StanForD2010

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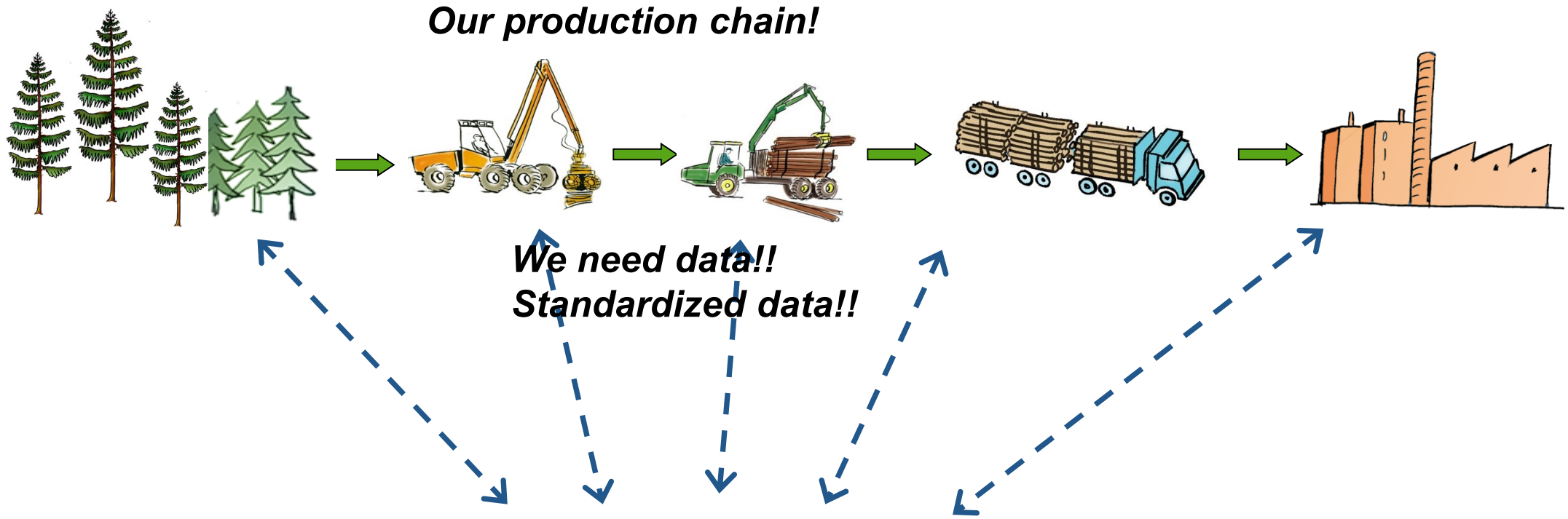
Structure

- Standardization & StanForD2010
- New possibilities! On-going projects
- Trends….where are we heading?

Supplying data



We want to plan and control for maximum value and minumum costs!

A number of standards….

Flexible between systems

Plug'n play International

Between systems, not paper machines! International

Forestand SS637009
Focus on forests and terminology

StanForD2010
Focus on machines

papiNet
Focus on business transactions, product & logistics

Plan and control
for maximum value and minumum costs!

Using StanForD? Focus?

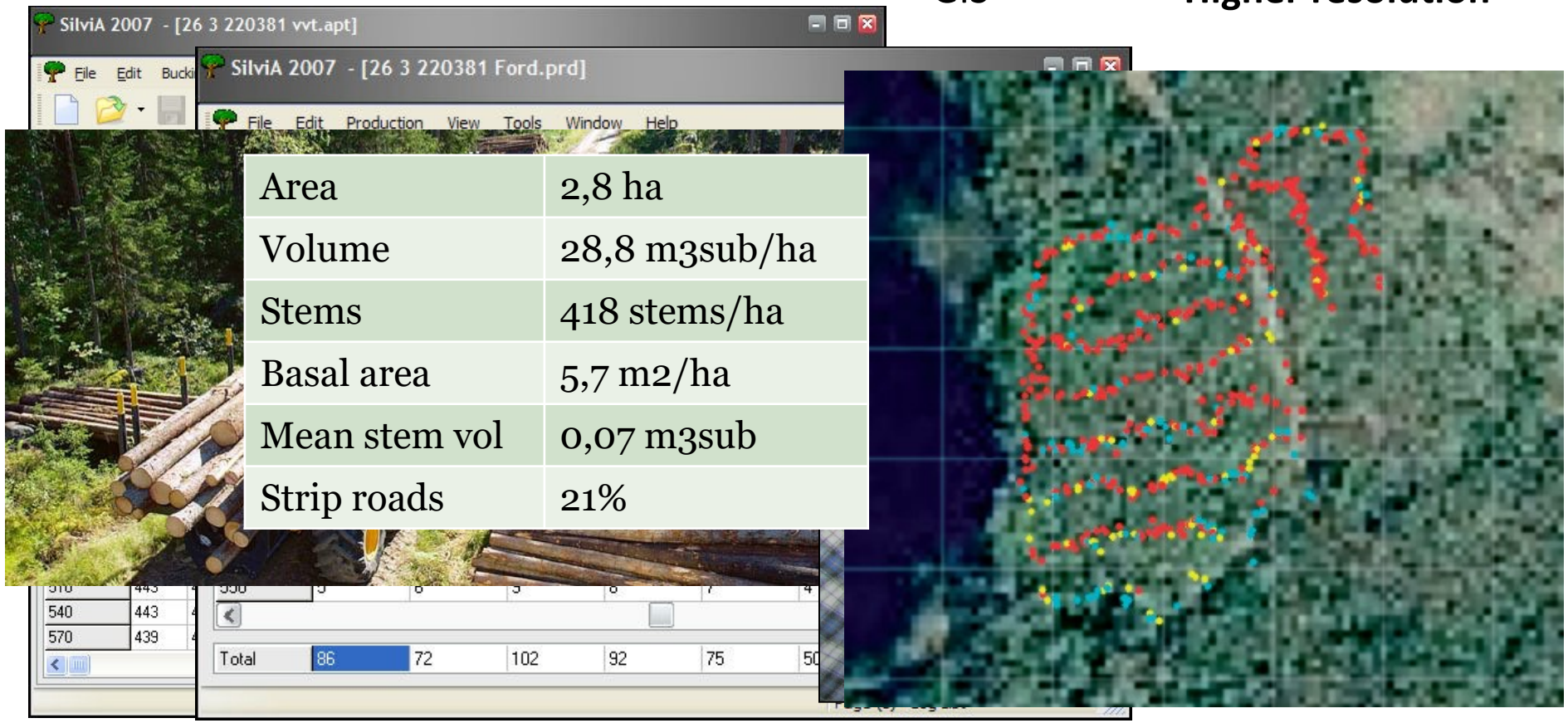
StanForD2010

1990 — Control bucking

2000 — Harvested production

2010 — Forwarding, Measuring, Monitoring, GIS

Present focus…
Integration
Flexibility
Higher resolution



Area	2,8 ha
Volume	28,8 m3sub/ha
Stems	418 stems/ha
Basal area	5,7 m2/ha
Mean stem vol	0,07 m3sub
Strip roads	21%

Instructions

***Forwarding object instruction* (foi)**
- Object identities
- Landing (location)

***Forwarding delivery instruction* (fdi)**
- Productgroups per mill

***Object geographical instruction* (ogi)**
- Map layers (photo, shp-files)
- Presentation of map layers

***Species group instruction* (spi)**
- Definition of species-groups
- DBH height
- Identiteties
- Bark function

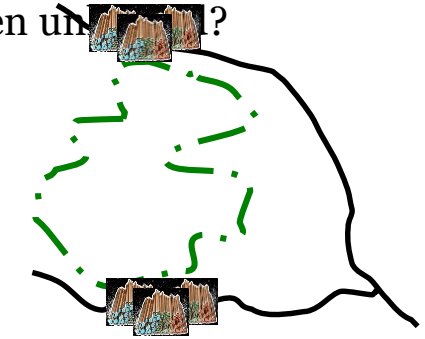
***Object instruction* (oin)**
- Object identities
- Logging company
- Forest owner etc
- Products

***Product instruction* (pin)**
- Identities
- Lengths/Diameters
- Qualities
- Price matrix
- Distribution matrix

Reporting production

***Forwarded production* (fpr)**

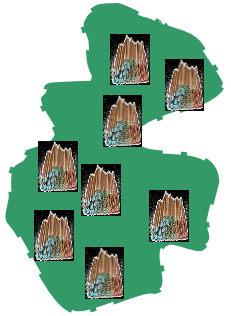
- Products at specific landing?
- When unloaded?



***Harvested production* (hpr)**

Per harvested log:

- Product
- Length
- Diameter
- Stem no



Per harvested stem:

- Stem no
- Species
- GPS-position
- Time of harvesting

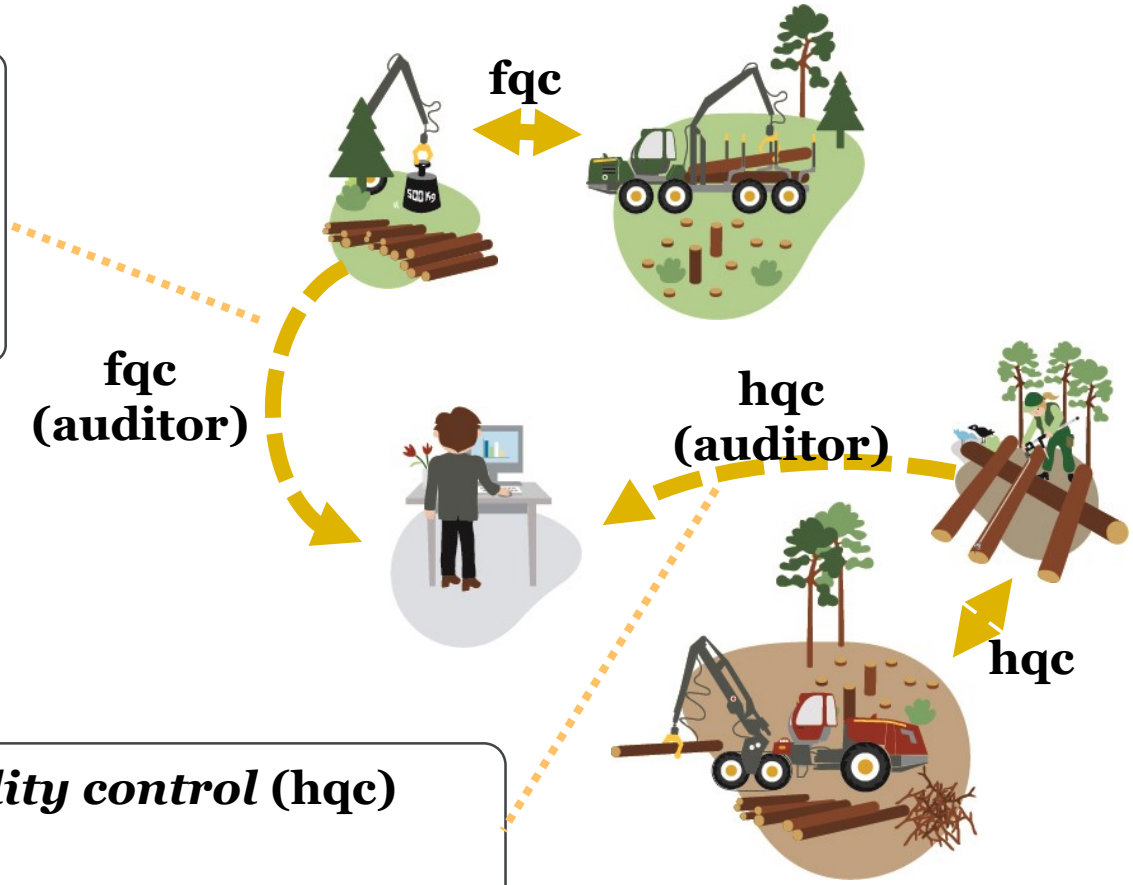
Operational monitoring

***Operational monitoring data* (mom)**
Time, operator, object registered indivudally for:

- Processing
- Terrain travel
- Break
- Repaire
- Maintenance
- Travel to work
- Planning etc.

Measuring quality control

***Forwarding quality control* (hqc)**
- Known reference mass
- Scale control mass
- Calibration



***Harvesting quality control* (hqc)**
- Log lengths
- Log diameters
- Measured by:
  - Harvester
  - Operator
  - Auditor

The major building blocks

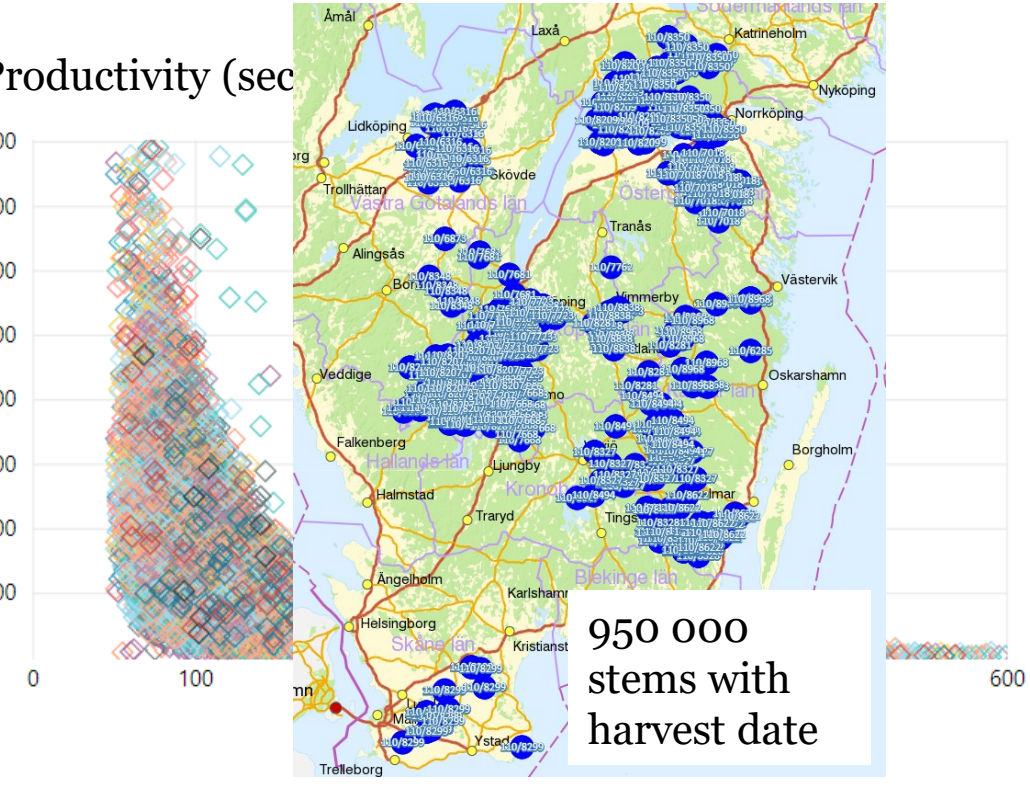
- XML
- Basic/measured data registered in machine
  - Calculations avoided in machine
- Globally unique ids.
- Plenty of coordinates.
- Optional time stamps.

New possibilities!

- Large detailed datasets from normal work situations
- Combining machine datasets
- All bucking control settings reported
- Flexible adjustment of harvester production
- Combining manual field data, ALS, saw mill measuring and harvester data

Large dataset from normal work situations

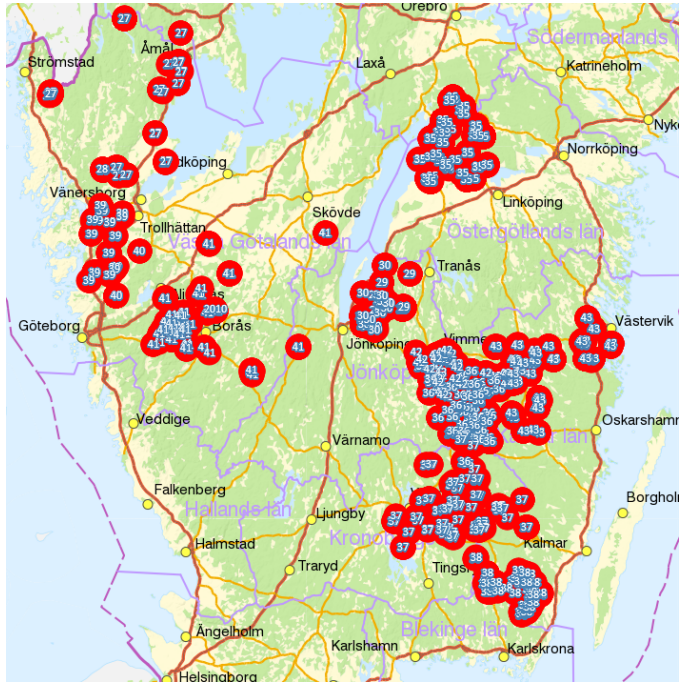
- On-going project: New model for paying contractors

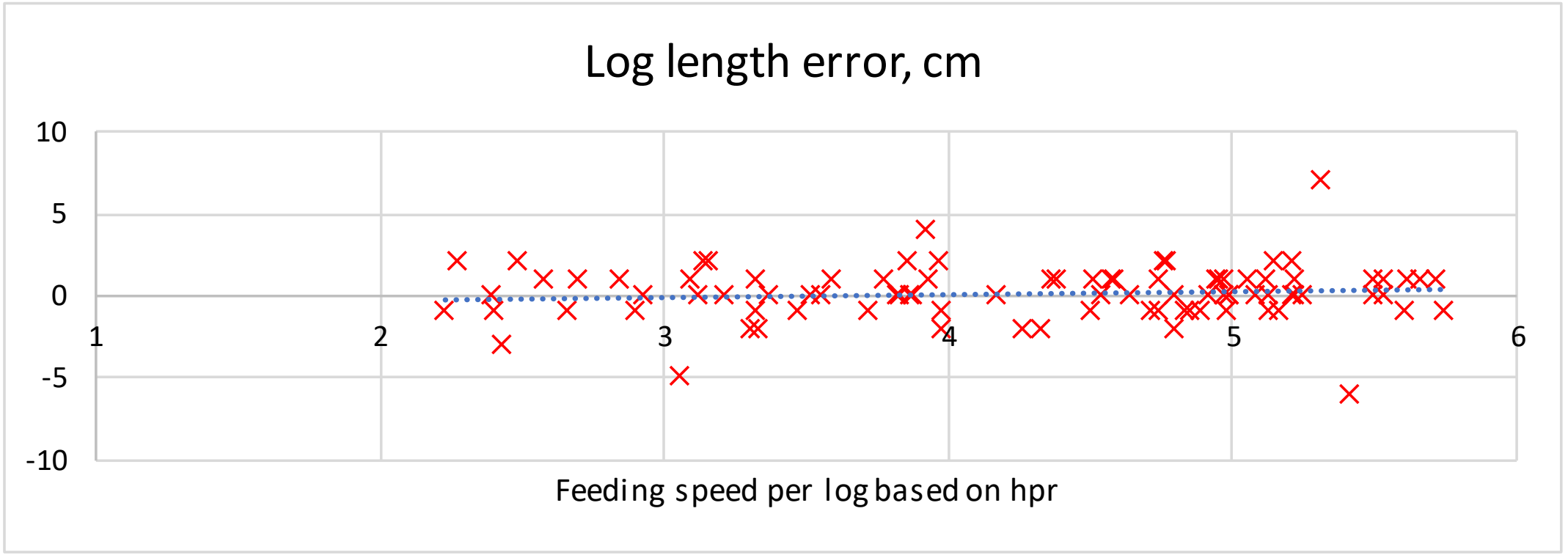


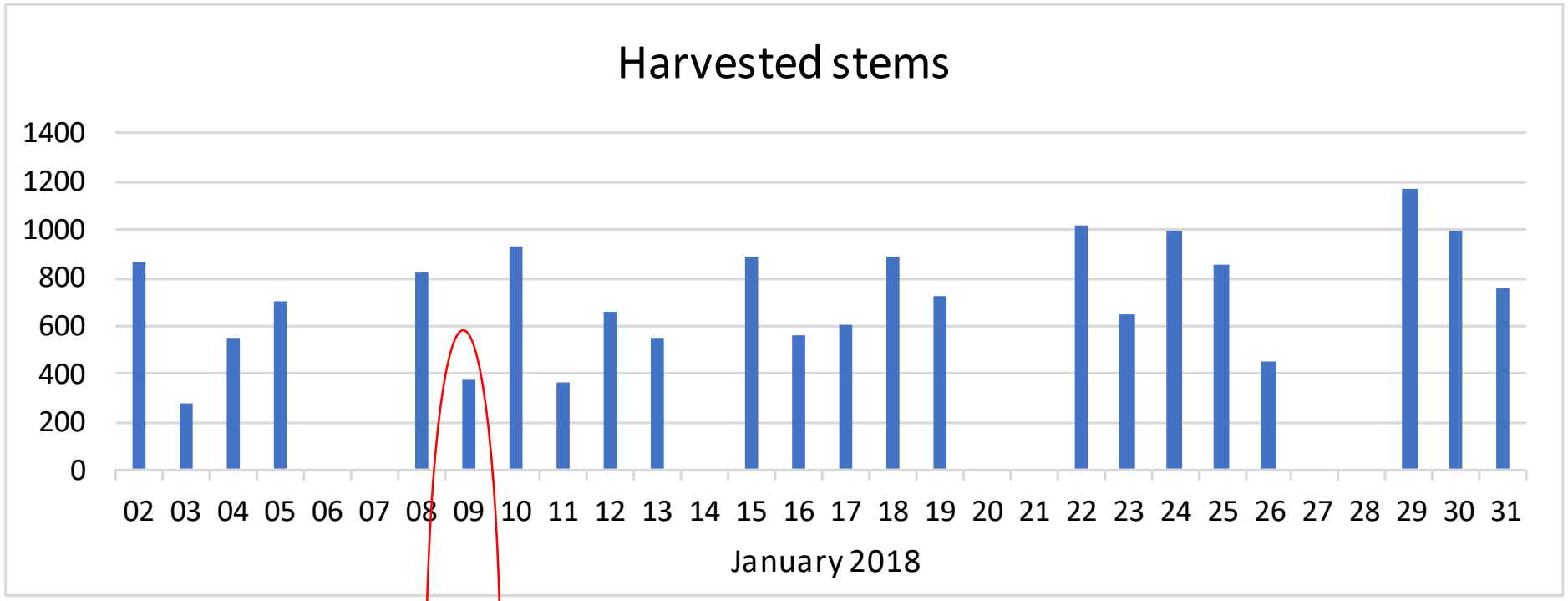
Combining hpr and hqc data

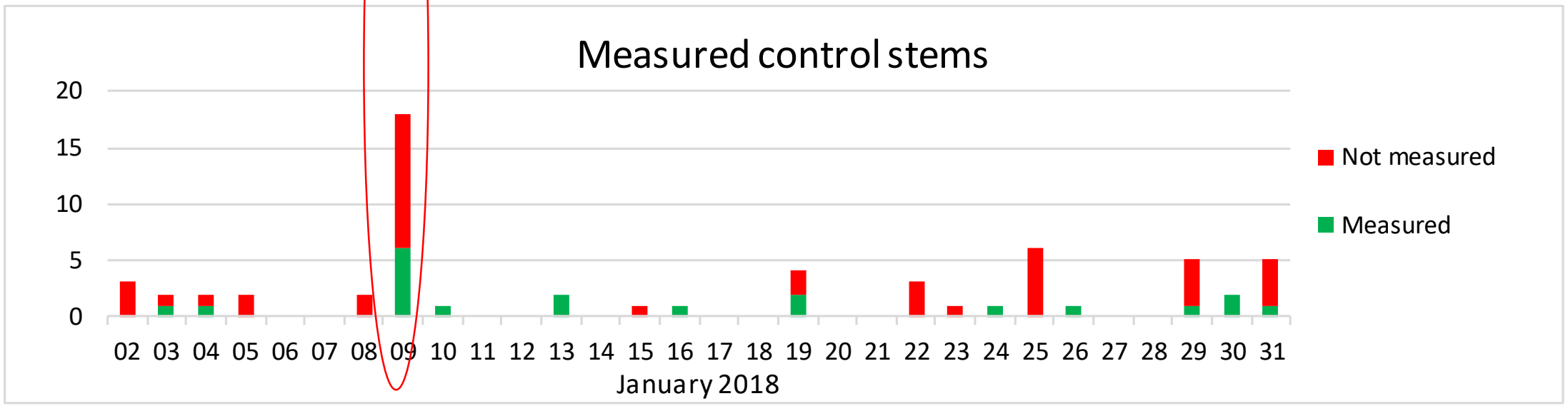
- On-going project: Improved analytical tools for improved measuring
- Effect on measuring accuracy?
  - Pressure settings
  - Manual opening of knives
  - Speed of feeding
  - Reversing

- Parameters registered in hpr.
- Measuring accuracy from hqc




Log length error, cm
10
5
0
-5
-10
1
2
3
4
5
6
Feeding speed per log based on hpr

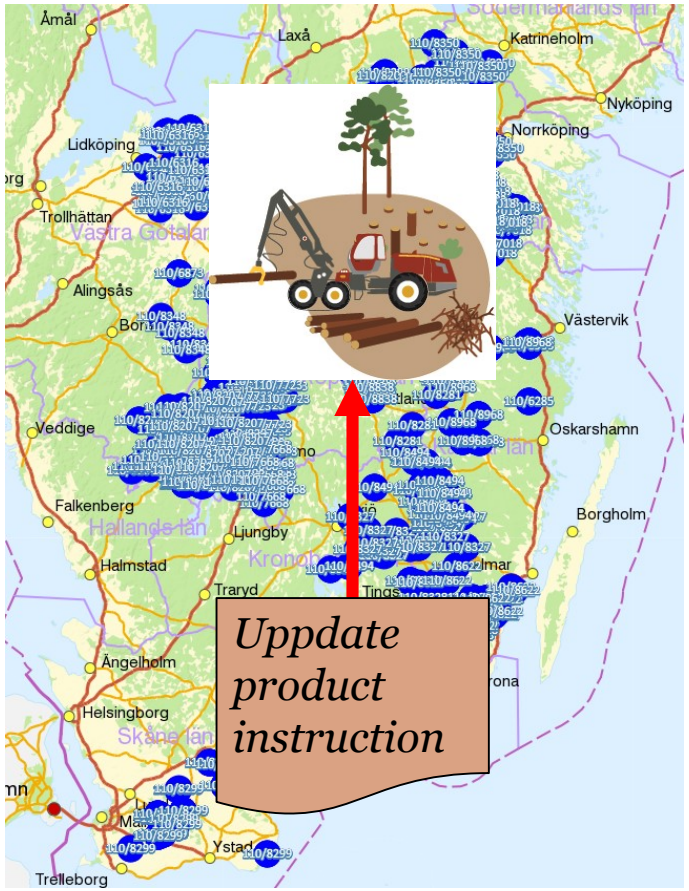

Harvested stems
1400
1200
1000
800
600
400
200
0
02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
January 2018

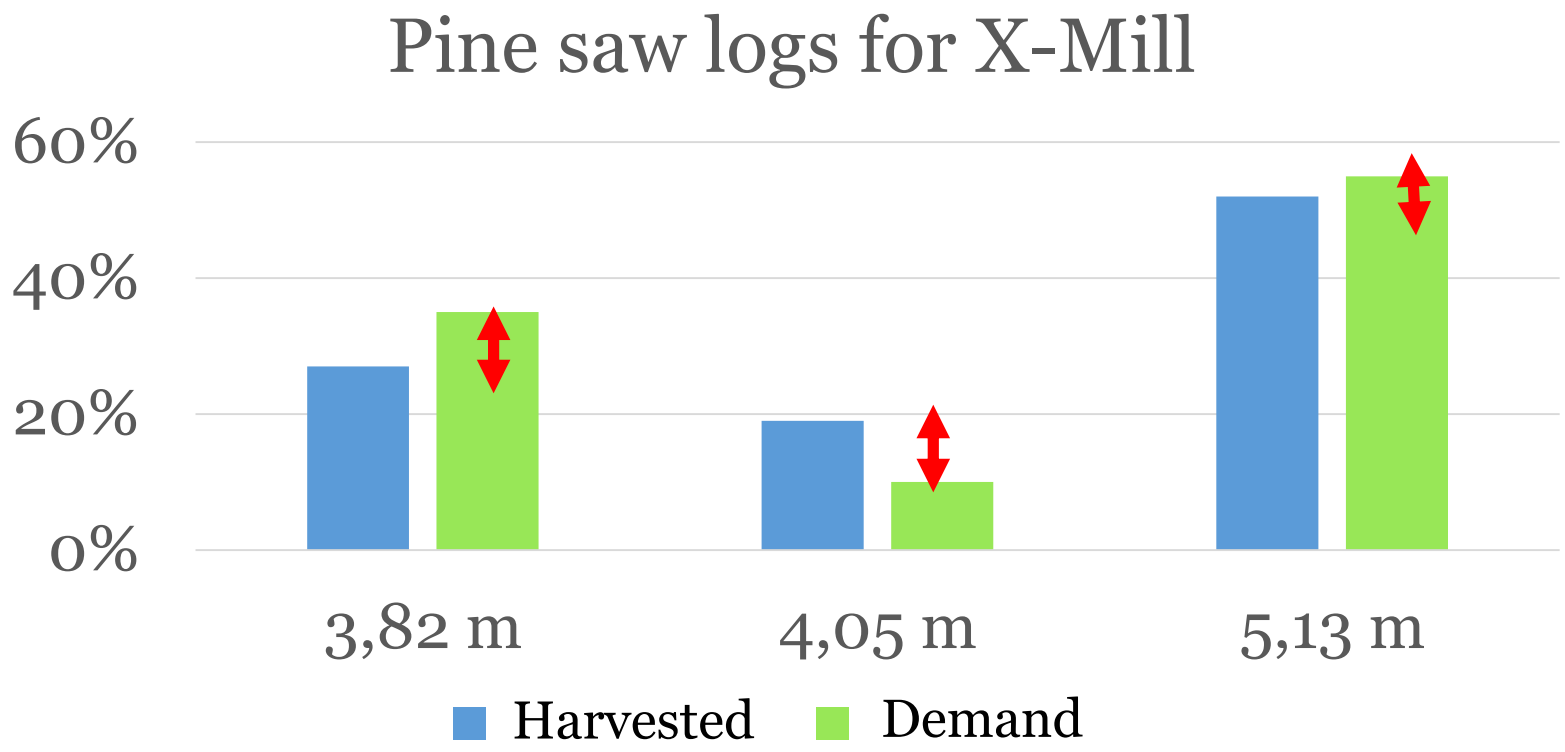

Measured control stems
20
15
10
5
0
02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
January 2018
Not measured
Measured

All bucking control settings are reported

- E.g. bark, butt end extrapolation, cutting window,
  - Instructions created correctly?
  - Implementations correct?
  - Modifications done by operator?

Flexible adjustment of harvester production

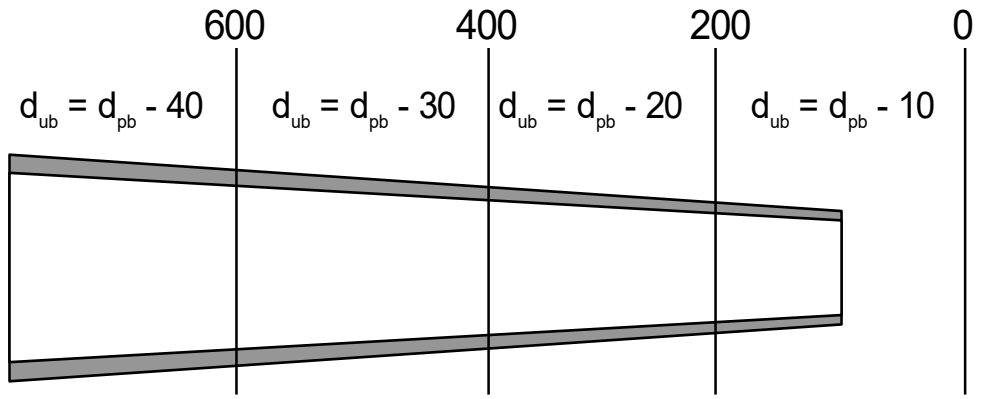




Trends…where are we heading?

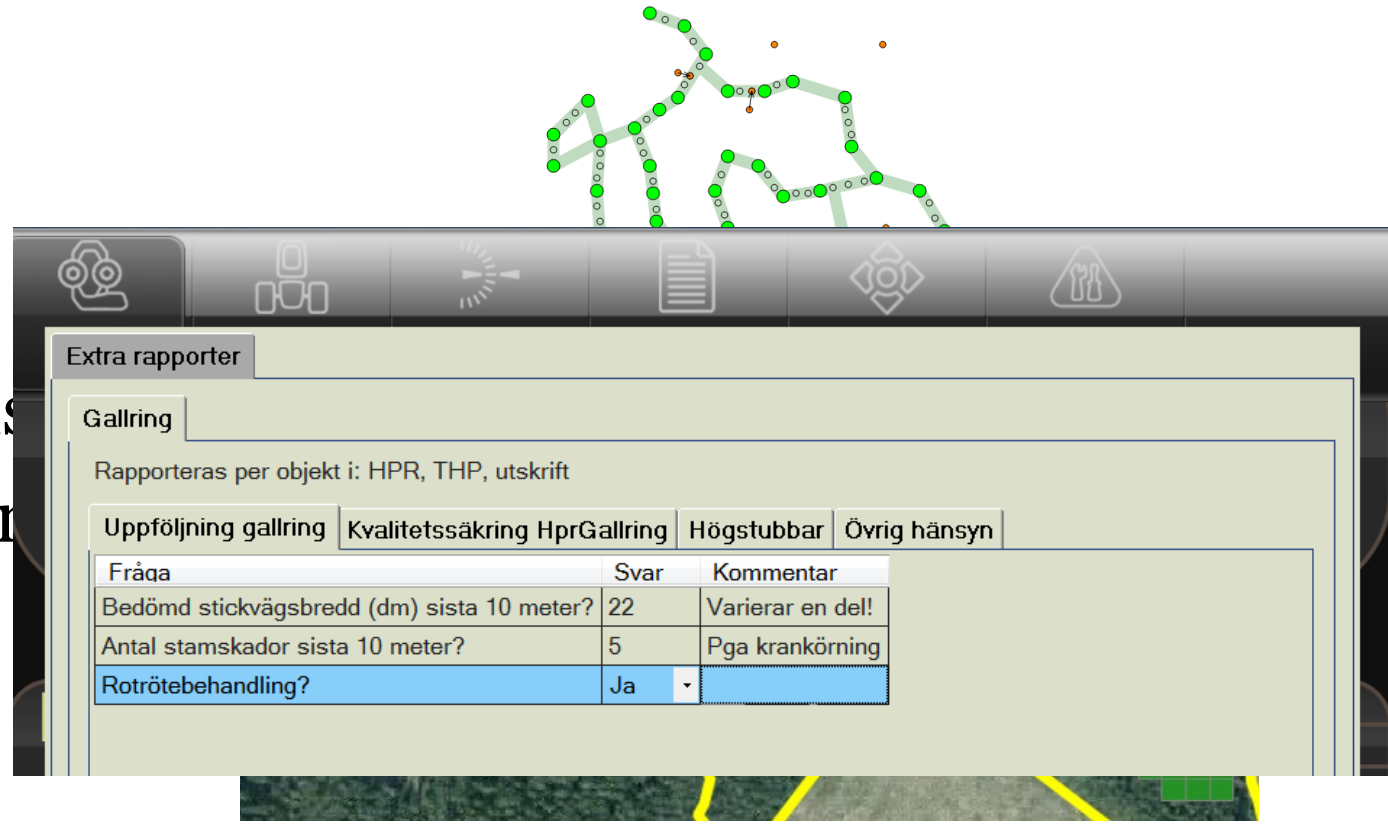
Globalization:

- Back to basics
  - volumes
  - bark functions
- Extending
  - E.g. tree-length operations



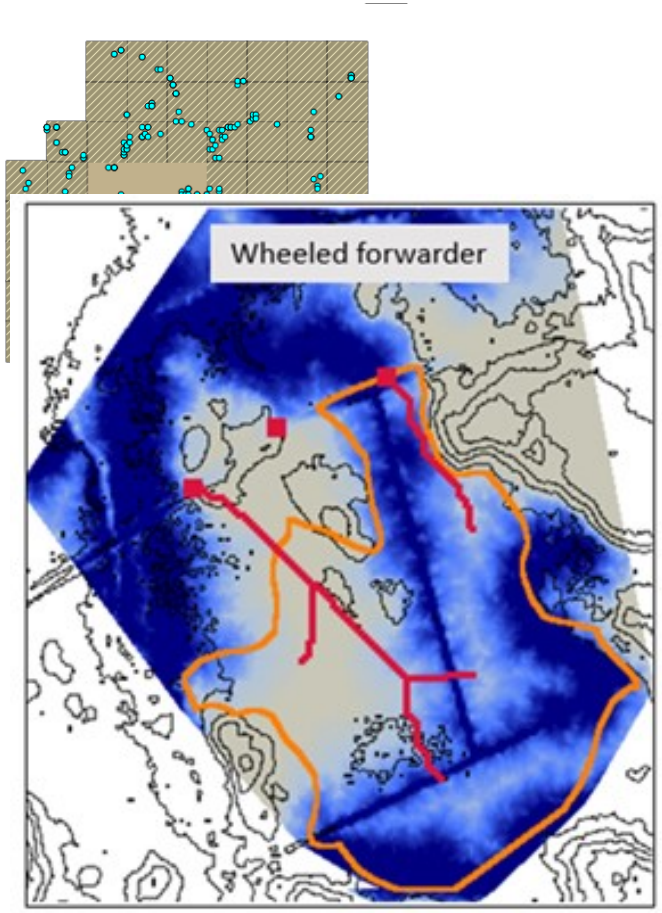
New detailed machine data:

- Tracking
- Stem-codes
- User-defined-data
- Crane angle and extens
- Forwarding quality cor



New use of machine gis-applications:

- Monitoring thinnings
- Route optimization
- Product quality parameters
- Operators updating forest databases



Plenty of fun stuff to do until 2036-08-15!