Green Vision IT

Let's be part of the solution, not the problem.

Nanna Lumholt Vangkilde

- **Interest** Reducing CO2 emission within my field of work. Coparenting with husband Mads to 3 youngsters and 3 way too spoiled cats.
- **Education** Master of Science in Information Technology.
- **Key areas** Sustainable IT, Sustainable Enterprise Architecture, Sustainable IT transformation, Thought leadership, Strategy development, Concept development and keynote speaker.
- **Experience** Summed up around +17 years either studying or working with technology.
- **See more** www.linkedin.com/in/nannalumholtvangkilde

Key references

Green Vision IT – Spreading awareness and reducing CO2 through advice and speaking.

Nordea – Leading architecture activities catering for customers and advisors in the Nordics.

Nykredit – Building the future digital bank platform, BI & delivering on the ESG agenda.

PFA – IT strategy, working with maturing governance and establish best practices.

Novo Nordisk – Supporting the R&D area with IT architecture and Enterprise Architecture.

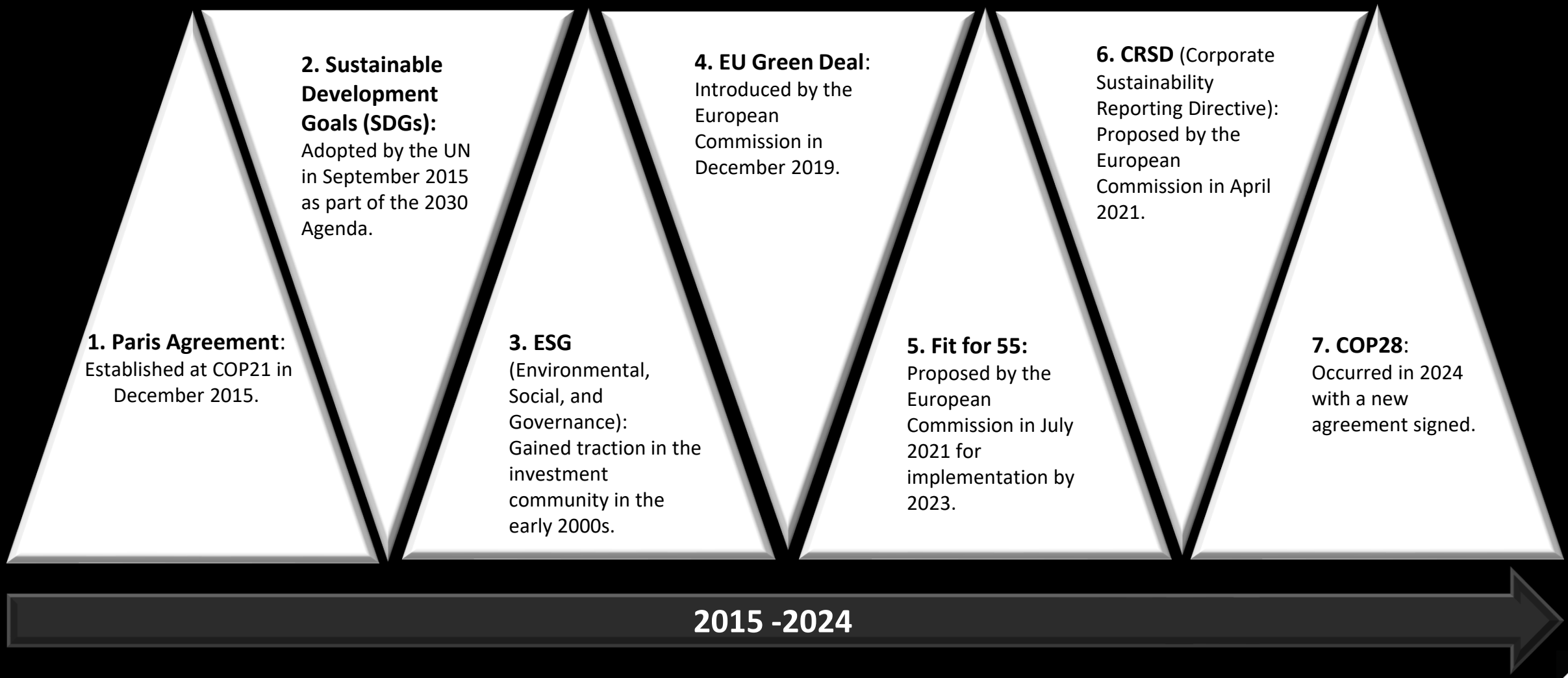
Rockwool – Designing a new global B2B ecommerce initiative and improving an existing.

Novozymes – Establishing a global B2B ecommerce solution and work with commercial initiatives.

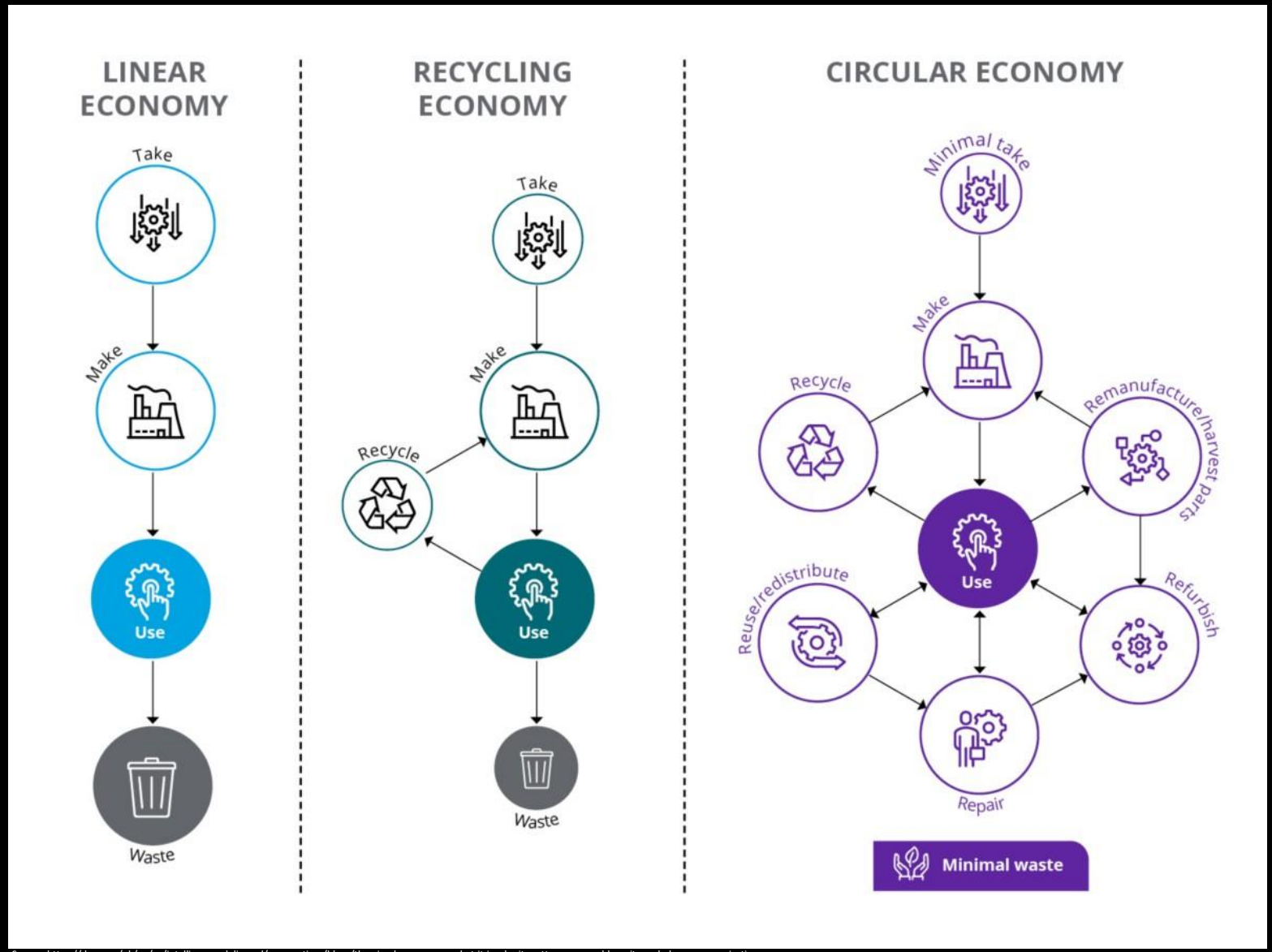
DR – Responsible for graphic and music archive deliverables. Management and solution architecture.

Oticon – Working on a global “single source of truth” marketing platform.

Legislation demands organizations to change practises



Transforming to a circular economy



Source: https://dxc.com/uk/en/cp/intelligence_delivered/perspectives/blogs/the-circular-economy-what-it-is-why-it-matters-now-and-how-it-can-help-your-organisation

Sustainable IT transformation framework for IT development

Define	Conceptualize	Design	Implement	Release
Sustainable value proposition	Using sustainable standards	Sustainable solutions	Energy efficient solutions	Greener value for the user
STRATEGIZE	**MATURE**	**ASSESS**	**DEVELOP**	**OPERATE**
1.Develop a Green Enterprise Architecture Strategy Aligned with Business Goals and Legislation.	1. Conduct Lifecycle Assessment. 2.Evaluate Sustainability in Service Contracts. 3.Execute Certified Sustainable Procurement. 4. If new SW or HW is acquired ensure sustainable sunsetting or E-Waste handling.	1.Craft Energy-Efficient User Experiences. 2. Build Eco-Friendly Web Design. 3. Design Sustainable Architecture. 4. Apply Energy Conservation in AI. 5. Ensure Green Data Management.	1.Optimize for efficiency using Green coding. 2. Use Eco-friendly methods for Responsible testing.	1.Utilize the benefits from Fin Ops and Green Ops.

ESTABLISH A DATA VISUALIZATION OF THE "END TO END" IT DEVELOPMENT PROCESS

Location for sustainable deployment matters..

Region	Carbon Intensity	Factor Increase Over Sweden
Sweden	9 g CO_2e/kWh	1
Upstate New York	106 g CO_2e/kWh	11,78
Denmark	130 g CO_2e/kWh	14,44
Spain	232 g CO_2e/kWh	25,78
California	241 g CO_2e/kWh	26,78
Germany	402 g CO_2e/kWh	44,67
Florida	378 g CO_2e/kWh	42,00
Tennessee	423 g CO_2e/kWh	47,00
Hawaii Oahu	741 g CO_2e/kWh	82,33
Estonia	946 g CO_2e/kWh	105,11

Table 4 Comparison of energy carbon intensity between different EU countries and US regions for the year 2022 highlighting the large gap between ICT software product GHG emissions depending on where hardware is located (European Environment Agency, 2022; United States Environmental Protection Agency (EPA), 2023).

Source: https://uu.diva-portal.org/smash/get/diva2:1803269/FULLTEXT02.pdf

What is the trend about, and what are the most noteworthy technologies?

5G/6G cellular, wireless low-power networks, low-Earth-orbit satellites, and other technologies support a host of digital solutions that can help networks increase geographic coverage, reduce latency, reduce energy consumption, increase data throughput, and increase spectrum efficiency. This has led to higher-quality network access for consumers and unlocked new use cases for industrial players

Fixed → Terrestrial wireless → Non-terrestrial wireless

Connectivity technology	Optical fiber	LPWA[1] networks	Wi-Fi 6	5G/6G cellular	LEO[2] satellite constellations
Description	Most reliable high-throughput, low-latency connectivity provided through physical wire	Wireless low-power networks with wide-area coverage supporting a high number of connected devices (eg, NB-IoT,[3] LTE-M, LoRa, Sigfox)	Next-generation Wi-Fi (also called "industrial Wi-Fi") with higher throughput, more controllable quality of service, and almost "cellular like" level of security	Next-generation cellular technologies with higher-spectrum efficiency, providing high-bandwidth, low-latency services for consumers and industrial verticals	Wide-area coverage with significantly reduced latency vs existing satellite offerings, due to lower-orbit constellations

[1]Low-power wide-area.
[2]Low-Earth orbit.
[3]Narrow-bandwidth Internet of Things.

Source: McKinsey analysis

CAGR

A good CAGR for an industry is 8% to 12% for large companies, while for high-risk companies, a good CAGR is between 15% to 25%. CAGR stands for Compound Annual Growth Rate, a ratio to extrapolate a constant rate of return over several years. In other words, the constant growth rate over multiple years.

CAGR (Compound Annual Growth Rate) = ((EV / BV) ^ 1/n) - 1

EV = Earned Value / Earning Value of Investment

BV = Beginning Value of Investment

n = Periods (months, years, etc.)

Market facts

The global Green Data Center market size was valued at USD 50480.07 million in 2021 and is expected to expand at a CAGR of 26.25% during the forecast period, reaching USD 204455.65 million by 2027.

Greenland today

- Greenland does not have a green datacenter today.
- The Greenlandic government wants 1. To increase growth of green solutions in Greenland and 2.To built up new competences in the Greenlandic society.

Problem

- Datacenters leave approximately 3% footprint on the planet, and the data needs are estimated to grow significantly over the next decades.
- Most datacenters are based on fossil fuels, the need for sustainble datacenters is high.
- Today CSRD and ESG reporting requirements makes it transparent for large organisations how much C02 they emit running their business and by developing their products.

Prerequisites

- Legislation requires that many pharma, finance and government organisations will need to retain cold data for many years, the need for green hosting services are increasing.

Opportunities

- The CAGR for Sustainable datacenters is high, making these types of initiatives attractive for investors.
- Waste heat from a green datacenter will be used to grow vegetables for the greenlandic population who mainly import vegetables from outside Greenland.
- Production of a hosting service and vegetables will be based on renewable energy and support 11 of UN's global goals.

What if?

We provide local hosting and serve EU via Iceland.

Source: https://www.tjekdet.dk/faktatjek/5000-milliarder-ton-er-forsvundet-i-groenland-paa-20-aar

Objective

*To built a cutting egde Green datacenter near the capital Nuuk in Greenland.

*To establish a large scale green datacenter with an attached greenhouse.

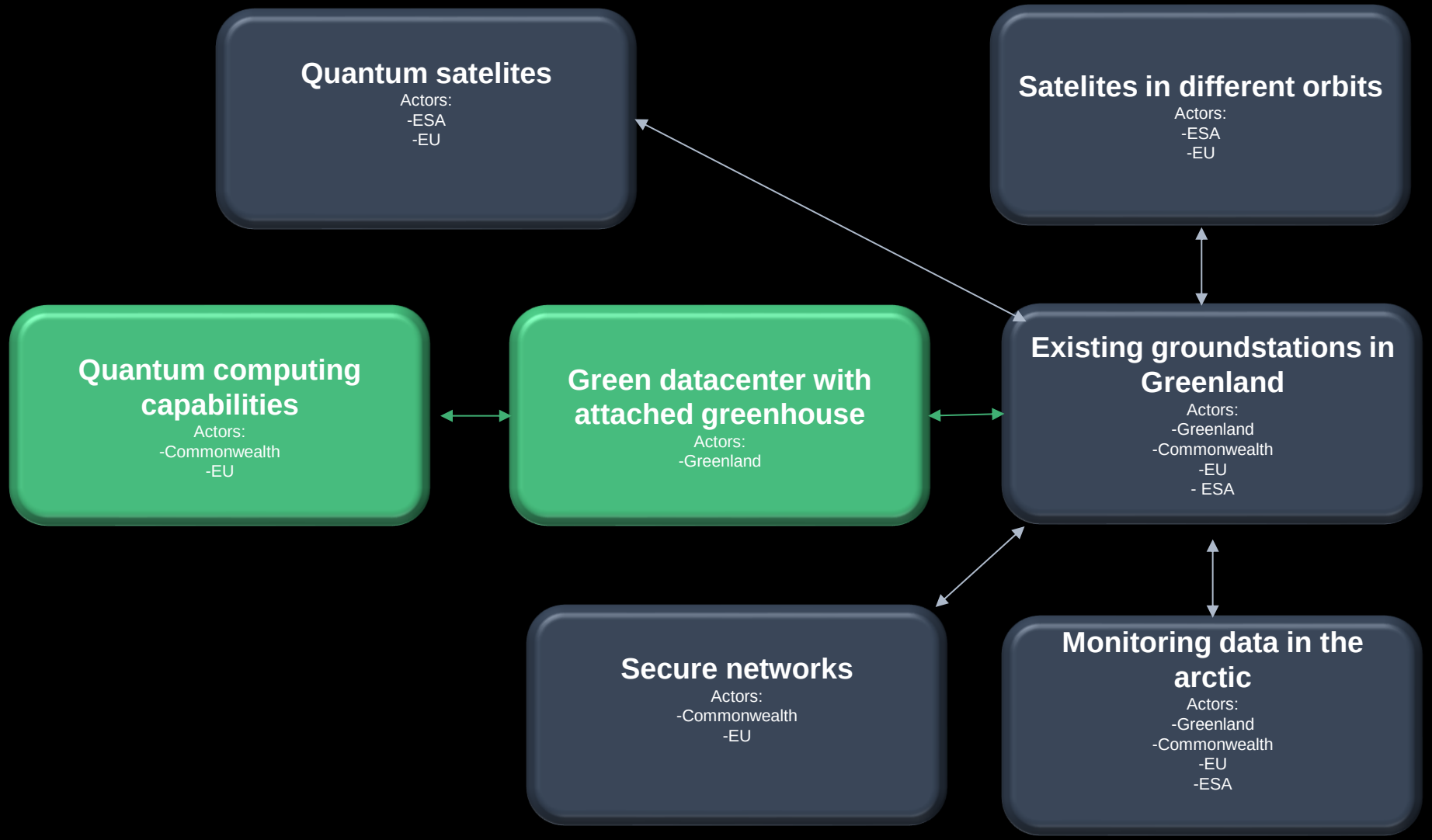
*Fuelled by renewable energy either by hydro electric powerplant or perhaps windmills .

*The greenhouse will be heated by waste energy from the datacenter and grow. vegetables for local usage in Nuuk and for the rest of Greenland.

Source:
https://eandt.theiet.org/content/articles/2022/12/is-iceland-the-coolest-location-for-data-centres/

What if?

- Interests are merged into a green future technology hub based in Greenland for a greener future handling green data from Greenland?



*Creating a technologyhub delivering green technology services for governmental, science, private sector and more.

*Green infrastructure supporting quantum networks and quantum satelites.

*Enhancing energi efficiency when running blochhain, AI and cryptocurrency loads.

*Utilising Quantum computing capabilities for science and education.

*Utilising infrastructure for green dataexchange used for monitoring and more.

*Opportunities for green commercial solutions for B2C and B2B.

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Can be found on LinkedIn by searching for Nanna Lumholt-Vangkilde

Green Vision IT’s goal is to ”Let’s make IT greener!”

- It is estimated that the CO2 footprint from ICT will increase to up to 14% of the total global emission by 2040.

BACKGROUND

Greenland is a part of the Paris agreement, a green datacenter will adhere to the following goals:

1. The need for more green data hosting solutions (SDG 7).
2. The wish to impacting good health and mental wellbeing (SDG 3).
3. The ability to giving access to healthy food (SDG 2).
4. The goal to stimulate growth in Greenland (SDG 8)
5. Ensuring a responsible consumption and production (SDG 12).
6. Using affordable and Clean Energy (SDG 7).

MISSION

Green Vision IT wants to make information technology greener in order to reduce the CO2 footprint. Also, growing new competences in Greenland and expand the export services along with offering more local vegetables and therapeutic facilities for mental health needs.

VALUES

Green Vision IT is about authenticity and change having a fully committed approach to reduce CO2 and a belief that sustainable changes require concrete actions and that we in partnerships must strive to change the world for a better tomorrow.

Innovation

- Export of sustainable data hosting services and vegetables for Greenland

CHALLENGES	OPPORTUNITIES	CUSTOMERS
1. Greenland rely heavily on selling fish.	1. Export of green data hosting services.	1. EU corporate companies, government, science etc.
2. EU are in need of green datacenters to reach the Paris agreement goals.	2. EU have in 2023 allocated 240 Euros to accelerate building green datacenters.	2. EU corporate companies, government, science etc.
3. Many vegetables are exported to Greenland, this is expensive and transport leaves a CO2 footprint.	3. Establish a greenhouse based on excess heat offering a broader variety of local vegetables in Greenland.	3. Greenlandic crocery stores and social institutions offering gardening terapy.