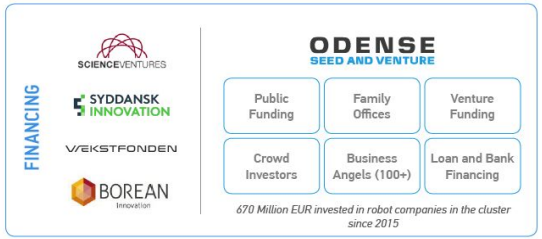
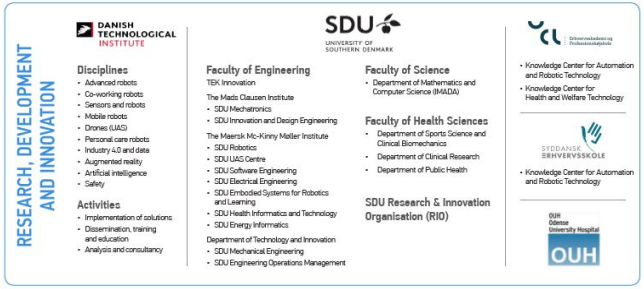
BLUE OCEAN ROBOTICS

- for humans

ODENSE ROBOTICS
WHERE ROBOT HEROES GROW
POWERED BY DEVELOPING FYN





Updated: 03.01.2019

COMPANIES ARE SELECTED BASED ON AN ASSESSMENT OF THE FOLLOWING PARAMETERS:

- Share of turnover in the robotic and automation industry
- Strategic focus
- Activity in cluster cooperation
- Dedicated technology

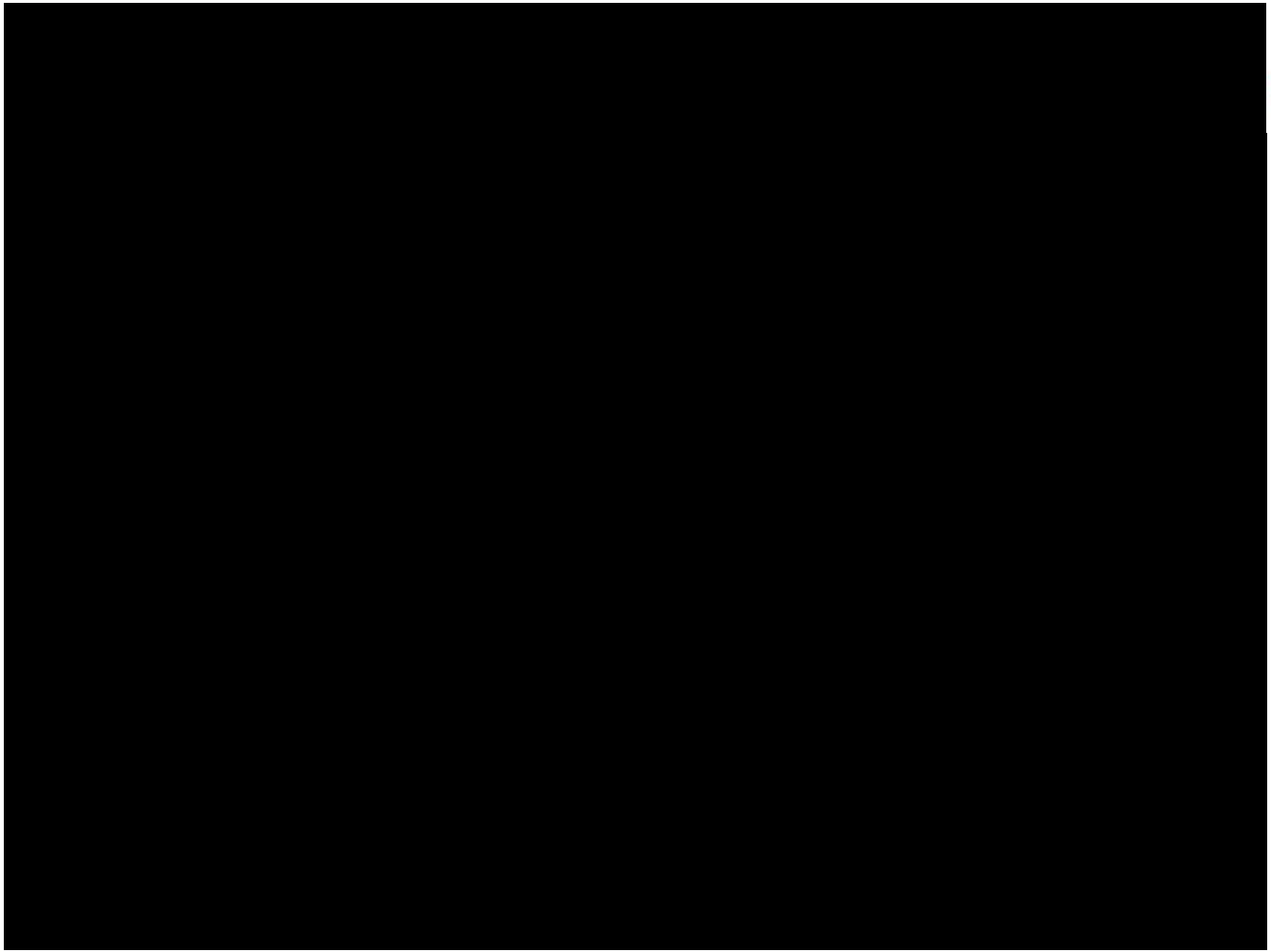
Claus Risager
- short bio

- Founder & CEO @ Blue Ocean Robotics

- B.Sc., M.Sc. in Appl. Maths., Ph.D. in Robotics & AI
- Leadership education: MÆRSK Industry Group, DTI

- Career in robotics started 1988
- 100+ R&D innovation projects
- 20+ start-ups / joint ventures
- EU Reviewer & Evaluator
- Granted several Awards & Prizes

- M: +45 2510 5431
- E: cr@blue-ocean-robotics.com
- W: www.blue-ocean-robotics.com



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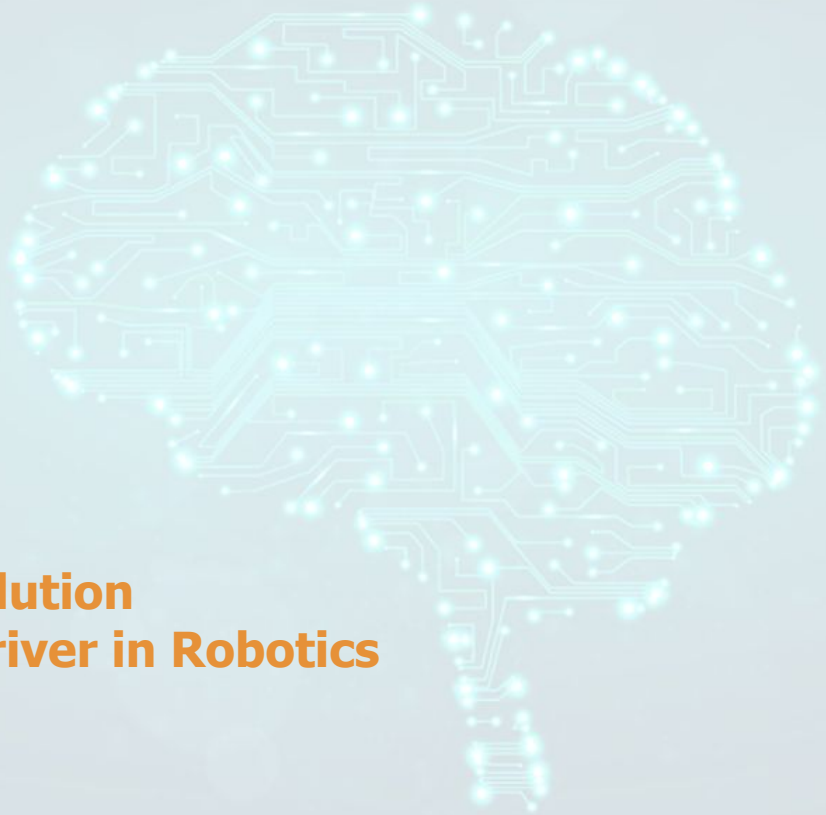

Digital Revolution
Exponential Growth Driver in Robotics

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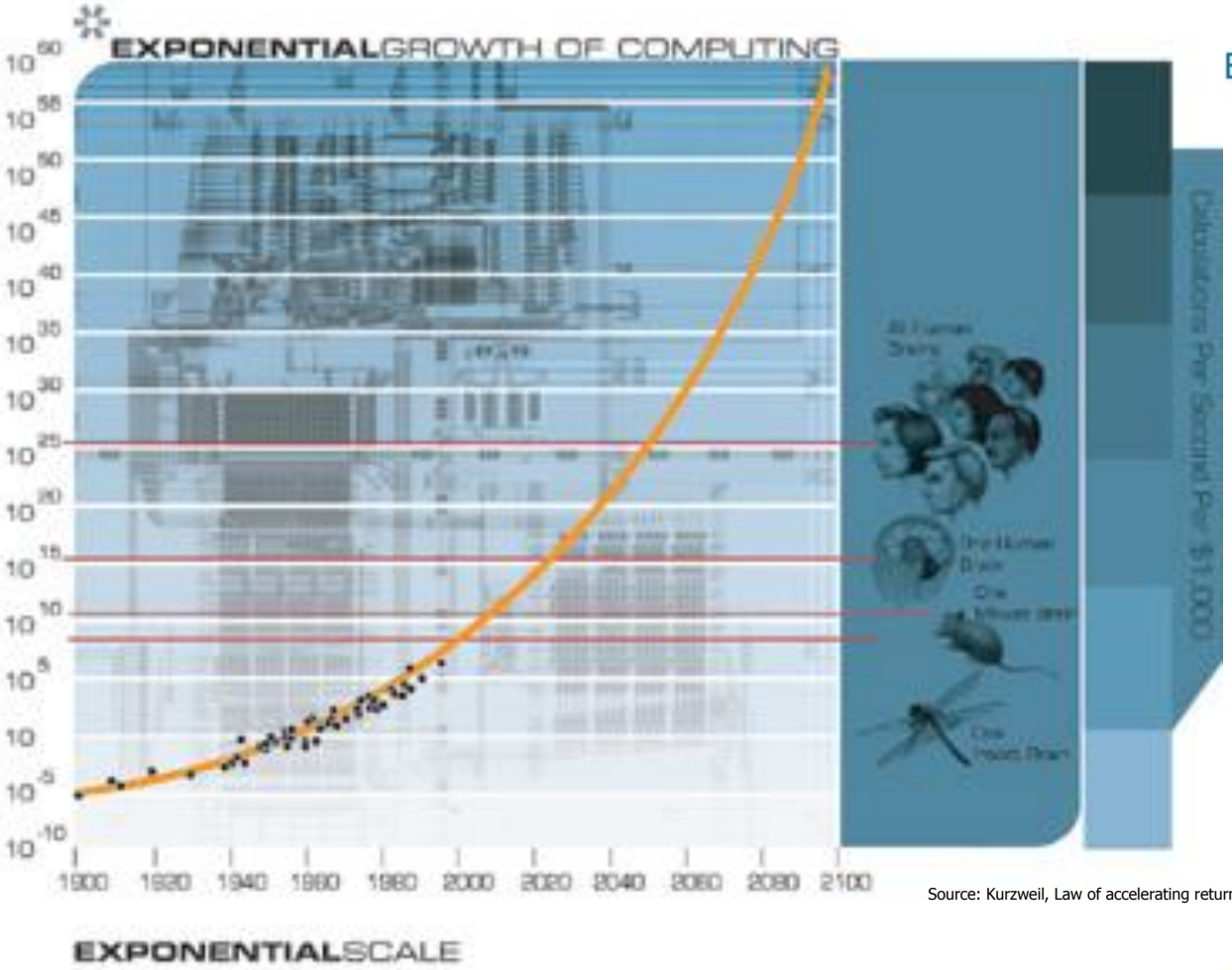

Source: Kurzweil, Law of accelerating returns

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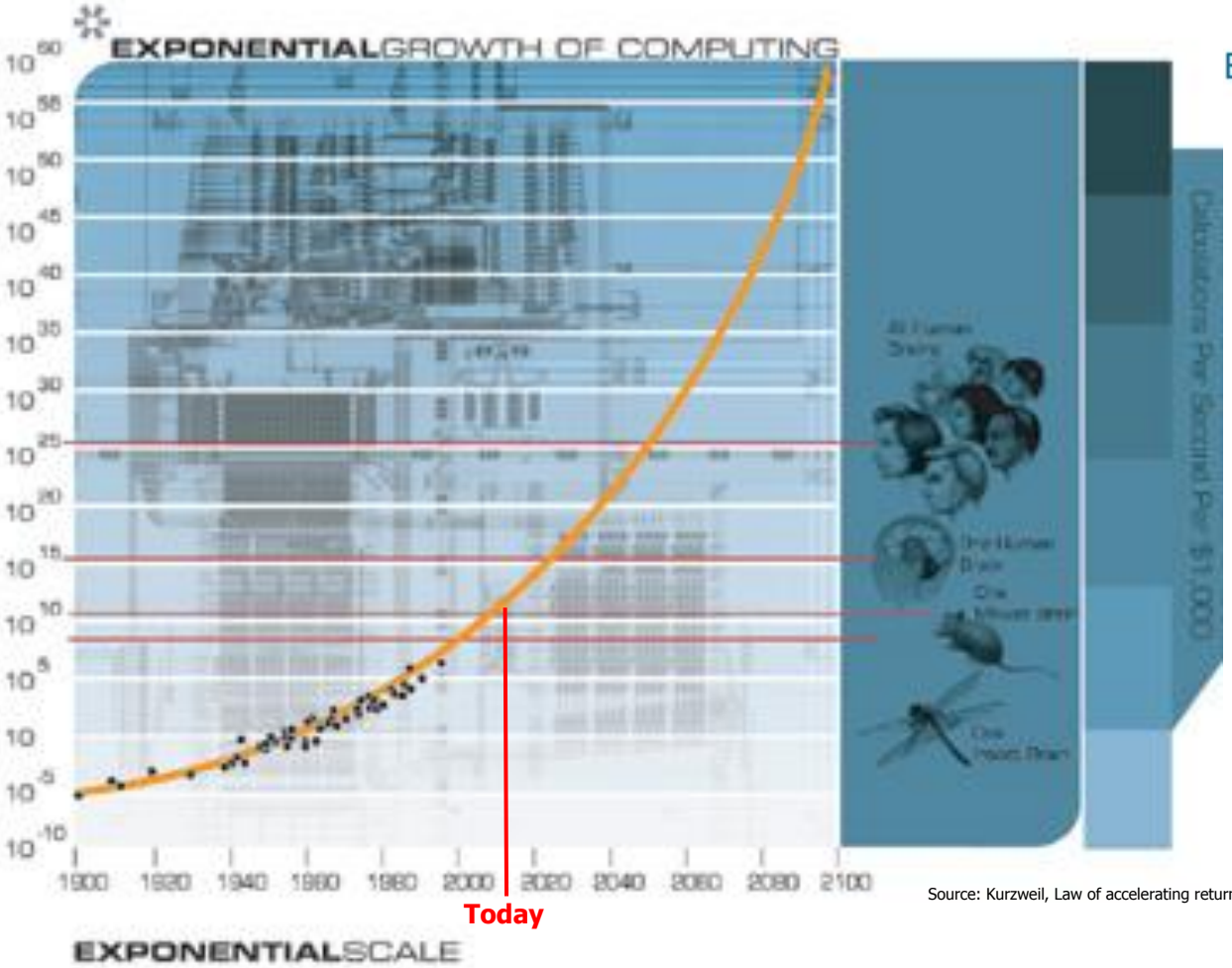

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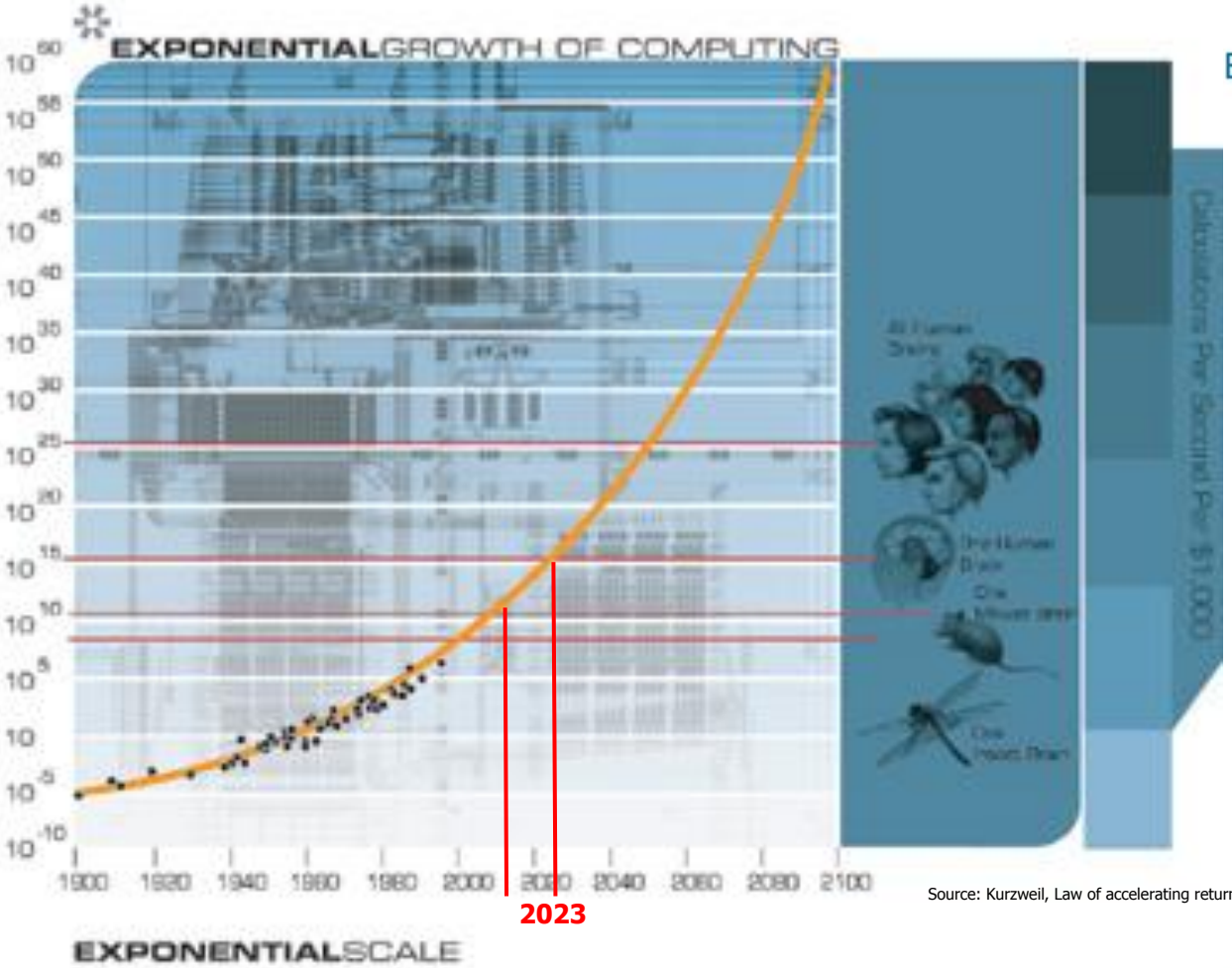
BLUE OCEAN ROBOTICS
- for humans



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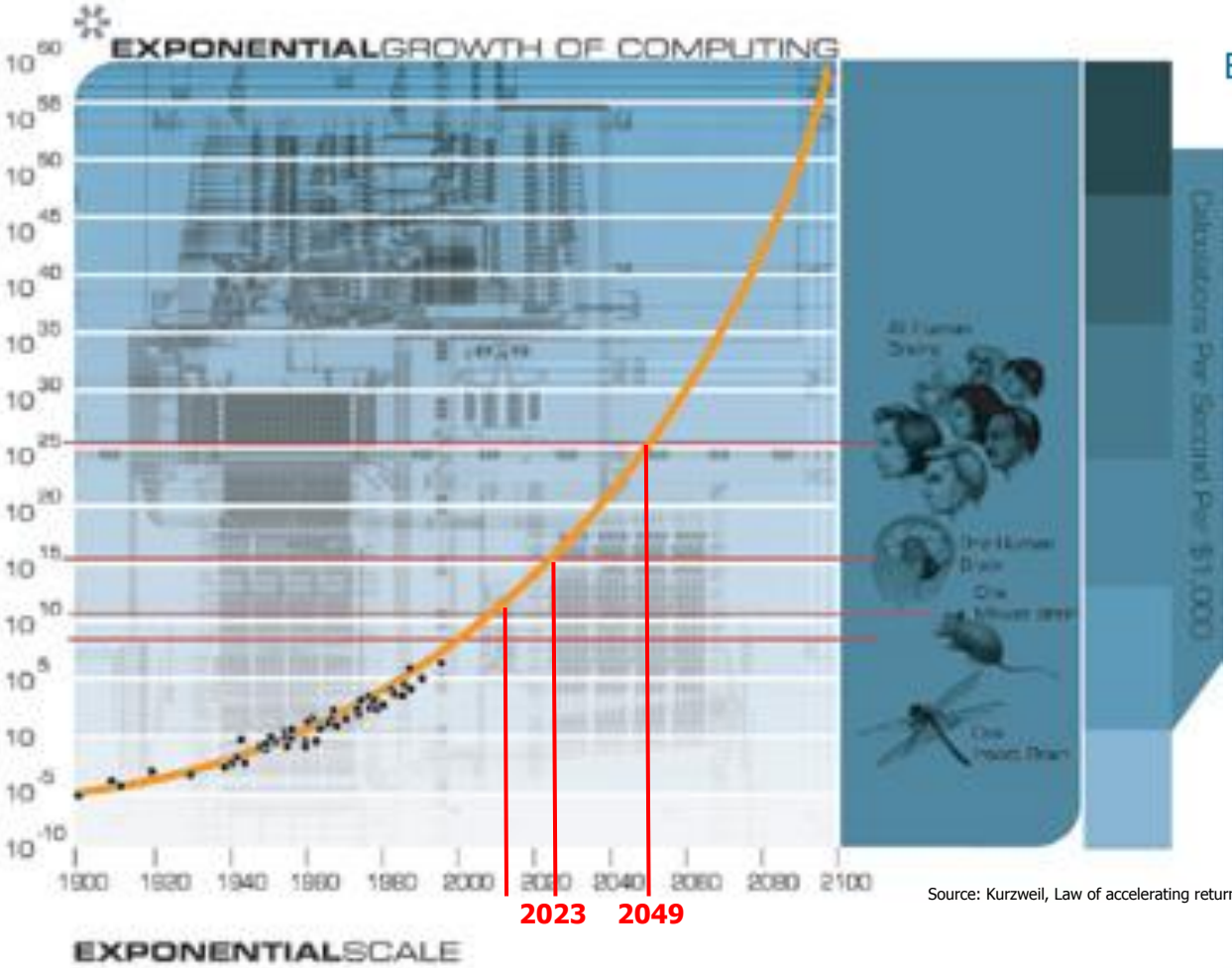
BLUE OCEAN ROBOTICS
- for humans



Source: Kurzweil, Law of accelerating returns

Nanotube Circuitry

- a technology to make the exponential growth continue

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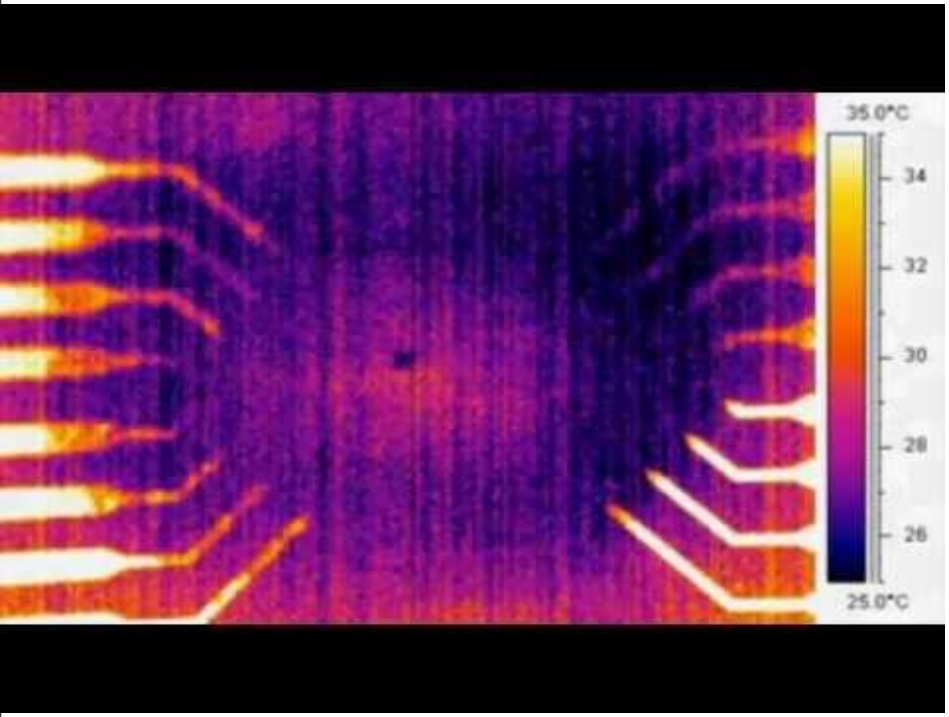
- for humans

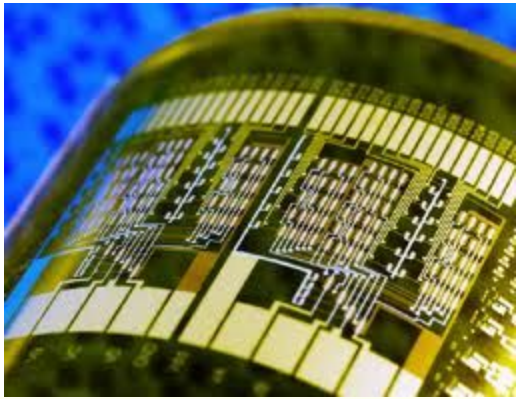


Can the exponential growth continue?

"One cubic inch of nanotube circuitry would be a million times more powerful than the human brain"

"There are more than enough new computing technologies being researched, including three-dimensional silicon chips, optical computing, crystalline computing, DNA computing and quantum computing, to keep the law of accelerating returns as applied to computation going for a long time"

Source: Law of accelerating returns



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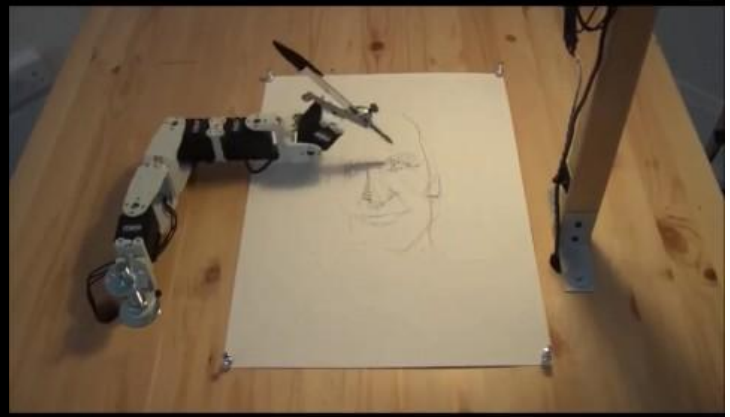

Advanced Sensors

Gesture Recognition

Facial Recognition

Object Recognition and Grasp Pose Estimation

Manipulators and Precise Replication

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- for humans

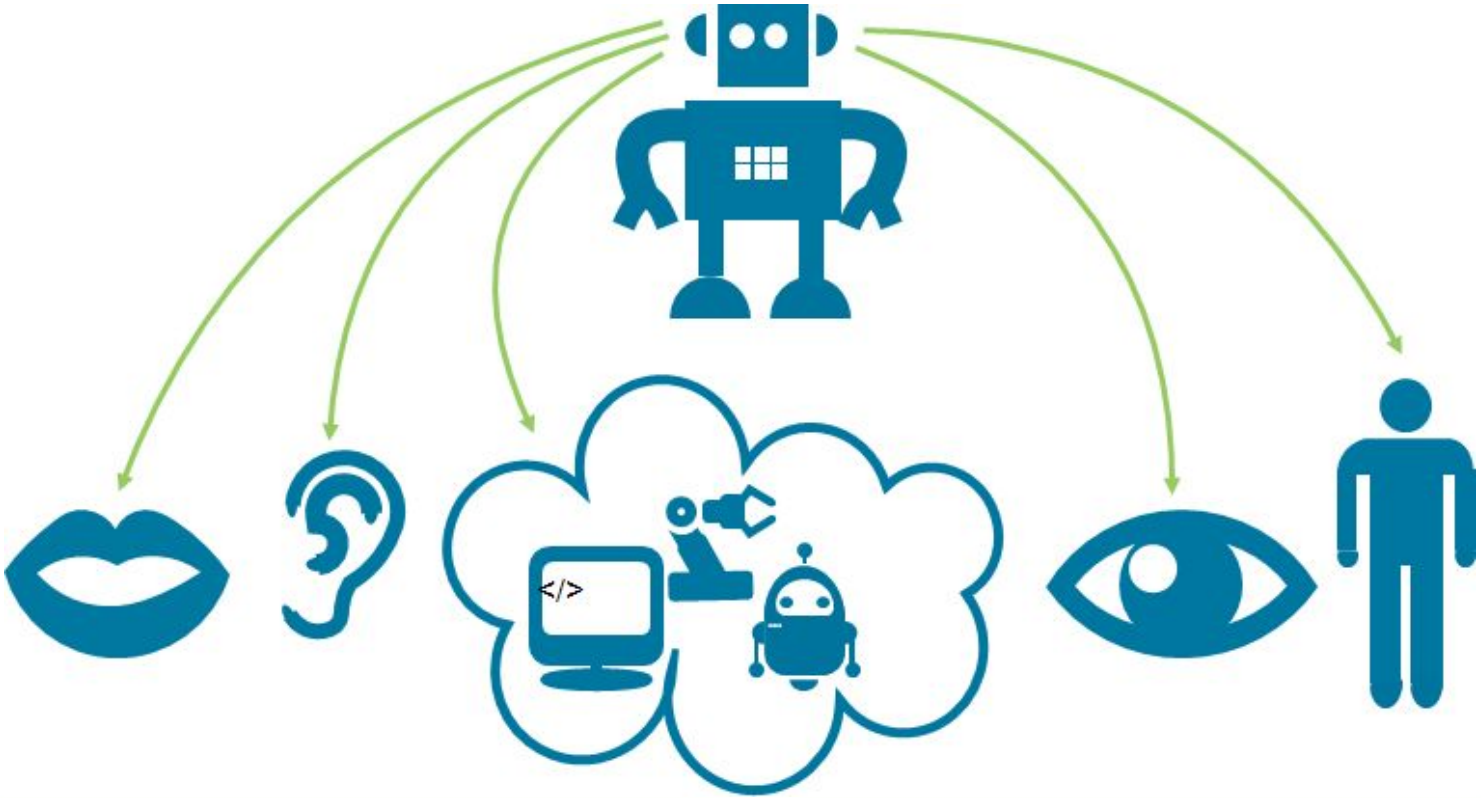
Artificial Intelligence (AI)

Situational Awareness,
Learning, Reasoning,
Decision Making

Learning from Experience

- self programming or meta-level programming

BLUE OCEAN ROBOTICS
- for humans



Learning from Sharing (Cloud Robotics)

- self programming or meta-level programming

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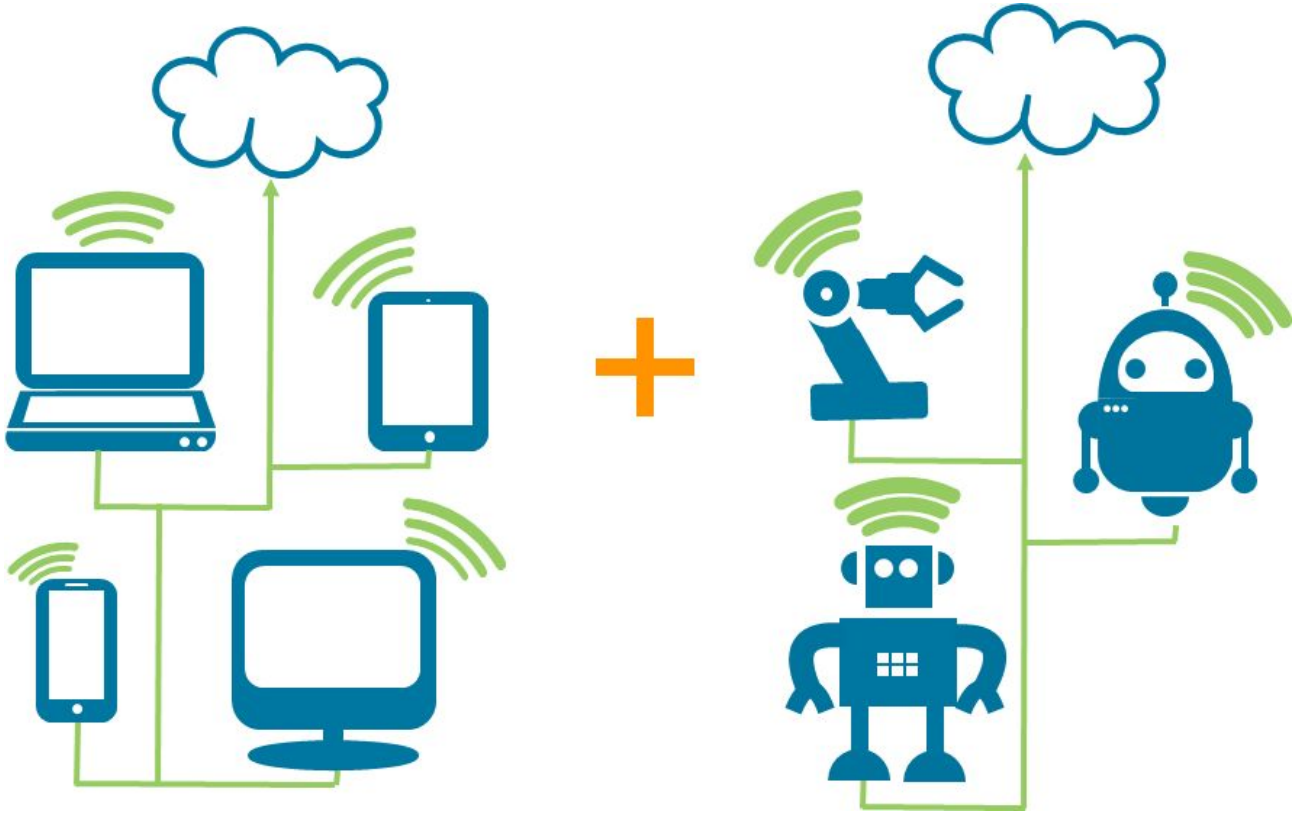
- for humans



Advanced Sensors
Artificial Intelligence (AI)
Learning by Experience
Learning by Sharing

Forecasts of the Robotics Market

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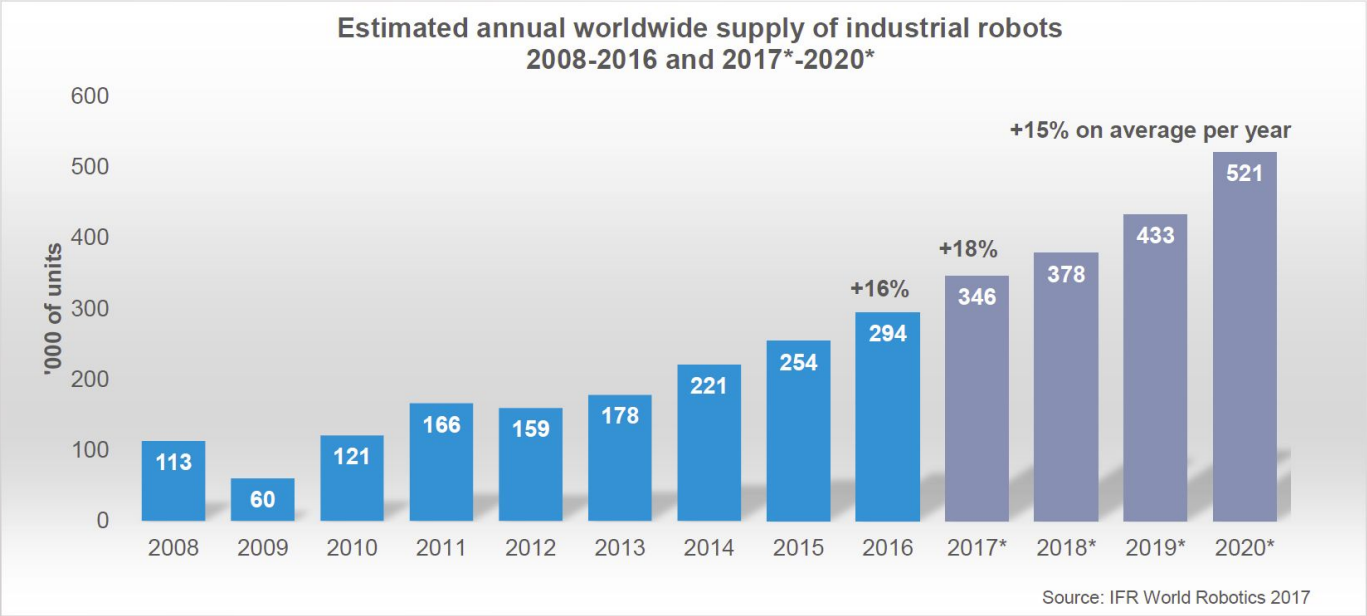
- for humans

IFR International Federation of Robotics

1.7 million new industrial robots by 2020

Double-digit average annual increase



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What is a service robot?

Industrial Robots

Industrial environments

Service Robots

Professional Use

Personal/domestic

Non-industrial environments

Picture source: Goldbeck, ;KUKA AG, Bosch Bonirob, Hetwin, SMP Robotics, Omron, International Submarine Engineering , Robert Bosch Hausgeräte , Wonder Workshop

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Professional service robots: significant growth

- 2016: almost 60,000 units, +24%
- Forecast 2017: +17% -almost 79,000 units
- Forecast 2018 -2020: about 400,000 units
  20% to 25% on average per year

IFR International Federation of Robotics

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Professional service robots: increasing turnover

2016: 4.7 US$bn, +2%

Forecast 2017: +12% - 5.2 US$bn

Forecast 2018 -2020: 26.8 US$bn
20% to 25% on average per year

IFR International Federation of Robotics

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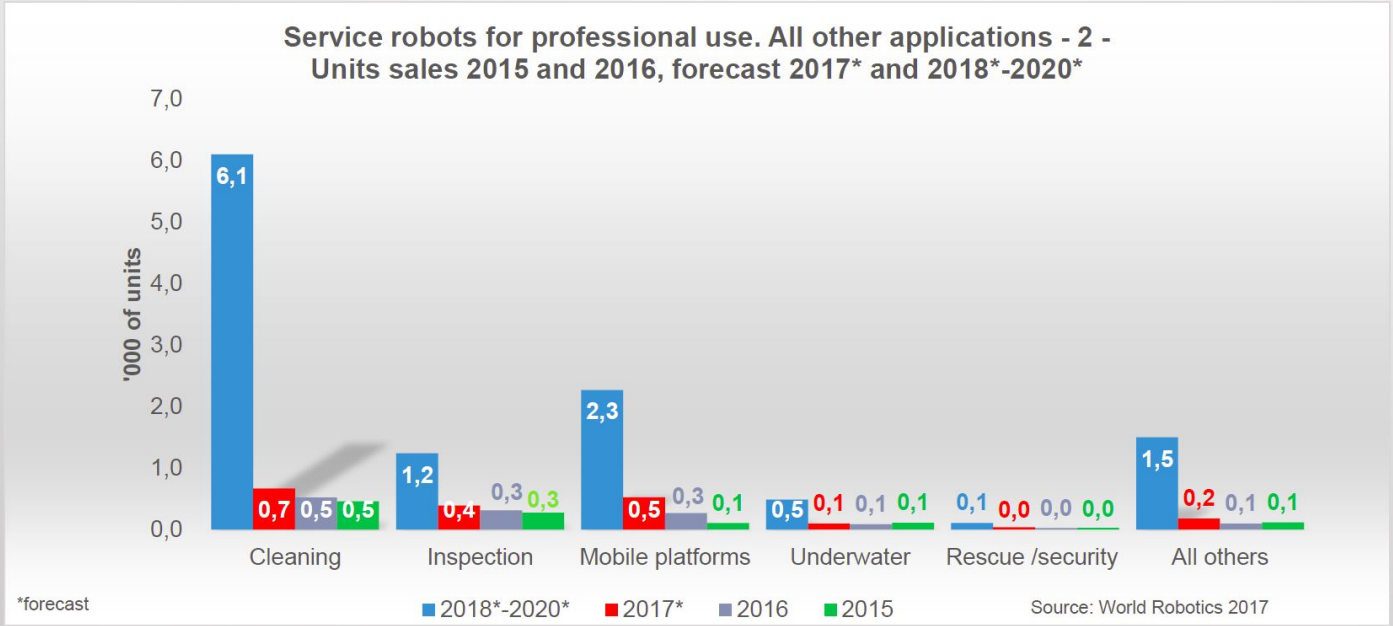
Good prospects for cleaning robots

IFR International Federation of Robotics



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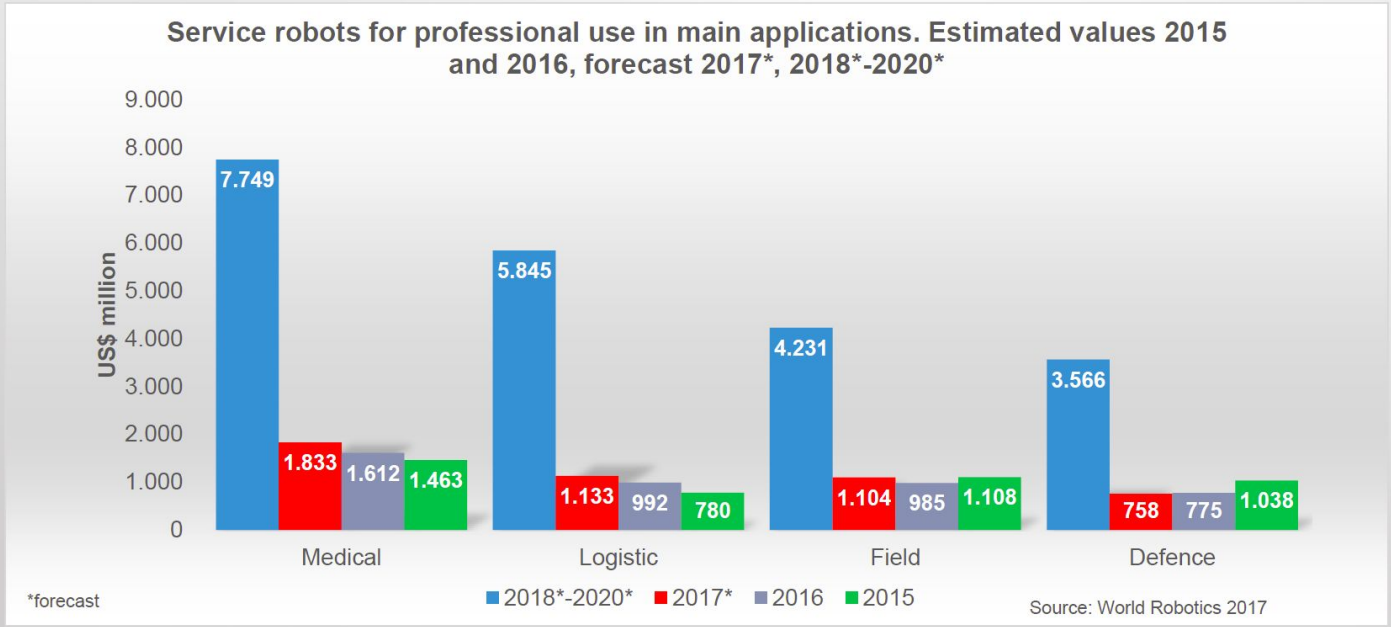
Medical robots: most valuable

IFR International Federation of Robotics



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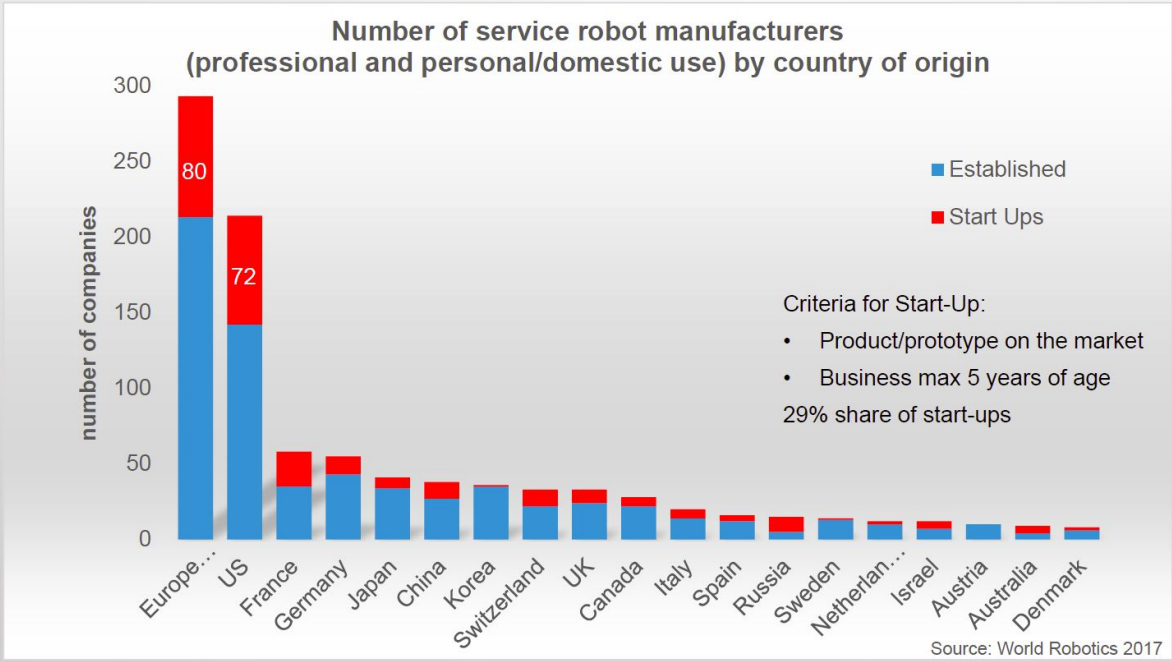
Europe fares well in service robot start-up creation

IFR International Federation of Robotics



UN, Economics Chamber

- impacts of robotics in this century

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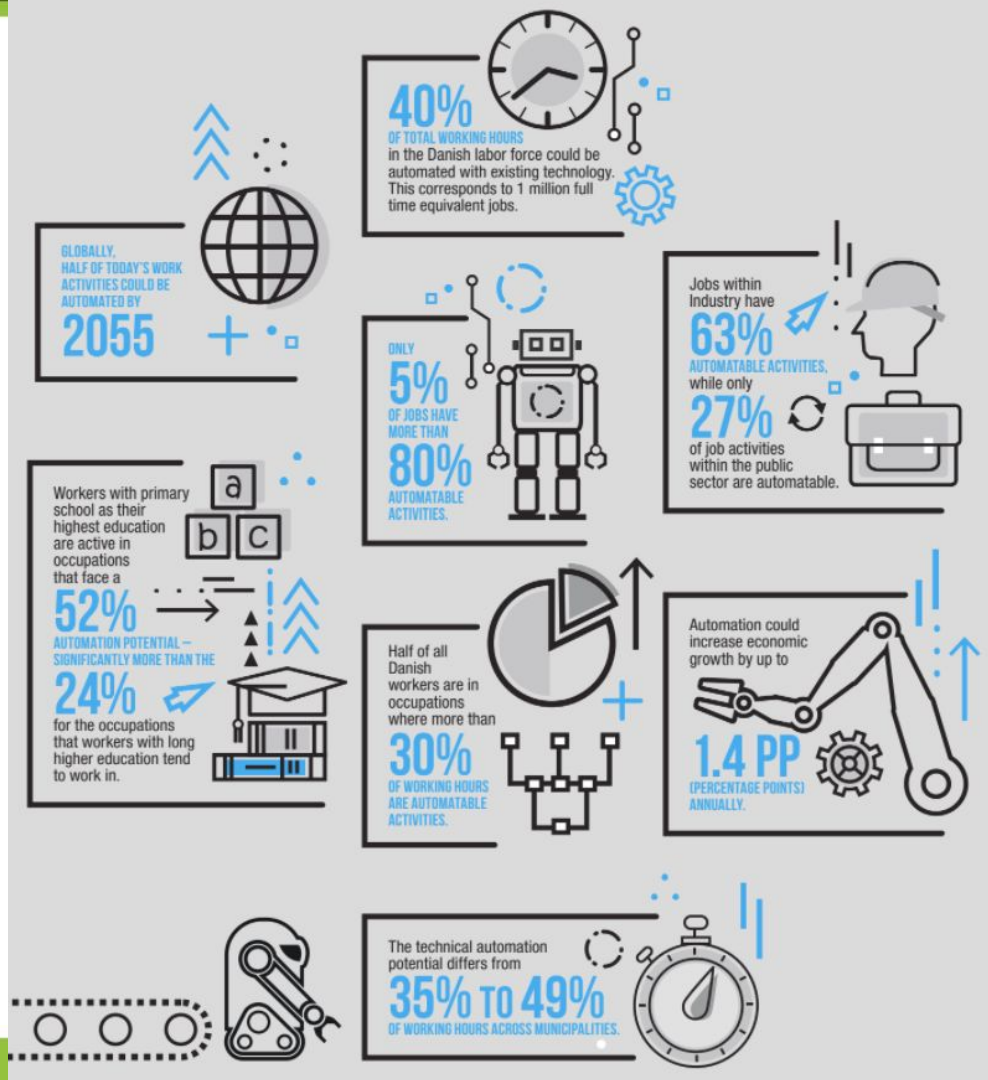
” The industry of personal robots will in the 21st century be
what the automobile was in the 20th century
in terms of economic growth and social change ”

Source: UN, Economic Chamber,
prediction on 21’st century importance of robotics

McKinsey
- Danish Automation, 2017

50 % of all jobs do not exist in 20 years
More jobs will be created than automated
But new jobs will have higher competence requirements
- E.g. App Developers (4 mill. in EU, ~1 % pop.)

Source: McKinsey, 2017, A Future that Works,
Source: International Federation of Robotics (IFR)



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Develop, Manufacture, Sell
Mobile Robots for
Professional Service Robot market

Healthcare, Hospitality,
Agriculture, Construction

Portfolio of Robots

Pace: 1 annually (2020/2021)

World's first:
"Robot Venture Factory"

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Beam Robots

Challenge, Problem & Solving the Problem
The Solution & Competitive Advantage
Market Potential & Timing
Traction & Milestones
Forecast

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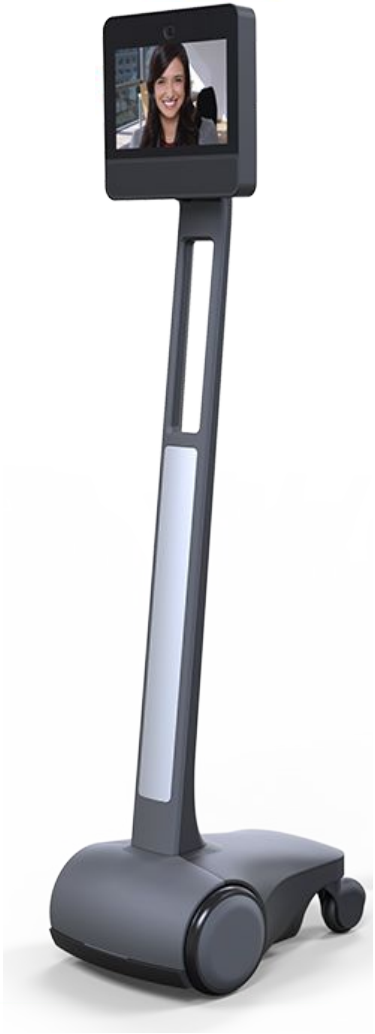
beam
suitabletech.com

- ✔ RoBi-X Strategic Partnership

<u>Blue Ocean Robotics</u>:
- ✔ GoToMarket
- ✔ RoBi-X & TP-X

<u>Beam Co. ApS (pending)</u>:
- ✔ Sales/Support
- ✔ Strategic partners for global sales



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- for humans

UVD Robots ApS

Challenge, Problem & Solving the Problem
The Solution & Competitive Advantage
Market Potential & Timing
Traction & Milestones
Forecast

IERA Award 2019

Challenge, Problem & Solving the Problem

(Case: UVD Robots)

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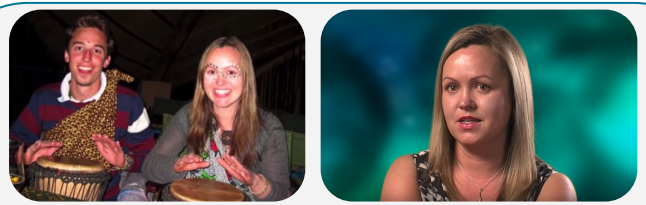
- for humans

Glen's story



Glen was diagnosed with Leukemia. He was hospitalized and started chemotherapy, which naturally weakened his immune system. While hospitalized he got infections multiple times including MRSA. Doctors estimated that his survival chances were less than 10%. After 3.5 months he finally recovered.

> **"It is quite incredible that I survived, and certainly I treasure life at this stage"**
>
> - Glen, survived Leukemia and multiple hospital acquired infections

UVD ROBOTS
INFECTION PREVENTION

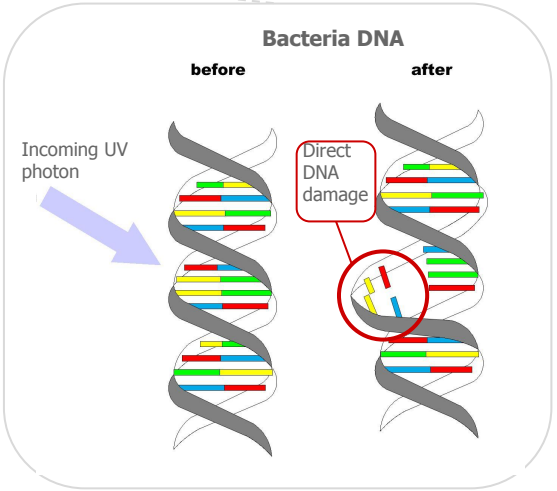
Problem

Each day, one out of 25 patients in the U.S. contracts a **hospital-acquired infection** resulting in billions of wasted dollars and an eye-popping **90,000 deaths annually** - **Healthcare Finance, June 20, 2018**

Solving the Problem

Bacteria

UV-C technology has the ability to kill bacteria, germs, viruses, molds and yeasts, as it can destroy the DNA of the cells ultimately killing the cell. The **UV-C rays change the characteristics of the DNA** and eventually the cells die. UV frequency range of 200-300 nm is most effective in destroying bacteria, viruses, molds and yeasts, and UV-C falls in this range.



The Solution & Competitive Advantage

(Case: UVD Robots)

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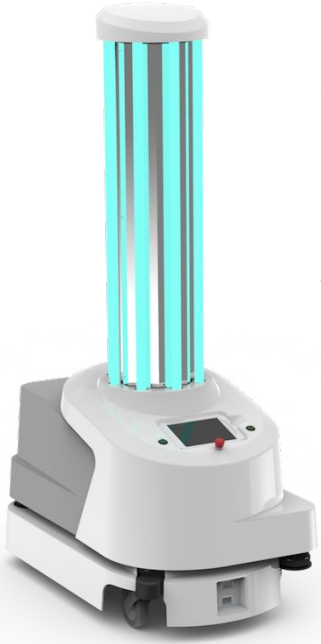
- for humans

The Solution

The UVD Robot is an autonomous robot for **disinfection** at primarily hospitals. It is used as part of the regular cleaning cycle, and aims at preventing and reducing the spread of infectious diseases, vira, bacteria, and other types of harmful organic microorganisms in the environment by breaking down their DNA-structure.



10 min.
disinfection time

99.99%
of bacteria killed

Dimensions: L93cm, W66cm, H171cm
Operating time: UV-module: 2-2.5 hours (equal to 9-10 rooms). Mobile platform: up to 8 hours.
Battery charging time: 3 hours
Speed: up to 5.4 km/h
Weight: 140 kg.
UV-Wavelength: 254nm (UV-C light)

Video

UVD ROBOTS
INFECTION PREVENTION

Competitive Advantage

- UVD Robot can increase the hygiene level at hospitals
- UVD Robot can reduce hospital acquired infections (HAIs), patient readmissions and in the end save lives
- UVD Robot can destroy 99.99 % of bacteria
- UVD Robot knows which areas to expose with UV-C light to reach a higher hygiene level
- One tap on a smartphone or tablet and the UD Robot does the disinfection job
- UVD Robot is a mobile solution. Competing solutions are passive, meaning they require much handling effort from the users in moving it to different positions and these disinfections are prone to human errors. UVD Robot requires much less time and effort from personnel in handling ensuring a consistent disinfection
- UVD Robot has a great potential in other areas likes hotels and facility management

UVD ROBOTS
INFECTION PREVENTION

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PTR Robots

Challenge, Problem & Solving the Problem
The Solution & Competitive Advantage
Market Potential & Timing
Traction & Milestones
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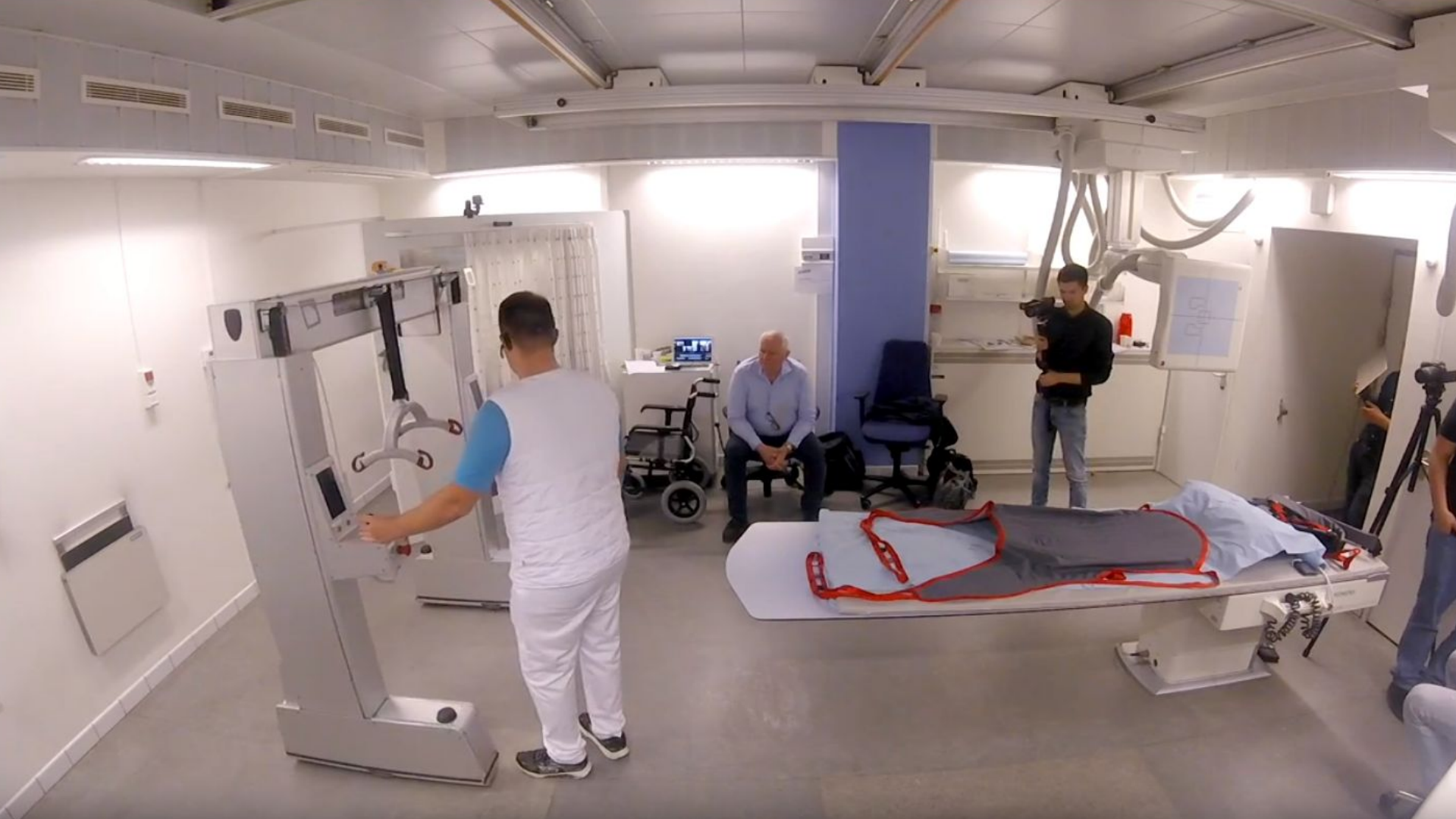


SIEMENS

multi Tower
PTR Robots
Patient Transfer and Rehabilitation
Et løft i den rigtige retning
Velkommen til Robot test dag
molift

Blue Ocean Robotics

Purpose / the "why?" & Market Potential
The Group & Business Model, Revenue Streams
Robot Venture Factory & Competitive Advantages
TP-X & RoBi-X & Portfolio
Economics & Forecast & Use of Funds

Blue Ocean Robotics

- The purpose of the company, the "WHY"?

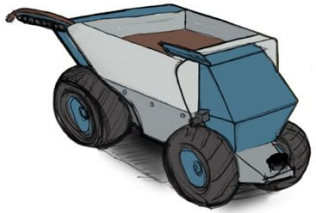
BLUE OCEAN ROBOTICS
- for humans

"People use our robots to change the way they work
to be more meaningful, rewarding and healthier.
We improve quality-of-life and productivity.
We make robots for humans"

Beam Robots

UVD Robots

PTR Robots

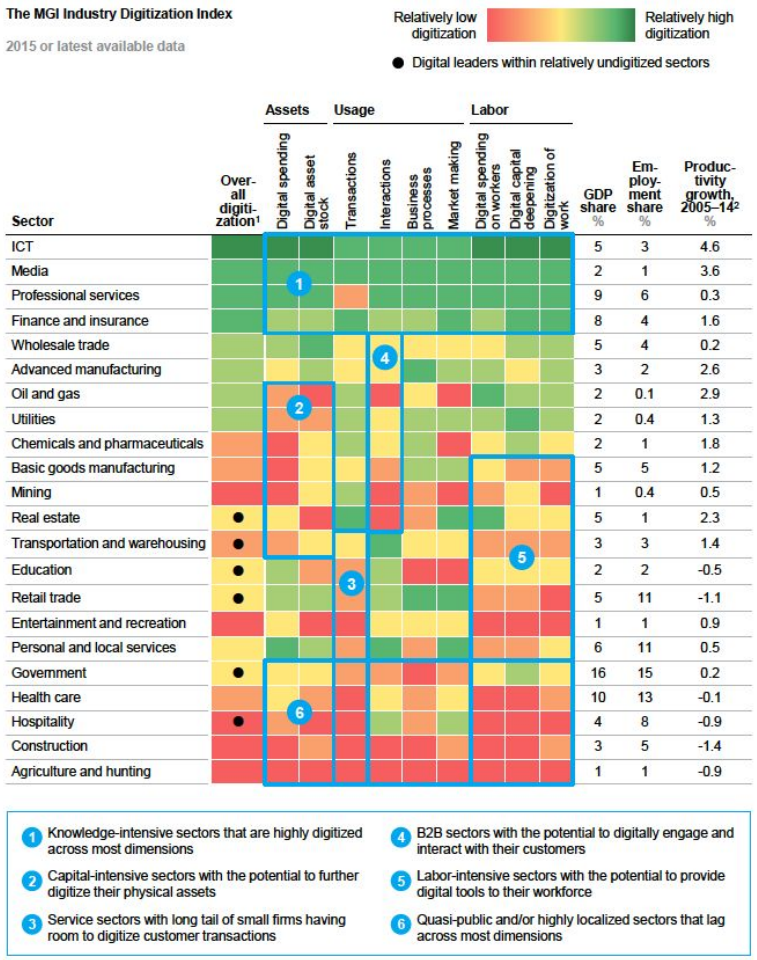


… next Spin-Out Robots

Market Verticals, Focus & Opportunities

- Productivity vs GDP vs Employment vs Digitisation

"... market verticals / sectors in the bottom are less digitised, have negative productivity, employ relatively many people and contributes relatively little to the GDP. As a result people in these industries have lower income, hard working environments, less healthy lives, etc. By digitising these sectors including with robot technology we can transform them such that people can become more productive, increase income, work healthier and on the overall have a higher quality-of-life. This is why Blue Ocean Robotics is dedicated to bring new robots to this part of the world …", CEO, Claus Risager



Global Challenges

UN's 17 Sustainable Development Goals

SUSTAINABLE DEVELOPMENT GOALS

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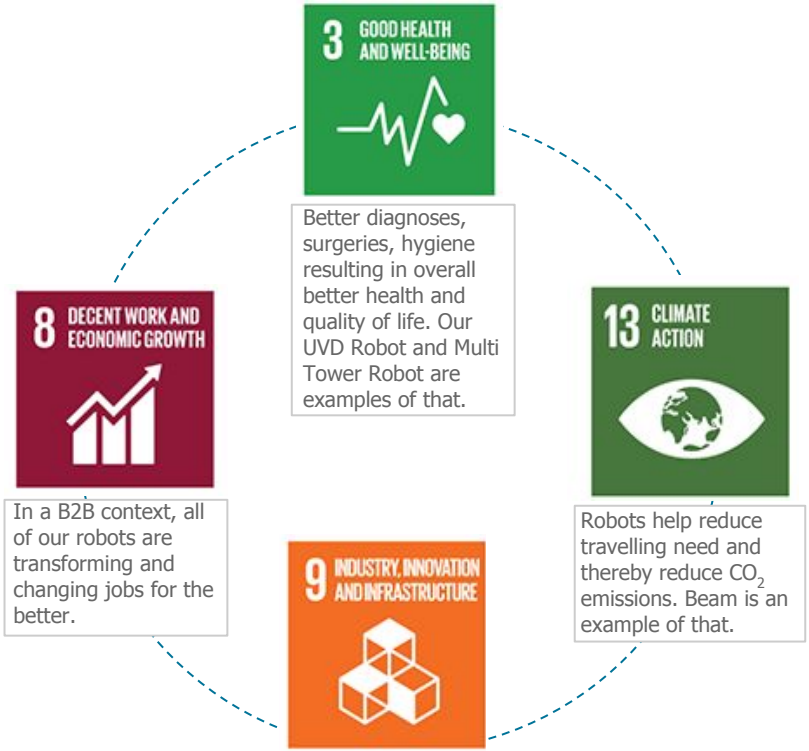
- for humans



We make robots - for humans

Quality of Life | Working Environment | Productivity

There are several other challenges and vertical market segments where robots make or will make a difference for humans

Market Potential

Professional Service Robots

BLUE OCEAN ROBOTICS
- for humans

What is a service robot?

Picture source: Goldbeck, KUKA AG, Bosch Bonirob, Hetwin, SMP Robotics, Omron, International Submarine Engineering , Robert Bosch Hausgeräte , Wonder Workshop

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IFR International Federation of Robotics

The professional service robot market is growing with **25% annually**, according to International Federation of Robotics. This means that the **market is doubled in size every 3 years**. The interesting thing about the professional service robot market is that there are numerous verticals, such as for example the hospital industry (with 16.500 hospitals worldwide), hotel industry (with 187.000 hotels worldwide), airport industry (42.000 airports worldwide), and many, many more.

Reseller & Distributor Strategy

Go To Market

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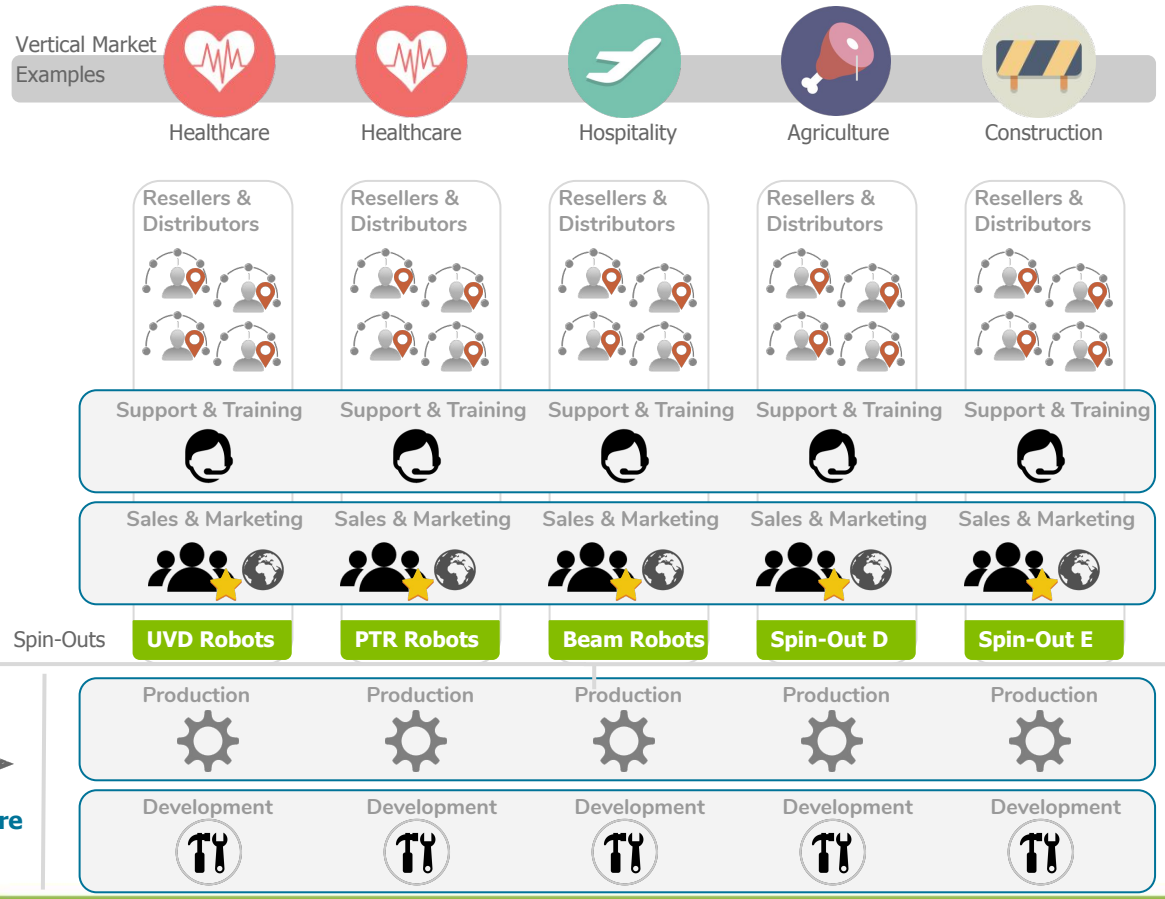


Robot Venture Factory

Resellers & Distributors
- The Spin-Out has a reseller strategy
- Resellers are highly competent in the specific domain with many years of experience and access to customers
- Resellers act locally at exhibitions and have direct contact with customers

Support & Training
- The Spin-Out provides education, training, qualification and upgrade of support- and service systems to the resellers

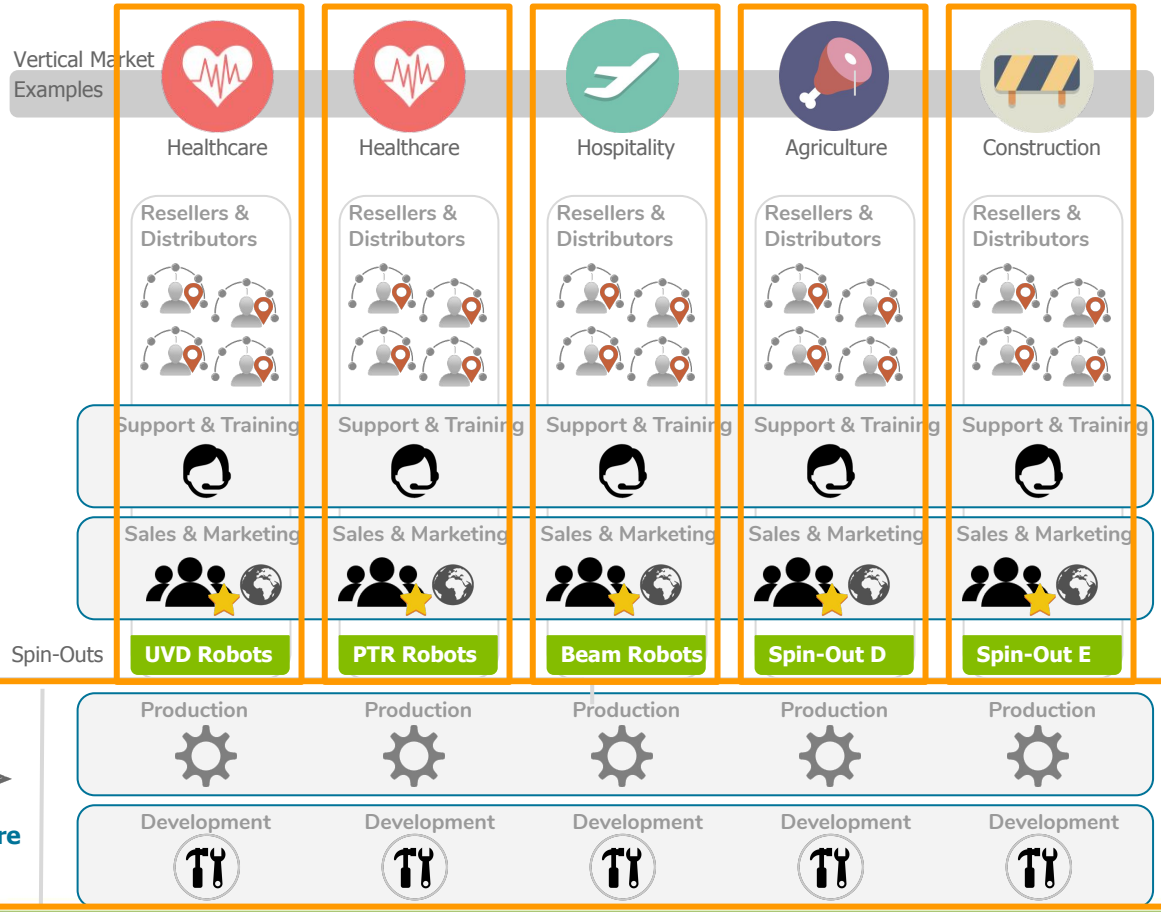
Sales & Marketing
- The Spin-Out hires sales and marketing professional personnel with extensive experience from the specific domain
- The Spin-Out does global marketing and creates awareness
- The Spin-Out works based on replicable methods, contracts, etc. across all Spin-Outs no matter what vertical market or segment

Production
- All robots are produced in a classic assembly line "asset light" integrating components from various suppliers across products.

Design & Development
- All robots are designed and developed via our novel RoBi-X model integrating users.

Reseller & Distributor Strategy

Go To Market



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Business Model

BLUE OCEAN ROBOTICS
- for humans

Venture Factory

BLUE OCEAN ROBOTICS
- for humans

Development, Production, Adm.

Blue Ocean Robotics has revenue from developing producing and doing administrative work for the Spin-Outs.

Royalties

Blue Ocean Robotics earns royalties from the robot sales in the Spin-Out companies by allowing the Spin-Out companies' robots to use TP-X.

Exit

Either the Spin-Out company or Blue Ocean Robotics is sold.

Spin-Out Company

UVD ROBOTS
INFECTION PREVENTION

Multi Tower
Better Life Robots

Sales of Robots

Offering the robots at full-price. Today, this is what the Spin-Outs practise mostly.

RaaS

Offering the robots as a services (RaaS), where customers use and pay robots according to when they need them

Renting robot

Offering the robots in a rental agreement

Leasing robots

Offering the robots in a lease agreement

Service & Support

Offering service & support agreements, where the Spin-Out company performs repair, maintenance, support, etc.

Add-Ons

Offering additional software- and hardware features such as for example an RCPD module on the UVD Robot, or autonomous vs. manual movement.

Industrialise "Robotic Entrepreneurship"

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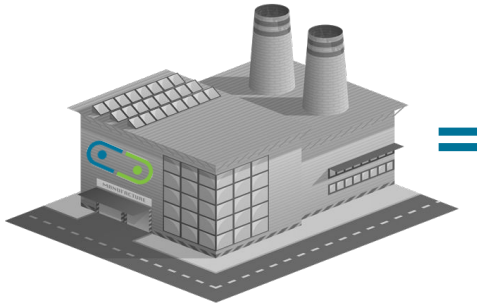
Robot Venture Factory

(Blue Ocean Robotics - a New Category of Robot Company)



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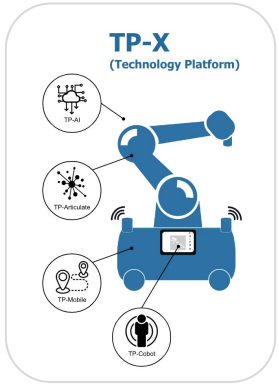

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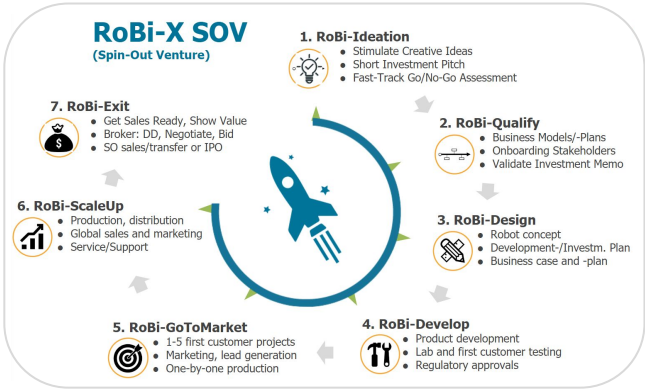

TP-X:
A toolbox with reusable technological components

Team:
A world-class team mastering the TP-X and RoBi-X

Venture Capital:
Financing the development and commercialization

Industrial stakeholders:
Partner companies with specific knowledge or technology

RoBi-X:
A methodology to systematically traverse a life-cycle from idea, through development to commercialisation and exit

The solution - a systematic approach to creating and commercialising robots enabling
- increase in productivity,
- better working environments,
- improved quality or quality-of-life

TP-X
Technology Platform

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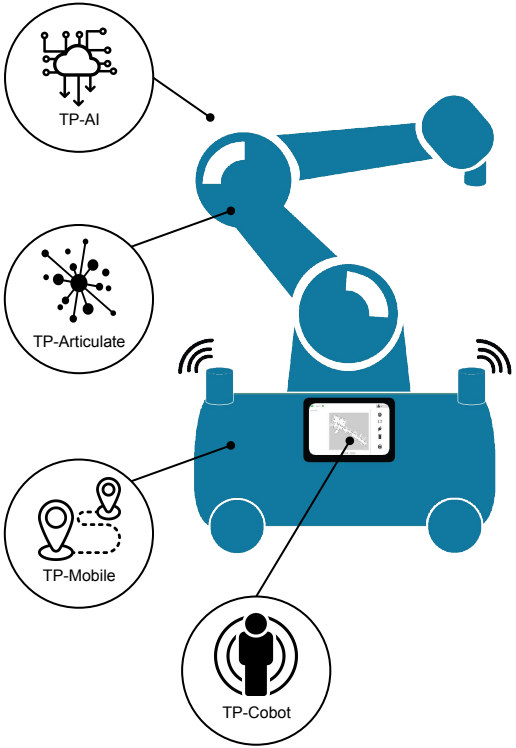

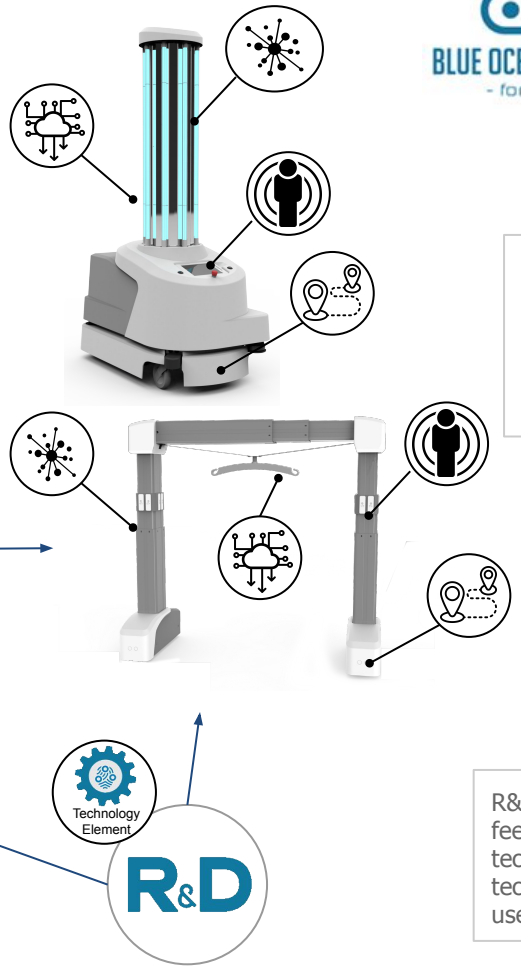

Technologies from TP-Xes are reusable across robots. For example the mobile part in the UVD Robot is the same mobile part in the MT Robot.

R&D projects are used to feed TP-X with technologies. These technology elements are used in the robots.

RoBi-X
Spin-Out Venture

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DISCOVER

1. RoBi-Ideation
- Stimulate Creative Ideas
- Short Investment Pitch
- Fast-Track Go/No-Go Assessment

2. RoBi-Qualify
- Business Models/-Plans
- Onboarding Stakeholders
- Validate Investment Memo

CREATE

3. RoBi-Design
- Robot concept
- Development-/Investm. Plan
- Business case and -plan

4. RoBi-Develop
- Product development
- Lab and first customer testing
- Regulatory approvals

COMMERCIALISE

5. RoBi-GoToMarket
- 1-5 first customer projects
- Marketing, lead generation
- One-by-one production

6. RoBi-ScaleUp
- Production, distribution
- Global sales and marketing
- Service/Support

7. RoBi-Exit
- Get Sales Ready, Show Value
- Broker: DD, Negotiate, Bid
- SO sales/transfer or IPO

Mindset

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Think Big

Thinking small is a self-fulfilling prophecy. We create and communicate a bold direction that inspires results. We think differently and look around corners for ways to serve customers.

For Humans

Humans use our robots to change the way they work to be more meaningful, rewarding and healthier. We improve quality-of-life and productivity. We make robots for humans.

Customer Obsession

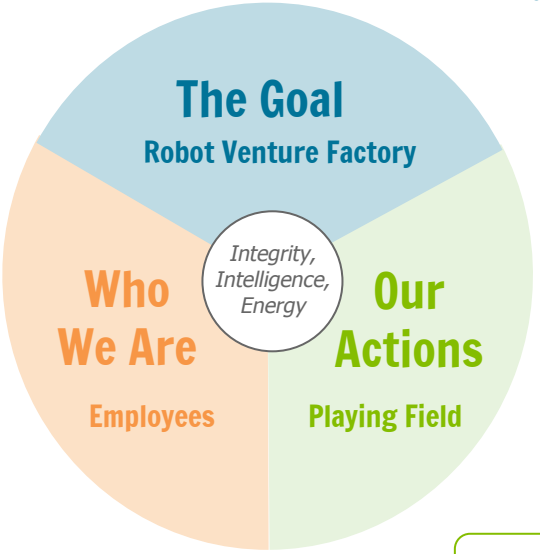
We start with the customer and work backwards. We work vigorously to earn and keep customer trust. Although we pay attention to competitors, we obsess over customers. Customer quality preferences are essential.

Invent and Simplify

We expect and require innovation and invention from ourselves and our teams and always find ways to simplify. We are externally aware, look for new ideas from everywhere, and are not limited by "not invented here." As we do new things, we accept that we may be misunderstood for long periods of time. Make complexity simple by reducing uncertainties every day.

Build Trust

We listen attentively, speak candidly, and treat others respectfully to establish a trustful environment. We are vocally self-critical, even when doing so could feel awkward or embarrassing. We do not believe we or our teams are flawless. We benchmark ourselves and our teams against the best, building the best conditions to succeed together.



Bias for Action

Speed matters in business. Many, but not all, decisions and actions are reversible and do not need extensive study. We value qualified risk taking. We have enormous propensity for getting things done.

Ownership

We are owners, think long term and don't sacrifice long-term value for short-term results. We act on behalf of the entire company, beyond just ourselves and our own team. We take responsibility and never say "that's not my job."

Disagree and Commit

We are obligated to respectfully challenge decisions when we disagree, even when doing so is uncomfortable or exhausting. We have conviction and are tenacious. We do not compromise for the sake of social cohesion. Once a decision is determined, we commit wholly.

Learn and Be Curious

We are never done learning and always seek to improve ourselves. We are curious about new possibilities and act to explore them.

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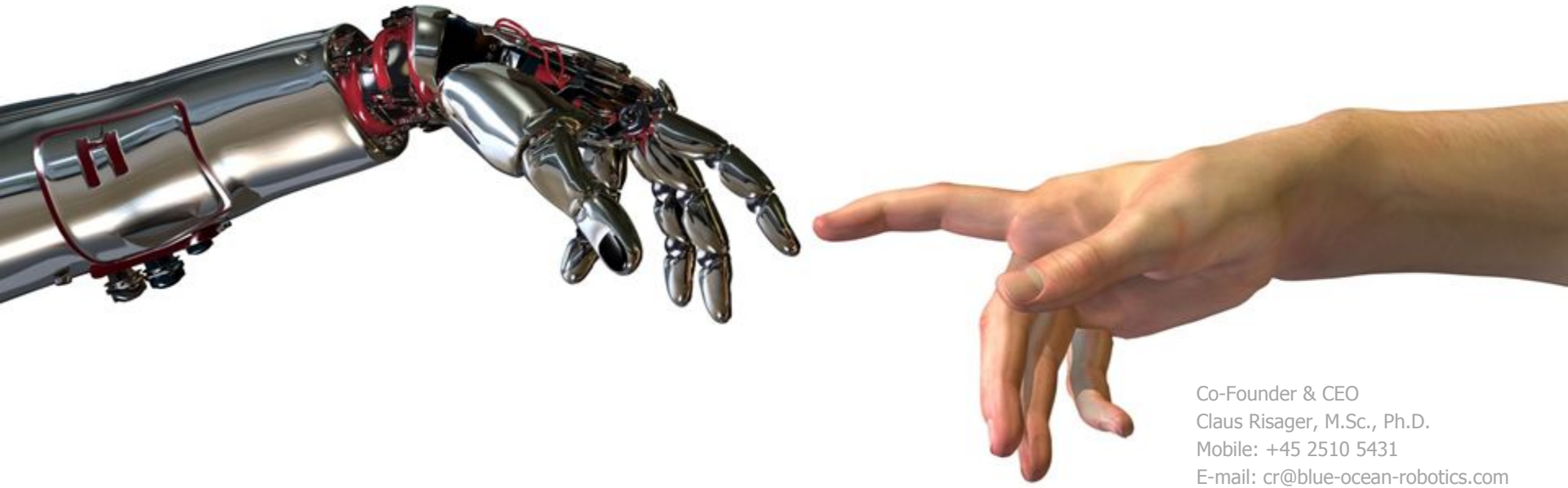
- for humans

Thank you for your attention



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