AI - Impact on R&E

EDUCATION

Personalized Learning

- Adapts to individual student needs
- Provides real-time feedback
- Identifies learning gaps quickly
- Customizes pace and difficulty
- Breaks down language barriers

Teaching Support

- Automated grading and feedback
- Content creation assistance
- Administrative task automation
- Intelligent tutoring systems

RESEARCH

Enhanced Data Analysis

- Processes massive datasets quickly
- Identifies patterns humans miss
- Accelerates research timelines

Research Tools

- Automated literature reviews
- Hypothesis generation
- Predictive modeling
- Lab automation and experiment optimization

Interdisciplinary Benefits

- Enables cross-field discoveries
- Combines insights from multiple domains
- Creates new research methodologies

IMPACT (GÉANT Community)

Generative AI

- Use wherever possible (content generation)
- Removes human error (data relationships)

FAIR for F-AI-R

- FAIRhub and AI READI project (example)
- Access to Open/Brokered/Contracted data

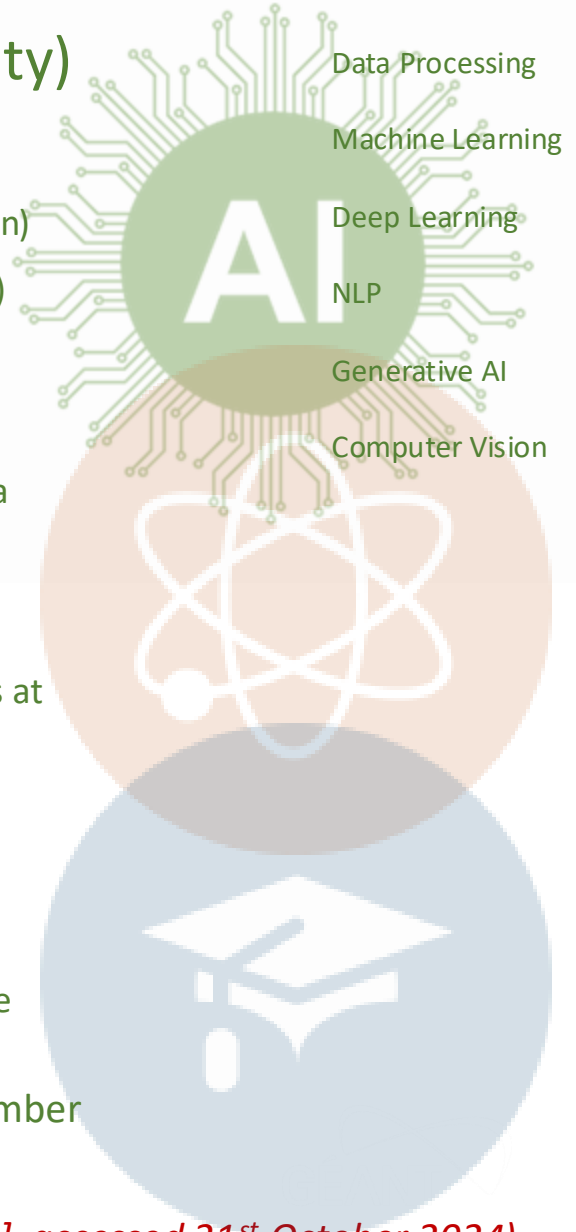
TRE (Trusted Research Environments)

- Secure research data hosting and sharing
- Algorithm (ML) based compute workloads at the cloud edge

GÉANT SERVICES IMPACTED

1. **AAI** – Data/Services brokering
2. **AtN** – Procurement/DRE/TRE
3. **Network** – Data visitation/Edge compute

***SIG-AI 1st Meeting 2024 –** 11 December



(Anthropic (2024). Claude [Large language model], accessed 21st October 2024)

AI usage and plans in DeiC

Strategiske pejlemærker

SIG-MSP, Poznan

24th October 2024

Head of NRENMartin Bech
martin.bech@deic.dk

Activities in DeiC that include AI

Services:

- Speech-to-text services Amberscript and the REACH module in Panopto
- OCRE includes a range of AI-based services (including training and usage of LLMs)
- Development and sharing of recipes for running a license free LLM on your own laptop/server. The results of this is presented at the annual DeiC users' conference next week.

Ideas for new services:

- A self-hosted environment for running trained AI models
- Analysis of logfiles and traffic statistics, based on AI (although that may be stretching what AI is capable of)
- Whisper - an AI based speech-to-text function
- Generation of meta data for datasets as part of out data management services
- Creating data management plans

For our internal productivity:

- Code revision/development
- Translation, text analyses and documentation
- Our own LLM/GPT, trained on our own content
- A component in the workflow of processing applications (but then we have serious concerns about the transparence and objectivity of the our decisions)

AI @ NORDUNET

SIG MSP, Poznan, 24 October 2024

NORDUnet
Nordic Gateway for Research & Education

Lars Fischer

AI AT NORDUNET

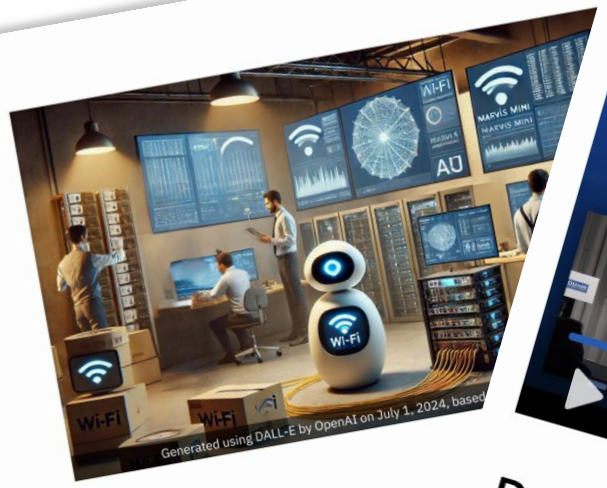
- No major initiatives
  - Follow the developments
  - Allow for experimentation
  - Make resources available
- Pilot adoption where there’s an immediate use case (for existing services)
- Impact on future strategic objectives being evaluated

PILOTS

WIFI network management (MIST)

Home › Silent revolution in conference networks

Silent revolution in conference networks

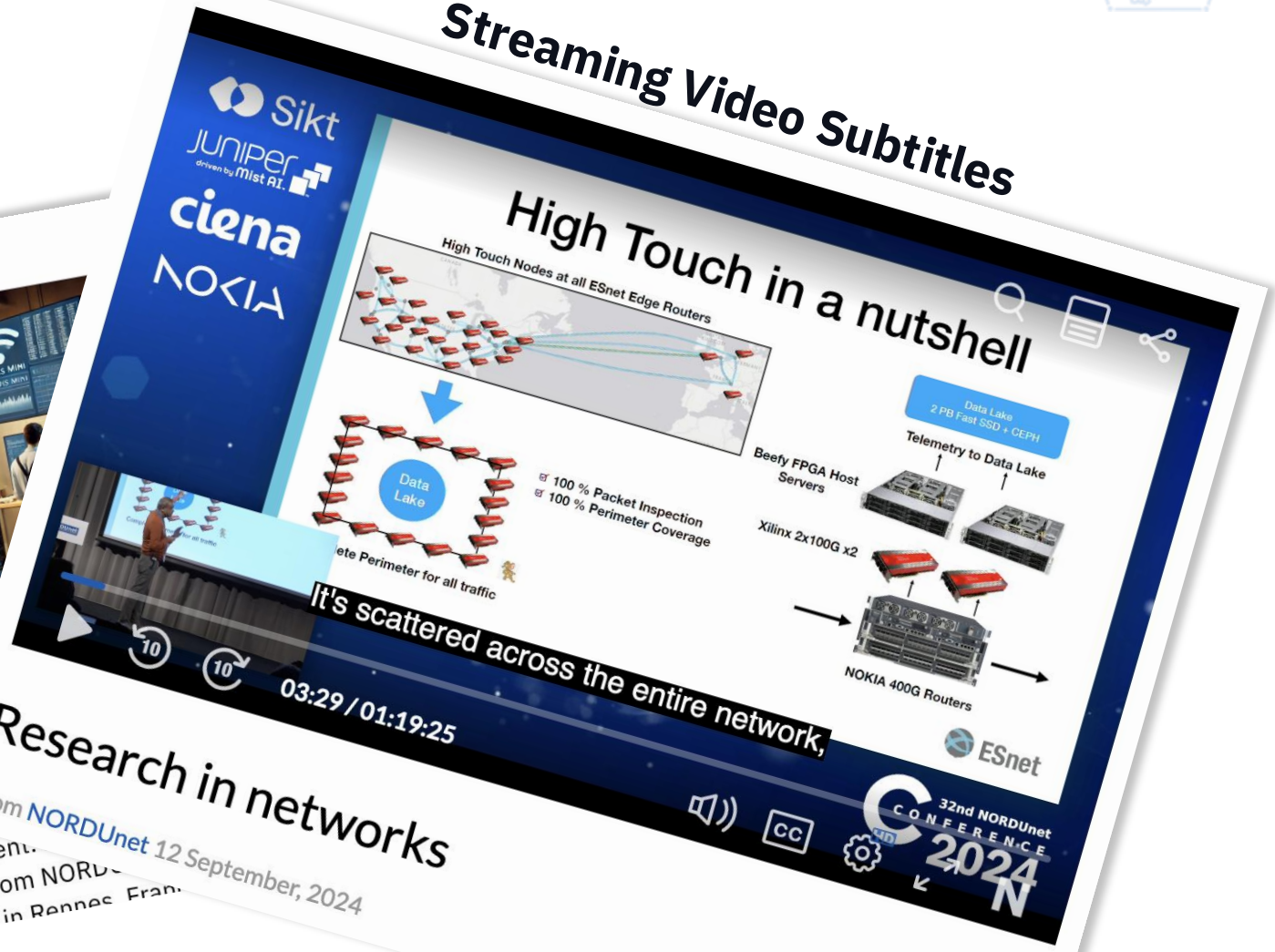


July 2, 2024

At the recent TNC24 conference in Rennes (hosted by RENATER, ed.), a c
NORDUnet used Artificial Intelligence to improve the quality of Wi-Fi a

Setting up a network for a conference is like being a referee at a sports event.
about your performance, you have done a good job. Still, four engineers from NORD
a noteworthy effort as they set up the network for the TNC24 conference in Rennes, Fran

Streaming Video Subtitles



Research in networks

From NORDUnet 12 September, 2024

49 0

NORDUnet
Nordic Gateway for Research & Education

THANK YOU!

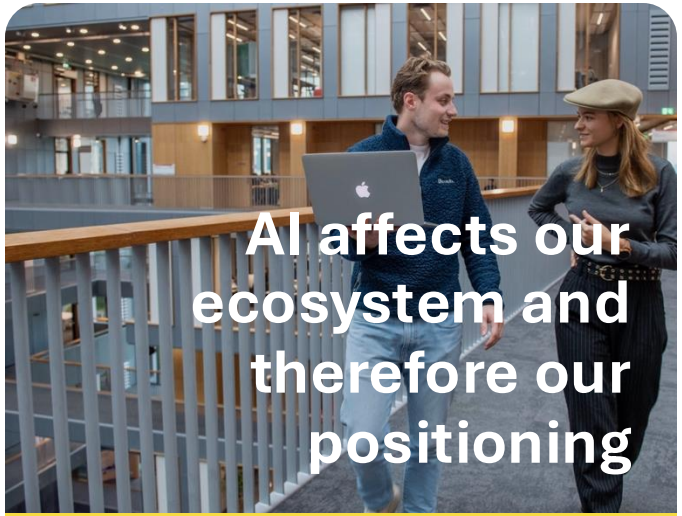
Lars Fischer
<lars@nordu.net>

Impact of AI on SURF

Thijs van der Horst

SIG MSP, 24 October 2024

Impact of AI (1/2) – Making SURF AI-ready

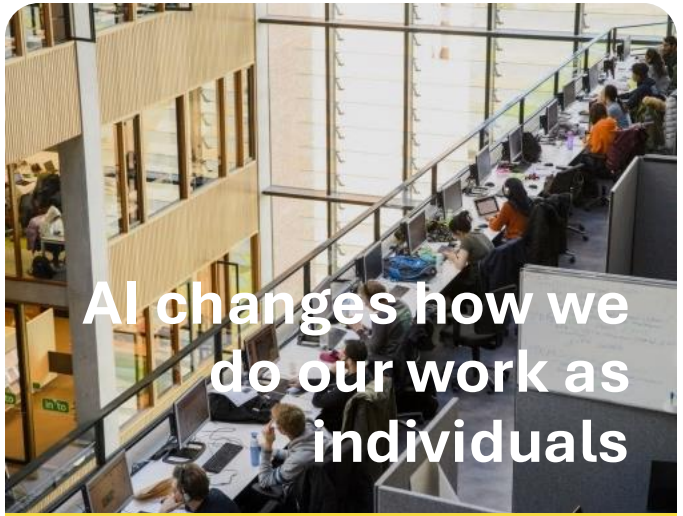


AI affects our ecosystem and therefore our positioning

- Facilitate strategic discussions
- Support prioritization
- Strategic decision making
- Internal coordination & expertise sharing

AI impacts our operations

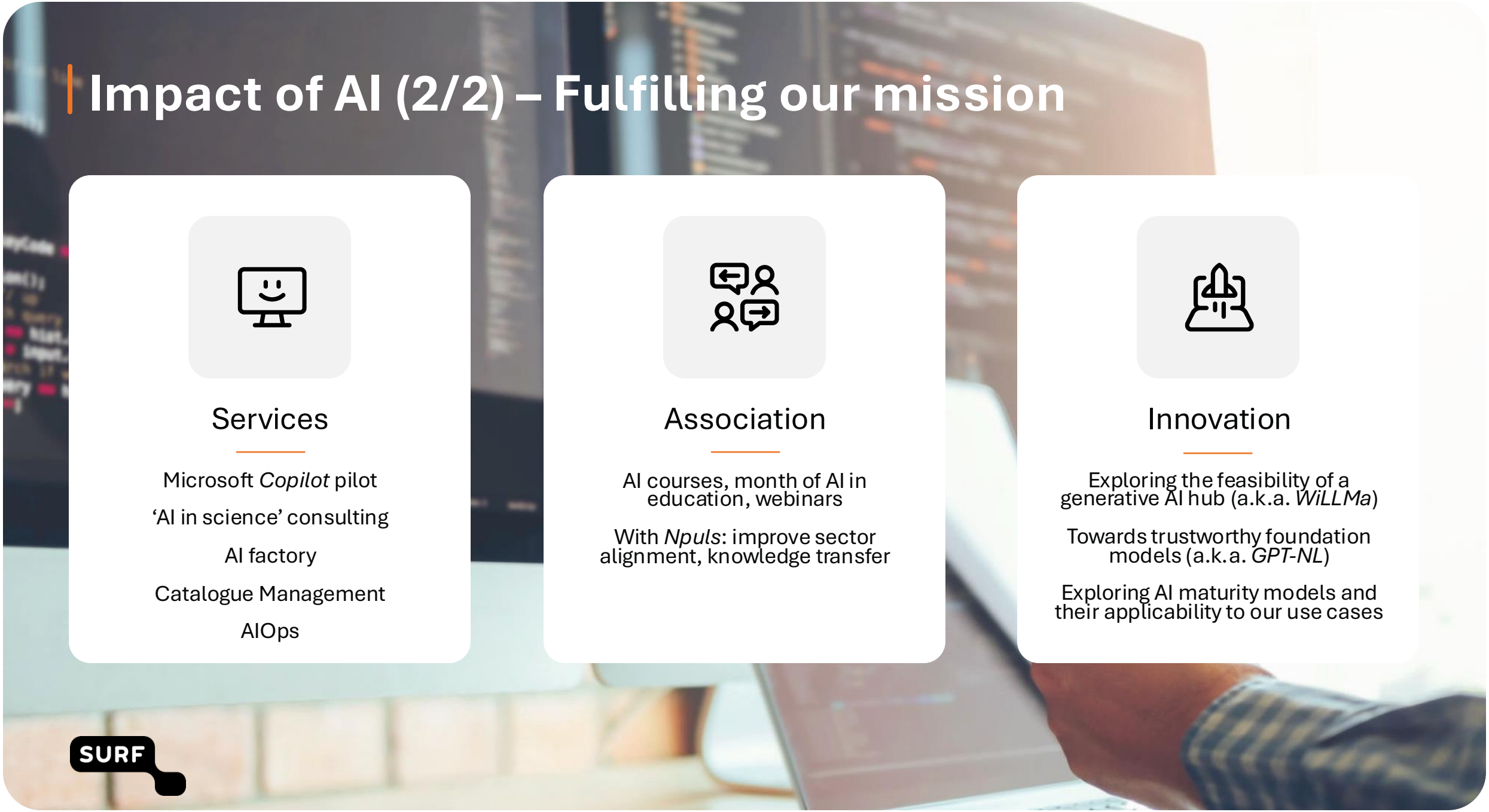
- AI act preparation, responsible AI guidelines
- Impact on services review



AI changes how we do our work as individuals

- Internal pilots: e.g., code generation, generative models, assistants
- Literacy building, best practices

Impact of AI (2/2) – Fulfilling our mission



Services

Microsoft *Copilot* pilot

'AI in science' consulting

AI factory

Catalogue Management

AIOps

Association

AI courses, month of AI in education, webinars

With *Npuls*: improve sector alignment, knowledge transfer

Innovation

Exploring the feasibility of a generative AI hub (a.k.a. *WiLLMa*)

Towards trustworthy foundation models (a.k.a. *GPT-NL*)

Exploring AI maturity models and their applicability to our use cases

SURF

SURF

Status of AI Activities in HEAnet

- HEAnet at the “experimental stage”
- Microsoft CoPilot, ChatGPT
- Software Development / config generation
- AI a feature of new Strategy 2025 – 2030 (launched in November conference)
- Concerns re compliance, risks but also opportunities e.g. automation
- AI policy in development – driven by strategy, AI Act & FOMO
- Next stage, approval mechanism & governance

HEAnet
Ireland's National Education & Research Network

HEAnet
Ireland's National Education & Research Network

CSC

CSC – IT Center for Science Ltd

www.csc.fi

Total turnover: **90 Meur**

Funet NREN volume**: 9 Meur**

AI volume**: 3 Meur**

www.lumi-supercomputer.eu

CSC provides **comprehensive AI infrastructure** for our users and AI consultation services **primarily using our own infrastructure**. On some cases commercial clouds are used (e.g. Azure AI).

CSC's AI activities are funded by CSC, Ministry of Education and Culture, Academy of Finland...etc.

Total employees: **670**

Funet NREN FTE's: **25**

AI related FTE's**: 20**

Current AI service portfolio

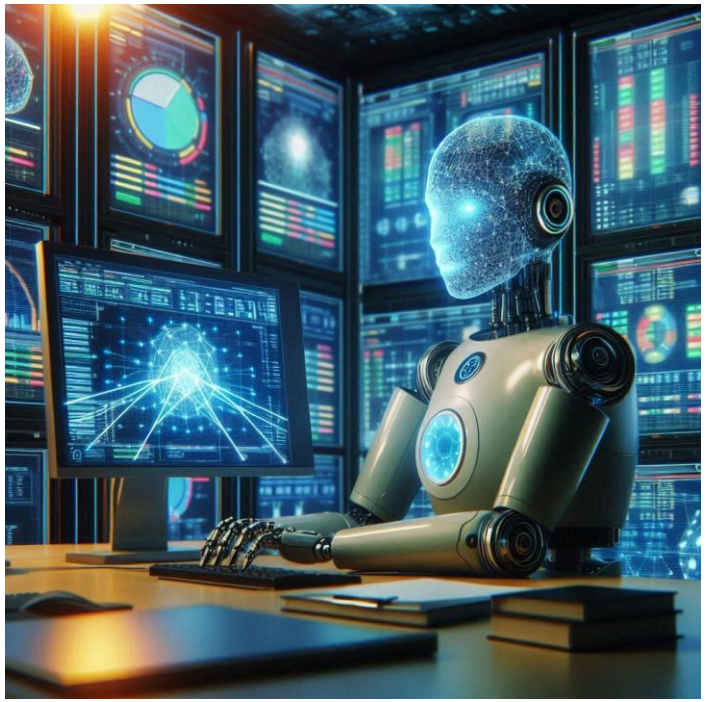
- AI-HPC computing environments (LUMI, Mahti-AI, Puhti-AI)
- AI cloud capacity (cPouta, ePouta)
- AI container capacity (Rahti)
- AI/ML expert support
- AI consultation

Strategic goals under finalisation:

1) Enabling **bleeding edge** AI development
2) Integration of **data resources** with AI systems
3) Supporting customer organisations in **AI transformation**

AI in my NREN

- ❌ **NO AI services for clients**
- ✅ **AI in research projects**
  - Network security
  - Machine learning since 2014
  - LLM in last three years
  - 💰 by research projects
  - About 6 final theses a year
- ✅ **AI in daily work**
- 💡 **Aspiration: AI handling L1 Service Desk**



Key AI Projects and Initiatives

1. **Project BrAIn**

   A strategic project using AI to optimize learning and education through personalized recommendations for students and teachers in Croatian schools and development of curriculum and digital educational content in the field of AI

2. **AI in Customer Support**

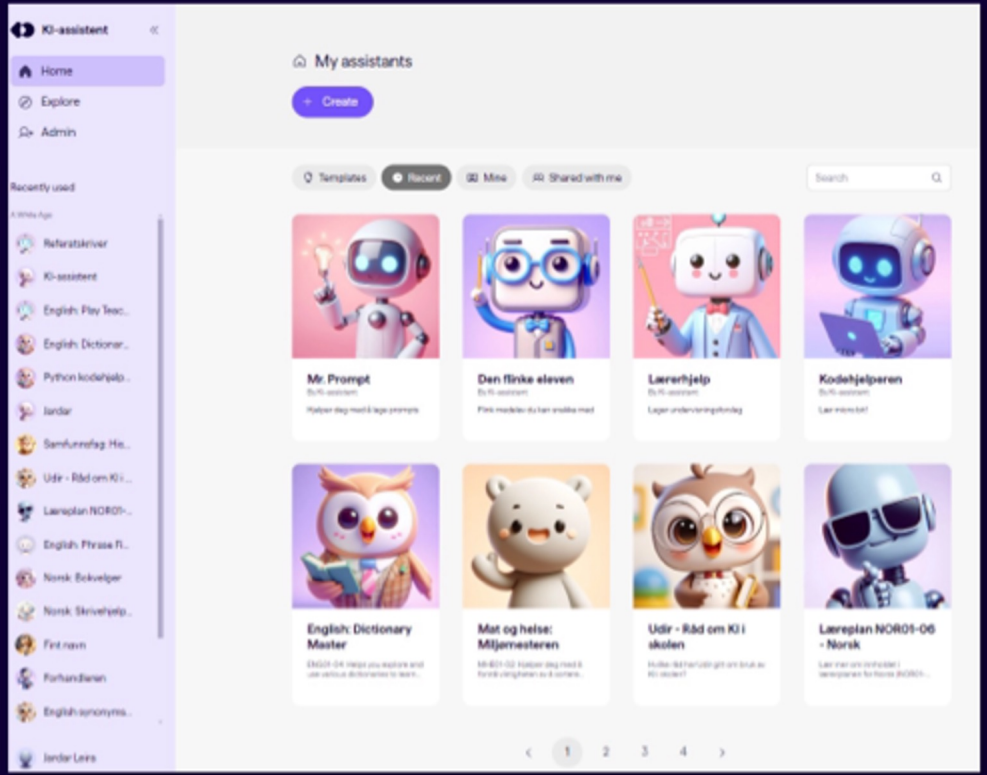
   Pilot of Watson Chatbot: Deployed in domain support, assisting users by automating responses to frequently asked questions

   IBM watsonx Integration: Email Categorization and Response Generation: Using Retrieval-Augmented Generation (RAG) to streamline email sorting and response times.

   Focused on reducing unnecessary manual tasks and speeding up responses during high-demand periods.

AI@Sikt

- cross-organisational AI support team
  - build up competence systematically
  - help with implementing AI
- Optimise processes and services
  - ease documentation search (Feide)
  - auto-tagging suggestions for incoming tickets based on history
  - increased code quality in shared IAM
  - started: include in ethics assessment service for research project
- AI-Chat
  - legal, financial, contractial buffer + store as little as possible, universal access
- AI-assistant
  - platform for scoped chats
  - encrypted storage of prompt history
  - use cases both in primary/secondary education and HE&R



Switch

AI Analysis

G. Hoevenaars + V. Vogel
Version 1, 23 October 2024

AI: product playing field (1)

Applications:
- Generic Chatbot with built-in data protection
- AI assistant for a certain organisation (comparable to student app)
- AI assistant for a certain discipline (like biology) or even a certain course
- AI generator of exam questions
- AI generator of key words (SEO, OER, etc.)

Market Definition:
- Especially teaching universities and universities of applied sciences
- Size dependent on use case
  - AI assistant: Per student calculate with CHF 7.50 as a first vector

Risks
- This market is going too fast (similar to cybersecurity).
- Everybody wants AI, but many started AI projects fail.
- People/knowhow level is low. We need to invest or seek partnerships.

AI: product playing field (2)

Product Playing Field

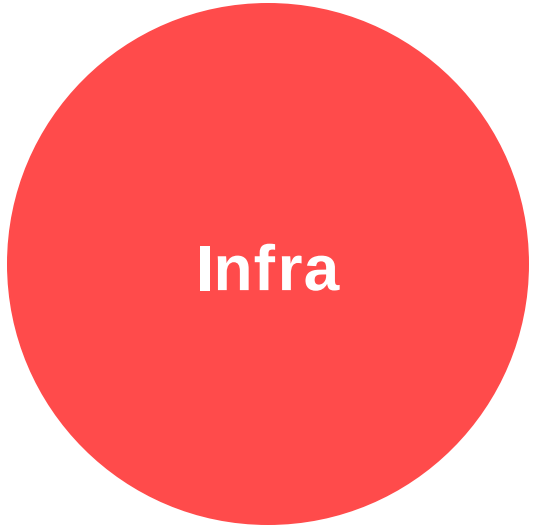
Technical Requirements:

- For AI Detection use cases, standard computational resources are probably sufficient.
- For the chatbot/service use cases a considerable amount of VRAM and GPU power are required if the application would be self hosted. It is a major need of the community to have a professionally-run infrastructure service
- Use the RAG technique to prevent hallucinations and to specialise on a certain subject
- Use smaller LLMs (based on OS) for smaller applications (e.g. Switch App)

Legal Challenges:

- GDPR, sensitive data protection laws
- EU AI act
  - Use of AI without any 4-eye principle
  - Use of AI for important decisions (such as grading an exam)

Proposal to start with Product Development



We provide a stable infrastructure with data security, which is easy to budget

We assist the universities by offering consultancy in the area of LLM choice, RAG, use cases

Switch can set-up the service, provide legal assistance & procurement, but also operate an LLM

Switch_

NICIS
NATIONAL INTEGRATED CYBERINFRASTRUCTURE SYSTEM
SANReN

South African National Research Network (SANReN)

Ajay Makna
Head of Operations
SIG-MSP Autumn 2024,
24 October 2024,
Poznan, Poland

A national initiative of the Department of Science and Innovation and implemented by the CSIR

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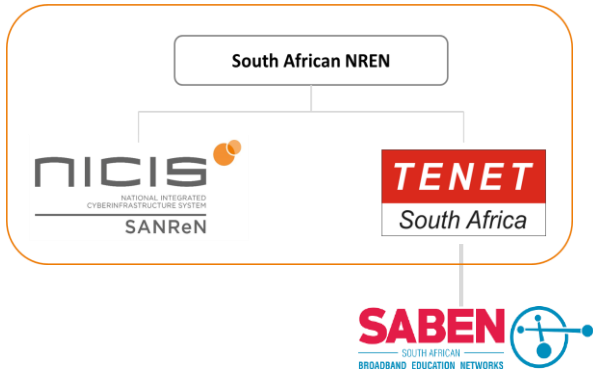
Science and Innovation
REPUBLIC OF SOUTH AFRICA

CSIR
Touching lives through innovation

South African NREN: Structure



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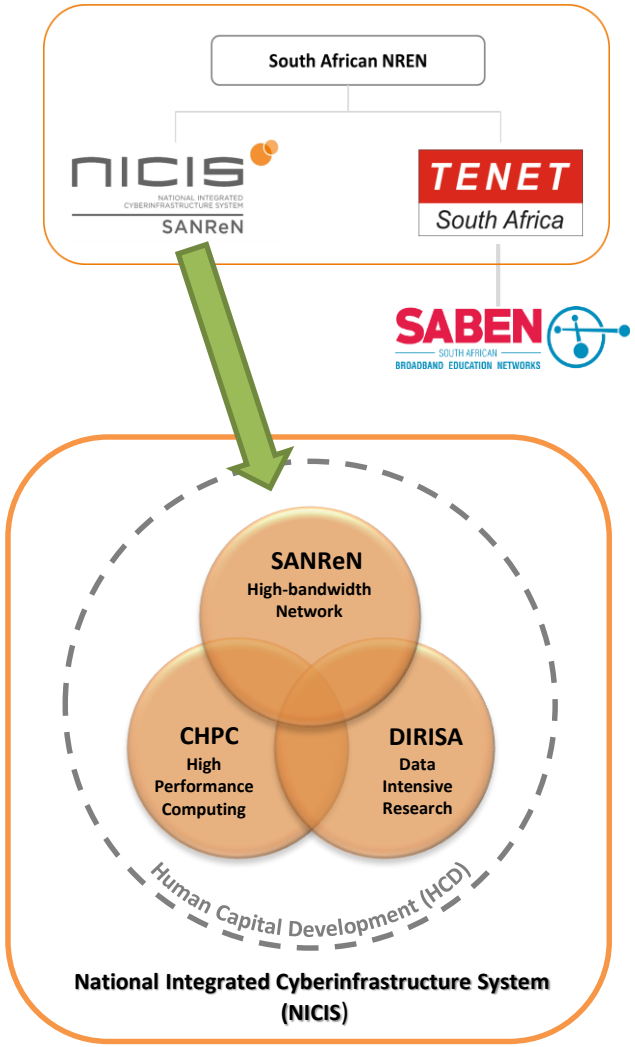
NICIS Structure

- No dedicated Comms and Marketing functions in SANReN



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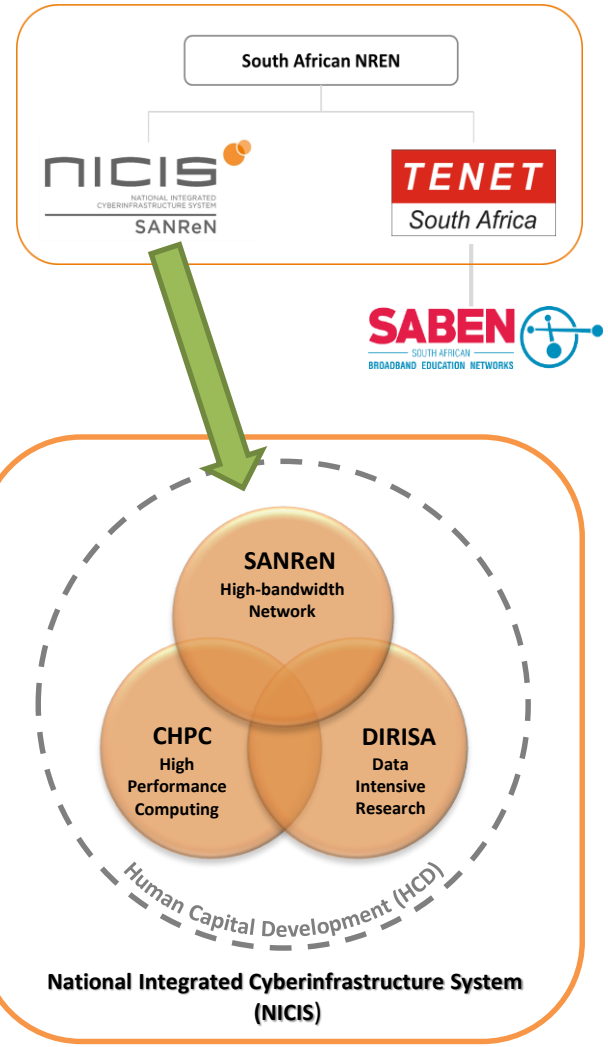
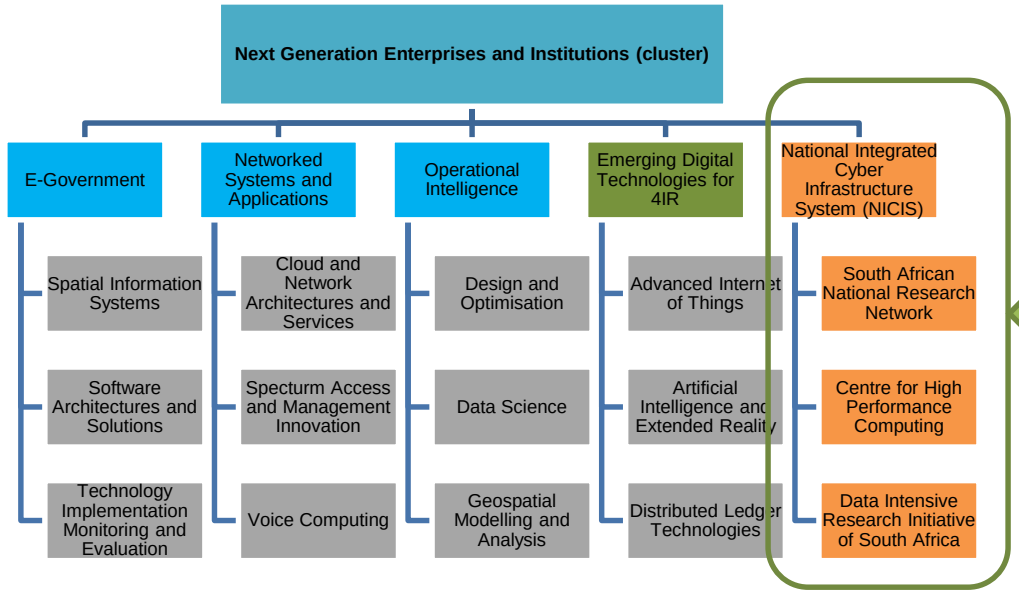
SANReN Placement

- No dedicated Comms and Marketing functions in SANReN





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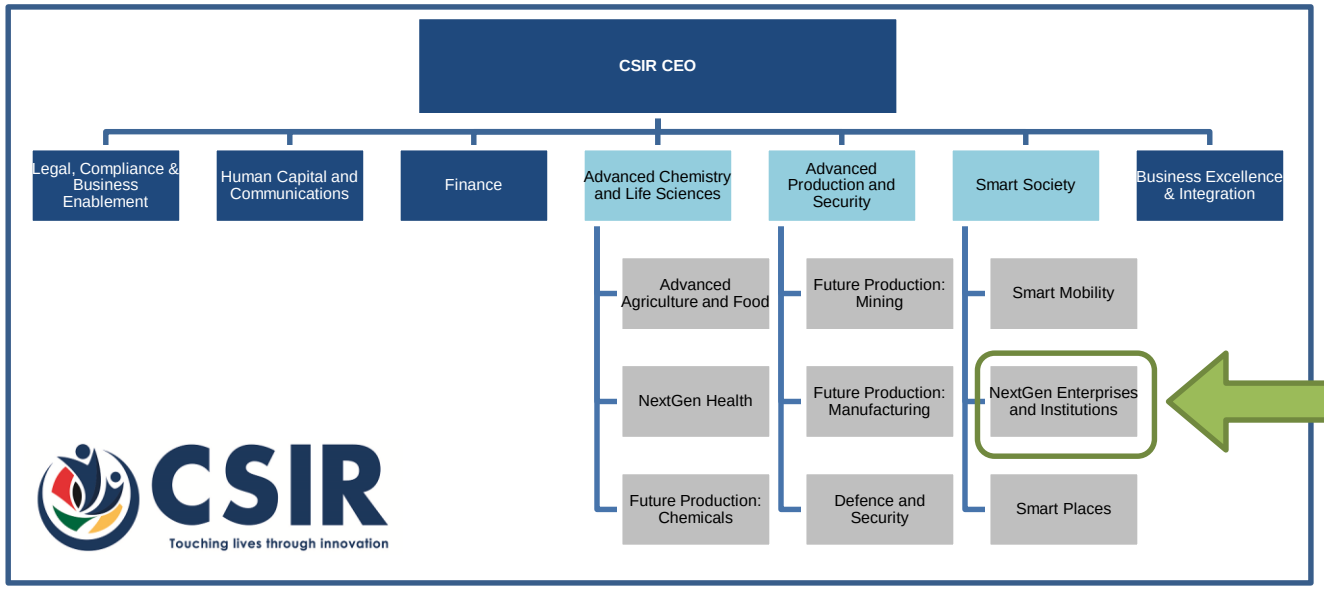
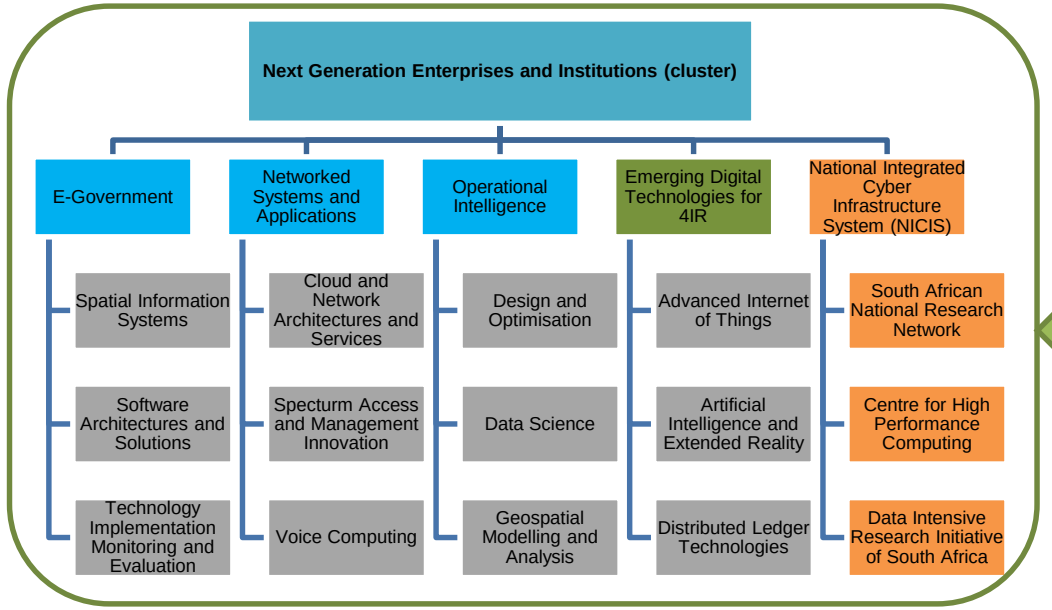
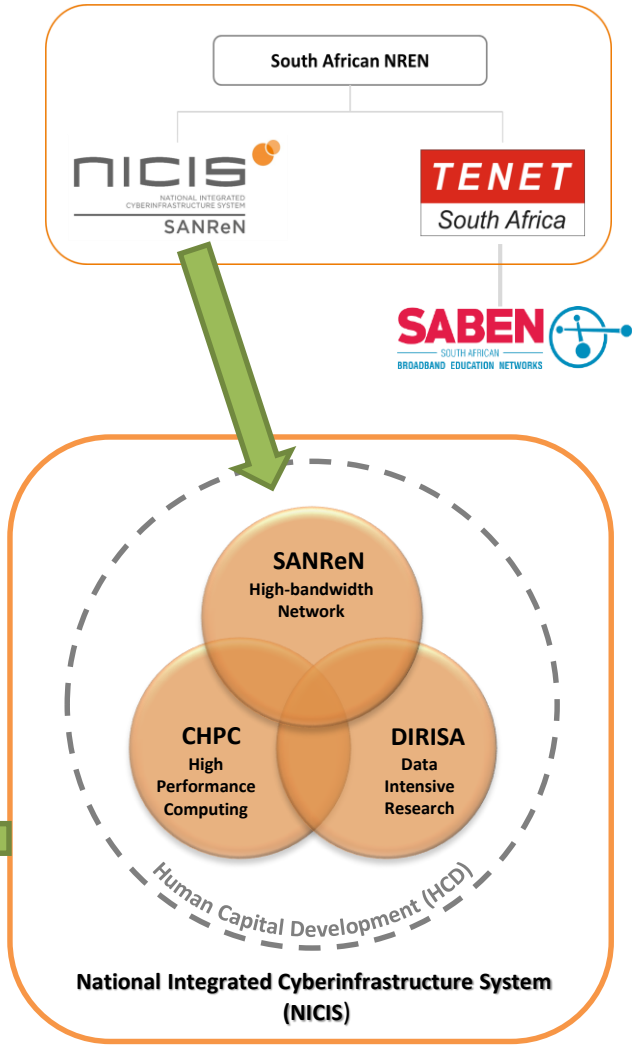
SANReN Placement



- No dedicated Comms and Marketing functions in SANReN
- Transactional in nature
  - Use CSIR Comms
  - Outsource





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