



The Sensor Pioneers.

Smart Surveillance Sensors Products and Market Trends

May 24th, 2022 / CEDES CEO Christian-Erik Thöny

CEDES at a glance

Sales (2021)



>56 MCHF

Head office



**Landquart,
Switzerland**

Employees



360

Channel



**true
global
30/40/30**

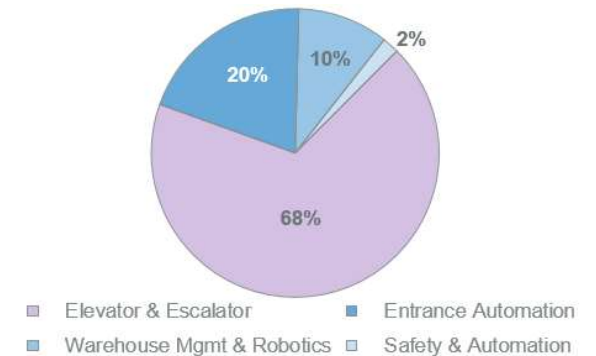
60 countries

Manufacturing footprint



**6 entities, 2 factories
on 3 continents**

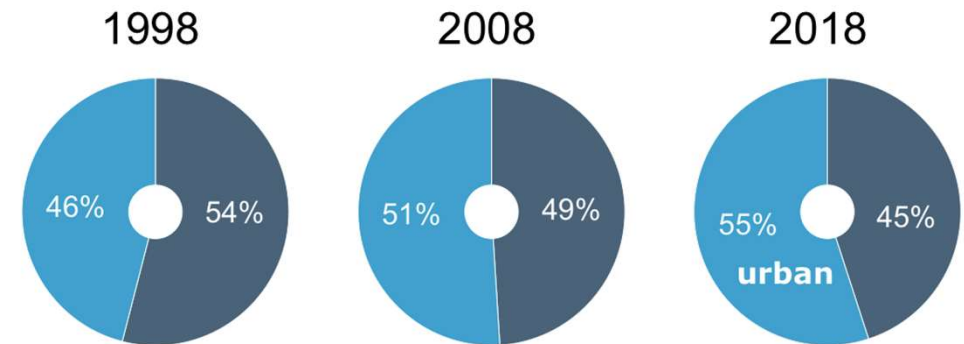
Share of Segment sales:



Mega Trends

- ▶ Urbanization (3D transportation)
- ▶ Demographical Changes (3d transp.)
- ▶ Growth of population (3d transp.)
- ▶ Environmental protection (ESG)
- ▶ Digitization, Industry 4.0, **IoT, WSN**
- ▶ Cost efficiency
- ▶ (De)Globalization

⇒ **Massive growing demand on Sensors**



Internet of Things

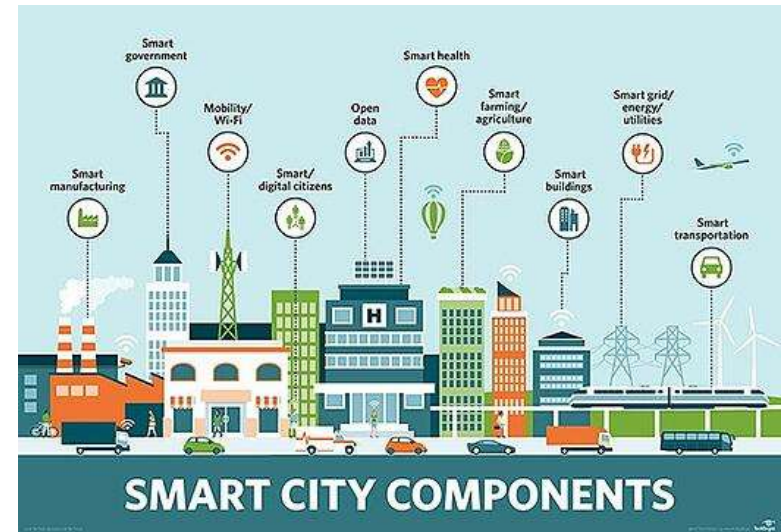
Today, good or bad, almost all areas of life is monitored and digitally supported



Wireless Sensor Network (WSN) - IoT

- ▶ Omnipresent sensing cut across most of modern-day living
- ▶ Ability to measure and understand environmental indicators
- ▶ Industrial processes, urban environment, natural resources, delicate ecologies
- ▶ Sensors and actuators blend seamlessly with the environment around us
- ▶ Proliferation of WSN drives IoT

Common
Operating Picture
(COP)



Real life example Singapore

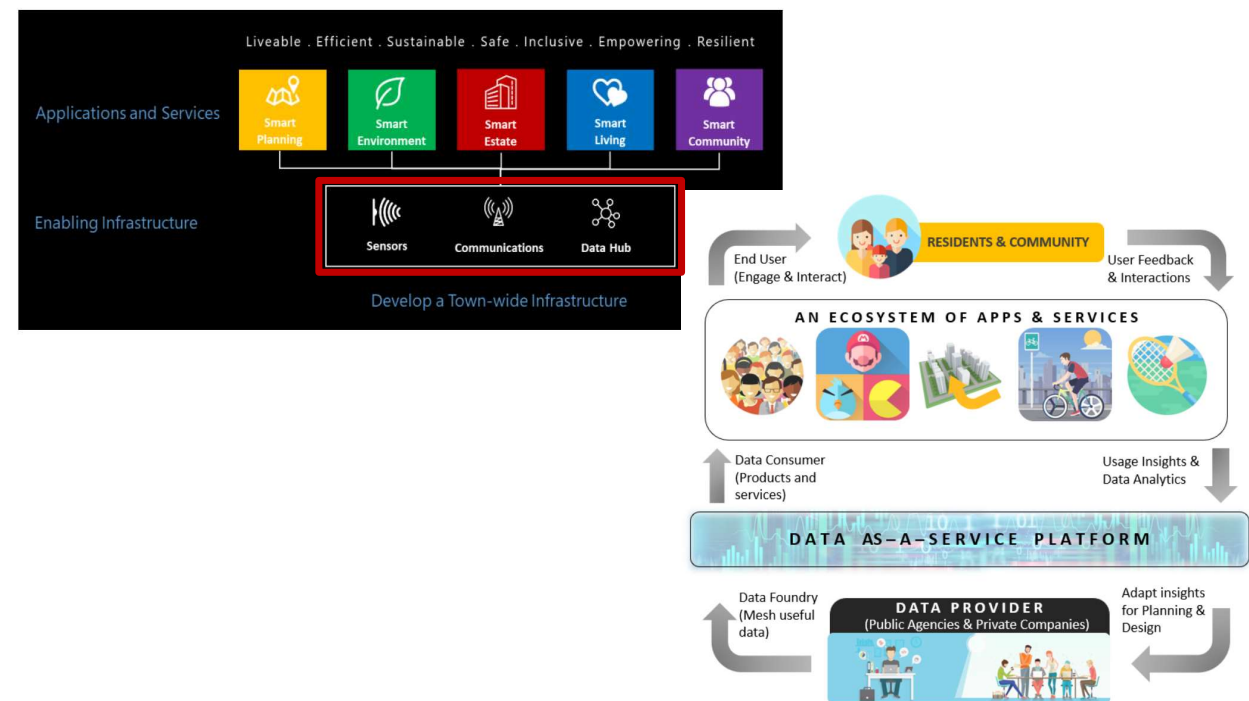
Example of superordinated smart city already existing.

- **Services:** comprehensive concepts are developing
- **Enabling:** Data, as a service platform, to be turned into useful information.
The right information needs to be available, at the right time and speed.

Smart HDB Town

Smart HDB Town Framework

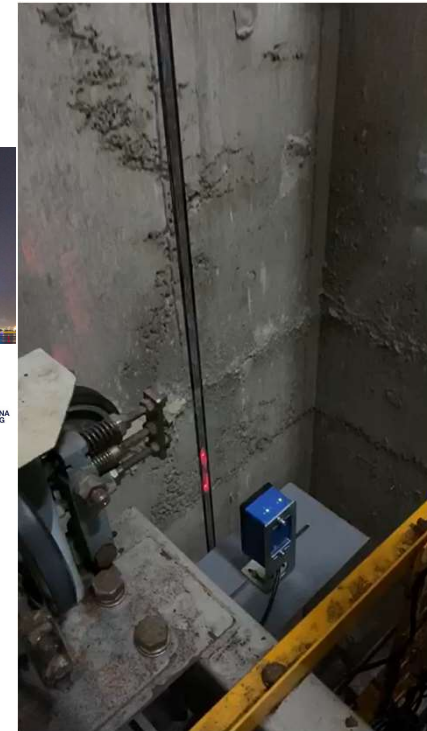
Use of smart technologies in the planning, development, and management of HDB towns is helping to create a better living environment for residents. Our 'Smart HDB Town Framework', unveiled in September 2014, maps out how we will introduce smart initiatives across 5 key areas.



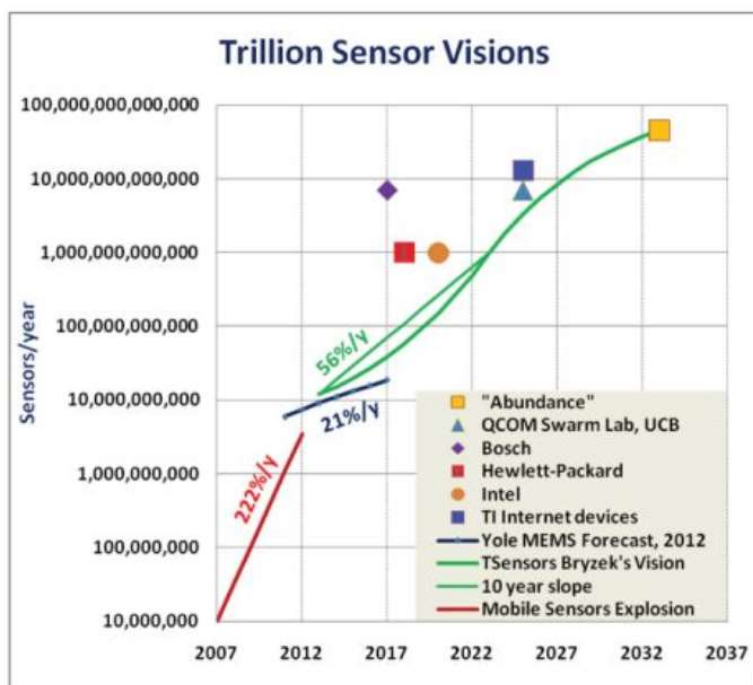
HDB Singapore, CEDES is in

CEDES won majority of HDB elevator supervising APS systems.

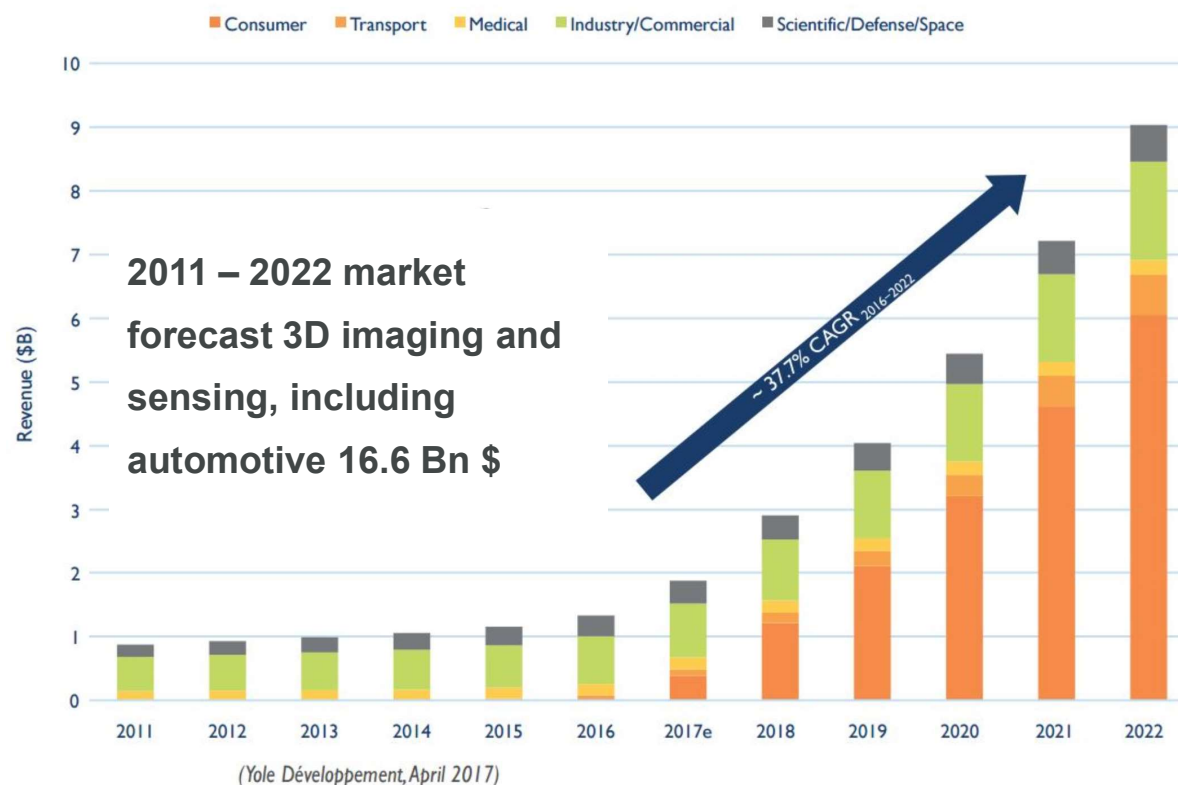
- ▶ **Supplier:** installed elevators and services of suppliers are supervised
- ▶ **Maintenance:** elevator behavior observed & compared (hundreds). Request Preventive & adequate service.
- ▶ **Data:** massive data generated by APS, source to optimize people flow in Singapore
- ▶ **Role model:** 500 installations, growing; excellent IoT reference for Cedes hardware and application example for CEDES to now leverage with own Platform & Data



Mega Trend IoT drives sensor market

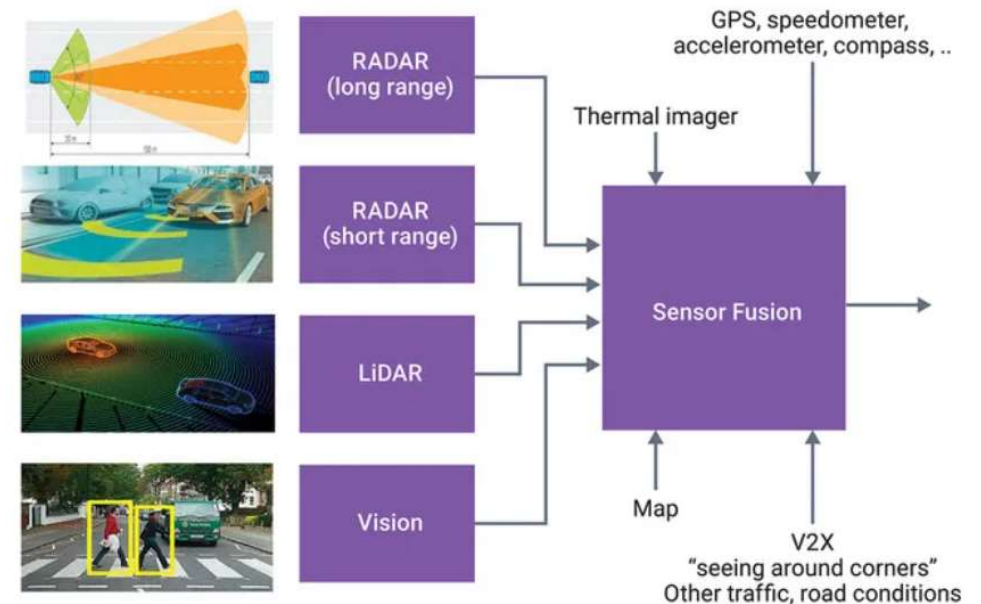


With a Trillion Sensors, the Internet of Things will Be the "Biggest Business in the History of Electronics"



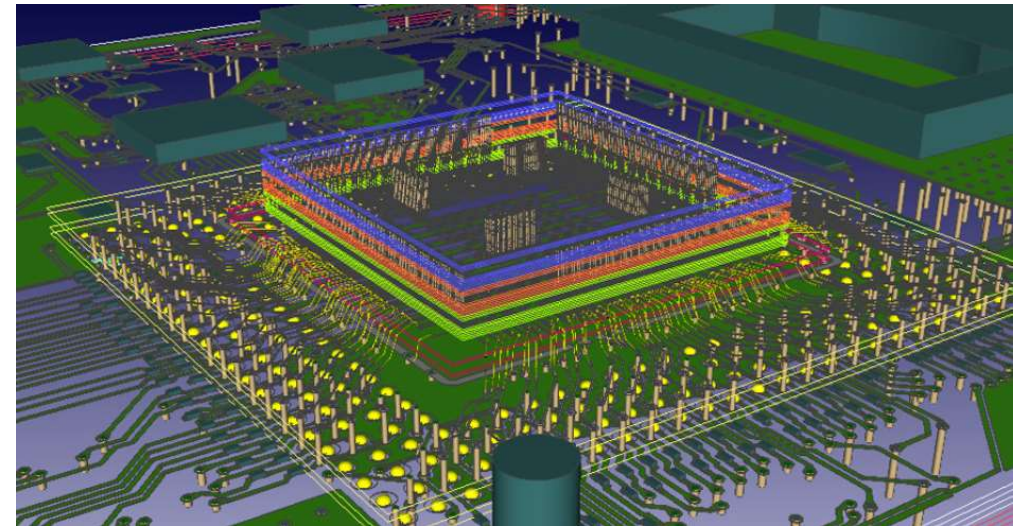
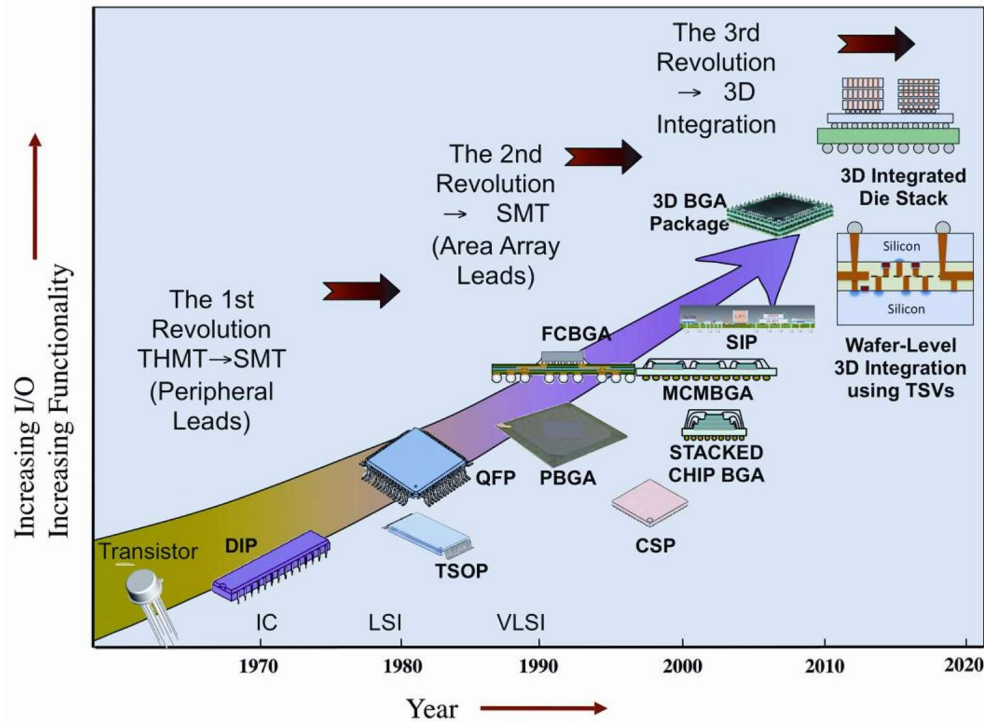
Product trend

- ▶ A large number of all kind of different sensors (technologies) are growing
- ▶ But 3D capable sensor types seem to peel out
- ▶ Dynamic 3D point clouds; quantum leap higher intelligence
- ▶ Sensor fusion; the micro (eco)system
- ▶ (Wireless) Sensor Network WSN; the macro (eco)system
- ▶ IoT; total network of “everything” – Common Operating Picture



Development of Components and Products

Miniaturization, key of WSN / IoT



- ▶ Further expansion of stacked Die; future of IC packaging
- ▶ Highest density; integrating multifunctionality in smallest space

Summary

- ▶ Mega trends drive data acquisition and feature evaluation
- ▶ Sensors; the omnipresent source of data
- ▶ Sensor fusion necessary to understand micro systems
- ▶ 2035; 50 Trillion (D; Billionen) Sensors / Year
- ▶ IoT / WSN enable understanding processes in life and industry => COP - common operating picture
- ▶ Miniaturization inevitable for efficiency, cost optimization, low energy and highest computing power (huge 3D data point clouds)



CEDES

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