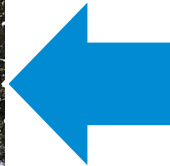


Company Presentation

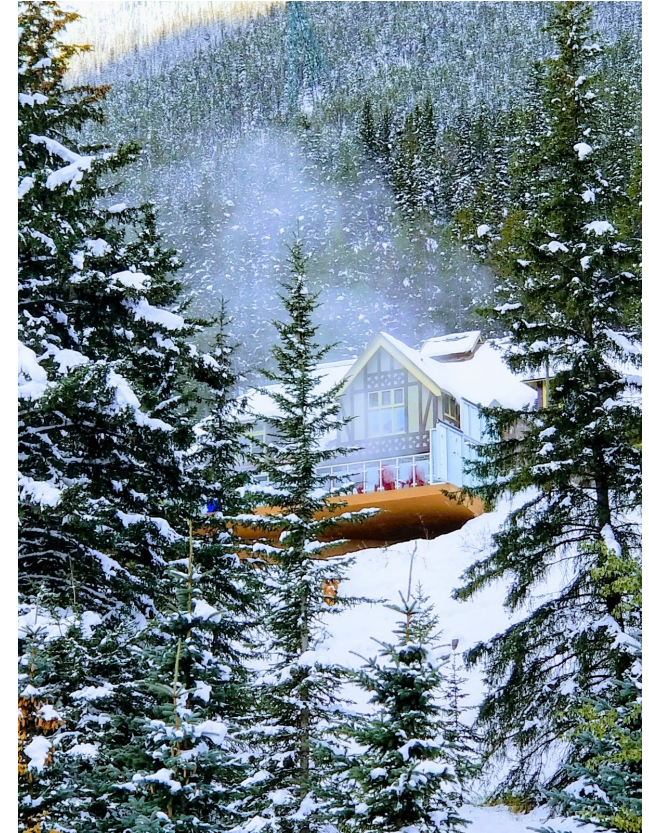
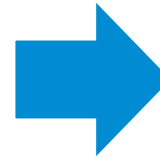
Rutronik Electronics Worldwide

- 1. Who is Rutronik?**
2. Cellular Network Evolution



No Google Processing

With Google Processing





Really?????

- **Global Company**
 - Founded 1973
 - ~\$1.3B Sales
 - 1,800+ employees
 - More than 33 countries and 82 offices worldwide
- **Distribution Market Share**
 - 3rd largest distributor in Europe
 - 11th largest distributor globally
- **Logistics**
 - Warehouses in Asia, Americas, & Europe
 - Services more than 30K customers globally
 - 100B+ components shipped annually
- **Supplier Linecard**
 - Leading supplier engagement
 - Strong wireless portfolio
 - Garmin/ANT+
 - Nordic (Europe)
 - Insight SiP



Helmut Rudel
President



Thomas Rudel
CEO

Who is Rutronik



- Benefit from Rutronik's high volume purchases
- Get very competitive prices



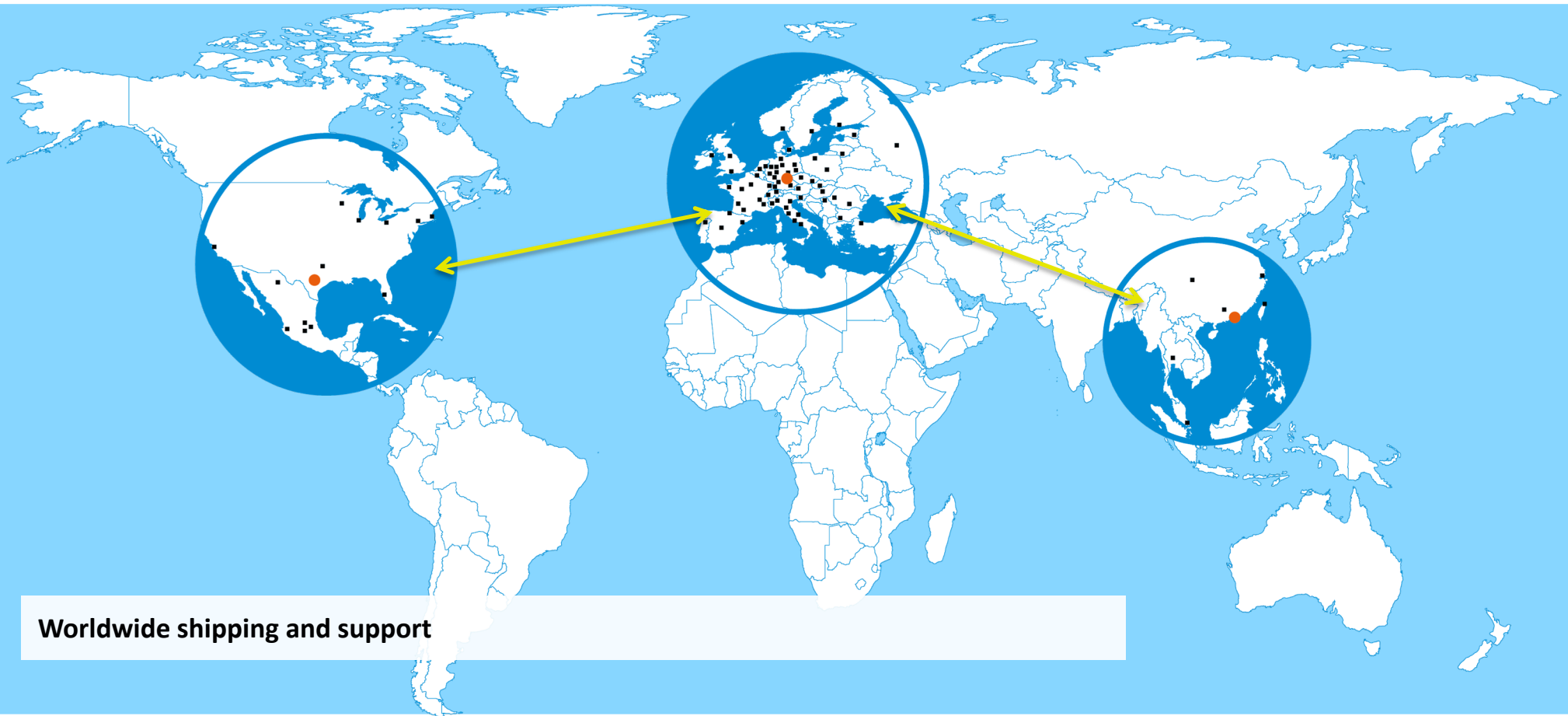
- Customer support
- Face-2-face to the customer
- Long term customer relationship



- Worldwide support
- One logistics system
- One network

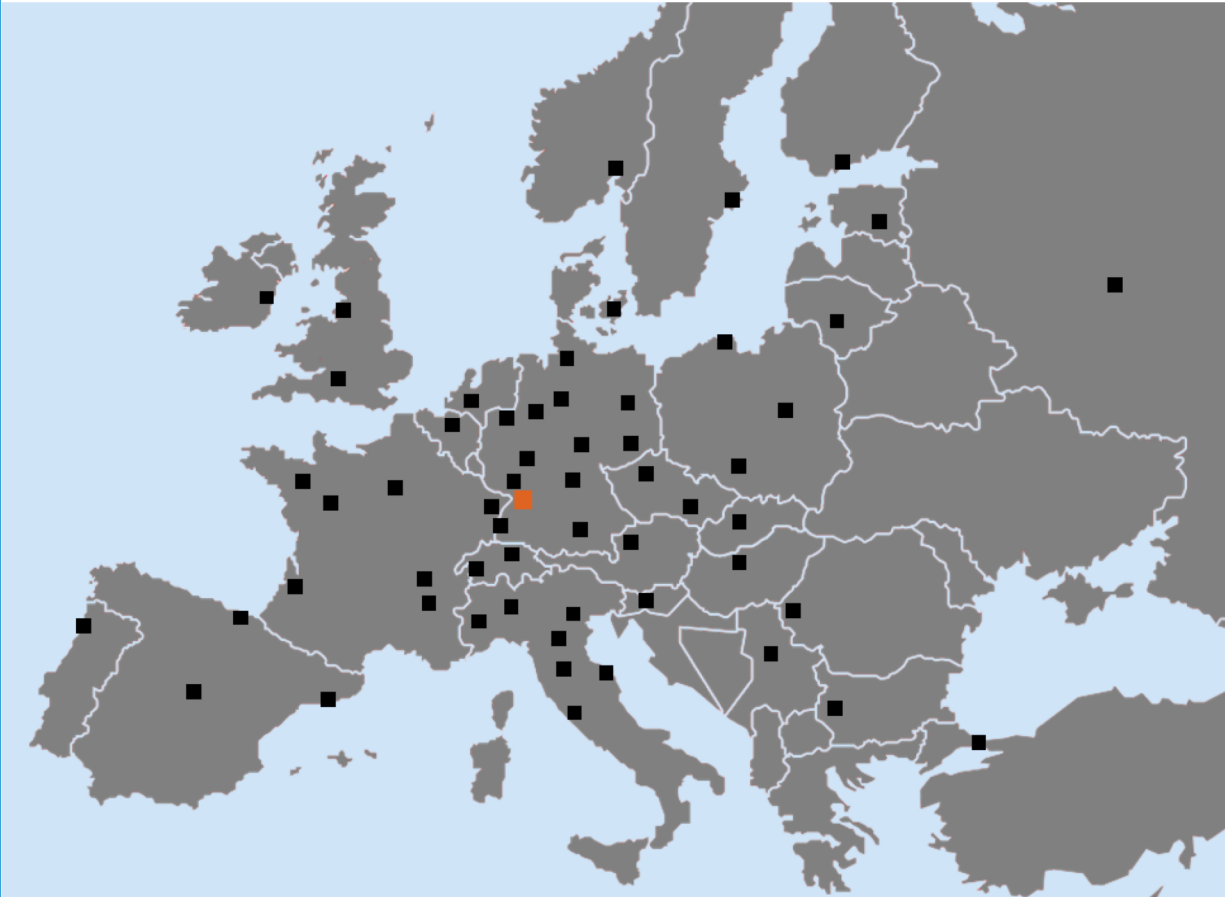
Customer base servicing low to high volume distribution

Who is Rutronik



Worldwide shipping and support

Who is Rutronik - Sales Offices Europe



- Headquarters and Logistic Center in Ispringen/Germany
- 12 offices in Germany
- More than 40 offices in Europe outside Germany



China: Rutronik Electronics (Shenzhen) Co., Ltd

- Shenzhen
- Shanghai
- Chengdu
- Beijing (2020)
- New Logistic Center (2020) Shanghai

Hong Kong: Rutronik Electronics Asia HK Ltd. **Sales Office and Logistic Center**

- Taiwan: Taipei

Singapore: Rutronik Electronics Singapore Pte. Ltd. **Sales Office and Logistic Center**

- Singapore
- Thailand: Bangkok
- Malaysia: Penang
- India: Bangalore

Who is Rutronik - Sales Offices Americas



- Headquarters USA
- Regional sales office
- Rutronik Warehouse

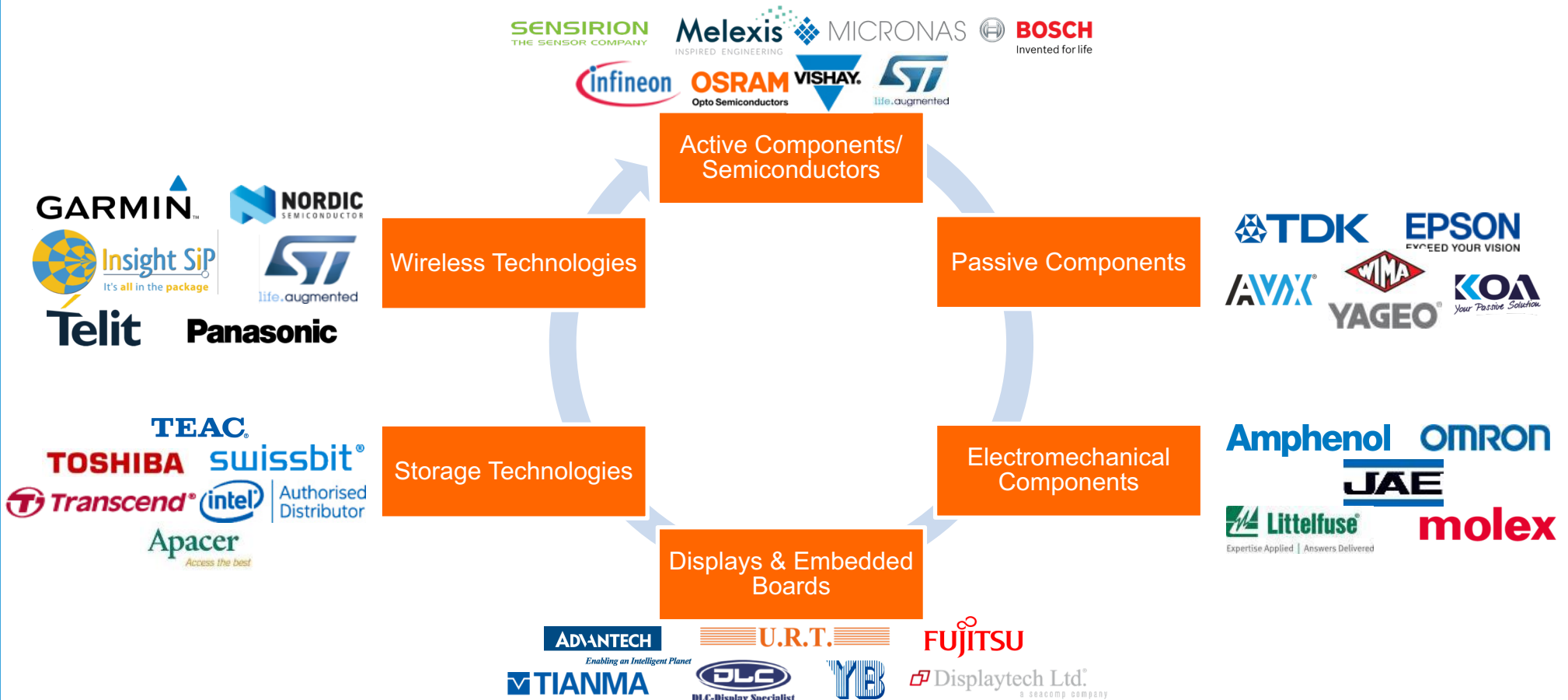
Who is Rutronik - Sales Offices Mexico



■ Home Offices

■ MX headquarters and key sales area

Who is Rutronik – Supplier Synergy



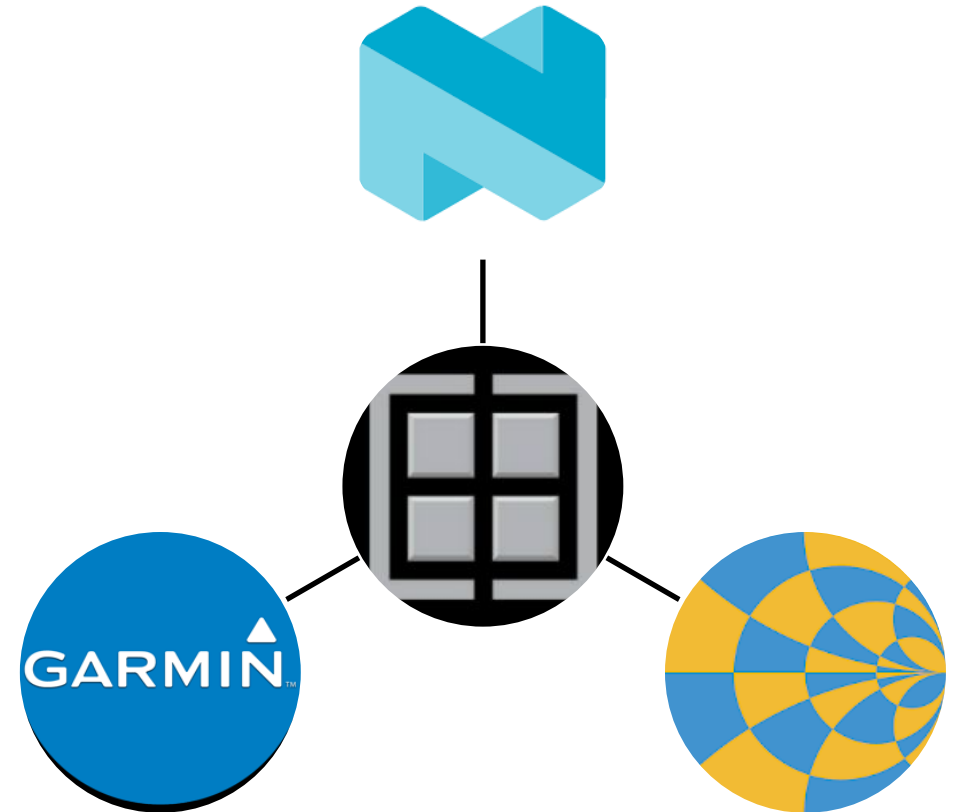


Applications:

- Battery Management
- Automotive Pump Sensors
- Data Collection
- Autonomous Vehicles
 - Driving
 - Delivery

Applications:

- Fitness Bike Remote Control
- Air / Pollution Sensor
- Remote Fitness Display
- Fitness Tracker
- Smart Fitness Trainer



- **Demand Creation Expert**

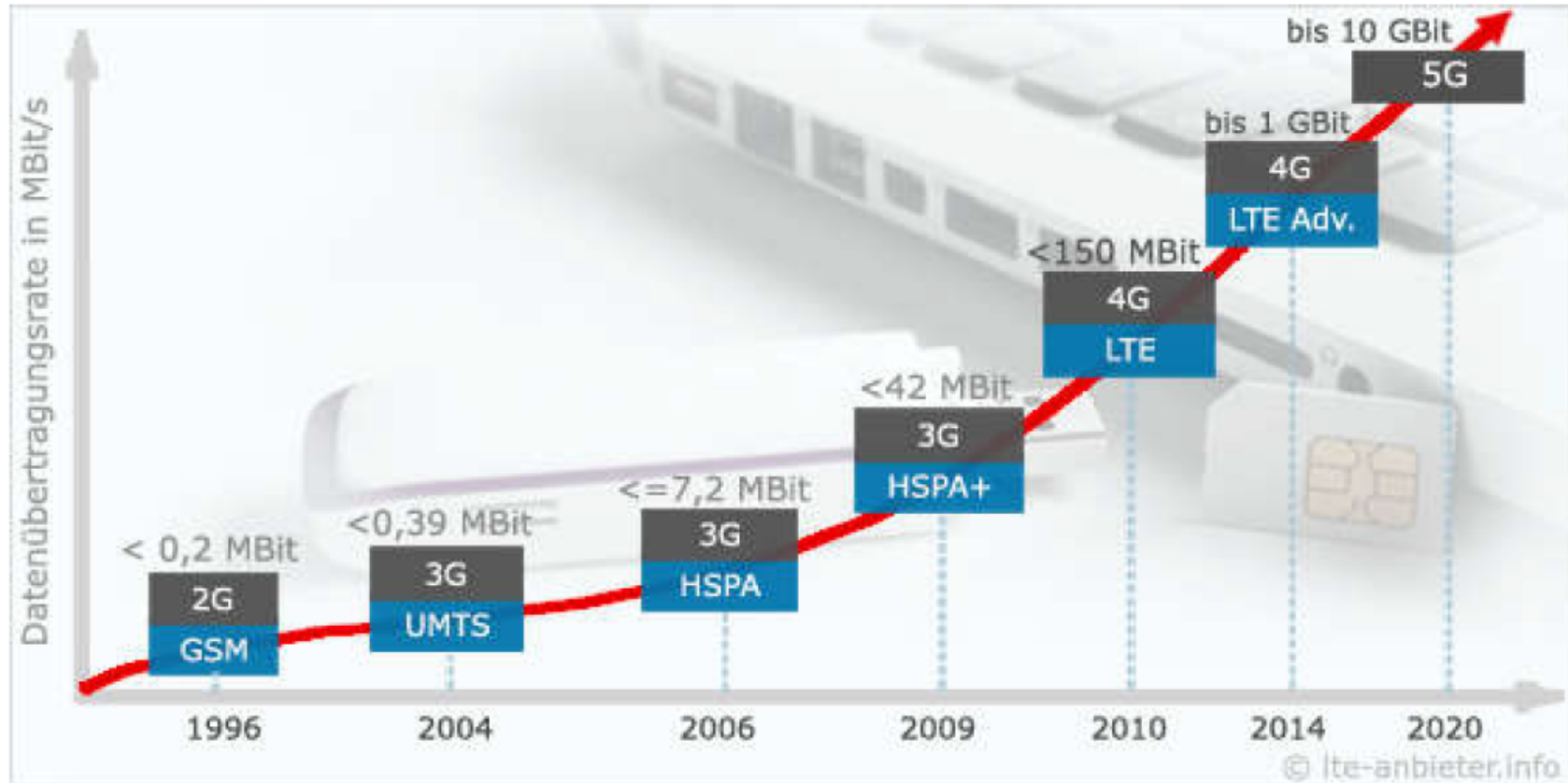
- Emphasis placed on Field Applications Engineers globally
- Measured on new design activity
- Expected engagement from our supplier partners

- **Global Logistics Partner**

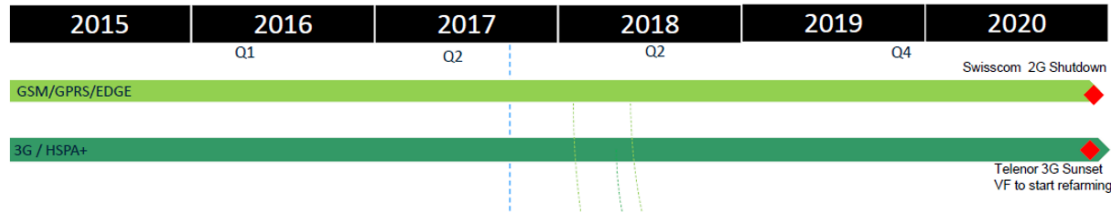
- Largest “Organically” grown distributor in Europe
- Ability to service any size customer globally

1. Who is Rutronik?
2. **Cellular Network Evolution**

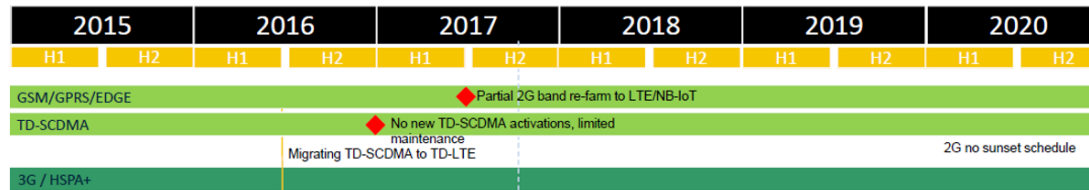
Cellular Network Evolution



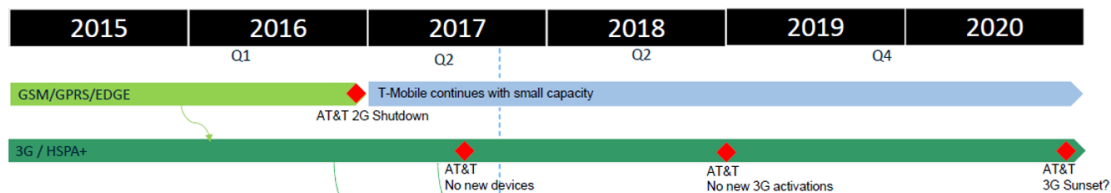
IoT Technology Deployment Status – EMEA



IoT Technology Deployment Status – China



IoT Technology Deployment Status – USA



So what Cellular Technology should we use?



LTE-M / NB-IoT:

- 1 Mbps DL
- 1 Mbps UL

Higher LTE Categories:

- 10/5 Mbps DL/UL
- 1.2 Gbps DL

LTE Category	Downlink	Uplink
0	1 Mbps	1 Mbps
1	10 Mbps	5 Mbps
4	150 Mbps	50 Mbps
9	450 Mbps	50 Mbps
11	600 Mbps	75 Mbps
18	1.2 Gbps	150 Mbps

eMBB

enhanced Mobile Broadband

Goal 1

20Gbit/s DL
10Gbit/s UL



mMTC

massive Machine Type Communication

Goal 2

1 Mio. connected devices per km²



uRLLC

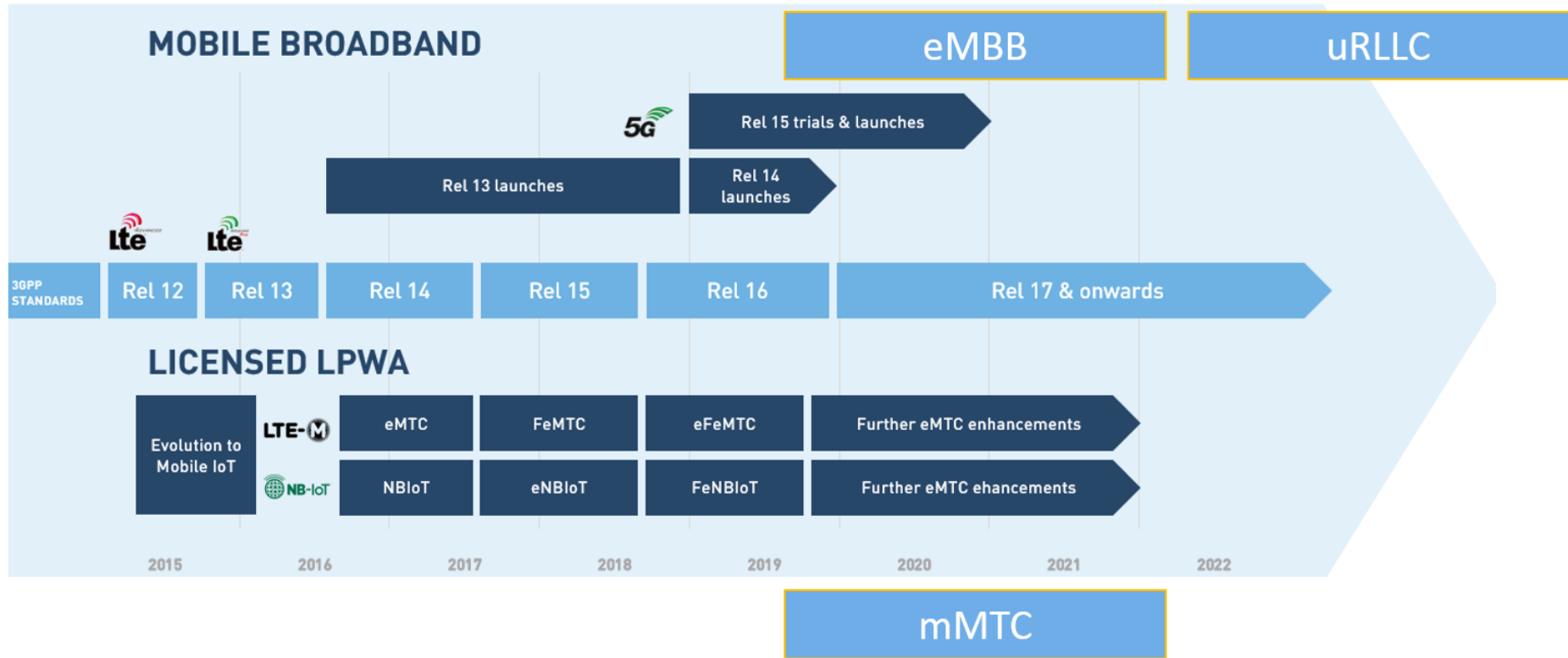
ultra Reliable Low Latency Communication

Goal 3

Latency < 1ms



Technology Evolution towards 5G

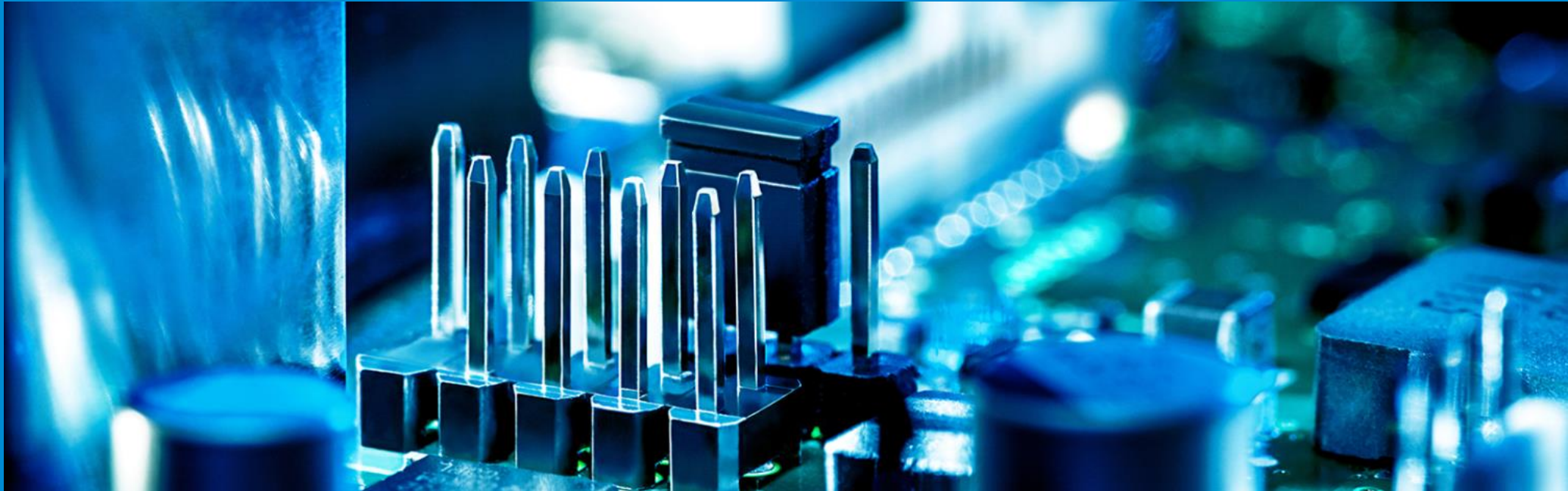


Just contact us!



...we'll find the right solution for you...





Thank you for your attention!