

Introduction to the dimensions of digitalisation

Module 1.3: Key Technologies

Agenda

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- Apps
- Artificial Intelligence
- Internet of Things (IoT)
- 3D-Printing
- ICT & Climate
- Deep Dive: Blockchain

Apps:

What is your definition of *App*?

Which examples of applications for development do you know?

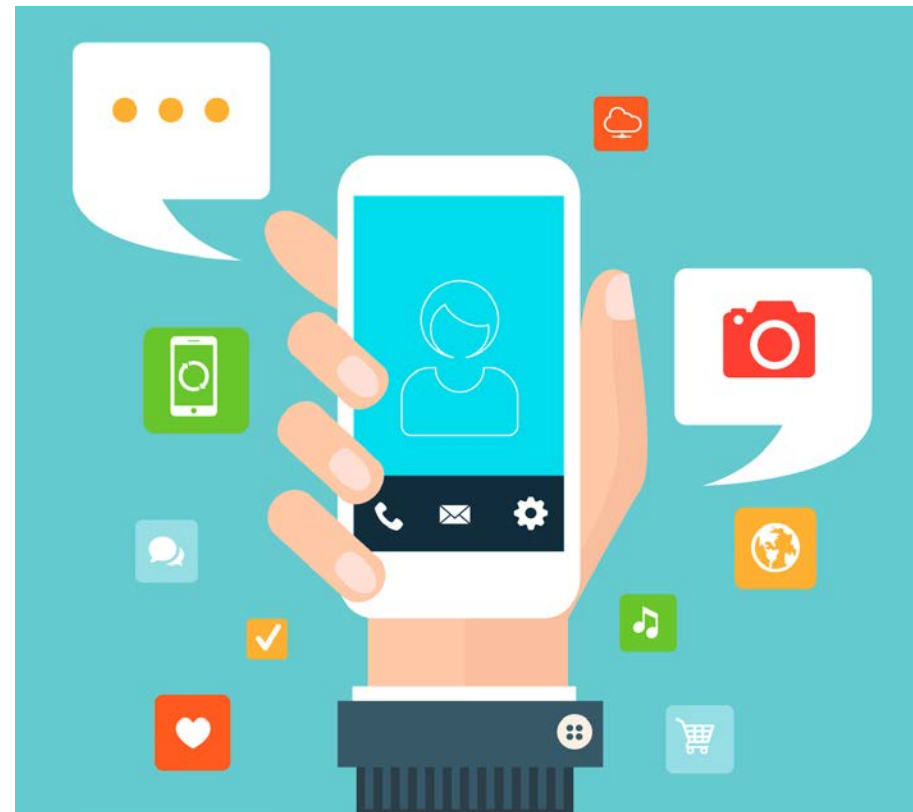
What do I need to know when talking about **Apps**?

Short definition

An application (commonly abbreviated to “app”) is an add-on program or piece of software for smartphones, tablets and/or desktop computers.

Examples

Messenger (WhatsApp, WeChat),
Barcode Scanner, Google Translator
or Farm-Apps.



Artificial Intelligence (AI):

What is your definition of Artificial Intelligence?

Which examples of application for development do you know?

What do I need to know when talking about **Artificial Intelligence (AI)**?

Short definition

AI refers to the capability of machines to imitate intelligent human behaviour. This involves performing various cognitive tasks such as:

- sensing
- processing and translating language
- reasoning
- learning
- making decisions.

AI works better the more information and data – **BigData** - is available.



2.3 million jobs created from AI while 1.8 million are eliminated by 2020

Internet of Things (IoT):

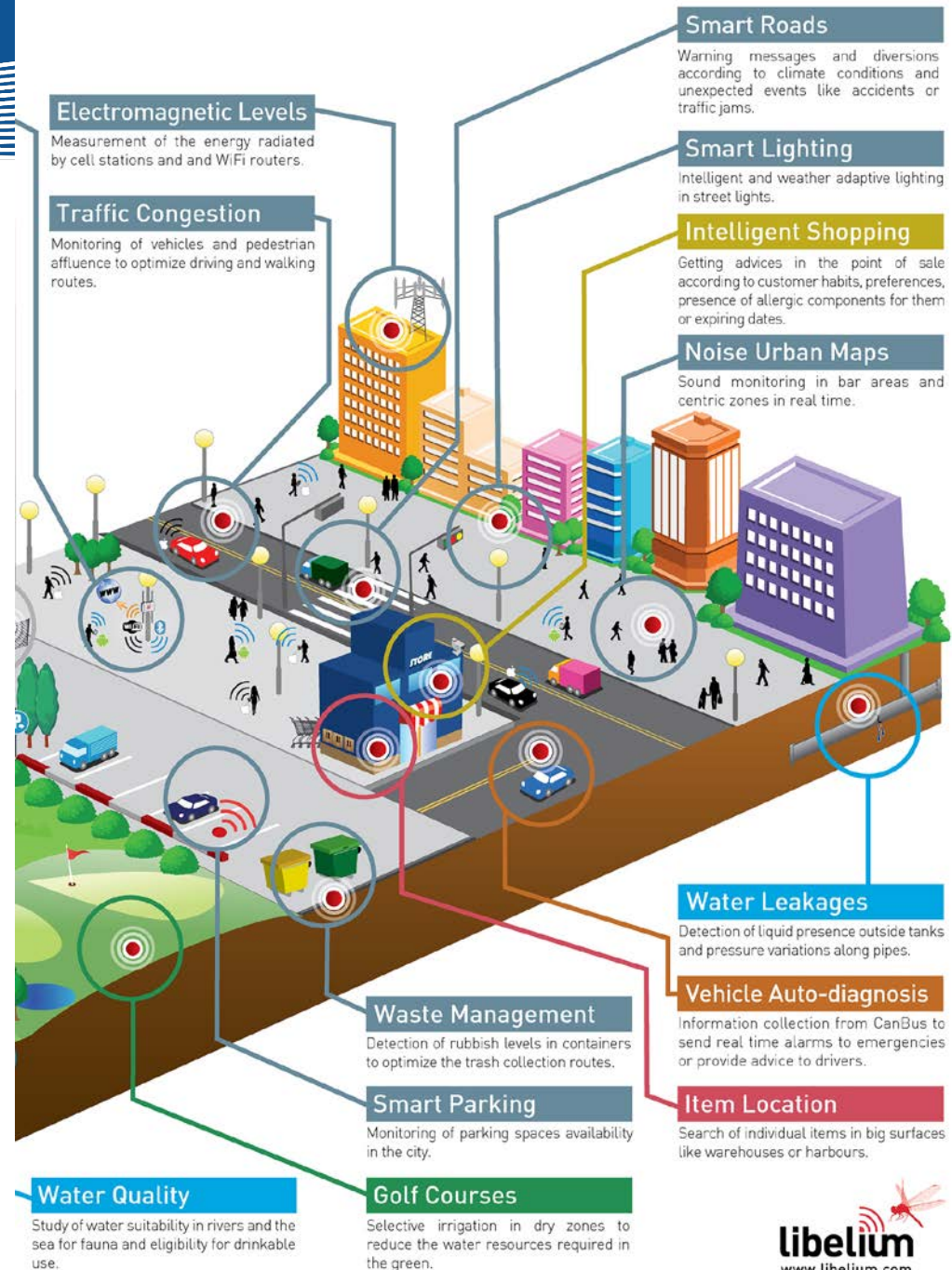
What is your definition of IoT?

Which examples of application for development do you know?

Short definition

The term “things” refers to a wide variety of devices like cars with builtin sensors, heart monitoring implants or smart thermostats in private homes. Sensors and network connectivity allow these things to:

- monitor their environment,
- report their status and location,
- receive instructions
- execute actions based on the data they receive



Challenge:

What do you see?





3D Printer for Homes

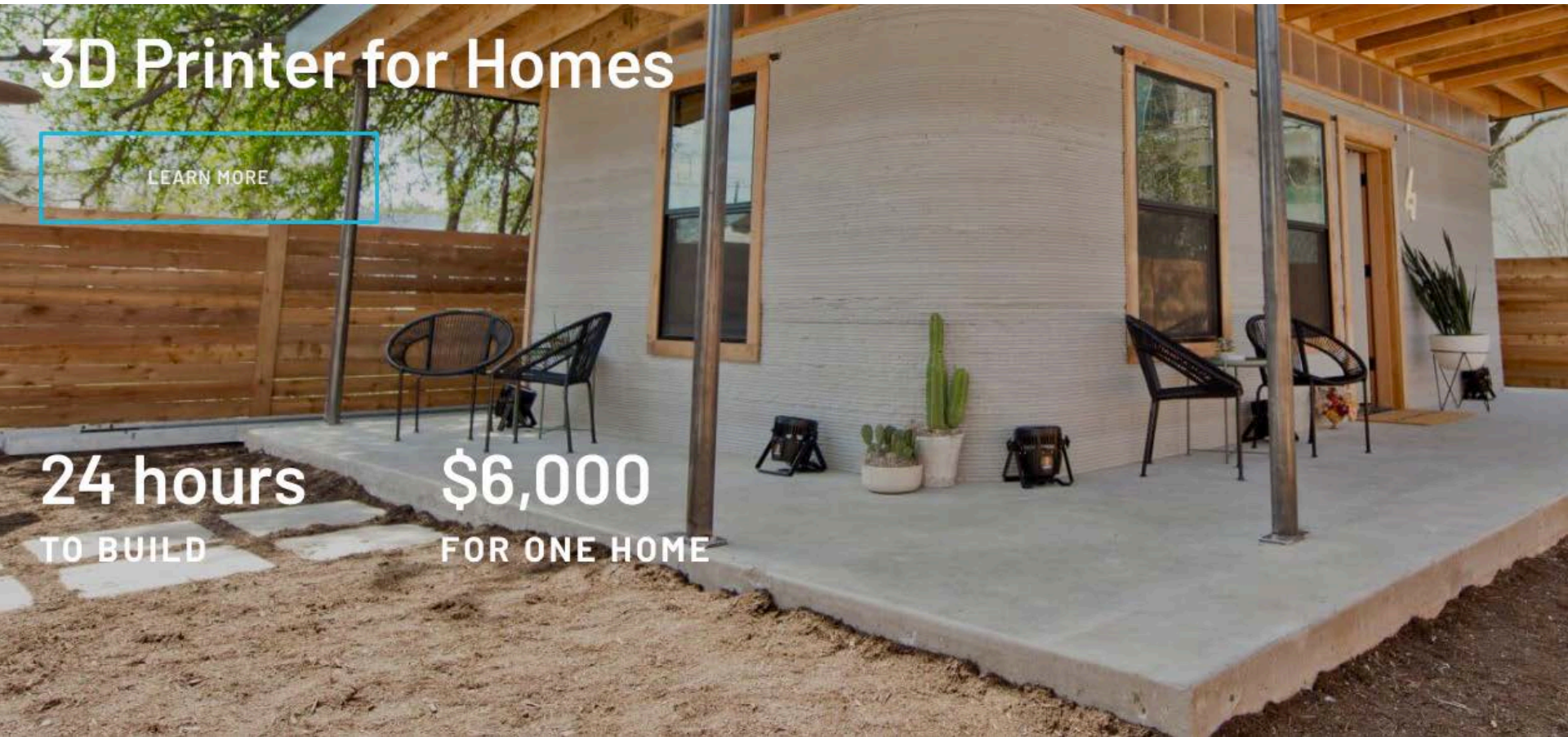
LEARN MORE

24 hours

TO BUILD

\$6,000

FOR ONE HOME



What do I need to know when talking about **3D-Printing**?

Short definition

3-D printer works by manufacturing items layer by layer. For example, when using plastic the printer works like a hot glue gun. The 3D printer is controlled by a computer following pre-programmed 3D models. Its revolutionary aspect lies in its digital nature: physical objects become digital information that can be:

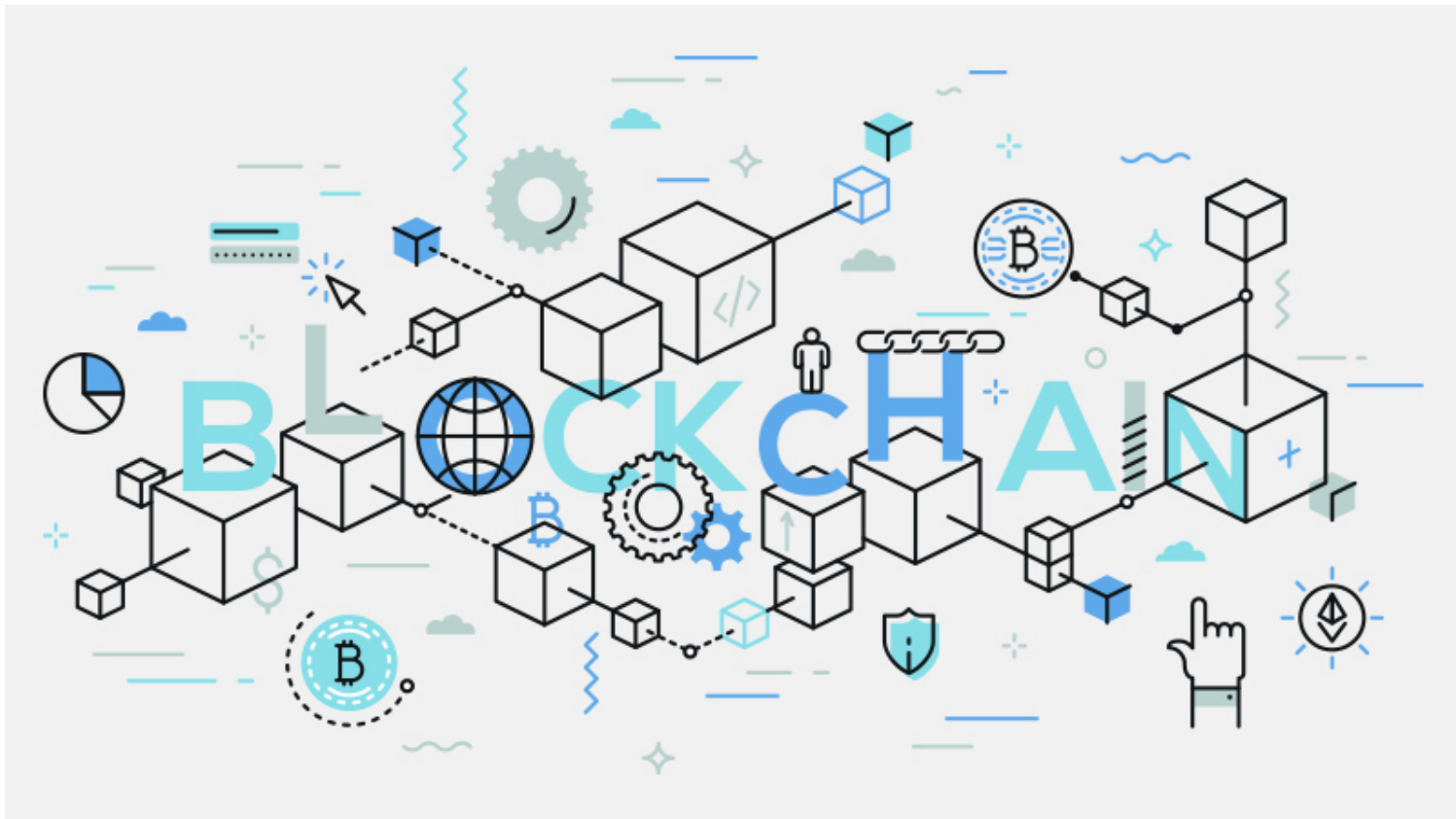
- remixed
- reformulated
- improved
- shared.

Examples

Prostheses, specific spare parts, models, individual items or components (e.g. a single shoe or screw) and even houses and human organs.



Deep Dive: Blockchain



Blockchain:

What is your definition of Blockchain?

Which examples of application for development do you know?

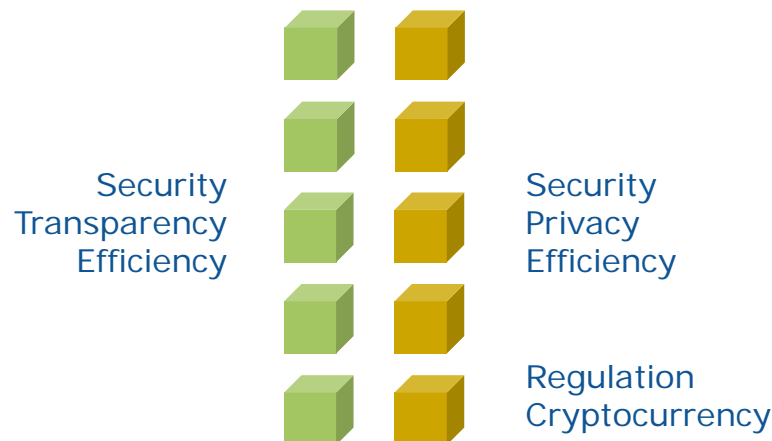
A short introduction to Blockchain



Blockchain

Take aways

- **A Blockchain is a database (DB)**, stored redundantly
- Its regulated by algorithms and can be public or private
- It has – above Bitcoin – many applications, there are many Blochains
- Therefore it is better to speak of **Digital Ledger Technologies (DLT)** instead of just the Blockchain.



Blockchain Applications



BUT

Check if DLTs really make sense in your case



20 min

Blockchain Exercise

Let's transfer some money via DLT (a Blockchain)

1. **Install** the App „Coinbase wallet“
2. **Create** your wallet (This is a real digital wallet! You can now store, send or receive bitcoin or any other digital currency)
3. **Go to:** „Settings“ – „Advanced“ – „Active network“: Under Ethereum select „Kovan“
(Kovan is an Ethereum Test-Network. The Ether (cryptocurrency with the 3rd highest market capitalization) we will send each other now is only test-ether without real value)
4. **Go to:** „settings“ – „recovery phrase“: You'll find 12 words here. From them your private and public keys can be generated.
Keep in mind:
 1. *If you ever lose these, you will never be able to get access to your wallet again! People in germany have offered a million euro to dig up a dumpsite, where they expected their old harddrive to be laying. Some Bitcoins which had once been worth just cents, were suddenly worth millions. You can know where the wallet is they belong to and basically „see“ these bitcoins, but you cannot get access anymore*
 2. *If someone else gets these words he can access your wallet*

Blockchain Exercise

Let's transfer some money via DLT (a Blockchain)

5. **Receive some Ether:** from the trainer or other participants. Click on Receive and show your QR-Code, or copy the key (to be seen below the QR-code (this is the address of your wallet) and send it via SMS, Whatsapp etc.
6. **Check your wallet:** At the top you will see the value of ether you got as well as how much this is worth in national currency (dollar, Euro, etc.): *have a look at the dollar / Euro value. It changes constantly as the exchange rate is changing*
7. **Transparency:** *You can view all transactions taking place in the room and globally!*
GoTo: <https://kovan.etherscan.io/>, type in any wallet address (yours or the one of the trainer).
You will see when, which transaction to whom took place and even in which block this information is stored.
8. **Cost:** *You will also see what this had cost.*
The transactions your performing are not for free! This is what is payed to the network, so they can accomodate their (energy etc.) costs. But it is still very cheap. This is why bitcoin is popular for international transactions (remittances, see „rebit“). You can create your own currency and use it publicly or between peers and use existing blockchains. Also a token checking value chains can be set up on existing Blockchains. The transactions only have to be payed and to be payed in the currency of the blockchain you choose (here ether)