

Minutes StanForD2010

2013-11-06--07

Place:	Skogforsk, Uppsala 10:00-15:00 CET
Participants:	Teemu Paldanius, Ponsse Tapio Räsänen, Metsäteho Timo Melkas, Metsäteho Björn Hannrup, Skogforsk (day 2, §13-14) Maria Nordström, Skogforsk (day 2, §13-14) Antti Korkiakoski, John Deere Lars Henriksson, SDC Pasi Palonen, Parker Johan Arvidsson, Dasa (day 1) Richard Jonsson, Skogforsk Niclas Eriksson, Komatsu Forest (phone) Fredrik Tjernberg, Komatsu Forest (phone) Jonas Thorsson, Dasa (phone) Jean Plamondon FP Innovations (phone) Patrik Andersson, Södra (phone) Uli Dietz, KWF (phone) John Arlinger, Secretary Johan J. Möller, Chairman

§ 1 Opening of meeting

Johan J Möller opened the meeting.

§ 2 Agenda

The agenda was accepted by the meeting.

John presented the roadmap for StanForD2010 that was decided at the meeting 2012-11-14—15. John pointed out that all decisions at the meeting will be

included in new 3.0 release schemas that will be published after a telephone meeting on the 6th of February 2013.

§ 3 Previous meeting

Secretary presented some of the major decisions made at the previous meeting in April (see minutes from 2013-04-10—11):

- WorkOrderNumber (later withdrawn)
- Mandatory ReportFilterCategory in mom
- Alarm coordinates (later withdrawn)
- Updating modificationRestricted
- Updating design of some definitions

Observe that it was discovered 2013-11-20 that also the structure of LocationDefinition must be updated as illustrated by table below. This was decided with the minutes (phone meeting 2013-12-12).

Element/Message	foi	fpr
LocationUserID	X	X
LocationName	X	X
LocationInfo	X	X
LocationVersion	X	X
HarvestDate	X	X
LocationCoordinates	X	X
RoadCondition	X	X
LocationDescription	X	X
ModificationDate	X	
LocationKey		X
ObjectKey		X
SubObjectKey		X

- Product migrations during forwarding
- Compression and envelopes

§ 4 Clarifications and annotations

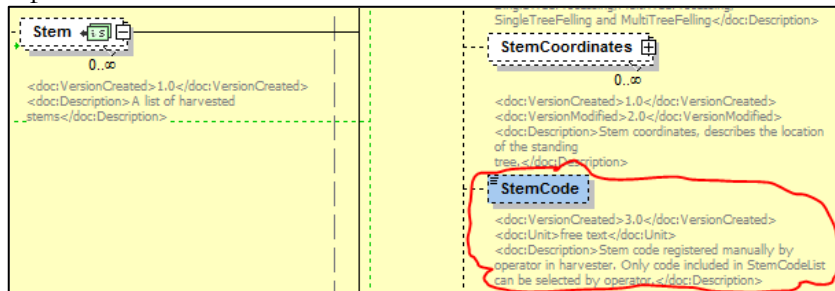
STEMCODE IN HPR

Proposal by John Arlinger, 2013-09-26.

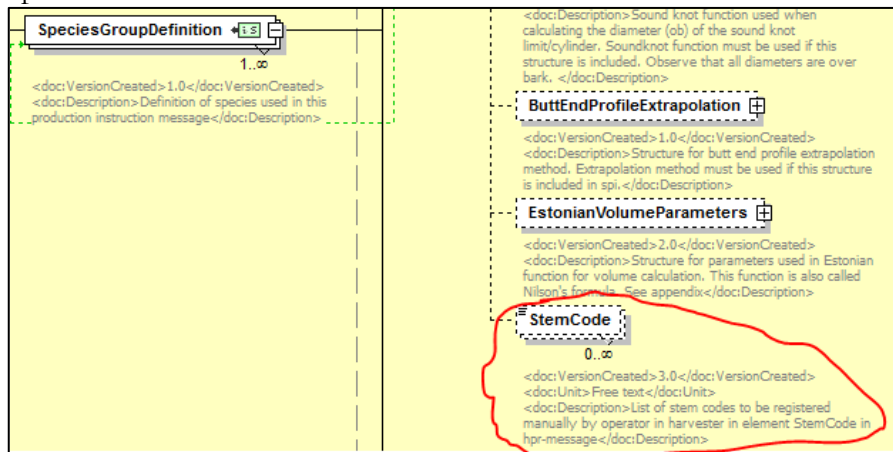
Present annotation of StemCode (version 3.0 pre-release) is: *Stem code registered manually by operator in harvester. Only code included in StemCodeList can be selected by operator.*

As can be noted below no element StemCodeList exists in spi-file.

Hpr:



Spi:



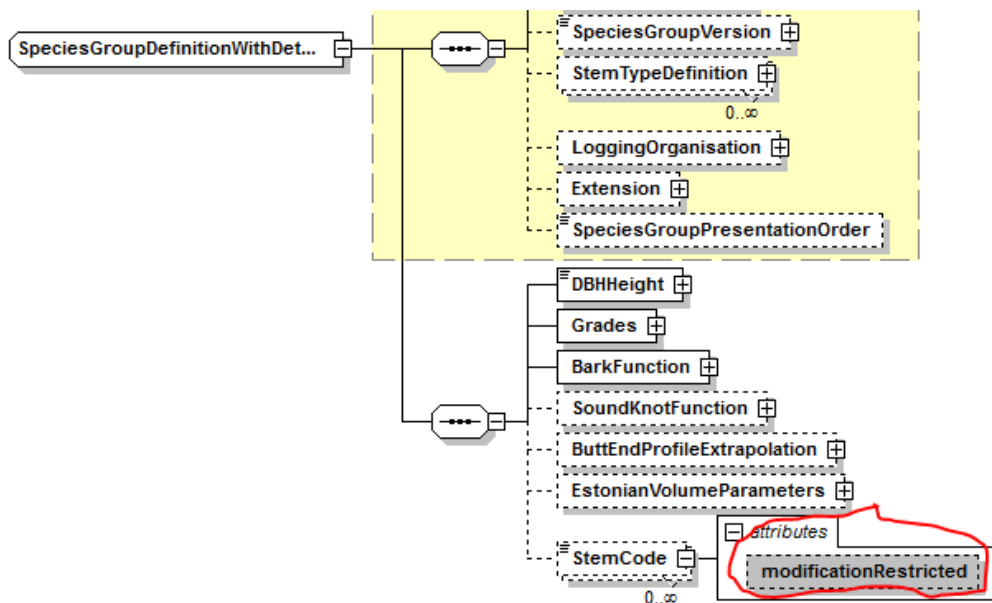
It was decided to add following text to annotation for StemCode in spi:

*List of stem codes to be registered manually by operator in harvester in element StemCode in hpr-message. **No default value can be set. Code only to be used for small subset of harvested trees.***

It was also decided to add following text to annotation for StemCode in hpr:

Stem code registered manually by operator in harvester. Only codes s included in Spi elements StemCodeList can be selected by operator.

It was also decided to add attribute modificationRestricted to StemCode in spi-file:



DATE STAMPS

Issue raised by Lars Henriksson, SDC, 2013-10-15 and Nazmul Bhuyian, Skogforsk, 2013-09-23.

It was decided to update the annotation for MeasurementDate according to the following text (new text underlined):

```
<doc:VersionCreated>1.0</doc:VersionCreated>
<doc:Unit>>yyyy-mm-ddThh:mm:ss[+|-]hh:mmhh:mm:ss</doc:Unit>
<doc:Description>Date and time of measurment</doc:Description>
```

It was decided, with earlier minutes, that the following time format is to be used: 2010-12-10T12:30:12+2:00 (local time $\pm$ offset from UTC)

Example:

2010-12-10T12:30:12+2:00 means that local time is 12:30:12 with an offset from UTC with +2:00 hours.

It was decided that all annotations for times stamps are updated according to the following text (new text underlined):

```
<doc:Unit>yyyy-mm-ddThh:mm:ss[+|-]hh:mm</doc:Unit>
<doc:Description>Date when ..... Time stamp must have the following tiems
registered: local time  $\pm$  offset from UTC.</doc:Description>
```

CLARIFICATION BUTTENDEXTRAPOLATIONMETHOD

Issue raised by Jörgen Eriksson, Dasa 2013-05-28.

How to handle diameters between first measured diameter and 130 cm if spp-function is used. Should we for example just discard diameters measured between 80 cm and 130 cm?

Should we allow measured diameters even if spp-funtion is in use? Should we then register where measured diameters are first registered in hpr and hqc?

Tapio Räsänen (2013-05-30) answered that spp functions should be used also in cases where you get measurement values below 130 cm. Of course it is wise to utilize those measured values in calculation of the filtered diameter of 130 cm, but the butt end profile should always be based on spp function / table values.

It was decided that the description of element ButtEndProfileExtrapolation is updated according to the following text:

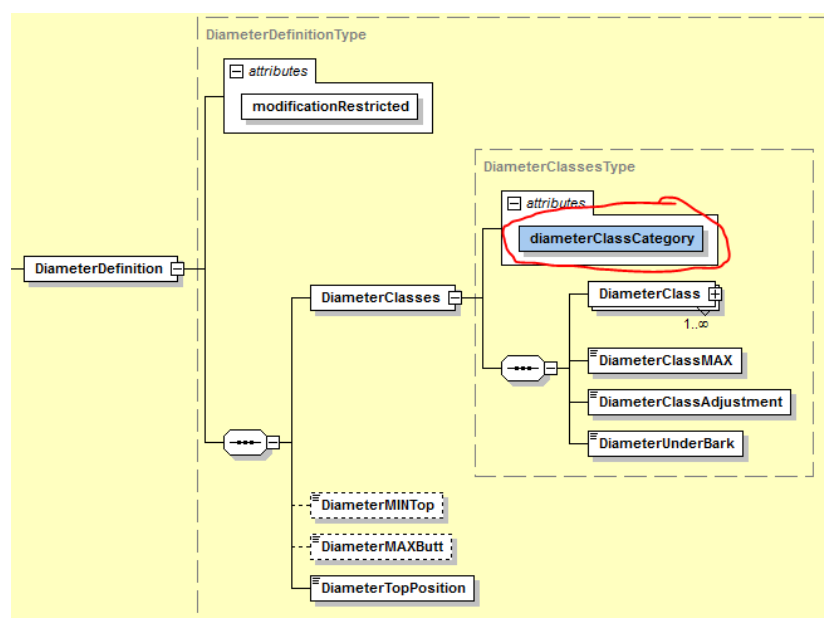
Structure for butt end profile extrapolation method. Extrapolation method must be used if this structure is included in spi. Extrapolation method must be used also in cases where you get measurement values below breast height (normally 130 cm).

DIAMETERCLASSCATEGORY

Proposal by Anders Nylund, Komatsu, 2013-05-08.

Skogforsk has studied how to use the Norwegian mid measured volume based on questions from Anders Nylund (Komatsu).

It was discovered that the classification of these logs are based on the top diameter rather than the estimated mid diameter. The same is true also for the Estonian mid measured volume. This means that only two values are needed for the attribute diameterClassCategory (Top and Midpoint). It was decided that the values “Calculated Norwegian mid” and “Calculated Estonian mid” are both excluded from diameterClassCategory.



The following table, including updates regarding the Norwegian mid measured volume in red text, is copied from “StanForD2010 introduction.docx”. Text in red color has been modified.

Examples of how to use the new elements based on the present price volume types

Name	Description	Swe sub	Swe to	Fin ¹ sob	Nor ² mid	Ger mid	Ger top	Dan mid	Est mid	Fra sub
Old codes (var161_t1) Country code (var6_t1)		2 752	1 752	130 246	4 578	7 276	6 276	136 208	12 233	2 250
<u>DiamClassCategory</u> Diameters in DiamClasses (price matrix)	1 = Top, 2 = Midpoint <i>3 = Calculated Norwegian mid</i> <i>4 = Calculated Estonian mid</i>	1	1	1	<i>1</i>	2	1	2	1	1
<u>DiamClassAdjust</u>	1= diameter class smaller or equal to log diameter 2= closest diameter class, normal rounding	1	1	1	1	1	1	1	1	1
<u>DiameterUnderBark</u> Diameter classes under bark.	True/false	True	True	False	True	True	True	False	True	True
<u>DiameterTopPosition</u> Position from top end of log where top diameter is measured.	Cm	10	10	0	10	0	0	0	0	0
<u>LengthClassAdjust</u>	1= length class smaller or equal to log length 2=closest length class, normal rounding	1	1	1	1	1	1	1	1	1
<u>VolumeDiamAdjust</u> Diameters in log price volume calculation	1=Measured diameter 2=Measured diameter rounded down to cm,	1	1	1	2	2	2	1	1	1
<u>VolumeDiamCategory</u> Diameters used in price volume calculation:	1 = Solid volume 2 = Top 3 = Mid 4 = Calculated Norwegian mid 5 = Calculated Estonian mid	1	2	1	4	3	3	3	5	1
<u>VolumeLengthCategory</u> Lengths used in price volume calculation:	1 = Physical length 2 = Length as defined in LengthClasses 3 = Rounded downwards to nearest dm-module 4 = Rounded to nearest mid-dm	1	2	1	3	2	2	1	1	1
<u>VolumeUnderBark</u> Price volume under bark.	True/false	True	True	False	True	True	True	False	True	True
<u>volumeDiameter-TopPosition</u> Position from top end of log where top diameter for volume calculation is measured.	Cm	10	10	0	10	0	0	0	0	0
<u>BarkFunctionCategory</u>	1=None 2=Swedish Zacco 3=German 4=Skogforsk 2004, Scots pine 5=Skogforsk 2004, Norway spruce	2/4/5	2/4/5	1	2/4/5	3	3	1	2/4/5	2/4/5

1. Same in Denmark

2. Primarily used for normal saw logs. Volume is calculated based on a cylinder with a theoretical diameter on the middle of the log (M).

Length: Length (L) is the total actual length in decimetres. If L is in centimetres it is truncated into decimetres (class bottom).

Diameter: By definition a diameter class is 1 cm (independent of the actual price matrix). Registered

diameter (Dt) is measured 10 cm from top. If Dt is in millimetres it is truncated into centimetres (class bottom). To get the diameter on the middle of the log (Dmid) you use the formula: $D_{mid} = D_t + (L/2 * 0.1) + 0.5$

Example: $L = 518 \text{ cm}$, $D_t = 223 \text{ mm}$

$D_{mid} = 22 + (51/2 * 0.1) + 0.5 = 25.05 \text{ cm}$

Volume: Volume is calculated in dm³.

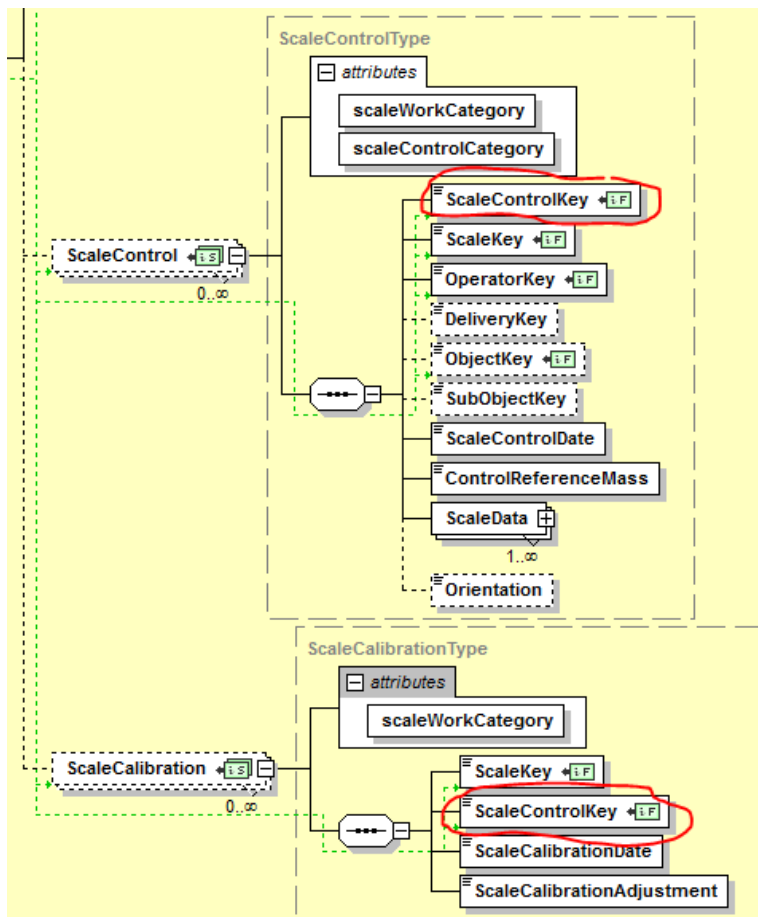
$\pi = 3.14$

$V = ((D_{mid}/10) * (D_{mid}/10)) * \pi / 4 * L = ((25.05/10) * (25.05/10)) * \pi / 4 * 51 = 251 \text{ dm}^3$

SCALE CONTROL IN FQC

Issue raised by John Arlinger, 2013-06-24.

ScaleControlKey (Machine unique scale control identity, set by machine) is included in both ScaleCalibration and ScaleControl. The question is how to use ScaleControlKey in ScaleCalibration?

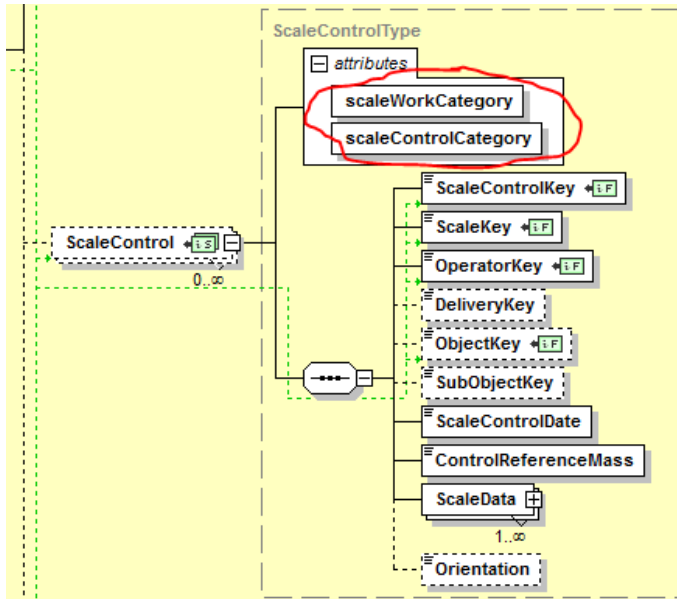


Teemu Paldanius pointed out (2013-08-22) that ScaleControlKey inside ScaleCalibration is used in order to indicate what scale control data was used in a calibration. It was decided that the annotation of ScaleControlKey in ScaleCalibration is updated according to the following text:

Machine unique scale control identity, set by machine. Used in order to describe what scale control data was used for a scale calibration.

Observe that the ScaleControlKey is presently not repeatable. This could be changed if deemed necessary.

Another question is how to use scaleWorkCategory (loading or unloading) in case of scaleControlCategory being "Manual fixed mass"? Should scaleWorkCategory be mandatory or should some additional enumeration be added?



A similar question is how to use scaleWorkCategory (loading or unloading) in ScaleCalibration if calibration is not done separately for loading and unloading.

The meeting decided to add enumeration value "Static" to scaleWorkCategory.

ScaleCalibrationAdjustment

We discussed the definition of ScaleCalibrationAdjustment in 2011-05-04 (§11). The following was written in the minutes:

- *Improve definition of factor (ScaleCalibrationAdjustment) in ScaleCalibration!*

The following text was written after the meeting in a separate document:

- *"Scale adjustment in %. 100% is equal to no adjustment and 105 % means that the scale is adjusted with 5% upwards." Teemu suggested at meeting to also add "102% is to be registered if scale is adjusted -3% at subsequent calibration".*

The additional description was for some reason lost along the road but will be proposed at the next meeting.

It was therefore decided that the definition of ScaleCalibrationAdjustment is updated according to the following text:

Scale adjustment in %. 100% is equal to no adjustment and 105 % means that the scale is adjusted with 5% upwards. 102% is to be registered if scale is adjusted -3% at subsequent calibration.

§ 5 Forwarding issues

Observe that no additional comments were given after the meeting from the WoodForce project regarding the postponed issues in §5. This means that these issues are postponed until the next meeting.

LOCATIONDEFINITIONS IN FOI

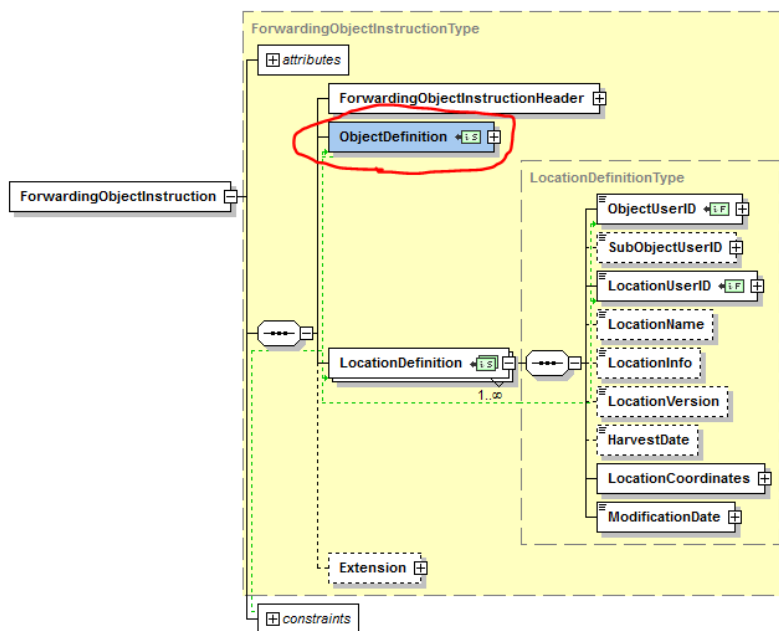
Introduction

The reason for discussing this issue was a Finnish proposal based on work done in the project "Common planning service for contractors" (companies involved are Stora Enso, Metsä Group and Metsähallitus)).

A timber sale contract can, in Finland, have several objects. An object is a logging area having the same logging form (final felling, first thinning etc.) and one single harvesting instruction. An object may consist of sub-objects which are normally the forest compartments of the forest plan. Sub-objects are needed to keep harvested volumes of different stands separated for planning purposes.

If objects are close to each other they have only one roadside landing. Piles for different assortments are located at the landing. Timber from all the objects can be forwarded into the same assortment-specific pile. That is why several objects can have one common location.

The first idea, raised in July 2012, was to perhaps update the forwarding object instruction (foi). However, it was later decided (2013-04-11) to only allow one object per instruction in schema version 3.0. This meant that the original proposal of updating the foi was not relevant.



Schema structures for foi. Observe that ObjectDefinition is not to be repeatable from version 3.0.

One landing used for several objects

An example illustrating why one single landing may sometimes be used for several different objects is shown in figure 2. A landing is presently identical with a LocationDefinition in foi- and fpr-files.

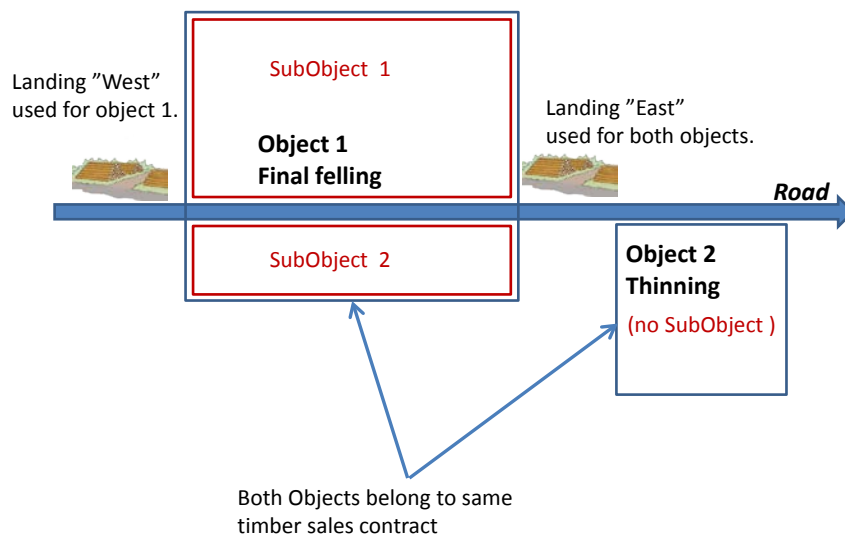


Illustration of a situation where there are two objects that have one location (landing) in common.

How to handle this situation? It is not possible to create one single instruction with two separate objects included; instead we have to create two separate

ForwardingObjectInstructions, one for each object. What can be done is to give location “East” exactly the same identities in both instructions (foi).

Example messages created to illustrate how to handle the example illustrated in figure 2 (xml-files available from StanForD secretary):

- FinalFelling.foi
- FinalFelling.fdi
- FinalFelling.fpr
- Thinning.foi
- Thinning.fdi
- Thinning.fpr

Observe that the:

- fdi-files are identical.
- fpr-files have been created manually in order to illustrate expected location identities.

Table 1. Summary of locations in ForwardingObjectInstructions

File name	ObjectName	ObjectUserID	LocationUserID	LocationName	LocationInfo	Location-Coord.
FinalFelling.foi	Object 1 - Final felling	LRKSren/Erna_1	1_LRKSren/ Erna	Landing East	120034	60.16060; 16.02615
			2_LRKSren/ Erna	Landing West	120035	60.16001; 16.02613
Thinning.foi	Object 2 - Thinning	LRKSren/Erna_2	1b_LRKSren/ Erna	Landing East	120034	60.16060; 16.02615

Table 2. Summary of locations in ForwardingProductionReports

File name	ObjectName	Object-Key	ObjectUserID	Location-Key	Location-UserID	Location-Name	Location-Info	Location-Coord.
FinalFelling.fpr	Object 1 - Final felling	32	LRKSren/Erna_1	257	1_LRKSren/Erna	Landing East	120034	60.16060; 16.02615
				258	2_LRKSren/Erna	Landing West	120035	60.16001; 16.02613
Thinning.fpr	Object 2 - Thinning	33	LRKSren/Erna_2	259	1b_LRKSren/Erna	Landing East	120034	60.16060; 16.02615

Observe that the only significant differences between identities in table 1 and 2 are the addition of Keys in table 2.

All instruction files in the example has also been merged into one single envelope (MergedForwarderInstructions.env) in order to illustrate the fact that several different object instructions can be distributed together.

The Finnish meeting participants at phone meeting 2013-08-28 stated that the solution described above would be sufficient.

FPR CONVERSION OF FORWARDED MASS TO VOLUME

It has been proposed by WoodForce project (Tapio Räsänen, Metsäteho) to add new elements in fpr in order to give needed parameters from the forwarder for specifying the weight class and fresh density values (kg/m³) of bioenergy assortments for conversions. The weight scale measured green mass (kg) of the assortment is converted to volume on bark (m³), which is normally done in an information system of the forest company. The assortments in question include 1) energy wood from the thinnings (normally small-sized roundwood), 2) logging residues and 3) stump biomass. The conversion tables for thinning wood (8 tables) and logging residues (2 tables) prepared by Metla are based on next parameters:

- Area (location of the logging site), 5 areas of Finland
- Energy wood category (thinned wood or logging residues)
- Tree species group: 1) coniferous wood, 2) birch or 3) other broadleaved wood
- Logging date (recommended to use start date of logging)
- Measuring date (recommended to use start date of forwarding, if wood is measured by weight scale)
 - drying time (days) on site is calculated based on the date info

These conversion parameters can be obtained from the present fpr information. However, if the logging of separate sub-objects is started on different times and there is a clear difference in drying period and time, it may be needed to specify logging date for each sub-object. This requires a change in standard by adding both StartDate and EndDate to SubObject level (see proposal # 2).

Linked to the issue there is also a need and a proposal from WoodForce that harvesting date (both StartDate and EndDate) should be possible to be sent to the forwarder from the forest company system. Harvester can send the actual harvesting dates to the forest company in hpr. This could be done in foi, but it requires a change to the standard by adding the dates on Object level (change element names to HarvestingStartDate and HarvestingEndDate or keep them as they are?) (see proposal # 3).

The moisture (%) of the wood has to be specified for selecting the weight class (pre-defined classes 1-7). The conversion tables are based also on the information if there is snow or ice within the wood. Existence of rain or melting water in the wood can be taken into account as well. This information cannot be given today in any elements or attributes of fpr. The idea is that snow/ice and water information (Yes/No) is given per Delivery and per Object/SubObject. It is not required per Load.

Converting the green mass of stump biomass to volume is done by specifying a fresh density value which is based on weight class and cleanliness (purity?) class of stump biomass. There is only one fresh density table for whole Finland and all tree species. Moisture-% and measuring date are parameters in specifying the fresh density. Cleanliness class describes the share of foreign objects (stones, sand

etc.) in stump wood: class 1) < 5 %, 2) 5 – 10 %, 3) 10 – 15 %. The operator has to estimate the class visually.

The aim is that the operator of the forwarder feeds the needed conversion parameters in fpr, which is then sent to the forest company or contractor's planning system for further calculations. Parameters are normally given only once when the forwarding is finished in the last sent fpr file. However, it must be possible to send the parameters in any fpr in cases when the weather conditions change or the forwarding period is long, for example. If the harvesting site is small and the conditions don't change during the forwarding, it might be reasonable to save the parameters when the work is started for the first time. Conversion parameters can be the same for all bioenergy assortments or they can vary between the assortments. Default or previous values could be shown in the user interface for the operator and make the selection as simple as possible.

The weight class is normally not given by the forwarder, but it must be discussed if that would also be possible in the cases when all the necessary information is available in the forwarder and there is no back-end system for making the conversions. If that is the case, weight class should be added to parameter information as well.

In final calculations the conversion parameters are needed for each forwarded bioenergy assortment (Delivery). Because they are also related to the site (Object and SubObject) the element structure including the parameters must have a link to both Delivery and Object/SubObject.

These new elements should be added in fpr

Parameter	Description	Type	Name of element / attribute
Snow / ice	Snow or ice exists (Yes / No)	Boolean	SnowIce: attribute snowIce
Water	Rain or melting water exists (Yes / No)	Boolean	Water: attribute water
Cleanliness class	Cleanliness / purity class of stump biomass (pre-defined classes 1–3)	positiveInt.	CleanlinessClass
Weight class	Weight class of assortment (predefined classes 1–7)	positiveInt.	WeightClass

Proposal # 1

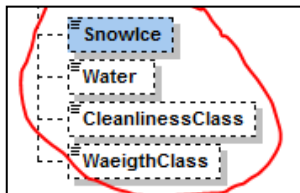
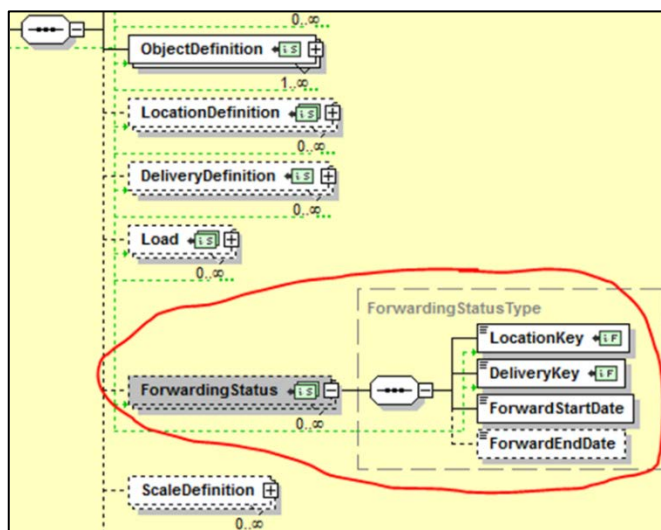
Six different alternatives for the location of the new parameter element structure in fpr schema were presented at the meeting:

- 1) Adding elements straight to DeliveryDefinition
- 2) New DeliveryConversionInformation under DeliveryDefinition
- 3) New ObjectDeliveryInformation under Object and SubObject
- 4) Parameters in User defined data
- 5) Adding elements to ForwardingStatus or defining a similar structure
- 6) Parameters in User defined data with conversion per load

Since alternative 5 and 6 were deemed to be most relevant the other alternatives are not included in the minutes.

Alternative 5: Adding elements to ForwardingStatus or defining a similar structure

ForwardingStatus has a reference to both Delivery and Location and thus via Location to Object/SubObject. The new conversion parameter elements could be added to the present structure as optional. ForwardingStatus may be registered and sent more frequently for the work follow-up purposes than there is a need to register the conversion parameters, but that is not probably a problem if we use optional elements. However, if there is any conflict with use of the elements inside the structure or if ForwardingStatus is not descriptive enough as an element name, it is possible to define a totally new but similar kind of structure for the conversion parameters.



Alternative 6: Parameters in User defined data

This additional alternative is based on a proposal from Finland regarding conversion of forwarded mass to volume. The complete original Finnish proposal is described in appendix 1 and this document can be view as an additional alternative proposal to discuss.

The basic assumption is that the mass is scaled per load in the forwarder. This means that if conversion from mass to volume is to be done it is an advantage to have this information per load and not per delivery and location since the piles will consist of a large number of loads forwarded under different conditions.

In other words, the precision of the conversion calculations must be higher if the calculation is done per load.

It is therefore suggested that we use users-defined-data (udi) where the operator is supposed to register information about Snow/ice, Water, Cleanliness and Weight class each time the conditions are changing at an object.

Example

Below is an example of load data in an fpr:

Load no	Unloading time	Coordinates	Product/ species	Operator	Mass
1	08:20	X / Y	Fuel logs pine	1	9700
2	08:43	X / Y	Fuel logs pine	1	10500
3	08:59	X / Y	Branches and tops, conifer	1	4400
4	09:15	X / Y	Stumps	1	3600
5	09:37	X / Y	Branches and tops, conifer	1	4100
6	10:15	X / Y	Branches and tops, conifer	1	4200
7	10:53	X / Y	Branches and tops, conifer	2	3900

Operator registers the following user-defined-data per object in fpr. There must be one start value which is valid until a change is made by the operator.

Registration date	Snow/ice	Water	Cleanliness class
07:45	No	No	1
09:00	Yes	No	1
09:55	No	Yes	2

Results in receiving system per load in table below. Created by matching load data and user defined data based on time stamps in tables above.

Load no	Unloading time	Mass	Snow/ice	Water	Cleanliness	Calculated weight class	Calculated volume	Product/ species
1	08:20	9700	No	No	1	23	11.3	Fuel logs pine
2	08:43	10500	No	No	1	43	13.2	Fuel logs pine
3	08:59	4400	No	No	1	23	10.2	Branches & tops, conifer
4	09:15	3600	Yes	No	1	23	12.2	Stumps
5	09:37	4100	Yes	No	1	46	9.9	Branches & tops, conifer
6	10:15	4200	No	Yes	2	76	12.1	Branches & tops, conifer
7	10:53	3900	No	Yes	2	43	11.6	Branches & tops, conifer

Observe that the result in the table above can easily be summed per location and delivery if required.

The only trick is that operator must register this information immediately after having created new object and when conditions change. A solution to this could be that we implement the possibility of having specific “trigger points” needed for when user defined data interface is to be show to the operator, for example at the following events:

- StartObject
- EndObject

- EndShift

User interface example

Below is an example of the necessary user interface. Observe that changes in conversion parameters can be updated as many times as is needed, no limitations on the number of available rows.

Landing data (ProductionObject)		Landing data (ProductionLocation)		
Conversion parameters during forwarding				
OperatorKey / Date	Snow and ice	Water	Cleanliness	Comment
3 / 2013-10-25T14:56:22.705+0	TRUE	TRUE	Clean	
3 / 2013-10-25T14:56:26.178+0	FALSE	FALSE	Select an item	
			Clean	
			Medium	
			Dirty	

UDI

Some comments regarding user defined data:

- Udi flexible, changing and adding new parameters or enumerations is easier to do than in the standard
- Can also be more easily used on other markets.
- Must be created by company system
- Must be possible to re-use the same instruction on many objects. Basically it should be possible to set that a specific udi is always to be used on new objects by default.

Meeting conclusion

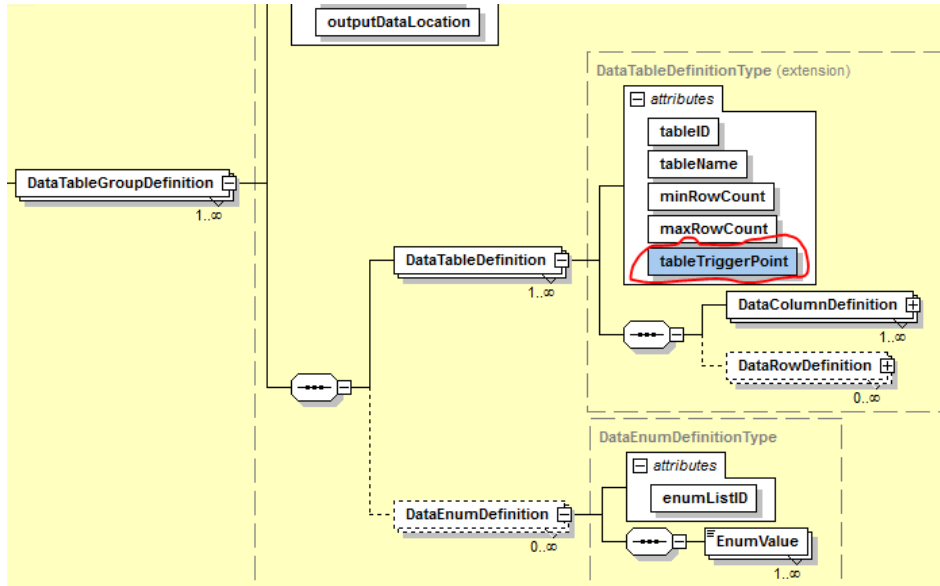
The meeting had a long and detailed discussion regarding whether we should use user defined data (alternative 6) or implement completely new elements (alternative 5). Several participants were hesitant about adding new country specific elements and prefer to use user-defined-data. It was decided by the meeting to postpone the issue and instead try to use “user defined data”. If this does not work out the issue will be raised again. It is possible to test on Komatsu and JohnDeere machines to use user-defined-data according to the proposal above.

The following suggestion was added after the meeting in order to facilitate the use of “user defined data” for registering conversion parameters.

It is decided with the minutes (phone meeting 2013-12-12) that a new optional attribute ”tableTriggerPoint” is added to the udi-file with the following enumerations:

- StartObject
- EndObject
- EndShift (same as logging out of system)
- UnloadingComplete
- ChangeSubObject

The attribute “tableTriggerPoint” will have the following description: *Attribute indicating when a user defined table must be presented to the operator (in the GUI of the machine) in order to make it simple to fill in the table at the right time.*



Proposal # 2

To add **StartDate** and **EndDate** to **SubObject** as optional in **hpr** and **fpr**. Sending the dates first in **hpr** to the forest company or to contractor makes it possible to add the harvesting dates next to **foi** and send them to the forwarder (proposal # 3). Dates sent again in **fpr** can be used for calculating the drying time on site based on the forwarder reporting only. Because saving actual harvesting date (**HarvestDate**) on stem level in **hpr** is a sensitive question in some countries that cannot be used as a common solution. Precision on a day level is often enough for the conversions.

A question was raised concerning why not use **CreationDate** of each message, this should be enough in cases where reporting is done daily or weekly.

Decision postponed to phone meeting in December. Metsäteho will discuss the possibility of using **CreationDate** with the project group for LogForce.

Proposal # 3

To add **StartDate** and **EndDate** to **ObjectDefinition** and **SubObject** in **foi** as optional. The need is to send actual harvesting dates from the forest company to the forwarder. It may be needed to discuss if planned and actual harvesting dates should be distinguished somehow, e.g by adding an attribute that describes if the date is either ‘Planned’ or ‘Actual’.

Decision postponed to phone meeting in December (see comments regarding proposal 2 above).

WOOD PILE INFORMATION IN HPR

Issue based on discussion in the Finnish WoodForce project. The issue was first presented and discussed in a web meeting (2013-10-25).

In the old standard var31_t5 (ORGANIZATION) for wood pile (roadside landing) id is included in prd, pri, prl and oai with priority 2. Wood pile id is shown in the UI of the harvesters and the operator can possibly modify it. Some Finnish companies have used it in prd for identification of wood piles belonging to a harvesting object. However exactly how and why it is used was not known at the meeting. Only one instance of this variable can be registered per harvesting object.

Wood pile id has not been included in the elements of LoggingOrganisation in StanForD 2010 unlike the other types of var31 perhaps for the reason that it is not really logging organization information. Wood pile id has not been defined anywhere in hpr, thp and oin

In foi and fpr a elements similar to wood pile id has been defined in LocationUserID, LocationInfo and LocationVersion.

It was suggested that wood pile id can be given as optional element in hpr on both Object and SubObject level. This would mean that each stem and log is linked to a wood pile (Location) via ObjectKey or SubObjectKey

Idea is to utilize harvester production data as a help in forwarder's reporting

- Hpr is sent to a forwarder
- Forwarder operator sees on the screen how much wood per assortment there is supposed to be on each location after the forwarding

A typical use case is that there are several SubObjects and several wood piles belonging to one Object

- SubObjects have their own separate wood piles (Locations)
- A problem: what about if there are more than one wood pile specified per SubObject?

A precondition for the use is that the harvester operator knows to which pile the wood is forwarded

- the system is to be optional, not needed to be used in all the cases
- If there are differences in quantities between harvester and forwarder reporting, the corrections should be done in the backend systems of the forest company, not in the machines

In order to work fully, wood pile id should be sent to the harvester in ObjectDefinition of oin.

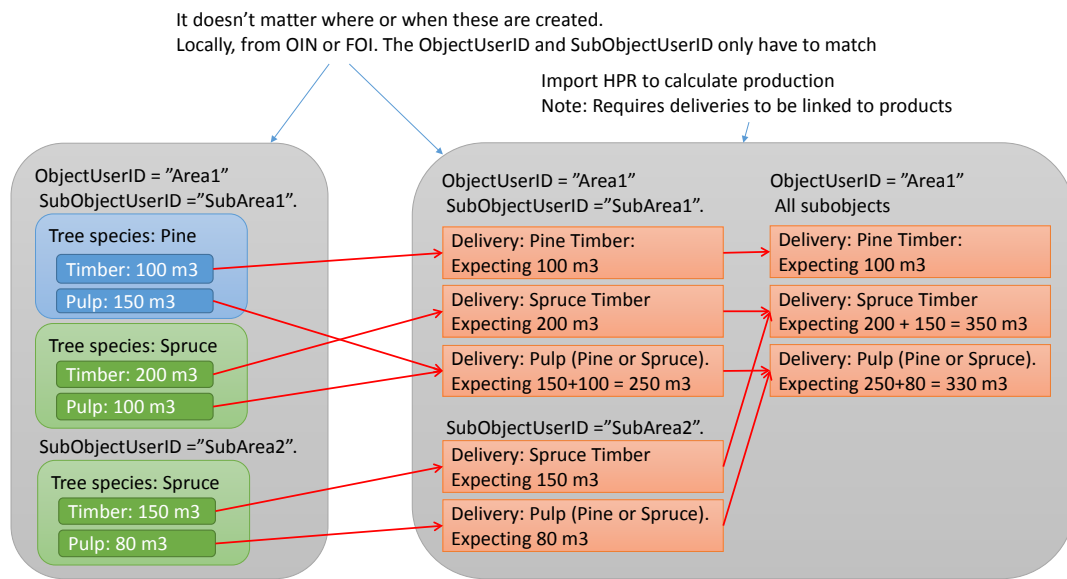
Proposed changes in the standard:

1. LocationUserID with attribute Agency is added as optional and repeatable in ObjectDefinition of oin, hpr and thp (Object level)

- e.g. after LoggingOrganisation in the structure
2. LocationUserID with attribute Agency is added as optional and repeatable in SubObject of oin, hpr and thp (SubObject level)
- e.g. after LoggingForm in the structure
 - LocationUserID given in SubObject defines the wood pile
 - If there is a need to send also other Location information to the harvester in oin then LocationDefinition structure should be added
 - e.g LocationCoordinates
 - cases where the harvester needs to know the location of wood piles for preparing the area?
 - The case with two or more Locations per Object/SubObject should be considered carefully
 - How to make a choice on stem or log level?
 - Makes it mission impossible, if the choice should be done on log level (no ObjectKey/SubObjectKey)
 - Use of LocationKey with Log? LocationDefinition structure is required in that case

Include below is a figure originally created by Fredrik Tjernberg at Komatsu. The diagram illustrates quite well what kind of volume tracking that is possible to do today.

We will probably run into problems when trying specifying these things exactly per location. In order to do that we basically must register location for each stem or log in the hpr-file which do feels like almost mission impossible. It is complex from a structural point of view and tricky to expect the harvester operator to do in a correct way (he may not be able to do more than guessing in cases where several locations exist). The decision on which location to use normally rests with the forwarder operator rather than the harvester operator.



A possibility not include in figure above is the fact that it is we have the coordinates per harvested stem. This means that the forwarder operator has the possibility to calculate what has been harvested in a certain area through a GIS interface. The forwarder operator will probably have better knowledge about how different parts of an object or subobject are forwarded.

There was a long discussion during the meeting where no conclusion could be reached. Several of the participants found it difficult to understand how the system is to work as well as how the present var31_t5 is used since it is not repeatable per object.

It was decided to postpone the issue and that Metsäteho will make a detailed use-case description together with Finnish companies in order to:

- describe how the forest companies will use this kind of information
- how and when the harvester operator is supposed to register this information
- how the results are to be presented and used in the forwarders

Skogforsk pointed out that they are very willing to join a meeting in Finland for a more detailed discussion.

LOCATIONCOORDINATES

Suggestion by Antti Yli-Fossi, 2013-10-02

It seems that LocationDefinition/LocationCoordinates is a mandatory element in FOI. Timbermatic supports locations (storage places/landings) that do not have coordinate data for them. Any recommendation how we should fill the element in such case?

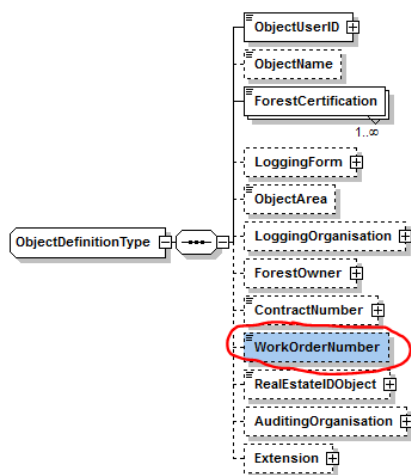
It was decided that we make LocationCoordinates optional in version 3.0.
Recommended that 0 is registered in version 2.1 if necessary.

It was noted by Juha-Antti Sorsa (2013-11-20) that it was not clearly stated whether this modification applies to both fpr and foi. It is was decided with the minutes (phone meeting 2013-12-12) that LocationCoordinates is made optional in both foi and fpr.

NEW FORWARDING INFORMATION ELEMENTS

This issue was raised during the specification of the WoodForce project (earlier KSP, Common planning service for contractors).

It was suggested at the last meeting that we add new element WorkOrderNumber to ObjectDefinition:



However, it was realized by the WoodForce project group (Metsä, Stora Enso, Metsähallitus) that there really is no need at all for WorkOrderNumber. This means that the proposal is withdrawn.

The work group has also discussed some other issues:

Would be good to add TextToMachine to ProductDefinition, DeliveryDefinition and LocationDefinition.

Niclas Eriksson mentioned at the meeting that he thought it would be a good idea to use a different element name than TextToMachine since the information in this element might be utilized not only by a harvester or forwarder. A possible name could be for example ProductDescription or maybe an even more general name like DescriptiveText or AdditionalText.

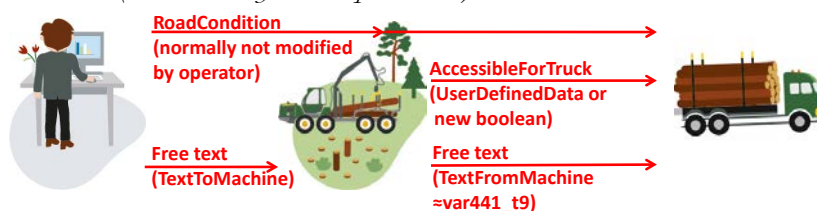
It was thus decided that we add the following optional text elements:

- ProductDescription with description “Free text sent to sent to machine per product definitions”. Added added to all product definitions
- DeliveryDescription with description “Free text sent to sent to machine per delivery definitions”. Added to all delivery definitions

- LocationDescription with description “ Free text sent to sent to machine per location definitions”. Added to all location definitions
- Observe that these elements should not be modified in machine and they should be used for all machine types.

Comment from secretary:

TextToMachine and TextFromMachine in these definitions were also suggested by Södra at the meeting in April but then postponed. We also have had discussions about RoadCondition in the foi-file (Södra, April 2013) as well as about a new boolean element AccessibleFor Truck per Location (Södra and Sydved, April 2012)



The Swedish users are now planning to use “User defined data” in order to include additional information per landing as illustrated below:

Landing data (ProductionLocation)			
Status information			
OperatorKey / Date	Question	Answer	Comment
3 / 2013-11-04T21:45:24.164+0	Road status?	Snow, must be plowed	
3 / 2013-11-04T21:45:19.359+0	Landing status?	OK, accessible for transport	
3 / 2013-11-04T21:45:46.301+0	Turning place for truck [24 m]?	Yes	

However since RoadCondition cannot be sent to forwarder from forest company it was decided that element RoadCondition is added to the foi-file per Location and not only in the fpr-file. This is due to the fact that this information is often sent from forest company and then directly to the transportation company.

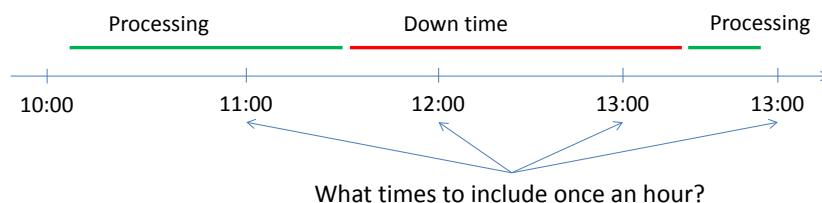
§ 5 Harvester implementation issues

The secretary had planned to present some recommendations regarding Butt end extrapolation (spp) in Sweden and Norwegian mid measured volume. Due to lack of time the presentations were postponed (see appendix 2).

§ 6 Implementing ReportInterval in mom

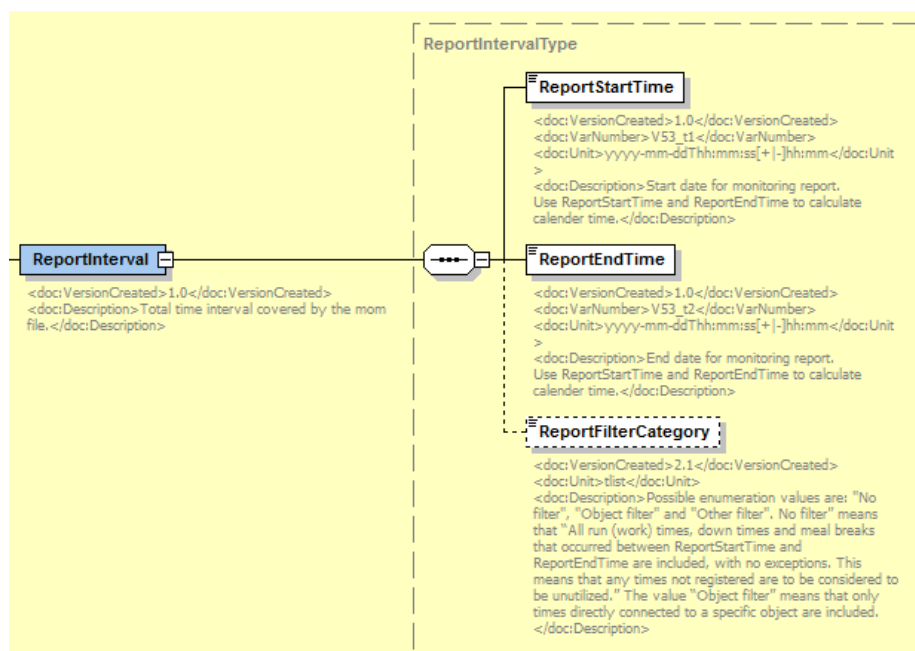
Issue originally based on question from Jonas Thorsson (Dasa), May 2013.

Jonas question was related to how to use ReportInterval in case where a work time starts before the ReportStartTime but ends after ReportStartTime? Same problem may occur for ReportEndTime.



The text below was updated based on discussions between John Arlinger and Niclas Eriksson after telephone meeting 2013-08-29.

It is clearly stated in the description of element ReportFilterCategory that:
*“No filter” means that **all run (work) times, down times and meal breaks that occurred between ReportStartTime and ReportEndTime are included, with no exceptions.** This means that any times not registered are to be considered to be unutilized.*

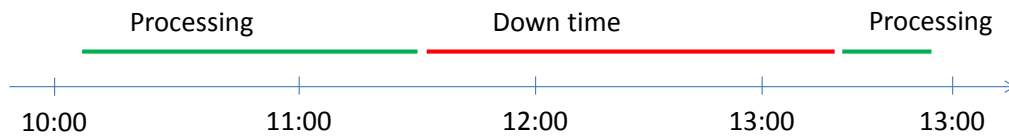


The definition above means that the present time is given an end time when report period ends. This means that the end of the present work time is equal to the ReportEndTime. All types of times are treated in the same way.

MonitoringStartTime of present time will be equal to ReportStartTime in the next mom-file.

It is up to the receiving system to merge these times together or not.

For example:



Mom no	Report interval	Individual work times included in mom
1	10:00-10:59	Processing 10:10-10:59
2	11:00-11:59	Processing 11:00-11:30, Down time (Maintenance) 11:30-11:59
3	12:00-12:59	Down time (Maintenance) 12:00-12:59
4	13:00-13:59	Down time (Maintenance) 13:00-13:19, Processing 13:20-13:50

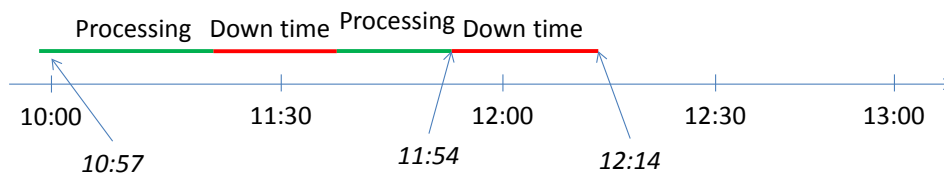
Down times are sometimes not specified when reporting a mom-file, e.g. at 12:00 above since the system normally does not ask the operator for reason of down time until the end of a down time.

It was discussed if it should be recommended that the monitoring system:

- should force operator to specify un-defined downtime before automatic generation of mom-file
- should block editing of down time reason if down time has already been reported.

Additional comments from Jonas Thorsson (2013-09-03) after last meeting in August:

The recommendations above may in some cases be problematic, e.g. in a case where MinimumDowntimeFilter is 15 min (E15) and a downtime starts 6 minutes before the report is to be generated (at 12:00) as described in figure below:

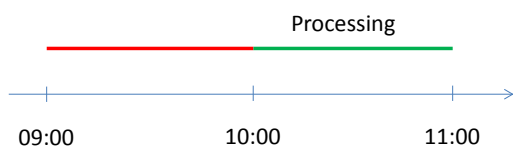


The type of time between 11:54 and 12:00 is not known at 12:00 since the down time is shorter than 15 minutes. No second Down time will be registered at all if Processing restarts at e.g. 15:06.

One possible solution could be to state that the ReportStartTime and ReportEndTime could be adjusted based on the different work times registered. For example the ReportStartTime would be 10:57 and the ReportEndTime would be 11:54 in the example above.

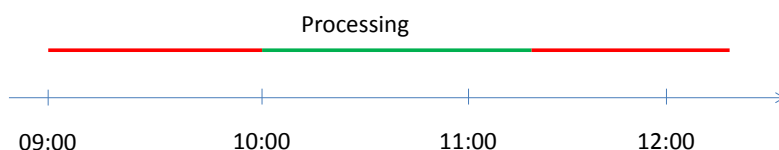
Another example is related to OtherMachineData which may be difficult or impossible to divide up between different mom-reports depending on the layout of the database

We may for example create a mom-file at 11:00 covering the times between 10:00 and 11:00 on a time line illustrated below. The green line (Process) includes 100 harvested stems (NumberOfHarvestedStems).



At a new mom-file is created at 12:00 covering the time between 11:00 to 12:00 according to the time line below. In this case the Processing includes 200 stems for the time between 10:00 and 11:20.

It will be problematic to divide these 200 stems if the total green time is stored as one event in the database.



Decision

The solution to this issue might be that we agree on some basic requirements without detailed specification being included. The decided requirements to be added to “StanForD2010_rules_tableV1p5.pdf” (R4.9) document are:

- No times MUST NOT be lost if we report automatically per time interval e.g. every hour, day or month
- If a specific time cannot be divided then it is possible to adjust ReportStartTime and ReportEndTime
- All times between ReportStartTime and ReportEndTime must be included (only exception is un-utilized times) if ReportFilterCategory is equal to “No filter”.

§ 7 SpeciesGroupDefinition in forwarder MOM

Based on question from Antti Yli-Fossi, JohnDeere (2013-09-05)

It seems that SpeciesGroupDefinitionForwardingDeliveryInstructionType does not define grades, yet they are required in the SpeciesGroupDefinitionMachineType that is output in a MOM file. Is there any convention as how to fill this element?

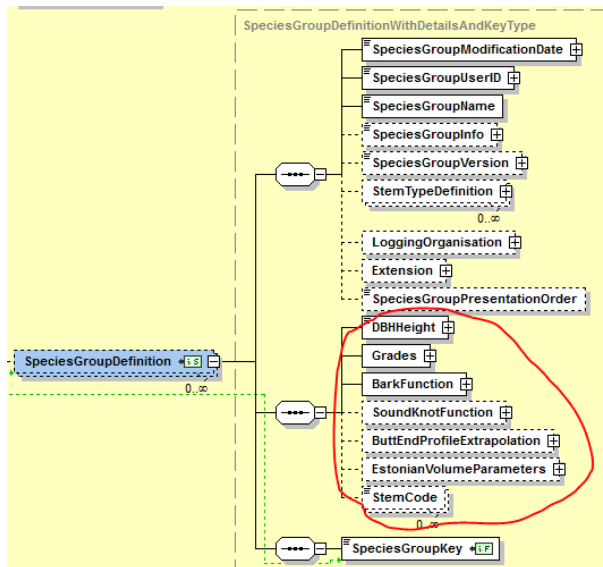
Antti noted that this is also a problem for BarkFunction and DBHHeight. These are totally irrelevant elements in case of mom-file being used for a forwarder.

In case of implementing earlier versions Antti did not see any other solution than to add some dummy data, e.g.:

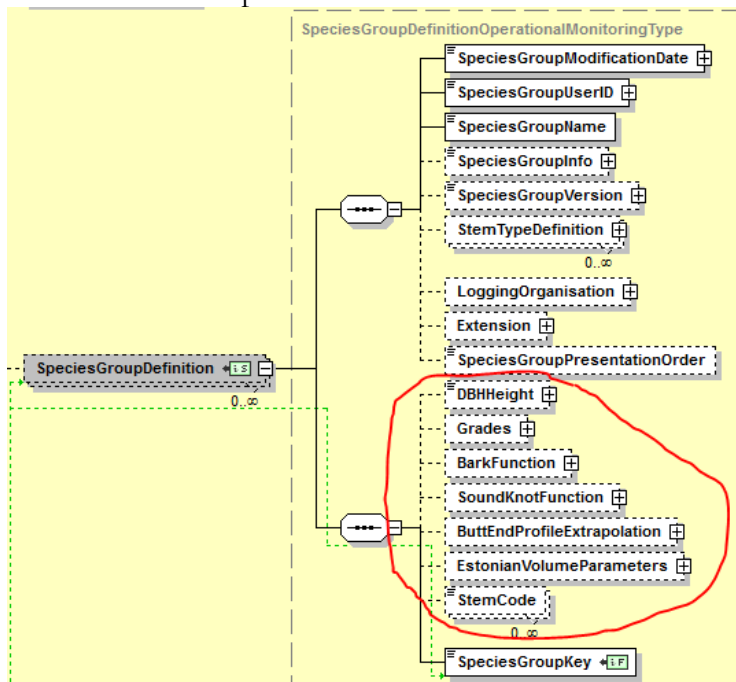
- barkFunctionCategory=None
- StartGrade=1
- Grade=1

- DBHHeight=120

Figure below illustrates SpeciesGroupDefinition in mom-file where all marked elements are irrelevant from a forwarder perspective:



It was decided to update the SpeciesGroupDefinition in order to make the marked structure optional in the mom-file:



§ 8 Negative price values

Suggestions based on discussion at meeting between Skogforsk and Metsäteho, Helsinki (2012-12-19).

It was suggested to make Price a nonNegativeInteger instead of an integer since negative values are not relevant.

Niclas Eriksson pointed out at the meeting 2013-05-10 that Komatsu can handle negative price values in MaxiXplorer. The meeting decided to postpone the issue.

Anders Nylund, Komatsu, commented after the meeting that the issue of allowing negative values in var162 was discussed at the meeting 2000-04-10 (§2) when the limitation matrix was implemented. It was then decided that negative values are allowed.

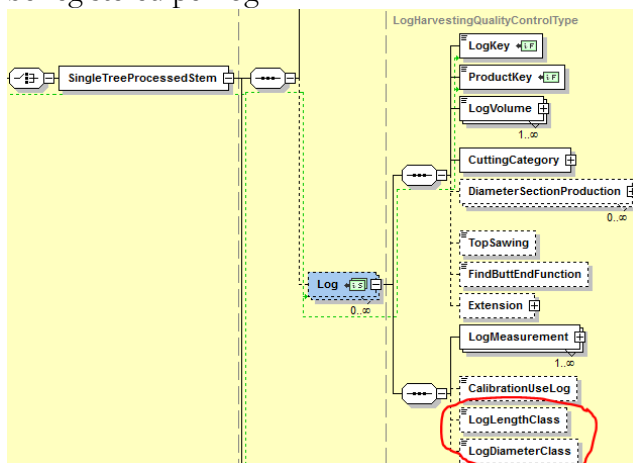
It was decided that that we change the data type to nonNegativeInteger as well as adding to the annotation for element Price that "Possible negative values originating from an apt-file must be converted to the value 0" as discussed with Anders Nylund.

§ 9 LogLength- and LogDiameterClass per log in hpr

Proposal by Niclas Eriksson, Komatsu (2013-03-26).

It has been noted by Niclas that the length and diameter classes of a log is not registered for each log in an hpr-file.

If we look at the hqc-file it can be noted that both length and diameter class can be registered per log:

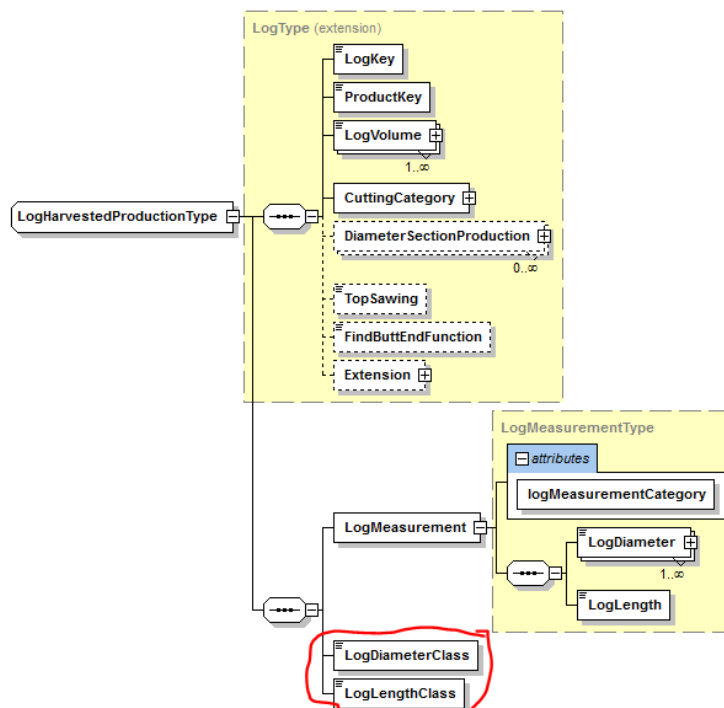


A large number of different parameters in the hpr-file must be considered in order to be able to calculate the length and diameter classes:

- LogLength and LogDiameter in LogMeasurement.

- DiameterClassLowerLimit and LengthClassLowerLimit and several other elements under LengthDefinition and DiameterDefinition

It was thus suggested that we add to new optional elements (LogLengthClass and LogDiameterClass) per log to the hpr message:



Name	Description	Unit	Type
LogDiameterClass	Harvester registered diameter class of the log. Use value 0 in case of unclassified log.	mm	nonNegativeInteger
LogLengthClass	Harvester registered length class of the log. Use value 0 in case of unclassified log.	cm	nonNegativeInteger

There was a discussion during the meeting 2013-04-10 about the fact that this proposal means adding information that can be calculated using already existing variables.

It was again decided to postpone the issue, this time indefinitely, since the proposal breaks the fundamental idea of not including data that can be calculated based on already existing data.

§ 10 New German bark function

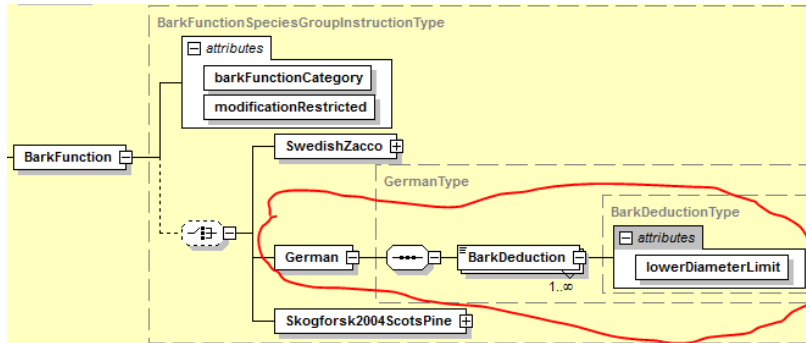
Proposal by Anders Nylund, Komatsu, 2013-10-17.

Presently there are four different types of bark functions included in the spi-file:

1. Swedish Zacco
2. German
3. Skogforsk 2004, Scots pine

4. Skogforsk 2004, Norway spruce.

The figure below illustrates how the German bark function is stored in the spi-file:

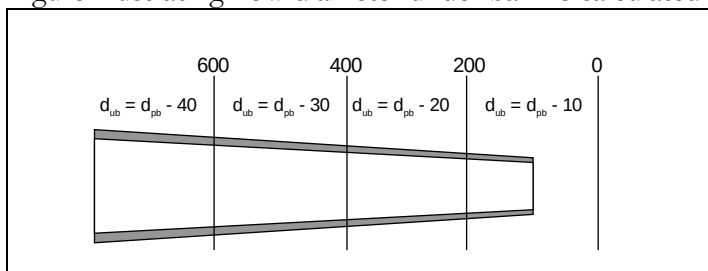


The German function has (at least earlier) been based on four bark deduction values 10, 20, 30 and 40 mm (element BarkDeduction). A diameter interval is attached to each deduction value in attribute lowerDiameterLimit. Depending on the diameter at each position along the stem, one of the four deduction values is valid. The deduction is equal to the double bark thickness, for example deduction 10 mm is equal to 5 mm bark at each side of the log. The diameter break is the bottom of the class.

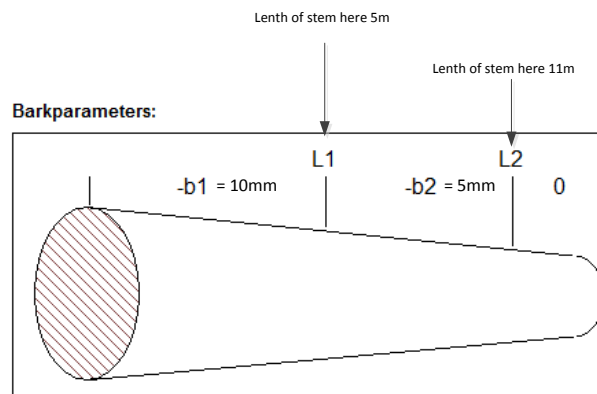
Example:

BarkDeduction (mm)	lowerDiameterLimit (mm)
40	>=600
30	<600 >=400
20	<400 >=200
10	<200 >=0

Figure illustrating how diameter under bark is calculated:



Anders has discovered a need for a slightly different bark function in Germany which is based on the distance (length) from the butt end of the stem as illustrated



below.

This type of distance dependent function is required on the German market and it has been implemented by some other manufacturers. When implementing it Anders would strongly prefer to have it standardized.

Just prior to the meeting it was discovered by Ponsse that they have an additional type of German bark function as illustrated below where bark deduction is dependent on both position from butt end as well as size of the tree (DBH):

Barkparameters:

Kiefer, 711

Latitude:

60,00000

Diameter and lengthbased deduction

Rounding to lower centimeter

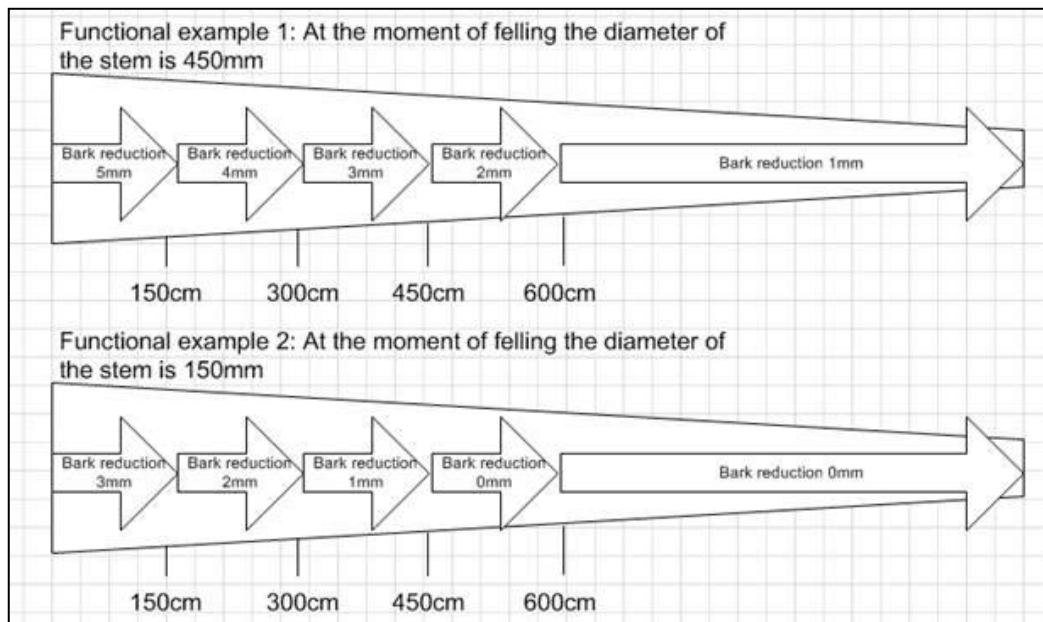
Name of the new function: Diameter and length based deduction
Lengths (unit must be added [cm]). User can freely set all length values.

	0	150	300	450	600				
0	3	2	1	0	0				
200	4	3	2	1	0				
400	5	4	3	2	1				

Bark reduction at mm

Matrix for diameter and lengt classes

Diameters (unit must be added [mm]). User can freely set all diameter values.



Ponsse has also implemented a number of different diameter rounding methods:

- “No rounding” = Diameter under bark by normal subtraction of deduction
- “Rounding to lower cm” = Diameter under bark rounded up to nearest upper cm
- “Rounding to upper cm” = Diameter under bark rounded off to nearest lower cm
- “Rounding to nearest cm” = Diameter under bark mathematical rounded to cm

No conclusions regarding the issue were reached at the meeting. It was instead decided to ask the secretary to discuss the issue with KWF after the meeting and to include a suggestion with the minutes (see below).

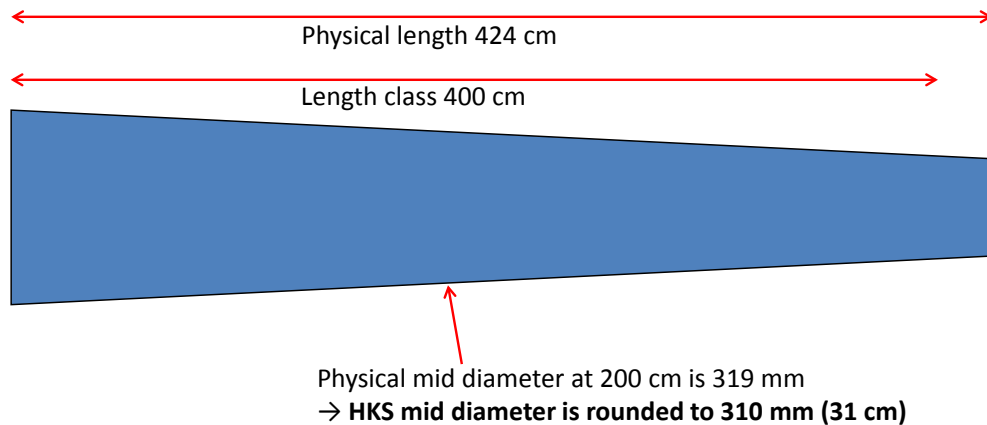
MEETING AT KWF

Additional comments and suggestions based on meeting between John Arlinger, Björn Urbanke and Uli Dietz at KWF 2013-11-11.

Background

Measurement of logs in Germany is regulated through HKS (HandelsKlassenSortierung). HKS was a German law from the 1969 until 2009. The law was revoked due to EU regulations. However HKS is still used for all log measuring in Germany but it is now basically a business agreement rather than a law. Any changes to HKS are based on discussions between national umbrella organizations for forest owners and forest industries.

The mid measured price volume used in Germany is always based on the midpoint between butt and the length class. This means that if a log is 424 cm while the length class is 400 cm the mid point is at 200 cm and not at 212 cm. The mid point diameter is then always rounded downward to the closest whole cm, for example the diameter 319 is rounded down to 310 mm (31 cm). Classification of logs are also often based on the HKS mid diameter as described above.



The only rounding used for diameters in HKS is downwards to closest whole cm. From German perspective no other rounding methods are necessary.

StanForD2010

HKS mid diameter exists already in element LogDiameter in hpr. It is suggested that it is clarified in the annotation that “HKS diameter is always rounded downwards to whole cm and is based on length class mid-point”.

The existing element VolumeDiameterAdjustment already today defines the diameter rounding when calculating HKS volumes.

The existing element VolumeDiameterCategory has the enumeration value “Mid”. Is this physical mid point or length class mid point? It is suggested that we add new enumeration “HKS Mid” that is always to be based on length class mid-point or that we update the enumeration in order to point that “Mid diameter” is measured at a position defined according to VolumeLengthCategory.

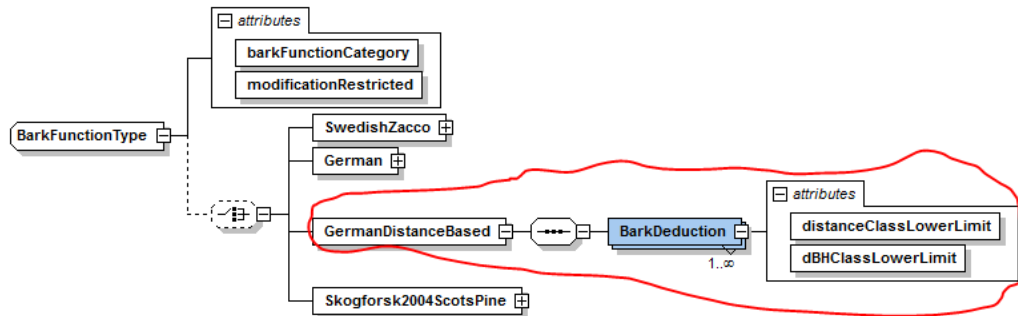
Conclusions:

- no new rounding methods are needed from a German perspective.

It was decided with the minutes (phone meeting 2013-12-12) to update the annotation for VolumeDiameterCategory in order to point that “Mid diameter” is measured at a position defined according to VolumeLengthCategory:

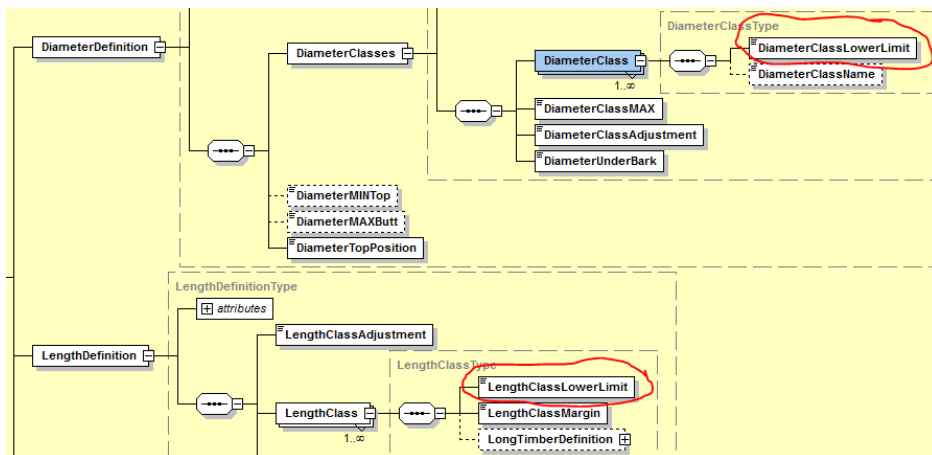
It was also decided with the minutes to implement the following structure with a new element GermanDistanceBased without any attribute for diameter

adjustment (rounding):

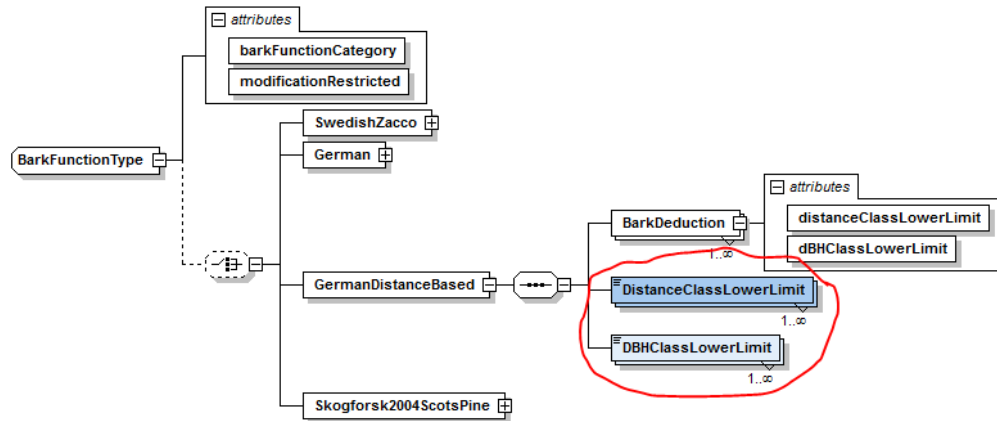


It was also decided that a new enumeration “GermanDistanceBased” is added to barkFunctionCategory.

Mikael Eliasson, LogMax (2013-11-29) contacted the secretary after the November meeting regarding the new bark function. Mikael thought that it would be an advantage to be able to define all length and diameter classes separately as in the case of the price matrix using DiameterClassLowerLimit and LengthClassLowerLimit.



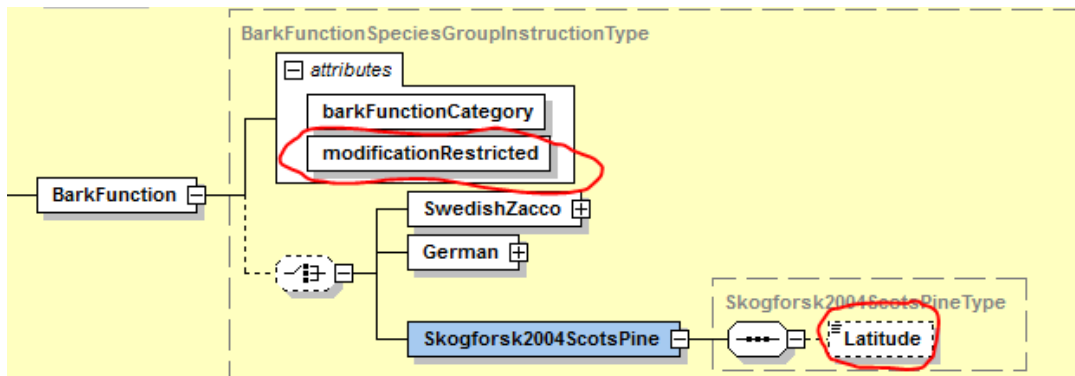
It was thus decided with the minutes to add mandatory elements DistanceClassLowerLimit and DBHClassLowerLimit according to the following figure:



Name	Data type	Unit	Description
GermanDistance-Based			Structure for German bark function parameters. Function based on <u>DBH and distance from stump</u>
BarkDeduction	NonNeg-Decimal	Mm	Deduction for double bark thickness per species group: Bark function based on DBH and distance (from stump) classes with fixed bark deductions (double), based on German requirements
DistanceClass-LowerLimit	NonNeg-Integer	cm	Lower distance from stump limits per species group: Bark function based on DBH and distance (from stump) classes with fixed bark deductions (double), based on German requirements
DBHClass-LowerLimit	NonNeg-Integer	Mm	Lower DBH limits per species group: Bark function based on DBH and distance (from stump) classes with fixed bark deductions (double), based on German requirements
DistanceClass-LowerLimit	NonNeg-Integer	cm	All lower class limits for distance from stump per species group. Used in GermanDistanceBased bark function. DistanceClassLowerLimit and DBHClassLowerLimit defines the the layout of the bark deduction matrix.
DBHClass-LowerLimit	NonNeg-Integer	Mm	All lower class limits for DBH per species group. Used in GermanDistanceBased bark function. DistanceClassLowerLimit and DBHClassLowerLimit defines the the layout of the bark deduction matrix.
German			Structure for German bark function parameters. Function based on <u>stem diameters</u> .

OTHER BARK UPDATES

It was also decided (suggestion by Komatsu) that the annotation for modificationRestricted in BarkFunction should be clarified in order to point out that Latitude must always be settable in the machine, especially in cases where it is automatically adjusted by harvester GPS receiver.

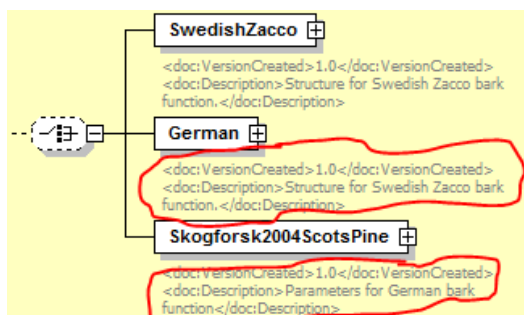


It was decided to modify annotation for modificationRestricted:

If attribute value is "true" then modification of the definition is restricted, if "false" then modification is allowed. Should not affect element Latitude used in function "Skogforsk 2004 Scots pine since it must be settable in the harvester"

It was decided that the annotation for Latitude is modified according to the following text: *Latitude used in bark function Should be set in machine since it is specific for a certain geographical area. Not to be restricted by modificationRestricted*.

It is also decided that that the annotations for element German and Skogforsk2004ScotsPine are switched since they have been mixed up as illustrated below:



§ 11 Stump treatment

Proposal by Ian Wilson, HVP Plantations 2013-10-01.

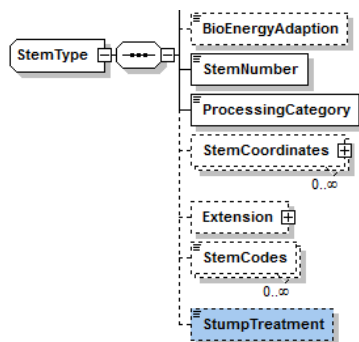
In Australia a fairly large resource of Short Rotation Hardwood Plantations (SRHP) are now harvested. One of the species that has been planted is Eucalypts globulus. Globulus coppices as a species after harvesting and this leads to large re-establishment costs.

They have ‘borrowed’ a Scandinavian idea/system of the root rot control method of applying Urea via the harvester head saw bar. In the Australian case, they are using the same harvester system but are applying a herbicide during the clearfell operation to prevent the stump from coppicing at a later stage

The question is, within the StanForD framework, are there any Variables/types to record that a tree had the stump treatment applied to it including GPS coordinates?

Re the “stump treatment” the feature would be a “must have” rather than a “nice to have” as how else would we know which area/stem was treated/not treated. Harvester contractors are paid a higher harvesting rate to be using this system, so A) would like to know if we are getting value for money, B) success is if the stump doesn’t coppice, so if it does, is this because (1) the area wasn’t actually treated or (2) it was treated but for some reason it still coppiced.

It was thus decided that (also discussed in spring 2013) that a Boolean element StumpTreatment is added per stem in the hpr-file:



The annotation of the new element should be:

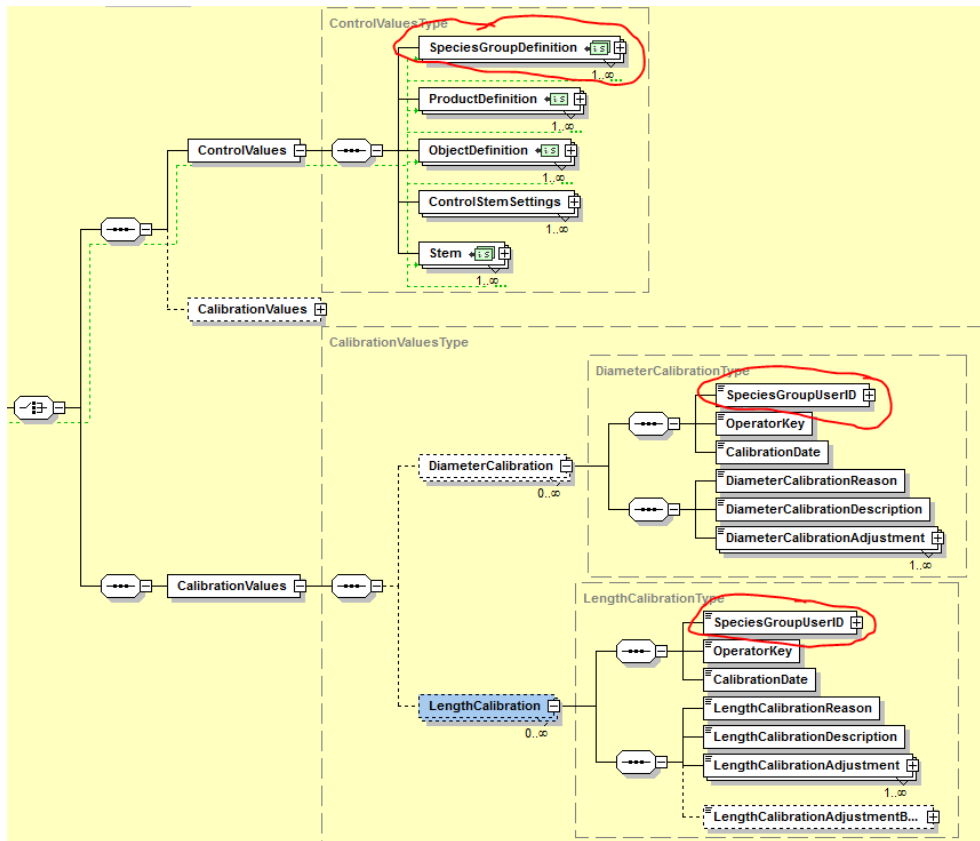
Element indicating if stump was treated with fungicide or herbicide during felling of tree.

Observe that several Swedish users (Södra skogsägarna and Sydved) have also expressed an interest in this information.

§ 12 Hqc with only calibration log

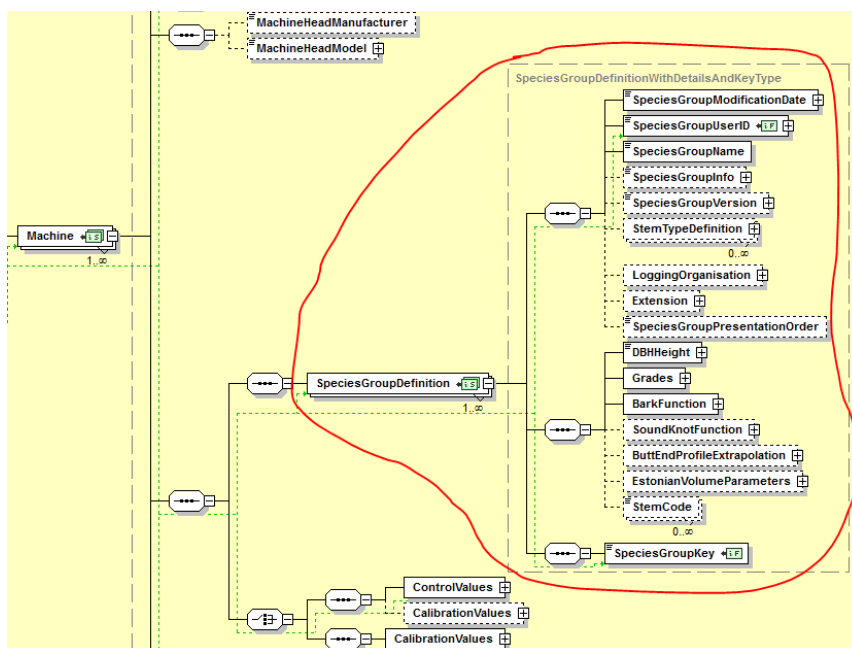
Proposal based on question from Lars Henriksson, 2013-10-15.

Element CalibrationValues does not include SpeciesDefinition as illustrated below:



This is problematic in case of using hqc for only registering calibration history since no **SpeciesGroupDefinition** will be included and no identity information per **SpeciesGroup** will be available.

It was therefore decided (suggestion from Juha-Antti Sorsa) that **SpeciesGroupDefinition** is moved upwards as illustrated below:



§ 13 Information about Skogforsk projects

QUALITY SYSTEM FOR WOOD VALUE (HARVESTER PRODUCTION)

Presentation of project status by Johan J Möller.

DEVELOPMENT OF CALIBRATION METHODS

Presentation of project status by Maria Nordström and Björn Hannrup.

§ 14 Implementation of StanForD2010

NEW SDC SENDER SOFTWARE AND

Lars presented the work on a new “SDC Sender” which will support both new and old standard as well as automatic transmission and information transmissions to the machines including instruction/feedback/errors.

SDC IMPLEMENTATION OF HPR AND OTHER MESSAGES IN SWEDEN

Sdc have tested hpr-reporting on 10 different harvesters since the spring of 2013. It seems like pri and hpr data does not differ significantly today.

SILVIA7 AND SDC TESTS (HOLMEN/SVEASKOG)

Skogforsk has tested to create new instructions using Silvia7 and then reporting using hpr to SDC. Some bugs and errors have been found and will hopefully soon be fixed.

HAGLÖF'S NEW DPII CALIPER

DPII currently sold for inventories and log measurements.



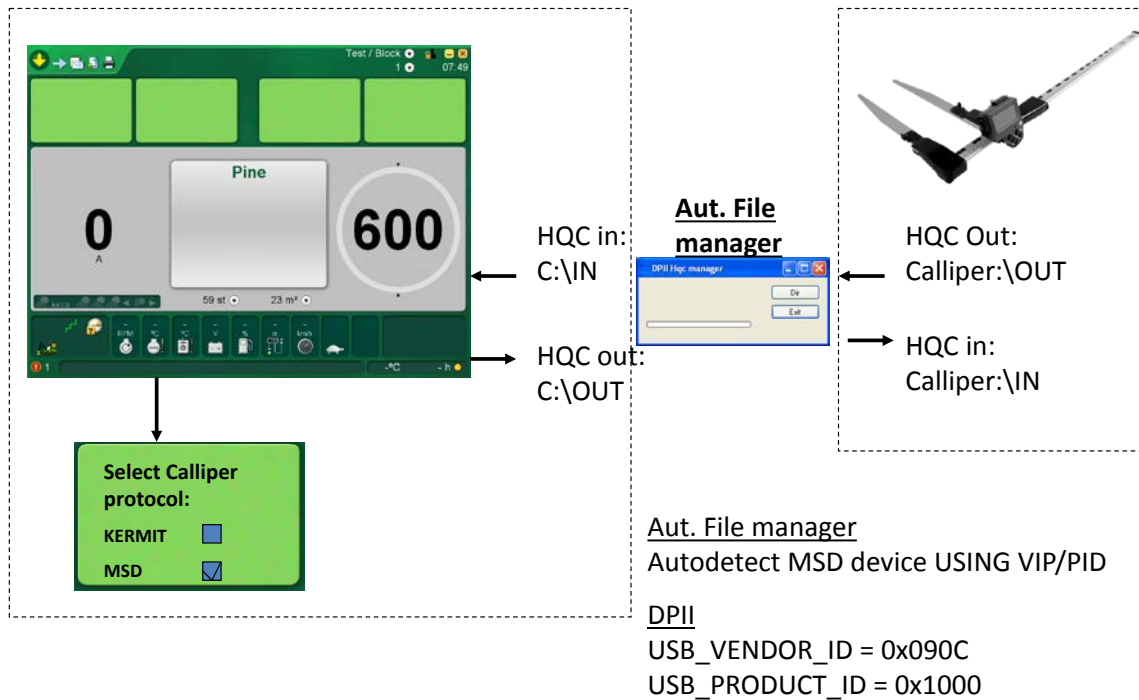
No bracket for harvesters is currently available (under development).

Primary support is for USB and Stanford2010. However the current version of Skalman6 ('classic' Stanford+kermit) and Skalman7(Stanford2010+Usb communication) is ready for new caliper.

No manufacturer supports usb communication yet. Discussions are going on.

Transmission of large hqc works very well in new DPII using it as a usb-memory (MSD, Mass Storage Device).

Harvester system stores hqc in specific folder. Separate app checking the folder continuously and copies file to available caliper. Haglöf has created such a transmission tool (monitoring software) which is illustrated by figure below:

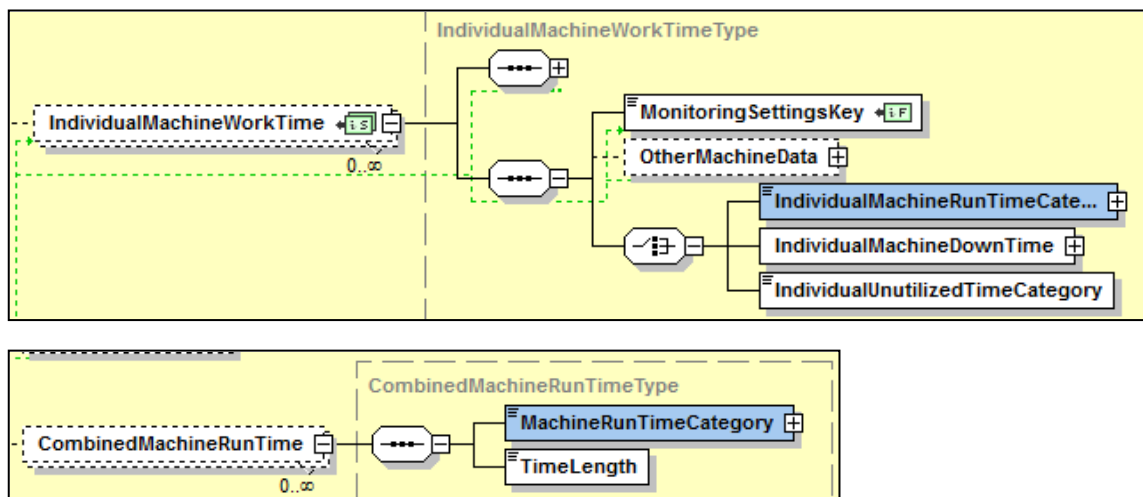


§ 17 Other issues

DUAL/HARWARDER AND MOM!

MachineRunTimeCategory today have the following enumerations:

- Processing
- Terrain travel
- Other



There is today no separate enumeration for "Loading/unloading". This might be of interest in case of mom-reporting from a harwerder or a dual/combi machine.

The meeting decided to postpone the issue to the next meeting.

ENVELOPE WITH MULTIPLE INSTRUCTIONS

Comments from Antti Korkiakoski, JD.

Is it possible to use envelopes so that the envelope contains both harvester and forwarder cutting instructions? I mean what if I put OIN, SPI and PIN files for harvester and then I also include FDI and FOI files for forwarder into same file, and then send the same ENV to both machines working on same site? Harvester would only use OIN, SPI and PIN and ignore the forwarder files, so no mix up with this.

No objections were raised at the meeting against using envelopes including both forwarder and harvester instructions.

TEST FILES

Comments from Antti Korkiakoski, JD.

One thing that might help all manufacturers would be if someone had a server (or ftp) where all the manufacturers could send their SF2010 files, and these files would be available for others also. This way we could test that our systems are compatible with other manufacturers' files.

Skogforsk will set up the StanForD extranet in order to make this kind of information exchange possible.

HQC-QUESTIONS

Some questions from Antti Korkiakoski, JD.

- With HarvestingQualityControl (HQC) file format it is possible to send an hqc file with multiple stems. It is also possible to send one or multiple hqc files to the caliper. Should these multiple hqc-files be sent back with one hqc file or multiple hqc files (as they were sent to the caliper)? In the case of "old" ktr-files there was always one ktr-file that was sent from caliper (and it could include several stm-files).
- Other question is for HQC file name? In the case where HQC file is sent from caliper should the file name be changed? E.g. 'M2' is added last in each filename?

Comments from Joakim Nygren, Haglöf

In my opinion, it is best to return the same file(s) that was sent to the calliper. Each hqc-file can include one or several stems.

I also believe that the filename should be modified, adding 'M2' or 'M3'.

Example illustrating naming hqc-files in caliper:

20131002085807.hqc	→	Calliper
20131002085814.hqc	→	Calliper
20131002085807M2.hqc	←	Calliper
20131002085814M2.hqc	←	Calliper
20131002085807M2.hqc	→	Calliper (audit control)
20131002085814M2.hqc	→	Calliper(audit control)
20131002085807M3.hqc	←	Calliper(audit control)

Joakim's comments above will be added to the introductory StanForD documentation (*StanForD 2010 Introduction YYMMDD.pdf*).

§18 Next meetings

2013-12-12, 09:00 CET StanForD phone meeting (discussing suggestions with minutes)

2014-02-06, 09:00 CET StanForD phone meeting (decide on 3.0 Release)

2014-04-09, 10:00 CET Regular StanForD meeting (1 day) in Uppsala

§ 19 End of meeting

Johan thanked everyone for their participation.

Tapio Räsänen
Metsäteho

2013-10-30

Proposal to StanForD 2010 version 3.0

New elements to fpr

Background

It has been proposed by WoodForce project to add new elements in fpr in order to give needed parameters from the forwarder for specifying the **weight class** and fresh density values (kg/m^3) of bioenergy assortments for conversions. The weight scale measured green mass (kg) of the assortment is converted to volume on bark (m^3), which is normally done in an information system of the forest company. The assortments in question include 1) energy wood from the thinnings (normally small-sized roundwood), 2) logging residues and 3) stump biomass. The conversion tables (example in appendix) for thinning wood (8 tables) and logging residues (2 tables) prepared by Metla are based on next parameters:

- Area (location of the logging site), 5 areas of Finland
- Energy wood category (thinned wood or logging residues)
- Tree species group: 1) coniferous wood, 2) birch or 3) other broadleaved wood
- Logging date (recommended to use start date of logging)
- Measuring date (recommended to use start date of forwarding, if wood is measured by weight scale)
 - drying time (days) on site is calculated based on the date info

These conversion parameters can be obtained from the present fpr information. However, if the logging of separate sub-objects is started on different times and there is a clear difference in drying period and time, it may be needed to specify logging date for each sub-object. This requires a change in standard by adding both StartDate and EndDate to SubObject level (see proposal # 2).

Linked to the issue there is also a need and a proposal from WoodForce that harvesting date (both StartDate and EndDate) should be possible to be sent to the forwarder from the forest company system. Harvester can send the actual harvesting dates to the forest company in hpr. This could be done in foi, but it requires a change to the standard by adding the dates on Object level (change element names to HarvestingStartDate and HarvestingEndDate or keep them as they are?) (see proposal # 3).

The moisture (%) of the wood has to be specified for selecting the weight class (pre-defined classes 1-7). The conversion tables are based also on the information if there is snow or ice within the wood. Existence of rain or melting water in the wood can be taken into account as well. This information cannot be given today in any elements or attributes of fpr. The idea is that snow/ice and water information (Yes/No) is given per Delivery and per Object/SubObject. It is not required per Load.

Converting the green mass of stump biomass to volume is done by specifying a fresh density value which is based on weight class and cleanliness (purity?) class of stump biomass. There is only one fresh density table for whole Finland and all tree species. Moisture-% and measuring date are parameters in specifying the fresh density. Cleanliness class describes the share of foreign objects (stones, sand etc.) in stump wood: class 1) < 5 %, 2) 5 – 10 %, 3) 10 – 15 %. The operator has to estimate the class visually.

The aim is that the operator of the forwarder feeds the needed conversion parameters in fpr, which is then sent to the forest company or contractor's planning system for further calculations. Parameters are normally given only once when the forwarding is finished in

the last sent fpr file. However, it must be possible to send the parameters in any fpr in cases when the weather conditions change or the forwarding period is long, for example. If the harvesting site is small and the conditions don't change during the forwarding, it might be reasonable to save the parameters when the work is started for the first time.

Conversion parameters can be the same for all bioenergy assortments or they can vary between the assortments. Default or previous values could be shown in the user interface for the operator and make the selection as simple as possible.

The weight class is normally not given by the forwarder, but it must be discussed if that would also be possible in the cases when all the necessary information is available in the forwarder and there is no back-end system for making the conversions. If that is the case, weight class should be added to parameter information as well.

In final calculations the conversion parameters are needed for each forwarded bioenergy assortment (Delivery). Because they are also related to the site (Object and SubObject) the element structure including the parameters must have a link to both Delivery and Object/SubObject.

These new elements should be added in fpr

Parameter	In Finnish	Description	Type	Name of the element or attribute
Snow / ice	Lumi / jää	Snow or ice exists (Yes / No)	boolean (true/false)	SnowIce attribute snowIce ?
Water	Sade- ja sulamisvesi	Rain or melting water exists (Yes / No)	boolean (true/false)	Water • attribute water?
Cleanliness class (PurityClass)	Puhtaus-luokka	Cleanliness / purity class of stump biomass (pre-defined classes 1–3)	positive-Integer	CleanlinessClass (PurityClass?)
Weight class	Painoluokka	Weight class of the assortment (pre-defined classes 1–7)	positive-Integer	WeightClass

Proposal # 1

Four alternatives for the location of the new parameter element structure in fpr schema are presented for making a decision about the issue:

- 1) Adding elements straight to DeliveryDefinition
- 2) New DeliveryConversionInformation under DeliveryDefinition
- 3) New ObjectDeliveryInformation under Object and SubObject
- 4) Parameters in User defined data
- 5) Adding elements to ForwardingStatus or defining a similar structure

Alternative 1: Adding elements straight to DeliveryDefinition

New elements SnowIce, Water, CleanlinessClass and WeightClass could be added straight under DeliveryDefinition as optional just like we have Density now In StanForD 2010 v.

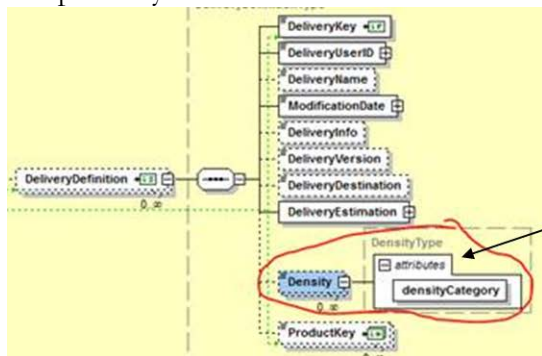
2.1. Elements are then specified per Delivery and each Delivery can be connected to Products and SpeciesGroups. Effects of this alternative:

- Density and densityCategory are kept as they are in the structure.
- DeliveryDefinition changes every time the parameter information is updated. ModificationDate and DeliveryKey are changed.
- There is no link between Delivery and Object. The link is only in Load / PartialLoad via DeliveryKey.

- There can be several Objects in one fpr or several SubObjects under one Object. The parameter values can be different for them or they can be left out if not needed at all for some of the objects. This causes that DeliveryDefinition is different for the wood forwarded from the separate Objects, even if is transported to the same pile. Any problems with the conversions?

Alternative 2: New DeliveryConversionInformation under DeliveryDefinition

DeliveryDefinition / Density could be replaced with a new element structure DeliveryConversionInformation (or DensityInformation?) including existing Density and the new optional, non-repeatable parameters which could either all be defined as elements or optionally SnowIce and Water could be defined as attributes and the rest as elements.



DeliveryConversion- Information	Density, densityCategory
	SnowIce
	Water
	CleanlinessClass
	WeightClass

Effects of this alternative:

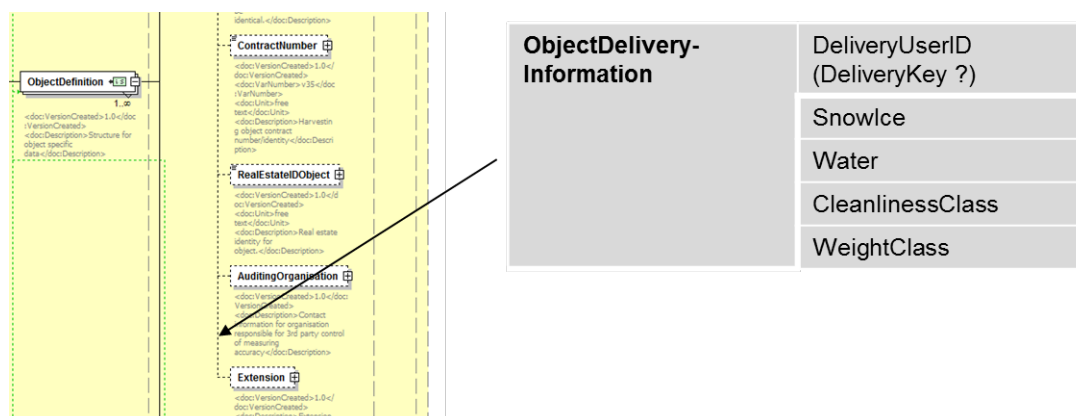
- DeliveryDefinition changes every time the parameter information is saved. ModificationDate and DeliveryKey are changed.
- There is no link between Delivery and Object. The link is only in Load / PartialLoad via DeliveryKey.
- There can be several Objects in one fpr or several SubObjects under one Object. The parameter values can be different for them or they can be left out if not needed at all for some of the objects. This causes that DeliveryDefinition is different for the wood forwarded from the separate Objects, even if is transported to the same pile. Any problems with the conversions?

Alternative 3: New ObjectDeliveryInformation under Object and SubObject

A new element / attribute structure ObjectDeliveryInformation (the name can be something else) could be added under both Object and SubObject. The content of the structure would be:

- DeliveryUserID
- DeliveryKey ? any problems if there are several DeliveryKeys per DeliveryUserID?
- SnowIce either attribute or element
- Water either attribute or element
- CleanlinessClass (PurityClass) element
- WeightClass if needed, element

Other parameters of Deliveries per Object/SubObject can be added later if needed.



Load or PartialLoad do not have ObjectKey, so it is not possible to connect the parameters on load level, but that was not the original idea. In Location there are ObjectKey and SubObjectKey, so it is possible to link the conversion parameters to the wood pile.

Alternative 4: Parameters in User defined data

One alternative would be to use UserDefinedData for the feeding of conversion parameter info. Regarding the needs of different markets and the possible changes in the set of parameters and the enumerations of the classes this might be a flexible solution.

UserDefinedData cannot be included per Delivery (only Object or Location) in the present version of the standard. It would require adding new enumeration e.g. ProductionDelivery to attribute outputDataLocation of DataTableGroupDefinition in

UserDefinedDataInstruction. This solution requires that UserDefinedDataInstruction is sent from the forest company. Whether it is done only when the content of the file is changed or per each forwarding object together with foi must be discussed. From the point of view of the operator this solution might be not very convenient, especially if there are other user defined data which must be managed either connected to the start or end of the site.

Example:

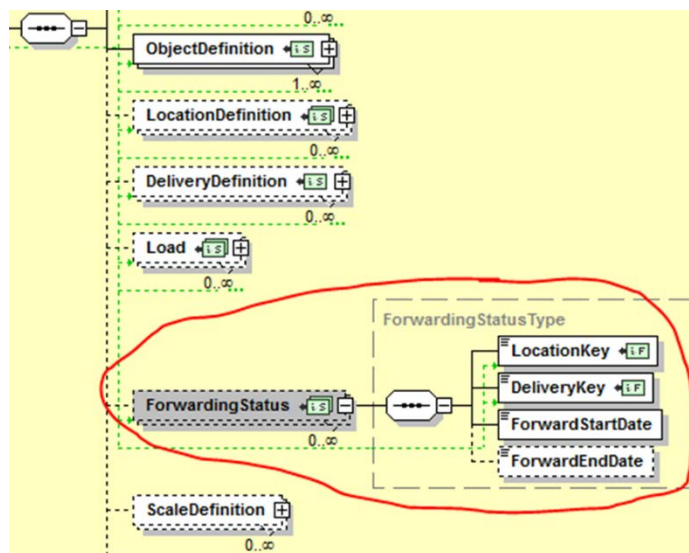
The screenshot shows the **DEMO - UserDefinedData** application window. It has a menu bar with **Open instruction**, **Open user data output**, **Select instructions**, and **Copy table**. Below the menu bar, there is a section titled **Follow-up forest fuel forwarding (ProductionObject)**. Under this section, there is a sub-section titled **Forest fuel, weight parameters**. This sub-section contains a table with the following columns: **OperatorKey / Date**, **Question**, **Answer**, and **Comment**.

OperatorKey / Date	Question	Answer	Comment
3 / 2013-08-27T15:58:18.331+0	Snow or ice exist?	No	
3 / 2013-08-27T15:58:20.291+0	Rain water exist?	Yes	
	Cleanliness (purity) of stumps?	Select an item	
	Weight class?	Class 1 (less than 5%) Class 2 (5-10%) Class 3 (10-15%)	

Alternative 5: Adding elements to ForwardingStatus or defining a similar structure

ForwardingStatus has a reference to both Delivery and Location and thus via Location to Object/SubObject. The new conversion parameter elements could be added to the present structure as optional. ForwardingStatus may be registered and sent more frequently for the work follow-up purposes than there is a need to register the conversion parameters, but

that is not probably a problem if we use optional elements. However, if there is any conflict with use of the elements inside the structure or if ForwardingStatus is not descriptive enough as an element name, it is possible to define a totally new but similar kind of structure for the conversion parameters.



Proposal # 2

To add StartDate and EndDate to SubObject as optional in hpr and fpr. Sending the dates first in hpr to the forest company or to contractor makes it possible to add the harvesting dates next to foi and send them to the forwarder (proposal # 3). Dates sent again in fpr can be used for calculating the drying time on site based on the forwarder reporting only. Because saving actual harvesting date (HarvestDate) on stem level in hpr is a sensitive question in some countries that cannot be used as a common solution. Precision on a day level is often enough for the conversions.

Proposal # 3

To add StartDate and EndDate to ObjectDefinition and SubObject in foi as optional. The need is to send actual harvesting dates from the forest company to the forwarder. It may be needed to discuss if planned and actual harvesting dates should be distinguished somehow, e.g by adding an attribute that describes if the date is either 'Planned' or 'Actual'.

Appendix

Taulukko 1. Harvennusenergiapuun tuoretiheysluvut havupuilla Etelä-Suomessa ja Pohjanmaalla.

Painoluokat	Kosteus %	Ajankohta				Tuoretiheys kg/m ³
		1.4. - 30.4.	1.5. - 15.8.	16.8. - 30.9.	1.10. - 31.3.	
1	> 60	Tuore, jossa lunta tai jäätä				1000
2	55-60	Tuore, 30 vrk ↓	Tuore, 10 vrk ↓	Tuore, 30 vrk ↓	Tuore	930
3	50-54	≥ 30 vrk	⇒ 20 vrk ↓	≥ 30 vrk	≥ 30 vrk	830
4	45-49	-	25 vrk ↓	30 vrk ↑	30 vrk ↑	750
5	40-44	-	30 vrk ↓	30 vrk ↑	30 vrk ↑	680
6	< 40	-	≥ 85 vrk	30 vrk ↑	-	600

Weight class

Moisture

Drying period

Drying time

Fresh density

Taulukko. Kantopuun tuoretiheysluvut. Kosteusprosenttia käytetään, jos se on tunnettu.

Tavaralaji	Painoluokka	Kosteus	Aikaväli	Tuoretiheys, kg/m ³		
				Puhtausluokka 1	Puhtausluokka 2	Puhtausluokka 3
Kantopuu	1	> 50	koko vuosi	890	940	980
	2	40-50	1.5.-30.9.	810	850	890
	3	30-40	1.5.-31.7.	690	720	750
	4	20-30	1.5.-31.7.	600	620	650

density

Weight class

Moisture

Drying period

Cleanliness class

Fresh

Painoluokkien määrittelyt:

Painoluokka 1: Muuntolukua käytetään nostotuoreen kantopuun mittauksessa ympärivuoden ja silloin, kun kosteus muutoin sitä edellyttää.

Painoluokka 2: Muuntolukua käytetään elo-syyskuussa yli neljä viikkoa ja touko-heinäkuussa 2-4 viikkoa kuivuneen kantopuun mittaukseen ja silloin, kun mittauskerän kosteus on kyseisessä luokassa.

Painoluokka 3: Muuntolukua käytetään touko-heinäkuussa yli neljä viikkoa kuivuneen kantopuun mittaukseen ja silloin, kun mittauskerän kosteus on kyseisessä luokassa.

Painoluokka 4: Muuntolukua käytetään touko-heinäkuussa yli kahdeksan viikkoa kuivuneen kantopuun mittaukseen ja silloin, kun mittauskerän kosteus on kyseisessä luokassa.

Puhtausluokkien määrittelyt:

Puhtausluokka 1: Puhdas, vierasaineiden osuus alle 5 % mittauskerän massasta. Ei silminhavaittavaa epäpuhtautta tai kiviä. Tyypillisesti hakkuu on tehty jo edellisen kantopuun korjuukauden aikana.

Puhtausluokka 2: Hieman epäpuhtauksia, vierasaineiden osuus 5-10 % mittauskerän massasta. Luokka edustaa keskimääräistä, kantopuun korjuulle tyypillistä puhtautta.

Puhtausluokka 3: Runsaasti epäpuhtauksia, vierasaineiden osuus 10-15 % mittauskerän massasta. Tyypillisesti hienojakoisilta maatyypeiltä (savikot) nostetut kannot ja silloin, kun kannot nostetaan ja punnitaan pian hakkuun jälkeen.

StanForD implementation recommendations

This document describes some implementation recommendations and requirements based on some analyses done during the spring of 2013.

Part of these recommendations will be included in StanForD2010 documents and annotations.

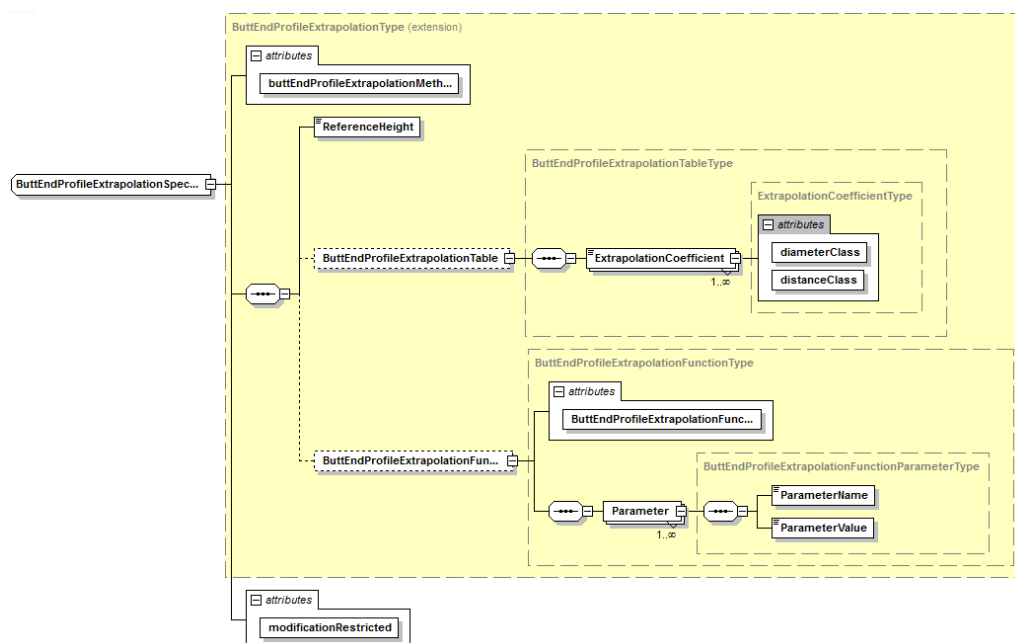
Spp-file and butt end extrapolations

It has been noted during analyses of ktr-files from Sveaskog and Södra that several manufacturers by default are not using the standardized functions included in spp-files. It was strongly recommended by a meeting with representatives from several Swedish forest companies (Brukargrupp virkesvärde) that all harvesters are to use the spp-functions by default instead of manufacturer specific functions. Basically the Swedish requirements are identical with the Finnish requirements that spp should always be used. Observe that the spp-file also must be sent to Haglöf's Digitech in order to get all spp-variables registered correctly in the ktr-file.

The group of Swedish company representatives also agreed on the need to always use the new bark functions (Skogforsk 2004). However this is primarily not a question for the manufacturers but for those responsible for creating apt- and spi-files.

Spi-files and butt end extrapolations

The butt end extrapolation can be defined in two separate ways in both the old spp-file and the new spi-file, either the parameters of the functions or a table can be registered in the file (illustrated below). Some manufacturers require the parameters while some other manufacturers require the table.



Attribute buttEndProfileExtrapolationMethod in the spi-file includes the following enumeration list:

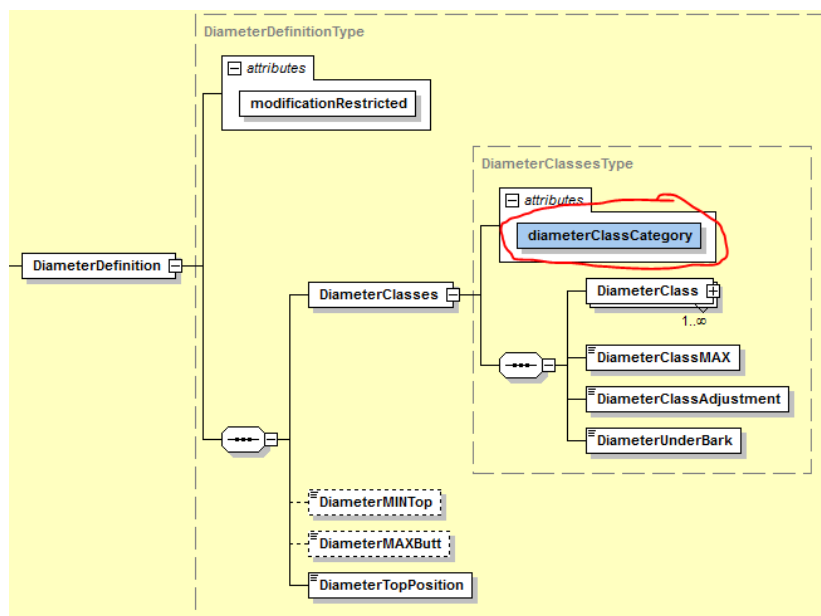
- ExtrapolationFunction (only element ButtEndProfileExtrapolationFunction is used)
- ExtrapolationTable (only element ButtEndProfileExtrapolationTable is used)
- Both (both ButtEndProfileExtrapolationFunction and ButtEndProfileExtrapolationTable are used)

Since different manufacturers use different methods it is strongly recommended that all spi-files sent out to harvesters include both methods. This means that attribute buttEndProfileExtrapolationMethod must have the value “Both”. It is also required that all harvesters support the value “Both”.

Norwegian mid measured volume

Skogforsk has further studied how to use the Norwegian mid measured volume based on questions from Anders Nylund (Komatsu).

It was discovered that the classification of these logs are based on the top diameter rather than the estimated mid diameter. The same is true also for the Estonian mid measured volume. This means that only two values are needed for the attribute diameterClassCategory (Top and Midpoint). It will therefore be suggested at the next meeting that the values “Calculated Norwegian mid” and “Calculated Estonian mid” are both excluded from diameterClassCategory.



The following table, including updates regarding the Norwegian mid measured volume in red text, is copied from “StanForD2010 introduction.docx”:

Table 5. Examples of how to use the new elements based on the present price volume types

Name	Description	Swe sub	Swe to	Fin ¹ sob	Nor ² mid	Ger mid	Ger top	Dan mid	Est mid	Fra sub
Old codes (var161_t1)		2	1	130	4	7	6	136	12	2
Country code (var6_t1)		752	752	246	578	276	276	208	233	250
<u>DiamClassCategory</u> Diameters in DiamClasses (price matrix)	1 = Top, 2 = Midpoint 3 = Calculated Norwegian mid 4 = Calculated Estonian mid	1	1	1	1	2	1	2	1	1
<u>DiamClassAdjust</u>	1= diameter class smaller or equal to log diameter 2= closest diameter class, normal rounding	1	1	1	1	1	1	1	1	1
<u>DiameterUnderBark</u> Diameter classes under bark.	True/false	True	True	False	True	True	True	False	True	True
<u>DiameterTopPosition</u> Position from top end of log where top diameter is measured.	Cm	10	10	0	10	0	0	0	0	0
<u>LengthClassAdjust</u>	1= length class smaller or equal to log length 2=closest length class, normal rounding	1	1	1	1	1	1	1	1	1
<u>VolumeDiamAdjust</u> Diameters in log price volume calculation	1=Measured diameter 2=Measured diameter rounded down to cm,	1	1	1	2	2	2	1	1	1
<u>VolumeDiamCategory</u> Diameters used in price volume calculation:	1 = Solid volume 2 = Top 3 = Mid 4 = Calculated Norwegian mid 5 = Calculated Estonian mid	1	2	1	4	3	3	3	5	1

Name	Description	Swe sub	Swe to	Fin ¹ sob	Nor ² mid	Ger mid	Ger top	Dan mid	Est mid	Fra sub
Old codes (var161_t1) Country code (var6_t1)		2 752	1 752	130 246	4 578	7 276	6 276	136 208	12 233	2 250
<u>VolumeLengthCategory</u> Lengths used in price volume calculation:	1 = Physical length 2 = Length as defined in LengthClasses 3 = Rounded downwards to nearest dm-module 4 = Rounded to nearest mid-dm	1	2	1	3	2	2	1	1	1
<u>VolumeUnderBark</u> Price volume under bark.	True/false	True	True	False	True	True	True	False	True	True
<u>volumeDiameter-TopPosition</u> Position from top end of log where top diameter for volume calculation is measured.	Cm	10	10	0	10	0	0	0	0	0
<u>BarkFunctionCategory</u>	1=None 2=Swedish Zacco 3=German 4=Skogforsk 2004, Scots pine 5=Skogforsk 2004, Norway spruce	2/4/5	2/4/5	1	2/4/5	3	3	1	2/4/5	2/4/5

3. Same in Denmark

4. Primarily used for normal saw logs. Volume is calculated based on a cylinder with a theoretical diameter on the middle of the log (M).

Length: Length (L) is the total actual length in decimetres. If L is in centimetres it is truncated into decimetres (class bottom).

Diameter: By definition a diameter class is 1 cm (independent of the actual price matrix). Registered diameter (Dt) is measured 10 cm from top. If Dt is in millimetres it is truncated into centimetres (class bottom). To get the diameter on the middle of the log (Dmid) you use the formula: $Dmid = Dt + (L/2 * 0.1) + 0.5$

Example: L = 518 cm, Dt = 223 mm

$Dmid = 22 + (51/2 * 0.1) + 0.5 = 25.05$ cm

Volume: Volume is calculated in dm³.

PI = 3.14

$V = ((Dmid/10) * (Dmid/10)) * PI/4 * L = ((25.05/10) * (25.05/10)) * PI/4 * 51 = 251$ dm³