Accelerating digital transformation at Stora Enso

PLM Road Map™ EMEA & PDT Europe 2022

Digital Transformation and PLM – a call for PLM professionals to re-define and re-position the benefits and value of PLM

CIMdata® 18 & 19 October -eurostep-

Kaisa Suutari

THE RENEWABLE MATERIALS COMPANY

Kaisa Suutari, Director of Innovation Services in Stora Enso

A company in transformation

THE RENEWABLE MATERIALS COMPANY

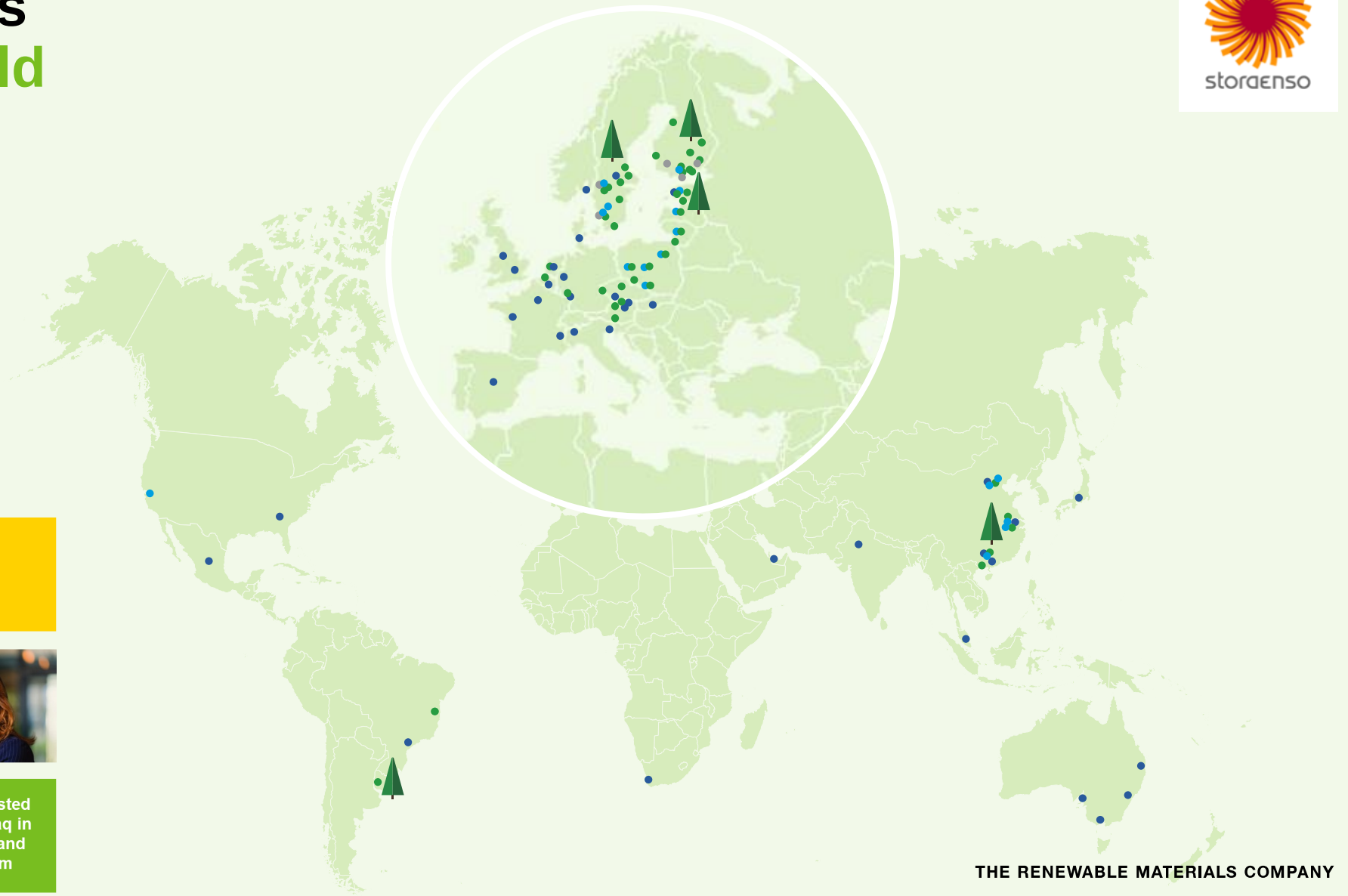
Everything that's made from fossil-based materials today can be made from a tree tomorrow.

storaenso

THE RENEWABLE MATERIALS COMPANY

Serving markets
around the world

- Production unit
- Sales office
- Design Studio
- Innovation Centre
- Forests and plantations



Sales
EUR 10.2 billion

President and CEO
Annica Bresky

Employees
22 000

Shares listed on Nasdaq in Helsinki and Stockholm

THE RENEWABLE MATERIALS COMPANY

Shaping our business for
higher growth and value

Biomaterials

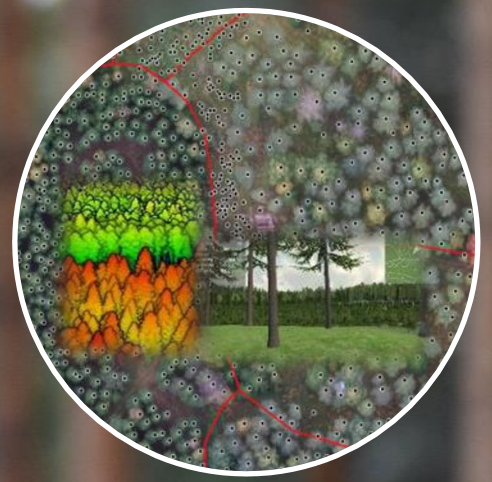
Digitalisation will change forestry radically

Digital services for forest owners

"Big Forest Data" and precision forestry

Maximising raw material value

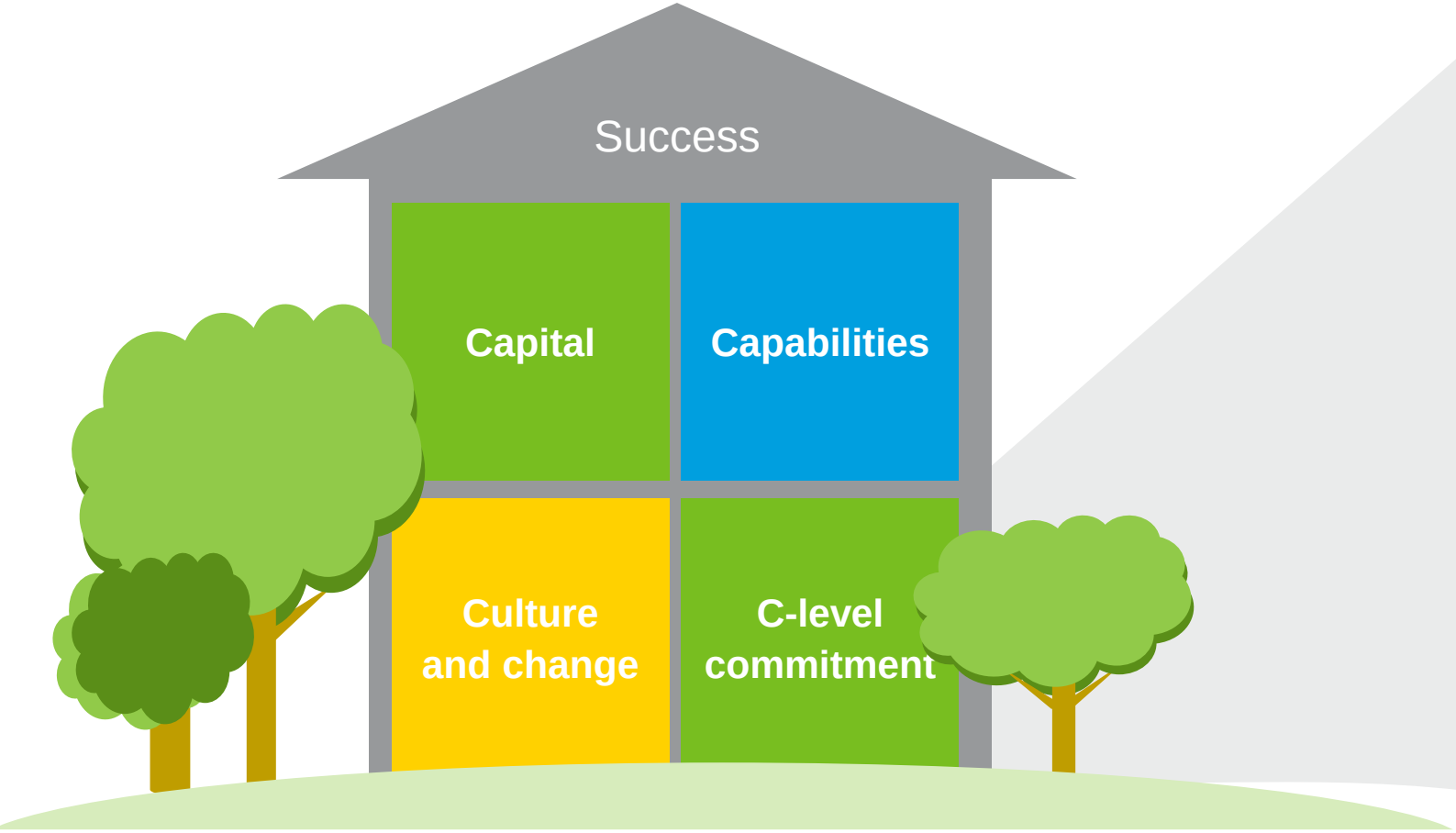
Optimised supply chain



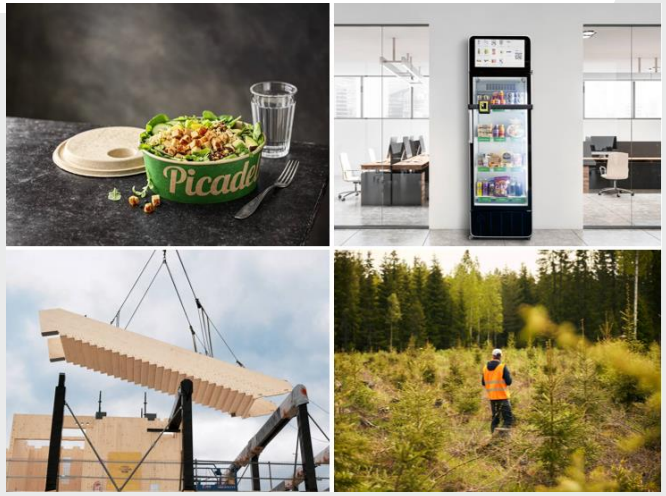
THE RENEWABLE MATERIALS COMPANY

Digitalisation is an enabler for our transformation

Stora Enso’s key pillars to succeed with digital transformation



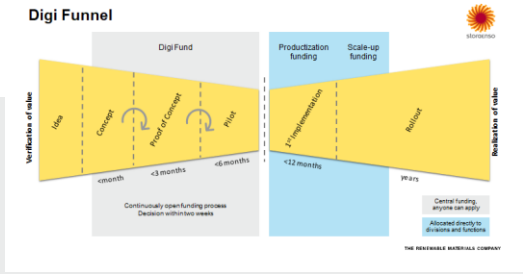
Always starting from the business need



Business challenge/opportunity

Business has a challenge that needs to be solved or wants to capture a new opportunity

Clear idea how new technology could potentially solve the need



Experiment supported by Digi Fund

→ **Proof of Concepts Pilots**

Many ways to solve, not yet clear, which one is the best

Open innovation with startups via Combient Foundry

→ **Experimentation**

What digital experimentation means

Analyse - Do

Do - Analyse

What digital experimentation means

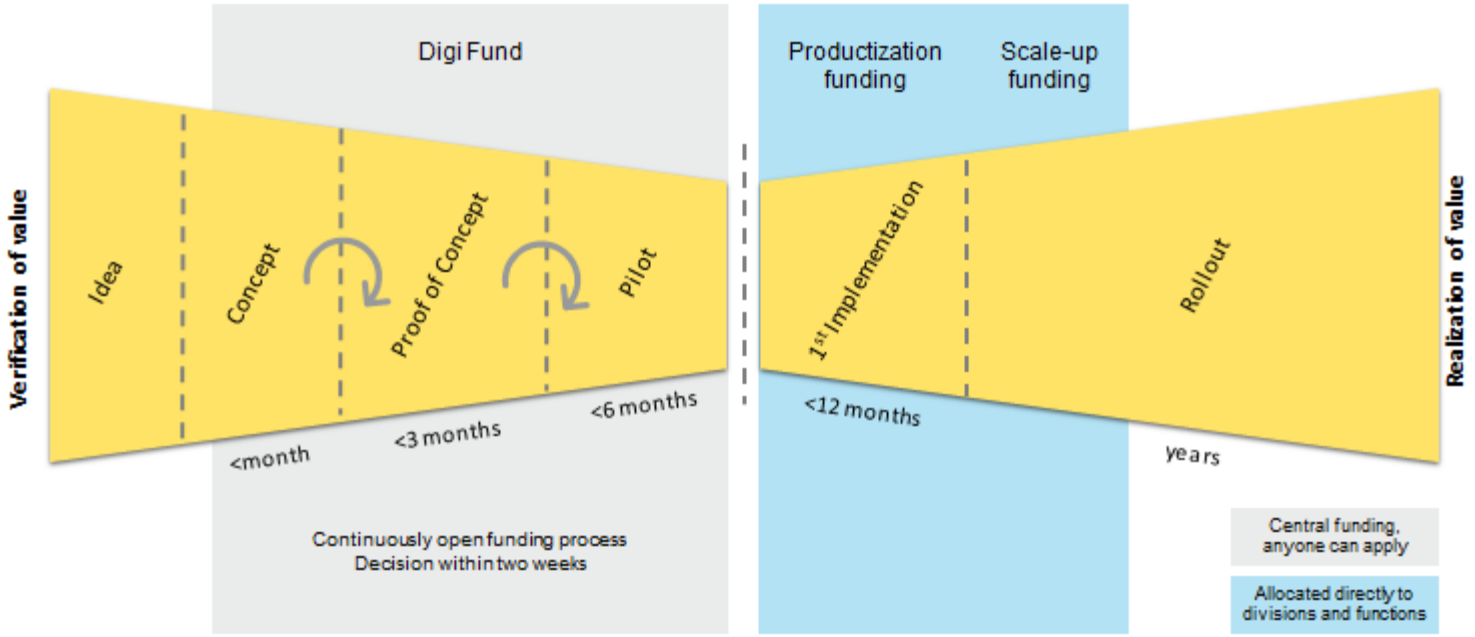
~~Analyse - Do~~

Do - Analyse

Experimenting with new technologies

Digi Fund supports two types of experimentation projects:

- **Proof of Concepts** (PoC): validating the hypothesis with clear small-scale experiment
- **Pilots**: experimenting with the idea while building the first small-scale working version of the solution



Cross-organizational and fast decision-making is a key

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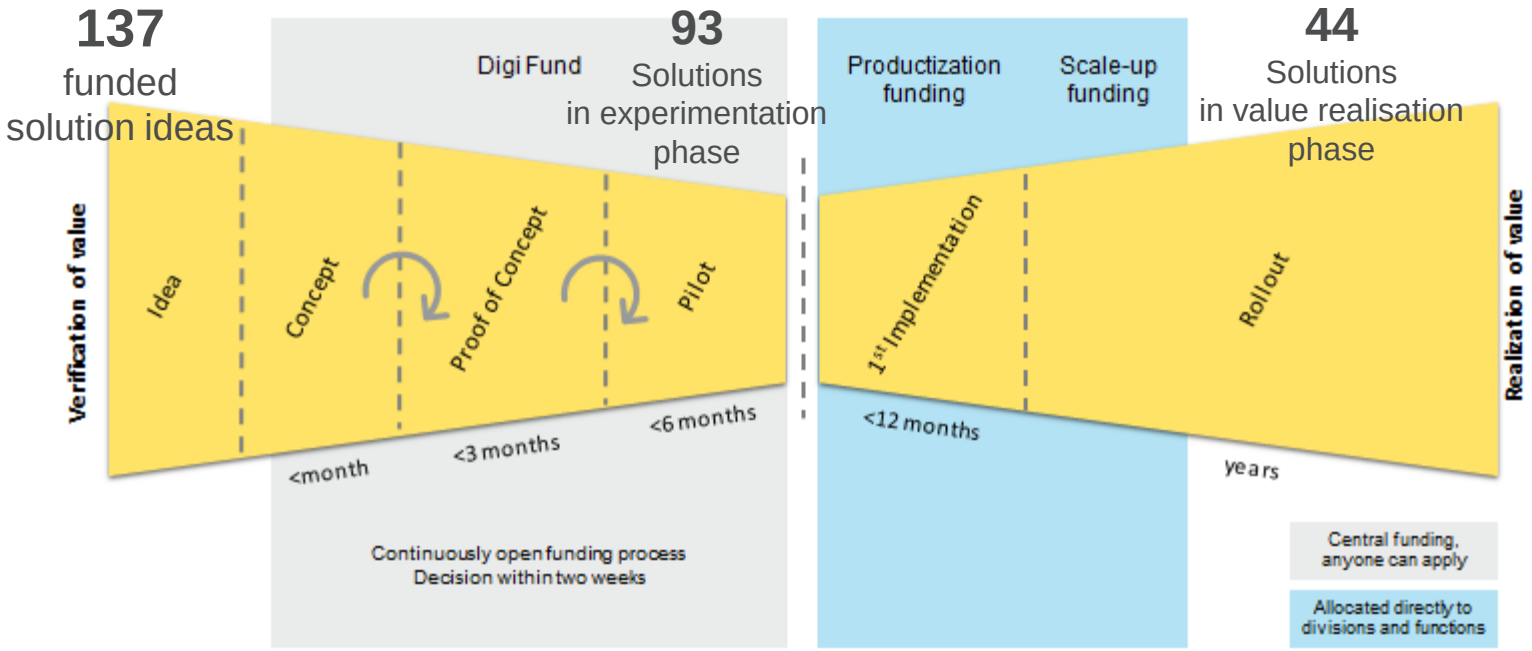


Cross-organizational and fast decision-making is a key

Iterative development enables continuous value creation

In the end, it's all about **people**

Value data-drivency

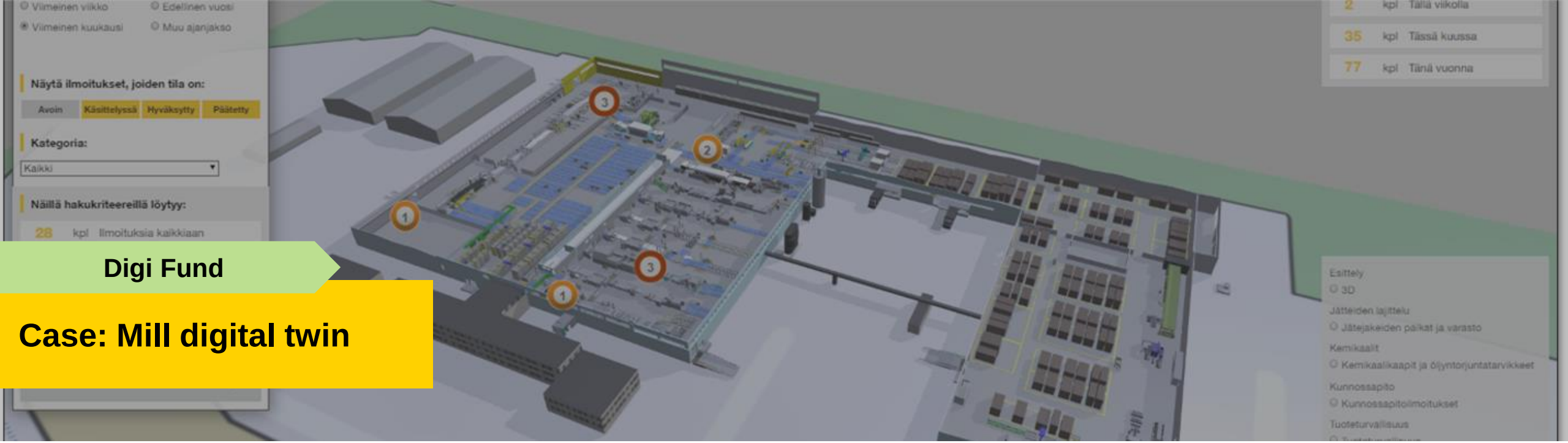
„**You get what you measure!**“

Webinar: “**It's time to celebrate failure!**”

Through fast failures...

… to continuous value creation!

Starting with **MVP** and validating the assumptions



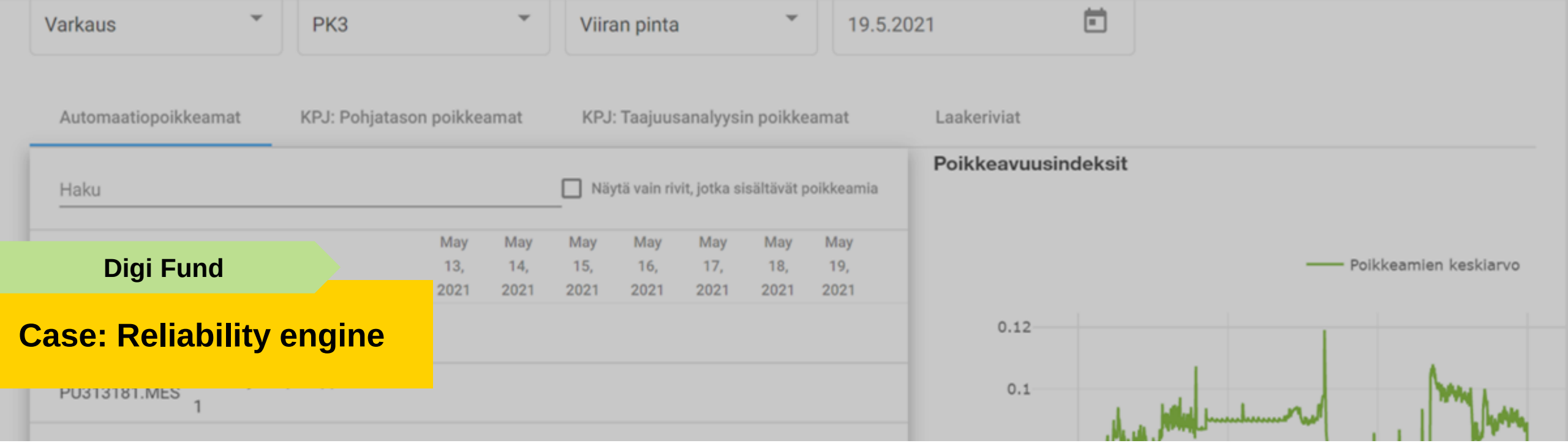
Digi Fund

Case: Mill digital twin

The Mill Digital Twin is a 3D model of the mill, where different type of information can be presented in their actual locations. The Digital Twins are running on the 3D Visualization platform solution created for Stora Enso. The Digital Twin models are built by using existing CAD models or 360 cameras. The value is generated from the applications that utilize the platform, such as the Safety Heat Map and Production KPIs. These applications give a comprehensive overviews of relevant data based on their location.

Benefits

- Improved safety
- Possible to easily prioritize where to focus on
- Overview of the mill and its performance



Digi Fund

Case: Reliability engine

The Reliability Engine is a solution that helps to avoid unplanned shutdowns and thus increases uptime. The solution uses different source data, and based on advanced analytics, can detect anomalies that could lead to failures and shutdowns. The solution has both a predictive and prescriptive parts and it supports the daily work of both production and maintenance at mills. Reporting and visualization is done via a web-based user interface and with the help of central support, mill experts can use the solution individually.

Benefits

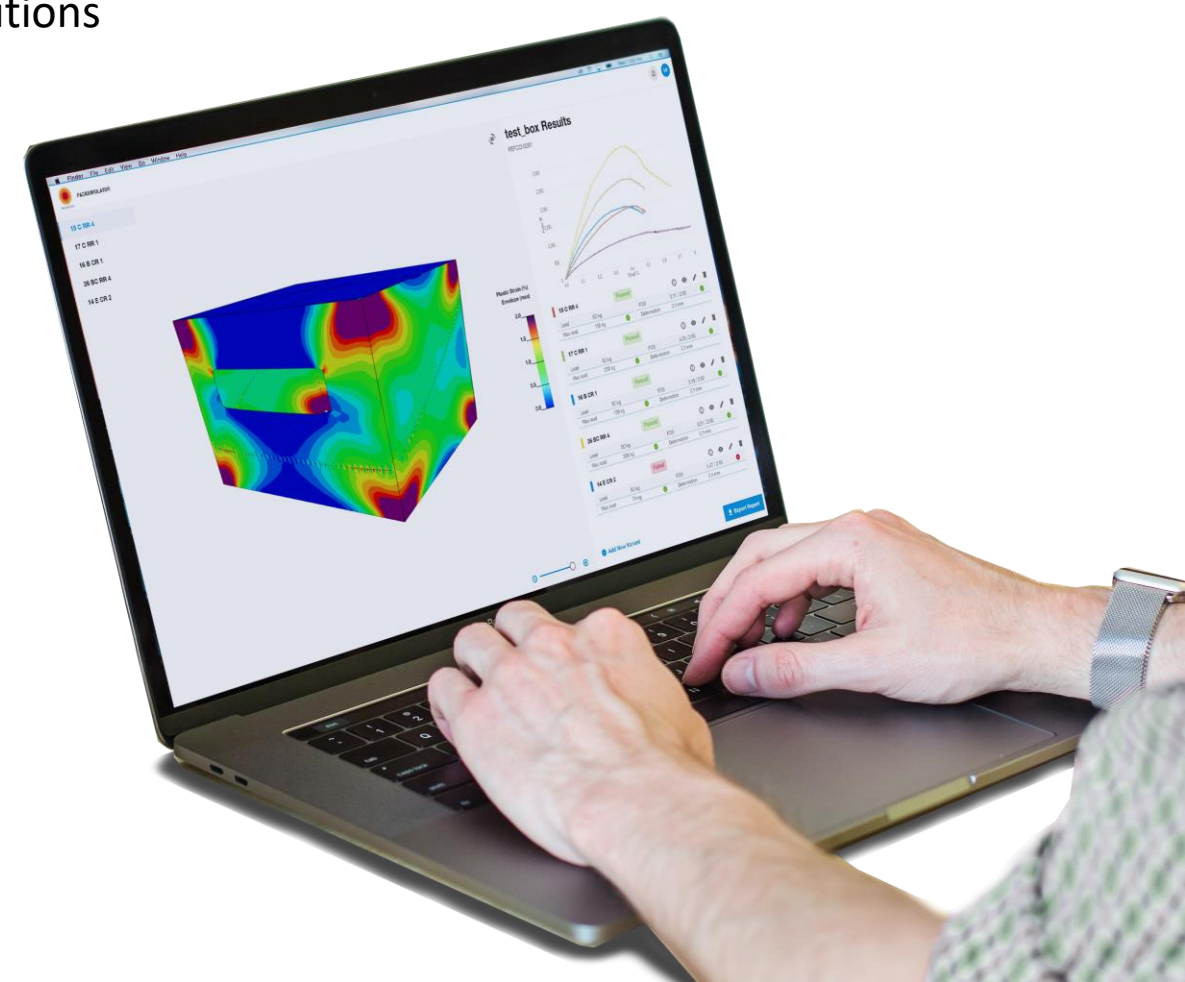
- Increased uptime due to smaller number of unplanned shutdowns caused by technical failures
- Better material efficiency, resource planning and maintenance

Digi Fund

1. Get the 1st proof before physical lab test/field test
2. Improve strength properties without switching to more expensive materials
3. Make smarter and optimal material choices and test virtual corrugated recipes

PackSimulator

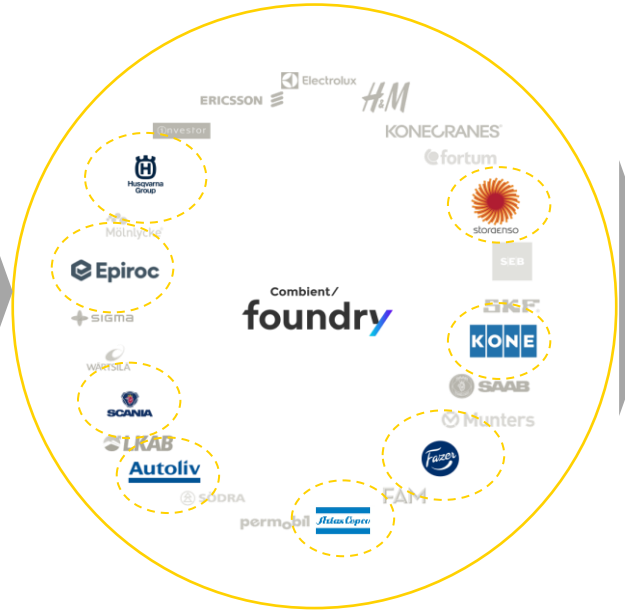
Virtual laboratory for testing corrugated solutions



We expose our business opportunities to global startup scene

Business challenges and opportunities

Real business challenge
Real customer for the start-up



Start-up ecosystem

Technology
Materials
Services
Business

1698
Startups screened

49
Startups engaged

8
Startups services implemented

WIISTE
cove.tool
Snap Support

Running open innovation programs continuously

Both material and digital innovation in the scope

C3/2021
Wood Products
Packaging Materials

Automated panel manufacturing optimization
Sustainable caps and closures

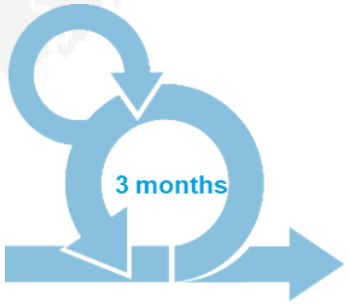
C1/2022
Packaging Solutions

Sustainable reusable food packaging

C2/2022
Packaging Materials

Compostable Barrier Solutions.

C3/2022
Forest



Forest biodiversity monitoring
Rethinking forest management planning

Combient Foundry

Digi Fund

Case: Pulp Quality Advisor

Predicts pulp quality for the next 12 hours and proposes process parameter changes to maintain the right pulp quality. With simulation operators can test parameter changes and their impact on quality.

- A cloud-based AI application.
- Calculates and suggests optimized process settings – prediction & prescription.
- Possibility to simulate process changes and see their impact before resetting parameters.
- Can be implemented in multiple pulp production lines.

Benefits

- Reducing just-in-case process parameter adjustments thanks to the simulation – stability improvement.
- Improved routines e.g. evening instead of night adjustments thanks to predictions after simulations.
- Learning to be better in pulp quality management.
- More production to target quality.

Starting from the business need is crucial…
… but it's not enough

AI platform	IIoT platform	Computer Vision platform	SEEDS – Stora Enso Expanded Design System
• Centralized and structured platform approach for managing AI-based solutions	• Standardized way to Smart Operations data in cloud	• An intuitive platform service to scale computer vision models across Stora Enso effectively	• More than just the digital screen designs: An end-to-very-end design system to discover business problems and deliver digital solutions efficiently and consistently.

Working centrally and proactively setting up the enablers

Digi Fund

Case: Computer Vision Platform

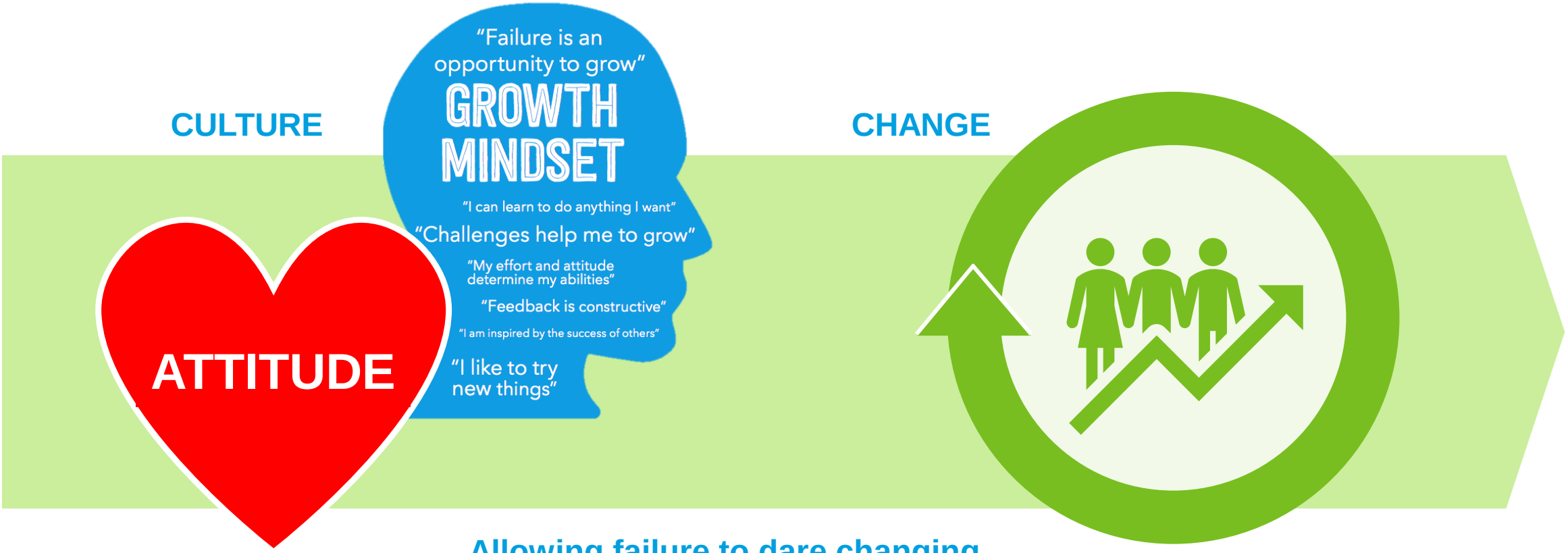
- A company-wide AI powered computer vision “Appstore”
  - Easy-to-use interface for automatized training of computer vision models for new applications
  - Faster and cost-efficient development and scale-up
- Centralized maintenance and development of computer vision models
- Standardized approach for requesting developments via Teams

- **Sharing** existing machine vision models in a library
- **Doing** quick Proof of Concepts (PoCs) by uploading own data to test existing models
  - **Finetuning** existing models towards your own needs
    - Train new models using your own data
  - **Scaling-out/Deploying** existing solutions to your own environment

Benefits

- Faster and cost-effective development and scale-up
- Roadmap towards more autonomous processes
- Standardized way of applying AI to mill camera systems

Digitalisation is not a software or a technology or a solution… it is equally much about culture and change



Allowing failure to dare changing

More at Storaenso.com