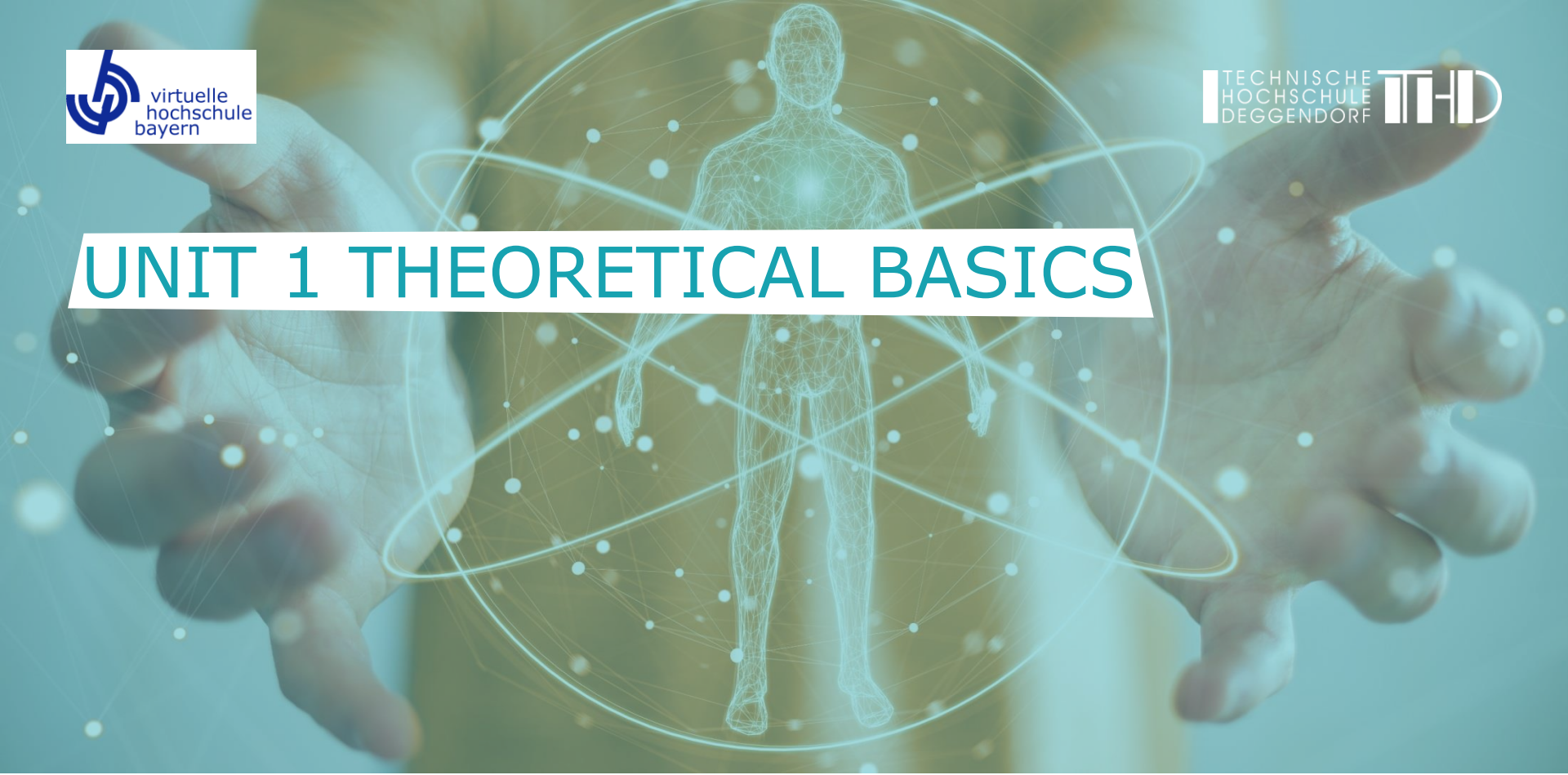


UNIT 1 THEORETICAL BASICS

Prof. Dr. Horst Kunhardt,THD

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

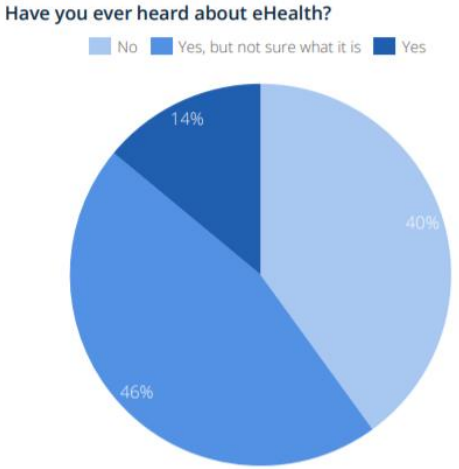
eHealth

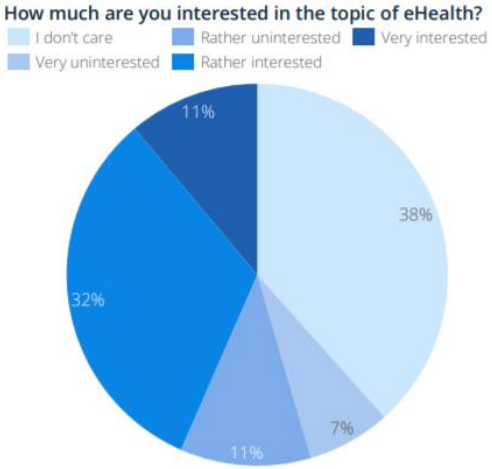
- Use of information and Communication technologies (ICT)
- Electronic processing of health information
- E.g.: Electronic health record (EHR); Provision of medication plan on the electronic health card

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

More than 86% of German citizens have heard or are familiar with the term "eHealth"

Consumer attitudes: knowledge of eHealth





Source: https://de.statista.com/statistik/studie/id/50712/dokument/ehealth-market-report-germany/, retrieved on 11.03.2021

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

Health telematics

- Improving medical care
- Simultaneous reduction of costs
- Secure communication of sensitive health information

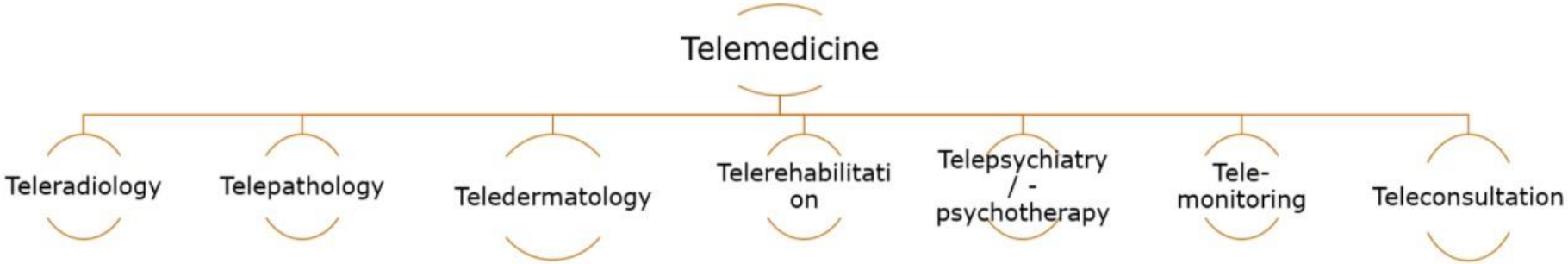
1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

Telemedicine

“Telehealth” in Canada and Australia

- Improves quality of care and increases life expectancy
- Surmounts spatial distance through ICT use
- For example: communication between physicians and patient or several physicians (teleconsultation, tele diagnostics, teleradiology)

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS
TELEMEDICINE



Source: own presentation

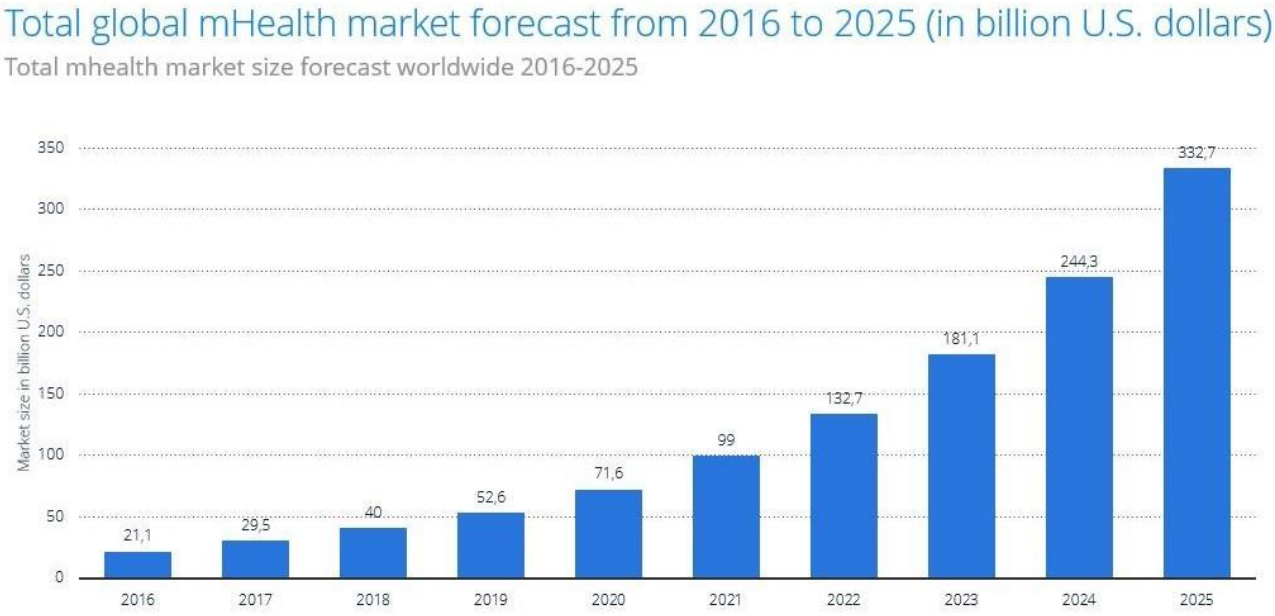
1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS
MHEALTH / MOBILE HEALTH

Source: https://pixabay.com/images/id-3291962 / (retrieved on 25.10.2020)

- The WHO has defined mHealth as the "use of mobile and wireless technologies to support the achievement of health objectives.“
- The National Institutes of Health (NIH) defines mHealth as “the use of mobile and wireless devices (cell phones, tablets, etc.) to improve health outcomes, health care services, and health research.”

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS
MHEALTH / MOBILE HEALTH

Global mHealth Market Forecast: 2021 five-fold increase from around $21 billion in 2016 to nearly $100 billion



Source: http://www.statista.com/statistics/938544/mhealth-market-size-forecast-globally/ (retrieved on 25.10.2020)

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS
QUANTIFIED SELF – SELF TRACKING

- Includes data collection, processing, analysis and disclosure
- Forms of sensors in medical applications (wearable and implanted).
- For example: Wristbands measure pulse rate, skin resistance or temperature; T-shirts record ECG and respiratory rate e.g. during sports.

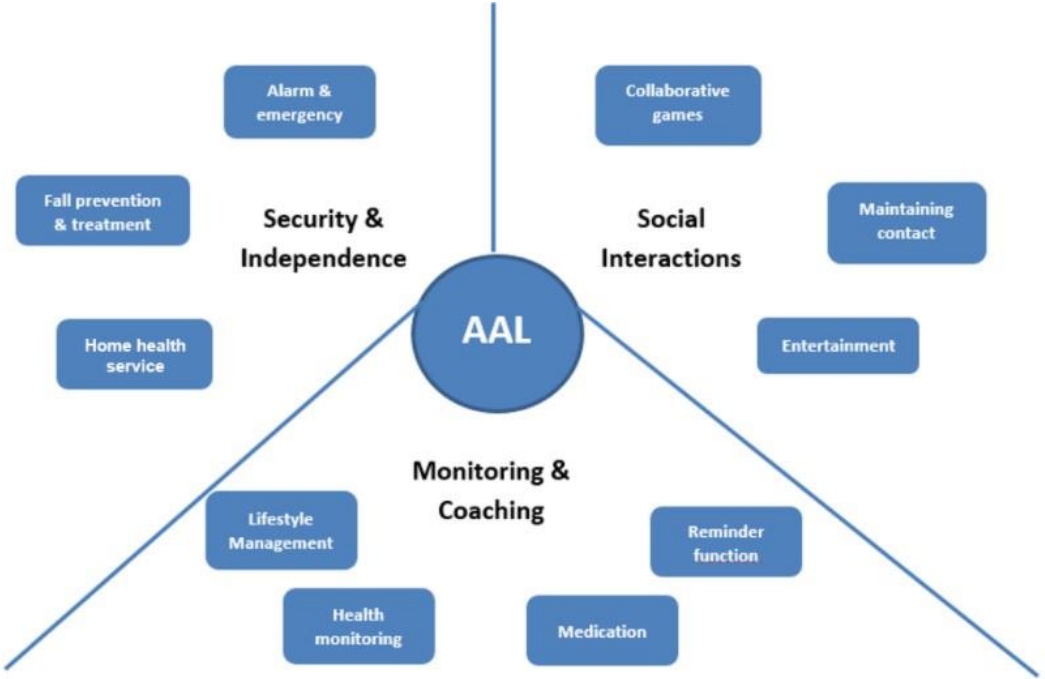
1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS AMBIENT ASSISTED LIVING (AAL)

AAL is a home environment enhanced by technical assistance systems.
-> technical methods, concepts and systems in the home and public living environment

Objective: to support the daily life of seniors and vulnerable people.
Essential areas are: communication, mobility, self-sufficiency as well as domestic life

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

AMBIENT ASSISTED LIVING (AAL)



Prof. Dr. Horst Kunhardt,THD

Source: own presentation

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS

MEDICAL DEVICES

Products, devices and software with a medical purpose, intended for use on humans.

Examples:

- Physicians office software
- Implants
- Cardiac pacemaker
- X-ray device

Legal requirements and conditions have to be fulfilled for licensing.

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS MEDICAL INFORMATICS

Medical informatics is computerized systematic processing and preparation of information in the medical/health care field

Areas of activity:

- Establishment and operation of telematics procedures in the healthcare sector
- Development and implementation of quality assurance concepts
- Development and support of databases for epidemiological studies

1.1 DEFINITIONS AND CONCEPTUAL DELIMITATIONS MEDICAL INFORMATICS

Further fields of responsibilities:

- Analysis, planning and implementation of information systems for medical practices, hospitals, company doctors, health insurance companies and public health departments
- Organizational analyses and organizational design in medical facilities
- Implementation and maintenance of application systems in health care facilities
- Development and maintenance of medical coding and documentation systems
- Connection of medical technology systems to information systems as well as measured value processing/analysis

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

DA VINCI SURGICAL SYSTEM

- Assists the surgeon during endoscopic procedures
- Up to 10x magnification and 3-D imaging
- For instance in the case of prostate or urinary bladder carcinoma

Video Link:
https://www.youtube.com/watch?v=jF2KYlwGzF4

Source:
https://www.asklepios.com
(retrieved on 25.10.2020)

Prof. Dr. Horst Kunhardt,THD

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

"DEINHAUS4.0" – LIVING AT HOME FOR LONGER

- Research project of the Deggendorf Institute of Technology
- Project duration: May 1, 2018 - April 30, 2023
- Objective: to make it easier for people in need of nursing care and/or medical assistance to live within their own homes by means of technical-digital support

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

"DEINHAUS4.0" - LIVING AT HOME FOR LONGER

- Access to model facilities for various types of accommodation, such as one's own house, one's own apartment and a room in a nursing home
- Four locations: Osterhofen, Freyung, Deggendorf and Cham

Video Link: https://landshut.niederbayerntv.de/mediathek/45672

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

Telemedicine Case study:

A patient calls his doctor and informs him of a blood pressure reading of 240/130 mmHg (normal 120/80 mmHg). The doctor advises the patient to come in immediately or to go to a hospital. This is telemedicine between people.

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

Telemedicine Case study:

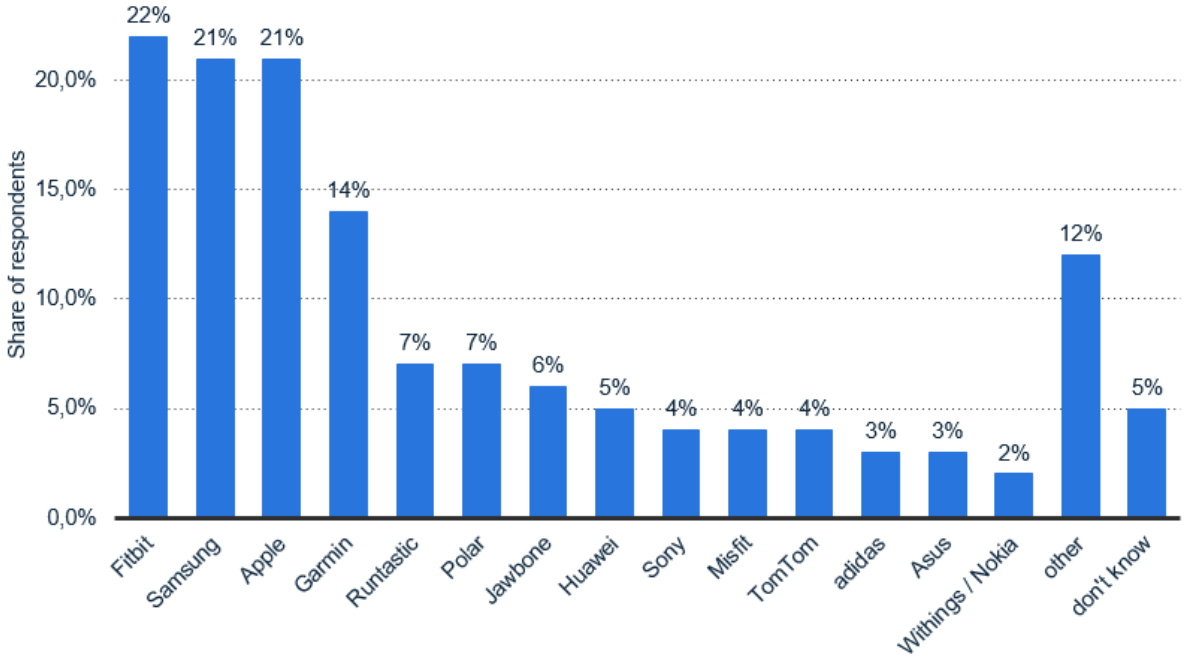
The blood pressure monitor automatically transmits the blood pressure value of 240/130 mmHg (normal 120/80 mmHg) via the Internet to an information system at a medical expert center. The system there automatically detects the emergency blood pressure value and alerts the doctor at the expert center. The doctor contacts the patient and advises him or her to come to the center immediately or to go to a hospital. This is telemedicine, first between systems and later between people

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

Fitness bands and **smartwatches** measure speed, skin conductance, pulse, and offer additional options such as displaying the measured data, a message when, for example, a predefined number of steps has been reached. Fitness wristbands communicate via Bluetooth or USB with smartphones and/or computers.

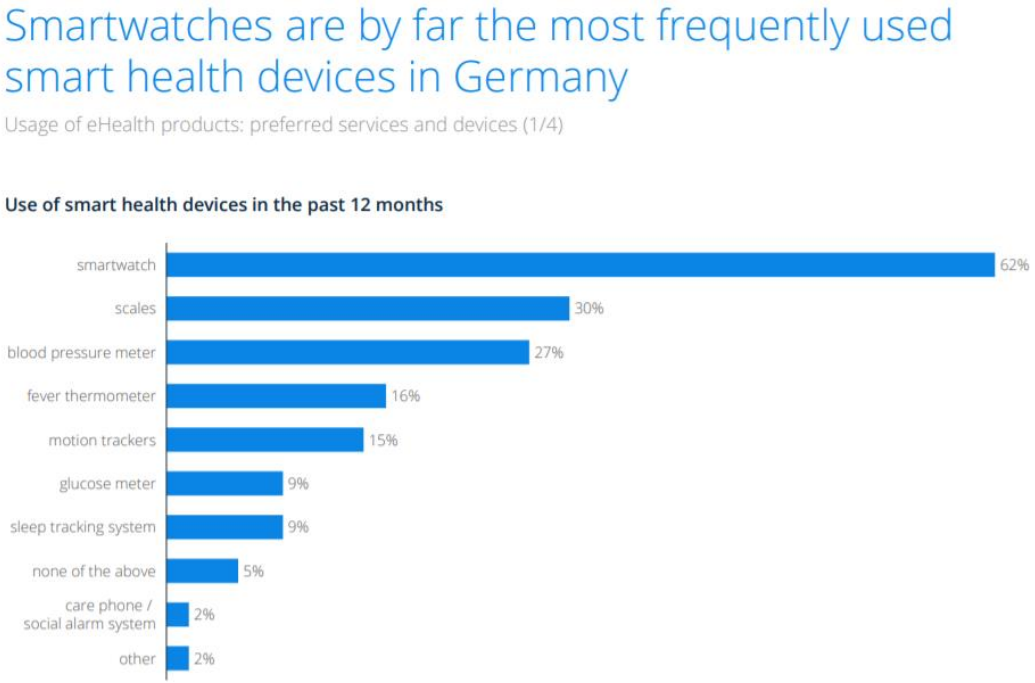
1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

smartwatches/ fitness trackers ownership by brand in Germany in 2019



source: https://www.statista.com/forecasts/998716/ehealth-tracker-smart-watch-ownership-by-brand-in-germany retrieved on 20.11.2020

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES



Source: [https://de.statista.com/statistik/studie/id/50712/dokument/ehealth-market-report-germany/,](https://de.statista.com/statistik/studie/id/50712/dokument/ehealth-market-report-germany/) retrieved on 11.03.2021

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

Apps can likewise be installed on the smartwatch, similar to the smartphone.

Source: https://pixabay.com/images/id-828786 / (access at the 03/11/2020)

1.2 EXEMPLARY APPLICATION AREAS & TECHNOLOGIES

Further areas of application and technologies can be found in the script "Unit 1 Conceptual derivation, definition and delimitation".

Task: Please review the application examples in the script!

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