Short resume

- I am a doctoral candidate in Embedded Systems from Åbo Akademi University located in Turku, Finland
- My research is about using Edge Computing for monitoring the maritime engines
- I am currently working in "Smarter" project where together with colleagues we are studying the data interoperability between project partner companies
- I recently finished the project: "Lifecycle Emissions of Cruise Ships" mentored by industry partners
- I am a mentor of two student teams each participating in a seven months long project as part of a course
- My hobbies: hiking, running, road cycling, badminton, puzzling, technology
- My interests involves planning, leadership and mentoring projects

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Remarks

- The paper analyses the possibilities and barriers for reaching effective data sharing through qualitative interviews with company representatives with technical insights into data sharing.

- The motivation of the paper started from the need of companies of having research on the subject of data sharing.

- We organized semi-structured interviews with 12 specialists during 2022-04-02 to 2022-04-28.

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Conducting the interview

- Selection of respondents was decided internally within the author group on companies that were previous project members in consortiums with the university
- A quarter of the total number of specialists invited for interviews chose not to attend online interviews due to their personal disinterest in discussing any information about company practicalities.
- Each interview was scheduled for 30 minutes, with an average of 24 minutes per participant.
- Many questions were meant for an open discussion where the specialists discussed the practicalities of data sharing within the companies where they work.

Research questions

RQ1: Is your organisation exercising any data sharing with other company?

– If yes, to what extent do you do this and how dependent is your business on data sharing? How long do you store the data you share with others? Do you use a 3rd party service for sharing data, such as Amazon/cloud service?
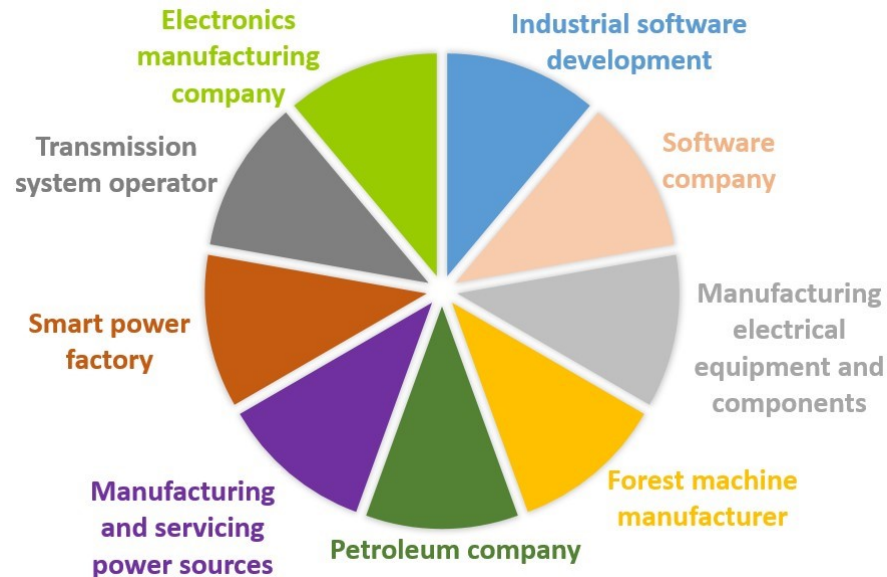
– If no, what are the reasons for not doing this?

RQ2: What value do you see between sharing your data with other organisations?

RQ3: What are the barriers for performing data sharing? Were there some previous episodes of data sharing with others?

RQ4: Is confidentiality of data an issue?

RQ5: Do you have a data management strategy/ policy?

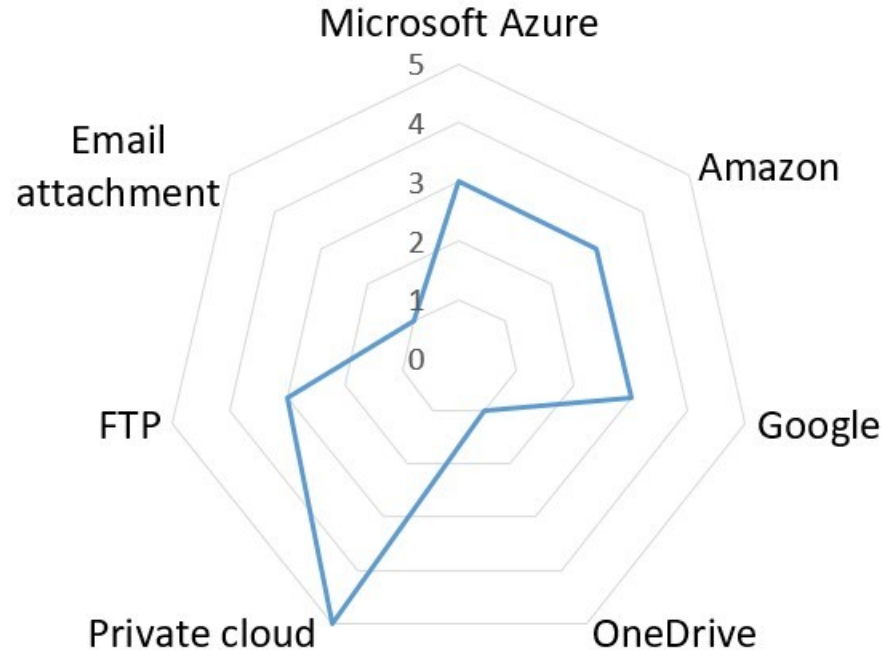# Application domains of the interviewed companies

Data sharing between companies (RQ1)

- It was discussed that confidentiality, general data protection regulation, data ownership, and low business opportunities were some of the risks preventing data sharing

- One individual indicated, their business was not dependent on data sharing

- Another claimed that the practice did not result in a long-term partnership due to the differences between the two partners' technologies

- On follow-up of affirmative answer, some mentioned that they store data according to project duration or up to ten years.

Methods for performing data sharing

Value of shared data (RQ2)

Value of shared data comes from reasons as:

- Money saving from better understanding of the processes
- Forecasting the need for components
- Quick troubleshooting
- Enhancing services to customers
- Development of products
- Increasing value of use cases
- Ensuring customers that sold products will not break

Barriers preventing data sharing (RQ3)

Is data confidentiality an issue? (RQ4)

The NDA contracts usually contain agreements that include:

- Common collaboration on improvements
- Complete list of information about shared data
- Data leaking prevention measures
- Access limitations

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Strategies for Data Exchange (RQ5)

- Challenges that affect the deployment of AI solutions in companies:
  - storage of data in silos and not implementing regulated exchange frameworks
  - prefering a more traditional approach to data privacy and security, which limits data sharing or exchange

- Federated platforms are one solution for the aforementioned challenges. It promotes the idea of developing Machine Learning (ML) models by exploiting data originating from multiple sources, while obstructing data breaches.

- Gaia-X is a standard for performing data exchange across companies
  - Catena-X is an ecosystem that creates a standalone data exchange standard across the entire automotive supply chain

Conclusions

- Many companies and allied businesses begin to exchange data in order to increase the number of services they offer and solve unknown customer problems.

- We interviewed 12 employees of various companies in industrial sectors that gave us insights on practicalities they have regarding data sharing with external parties.

- It is common nowadays to see an increase in external collaboration, but unfortunately, the companies are backed-up on collaborating only under projects.

- Collaboration between two companies is usually time-consuming when NDA contracts are involved. For the purpose of avoiding damaging company information, companies prefer to send single batches of data that are averaged and partially removed.

Thank you!

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