

HEALTH CARE OF THE FUTURE

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“Re-thinking Health Care will increase patient value by integrating practice units, bundling payments across the care cycle and coordinating care delivery across facilities. Convergence will bring Health Care, Life Science and Agriculture closer together to best serve patient`s needs. The use of patient data and new technology will make the difference.”

Götz G. Wehberg, PhD



The Future of Health Care will be determined on three levels

Levels of Strategic Evolution

**Where
to play**

Converged CagTech

Integration of Health Care, Life Science and AgTech

**How
to win**

Value based Health Care

Integration of the current Health Care services

**Which
capabilities**

Data driven Operations

Next level Health Care operating model



Basic Consumer Needs and *Dawn Digital's* Behaviour

Eat: She's always shopping, however, she's never in line

Care: She's never been to a doctor, but she visits her doctor every week

Dress: Her T-shirt is connected to the web

Move: She doesn't know how to drive, however, she's driving all the time

Live: She's never ever been "lost," and her tattoo unlocks her door

Create: Her superior is a robot

Talk: She never logs on, but she is indeed always online

**Digital Natives Like
"Dawn Digital"
Behave Differently**

Current Health Care players are being challenged...

End-consumer' Needs and Market Landscape



Dawn Digital

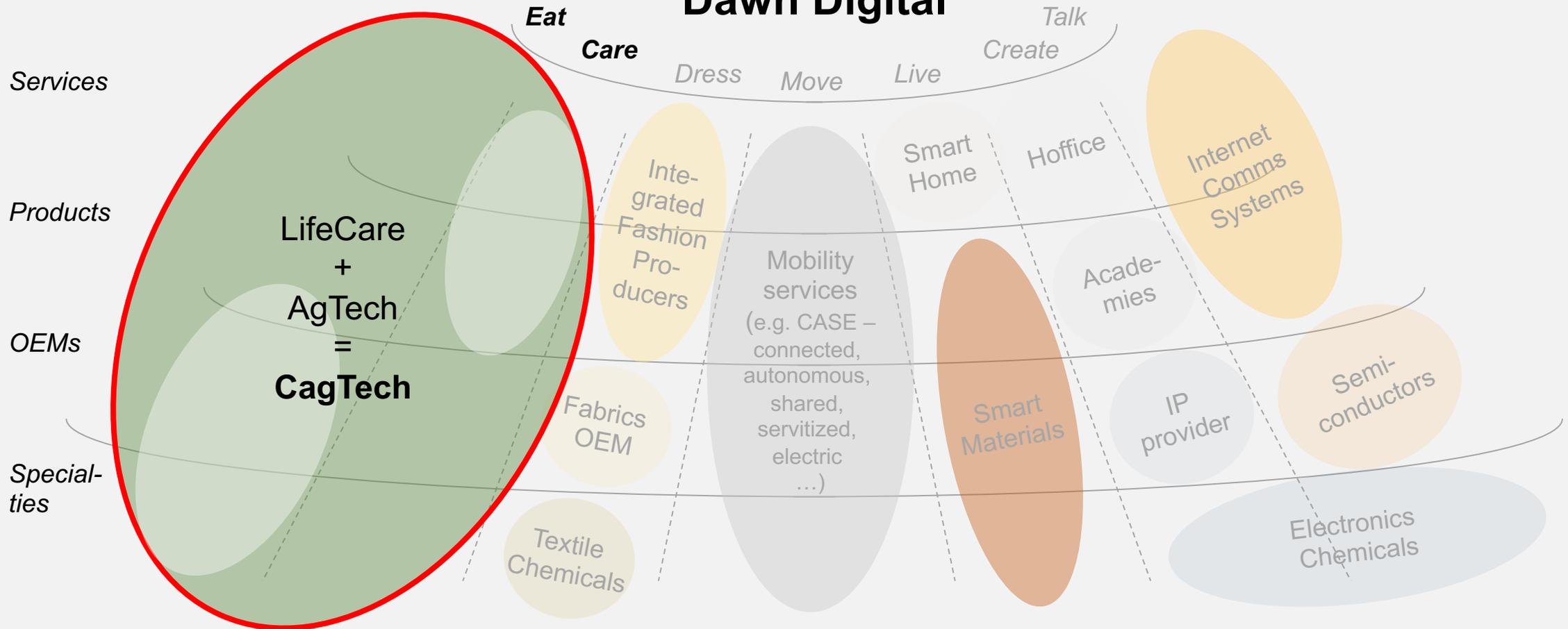


...and develop to CagTech providers and B2B2C...

Future Business Models

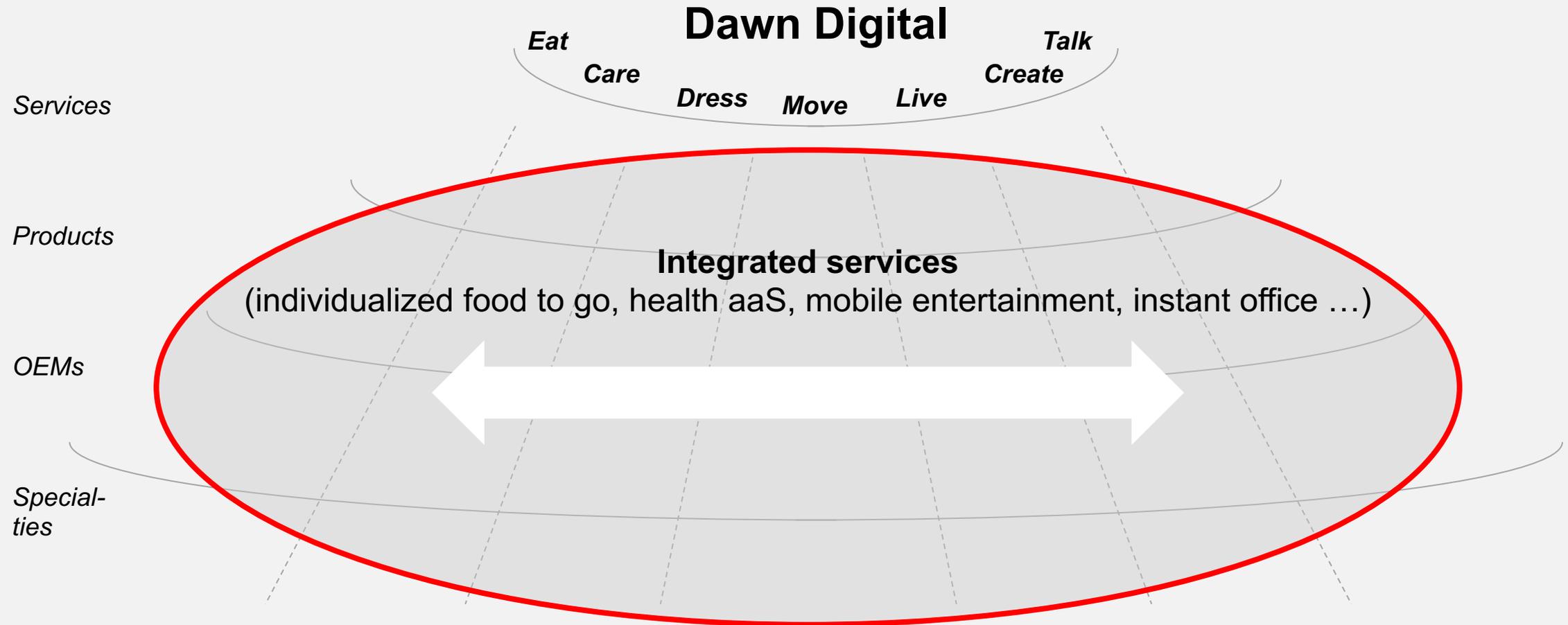


Dawn Digital



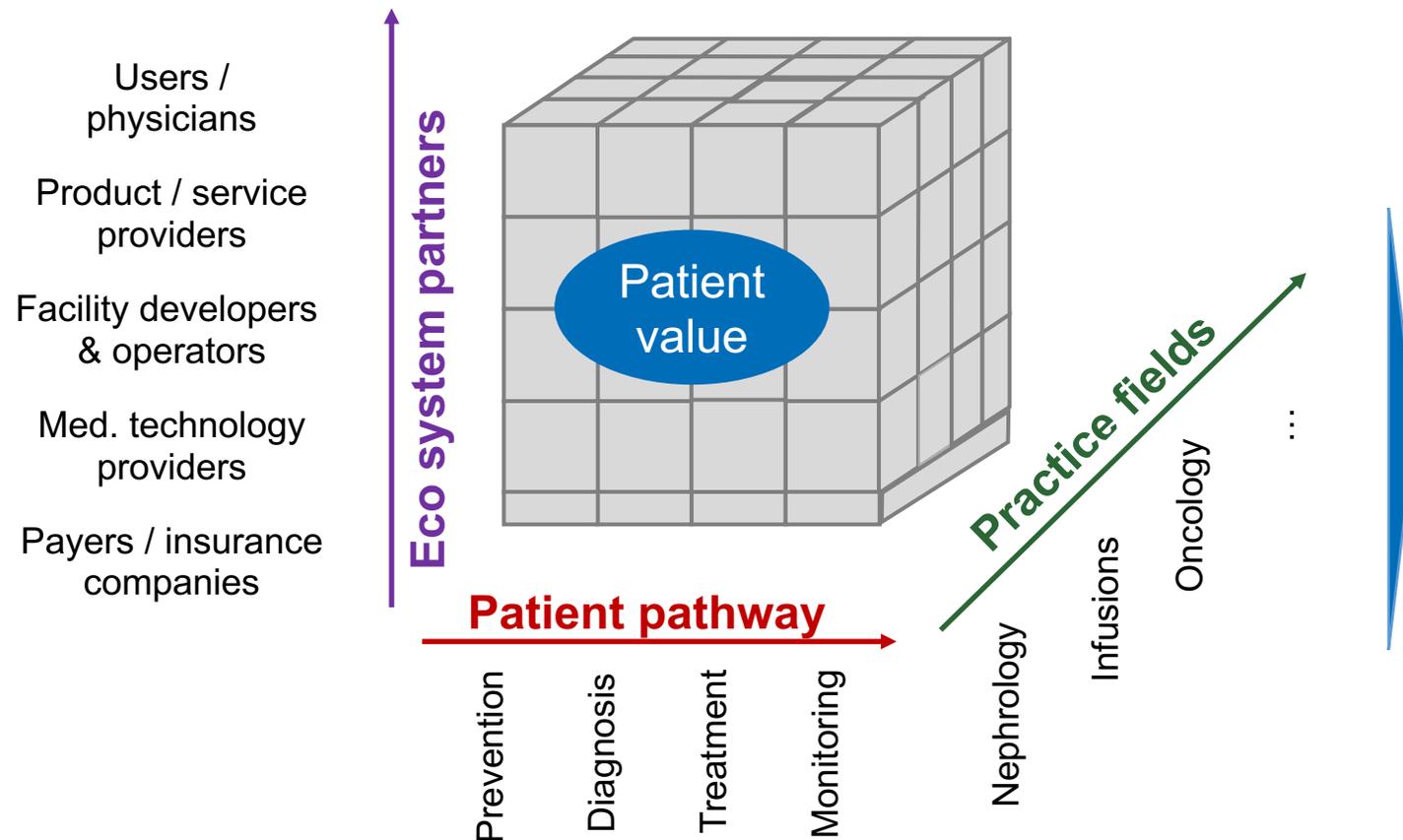
...which will integrate other end-consumer spheres

Future Business Models



Health Care players must re-define value in order to win

Integration as key differentiator



Value based principles

- Organize **integrated practice units** (incl. eco partnering)
- ➔ Move to **bundle payments for care cycles**
- ⬆ **Integrate care delivery** across facilities (hospital, home, insurance, ...)
- **Individualize health care offering** to customize toward needs
- Measure **outcomes and cost** for every patient, e.g. in terms of clinical outcomes, consumer engagement and patient / physician access

Data privacy is a key prerequisite for future Health Care

Data models within the triad



North America`s frightful five

- Increasing number of **societal "privileges" controlled by tech companies** like Google and Amazon, etc. (e.g. insurance)
- **Silicon Valley's rules are getting stricter**, for being allowed to use their services
- Strong **anti trust regulation** by future Biden administration expected, but yet open



Europe`s privacy culture

- **Anonymous data stored locally** preventing access and control over health status by third party
- Standard being set by **General Data Protection Regulation (GDPR)** of the EU, in particular
- **Potential role model** for value based health solutions and data privacy standards associated



China`s social credits

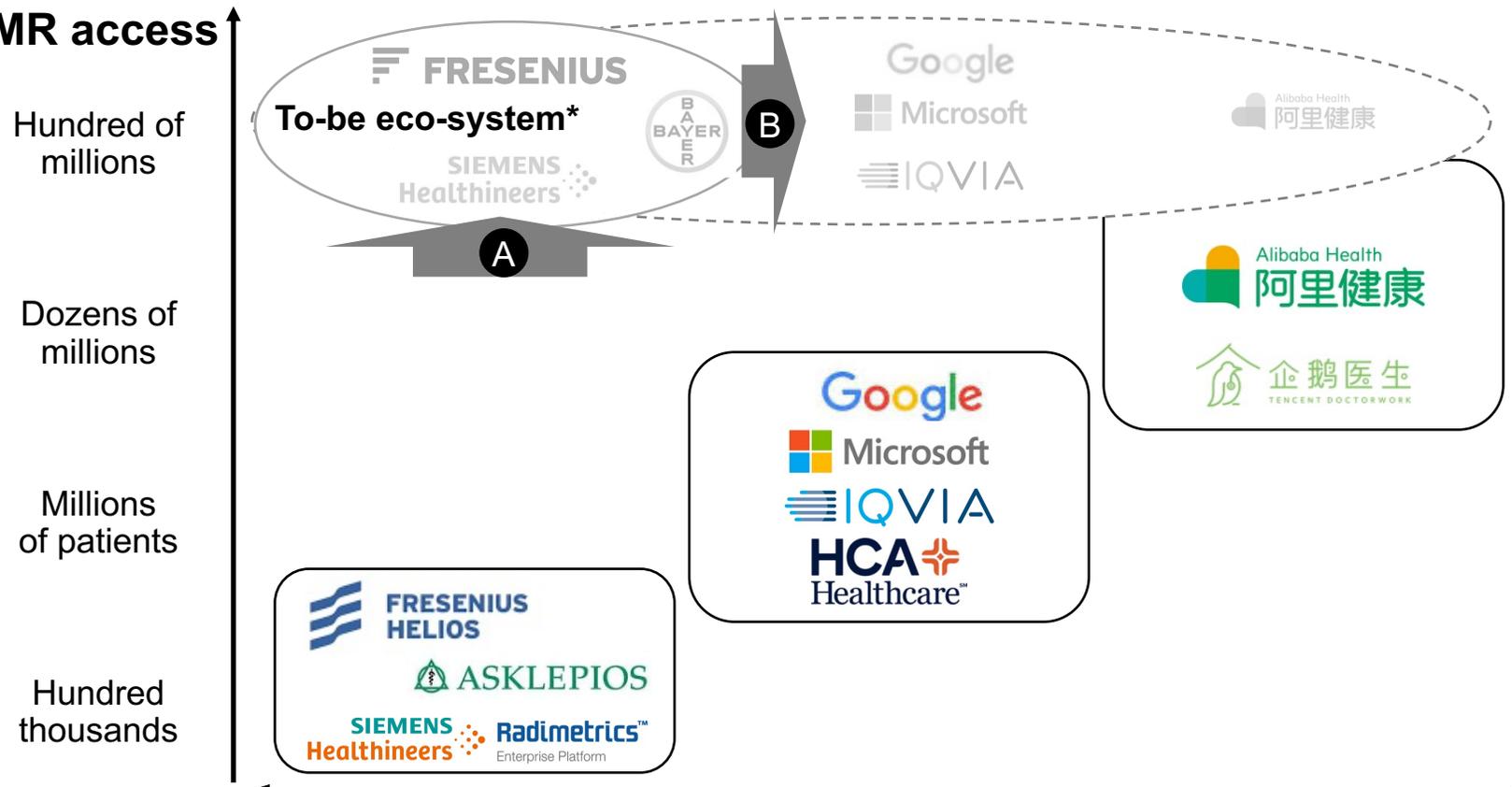
- **Social Credit System** is meant to provide an answer to the problem of lack of trust on the Chinese market, amongst others
- **"Health Code"** as extension based on people`s health condition and beyond
- **Increasing Orwellian social scoring experiments**, e.g. "Civility Score" (Suzhou)



Patient data will determine value creation in the future

Data access as driver for competitiveness

patients /
EMR access



How to build scale

- Organic as well as external growth through ongoing M&A
- Ⓐ Use strong European position to attract and onboard new eco-system partners
- Ⓑ Build EMR footprint in the US and China via regional eco partners

Note: Selection; EMR data partly estimated, EU basis

* Example eco-system partners.

Health Care players should actively influence the future

Example German Health Care system



Improving the system

- Measure and report **outcomes** for patients
- Measure **costs** at condition level / across cycles
- Organize care around **integrated practice units**
- **Eliminate separation** of e.g. in/outpatient
- Move to **primary and preventive care**
- Get patient involved as "**pro-sumers**"
- Move to **reimbursement** of full care cycles
- Open up **competition** btw. providers & insurances
- Develop **new health plans** to maximize value
- Harness the **power of IT** to generate value



Improvements within the system

Value (example)

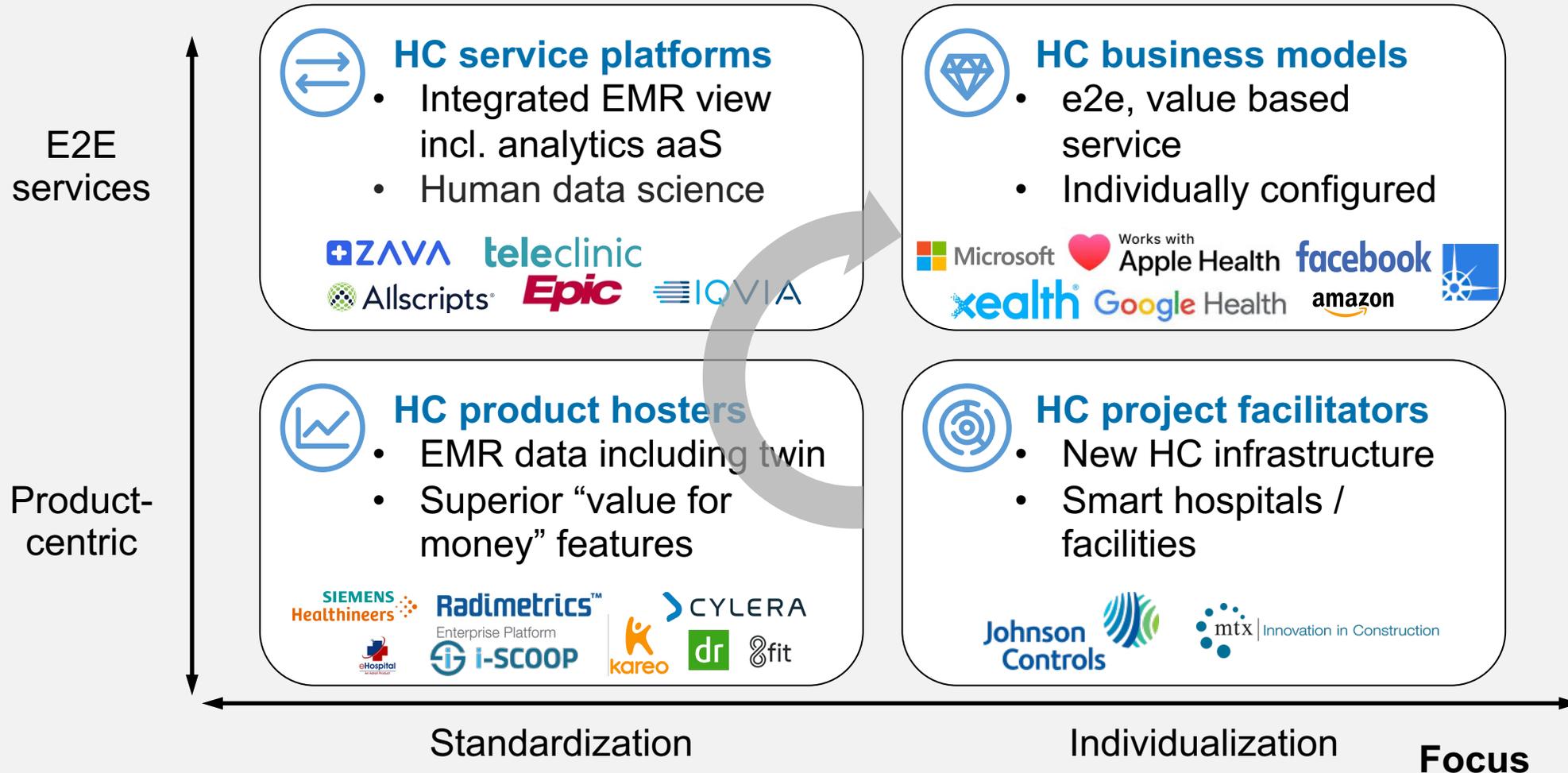
- Build **360-degree data** for health analytics
- **Measure health**, e.g. mortality or recovery cycle
 - Improve health with a "**health coach**" app
 - Charge "health aaS" as **Eagle service**

Costs

- Reduce process **variations & over-services**
- Reduce **documentation time** of personnel
- Increase **cost awareness** in clinical teams
- ...

Health Care platforms are in the process of maturing

Platform maturity levels



Value based Health Care asks for a new operating model

Health Care target operating model (TOM)



Health care value chain

- **Monitoring / preventing**
- **Diagnosing**
- **Preparing**
- **Intervening**
- **Recovering /rehabilitating**
- **Monitoring / managing**

As-is consolidation focus

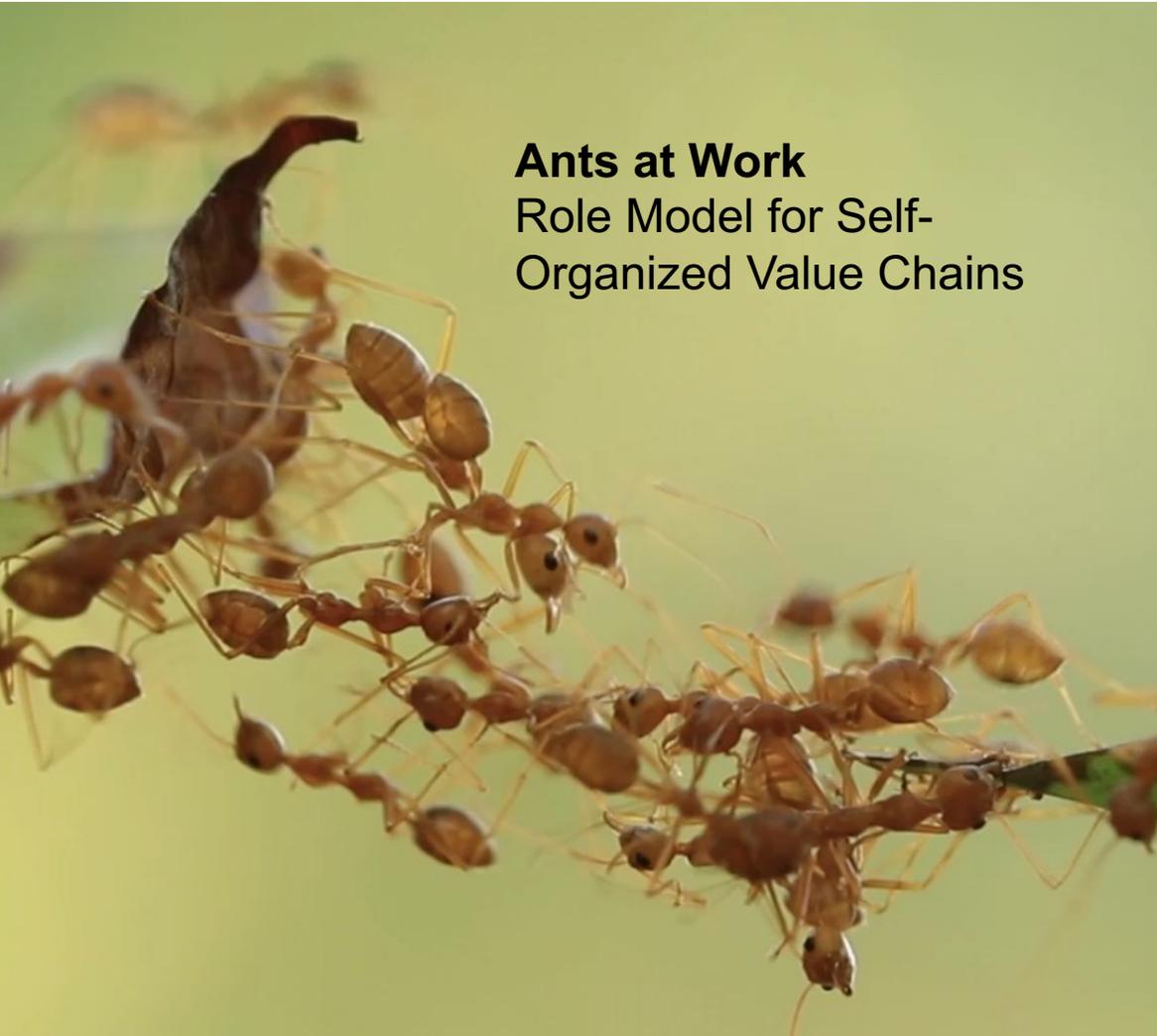
- **Organization:** Facility oriented, central steering, network-optimized
- **Offering:** Product centric
- **Sourcing:** Integrated, asset / OEE driven
- **Processes:** Standardized / stable, cost efficient, S&OP, tracking & tracing (geo), CO2 footprint
- **Talent:** Practice focused
- **IT:** Lights-off, algorithms, centralized data

Future TOM requirements

- Cross-functional, self-organized (\gg) / democratic, continuously optimizing (\gg)
- Care cycle / health aaS
- Eco-system, asset light
- Individualized / make-to-order, value / risk oriented, dynamic forecasting, digital twin of everything (\gg), SDG
- Diversity of people & talent
- Self-driving, machine learning, shared data

Self-organization offers new design principles

Self-organization Key Principles



Ants at Work
Role Model for Self-Organized Value Chains

...of nature
Recursion

Autonomy

Redundancy

Self-reference

...of value chains

- Consistency of Steering
- Modular Across Hierarchy
- Standardization Across Sites
- End-to-end Responsibility
- >95% Online
- Enforced Alignment
- No Management Intervention
- Real-time Transparency
- Sharing
- One Data Lake
- Dynamic Forecasting
- Continuous Improvement
- Machine learning

Medical devices become smarter and 3-D along with

SERVICE-ORIENTED MODELS



Smart & Green Devices

- Connected medical devices based on IoT technology
- Remote analyses of asset history support predictive maintenance



3D

- Device production through 3D printing at scale
- Local production sites decrease distribution cost and reduce cycle times

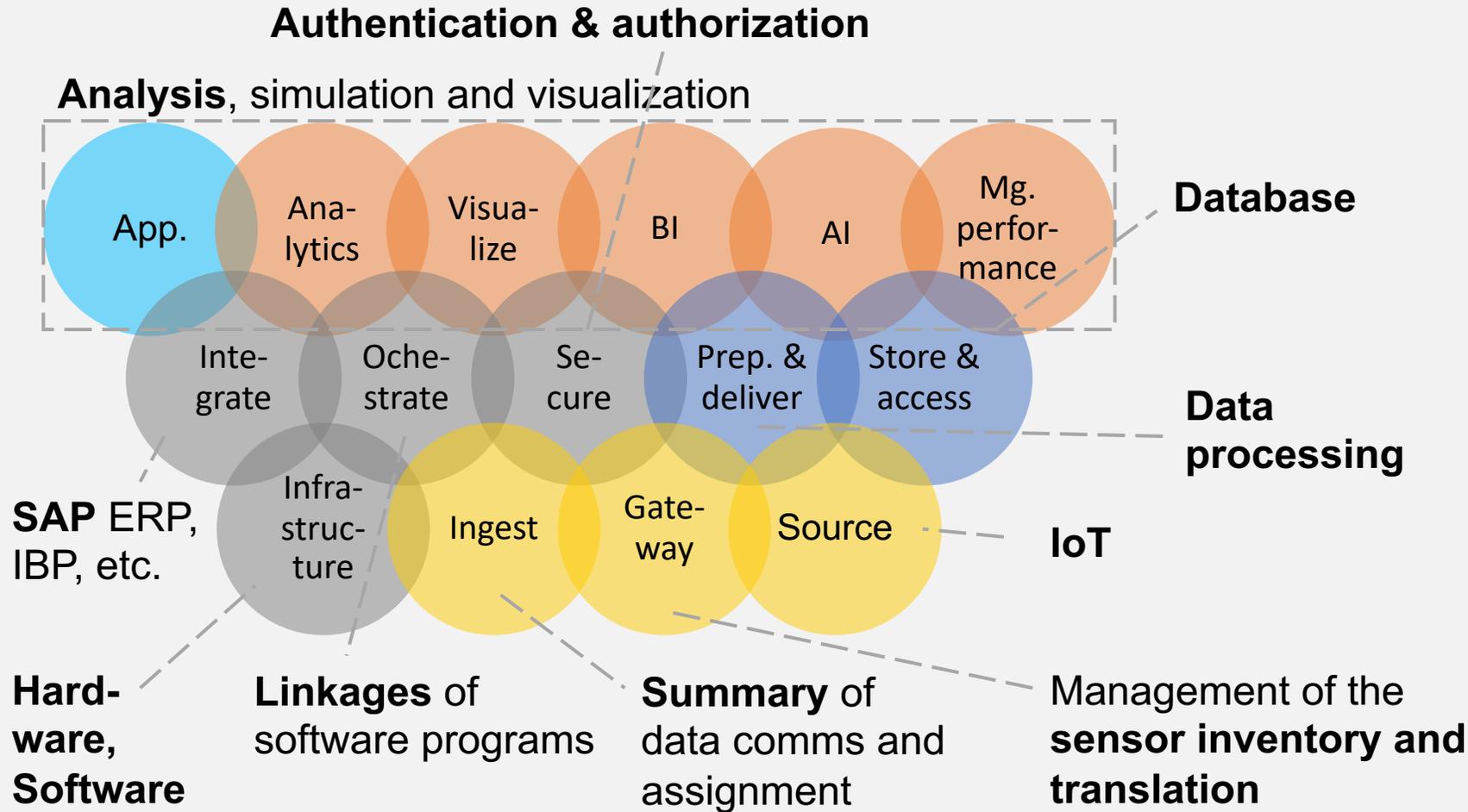


Service-oriented Model

- Selling uptime or other services instead of devices
- Pricing upsides for focusing on patient value and results-oriented service levels

To-be architecture has to leverage on solutions and data

Reference architecture



Benefits

- **Quick wins and speed boats** accelerate value creation
- **Alignment with business strategy**
- **Modular set-up** supports agile development
- **Leverage best-of-breed** solutions
- **Avoidance of sunk investment**

Any Health Care platform needs to meet on-top requirements

On-top Requirements for Future Health Care

Converged CagTech

Value based Health Care

Data driven Operations

- **B2B2C and Democracy** - ready for the long-tail, B2B2C
- **Double-sided Platform** - leveraging services
- **Multi-channel** - Integrating care-delivery facilities
- **Eco-partnered** - e.g. last mile via city logistics partners
- **Make-to-order as Mainstream** – individualized everything
- **End-to-end visibility** – across practice units
- **Predictive forecasting** - of both demand and disruptions
- **Continuous optimization** - of network and beyond
- **Self-organization** - as future design principle
- **Second-degree Automation**
- **Green** - like net-zero
- **Servitized** – patient-value pricing along across care cycle
- **Cloud-based and Micro Services**
- **3D-enabled**
- **Connected with Patients and Devices** - remote diagnosis

**Thank
You**

