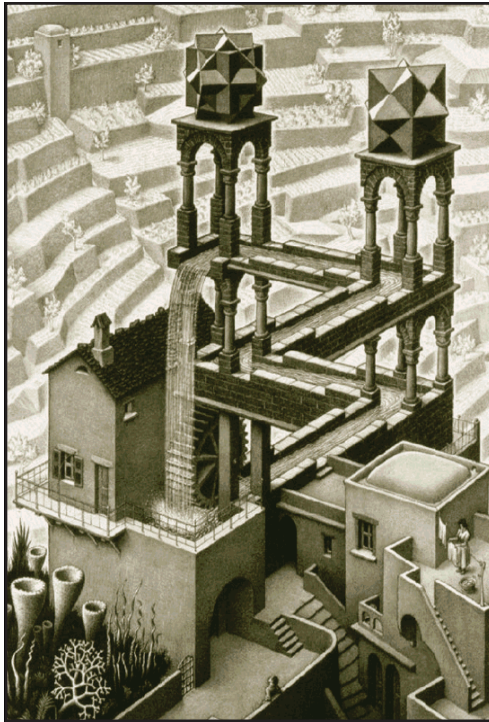




GUIMARAES PORTUGAL
21 – 12 / 09 / 2011

SPACE FOR INNOVATION IN SPACE

Dr. Knut Siercks
Managing Director
Hexagon Technology Center



AGENDA

01 Innovation in Space - P&N from Space to Earth

02 Precision P&N Examples - Challenges

03 Space for Innovation - Hexagon Technology Center



A heritage of trust, a history of getting it right

Almost 200 years of Measurement Technology

- since 2006: Acquisition of more than 15 companies
- 2005 Merger with **Hexagon AB**
- 2004 Divestment **Swiss Optics** and **Escatec**
Acquisition **Tritronics**
- 2002 Divestment **Vectronix (defense)**
- 2001 Acquisition **Cyra**, Acquisition **Laser Alignment**
Acquisition **ERDAS**, Acquisition **LH Systems**
- 2000 IPO at Swiss Exchange (SWX)
- 1997 **Leica Geosystems**
- 1994 Acquisition **GPS-Magnavox (US)**
- 1990 Merger of Wild-Leitz and Cambridge Instr into **Leica**
- 1988 Acquisition **Kern, Aarau**
- 1986 Merger of Wild and Leitz into Wild-Leitz
- 1921 **Wild** founded in Heerbrugg, Switzerland
- 1819 **Kern** founded in Aarau, Switzerland



INTERGRAPH

Leica
Geosystems

HEXAGON
METROLOGY



Space- and Airborne



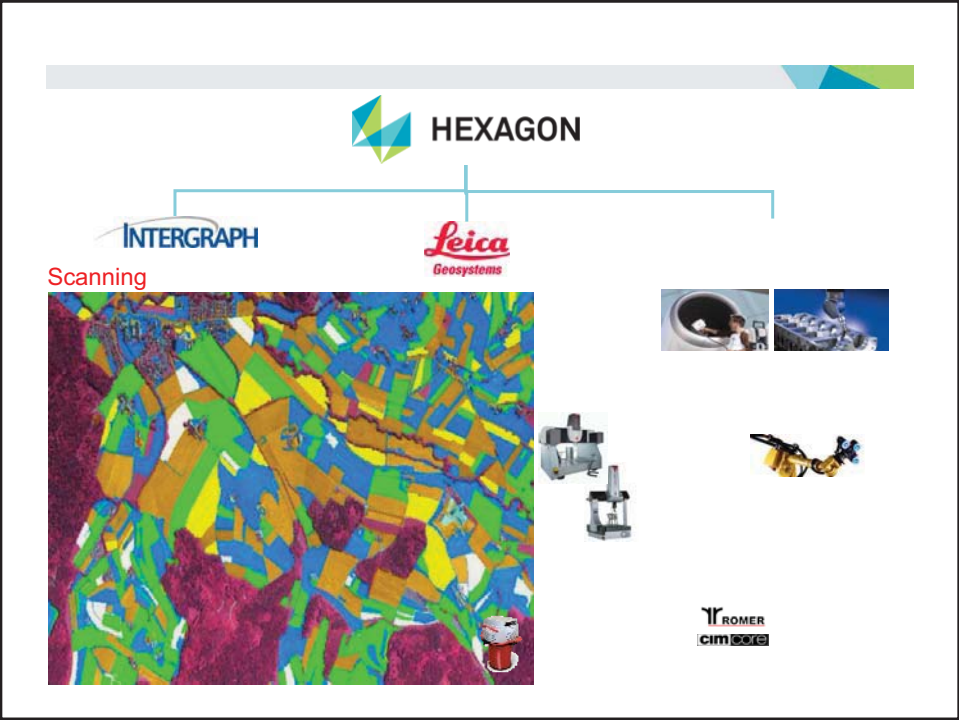
Ground-Based



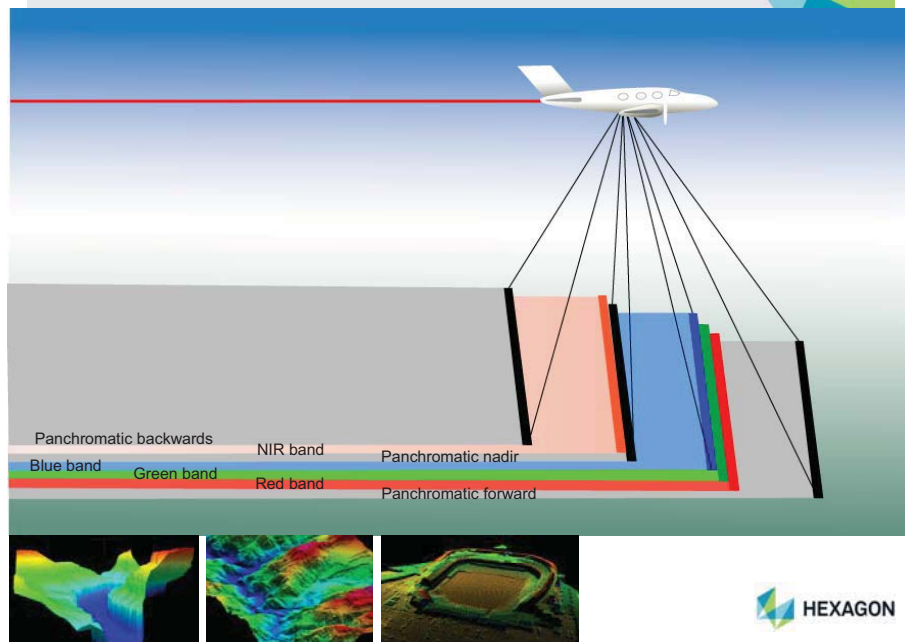
Indoor







Digitale Luftbildkamera (Panchromatische und Spektrale Zeilenfilter)



Space- and Airborne



Ground-Based



Indoor



HEXAGON

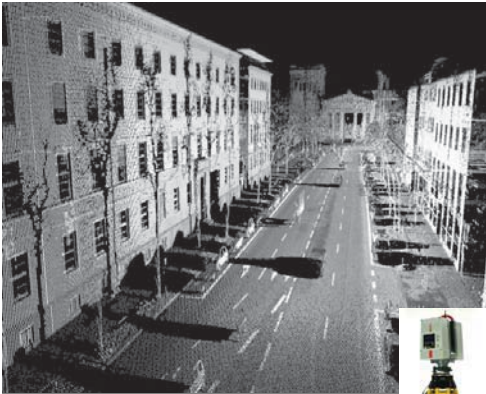




**HEXAGON**

**INTERGRAPH**

Scanning



**Leica**
Geosystems







**HEXAGON**

**INTERGRAPH**

Scanning



**Leica**
Geosystems













INTERGRAPH

Security



Leica
Geosystems



ROMER
cim

Space- and Airborne



Ground-Based



Indoor



HEXAGON



Diagram illustrating the application of Hexagon technology in a shop floor environment:

- Top row: Six images of industrial equipment (CMMs, robotic arms, inspection systems).
- Bottom left: A large image showing a robotic arm in a shop floor environment.
- Bottom right: Text describing the goals and challenges:

Mechanics and Photonics

to achieve

- Flexibility
- Reliability
- Precision
- Productivity
- Cost Efficiency

Challenge: Cost, Shop floor environment



Mechanics and Photonics

to achieve

Flexibility
Reliability
Precision
Productivity
Cost Efficiency

Challenge: Cost, Shop floor environment



3D-Artifact
e.g. T-Probe

T-Cam
→ ω, φ, κ

Tracker
→ X, Y, Z

Challenge: Cost, Shop floor environment





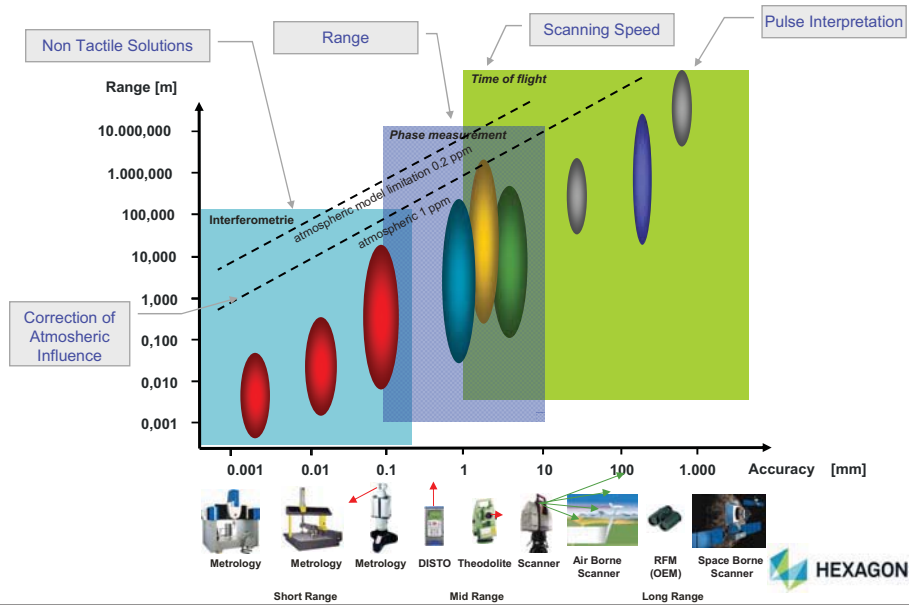
Challenge: Cost, Simple Use (MMI)



Challenge: Cost, Simple Use (MMI), Image processin



Reflectorless – Electro-optical Distance Measurement Portfolio (run time) / Technology Cluster



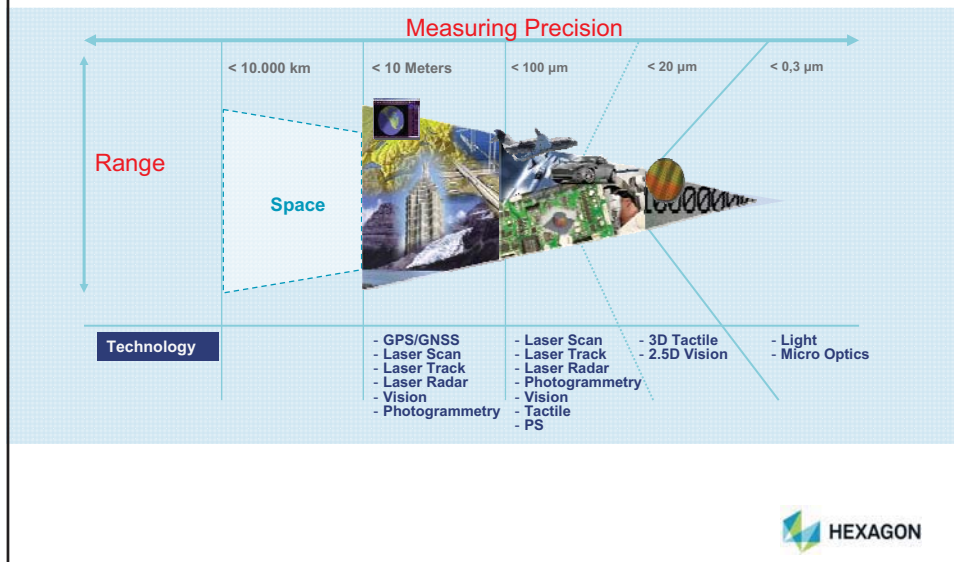
INTERGRAPH

Leica
Geosystems

HEXAGON
METROLOGY



From space to nano technology

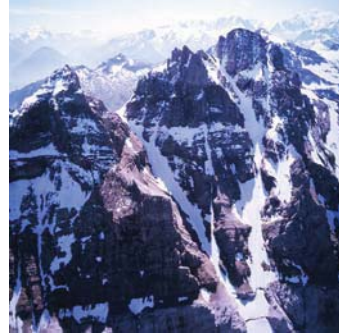


Everything began in the mountains...!

The Surveying Challenge in Switzerland ...



Heinrich Wild – August 1901



Dents du Midi – surveying point



Miniaturisation was the crucial step for the founding of Wild and Leica!



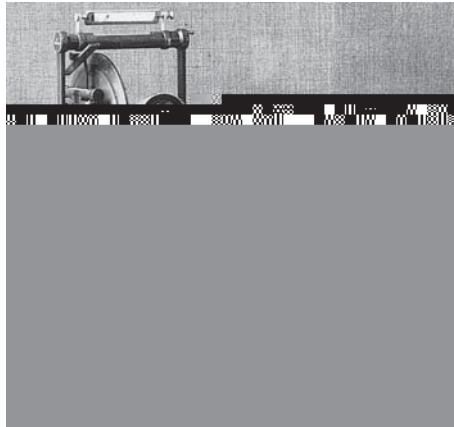
Heinrich Wild – co-founder



“Miniaturization” of surveying instruments
(1921)



Miniaturisation was the crucial step for the founding of Wild and Leica!



“Miniaturization” of surveying instruments
(1921)



ASIA
Mt. Everest
in 1992/93
K2 1996,
with a Leica
GPS 300
and TC2002
(Intern. Ev-K2
Team):
8846.10 m a.s.l.



**WORLD'S
FIRST GPS TOP
MEASUREMENTS**

AMERICAS
Aconcagua in
January 2001
with GPS500
(Prof. G. Poretti):
6961,83 m a.s.l.



AFRICA
Kilimanjaro in 1999 with
GPS500 (E. Messmer):
5893 m a.s.l.



EUROPE
Matterhorn in 2000
with GPS500 and
TCA2003
4477,55 m a.s.l.
Mt. Blanc in 2003
with GPS500 by IGN:
4808,4 m a.s.l.

ALL PERFORMED
WITH LEICA GPS SYSTEMS

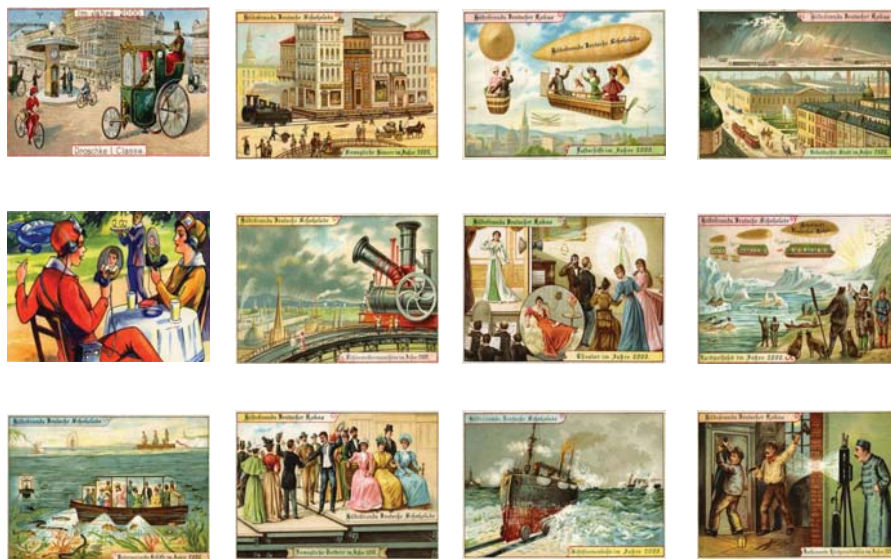


Synergies



Change the context ...

The Future from yesterday ... 1900



Vision from 1900 about the society in 2000

The Future from yesterday ...1950



Atom - Ship



Personal Rohrpost



Space Station



Assembly Hall



Floating Islands



Underwater City



Traffic



Town and Urbanisation



Flying Power Station



Discovery of the Space



Moon City



Magnetic Rail Way

Werke einiger Künstler des Weltraumzeitalters - der fortschrittsgläubigen 50er und 60er Jahre des vergangenen Jahrhunderts



Zentral R&D

Mission



Hexagon Technology Center - Mission



**Generate and protect
INNOVATION
with and for the
Hexagon Group**
...
**to strengthen our current
business
and generate new business**

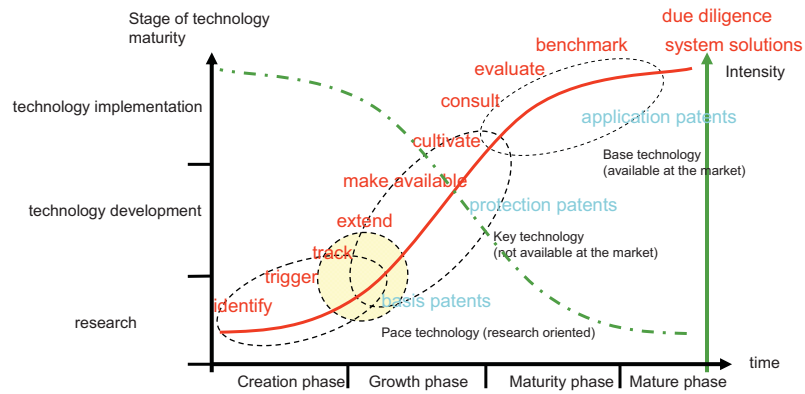


Zentral R&D

Task



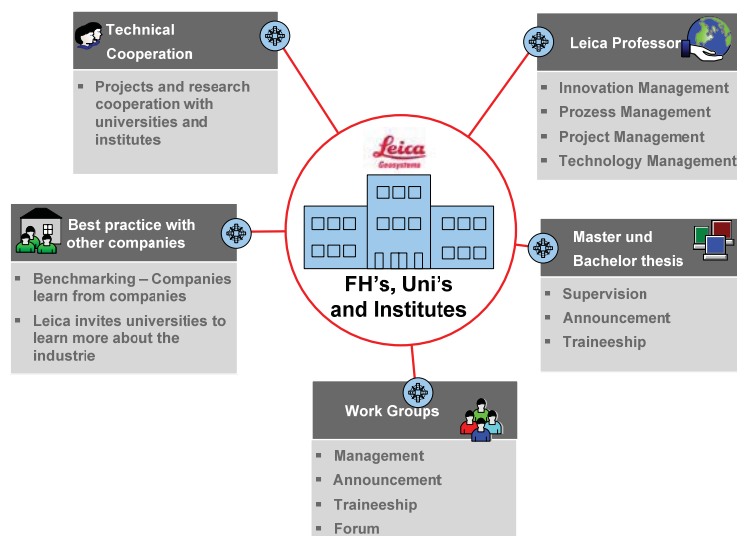
Corporate Research and Innovation Management -> Tasks along the Technology S-Curve



The maturity of technologies is following a S-shaped curve over the time in most cases



Research Cooperation



We have to think global!



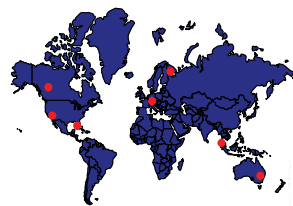
Hexagon Research Network

WEF – The Global Competitiveness Report 2010

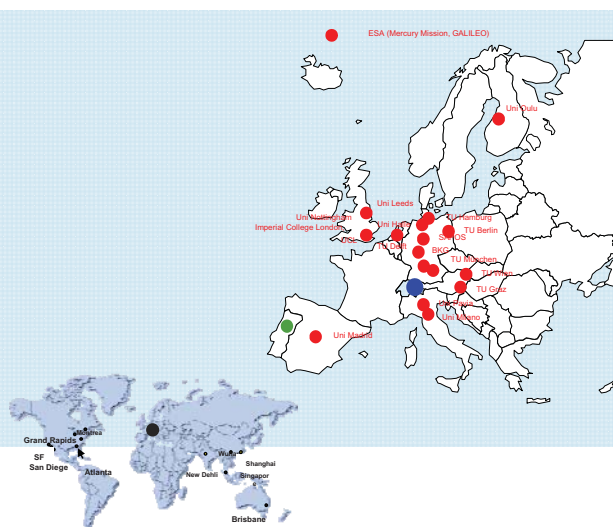
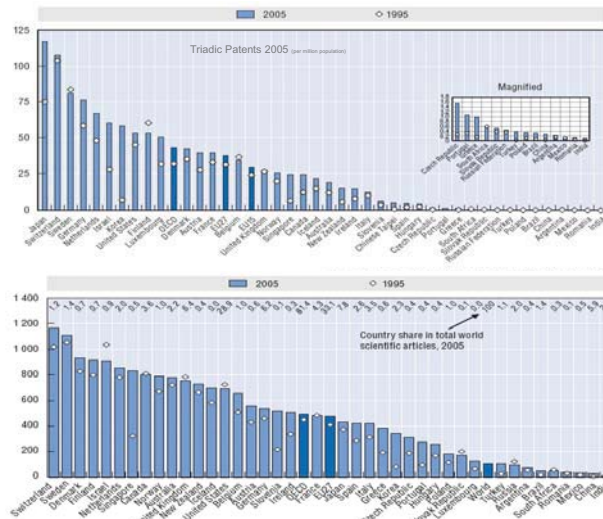


Country/Economy	GCI 2010–2011		GCI 2010–2011 rank among 2009 countries	GCI 2009–2010 rank *
	Rank	Score		
● Switzerland	1	5.63	1	1
● Sweden	2	5.56	2	4
● Singapore	3	5.48	3	3
● United States	4	5.43	4	2
● Germany	5	5.39	5	7
● Japan	6	5.37	6	8
● Finland	7	5.37	7	6
● Netherlands	8	5.33	8	10
● Denmark	9	5.32	9	5
● Canada	10	5.30	10	9
● Hong Kong SAR	11	5.30	11	11
● United Kingdom	12	5.25	12	13
● Taiwan, China	13	5.21	13	12
● Norway	14	5.14	14	14
● France	15	5.13	15	16
● Australia	16	5.11	16	15
● Qatar	17	5.10	17	22
● Austria	18	5.09	18	17
● Belgium	19	5.07	19	18
● Luxembourg	20	5.05	20	21





■ 2005 ○ 1995



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THANK YOU FOR YOUR ATTENTION!

