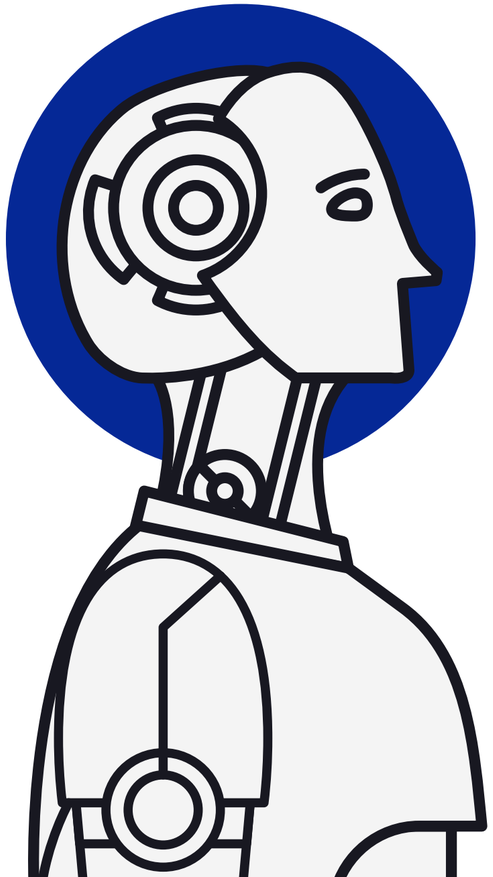
Tileyard needs to stay competitive !



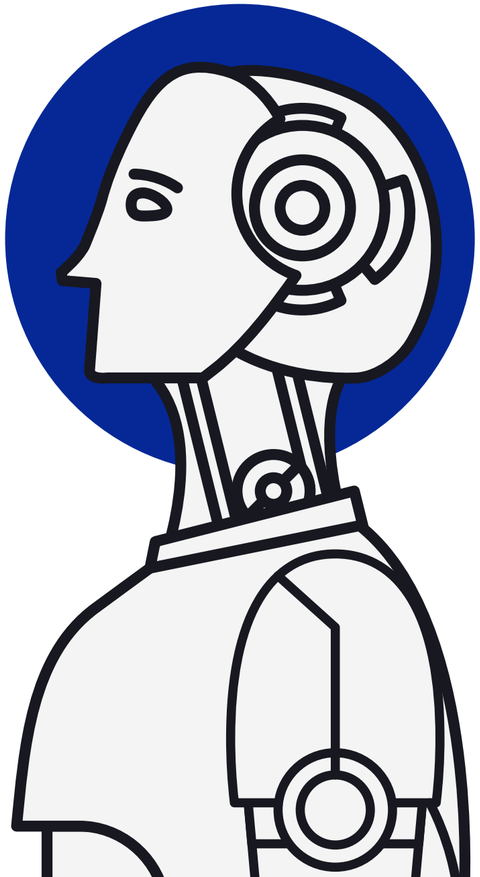
Customised !

Encourage to collaborate !

Why Tileyard ?



Keeping up with technological improvements



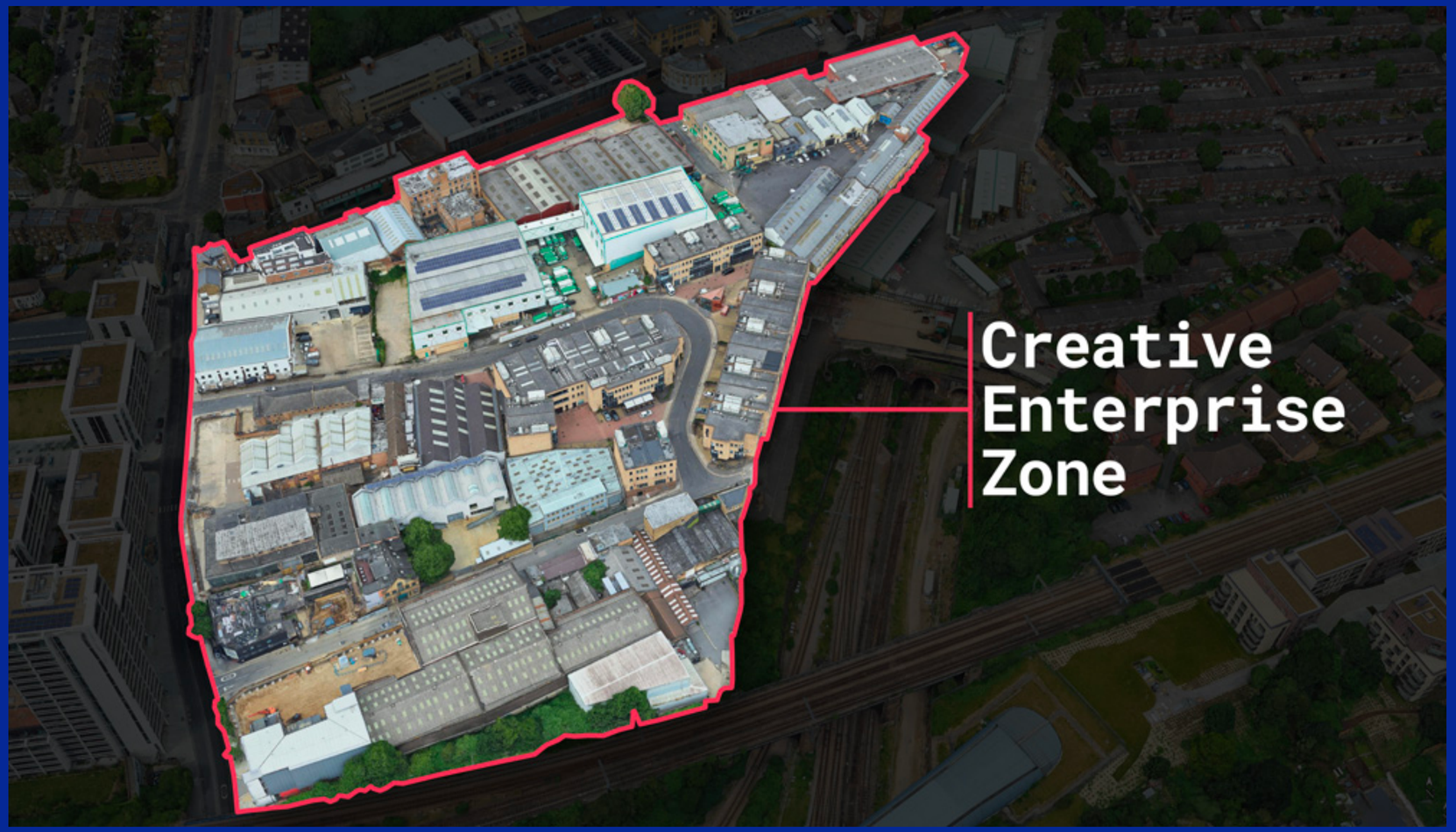
5G in a Box for Songwriting Camps

- National/International songwriting camps
- Rich and varied experience that promotes cross-cultural collaboration
- Essential due to the music industry's reliance on digital technology

Budgeting

Private Campus network for Tileyard

Budget sheet for Tileyard

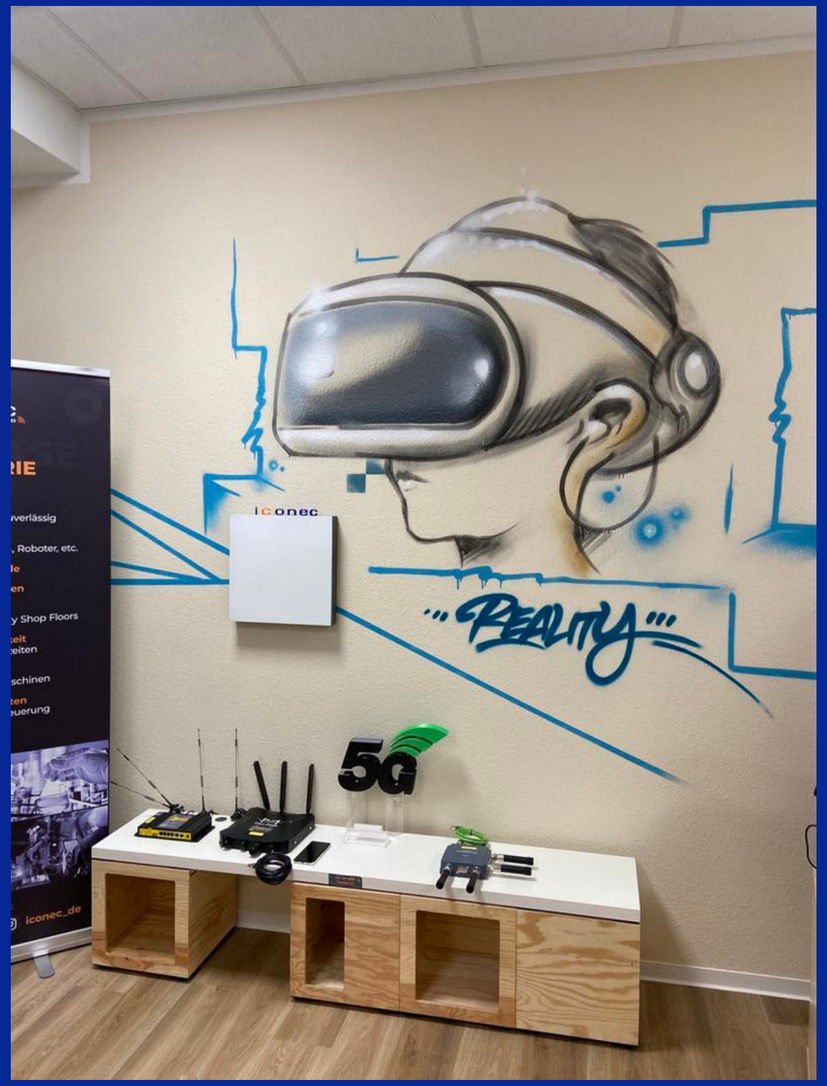


	Customer / End price net
Material	
Indoor RAN (BTI): 1x Base Band Unit, 1x Switch (EU) N x Radio Unit (12sqm ~3 Radios per floor)	61 400,00 €
5G core 10Gbit/s HW platform + Switch + 2500 user license, commercial use/ Academic use	120 000,00 €
Small parts, cables, feeders, adapters, splitters, mast etc.	6 000,00 €
2500 SIM Cards	8 000,00 €
Sum Material	**195 400,00 €**
Design	
Site Survey	4 800,00 €
Net architecure & Design	25 000,00 €
Documentation (network planning, component documentation etc)	10 000,00 €
Sum Design	**39 800,00 €**
Installation	
Pre configuration	24 000,00 €
Installation (Core + Radio) Indoor	9 600,00 €
e2e Integration on site	9 600,00 €
Acceptance e2e system	48 000,00 €
Sum Installation	**91 200,00 €**
Training	
Training of employees as required (2 days)	4 500,00 €
Sum Training	**4 500,00 €**
Maintenance & Support	
SW subscription and best-effort support annually 5G core & RAN	20 000,00 €
50 man days technical support on call (2h blocks) first year (ticket system, phone contact, remote support)	40 000,00 €
Sum Services	**60 000,00 €**
SUM Project	**390 900,00 €**

Budget sheet for Tileyard

- Material = 195K
- Design and Architecture = 39K
- Installation = 91K
- Training = 4,5K
- Maintenance and Support = 60K

Total: 390 900 €



Thank You

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Questions ?