Industry & Technology

Digital Transformation

Prof. Hans Georg Näder, President & CEO
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Agenda

- Two questions for you
- Disruptive Change
- Digitalization
- Industry Version 4.0 to 5.0
- Open Innovation
Questions to address

- Is the industry best characterized as Half-full or Half-empty?
  - Show of hands….

- How can technology be leveraged to assist building a bright future?
  - Let’s see!
Disruptive change

- Human Mobility
- Robotics
- Digital World
- E-Health
- Big Data
- Post Automotive
- Urban Mobility
- Embedded Living
It is becoming reality...

Bionico Hand
by Nicolas Huchet

Open Bionics Action Hero Prostheses

DARPA Near-Natural Sense Prostheses

Lego Hand by
Carlos Arturo Torres
It is becoming reality...

**Medical fields of application of 3D technologies**

- Virtual surgeries
- Dental braces
- Hearing aids
- Walking aids
- Scoliosis braces
- Prostheses

Source: Frankfurter Allgemeine Sonntagszeitung from Nov 08, 2015
It is becoming reality...

Organic material from 3D-printers for fabrication of

- Teeth
- Hair
- Bones
- Dermal tissue
- Organs

Source: Welt am Sonntag from Nov 08, 2015
Finding the sweet spot
Digitalization

It's just the beginning…
Industry 4.0

Smart Factories:
Internally optimized super-factories with cross-linked machines

... and it's not yet the end...
Industry 4.0

... because even this is a machine – and very easy to use...
Industry 4.0

... and neither should we ignore the intelligence and ideas of the “community”...
Open Innovation Space at Bötzow Berlin
Open Innovation Space at Bötzow Berlin

- Room for hardware and software developers as well as designer, artists and inventors from Berlin and the world
- Exchange with Ottobock’s development engineers and product designers
- Cooperation leads to innovation and prototypes, which can immediately be tested and realized
- First leaseholder and cooperating partner is the Fab Lab Berlin
- Interaction with research organizations, universities and students
“Digital fabrication ecosystem”
Open Innovation Space today
Open Innovation Space today
Open Innovation Space today
Open Innovation Space tomorrow

2,500 m² laboratory
3,500 m² co-working
4,000 m² office
Angiotrainer
Angiotrainer
Soundbrenner
Soundbrenner Pulse: Smart Vibrating Metronome

Soundbrenner Pulse
The Future of Rhythm.
SMART VIBRATING METRONOME

$230,168 USD
total funds raised

InDemand
Original campaign was 205% funded
on May 31, 2015
Electro couture
Electro couture

**FASHION**
Glowing ready-to-wear and bespoke elektronik couture

**TECH**
Smart battery systems for wearable, easy-to-use technology

**FUTURE**
Inspired collaborations with tech giants and fashion visionaries alike
Electro couture
Questions answered...

- Is the industry best characterized as Half-full or Half-empty?
  - At least 3/4-FULL!

- How can technology be leveraged to assist building a bright future?
  - Be on a continuous quest for technology and knowledge!
  - Create environments to foster technology and embrace change!
  - Invest in people and support our next generation!
Thank you!

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Industry & Technology
AOPA Leadership Conference
Stephen Blatchford
In memory of

Joyce Blatchford

27th March 1928
- 
31st December 2015
1985 v 2015

• No microprocessor based products
• No liners
• Energy storing feet just being launched
• First version of endolite just launched (Multiflex foot / ESK knee)
• Quadrilateral sockets
• No university courses for prosthetists/orthotists
• Large proportion of prostheses were conventional construction
First 2 decades of 21st Century

- Clinical Outcome
- Advanced Product

- Intelligent Prosthesis
- IP+ knee
- Adaptive Prosthesis
- Smart Adaptive

- Greater patient satisfaction
- Greater Mobility
- Less Gait deviations
- Improved control
- Reduced socket loads
- Improved stability
The Market
Today’s Challenges - Hydraulic v Electric Power, Sensing Interfaces

Assist, Support, Weight, size, battery, user fitting, etc..

Need for Customisation or personalisation to ADL?
User Centered from biomechanical Need to fitting

- Functionally Graded Biomimetic Parts
- Embedded Sensors
- Morphologically Tailored Custom Made Parts
- Kineto-Dynamic Custom Made Parts
- Embedded Sensing
- Acquisition
- Total Body Avatar

Value Chain
For synchronized delivery and assembly of standard components

Additive Machines
For custom made parts

Advanced Materials
Automatic Generative Design

Service Platform

Synchronized
Value Chain

Sales & Services

Market take-up of new technology

Sales by product age - Endolite North America

- More than 4 years
- 3-4 years
- 2-3 years
- 1-2 years
- <=1 year
Market take-up of new technology

Sales by product age - product sales outside USA
Why has innovation been successful?

- US Market structure has encouraged innovation – it has acted as an incubator to the world
- Virtually all successful innovation has come from the commercial sector with a spread across larger and smaller companies
- Previously the ability to get a new L-Code has meant that there is a reward for innovation
What do we need to do for this to continue?

• General agreement that we need clinical evidence to justify the benefits of new technologies

• What are the implications of this?
Case study

- We spend about 8% of our product sales on R&D and NPD
- We launched the first modern hydraulic ankle foot (echelon) in October 2008
- We launched an electronic version of this (elan) which had added benefits in November 2011
- We now have a large range of published studies showing the benefits of the echelon foot
- We have now just got the first published study on the elan which again shows good benefits
Catch 22

- So if we wait for published studies before we launch a new product it will add two to three years to the development cycle (effectively doubling it)
- This means that the revenue from the new product will be delayed and the cost of developing the product will be increased (nearly doubled)
- We cannot afford this - how do we get over this catch 22?
In an ideal world…

- Reimbursement system would have proper support for innovation
- Funding to support an organisation when launching a new product to do proper clinical trials and scientific studies to prove their benefits
- Would need to be some form of initial evaluation as to whether it was worth supporting a new innovation in this way
“It is not the strongest of the species which survives but those which are the most responsive to change”

Attributed to Charles Darwin
Thank you