NavVis

Digitizing the great indoors

🚶 **7 min**
0.3 mile

🚶 **6 min**
0.3 mile

🚶 **6 min**
0.3 mile
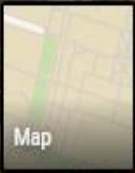
Oval Park

+Georg

Serra Grove

Via Pueblo

Serra Mall

Lomita Mall

Lomita Mall

Durand Bldg

Stanford University

Memorial Church

Escondido Mall

Escondido Mall

Escondido Mall

Map

Google

FIRE ESCAPE PLAN
Ground Floor

SAFETY NOTICE
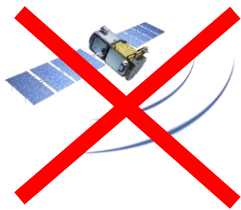
This drawing is based on the example found in BSI ISO 23601

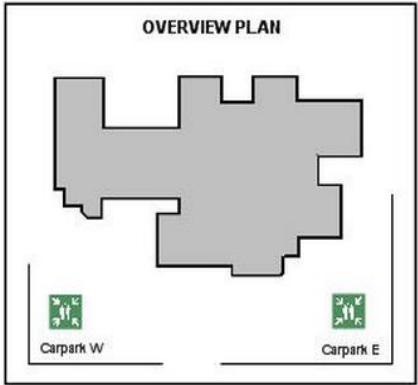It was created using Visual Building Basic and an addon Fire Escape symbol catalogue.

YOU ARE HERE

LEGEND

- You are here
- Escape route
- Emergency e...
- Emer...
- First
- Fir...

No GPS reception

BSI ISO 23601 Example

Drawn by:	Les Player with Visual Building
Date drawn:	27th October 2012
Date revised:	
Plan No:	201210271

OVERVIEW PLAN

Carpark W

Carpark E

Next-level Indoor digitalization
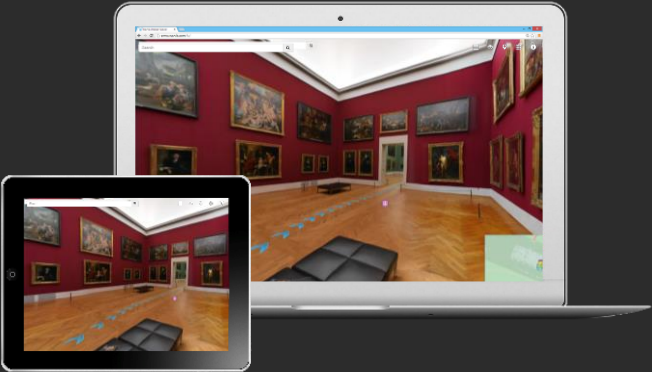
NavVis

M3 Trolley

IndoorViewer

Navigation App
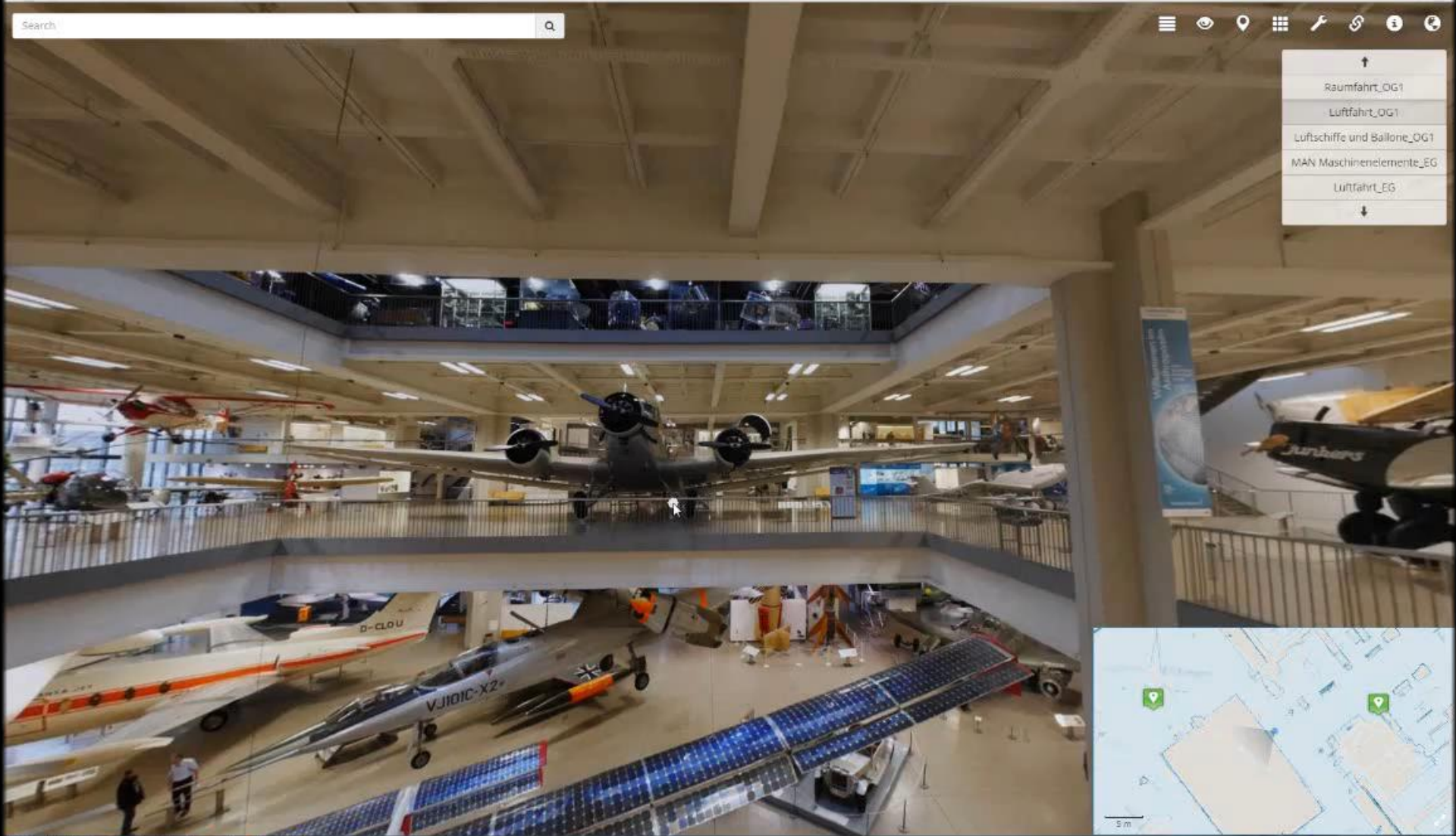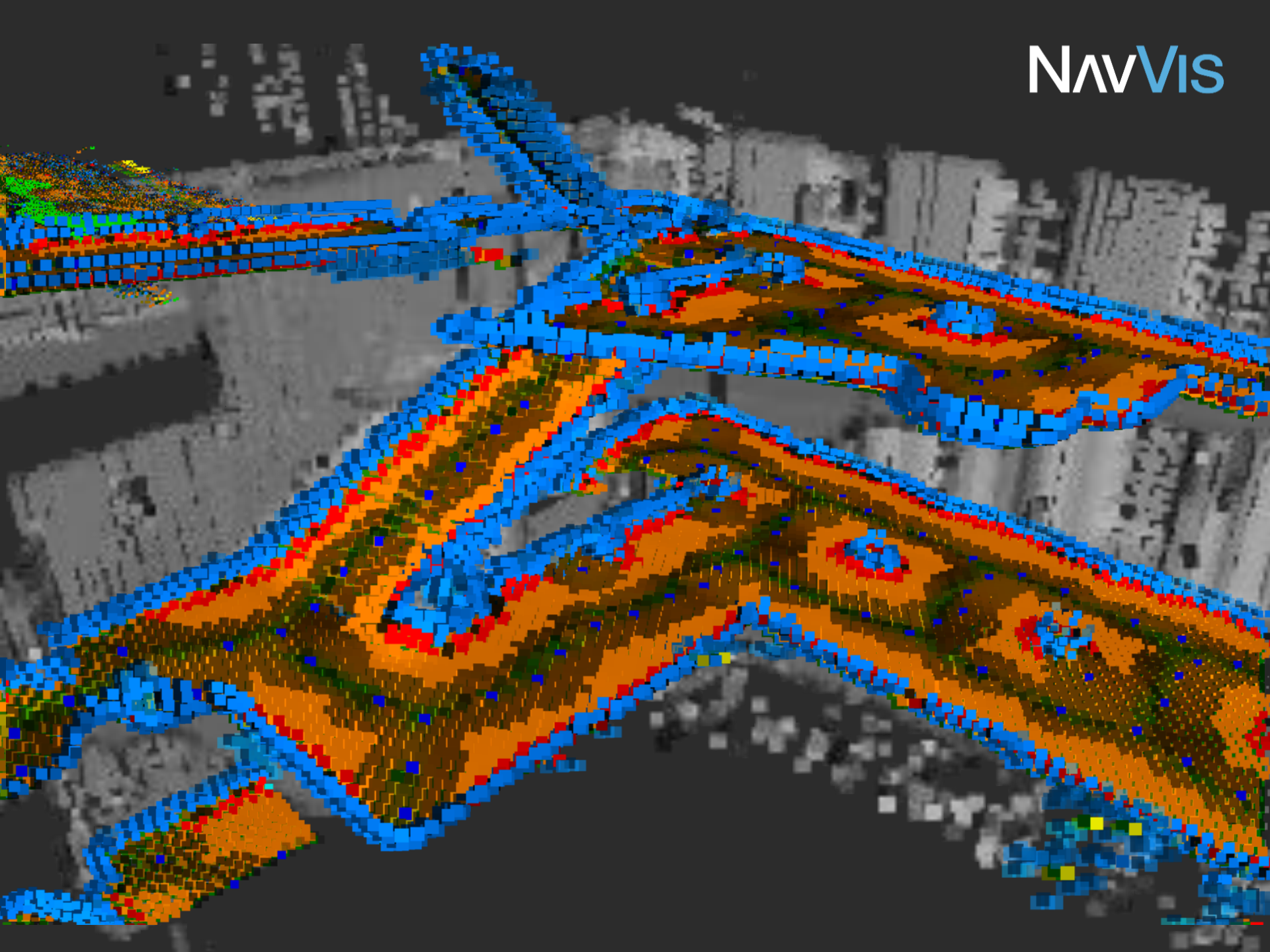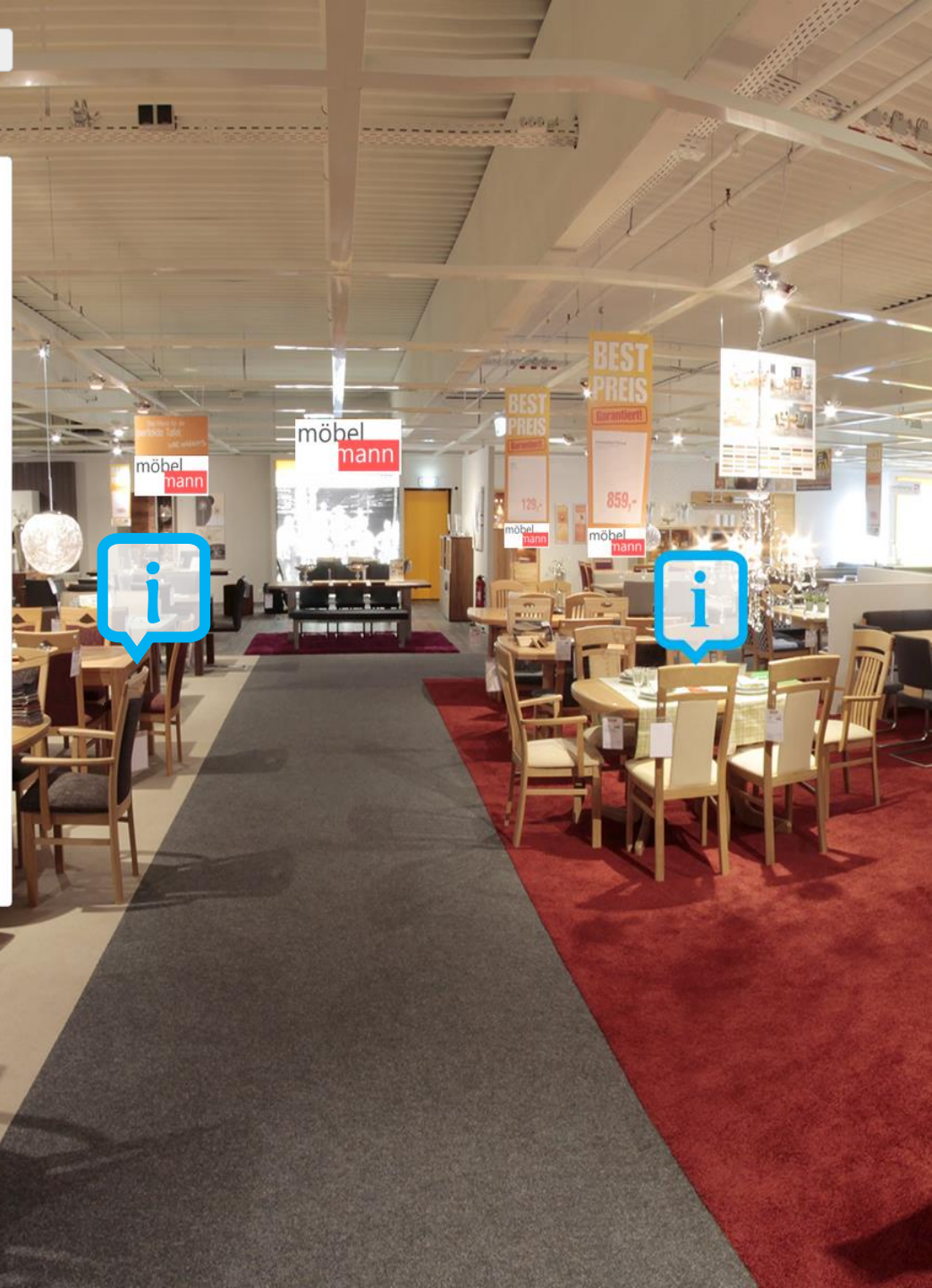
TORNOS DECO 2000 – CNC machining center

Main spindle (Z11 / S11 / C11)

Max. bar capacity	mm	25,4
Standard workpiece length with rotating guide bush	mm	200
Spindle speed of rotation	rpm	0 to 10 000
Spindle output S11 / S41	kW	9,5 (12,8)
Max. constant torque	Nm	15,1 (20,4)
Spindle stoppage time (8 000 rpm to 0)	sec	1
Mild steel drilling capacity	mm	14
Mild steel tapping capacity		M12

#22344

Montagestation 27 - Armaturenbrett

Go 5m straight

Turn right

You have reached your destination
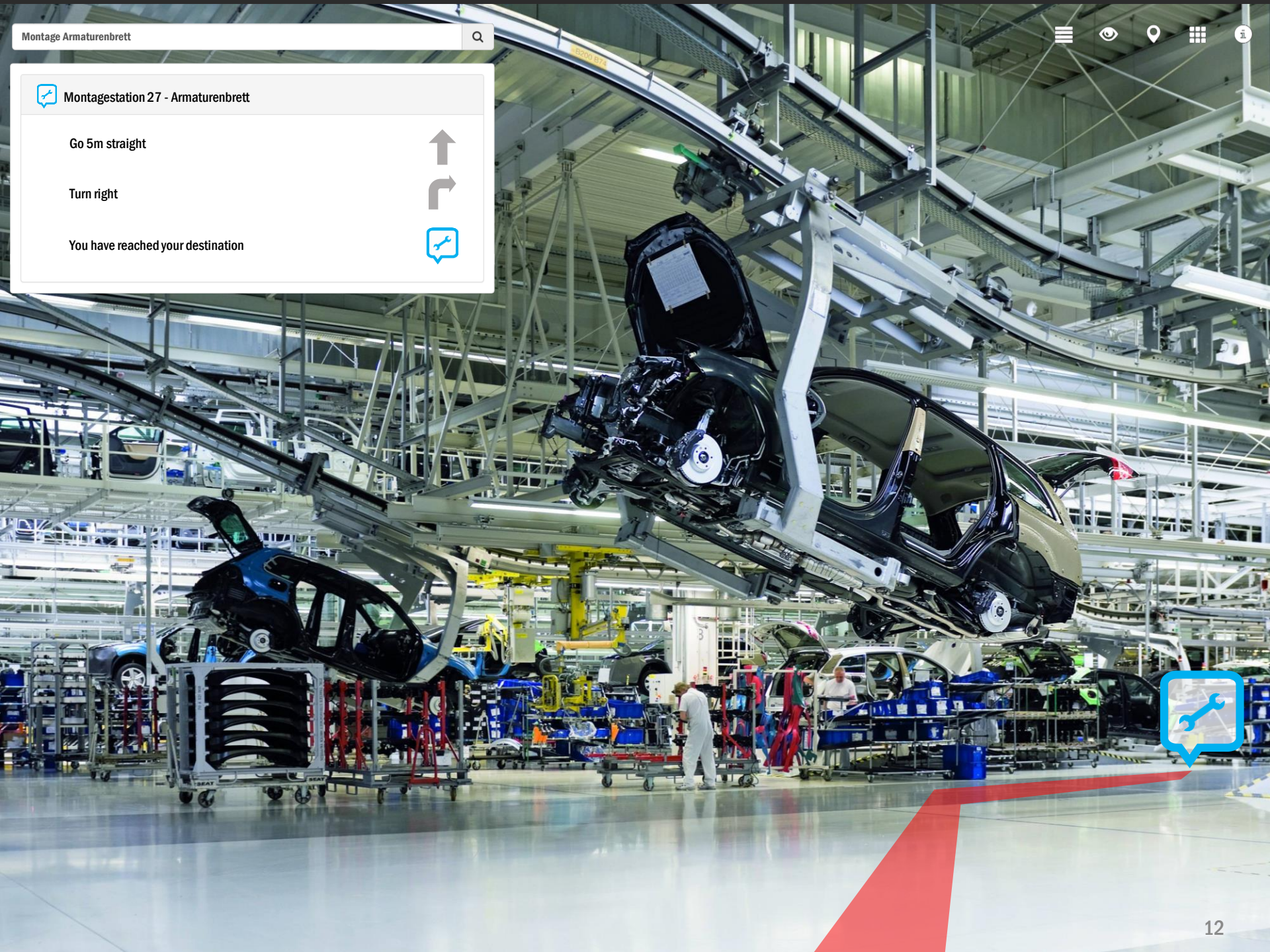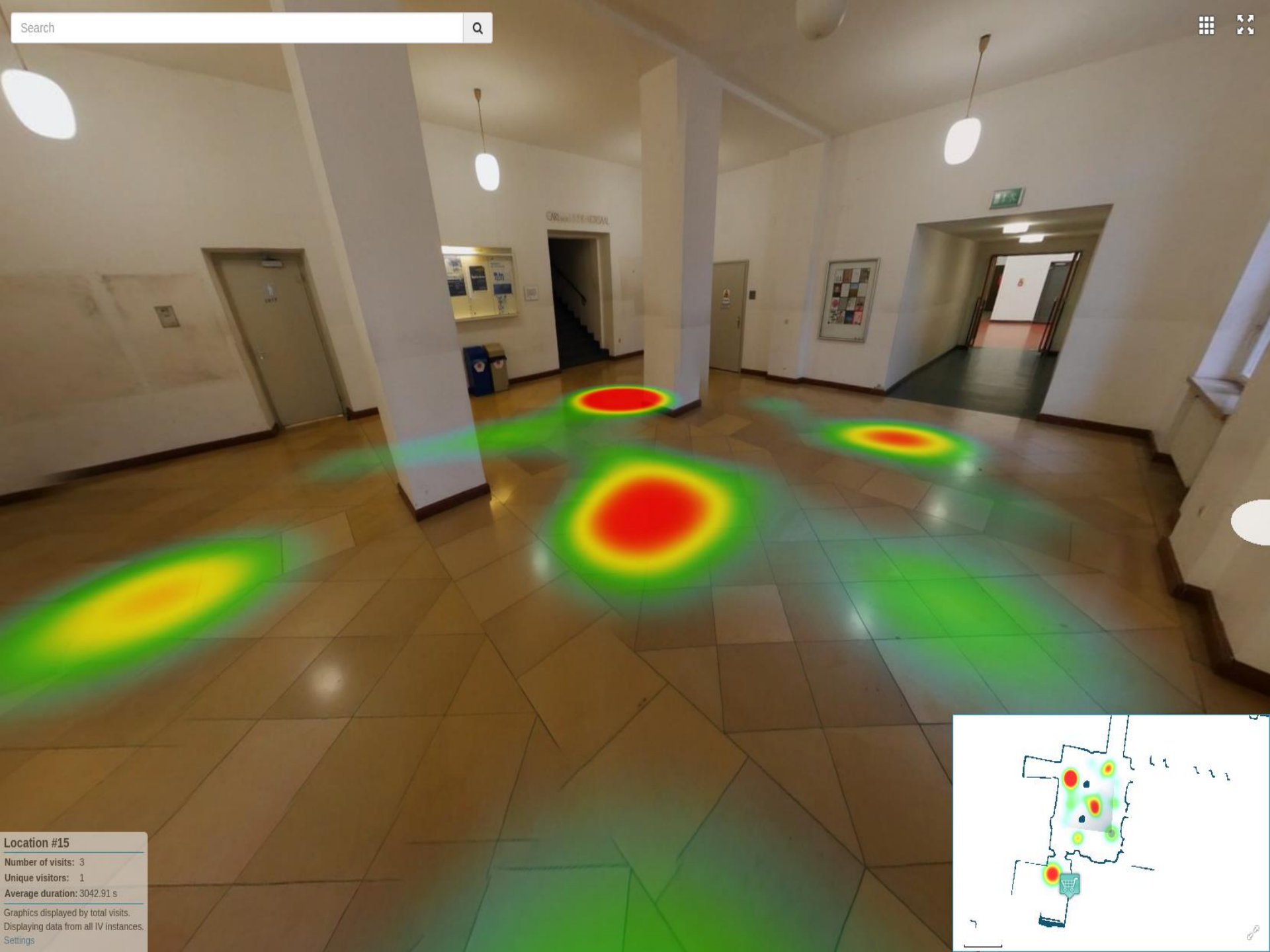
Location #15

Number of visits: 3
Unique visitors: 1
Average duration: 3042.91 s

Graphics displayed by total visits.
Displaying data from all IV instances.
Settings

Digital indoor today

Expensive — € 4 per m^2

Slow — Usually more than a month to get data

Only experts — Point cloud or CAD software hard to use

Not open — No open APIs, not web based

No position — Not helpful for field workers

NavVis digital indoor tech is game changing

Low cost

€ 4/m^2 → € 0,10/m^2

Cutting mapping cost by factor 40

Fast

30 day → 1 day

Data next day

For all

Browser based. No plugins. Everyone, any device.

Open

HTML 5. Open APIs. Deep virtual HTML links.

Positioning

NavVis App: Vision based. Meter accurate. No hardware.

NavVis GmbH

- ✓ Located in Munich, Spin-off from TU Munich, VC backed since Q3 2014

- ✓ Patented tech; >7 years of public funded research (>150 man years of R&D), >10 PhD theses, >40 master theses, >35 peer reviewed publications, …

- ✓ Market entry Q4 2014, gained top industry leaders as customers by Q3 2015

- ✓ Started build out of international partner network to >15 today

- ✓ Forged first strategic partnerships with key players inc. Esri, Intershop, Siemens, …

- ✓ High profile team of >70

- ✓ Backgrounds from top international research / business institutions (incl. Stanford, Harvard, LSE, St. Gallen, UCLA, Microsoft, HP, McKinsey)
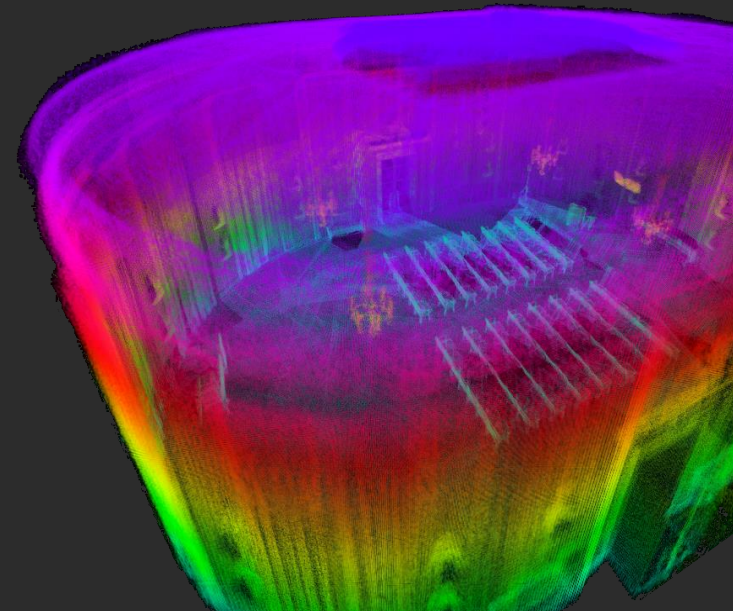
Why not Silicon Valley

NavVis

Research

Talent

Customers

Suppliers

NavVis

Digitizing the great indoors

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Email: reinshagen@navvis.com

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Appendix

M3 Trolley

- Indoor digitalization at scale – scans up to 50.000 m^2 on a single day

- Creates inch-perfect 3D data

- Captures high resolution panoramic images with a brilliant visual quality

- Very easy and intuitive to use – press record and capture data on the go

- Automated data-processing optimized for web and CAD import

IndoorViewer

- Browser-based viewer to access and explore your buildings in 3D on any device

- Interact with points-of-interest and connect them to real-world objects

- Route between any two locations

- Measure distances and volumes

- Share your location and points-of-interest via Mail or Facebook

- Provides a powerful API to integrate IndoorViewer into your SAP, facility management tools, or any other existing infrastructure

Test here

www.navvis.com/iv.dm-demo/#?image=4717

NavVis App

- First indoor navigation app that does not require infrastructure

- Meter-accurate thanks to patented computer vision based algorithms

- Highly scalable due to extremely low set-up costs

- Instantaneous localization – saves battery and nerves!

- Virtual reality interface for easy orientation

- An ecosystem for 3rd party location-based services

250 billion m²

total global floor space

50 billion m^2

will be fully digital by 2020

Scalable go to market model

NavVis

Customer Segment		Go to Market Approach	Focus
Consumer		Direct through app and referral engine	Access to large consumer revenue pool
SME		Partners	Scalability in sales and service
Enterprise		Direct with service and value added solutions through partners	Relationship to key accounts; learning / market knowledge
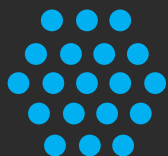
Towards NavVis in every room

NavVis

0,1 mio m^2 1 mio m^2 10 mio m^2

<u>Scaling up</u>

- ☐ Roll-out at lead customers
- ☐ Partner ecosystem
- ☐ US / Asia presence
- ☐ New releases (app, M4, analytics, app world, ...)

Funding targeted for Sep 2015

✓ Market proof

✓ Incorporation

✓ VC funding

✓ Market entry

✓ Tech breakthrough

| 2010 | 2013 | 2014 | Q1 2015 | Q3 2015 |
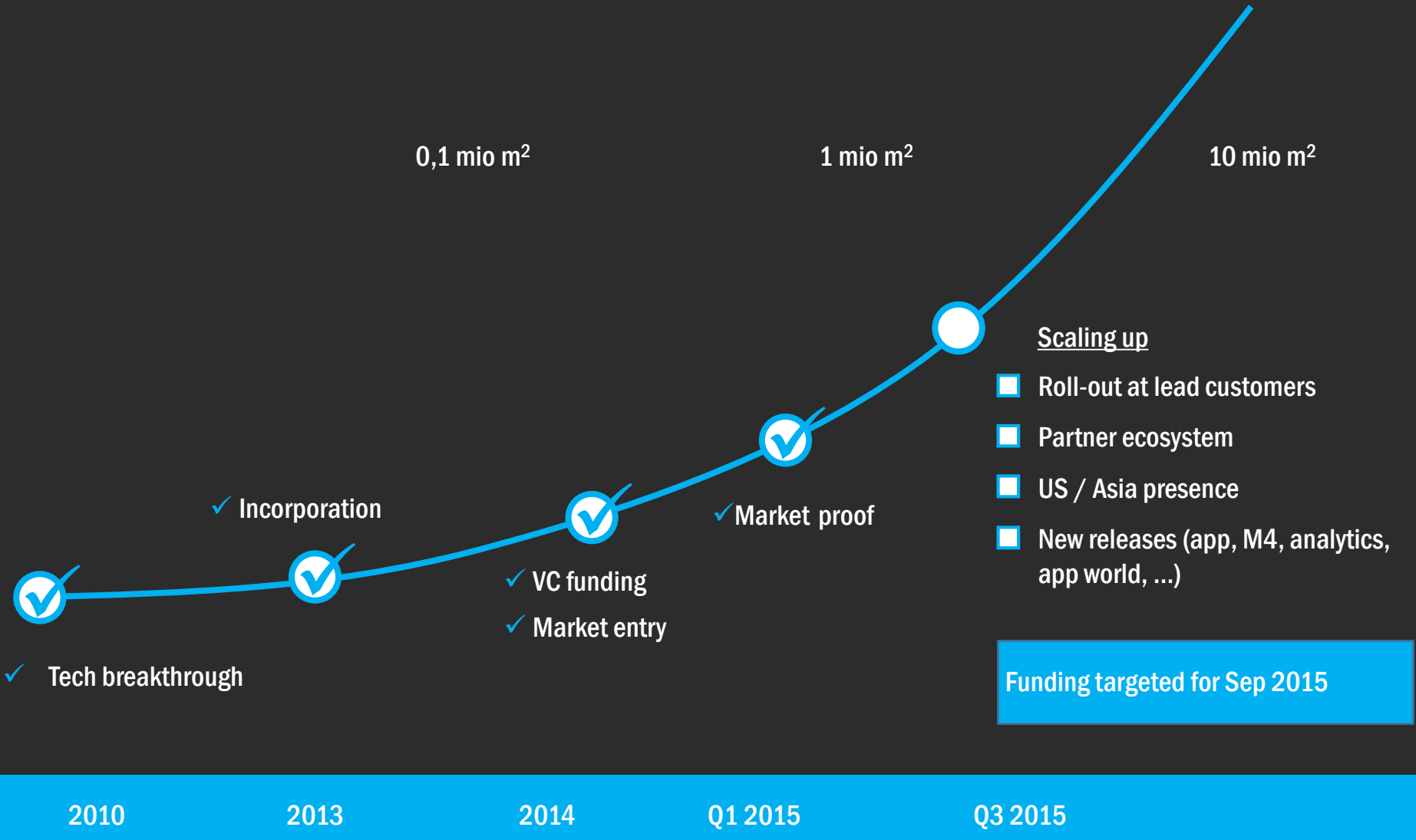
Indoor value chain

Earning (> cost)

Run: 80% of cost

Build: 20% of cost

> € 200 per m² p.a.

Digital value creation indoors

NavVis

primary

Indoor value chain

> EUR 100 p. m^2 p.a.

- Sell
- Produce
- Service
- Educate

secondary

> EUR 80 p. m^2 p.a.

- Maintain & repair
- Clean & heat
- Insure

> EUR 20 p. m^2 p.a.

- Build / rent

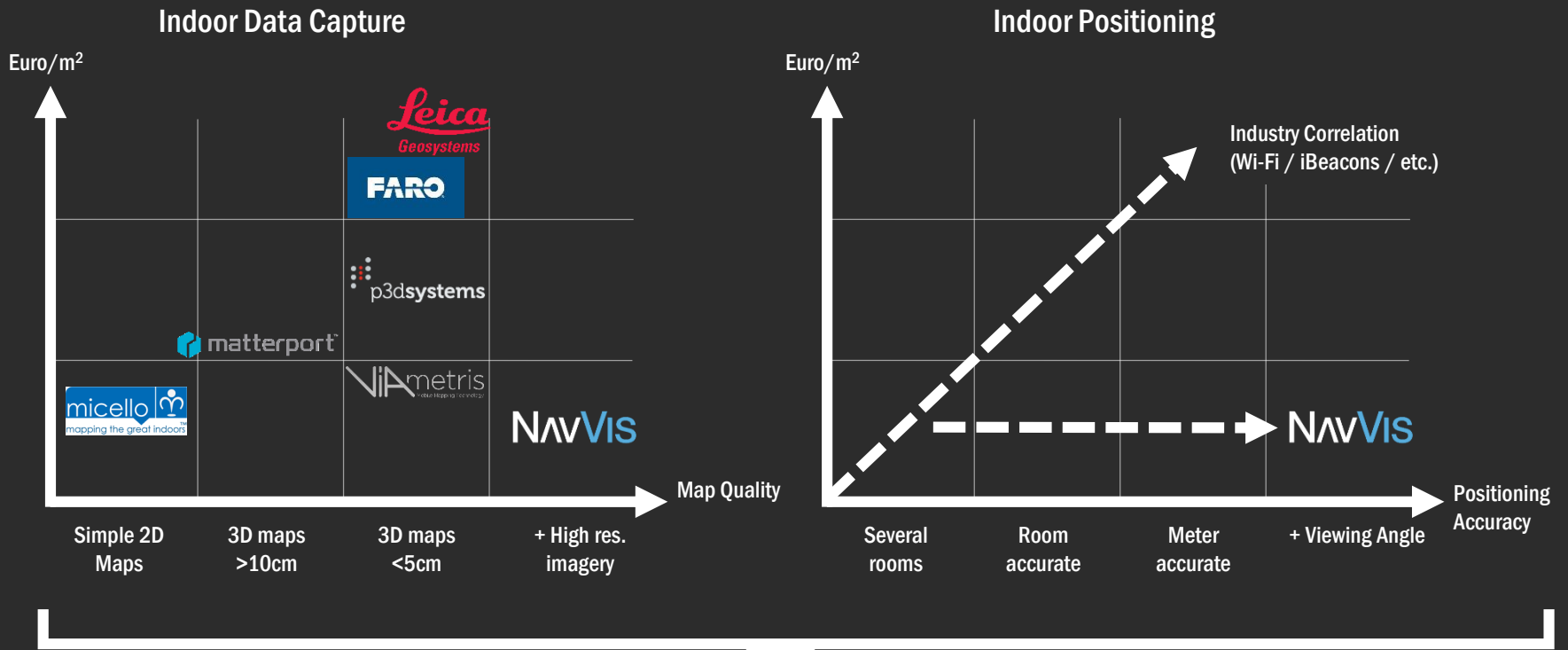> EUR 200 p. m^2 p.a.
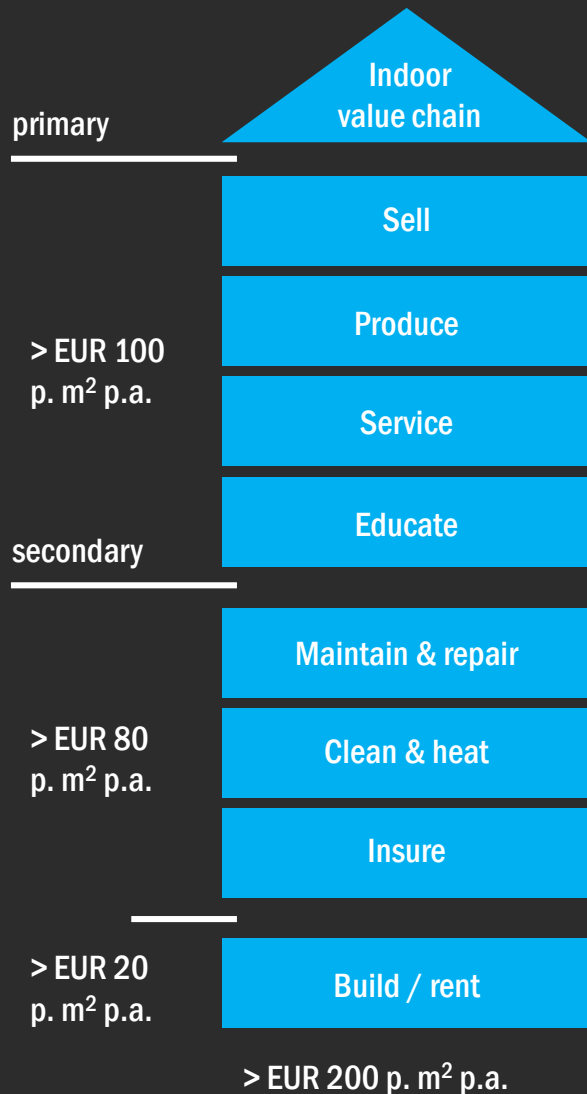
Benefits of digitalization (examples)

- Improve multichannel retail experience
- Digitally plan / manage production assets
- Leverage virtual visits and smart location based services
- …

- Replace 80% of onsite visits through remote visits
- Allow insurance premiums for digitally documented buildings
- …

- Allow remote visits, documentation, collaboration on construction sites
- Document real estate transactions
- …

> € 1 trillion addressable market

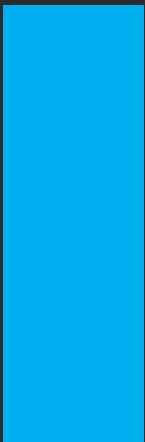Assuming only 10% digital value share of today's value creation

Digitalization will further expand value creation

Competition

Indoor Data Capture

Euro/m^2

Leica Geosystems
FARO
p3dsystems
matterport
micello — mapping the great indoors
ViAmetris — Mobile Mapping Technology
NavVis

Map Quality

Simple 2D Maps | 3D maps >10cm | 3D maps <5cm | + High res. imagery

Indoor Positioning

Euro/m^2

Industry Correlation (Wi-Fi / iBeacons / etc.)

NavVis

Positioning Accuracy

Several rooms | Room accurate | Meter accurate | + Viewing Angle

NavVis provides the only full stack offering in the indoor space

Superior cost to quality ratio

NavVis

€ 3,00

Faro/Leica

€ 0,25

Matterport

€ 0,03

NavVis

Cost reduction vs. state of the art technology by two orders of magnitude

Cost per m²

- Mobile: Maps 15.000 – 50.000m² /day
- Easy to use: Low wage labor
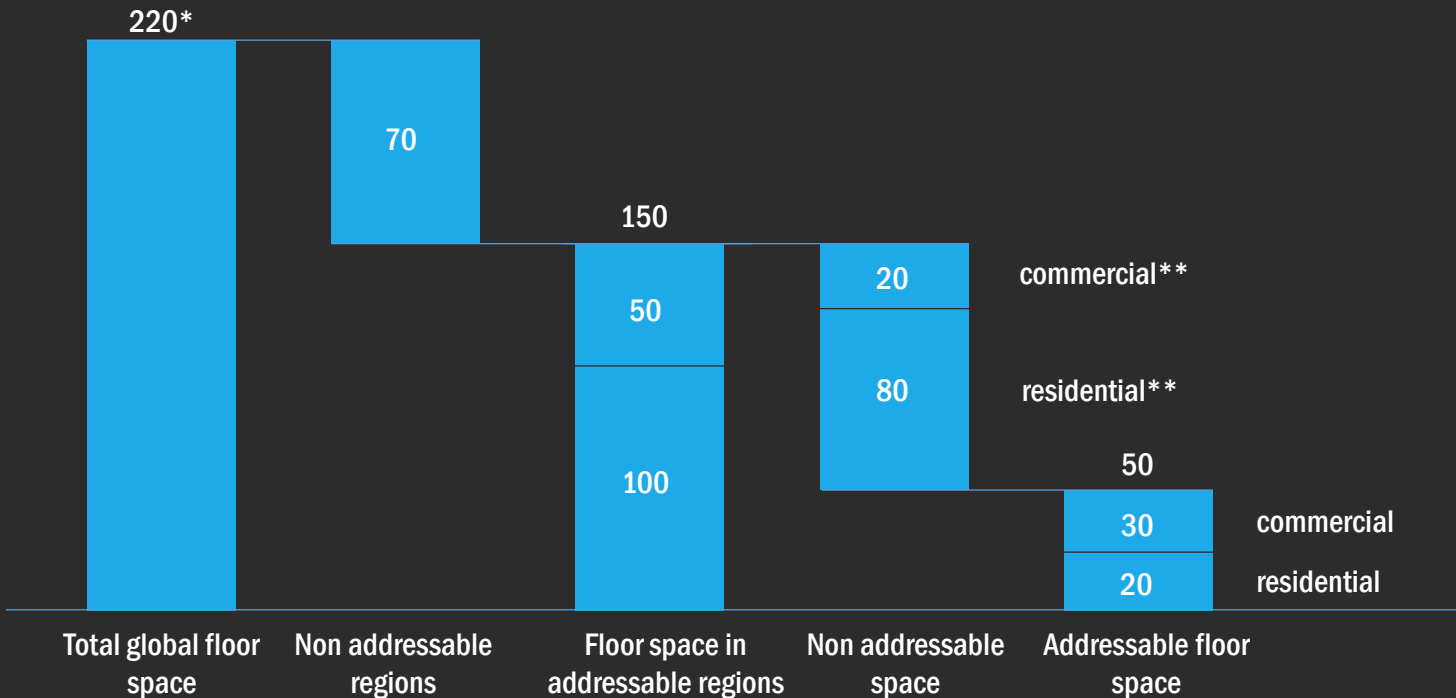- Real-time: Mapping data instantly available

Quality

- Cm accurate 3D mapping data
- Ultra high-resolution 720° panoramas
- Wi-Fi/Bluetooth scans, floorplans, etc.

Indoor space will go digital

NavVis

Outdoor space is digitally captured and easily available on all our devices today. Economically even more valuable indoor space – counting in billions of square meters – is still a digital wasteland.

Global total addressable market 2020 (m^2)

220*	70	150	20 commercial**	50
		50	80 residential**	30 commercial
		100		20 residential
Total global floor space	Non addressable regions	Floor space in addressable regions	Non addressable space	Addressable floor space

*   Statistical data provides a wide range of estimations of global floor space from m^2 150 bn to 300 bn globally

**   Non addressable commercial space refers to (very) small shops / office space; non addressable residential space refers to small to medium sized private space

Customers
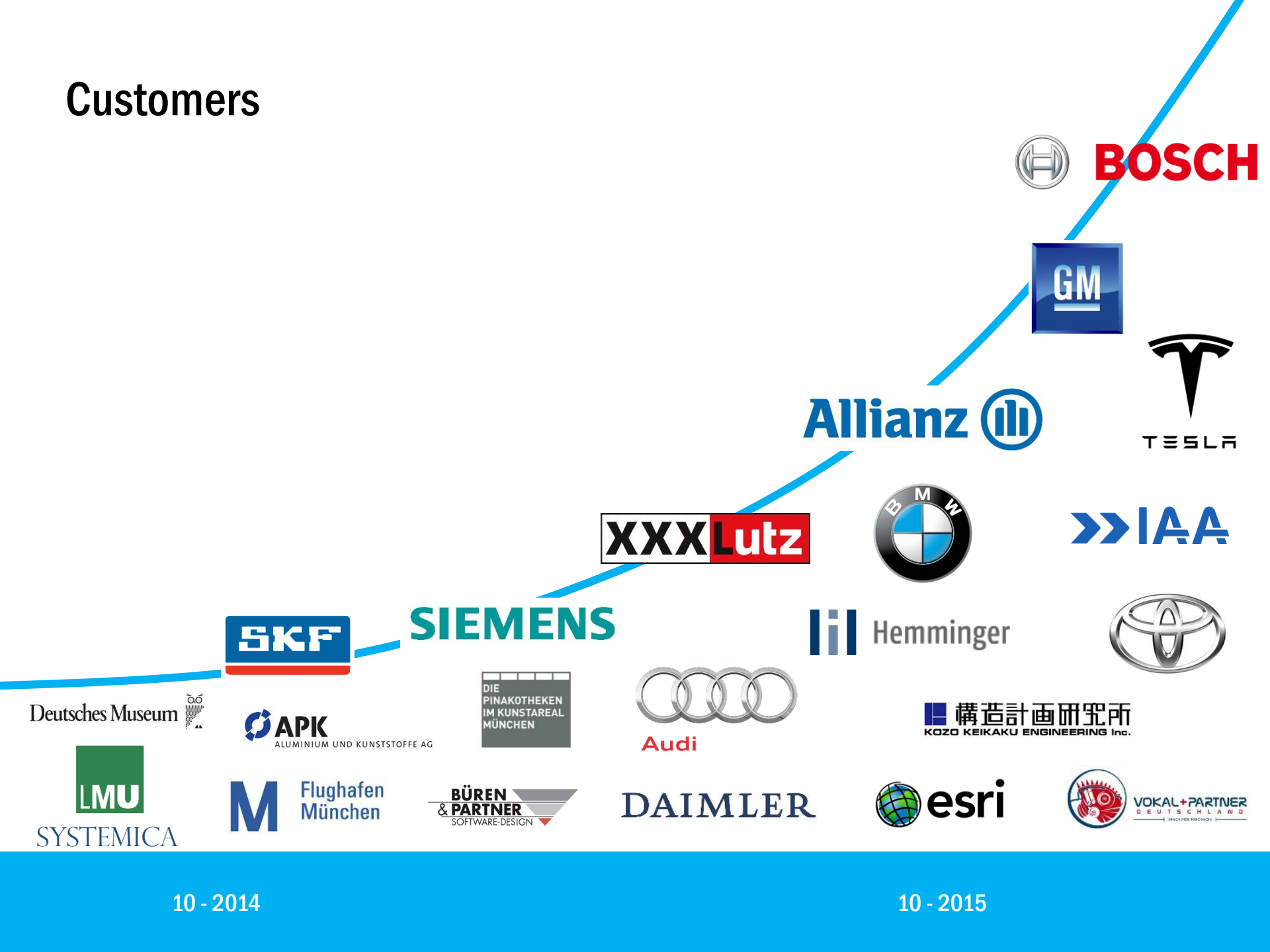
Application World: Global Partners

NavVis

Developer	Developer & Product Description
esri	Web-based indoor/outdoor geo solution
intershop	E-commerce plug-in for IndoorViewer
PANORAMA BERLIN	Building a trade show viewer on NavVis
SIEMENS	Integration into building management product offering
SAP	Analytics and retail solutions in cooperation with SAP Hybris
NavVis	Task management, crowd based object detection, tour-builder

Business model

NavVis

Vertical / horizontal Apps [1]

B2B

B2C

Under development with partners

API / SDK

Productivity Tools

Location Service / App

IndoorViewer

B2B

Subscription: p.a. = m^2 * modules used

M3 Mapping Trolley

B2B

Subscription

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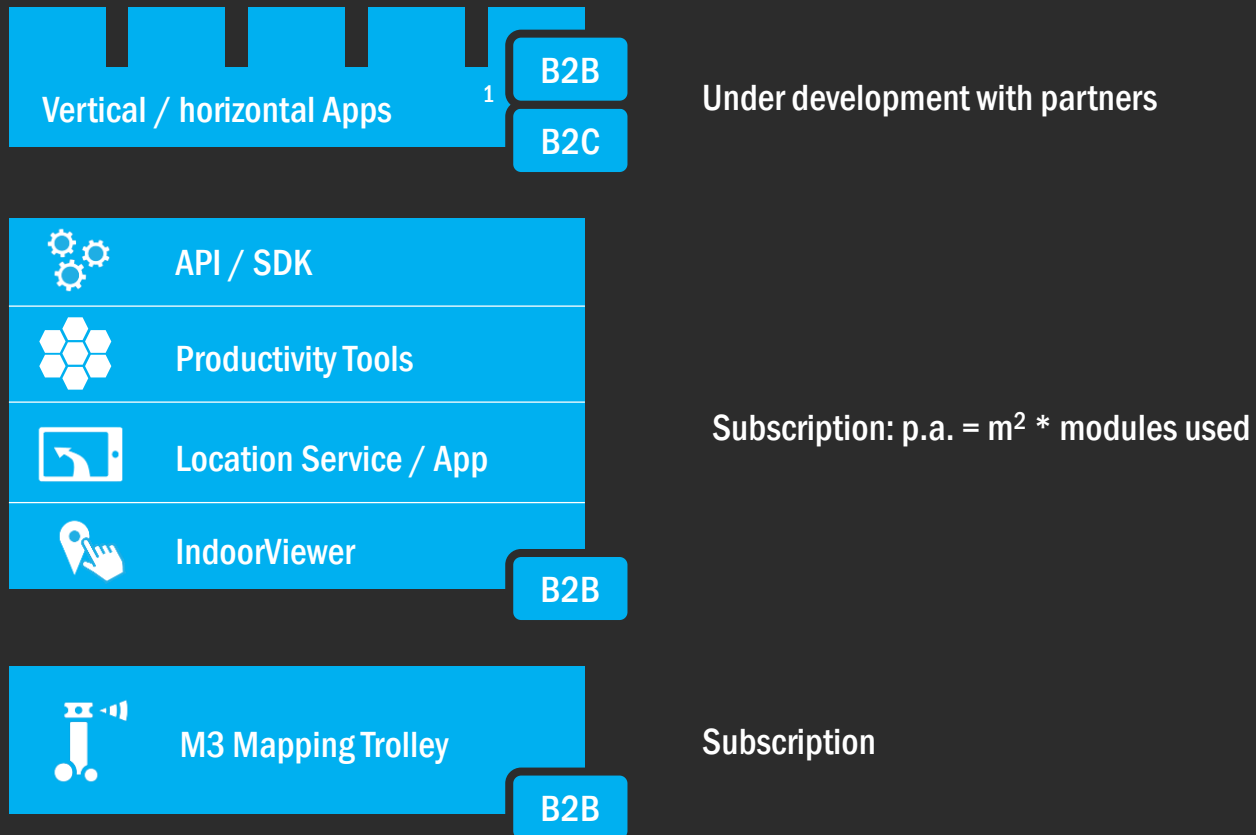
1 verticals / horizontals include: Facility Management, Retail, Industry, Repair & Maintenance, Construction, exhibitions, big data, …

Backers, Awards & Media

NAVVIS

Backed by renowned venture funds and industry leaders

- Target Partners, MIG Fonds, BayBG
- Technical University Munich, DLR, ESA, BayStartUp, ...
- Angels incl. Don Dodge (Google Dev advocate), Juergen Gallmann, (former CEO Microsoft Germany) and Lothar Stein (former Director McKinsey)
- ...

Honored by multiple prestigious awards

- DLD Digital Star 2016
- European Space Agency Award
- VDI Award
- VDE Award
- E.On Future Award
- Best of Munich
- ...

Featured by national and international media

- TechCrunch
- WiWo
- Technology Review
- Frankfurter Allgemeine Zeitung
- Süddeutsche Zeitung
- Computerwoche
- ...