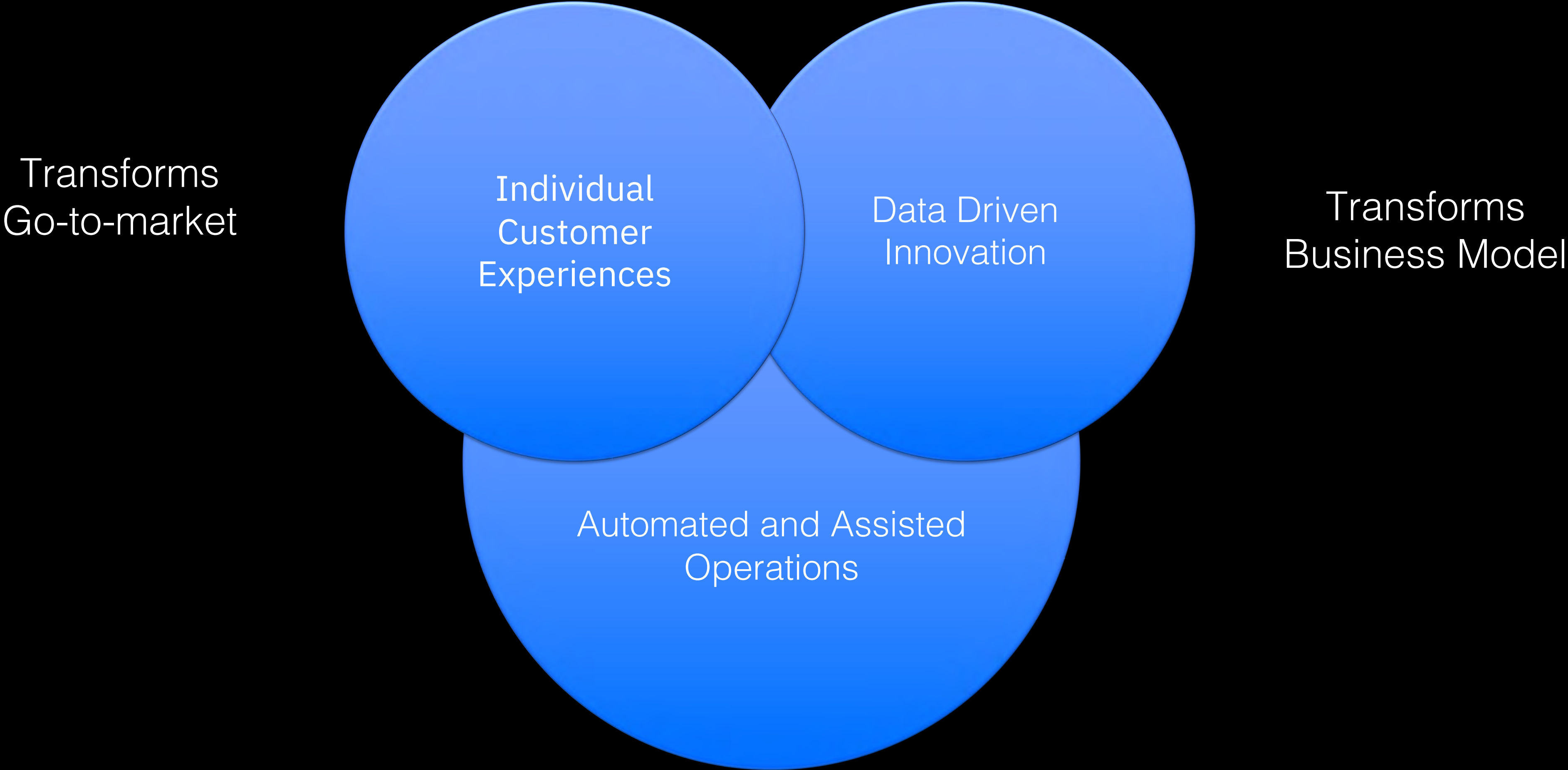


FIIF: AI/ML case studies – *AI powered **Systems** from underground to space*

22.11.2018
Timo Rastas, IBM

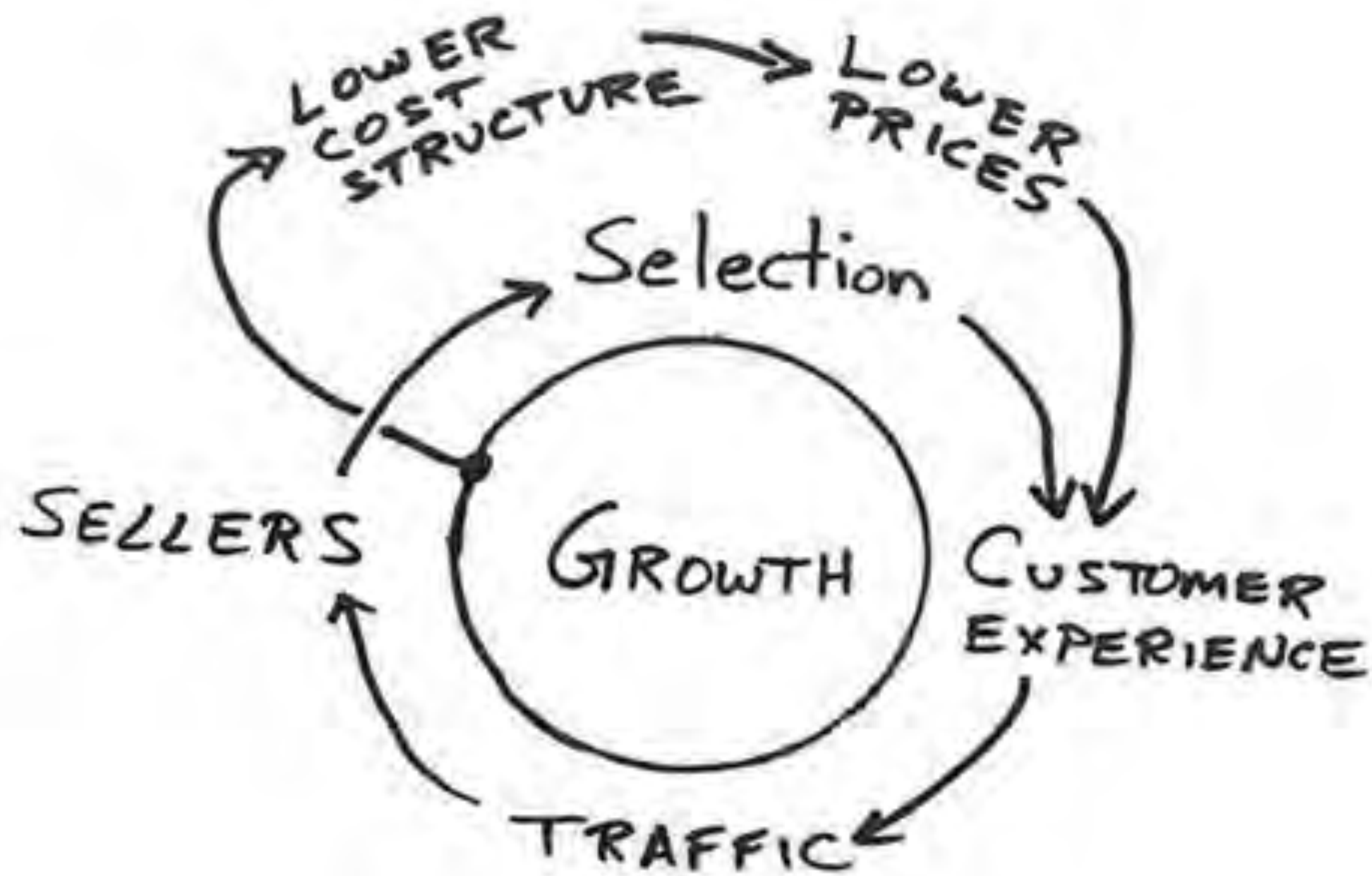
timo.rastas@fi.ibm.com

ML/AI Case Studies driving digitalisation



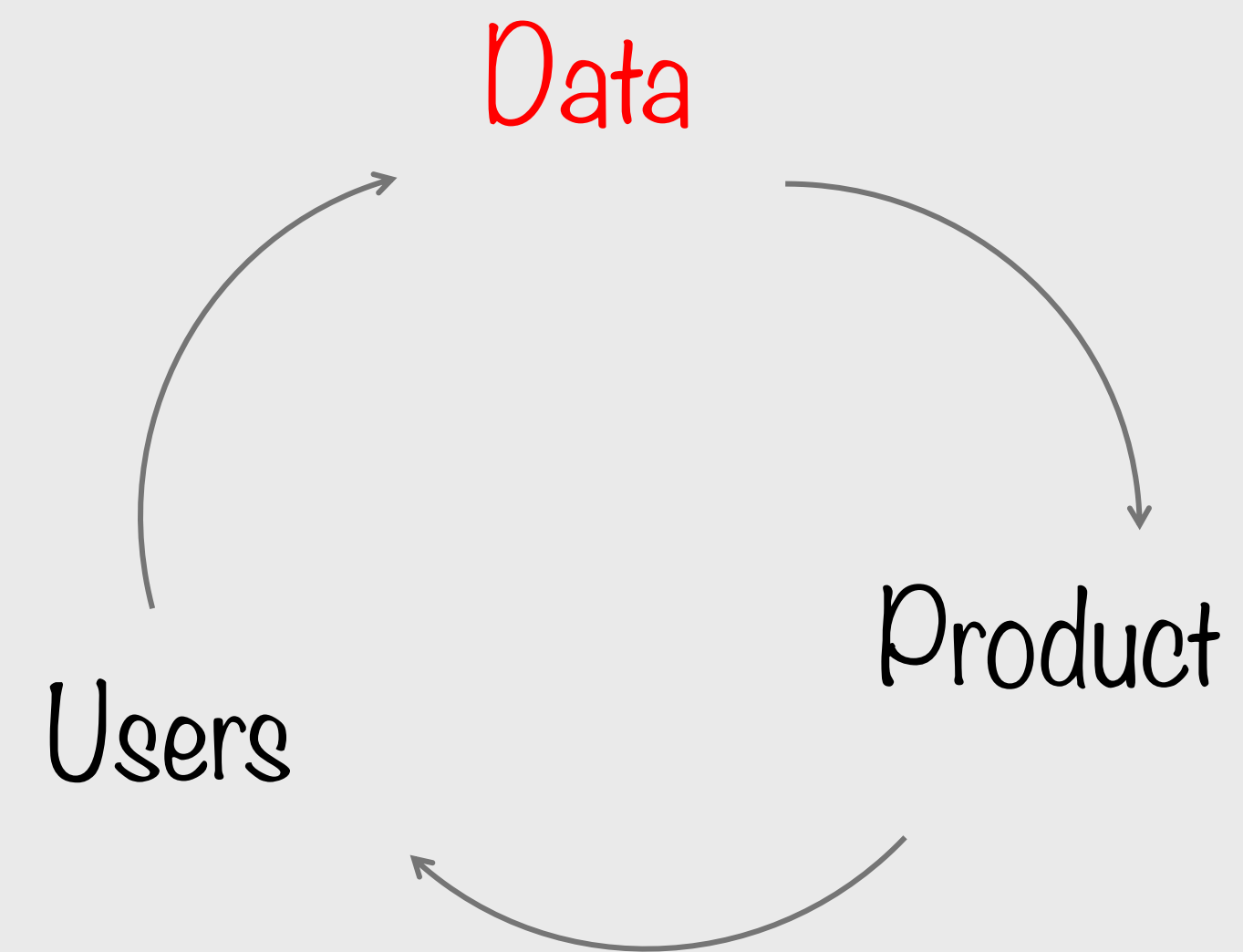
"Amazon Business Model"

Jeff Bezos 2001



"AI Business Model"

Andrew Ng 2017



Individual Customer Experiences...for all

*“In order to be irreplaceable one must
always be different”*
- Coco Chanel

Sandvik provides enhanced mine analytics and operations automation



Data: Detailed mine and individual equipment specific measurements, Equipment maintenance history

Product: OptiMine mine operations and predictive maintenance planning and optimisation

Users: Mining operators

Value: More tons, Safety, Automated 24/7 operations without shift breaks, radically lower cost per ton

<https://youtu.be/mW0mL0QaMBQ>

Medtronic transforms individual diabetes care

Data: Detailed information of individual glucose level, corpus of food, collect contextual detail about meals

Product: Sugar.IQ advisor app features real-time, continuous glucose monitoring (CGM) to predict hypoglycemia 2 to 3 hours in advance, with an accuracy of 85-89%

Users: potential 415 million adults with diabetes in the world – a number that could grow to 642 million by 2040

Value: More effective patient participation in care



<https://youtu.be/Cj3ksIs10AQ>

Medtronic

Woodside Energy leverages AI to make relevant information available just by asking



Data: 80,000 sensors, >1 million documents, and 30 years of lessons learned from employees

Product: Woodside operators and engineers can ask questions in natural language to maintain situational awareness and advice on complex equipment and processes

Value: Reduces time spent searching for expert knowledge by 75%

<https://youtu.be/GFZ2IaTVkY8>
<https://youtu.be/yEdpSyk4jLE>

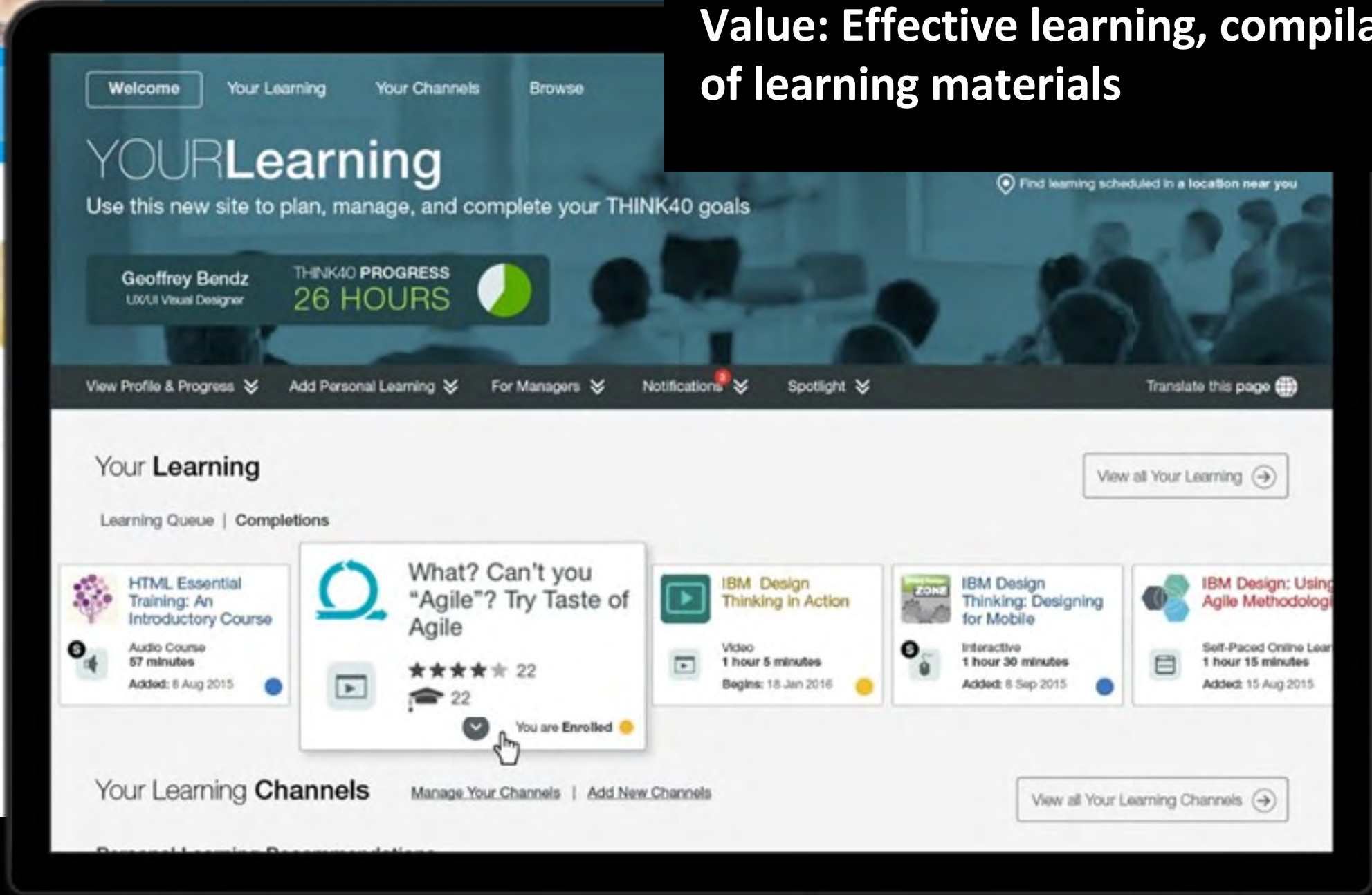
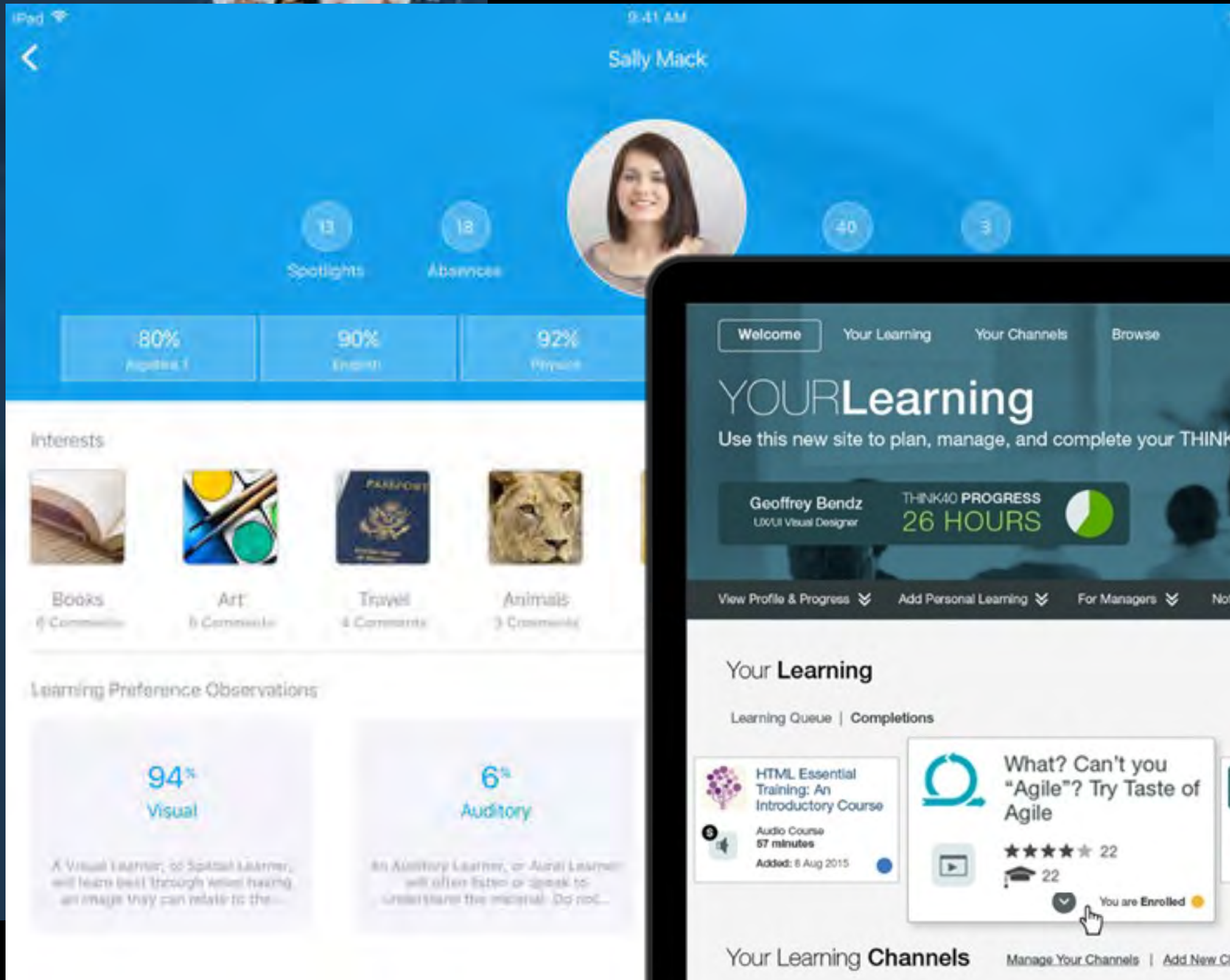
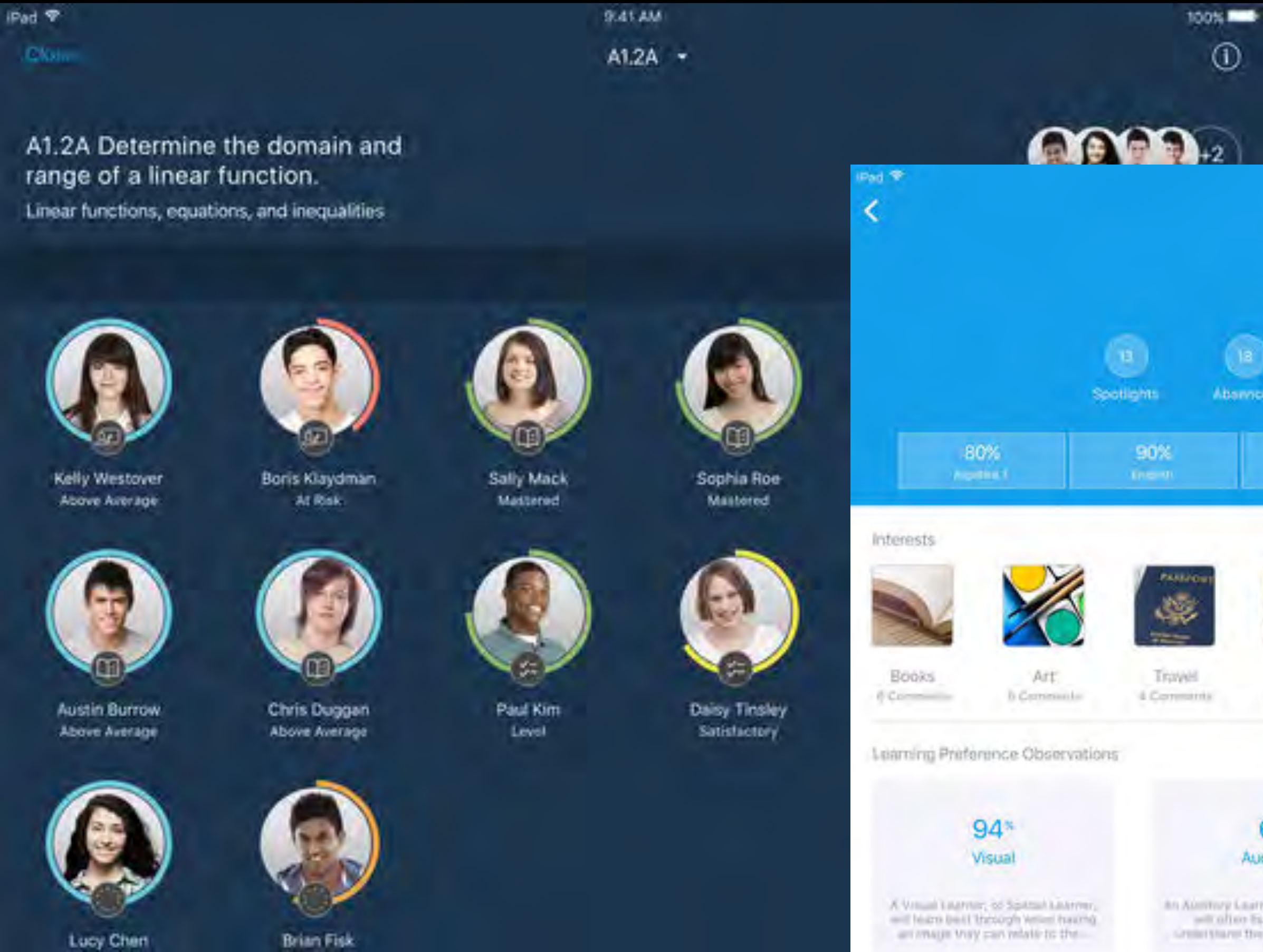
Individual learning experiences for students and employees

Data: Employee/Student learning targets and history, Learning style preferences, Diverse training materials

Product: Individual learning program generation, learning offering generation

Users: Maintenance operations, Sales, Employees, Schools, ...

Value: Effective learning, compilation of learning materials



Ecosystem Data Driven Innovation

"Things don't have to change the world to be important"
Steve Jobs

FRIDAY insurance leverages BMW CarData to create a Pay as you go insurance offering

Data: Detailed sensor information about comparative driving behavior and car use from BMW CarData combined with insurance statistics

Product: Pay as you go insurance

Users: BMW drivers

Value: Insurance for a fair and very competitive cost



Das kann nur FRIDAY Innovation zum Abfahren

- ✓ Top Kfz-Schutz zum fairen Preis
- ✓ Digitale, kilometergenaue Abrechnung
- ✓ Vollautomatisch dank BMW CarData

[Angebot berechnen](#)

[Mehr erfahren](#)

FRIDAY
in Kooperation mit



Virgin Holidays listens to consumers (15M posts) and 5000 rum recipes to create a new emotional rum for their brand

Data: Social media posts from travellers, Rum recipes, Emotion and flavor pairings

Product: Rum to keep memory of Caribbean vacation alive

Users: Virgin Holidays travelers to the Caribbean

Value: Brand strength, repeat sales



EMOTION

HAPPY
EXCITED
CURIOUS
ADVENTUROUS
RELAXED

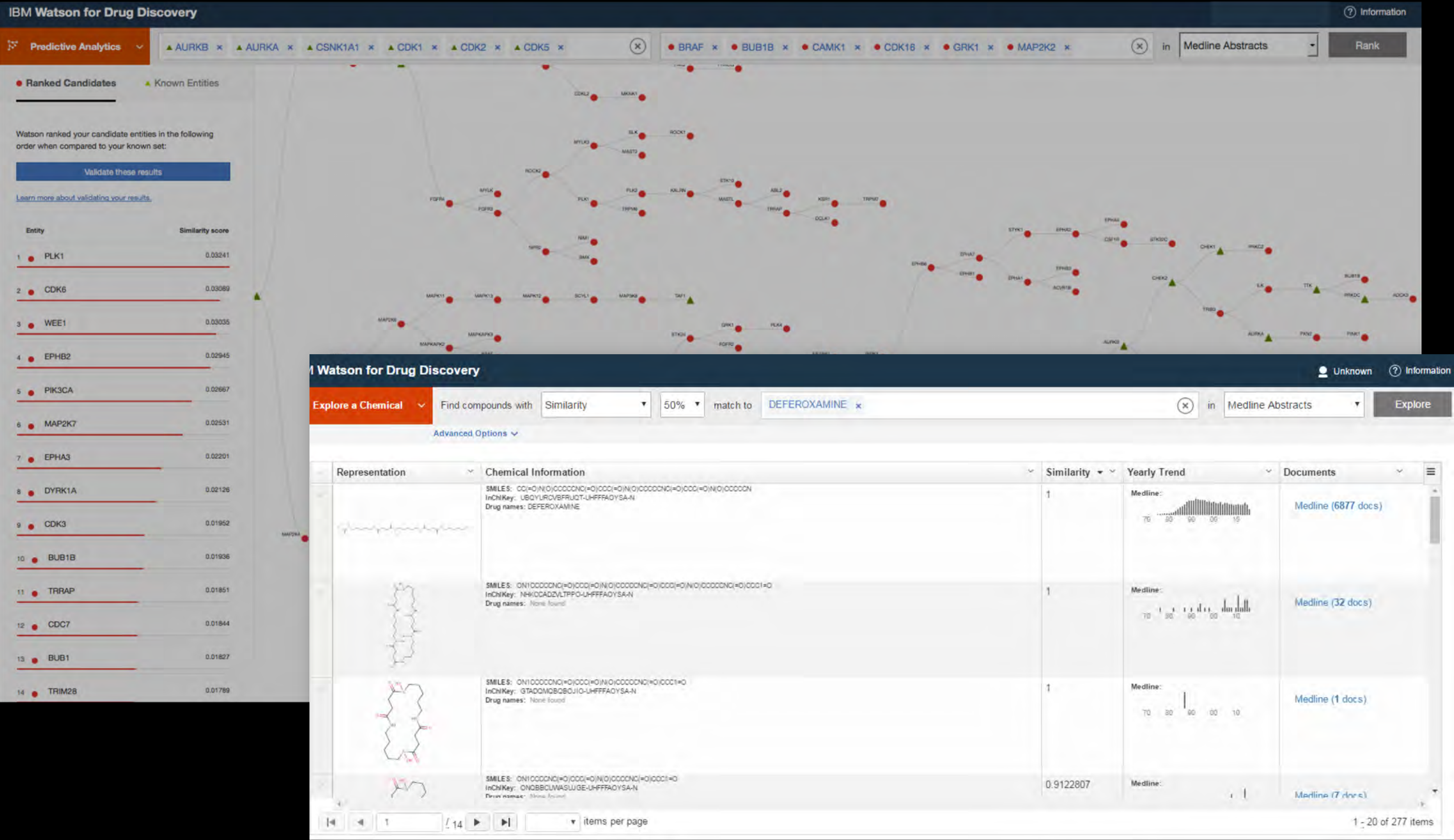
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FLAVOUR

VANILLA
SUGARCANE
CINNAMON
ALLSPICE
COCONUT

<https://youtu.be/rGrXiQRJ0LA>

Accelerating the Pace of Drug Discovery through interactions between diseases, genes and chemical compounds



• Using AI to research **Immuno-oncology**



• Using AI to develop **Diabetes treatments**



• Using AI to identify new **diseases for existing drugs**

Data: Scientific articles, Patents, Medical literature, Clinical Trials, Drugs, Genes, Lab reports, Toxicologies, ...

Product: New effective drugs or new uses for existing drugs

Users: Consumers

Value: Faster innovation and time-to-market with lower costs and risks

<https://youtu.be/ohkOnaTzSlc?t=525>

Automated and Assisted Operations

"Action is the foundational key to all success"
- Pablo Picasso

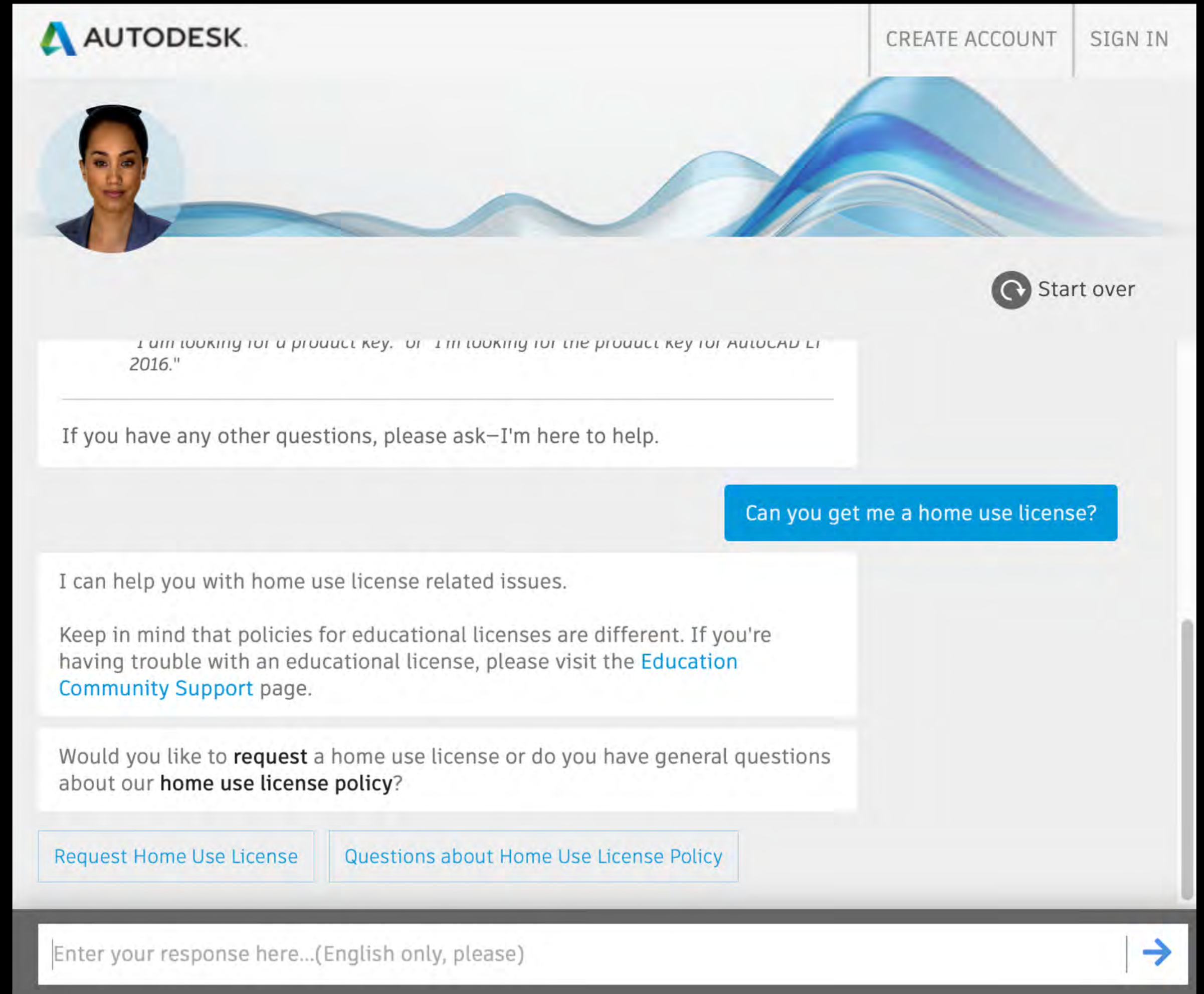
Autodesk (and Kela, OP, Vodafone...) automates contact center

- Supports 30,000+ conversations per month
- Recognizes 40 distinct use cases to quickly resolve easy requests freeing agents to focus on customers with complex issues
- Cuts resolution from 38 hours to 5.4 minutes for most inquiries
- Cuts cost per case from \$15-\$200 to \$1

<https://youtu.be/d402EY-AZ-w>

<https://youtu.be/mKZ8401666g>

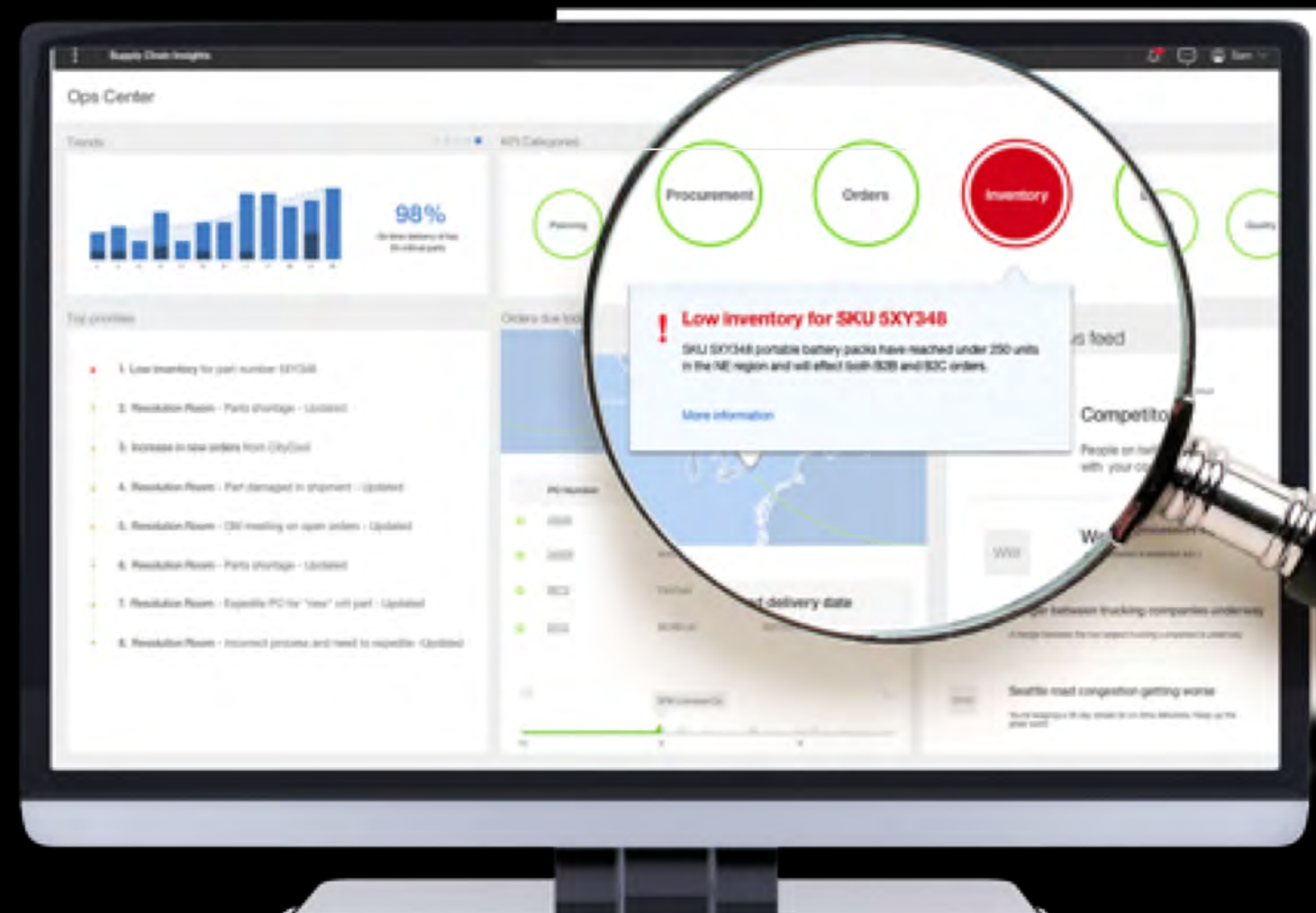
<http://www.chattirobotti.kela.fi>



The screenshot displays the Autodesk chatbot interface. At the top left is the Autodesk logo, and at the top right are links for "CREATE ACCOUNT" and "SIGN IN". A profile picture of a woman is shown on the left. The chat history shows a user message: "I am looking for a product key. or I'm looking for the product key for AutoCAD LT 2016." followed by a bot response: "If you have any other questions, please ask—I'm here to help." A blue button labeled "Can you get me a home use license?" is visible. Below it, the bot responds: "I can help you with home use license related issues. Keep in mind that policies for educational licenses are different. If you're having trouble with an educational license, please visit the [Education Community Support](#) page." Another bot message asks: "Would you like to request a home use license or do you have general questions about our home use license policy?" Two buttons are provided: "Request Home Use License" and "Questions about Home Use License Policy". At the bottom, there is a text input field with the placeholder "Enter your response here...(English only, please)" and a blue arrow button to the right.

Lenovo uses virtual Supply Chain assistants to monitor and assist in solving issues in the end-to-end supply chain

Operations Center



- Predictive alerts cut through data overload
- Instantly assess financial impact of impending risks and disruptions
- Visibility across internal and external events affecting the supply chain lifecycle

© 2018 IBM Corporation

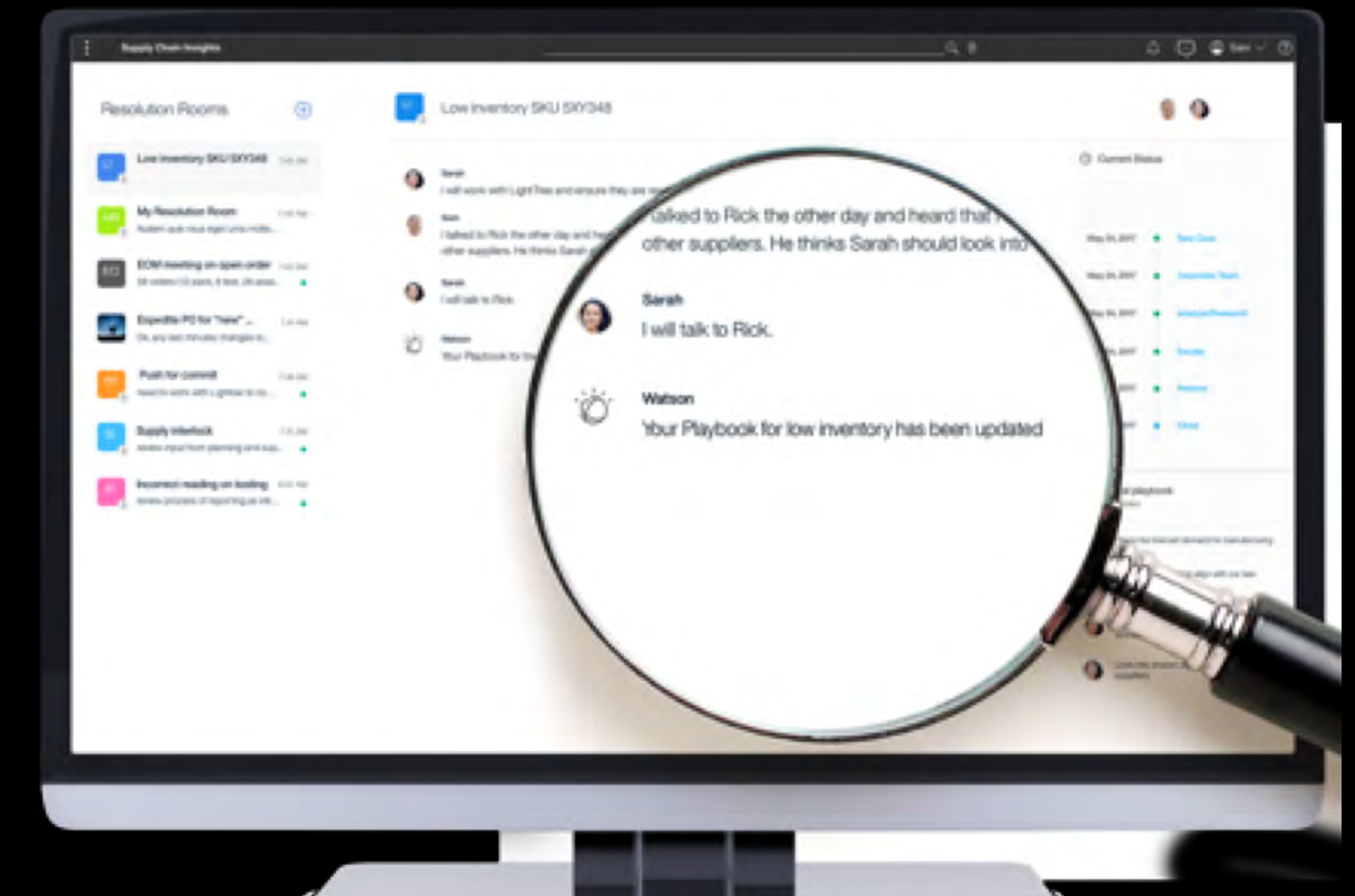
Resolution Rooms



- Online collaboration aided by cognitive insights to resolve disruptions and mitigate risks

Ask Watson AI to recommend experts, source key information and access knowledge from prior event resolution

Digital Playbooks

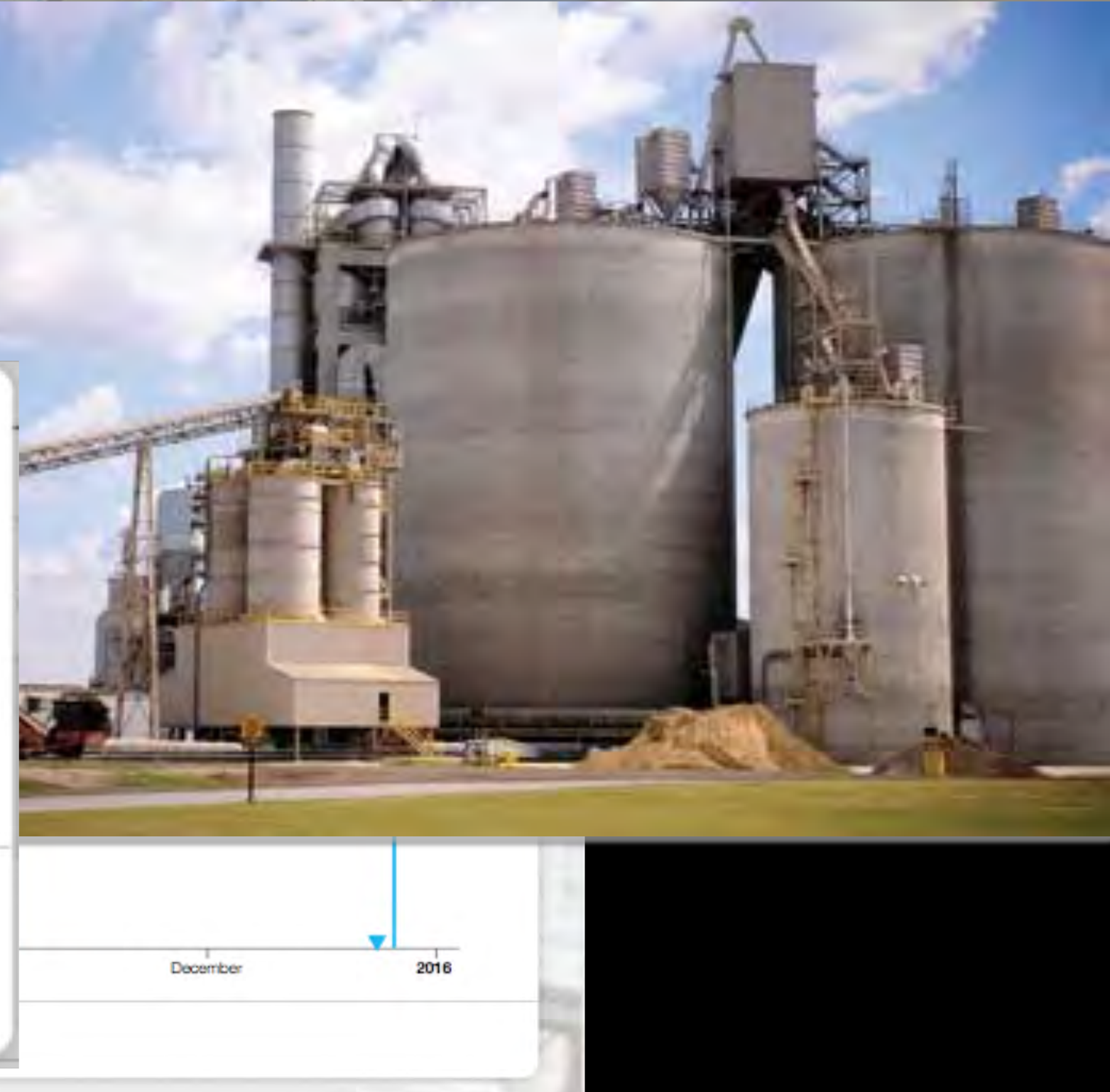


- Remembers actions and builds a body of knowledge by learning over time about how issues are addressed

Enables greater speed and accuracy in responding to future events

<https://youtu.be/YMMf345dmPI>

Optimal plant operations and digital twins





Airbus launches AI into space on ISS

Project CIMON



Project *CIMON* (**C**rew **I**nteractive **M**obile **C**ompanion) is a mobile and autonomous assistance system helping astronauts aboard the ISS. The first form of artificial intelligence (AI) aboard the ISS will be tested by ESA astronaut Alexander Gerst during the Horizons mission. Airbus, in cooperation with IBM, developed project CIMON for the DLR Space Administration.

Benefits for astronauts

- Minimise Stress Level of Crew
- Help Crew to perform tasks more efficiently
- Increase Spacecraft Safety
- Visualise Human Spaceflight to stakeholders and public

Man-machine interaction

The assistant for complex tasks can:



- Diameter**
32 cm
- Weight**
5 kg
- Battery runtime**
2 h

High tech elements

- 3D printed structure
- Ready for augmented reality
- Absolute navigation
- Artificial intelligence
- Face detection and recognition
- Battery powered propulsion system

Insights

1. Start small - then combine to scale up

- *Classify images, MRO items or indirect purchases, inbound mails, harmonize ERP items*
- *Predict sales, customer purchases, device failures*
- *Build an internal HR/Finance/... chatbot*

2. Begin treating and versioning Data as products

- *Plan and acquire external data as needed*

3. Look for sufficient business potential (customers, reduced effort,...)

4. Focus on the “Job to be Done (JTBD)” not on individual tasks or tech

5. Exploit synergies with RPA, Blockchain, IoT, OCR, ... mobile, AR ...

Some links for further discovery

AI Application samples: <https://developer.ibm.com/code/technologies/artificial-intelligence/>

Ready to use open source AI models: <https://developer.ibm.com/code/exchanges/models/>

Tutorials: <https://medium.com/machine-learning-in-practice/over-200-of-the-best-machine-learning-nlp-and-python-tutorials-2018-edition-dd8cf53cb7dc>

Competitions: <https://www.kaggle.com/competitions>

Ethics: <https://www.ibm.com/watson/ai-ethics/>

Tooling for managing bias and ethics in your projects: <https://youtu.be/udSKUkGANHA>