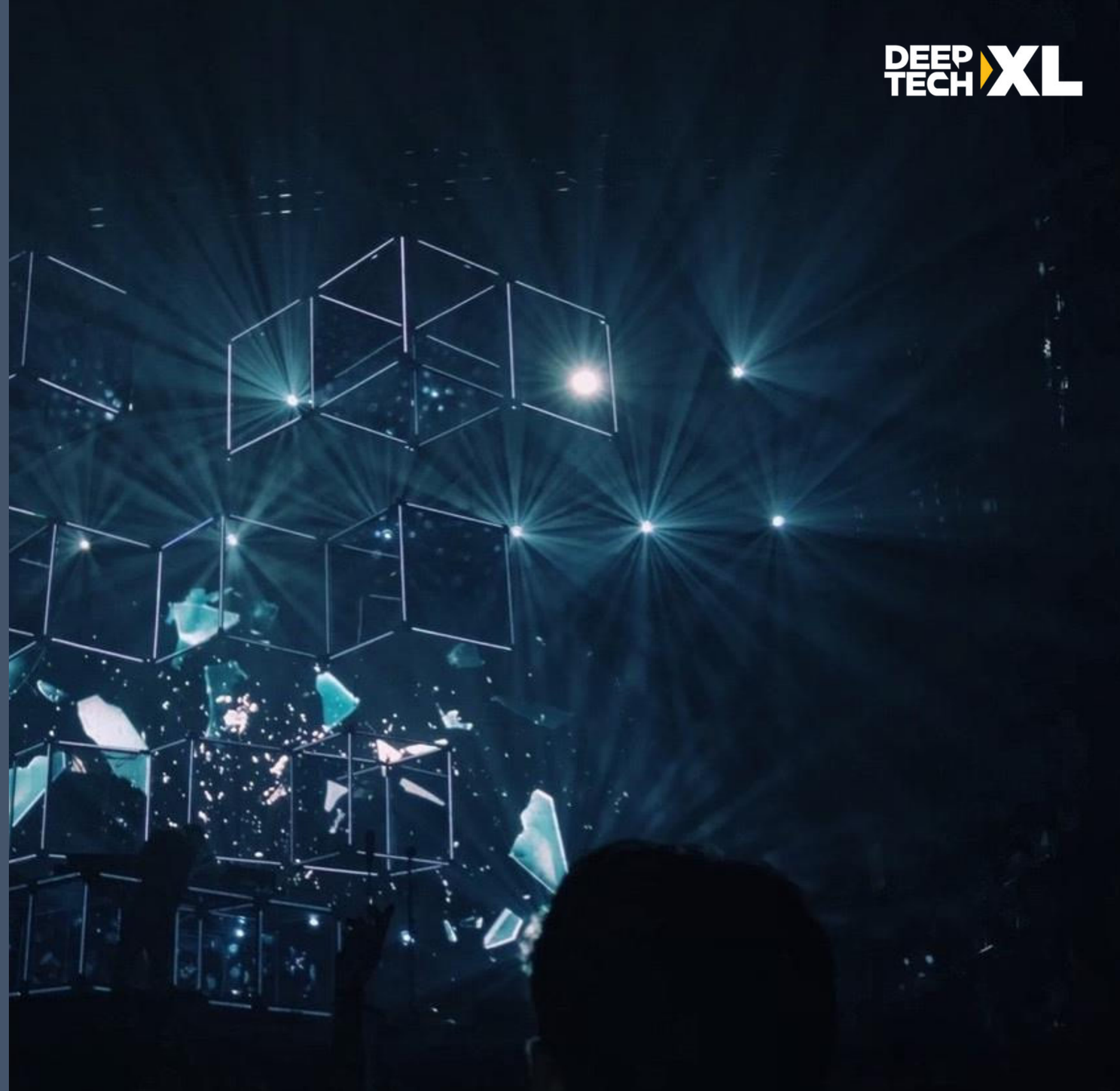
IMPACT REPORT 2024



"In times when uncertainty increases rapidly, we stay true to our beliefs. As such, we continue to invest in purpose-driven companies that truly want to make the world a better place."

TESKA VAN VUREN

MANAGING PARTNER



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About DeepTechXL



2024 HIGHLIGHTS

2024 was the year that we had our Final Close, and we could fully focus on building our portfolio of impactful ventures. In 2024, we assessed 150 promising deep-tech ventures and made **a new investment: MicroAlign**.

We focused on adding value and making progress on our existing portfolio, which consists of **9 companies**. As such, the **personnel growth** was **20%** on average in 2024. These are companies with bold ambitions to address the world's grand societal challenges. In 2024, the first companies are entering beachhead markets and are validating their expected impact.

2024 SUSTAINABILITY & IMPACT HIGHLIGHTS

2024 also marked the year that we built upon our sustainability and impact strategy. We have upgraded our way of assessing sustainability risk by, for example, incorporating the **SASB materiality finder**, and have intensified the collaboration with the **Impact Advisory Committee.** Their advice on each case is now an integral part of decision-making within our investment committee.

"In the changing dynamics around the topic of sustainability, we continue to roll out and improve our sustainability assessments and support to fund the dreams of impactful ventures."

GUUS FRERICKS
MANAGING PARTNER





DEEPTECHXL TEAM

UNIQUE DNA CAPTURED IN OUR VALUES

The team united on THE DREAM...



Teska van Vuren
Managing Partner (NL)



Stephane Mutz
Tech Officer (FR)



Toam Jaber
IM (JD)



Ronald Meersschaert
Controller (NL)



Bart Lugard
IM (NL)



Ronald Maurer
Partner (NL)



Matthieu Mutz
Tech Officer (FR)



Marlien Blaauw
Chief Compliance officer (NL)



Guus Frericks
Managing Partner (NL)



Soukaina Adnane-Murphy
IM (MR)



Wouter Folkers
Head Legal (NL)



Hessel Mittelmeijer
IM & Sustainability Officer (NL)



Joos Kat
Intern (NL)



Elifsu Erdem
Working Student (TK)

THE DREAM

TEAMWORK — We believe that **Teamwork**, makes the dream work

HAPPINESS — We strive for **Happiness**, radiate positive energy, and enjoy what we do

ENTREPRENEURSHIP — We cultivate **Entrepreneurship** to make the world a better place

DIVERSITY — We actively promote **Diversity**: for we believe it truly is a crucial business asset

RESPONSIBILITY — We take full **Responsibility** for everything we do individually and as a team

EXCELLENCE — We strive for **Excellence**: we go for gold!

AUTHENTIC — We dare to be **Authentic** leaders and we feel safe to show our true colors

MOVEMENT — We create and inspire a **Movement**; because we need others to realize our dream

DEEP TECH XL

DEEPTECHXL FUND IN A NUTSHELL 2024

€110M
Assets Under Management

>140
Ventures Assessed

38%
Female Employees

5
Academic Engagements

13
Team Members

9
Portfolio Companies

Signatory of:

PRI Principles for Responsible Investment

Member of:

ESG_VC

DEEPTECHXL: MISSION, VISION, STRATEGY, VALUES AND CULTURE

Our vision

We support entrepreneurial ventures that develop and commercialize disruptive deep-tech innovations aim to solve the global grand challenges that societies face, we share the European Innovation Council's (EIC) vision of boosting Europe's technological sovereignty through targeted investments in breakthrough technologies.



Our mission

We provide innovative deep-tech ventures with access to capital, knowledge, and a network to help them achieve their entrepreneurial dreams while delivering superior returns on investment and creating a positive impact.

Our strategy

We invest in early stage financially lucrative and impactful projects related to key social themes:

- Health and care
- Energy transition and sustainability
- Security
- Agriculture, water, and food

DEEPTECHXL: OUR BELIEVES, VALUES AND CULTURE



We believe in THE DREAM of making a positive impact on the grand challenges society is facing.

We aim to make a real difference as a diverse fund team, being very well connected to the Dutch deeptech industry and rooted within the Brainport ecosystem.

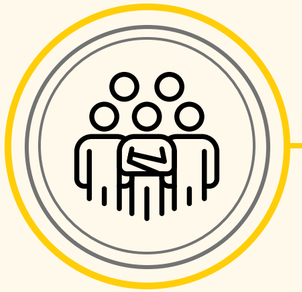
DEEPTECHXL PORTFOLIO IMPACT IN 2024



32%
Non-Dutch FTE



26%
Of workforce is female



20%
Personnel growth



33%
Of our ventures have
Female Co-Founder(s)

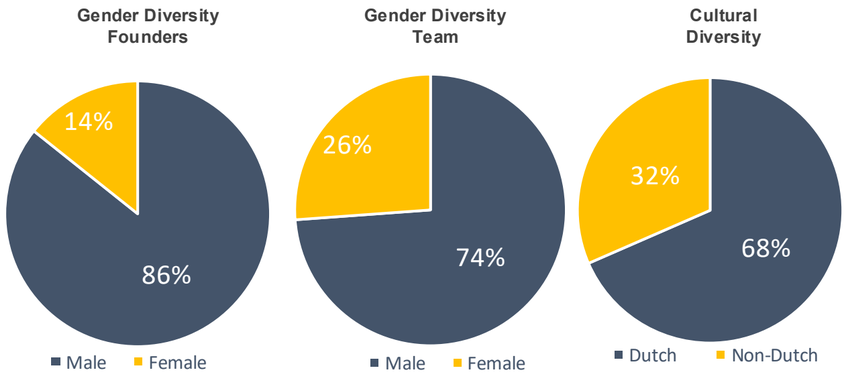
The Dutch Tech Sector is Still Dominated by Male Founders & Employees

Over the past decade, the share of venture capital (VC) investment raised by female-founded startups in Europe has doubled; however, progress has stalled since 2017, with this figure remaining around 10%. Currently, 12% of founders are female, which is slightly higher than the Dutch average of 10%. In 2024, only 10% of European VC funding was allocated to women-led startups, with the Netherlands showing a higher rate at 12.8% according to the European Women in VC report. While 87% of venture capitalists and limited partners believe that diversity improves investment outcomes, women are still underrepresented in leadership positions. Notably, 78.1% of startups are founded by all-male teams, and only 38.2% of VC firms have women in senior roles, as reported by the European Investment Fund in 2023. Furthermore, less than 24% of deep tech startups in 2022 had a female founder, and women founders continued to receive less funding than their male counterparts. These statistics underscore the ongoing gender gap and the untapped potential within Europe's startup ecosystem.

We Walk The Talk

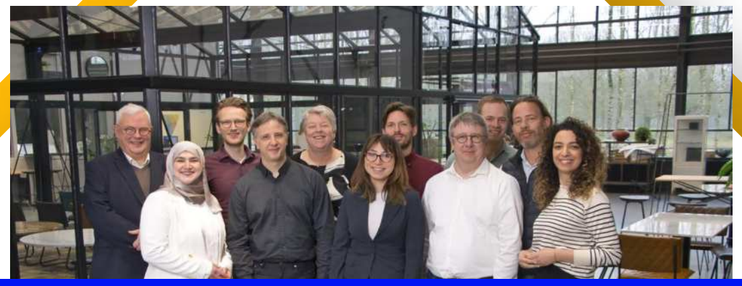
We believe that diverse and inclusive teams perform better by bringing a variety of perspectives to challenges and solutions. At DeepTechXL, we prioritize investing in companies with diverse leadership teams that include various genders, ethnicities, ages, sexual orientations, disabilities, and national origins. We are proud of our diverse team and our 'THE DREAM' culture. Among the 100 Gerard and Anton award winners, only 12% of founders are female, compared to an average of 10% in the Netherlands. In contrast, our portfolio boasts 14% female founders, demonstrating a stronger performance.

Portfolio Company Diversity Metrics:

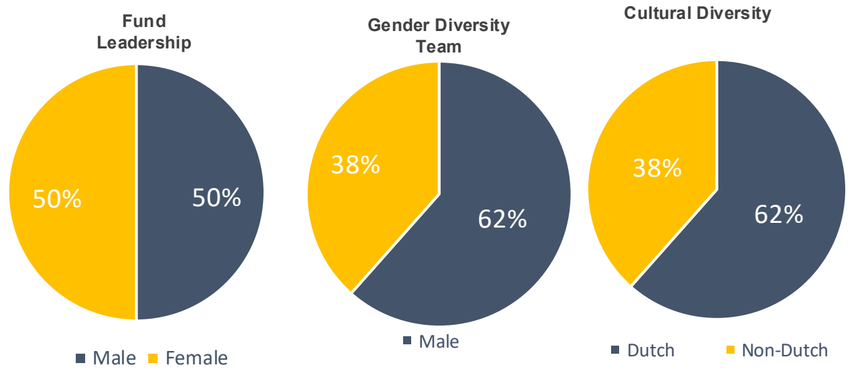


- **Gender diversity Founders**: -1%
- **Gender diversity team**: +2%
- **Cultural diversity**: +3%

Diversity and Inclusion are *Key Business Assets*



DeepTechXL Fund Team Diversity Metrics:



- **Gender diversity Fund leadership**: 0%
- **Gender diversity team**: +7%
- **Cultural diversity**: -28%

IMPACT DECISION MAKING

These are the people who help us make the most impact:

We have established a strong network of experienced professionals in venture capital, deep-tech entrepreneurship, impact investing and academia to support the impact assessment and management of our investment process.

Impact Advisory Committee:

Reviews and approves the setting of impact targets for each venture considered for investment. In addition, it provides access to its network and acts as a sounding board to the fund team.

Members of Impact Advisory Committee:



ESTHER KERSTENS
IMPACT-X
FOUNDER & CEO



BARTOUT GIEBEN
VERENIGD BEHEER
P/E & VC PORTFOLIO MANAGER



SIMON BRAAKSMA
PHILIPS
SENIOR DIRECTOR SUSTAINABILITY

2

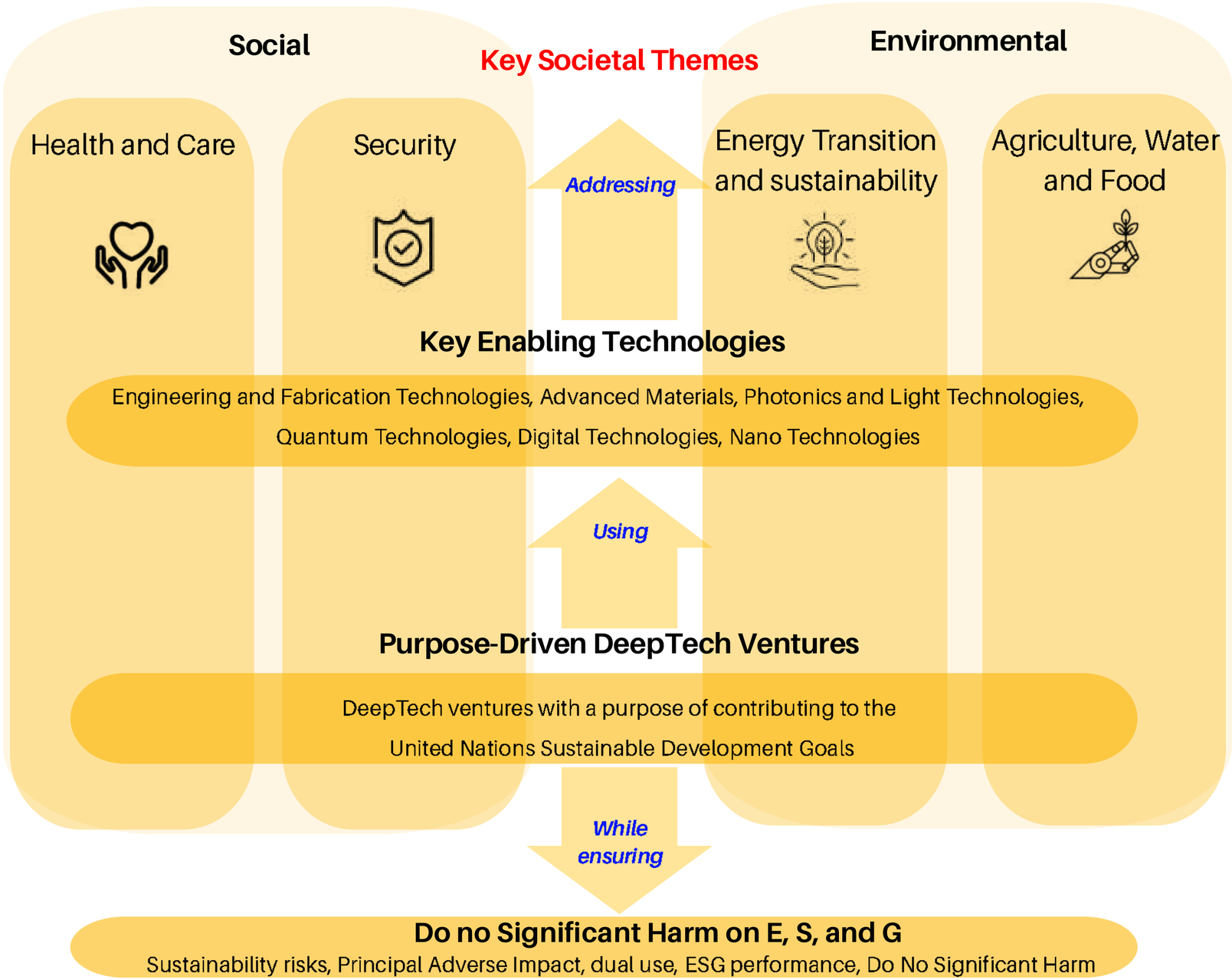
Sustainability Strategy



OUR INVESTMENT STRATEGY

We believe that deeptech innovation and entrepreneurship can have a significant impact on these key societal issues.

We believe that we have the required industry know-how and network to make a real difference. Our ability to tap into the unique knowledge base that surrounds us in the Brainport Region provides us with a sustainable competitive edge.



In each societal theme our portfolio makes impact through:



Energy transition & sustainability

We invest in companies that actively contribute to the energy transition and transition to a more sustainable supply chain.





Agriculture, Food & Water

We invest in ventures that use innovative hardware technologies to make the agri-sector more sustainable and robust.





Security

We fund companies that actively contribute to improving (cyber)security through hardware-focused offerings.





Health & Care

We fund medical technology ventures that actively contribute to better care at lower cost. We predominantly focus on med-tech ventures that use hardware technologies, such as a smart precision inhaler.



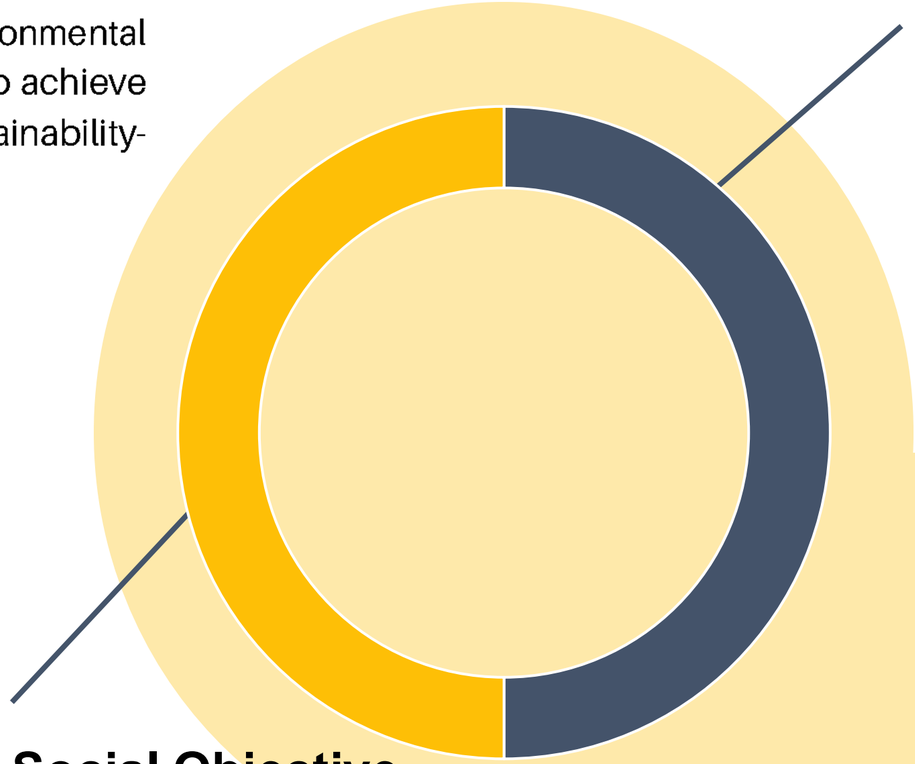
The whole portfolio has impact through:



SFDR-Related Sustainable Investment Objective

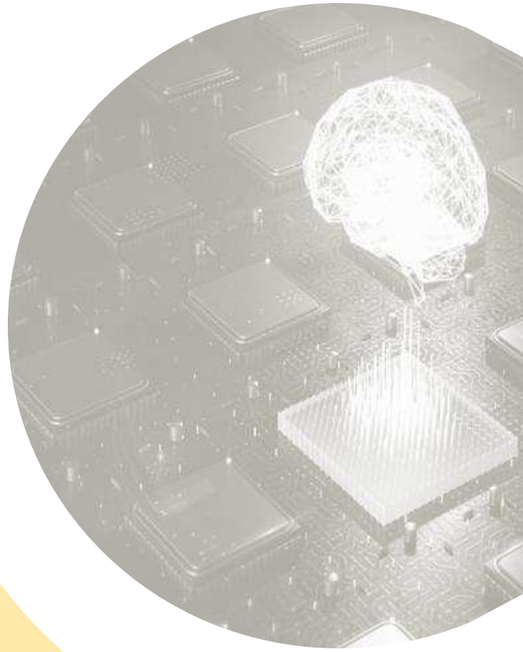
All DeepTechXL funds have a sustainable investment objective and comply with Article 9 of the Sustainable Finance Disclosure Regulation (SFDR). DeepTechXL allocates at least 30% of its sustainable investments to social initiatives, with an additional 30% dedicated to environmental causes. The fund is fully invested in sustainable investments. To achieve this, DeepTechXL has established a set of binding sustainability-focused selection criteria, which include:

- The target company adheres to the DeepTechXL exclusion criteria.
- The target company adheres to the DeepTechXL investment guidelines.
- The target company does not do significant harm and is not active in sectors that we consider inherently unsustainable.



53%(-3%) Environmental Objective

47%(+3%) Social Objective



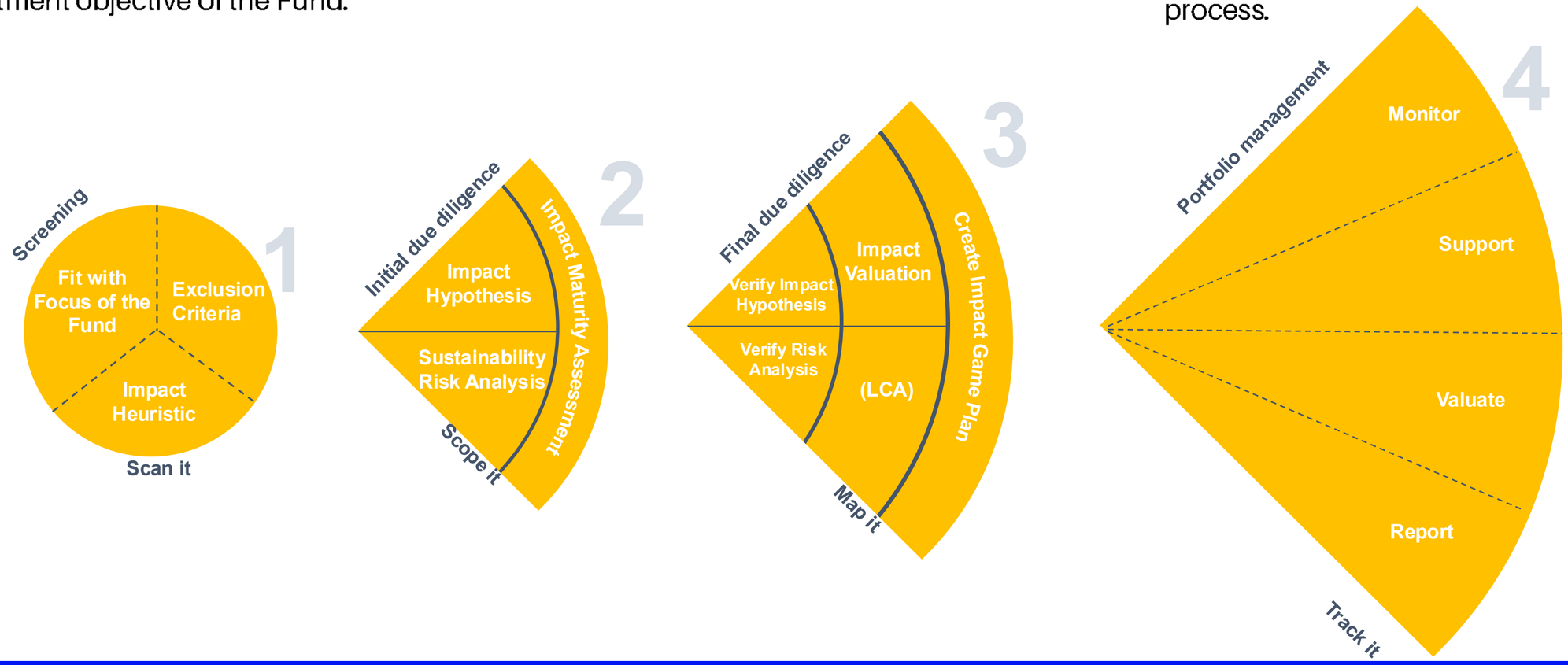
DEEPTECHXL SUSTAINABILITY IMPACT & RISK ASSESSMENT PROCESS

DeepTechXL has developed a science- and evidence-based impact investment process in collaboration with the University of Technology Eindhoven to ensure the implementation of the sustainable investment objective of the Fund.

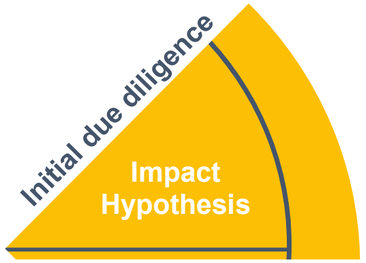
This impact investment process consists of four phases. Each of these phases consists of multiple assessment activities.

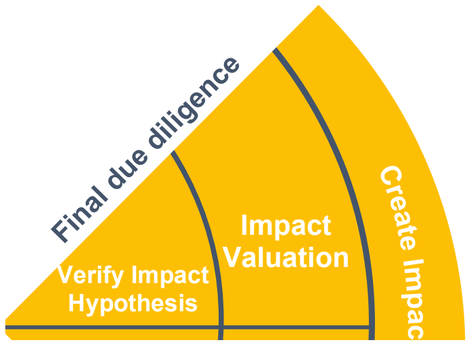
The impact investment process rests on two key pillars: positive sustainability impact and sustainability risks.

The following two pages describe the 10 most important activities of our impact process.



SYSTEMATIC METHODOLOGY TO *IMPACT MEASUREMENT*





1 **Problem**

PROBLEM:

Which pressing societal problem do you aim to address and how is this linked to the SDG's defined by the UN?

2 **What**

CONTEXT & INPUT:

What effects do you aim to achieve with your solution, what is the situation, where it takes place and what resources are used?

3 **Who**

ACTIVITIES & WHO:

What are your activities and who will benefit from your solution and how will they implement your solution?

4 **Quantify Impact**

OUTPUT & OUTCOME:

What tangible things do you produce via your activities and what do you achieve with this, quantified in 1-3 impact KPIs to measure your impact?

5 **Additionality**

ADDITIONALITY:

What is most likely going to happen, if your solution does not get accepted by the market?

6 **Systematic Impact**

SYSTEMATIC IMPACT:

Why do you do this and what does your venture aim to structurally change the system on macro level?

SYSTEMATIC METHODOLOGY TO *IMPACT MAKING*

STRATEGY AND RISK ANALYSIS

7

ALIGNED IMPACT STRATEGY:
We always seek alignment on the impact strategy with the ventures we invest in.

8

ALIGNED RISK ANALYSIS:
We always seek alignment on the key risks associated with ventures business plan in the categories:

1. Team
2. Market and customers
3. Competition
4. Financials
5. Sustainability & impact
6. Legal & compliance

The key risks are assed on:

1. Impact of risk
2. Likelihood of occurrence
3. Level of control

For each of RISK Items 1-3, mitigating actions will be formulated and agreed with the company prior to closing.

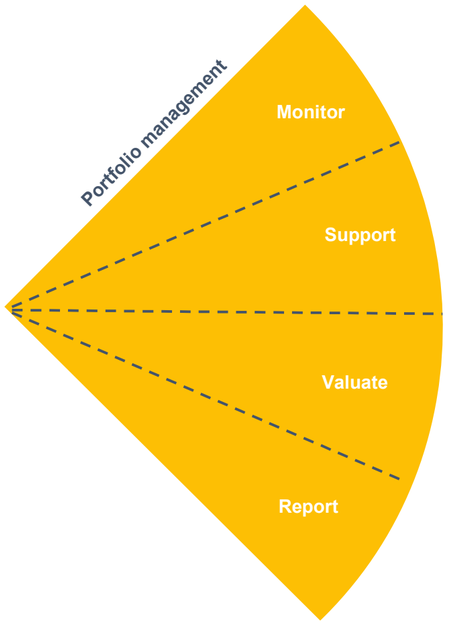
EXECUTION AND CONTROL

9

6Q-ACTION PLAN:
We help our portfolio companies to implement a '6Q action plan', which translates strategic initiatives (including sustainability) into actionable milestones and targets six quarters ahead. Each quarter, the company should review the previous quarter (actual vs. target) and add another quarter to the plan.

10

COACH, MONITOR AND CONTROL:
We see early-stage deeptech ventures struggling to implement a rigorous and professional management control system based on Plan-Do-Check-Act (PDCA) continuous improvement principles. We provide hands-on support and tools to make this happen. During this journey, we sit down with our ventures on a weekly basis to provide coaching and monitor performance (actual vs. target) on a monthly and quarterly basis.





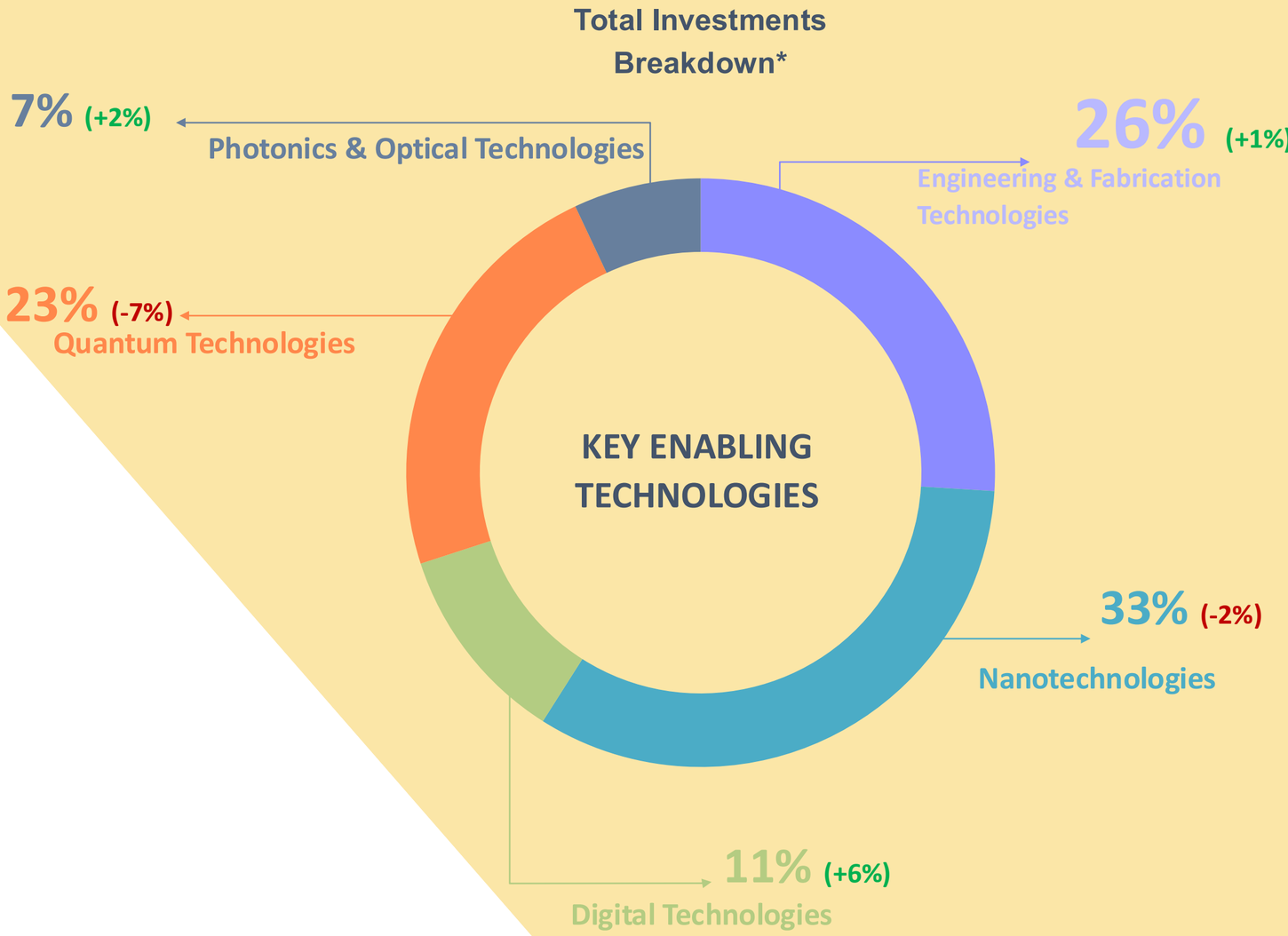
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Portfolio Companies

SFDR-RELATED SUSTAINABLE INVESTMENT MEASUREMENT

DeepTechXL has created a set of sustainability-focused selection criteria that are binding and three key indicators to measure its performance on the sustainable investment objective:

- A minimum of 80% of its portfolio companies use a key enabling technology, split per KET
- A 100% of its portfolio companies target a global environmental or societal problem, split per key societal theme
- A 100% of its portfolio companies are aligned with the United Nations Sustainable Development Goals, split per SDG



*Based on EUR investments

DEEPTECHXL SUSTAINABILITY IMPACT DISTRIBUTION PER COMPANY

Health & Care

Gilbert TECHNOLOGIES

alphabeats

Energy Transition & Sustainailbity

KEIRON

MicroAlign

Delft Circuits
Hardware for quantum engineers

SUPERLIGHT PHOTONICS

SENERGETICS
SENSE IN DATA

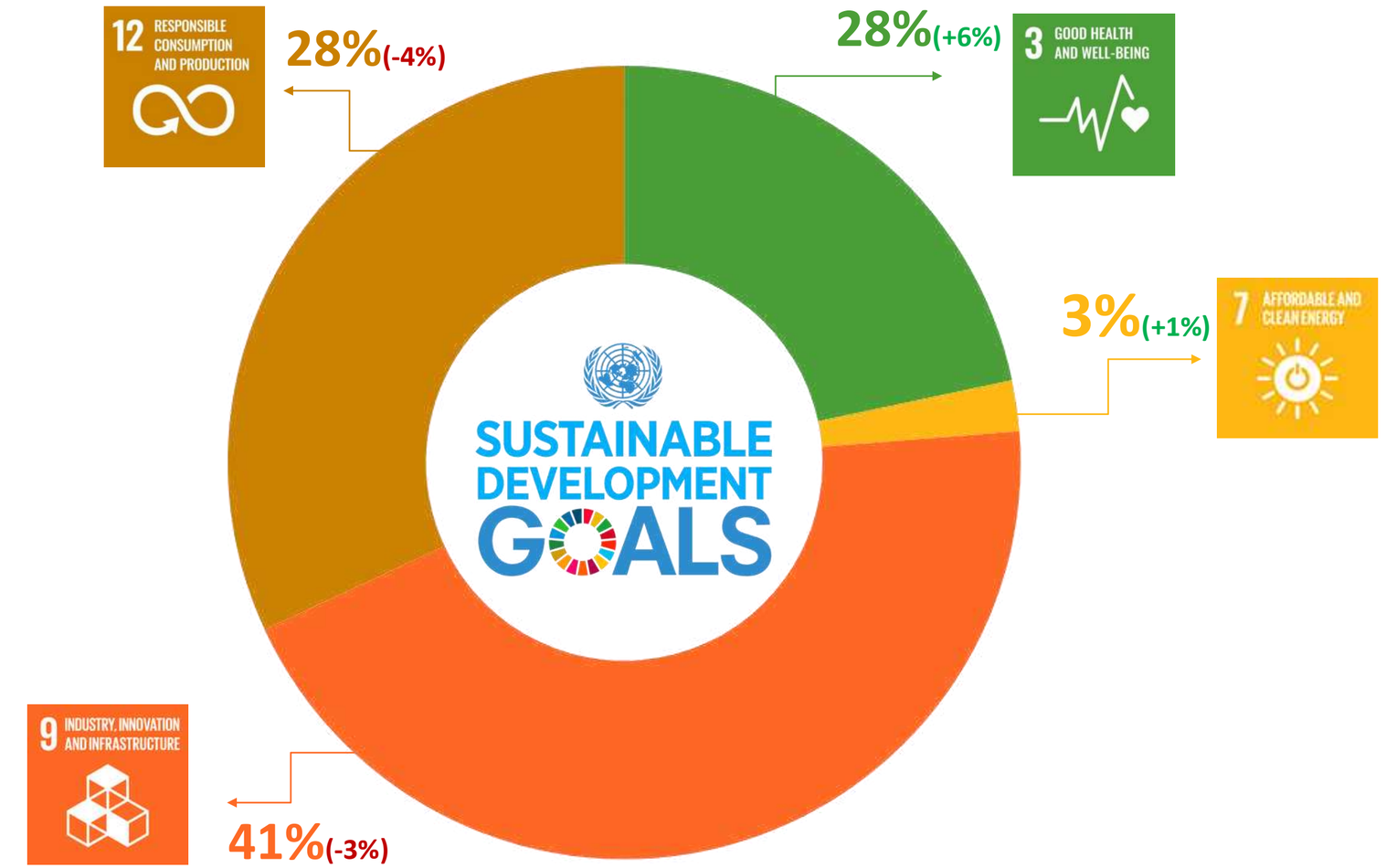
Security

SandGrain

Agriculture, Water & Food

inPhocal

Breakdown per impact KPI*



PORTFOLIO-LEVEL ESG ANALYSIS

ESG analysis from 2024

Based on feedback from the first ESG questionnaire sent out, several questions have been removed, modified or added. Questions have mainly been added in the areas of data governance & cybersecurity and corporate policy.

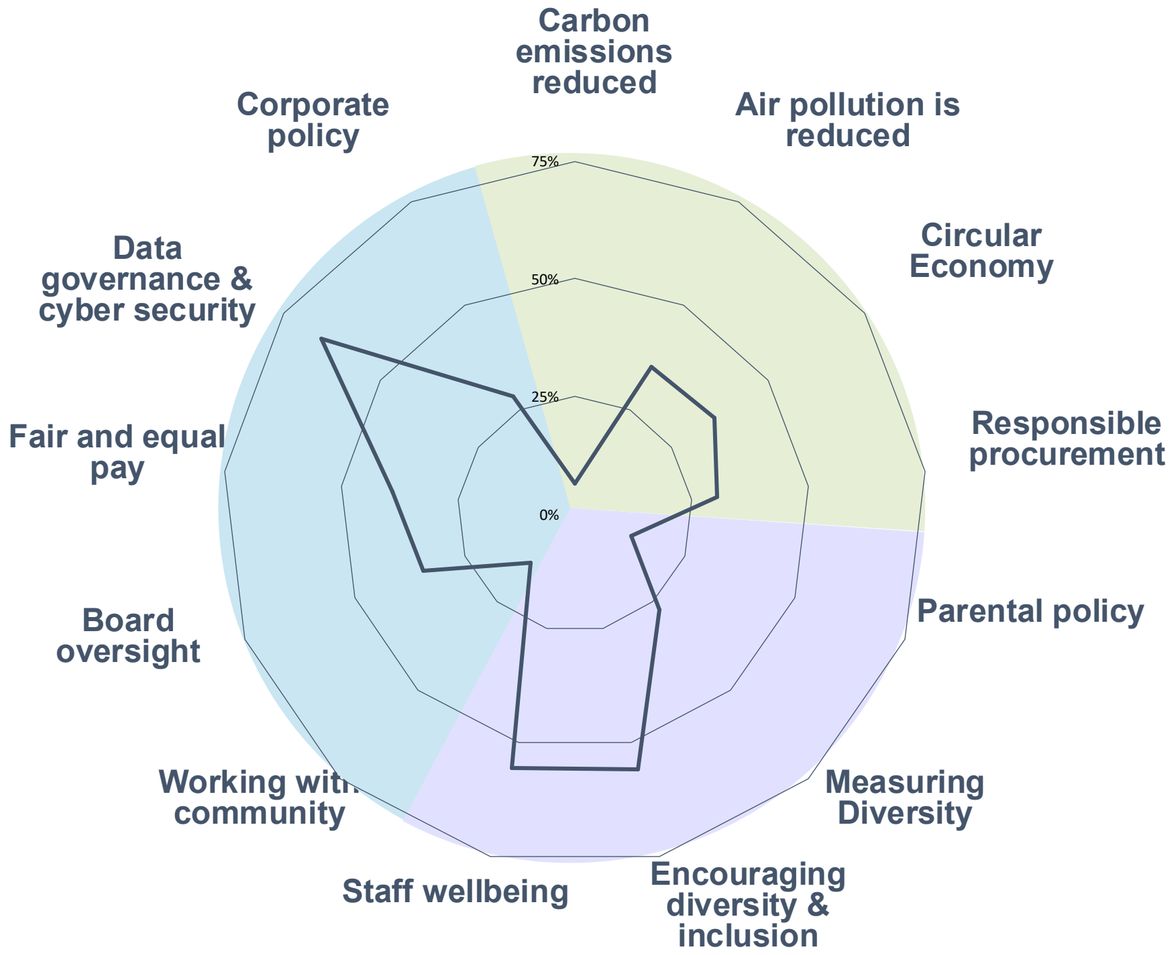
The questionnaire is used to report on key sustainability data and as a **roadmap for portfolio companies' annual impact game plans**. At the (pre-)seed stage, companies are not expected to have a significant **reporting** track record, but it is about how the portfolio companies will progress over the years.

The 2024 analysis, provided the following insights:

- **Environmental:** Companies in the seed-stage are not yet able to report on environmental metrics. Relatively little progress has been booked in 2024 as companies are still about to enter the commercialization phase.

- **Social:** In 2024, companies were able to make progress on promoting diversity, measuring diversity, and overall staff wellbeing, which is a critical pillar for sustainable growth.

- **Governance:** Governance continues to be the highest performing category, albeit that due to the added questions within this category the average performance in percentage has been reduced.



2024: IMPACT INVESTMENT CASE 1
Theme: Agriculture, water and food

inPhocal

IMPACT POTENTIAL:
By replacing inkjet-based printers with laser-based printers, InPhocal can potentially eliminate ink from the Food & Beverage industry, and thereby significantly reducing the industry's environmental footprint.



KPI 1:
Amount of liters ink and toners reduced



KPI 2:
Amount of electricity reduced



DEEP TECH XL

WHY WE ARE EXCITED ABOUT INPHOCAL (1/2)

Impact Framework: InPhocal

About:

In 2020, a group of enthusiastic founders set out on a journey to start InPhocal, a deep-tech company based on optical technology that originated from the CERN Institute, where it was originally developed for the long-distance alignment of equipment in their Large Hadron Collider (LHC) experiment.

InPhocal participated in the nine-month HighTechXL venture-building program, supported by top-class institutes and companies such as ASML, the European Space Agency, Philips, and TNO, to develop into a mature company.

InPhocal sells laser-based printers to the food and beverage industry, enabling its customers to eliminate pollutive ink from the industry.

InPhocal was mentioned in ASML's 2022 annual report.

(1) Problem

Ink can be a complex mixture, containing a variety of substances such as solvents, carbon, dyes, pigments, glycerin, alcohol, resins, and other materials. One 30-milliliter pen has an environmental footprint equivalent to 45 minutes of diesel emissions. Currently, the food and beverage industry is estimated to use approximately 160 million liters of ink annually to print expiry dates and SKU codes. This has a significant environmental impact while being a suboptimal solution for its use case.

Some companies print ink on plastic, but ink and plastic cannot be separated for recycling. As a result, the combination may end up in landfills or contribute to pollution in thermal recycling. Until now, other technologies have not been competitive with ink technology in terms of printing speed and cost.

Additionally, regulations are pushing the food and beverage industry to reduce its environmental footprint and increase the traceability of single-item cans and bottles. Existing inkjet printers are not suited to fulfill this regulatory demand.

(2) What/Technology Solution

InPhocal's proprietary and patented laser technology transforms a standard laser beam into a concentric beam with a central spot. The novel laser beam characteristics enable a longer focal depth and focal length, resulting in larger print areas at speeds more than twice that of conventional laser beams.

When applied to laser marking, InPhocal's laser beam can mark curved surfaces at high speeds, including fresh produce, cans, and bottles—something current laser beams cannot achieve. InPhocal's laser has the potential to consume up to **50 times** less energy compared to conventional inkjet technologies.

(3) Who Benefits?

Society as a whole benefits from an environmental perspective. Moreover, less developed local communities are also likely to benefit.

(4) Quantifying impact

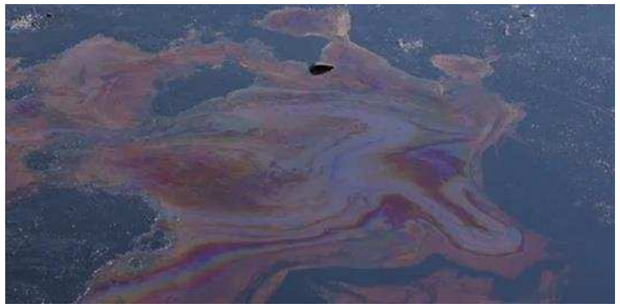
By replacing inkjet-based printers with laser-based printers, inPhocal can potentially completely eliminate ink from the Food & Beverage industry, and thereby significantly reducing the industry's environmental footprint.



KPI 1:
Amount of liters ink and toners reduced



KPI 2:
Amount of electricity reduced



WHY WE ARE EXCITED ABOUT INPHOCAL (2/2)



"By using our innovative optical technology, we enable food producers and packagers to replace polluting ink technology with a sustainable alternative. Our technology is capable of making existing laser processes more efficient, and for applications that were previously not possible. For example, think of marking curved surfaces in production lines without loss of speed."
- Kathy Vredeveldt, co-founder and CFO inPhocal

(5) Additionality

InPhocal offers a solution that is currently unavailable. Existing laser-based printers are too slow and too expensive. Since local factories operate with relatively small profit margins, they have little incentive to replace inkjet printers with laser printers. Incumbent technologies do not match InPhocal's capabilities in terms of focus depth, round-surface printing, and cost.

(6) Systematic impact

InPhocal aims to drive systemic change by eliminating ink from the food and beverage industry. To achieve this, InPhocal provides a cost-effective alternative to inkjet printers without compromising performance.

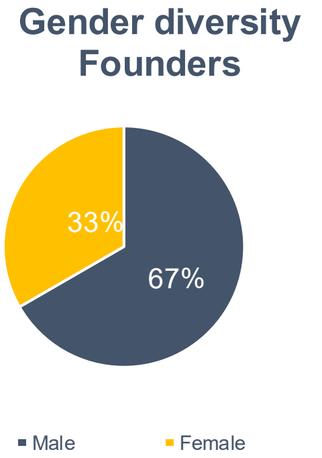
SDG Alignment

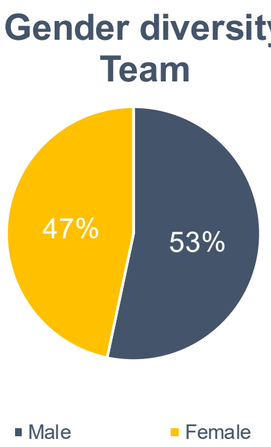
SDG 12: Responsible consumption and production
By 2030, substantially reduce waste generation through reduced ink and inkjet toners.

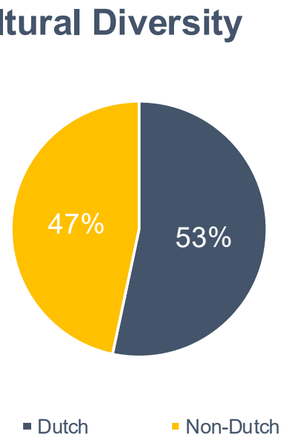
SDG 9.4: upgrade all industries and infrastructures for sustainability
By 2030, substantially reduce amount of electricity consumed for marking.

Key risks

1) InPhocal laser technology is unable to meet required specifications to replace inkjet fully.
2) Rising energy costs might harm uptake of laser solutions.







2024: IMPACT INVESTMENT CASE 2
Theme: Health and Care

alphabeats

IMPACT POTENTIAL:
AlphaBeats aims to increase the mental health and well-being through real time neurofeedback, reducing stress and leading to next level mental performance and reducing stress



KPI:
Number of Monthly active users



DEEP TECH XL

WHY WE ARE EXCITED ABOUT ALPHABEATS (1/2)

Impact Framework: AlphaBeats

About:

In 2019, Philips decided to spin off a brainwave-focused digital technology that had been researched for over 10 years within its R&D department.

Through the nine-month HighTechXL venture-building program, AlphaBeats was founded to further develop the technology and make a meaningful impact on public health.

AlphaBeats offers a patented neurofeedback **artificial intelligence** solution designed to enhance mental well-being, focusing on performance improvement and stress management. The company won the CES Top Innovator Award in 2023 and was selected for the Apple Foundation Program.

(1) Problem

According to the American Institute of Stress, 73% of people experience stress that affects their mental health. The World Health Organization (WHO) states that this number continues to rise due to the pandemic and subsequent geopolitical tensions.

AlphaBeats initially targets the elite athlete market, followed by the amateur athlete market, and eventually the consumer well-being market.

(2) What: Technology Solution

AlphaBeats' proprietary and patented neurofeedback technology uses data from an electroencephalography (EEG) headset to measure alpha (relaxation) and beta (stress) waves in the brain. AlphaBeats' AI processes this data in real time, dynamically adjusting music through its patented algorithm to reward alpha brainwave activity.

The training is implicit; the listener simply wears the headset and listens to their music—no additional effort is required.

Mental performance and health improve with increased alpha wave control, a process that has been scientifically validated. AlphaBeats' technology trains users to regulate their alpha waves. The solution is currently undergoing scientific validation in collaboration with a neuroscience professor and their team at Tilburg University.

(3) Who Benefits

Society as a whole benefits from improved mental health. In the beachhead market, athletes will initially gain advantages from the solution through enhanced mental performance and well-being. Consumers will benefit through increased well-being and reduced stress.

(4) Quantifying impact

AlphaBeats aims to increase the mental health and well-being. This is done via two pillars:

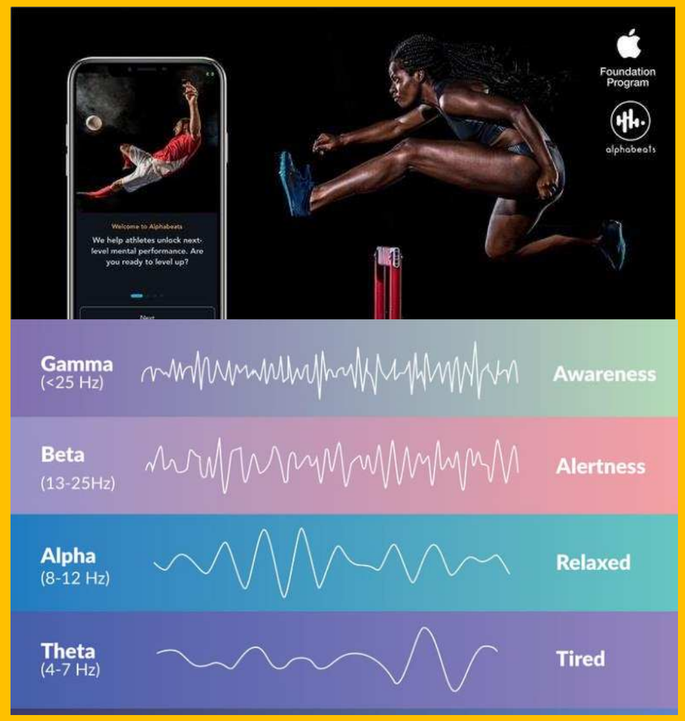
1) Unlocking next-level mental performance: Increasing alpha wave control has a scientifically proven effect on enhancing mental recovery and player readiness.
2) Reducing stress and increasing well-being: Providing real-time neurofeedback to lower stress and promote relaxation has a scientifically proven impact on the Perceived Stress Score (PSS).



KPI:
Number of Monthly active users



WHY WE ARE EXCITED ABOUT ALPHABEATS (2/2)



"As a company, we have great ambitions and for that you need great partners. We all share the same big vision and are excited to combine forces to make a global impact in mental performance and well-being"

- Han Dirkx, COO AlphaBeats

(5) Additionality

AlphaBeats offers a solution that is currently not available. There is not yet any solution that uses EEG data in real-time and dynamically adjusts music via a neurofeedback algorithm. Hence, it is the only solution that actually measures its impact and immediately adjusts based on its measurements.

(6) Systematic impact

AlphaBeats aims to create systemic change to improve mental performance and well-being. AlphaBeats aims to achieve this goal by providing an implicit, hardware-agnostic solution that has a scientifically proven effect on alpha control and stress.

SDG Alignment

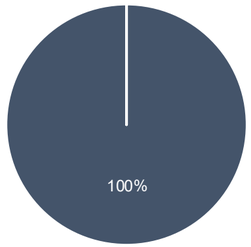
SDG 3.4: Good Health and Well-being

By 2030, significantly improve mental health and well-being.

Key risks

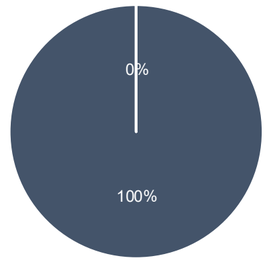
1) AlphaBeats is unable to use EEG data from hardware providers.
2) Scientific proof of alpha control is limited and does not sufficiently underpin its effect.

Gender diversity Founders



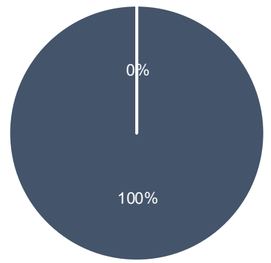
■ Male ■ Female

Gender diversity Team



■ Male ■ Female

Cultural Diversity



■ Dutch ■ Non-Dutch

2024: IMPACT INVESTMENT CASE 3
Theme: Health and Care

IMPACT POTENTIAL:
By replacing incumbent inhalers, Gilbert can improve quality of life by increasing the efficacy of respiratory drug delivery for multiple (lung) diseases.



KPI:
Total number of patients reached

Gilbert TECHNOLOGIES



DEEP TECH XL

WHY WE ARE EXCITED ABOUT GILBERT (1/2)

Impact Framework: Gilbert

About:

In 2013, Delft University of Technology decided to spin-out a respiratory technology, which was researched for > 10 years.

It's Gilbert's mission to make medical treatments easier and more effective for lung patients to save lives and reduce the burden on the healthcare systems. Gilbert has the ambition to bring a paradigm shift in the inhaled pharmaceutical market and a new pulmonary drug formulation strategy with a new generation soft mist inhaler technology, based on its proprietary Electro Hydrodynamic Atomization (EHDA – 'Electrospray') technology.

Gilbert develops and will sell handheld soft mist inhalers.

Gilbert is a showcase collaboration for Philips Engineering Solutions.

(1) Problem

Chronic lung diseases remain the third leading cause of death and disability worldwide. The treatment of more severe lung diseases is accompanied by therapy with complex expensive pharmaceuticals, for example, biologicals, oncological or antifibrotic drugs, which are administered in hospital to the patient currently either orally, intravenously, or subcutaneously. The drug is delivered via the blood circulation to the pulmonary system, because of the high density of blood vessels in the lungs. However, the drug needs to be transferred through large parts of the body, which is a high burden for the patient and requires a relatively high dose of the medicine. It is well acknowledged that the administration of pharmaceuticals directly to the lungs is more effective.

Inhalers have historically been popular due to their ease of use. However, when it comes to treating severe lung conditions like Cystic Fibrosis, severe asthma, or lung cancer, current commercially available dry powder inhalers (DPIs), metered dose inhalers (MDIs) and Nebulizers (NEBs) have limited capabilities. This is related to:

(i) A relatively limited lung deposition (5-20% effective regional deposition)

(ii) A heterogeneous lung deposition pattern in large, intermediate, and small airways; and

(iii) Shear stress exposition to sensitive pharmaceutical compounds

(2) What/Technology Solution

Electro Hydro Dynamic Atomization (EHDA) or 'electrospray' features controllable aerosol particle size, which enables the medication to target the bronchial tree. The underlying technology breaks up the liquid jet drug formulation into droplets under the influence of electric forces. Depending on the condition and medication dosage, the droplet size can be varied within a narrow interval creating a uniform and monodisperse aerosol. The controlled droplet size enables the deposition of medication at the right (diseased) place in the lungs. Since the generated aerosol is a soft mist, it is more comfortable and more convenient for patients to inhale with a higher deposition in the lung (up to 80%).

(3) Who benefits

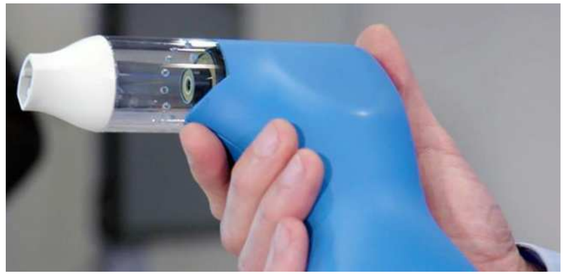
Society from a health perspective. The efficacy of the drugs increases, reducing the dose required, and reducing the resistance on antibiotics. Hence, the quality-of-life increases.

(4) Quantifying impact

By replacing incumbent inhalers, Gilbert can improve quality of life by increasing the efficacy of respiratory drug delivery.



KPI:
Total number of patients reached



WHY WE ARE EXCITED ABOUT GILBERT (2/2)



"It's our mission to make medical treatment easier and more effective for lung patients to save lives and help them live the life they want, while reducing the burden of care on the health systems"

- Maurits Huigen, CEO Gilbert Technologies

(5) Additionality

Gilbert offers a solution that is currently not available. Existing inhalers have a lower efficacy and are more prone to patient errors. Gilbert offers a solution that includes: (i) soft mist aerosol (leading to a higher efficacy and fewer mistakes by patients), (ii) a narrow distribution in particle sizes of the generated aerosol (leading to higher lung deposition, lower dose of the drug and ability to regionally target medicines in the diseased area of the lungs); and (iii) breath-activated device (reduce # of errors by patient and enable patient's home care).

(6) Systematic impact

Gilbert aims to create systemic change to improve respiratory drug delivery. Gilbert aims to achieve this goal by providing a cost-effective solution that increases efficacy and reduces the amount of patient errors during usage.

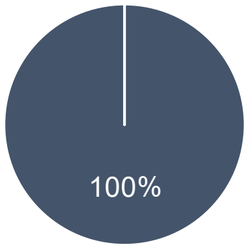
SDG Alignment

SDG 3: Good Health and Well-being
By 2030, significantly improve the inhaled pharmaceutical market and its efficacy to treating diseases.

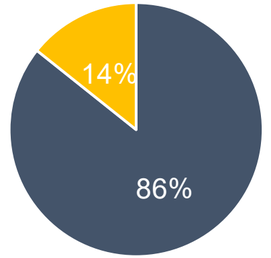
Key risks

1) Re-use and recycling patient behavior; Limited patients offer used containers and cannisters for re-use and recycling
2) Pharmaceutical companies slow to adopt to co-formulate medication via next-gen soft mist smart inhaler
3) Engineering issues in the process from proof of concept to minimum viable product

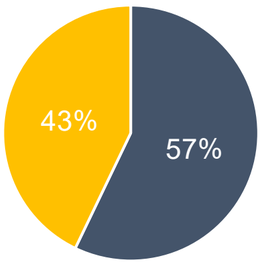
Gender diversity Founders



Gender diversity Team



Cultural Diversity



2024: IMPACT INVESTMENT CASE 4
Theme: Energy transition and Sustainability

IMPACT POTENTIAL:
By replacing screen printers, Keiron can improve PCB e-waste by improving the placement of solder paste during PCB Assembly.



KPI 1:
KG solder paste reduced

KPI 2:
Liters of chemicals reduced

KPI 3:
KG high-end stainless steel reduced

KEIRON



WHY WE ARE EXCITED ABOUT KEIRON (1/2)

Impact Framework: Keiron Technologies

About:

In 2019, TNO decided to spin-out a Laser-Induced Forward Transfer technology ('LIFT'), which was researched for >10 years within the TNO Printed Electronics department. Through the nine-month HighTechXL venture-building program, Keiron was founded to further develop the technology. Through the HighTechXL program, Keiron was supported by top-class institutes and companies, such as ASML, the European Space Agency, Philips, and TNO.

Keiron intends to sell its patented LIFT solution to eliminate inkjet printers from the Printed Circuit Board ('PCB') Assembly lines and thereby significantly reduce PCB e-waste.

(1) Problem

The first step in the PCB Assembly line is placing solder paste dots on a 'clean' PCB. Although this is a critical process step, the past 20 years only incremental improvement steps have been realized. As a result, existing technologies to place solder paste on a PCB (dispensing- & jet-based) are unable to meet the exceeding push for added complexity PCB topographies. For example, small- and large dots on the same PCB cause serious issues. Hence, the current First Pass Yield of low volume-high mix assembly lines is ±50%.

Currently, PCBA manufacturers try to solve this issue with software, albeit a suboptimal solution. Faulty PCBs are thrown in the bin and cause a serious e-waste stream. Other waste streams created with the existing method are screens, stencils, and solder paste.

(2) What/Technology Solution

Laser-induced forward transfer (LIFT) is a digital printing technique that uses a pulsed laser beam as the driving force to project material from a donor thin film toward the receiving substrate whereon that material will be finally deposited as a voxel. This working principle allows LIFT to operate with both solid and liquid donor films, which provides the technique with an unprecedented broad spectrum of printable materials, and thus makes it very competitive over other technologies, like inkjet printing. It is not only that LIFT can access a much wider range of ink viscosities and loading particle sizes; the possibility of printing from solid films allows the single-step printing of multilayers and entire devices, and even makes 3D printing possible.

Short laser impulses are used to locally heat up and vaporize the donor layer, thereby creating a tiny gas pocket that ejects a droplet of donor material towards the opposite direction of the incident laser beam (i.e. towards the bottom of the laser beam comes from the top of a plate). The droplet of material can then be deposited to a substrate placed near the donor layer. This process enables printing both small and large dots on the same PCB with much higher precision.

(3) Who benefits

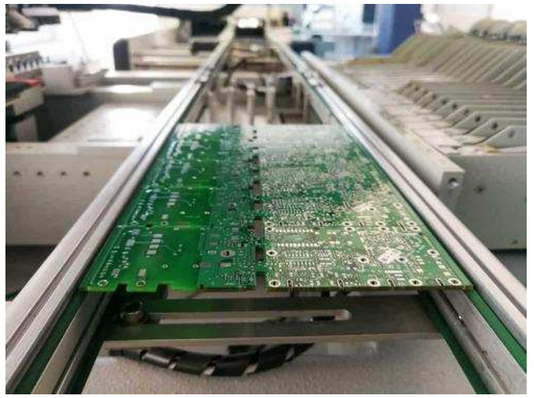
Society as a whole from an environmental perspective. The reduction of E-waste causes valuable materials and toxic chemicals to be more effectively used.

(4) Quantifying impact

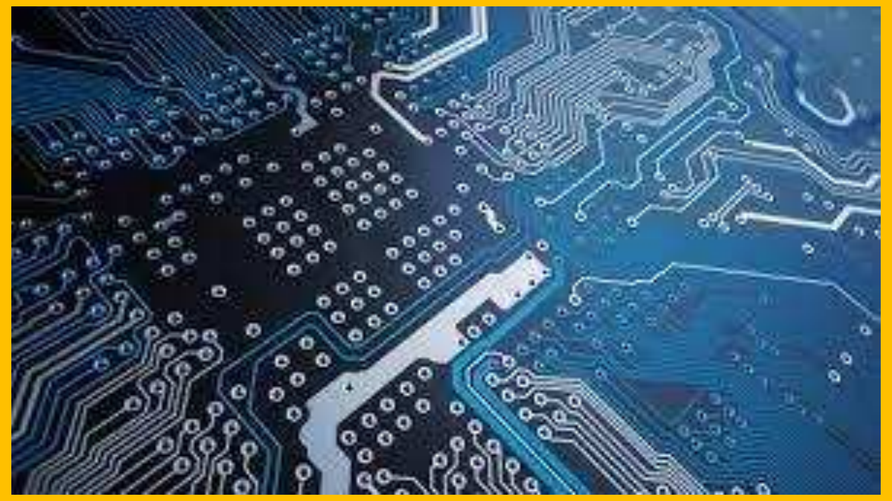
By replacing incumbent solder paste printers, Keiron can improve the yield of PCB assembly, reducing the amount of e-waste created, and reduce use of materials, such as solder paste, chemicals, and stainless steel.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

KPI 1:
KG solder paste reduced
KPI 2:
Liters of chemicals reduced
KPI 3:
KG high-end stainless steel reduced



WHY WE ARE EXCITED ABOUT KEIRON (2/2)



"By using our innovative laser technology, we enable PCB Assembly manufacturers to replace screen- and jet-printers with a sustainable alternative. We can significantly reduce the amount of plastic, steel, ink, and other chemicals with our fault-tolerant digital process."

- Paul Rooimans, CEO Keiron

(5) Additionality

Keiron offers a solution that is currently not available. Existing dispensing- and jet-based solder paste printers have a lower yield and a larger waste stream of consumables. Keiron offers a solution that (i) eliminates solder placement issues of screen printing & dispensing (leading to higher yield), (ii) eliminates stencils from the production process (leading to faster changeovers and fewer operators required), and (iii) digitalizes the process step (leading to faster changeovers and fewer operators required).

(6) Systematic impact

Keiron aims to create systemic change to reduce E-waste. Keiron aims to achieve this goal by providing a cost-effective solution that increases yield and digitalizes the process.

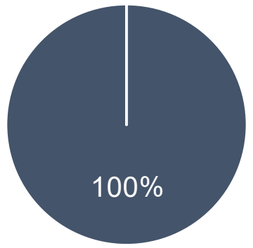
SDG Alignment

SDG 12.5: Ensure sustainable consumption and production patterns
By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse by reducing e-waste in PCB assembly.

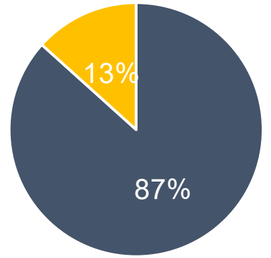
Key risks

1) **Engineering issues** in the process from proof of concept to minimum viable product

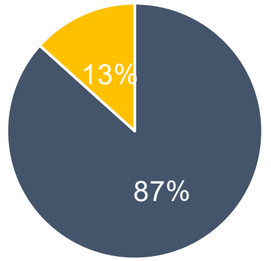
Gender diversity Founders



Gender diversity Team



Cultural Diversity



2024: IMPACT INVESTMENT CASE 5
Theme: Security

SandGrain

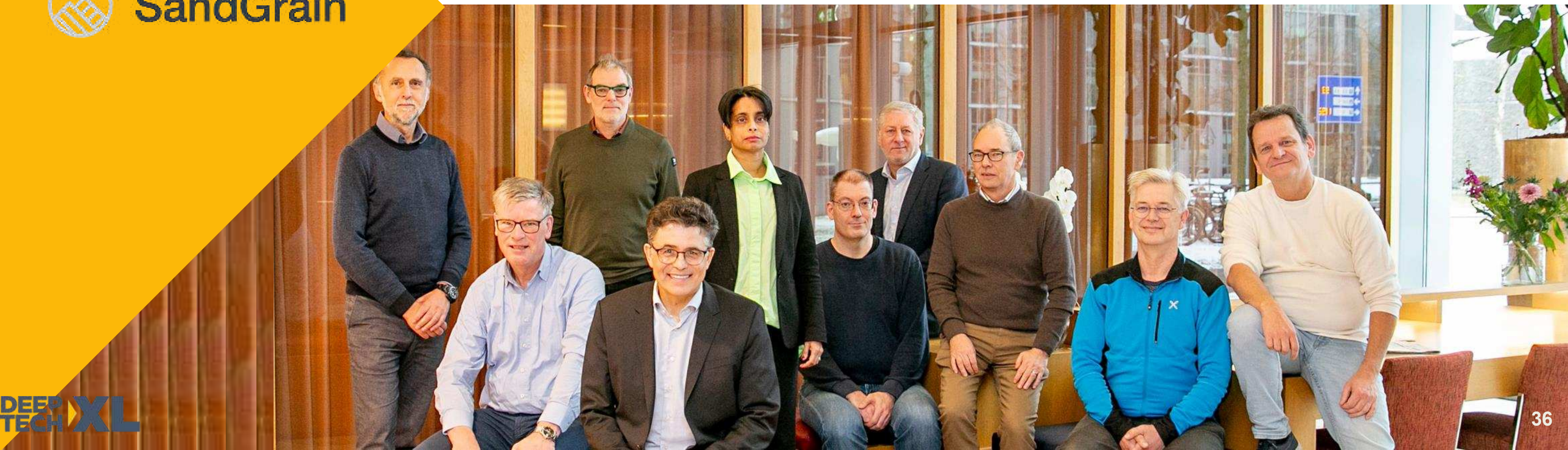
IMPACT POTENTIAL:
By hard-coding an identifier on chip-level, Sandgrain improves traceability of chips and security of assets.



KPI 1:
# of PCB e-waste reduced



KPI 2:
# of assets securely tagged



WHY WE ARE EXCITED ABOUT SANDGRAIN (1/2)

Impact Framework: Sandgrain

About:

In 2019 a group of seasoned semiconductor professionals started the company Sandgrain, a deep-tech company based on unique identification IP from Irdeto. Irdeto had developed the technology to in a joint venture develop a unique identification method for the hardware supply chain.

Sandgrain has focused in the early years to create awareness and create a top-class team to develop a very cheap and reliable solution.

Sandgrain sells an IC and software suite to the high-tech equipment market, which enables their customers to keep track of their assets and create a material/asset passport.

(1) Problem

High-tech equipment will be used in the field for many years, sometimes decades. When used maintained and serviced the original equipment manufacturer or the asset owner get loose track of the parts and materials within this complex equipment. Thus, do not have the right information for re-use, or recycle.

Currently, the high-tech equipment industry is working with traditional asset tracking solutions (bar/QR codes) this is highly dependent on human interactions to keep track of the changes made.
These current solutions do not provide a 100% real time, non-error track and trace system where data about the equipment can be stored and used.

Additionally, new regulations in extended producer responsibility in for example the manufacturing of batteries require the battery producer (Electric car manufacturers) to keep track of their batteries and provide a second-life alternative.

(2) What/Technology Solution

Sandgrain its proprietary and patented unique identification and authorization technology can produce in high volume IC with a hard written unique identification code. Combined with the Cyber-rock software suit authorization can be done to ensure that each unique code is who it claims to be. The Sandgrain solution can do this unique identification with a very cheap IC without the need for complex error corrections etc. making this solution suitable for almost all PCB equipment.
When the solution is used in for instance a Phillips MRI scanner a PCB can be tagged, a material passport can be attached to each PCB and at the end of life of the MRI the OEM can determine what can be re-used, or the recycler knows exactly what kind of materials have been used on that specific PCB.

(3) Who benefits

Society benefits by recycling and re-using PCBs and extending lifetime of High-Tech equipment.

(4) Quantifying impact

By tracking and tracing of equipment Sandgrain is enabling OEMs to extend the lifetime of equipment and enable a more educated recycle process for PCBs.



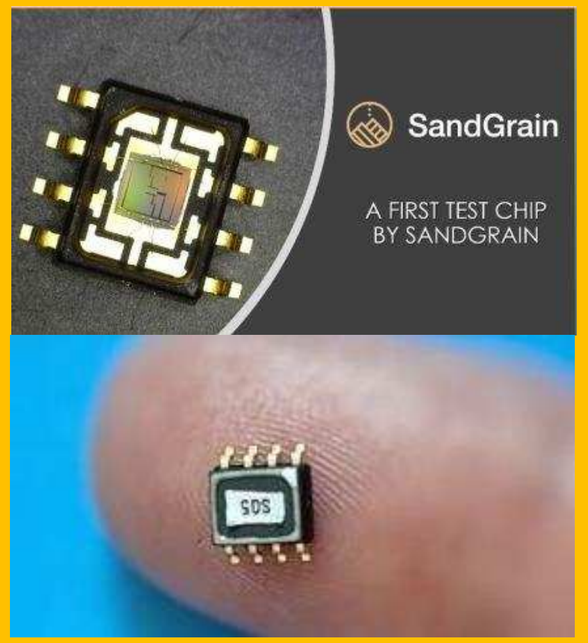
KPI 1:
# of PCB e-waste reduced



KPI 2:
# of assets securely tagged



WHY WE ARE EXCITED ABOUT SANDGRAIN (2/2)



By making supply chains transparent again, we can contribute to effective recycling programs for electronic products that have reached end-of-life.

- Rene Claessen, Co-founder & CEO Sandgrain

(5) Additionality

Sandgrain is offering a solution that is currently unmet in cost and easy to use. Current solutions require complex error correction. By offering unique identification and authorization technology asset and supply security will grow and counterfeiting of sensitive technologies can be fought.

(6) Systematic impact

Sandgrain aims to create systematic change by securing and identify high-tech equipment and thus offer a reliable source of information for future re-use and recycle. Sandgrain aims to achieve this goal by proving the IC for a very low cost and with this roll-out in a significant part of the high-tech supply chain.

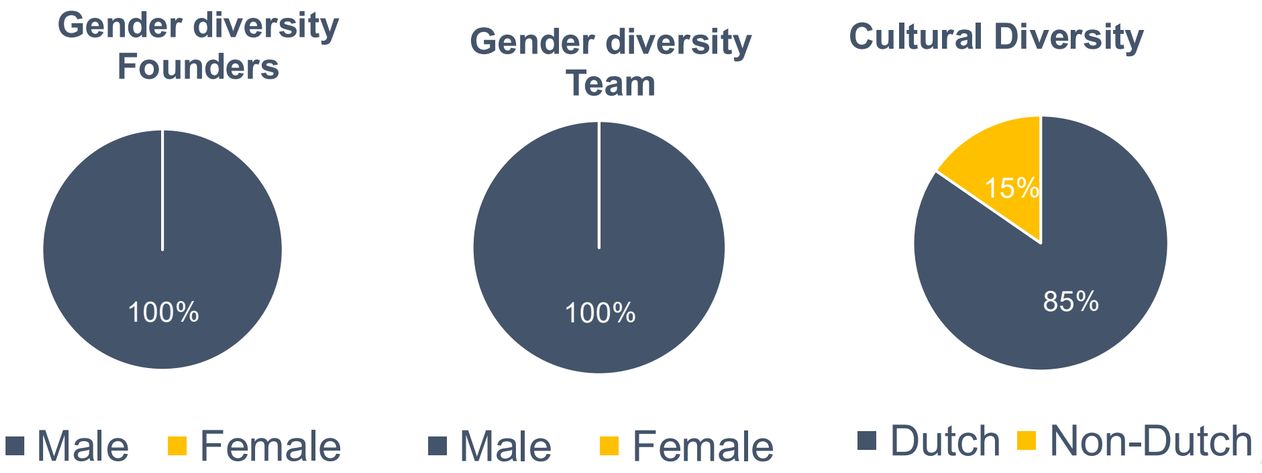
SDG Alignment

SDG 12: Responsible consumption and production
By 2030, substantially reduce waste generation through the re-use and recycling of equipment parts

SDG 9.1: Industries, Innovation, and Infrastructure
Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all by providing enhanced security.

Key risks

1) **Sandgrain its technology is unable to meet industry specifications** and is not utilized in the high-tech markets



2024: IMPACT INVESTMENT CASE 6
Theme: Energy transition and Sustainability

IMPACT POTENTIAL:
By providing i/o cables to the quantum industry, Delft Circuits enables quantum computers to increase their number of qubits, and hence, provide faster simulations for a plethora of applications (such as drug discovery).



KPI:
Amount of energy/ electricity reduced in Cryogenic Systems

Delft Circuits
Hardware for quantum engineers



WHY WE ARE EXCITED ABOUT DELFT CIRCUITS (1/2)

Impact Framework: Delft Circuits

About:

The idea of Delft Circuits sprung from the PhD research that Sal Bosman, CEO and co-founder of Delft Circuits, performed. During his PhD, he realized the performance and scaling limits of coaxial cables used in building quantum computers. In October 2017, Delft Circuits was founded.

Delft Circuits sells microwave cables to quantum computer researchers, designers and builders which enables these players to efficiently connect room temperature control electronics to qubits operating at 20 millikelvin. It incorporates particles, such as filters and other electronics.

Current coaxial cables used in the quantum computing industry are bulky, introduce signal loss and noise and can generate thermal noise which can contribute to errors and inefficiency in quantum operations.

(1) Problem

The promise of quantum computing technology: a problem that takes the most powerful classical computer today hundreds of thousands of years to solve, a universal, fault-tolerant quantum computer would be able to solve within a matter of hours or days.

Quantum computers follow the laws of quantum mechanics. The possibility of what can be considered calculable exponentially expands. Conventional computers use binary bits, which can only consider two positions: on/off or zero/one. With quantum computers' ability to encode information as quantum bits or qubits, they can deal with big, messy data sets, at exponentially high speeds, more quickly than conventional computers.

Quantum computers require extremely low temperatures, fast signals and several interconnects in limited space. Currently Coaxial cables are used to connect room temperature electronics to cryogenic quantum systems.

Coaxial cables can experience signal loss, particularly at higher frequencies and signal reflections which can distort signals and introduce noise into the system.

Coaxial cables can be susceptible to electromagnetic interference from external sources, which can introduce noise into the system and affect the reliability of signal transmission.
Moreover, coaxial cables can be relatively bulky and less flexible compared to other types of cables, which may limit their suitability for certain quantum computing setups.

(2) What/Technology Solution

The patented flat cables designed by DC are based on microstrip lines, have a very small footprint and can scale to carry multiple channels next to each other. They significantly improve channel density for the same footprint. DC also simplifies the cabling process by reducing the number of connectors and is a lot easier to handle compared to semi-rigid coaxial cables. The small footprint and material selection help in reducing thermal conductivity along the cable.

(3) Who benefits

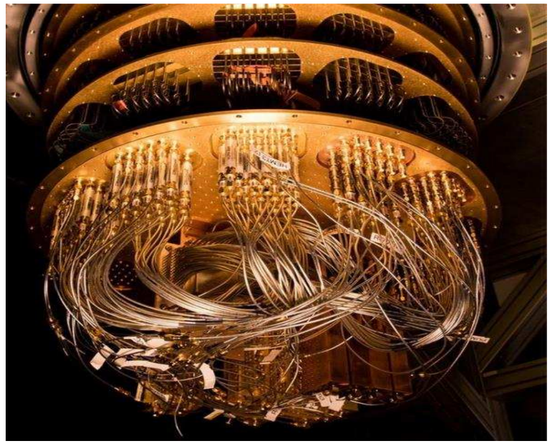
Delft Circuits products will act as an enabler for the development of quantum computers. With lower thermal noise, the use of the cables of Delft Circuits will allow for a reduction in the energy used to cool cryogenic systems.

(4) Quantifying impact

By replacing coaxial cables, Delft Circuits has the potential to improve the performance of the quantum computing cryogenic systems and help reduce noise and thermal waste.



KPI:
Amount of energy/ electricity reduced in Cryogenic Systems



WHY WE ARE EXCITED ABOUT DELFT CIRCUITS (2/2)



"My motivation is to become a great employer adding value to society and the high-tech industry in the Netherlands (Delft/ Eindhoven Region) and beyond.
- Sal Bosman, CEO Delft Circuits

(5) Additionality

The additionality is mainly in terms of enabling customers to build better quantum systems. In terms of a comparison to inaction: It will take longer for other parties to provide real scaling i/o technologies, slowing down the development of quantum technologies, especially in terms of scaling.

(6) Systematic impact

Delft Circuits works as an enabler of quantum computing and helps in improving the performance of quantum computing systems. Customers will be able to build quantum systems with more quantum devices (qubits for computing, photon detectors for quantum communication).
These systems will be more powerful and lead to a faster realization of the impact of quantum.

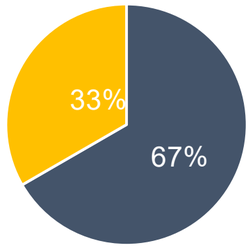
SDG Alignment

SDG 9.5: "Enhance scientific research, upgrade the technological capabilities of industrial sectors." Delft Circuits can support the development of i/o connectors and cables for quantum computers.
SDG 12.2: "By 2030, achieve the sustainable management and efficient use of natural resources"
By 2030, substantially reduce the number of inefficient cables used for connecting quantum computers.

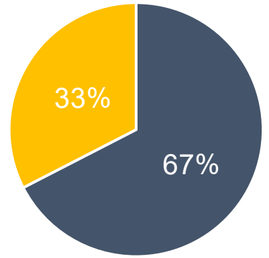
Key risks

1) **Delft Circuits cables** are unable to meet the required specifications to replace existing cables.
2) **Delay in the uptake of quantum computers** might harm the scaling up of Delft Circuits cables.

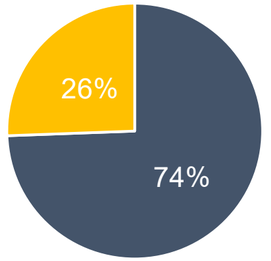
Gender diversity Founders



Gender diversity Team



Cultural Diversity



2023: IMPACT INVESTMENT CASE 7
Theme: Energy transition and Sustainability

IMPACT POTENTIAL:

By replacing white light lasers, Superlight Photonics can reduce the power consumption significantly in several application areas. Within data centers, Superlight Photonics can increase the bandwidth while reducing the power consumption for data network equipment. Hence, they can significantly reduce the industry's environmental footprint.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

KPI:

Amount of electricity reduced

SUPERLIGHT PHOTONICS



WHY WE ARE EXCITED ABOUT SUPERLIGHT PHOTONICS (1/2)

Impact Framework: Superlight Photonics

About:

In 2022, a post-doctoral researcher set course to start Superlight Photonics, a deep-tech company based on a photonics technology of supercontinuum generation laser. This technology originated from his own 12-years of research, first at University of Hamburg and later at the University of Twente.

Superlight Photonics received initial support from Novel-T, the incubator of Twente University.

Superlight Photonics sells a laser sub-system performing super continuum laser generation, generating a wide spectrum laser beam in the sub infra-red area. This solution can be incorporated as a subsystem for imaging applications (increased image quality, reduced energy consumption, less bulky and more stable), or for data center networking (increased bandwidth and reduced energy consumption).

(1) Problem

Data centers face the arduous problem that the demand for compute and storage is exponentially increasing due to video streaming, cloud services, social media, and big data/AI/ML applications. The (mainly) electrical equipment in data center networking is reaching its limits in terms of bandwidth. Moreover, data centers are expected to require more than 10% of global energy production within 2 years.

While significant innovations are taking place to reduce energy consumption and increase computing on the server level, the networking architecture of data centers is falling behind. Nonetheless, electrical interconnects cannot keep track of Moore's law indefinitely, with increasing bandwidth and energy efficiency requirements. The required bandwidth of interconnects and switches is expected to grow tenfold per decade, while the energy efficiency must follow the same trend.

Additionally, regulators are limiting the amount of energy toward data centers.

(2) What/Technology Solution

Superlight Photonics' proprietary and patented supercontinuum generation technology turns a laser source into a very broad spectral bandwidth. The novel chip-level laser enables a significantly higher bandwidth while reducing power consumption.

When this technology is applied for transmitting data, Superlight Photonics' SCG can significantly increase the bandwidth of data center networks, while limiting its environmental footprint in terms of energy consumption, something current optical interconnects cannot do.

(3) Who benefits

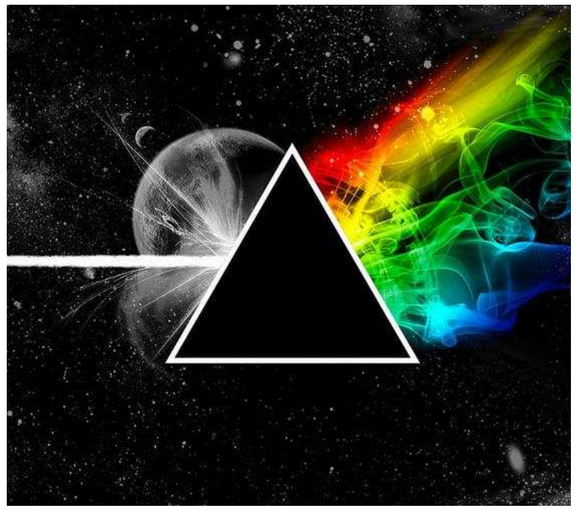
Society from an environmental perspective. Moreover, society by enables the progression in AI/ML applications without significantly increasing society's total energy consumption.

(4) Quantifying impact

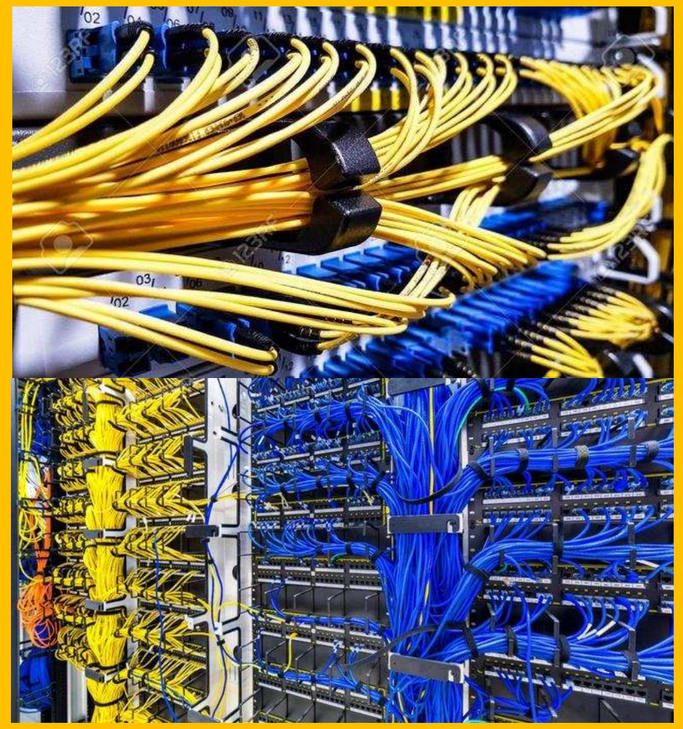
By replacing electronic interconnects with optical interconnects, Superlight Photonics can potentially reduce energy consumption and thereby significantly reducing the industry's environmental footprint, while increasing the bandwidth.



KPI:
Amount of electricity reduced



WHY WE ARE EXCITED ABOUT SUPERLIGHT PHOTONICS (2/2)



With better light, more insight!

At our core, we're driven by the belief that better light leads to deeper understanding. Through our work in photonics technology, we aim to enhance insights across various fields, including healthcare, industry, agriculture, and research by addressing accuracy, efficiency, process control, and quality management. We do this by providing superior laser lighting solutions, that reduce environmental impact and thereby contribute to sustainability. Our commitment to sustainability guides us in developing environmentally friendly solutions for a brighter future." **- Cees Links, CEO Superlight Photonics**

(5) Additionality

Superlight Photonics offers a solution that is currently not available. Existing copper interconnects have too low bandwidth and require significant energy consumption. Existing optical interconnects are unable to scale to Tbits/s. As hyperscale data centers face the issue of increasing demand for AI/ML computing, and interconnecting servers, the demand for bandwidth in data center networks is significantly increasing. Moreover, data centers face regulatory limitations of the amount on energy consumed, further limiting the compute per square meter, given the energy limit received.

(6) Systematic impact

Superlight Photonics aims to create systemic change to radically change the data center network infrastructure from electronic to optical, via SCG-generated lasers.

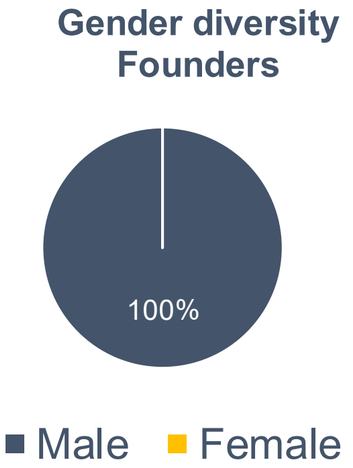
SDG Alignment

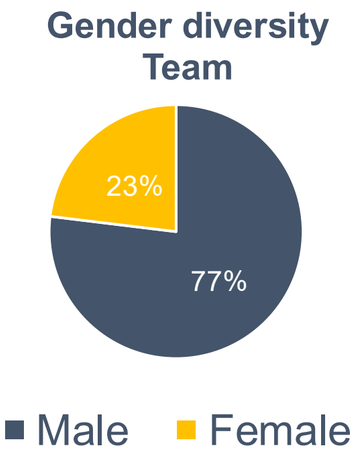
SDG 9.4: upgrade all industries and infrastructures for sustainability

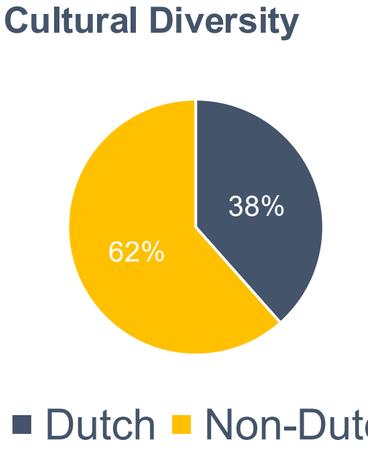
By 2030, substantially reduce the amount of electricity consumed for data center networks.

Key risks

1) Superlight Photonics' supercontinuum generation is unable to meet the required specifications to replace interconnects.
2) Global standards might harm the offtake potential for innovative data center network solutions







2023: IMPACT INVESTMENT CASE 8
Theme: Energy transition and Sustainability

IMPACT POTENTIAL:
Through the measurement of temperature differences, potential corrosion under insulation can be detected and Senergetics can thus prevent energy loss.



KPI:
Enhance energy efficiency on industrial level (7.3)

SENERGETICS
SENSE IN DATA



DEEP TECH XL

WHY WE ARE EXCITED ABOUT SENERGETICS (1/2)

Impact Framework: Senergetics

About:

In 2022 Frank and Anitha (founders of Senergetics) started in the HightTechXL (HTXL) cohort. Based on technology developed by the HTXL partner Photon First Frank and Anitha saw potential in the Corrosion Under Insulation (CUI) market.

Frank has knowledge of the industrial insulation market from previous working life, and Anitha is technology-focused. Senergetics started to valid from the day the potential and found that there was a lot of interest from the market.

Senergetics sells an end-to-end solution fiber optic-cable, sensors, interrogator and a software suit to monitor asset health with a focus on CUI and energy management.

(1) Problem

The piping used in the process industry is often insulated to keep the material flowing through the pipes at processing temperature (can be hot above 100 Celsius or cold below 0 Celsius) because of aging or other influences pipe can start to corrode. This corrosion is hard to detect because the pipe is wrapped in insulation and cladding, and this will cause loss of energy and a dangerous situation (leakage or even explosion danger)

The current technology is based on maintenance schedules and inspection of the piping, this is done visually or with the help of x-ray or laser technology. These methods al are not continuing.

Additionally, corroded piping is causing energy leaks because the insulation is getting wet and therefore is not working correctly. Thus creating energy losses which can have a significant impact on the whole energy usage of the processing plant. By correct monitoring and predictive action this energy loss can be prevented.

(2) What/Technology Solution

Senergetics is using the FBG (fiber bragg grading) technology of Photon first, and the interrogator of photon first.
Combined with an AI data and software suite this gives an end-to-end solution for the customers of Senergetics
When the technology is used for instance at the Shell Pernis plant the operators of the plant know exactly the condition of the piping (160.000 Kilometers in total in the Shell Perniss plant) and also know potential energy leakage. Knowing the condition of the piping makes maintenance more predictive and manageable. By knowing and fixing heat loss locations the asset owner can save energy equivalent to 25 households per kilometer per year of pipe. For Shell perniss plant that is equal to 4Million households (taking first initial test results as input).

(3) Who benefits

The asset owner benefits because he can have predictive maintenance scheduled and by doing so prevent unmanaged stops of the plant. Society benefits because preventing CUI will reduce leakage which can cause environmental harm, and by reducing energy losses energy can be saved (as mentioned above).

(4) Quantifying impact

Knowing the exact spots of CUI Senergetics enables the asset owners to predictive maintenance and timely action thus preventing danger. And per kilometer of Senergetics solution installed the equivalent of 25 households of energy loss can be saved per year (according to initial calculations)



KPI:
Enhance energy efficiency on industrial level (7.3)



Wet pipe



Dry pipe

WHY WE ARE EXCITED ABOUT SENERGETICS (2/2)



Let's make impact today by reducing energy consumption – don't wait for tomorrow we empower the process industry to start changing now
- Frank Jacobs, co-founder and CEO Senergetics

(5) Additionality

Senergetics is aiming to create a solution that offers an attractive return on investment for the customers (max of 2 years) and offers additional benefits (increase safety, increase maintenance efficacy, increase energy efficiency)

(6) Systematic impact

Senergetics aims to create systematic change by offering its customers the technology needed to battle the CUI problem, and simultaneously give them insight into energy loss locations. Senergetics aims to achieve this goal by proving both solutions as one offering.

SDG Alignment

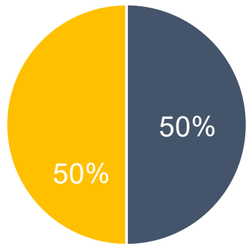
SDG 7.3: Ensure access to affordable, reliable, sustainable and modern energy for all
By 2030, double the global rate of improvement in energy efficiency

SDG 9.4: Upgrade all industries and infrastructures for sustainability
By 2030, substantially reduce energy usage

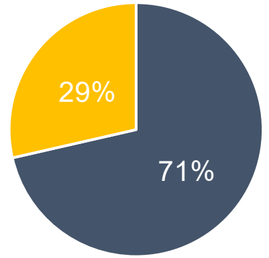
Key risks

Senergetics' technology is unable to meet industry specification and therefore the technology may not adopted by the industry.

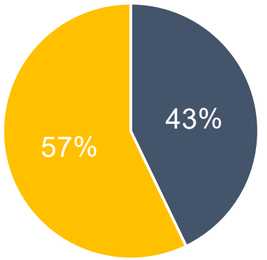
Gender diversity Founders



Gender diversity Team



Cultural Diversity



2024: IMPACT INVESTMENT CASE 9
Theme: Energy transition and Sustainability

MicroAlign

IMPACT POTENTIAL:

MicroAlign is enhancing quantum computing efficiency by improving fiber array alignment, reducing photon loss and computation errors.



KPI:

KwH in energy reduced and faster adoption on quantum computers



DEEP TECH XL

WHY WE ARE EXCITED ABOUT MICROALIGN (1/2)

Impact Framework: MicroAlign

About:

MicroAlign is a Dutch deep-tech startup and spin-off of the Eindhoven University of Technology established in 2021 by Simone Carderalli, Marco Fattori, and Cees Luijendijk. Their revolutionary technology enables for the first time to optimally connect many densely spaced fibers to multiport optical components, all at the same time and with individual sub-micrometer accuracy.

MicroAlign leverage their micro-manipulation technology to manufacture the next generation of ultra-high accuracy fiber arrays, with core position accuracy better than ±100 nm enabling components in applications where every photon counts.

(1) Problem

Quantum computing, which leverages the principles of quantum mechanics, can solve problems in hours or days that would take today's most powerful classical computers hundreds of thousands of years. Unlike conventional computers that use binary bits, quantum computers use qubits, enabling them to process vast, complex data sets at exponentially higher speeds.

While this potential holds significant promise for breakthroughs in fields like healthcare, encryption, and energy, the technology is still in the research phase, with challenges like photon loss in photonic quantum computations hindering its scalability.

Quantum computers require all photons at the same time to 'jump' to/from the Quantum PIC, while current fiber arrays have ±>4% loss ratio. Thus, many computations need to be re-sent, causing significant energy consumption and limited quantum efficiency.

(2) What/Technology Solution

MicroAlign aims to become the global leader in the manufacturing of fiber arrays for the quantum computing industry by addressing the long-standing challenge of fiber array-to-chip connection. Their innovative technology introduces individual fiber position control within a fiber array, combined with core-based active alignment, achieving a 10x improvement in accuracy over current passive alignment solutions without compromising alignment speed. This revolutionary tuning capability allows all fibers to be controlled individually and simultaneously, making alignment tasks highly parallelizable. By solving this critical issue, MicroAlign has the potential to significantly reduce energy consumption in quantum computers by minimizing computation redundancy caused by photon loss.

(3) Who benefits

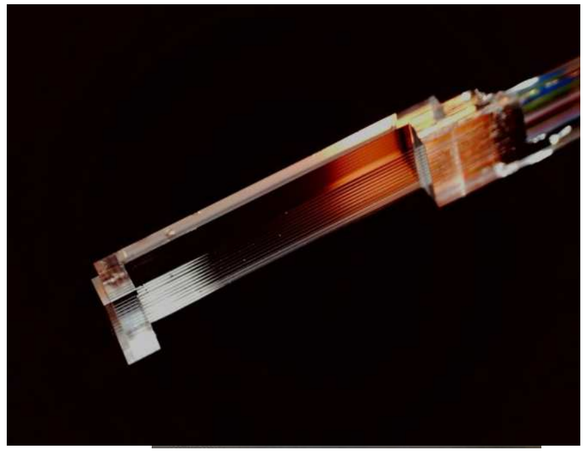
MicroAlign's products serve as a key enabler for the advancement of quantum computing, accelerating its adoption and integration across various industries. By addressing critical challenges in fiber array-to-chip connectivity, MicroAlign unlocks new possibilities for innovation, empowering industries to harness the transformative potential of quantum computing and drive progress in numerous domains.

(4) Quantifying impact

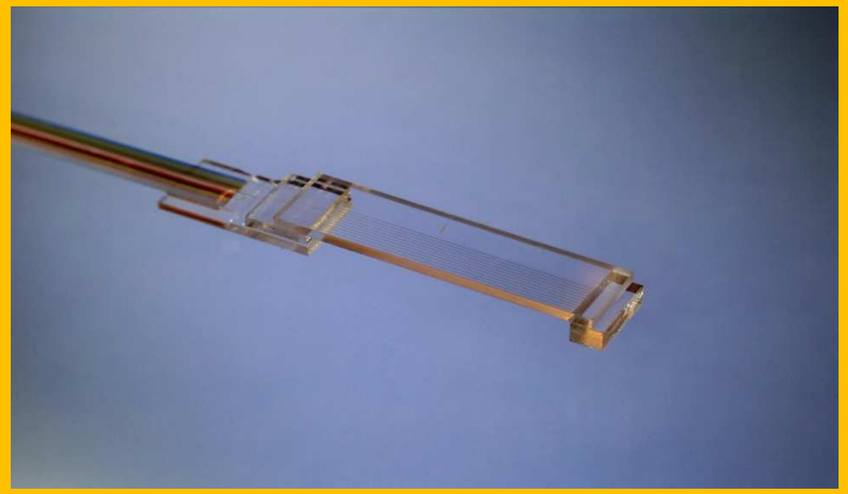
MicroAlign sells fiber arrays and by doing so, MicroAlign aims to increase quantum efficiency and enable the commercialization of quantum computers to run simulations to enable radical new innovations for societal challenges.



KPI:
KwH in energy reduced and faster adoption on quantum computers



WHY WE ARE EXCITED ABOUT MICROALIGN (2/2)



Quantum photonic computing is on the edge of proofing processing supremacy with respect to classical computers. 1 million-qubit computer is only possible by connecting hundreds of quantum photonic chips together through optical fiber connectors with ultra-low loss. While existing fiber connector technology cannot provide the needed loss performance, MicroAlign has developed a revolutionary fiber connector that can enable chip interconnection according to the Quantum Computing industry needs.

- Simone Carderelli co-founder and CEO MicroAlign

(5) Additionality

In addition to providing the perfect fiber array, MicroAlign is also able to offer optical testing and assembling beyond quantum industry for example other industries such as data and communication.

(6) Systematic impact

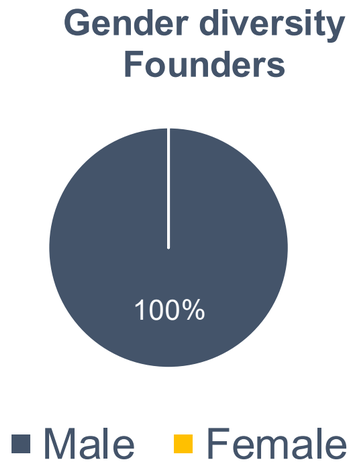
By aligning fiber arrays more perfectly, MicroAlign has the potential to reduce photon loss, thereby reducing the error rate of computations, which improves the performance of quantum computing efficiency.

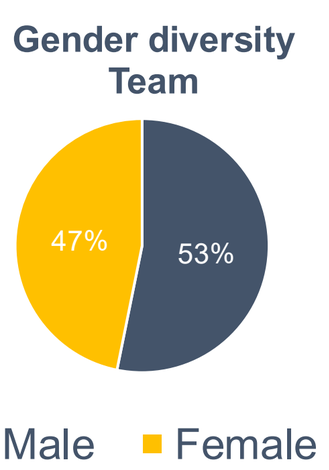
SDG Alignment

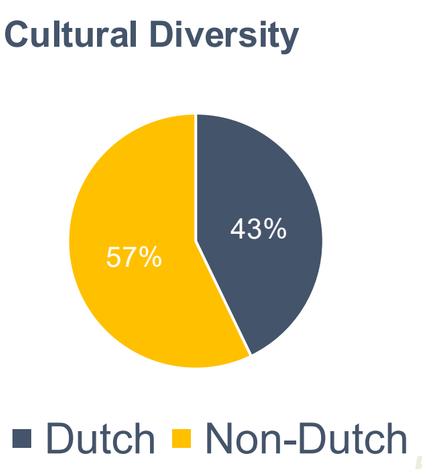
SDG 9.4: upgrade all industries and infrastructures for sustainability

Key risks

1) Unable to meet the fiber's array customers' specification
2) Delay in adoption of the quantum computers







4

Outlook For 2025





2024 – FOUNDATION FOR IMPACT

Continuous improvement has been implemented in 2024

In 2024, our team created a culture of continuous improvement for assessing, managing, and reporting on impact and sustainability:

- Upgraded our sustainability risk assessment with state-of-the-art knowledge and insights, such as the SASB Materiality Finder in our material risk assessment.
- Improved our ESG questionnaire by improving the efficacy of the data points monitored.
- Intensified the impact committee involvement during the sustainability impact assessment process and made the advice of the committee an integral element of the investment committee decisions.

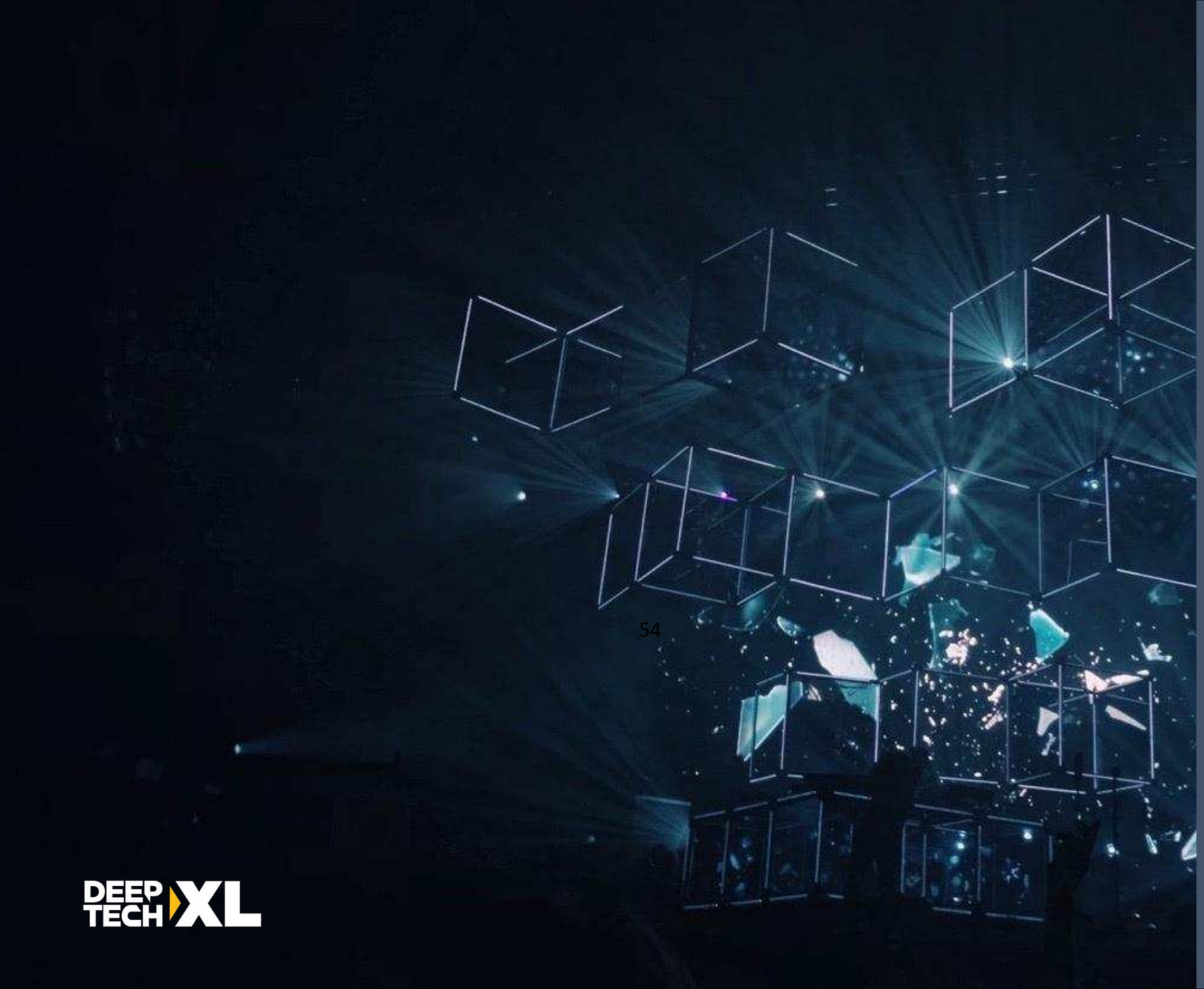
OUTLOOK 2025: KEY INITIATIVES TO STRENGTHEN OUR IMPACT APPROACH



Goals for 2025

For 2025, we have created the following goals regarding our sustainability strategy:

- Improve our impact game plan methodology by advancing on our sustainability impact maturity grid.
- Continue upgrading our sustainability impact assessment methodology with state-of-the-art knowledge and insights.
- Continue upgrading our sustainability risk assessment with state-of-the-art knowledge and insights.
- Following the implementation of the upgraded impact processes and procedures, additional focus is put towards monitoring and reporting on impact across our portfolio.
- Increase the added value of our impact and sustainability vision by creating, for example portfolio-level sustainability workshops.



Impact Report 2024

DEEP TECH XL