

Minutes StanForD2010

2020-05-07

Place:	Microsoft Teams (Uppsala), 2020-05-07
Participants:	John Arlinger, Secretary Johan J. Möller, Chairman Tapio Räsänen, Metsäteho Timo Melkas, Metsäteho Antti Korkiakoski, JohnDeere Patrik Anderchen, Södra skogsägarna Pasi Palonen, Parker Jean Plamondon, FPInnovations Jonas Gustafsson, Sveaskog Andreas Barth, CGI Per Knutsson, CGI Lars Henriksson, SDC Niclas Eriksson, Komatsu Heikki Komulainen, Ponsse Janne Pursiainen, Ponsse Ian Wilson, ForestPHD Jeremy Gibson, ForestPHD Juha Yli-Hemminki, Exertus Jouni Kytovaara, Log set Filip Ciolkowski, Coillte Mike O'Shea, Coillte Jacek Nawrot, Tigercat Joshua Hildebrand, Tigercat Jonas Thorsson, Dasa Henrik Persson, LogMax Markku Laaksonen, Technion Bengt Sörvik, Otmeka

Decision summary:

- Next version to be implemented (version 3.7 or 4.0) will be discussed at meeting for members on the 17th of August 09.00 CET.
- It was decided that we update the description of ButtLogMAXStartHeight.
- It was decided to further develop the following proposals for the next meeting:
 - Restrictions on modification of ProductUserIDs in oin and DeliveryUserIDs in foi.
 - New schema for caliper control.
 - New schema for the production message for yarders and skidders. It was decided to let the secretary merge these two machines into one single schema (spr).
 - Developing new ogi schema for version 4.0.
- The meeting decided to only consider new volume types if there is a strong requirement to use it for optimization of bucking. It was decided to let the secretary together with Antti Korkiakoski study the possibility of including a “log volume extension” in the hpr where manufacturer can store un-standardized volume types used for reporting only.
- It was decided to postpone the issue of controlling data in the hpr using the oin (e.g. coordinates or diameter vector).
- It was decided with the minutes that element StemMeasurement is to be made repeatable in bqc.
- Next ordinary StanForD meeting 2020-12-02 with an option of extending to the 2020-12-03 in case we decide to do an update to major version 4.0, Uppsala

Action list:

- The following guidelines should be followed when implementing LongTimberDefinition:
 - Must be possible to view and edit LongTimberDefinition in administrative tools.
 - Default value equal to DiameterMAXButt in administrative tools
 - LongLogButtMAX is never to be included in pin-file if value is 0 (it is optional).

- Value 0 (zero) is to be interpreted as null.
- It is recommended to implement stem codes for both individual trees and groups of trees (so called “sticky registration of stem codes”). Whether the “sticky registration” is trigger by double click or any other operator interaction does not matter.
- Do not mix products and deliveries in forwarder applications.
 - Focus on Deliveries in the UI.
 - Avoid using pin-files. It often creates a lot of confusion
- Map interface when creating Locations would be good in order to avoid incorrect coordinates.
- TextToMachine an urgent variable to be shown when creating new object in harvester and forwarder.
- The description of OtherMachineDownTimeStandardCode was updated: *Allowed values: "Waiting for repair", "Trailer transportation", "Unproductive terrain work", "Other", "Default". "Default" used only in cases where operators have not registered any reason at all. "Default" not to be available in GUI and only generated by control system. "Default" to be used in system where down time reasons are disabled or there is a "time-out".*
- It is strongly recommended that the control system does not automatically activate a modified pin if it is not active at the present harvesting object
- All randomly selected stems (both rejected and not rejected) must be saved in an hqc-file including a possible reason for rejection. This file should be possible to send directly to the forest company (in Sweden to Biometria).
- Coordinates in production files should always be activated by default in all forest machines (especially important after software updates when coordinate registration is commonly lost).

§ 1 Opening of meeting and agenda

Chairman Johan J Möller opened the meeting.

The issue of whether to update to version 3.7 or 4.0 was added to “§8 Other issues”.

§ 2 Presentation of new member and participants

Presentation of meeting participants as well as the new members Coiltte, Ireland and Tigercat, Canada.

§ 3 Information about decisions at previous meetings

The decisions made at the previous meetings (2019-04-03--04) were presented as well as the action list compiled after the meeting.

- Next version to be implemented is 3.6.
- New element SawCutWidth added to ControlValues in hqc schema.
- Definition of element Density updated in order to specify that the unit is supposed to be kg/m³.
- LocationDefinition to be optional in the foi-file.
- Add new enumeration value "Not measured in caliper" to RandomControlStemMeasurementMode with description: *Code for control measurement mode per stem. Set in caliper. Allowed enumeration codes for caliper measurement modes: "Both diameters and lengths registered", ~~and~~ "Only lengths registered" and "No lengths or diameters registered in caliper".*
Value can be modified in receiving system.
- Add new optional attribute auditorCategory to ControlMeasurementDefinition with enumerations "Third party", "LoggingOrganization" and "LoggingContractor".
- New hpd-schema (delta hpr) added. It is identical with the hpr-schema but excluding the constraints requiring optional definitions (Product / SpeciesGroup / DiameterSectionDefinitions).
- New bqg schema (feller buncher quality control) added. Similar to hqc but including control measuring data for DBH and ReferenceDiameter.
- The following text to be added to the description of all UserIDs:
*Do not use a single space or null value. Do not begin or end with a space. Do not include any of the following characters: Double space, Linefeed, carriage return, %, ?, /, <, >, :, " (double quote), /, \, |, *,*
- Decided to let Skogforsk consider new bark function. Decision at meeting in February.
- Add to description of ProductCondition (in ProductDefinition):
By default all logs with a starting point within 100 cm from stump cut are "butt logs". Settable in machine. Registered ButtLogMAXStartHeight.
Add optional element for "ButtLogMAXStartHeight" to SpeciesGroupDefinition with following definition:
Defines the maximum start height where a log is to be considered. E.g. if this value is 100 cm all logs having their butt cut below 100 cm must be considered a butt log. This element has an effect if BuckingCondition has value "Buck butt-log only" or "Do not buck butt log"

- Skogforsk to study possibility of updating ogi/ogr (including scarifier data).
- Skogforsk to create beta proposal for yarders and skidders during 2020.

§ 4 Proposals

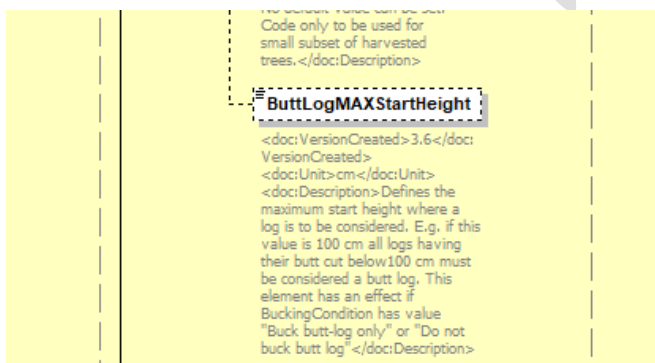
BUTTLOGMAXSTARHEIGHT

Räsänen Tapio, Metsäteho, 2020-03-10

There is a mistake in the newly added description of ButtLogMAXStartHeight (version 3.6).

It was decided (2019-11-13) to add to description of ProductCondition (in ProductDefinition): *By default all logs with a starting point within 100 cm from stump cut are "butt logs". Settable in machine. Registered ButtLogMAXStartHeight.*

The new optional element "ButtLogMAXStartHeight" (added to SpeciesGroupDefinition) has the following definition: *Defines the maximum start height where a log is to be considered. E.g. if this value is 100 cm all logs having their butt cut below 100 cm must be considered a butt log. This element has an effect if **BuckingCondition** has value "Buck butt-log only" or "Do not buck butt log".*



The description should not refer to BuckingCondition but instead to ProductCondition.

It was therefore decided that we update the description of ButtLogMAXStartHeight to:

Defines the maximum start height where a log is to be considered. E.g. if this value is 100 cm all logs having their butt cut below 100 cm must be considered a butt log. This element has an effect if ~~BuckingCondition~~ ProductCondition has value "Buck butt-log only" or "Do not buck butt log".

RESTRICTIONS PRODUCTUSERIDS IN OIN

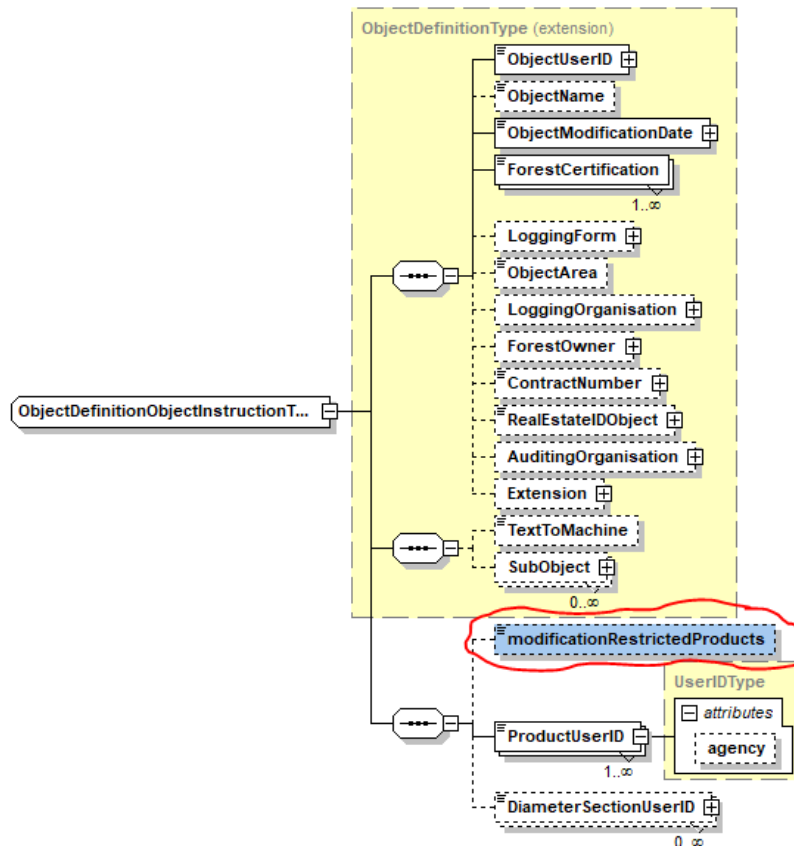
Patrik Anderchen, Södra skogsägarna, 2020-03-12.

The idea is to add a flag to the oin that forbids changes to the list of products (ProdUserID). Some administrative systems require that products in oin and hpr are matching. In the new VIOL3 system developed by Biometria the harvester is

only allowed to report products that has been specified for a specific contract. This means that if the operator adds an additional product the hpr will be rejected by the receiving system.

A new optional element ModificationRestrictedProducts was therefore suggested in the ObjectDefinition. This is to be a Boolean with the following description:

If element value is "true" then modification of the list of ProductUserIDs is restricted, this means that the operator is not allowed to do any changes to the product mix as defined in the oin. If the value is "false" then modifications are allowed. False is default if element is missing.



No objections were raised. It was decided to postpone the issue to the next meeting in order to also include a similar restriction for DiameterSectionsUserIDs (oin) and DeliveryUserIDs in (foi). Henrik Persson, LogMax also proposed that a new hierarchical level "ProductUserIDCollection" might be added in version 4.0 since this would make the proposed restriction more logical as illustrated below:

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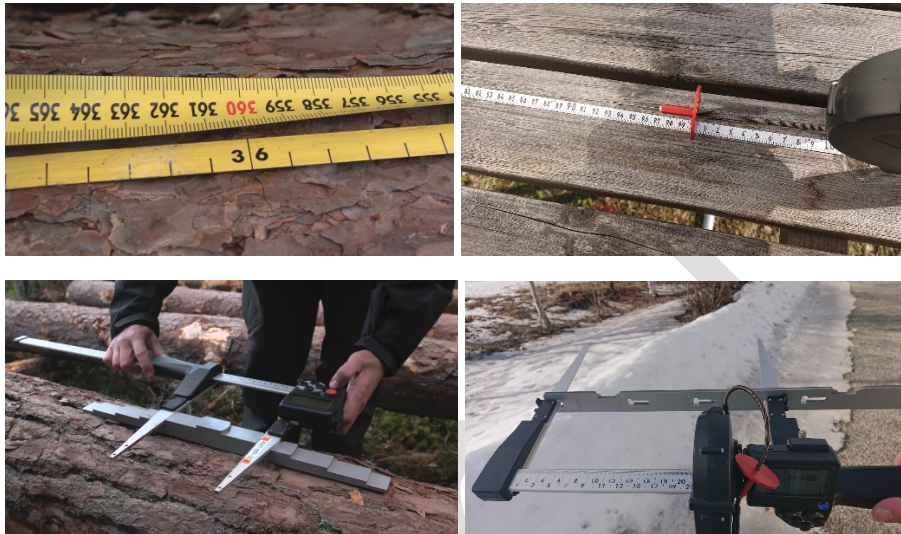
<ObjectDefinition>
  <ObjectUserID>.....</ObjectUserID>
  ...
  ...
  <SubObject>.....</SubObject>
  <ProductUserIDCollection modificationRestricted=true>
    <ProductUserID>X</ProductUserID>
    <ProductUserID>Y</ProductUserID>
  </ProductUserIDCollection>
</ObjectDefinition>

```

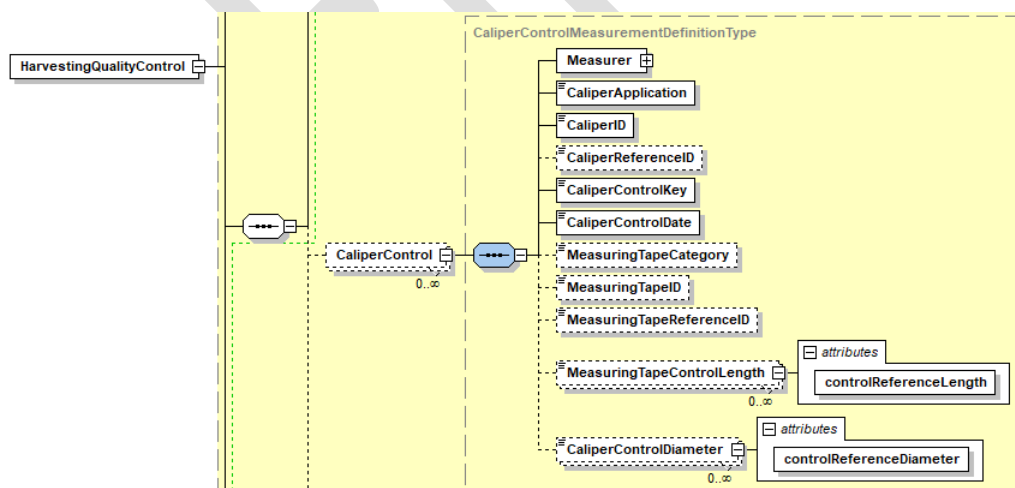
CALIPER CONTROL

Joakim Nygren, Haglöf, 2020-03-20

It is important to regularly check the handheld instruments used for controlling harvester measurements. The measuring tape is checked against a steel measuring tape, class 1. This also applies to digital measuring tapes, which must be calibrated if the length deviates from the template. The calliper is most easily checked with a caliper template.



Operators are supposed to control their caliper and measuring tape once a week. These controls are today logged in the calliper but not reported in a standardized way. It was therefore suggested that we add the following structure to the hqc-file.



The following new definitions were suggested to be added to the Hqc-schema:

Name	Unit	Data Type	Description
CaliperControl		nonNegative-Integer	Structure for control of caliper and measuring tape. Only registered when carrying out "Operator" measurement (M2)

Name	Unit	DataType	Description
Measurer		MeasurerType	Contact information of measurer
CaliperApplication	free text	String	Version of software used in caliper.
CaliperID	free text	String	Caliper identity information.
CaliperReferenceID	free text	String	Caliper reference identity information. Normally a fixed template with a number of fixed distances.
CaliperControlKey	sequential no	nonNegative-Integer	Unique caliper control identity, set by caliper. Must be totally unique for a certain Caliper.
CaliperControlDate	yyyy-mm-ddThh:mm:ss[+ -]hh:mm	StanForD2010-DateTimeType	Date and time of caliper control. Time stamp must have the following times registered: local time $\pm$ offset from UTC.
MeasuringTapeCategory	List	Enumeration list	Type of measuring tape: "Manual tape", "Digital tape".
MeasuringTapeID	free text	String	Measuring tape identity information.
MeasuringTapeReferenceID	free text	String	Reference measuring tape identity information. Normally a steel measuring tape class1.
MeasuringTapeControlLength	Cm	nonNegative-Decimal	Registered length when control measuring using measuring tape.
controlReferenceLength	Cm	nonNegative-Decimal	Reference length, length of the control object e.g. steel measuring tape class 1.
CaliperControlDiameter	Mm	nonNegative-Decimal	Registered diameter when control measuring using caliper.
controlReferenceDiameter	Mm	nonNegative-Decimal	Reference diameter, diameter of the control object e.g. caliper template.

It was decided to postpone this issue in order to study the possibility to create a separate message due to the fact that these controls are completely independent of control stem measuring as well as the harvester. It was also suggested at the meeting to add elements for registering the identities of the caliper template and the measuring tape (included in table above).

§ 5 Proposals for version 4.0

No proposals for version 4.0.

§ 6 Items for discussion

NEW VOLUME UNITS

This document is based on a question from Antti Korkiakoski, John Deere. The objective was to continue discussing additional volume types.

In this case the discussion refers to Japanese and Russian volume types but there are many parallels to the American board feet that we have discussed at previous meetings.

Russian GOST 2708-75

Russian legislation requires volume calculations to be done in compliance with national standards such as GOST 2708-75 (from 1975/77).

Example table below where diameters are rounded to closest cm (even integer if diameter >14 cm).

4,0-4,9 m													
Thickness, cm	Volume, cub. m., at length, m												
	4,0	4,1	4,2	4,25	4,3	4,4	4,5	4,6	4,7	4,75	4,8	4,9	
3	0,0067	0,0069	0,0071	0,0072	0,0073	0,0075	0,0078	0,0081	0,0083	0,0084	0,0086	0,0089	
4	0,0093	0,0100	0,0110	0,0110	0,0110	0,0110	0,0110	0,0120	0,0120	0,0120	0,0120	0,0130	
5	0,0130	0,0130	0,0140	0,0140	0,0140	0,0150	0,0150	0,0160	0,0160	0,0160	0,0170	0,0170	
6	0,0170	0,0170	0,0180	0,0180	0,0180	0,0190	0,0190	0,0200	0,0200	0,0210	0,0210	0,0210	
7	0,0210	0,0220	0,0230	0,0230	0,0240	0,0250	0,0250	0,0250	0,0260	0,0260	0,0260	0,0270	
8	0,0260	0,0270	0,0280	0,0290	0,0290	0,0300	0,0310	0,0320	0,0330	0,0330	0,0340	0,0350	
9	0,0320	0,0330	0,0340	0,0350	0,0350	0,0360	0,0370	0,0390	0,0400	0,0400	0,0410	0,0420	
10	0,037	0,038	0,039	0,041	0,041	0,042	0,044	0,045	0,047	0,047	0,048	0,049	
11	0,045	0,047	0,048	0,049	0,050	0,052	0,053	0,055	0,057	0,058	0,059	0,060	
12	0,053	0,055	0,057	0,058	0,059	0,061	0,063	0,065	0,067	0,068	0,069	0,071	
13	0,062	0,065	0,067	0,068	0,069	0,072	0,074	0,077	0,079	0,080	0,082	0,083	
14	0,073	0,075	0,077	0,078	0,080	0,082	0,084	0,086	0,089	0,090	0,092	0,094	
16	0,095	0,098	0,101	0,102	0,104	0,107	0,110	0,113	0,116	0,117	0,118	0,121	
18	0,120	0,124	0,127	0,129	0,131	0,135	0,138	0,142	0,145	0,147	0,150	0,152	
20	0,147	0,151	0,156	0,158	0,160	0,165	0,170	0,174	0,178	0,180	0,183	0,187	
22	0,178	0,183	0,188	0,190	0,193	0,198	0,200	0,200	0,210	0,210	0,220	0,220	
24	0,210	0,210	0,220	0,220	0,230	0,230	0,240	0,240	0,250	0,250	0,260	0,260	
26	0,250	0,250	0,260	0,260	0,270	0,270	0,280	0,290	0,300	0,300	0,310	0,310	
28	0,290	0,300	0,300	0,310	0,310	0,320	0,330	0,330	0,340	0,350	0,350	0,360	
30	0,33	0,34	0,35	0,35	0,36	0,37	0,38	0,39	0,40	0,40	0,41	0,41	
32	0,38	0,39	0,40	0,40	0,41	0,42	0,43	0,44	0,45	0,45	0,46	0,47	
34	0,43	0,44	0,45	0,46	0,47	0,48	0,49	0,50	0,51	0,51	0,52	0,53	

Japanese JAS

Two types of formulas, one for short logs (<6m) and one for long logs (>=6m). These two different formulas are illustrated in figure 1 and 2 below. For diameters below 14 cm the diameter is rounded down to the nearest cm and for logs with more than 14 cm, the diameter is rounded down to the nearest even integer.

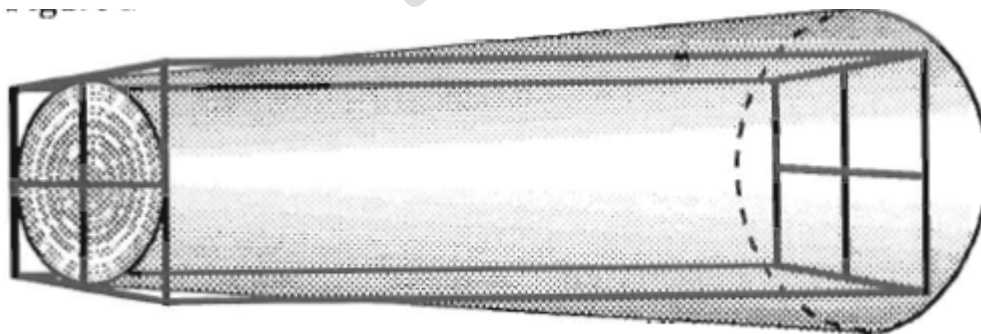


Figure 1. Formula for short logs is $\text{vol} = (\text{SED}^2 \cdot L) / 10000$. No compensation for taper.

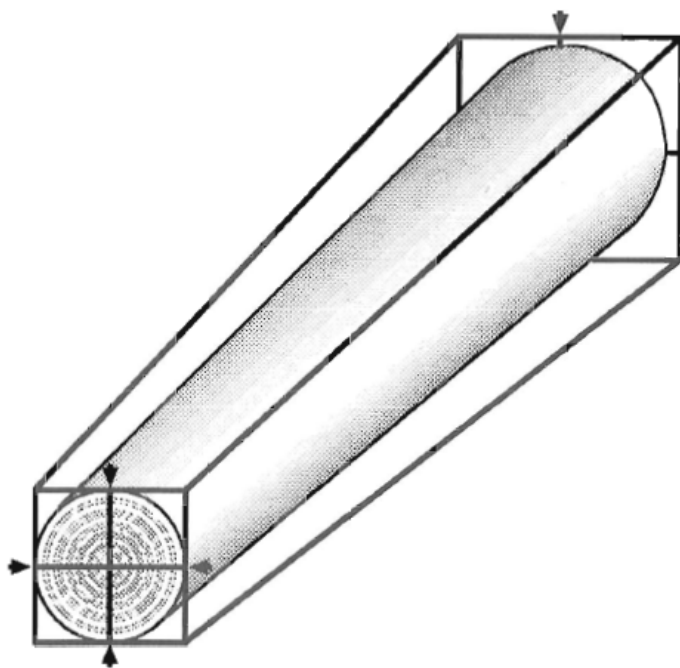


Figure 2. Formula for long logs is $\text{Vol} = (\text{SED} + (L'-4)/2)^2 (L/10000)$. A standardized correction for taper is included.

Comments from secretary prior to meeting

It seems like neither of the standards depend on tree species.

As is the case with board feet the GOST standard is based on tables. There probably exists some approximate functions as is also the case for some of the board feet tables.

Most volume types assumes that a log is described as a cylinder or a cut cone. However, the JAS volume is not, instead it is based on a square cant (as illustrated above) with a difference between short and long logs.

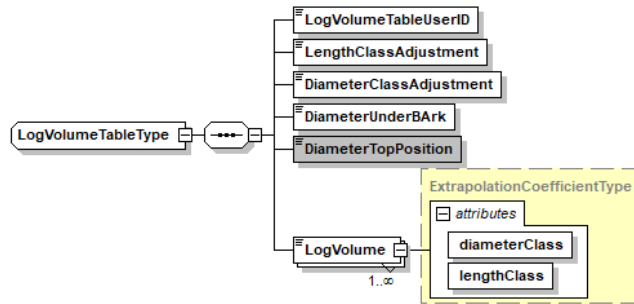
Both JAS, GOST and sometimes board feet have separate estimation methods for shorter vs longer logs. Long logs are normally segmented into two or more shorter segments that are scaled individually. However, the length limit varies significantly and is probably of lower relevance for harvesters since they are intended for cutting shorter lengths rather than long lengths.

An important factor to consider when discussing new volume types is whether or not there is a need for optimizing based on the volumes or if it only a need for creating reports.

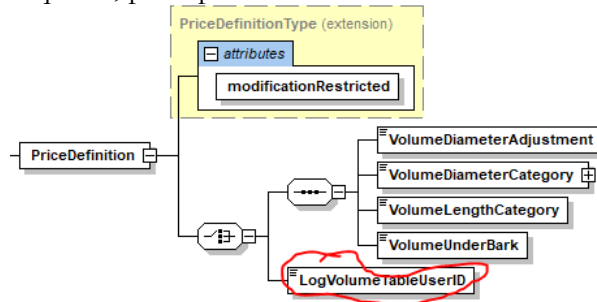
Possible ways forward:

- Implement additional functions that are usually only approximate.
- Implement possibility to create volume tables similar to the table for butt end extrapolation. This table would be based on log length and one single log diameter as illustrated below. Probably included in a completely new

schema.



A reference between the Product (pin) and the volume table would be required, perhaps as illustrated below:



- Modify price matrix with top measured volume so that the price represents the true values according to e.g. JAS or GOST. This means that any production volume must be calculated in receiving system.
- Leave these “non computable”, such as GOST, JAS and board-feet, totally outside the standard.

Summary of Meeting discussion

It was pointed out by Jeremy Gibson that the fact that a segmentation is done when calculating board feet volume of long logs. This means that a long log is divided up into shorter segments where the volume is calculated for each segment individually. This is also true for the GOST volumes. Log segmentation based on complex rules is presently not possible to do in any control systems and will probably be very to implement. Another disadvantage with both GOST and especially board feet is that there are threshold levels which means that using these units for optimization probably will mean unforeseen effects with some length and diameter combinations being more attractive than others.

For reporting purposes, it is possible to calculate basically all thinkable types of volumes using an hpr including diameter vectors (element StemDiameters). Observe that forest machines calculate a gross volume and not a net volume where deductions are made based on defects. Creating new definitions in the ProductDefinition for “non computable” volume types is thus unnecessary from a StanForD perspective in cases where we need a new volume type only for generating reports.

The meeting decided to only consider new volume types if there is a strong requirement to use it for optimization of bucking. Presently this requirement does not exist for either of the different volume types. The meeting also pointed out that we must involve people who “eat and breath” any new volume type if we are to consider adding any new volume types.

It was decided to let the secretary together with Antti Korkiakoski study the possibility of including a “log volume extension” in the hpr where manufacturer can store un-standardized volume types used for reporting only.

NEW “LOGISTIC BARK FUNCTION

Björn Hannrup, Skogforsk, has analyzed the possibility of using the logistic bark function for birch in Sweden. The preliminary report is so far only in Swedish. The following text is based on this preliminary report.

A significant proportion of the harvested volumes from thinning consists of birch in Sweden. Up to 18% of the harvested volumes consists of birch in the south of Sweden (Södra skogsägarna). In first thinnings the proportion increases slightly to 19%. Today this is a significant limitation in using harvester measurements for paying forest owners since the presently used bark functions gives systematic errors that are deemed to be too high. A maximum of 10% birch is allowed when using harvester measurements for payment.

In order to analyse the existing functions as well as studying possible new functions, a total of 221 birch trees were sampled and measured by a number of harvester auditors from the wood measurement associations Qbera and Syd (today Biometria) in the southern half of Sweden.

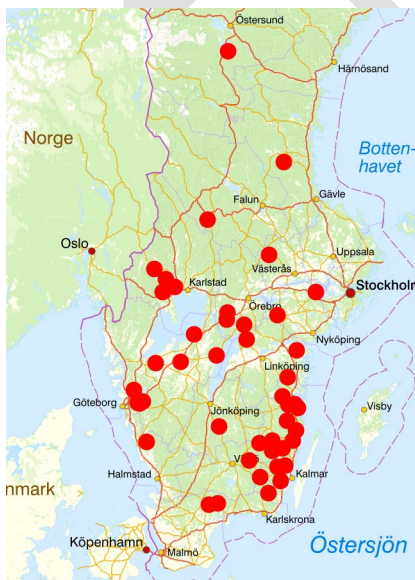


Figure 1. Map illustrating where birch trees were sampled.

Table 1. Statistical key figures for sampled areas and trees.

Variable	N	Mean	Std. dev.	Min.	Max.
Latitude (°N)	46	58.2	1.3	56.3	62.8

Longitude (°O)	46	14.8	1.5	12.1	17.1
Age (years)	216	49	18	20	100
Breast height diameter (mm)	220	201	68	61	423

The double bark thickness was measured at the butt and top end of each log as well as at breast height.

Two different types of bark functions were evaluated, a logistic and a logarithmic function. The logistic function is identical with the function implemented in StanForD2010 version 3.4 (2019-02-06) with element LogisticTypeBarkModel.

Logistic function

db = double bark thickness, mm

D = diameter on bark, cm

H = height in stem (distance from the stump cross section),m

$$[7] \quad db = \frac{a_3}{1 + (\frac{a_3}{a_1} - 1)e^{(-a_2 H)}} + (\frac{b_3}{1 + (\frac{b_3}{b_1} - 1)e^{(-b_2 H)}})D + \varepsilon$$

Logarithmic function

db = double bark thickness, mm

dbh = diameter at breast height on bark, mm

h = height in stem (distance from the stump cross section), cm

$$[4] \quad db = \alpha_0 + \alpha_1 dbh + \alpha_2 dbh^2 + (\beta_0 + \beta_1 dbh) \ln(h) + \varepsilon.$$

Parameter values for the logistic function were estimated using very advanced techniques based on an iterative process which includes the Levenberg-Marquard algorithm. Estimating the parameters of the logarithmic function is much simpler using regression techniques.

It can be noted from the table below that the systematic differences for the whole material are on the same levels for both functions using parameters estimated in the study while the original parameters from 2014 does not work very well on Swedish birch (generate underestimates).

Table.5. No of observations, systematical error (bias) and random deviation (*RMSE*) for deviation between measured and calculated double bark thickness with functions developed in this study as well as logistic function where birch parameters according to Petrauskas (2014) was used.

Indata	Function	n	bias (mm)	RMSE (mm)
All measurements	Logistic, Parameters 2019	1364	0.09	5.55
All measurements	Logarithmic, Parameters 2019	1364	0.00	5.54
All measurements	Logistic, Parameters Petrauskas m. fl. 2014	1364	2.19	5.95

However, as illustrated below, there are large differences in the bias when analysing trees divided up into different dbh-classes for the logistic function. The bias for small trees below 12 cm is very high. This is a problem since around 16%

of the harvested birch volume in thinnings is cut from trees below 12 cm (southern Sweden). This proportion is around 25% in 1st thinnings. With a bias of 2.5 mm we will overestimate the volume under bark with approximately 6% for trees below 12 cm.

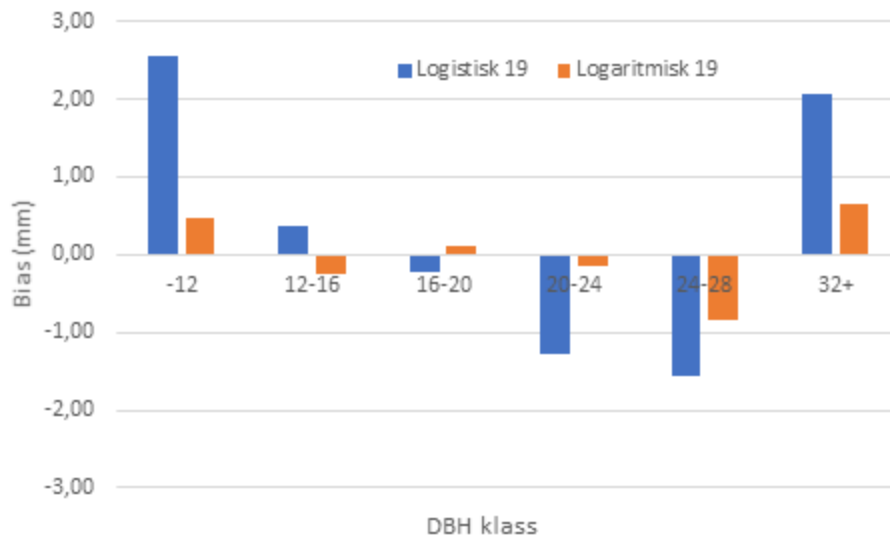


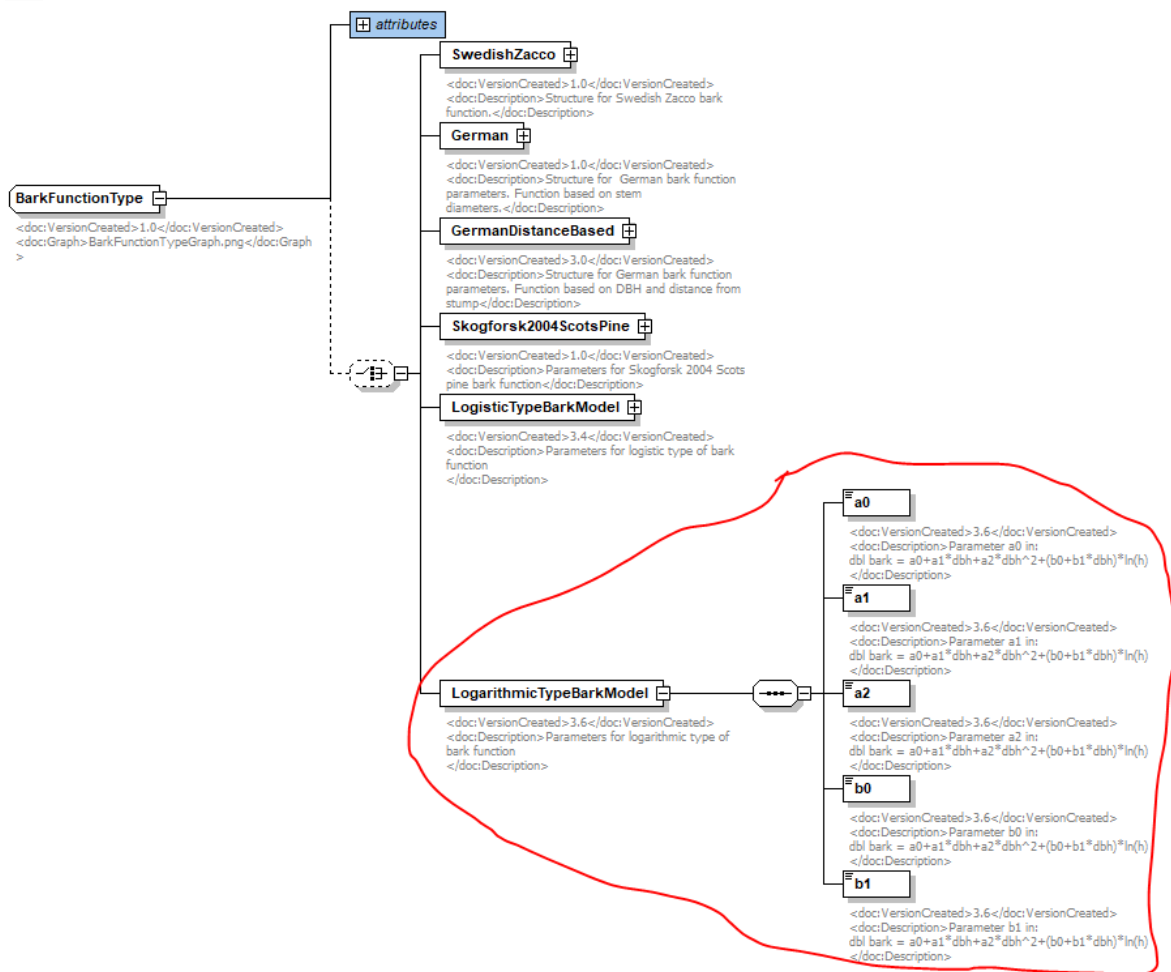
Figure 9. Systematical error (bias) per DBH-class for the logistic and logarithmic function (2019).

In Sweden today the bark function for scots pine (Hannrup 2004) is commonly used for birch. This function gives a small bias for small trees while it gives significant bias on large trees (+5.6% on m³sub) above 30 cm at breast height.

It is for the following reasons suggested that we implement the logarithmic bark function for birch as an additional bark function:

- No bias in any size classes
- Much simpler to estimate new parameters (PhD degree in statistics not needed)
- Possible to start using harvester measurements on a wider scale where volumes are paid per m³ under bark

It is thus suggested that we add a new structure for logarithmic bark functions under BarkFunctionType as illustrated below:



The data type for all elements a0-b1 are to be “decimal”.

Name	Data type	Unit	Description
LogarithmicTypeBarkModel			Parameters for logarithmic type of bark function
a0	Decimal		Parameter a0 in: $dbl\ bark = a0 + a1 * dbh + a2 * dbh^2 + (b0 + b1 * dbh) * \ln(h)$ dbl_bark: double bark thicknes, cm dbh, diameter at breast height, mm h: height from stump, cm
a1	Decimal		Parameter a1 in: $dbl\ bark = a0 + a1 * dbh + a2 * dbh^2 + (b0 + b1 * dbh) * \ln(h)$ dbl_bark: double bark thicknes, cm dbh, diameter at breast height, mm h: height from stump, cm
a2	Decimal		Parameter a2 in: $dbl\ bark = a0 + a1 * dbh + a2 * dbh^2 + (b0 + b1 * dbh) * \ln(h)$ dbl_bark: double bark thicknes, cm dbh, diameter at breast height, mm h: height from stump, cm
b0	Decimal		Parameter b0 in: $dbl\ bark = a0 + a1 * dbh + a2 * dbh^2 + (b0 + b1 * dbh) * \ln(h)$ dbl_bark: double bark thicknes, cm dbh, diameter at breast height, mm h: height from stump, cm
b1	Decimal		Parameter b1 in: $dbl\ bark = a0 + a1 * dbh + a2 * dbh^2 + (b0 + b1 * dbh) * \ln(h)$ dbl_bark: double bark thicknes, cm

Name	Data type	Unit	Description
			dbh, diameter at breast height, mm h: height from stump, cm

The issue of implementing this new function was postponed at the meeting in November 2020. Skogforsk analysed the possibilities of merging this new function with other existing bark functions. It was concluded after that meeting that it is:

- Difficult to merge (e.g. Zacco/Austrian/exponential) since different limitations (sanity checks) exists:
 - If $h > h_{tg}$ then
 - If $dbh > 590$ then $dbh = 590$
 - If $h < 1$ then $h = 1$
- Complex to keep track of parameters for “multi-functions”, the risk for mistakes is high.

Several actors (e.g. Södra skogsägarna) are pushing hard for having this function implemented as soon as possible.

It is therefore suggested that we implement the new bark function at the meeting in November.

Biometria is now collecting additional bark measurement data also from the northern half of Sweden. Skogforsk do a new analyses of the suggested logarithmic function. There are also discussions with ForstPHD regarding the possibility to find bark measurement data from Australia in order to check if any of the existing or the new function would be suitable for radiata pine.

Several manufacturers expressed a clear hesitancy towards adding this new function without a deeper analyses.

GEOGRAPHICAL INFORMATION AND OGI IN STANFORD

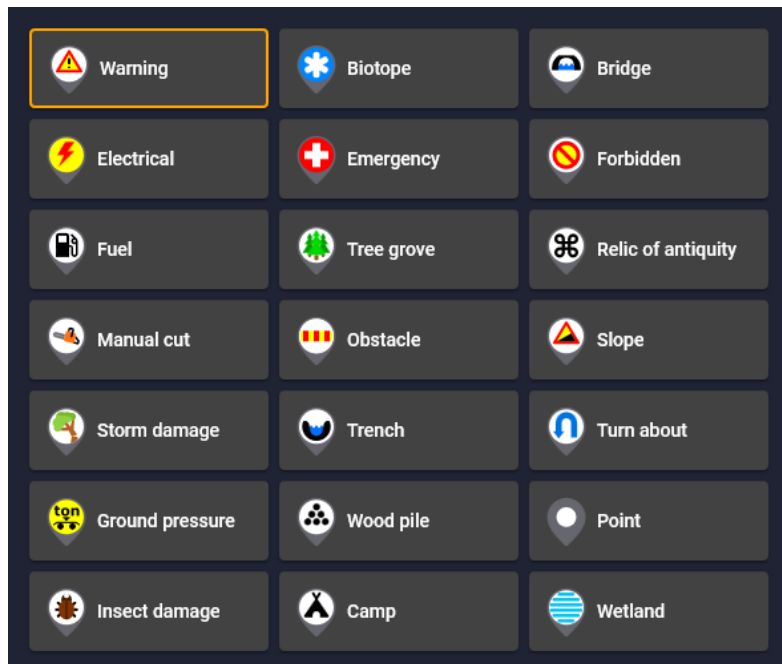
Background

Several different suggestions related to the ogi-schema has been discussed lately as illustrated below.

Standardized map symbols

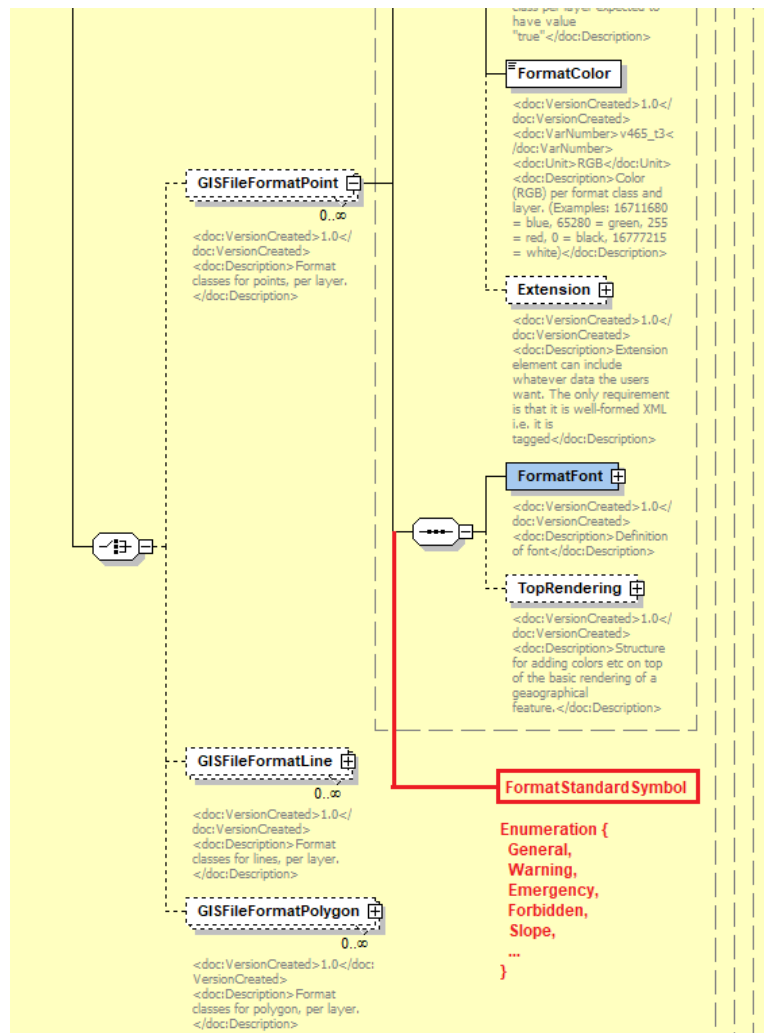
Niclas Eriksson, 2019-10-28

Niclas has pointed out that using the font files for distributing symbols is quite complex and often causes problems. Having standardized set of symbols using the e.g. svg-format would be a significant advantage. A possible set of symbols are described below.



How to go about when needing additional non-standardized symbols?

This could probably be handled by adding a new element `FormatStandardSymbol` as illustrated below:



Mapping of Koalas

Ian Wilson, 2019-10-29.

Areas where Koalas prefer to sleep is an important factor when harvesting in Australia due to strict regulations. Drones are sometimes used on a daily basis in order to find these areas to avoid killing the koalas during harvesting. Sending out simple updated maps including “koala areas” would be an advantage.



Re-modelling ogi?

Based on the two issues raised above as well as some work on developing some ogi-test-files it was decided in November 2020 to let the secretary study the possibility of re-modelling the ogi-schema.

Today the ogi (and old ghd) are based on working with other “standards formats” like font-files, shp/dbf/shx-files etc. It is necessary to include a number of additional files inside an envelope. This makes it quite complex to work with the ogi.

New goi-schema

The idea is to re-model the ogi by making it possible to include all basic geographical features inside StanForD2010 as well as opening up for utilizing pre-defined “StanForD-symbols” as suggested by Niclas. The objective is to avoid problems such as e.g. encoding, dbf-files created for other purposes, registering font-files in client application. Another objective is also to come up with a solution whereby other formatting parameters than symbols can be pre-defines within StanForD. This means that all design parameters such as colors, line styles and symbols are handled in two “separate configuration files”.

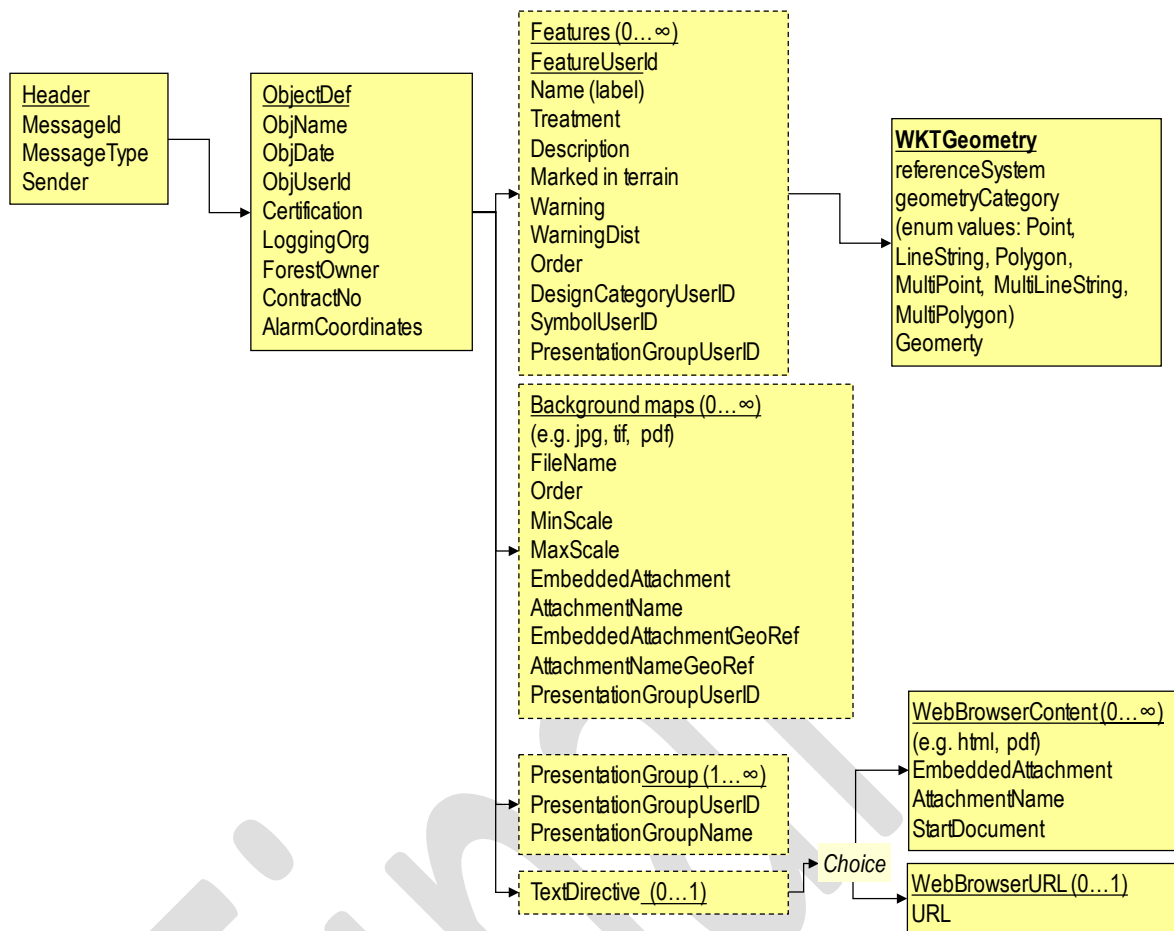


Figure 1. Structure for new object geographical instruction (goi). All separate files are to be embedded using BASE64 (element EmbeddedAttachment) and geometries are stored using the WKT-format.

The geometries (coordinates) could be stored using the WKT format (https://en.wikipedia.org/wiki/Well-known_text_representation_of_geometry) in element Geometry as illustrated in examples below (table 1 and 2). Observe that a polygon must be topologically closed according to WKT. Alternatives to WKT can be discussed. It would e.g. be possible to include basic geometry structures based on GML or Geojson.

Table 1. Geometry primitives according to WKT.

Geometry primitives (2D)		
Type	Examples	
Point		POINT (30 10)
LineString		LINESTRING (30 10, 10 30, 40 40)
Polygon		POLYGON ((30 10, 40 40, 20 40, 10 20, 30 10))
		POLYGON ((35 10, 45 45, 15 40, 10 20, 35 10), (20 30, 35 35, 30 20, 20 30))

Table 2. Multipart geometries according to WKT.

Multipart geometries (2D)	
Type	Examples
MultiPoint	 MULTIPOINT ((10 40), (40 30), (20 20), (30 10)) MULTIPOINT (10 40, 40 30, 20 20, 30 10)
MultiLineString	 MULTILINESTRING ((10 10, 20 20, 10 40), (40 40, 30 30, 40 20, 30 10))
MultiPolygon	  MULTIPOLYGON (((30 20, 45 40, 10 40, 30 20)), ((15 5, 40 10, 10 20, 5 10, 15 5))) MULTIPOLYGON (((40 40, 20 45, 45 30, 40 40)), ((20 35, 10 30, 10 10, 30 5, 45 20, 20 35), (30 20, 20 15, 20 25, 30 20)))
GeometryCollection	GEOMETRYCOLLECTION (POINT (40 10), LINESTRING (10 10, 20 20, 10 40), POLYGON ((40 40, 20 45, 45 30, 40 40)))

The objective is that we should make it possible to construct “StanForD default configuration files” (smb and dsg) covering so many alternatives that there is little or no need for creating your own design and symbol configuration files. This is a parallel to the spi-files where, in both Finland and Sweden, national default files are in use with little or no need for making company specific spi-files.

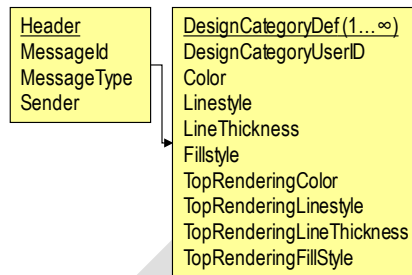


Figure 2. Structure for configuration of formatting (dsg) where DesignCategoryUserID is to be registered for each geometry.

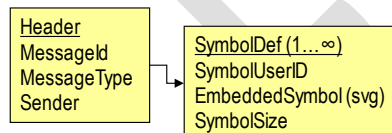


Figure 3. Structure for configuration of symbols (smb)) where SymbolUserID is to be registered for each geometry. The SVG file is to be embedded in element EmbeddedSymbol.

Element	Geometry 1	Geometry 2	Geometry 3	DesignCategory-UserID	Line-Color	Line-Style	Line-Thickness
Name (label)	Main landing	Cutting	Route 66	CuttingArea	Blue	Solid	3
Treatment	Both sides of road	Clear fell		StripRoadLine	Brown	Dot	1
Description		Pine forest		RoadLine	Black	Solid	2
Marked in terrain	False	True	False	PowerLine	Red	Dash	1
GeometryType	Point	Polygon	Line				
Geometry	(30 10)	((30 10, 40 40, 20 40, 10 20, 30 10))	(30 10, 10 30, 40 40)				
Order	1	2	3				
DesignCategoryUserID		CuttingArea	RoadLine				
SymbolUserID	Landing		Road				
PresentationGroupUserID	Logging	Logging	Roads				

SymbolUserID	Symbol	Symbol-Size
NoLogging		5
Landing		5
Road		4

Figure 4. Illustration of how each geometry has a reference to a design category and/or symbol. Geometries in this example according to WKT.

Important issues to be considered

Schema

New separate schema or extension of present ogi? Waiting until StanForD version 4.0 to do a major update of the ogi?

Geometries

Should we use an existing format such as e.g. GML, GeoJson, WKT or KML for storing geometries? One idea is to convert GeoJson into XML (example at <https://www.convertjson.com/json-to-xml.htm>).

Is it enough to only use WGS84 for the geometries?

Symbols

Should we make it possible to create and distribute symbols to all machines? Or should we standardize a fixed set of symbols?

Layers

The present proposal does not include the concept of layers. Each geometry is stored separately with the possibility of defining for example design and symbol. Each geometry can belong to a presentation group. Observe that the objective of a presentation group is to make it simple to switch on and off a group of geometries (for example all types of roads or all point, polygon and line geometries describing cultural heritage objects).

Do we need the concept of collection (layer) as an intermediate level in between the geometry and the presentation group? A collection contains only one type of geometries (point/line/polygon) and can have a default design as well as presentation order.

Meeting conclusions

Below follows a list of the main conclusions:

- The two preferred formats for storing geometries seems to be GML or GeoJson (xml-ified). WKT is less suitable since that would mean very

limited possibilities to validate data. The geometries must be stored using XML.

- It would be preferable to only use WGS84 for storing geometries.
- StanForD should create a standardized set of SymbolUserIDs with a description of each. However, these symbols should be created and managed by the machine manufacturer. The possibility for forest companies, or other external actors, to create and distribute their own symbols must be supported.
- SVG is a suitable format for symbols since it is based on xml.
- An additional hierarchical level FeatureCollection would probably be an improvement. It should be possible to set a default design and presentation order for each collection. A collection should only include points, lines or polygons.
- The choice between using present ogi or a new separate schema was discussed. It was concluded that it is probably preferable to update the present ogi schema when the standard is updated to version 4.0.

YARDER AND SKIDDER MESSAGES, STEM FORWARDING

Introduction

New schemas for feller bunchers were added to the standard in 2018 (boi, bpr) and 2019 (bqc). Including other tree length machines, such as skidders and yarders, were discussed already with the first feller-buncher proposals.

It was suggested by Jeremy Gibson and Ian Wilson (2019-07-01) that we discuss schemas for yarders and skidders.

The old production proposal (based on the fpr) for skidders from 2018 is illustrated below.

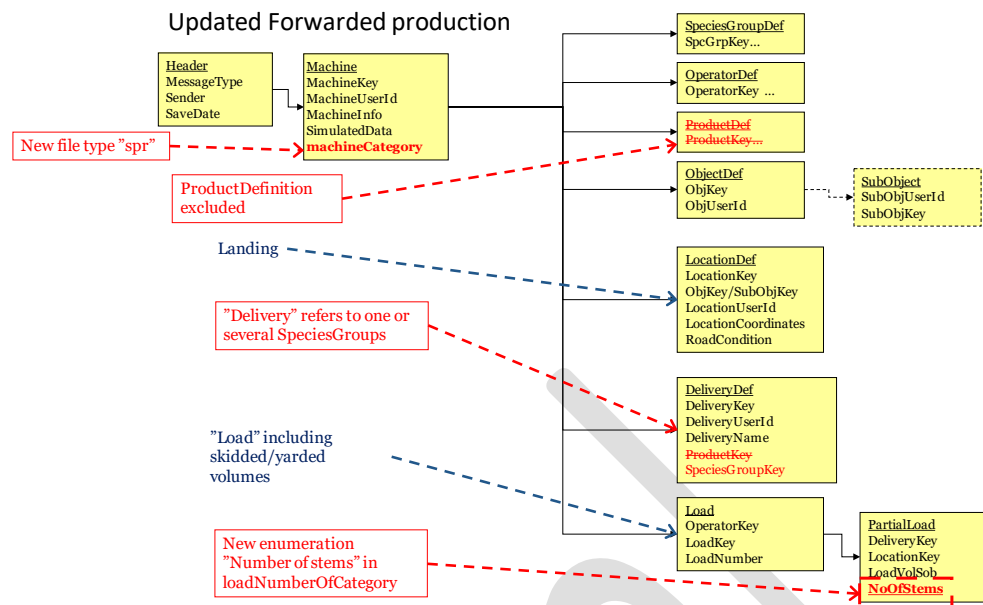


Figure 1. Early preliminary proposal for new skidder and yarder production message.

In discussions between Ian, Jeremy and John Arlinger it was deemed best to keep yarders and skidders separate as was also discussed at the meeting 2018-11-20 (table below).

Table 1. File extensions also to be used for tree length machines are described below.

	Object Instruction	Production Report	Quality Control	Operational Monitoring
Harvester	Oin+Pin+Spi	Hpr	Hqc	Mom
Forwarder	Foi+Fdi	Fpr	Fqc	Mom
Feller Buncher	Boi+Spi	Bpr	Bqc	Mom
Skidder	Soi+Spi	Spr	-	Mom
Yarder	Yoi+Spi	Ypr	-	Mom

As a first step towards a complete proposal for skidders and yarders the focus is on the production reports (spr and ypr). This document is presently to be view as a basis for further discussions. Once production reporting is defined it will be simple to develop schemas also for instructions and operational monitoring

Skidder production

The basic idea is to report each skidder-load with information about species and number of stems. This means that the Deliveries and Products are irrelevant when comparing with the forwarder.

When comparing with the present standard for forwarder production the following new parameters are deemed to be required:

- **Winch**
 - Brand/Model/Year
- **Extraction Method**
 - Grapple
 - Choker/Winch
- **Stem Presentation**
 - Un-bunched – stems are generally not grouped into a bunch and are typically felled by a person with a chainsaw
 - Part Bunched – stems are roughly grouped into a bunch and are typically mechanically felled using a Dangle Head feller buncher
 - Bunched – stems are precisely grouped into a bunch and are typically mechanically felled using a Fixed Head feller buncher
 - Machine Fed – stems are placed or lifted by a separate machine into the grapple or for the grapple to grab them

It is suggested to add Winch information to the Machine and to add ExtractionMethod and StemPresentation to the Load as illustrated below. In most cases ExtractionMethod and StemPresentation are not changed within an object but they sometimes are depending e.g. on the terrain variability. This information is set by the operator. These parameters are thus not to be included in a future instruction.

Observe that the figure below is a simplification of the schema. The idea is to keep all elements and attributes from the fpr-schema except for those explicitly mention in previous section.

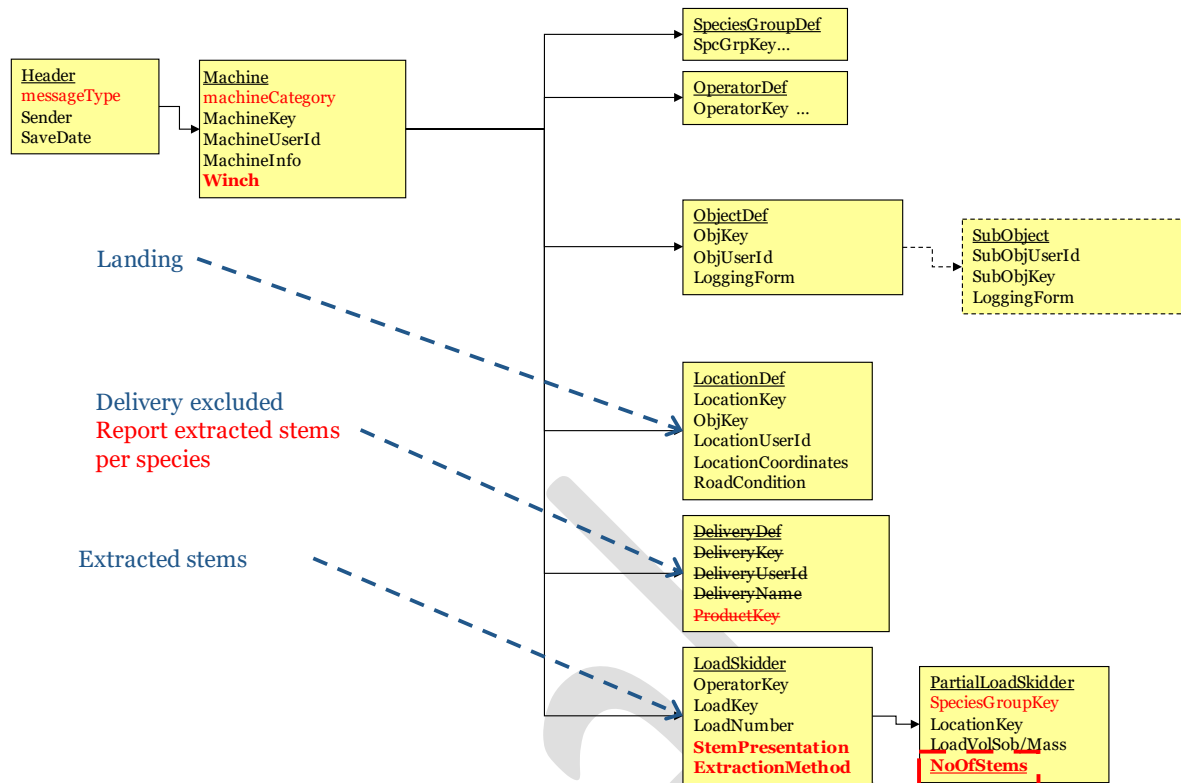


Figure 2. New or updated elements or attribute in red color. Observe that DeliveryDefinition is to be excluded.

Yarder production

The basic idea is to report each yarder-load with information about species and number of stems. This means that the Deliveries and Products are irrelevant when comparing with the forwarder.

The following existing elements and attributes need new enumeration values:

- Add “ypr” to attribute messageCategory
- Add “Yarder” to attribute machineCategory
- Add “Number of stems” to attribute loadNumberOfCategory

When comparing with the present standard for forwarder production the following new parameters are deemed to be required:

- **Carriage**
 - Brand/Model/Year
- **Extraction Method**
 - Grapple
 - Choker/Winch
- **Stem Presentation**
 - Un-bunched – stems are generally not grouped into a bunch and are typically felled by a person with a chainsaw
 - Part Bunched – stems are roughly grouped into a bunch and are typically mechanically felled using a Dangle Head feller buncher

Bunched – stems are precisely grouped into a bunch and are typically mechanically felled using a Fixed Head feller buncher
Machine Fed – stems are placed or lifted by a separate machine into the grapple or for the grapple to grab

- **Tail Hold**

- Manual – The yarders wire ropes on the "backline" are shifted manually by people
- Mobile – The yarders wire ropes on the "backline" are shifted via a machine (excavator/bulldozer) that is driven by a person i.e. it's not manned all the time.
- Mobile Tele-Operated – The yarders wire ropes on the "backline" are shifted via a machine (excavator/bulldozer) that has been fitted with a remote control system and camera's so that the Yarder operator can remotely start the excavator up and drive it to the next Yarder line while never having to leave the Yarder

- **Rigging System** (how the wire rope systems are operated)

- Northbend
- Southbend
- Shotgun
- Highlead
- Grabinski
- Slack pulling carriage

It is suggested to add Carriage information to the Machine and to add ExtractionMethod , StemPresentation, RiggingSystem and TailHold to the Load as illustrated below. In most cases these values are not changed within an Object but they sometimes are depending e.g. on the terrain variability. This information is set by the operator. These parameters are thus not to be included in a future instruction.

Observe that the figure below is a simplification of the schema. The idea is to keep all elements and attributes from the fpr-schema except for those explicitly mention in previous section.

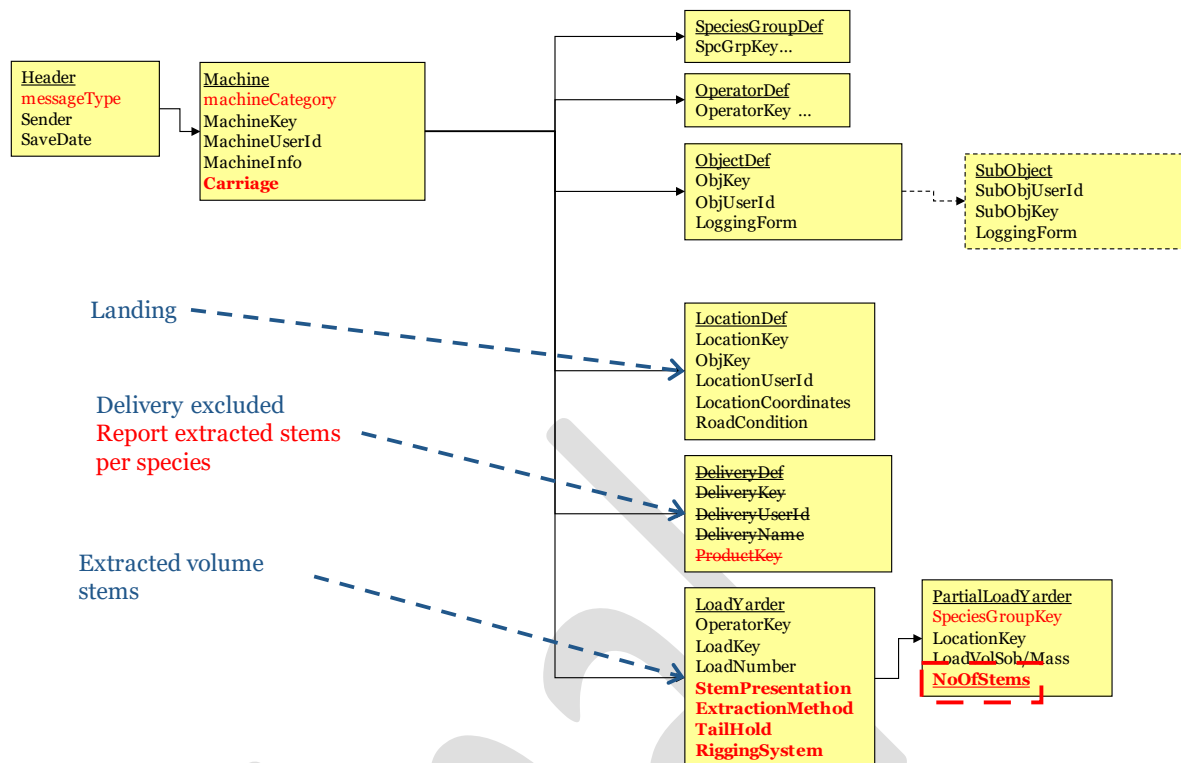


Figure 3. New or updated elements or attribute in red color. Observe that DeliveryDefinition is to be excluded.

Detailed description of new parameters

Extraction Method

Observe that a skidder can be equipped with both winch and grapple and therefore might use both of them even though using a winch is becoming less frequent.

Grapple

Skidder or yarder using a grapple to extract logs.





Choker

Skidder or yarder using a choker and/or winch to extract logs.



Stem Presentation Un-bunched

Stems are generally not grouped into a bunch and are typically felled by a person with a chainsaw.



Part Bunched

Stems are roughly grouped into a bunch and are typically mechanically felled using a Dangle Head feller buncher.



Bunched

Stems are precisely grouped into a bunch and are typically mechanically felled using a Fixed Head feller buncher.



Machine Fed

Stems are placed or lifted by a separate machine into the grapple or for the grapple to grab.





Tail Hold Manual

The wire ropes on the backline are shifted manually by people across to the next Yarder extraction line. Slow and time consuming compared to the other 2 methods.

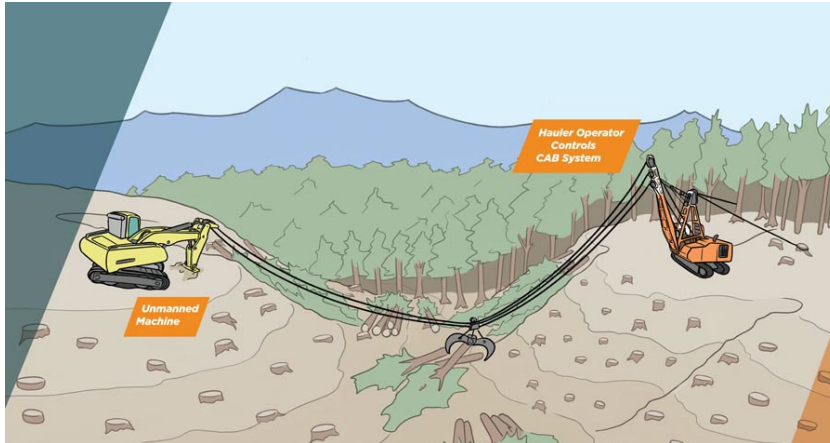
Mobile

The wire ropes on the back line are shifted by machine across to the next Yarder extraction line. This machine is normally an excavator or bulldozer that gets driven by a person i.e. it's not manned all the time and a person usually will drive from the Yarder out to where the Tail Hold machine is located, then shift the excavator/bulldozer across to the next Yarder line, then drive back to the Yarder.



Mobile Tele Operated

Similar to above, but the machine has been fitted with a remote control system and camera's so that the Yarder operator can remotely start the excavator up and drive it to the next Yarder extraction line while never having to leave the Yarders cab (this method is typically much quicker and doesn't need to take someone away from doing their normal job).



Rigging System

This parameter describes how the wire rope systems are operated. No detailed description of different rigging systems in this document.

Northbend

Southbend

Shotgun

Highlead

Grabinski

Slack pulling carriage

Meeting conclusions

The meeting decided to let the secretary develop a beta schema for the production message that is to be distributed with the minutes. Since the difference between skidders and yarders seems to be primarily limited to elements RiggingSystem and TailHold it was decided to let the secretary merge these two machines into one single schema.

After some further discussion between Ian Wilson, Jeremy Gibson and secretary (2020-06-0) it became clear that it is probably more wise to keep them separate considering further developments of these two very different machine types.

Separate beta-schemas for skidders vs. yarders are thus distributed with these minutes.

CONTROLLING HPR CONTENT THROUGH OIN

Below are two separate proposals for opening up possibility of controlling the content of the hpr using new elements in oin. They were discussed jointly since these two proposals have significant similarities in that they both open up a totally new functionality that presently does not exist.

Size of hpr using new StemDiameterStep

Proposal has been raised by Trimble Forestry (Jyrki Vainio, Jaakko Vuolasto). The proposal was discussed in the WoodForce development group as well as in a meeting with machine manufacturers 2020-04-17.

Background to proposal:

- The forest companies using WoodForce have started to collect hpr files with stem profile data (diameters) since objects with full stem profile data will be utilized in ValueForce service
- There have been some problems with the size of hpr files, if diameters with 10 cm interval have been saved and if the harvesting object is very big. Sending of large hpr-files sometimes does not succeed due to controller running out of memory.
- There may also be some file size restrictions in forest company systems.
- To manage the problem in short run, there can be a warning to the operator in WoodForce if the file size is too big to send.
- The objective is to control the diameter registering by the forest company, so that the distance between the diameter registering points could be specified per harvesting object in oin
 - distance could be e.g. 20 – 50 cm instead of 10 cm
 - stem profile functions can still be calculated with an enough good accuracy

Proposed solution:

- Suggested to add a new optional element StemDiameterStep in oin the value of the element can vary between 1 to 100 cm if not specified in oin of the object, the measuring system uses the default value 10 cm
- Additionally it is proposed to add a new element SaveStemDiameters with type boolean in oin to specify if stem diameters are to be saved in hpr or not.
- This solution requires changes in the harvester systems and software, but could be a better solution in long run

Coordinates in hpr

Raised by UPM, Ari Ronkainen,

Background to proposal:

- coordinates are needed for creating the object boundaries (delineation) after harvesting
- forest companies are starting to deliver the stem data to Forest Centre in Finland where the delineation of the objects are calculated
- the final use will be to update public forest resources
- saving the coordinates is not needed for all of the harvesting objects and therefore should be controlled by the forest company

Suggested to add a new element SaveStemCoordinates with type boolean in oin to specify if stem coordinates are to be saved in hpr or not

Conclusions Controlling hpr content through oin

The main objections/comments:

- This a completeley new functionality (controlling hpr content through oin/pin/spi) that does not presently exist and that probably would mean requirements also for other parameters such as HarvestDate, operator identities, volume types etc. So far the basic principle has been that this is a machine setting done by the operator.
- WoodForce requires that the last hpr file from an object always is a complete aggregated file including all stems. Several other IT systems exist that requires both coordinates and stem diameters, this works well since only partial reporting is used. Hence, this is not a problem if aggregated (total) reporting is not used on large harvesting objects.
- It is planned to restructure the stem diameter vector in next major version (4.0) in order to minimize the effect on file size.

It was decided to postpone this issue. WoodForce should be present if this issue is to be discussed again.

§ 7 Implementation issues

STANFORD REST API

Detailed description of present proposal can be found in appendix 1.

FREQUENT UPDATES OF SPI-FILES

Discussion between John Arlinger, Jeremy Gibson and Ian Wilson (2020-04-28).

ForestPHD is studying the possibilities of implementing StanForD2010 instructions in Australia.

Today Australian forest companies create a new apt for each individual object. One of the parameters frequently adjusted is bark parameters using the linear

Zacco function. The parameters are typically adjusted based on tree age and geography.

Jeremy raised the idea of opening the possibility to include bark parameters also in the oin-schema. However, the secretary is very hesitant since it would break the fundamental principle of only include a specific setting in one place. The risk for creating confusion is deemed significant.

Before any further discussions it should be clarified whether it is possible to distribute oin and spi in an envelope that is used for starting each object. It should be checked that existing objects are not affected if a new spi is imported for new object.

A separate questionnaire and test case to be distributed to all manufacturers with the draft minutes.

STANFORD 2010 NOMENCLATURE

No language updates suggested after last meeting.

TIME SCHEDULE FOR IMPLEMENTATION OF STANFORD2010

Observe that the following control systems have not responded to the questionnaire in May 2020: xLogger, TOC 2 and LogMate.

General StanForD tools

Manufacturer	Present software version released on the market	Last StanForD-version supported	Lower versions not supported
Silvia7 (CGI)	2019.1.0.0	3.5	<=2.0
ForesterOffice (Dasa)	1.7.1	3.1	<=2.0
SenderXC (SDC)	1.12	3.6	<=2.0
DP II (Haglöf)	7.17	3.x	<1.0

Harvesters

Specify latest minor version that has been or is planned to be implemented.

Manufacturer	Present software version released on the market	Latest StanForD-version supported	Lower versions not supported
Opti (Ponsse)	4G 4.761	3.1	2.0 or lower
Timbermatic (JohnDeere)	H 2.3	3.5	2.0
LogMate (LogMax)	2.0.29 (not updated 2020)	3.3	< 2.0
MaxiXplorer (Komatsu)	MaxiXplorer 3.22 / MaxiXT 1.1	3.6	3.2, 3.4, 3.5
DasaForester	1.6.5	3.5	<2.0
Motomit (Parker)			
xLogger (Technion)	7.51 (not updated 2020)	3.3	< 3.0
TOC 2 (LogSet)	3.172 (not updated 2020)	3.0	< 3.0

Implemented functionality	Opti	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa-Forester	Motomit	xLogger	TOC 2
Updating of product (pin) during harvesting? Restart not needed.	X	X	X	X	X		X	X
Updating of object (oin) during harvesting? Restart not needed.	X	X	X		X		X	
Can ObjectDef.TextToMachine easily be presented to operator? Important when updating oin (pop-up).	X	X	X	X*	X		X	
Can ProductDef.ProductDescription easily be presented to operator? Important when updating oin (pop-up).			X*	X*	X		X	

* Some adjustments remain

Implemented elements	Opti	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa-Forester	Motomit	xLogger	TOC 2
ProductDef.ProductClass	X	X	X		X		X	
Stem.StemCode			X	X	X			
Machine.Tracking (gps-log)			(X)	X	X**			
SingleTreeProc.Reversing			X					
Stem.BoomeAngle		X		X	X(Rottne)			
ModificationRestricted		X*	X	X	X		X	
UDI				X				

* Some adjustments remain

**Autumn 2020

Implemented for multi tree processing	Opti	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa-Forester	Motomit	xLogger	TOC 2
Calculated "true" length and top diameter per log. <u>NOT measured values based on total log bunch.</u>	X	X(-)	X		X		X	
Calculated "true" DBH based on reference diameter. <u>NOT measured values based on total stem bunch.</u>	X	X	X	X(-)	X		X	

Forwarders

Specify latest minor version that has been or is planned to be implemented.

Manufacturer	Present software version released on the market	Last StanForD-version supported	Lower versions not supported
Opti (Ponsse)	4G 4.761	3.1	2.0 or lower
Timbermatic (JohnDeere)	F 2.3	3.5	2.0
LogMate (LogMax)	No forwarder application		
MaxiXplorer (Komatsu)	MaxiXplorer 3.22 / MaxiXT 1.1	3.6	3.2, 3.4, 3.5
DasaForester	1.3.2	3.1	<2.0
Motomit (Parker)	No forwarder application		
xLogger (Technion)	No forwarder application		
TOC 2 (LogSet)	No forwarder application		

Implemented file types	Opti	Timber-matic	Maxi-Xplorer	Dasa-Forester	Motomit	xLogger	TOC 2
Forwarding instructions (foi and fdi)?	X	X	X	X			

Manual cuts

	Stan-ForD	Opti	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa-Forester	Motomit	xLogger	TOC2
Manual moving cut position	<u>Other manual</u>	Other manual	Other manual	Other manual	Other manual	Other manual		Other manual	
Re-optimization (shorter length with max value)	<u>Other manual</u>	Autom.	Other manual	Other manual	Other manual	Other manual		Autom.	
Manual cut at optimal length	<u>Autom.</u>	Autom.	Autom.	Other manual	Other manual	Other manual		Autom.	
Outside cutting window when ManualFreeBuck is true	<u>Other manual</u>	Pulpwood-grade, or Other Manual	Other manual	Other manual	Other manual	Other manual		Other manual	
Outside cutting window when ManualFreeBuck is false	<u>Other manual</u>	Other Manual Remain (forced Sawing)	Other manual	Other manual Re-classified (forced Sawing)	Other manual Most valuable product that fit criteria	Other manual Re-classified		Other manua According to the selected grade, length and diameterl	
Last log cut outside cutting window when TopLogFreeBuck is true	<u>Autom.</u>	Autom.		Autom.	Autom.	Autom.		Autom.	
Changing stem grade (no pre-selected log length)	<u>Autom.</u>	Autom.		Autom.		Autom		Autom.	
Pre-selected log length.	<u>Manual</u>	Manual		Other manual		Manual		Manual	

TopLogFreeBuck

All functions below should be defined as OK according to earlier meeting decisions.

	Opti*	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa Forester	Motomit	xLogger	TOC2
Minimum diameter search is priority before length-class on last log before minimum top diameter allowed.	Not ok	Ok		Ok	Ok		Yes	
Minimum diameter search is priority before price on last log before minimum top diameter allowed.	Not ok	Not tested		Ok	Ok		No	
Minimum diameter search is priority before distribution demand price on last log before minimum top diameter allowed.	Not ok	Ok		Ok	Ok		No	
"Forbidden to buck" is not allowed when "TopLog FreeBUck" is activated	Not ok	Ok		Ok	Ok		Ok.	
"Only allowed to cut manually" is not allowed for automatic cut even when "TopLog FreeBUck" is activated, just manuel	Not ok	Ok		Ok	Ok		Ok	
Log is classified as pulpwood if the log is cut in between allowed minimum and maximum leght/ diameter also when it is cut outside the cutting window.	Ok	Ok		Ok	Ok		Log is classified according to value	

* Some adjustments remain

Activating optional hpr data

Is it possible for the operator to activate the following parameters in hpr-file

	Opti	Timber-matic	Log-Mate	Maxi-Xplorer	Dasa Forester	Motomit	xLogger	TOC2
StemCoordinates	X	X*	X	X	X		?	X
HarvestDate	X	**	X	X	X		?	X
Diameter vector (StemDiameters)	X	X	X	X	X		?	?

* Always on when GPS is enabled

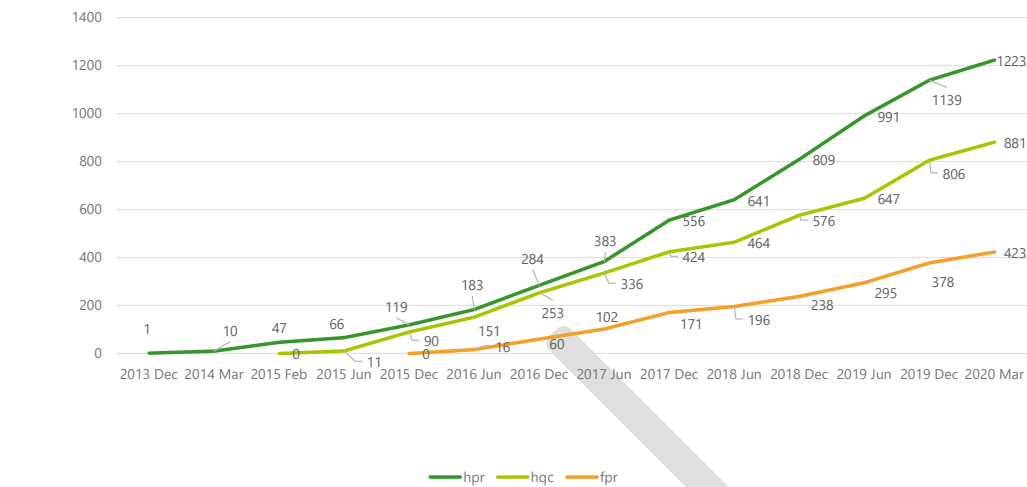
**Possible to set using settings-file (not easily accessible).

§ 8 StanForD2010 projects

USE OF STANFORD2010

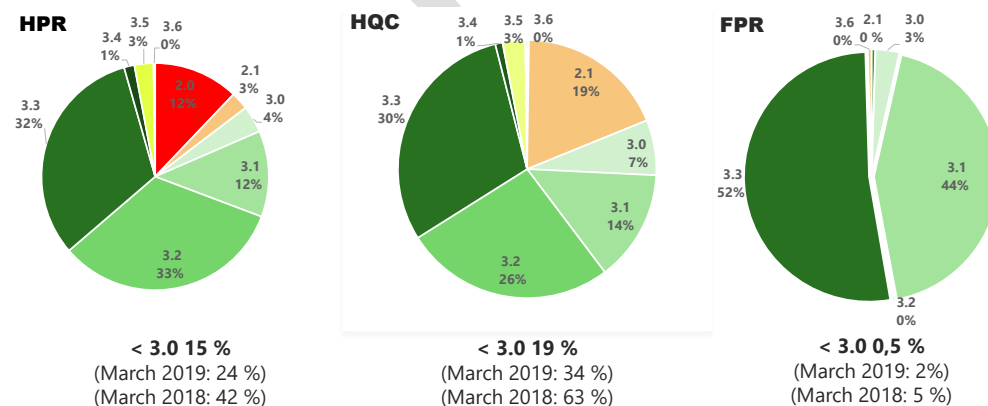
Lars Henriksson, Biometria, presented the number of machines using StanForD2010 for reporting on the Swedish market. The trends are clearly positive with more machines reporting and fewer machines reporting based on

version 2.1 and 2.0. There also an increase in the number of harvesters using StanForD2010 instructions.



	Machines	Files
Harvested production:		
hpr	74%	84%
pri	26%	16%
Forwarded production:		
fpr	33%	39%
prl	67%	61%
Harvester quality:		
hqc	65%	87%
ktr	35%	13%

StanForD2010-versions in March 2020



FELLER-BUNCHER IMPLEMENTATION

Ian Wilson briefly described the fact that several machines are now starting to be able to report feller buncher production data (bpr).

§ 9 Other issues

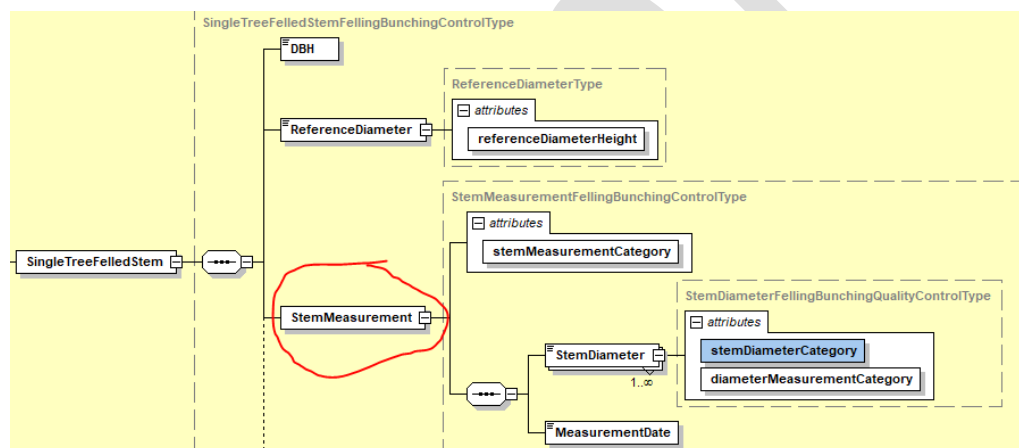
NEXT VERSION

The issue of moving to a new major standard version (4) was discussed at several points during the meeting.

It was decided by the meeting to arrange a separate Teams meeting on the 17th of August to go through all postponed 4.0 issues and then discuss the possibility of updating to version 4.0. All postponed 4.0 issues are included in appendix 2.

ERROR IN BQC

A serious error in the bqc schema was found after the meeting. It was decided with the minutes that element StemMeasurement is made repeatable. The bqc schema is basically unusable as it is since it now not possible to include both machine and operator measurements.



Observe that also the element `CalibrationValues` has structural problems that needs fixing.

§ 10 Next meeting

StanForD Teams meeting to discuss next standard version 2020-08-17, 09.00 CET.

Ordinary StanForD meeting 2020-12-02 with an option of extending to the 2020-12-03 in case we decide to do an update to major version 4.0, Uppsala

A separate meeting for the work group on StanForD REST API will be arranged. Date to be decided at a later time.

§ 11 End of meeting

Johan thanked everyone for their participation.

Final