



A researchers perspective on **Big data from forest machines**

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Big data from forest machines
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What is **Big data**?



What is **Big data**?

- The concept *Big data* is **still evolving** and being reconsidered
- It is a driving force behind the ongoing waves of **digital transformation**, including artificial intelligence, data science and the Internet of Things
- The term *Big data* describes the **large volumes of data** generated by a business on a day-to-day basis
- It is **not the amount** of data that's important – more the capture and coupling
- These data may be both **structured and unstructured**
- Big data **can be analyzed for insights** that lead to better decisions and strategic business moves
- Such analyses may **reveal patterns, trends, and associations**, especially relating to human behaviour and interactions

StanForD data provides Big data-opportunities for mechanized 'Nordic' forestry

Large amounts of machine data that can be analyzed and coupled to other data sets



As in other industries,

We are **already** seeing the power of **Big data**

- **Logistics** and transports
- Follow up of **performance and production**
- **Financial transactions**
- Updating of **forest inventory** records
- Improved **production forecasting**
- Stand choice and **harvesting sequencing**
- **Machine state** monitoring
- **Decision support**, e.g. for reduced environmental impact
- Identification of **operator training** needs
- ...

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Almost endless possibilities



In short: **Big data**

improves efficiency and precision of operations



This means that **the forestry cake grows** – with more to share...
...this is the purpose of applied forest operations research

How the cake is shared is, however, **not a scientific question!**

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Data ownership

Integrity



Big data stakeholders



Researcher



Authorities



Machine owner



Buyer



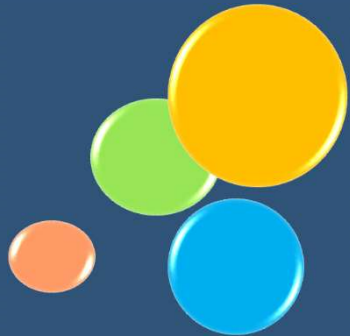
Operator



Forest owner



Manufacturer



Some **Big data** concerns

Big data may yield unprecedented insights and opportunities

Big data also raises concerns and questions that must be addressed:

- **Data privacy** – contains a lot of personal or sensitive information.
- **Data security** – if we approve for someone to have our data for a particular purpose, can we trust them to keep it safe?
- **Data discrimination** – is it acceptable to discriminate, based on data? We use credit scoring to decide who can borrow money. Insurance is heavily data-driven. We can expect future analyses and assessments of ever increasing detail. Care must be taken that this will not become an obstacle for development.

Addressing these challenges is important.

Failure to do so can leave individuals as well as businesses vulnerable, in terms reputation, legally and financially.

My personal view on Big data



The Big data approach is a megatrend where much development made in other sectors will become useful and available also in forestry



My personal view on Big data



The combination of machine generated data with other data sets - ultimately in an “internet of things” – provides opportunities for development of the same dignity as did mechanization



My personal view on Big data



The inclusion of Big data procedures in forestry will increase the value of forestry for the growing bioeconomy and increase output as well as sustainability and profitability



My personal view on Big data



The inclusion of Big data procedures in forestry will also increase the attractiveness of the sector



My personal view on **Big data**



A successful launch of **Big data** including machine generated data presupposes a speedy solution to the different problems related to

- **Data ownership**
- **Data security**
- **Personal & business integrity**
- **Misuse, e.g. data discrimination**





Big data
welcomes us to
a digital forest of opportunities