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7 May 2026

Minutes StanForD

2026-05-07

Place:	Vantaa/Teams, 2026-05-06--07, 13:00-12:00 EET
Participants:	John Arlinger, Secretary Anders Rowell, Chairman Lovisa Engberg Sundström, Skogforsk Tapio Räsänen, Metsäteho Antti Korkiakoski, JohnDeere Jonas Gustafsson, Sveaskog Jonas Thorsson, Dasa Heikki Komulainen, Ponsse Timo Melkas, Metsäteho Koskiahde Timo, Ponsse <u>Attending through Teams:</u> Bobby Szwajkowski, TigerCat Douglas Thomson, Waratah Erik Kindlund, JohnDeere Etienne Pilon, LogMax Quebec Fredrik Tjernberg, Komatsu Haneef Radzi, Ensign/WoodsmanPro Henrik Persson, LogMax Ian Wilson, Forest PHD Jeremy Gibson, Forest PHD John Tönnesen, JohnDeere Joshua Hildebrand, TigerCat Juha Korhonen, Technion Magnus Hansson, SP Mathias Håkansson, Dasa Nicklas Nygård, LogSet Pursiainen Janne, Ponsse

	Tony Shrimpton, Ensign/WoodsmanPro Joakim Nygren, Haglöf (day 1)
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Decision summary

Decided to do the following schema updates with version 4.2:

- **ControllerDefault.** Allow for the use of “ControllerDefault” value in IndividualUnutilizedTimes (mom).
- **DBHHeight description.** Updated description in order to clarify how to use element DBHHeight.
- **VolumeDiameterAdjustment.** Update of the enumeration list with value “Diameter as defined by DiameterClasses” in order to handle volume tables based on for example the US board feet unit.
- **GeoFencing.** New structure for GeoFencing functionality to be included in the ogi schemas.
- **New coordinate reference systems.** New attributes to be added to make it possible to report any local reference system using EPSG codes. Some data types in existing CoordinateType also modified to handle other units than decimal degrees.
- **OperationalMonitoringCodeList.** New structure for additional OtherWork codes added to the oin in order to be able to append the code list distributed through the mcl-file. The appended codes only to be used at the Object in question.
- **Tree length production data in mom.** New enumeration value “Number of stems” added to attribute loadNumberOfCategory. Makes it possible to use element ForwarderData for skidders and yarders.

Other decisions:

- **Bunch diameters.** Proposal for new diameter element in multi tree processing postponed.
- **CaliperMeasurementMode.** Proposal to add new elements in hqc in order to specify how and where diameters are measured was postponed.

Conclusions from discussions:

- **Next standard version.** Version 4.2 probably published in 2027.

Action list:

- It should be clearly visible in the GUI for the operator to see if a “sticky” stem code has been activated.
- Implement ButtLogMAXStartHeight.

- Recommend that unclassified products are reported per SpeciesGroup.
- Recommend that the diameter vector and DBH are adjusted if a short log (butt-off) is completely excluded from the hpr.
- Recommend that by default all butt-offs from single tree processed stems should be registered independent of length.

§1 Opening of meeting and agenda

The CEO of Metsäteho Mikko Juhola welcomed the meeting participants to Metsäteho.

Chairman Anders Rowell opened the meeting.

The agenda was accepted with the addition of two “Other issues”:

- Finnish spi-files.
- Carbon emission

§2 Presentation of participants

Presentation of meeting participants.

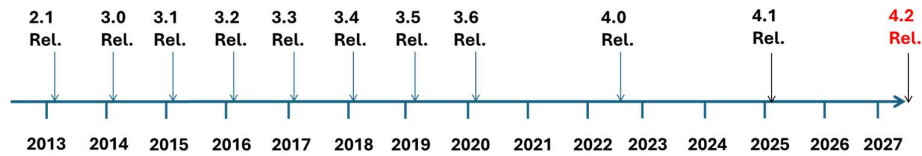
§3 Information about decisions and discussions at previous meeting

Main decisions and conclusions at last meeting (2024-12-11) were presented:

- **IndividualShortDownTime.** Description of Object/SubObjectKey under IndividualShortDownTime updated with version 4.2 in order to point out that they are to be deprecated. Also to be deleted with version 5.
- **barkFunctionCategory.** update the description with version 4.2 according to the following text as the value “None” is not allowed any more:
Allowed values: "~~None~~", "Consolidated", "MatrixDiameter", "MatrixDistanceDBH", "NonLinearLatitude" and "Logistic"
- Add OperatorKey to TrackCoordinatesWithStemLoadKeyType (ypr, spr), TrackCoordinatesWithStemKeyType (hpr, bpr) and TrackCoordinatesForwardedProductionType (fpr).

§4 Future frequency of StanForD updates

The figure below illustrates the timeline for publishing all versions since 2.1.



The secretary today estimates that a new version 4.2 will be finalized during the 2027. No major errors or other urgent problems regarding the standard were found during the harvester test run last autumn.

§5 Reporting of issues related to major version 4.1

No issues have been reported.

§6 New proposals

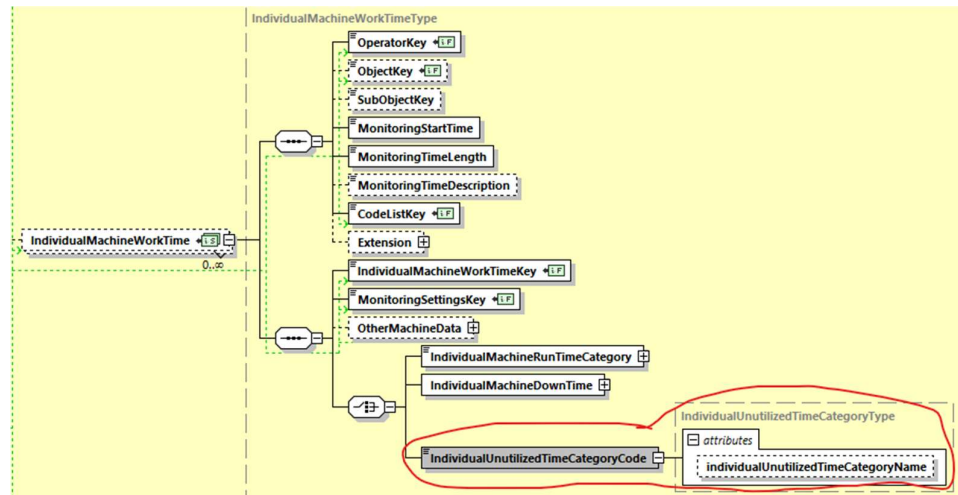
CONTROLLERDEFAULT

The following text was added to OtherMachineDownTimeCode with version 4.0 and where ControllerDefault was included for the first time:

Enumeration list with reason for other machine down times. According to code list in mcl file. Observe that the value “ControllerDefault” can be used in cases where operators have not registered any reason at all. This value is not to be included in the mcl-file. “ControllerDefault” not to be available in GUI and only generated by control system. “ControllerDefault” to be used in system where down time reasons are disabled or there is a “time-out”.

Element IndividualUnutilizedTimes has the following definition:

Enumeration list with reasons for unutilized times. According to code list in mcl file.



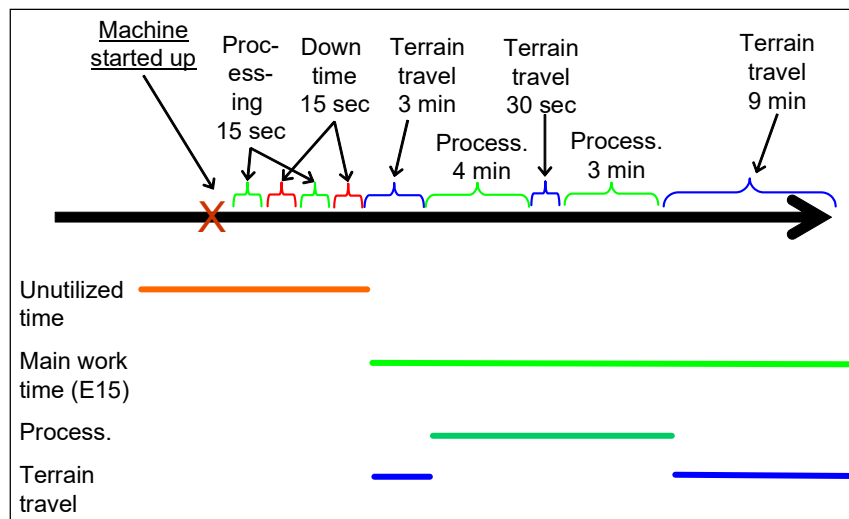
Historically we have used one of the following values:

- “Meal break”
- “Other unutilized time”

It is decided to make it possible to also use “ControllerDefault” value for IndividualUnutilizedTimes as there may be short “times” when a machine starts in the morning without any input from the operator and the time being too short to register as a down time or a work time. The description of element IndividualUnutilizedTimes is to be:

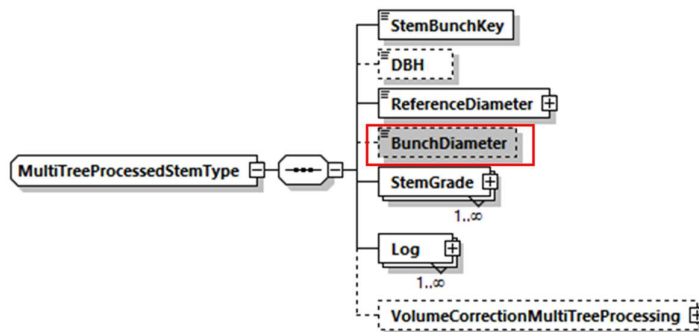
- *Enumeration list with reasons for unutilized times. According to code list in mcl file. Observe that the value “ControllerDefault” can be used in cases where operators have not registered any reason at all. This value is not to be included in the mcl-file. “ControllerDefault” not to be available in GUI and only generated by control system. “ControllerDefault” to be used in system where unutilized time reasons are disabled or there is a situation where no time category can be determined, e.g. at the start up of a machine.*

The example below is from the documentation written for older mom versions where the codes for unutilized times were standardized.



The first 60 seconds should be recorded as *Unutilised time* if the time prior to start-up was considered to be *Unutilised time* (which is typically the case during the night). It would in many cases be logical to register the *Unutilized time* automatically by the controller using the value “ControllerDefault”

Observe that these 60 seconds may also be registered as e.g. a down time in cases where the operator has defined the time prior to start-up as e.g. some type of Maintenance.



Name	Data type	Unit	Description
BunchDiameter	Positive integer	mm	Bunch diameter for all stems in a bunch when felling multi-trees. This is the total diameter for all stems inside the harvester head at the time of felling. Does not represent the diameter of an individual tree but a diameter calculate based on the actual position of the knives/feed rollers.

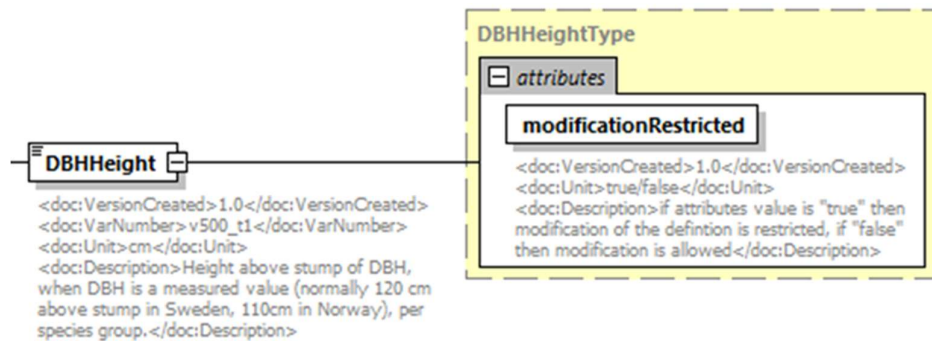
StemKey	StemBunchKey	RefDiameter	DBH	BunchDiameter
61	13	113	109	113
62	13	113	109	150
63	13	113	109	154

The meeting decided to postpone this issue as there probably would be significant differences between different harvester head configurations using different measuring devices, e.g. this type of measurements will be significantly different in a LogMax head where the diameter is measured using the feed rollers vs. when using the delimbing knives. As a consequence it will not be possible to do comparisons of bunchdiameters from different machines.

Fredrik Tjernberg will discuss this issue with Daniel Linder further and, if deemed necessary, come back with a new proposal where the needs and use for this type of data are described in more detail. It may be more suitable to use an Extension element.

UPDATING DESCRIPTION OF DBHHEIGHT

The present description text includes “normal” values where DBH is to be measured.



It was decided to update the description as these normal values have changed and can be changed again through the spi-fil:

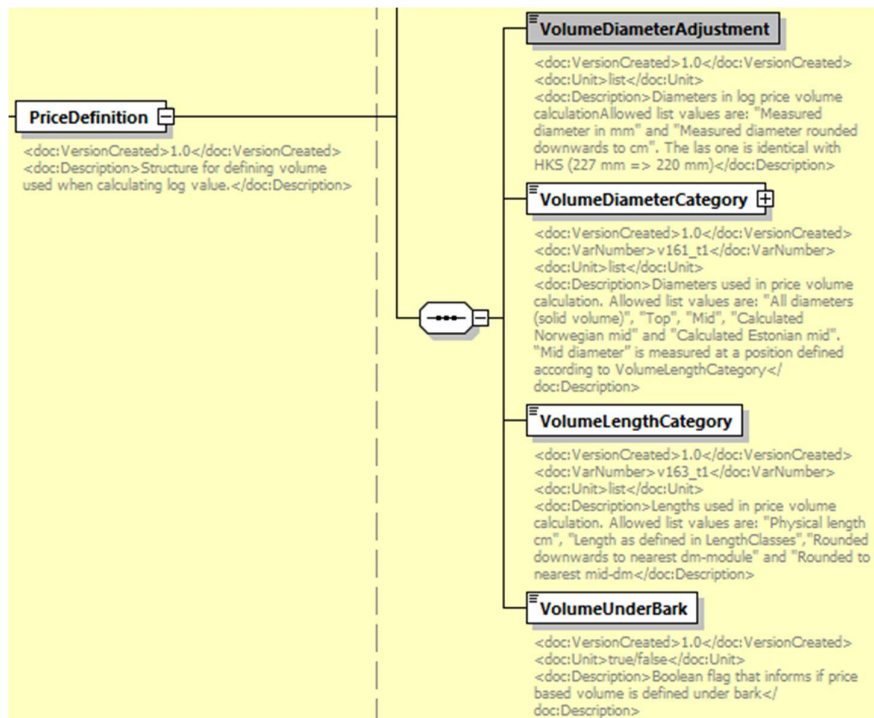
Height above stump of DBH per species group, ~~when DBH is a measured value (normally 120 cm above stump in Sweden, 110cm in Norway)~~, (e.g. 110 cm when assuming an average stump height of 20 cm and DBH is measured at 130 cm from the ground).

VOLUMEDIAMETERADJUSTMENT AND VOLUME TABLES

Based on discussions between the secretary and Henrik Persson, LogMax.

A re-occurring discussion throughout the history of StandForD has been on how to handle different types of commercial volume units that are based on some type of table (log diameter and log length) such as e.g. board feet. One solution to this could be to open for the price unit "\$ per log" that existed in the classic standard. However, a simpler solution to this issue could be to open the possibility of having a volume unit that is the same for all logs in a specific length and diameter class. This could be handled through a modification of element VolumeDiameterAdjustment.

Presently the allowed values for VolumeDiameterAdjustment are "Measured diameter in mm" and "Measured diameter rounded downwards to cm".



Observe that it is possible to use different price categories for different products in same object, this has always been very common on many markets such as the Swedish where pulp wood is measured using m^3 sub while saw logs are often priced using m^3 top (ub).

It was pointed out by Henrik Persson that the length adjustment is made in VolumeLengthCategory while diameter adjustments are made in VolumeDiameterAdjustment, an inconsistency in the terminology.

Jonas Thorsson commented that this update might cause a problem if an older controller tries to read this element but does not support this new enumeration value. Whether this is a problem or not depends on if a controller validates instructions against specific schema versions before parsing or not. From one point it could be argued this is not breaking backwards compatibility since a newer parser can read all older standard versions.

It was decided to add a new enumeration value “Diameter as defined in DiameterClasses” to element VolumeDiameterAdjustment with version 4.2.

This means that all logs in a specific length and diameter class would have the exactly same value if we combine VolumeDiameterAdjustment= “Diameter as defined in DiameterClasses” and VolumeLengthAdjustment= “Length as defined in LengthClasses”.

Example 1

The following settings are assumed:

VolumeLengthCategory = “Length as defined in LengthClasses”

VolumeDiameterCategory = “Top”

VolumeDiameterAdjustment = “Diameter as defined in DiameterClasses”

The required input data is marked with yellow color and the output that could be used in a price matrix (pin-file) is marked with green color.

Simple log rule, board feet per length and diameter class (inches and feet)

feet \ inches	17	18	19	20	21	22
10	120	130	150	170	190	210
11	130	150	160	190	210	230
12	140	160	180	210	230	250
13	150	170	190	230	250	270
14	160	190	210	240	270	290
15	170	210	220	260	280	310

Price per thousand board feet

Inches	17	18	19	20	21	22
Price	700	720	725	730	750	750

Simple log rule in mm and cm

cm \ mm	432	457	483	508	533	559
305	120	130	150	170	190	210
335	130	150	160	190	210	230
366	140	160	180	210	230	250
396	150	170	190	230	250	270
427	160	190	210	240	270	290
457	170	210	220	260	280	310

Price per log (Log rule * Pric / 1000)

cm \ mm	432	457	483	508	533	559
305	84	94	109	124	143	158
335	91	108	116	139	158	173
366	98	115	131	153	173	188
396	105	122	138	168	188	203
427	112	137	152	175	203	218
457	119	151	160	190	210	233

Volume per log in m3 (Diameter class/2^2 * Pi * Length class)

cm \ mm	432	457	483	508	533	559
305	0,446	0,500	0,558	0,618	0,681	0,748
335	0,491	0,550	0,613	0,680	0,749	0,822
366	0,536	0,600	0,669	0,741	0,817	0,897
396	0,580	0,651	0,725	0,803	0,885	0,972
427	0,625	0,701	0,781	0,865	0,954	1,047
457	0,670	0,751	0,836	0,927	1,022	1,121

Price per m3 (price per log / volume per log)

cm \ mm	432	457	483	508	533	559
305	188	187	195	201	209	211
335	185	196	189	204	210	210
366	183	192	195	207	211	209
396	181	188	190	209	212	208
427	179	195	195	203	212	208

NEW ELEMENT CALIPER MEASUREMENT MODE IN HQC

Heikki Komulainen, Ponsse.

There are different kinds of demands in Finnish forest companies of how many Stems/logs/batches needs to be measured per work week with calipers (operator).

Regulation is that diameters are measured at fixed positions (=static) points (50 (130), 150, 250,). This gives a predictable amount of diameter observations for calibration.

Volume difference between machine (m1) and operator (m2) are also calculated based on these diameter positions.

Some of those fixed diameters might be measured at positions where the stem is not well formed for diameter measurements: knots, curves, debarking damage, ovality, or measurement device has not been well positioned (e.g. operator has opened the front knives due to curves etc.).

The consequence is that more logs and more operator observations are needed to get reliable results for calibration of measurement devices.

Finnish forest companies are aiming to reduce the time spent on diameter calibration and use that saved time for harvesting. One good solution is to have more dynamic diameter measurement observations from fewer logs and batches.

Those additional dynamic diameter measurement points can be divided into two categories:

- Selected by the system (selection based on system analysis of machine and caliper data)
- Selected by the operator (selection based on operator visual observations, knowledge and experience)

This information needs to be able to be sent to forest company in HQC message in order to be able to analyze the diameter calibration method and results correctly.

System doing the selection (proposal) of additional points:

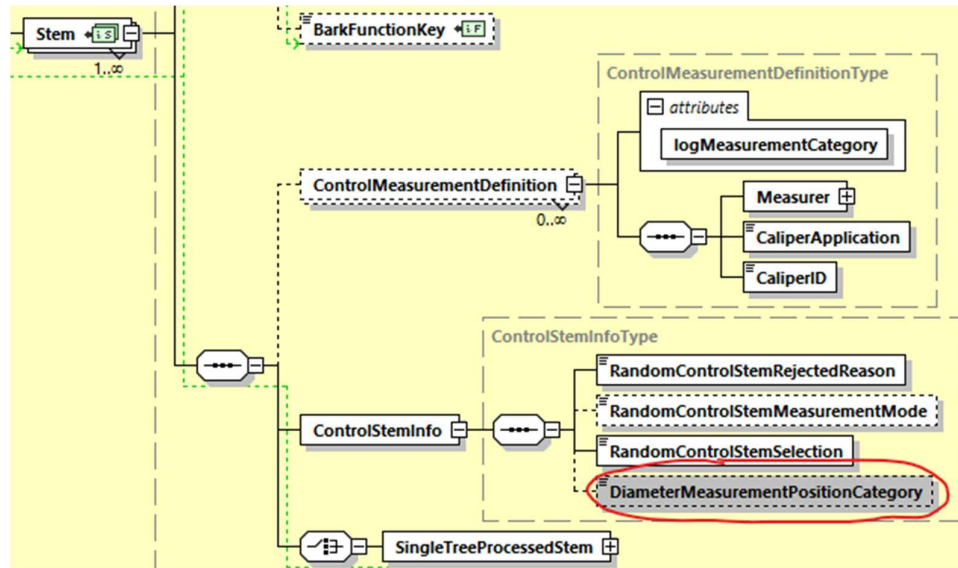
- System can be either controller or calipers or both.
- System logic could be using parameters from
 - Stem curve, provided by machine or some other device,
 - Additional data generated by machine, machine attachment or some external device. For example how well formed stem might be in certain point (curves, knots, ovality) and how well machine measurement device has been positioned when doing the measurements.
 - Exclude area of butt end extrapolation for adaptive points
 - Data provided by Caliper during measurement

- Any other parameter, You can imagine, which might affect the quality of harvester or caliper measurement

The operator can still make a decision to measure or not to measure additional point proposed by the system based on operator experience, operator visual observation of the stem.

It was thus suggested that a new optional element

DiameterMeasurementPositionCategory is added to the hqc schema according to the following figure and table:



Name	Data type	Unit	Description
DiameterMeasurment-PositionCategory	String	Enum.	Mode of how caliper diameter measurement positions are selected. Defines if positions are statically defined using some standard (e.g. Swedish or Finnish) or selected dynamically by operator or software application. Dynamic options may also contain positions according to "static positions". Static positions should be default. Allowed enumeration values: Static positions, Dynamic positions system selected, Dynamic positions operator selected.

Comments from secretary:

What if there is a mix within a stem? Is that possible?

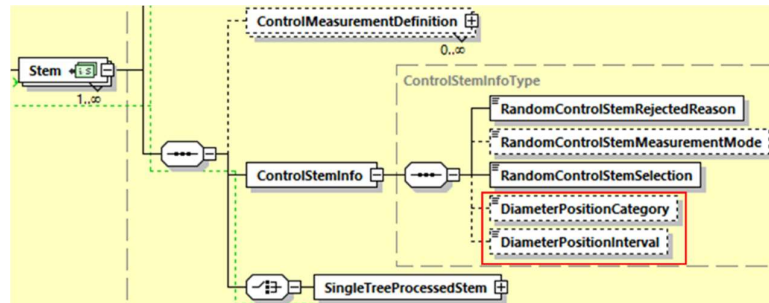
If a stem has been measured according to "static" Finnish rules can be determined by checking that the diameter positions are located at one meter intervals, e.g. at 50 cm, 150 cm, and 250 cm (300 cm long log).

Some harvester controllers generate Hqc including M1 diameter positions that are then sent to the caliper. These positions can then be used by the caliper to decide the positions where operator

is supposed to measure the diameters. It is today not possible to determine if the M1-positions have been decided by the machine, caliper or operator.

The diameter positions generated by machine and caliper could be at “fixed positions” or “variable positions” while the diameter positions decided by the operator could be viewed to always be at “variable intervals”.

Based on this a different solution could be to implement two separate optional elements:



Name	Data type	Unit	Description
Diameter-PositionSource	String	Enum.	Defines where caliper diameter measurement positions have been selected. Defines if positions are selected by harvester software, caliper software or operator. Allowed enumeration values: Harvester, Caliper, Operator.
Diameter-PositionInterval	String	Enum.	Length interval between diameter positions based on a fixed distance or a variable distance. Defines if positions are statically defined using some standard (e.g. Swedish or Finnish) or selected dynamically by operator or software application. Allowed enumeration values: Fixed, Variable

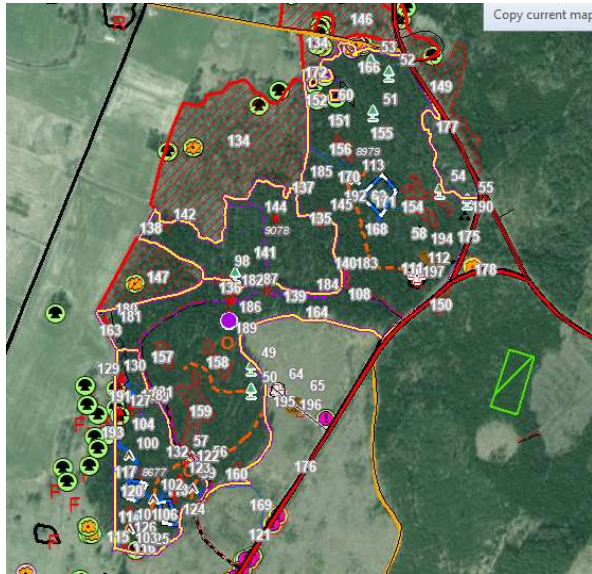
The meeting decided to postpone the proposal in order to clarify how it is to be used, e.g. by including a number of use cases in the updated proposal.

GEO-FENCING

Background

There are some different reasons for this proposal. One reason is to make it possible to automatically switch between different objects and sub-objects based on where the machine is located. Another important reason is that there is trend towards more and more complex geographical harvesting instructions with a large number of different features that affects if trees are to be cut and where the machine may drive.

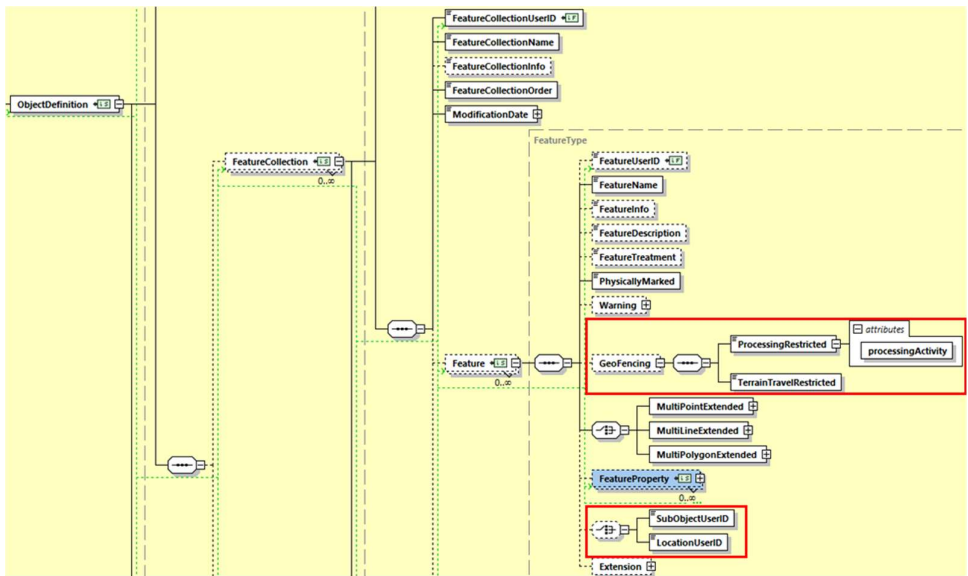
Below is the map from the work site where the harvester test was carried out as planned by Storaenso. It can be noted that the number of features affecting how to carry out the logging operation is significant:



The fact that we see more machines with high precision GNSS receivers and attachment positioning means that geofencing with high accuracy could be implemented. The main object being to decrease the operator work load and decrease the number of mistakes.

Previous meeting

The following proposal was presented at the previous meeting (2025-12-11).



Name	Data type	Unit	Description
Processing-Restricted	Boolean	true/false	Indicates if a machine is allowed to process (unload/load) inside or on this feature. Observe that any feature with the value "TRUE" has the highest priority for a given position. Default value is "FALSE" if element is missing.

TerrainTravel-Restricted	Boolean	true/false	Indicates if a machine is allowed to drive inside or on this feature. Observe that any feature with the value "TRUE" has the highest priority for a given position. Default value is "FALSE" if element is missing.
Processing-Activity	String	Enumeration	Indicates if only specific processing activity is restricted. Allowed values: All activities, Planting, Soil preparation, Loading, Unloading

A long discussion took place, with several comments:

- The attribute processingActivity makes the functionality much more complex. Highly questionable to include this attribute at this stage.
- What is really the difference between this new GeoFencing structure vs the existing Warning structure? Does this mean any improvement?
- An improved proposal should include a more complete description of the advantages of including a GeoFencing structure vs the existing Warning structure.
- How should the GeoFencing be used in order to determine whether the machine is inside the boundaries of the Object as well as estimating the proportion of the Object that has been harvested at any given moment?
- How should a polygon describing Locations be used?

New proposal

The existing warning functionality can be used in order to convey information to the operator whenever the machine is close to any type of feature. It can e.g. be a power line or a pit/well which the operator is to be aware of, but it does not mean that the harvesting of trees is to be affected. Trees are to be cut along the power line, and the machine can drive under the power line.

The suggested new GeoFencing functionality is to be used in order to inform the the machine that it should not cross into a feature (TerrainTravelRestricted = true) or that trees are not to be cut inside a feature (ProcessingRestricted = true). Typical examples are "biodiversity polygons" where no driving or harvesting is allowed while it is in many circumstances required that the operator harvests most trees on a "cultural heritage polygon" without driving inside the polygon. Driving is often not affected if a group of "retention trees" are to be left within a polygon.

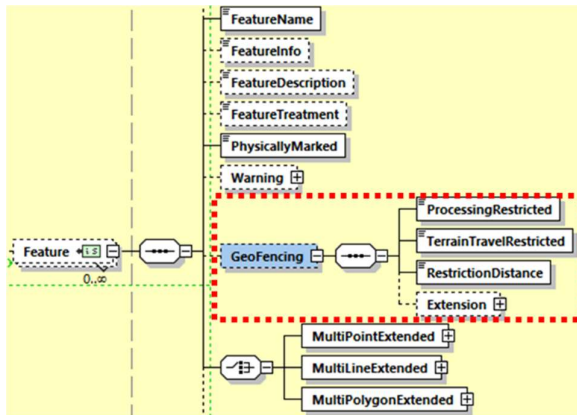
There is also a need for setting a buffer/distance if GeoFencing functionality is to be used also for points and lines (e.g. ruin or watercourse).

The data type and unit for setting a buffer was discussed with the conclusion that the best solution is to use the unit meter and a decimal data type.

It was decided to add the following new elements (slightly simplified comparing with previous meeting):

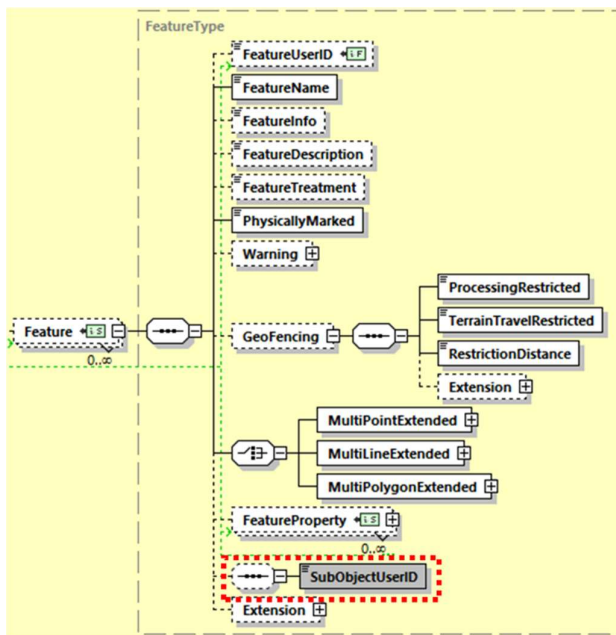
Name	Data type	Unit	Description
Processing-Restricted	Boolean	true/false	Indicates if a machine is allowed to process (unload/load) inside or on this feature. Observe that any feature with the value "TRUE" has the highest priority for a given position. Default value is "FALSE" if element is missing.

TerrainTravelRestricted	Boolean	true/false	Indicates if a machine is allowed to drive inside or on this feature. Observe that any feature with the value "TRUE" has the highest priority for a given position. Default value is "FALSE" if element is missing.
RestrictionDistance	Non-Negative-Decimal	meter	Distance from feature (buffer) when restriction applies as defined by ProcessingRestricted and TerrainTravelRestricted, distance in meters.



All features belong to a specific Object since they are always located within an ObjectDefinition. The controller could thus automatically switch between different objects in cases where the machine has moved from one polygon to another given that the ProcessingRestricted is false. In cases where SubObjects are defined prior to harvesting it would be of interest to be able to switch automatically between different SubObjects. It could be possible to implement such a function by adding an optional element SubObjectUserID to the FeatureType structure as illustrated below.

It was decided to add an optional element SubObjectUserID to the FeatureType as illustrated below:



It was also discussed whether there is a need for being able to specify some text information to be displayed when “breaking” the geo-fencing. However, it was deemed enough to use the FeatureName/Description/Treatment in those cases.

The meeting also expressed a need to further study how to use the existing element “WarningDescription”.

ADDITIONAL COORDINATE REFERENCE SYSTEMS

The possibility of using local reference systems in StanForD coordinate elements has been discussed at several previous meetings. In part due to modern GNSS receivers with corrections being able to generate the coordinates based on local reference systems and in part due to problems caused by different epochs (drift of continental plates).

A solution could be to update the header attribute of all schemas to make it possible to replace the WGS84 with any other EPSG codes and to define which epoch that was used in order to adjust for the movement of the continental plates.

Present attributes and data type for Longitude and Latitude may cause problems when allowing for more coordinate reference systems.

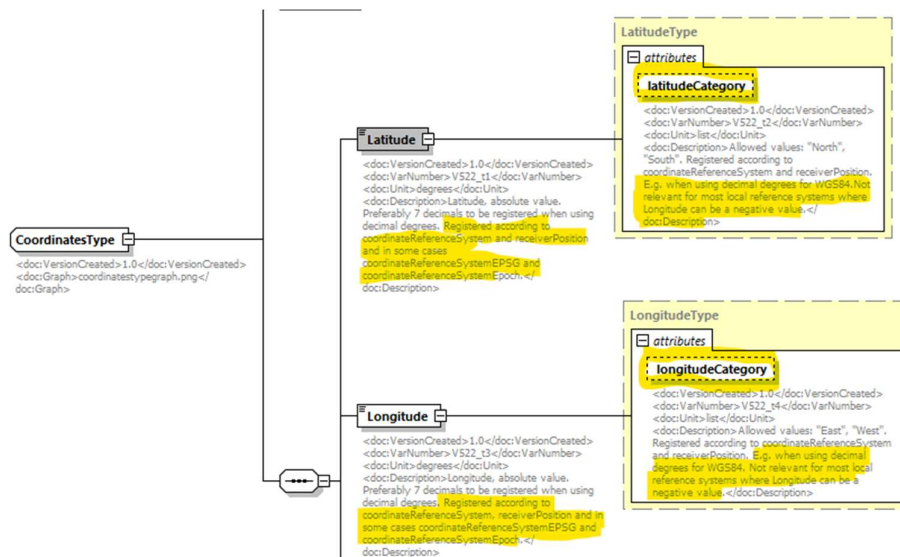
This is due to the fact that the present data type only allows for decimal degrees (0-180 degrees) and the CategoryType has one of the following enumeration values North/South and East/West.

The present limitation with a maximum value of 180 makes it impossible to use reference systems where the unit is in meters, e.g. “EPSG:3006”.

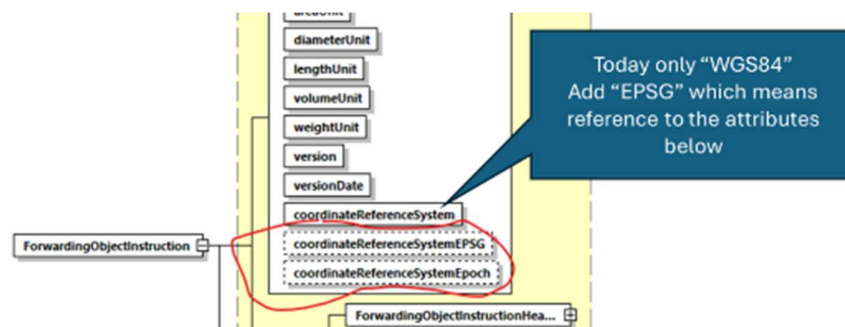
The conclusions from the discussion at the previous meeting were to do the following modifications:

- Updating CoordinateType in order to allow for any decimal value in elements Latitude and Longitude as well as making latitudeCategory and longitudeCategory optional.
- Adding enumeration value EPSG to attribute coordinateReferenceSystem (message header)
- Adding attributes coordinateReferenceSystemEPSG and coordinateReferenceSystemEpoch to the message headers of all files.

It was decided at the previous meeting to let the secretary create a new proposal for the next meeting according to the conclusions above as illustrated below:



Registered according to coordinateReferenceSystem, receiverPosition and in some cases coordinateReferenceSystemEPSG/Epoch when coordinateReferenceSystem has value EPSG.

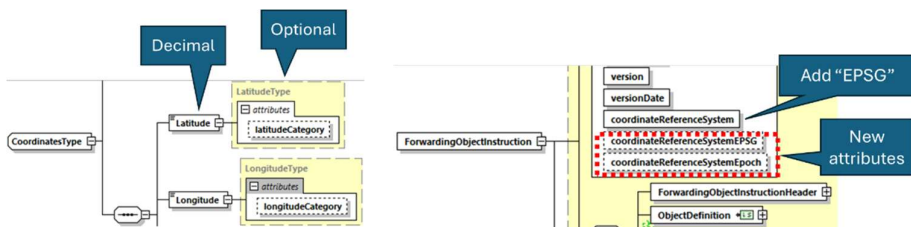


It was decided that the following new attributes are added to the MessageAttributeGroup (included in all schema headers):

Name	Data type	Unit	Description
Coordinate-Reference-SystemEPSG	Positive integer		EPSG code for reference system used in file (correct codes found at EPSG.org). Attribute used in cases when attribute coordinateReferenceSystem has value "EPSG".
Coordinate-Reference-SystemEpoch	Positive decimal		Decimal year used in transformation to local coordinate reference system. Attribute used in cases when attribute coordinateReferenceSystem has value "EPSG".

It was decided that the following elements and attributes in the CoordinatesType are modified (new text in green and underlined):

Name	Data type	Unit	Description
Coordinate-Reference-System	String	list	Coordinate system used in StanForD file: WGS84, <u>EPSG</u> . <u>Attribute coordinateReferenceSystemEPSG required if value EPSG is used in this attribute.</u>
Latitude	<u>Decimal</u>	Degrees <u>or meters</u>	Latitude, absolute value. Preferably 7 decimals to be registered. Registered according to coordinateReferenceSystem and receiverPosition <u>and in some cases coordinateReferenceSystemEPSG/Epoch when coordinateReferenceSystem has value EPSG</u>
latitudeCategory	String	List	Allowed values: "North", "South". <u>Optional value</u> registered according to coordinateReferenceSystem and receiverPosition. <u>Attribute often not relevant when using local reference systems where the unit is meters rather than degrees.</u>
Longitude	<u>Decimal</u>	Degrees <u>or meters</u>	Longitude, absolute value. Preferably 7 decimals to be registered <u>when registering position using degrees</u> . Registered according to coordinateReferenceSystem, receiverPosition <u>and in some cases coordinateReferenceSystemEPSG/Epoch when coordinateReferenceSystem has value EPSG</u>
longitudeCategory	String	list	Allowed values: "East", "West". <u>Optional value</u> registered according to coordinateReferenceSystem and receiverPosition. <u>Attribute often not relevant when using local reference systems where the unit is meters rather than degrees.</u>



It was also decided that the secretary shall look into the datatype of attribute CoordinateReferenceSystemEPSG as it differs from GISCoordinateReferenceSystem until the next meeting and make sure no updates are needed. Observe that the GISCoordinateReferenceSystemType is based on a “restricted string” rather than an integer.

It was discussed whether to deprecate longitude/latitudeCategory as Longitude and Latitude now will allow also for negative values. Another solution could be that this issue is postponed until a possible new major version 5 and that we continue to register latitude and longitude as has been done in all versions up until now. Negative values are thus only to be used for local reference systems where the unit is given in meters, longitude/latitudeCategory are to be used as long as e.g. WGS84 is used with unit decimal degrees.

OPERATIONALMONITORINGCODELIST

The new code list included in the mcl-schema is not constructed to be frequently adjusted from one object to another.

The idea when constructing the mcl-schema was that the code list would be fairly stable and perhaps only manually changed by the operator.

There are at least one Swedish forest company (SCA) that would like to be able to change between different “other work times” from one object to another as this type of work is often paid per hour and it is paid differently depending on the experience of the operator and the site conditions.

The previous meeting concluded that the need for updating any other activities than “OtherWorkTimes” is deemed insignificant. Codes in otherWorkCategoryCode are to be appended to the list of codes included in the mcl-file. These additional codes are only to be used at the present object.

It was therefore decided to update the proposal with a focus on adding a new optional and repeatable element OtherWorkCategoryCode to the oin with some example files.

It was decided that we add new repeatable element OtherWorkCategoryCode with attribute otherWorkCategoryCodeName to the ObjectDefintionType as illustrated below:



Name	Data type	Unit	Description
AppendedOperationalMonitoringCodes			Operational monitoring codes that are to be appended to the codes communicated through the OperationalMonitoringCodeList schema (mcl). These codes append the existing codes, also when receiving an updated oin. Only to be used on specific Object.
OtherWorkCategoryCode	String	Free text	User defined other work category codes. <u>Appended</u> to the codes in the mcl.message in use.
otherWorkCategoryCodeName	String	Free text	Descriptive name per other work category. <u>Appended</u> to the codes in the mcl.message in use.

Example

A Swedish default mcl-file is used with the following codes (some old standard codes excluded):

General other work codes
File: SE_Default.mcl
OtherWork:

- Road travel to object
- Preparing strip road
- Other

- ← Towing other machine
- ← Roadside loading
- ← Unproductive work

OtherWorkCategoryCode (3)		
	otherWorkCategoryName	Rbc
1	Road travel	Road travel
2	Preparing strip road	Preparing strip road
3	Other	Other

A forest company need some additional codes for specific objects and operators with the following codes communicated through an oin-file:

SCA for some objects and operators
File: x.oin
Appended to OtherWork:

- Special harvesting
- Bridge building
- Cording
- Operator introduction

OtherWorkCategoryCode (4)		
	otherWorkCategoryName	Rbc
1	Special harvesting	Special harvesting
2	Bridge building	Bridge building
3	Reinforcing ground	Reinforcing ground
4	Operator introduction	Operator introduction

The operator will be able to select among the following other work codes at the present object:

Types of other work:	Source:
• Special harvesting	Oin
• Bridge building	Oin
• Cording	Oin
• Operator introduction	Oin
• Road travel to object	Mcl
• Preparing strip road	Mcl
• Other	Mcl

TREE LENGTH PRODUCTION DATA IN MOM-FILES

It has been noted that there is no definition for FellerBuncherDataType, YarderDataType nor SkidderDataType under IndividualMachineWorkTime/OtherMachineData in the mom-schema.

It was decided at the previous meeting not to update with additional structures for reporting production data in the mom schema for FellerBunchers, Skidders and Yarders. Question of re-designing HarvesterData and ForwarderData to be discussed again when a new version 5 is created.

It was also decided at the previous meeting that FellerBunchers are to use the HarvesterData-structure (as Dasa is using today) and the ForwarderData-structure is to be used by future implementations of mom by Yarders and Skidders.

Existing enumeration values in attribute loadNumberOfCategory are:

- Estimated number of logs
- Number of bundles

Neither of these enumerations are suitable to use for a yarder or skidder. It was thus decided that we add the value “Number of stems” to attribute loadNumberOfCategory.

It was noted by the secretary, after the meeting, that the descriptions of elements HarvesterData and ForwarderData probably should be updated to point out that these can be used also for Skidder, Yarders and FellerBunchers in accordance with the decisions at the previous meeting in December 2025.

§7 Items for discussion

STANFORD REMOTE API

Aim was to discuss how the data communication between cloud services of machine manufacturers, forest company systems and 3rd party services should be designed for future purposes.

Timo Koskiahde, Ponsse, presented some basic ideas on this topic.

The need for data sharing is growing: more, better quality and more realtime

- Operational development based on data
- Reporting needs(ESG/CSRD)
- Coherent information to all parties (forest company, contractor, operator, service, public forestry data, ...)
- Goal is to unlock the value of the data in full extent

Data ownership, trade secrets, contract based operations are important factors affected by possibility to ensure:

- data validity
- role-based access to data (content, accuracy, interval, ...)
- interoperability

Development of remote APIs must consider relevant legislation such as:

- EU Data Act
- EU CRA
- EU Data Governance Act
- EU Digital Markets Act
- GDPR

The existing model based on StandForD files is becoming end of lifecycle:

- Does not fulfill all legislation
- Does not fulfil contractor needs

- Does not scale to new services

API needs to move to cloud (Remote data API) -> need to standardize. Maybe based on data model in files, but e.g. Authorization can not be file specific anymore

- Need to agree what will be standardized and what is left manufacturer specific

It was decided to form a task force (by open invitation to all members) to discuss the problem in more detail. A physical meeting in September is preferred (after FinnMETKO 3rd – 5th of September). Primarily manufacturers working with cloud solutions should participate. StanForD secretary/chairman to send out invitation to a meeting after the summer.

MID DIAMETERS

Based on discussions with Henrik Persson, LogMax.

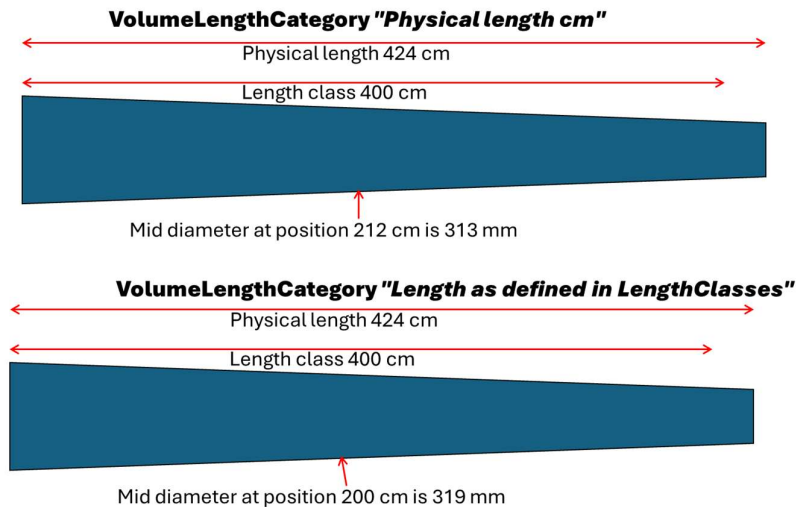
Element VolumeDiameterCategory has the following description:

Diameters used in price volume calculation. Allowed list values are: "All diameters (solid volume)", "Top", "Mid", "Calculated Norwegian mid" and "Calculated Estonian mid". "Mid diameter" is measured at a position defined according to VolumeLengthCategory

Element VolumeLengthCategory has the following description:

Lengths used in price volume calculation. Allowed list values are: "Physical length cm", "Length as defined in LengthClasses", "Rounded downwards to nearest dm-module" and "Rounded to nearest mid-dm."

It is clearly stated that the mid point diameter used for calculating a mid measured volume is dependent on the VolumeLengthCategory. The starting point for calculating the midpoint is always the butt end of the log. This was decided at the meeting 2013-12-12. This is illustrated below.



However, whether the length classification has an effect on diameterClassCategory with value "Midpoint" is not specified. This element affects how a log is classified.

This is also true for logDiameterCategory (Mid ob/ub) in the hpr.

A starting point for a further discussion could be to investigate how the present controllers handles mid point diameters registered in the hpr. Is this always the physical midpoint? Or does it depend on what length is used in volume calculation or length classification?

It was decided to let the secretary distribute a questionnaire regarding how mid diameters are actual measured for each log in the hpr-file.

STEM COUNT

No further work has been carried out since last meeting.

§8 StanForD2010 projects / implementations

USE OF STEMCODES IN HARVESTING OF WINDTHROUGHS

Jonas Gustafsson, Sveaskog, presented some experiences from using stem codes in order to follow results after a wind-throw.

In early January the storm "Johannes" felled approx. 11 milj. m³ in the middle part of Sweden. Many large and small landowners affected.

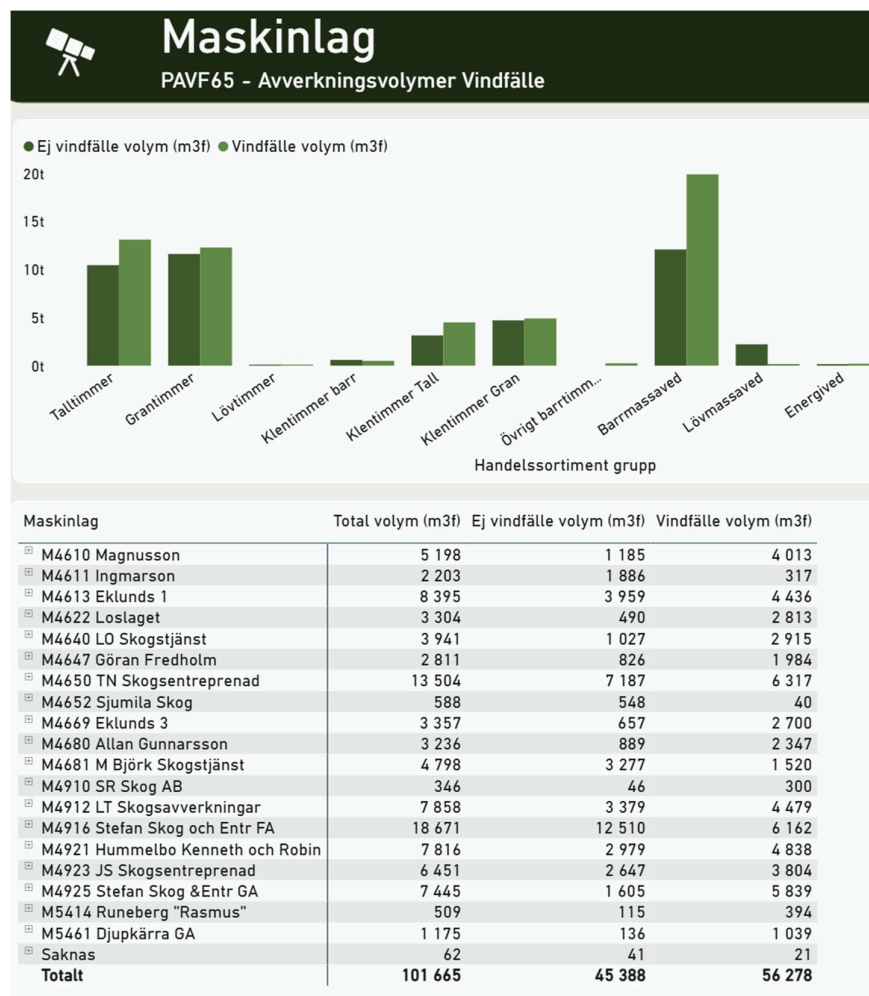
Insurance companies will ask for the volume of windthrouws. We need to declare how much volume it is. An alternative to using stem codes would be is to use "storm species". However, that means doubling the number of products in the harvesters. Making it quite meey!

Experiences of using stem codes in a windthrow situation:

- Must be easy to activate

- To "mark" a lot of trees is not the same thing as single tree stem code. (high stump)
- Sticky function is necessary (could it be possible to chose which stem codes could be sticky?)
- Need to be clear and visible that it's activated and if sticky is activated.

Example of a report:



NEW SIMPLE LENGTH CONTROL

The secretary presented an on-going project whereby operators should be able to report and analyse a simple log length control as is often done today without any digital tools available. Test on a number of harvester will be carried out during the coming months.

If the new method is proving to be relevant a proposal will be made in order to do updates to the hqc schema.

HARVESTER TEST 2025

Lovisa and Anders presented some general results from the harvester test carried out by Skogforsk during October and November 2025. The results presented at the meeting are included in appendix 1.

A work report in Swedish to be published this summer and an English translation to be published after the summer.

Heikki Komulainen pointed out that there will be support for version 4 not only for Opti 5G but also for Opti 4G produced 2021 or later.

STANDARD FOR MECHANIZED FOREST REGENERATION

John informed the meeting about the fact that at least one actor is now test the use of operational monitoring on a forest regeneration machine (planting and soil preparation).

Please contact the secretary for further discussions if any other member is looking more closely at the implementation of this new proposed standard. We need to catch the weak links ASAP!

§9 Other issues

FINNISH SPI-FILES

Finnish recommended spi-files have been updated (2025-12-30).

- ButtLogMAXStartHeightset is set to 150 cm for all tree species (ver. 3.6 -4.1)
- DBHHeightset is set to 110 cm for all tree species (ver. 3.0 –4.1)

It was decided in the Finnish StanForDgroup meeting (2026-03-26) that all machine manufacturers should test the updated files, at least in simulators, and inform Metsäteho if they are OK or not. Testing has been done by Ponsse and Dasa so far.

The following errors have been discover and will be corrected:

- Version 3.5: 'versionDate' has invalid value '2018-02-07', Correct date for version '3.5' is '2019-02-07'
- Version 4.1: 'versionDate' has invalid value '2024-11-13', Correct date for version '4.1' is '2025-02-05'

After testing Metsäteho and Trimble will prepare a notice to machine owners and forest companies that the updated files are ready for updating in the machines

Delivery of spi-files can be arranged via WoodForceservice, possibly also via Pinja's service. Machine manufacturers can also do the updating along with other software update.

Loading of updated files to official StanForD website will be done also (by Skogforsk)

It has been discussed to also have a national website in Finland (e.g. linked to Metsäteho's web pages) for the machine owners and other users from where to upload the current versions of spi-files and all the information related to their handling.

CARBON EMISSIONS REPORTING

Trimble Forestry has presented the mom-file based idea for the solution for CO2 calculation and reporting

The solution would be independent of WoodForce, but be based on it:

- The users would mainly be those companies and entrepreneurs already using WoodForce
- Therefore there will be a need for other solutions as well

Idea has been preliminarily accepted by the representatives of Contractors Union provided that mom-files are used only for emission calculation and original data is not delivered to customers. Requirement from the contractor side is that machine owners can get all the needed emission data from the system to their energy audit reporting

The solution will be discussed with Metsäteho's shareholder companies 12th of May and Trimble is ready to design and build the system Q3-Q4/2026. Piloting is an open question.

Another road will be to apply machine manufacturers cloud services and emission calculation and reporting tools

Standardised API interfaces for integrating various emission reporting systems and tools to forest companies' systems are important to be specified before building Globally standardised interfaces are required for the forest sector

Trimble's solution

Functionalities and phases of emission calculation

- Transfer of mom files from the forest machine to the server is behind several separate settings
- Fuel consumption must be saved in mom-files by work shifts (start and end time of the shift)
- Identification of the object (harvesting site) and the machine taken from mom
- Production of assortments connected to fuel consumption from mom or hpr/fpr files
- Gathering of object specific fuel consumption data from mom-files of forwarders may be problematic
 - Separate objects can be mixed in reporting

- However, our understanding is that main part of objects are handled as single in practice
- Emission factor based on the fuel category (and its carbon content)
- Fuel category either linked to the machine (default value in the system) or extracted from mom file
 - Mom alternative requires a change in StanForD
 - Emission calculation for each object should be ensured
- Calculations and reporting must allow for changes in emission factors e.g. annual update of emission factors based on Statistics Finland's fuel classification
- Consumption of other substances and their emissions should be included in the reporting e.g. on annual basis
 - especially stump treatments(urea)
 - AdBlue, hydraulic oils, colour marking chemicals etc.
- Calculated results via API integration to users's systems
- Possibility to create user's own reports in the system (reporting templates)?

Comments

John Arlinger pointed out that “shifts” are not defined within StanForD. This concept has historically been considered an “implementation issue”.

Fredrik Tjernberg, Komatsu, informed the meeting about the fact that fuel consumption is typically measured using the time that the fuel pump is “active”. Depending on the diameter of the nozzle the actual volume of fuel per time unit may increase over time since the nozzle diameter sometimes increases over time due to wear.

§10 Next meetings

StanForD meeting StanForD meeting, Uppsala, (2026-11-18, 10:00-15:00 CET)

It has been suggested to arrange the next spring meeting in connection with the ForestExpo exhibition that is arranged on the 3rd to 5th of June 2027 (Stockholm, Sweden) in order to make it possible for participants from abroad to attend both events during the same trip.

Spring meeting 2027 is therefore planned to be held on 8th-9th of June 2027, in Vantaa, Finland.

By default, all financially contributing members will receive an Outlook invitation to all meetings in advance.

§11 Summary of meeting decisions

The chairman presented a summary of all meeting decisions.

No objections were raised.

§12 End of meeting

The chairman Anders Rowell thanked everyone for attending the meeting.