



UMIT
the health & life sciences university



ConCep⁺
Think Tank & Strategy Consultant

Impulsvortrag

Digitalisierung - Chancen und Auswirkungen auf die Geschäftsmodelle der Medizintechnikunternehmen

Vorbereitet für die:
ÖGBMT Jahrestagung 2018
Hall in Tirol

Vorgetragen durch:
Beatus Hofrichter
Managing Partner

16. September 2018

ConCep⁺ Think Tank

Photo: ConCep+, 2015 - 18 ©

Live Voting – Survey

You can participate by PC, Tablet, or phone now

1. WLAN starten (Passwort: “public”)
2. Open your browser on your device
3. Enter <https://www.surveymonkey.com/r/C75RT9T>

or

Enter the QR code:

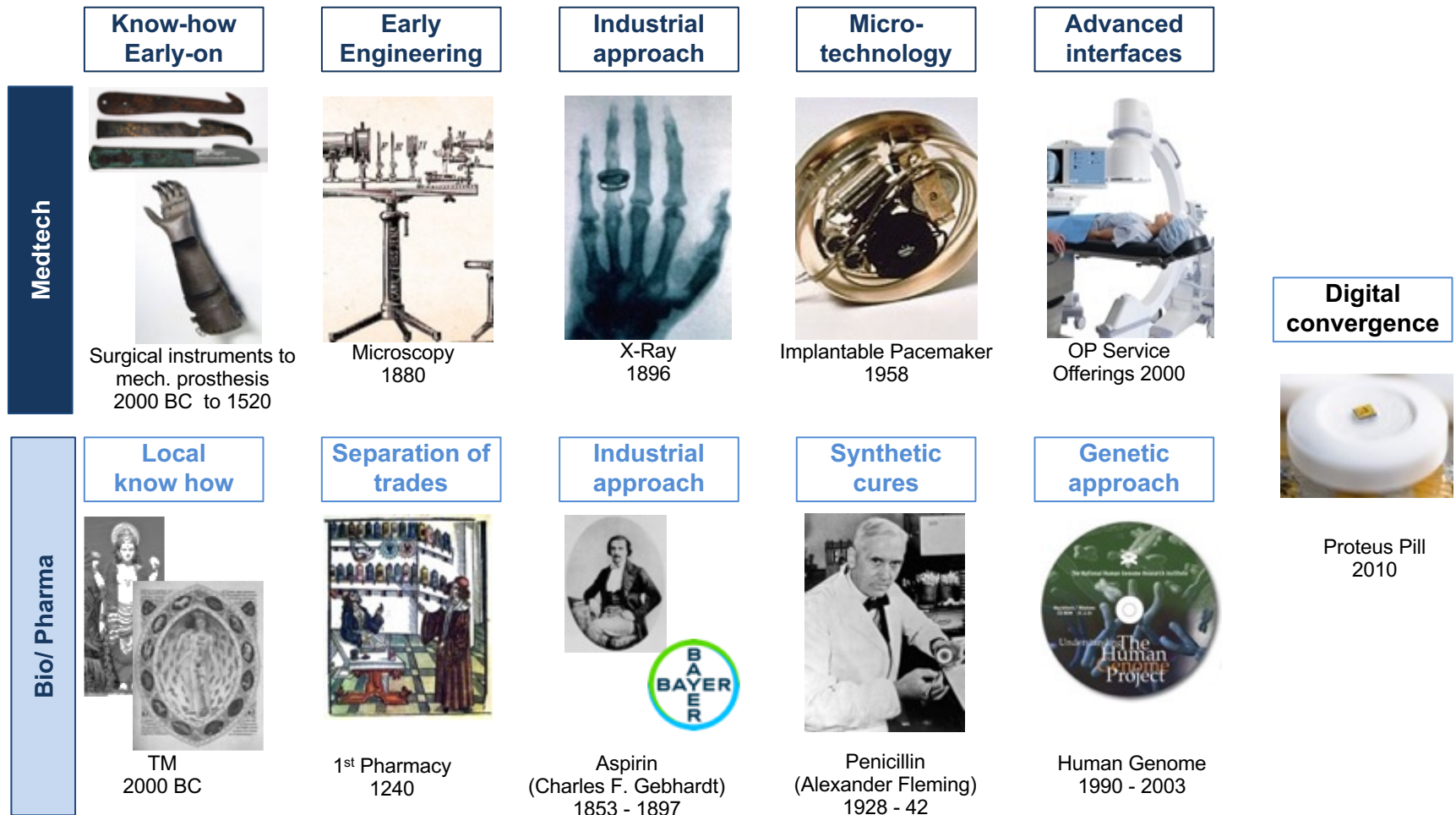


4. Answer all questions in on go, submit survey and view the results on the screen

Fokus des Vortrags

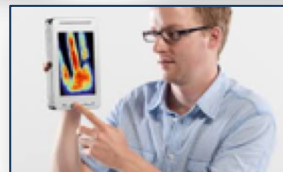
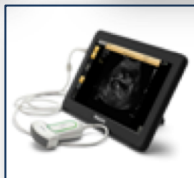
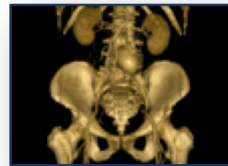
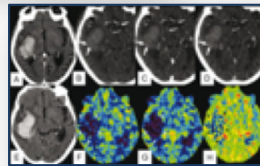
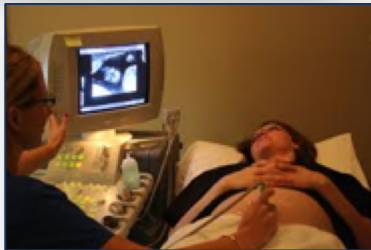
- Digitalisierungstrends und Herausforderungen
 - Auswirkungen auf Behandlungspfade
 - Vertikale Geschäftsmodelle und Digitalisierung als Chance
 - Ausgewählte „Digitalisierung“ Erfolgsbeispiele
 - Ausblick auf den Gesundheitsmarkt im Jahr 2030
-
- Diskussion mit Live Voting Results

Zukünftige Innovationen treiben die Verschmelzung der Life Science Akteure voran



Source: Wikipedia, Getty Images

Imaging/ Radiology – “One diagnostic reference tool box”



- Computer Tomography
- Magnet Resonance
- Ultrasound
- AI/ Advance Visualization (SW)
- Mobile devices

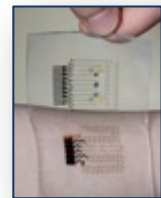
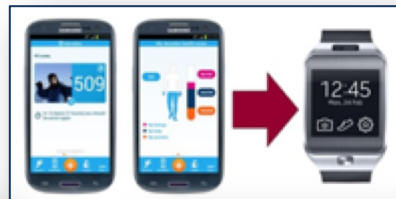
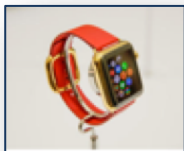
Picture source: Google images and/or company homepages

Diagnostics: From Top-Lab to Mobile/ anywhere ...



- In-vitro diagnostics

- Lab-equipment



- Monitoring/ adherence devices & tattoos
- Integrated CGM dispensers
- Mobile, real-time diagnostics

Picture source: Google images, MobileHealthNews, and/or company homepages

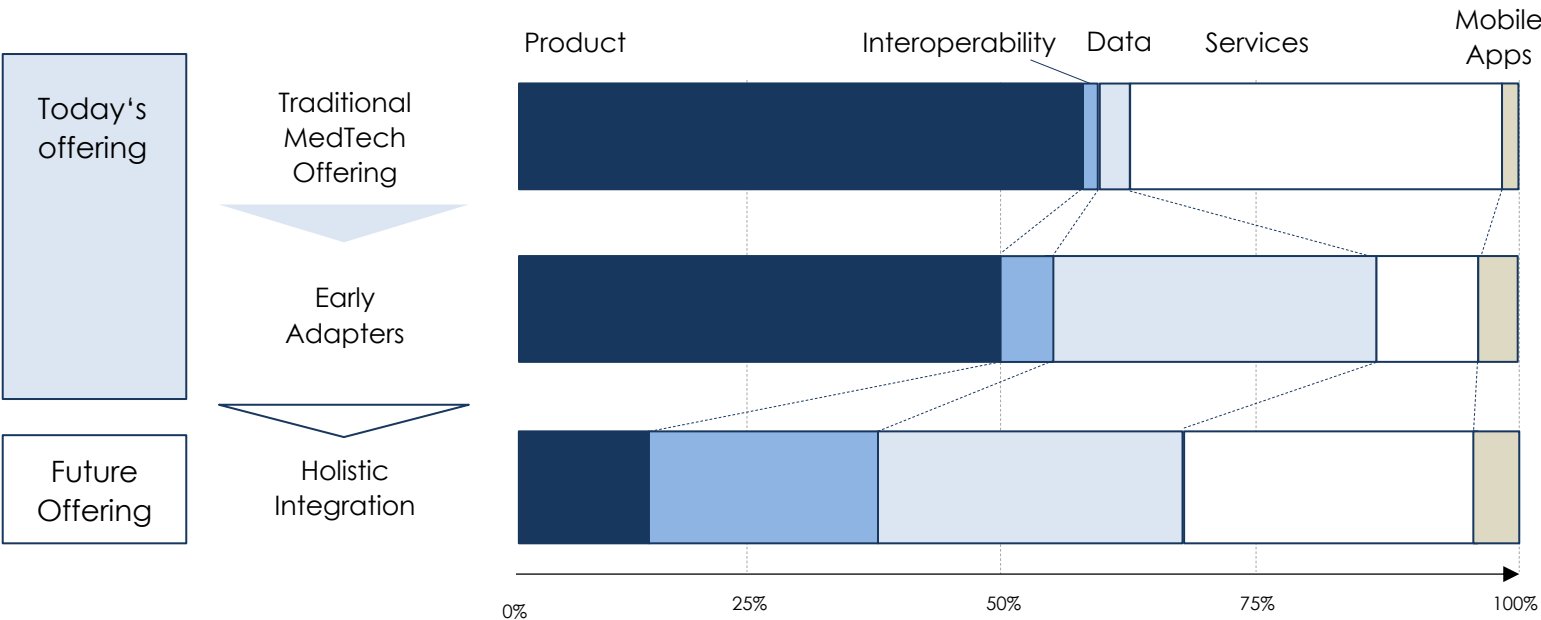
Out of the Box – Bio-printing, Tissue engineering, and more



Harald Ott et al. MTI, May 2015

Der Angebotsumfang erweitert sich stark hinzu digital-integrativen Komponenten

Illustrative



Source: Based on 5th LIMEDex Index report, March 2016

Remark: Illustrative model only indication potential shifts among current and future product offering structure in order to meet future demands and ICT needs

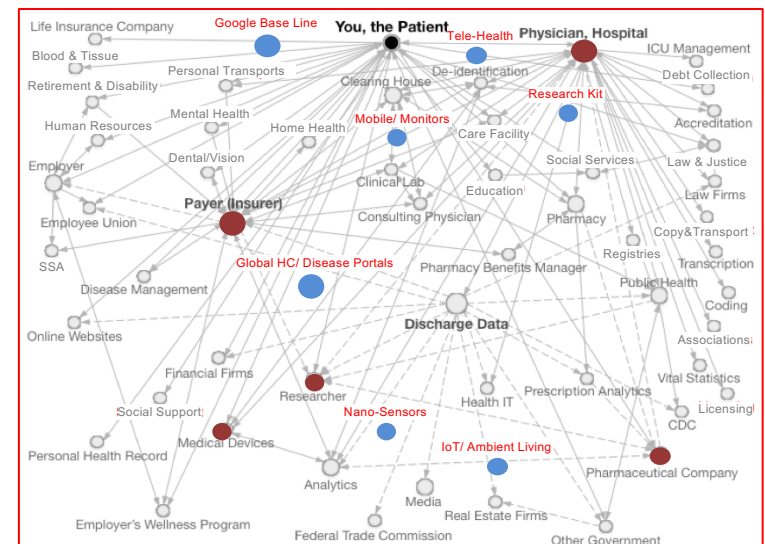
Illustrative



- Internal project network
- Partner project network
- Application integration
- Best procedural standards
- Interoperability (i.e. Argonaut/ FHIR)
- Alliance management
- Competitive watch

Future Risk prevention focus:

- ❖ ICT compliance globally
- ❖ Data ethic and Citizen/ Patient privacy
- ❖ Closed global procedural experts systems
- ❖ Constant Peer-Reviewed PMS
- ❖ Stringent network access controls



Rising demand for ICT security

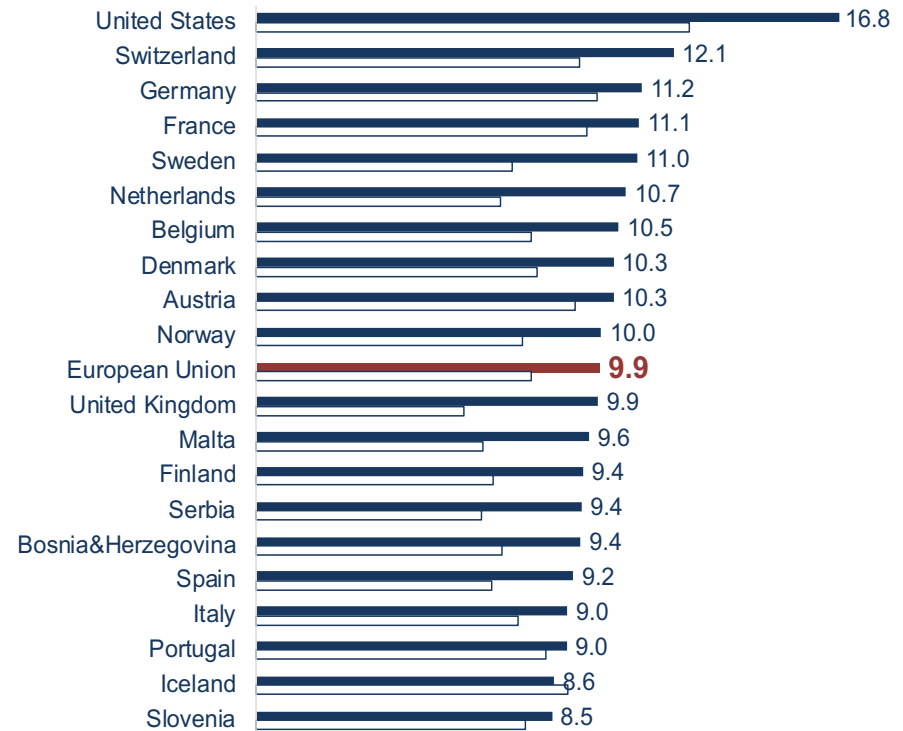
Source: <http://thedatamap.org/history.html>, Harvard University, 2015; CC+ - solely indicative additions based on current adhoc market observations, intentionally w/o any links

Wesentliche Herausforderungen an die Gesundheitssysteme

Einige Beobachtungen

- Top innovations in technologies and clinical procedures
- KOL/ Expert networks geared R&D and marketing
- Portfolio and volume incentives are still common in markets
- Divided financial system focus
e.g. Reimbursement (Treatment & Interventions) vs. Invalidity & Out of Pocket spend (Rehabilitation/ Prevention)
- Unsustainable cost burden
(avg. +2.0% HC spend vs. GDP since Year 2000)
- Cure and care costs soar further
given demographic changes in the years to come

European Healthcare spend growth rate of national GDPs in % (2000 -'15)



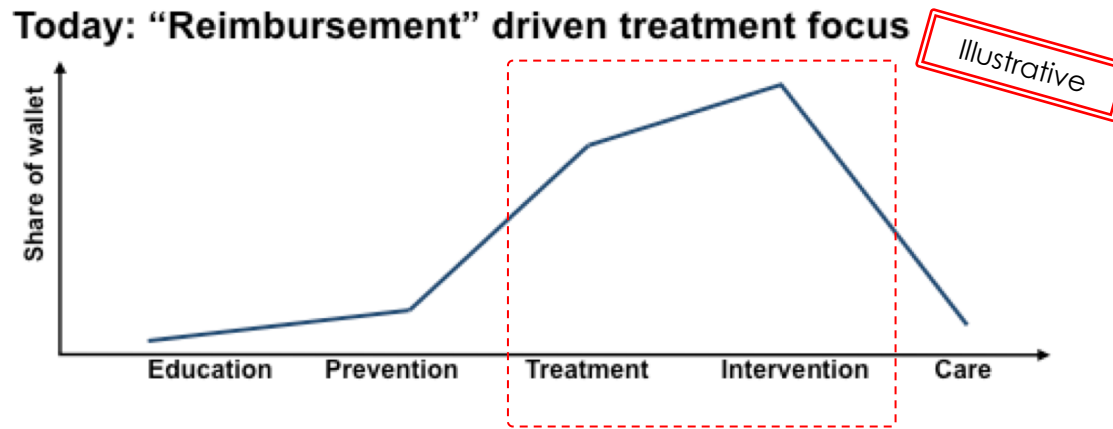
Source: CC+ Think Tank
© 2015 - 2018. ConCep+

Source: **World Health Organization** Global Health Expenditure database
(<http://apps.who.int/nha/database>).

Fokus des Vortrags

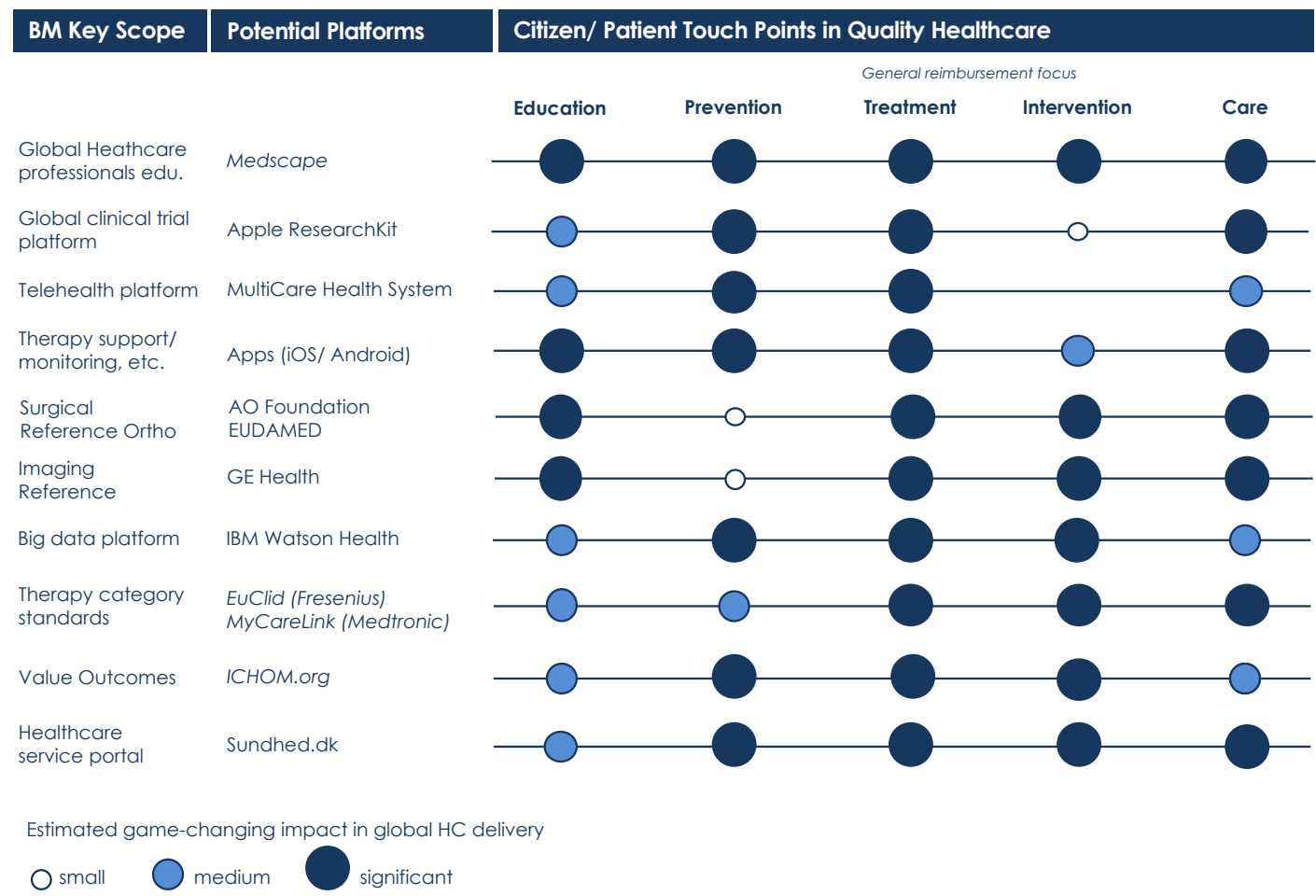
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Quality Health Angebote prägen zukünftiges Wachstum im erweiterten Care Continuum



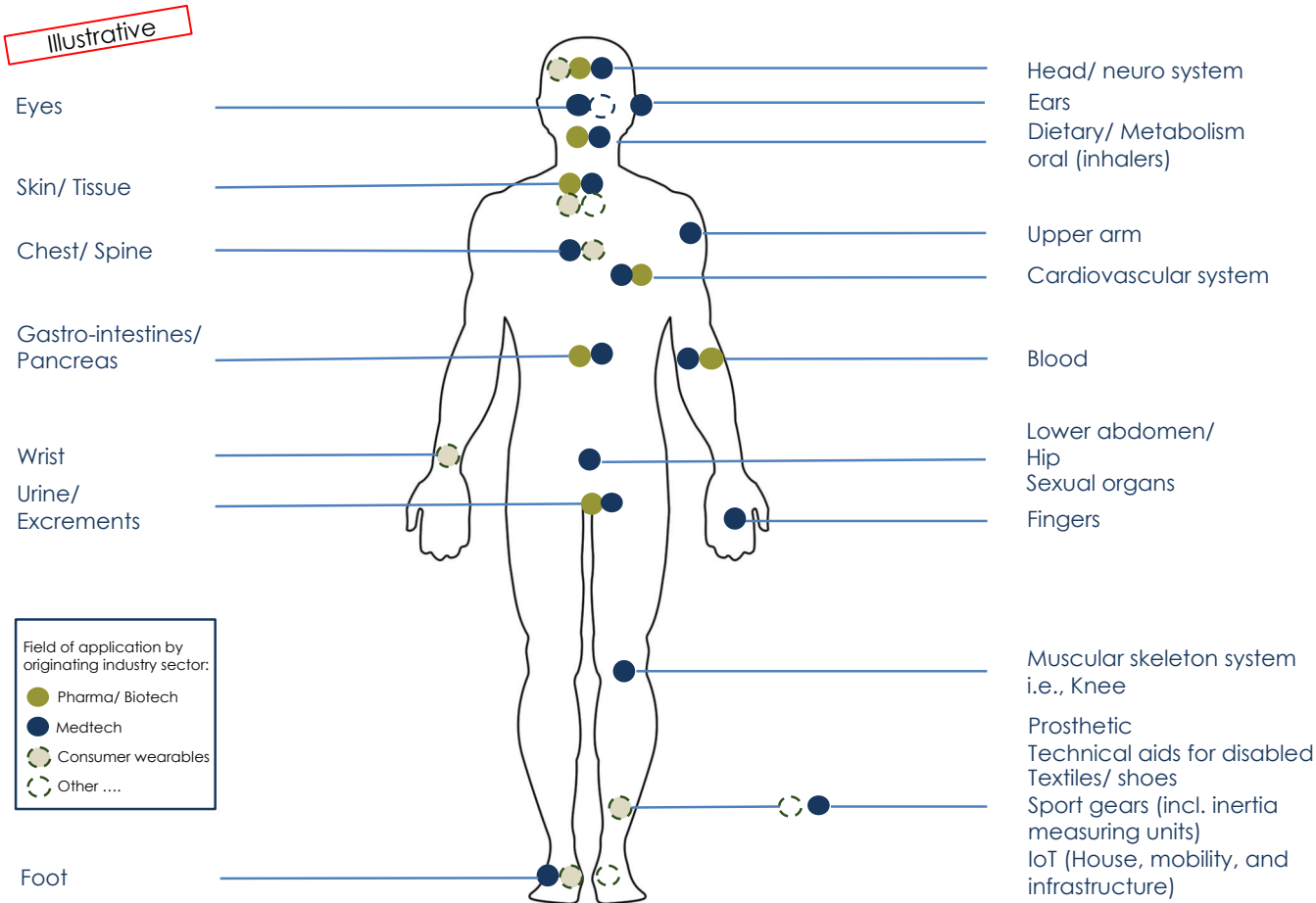
Source: B. Hofrichter, A. Ruzicic, Dr. P. Dümmler "GMTI 2013 Report – Accelerating Transformation for Success"

1st Movers erkannten die Wertsteigerung von fokussierten globalen Therapie-Plattformen im Gesundheitsmarkt



Smart Apps & Wearables – Heutige Anwendungsfelder In, am Körper bzw. Körpernahe

Highlighted examples of disruptive fields application by originating industry sector:



Source: CC+ Think Tank - LIMEDex Survey; Soreon Research, "The wearable health revolution, Zurich, Switzerland, Oct. 2014

Image: carwad.net/ wallpaper-938211

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Disruptive Ansätze entlang der Behandlungspfade

Indication specific

Integrated CGM system



Abbott

Colorectal cancer screening application

Decoding Cancer.

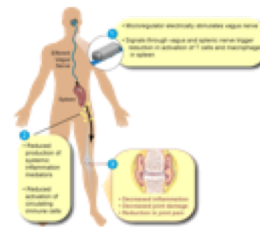
Researchers are hunting cancer's complexity by decoding its genetic code using advances in artificial intelligence to analyze genetic data and identify biomarkers for patients at risk.

All from a simple blood test.



fraxnoma

Bioelectronic diseases management



SetPoint MEDICAL

AI in imagine



zebra MEDICAL VISION

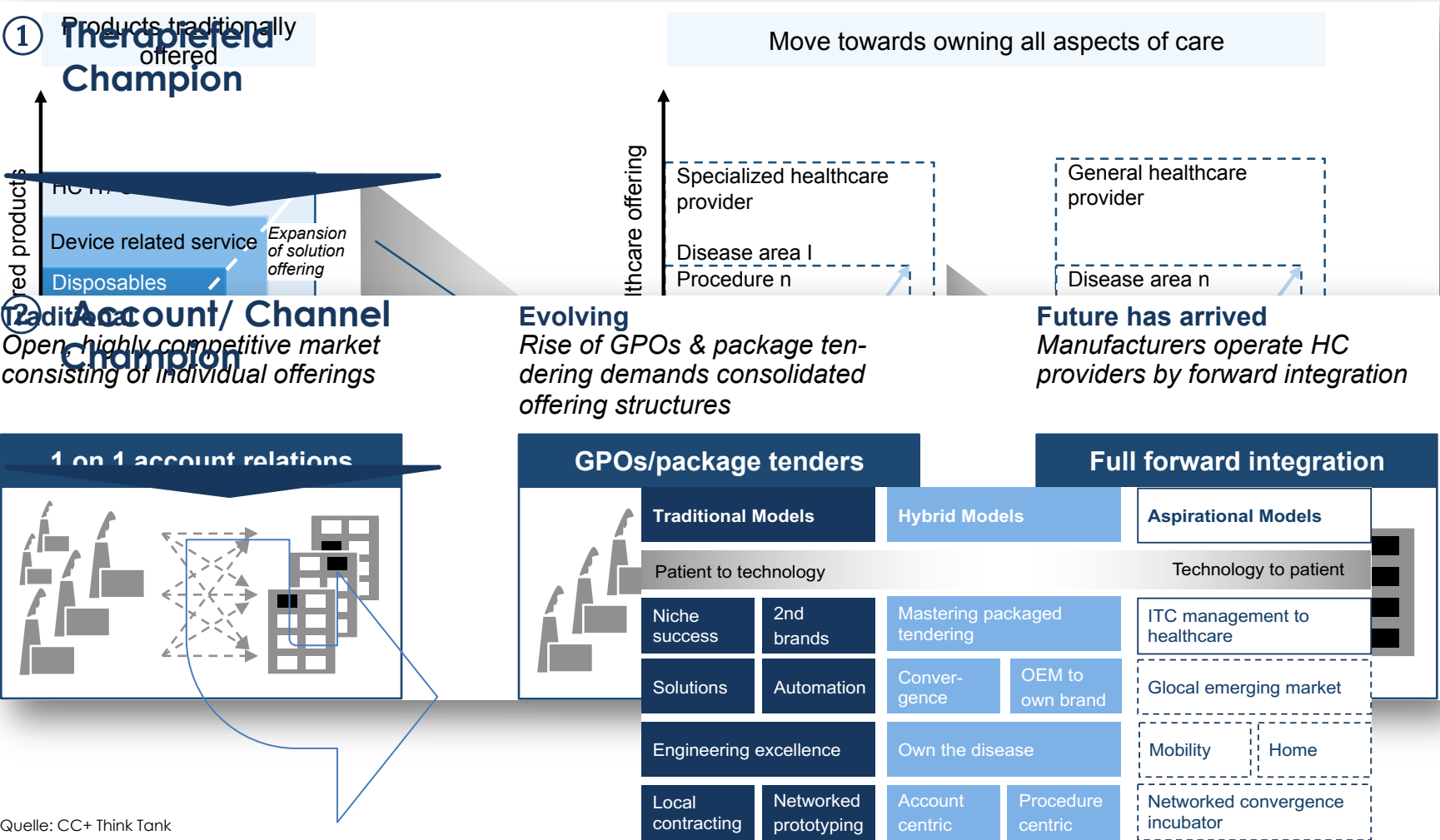
Source: Respective company websites

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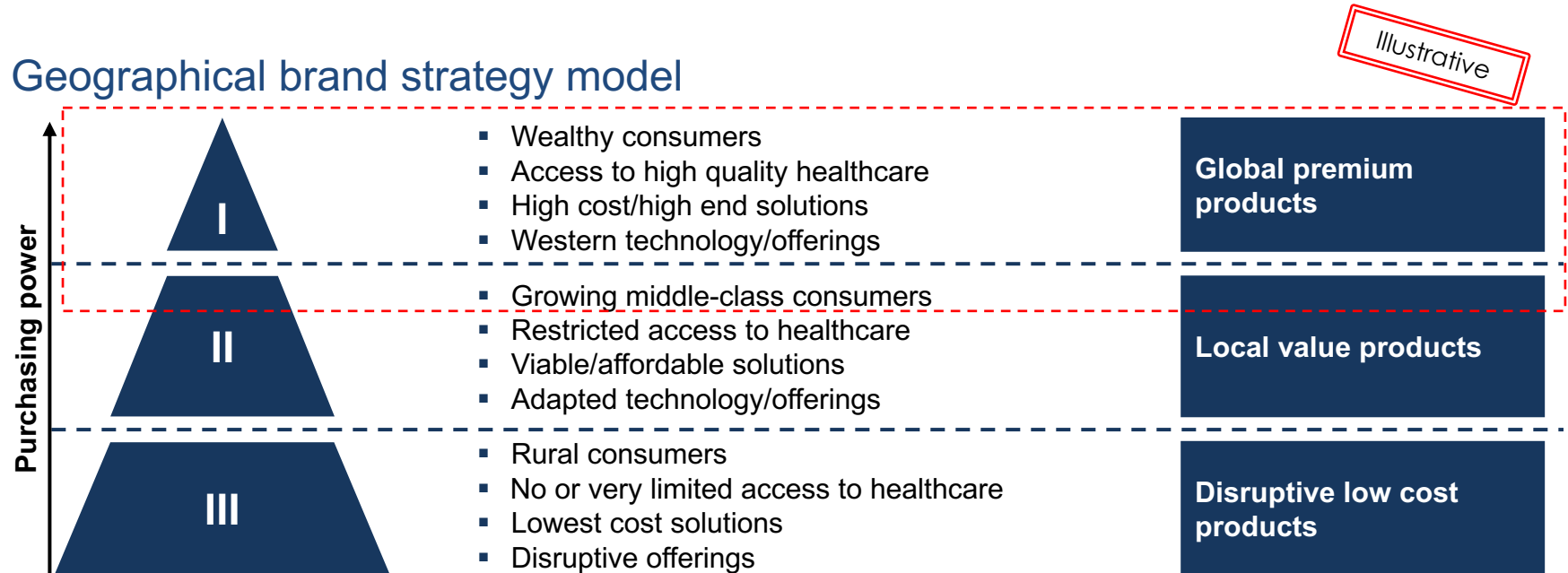
Traditionelle Medtech Geschäftsmodelle seit den 2000er Jahren



Quelle: CC+ Think Tank
© 2015 – 2017. ConCep+

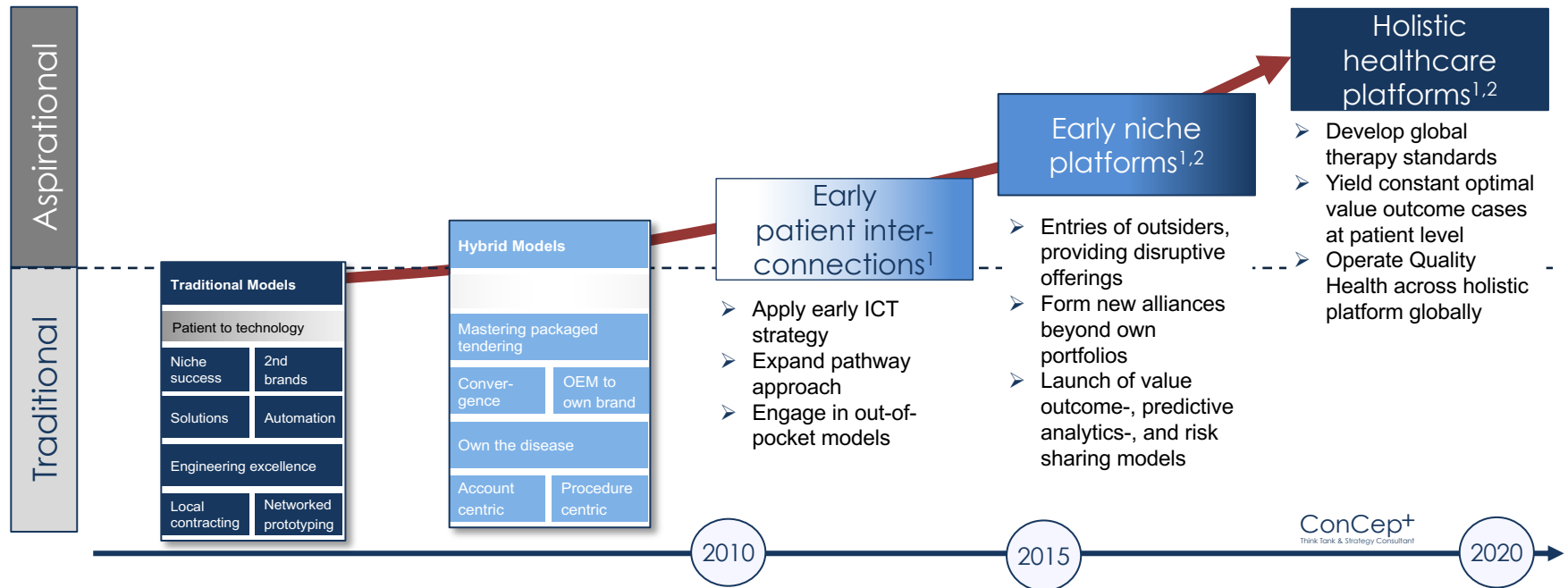
Traditionell bedienen westliche MedTech firmen Premium Produktsegmente

Geographical brand strategy model



Source: B. Hofrichter, A. Ruzicic, Dr. P. Dümmler "GMTI 2013 Report – Accelerating Transformation for Success"

Wie gestalten sich neuerdings MT Geschäftsmodelle?



Source: CC+ Think Tank - LIMEDex Survey
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➔ Business model growth continuum

- 1) Build on proprietary offerings, niches and extension of previous model(s);
2) Build on complementary and/ or disruptive offerings, establishing new business model

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Reengineering (“Made in India”), Miniaturization und Digitalisierung von Ultraschallgeräten

GE Healthcare



MAC 400

Year: **04/ 2009**

Weight: 15 lb

Cost US\$1'500



PHILIPS
Medical Systems

Year: **04/ 2014**

Weight: < 5 lb

Cost: USD 410 (HW/ SW)



Lumify

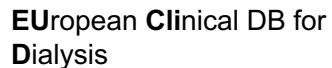
Year: **11/ 2017**

Weight: < 1 lb

Cost: USD 199 p.m. (SW)



1998



- **Benchmarking** (D 2002), EU (2006), all EU Dialysis (2014)

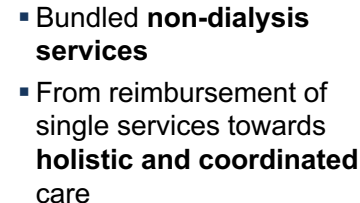
© 2015 - 18. ConCep+

2007



- Hospitals Mgmt. and infrastructure
- **Best of breed IT architecture** and platforms (+800 projects)
- Focus on Quality Health

Care Coordination 2013



Predictive Analytics 2015



- High risk US renal care patients monitoring & prediction
- HC cost reductions - fewer admissions & shorter stays

Medtronic's nutzt die ganzheitliche Vorwärtsintegration inkl. Integrierten Digitallösung und Partnerschaften global

Building on the disease model

- 1 Create efficiency in care continuum



- 2 Build integrated offering platform



Expansion of owning a disease model

- 1 Create efficiency in care continuum



- 2 Build integrated offering platform



- 3 Establish long-term value outcome partnership



- 4 Build risk-sharing models



- 5 Scale up globally



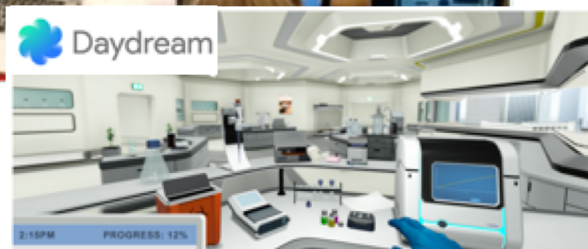
Monitor and drive value outcomes



Source: Respective company websites

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VR in Surgical procedures and Lab-Education



TOOL HANDLING	SPIKE	KNEE	TRAUMA
Cutting Straight & oblique cuts Osteotomy cuts Arthroplasty cuts Bone Clamps Open reduction K-Wires & External Fix. K-wire technique Traction technique External fixation Drilling Straight & oblique drilling Internal fixation Needle Insertion Compartment syndrome diagnosis Joint aspiration & aspiration	Spinal Fusion C6 - C7 C7 - C8 C4 - C5 T10 - L1 T12 - L2 L4 - L5 L5 - S1 Laminectomy C3 - C4 C5 - C6 T10 - T11 T12 - L1 L2 - L3 L4 - L5 Discectomy C4 - C5 L4 - L5 L5 - S1 Interbody Fusion L1/2 L2 - L3 L3/4 L3 - L4 L4/5 L4 - L5 L5/S1 COMING IN 2019 Sacrospin	Osteotomy Tibial Osteotomy - Open Wedge - Closed Wedge Partial Knee Replacement Medial with Mobile Plate Medial with Fixed Plate Total Knee Replacement Right knee Left knee Complex knee Arthroplasty COMING IN 2019 Hip Right hip Left hip Complex Hip Arthroplasty	Fixation-wires Wrist FX Proximal ulna FX Pediatric subscapula FX External Fixator Placement Wrist FX Proximal ulna FX Pelvis FX Cannulated Screws Subscapular hip FX Transcervical hip FX Distal femur FX Plate and Screws Wrist FX Ankle FX Distal femur FX Med-clavicle FX Dynamic Condylar Screws

A fully-online Biology and Lab-STEM degree with Google with universities worldwide: California State University, Harvard, ETH Zürich, Copenhagen, Glasgow, MIT, Exeter University, University of New Haven, Stanford, University of New England, Trinity College, University of Hong Kong and Berkeley, etc.

Source: Respective company websites

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Inovalon entwickelte ein HC-Datenplattform für Case-referenzen und zeitnahe Behandlungsempfehlungen



# of physicians	784,000
# of clinical facilities	269,000
# of unique patients	130 m
# of medical events	11 bn
USD million revenues	437.3

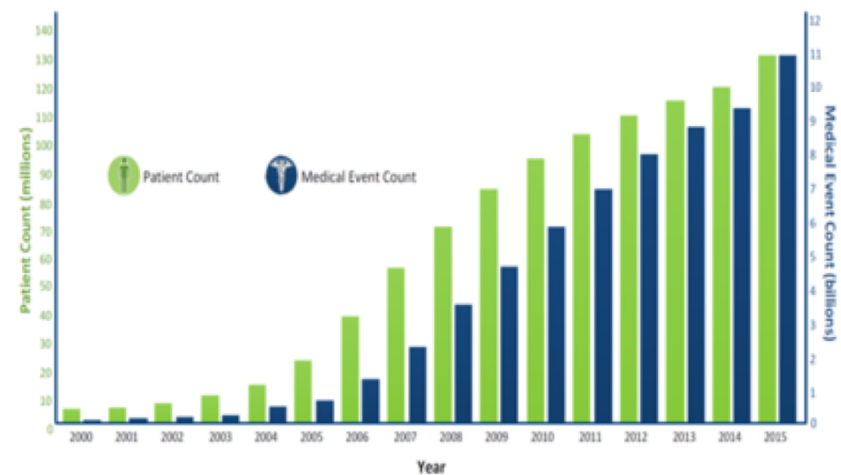
Healthcare IT Core Database	MORE² Registry
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DATA-DRIVEN IMPROVEMENTS IN HEALTHCARE™

Turning Data into Insight,
and Insight into Action™



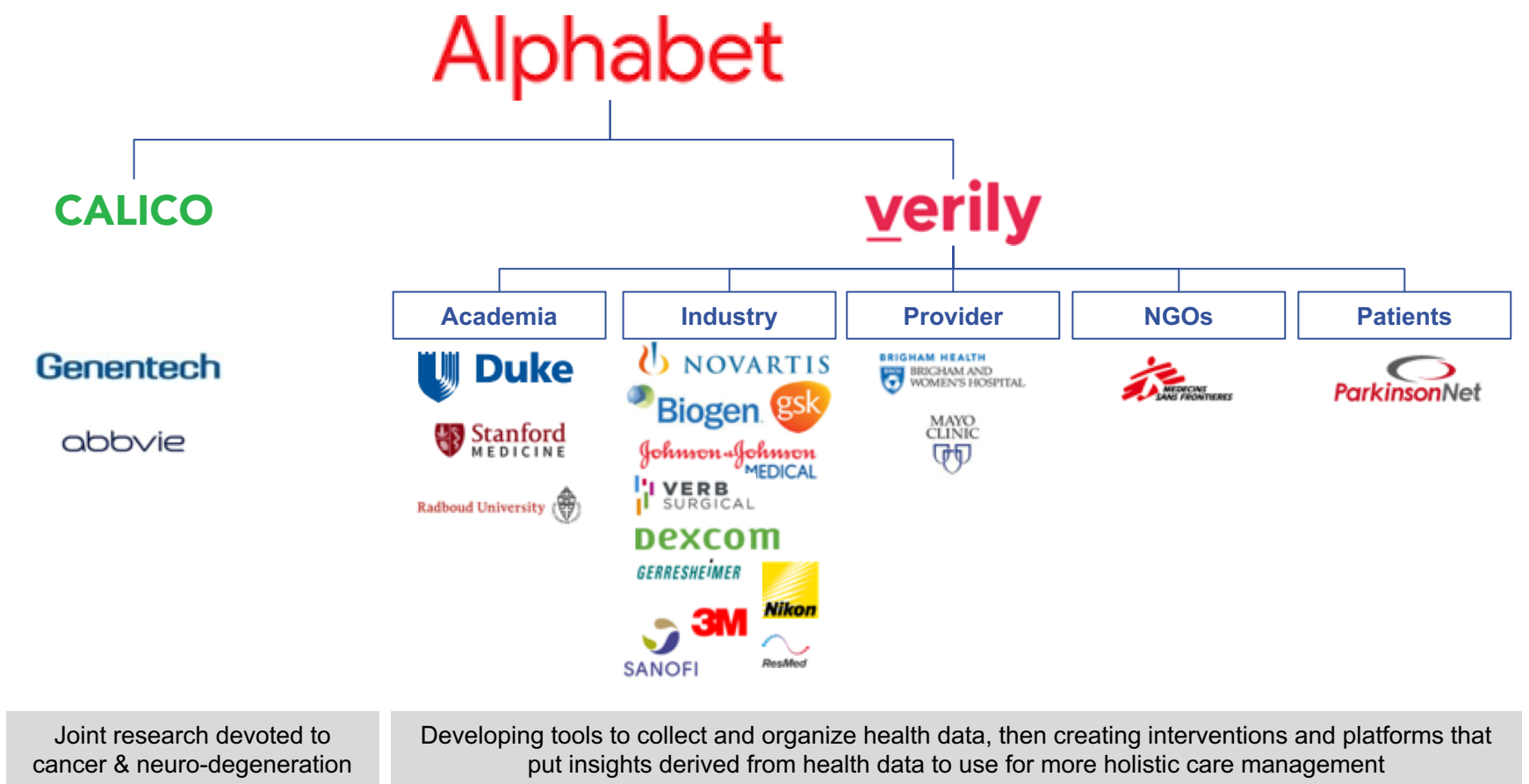
Medical Outcomes Research for Effectiveness and Economics Registry



Source: Respective company websites

© 2015 - 18. ConCep+

Alphabet kollaboriert mit strategischen Partnern, um die Verfügbarkeit und Datenqualität in Gesundheitswesen zu erhöhen



Joint research devoted to cancer & neuro-degeneration

Developing tools to collect and organize health data, then creating interventions and platforms that put insights derived from health data to use for more holistic care management

Source: Respective company websites
© 2015 - 18. ConCep+

Sponsor¹ des Argonaut Projekt Alliance für EHR Information Standards



1) Further projects sponsors are: Accenture, Allscripts, Athena Health, Beth Israel Deaconess Medical Center, Cerner, Epic, Intermountain Healthcare, Mayo Clinics, Meditech, Optum, Partners HealthCare System, SMART at the Boston Children's Hospital Computational Health Informatics Program, Surescripts

Source: Apple websites

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Welche Hebel beeinflussen Geschäftsmodelle langfristig?

Value Outcome

**Comorbidities
/Prevalence**

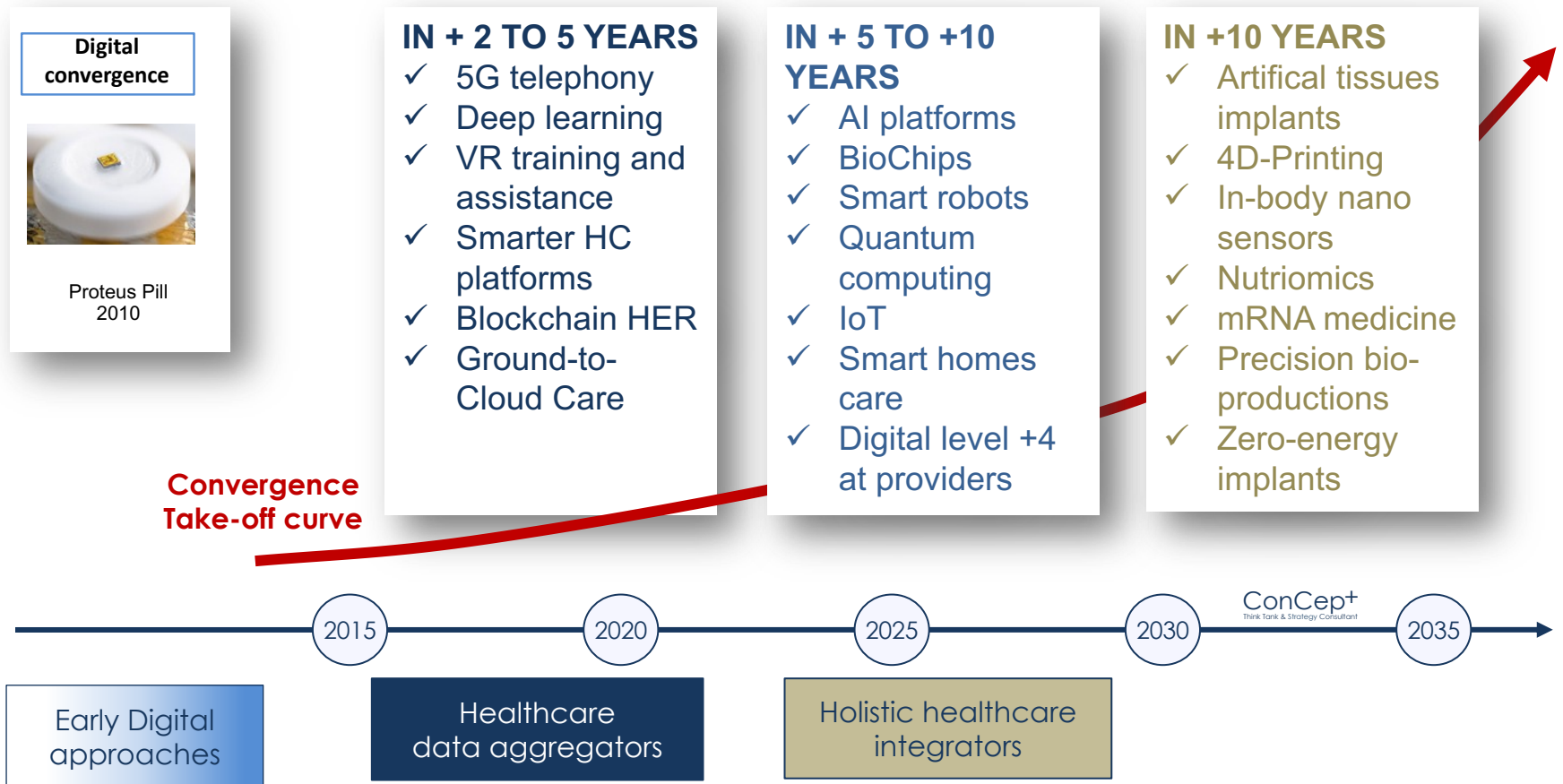
Affordability

Healthcare
Market
by
2030

**Convergence &
Innovation**

**Demographic
changes**

Konvergenz in Life Sciences wird durch die ICT Trends bis 2035 stark beschleunigt



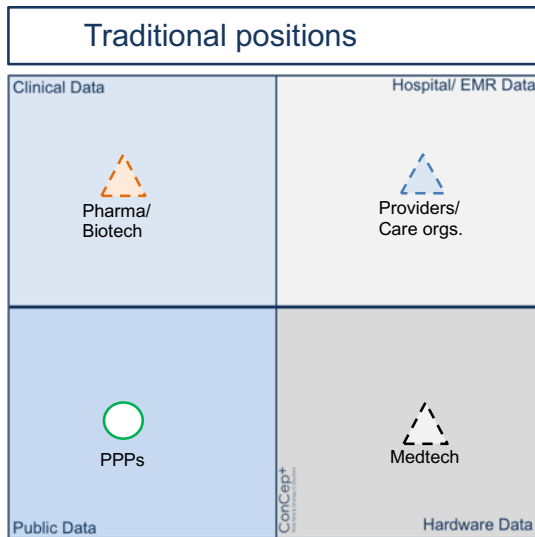
Source: CC+ Think Tank, Gartner Hype Cycle 2018
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Die Welt im Jahr 2030

Zukünftige Positionierung mittels der Daten-Domänen

Illustrative

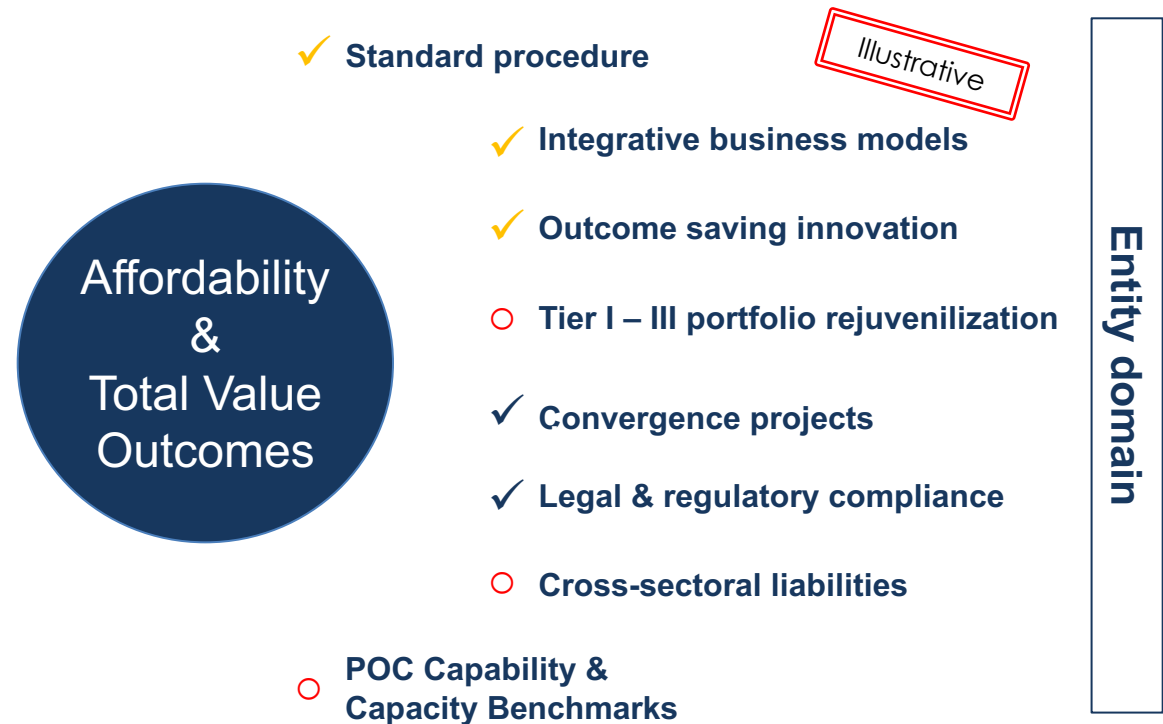
Shifting in positioning of stakeholder across healthcare-data space emerges



-  Traditional providers/ clinics specialist/ care organizations
-  Traditional Medtech devices/ diagnostic firms incl. services
-  Traditional Pharma/ Biotech firms incl. services
-  PPPs organizations

Source: CC+ Think Tank
© 2015-2018. ConCep+

Wenn Erschwinglichkeit und Global Outcomes in den Mittelpunkt rücken, was sind die wesentliche Treiber für LS?



Source: CC+ Think Tank
© 2015 - 2018. ConCep+

✓ Established

✓ Initiatives or 1st templates available

○ No yet initiated

Eine aktuelle Buchempfehlung

Thomas Schulz

„Zukunftsmedizin“

Deutsche Verlags-Anstalt, München
& Spiegel-Verlag, Hamburg, Deutschland
www.dva.de

1. Auflage, Mai 2018

ISBN: 978-3-421-04811-0



■ Diskussion mit Live Voting Results

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für
Ihr Interesse
und
Ihre Aufmerksamkeit!



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