

# Digital transformation of your business process

Bridging the information gap between physical assets  
and your company business system

Pär Bergsten, Founder & CEO



Awarded top 10 best IoT solution provider, CIO Bulletin, USA, 2018

Listed on Nasdaq First North - Dec 2017

Top 33 hottest tech-company in Sverige – NyTeknik & Affärsvärlden 2016

Top 100 hottest tech-company in the world – Red Herring 2015





# Q2 nyheter från HDW

April



## New order from Scania

New order from Scania – Additional pilot orders for RTLS-System to Scania Smart



## Decawave UWB selected for GE...

H&D Wireless selects Decawave for delivery of UWB chips for production ramp



## Speaker: Scania case@IoT Ma...

See H&D Wireless CEO on stage at the IoT Conference in Malmö 26 April



## Evertiq Expo in Helsinki 19 April

Join H&D Wireless at the Evertiq Expo in Helsinki 19 April EVERTIQ EXPO HELSINKI



## Breakthrough order on SPB228

H&D Wireless receives Norwegian Breakthrough order on SPB228 [Kista,

May



## H&D Wireless wins strategic or...

– RTLS IoT Solution to monitor material flow at vehicle manufacturers Stockholm



## First day of trading Hitech & De...

At the request of Hitech & Development Wireless Sweden Holding AB and in



## Elmia Automation fair 15-18 of ...

Meet with H&D Wireless at the Elmia Automation fair 15-18 of May. H&D

June



## H&D Wireless awarded 10 best ...

Award-winning IoT pioneer puts disruptive technology to work for established



## H&D Wireless Awarded Three P...

H&D Wireless, Swedish leading supplier of IoT Connectivity Modules and

July



## H&D Wireless i Almedalen

Foto: Region Gotland/Tove Turesson Träffa VD och grundare par.bergsten@hd-



## H&D Wireless genomför företrä...

H&D Wireless Sweden Holding AB (publ): ("H&D Wireless") meddelar i dag att

## VISION

H&D wireless will be market leader in Nordic within Production Logistics with the use of realtime location service (RTLS+GPS).

## MISSION

To collaborate and be a strategic partner for Nordic Industry companies that want to digitize and automate thier business processes to strenghten thier competitivness.

- World class IoT Connectivity and Turn-key IoT Cloud platform for Smarthome.
- Shipped > 1000 000 products world wide.
- Opened new business segment for Industry IoT: Enterprise Services RTLS+GPS
- Successful Pilots with major tier 1 Industry companies Cramo and Scania.
- Cloud based commercial service installed and running with first customer, Exploria.
- Patent granted for the security of the Griffin system, #US20150006892 A1 + Three invention disclosures in progress for patent application Q4-2018.
- Launched first indoor + outdoor positioning solution GEPS at Mobile World 2018.
- Total generated > 90MSEK revenue since start.
- Increased from 16 people in January to 30 people in Aug-2017, mainly Enterprise BU
- Raised 70MSEK to focus on largest segments within IoT for Enterprise 2016 - 2017
- **Listed at Nasdaq First North 22d Dec-2017.**
- Warrants TO1 listed for trading 31th May-2018
- New investment round directed to existing shareholders as preferential rights issue of 37.4MSEK announced in June-2018.





# H&D Wireless organisation

Pär Bergsten,  
Grundare & VD



Per-Olov  
Östberg,  
CFO



Carl Elgh,  
VP Marketing &  
Business  
Development



Rajesh Patel,  
VP  
Technology  
strategy



Marie  
Edlund,  
HR Manager



VP Connectivity BU,  
Johnny Johansson



## Connectivity

Peter Rörfors

Försäljningschef Connectivity Global



- WiFi-moduler
- Combo-moduler
- BT, BTLE, NFC RFID, UWB
- IoT-moduler med Cloud MV
- Operativa tjänster till affärsenheter



## HDW LABS

## LABS/Incubator Design services

Åke Jernberger  
VP Engineering



- Engineering support
- Nyckelfärdiga FoU-projekt
- Intern FoU till affärsenheter



VP Enterprise BU,  
Mats Larsson

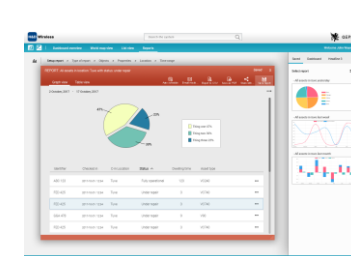


## Enterprise RTLS Services

Pontus Holmberg  
Technical sales



- Smart-fabrik, Industry 4.0
- Transport & logistik
- Lekcenters, parker & Hotell





# HDW Partners:

SEMICON

CLOUD SW

MEMBER ORG

COMP DISTI

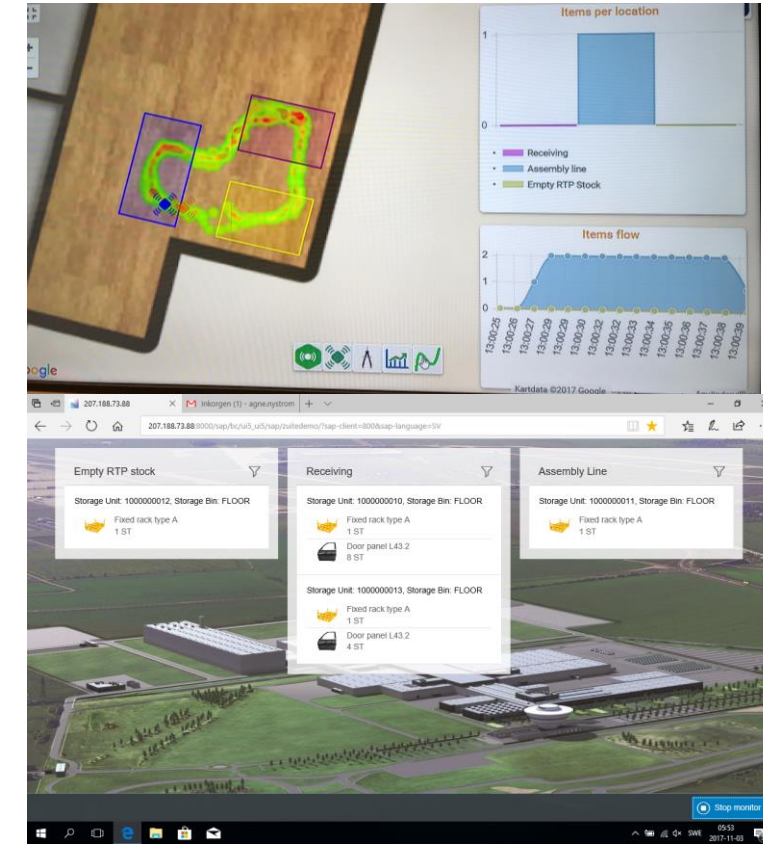
GoTo Market GEPS

Production



# GEPS™ for Industry – RTP is the lifeblood of Industry 4.0

**GEPS™**  
Griffin Enterprise Positioning Services

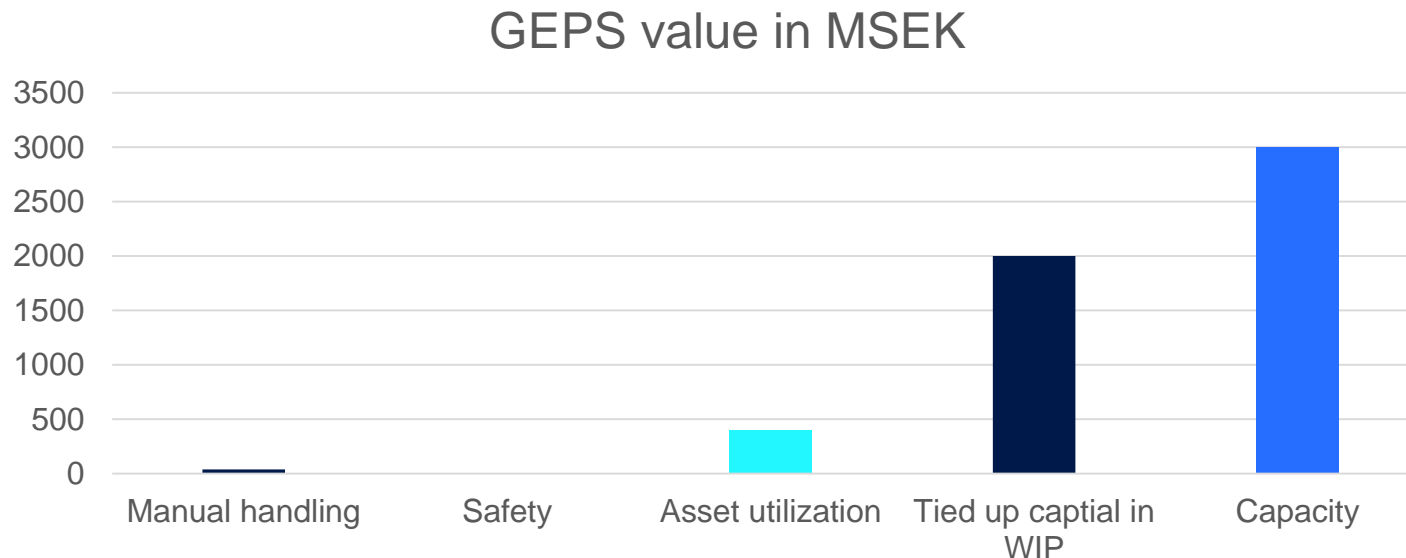




# Value of GEPS

Volvo AB – example

- |  |                           |          |
|--|---------------------------|----------|
| ■ Reduction of manual handling 10%       | ■ 500 people 10%          | 40MSEK   |
| ■ Safety of personell and equipment 1%   | ■ 500 people 1%           | 4MSEK    |
| ■ Better utilization of assets 20%       | ■ 2000MSEK in BS -20%     | 400MSEK  |
| ■ Reduced capital tied up in material 2% | ■ 100 BSEK WIP – 2%       | 2000MSEK |
| ■ Increased capacity 1%                  | ■ Increased sales 300B+1% | 3000MSEK |



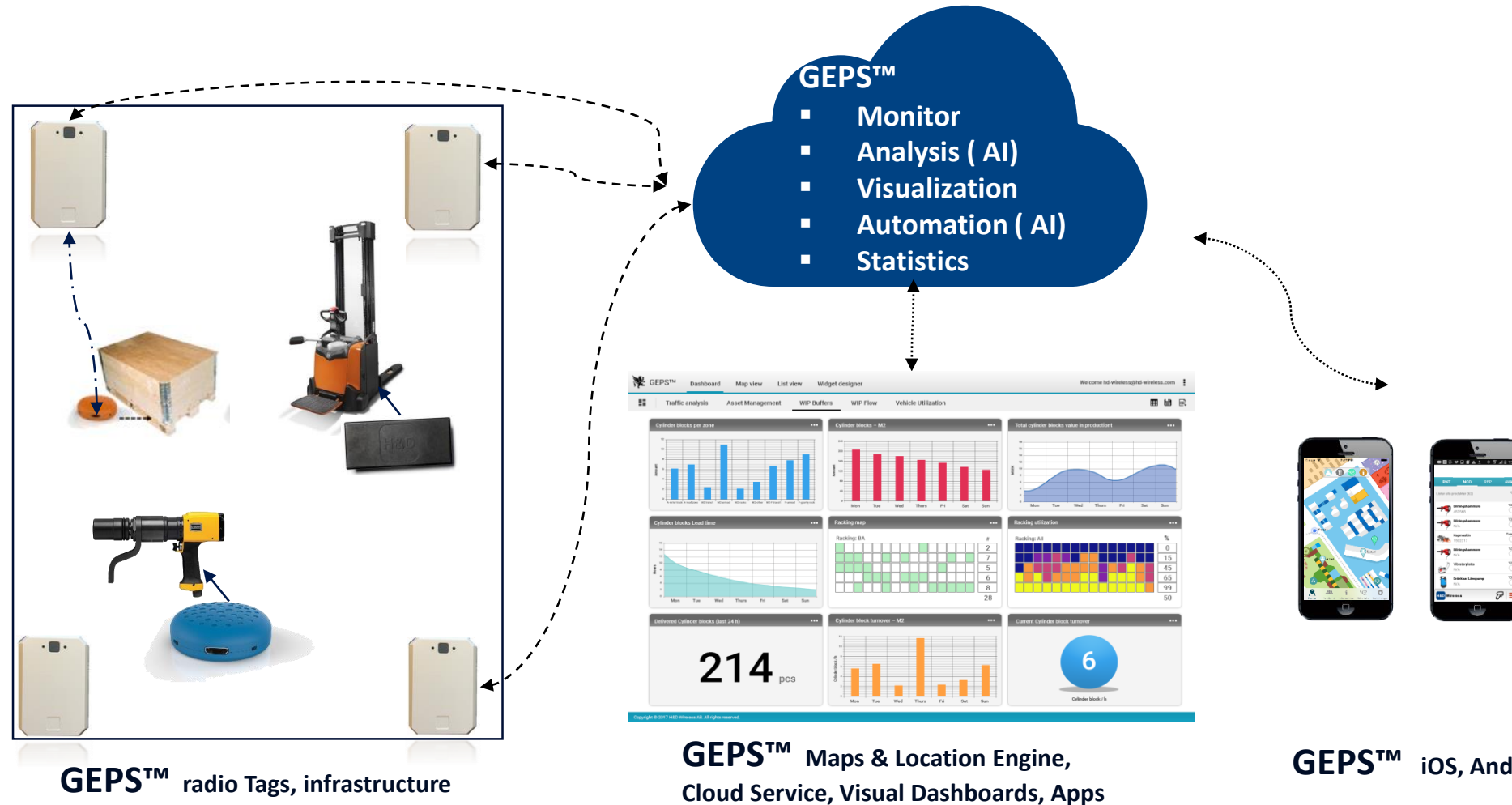
# PRODUCTS & SERVICES



# GEPS™ for Industry- Griffin Enterprise Positioning Services ,

Key deliverables and business value

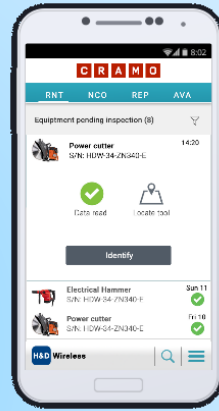
- ✓ Inventory Control
- ✓ Improved asset utilization
- ✓ Work flow planning
- ✓ Performance Monitor
- ✓ Identify and eliminate bottle necks
- ✓ GEPS™ – Griffin Enterprise Positioning Services



# GEPS for Building Industry

## Key Benefits:

- ✓ Asset Management
- ✓ Safety
- ✓ Find & Locate
- ✓ Anti Theft
- ✓ Optimize utilization
- ✓ Read out tool usage
- ✓ Reduce costs – less manual work
- ✓ Increase tool sales
- ✓ GEPS™ Raven tags with NB-IoT
- ✓ Applications as a Service, AaaS
- ✓ Immediate RoI



## GEPS™ - Digitalize & Visualize Your business processes

- Follow key Assets & Products in Real time

- Smart Positioning is revolutionizing the tool and building Industry



[www.hd-wireless.com](http://www.hd-wireless.com)

H&D Wireless AB (publ) is listed on Nasdaq First North (HDW B)





# GEPS for Industry: Visualizer – Dashboard view



# GEPS for Industry: Visualizer – Map view

The screenshot displays the GEPS Visualizer Map view interface. The main area shows a detailed map of a warehouse floor plan with various assets represented by icons. A red rectangle highlights a specific area in the upper left, and a purple rectangle highlights another area in the lower left. A red starburst icon is visible in the center of the map, and an orange starburst icon is in the lower left. The sidebar on the right contains the following sections:

- Welcome** hd-wireless@hd-wireless.com
- Assets** | Charts
- Find by identifier**  
Type serial or batch #
- Filter assets**
  - Tow truck - Empty trailers (1)
  - Tow truck - idle (3)
  - Tow truck - With load (1)
  - Forklift - Service (1)
  - Forklift - Charging (1)
  - Forklift - With load (1)
  - Pallet - Empty (20)
  - Pallet - With load (1)
  - Trailer - With load (1)
- Collision** Clear
- Properties**
  - Type: Forklift
  - Status: Charging
  - S/N: BDH872687JSDLO

Map data ©2018 Google | 10 m | Terms of Use

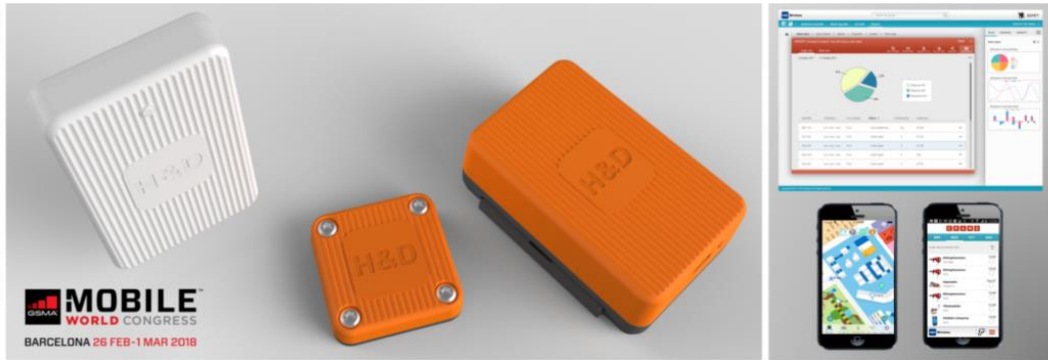
Copyright ©2017 H&D Wireless AB. All rights reserved. (Version: 1.0.0.3)



# H&D at MWC: Launch of indoor plus outdoor tracking.

## → Mobile World Congress 2018

H&D Wireless at Mobile World Congress 2018 with GEPS for indoor and outdoor



### H&D Wireless at Mobile World Congress 2018

H&D Wireless, leading Nordic IoT end-to-end provider will be participating in this year's Mobile World Congress in the Swedish Pavilion, Hall 7.

We will be showing **GEPS™** - Griffin Enterprise Positioning Services - Leading indoor RTLS platform for Industry 4.0 powered by BLE/UWB/Wi-Fi now also covering outdoor with GPS, LTE Cat.M1 & NB1

Please visit us in hall 7 stand E41 or email us in advance to set up a meeting:

[carl.elgh@hd-wireless.se](mailto:carl.elgh@hd-wireless.se) +46 733-941400  
[www.hd-wireless.com](http://www.hd-wireless.com) , [info@hd-wireless.se](mailto:info@hd-wireless.se)



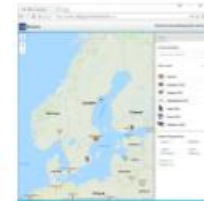
H&D Wireless AB (publ) is listed on Nasdaq  
First North (HDW B)

H&D Wireless will be showing **GEPS™** – Griffin Enterprise Positioning Services:

- Leading indoor **RTLS platform for Industry 4.0** – powered by **BLE/UWB/Wi-Fi**
- Now also covering **Outdoor with GPS, LTE Cat.M1 & NB1**



**GEPS™**  
Infrastructure & tags



**GEPS™** Visualizer



**GEPS™**  
iOS App

### **GEPS™ Production Logistic SuperTag** key features include:

- Cloud based service
- RTLS indoor & outdoor usage
- A-GPS, Cat.M1, NB1, EGPRS, UWB, BLE, NFC
- 5 Year battery life time, 24h ping
- Quick mounting
- IP class 65



H&D Wireless @hd\_wireless · Feb 27

The car Industry confirm high interest in Griffin Enterprise Positioning Services - follow valuable assets in the production line #MWC2018 Barcelona



# Accelerate<sup>©</sup> - Connectivity Modules for the Digital World

## Most versatile, secure and future-proof module family

- High performance and covers all application demands
- Throughput from 150Mbps to 866Mbps
- Multiple form-factors for best footprint and cost
- Industrial temperature range
- FCC, IC and CE certified



### HDG229

#### Key features

- WiFi 11abgn
- Dual Band
- Bluetooth 5
- Classic and LE
- SDIO, UART IF
- Integral shield
- 8x8mm SiP

Marvell 88W8977

### SPB209A

#### Key features

- WiFi 11abgn/ac
- Dual Band
- Bluetooth 4.2
- Classic and LE
- SDIO, UART IF
- 14x14, 14x21mm
- Optional antenna

Marvell 88W8887

### SPB228

#### Key features

- WiFi 11abgn/ac
- 2x2 MU-MIMO
- Dual Band
- Bluetooth 5
- Classic and LE
- PCIe, SDIO, USB IF
- M2 12x16mm

Marvell 88W8997



Evaluation kits available in SD and PCIe M2 card formats



# Marketing

**Top 33 hetast i Sverige** – *Enligt NyTeknik & Affärsvärlden 2016*  
**Top 100 hetast i Världen** – *Enligt Red Herring 2015*



GSMA **MOBILE**  
WORLD CONGRESS



H&D

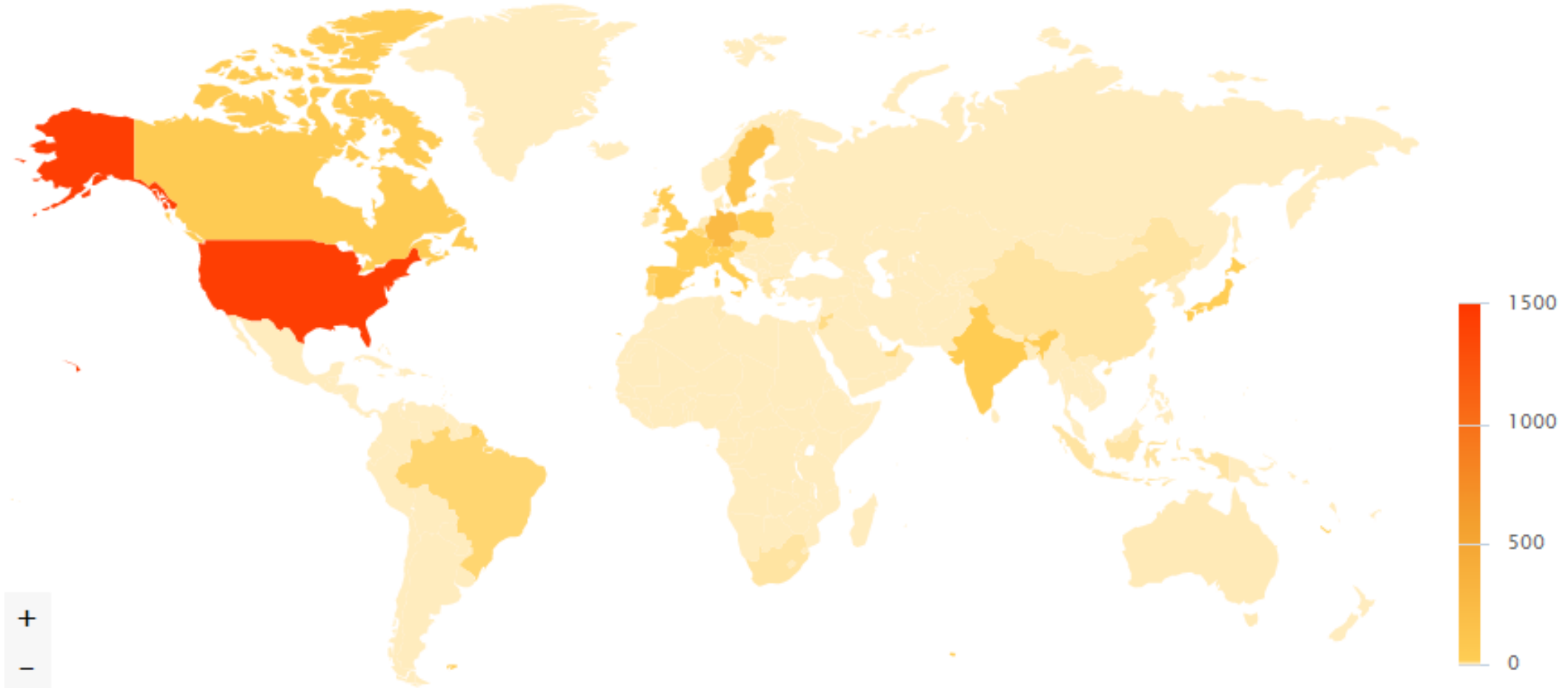
H&D Wireless @hd\_wireless · Feb 27

GEPS™ – Griffin Enterprise Positioning Services - Leading #RTLS platform for Industry 4.0 drawing attention at #MWC18 Swedish pavilion @ghokmark @BusinessSweESP @swedish\_IoE





# Geodensitet - H&D Wireless



- Visar i vilka geografiska områden som det talas mycket om H&D Wireless

# Market update

## Business units:

Enterprise

Connectivity

Incubator/Spin-offs



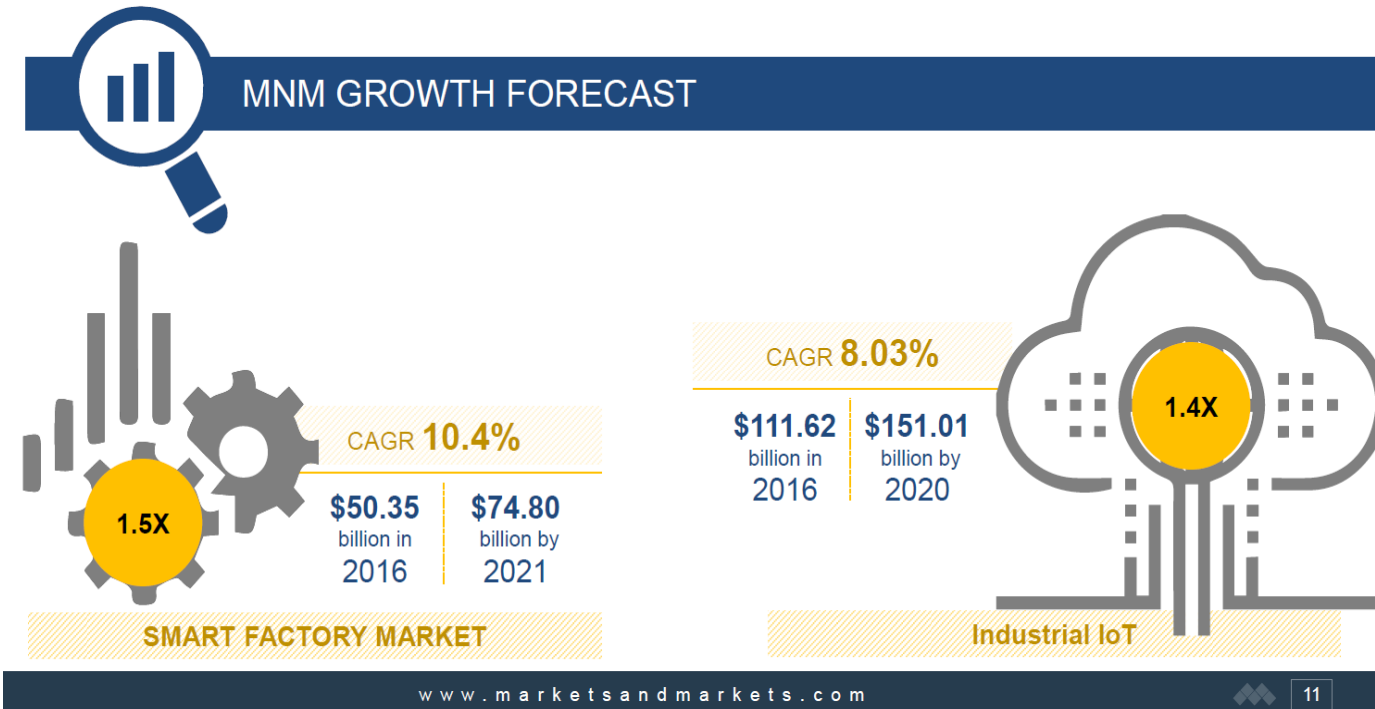
# Market outlook

## Generic IoT



Figur 3: Sektorsövergripande syn på potentiell påverkan inom IoT  
Källa: McKinsey & Company, juni 2015

## Industry IoT incl. Production logistics



# Market View: Building Industry: Tool mfn segment



Company	Hand/Power Tool Sales	Global Market Share
Stanley Black & Decker Inc.	\$7.14 Billion	14.0%
Robert Bosch GmbH	\$6.2 Billion	12.2%
Fortive Corp.	\$6.0 Billion	11.8%
Techtronic Industries Company Limited (TTi)	\$5.04 Billion	9.88%
Hilti Corp.	\$4.3 Billion	8.43%
Illinois Tool Works Inc.	\$3.6 Billion	7.06%
Makita Corp.	\$3.5 Billion	6.86%
Snap-on Inc.	\$3.4 Billion	6.67%
Emerson Electric Co.	\$1.9 Billion	3.73%
Apex Tool Group, LLC.	\$1.5 Billion	2.94%
Hitachi Koki Co., Ltd.	\$1.2 Billion	2.35%
TOTAL		\$51 Billion 100%

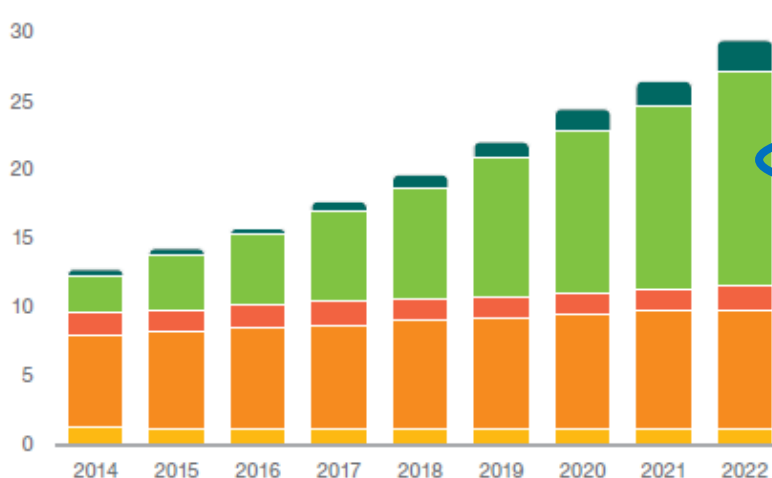
# Market View: Modules and Systems

## 1.5 billion IoT devices with cellular connections by 2022

At the end of 2016, there were around 0.4 billion IoT devices with cellular connections. Due to increased industry focus

The first cellular IoT networks supporting massive IoT applications, based on Cat-M1 and Narrow Band-IoT (NB-IoT) technologies<sup>4</sup>, were launched in early 2017. Several operators are expected to deploy cellular IoT networks in 2017.

Connected devices (billions)



	2016	2022	CAGR
Wide-area IoT	0.4	2.1	30%
Short-range IoT	5.2	15.5	20%
PC/laptop/tablet	1.6	1.7	0%
Mobile phones	7.3	8.6	3%
Fixed phones	1.4	1.3	0%
	16 billion	29 billion	

Wide-area IoT CAGR=30%  
NB-IoT and CatM1 new standards will explode in volume 2019-2020

Mobile Phone CAGR=3%  
Short Range IoT CAGR=20%

<sup>1</sup> In our forecast, a connected device is a physical object that has a processor, enabling communication over a network interface  
Note: Traditional landline phones are included for legacy reasons

<sup>2</sup> Including: Smart TVs, digital media boxes, Blu-Ray players, gaming consoles, audio/video (AV) receivers, etc.

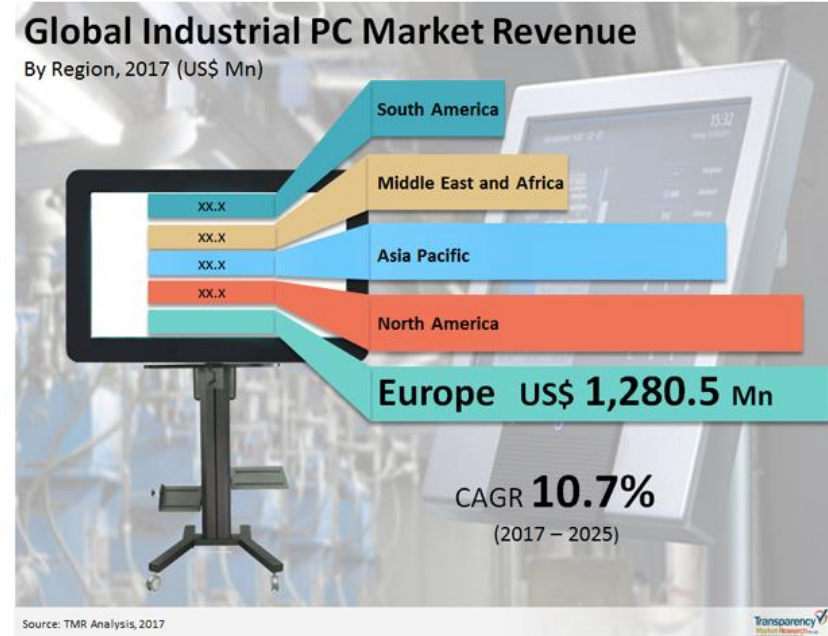
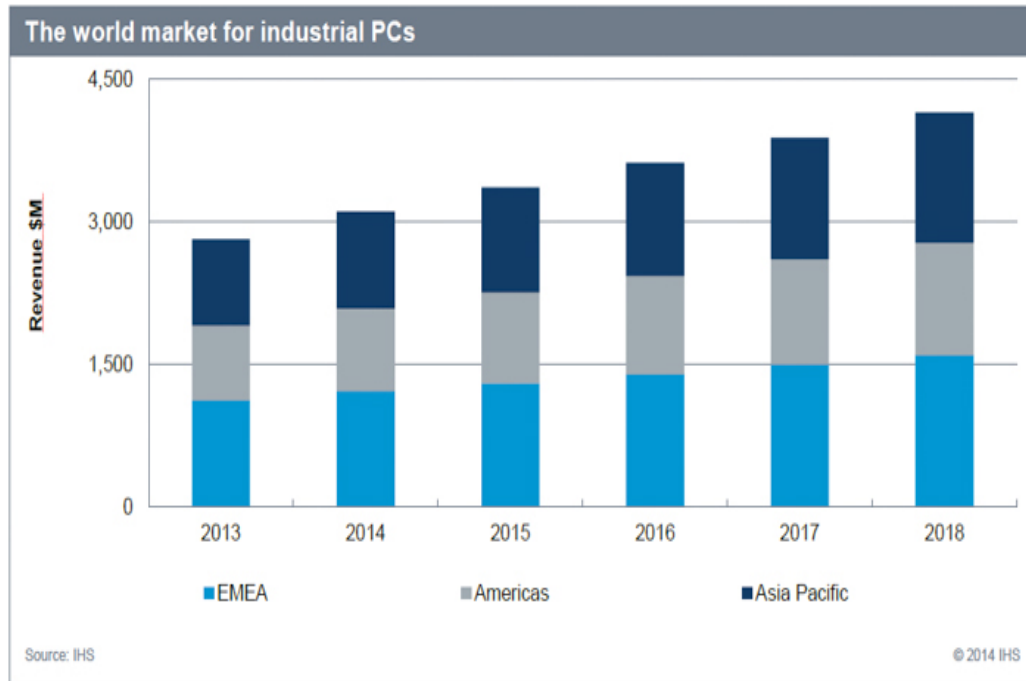
<sup>3</sup> Connected devices connecting to a wide-area network through a common gateway

<sup>4</sup> Cat-M1 supports a wide range of IoT applications, including content-rich ones, and NB-IoT is streamlined for ultra-low throughput applications. Both these technologies are deployed in LTE networks



# Industrial PCs: Target for our Connectivity business

The revenue of the global industrial PC market stood at US\$3,651.5 Mn in 2016; this is projected to expand at a CAGR of 10.7% during the forecast period (2017 to 2025) and reach US\$8,784.2 Mn by 2025.

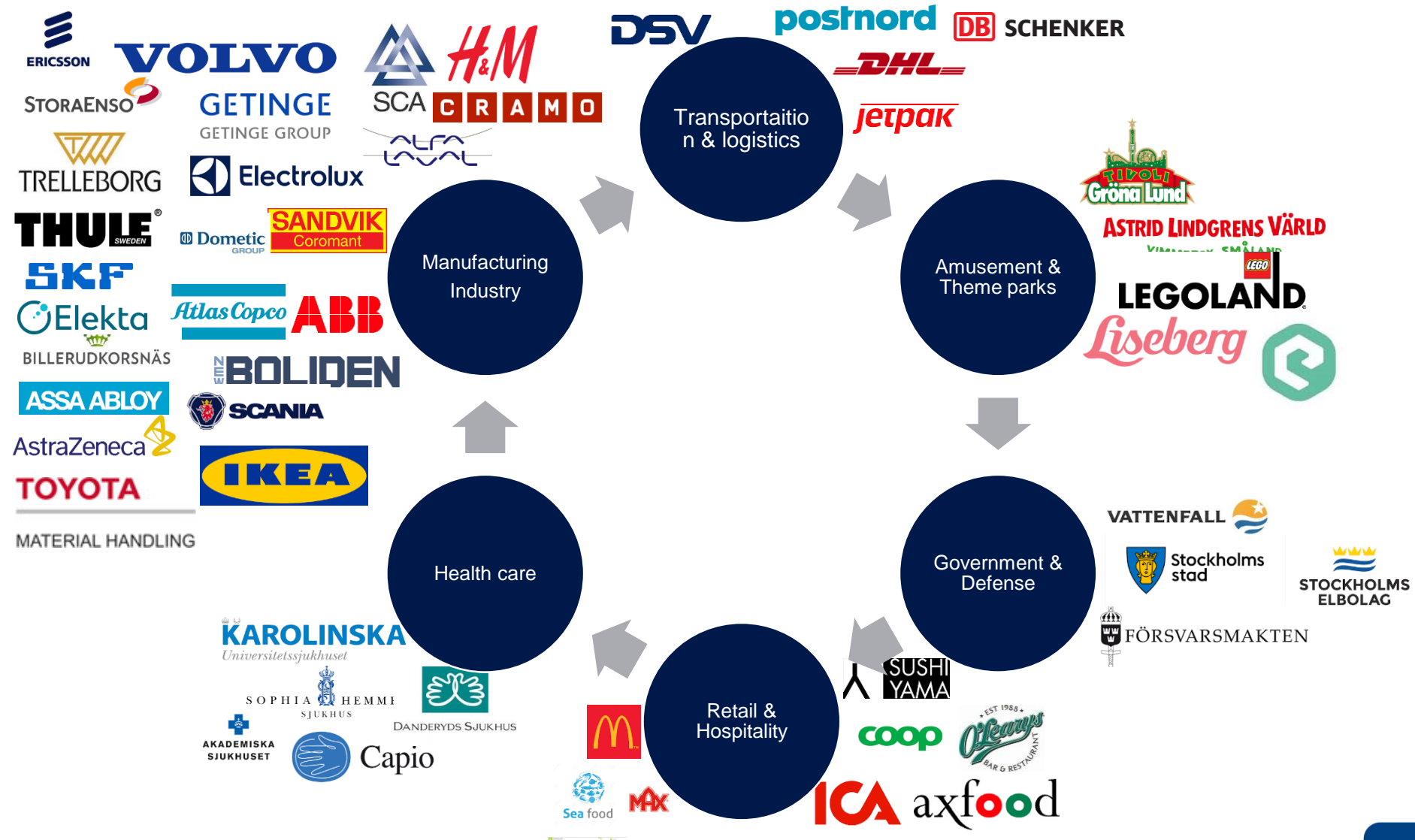


## Panel Industrial PCs to Dominate Industrial PC Market due to Rising Demand for Automated Process Control

The industrial PC market has been segmented on the basis of its type and end use. On the basis of type, the industrial PC market is categorized into panel industrial PC, box industrial PC, embedded industrial PC, DIN rail industrial PC, rack mount industrial PC, and thin client industrial PC. Panel industrial PCs are widely used across the industrial sector, as these are generally used for process control operations and data acquisition. Panel industrial PCs are used in the automation, manufacturing, surveillance, transportation, food and beverage, gaming, medical, communication and network infrastructure, retail, and energy and power sectors.

<https://www.transparencymarketresearch.com/industrial-pc-market.html>

# RTLS segments + target customers



# GEPS segments and traction

 = active discussions

FOCUS #1

FOCUS #2 study

FOCUS #3 study

FOCUS #3 study

Production  
logistics –  
Vehicle+Heavy  
Industry



Asset+Safety  
Management-  
Construction  
Industry

C R I A I M O

Industry

Fleet  
Management

Yard  
Management

Hospitality

Hospitals

Transport  
Logistics



Exploria

Sweden

Operators

Japan

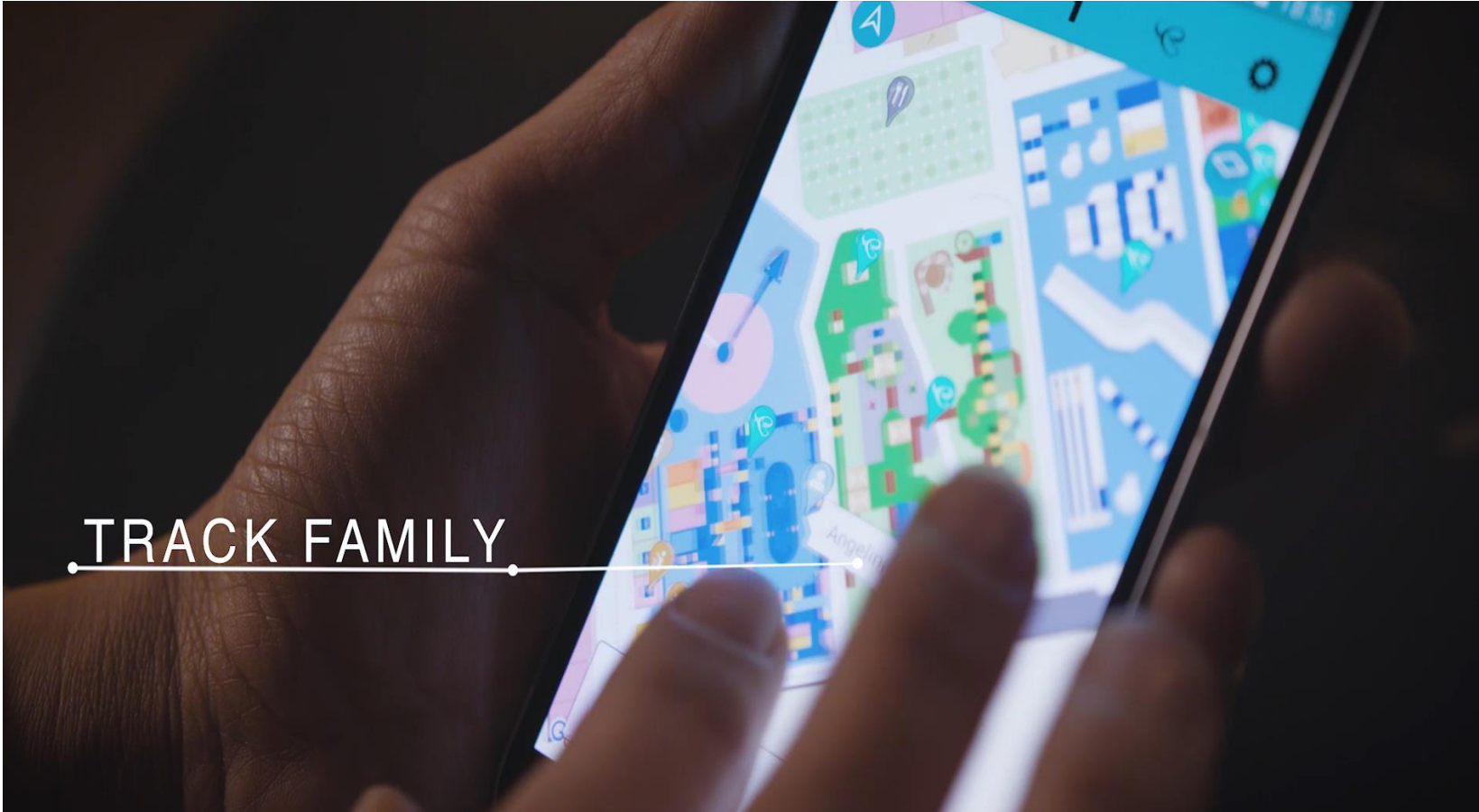


# Customer cases

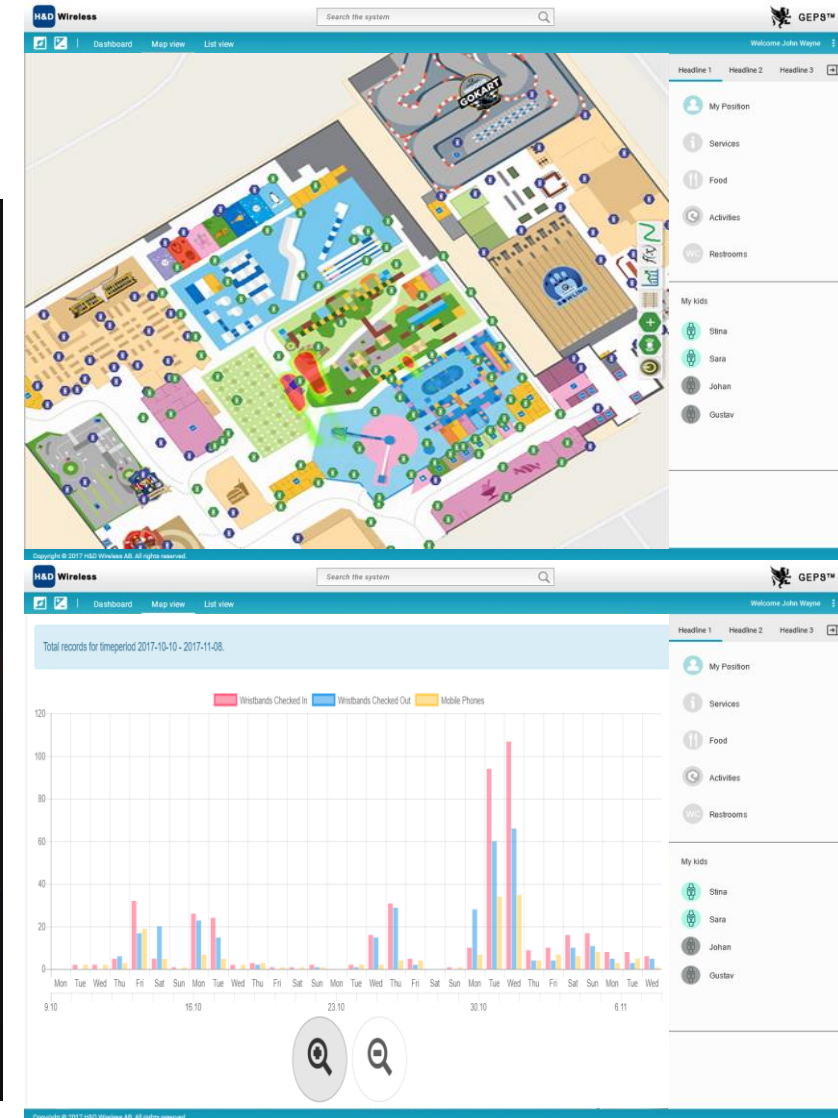
An aerial photograph of a city skyline at sunset. The sky is a mix of deep blue, orange, and yellow. The city is illuminated with lights, and the water in the foreground reflects the city lights and the sunset. The text "Customer cases" is overlaid in white, bold, sans-serif font.



# GEPS™ for Hospitality: Running service

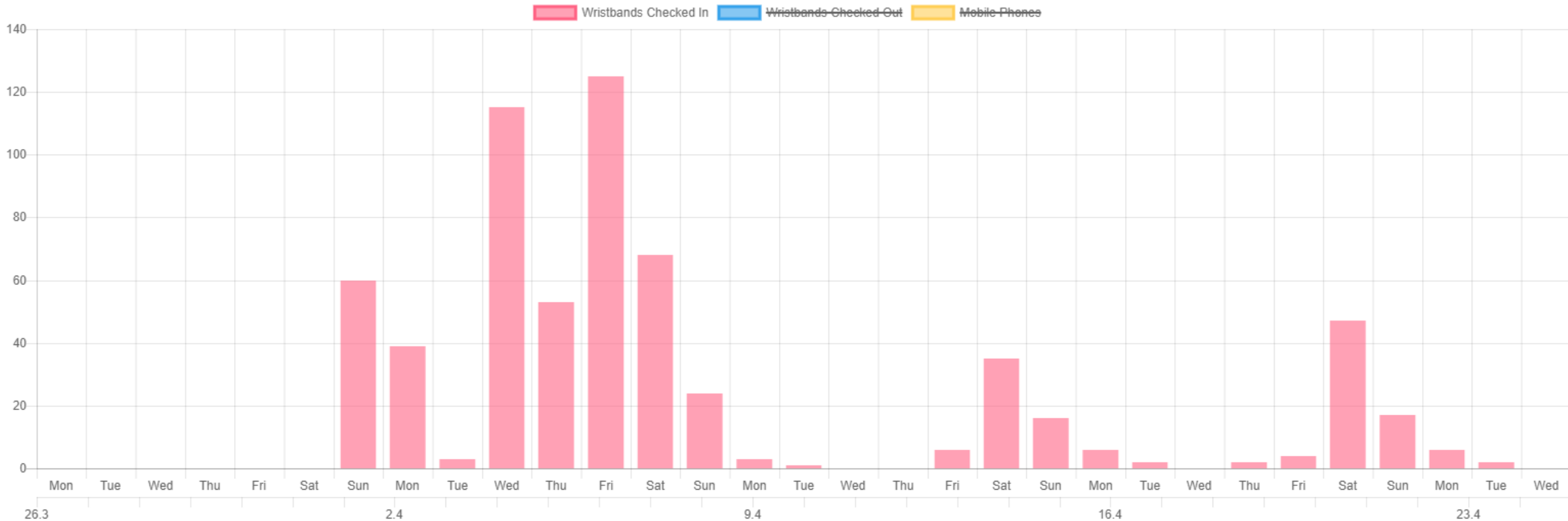


TRACK FAMILY



# Exploria- statistics

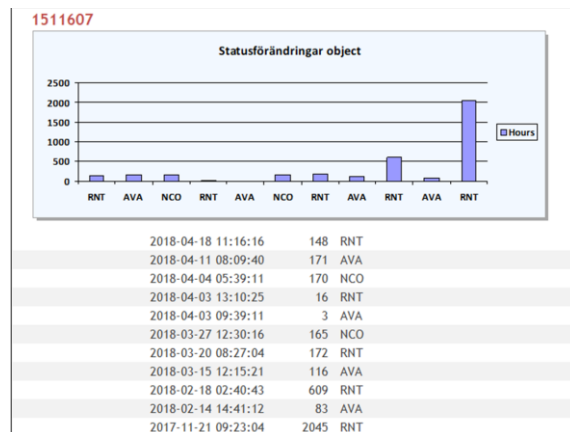
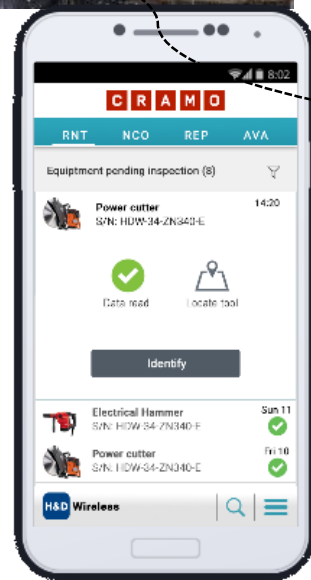
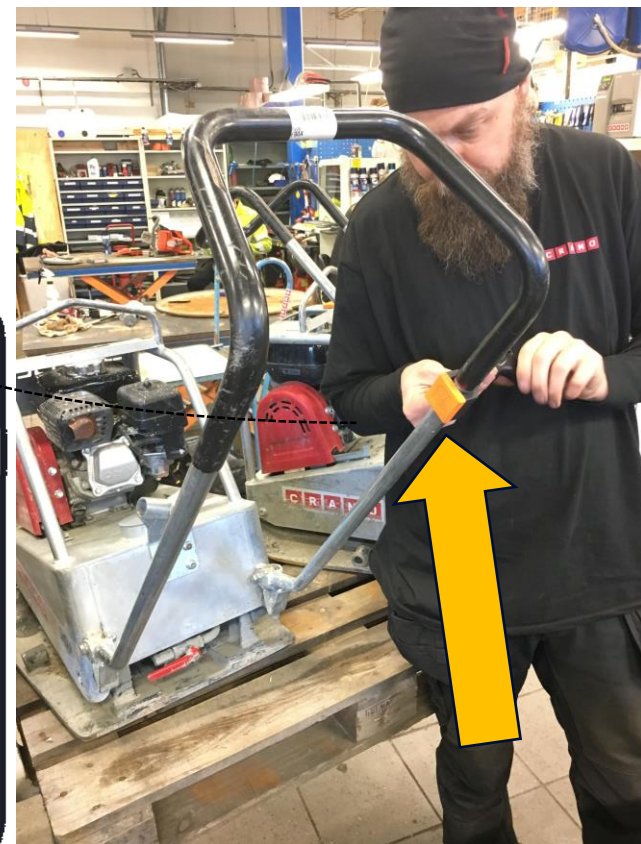
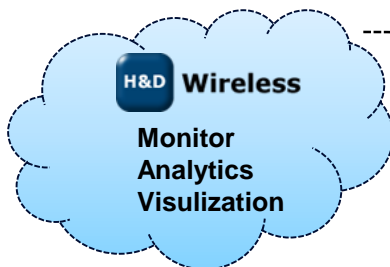
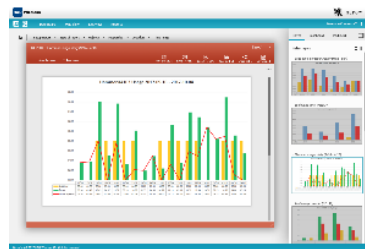
Total records for timeperiod 2018-04-01 - 2018-04-25.





# Cramo – Gothenburg depot

## GEPS™ Pilot



Each rental product equipped with an individual wireless tag for on-line and real time positioning

- ✓ Increase Customer satisfaction
- ✓ Optimize utilization
- ✓ Digitalize – return flow
- ✓ Increase sales
- ✓ Reduce costs – less manual work

# Scania Smart Factory – Arena for new technique

Scania together with H&D Wireless display and show RTLS solutions in the Scania Smart Factory in Södertälje



# Outcome:



Lars Hansson, Project Manager  
Scania Smart Factory

Press release

2018-02-23

**Scania sees positive outcome on evaluating H&D Wireless RTLS system for indoor positioning in Smartfactory Lab.**

[H&D Wireless](#), The Swedish supplier of IoT and RTLS Clouds Platform Solutions, recently listed on Nasdaq First North, has been evaluated and approved in a project with another Swedish industrial company. The truck manufacturer Scania has evaluated H&D Wireless GEPS indoor positioning system in its "SmartFactory Lab" in Södertälje, Stockholm, with the goal of getting a better overview of processes and objects through production.

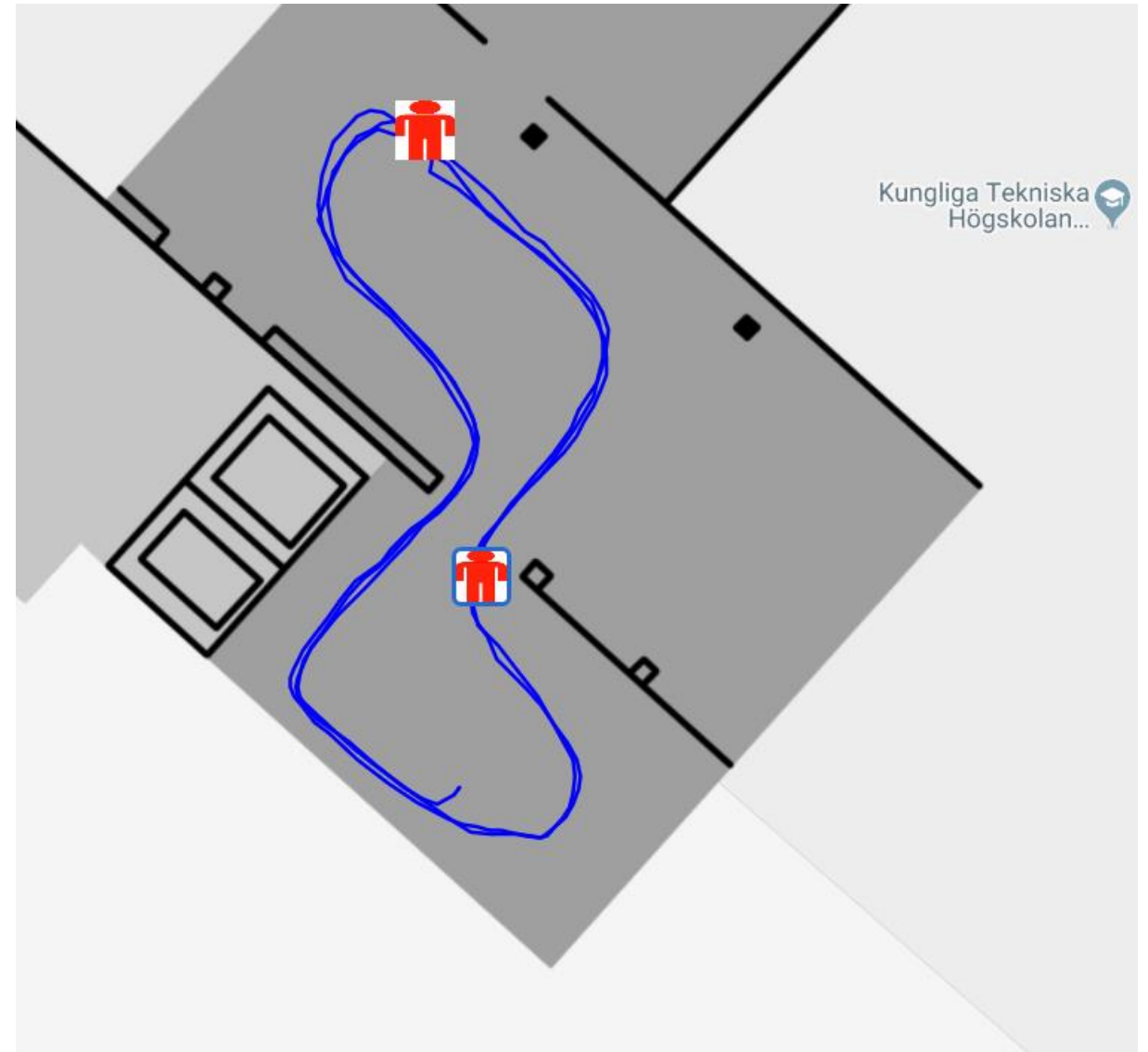
“At Scania Smart Factory Lab, we evaluate new technologies and solutions to see what you can achieve. Furthermore, we are demonstrating the technologies in the most real way possible regardless of the ongoing production”





# Smart Factory – Scania-KTH

- UWB tracking of people show very good accuracy, see image.
- Tags attached to Automated Guided Vehicles.
- Successful demo done for the King of Sweden, Carl XVI Gustaf in June at the installation of KTH Södertälje.



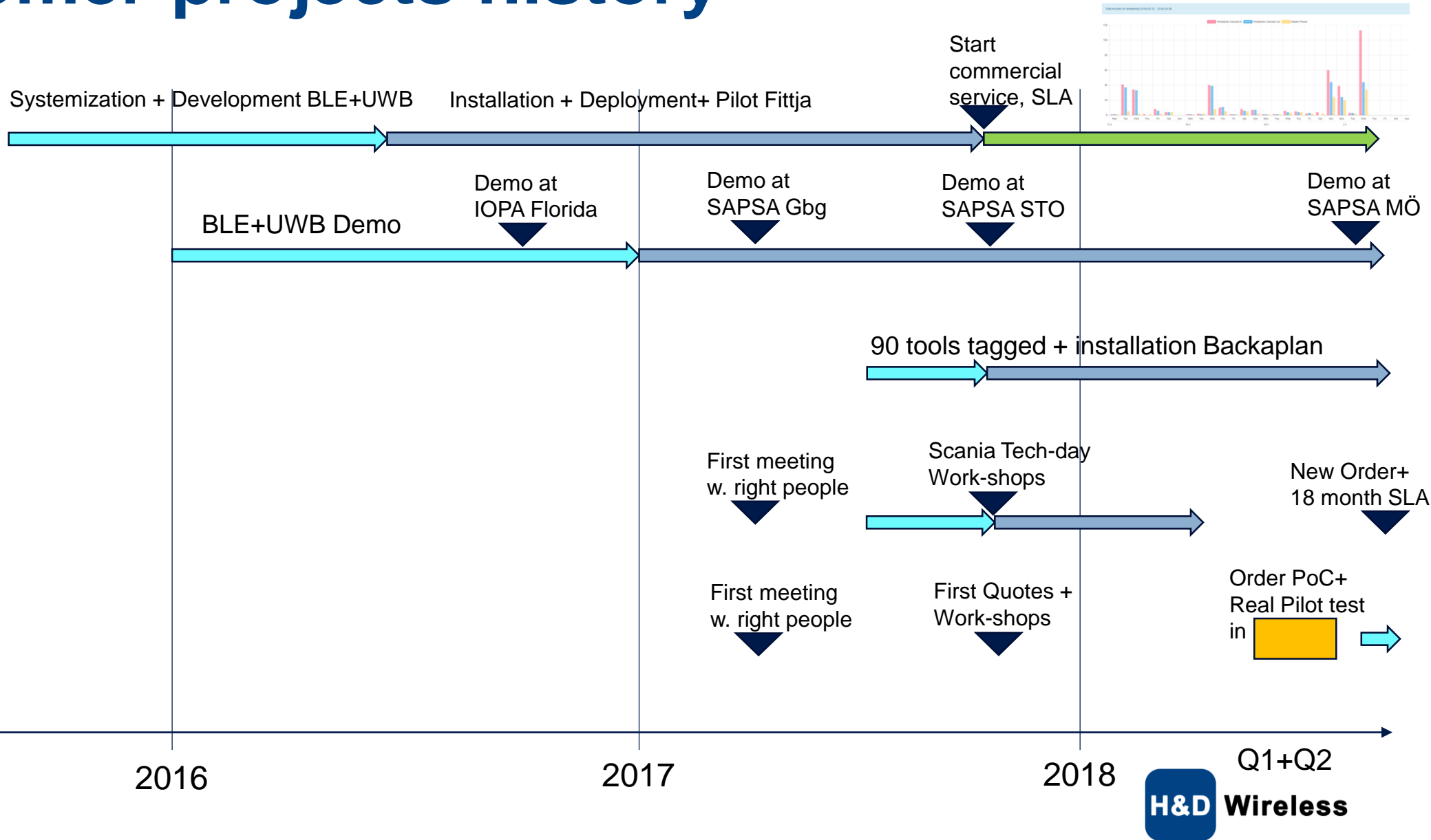
# Customer projects history

- Exploria

- Train demo

- Cramo

- Scania



Connectivity: Our wireless module business.

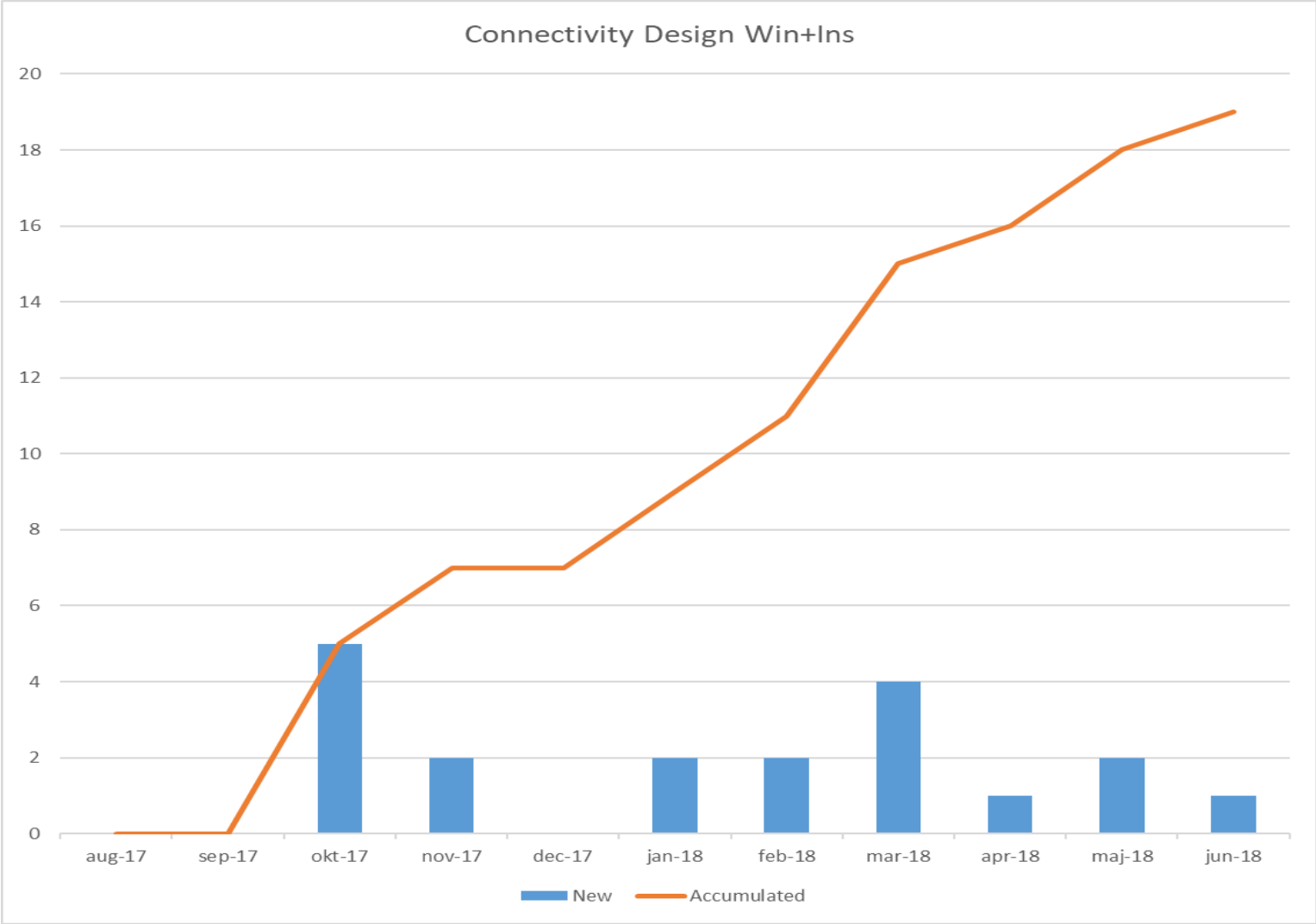
First customer to reach volume production is No-Isolation with Social Robots for children with long-term illness. Photo from where the robot is stand-in for a child at the start a football game.

*“Jack’s dream came true thanks to the great work of WellChild, a UK charity working to better the lives of children with long-term diseases, and Everton Football Club, who moved boulders to arrange Jack’s dream day”.*  
<https://www.noisolation.com/global/news/av1-everton/>





# Connectivity BU – traction of the new modules



Updated 2018-06-15

# History & Team

# Founder track record



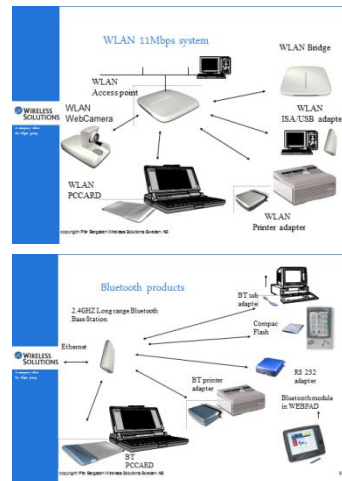
MSc. E.E+MBA

After 2 years with Ericsson Radar products moved to central R&D, CTO office, at Mobile Cellular Systems for 12 years.

Three major internal start-ups:

- Introduced RF-semiconductors to Cellular
- Linearized RF Power Amps TRX for Mobil Base stations.
- Started first 3G base station project for NTT-DoCoMo trials

Founder, CEO& CTO.  
Wireless connectivity solutions for defense, networks, accessories and Smarthome



Germany, US, Japan

**ERICSSON**

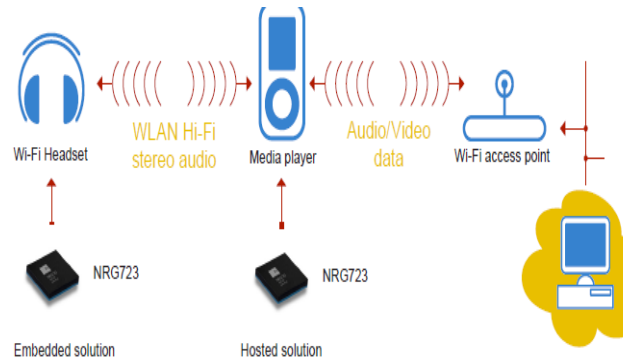
1983-1997

**WIRELESS SOLUTIONS**

1997- 2002

Company acquired by Allgon AB and then National semiconductors at total of 400MSEK. (not official)

Founder, CEO& CTO.  
World class Wi-Fi silicon and software for cell phones



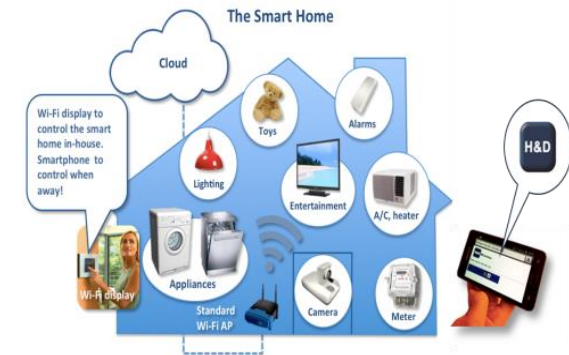
Korea, Japan, Sweden

**nanoradio**  
Always On WiFi

2003- 2009

Company acquired by Samsung semiconductors at 250 MSEK. (not official)

Founder and CEO.  
World class one-chip IoT solutions for Smart Home, Smart Grid & Enterprise and In-door positioning RTLS for Industry 4.0



US, Korea , Germany

**H&D Wireless**

2009 - present

>50% growth/ year 2011-2015

- 1000k units shipped
- Three business units

**H&D Wireless**



# H&D Wireless organisation

Pär Bergsten,  
Grundare & VD



Per-Olov  
Östberg,  
CFO



Carl Elgh,  
VP Marketing &  
Business  
Development



Rajesh Patel,  
VP  
Technology  
strategy



Marie  
Edlund,  
HR Manager



VP Connectivity BU,  
Johnny Johansson



HDW LABS

VP Enterprise BU,  
Mats Larsson



## Connectivity

Peter Rörfors

Försäljningschef Connectivity Global



- WiFi-moduler
- Combo-moduler
- BT, BTLE, NFC RFID, UWB
- IoT-moduler med Cloud MV
- Operativa tjänster till affärsenheter



## LABS/Incubator Design services

Åke Jernberger  
VP Engineering



- Engineering support
- Nyckelfärdiga FoU-projekt
- Intern FoU till affärsenheter

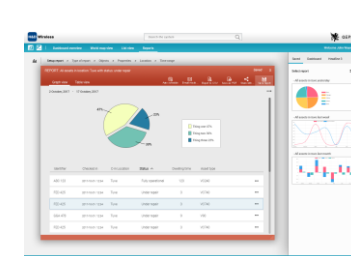


## Enterprise RTLS Services

Pontus Holmberg  
Technical sales



- Smart-fabrik, Industry 4.0
- Transport & logistik
- Lekcenters, parker & Hotell



# Styrelse



**Pär Bergsten**

VD



**Peter Dahlander**  
Ordförande



**Carl Östholm**



**Hans Söderberg**



Samarbetande Konsulter AB since 1977

# Advisory board



**Roland Andersson**



**Hadar Cars**



**Jörgen Lantto**



FINGERPRINTS



**Hans Andréasson**



MANNHEIMER  
SWARTLING



**Anders Pettersson**







# Thank You



**Wireless**



[youtube.com/user/HDwireless2009](https://youtube.com/user/HDwireless2009)



**Wireless**