Data and Artificial Intelligence

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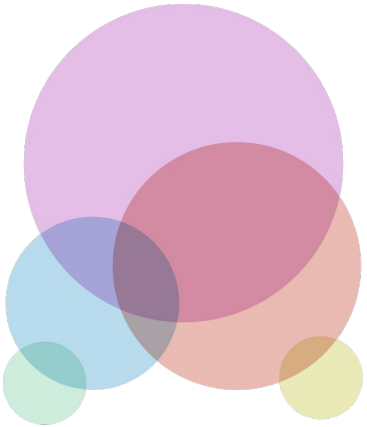
09:00-09:30	30 min	Introduction / Background ○ Participants' introduction (expertise and professional area). ○ Expectations about the workshop.
09:30-10:00	30 min	AI as a tool to solve problems. ○ General about AI. ○ Applications from different industries.
	10 min break	
10:10-10:40	30 min	AI into a Business perspective. ○ Preparing to succeed.
	10 min break	
10:50-11:10	20 min	Hands-on case definition exercise.
11:10-11:50	40 min	Discussion.
11:50-12:00	10 min	Closing remarks.



Making your ideas thrive in digital.

Building the local AI network

Satisfy local technological needs, provide competitive advantage for local business, and offer support to implement AI strategies.

Structure

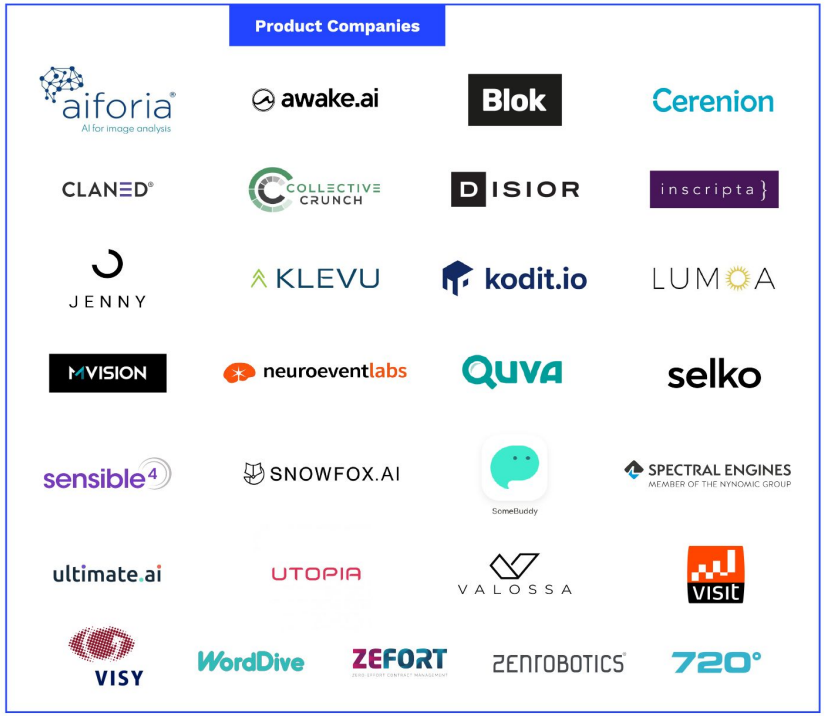
- Cutting-edge technology
- Connected and scalable
- Compliant with EU data-policy
- Integrated at National level

Services

- High-quality, reliable and accessible services
- Support and collaboration to local companies
- Expert consultancy about AI and data products

Training

- Modern technological education
- Talent attraction to the region
- Capacity to improve local expertise
- Connected with real-world needs



Source: faia.ai

Finland is a leading country in creating artificial intelligence business.

But despite this, and the government's ground breaking goal to educate people about AI,

Adoption of AI stills out of reach for most companies.

Facts.

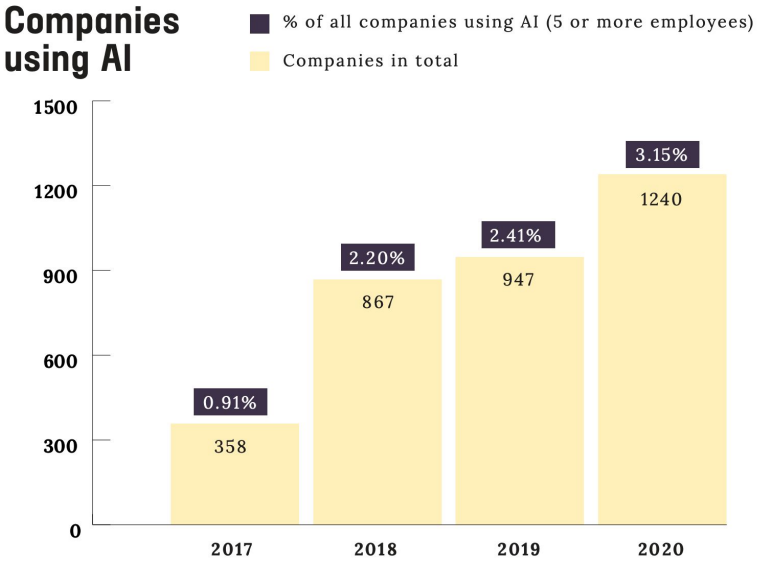


Figure 1: The graph shows the total number of Finnish firms using AI per year and the percentage of companies with 5 or more employees that use AI. Source: Etla and FAIA.

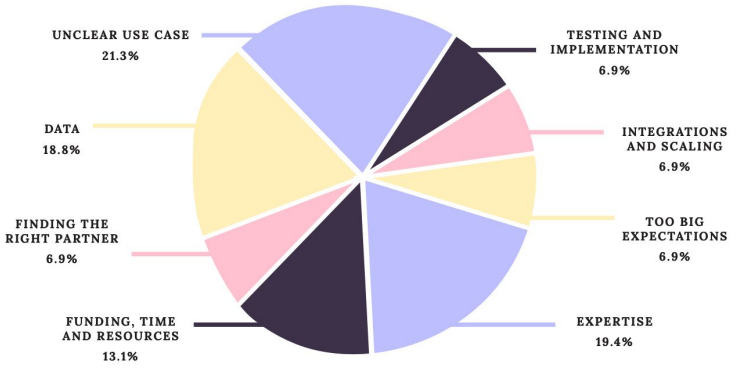
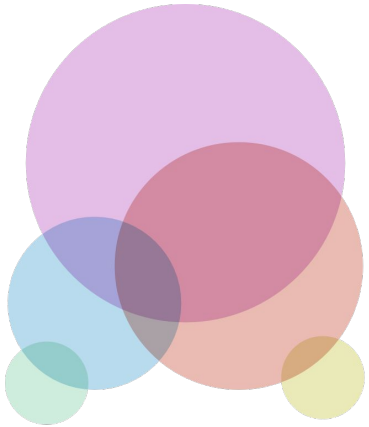


Figure 2: The identified main obstacles for implementing AI. Source: FAIA, 2019.



Don’t worry so much here yet

AI as a tool to solve problems.

Start here!

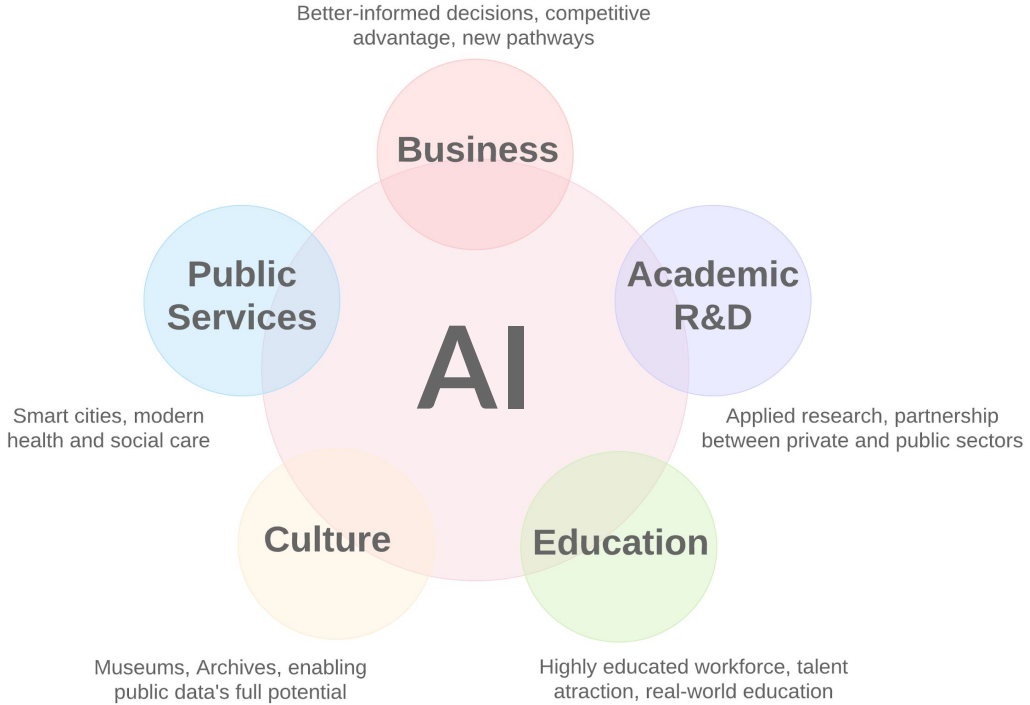
What are the top 3 things you wish worked better?

Why aren’t they working yet?

Opportunity.

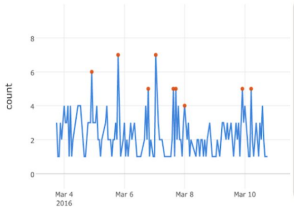
"AI is the effort to automate intellectual tasks normally performed by humans"

Where there is human thinking, there is potential.



Machine and Process Industries

- Predictive Maintenance
- Digital twins
- Visual quality control



Energy and Infrastructure

-Energy consumption prediction
- Visual quality control

Maritime Industry

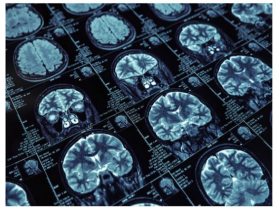
- Object detection
- Intelligent awareness
- Autonomous vessels and ports

Mobile and Telecom

- Network optimization and planning
- Network capacity prediction

Medical and pharma

- Support cognitive and diagnostic work
- Computer vision aided surgery



Smart devices and autonomous vehicles

- IoT device security
- Sensor fusion and perception
- Object detection and tracking

Financial Industry

- NLP based document AI
- Smart text analysis
- Risk categorization

Retail and Logistics

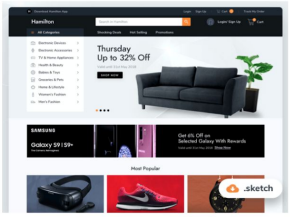
- Product recommendation
- Dynamic pricing
- Parcel delay prediction

Advertising and Media

- Real-time bidding
- Online experience optimization

Internet and Games

- Product recommendation
- Dynamic pricing



Legal Industry

- Legal clause recommender
- Smart document automation

What problems?

There are many examples of applications in multiple industries.

For each case on the left,

What were the things they needed working better?

Why weren't they working before?

AI solutions divided into three groups

To get the most out of AI, companies must understand which technologies perform what types of tasks, create a prioritized portfolio of projects based on business needs, and develop plans to scale up across the company.

Automation

- Automation of tasks.
- Internet of things - AIoT.
- M2M communication.
- Industry 4.0.
- Automate intellectual work.

Analysis

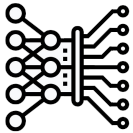
- Data analytics.
- Business intelligence.
- Competitive advantage.
- Predictions and forecasts.
- New ways to make sense of the world.

Engaging

- Improved experience for users.
- Great customer experience.
- New ways to interact with machines.
- Augmented reality.
- New ways of working.

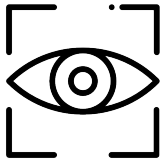
Trends.

- Software as a service, powered by AI.
- Solutions as packages capable to solve common problems.
- Hosted on the cloud, ready to scale to any size.
- Compliant with EU regulations for data-privacy.
- No need for experts throughout the entire process.
- Edge and tiny-AI.



Machine Learning

Intelligent control systems



Computer Vision

Quality assurance in production lines

Natural Language Processing

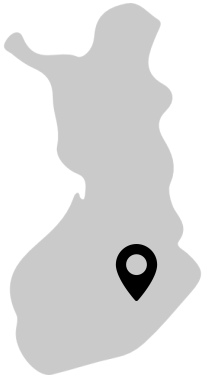
Interactive bots for customer services

aws

Google Cloud

Microsoft Azure

NVIDIA



mindhive

Product Companies

aiforia · awake.ai · Blok · Cerenion · CLANED · COLLECTIVE CRUNCH · DISIOR · inscripta · JENNY · KLEVU · kodit.io · LUMOA · MVISION · neuroeventlabs · Quva · selko · sensible4 · SNOWFOX.AI · SomeBuddy · SPECTRAL ENGINES · ultimate.ai · UTOPIA · VALOSSA · visit · VISY · WordDive · ZEFORT · ZENROBOTICS · 720°

AI Consultancies

DAIN STUDIOS · FOURKIND · HOUSTON ANALYTICS · SILO AI · TOP data science

Enabler Companies

aito · CURIOUS AI · GIM ROBOTICS · Headai · leiki · Speechly · VALOHAI

Source: faia.ai

aws

Google Cloud

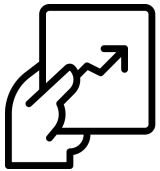
Microsoft Azure

NVIDIA

09:30-10:00 - AI as a tool to solve problems.

Business value for the Industry 4.0

Autonomous intelligent systems can make industrial control solutions more adaptable to changing environments, tackle complex processes, and combine human and machine intelligence.

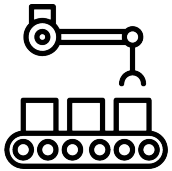


Maximize throughput

Adapt different optimization goals to maximize the throughput of many processes.

Reduce operation costs

Improve process efficiency and reduce machine downtime.



New automation levels

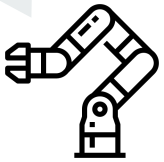
Intelligent control systems can tackle industrial processes that were previously too dynamic and complex to automate.

Quality assurance

Make industrial processes less susceptible to errors in production.

Machine predictive maintenance

Machine downtime and delays



Situation

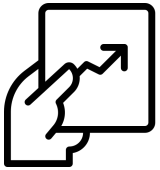
Machines break down and production lines need to be stopped for fixing.

AI increases autonomy of operations

Solution

AI predicts when a machine is likely to fail. Repairs are scscheduled automatically to minimise downtime.

Less reliance on human operators



Result

AI improves operational and cost efficiency by up to 10%.

AI technology empowers machine awareness solutions.

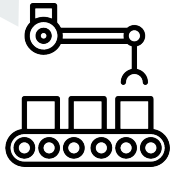
09:30-10:00 - AI as a tool to solve problems.

Business

- Industries
- Manufacturing
- Energy plants
- Oil and Gas
- Transportation
- Finance
- Health care

Advanced quality control systems

Machine downtime and waste



Situation

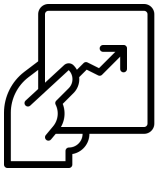
Slow response to out-of-spec products. The operator needs to stop the system to adjust the machine.

AI responds to the problem in real time

Solution

AI-system recognizes the problem and adjust the machine to meet the correct specs.

Less reliance on human operators



Result

17-20% production gains by manufacturers that implement intelligent systems.

AI technology provides early detection of defective items.

09:30-10:00 - AI as a tool to solve problems.

Business

- Industries
- Manufacturing

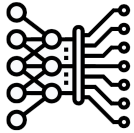
Analytics for industrial processes

Performed only by experts

Situation

Complex chemical processes with many parameters to be adjusted.

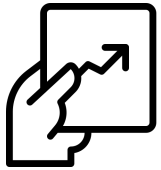
Analyses data from hundreds of sensors



Solution

AI calculates and adjusts parameters precisely and in advance.

Lower production costs



Result

Factory achieves high-quality outcomes with higher certainty.

Business

- Pulp & Paper
- Chemistry
- Fermentation
- Pharmaceutical

Stora Enso' AI suggests optimized parameters for improved pulp production.

More info: https://faia.fi/market-research/#stateofai

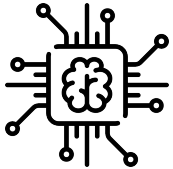
09:30-10:00 - AI as a tool to solve problems.

Academic, R&D and Education

Unleash the potential of collective intelligence and local technological hubs.

High-level education

Modern educational infrastructure capable to attract and form new talents.



Intelligent learning

Smart learning tools, individually tailored curriculum based on learner features.

Business incubators

The connection between theory and application to solve real problems from local companies.

Local expertise

Highly-educated workforce to attend the new local demands.

Education focused in the future...

Regional AI Centre will need experts

Situation

Finnish government's goal to educate people about the basics of AI.

AI as the topic and as a tool for learning

Solution

Multi-level education focused on global trends, but applied to local business needs.

Highly educated workforce

Result

Experts, both formed locally and attracted from other regions, ready to join the labor market.

AI-powered educational tools open new pathways for the region.

09:30-10:00 - AI as a tool to solve problems.

Education

- XAMK
- Otavia
- Esedu
- Samiedu
- Lut University

- Remote education
- Student well-being

… and acting in the present

Covid-19 and uncertainty about future

Situation

Social contact is very important for young people dealing with emotional challenges.

Smart chatbots, personal assistants

Solution

AI is applied to interact, detect, and suggest solutions for dealing with emotional problems.

Increased well-being

Result

Early detection of potential issues and connection with professional help.

Youth work can prevent social isolation among young people using chatbots.

More info: https://www.verke.org/blog/bottien-pauloissa-nuorten-tieto-ja-neuvontatyon-chatbottia-kasaamassa/

09:30-10:00 - AI as a tool to solve problems.

Education

- XAMK
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- Remote education
- Student well-being

Smart cities powered by AI

The most powerful strategy relies on the right combination of human and machine intelligence.

Efficient operations

Automation and intelligent monitoring and forecasting in city infrastructure, energy and logistics.

Health and Social Care

Intelligent systems for faster diagnosis and reduced errors. Autonomous customer service and improved customer experience.

Smart citizens

Transparent access to individual data, better informed decisions.

AI-assisted smart cities

IoT-AI systems provide big-data

Situation

Systems acquire big-data, but its utilisation is fragmented and not ideal.

AI connects and analyse the data for operators

Solution

AI utilizes multiple data sources to equip humans for making informed decisions.

Systems adapt real-time to new contexts.

Result

The general context updates local information in integrated systems.

AI predicts Helsinki's heat energy consumption for Helen Oy.

More info: https://faia.fi/market-research/#stateofai

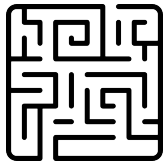
09:30-10:00 - AI as a tool to solve problems.

Cities and services

- Cities
- Essote
- Emergency services
- Electricity companies
- Traffic management

AI assistants for public services

Overload of information



Situation

Public services can turn into a quite complex network, difficult to find information.

Customer-oriented services

Solution

AI-system can provide individual advice based on users' needs.

Less overload for human workers.

Result

Better user experience, smarter services and utilization of public data.

Aurora AI assistant aims to give each Finnish citizen tailored advice.

More info: https://vm.fi/en/auroraai-en

09:30-10:00 - AI as a tool to solve problems.

Cities and services

Any institution dealing with customer services:

- Cities
- Essote
- Sosteri

Intelligent support to manage data

Over a Petabyte of archive to catalog

Situation

Institution is responsible for the national audiovisual cultural heritage.

Can recognize 90% of images with AI

Solution

Image classification AI-system recognizes common items.

5x less time spent digitizing images

Result

Less human workload, 80% total time reduction.

AI technology speeds up historical image handling at Hungary's National Archive.

More info: https://customers.microsoft.com/en-US/story/nava-civilian-government-azure-services-hungary

09:30-10:00 - AI as a tool to solve problems.

Data centres

- Cities
- Digital archives
- National Archive
- National Library
- Museums
- Elka

Hands-on AI demonstrations

https://teachablemachine.withgoogle.com/train

Audio Recognition

AutoML tool to build a classifier for audio clips provided by the user.

Image Recognition

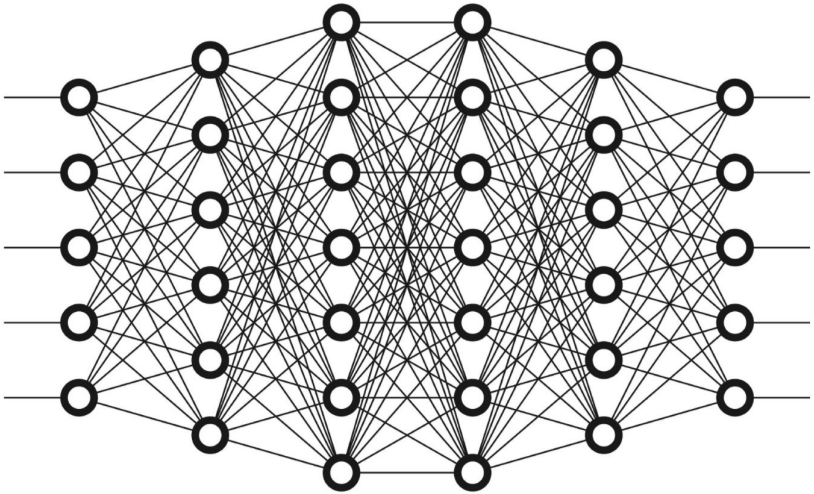
AutoML tool to build a classifier for different images.

Gesture Recognition

AutoML tool to build a classifier for videos of different gestures.

Hands-on AI demonstrations

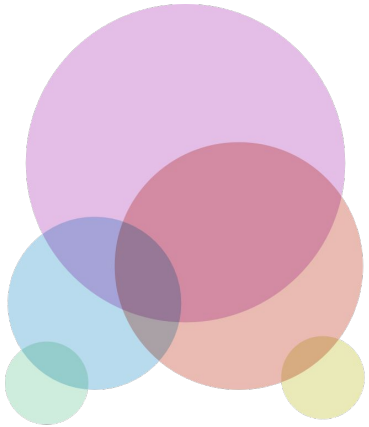
Examples on video



Discussion

Questions and comments

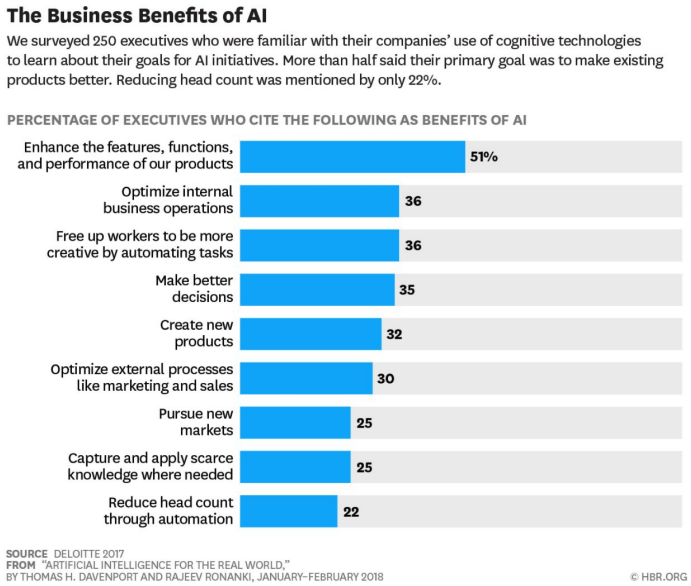
10min



AI into a Business perspective.

Preparing to succeed.

Facts.


The Business Benefits of AI
We surveyed 250 executives who were familiar with their companies' use of cognitive technologies to learn about their goals for AI initiatives. More than half said their primary goal was to make existing products better. Reducing head count was mentioned by only 22%.
PERCENTAGE OF EXECUTIVES WHO CITE THE FOLLOWING AS BENEFITS OF AI
Enhance the features, functions, and performance of our products 51%
Optimize internal business operations 36
Free up workers to be more creative by automating tasks 36
Make better decisions 35
Create new products 32
Optimize external processes like marketing and sales 30
Pursue new markets 25
Capture and apply scarce knowledge where needed 25
Reduce head count through automation 22
SOURCE DELOITTE 2017
FROM "ARTIFICIAL INTELLIGENCE FOR THE REAL WORLD," BY THOMAS H. DAVENPORT AND RAJEEV RONANKI, JANUARY–FEBRUARY 2018
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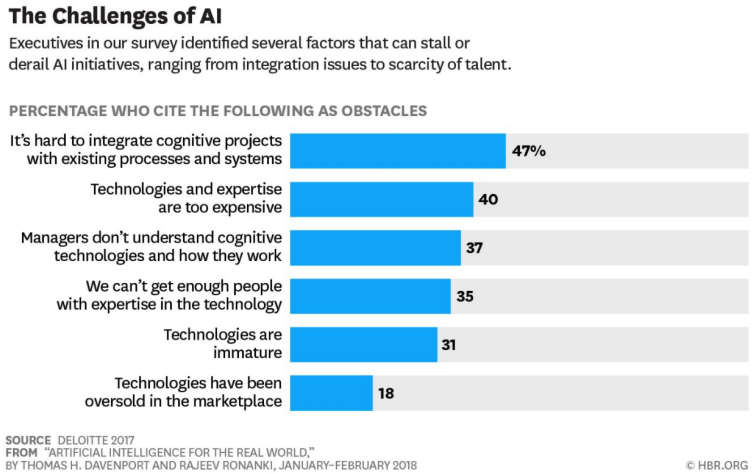
The Challenges of AI
Executives in our survey identified several factors that can stall or derail AI initiatives, ranging from integration issues to scarcity of talent.
PERCENTAGE WHO CITE THE FOLLOWING AS OBSTACLES
It's hard to integrate cognitive projects with existing processes and systems 47%
Technologies and expertise are too expensive 40
Managers don't understand cognitive technologies and how they work 37
We can't get enough people with expertise in the technology 35
Technologies are immature 31
Technologies have been oversold in the marketplace 18
SOURCE DELOITTE 2017
FROM "ARTIFICIAL INTELLIGENCE FOR THE REAL WORLD," BY THOMAS H. DAVENPORT AND RAJEEV RONANKI, JANUARY–FEBRUARY 2018
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Facts.

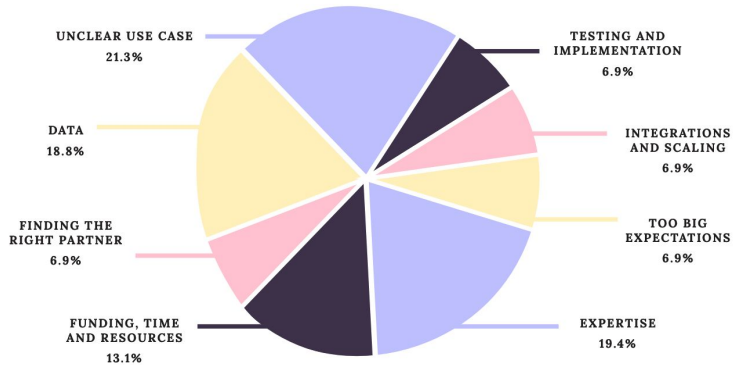
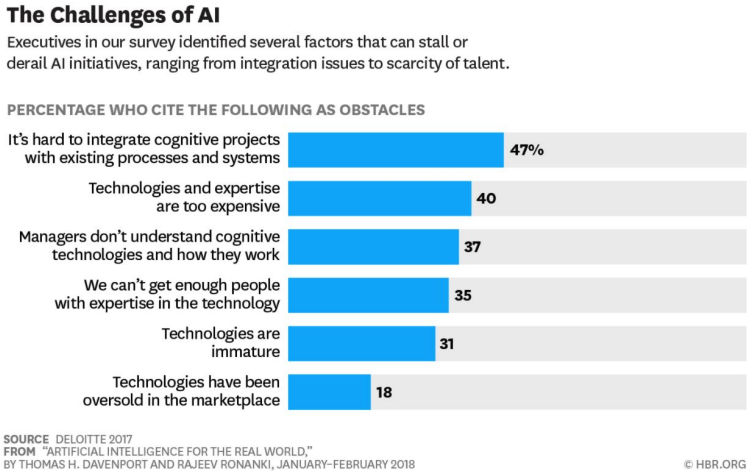


Figure 2: The identified main obstacles for implementing AI. Source: FAIA, 2019.



Don’t worry so much here

AI as a tool to solve business problems.

Start here!

- Strategy for a successful AI-journey.
- Structure for an AI-company.
- Structure for AI-projects.
- A template to facilitate the planning of AI-solutions:

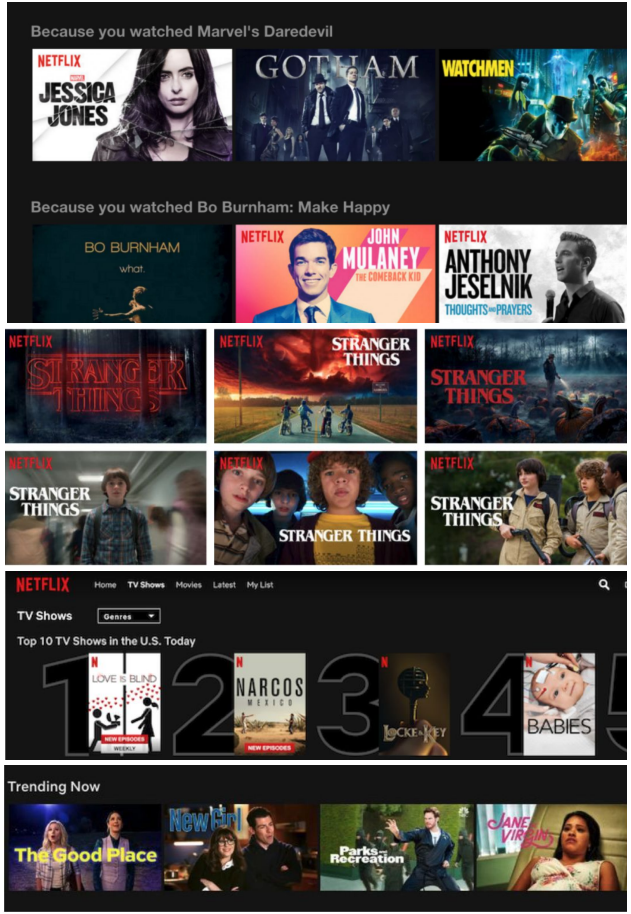
    Step 1: Identify a business problem (not an AI problem).

    Step 2: Brainstorm AI solutions.

    Step 3: Assess the feasibility and value of potential solutions.

    Step 4: Determine milestones.

    Step 5: Budget for resources.



Psychology and AI for product development

The Cocktail Party Effect states that people like to focus on information that's relevant to them.

1. Netflix's Recommendation Engine
2. Because you watched
3. Thumbnail Design
4. Social Proof in "Top Ten" and "Trending Now Categories"
5. Trending Now Categories

"... 100 million different products,
with one for each of our members ...".

AI is hidden to the eye.
Their products are not about AI. They are about the value of a great experience.

Small steps that add to the experience.
They apply AI to many sub-products, each adding one layer of great experience.

AI is a tool for a better product.
Put together, all sub-products work for the customer impression of a great brand.

A business perspective on proof-of-concept AI-projects.

What we can learn from the big players, but still being aware of our reality?

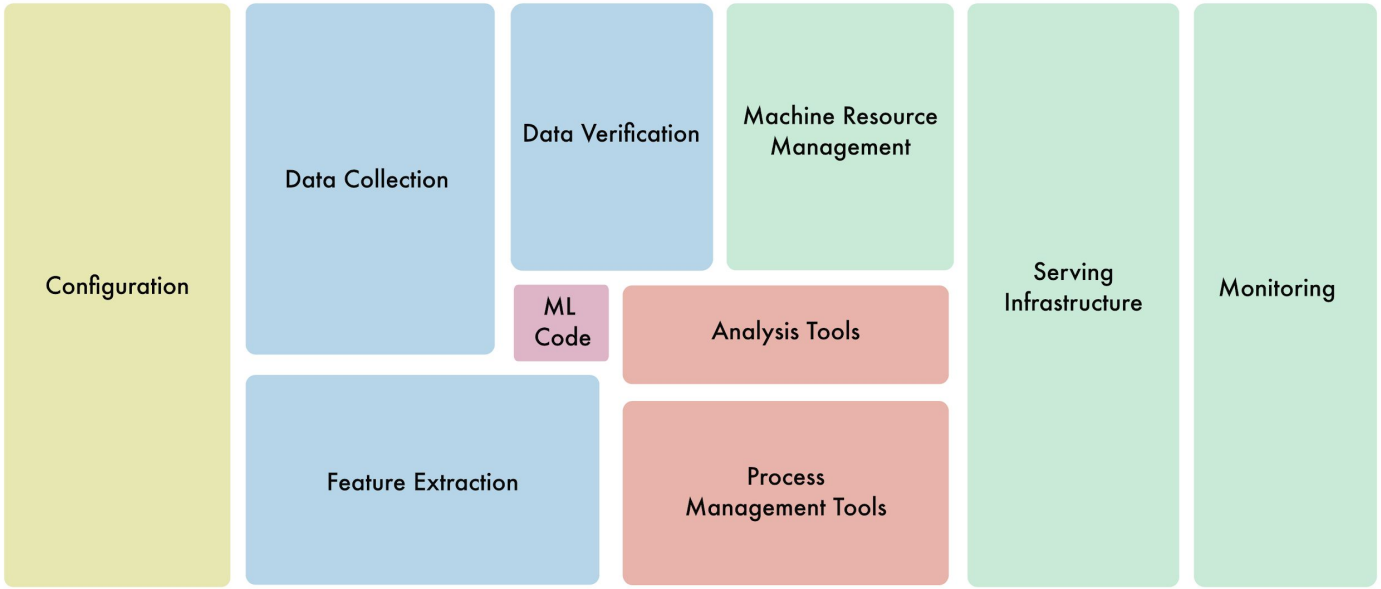
- **Start as small as you can**
  First develop a simple proof-of -concept AI-solution.
- **Share the risk**
  Once arriving at an MVP that can be made to production, then build an environment of valuable features around the AI.
- **Keep improving**
  When the solution is consolidated, it is time to improve and make it more complex and complete.

Build an AI-ready culture.

What we can learn from the big players, but still being aware of our reality?

- **Be honest about your readiness**
  Be aware of your data structure, digitalization degree, employees' readiness, etc.
- **Choose the right partners**
  Know your tech network, where to consult, what to outsource, what to bring in, etc.
- **Educate your stakeholders**
  The biggest asset you can have is not an AI data scientist, but an AI-product owner.

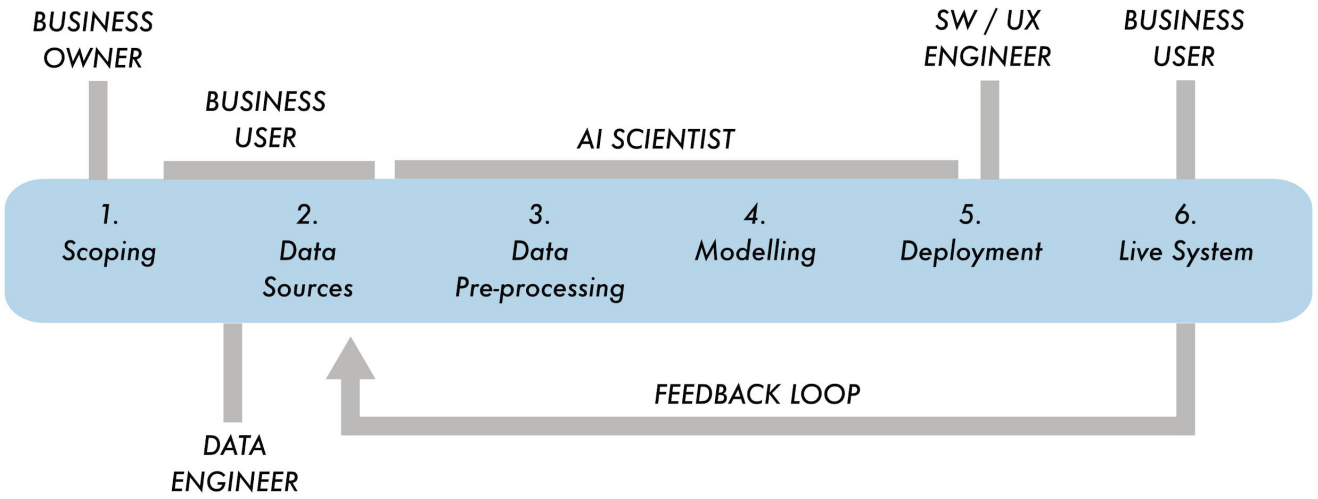
source: faia.fi



AI in the broader context of organizations.

The infrastructure surrounding AI can be extensive and complex.

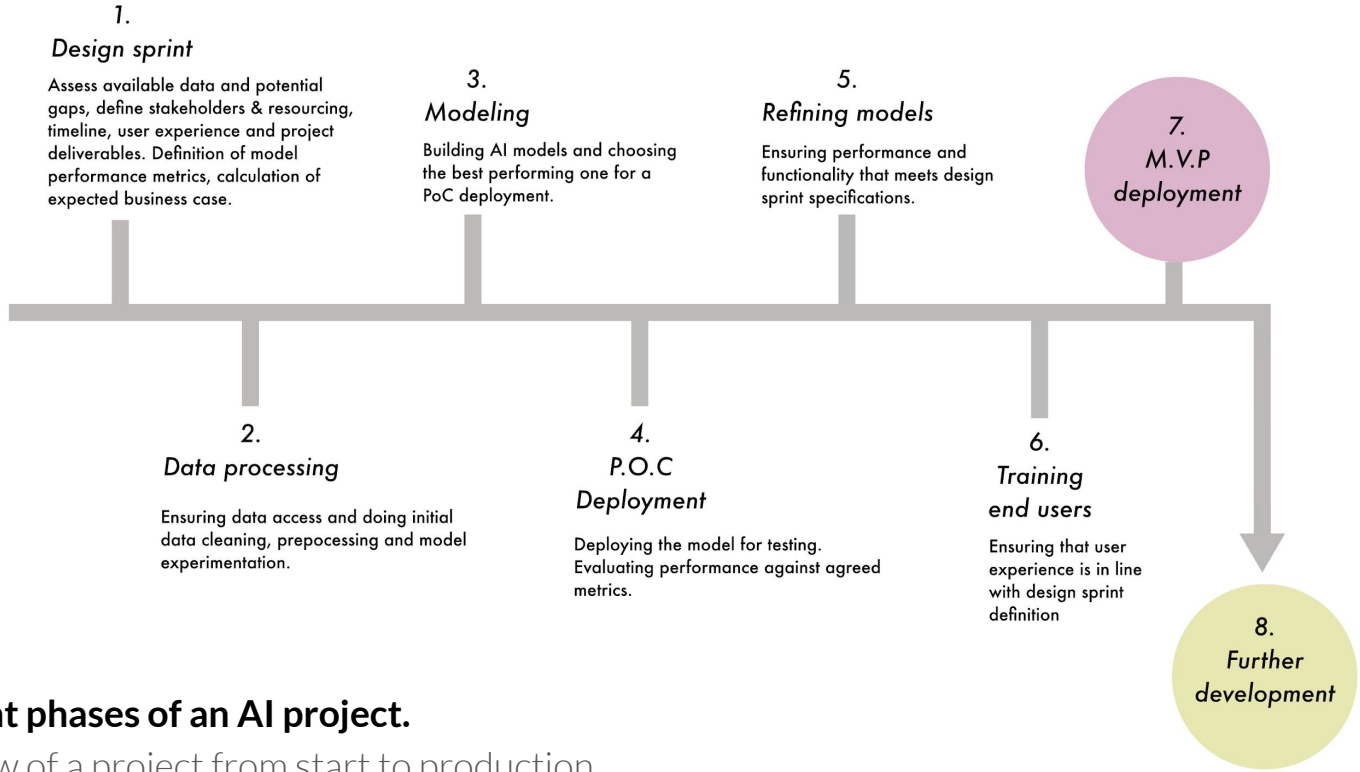
source: faia.fi



The actors and their roles.

Different expertise during an AI project.

source: faia.fi



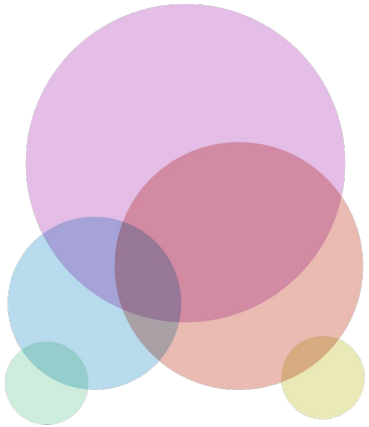
Different phases of an AI project.

Overview of a project from start to production.

Discussion

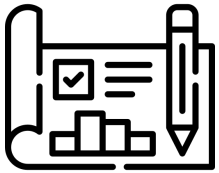
Questions and comments

10min



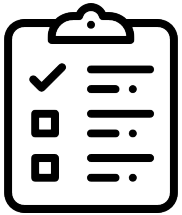
Hands-on case definition exercise.

Define your idea for an AI product



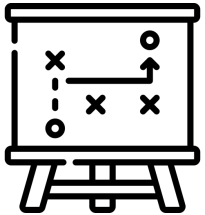
Problem definition

Fine-tune and prioritise cases we might approach with an AI-solution.



Guided exercise

Let's fill the AI-case template to guide us on the process.



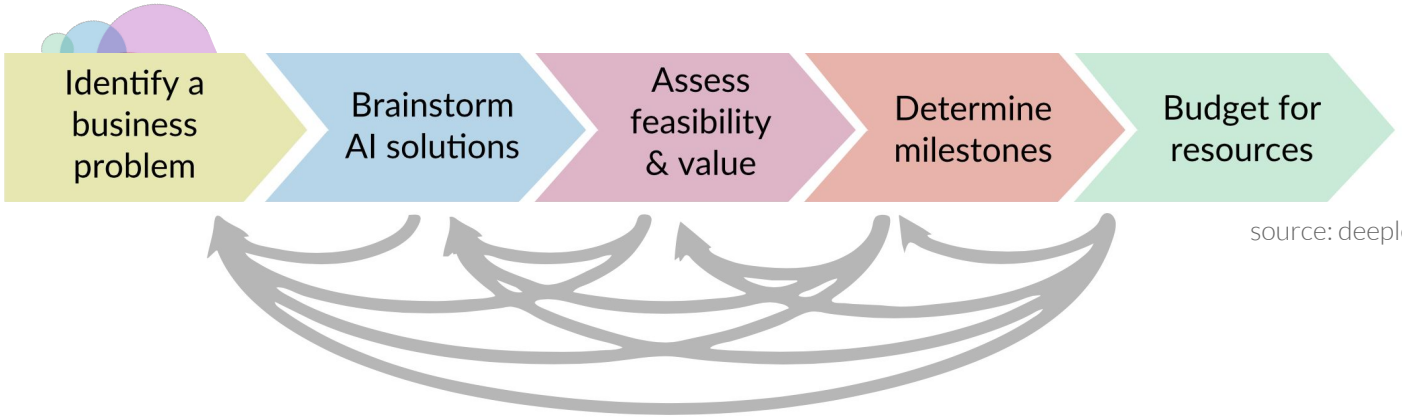
Action plan

Define action points towards an AI-solution.

What are the top 3 things you wish worked better?

Why aren’t they working yet?

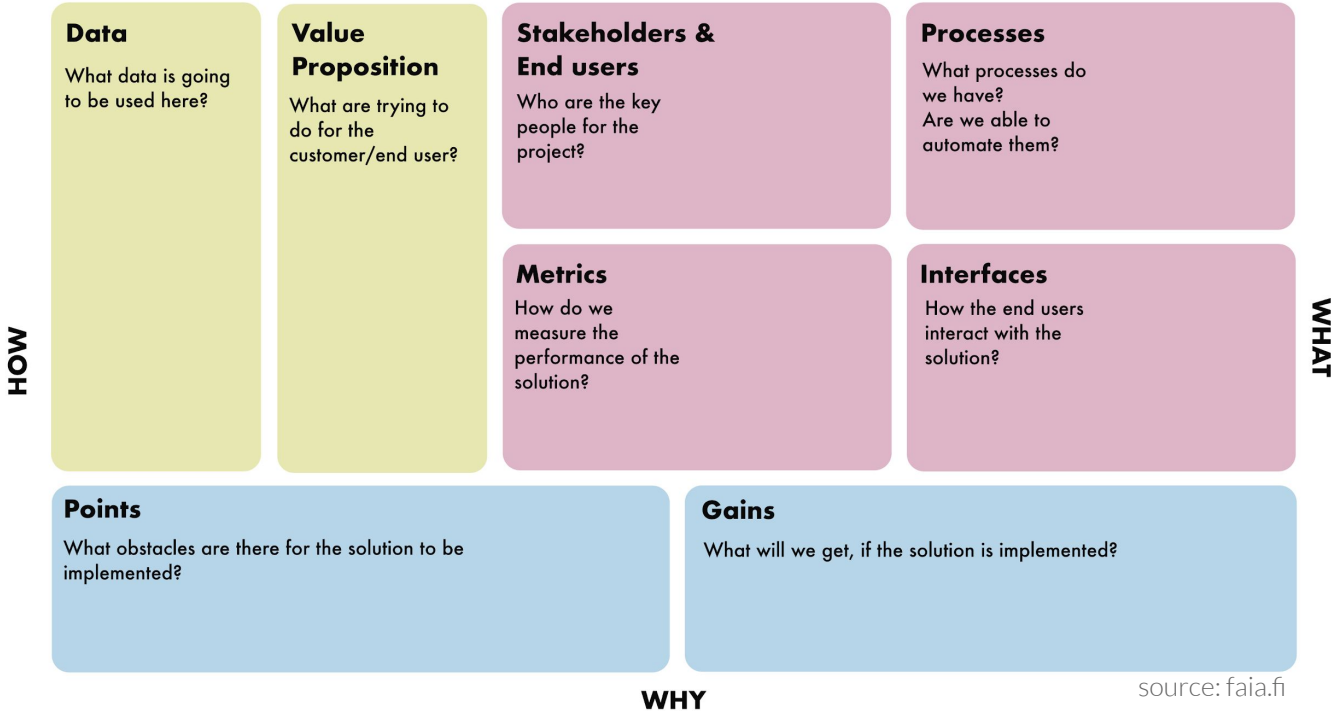
How to scope AI projects?



source: deeplearning.ai

Guided exercise

Template for structured brainstorming sessions.



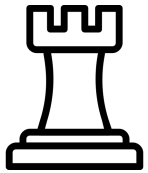
source: faia.fi

https://docs.google.com/presentation/d/1V8SeLTf4VxkotZl-UqxubZjfqKeWdrxT-iWR3rETHQg/edit?usp=sharing

10:50-11:10 - Hands-on case definition exercise

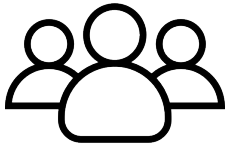
Build an action plan

The most powerful strategy relies on the right combination of human and machine intelligence.



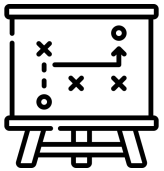
Define a strategy

Create, stimulate and support your team towards building your AI-solution.



Identify key partners

Bring together key actors and companies capable to kick-start and boost your company's AI-culture.



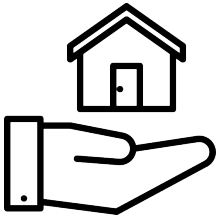
Execute the plan

Unlock all the potential of AI, in small and steady steps that will bring the expected benefits.

Open discussion

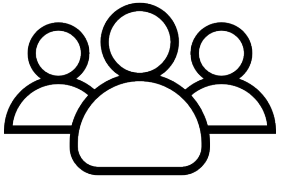
Discussion

Questions and comments



Take-home

What are the take-home messages so far

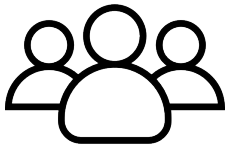


Share

Challenges, bottlenecks, risks, cooperation, etc.

Closing remarks

Let's be in touch!



Feedback

- Highlights of the workshop.
- Did it fulfill your expectations?
- What was missing?
- What's next?
- What other types of materials would you like to see from us?

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