Working after graduation @Ericsson

How it is to work as a
new-grad Data Engineer
at Ericsson

Adam Wirehed   2023-10-30

Agenda

- About me
- What is Ericsson?
- My position and what I do
- How my education ties into the position
  - Some recommended courses
- Some reflections

About me

- 26 year old from Ängelholm, Skåne (apologies for the accent)
- Graduated 2019 with B. Sc in Mechanical Engineering ("wrong" choice in hindsight*)
  - Bachelor Thesis: GANs as data generation for autonomous cars at Volvo Cars
- Graduated 2021 with M. Sc in Engineering Mathematics and Computational Science
  - Focus on: Mathematics (statistics/optimization), Neural Networks + Data/Programming-related
  - Master Thesis: NLP in Log-Analysis at Ericsson
- Did internship at Ericson summer 2020
  - CI/CD pipeline for ML models
- Currently Data Engineer at Ericsson
- Worked four summers as warehouse operative before and during Chalmers studies

*luckly Chalmers gives you a lot of oppertunities

What is Ericsson?

What Ericsson does

Communications APIs

- Voice
- SMS
- Video
- Auth
- IP Chat

+

Network APIs

- QoS
- Silent Auth
- Location
- Device Data
- More to come …

- High speed & Low latency
- Reliability
- Wireless edge solutions
- Security
- Network slicing

Worldwide 4G and 5G networks

A global team serving customers worldwide

North East Asia
13,200

North America
12,000

South East Asia,
Oceania & India
27,800

Middle East & Africa
4,500

Europe & Latin America
48,000

- R&D
- Manufacturing
- Service delivery center
- Number of employees by geography
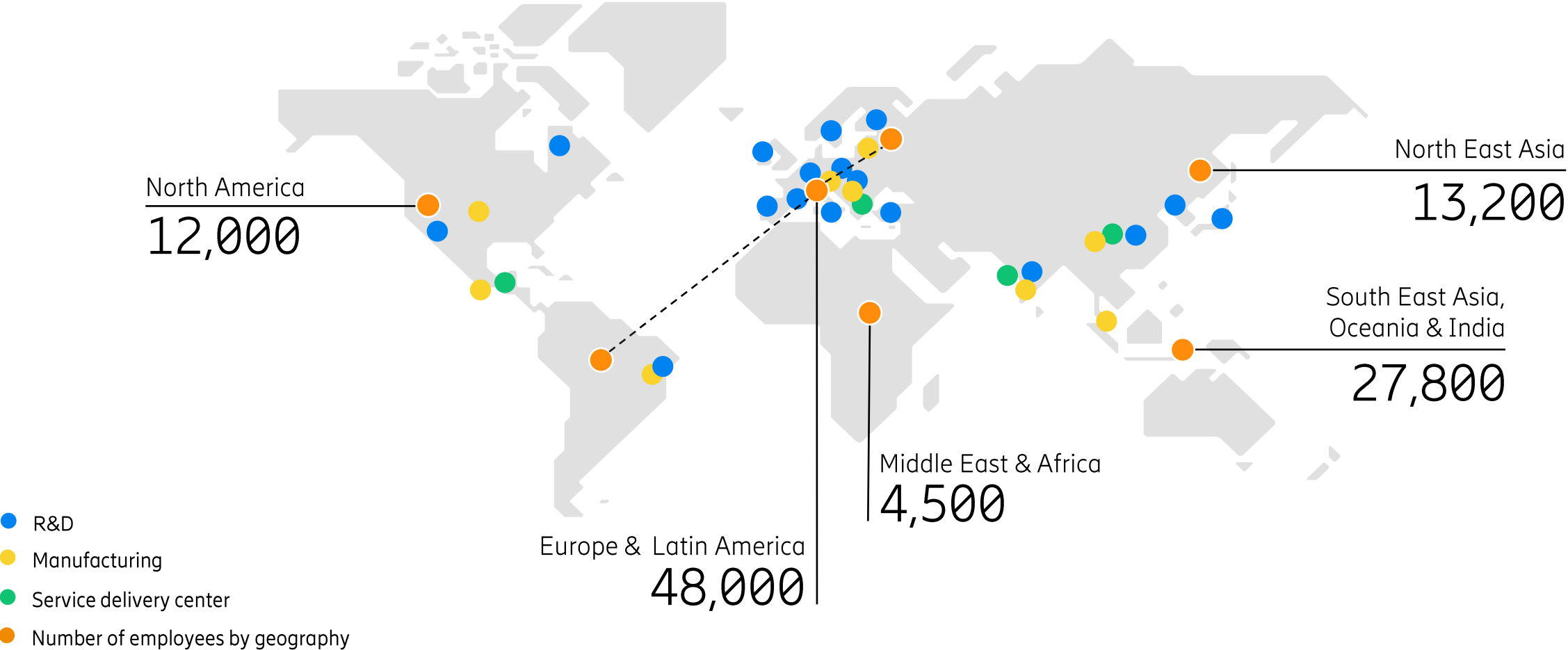
Note. Data as of December 2022

My Position -
Products, Way-of-Working and Education
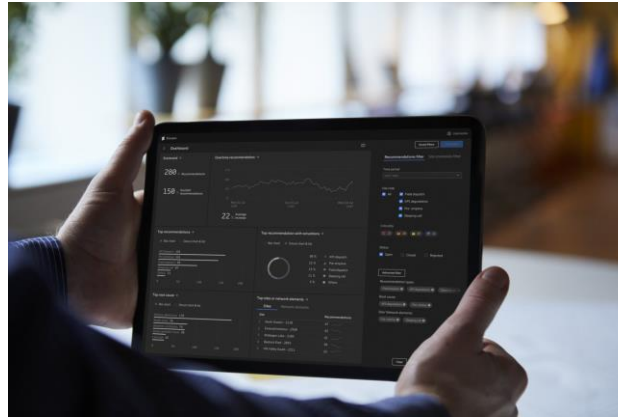
My position – The products and responsibilities

1. Parse and clean collected network data

- Over 100 operator networks
- +5 TB of data per day
- "Sea" of XML-files -> tabular data

2. Produce managleble and smaller datasets

- Smaller aggregated datasets with purpose in mind
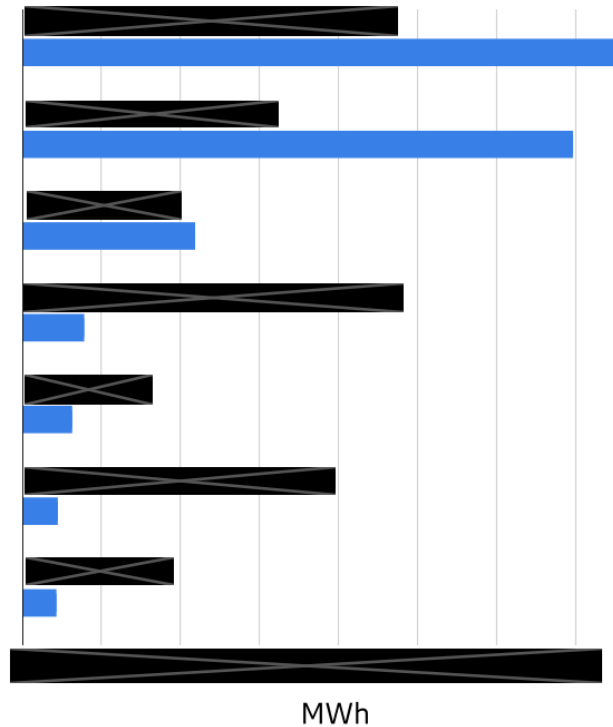- Used by other Ericsson teams internally
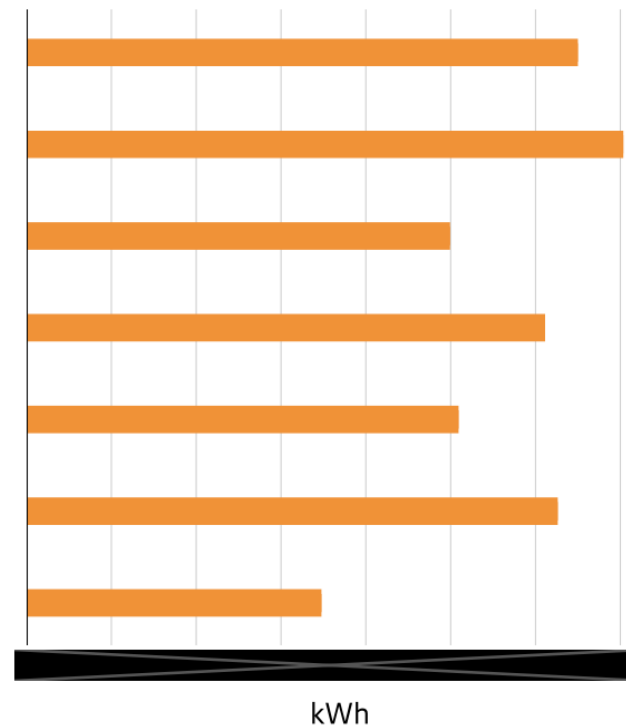
3. Quartily Network reports to operators

- PDF/PPTX with KPIs/charts describing the state of their network
- Benchmarks operators against each other

Energy consumption – product contribution in week 38*≋
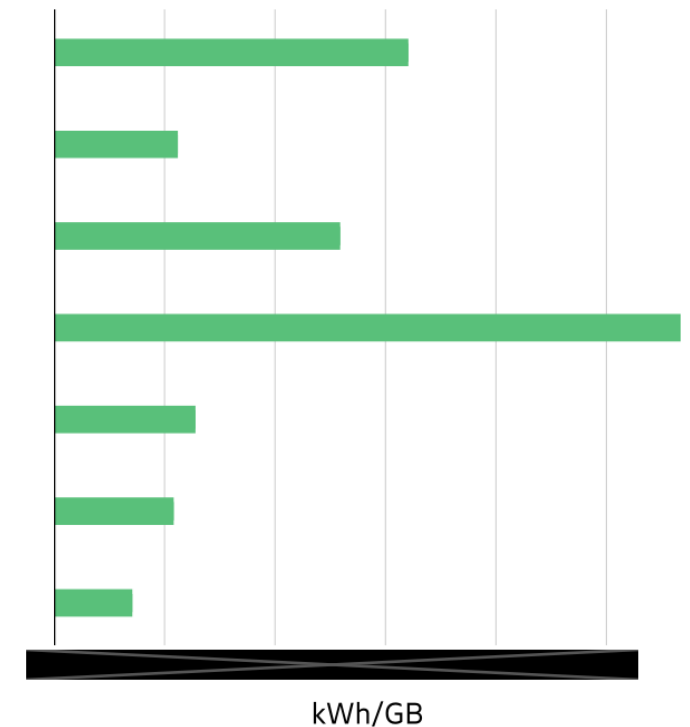
**Total energy consumption
of the top 7 radio products**

**Average energy consumption
per radio product unit**

**Normalized energy consumption
per product with data volume**

MWh

kWh

kWh/GB

Ericsson Network Benchmarking, <customer name>, 2023 Q3, provided by Ericsson Commercial in Confidence

* Excluding products without counter support and products with low data quality

4G user experience — downlink current status per area

Time-to-content per 4G coverage area
based on ✕ billion user activities measured 24/7 in week 38

- Each 4G node provides 4G coverage in a unique geographical area
- Time-to-content is measured for each user activity
- For each 4G coverage area the average (50th percentile) and the busy times worst-case (90th percentile) are calculated

Busy times worst-case

Average

Time-to-content (s)

0%   18%   52%   84%   100%

All 4G coverage areas ranked by
worst-case time-to-content

| Great | Good | Fair | Poor |

Throughput "at click"
Time-to-content

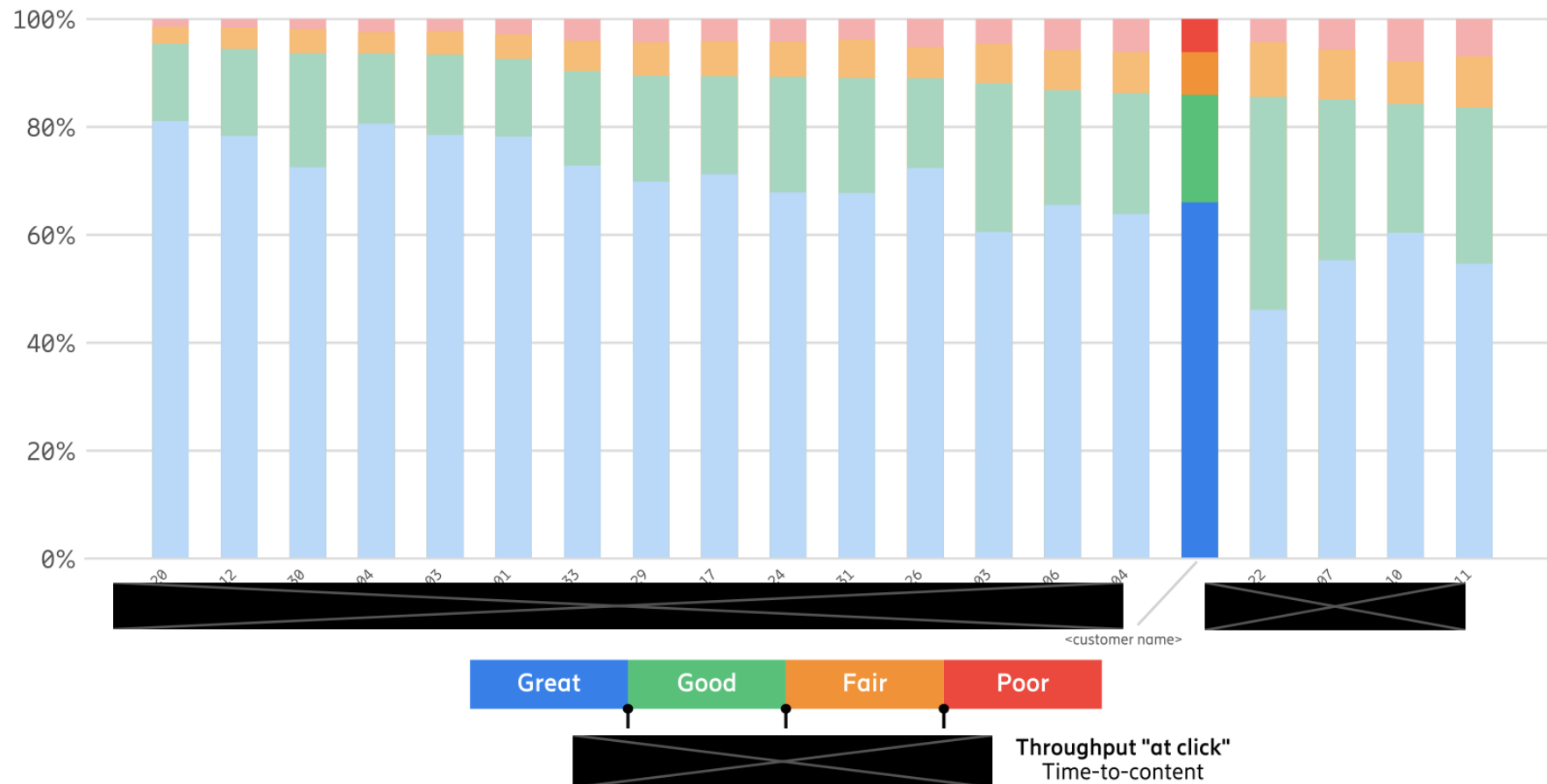Ericsson Network Benchmarking, <customer name>, 2023 Q3, provided by Ericsson Commercial in Confidence

4G user experience — downlink benchmark

Percentage of all 4G downlink user activities in week 38 across the entire Ericsson RAN of top 20 Ericsson customers

| Great | Good | Fair | Poor |

Throughput "at click"
Time-to-content

Ericsson Network Benchmarking, <customer name>, 2023 Q3, provided by Ericsson Commercial in Confidence

5G state of deployment — coverage in Denmark

Operators	⬤ 5G coverage	⬤ Not yet covered by 5G though possible
▨▨▨▨	▨%	▨%
▨	▨%	▨%
▨	▨%	▨%

⬤ No coverage* detected from any operator

⬤ 5G coverage* provided by the named operator

⬤ No 5G coverage* by the named operator but coverage* data is available by operator or competitors

Ericsson Network Benchmarking, <customer name>, 2023 Q3, provided by Ericsson Commercial in Confidence

* Coverage is based on Ericsson analysis of ▨▨▨ crowdsourced data

My position – Way-of-working

Product Backlog

Plan sprint

Start sprint

Work on planned tasks

Plan future tasks

Sprint demo for stakeholders

Reflect on previous sprint
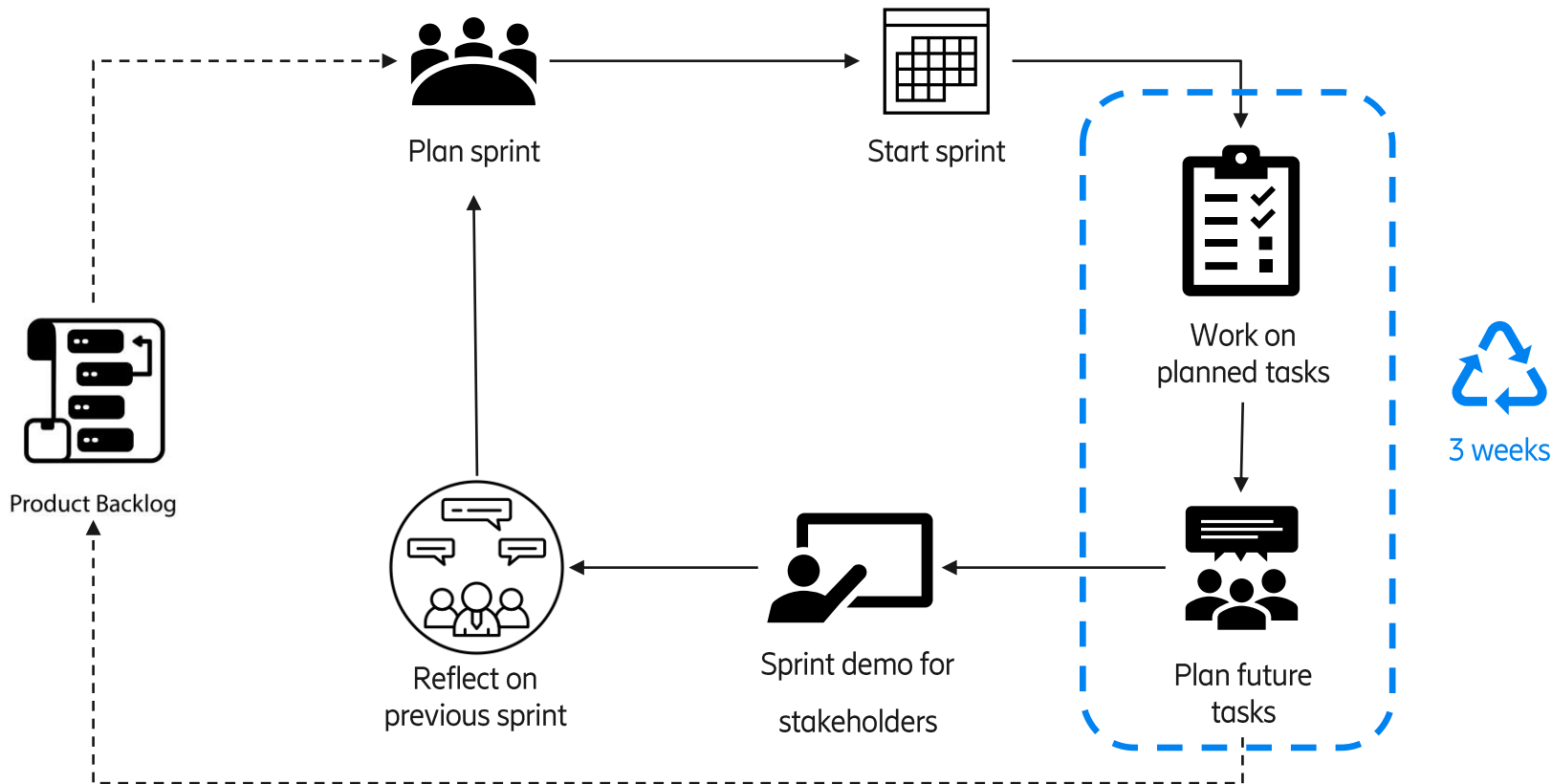
3 weeks

- Using the **Agile** approach for our way-of-working

- 3-week iterations called "Sprints"

- During the sprint you pick up tasks that the team planned to complete within the 3 weeks

  – Tasks can be small and independent or part of a bigger scope

  – Should be small enough to be completed within 3 weeks

- Not all tasks are pure coding but almost all of them involve some code

My position – The education

- **Very practical position**
  - My role is to **implement the theoretical studies done at Ericsson.** I don't need to know the in-and-outs of the theory, only the overview
  - So far only projects separate from our products that moves into more "theoretical" areas (Clustering, Community detection)
  - Day-to-day work involves at most simple statistics
    - Aggregating data, what you should and should not do (not doing mean-of-means etc..)

- **Courses I felt are useful for me today:**
  - High Performance Computing (TMA881)
    - Low level computing and UNIX
  - Statistics
    - Statistical Inference MVE155 and Statistical learning for Big-Data MVE441
  - Any course within the mathematical field to be honest
    - Being able to learn, understand and apply new concepts is truly the useful skill here, not individual theorems or methods
  - Data structures and algorithms!
  - Artificial Neural Networks!

Some reflections

- Really happy that I decided to go with higher education
  - Never had Sunday-anxiety so far at this position
  - Great benefits, compensation and flexibility which just makes life easier in general
- Chalmers gives you a lot of options, **just because you chose something at the start does not mean that you need to end up in that field** (I am a good example)
- Five years goes quickly! You'll be graduating before you even know it