



John Arlinger

23 November 2017

Minutes StanForD2010

2017-11-22

Place:	Skogforsk, Uppsala, 2017-04-22
Participants:	Lars Henriksson, SDC Tapio Räsänen, Metsäteho Timo Melkas, Metsäteho Antti Korkiakoski, JohnDeere Erik Kindlund, JohnDeere Teemu Paldanius, Ponsse Jonas Gustafsson, Sveaskog Jonas Thorsson, Dasa Uli Dietz, Kwf Henrik Persson, LogMax Andreas Barth, CGI Bengt Sörvik, Otmeka John Arlinger, Secretary Johan J. Möller, Chairman
Skype participants:	Fredrik Tjernberg, Komatsu Niclas Eriksson, Komatsu Pasi Palonen, Parker Jean Plamondon, FP Innovation Ian Wilson, Interpine Juha Yli-Hemminiki, Exertus Jouni Kytövaara, Logset

Decision summary:

- Decision (2017-04-25—26) to update the definition of attribute diameterPosition in the hqc message:
Control position for diameter measuring from butt end of log. Used for log diameter vector (element ControlLogDiameter). The value must be the same for all

~~logMeasurementcategory (Machine, Auditor, Operator).~~ Element is used to connect diameter values measured by Machine, Auditor and Operator

- New EnvelopeTransmissionAcknowledgement schema to be included in StanForD version 3.4.
- Coordinates to be registered with 7 decimals since 5 decimals gives too low precision. New description: *Longitude/Longitude, absolute value. Preferably 7 decimals to be registered. Registered according to coordinateReferenceSystem and receiverPosition.*
- New logistic type bark function to be included.
- Coordinates for downtimes in mom files added.
- Extension element added to CoordinateType.
- Optional attribute countryCodeCategory added to element CountryCode.
- New elements TrackingKey, ObjectKey and SubObjectkey added to Tracking structure. Aggregated reporting of coordinates in Tracking should be avoided.
- SubObjectKey element added to PartialLoad in fpr file in order to make it possible to analyse forwarded volumes per SubObject.
- Rule 2.3 is updated with a comment pointing out that the schemas are case sensitive and that assuming “non-case sensitive” probably will cause problems in some systems.

Action list:

- The possibility of changing the products during harvesting using an oin will be a requirement on the Swedish market. Updating oin should only affect product references (ProductUserID). It is NOT to be used for changing identities or sub-objects!
- It is strongly recommended that the control system does not automatically activate a modified pin if it is not activated 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 SDC).
- Implementation of ProductClass will be important on the Swedish market.
- Coordinates in production files should always be activated by default in all forest machines (especially important after software updates).

- Update GUI based on new Finnish and Swedish nomenclature list. Update Swedish list of LoggingForms according to Swedish recommendation.
- Increase number of coordinate decimals to a minimum of 7 decimals.
- Make it possible to register SubObjectKey per PartialLoad in fpr-file.
- No crash in forwarder control system if no product is included per Delivery in fdi-file.
- Must be simple to control and update BarkLatitude in harvester.
- No machine setting shall be needed in order to use ButtEndExtrapolation if included in spi-file. Spp-function shall be used by default for ButtEndExtrapolation in Sweden.
- Machine applications must not crash if oin references products that are not available in harvester. Manual start of object must be possible in this situation.
- It is recommended that TextToMachine (ObjectDef), ProductDescription (ProductDef) and DeliveryDescription (DeliveryDef) are all implemented in the forest machines so that the operator can easily read this information when taking a new/modified Object, Product, Delivery into use. It is also suggested that these elements are implemented in administrative software's like e.g. ForesterOffice or Silvia7.
- Add LoggingForm codes and text in Swedish according to §5.

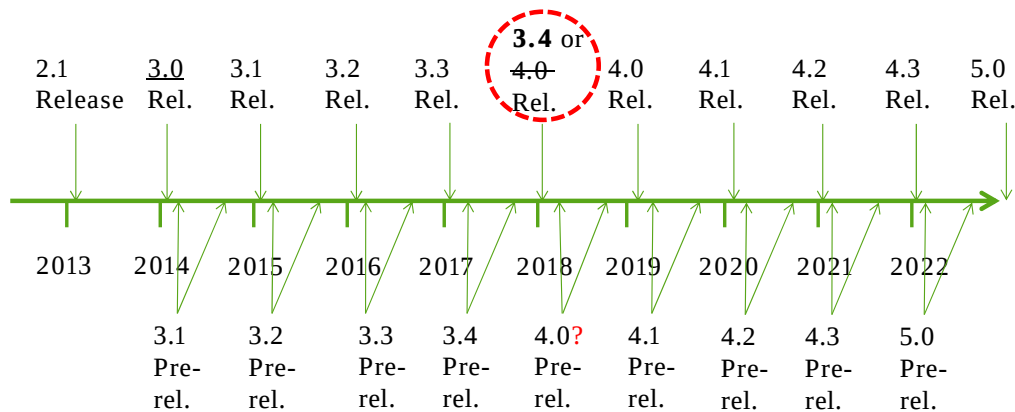
§ 1 Opening of meeting

Chairman Johan J Möller opened the meeting.

§ 2 Agenda

The agenda was accepted by the meeting without any additional issues added.

Secretary John Arlinger went through the road map for implementing new standard versions.



The decision from the meeting in April to continue with major version 3 was confirmed. The next version will thus be 3.4.

§3 Information about decisions at previous meetings

The decisions made at the previous meeting (2016-04-23) was presented as well as the action list compiled after that meeting.

- No urgent need for new major version 4.
- New draft schema for envelope transmission acknowledgement to be created.
- New structure for forwarding crane cycles to be created.
- Update the definition of attribute diameterPosition (added 2011-10-09) in the hqc message:
 - Control position for diameter measuring from butt end of log. Used for log diameter vector (element ControlLogDiameter). The value must be the same for all logMeasurementcategory (Machine, Auditor, Operator). Element is used to connect diameter values measured by Machine, Auditor and Operator
- Compile examples describing how diameterPosition is to be used in different situations. Postponed to 4.0:
 - Data type for LogLength (float or mm), mm is riskier than float
 - modificationRestricted for StemCodes and EstonianVolumeParameters in SPI

§ 4. Proposals

NEW FORWARDER PRODUCTION DATA MESSAGE

It was decided that the proposed (appendix 1) new structure for a more detailed registration of forwarder data is to be postponed indefinitely.

The proposal was to include this data in both mom and fpr. The main reason for postponing the proposal being that it was not clear whether this is to be considered to be production data vs operational monitoring data. The proposed structure was probably more detailed than needed from a logistical point of view.

The secretary might study the possibility of further developing the fpr-structure in order to register more detailed production data.

NEW ENVELOPTRANSMISSIONACKNOWLEDGEMENT MESSAGE

The proposal was based on suggestions and comments from Henrik Bengtsson, SDC, 2017-02-02.

It is possible for SDC using SenderXC (3rd party communication application developed by SDC) to send out StanForD messages (e.g. pin, spi, oin) to a forest machine. In order make it possible for a forest company to address and packet several messages together the StanForD envelope is used for communication between forest company and SDC as illustrated in figure 1.

StanForD2010EnvelopeHeader				
TransmissionInfo (2)				
1	TransmissionID	2016-10-12T08:48:10.181+02:00	Forest Ltd	sdcgpx9320
	agency	Other		
	Abc Text	Forest_4211213		
2	TransmissionID	2016-10-12T08:48:10.181+02:00	Forest Ltd	sdcgpx8921
	agency	Other		
	Abc Text	Forest_4211214		
BusinessSender				
	FirstName	Anders		
	LastName	Andersson		
	Address			
	Email	Anders.Andersson@forest.com		
	BusinessName	Forest Ltd		
	BusinessID	13451398		
StanForD2010Message				
	messageCategory	pin		
	MessageDocument			
	EmbeddedDocument	encodingMethod=None		
	DocumentName	Forest_GT_594280.pin		

Figure 1. Example of envelope including one pin sent from a forest company to SDC. Element TransmissionReceiver tells SDC the identity of the forest machine that is to receive the pin-file. TransmissionReceiver is repeatable which means that the envelope can be used to address a large number of different machines.

SDC has a need for acknowledging the transmission of an envelope to a transmission receiver (forest machine). A new message EnvelopTransmissionAcknowledgement has therefore been suggested (2017-04-25). The objective is to make it possible to send this information to a forest company that uses SDC for forwarding the content of an envelope to a forest

machine. The red arrow in figure 2 illustrates the use of this new suggested message.

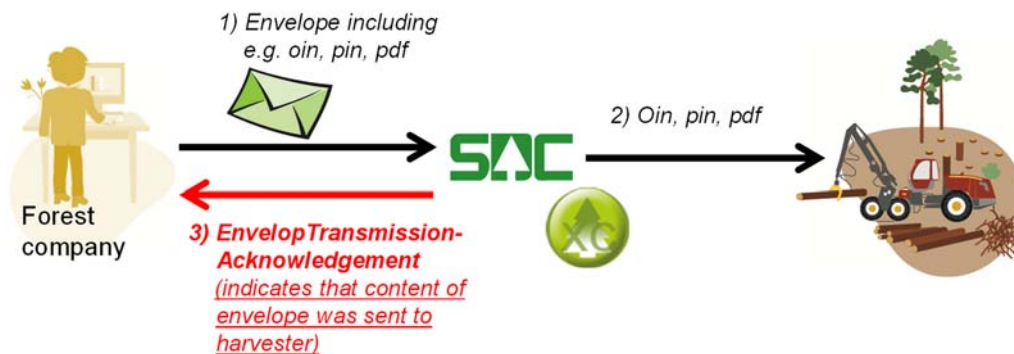


Figure 2. Communication between forest company, SDC and machine when sending a StanForD message to the machine.

The acknowledgement is thus to be created by the application sending the content of an envelope to machine, it is not created by the receiving forest machine. Thus the message is primarily used for third party applications responsible for sending data to forest machine. The message indicates that an envelope was sent, and it is not used for indicating if the content was actually taken into use or not.

Figure 3 below illustrates the structure of this new message and table 1 the descriptions of all elements.

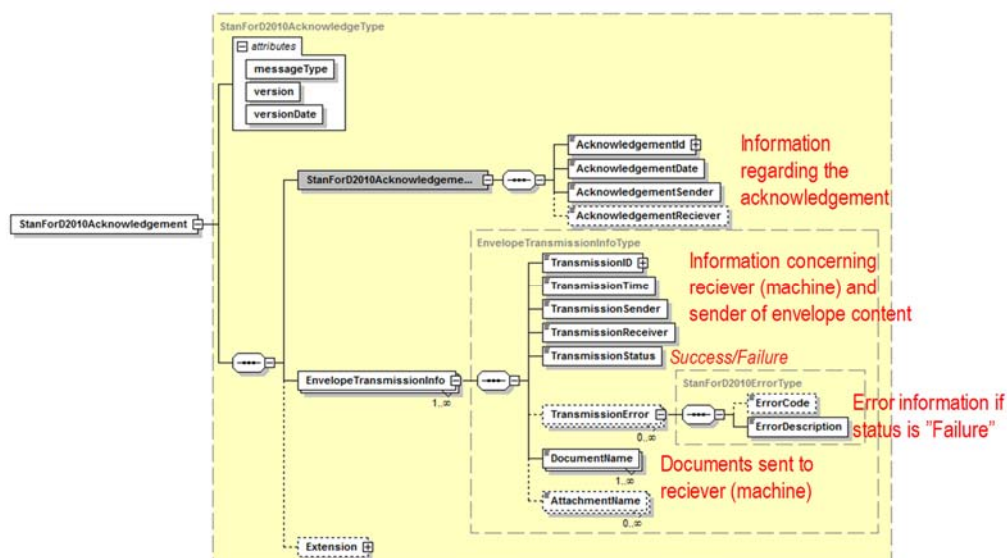


Figure 3. Structure of EnvelopTransmissionAcknowledgement

Table 1. Elements in EnvelopTransmissionAcknowledgement

Name	Datatype	Unit	Description
<u>StanForD2010-AcknowledgementHeader</u>			
AcknowledgementId	String	free text	Acknowledgement identity, set by the organisation sending the acknowledgement.
AcknowledgementDate		yyyy-mm-ddThh:mm:ss[+ -]hh:mm	Date and time when acknowledgement is created. Time stamp must have the following times registered: local time ±offset from UTC
AcknowledgementSender	String	free text	AcknowledgementSender is transmission application that recieved StanForD envelope.
AcknowledgementReciever	String	free text	Acknowledgement Reciever is application recieving acknowledgmt.
<u>EnvelopeTransmissionInfo</u>			
TransmissionID	String	free text	Unique identifier that can be used in registering and following envelope transmissions.
TransmissionTime		yyyy-mm-ddThh:mm:ss[+ -]hh:mm	Transmission time registered in sender
TransmissionSender	String	free text	TransmissionSender could be business sender but the value of this element could be also: transmission application or machine that is sending the message, the representative c
TransmissionReceiver	String	free text	TransmissionReceiver could be business receiver but the value of this element could be also: transmsion application or machine that is receiving the message, the representative company of the business sender.
TransmissionStatus	String	list	Attribute tells us the status of the acknowledgement. Enumeration list of status of StanForD 2010 acknowledge: Allowed values are: "Success", "Failure".
DocumentName	String	free text	The names of original StanForD2010 messages included in envelope.
AttachmentName	String	free text	The names of attachment files included in envelope.
<u>TransmissionError</u>			If the status is set to "Failure" then it is possible to store the corresponding errors here
ErrorCode	String	Code	Code for the error
ErrorDescription	String	free text	Description of error

StanForD2010AcknowledgementHeader							
AcknowledgementId agency=MachineOwner							
AcknowledgementDate		2016-10-12T08:59:11.353+02:00					
AcknowledgementSender		SDC					
AcknowledgementReceiver		Forest Ltd					
EnvelopeTransmissionInfo (3)							
TransmissionID	Transmission...	Transmission5...	TransmissionR...	TransmissionStatus	TransmissionError	DocumentName	AttachmentName
1	TransmissionID agency=Other	2016-10-12T08:59:11 Forest Ltd	sdcpw8920	Success		Forest_GT_594280.pin	
2	TransmissionID agency=Other	2016-10-12T08:59:11 Forest Ltd	sdcpw8921	Success		Forest_GT_594280.pin	xxxx434.pdf
3	TransmissionID agency=Other	2016-10-12T08:59:11 Forest Ltd	sdcpw8929	Failure	TransmissionError ErrorCode: 784824 ErrorDescription: No broadband connection with machine	Forest_GT_594280.pin	xxxx434.pdf

Figure 4. Illustration of acknowledgement sent after successful transmission of a pin-file to two separate machines. Message sent from SDC to forest company.

No major objections were raised at the meeting.

It was decided to add a new schema for EnvelopeTransmissionAcknowledgement to StanForD2010 from version 3.4. To be used by transmission softwares and NOT by machine control systems in order to verify use of instructions in machine.

CASE SENSITIVE USERIDS IN SCHEMAS

Teemu Paldanius, Ponsse, 21 august 2017

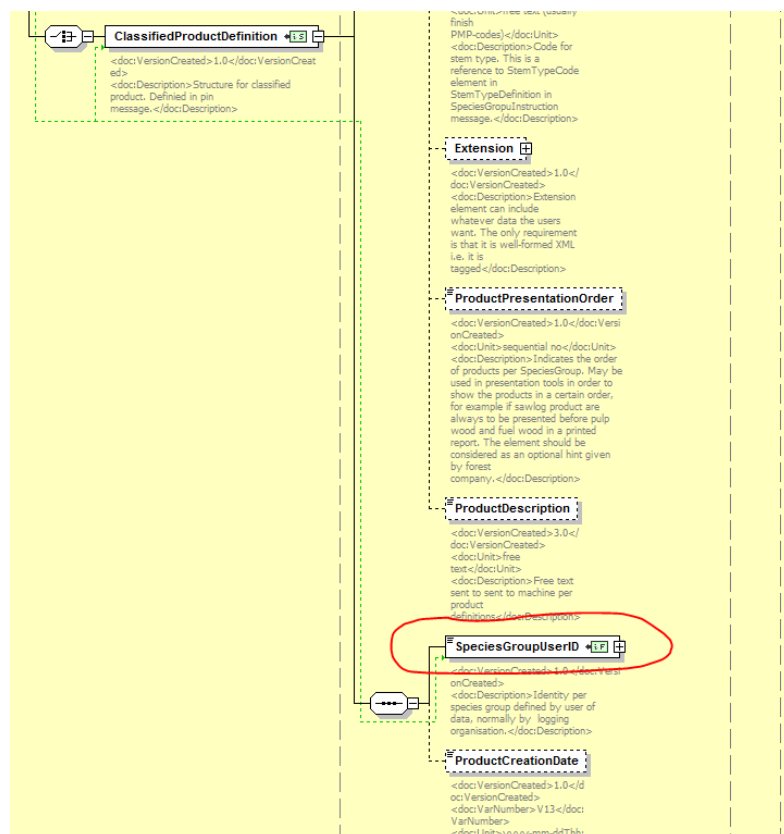
We have a rule (R2.3) that says that UserId's must not be case sensitive.

All UserIds and the MachineKey are to be considered "non case sensitive".

This means that for example the following ProductUserIDs are considered to be identical "PulpLogs" and "pulplogs".

However it seems that the FDI schema itself is case sensitive when referring products to species according SpeciesGroupUserID. This seems to be a real problem in some cases. Do you think this is a mistake in some constraint of schema or should we instead refer according SpeciesGroupKey as it is done at least in most cases in other message structures?

We have not investigated that issue much, but this is our understanding now when we have had some validation errors.



Comment from Juha-Antti Sorsa, 2017-08-24

Everything in XML is case sensitive, both markup (syntax) and text (content), therefore “pine” and “PINE” are different things. So if we want to use constraints (unique, key/keyref) in schemas we can’t obey Rule 2.3. If we instead follow that rule then we have to take away those constraints from schemas and implement necessary checks by ourselves. My opinion is that taking away those constraints is bad thing.

It was discussed whether to update rule 2.3 according to the following text:

All UserIDs and the MachineKey are to be considered “~~non~~-case sensitive”.

This means that for example the following ProductUserIDs are **NOT** considered to be identical “PulpLogs” and “pulplogs”.

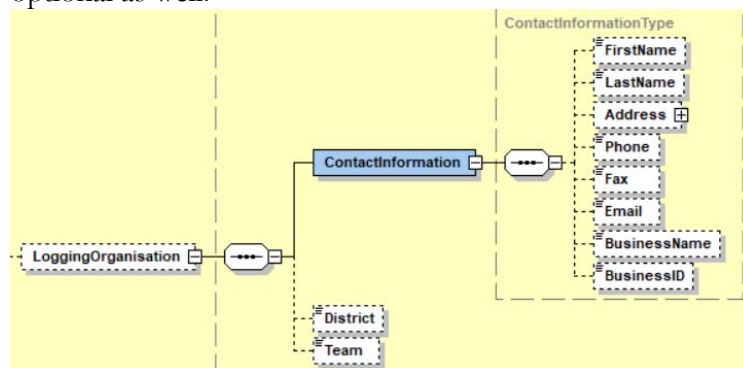
It was decided, after a long discussion, to not make any changes to the standard at all. Some machine softwares are built in order to follow rule 2.3. However, many systems and databases are most certainly “case sensitive”. This issue should be considered in when updating to version 4.0.

It was decided with the minutes that rule 2.3 is updated with a comment pointing out that the schemas are case sensitive and that assuming “non-case sensitive” probably will cause problems in some systems.

LOGGINGORGANISATION IN OIN

Paldanius Teemu, 2017-08-21

LoggingOrganisation in OIN message is now optional. Under the LoggingOrganisation element there is mandatory ContactInformation. If we add either “District” or “Team” we must add “ContactInformation” also. At least in our system we try to avoid empty elements so in this case our message is not valid if we don’t add ContactInformation content also. We can solve this somehow, but more logical in my point of view would be that ContactInformation here is optional as well.



Comment from Juha-Antti Sorsa, 2017-08-21

I agree that this is a problem and that it can be solved by making ContactInformation structure optional. It’s pity that there is no way to say in schema that if there is an optional element structure (in this case LoggingOrganisation) in message then there has to be at least one element inside

the structure. When we make ContactInformation optional it's possible to have empty LoggingOrganisation element and message is valid.

It was decided that ContactInformation is to be made optional in LoggingOrganisation with version 4.0.

COORDINATE PRECISION (NO OF DECIMALS)

Tapio Räsänen, 2017-09-08

It has been found that harvester coordinates are in many cases saved with the accuracy of five decimals of the degrees, which seems to be based on the old definition as illustrated below.

522	COORDSTART	1	long integer	0.00001 degrees	Latitude, absolute value, primarily used as reference point in case coordinates in var523, var266, var446 and var441 are stored as relative values. Registered according to var521_t2 and var520_t1.
		2	integer	code	1=North, 2=South Primarily used as reference point in case coordinates in var523, var266, var446 and var441 are stored as relative values, registered according to var521_t2 and var520_t1.
		3	long integer	0.00001 degrees	Longitude, absolute value, primarily used as reference point in case coordinates in var523, var266, var446 and var441 are stored as relative values. Registered according to var521_t2 and var520_t1.

This accuracy is not high enough and makes that the locations of the machines and stems become somehow “pixel-wise”.

The following table illustrates the effect of number of decimals on the precision (https://en.wikipedia.org/wiki/Decimal_degrees):

decimal places	decimal degrees	N/S or E/W at equator	E/W at 23N/S	E/W at 45N/S	E/W at 67N/S
0	1.0	111.32 km	102.47 km	78.71 km	43.496 km
1	0.1	11.132 km	10.247 km	7.871 km	4.3496 km
2	0.01	1.1132 km	1.0247 km	787.1 m	434.96 m
3	0.001	111.32 m	102.47 m	78.71 m	43.496 m
4	0.0001	11.132 m	10.247 m	7.871 m	4.3496 m
5	0.00001	1.1132 m	1.0247 m	0.787 m	0.43496 m
6	0.000001	111.32 mm	10.247 cm	7.871 cm	4.3496 cm
7	0.0000001	11.132 mm	10.247 mm	7.871 mm	4.3496 mm
8	0.00000001	1.1132 mm	1.0247 mm	787.1 µm	434.96 µm

It was decided that we should always register coordinates with at least 7 decimals. The new descriptions for elements Latitude and Longitude:

Longitude/Longitude, absolute value. Preferably 7 decimals to be registered. Registered according to coordinateReferenceSystem and receiverPosition.

The idea of increasing the number of decimals is strongly supported also from a Swedish perspective. Skogforsk (Björn Hannrup) recently carried out a study where a “normal machine gps” was compared with a more advanced gps. The results showing the “machine gps” performed surprisingly well.

LOGISTIC BARK FUNCTION MISSING

A new logistic bark function was added 2015-11-18 (version 3.2).

DbLB = double bark thickness, mm

D = diameter on bark, cm

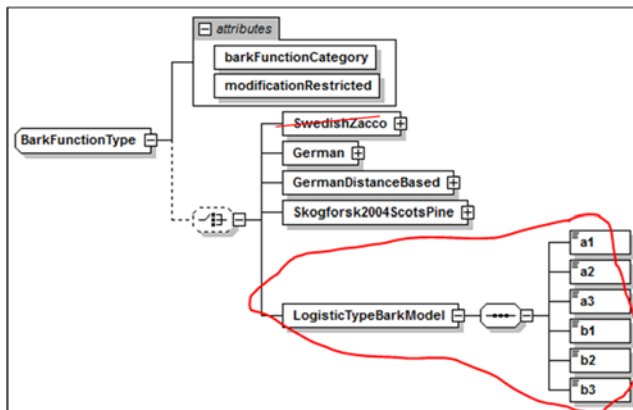
H = measurement place (distance from the stump cross section), m

$$DbLB = a + bD$$

$$a = \frac{a_3}{1 + \left(\frac{a_3}{a_1} - 1\right)e^{(-a_2H)}}$$

$$b = \frac{b_3}{1 + \left(\frac{b_3}{b_1} - 1\right)e^{(-b_2H)}}$$

However, accidentally the new structure was never added to BarkFunctionType.



The proposal also included a new enumeration value “LogisticTypeBarkModel” for barkFunctionCategory.

Elements descriptions for new elements:

Name	Description	Unit
LogisticType-BarkFunction	Parameters for logistic type of bark function	
a1	Parameter a1 in: $a = a_3 / (1 + ((a_3/a_1 - 1) * \exp(-a_2 * H)))$ $b = b_3 / (1 + ((b_3/b_1 - 1) * \exp(-b_2 * H)))$ $DbLBark = a + b * D$	Decimal
a2	Parameter a2 in: $a = a_3 / (1 + ((a_3/a_1 - 1) * \exp(-a_2 * H)))$ $b = b_3 / (1 + ((b_3/b_1 - 1) * \exp(-b_2 * H)))$	Decimal

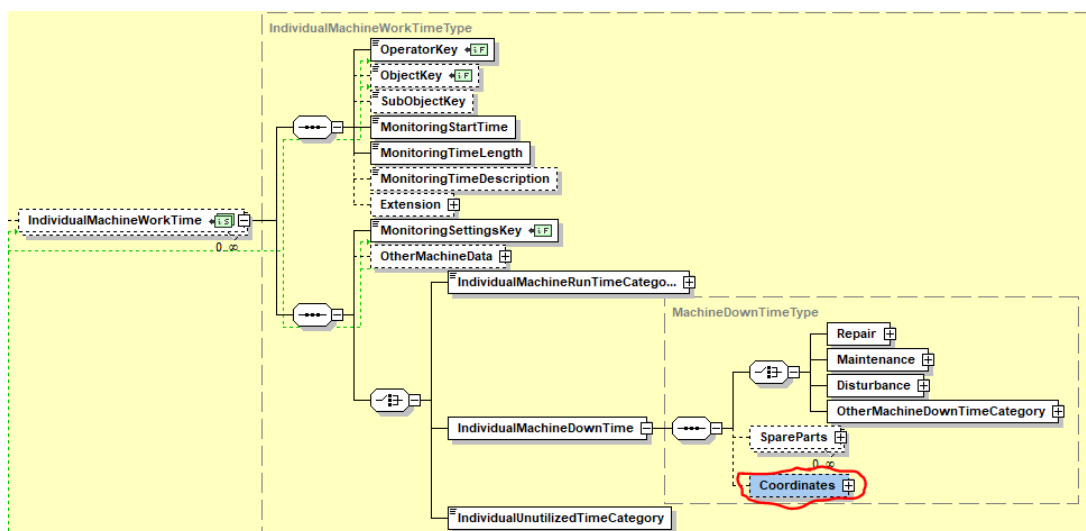
Name	Description	Unit
	$\text{DblBark} = a + b \cdot D$	
a3	Parameter a3 in: $a = a3 / (1 + ((a3/a1 - 1) \cdot \exp(-a2 \cdot H)))$ $b = b3 / (1 + ((b3/b1 - 1) \cdot \exp(-b2 \cdot H)))$ $\text{DblBark} = a + b \cdot D$	Decimal
b1	Parameter b1 in: $a = a3 / (1 + ((a3/a1 - 1) \cdot \exp(-a2 \cdot H)))$ $b = b3 / (1 + ((b3/b1 - 1) \cdot \exp(-b2 \cdot H)))$ $\text{DblBark} = a + b \cdot D$	Decimal
b2	Parameter b2 in: $a = a3 / (1 + ((a3/a1 - 1) \cdot \exp(-a2 \cdot H)))$ $b = b3 / (1 + ((b3/b1 - 1) \cdot \exp(-b2 \cdot H)))$ $\text{DblBark} = a + b \cdot D$	Decimal
b3	Parameter b3 in: $a = a3 / (1 + ((a3/a1 - 1) \cdot \exp(-a2 \cdot H)))$ $b = b3 / (1 + ((b3/b1 - 1) \cdot \exp(-b2 \cdot H)))$ $\text{DblBark} = a + b \cdot D$	Decimal

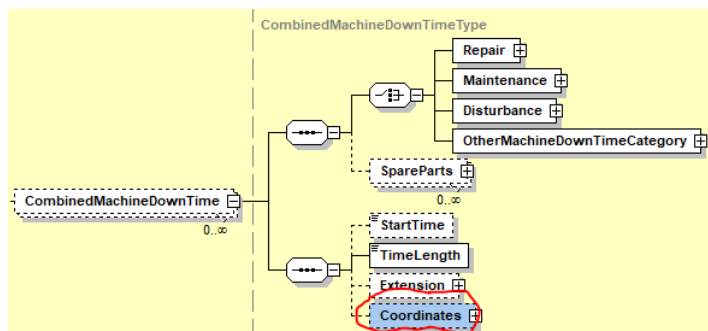
The meeting confirmed that the LogisticTypeBarkModel is to be added with version 3.4 schemas, including a new enumeration value “LogisticTypeBarkModel” for attribute barkFunctionCategory.

COORDINATES IN MOM

Niclas Eriksson, 2017-11-07

Including coordinates in mom-files makes it possible to illustrate where for example a down time occurred. This means that mom-results can be presented in a GIS interface. It was therefore decided that element Coordinates are added to both IndividualMachineDownTime and to CombinedDownTime. The coordinates are registered when the work/down time begins which is identical with the MonitoringStartTime.

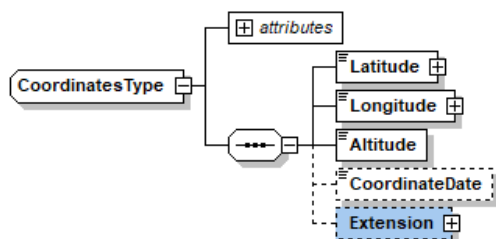




EXTENSION FOR COORDINATETYPE

Niclas Eriksson, 2017-10-30

It is decided to add element `Extension` to the `CoordinateType` in order to include additional information connected to the `Tracking`. For example adding some status information to a mom `Tracking`.



MISSING DATA TYPE FOR DELIVERYPRESENTATIONORDER

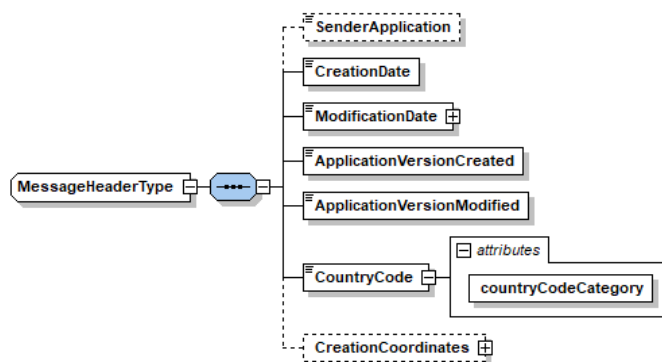
Niclas Eriksson, 2017-10-16

Element `DeliverPresentationOrder` does not have any data type. The data type should be `”xsd:positiveInteger”`. It will be changed with version 4.0.

COUNTRY CODES

Juha-Antti Sorsa, 2017-10-25

A Finnish co-operative company has found a potential “error” in `StanForD2010` definitions. We have `CountryCode` element in `MessageHeader` structure and there is a reference to ISO 3166 standard in its description. When we look at simple type definitions list in `StanForD2010CommonDefinitions.xsd` there is a simple type called `CountryCodeCategoryType` that is a string enumeration with one value “ISO 3166”. This type is not used anywhere, and I think that it should be used for attribute `countryCodeCategory` that is missing. So `MessageHeader` structure should look like following:



This attribute is missing from all versions of StanForD2010. So far no one seems to need it.

It was decided to add countryCodeCategory as an optional with version 3.4. Whether to change it to mandatory in 4.0 will be discussed.

§ 5. Implementation issues

USING NEW TRACKING STRUCTURE

Originally based on questions from Johan Möller (2017-06-12) and Teemu Paldanius (2017-09-07). The basic question is, how to register tracking coordinates in hpr and fpr for “Active object”?

From a Swedish perspective the most common use case is to include the tracking information in the hpr-file for the harvested object. The main reasons for including tracking elements in hpr and fpr are to:

- Avoid having to send separate shape files to forest company which is quite common today.
- Improve thinning follow up based on hpr-data
- Evaluate the routing of the forwarder
- Inform forwarder about exact locations of strip roads used by harvester. It is probably more important to be able to see the harvester tracking layer in the forwarder than to see your own forwarder tracking layer.

Three different alternatives for how to register tracking coordinates are described below based on a discussion with Niclas Eriksson:

1. Report all tracking coordinates within
 - a. total ReportInterval in mom,
 - b. first to last stem (HarvestDate) in hpr,
 - c. first to last load (UnloadingDate) in fpr.
2. Tracking coordinates reported cumulatively for all objects included in the file.
3. Include element defining whether tracking represent ReportInterval (different meaning in mom vs hpr/fpr) or Object (cumulative).

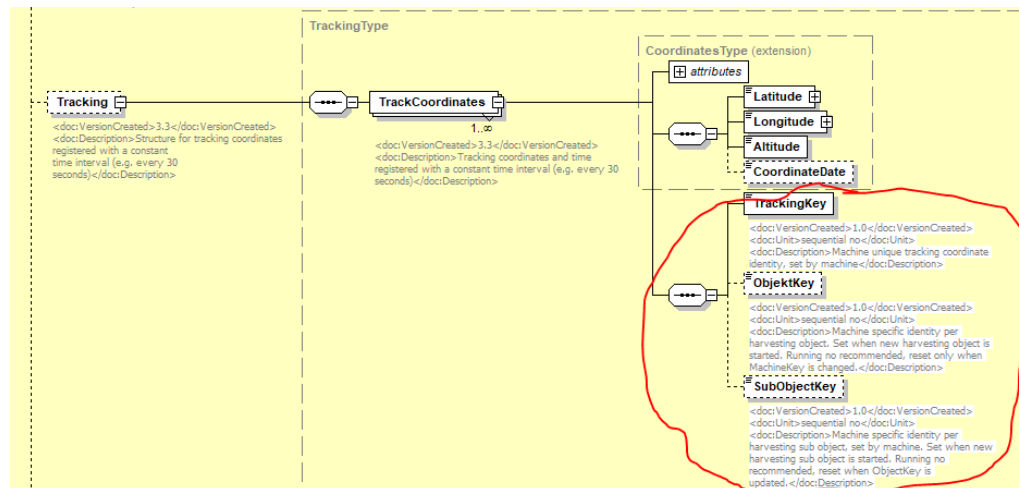
The meeting found alternative 1 is probably preferable as it is simple and avoids redundancy.

Observe that CoordinateDate is optional even though it is deemed absolutely necessary when using Tracking in mom-file.

Teemu pointed out that including additional information per tracking coordinate would make storing and analysing tracking data simpler. Based on meeting discussions it was decided with minutes that the following attributes are added to the Tracking structure: TrackingKey, ObjectKey and SubObjectKey.

It was also discussed whether to add also ShiftKey. In the first proposal this was included (2017-11-28) but Niclas Eriksson withdraw (2017-11-29) that proposal in order to simplify the structure. Adding also ShiftKey will be a question for version 4.0.

The structure illustrated below was therefore decided with the minutes (different elements for hpr vs mom). New elements TrackingKey, ObjectKey and SubObjectKey added to TrackingCoordinates (hpr, fpr and mom):



New suggested element is:

Name	Description	Unit
TrackingKey	<doc:VersionCreated>3.4</doc:VersionCreated> <doc:Unit>sequential no</doc:Unit> <doc:Description>Machine unique tracking coordinate identity, set by machine. Must be totally unique for a certain MachineKey. This sequential number can be used in order to sort coordinates in ascending order for re-creating a route driven by a machine, e.g. at a specific object. The identity can also be used in order to sort out duplicate positions. </doc:Description>	positiveInteger

Observe that a validation constraint checking that TrackingKey is unique within specific file might be added.

LOGGINGFORM

Background

Logging form codes was last discussed in 2007-11-29 as described below.

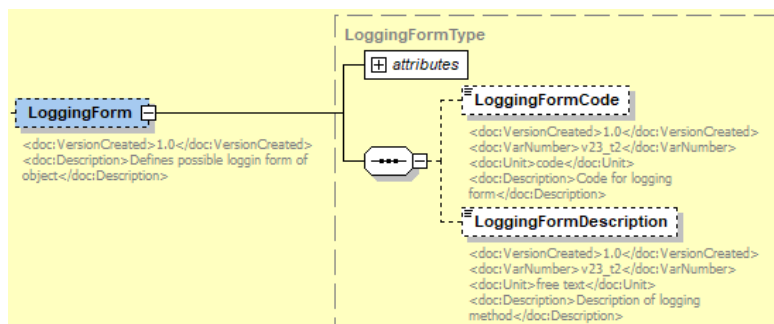
Recommendation for using general harvesting method codes and their descriptions in Finland has been specified by the Finnish StanForD group. The purpose of the recommendation is that these general harvesting method codes could be used when company-specific codes are not available or can not be used (normally company specific codes are used). Machine manufacturers should therefore have similar harvesting method alternatives in their systems. Harvesting method code is given in LoggingFormCode (var23_t1 / SITEINFO) and the name of the method (description) in LoggingFormDescription (var23_t2).

The proposal was based on using codes from the Solmu private forest planning system. Special harvesting methods have been defined separately in this system. The code list has been accepted in the Finnish pre-StanForD meeting 2007-04-25.

It was decided to add these recommended codes into StanForD's country specific appendix for Finland (only the Finnish descriptions are included in the appendix).

Code	Kuvaus (Descriptions in Finnish)	Description (not included in appendix)
1	ylispuiden poisto	cutting of hold-over trees
2	Ensiharvennus	first thinning
3	harvennus (muu kuin ensiharvennus)	thinning (other than first thinning)
4	Kaistalehakkuu	clear cutting in strips
5	Avohakkuu	clear cutting
6	Verhopuuhakkuu	cutting of nurse crop
7	Suojuspuuhakkuu	shelterwood cutting
8	Siemenpuuhakkuu	regeneration cutting
9	erikoishakkuu (määrittelemätön)	special cutting (unspecified)
91	erikoishakkuu: myrskytuhojen korjuu	special cutting: cutting of windblown timber
92	erikoishakkuu: tie-, oja-, sähkö- tai muun linjan aukaisu	special cutting: opening of lines (roads, ditches, power lines etc.)
93	erikoishakkuu: tonttipuuston hakkuu	special cutting: cutting of trees from building land
94	erikoishakkuu: energiapuun korjuu (hakkuutähteiden korjuun kaikki työlajit, ml. kannonnosto)	special cutting: recovering of logging residues (including stumps)
95	erikoishakkuu: muu erikoishakkuu (esim. tuhopuiden poisto, harsintatyyppinen hakkuu tai metsänomistajien omien puiden valikoiva hakkuu)	special cutting: other special cutting (e.g. selective cuttings, selection thinning, removal of single trees)
96	erikoishakkuu: nuoren metsän kunnostushakkuu, taimikon perkaus, raivaus	special cutting: early thinning of unmanaged young stands, pre-commercial thinning of young stands, clearing of logging site

The present structure for registering LoggingForm in StanForD2010 is illustrated below:



Observe that both **LoggingFormCode** and **LoggingFormDescription** have the data type “string” which means that the code does not have to be an integer.

Present implementations

John Arlinger sent out a questionnaire to a number of manufacturers based on a question from Per Knutsson, CGI (2017-10-25). Per was interested to know about the possibilities for the operator to register a code for logging form in the harvesters.

JohnDeere

There is a list with 15 different logging forms (based on decision 2007-11-29) that the operator can choose between as illustrated below.

The screenshot shows the JohnDeere logging form interface. At the top, there is a status bar with "1 Work", "Götbrunna 2:15 3", "SF2010_Operator1", and "14:47". Below this, there are three tabs: "1 Felling site", "2 Bucking instructions", and "3 Work statistics". The "1 Felling site" tab is active, showing a "Site list" table with columns: Name, Status, Start date, and End date. The table contains four rows of site data. Below the table are buttons for "Add new", "Activate", "End", and "Archive". The "Details" section shows a form with fields for "Lot number", "Site certified code", "Harvesting method", "Other harvesting method", "Site area", "Organization", and "Region". The "Harvesting method" dropdown menu is open, showing a list of 15 options, including "First thinning", "Cutting of hold-over trees", "Thinning (other than first thinning)", "Clear cutting of strips", "Clear cutting", "Cutting of nurse crop", "Shelterwood cutting", "Regeneration cutting", "Special cutting (unspecified)", "Special cutting (cutting of windblown timber)", "Special cutting (opening of lines; road, ditches, power lines etc.)", "Special cutting (cutting of trees from building land)", "Special cutting (recovering of logging residues; including stumps)", "Special cutting (other special cutting; e.g. selective cuttings, selection th)", and "Special cutting (early thinning of unmanaged young stands, pre-comme".

The logging form can be manually edited by the operator:

The screenshot shows the JohnDeere logging form interface with the "Other harvesting method" field selected. The field contains the text "Write your own harvesting method".

There is a list with 9 different logging forms (based on decision 2007-11-29) that the operator can choose between as illustrated below.

[illegible]

Komatsu

By default there is a list with 19 different logging forms (based on decision 2007-11-29) that the operator can choose between as illustrated below.

Avverkningssätt

Skördarmetod 2: Första gallring

Skördarvillkor 2: Kuperat

Typ av skog 1: Annan

Definierat av Skogsföretag

Code	Description
1	Avverkning av skärsträd
2	Första gallring
3	Gallring (annan än första gallring)
4	Kalhuggning i korridor
5	Kalhuggning
6	Avverkning av ungskog
7	Skärhuggning
8	Föryngringsavverkning
9	Specialavverkning (ospecificerad)
10	Specialavverkning: avverkning av vindfällida träd
11	Specialavverkning: upptagning av linjer (vägar, diken, kraftledningsgator osv.)
12	Specialavverkning: avverkning på mark som ska bebyggas
13	Specialavverkning: uppsamling av avverkningsrester (inklusive stubbar)
14	Specialavverkning: annan specialavverkning
15	Ospecificerad kod 101
16	Ospecificerad kod 102
17	Ospecificerad kod 103
18	Ospecificerad kod 104
19	Ospecificerad kod 105

DasaForester

There is no list of logging forms in DasaForester. There is only a “free text input” for code and description.

Apptering / Avverkningsobjekt / Avverkningsobjekt - Brännmossen FA 3

Identiteter Företagsinformation Produkter Trädslag Manuellvalsängder

Objektsinformation...

Objektnamn	Brännmossen FA 3	Fastighetsbeteckning	999888	Kontraktstyp	VV	Skogscertifiering
Objekt-id	132676-3	Virkesordernummer	34482857	Objekt-areal	21.0	
Startdatum	10-20-2016 4:47 PM	Ändringsdatum	10-16-2017 1:24 PM	Avverkningstyp	xxxxxxx	FSC
Slutdatum				Avverkningstyp, beskrivning:	xxxxxxxxxxxx	PEFC

Information till maskin:
66G8G4064 : Spara alla lövträd. Sparade träd och kalytearealen tror jag är uppfyllt eftersom det är åkermark. Återstår att ställa högstubbarna. Har inte ritat några basstråk eftersom min bedömning är att det är samma bärighet över hela.

Delobjekt

Delobjektsnamn	Id	Status
Standard	b1881690-f665-4173-b6ef-d6c250cd6463	Aktivt

Sätt till aktivt Avsluta Räddna delobjekt Öppna... Nytt...

Driver 1
Brännmossen FA 3/Standard 13:27

Övrigt

Kontraktstyp	VV
Objekt-areal	21
Avverkningstyp	xxxxxxx
Avverkningstyp, beskrivning	xxxxxxxxxxxx

ABCD Ctrl ← → 0 , Sv ← ↑ ↓ Avbryt Ok

LogMate

LoggingForm has not been implemented by LogMate.

XLogger

Unkown.

Motomit

LoggingForm has not been implemented by Motomit.

Summary

Below is a summary of all LoggingFormDescriptions in Swedish. Significant deviations are marked in yellow.

Code	English	JD	Komatsu	Ponsse
1	Cutting of hold-over trees	Avverkning av skärsträd	Avverkning av skärsträd	Avverkning av överståndare
2	First thinning	Första gallring	Första gallring	Första gallring

3	Thinning (other than first thinning)	Gallring (annan än första gallring)	Gallring (annan än första gallring)	Gallring
4	Clear cutting of strips	Kalhuggning i korridor	Kalhuggning i korridor	Korridoravverkning
5	Clear cutting	Kalhuggning	Kalhuggning	Slutavverkning
6	Cutting of nurse crop	Avverkning av ungskog	Avverkning av ungskog	Skärmavverkning
7	Shelterwood cutting	Skärmhuggning	Skärmhuggning	Skärmställning
8	Regeneration cutting	Föryngringsavverkning	Föryngringsavverkning	Avverkning av fröträd
9	Special cutting (unspecified)	Specialavverkning (ospecificerad)	Specialavverkning (ospecificerad)	Special avverkning

Proposal

Based on discussion with Tapio Räsänen a recommendation for translation into Swedish is included below:

Code	Kuvaus (Descriptions in Finnish)	Description (not included in appendix)	Recommended Swedish translations
1	ylispuiden poisto	cutting of hold-over trees	Avverkning av skärmträd
2	Ensiharvennus	first thinning	Förstagallring
3	harvennus (muu kuin ensiharvennus)	thinning (other than first thinning)	Gallring
4	Kaistalehakkuu	clear cutting in strips	Teghuggning/Kanthuggning
5	Avohakkuu	clear cutting	Slutavverkning
6	Verhopuuhakkuu	cutting of nurse crop	Avverkning, ställande av lågskärm
7	Suojuspuuhakkuu	shelterwood cutting	Avverkning, ställande av skärm
8	Siemenpuuhakkuu	regeneration cutting	Avverkning, ställande av fröträd
9	erikoishakkuu (määrittelemätön)	special cutting (unspecified)	Specialavverkning (ospecificerad)
91	erikoishakkuu: myrskytuhojen korjuu	special cutting: cutting of windblown timber	Specialavverkning: avverkning av vindfällan
92	erikoishakkuu: tie-, oja-, sähkö- tai muun linjan aukaisu	special cutting: opening of lines (roads, ditches, power lines etc.)	Specialavverkning: upptagning av linjer (vägar, diken, kraftledning etc)
93	erikoishakkuu: tonttipuuston hakkuu	special cutting: cutting of trees from building land	Specialavverkning: avverkning på mark som ska bebyggas
94	erikoishakkuu: energiapuun korjuu (hakkuutähteiden korjuun kaikki työlajit, ml. kannonnosto)	special cutting: recovering of logging residues (including stumps)	Specialavverkning: uttag av avverkningsrester (inkl stubbar)
95	erikoishakkuu: muu erikoishakkuu (esim. tuhopuiden poisto, harsintatyyppinen hakkuu tai metsänomistajien omien puiden valikoiva hakkuu)	special cutting: other special cutting (e.g. selective cuttings, selection thinning, removal of single trees)	Specialavverkning: selektiv avverkning, selektiv gallring, enstaka träd etc
96	erikoishakkuu: nuoren metsän kunnostushakkuu, taimikon perkaus, raivaus	special cutting: early thinning of unmanaged young stands, pre-commercial thinning of	Specialavverkning: tidiga gallring av obrukade bestånd, röjning av unga

Code	Kuvaus (Descriptions in Finnish)	Description (not included in appendix)	Recommended Swedish translations
		young stands, clearing of logging site	bestånd, rensning av avverkningsplats

It is recommended from a Swedish perspective that the translations above are implemented for all logging forms and that at least code 1-9 are made easily available for the operators as default if no code is sent through oin. It is also a requirement that original LoggingFormCode is included in hpr if LoggingForm is received with the oin-file and not manipulated by operator.

SUBOBJECT AND LOCATION (APPENDIX 8)

Lars Henriksson, 2017-10-23

It was noted by Lars that a SubObjectDefinition is included in the fpr-file without any SubObjectKey being included in the LocationDefinition.

The screenshot shows a software interface with a tree view. The 'SubObject' section is expanded, showing the following fields:

- StartDate: 2017-01-03T18:21:00.637+01:00
- SubObject
 - SubObjectUserID: agency=Other
 - SubObjectName: Delobjekt1
 - LoggingForm
 - RealEstateIDSub...
 - SubObjectKey: 17

The 'LocationDefinition' section is also expanded, showing the following fields:

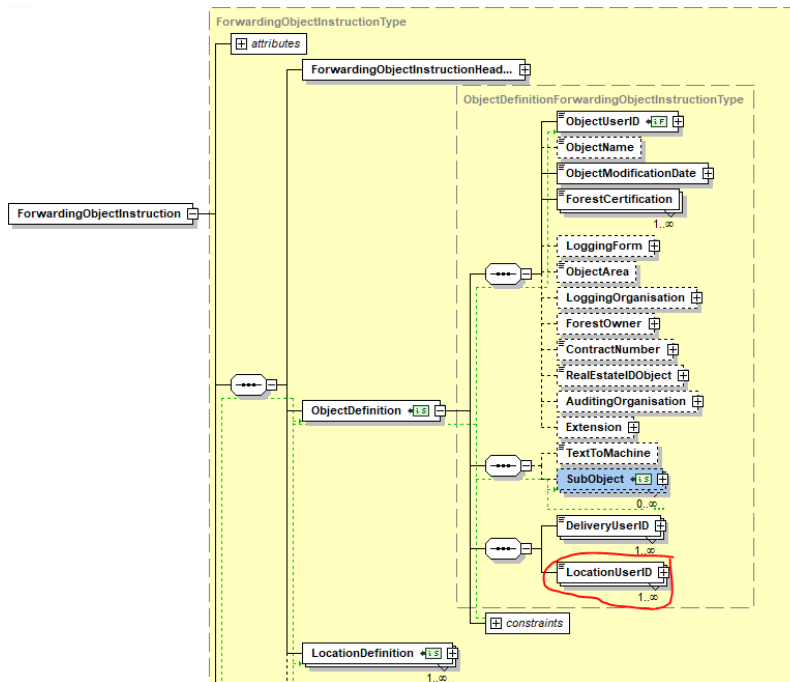
- LocationUserID: 9e5c8c69-71a0-4f0e-b820-f0733ca5700a
- LocationName: Standardplats
- LocationInfo: modificationRestricted=false
- LocationCoordinates: receiverPosition=Base machine position c...
- RoadCondition
- LocationKey: 15
- ObjectKey: 17

At the bottom, there are sections for 'DeliveryDefinition (4)' and 'Load (3)'.

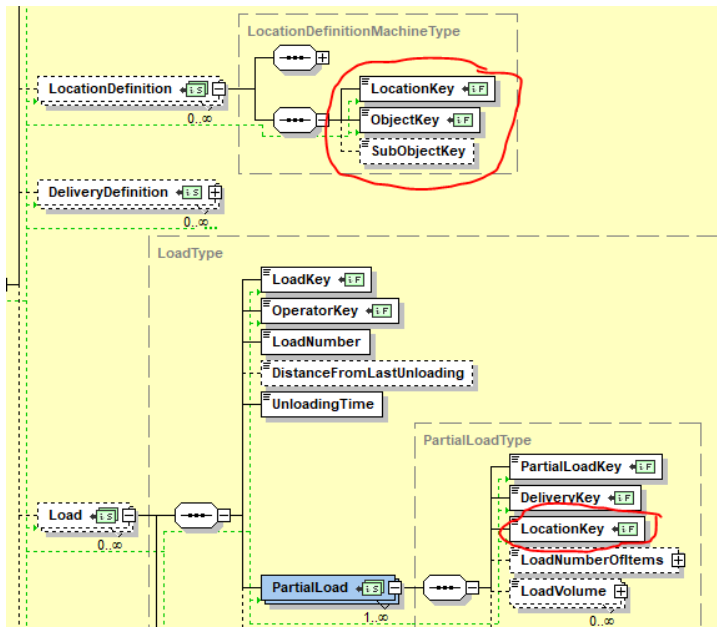
Fredrik Tjernberg, 2017-08-28

A LocationDefinition always belong to an Object in the foi-file (LocationUserID is mandatory per ObjectDefinition). No SubObject is defined per

LocationDefinition.

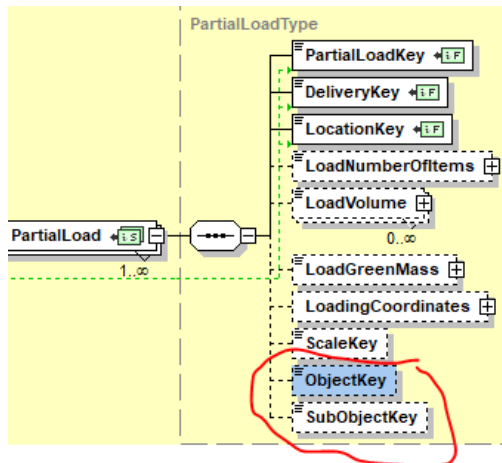


However, when looking at **LocationDefinition** in fpr-file it can be noted that an **ObjectKey** and an optional **SubObjectKey** element exists. While there is only a reference to the **Location** (**LocationKey**) in the **PartialLoad** structure. This means that several copies of the same **Location** must exist if it is used for more than one **SubObject**.

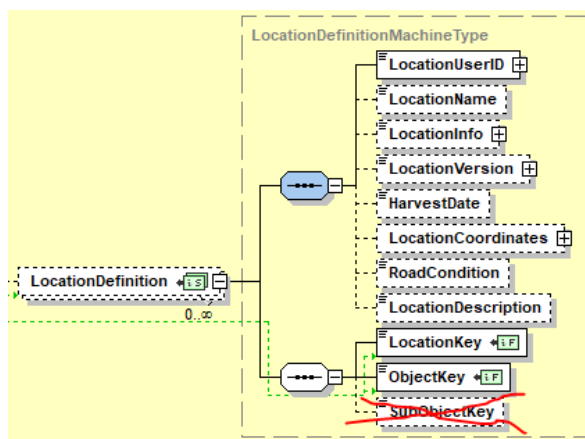


It would be more logical to have an ObjectKey and an optional SubObjectKey in PartialLoad and to exclude the SubObjectKey from the LocationDefinition (cannot be done until version 4.0).

It was new elements for partial load making it possible to register unloaded volumes also per SubObject:



Presently ObjectKey and SubObjectKey are defined per Location in fpr-file:



It is today possible to specify that a Location belongs to one single specific SubObject. It is not possible to register unloaded volumes for several different SubObjects at one Location. It could be possible to open this up by excluding SubObjectKey from the LocationDefintion while adding the SubObjectKey to the PartialLoad. However, this could not be done until version 4.0.

It was decided to add optional SubObjectKey to Partial Load, SubObjectKey in Location will be deleted in 4.0

It was also discussed whether SubObjects should be made mandatory with version 4.0

OTHER FORWARDER IMPLEMENTATION ISSUES

John Arlinger (in meeting with Jonas Gustafsson, Erik Kindlund, Antti Korkiakoski, Johan Möller), 2017-09-27

It should be observed that LocationDefinition is mandatory in foi. In Sweden it might be so that the forest company cannot/do not create a relevant Location, instead this is the responsibility of the operator. This means that the forest company is forced to create a “dummy location”. It is therefore strongly recommended that it is possible for the operator to manually create as well as delete locations when starting a new object.

The ProductDefinition is optional in the fdi message. However, several manufacturers requires that one Product per Delivery is included since the GUI is based on the operator being able to select Product rather than Delivery when unloading. It is therefore strongly recommended that at least one product per Delivery is included in the fdi-file. However, forwarder control system should not crash if no Product is included for a specific Delivery.

ProductDefinitions are not to be considered if that Product (fdi file) is not referenced in any Delivery.

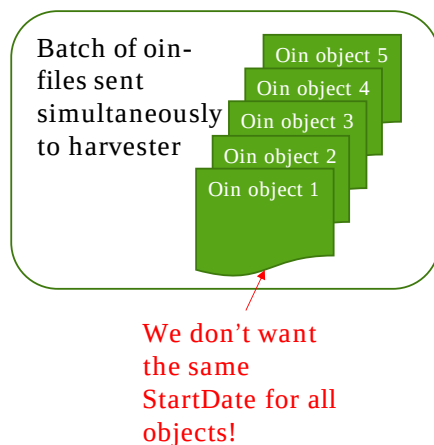
INFORMATION TO OPERATOR WHEN UPDATING OIN, PIN, FDI

See Swedish user requirements (§7).

STARTDATE WHEN SENDING OIN IN ADVANCE (APPENDIX 11)

Torbjörn Westman, Sveaskog, 2017-10-18.

How to define StartDate if an oin is imported (automatically) but not taken into use until later (e.g. two months)? It would be preferable if StartDate is not set until really taken into use in such a case.



No manufacturer today automatically imports a batch of oin-files as illustrated above.

NEED FOR SUPPORT OF ALL MINOR VERSIONS (APPENDIX 12)

It was noted at the previous meeting that Ponsse, JohnDeere, Komatsu and xLogger validate all instruction files before reading. This e.g. means that a system

that has only implemented version 3.0 and 3.1 cannot use version 3.2 even though all relevant information for 3.0 and 3.1 is included also in 3.2. Dasa and LogMate does not validate files, which means that they probably can handle the situation described above. Silvia does not validate files automatically.

Below is an illustration of what it means that instruction files are validated:

Present StanForD version when releasing control system version	Pin 2.0	Pin 2.1	Pin 3.0	Pin 3.1	Pin 3.2
2.0	OK				
2.1	OK	OK			
3.0	OK	OK	OK		
3.1	OK	OK	OK	OK	
3.2	OK	OK	OK	OK	OK

Systems that doesn't validate can in most cases handle basically all present standard versions:

Present StanForD version when releasing control system version	Pin 2.0	Pin 2.1
2.0	OK	OK
2.1	OK	OK

Present StanForD version when releasing control system version	Pin 2.0	Pin 2.1	Pin 3.0	Pin 3.1	Pin 3.2
3.0	OK	OK	OK	OK	OK
3.1	OK	OK	OK	OK	OK
3.2	OK	OK	OK	OK	OK

Observe that e.g. a new bark function added to standard version 3.2 never will be supported if the control system only was developed for version 3.1.

It is probably so that the oldest control system version in the machine fleet will decide what version the forest companies will use if machines validating instruction files prior to reading. Retiring old versions will be difficult if we use a strict validation. However, this problem will diminish if we have efficient systems for keeping the machines updated.

One way of handling this issue could be that the manufacturers start out reading the files and only validate the file if an error occurs during reading.

Validating files prior to reading means:

- Significant need for keeping all harvesters updated with latest software version
- If updating is not possible a control system might get obsolete quite quickly from a forest company perspective.

Conclusion: It is assumed machine control systems validating instructions support all lower versions if not stated differently (see “Time schedule for implementation” below).

TIME SCHEDULE FOR IMPLEMENTATION

Harvesters

The following table for forwarders was compiled after the meeting (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)	Opti4G version 4.740	3.1, 3.0, 2.1	2.0
Timbermatic (JohnDeere)	1.26.15	3.2	2.0
LogMate (LogMax)	1.8.11	3.3	1.0
MaxiXplorer (Komatsu)	MaxiXplorer 3.13.0	3.3	
DasaForester*	1.4.2	3.1	
Motomit (Parker)			
xLogger (Technion)			
DP II (Haglöf)	Skalman V7.16	3.4	
Silvia7 (CGI)	2017.2	3.2	
SenderXC (SDC)	1.08 (Dec 2017)	3,3	

* A conversion module is available for Dasa4/5 (oin,pin,spi,hpr)

Presently the following control systems can update a product, by sending a new pin, during harvesting at a site:

- Dasa
- LogMate
- Timbermatic
- MaxiXplorer
- xLogger
- Opti (under test, release Q1 2018)

It is not possible to use the updated pin until you start on a new site in:

- Motomit(no implementation is planned)

ModificationRestricted has been implemented:

- Komatsu, implemented
- JohnDeere, not implemented
- Dasa , implemented summer 2017
- Ponsse, not implemented
- Motomit, not implemented
- LogMate, implemented 2016 (read and written but does not affect GUI)
- xLogger, implemented

ProductClass has been implemented:

- Silvia, implemented
- Komatsu, not implemented

- JohnDeere, not implemented
- Dasa, not implemented
- Ponsse, implemented
- Motomit, unkown
- LogMate, implemented Q1 2018
- xLogger not implemented

Forwarders

The following table for forwarders was compiled after the meeting (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 StanForD-versions not supported
Opti (Ponsse)	Opti4G version 4.740	3.1, 3.0, 2.1	2.0
Timbermatic (JohnDeere)	1.26.15	3.2	2.0
LogMate (LogMax)	No forwarder implementation		
MaxiXplorer (Komatsu)	MaxiXplorer 3.13.0	3.3	1.0
DasaForester	1.0	3.1	2
Motomit (Parker)			
xLogger (Technion)			
Silvia7 (CGI)	2017.2*	3.2	
SenderXC (SDC)	1.08 (Dec 2017)	3,3	

* Observe that foi and fdi are not supported.

SWEDISH AND FINNISH NOMENCLATURE

Metsäteho has coordinated the work on compiling a Finnish and English recommendation regarding the StanForD 2010 nomenclature

- names and texts to be applied in GUI's of the machine applications
- pin, oin, spi, fdi and foi
- The outcome of the work was presented in StanForD meeting 2017-04-25—26

Swedish proposals were checked by Skogforsk and SDC 2017-11-20 and those were added to the tables.

Latest Skype meeting with the Finnish machine manufacturers was held 2017-11-21

- some changes to earlier proposals
- especially the names and texts of forwarder messages were not gone through properly in the spring

Objective is that the nomenclature could be accepted in StanForD meeting 2017-11-22 or right after that and the machine manufacturers could start using it in the specification of the GUP's of the applications' next versions

A separate excel sheet (StanForD 2010 Nomenclature_2017-11-22.xlsx) is also available.

Proposal for the Finnish file names to be used in GUP's of the machine applications:

- OIN Lohkon ohjeet
- PIN Puutavaralajiohjeet
- SPI Puulajiohjeet
- FDI Toimitusten ohjeet
- FOI Metsäkuljetuksen lohkon ohjeet
- UDI ?
- HPR Hakkuun tuotantotiedot
- THP Hakkuun tuotantokooste or Hakkuun koostetiedot
- FPR Metsäkuljetuksen tuotantotiedot
- MOM Työaika- ja tuottavuustiedot
- HQC Hakkuukoneen kalibrointitiedot
- FQC Kuormainvaa'an kalibrointitiedot

Subsets of the nomenclature:

StanForD 2010 element name / pin	FI	EN	SE
Product	Puutavaralaji	Product	Produkt
ProductUserID	Puutavaralajin tunniste	Product ID	Produkt-id
ProductName	Puutavaralajin nimi	Product name	Produktnamn
ProductInfo	Puutavaralajikoodi	Product code	Sortimentskod
ProductVersion	Puutavaralajiversio	Product version	Produktversion
ProductBuyer	Urakanantaja	Buyer	Köpare, Kod
ProductClass	Laatu	Product class	Produkt-klass
ProductDestination	Toimituspaikka	Delivery destination	Mottagningsplats
ProductDescription	Puutavaralajin kuvaus	Product description	Produktbeskrivning
ProductGroupName	Puutavaralajiryhmä	Product group name	Produktgruppsnamn
ProductCreationDate	Puutavaralajin luontiaika	Product creation date	Ändrad
CuttingWindow	Katkaisuikkuna	Cutting window	Kap-fönster
LowerLengthLimit	Katkaisuikkunan alaraja	Cutting window min	Nedre gräns kapfönster
UpperLengthLimit	Katkaisuikkunan yläraja	Cutting window max	Övre gräns kapfönster

StanForD 2010 element name / pin	FI	EN	SE
ManualFreeBuck	Vapaakatkonta	Free cut	Frikap

StanForD 2010 element name / pin	FI	EN	SE
TopLogFreeBuck	Minimiläpimitan haku	Minimum diameter search	Min-dia-sök
ProductCondition	Rungonosaehto	Bucking condition	Apteringsvillkor
DistributionAllowed DistributionCategory MAXDeviation	Pituusjakauma käytössä Jakauman vertailuysikkö Jakauman sallittu vaihtelu	Distribution bucking allowed Distribution matrix type Maximum deviation	Fördelningsaptering aktiverad Fördelningstyp Max tillåten avvikelse
LimitationCategory LimitationResult	Määrärajan tyyppi Toiminta määrärajan ylittyessä	Limitation matrix type Action after limitation fulfilled	Begränsningstyp Åtgärdstyp begränsning
BuckingCriteria* LogColorMarking	Apteerausehto Värimerkintä	Bucking criteria matrix Color marking matrix	Villkors-matris Färgmatris

*Observe that elements Limitation and BuckingCriteria are normally presented in one single matrix called “Limitation matrix”. This is probably due to the fact that both of these settings were stored in the same variable (var191_t2) in “StanForD-classic”. The need for presenting a separate BuckingCriteria matrix is therefore probably limited.

StanForD 2010 element name / oin	FI	EN	SE
ObjectInstruction ObjectDefinition ObjectUserID ObjectName	Lohkon tiedot Lohko Lohkon tunniste Lohkon nimi	Object instruction Object Object ID Object name	Objektsinstruktion Objekt Objekt id Objektnamn
SubObject SubObjectUserID SubObjectName	Kuvio Kuvion tunniste Kuvion nimi	Sub object Sub object ID Sub object name	Del-objekt Del-objekt id Del-objektnamn
ForestCertification LoggingForm	Metsäsertifiointi Hakkuutapa	Forest certification Treatment type	Certifiering Avverkningstyp
ObjectArea SubObjectArea	Lohkon pinta-ala Kuvion pinta-ala	Object size Sub object Size	Areal objekt Areal del-objekt
District Team LoggingOrganisation ForestOwner ContractNumber RealEstateIDObject RealEstateIDSubObject AuditingOrganisation BusinessID	Piiri Tiimi Metsäyhtiö Metsänomistaja Sopimusnumero Kiinteistö Kiinteistö Tarkastusorganisaatio Yrityksen tunniste	District Team Logging organisation Forest owner Contract number Real estate ID Real estate ID Auditing organisation Company code	Distrikt Maskinlag Skogsföretag Skogsägare Virkesordernr Objektgrupp-ID Del-objekt, Fastighets nr Revsions-organisation Skogsföretag, Id företag

StanForD 2010 element name / spi	FI	EN	SE
SpeciesGroupUserID	Puulajin tunniste	Tree species ID	Trädslagsid
SpeciesGroupName	Puulajin nimi	Tree species name	Trädslagsnamn
SpeciesGroupInfo	Puulajin lisätiedot	Tree species code	Trädslagskod
SpeciesGroupVersion	Puulajin versio	Tree species version	Trädslagsversion
Grades	Laadut	Grades	Kvalitet
GradeNumber	Laadun numero	Grade number	Kvalitetsnummer
GradeName	Laadun nimi	Grade name	Kvalitetsnamn
StartGrade	Aloitustila	Start grade	Startkvalitet
BarkFunction	Kuoriparametrit	Bark parameters	Barkparametrar
SoundKnotFunction	Tuoreeksainen	Sound knot	Friskkvist
StemCode	Runkomerkinnät	Stem code	Stam-kod
StemTypeDefinition	Runkolajit	Stem types	Stamslag

StanForD 2010 element name / fdi	FI	EN	SE
DeliveryUserID	Toimituksen tunniste	Delivery ID	Levernas-id
DeliveryName	Toimituksen nimi	Delivery name	Leverans, namn
DeliveryInfo	Toimituksen lisätiedot	Delivery code	Leveranskod
DeliveryVersion	Toimituksen versio	Delivery version	Leverans, version
DeliveryDestination	Toimituspaikka	Delivery destination	Mottagningsplats
DeliveryDescription	Toimituksen kuvaus	Delivery description	Leverans, beskrivning

StanForD 2010 element name / foi	FI	EN	SE
ForwardingObject-Instruction	Metsäkuljetuksen lohkon ohjeet	Object instr. forwarding	Objektsinstr. skotning
LocationDefinition	Varasto	Storage Location	Avlägg
LocationUserID	Varaston tunniste	Location ID	Avläggs-id
LocationName	Varaston nimi	Location name	Avläggs-namn
LocationInfo	Varaston tiedot	Location code	Avläggs-nummer
LocationVersion	Versio	Location version	Avläggs-version
HarvestDate	Hakkuupäivämäärä	Harvesting date	Avverkigngsdatum
LocationCoordinates	Koordinaatit	Coordinates	Koordinater
RoadCondition	Tien kunto	Road condition	Vägstandard
LocationDescription	Varaston kuvaus	Location description	Avläggsbeskrivning

It was decided to recommend all manufacturers to use the nomenclature above when updating softwares in the future.

DIAMETER MEASUREMENT POSITIONS IN HQC-FILES

Discussed at previous meetings 2016-11 and 2017-04.

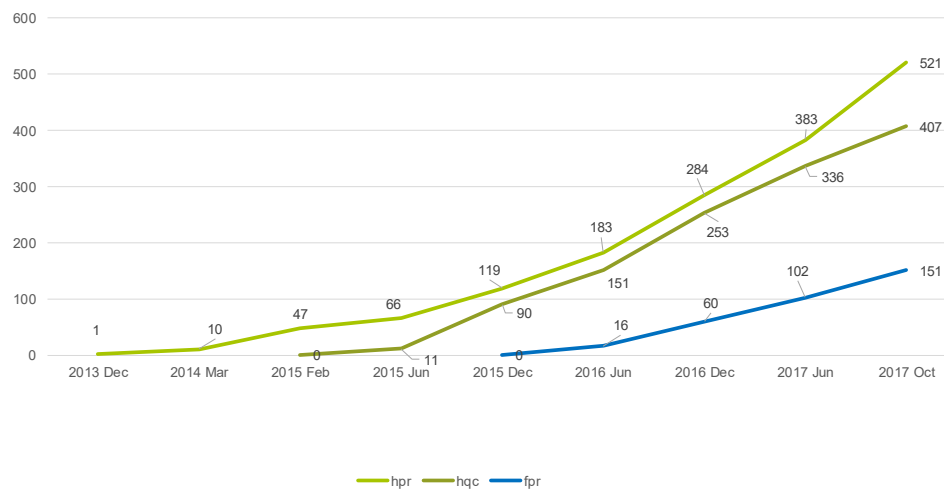
A separate open meeting to be held in Vantaa 2017-12-19.

Metsäteho, Skogforsk, Masser, Haglöf and JohnDeere will participate. Contact John and Tapio in order to get an invitation.

§ 7. StanForD2010 projects

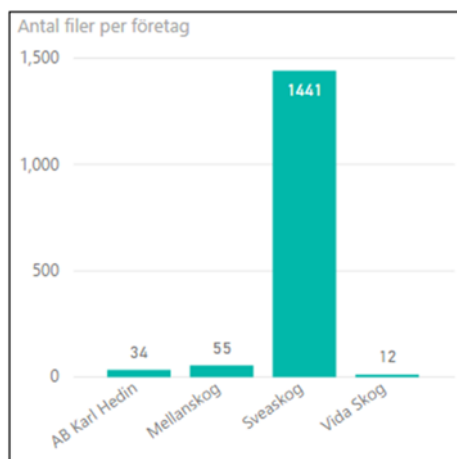
REPORTING PRODUCTION DATA AND DISTRIBUTING HARVESTER INSTRUCTIONS IN SWEDEN (SDC)

Number of machines reporting StanForD2010 to SDC.

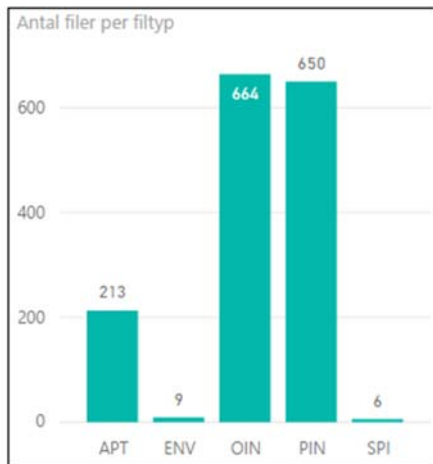


Statistics regarding distribution of StanForD-instructions to machines by using Sender XC (period 2017-10-20—2017-11-20).

Number of distributed files per company:



Number of distributed files per file type:

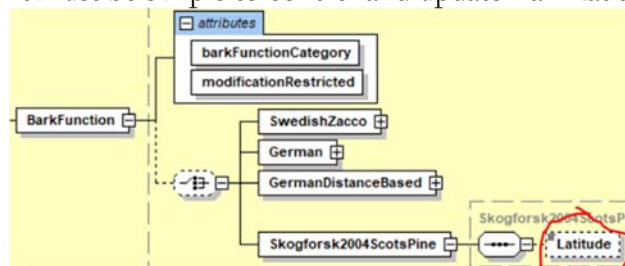


New use of StanForD2010 in forest company systems -Pin-implementation at Sveaskog

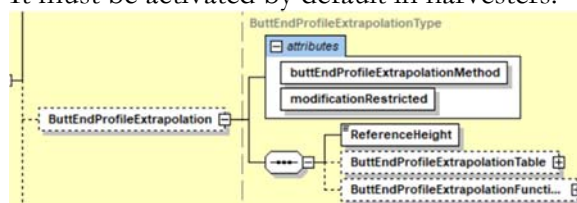
Jonas Gustafsson briefly described Sveaskogs work to migrate all harvesters from apt-files to oin/pin/spi-files. Migration will be completed during the spring of 2018.

Swedish user requirements (Skogforsk)

- BarkLatitude is NOT included in Swedish default spi.
- It must be simple to control and update BarkLatitude!



- ButtEndProfileExtrapolation set through spi
- Avoid need for machine setting in order to activate
- It must be activated by default in harvesters!



- Machine applications must not crash if oin has “missing products”!
- Manual start of object must be possible!
- Using TextToMachine, ProductDescription and DeliveryDescription when updating instructions

- It is recommended that TextToMachine (ObjectDef), ProductDescription (ProductDef) and DeliveryDescription (DeliveryDef) are all implemented in the forest machines so that the operator can easily read this information when taking a new/modified Object, Product, Delivery into use. It is also suggested that these elements are implemented in administrative softwares like e.g. ForesterOffice or Silvia7.
- Possibility of updating with pin and oin during production at an object is required.
- Coordinates “ON” by default! Don’t turn it “OFF” during software updates.
- Must be possible to report rejected and non-measured hqc stems.
- Five last hqc-setting must be included in all hqc-files.

RECOMMENDATION FOR COMMON FOREST MACHINE DATA USE PRINCIPLES IN FINLAND

-info about the outcome of a working group and possible consequences to StanFord

The work has been finalized and approved in October and the recommendation paper has been sent out for signing process

Background

Working group was set to define the common principles for ownership, use rights and management of forest machine data

Members of the working group

- Forest companies: Metsä Group, Metsähallitus, Stora Enso, UPM and Finnish Forest Industries
- Trade Association of Finnish Forestry and Earthmoving Contractors (Koneyrittäjät)
- Machine manufacturers: John Deere, Komatsu Forest and Ponsse
- Metsäteho coordinated the work

In the vision and strategic development programme of future forest resource data systems by Ministry of Agriculture and Forestry the data produced by and gathered from all type of forest operations – especially data from forest machines – is seen to play a big role

- focus is in updating of the open forest resource data and introducing new methods to it
- general acceptance for utilization of the operational data is required and therefore ”rules of the game” need to be defined

Aim was also to update the existing recommendation for forest machine data use principles

Outcome of the work

Definitions of forest machine data ownerships and use rights

- A. Full ownership of data
 - shared ownership is possible only in some cases
- B. Free right to use the data, but no right to deliver it to third parties
- C. Restricted right to use the data for specified purposes
 - may require removal of part of the data, anonymization or processing of the data into a new format

Data ownerships and use rights are specified by

- A. type of data
 - StanForD 2010 file type groups
 - unstandardized / machine-specific files
 - potential new data types
- D. machine type
 - harvesters
 - Forwarders
 - machines for silvicultural operations
- E. parties involved
 - business parties: service buyers (forest companies and others) and service providers (logging companies, contractors)
 - machine manufacturers
 - third parties: IT providers, Finnish Forest Centre, research organizations, forestry schools etc.
- F. What comes to productivity and time based data (mom), fuel consumption and emissions data, tracking and status data of the forest machines the outcome was that the ownership of the present data types belongs mainly to entrepreneurs, but it is possible to negotiate about the restricted use rights between the contract partners

Guidelines for noting the new General Data Protection Regulation by the European Commission together with the management of personal data included in forest machine data

- A. outcome of the work was the general guidelines how the personal data should be handled in forest machine systems and data registers, especially after the principal business ground for possessing the information does not exist any more

- B. personal data of operators and forest owners / sellers

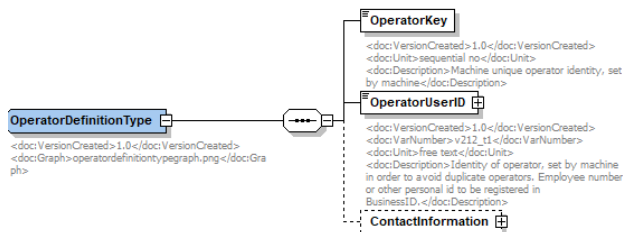
Comments from secretary regarding discussions of machine data and GDPR (general data protection regulation) in Sweden.

This is a hot but rather confusing Swedish discussion as well. The discussion often involves aspects relating to both law, technology and business relationships

What does it mean to StanForD? Anything? No one at the meeting had any clear answers.

There are different ways of making it possible to exclude personal id data already in the machine if needed:

- Machine setting to exclude ContactInformation?
 - Only OperatorKey & OperatorUserID included.
- Machine setting to use only one single “anonymous operator”?



WOODFORCE (METSÄTEHO)

Production pilot use of harvesting operations has been going on with more than 100 forest machines during the autumn

- focus has been in supporting the pilots by correcting the found errors and malfunctions and by improving the usability of the service and software
- tools for work planning and follow-up have been supplemented and reporting has been widened
- performance of the service will be the next key issue

Moving gradually from production pilots to full use of the service in forest companies has been started

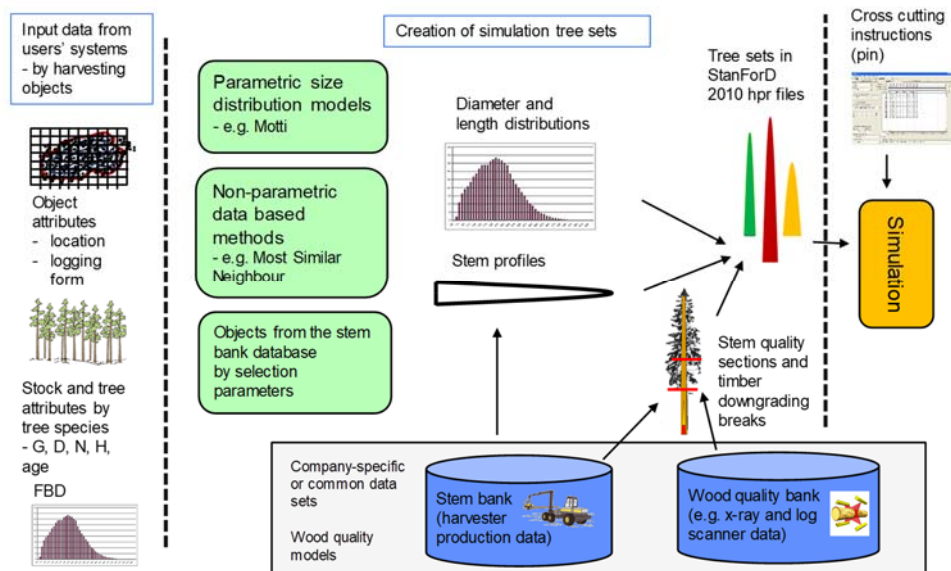
- Metsä Group 10/2017 →
- Metsähallitus: launch of WoodForce will take place together with the new forest system (schedule open)
- Stora Enso: launch of WoodForce will take place together with the new forest system FOX (schedule will be refined during the autumn)

VALUEFORCE/KAOS

KAOS has been renamed to ValueForce. The building phase of the service is continuing.

Deadline 06/2018

Cross cutting simulation process



8

§ 8. Other issues

No other issues.

§ 9. Next meeting

Web meeting with final decision of updating to version 3.4, 2018-02-06, 09:00-10:00 CET

StanForD meeting, 2018-04-17--18, Vantaa

§ 10. End of meeting

Johan thanked everyone for their participation.

Forwarding crane cycle data in fpr and mom

NEW FORWARDING PRODUCTION STRUCTURE

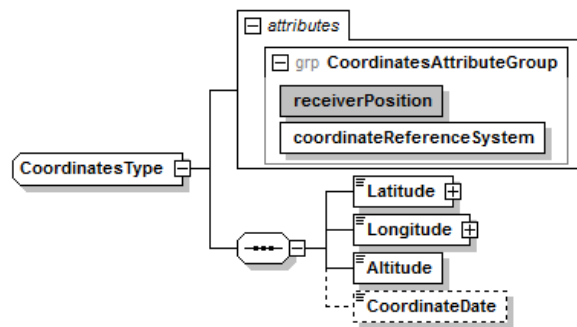
Contents

Background	2
Remodelling fpr-production	3
Definition of crane cycle	7
Proposals	7
New elements	8

Background

It was decided at the meeting 2015-11-18 to update the definition of receiverPosition based on a discussion between John Arlinger and Thomas Purfurst (Bavarian State Forest) regarding coordinates in fpr-files.

All Coordinates in StanForD messages have the attribute receiverPosition. GPS coordinates are e.g. included in CreationCoordinates, LoadingCoordinates, LocationCoordinates, StemCoordinates.



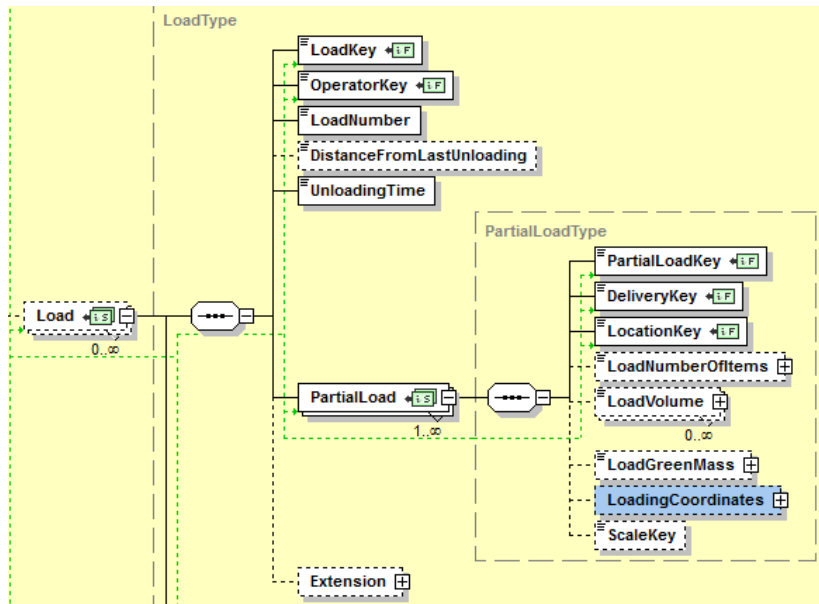
It was decided that the annotation for receiverPosition is updated according to the following text (new text underlined in red):

Position of coordinate registration in file: "Base machine position", "Crane tip position when felling the tree". Observe that only "Base machine position" is relevant for all types of coordinates. Other enumerations valid only in some specific situations.

The discussion between John Arlinger and Thomas Purfurst evolved to include whether it would be a good idea to include additional coordinates to the fpr-file. The following coordinates exist in fpr-files today:

- CreationCoordinates, LoadingCoordinates, LocationCoordinates,

Would it be relevant to add UnloadingCoordinates to PartialLoad?



Using coordinates for forwarders in PartialLoad might mean:

- New enumerations “Grapple position when opening grapple to release logs” and “Grapple position when closing grapple to pick up logs”

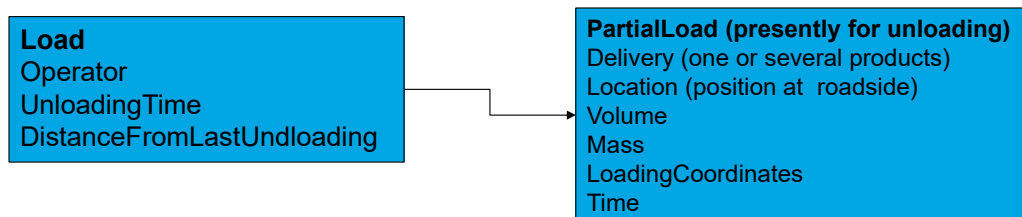
Boom angle for Unloading and PartialLoad?

- Attributes for boomAngleCategory: Felling, Last log cut, Release logs, Pick up logs.

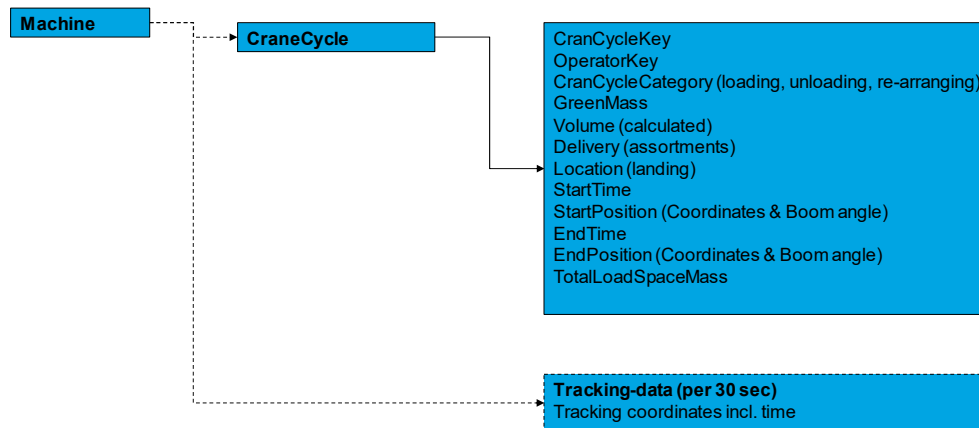
However, adding these new enumerations into the present structure will make the fpr-file even more complex than today.

Remodelling fpr-production

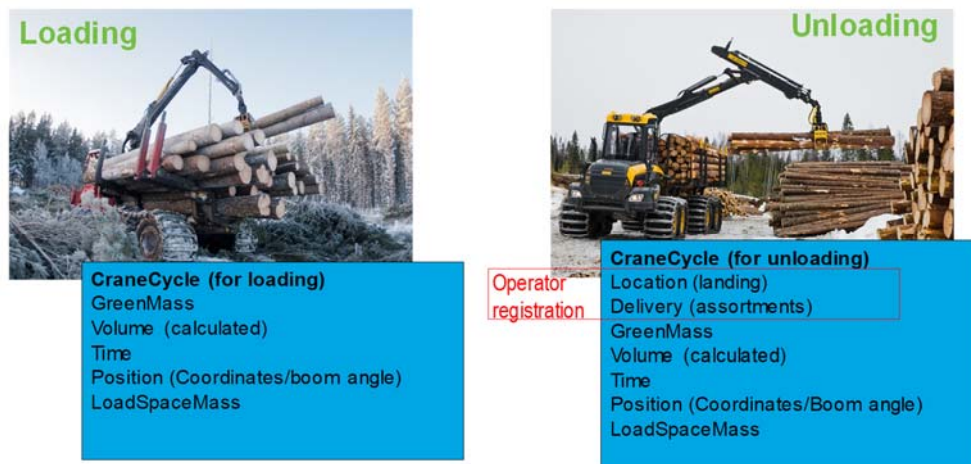
The present structure (illustrated below) is quite complex due to the fact that it can handle several different measuring methods (crane scales, load space scales and manual estimations) with varying resolution.



A solution, in order to make it possible to register data with a higher resolution, could be to separately register individual crane cycles based on scaling each grapple load. A new structure is suggested where each crane cycle during forwarding is registered (illustrated below). It would then be possible to register e.g. coordinates and times for both loading and unloading crane cycles.

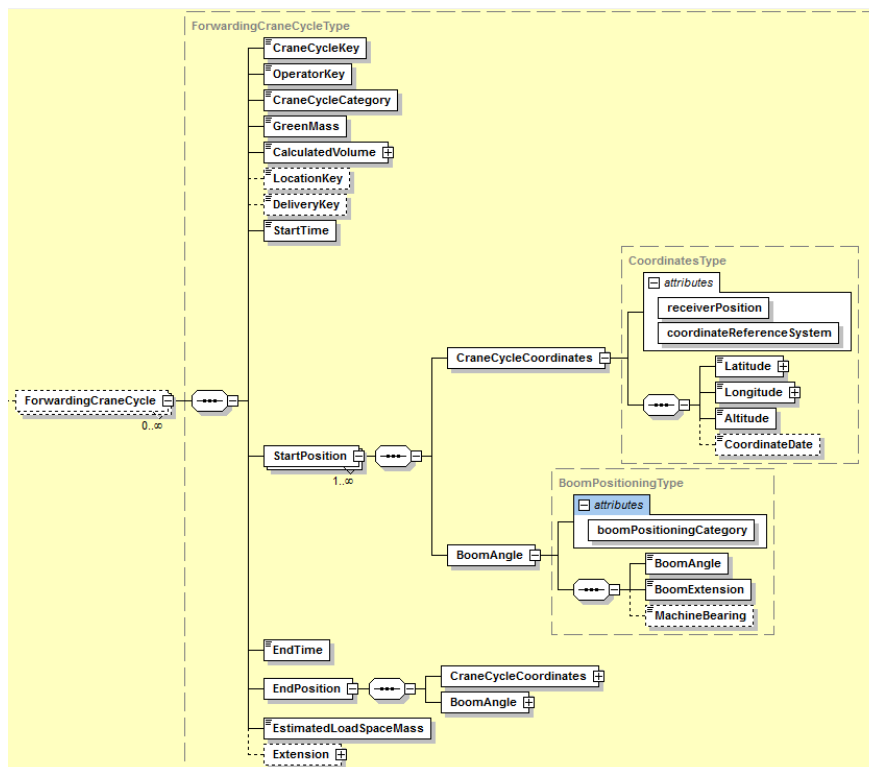
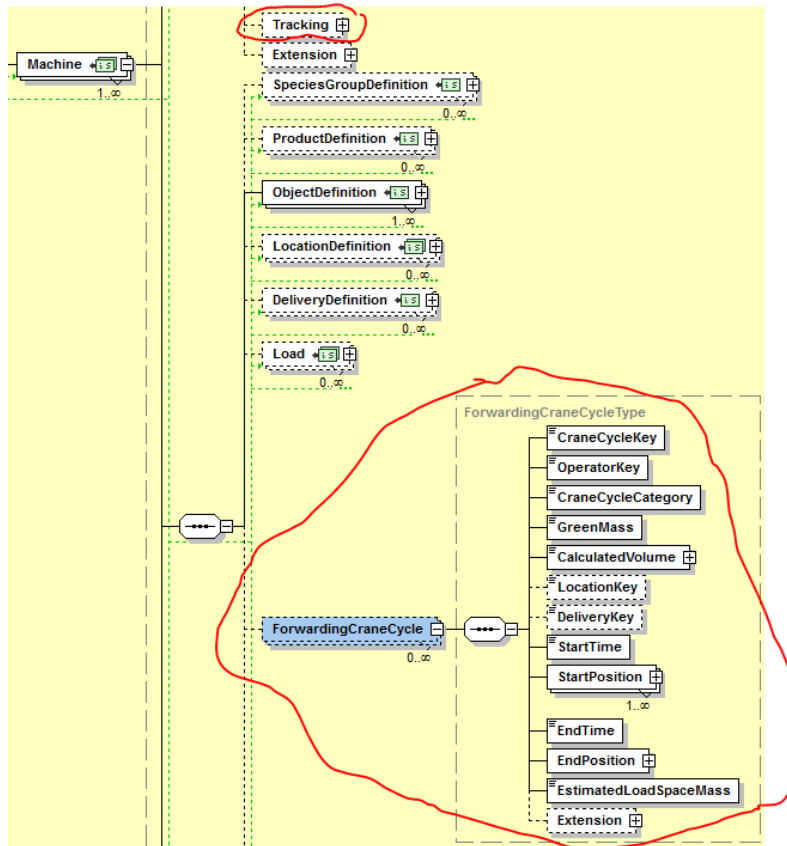


The new structure means that the mass, volume, coordinates, boom angle and time are possible to register for each crane cycle when loading, unloading and re-arranging logs (see figure below). Time, position and boom angle are to be registered both when starting and ending a crane cycle. Included in the structure is also the optional possibility to register location and delivery at unloading. Observe that these are optional and primarily suitable for unloading.

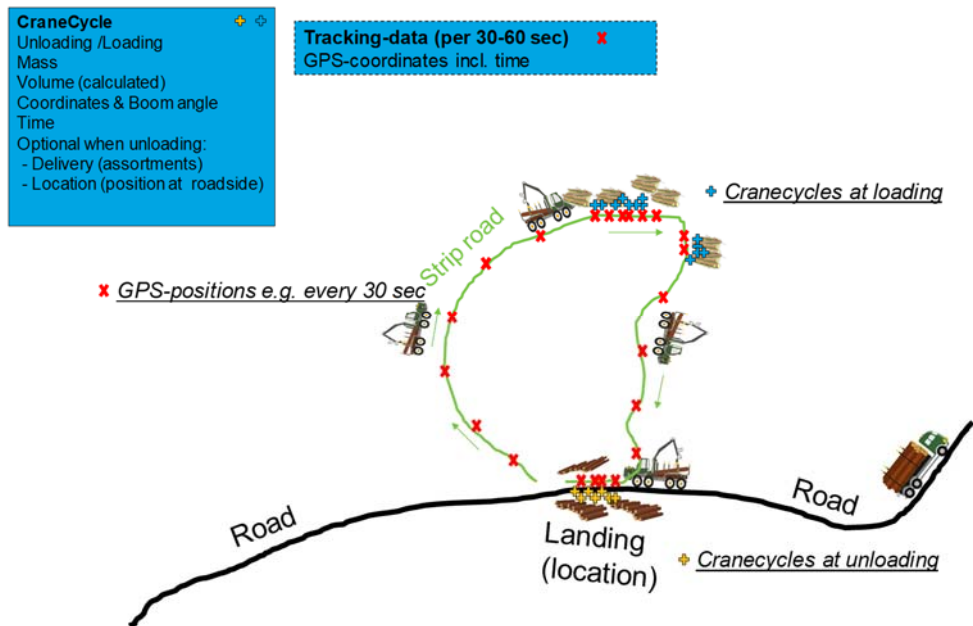


Since version 3.3 it is also possible to register tracking data in the form of coordinate points. The coordinates must be possible to register with a fixed time interval. The interest for including tracking data not only in forwarder production messages but also in operational monitoring and harvester production messages meant that this structure was included for all types of messages at the meeting 2016-11-23.

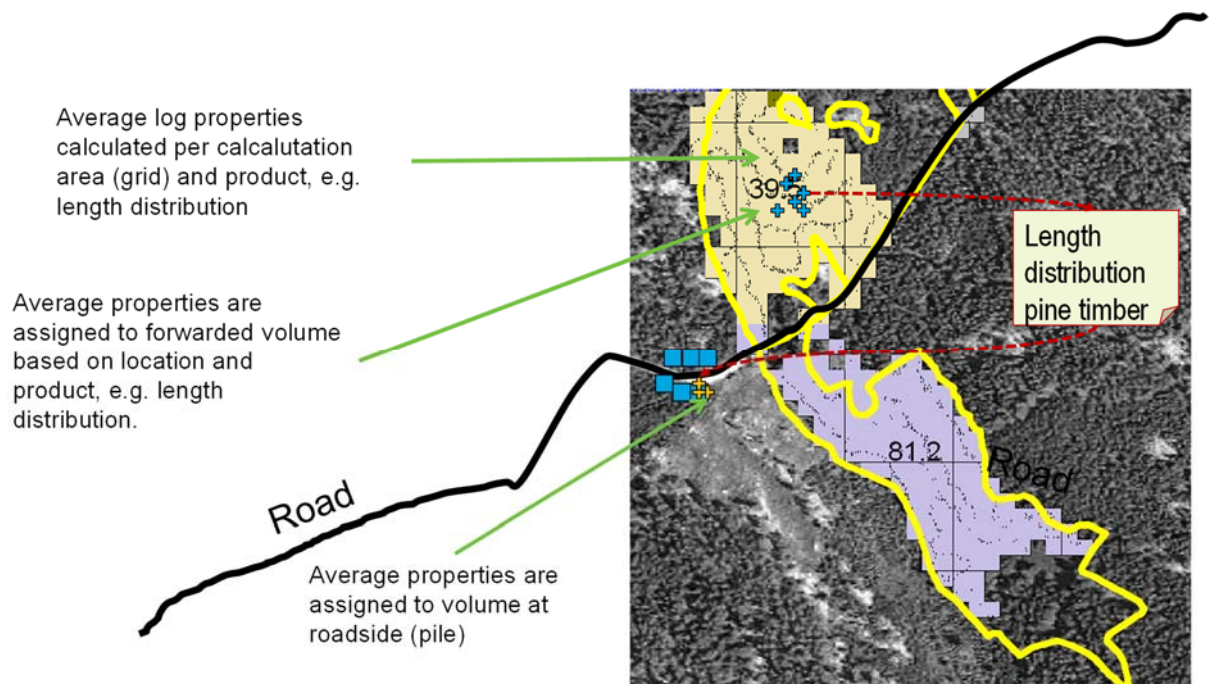
Below are two figures illustrating the suggested new structures added to the fpr schema:



Below is an example illustrating when data is registered during a “crane cycle”.



Example illustrating how the new detailed information can be used in order to calculate log properties for forwarded volumes:



Definition of crane cycle

A forwarding crane cycle can have one of the following categories:

- Loading
- Un-loading
- Re-arrange loadspace
- Re-arrange on ground

An important issue is how to define a crane cycle. When does it start and end. One possible solution is to base this on opening and closing of grapple or basing it on a change in grapple mass. It is today preliminary suggested that a combination of these machine indications are used. However, for logistical purposes this is not deemed to be a critical issue.

Proposals

It is suggested that we:

- Add a new "ForwardingCraneCycle" as an optional element to fpr- and mom-schemas. This means that no new schema is suggested.
- Add new boomPositioningCategory enumerations: ClosingGrapple and OpeningGrapple
- Add new recieverPosition enumerations: Grapple position

New elements

Table 2. New elements and attributes added to the fsp-schema in GrappleScaleLoad.

Name	Description	Unit	Type
CraneCycleKey	Machine specific identity per loaded grapple load. Must be totally unique for a certain MachineKey. Reset only when MachineKey is changed	Seq.no	Pos.integer
OperatorKey	Machine unique operator identity, set by machine	Seq.no	Pos.integer
CraneCycleCategory	Enumeration values defining the type of crane cycle. Allowed values are: "Loading", "Unloading", "Re-arrange loadspace", "Re-arrange on ground"	List	String
GreenMass	Green/raw mass (kg)	Kg	Pos. decimal
CalculatedVolume	Estimated volume of grapple load	m3	Pos. decimal
loadVolumeCategory	Enumeration values defining the actual content of the element. Allowed values are: "Volume, m3sob", "Volume, m3sub", "Loose volume, m3", "Solid volume including bark, branches and needles, m3", "Solid volume of bundles (length*cross sectional area), m3"	List	String
LocationKey	Machine specific identity per location definition. Set when new location definition is modified or created. Running number recommended, reset only when MachineKey is changed.	Seq.no	Pos.integer
DeliveryKey	Machine specific identity per delivery definition. Set when new delivery definition is modified or created. Running number recommended, reset only when MachineKey is changed.	Seq.no	Pos.integer
StartTime	Date and Time when crane cycle started. Time stamp must have the following times registered: local time $\pm$ offset from UTC.		DateTime
StartPosition	Structure for storing position at the start of a crane cycle		
CraneCycleCoordinates*	Coordinates when loading a grapple load		
BoomAngle*	Boom angle when loading a grapple load		
EndTime	Date and Time when crane cycle ended. Time stamp must have the following times registered: local time $\pm$ offset from UTC.		DateTime
EndPosition	Structure for storing position at the end of a crane cycle		
CraneCycleCoordinates*	Coordinates when loading a grapple load		
BoomAngle*	Boom angle when loading a grapple load		
EstimatedLoadSpaceMass	Automatically estimated load space mass after crane cycle. Primarily used in order to check if loadspace is empty (close to 0).	kg	Non-negative decimal

*Existing schema structures including a number of child elements.