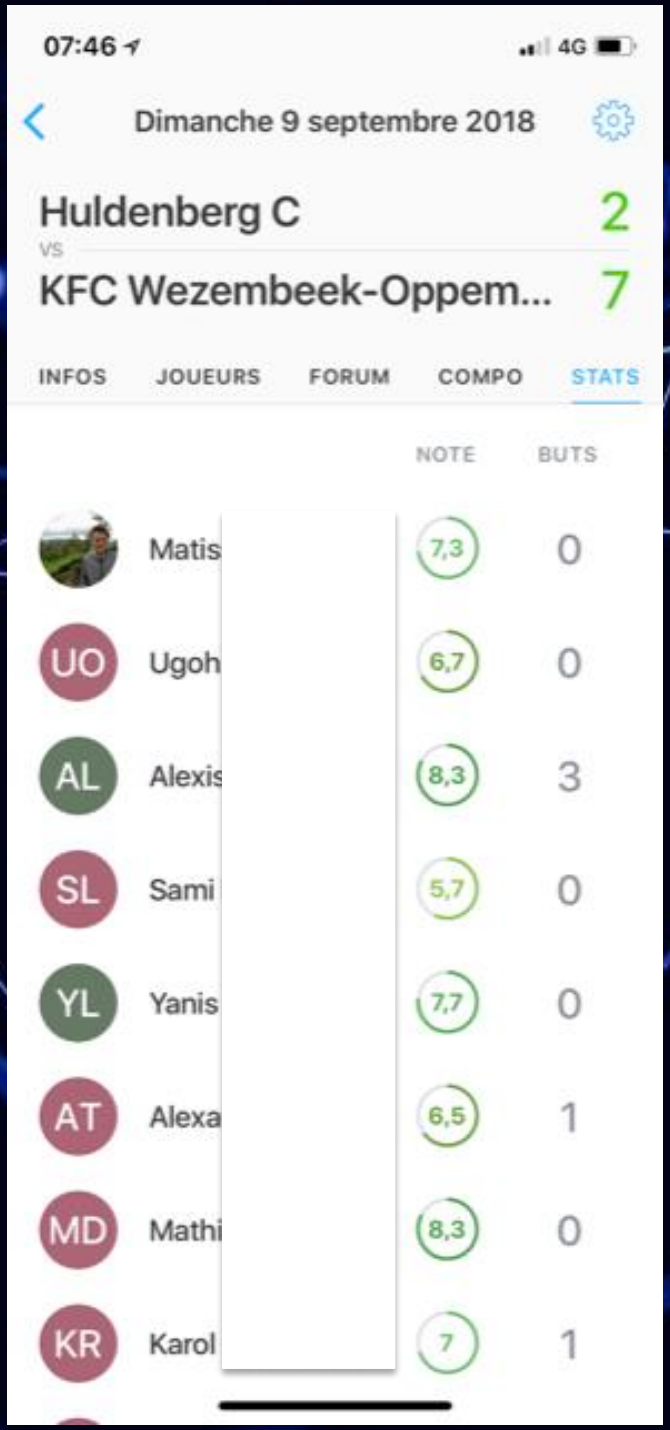
Mobile Health and Emerging Technologies: accelerating a SMART ecosystem

Prof. D. Gruson

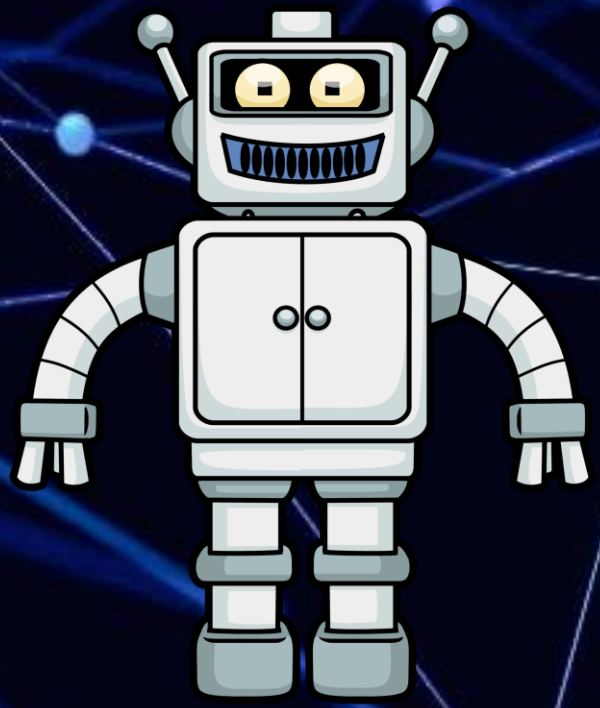

07:46
4G
Dimanche 9 septembre 2018
Huldenberg C 2
VS
KFC Wezembeek-Oppem... 7
INFOS JOUEURS FORUM COMPO STATS
NOTE BUTS
Matis 7,3 0
UO Ugoh 6,7 0
AL Alexis 8,3 3
SL Sami 5,7 0
YL Yanis 7,7 0
AT Alexa 6,5 1
MD Mathi 8,3 0
KR Karol 7 1


SPACEX
DRAGON

Ambiant computing

Smart cities

Emerging technologies to unlock new possibilities

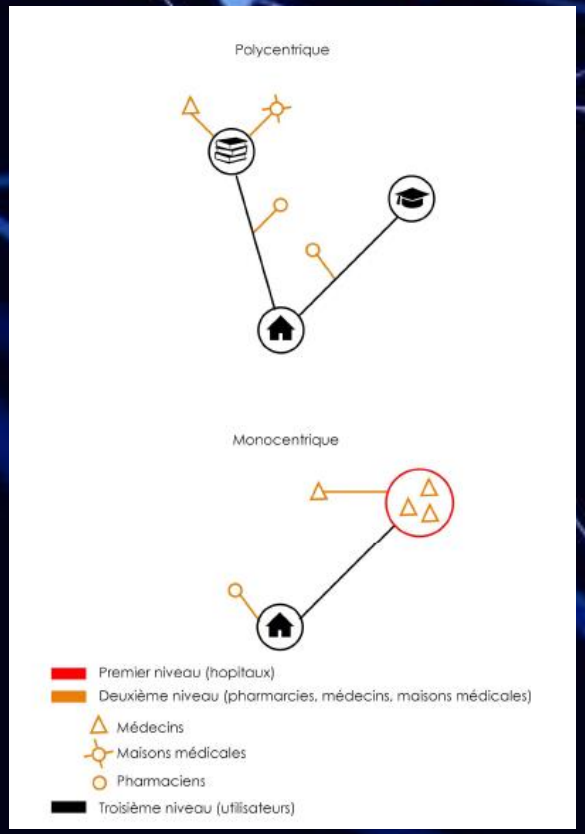


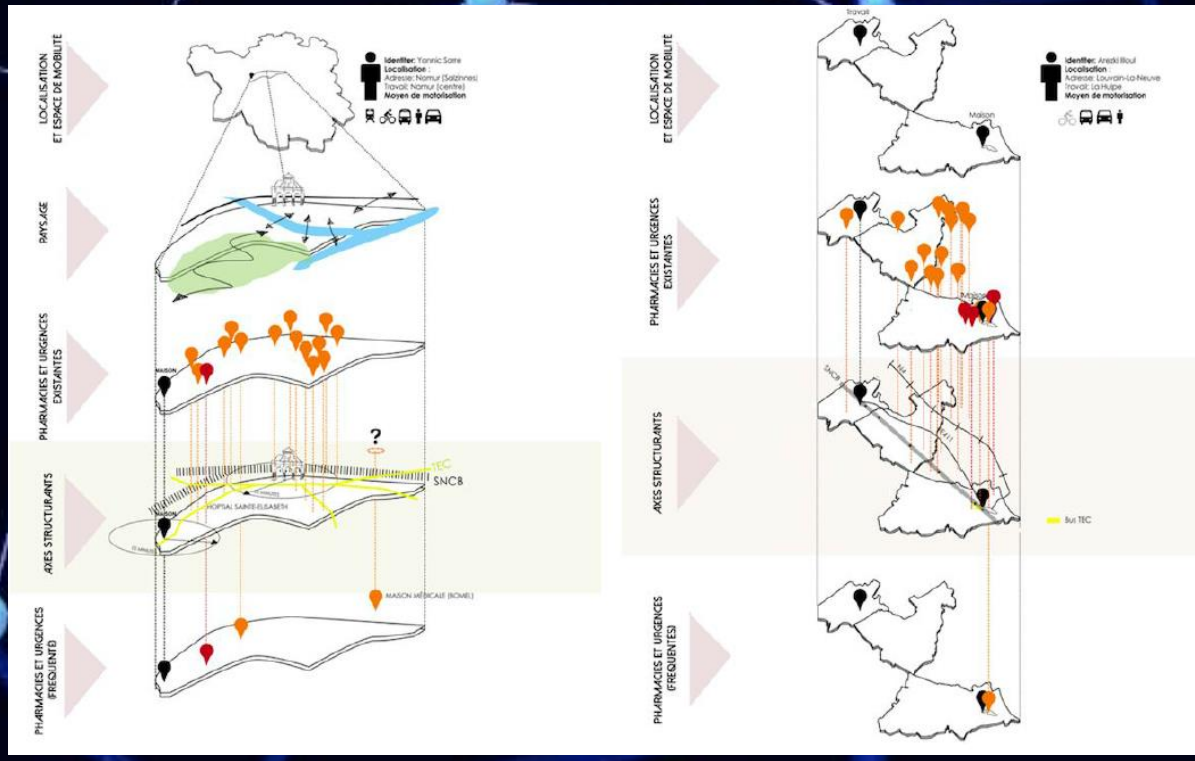
The processes and logistics will be integrated, intelligent and scalable

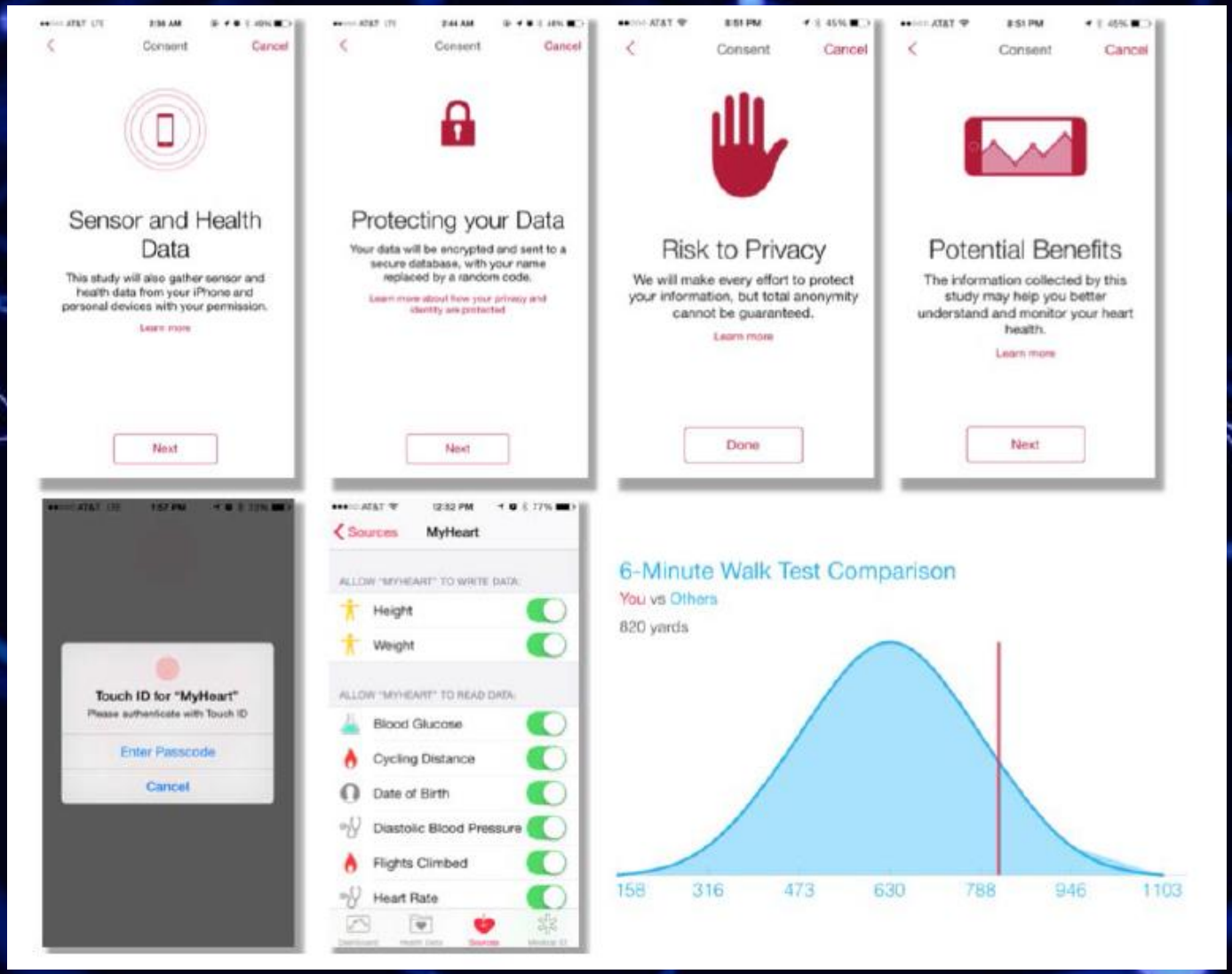
The efficient use of big data will improve operations

Clinical workflow

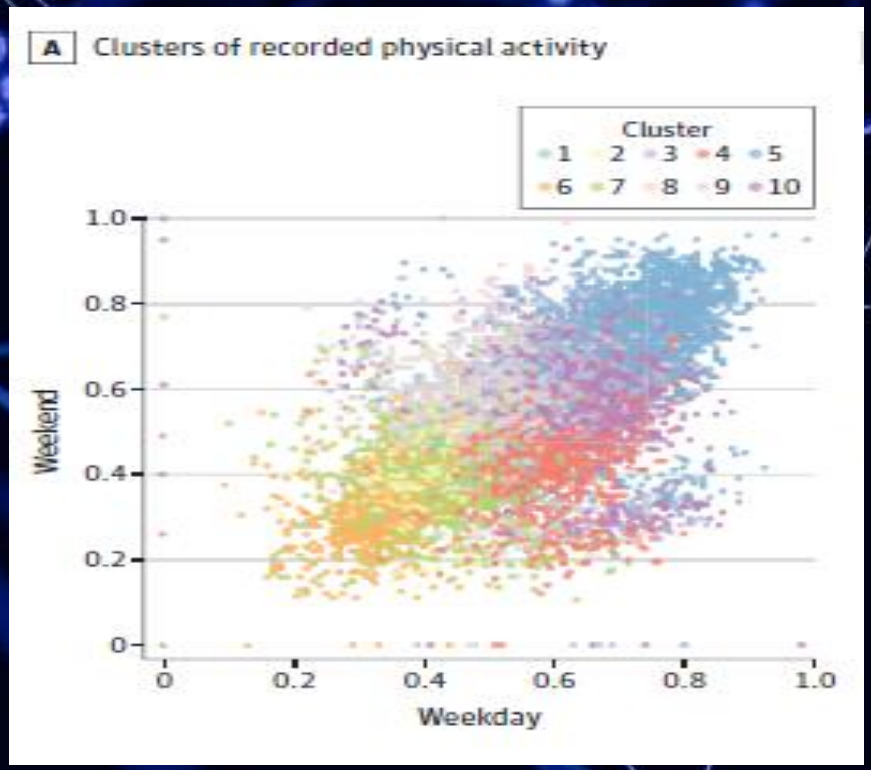
Mobility / Motility

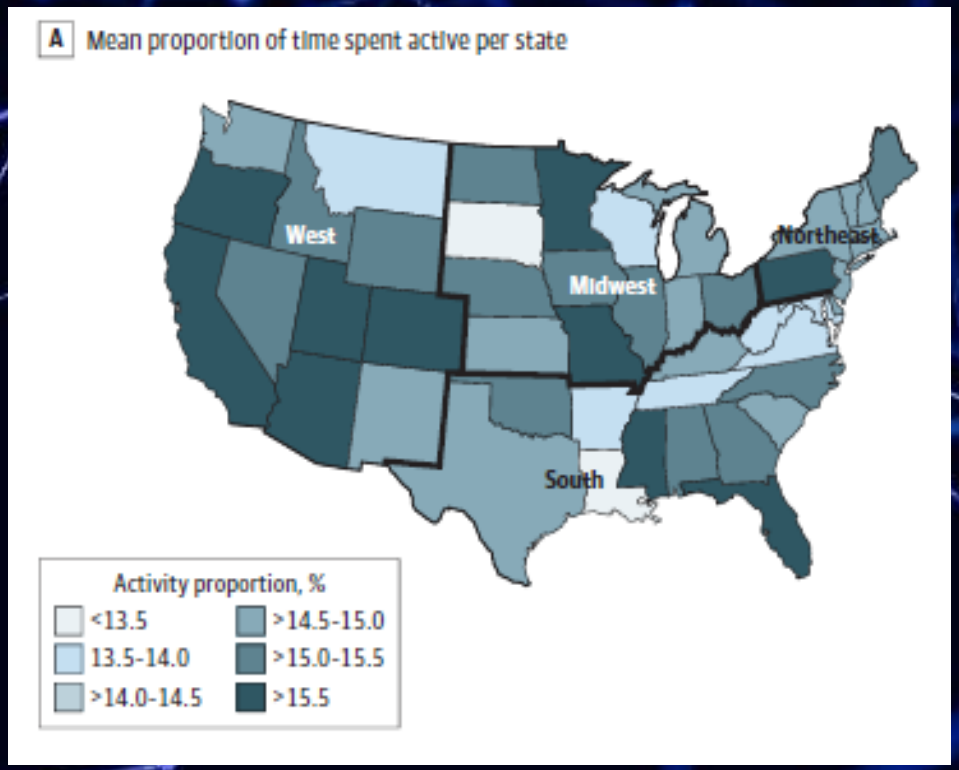






McDonnel et al.; 2017





McDonnel et al.; 2017

Mobile Health?

Foundation for the National Institutes of Health (FNIH)

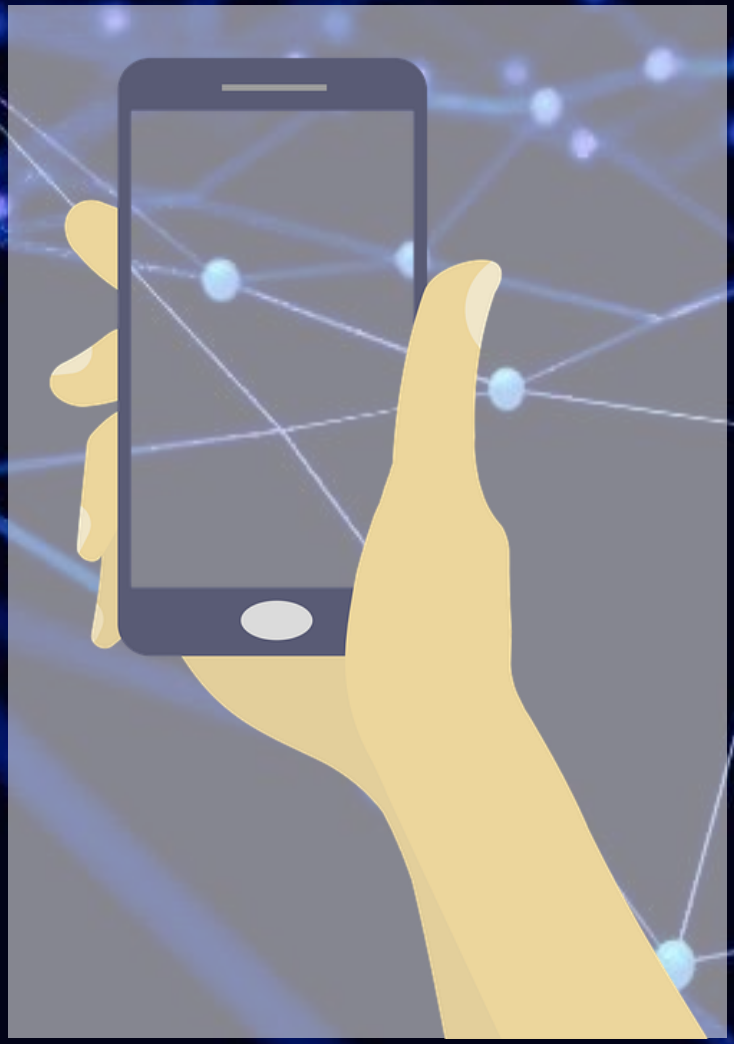
mHealth is “the delivery of healthcare services via mobile communication devices"
www.caroltorgan.com/mhealth-summit/

NIH Consensus Group

“mHealth is the use of mobile and wireless devices to improve health outcomes, healthcare services and health research.”
www.hrsa.gov/healthit/mhealth.html

World Health Organization (WHO)

"Mobile Health (mHealth) is an area of electronic health (eHealth) and it is the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs)."
www.who.int/goe/mobile_health/en/



Digital Patient

Digital Clinic

Digital Device

Digital Patient

Patient centric approaches - UX

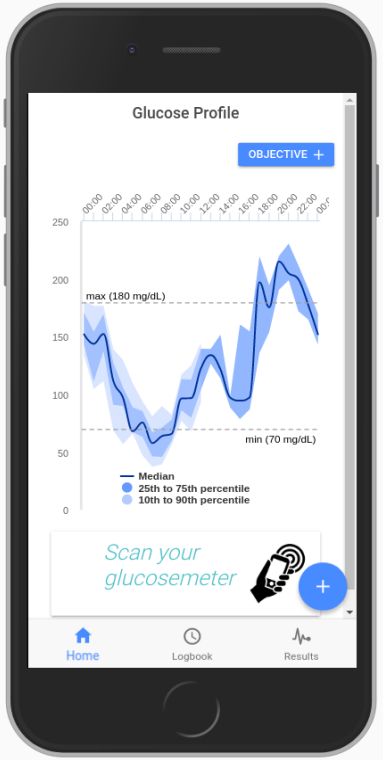
Telemedicine

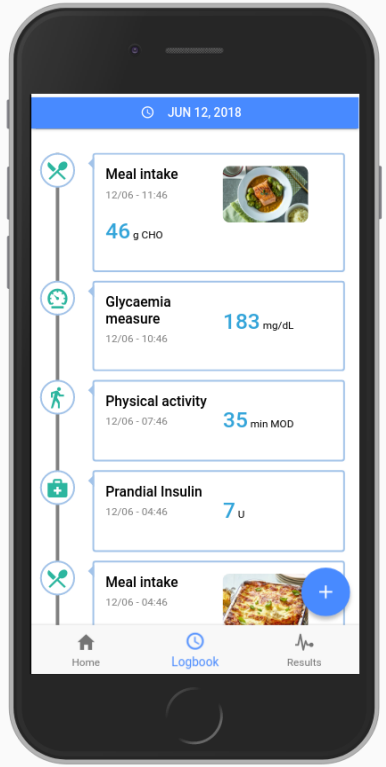
Self assessment

Patient generated data

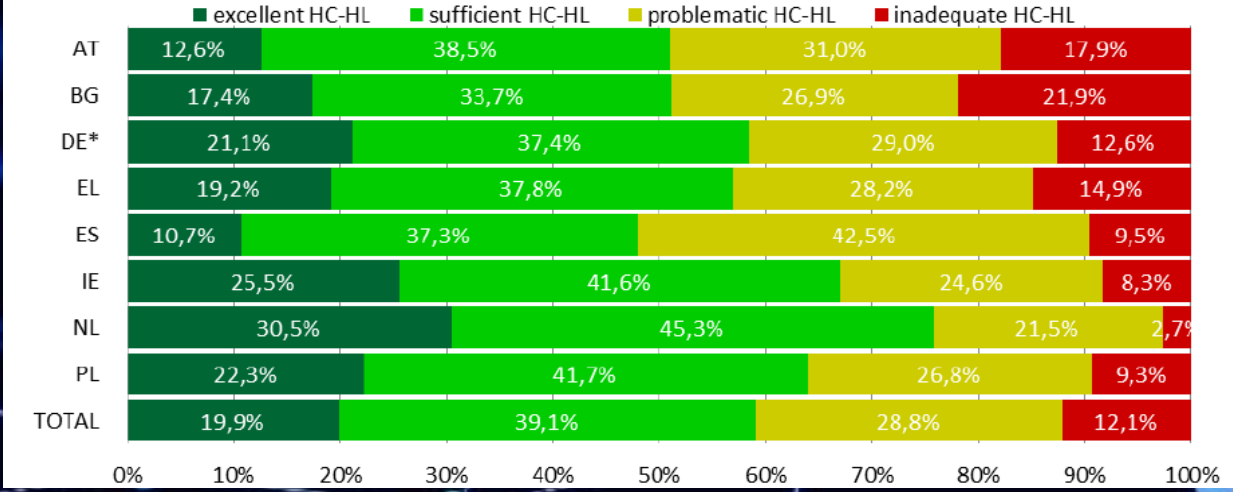
Behaviour modification

Digital engagement

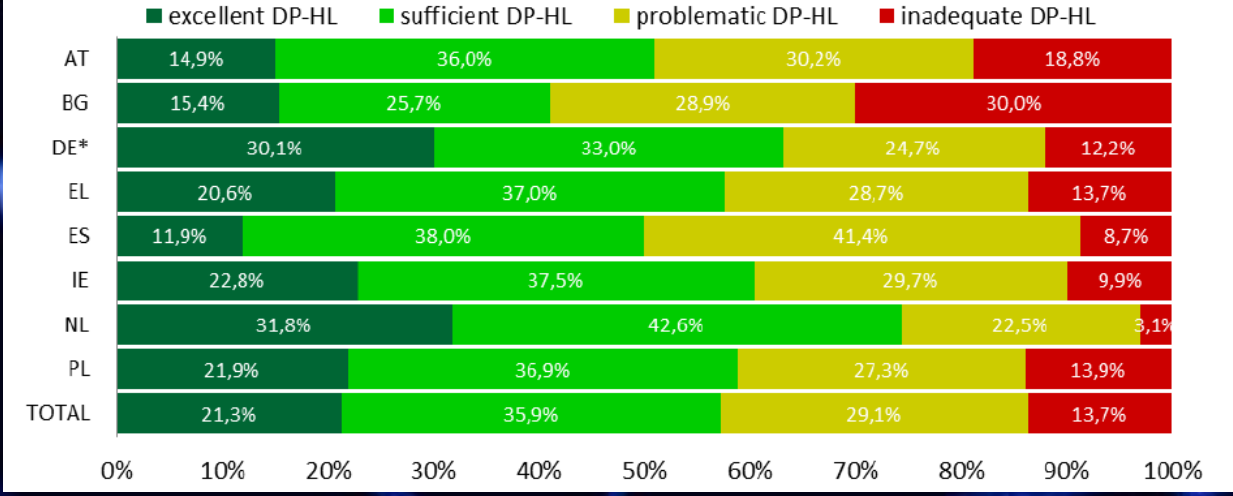




Graph 11: Percentages of Health Care Health Literacy Levels Thresholds for Countries and Total



Graph 12: Percentages of Disease Prevention Health Literacy Levels Thresholds for Countries and Total



HLS-EU CONSORTIUM (2012): COMPARATIVE REPORT OF HEALTH LITERACY IN EIGHT EU MEMBER STATES. THE EUROPEAN HEALTH LITERACY SURVEY HLS-EU , ONLINE PUBLICATION: HTTP://WWW.HEALTH-LITERACY.EU

Digital Devices

The use of tags and internet of things to enhances outcomes

Generating mHealth data
(Non-invasive telemonitoring / preclinical deterioration)

Remote actions / Remote Patients Management

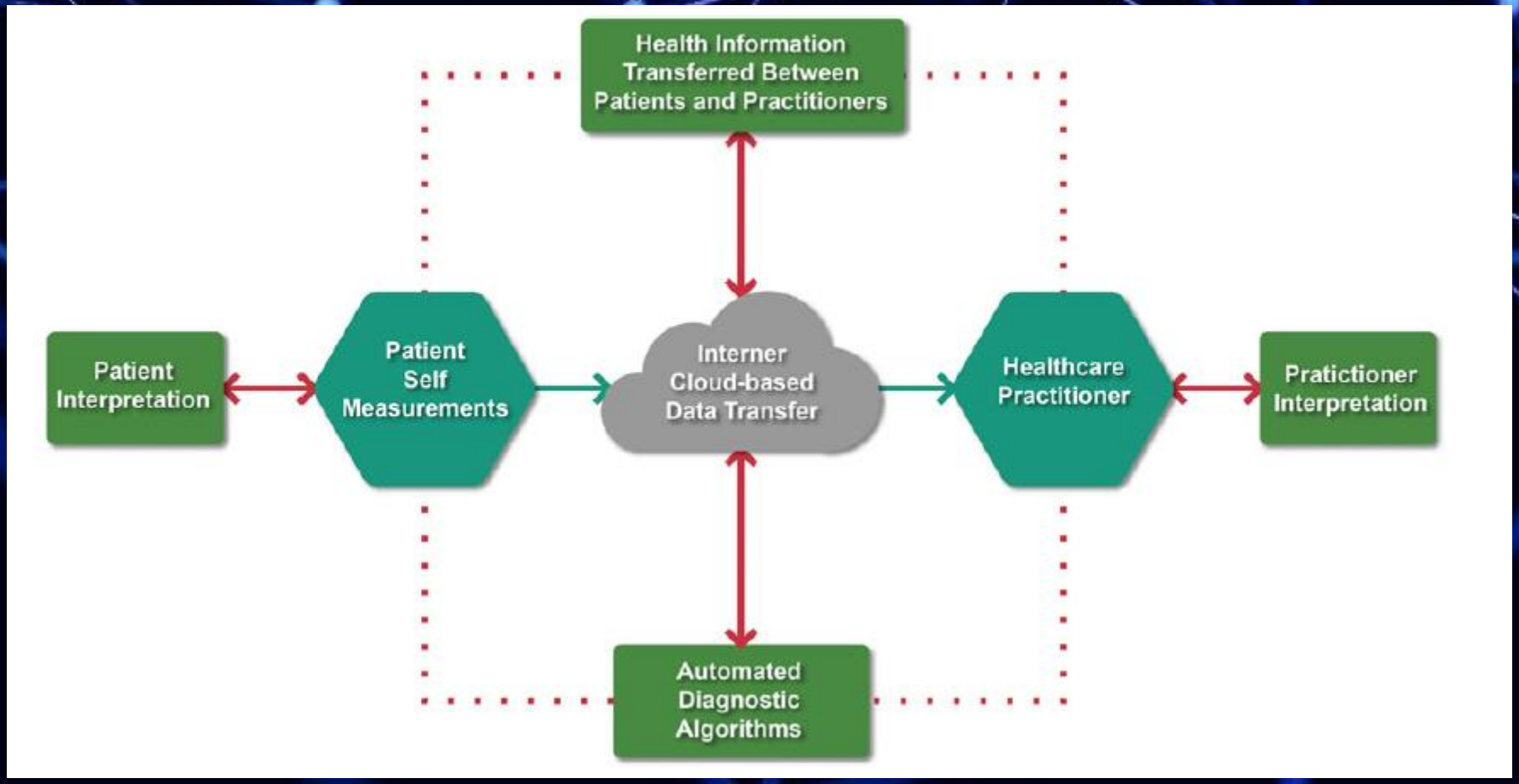
Integration and Interoperability

Biobanking

Connected objects and health applications: Exploratory study on attitudes, use (or non-use) and contexts of use

M. del Río Carral*, A. Schweizer, A. Papon, M. Santiago-Delefosse

Institut de psychologie, université de Lausanne, Quartier UNIL-Mouline, Géopolis, 1015 Lausanne, Suisse

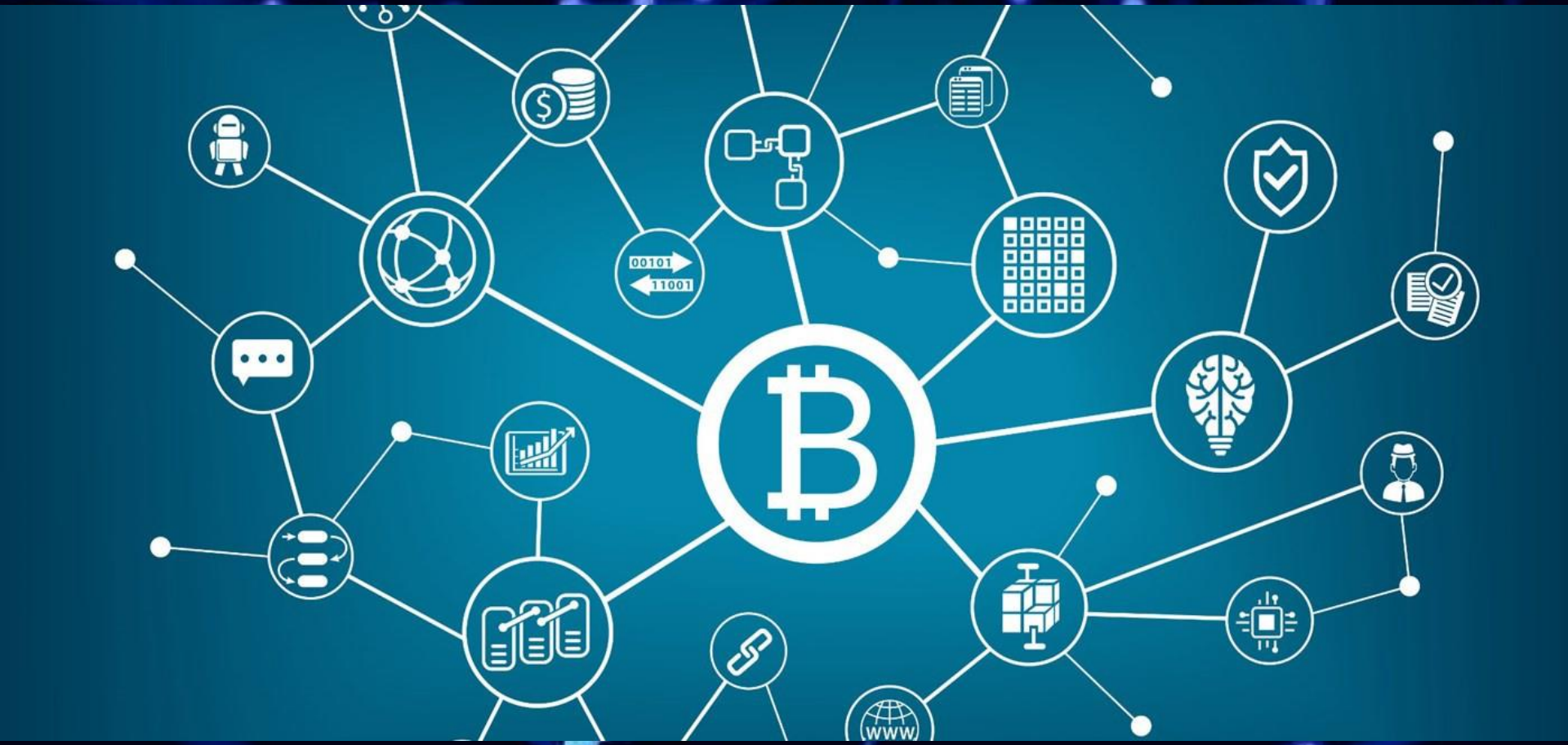


Bhavnani et al.; 2016

Artificial Intelligence, Machine Learning and Deep Learning

- Why now?
- Off the shelf or tailor made?
- Applications perspectives?
  - Process and care pathways
  - Test ordering and interpretation
  - Data mining, early diagnosis and proactive disease monitoring
  - Personalized treatment and clinical trials
- Positive regulation?
  1. Patient information and consent?
  2. AI Human Warrantee ?
  3. Graduation of regulation according to the level of sensitivity of healthcare data ?
  4. Accompaniment of the adaptation of healthcare professions ?
  5. intervention of an independent external supervision ?

Relying on automation and blockchain to improve security and safety



Co-creation and user experience

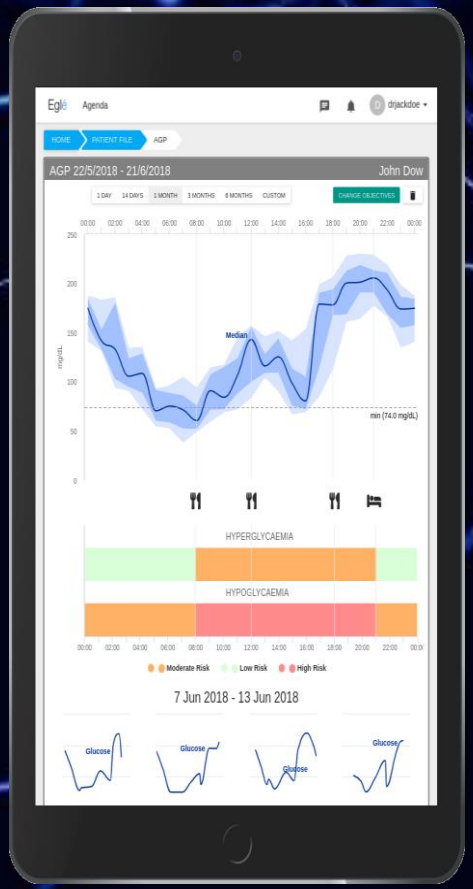
Daily monitoring

Treatment Assistant

Gamified coaching

HbA1c estimation

Chat



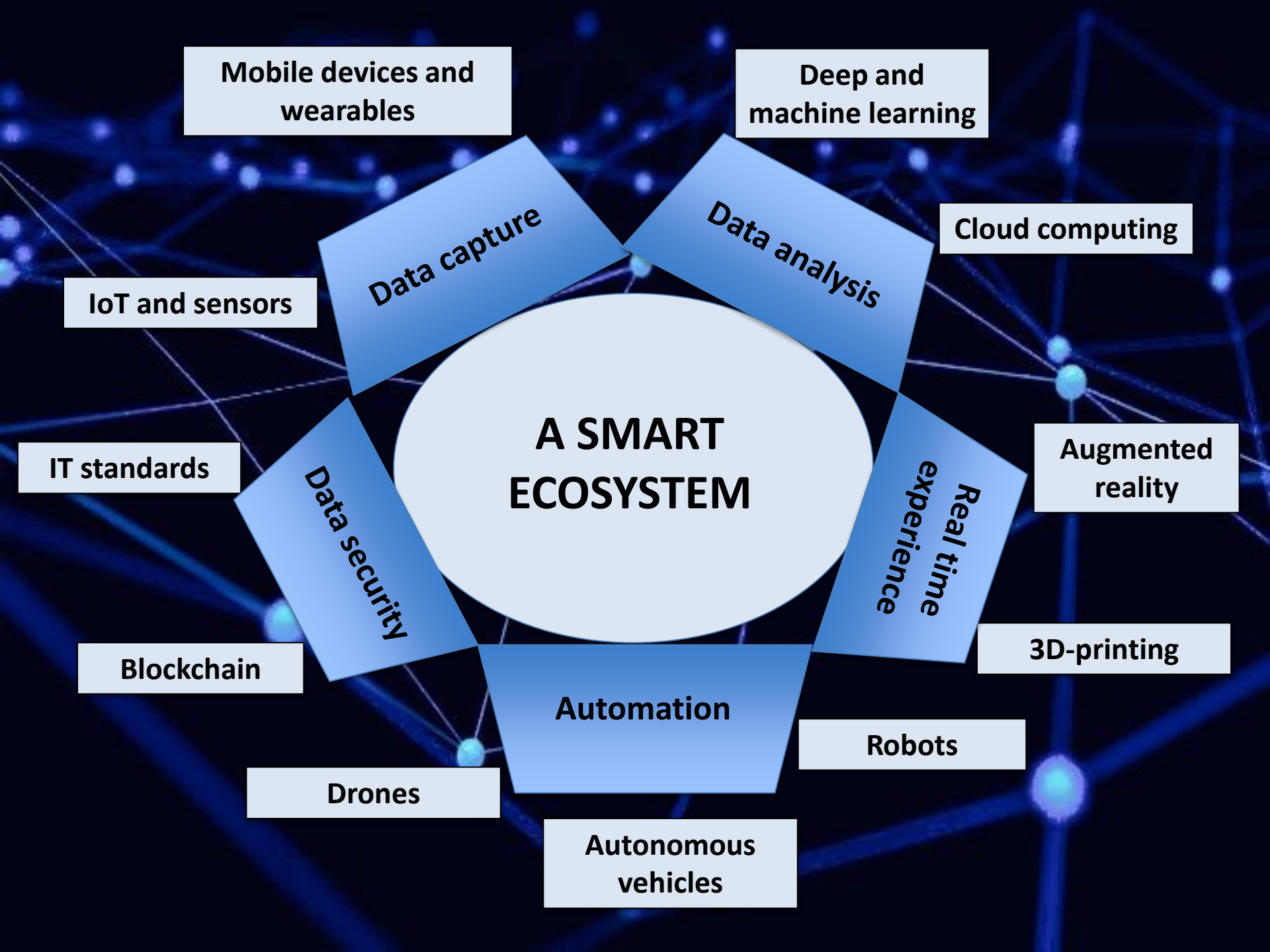
Decision support

Visualization

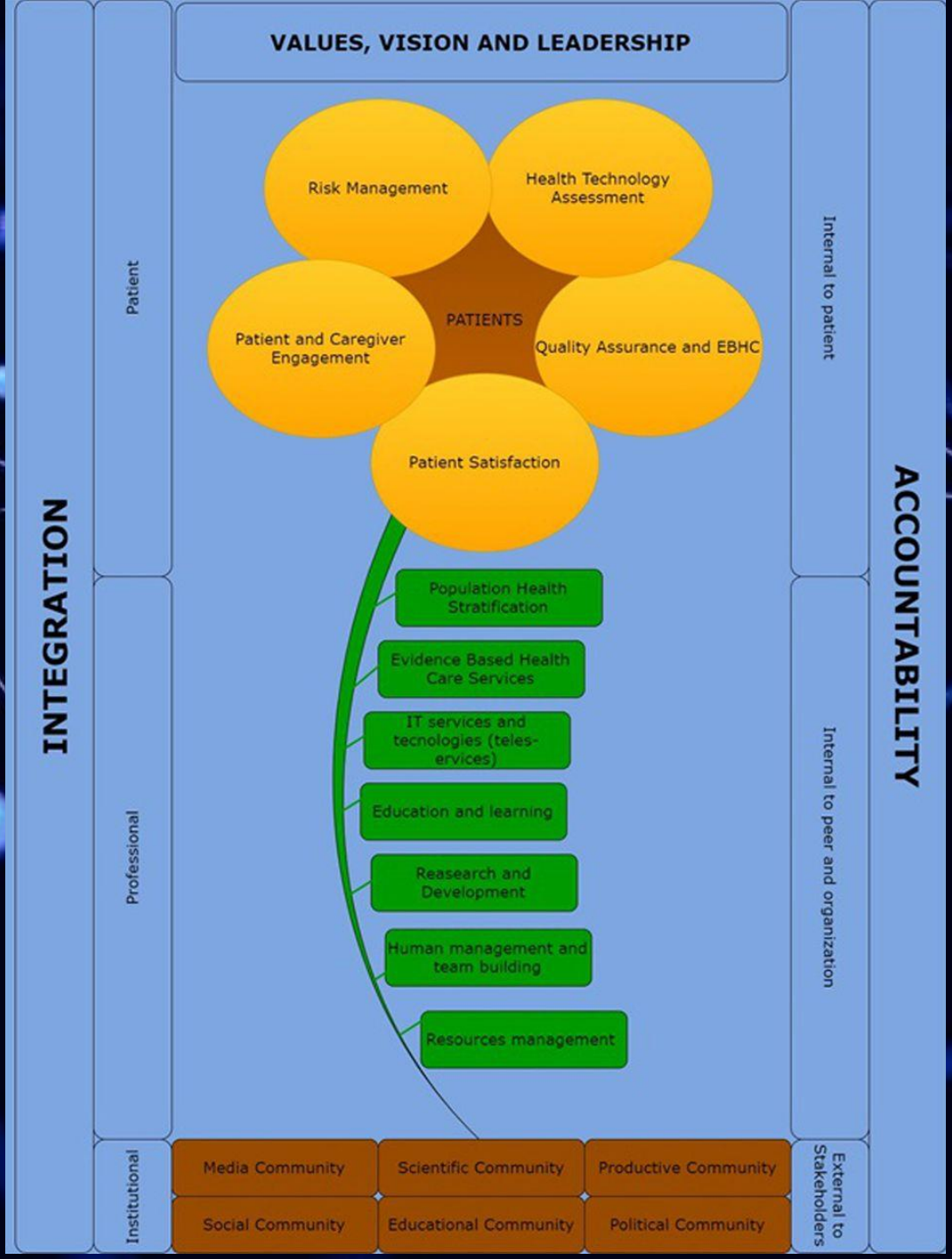
Video consulting

Appointment

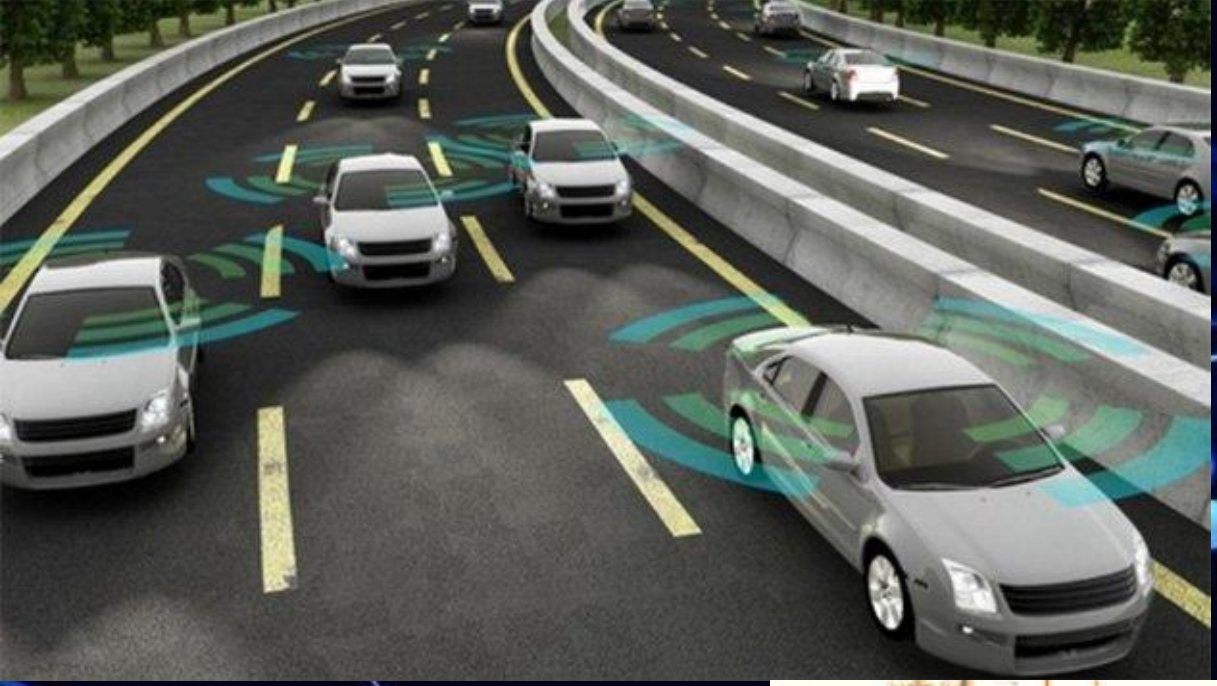
Try Me


Mobile devices and wearables
Deep and machine learning
Data capture
Data analysis
Cloud computing
IoT and sensors
A SMART ECOSYSTEM
IT standards
Data security
Real time experience
Augmented reality
Blockchain
Automation
3D-printing
Robots
Drones
Autonomous vehicles

- ✓ **Possibility to shift traditional healthcare delivery to virtual and real-time methods useful to empower healthcare approaches**
- ✓ **Possibility to create a cooperative network of different partners and stakeholders**
- ✓ **Transition from traditional hospital- or office-based visits to technology-based encounters**



Buja et al.; 2018



- ✓ Users validation / satisfactions?
- ✓ Cost-effectiveness? Financing?
- ✓ Legal framework?
- ✓ Interaction between human and remote services
- ✓ Innovation >< science of implementation
  (rate of development of new technologies
  vs preparedness of the system)?


The future is:
Us…
with the help of technology