

Minutes from the meeting with the StanForD-group 2006-10-24

Place:	Skogforsk, Uppsala, Sweden
Present:	Erik Kindlund, JohnDeere Sakari Suuriniemi, John Deere Mikko Tainio, John Deere Ruediger Dehn, DIS Informationssysteme Stefan Falk, Rottne Lars Nick, KWF Tapio Räsänen, Metsäteho Samuli Hujo, Metsäteho Perttu Isosaari, Vansco-Electronics Lars Henriksson, SDC Jörgen Eriksson, DASA Johan Bruun, Ponsse Teemu Paldanius, Ponsse Jyrki Partanen, Epec Jon Rudman, LogMax Mikael Eliasson, LogMax Johan Persson, CC Systems Per Annemalm, Komatsu Jonas Gustafsson, Sveaskog Leif Orth, Södra
From Skogforsk:	John Arlinger, Secretary Johan J. Möller, Chairman

§1 Opening of the meeting

Johan J. Möller opened the meeting. The proposed agenda was accepted.

§2 Clarifications and modifications of variables

BARK VARIABLES IN PRI

Bark variables should also have a priority in pri-files. It was therefore decided that var112 (NUMBARKPAR) and var113 (BARKPAR) should have priority 2 in pri-files.

TREE SPECIES (VAR110) IN PRD-FILES

The proposal was based on a question from Ola Söderlund, Komatsu Forest. Variable 110 (STEMSPC) has for some reason been given priority 1 in prd-files. When going back it seems like it was given this priority 2001-10-22. However, no explanation for this priority could be found in the minutes. The secretary therefore assumes that this was a mistake. The meeting therefore decided that the priority of var110 is changed to 0 in prd-files and 1 in ktr-files.

REJECTED RANDOMIZED STEMS

Some errors were found by Perttu Isosaari, Vansco, (2006-07-03) concerning the descriptions of var38. The following changes were therefore decided by the meeting (new text underlined):

Var	Name	Type	Data type	Description
		4		Type of stem selection (for control and calibration): 1-Randomized stem, 2-Manually by operator selected stem, 0-Other
38	CONTRMEAS	5	Integer	Acceptance/rejection of randomized stem, if code in var38_t4 is 1 (used for control and calibration <u>randomized stem</u>): 1-Accepted, to be manually measured with caliper, 2-Rejected, not to be manually measured with caliper, 0-Other
		6	Integer	No of harvested stems since last generation of ktr-file
		7	Integer	No of rejected randomized control stems, always reset when starting at harvesting object
		8	Integer	Control stem number for rejected stems, (identical with var270_t3 in stm-file): 1... var38_t6 <u>var38_t7</u>
		9	String	Harvesting time for rejected stems (identical with var12_t4 in stm-file): 1... var38_t6 <u>var38_t7</u>
		10	Integer	Reason for rejection of randomly selected stems: 0 = Not rejected, 1 = Stem defect, 2 = Out of reach, 3 = Part of stem mixed up with other stems, 4 = Poor weather, 7 = Bucking system error, 8 = Caliper broken, 9 = Other reasons not defined: 1... var38_t6 <u>var38_t7</u>

There was also an error related to the priority of var38_t10 in stm-files. It was decided that the priority is to be changed to 0 (not 2) in stm-files. The idea is that rejected randomly selected control stems are only to be logged in ktr-files.

ABOUT GPS COORDINATES IN PRI.

Proposal from Perttu Isosaari, Vansco, (2006-07-03).

Coordinates can be saved for each stem in the pri-file. Sometimes the GPS does not generate positions properly during harvesting. It is possible to exclude the coordinate variables (var523) from the stm if there is a signal break in the middle of the site, however there has to be some data (var 266, var267, tree codes 760-764) in a pri-file due to its structure. A common rule is needed.

The meeting decided that tree codes 760, 762 and 764 should all be "-1" when no signal (invalid) is received from the gps (this description will be added to the StandForD-appendix).

CATEGORY "GENERAL VARIABLES"

The proposal was based on a question from Per Annemalm, Komatsu (2006-08-16).

There has been a category "General variables" in the document "StanForD - Listing of variables by category". The definition of this category has been: "All general variables (var. 1-37) may be included at the beginning of application files. Var. 1 is mandatory and var. 5 should also be included in all application files."

It was decided that this category is excluded in future versions of the documentation as basically all "general variables" are also included for each file type category. There are also variables in this category that are not useful in some file types, for example BUILDDATE (var13) in a drf- or spp-file.

FILE TYPE

Var1_t4 shall have data type integer and not string (as it has been in the old Swedish documents). The following update was therefore decided (new text underlined):

Var	Name	Type	Data type	Unit	Description
1	FILETYPE	4	<u>String</u> <u>integer</u>	Code	System for measurement 0=meter (SI), 1=inch, Imperial

§3 New variables

UPDATING MULTI TREE HANDLING VARIABLES

Variables (var230_t2, var231_t2 and var246) were introduced or updated at the last StanForD-meeting (2006-04-04) in order to improve the production reporting from harvesters with multi tree handling functionality.

It was decided to change the name of var246 from BUNCHEDVOL to BUNCHEDPROD as suggested by Per Annemalm, Komatsu, during the meeting.

Production per operator

It was suggested with the preliminary minutes after last meeting by Jörgen Eriksson, Dasa, that some additional variables for multi stem handling was to be introduced in order to specify the production per operator. These changes were accepted (with the minutes in May 2006) but the secretary forgot to add these variables to the variable documents.

The following variables (according to Jörgens suggestion) will therefore, as decided with the last minutes, be added to the standard documents with priority 2 in prd- and pri-files:

Var	Name	Type	Data type	Unit	Description
230	NUMBNCH	3	Integer	No	Number of occasion that multi tree handling (several stems delimbed and cross cut simultaneously) is carried out at the site per operator: 1...var211_t2
231	STMSIN-	3	Integer	No	Number of multi tree handled stems (several stems

Var	Name	Type	Data type	Unit	Description
	BNCH				delimbed and cross cut simultaneously) per operator: 1...var211_t2
246	BUNCHED-PROD	5	Integer	m3 (ob)	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously) per operator: 1...var211_t2 The volume is based on the total diameter (diameter measured as if only one stem is processed)
246	BUNCHED-PROD	6	Integer	m3s ob	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously) as calculated in harvester per operator: 1...var211_t2
246	BUNCHED-PROD	7	Integer	m3s ub	Total volume of multi tree handled stems (several stems delimbed and cross cut simultaneously) as calculated in harvester per operator: 1...var211_t2

Number of logs and log bunches

There is, according to Mikko Tainio, John Deere (2006-06-07), a need for more detailed production data in order to be able to analyze the number of logs and the number of log-bunches.

The following new variables were therefore decided with priority 2 in prd- and pri-files:

Var	Name	Type	Data type	Unit	Description
<u>246</u>	<u>BUNCHED-PROD</u>	<u>8</u>	<u>Integer</u>	<u>No</u>	<u>Estimated number of logs from multi tree handled stems (number of logs = no of stems * no of cut log bunches, it is assumed that the same number of logs are cut from all stems processed together)</u>
<u>246</u>	<u>BUNCHED-PROD</u>	<u>9</u>	<u>Integer</u>	<u>No</u>	<u>Number of log bunches (equal to no of cross-cuts excluding felling cut) from multi tree handled stems</u>

Bundles versus multi tree handling

In order not to confuse the term bunch in var230, var231 and var246 with the term bundle in var151 and var516 it was also decided that it should be added to the appendix that the term bundle in var515 and var516 means "Logs, tops, branches compressed together into bundles".

Multi tree handling and stm-files

Proposal from Jörgen Eriksson, Dasa concerning how multi tree handled stems are to be registered in stm-files. The meeting decided to implement a new variable that indicates whether a stem in an stm-file includes data from several stems (multi tree handling) or not with priority 2 in stm-file:

Var	Name	Type	Data type	Unit	Description
<u>231</u>	<u>STMSIN-BNCH</u>	<u>4</u>	<u>Integer</u>	<u>No</u>	<u>Number of multi tree handled stems registered as one stem in stm-file (several stems delimbed and cross cut simultaneously). Registered for each stem in stm-file. Variable should always be included if multi tree handling is used. Default value if variable is not included in file is 1, meaning normal processing with one stem being processed at a time. A value of -1 is used if exact number of multi tree handled stems is unknown.</u>

Multi tree handling and stm-files

Question from Jörgen Eriksson, Dasa. Should multi tree handling variables that have a priority in prd-files also have a priority in drf-file? It was decided to postpone the issue to the next meeting when Skogforsk will present a suggestion.

UPDATING DRF-FILE

Teemu Paldanius, Ponsse, as well as several users (primarily contractors) have indicated a need for being able to specify Maintenance in a more detailed way. It has been suggested that this is done in the same way as the specification of "Disturbance" in var330 (SPECTIME).

It was decided to postpone the following update of var330 (new text underlined):

Var	Name	Type	Data type	Unit	Description
330	SPECTIME	1	integer	Number	Number of specified times per operator: 1...var211
		2	Integer	Code	Type of specified time (10 = Repair, <u>12 = Maintenance</u> , 14 = Disturbance): 1...var330_t1 / 1...var211_t2
		3	Integer	Code	Type of disturbance, maintenance or unit repaired (codes in appendix): 1...var330_t1 / 1...var211_t2
		4	Long integer	Sec	Specified time, the sum of this variable is equal to code 10, <u>code 12</u> and code 14 in var317: 1...var330_t1 / 1...var211_t2
		5	String	Hhhhmss	Specified time, the sum of this variable is equal to code 10, <u>code 12</u> and code 14 in var317: 1...var330_t1 / 1...var211_t2
		6	String	Text	Description, same text as in appendix (var330_t3) to be used: 1...var330_t1 / 1...var211_t2
		9	String	Text	Identity of spare part used in case of reparation, other identity in case of <u>maintenance/disturbance</u> : 1...var330_t1 / 1...var211_t2
		10	String	Yyyymmdd-hhmmss	Time when reparation/ <u>maintenance/disturbance</u> first started: 1...var330_t1 / 1...var211_t2

The proposal also means adding new codes to var330_t3 (added to appendix). The following new codes are a preliminary suggestion to be discussed at the next meeting:

Codes, causes for maintenance.

Name	Description	Code
Miscellaneous / other	Not defined	1000
Control measurement		2100
Control measurement, randomly selected *	Control measurement on randomly selected stem or by third party	2101
Control measurement, operator selected *	Control measurement on operator selected stem	2102
Calibration	Length or diameter calibration (work carried out inside machine)	2200
Saw (on harvester head)		2300
Saw chain maintenance*	Changing saw chain	2301
Saw bar maintenance*	Changing saw bar	2302
Refilling		2400
Refill fuel/diesel		2401
Refill fungicide		2402

Name	Description	Code
Refill colors		2403
Lubrication/greasing (automatic)		2500

PROPOSAL FOR NEW SPECIES CODES

Presently there are no absolute way of identifying a certain species or group of species in StanForD-files. Today a certain species is identified through its order/position. It is for example not uncommon in Sweden to use species number 3 and 4 for birch or for lodgepole pine (*pinus contorta*) or for all other broadleaves. In other regions of the world the number of commercial species that need to be kept separate is larger than in Scandinavia. This often means that the same species number is used for totally different species at different harvesting object.

This is sometimes a problem, for example when monitoring production, when using different bark functions or when calibrating the machine.

The present definitions are:

Var	Name	Type	Data type	Unit	Description
120	TREESPEC	1	String	Text	Name of tree species <u>class</u> : 1...var111_t1
120		3	String	Code	Tree species <u>class</u> code (see Swedish appendix) for tree species/tree species: 1...var111_t1 Codes according to Swedish appendix: 1 = tall (Scots pine) 2 = gran (Norway spruce) 3 = löv (broadleaves) 4 = övrigt löv (other broadleaves) (Also used in var110, var442_t3 & var652_t1)

A possible way of improving this situation would be to be able to define in a precise way exactly which species are used for a certain tree species number (var111_t1). It would then probably be better to change the term "tree species" in the old descriptions to "tree species groups".

New variables (underlined) were suggest according to the following table with the same priorities as var120_t1 and var110_t1:

Var	Name	Type	Data type	Unit	Description
120	TREESPEC	1	String	Text	Name of tree species <u>group</u> : 1...var111_t1
120		3	String	Code	Tree species <u>group</u> code (see Swedish appendix) for tree species/tree species: 1...var111_t1
<u>120</u>		<u>4</u>	<u>Integer</u>	<u>No</u>	<u>Number of species and race codes / tree species groups: 1...var111_t1</u>
<u>120</u>		<u>5</u>	<u>Integer</u>	<u>Code</u>	<u>Race code (for example Pinus, see appendix for all codes) / species code & tree species: 1...120_t4/1...var111_t1</u>
<u>120</u>		<u>6</u>	<u>Integer</u>	<u>Code</u>	<u>Species code within a race (for example Pinus silvestris, see appendix for all codes) / species code & tree species: 1...120_t4/1...var111_t1</u>
<u>110</u>	<u>STEMSPC</u>	<u>3</u>	<u>Integer</u>	<u>No</u>	<u>Number of species and race codes for tree species groups</u>

Var	Name	Type	Data type	Unit	Description
<u>110</u>		4	Integer	Code	Race code (for example Pinus, see appendix for all codes) / species code & tree species: 1...110 t3
<u>110</u>		5	Integer	Code	Species code within a race (for example Pinus silvestris, see appendix for all codes) / species code & tree species: 1...110 t3

Codes for race (släkte) in var120_t5, to be included in appendix:

Code	English name	Swedish name	Latin name	Foot note
0	Not defined		-	
1	Coniferous (codes 10-49), not defined	Barrträd		
2	Broadleaves (codes 50-), not defined	Lövträd		
10	Pine	Tall	Pinus	1
11	Spruce	Gran	Picea	1
12	Fir	Ädelgran	Abies	1
13	Douglas fir	Douglas gran	Pseudotsuga	
50	Birch	Björk	Betula	
51	Aspen	Asp	Populus	
52	Beech	Bok	Fagus	
53	Alder	Al	Alnus	
54	Oak	Ek	Quercus	
55	Larch	Lärk	Larix	
56	Elm	Alm	Ulmus	
57	Ash	Ask	Fraxinus	
58	Linden	Lind	Tilia	
59	Maple	Lönn	Acer	
60	Aspen/Poplar	Asp/Poppel	Populus	
61	Eucalypt	Eucalyptus	Eucalyptus	
62	Willow	Salix/ Pil /Sälg	Salix	
63	Whitebeam/Rowan	Rönn/Oxel	Sorbus	
64	Cherry	Fågelbär/Hägg	Prunus	
65	Hornbeam	Avenbok	Carpinus	

1) A sub-division into specific species is most certainly needed.

Codes for each species (art) in var120_t6, to be included in appendix:

Code, race	Name, race	Species name English	Species name latin	Code, species
Any code	All races	Not defined species	-	0
10	Pine (pinus)	Scots pine	Pinus silvestris	1
		Lodgepole pine	Pinus contorta	2
		Radiata pine	Pinus radiata	3
		Caribbean pine	Pinus caribea	4
11	Spruce (picea)	Norway spruce	Picea abies	1
		Sitka spruce	Picea sitchensis	2
12	Fir (abies)	European Silver fir	Abies alba	1

The following table describes how the suggested new variables could be used, observe that we for species group 1 and 2 define the exact species (Scots pine/*Pinus silvestris* and Norway spruce/*Picea abies*) while only the race (birch/*Betula*) is defined for group 3:

Var	Name	Data				
Var111_t1	NUMTREESPC	4				
Var120_t1	TREESPEC	Pine	Spruce	Birch	Other (aspen+alder)	
Var120_t4	TREESPEC	1	1	1	2	
Var120_t5	TREESPEC	10	11	50	51	53
Var120_t6	TREESPEC	1	1	0	0	0

It was suggested that the text in the Swedish appendix (var110 and var120) is excluded.

It was decided to postpone the proposal as described above as it would have extensive effects on a large number of areas within StanForD that has not been analyzed yet. It was also decided that Skogforsk is to develop new examples describing how the new species codes may be used and that Skogforsk should study the European standardization of species codes (EN 13556:2003, EU timber norm).

CONTACT INFORMATION FOR ORGANIS (VAR31)

Proposal based on discussions with Södra. No contact information has existed for the harvesting organisation / company / employer. It is of interest to be able to include this information when sending out harvesting directives in order for the operator to easily be able to find out whom to contact.

The meeting therefore decided to implement the following variables with priority 2 in oai-file:

Var no	Name	Type	Data type	Unit	Description	Priority
<u>31</u>	<u>ORGANIS</u>	<u>6</u>	<u>String</u>	<u>Text</u>	<u>Name of contact person (responsible for harvesting of a specific object) within harvest organization / company / employer</u>	<u>2</u>
<u>31</u>		<u>7</u>	<u>String</u>	<u>Text</u>	<u>Address of contact person (responsible for harvesting of a specific object) within harvest organization / company / employer</u>	<u>2</u>
<u>31</u>		<u>8</u>	<u>String</u>	<u>Text</u>	<u>E-mail of contact person (responsible for harvesting of a specific object) within harvest organization / company / employer</u>	<u>2</u>
<u>31</u>		<u>9</u>	<u>String</u>	<u>Text</u>	<u>Phone/fax number of contact person within harvest organization / company / employer</u>	<u>2</u>

§4 Calibration variables

The issue of updating calibration variables has been discussed at several meetings (2005-10-25, 2006-04-04). It was decided at the last meeting to postpone the decision until 2006-10-24 concerning the calibration variables and that Skogforsk was to study the following issues:

- In which file types should the variables have a priority (ktr, prd, pri etc)

- Predefined codes for "reasons for calibration" should be suggested
- Simpler structure for registering butt log length calibration according to original Finnish proposal, that is the difference in adjustment comparing to length adjustment of non butt logs
- Unit to use for var47_t1 is to be mm.
- Variables for storing adjustments when using a regression diameter calibration should be added
- Handling of species identities in a more efficient way (separate proposal previous section)

It was decided that the following old variables will be given priority 4 for all file types:

Var	Name	Type	Data type	Unit	Description
14	CALIBDATE	4	String		Calibration date
15	CALIBRSN	1	String		Reason for calibration
15	CALIBRSN	2	String		Reason for calibration: No correction = 0, Repair of measurement system = 1, Change in weather conditions = 2, Other reasons = 3

The main calibration variables (40, 43, 46-49 were implemented in April 2000 (2000-04-10).

The meeting decided to implement the following new variables as well as updates of variable descriptions concerning diameter calibration variables (new text underlined):

Var	Name	Type	Data type	Unit	Description
43	NUMDIACL	1	Integer	No	Number of diameter calibrations (<u>suggestion, at least last three calibrations</u>)
43	NUMDIACL	2	Integer	No	Number of diameter calibrations per tree species (<u>suggestion, at least last three calibrations</u>): <u>1...var111 t1</u>
<u>43</u>	<u>NUMDIACL</u>	<u>3</u>	<u>Integer</u>	<u>No</u>	<u>Number of diameter positions classes per calibration and tree species (suggestion, 14 points at diameters 50,100,150...700): 1...var43 t2/1...var111 t1</u>
44	DIACALDAT	4	String	Yyyymmdd-hhmmss	Diameter calibration date: <u>1...var43 t2/1...var111 t1</u>
45	DIACALRSN	1	String	Free Text	Diameter calibration reason: <u>1...var43 t2/1...var111 t1</u>
<u>45</u>	<u>DIACALRSN</u>	<u>2</u>	<u>Integer</u>	<u>Code</u>	<u>Code for diameter calibration reason:</u> <u>1...var43 t2/1...var111 t1</u> <u>0 = Repair of measurement system</u> <u>1 = Change in weather conditions</u> <u>9 = Other reasons</u>
48	CALDIA	1	Integer	Mm	Diameter positions classes (suggested diameters 50,100,150...700): <u>1...var43 t3/1...var43 t2/1...var111 t1</u>
49	CORRDIA	1	Integer	Mm	<u>Adjustment per diameter position class:</u> <u>1...var43 t3/1...var43 t2/1...var111 t1</u>
<u>49</u>	<u>CORRDIA</u>	<u>2</u>	<u>Integer</u>	<u>1/10000</u>	<u>Diameter adjustment, constant "a" in "Diameter adjustment (mm) = a + b*Measured diameter (mm)", if linear regression method is used for diameter calibration:</u> <u>1...var43 t2/1...var111 t1</u>
<u>49</u>	<u>CORRDIA</u>	<u>3</u>	<u>Integer</u>	<u>1/10000</u>	<u>Diameter adjustment, factor "b" in "Diameter adjustment (mm) = a + b*Measured diameter (mm)", if linear regression method is used for diameter calibration:</u> <u>1...var43 t2/1...var111 t1</u>

The meeting decided to implement the following new variables as well as updates of variable descriptions concerning length calibration variables (new text underlined):

Var	Name	Type	Data type	Unit	Description
40	NMLNGTHCA	1	Integer	No	Number of length calibrations (<u>suggestion, at least last three calibrations</u>)
40	NMLNGTHCA	2	Integer	No	Number of length calibrations per tree species (<u>suggestion, at least last three calibrations</u>): <u>1...var111_t1</u>
<u>40</u>	<u>NMLNGTHCA</u>	<u>3</u>	<u>Integer</u>	<u>No</u>	Number of length positions <u>classes</u> per calibration and tree species (<u>suggestion, at least one point at 500 cm</u>): <u>1...var40_t2/1...var111_t1</u>
41	LGHTCALDAT	4	String	Yyyymmdd-hhmmss	Length calibration date: <u>1...var40_t2/1...var111_t1</u>
42	LGHTCALRSN	1	String	Free text	Length calibration reason: <u>1...var40_t2/1...var111_t1</u>
<u>42</u>	<u>LGHTCALRSN</u>	<u>2</u>	<u>Integer</u>	<u>Code</u>	Code for length calibration reason: <u>1...var40_t2/1...var111_t1</u> 0 = Repair of measurement system 1 = Change in weather conditions 9 = Other reasons
46	CALLNGTH	1	Integer	Cm	Length positions <u>classes</u> (suggested length 500 cm): <u>1...var40_t3/1...var40_t2/1...var111_t1</u>
47	CORRLNGTH	1	Integer	Mm	Adjustment per length position <u>class</u> <u>1...var40_t3/1...var40_t2/1...var111_t1</u>
<u>47</u>	<u>CORRLNGTH</u>	<u>2</u>	<u>Integer</u>	<u>Mm</u>	Adjustment per length position <u>class</u> for butt logs, that is the difference in adjustment comparing to length adjustment of non butt logs. Used if separate butt log calibration exist in harvester: <u>1...var40_t3/1...var40_t2/1...var111_t1</u>

Observe that the correction/adjustment registered in var47_t1 and var49_t1 should be the value for that exact position, it should in other words be independent of whether an interval, regression or other type of calibration is carried.

It was decided that all variables are to be given priority 2 in ktr-files (and kal-files) except var49_t2 and var49_t3 which are given priority 3 and it was also decided that all variables are given priority 3 in prd- and pri-files.

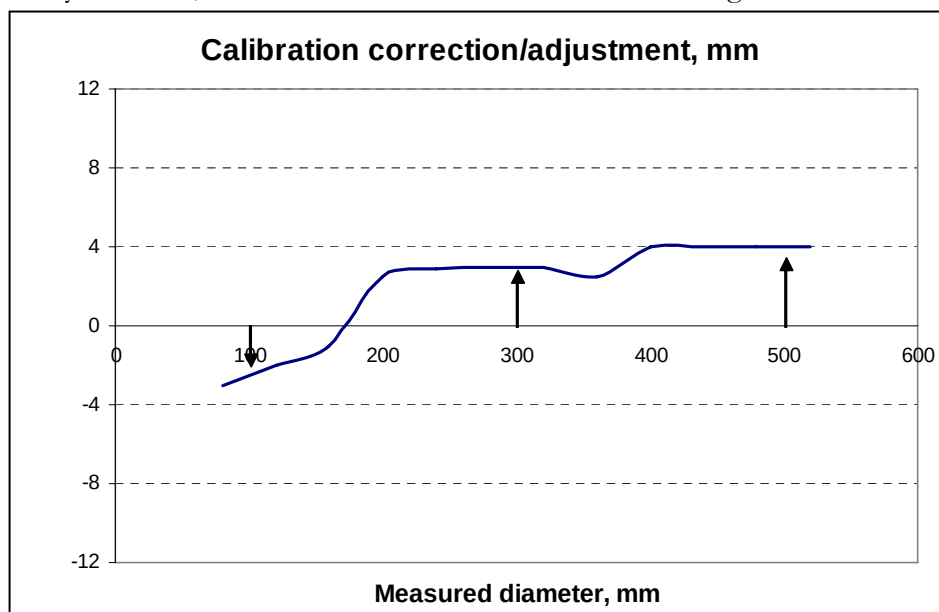
Examples illustrating how to use the updated variables for registering calibration data:

Var	Name	Data								
Var111_t1	NUMTREESPC	4								
Var43_t1	NUMDIACL	3								
Var43_t2	NUMDIACL	1	2	0	0					
Var43_t3	NUMDIACL	3	3	3						
Var44_t4	DIACALDAT	06-01-13	06-01-14	06-01-14						
Var45_t1	DIACALRSN	Repair	Repair	Repair						
Var45_t2	DIACALRSN	0	0	0						
Var48_t1	CALDIA	100	300	500	100	300	500	100	300	500
Var49_t1	CORRDIA	-2	3	4	0	2	5	-1	1	5
Var49_t2	CORRDIA	234	234	234						

Var	Name	Data								
Var49_t3	CORRDIA	452	452	452						

Var	Name	Data			
Var111_t1	NUMTREESPC	4			
Var40_t1	NMLNGTHCA	2			
Var40_t2	NMLNGTHCA	1	1	0	0
Var40_t3	NMLNGTHCA	1	1		
Var41_t4	LGHTCALDAT	06-02-13	06-02-14		
Var42_t1	LGHTCALRSN	Repair	Climate		
Var42_t2	LGHTCALRSN	0	1		
Var46_t1	CALLNGTH	500	500		
Var47_t1	CORRLNGTH	-11	-12		
Var47_t2	CORRLNGTH	+20	+16		

The first diameter calibration (date 06-01-13) could be illustrated with the following diagram (the arrows indicate the diameter positions which have been logged in the table above). Observe that the "calibration method" (the curve) is totally fictitious, it is neither an interval calibration nor a regression calibration.



Observe that what should be logged in var48_t1 and var49_t1 is the calibration adjustment for that specific diameter or length, not for a diameter class. This means that the logging is independent of what calibration method is used. It is also independent of which intervals are used when using interval calibration.

LOG VOLUME NEW: VAR299 LOGVOL TYPE 4

The proposal was suggested by the Finnish pre-StanForD meeting (2006-05-23).

A new variable for the control measurement log volume based on the diameter values of caliper and measured length is needed for comparisons of the different log volumes. So far this information has not been available in ktr-file.

Volume calculation of the log can be done either in the memory of the caliper or in bucking computer (must follow the calculation rule of the caliper).

The meeting decided that the following new variables should be added to the standard:

Var	Name	Type	Data type	Unit	Description	Prio
299	<u>LOGVOL</u>	4	<u>Integer</u>	<u>0.0001</u> <u>m3sob</u>	<u>Solid volume of logs on bark based on control measurements with caliper, calculated in caliper or in bucking computer: 1...var290_t1</u>	<u>ktr / 3</u>

The meeting also decided that a more precise definition of how this volume is to be calculated is needed. Presently in Finland this volume is calculated using spp-diameters and the function for cut cones up to a height of 1 meter and thereafter the manually measured diameters and the function for a cylinder. It was decided with the minutes that the issue of including this definition in the appendix is postponed to the next meeting.

It was also decided to update the description of var299_t3 (also for type 1 and 2) according to the following table (new text underlined):

Var	Name	Type	Data type	Unit	Description
299	LOGVOL	3	integer	0.0001 m3sob	Solid volume of logs on bark, <u>measured by machine:</u> 1...var290_t1

HARVESTING TIME OR CONTROL MEASUREMENT TIME OF THE CONTROL STEMS

The proposal was suggested by the Finnish pre-StanForD meeting (2006-05-23).

Harvesting time should be given for all control stems (randomized and manually selected), not only for rejected stems. It can be used for following the calibration need in the harvester application and also in the forest company's system for following the measurement accuracy of the machines over time. There are different existing alternatives for this, but also a totally new variable is possible.

Today this problem is handled by Haglöfs calliper (Skalman software) through registering var12_t4, copied from the original stm-file, for each stem in the ktr-file. This means that var12_t4 in many ktr-files occurs several times, first once for the whole ktr-file and then for each stem in the ktr-file then representing the harvesting date (measuring date of M1), that is the date when the stm-file was saved (se also document "Demand specification for quality certification of harvester measurements – Calibration and control of harvesters").

It was decided the var18 should be used instead of var12 when registering the harvesting date of each individual stem in the ktr-file.

The meeting decided to add the following variables per stem in ktr-files (priority 3 in ktr-files) to the standard:

Var	Name	Type	Data type	Unit	Description
-----	------	------	-----------	------	-------------

18	CONTRDATE	4	string	Yymmdd-hhmmss	Measuring date for machine (M1), identical with var12_t4 in stm-file. Registered for each stem in ktr-file
18	CONTRDATE	5	string	Yymmdd-hhmmss	Control measuring date for operator (M2). Registered for each stem in ktr-file.
18	CONTRDATE	6	string	Yymmdd-hhmmss	Control measuring date for 3rd party (M3). Registered for each stem in ktr-file.

Observe that var12_t4 is today used in the same way as the new var18_t4 (Measuring date for machine (M1), identical with var12_t4 in stm-file)

SITE-SPECIFIC AND STEM-SPECIFIC VARIABLES IN KTR

Proposal from Perttu Isosaari (Vansco Electronics).

There are some un-clarities in the present ktr demand specification (document "Demand specification for quality certification of harvester measurements") due to the fact that there can be stems from different sites in one single ktr file:

- there are some site-specific variables described in the "Data per stem"-part, like var16_t4, var21 and var35 (but there are site-specific variables in "Data per file"-part also)
- log data for rejected randomly selected stems is placed in the beginning of the file, but there can be rejected stems from several sites, log data is not site-specific. However, it could be expected according to the description of var38_t7 ("No of rejected randomized control stems, always reset when starting at har-vesting object"), that the log data in one ktr would be site-specific.

It was decided that it should be stated in the demand specification that variables that are placed in the beginning of the ktr file before the data of the first stem (var110_t1) refer to all the stems of the file. Then there is no need for determining separately which of the site-specific variables are actually given stemwise. Often one ktr is from one site and it is unnecessary to repeat site-specific variables for each stem. However, it must be possible to give these variables per stem.

It was decided that it should be clearly stated that the system must be able to handle the possibility of having several stems from different sites within one ktr-file. It was therefore decided that the demand specification will be updated in order to avoid site specific variables in the header of the file (Data per file). That means that var3_t1, var31_t1, var111, var112, var113 normally should be register per stem. Var521_t1 should be equal to 2, meaning that the coordinates per stem in var523 should be the absolute coordinates and not the difference from var522 which can be left out of the ktr-file (not needed)

It was also decided that both var38_t6 and var38_t7 (CONTRMEAS) are updated so that it is clearly stated that they are "reset after each generation of ktr-files, meaning after each registration of the rejection log in the ktr-file". This would mean that the reason and time for rejection of an individual stem is only registered once.

PRIORITIES OF CALIBRATION VARIABLES VAR40 – VAR45 IN PRD AND KTR

In Finland these variables are given in prd also and in Sweden in every ktr. Is it necessary for them to be in both files? Which are the priorities? This issue will be discussed in Finland with forest companies.

The variables are not necessary in prd-files from a Swedish perspective.

It was decided to postpone the issue to the next meeting.

§5 Identification of matrixes & transport objects

Proposal from Jörgen Eriksson, Dasa. The objective of the proposal was to be able to handle the fact that new price matrixes or transport objects sometimes are added/used at a harvesting object and that there are no clearly defined unique identity variables for these within a certain file.

Presently log code 1 (price matrix number) is used for identifying the price matrix of a log in a pri-file and load code 10 (transport object number) is used for identifying the transport object of a load in a prl-file. The codes refers to the order of the assortments (in var121) and the order of the transport objects (in var441).

It would be an advantage to have unique keys in case a new price matrix or transport object is added during the work at a certain harvesting object, especially if this means that the order of the matrixes or transport objects is changed. When for example an apt-file is edited, after this key has been set automatically once in the machine, the key should not be changed by the administrative program.

The meeting decided that the following two new variables will be added to the standard (priority 1 in pri/prd/stm/apt and prl):

Var	Name	Type	Data type	Unit	Description
<u>121</u>	<u>ASSTDESCR</u>	<u>6</u>	<u>integer</u>	<u>Integer</u>	Unique identification information set automatically in bucking computer / price matrix/tree species (compare with var441 t12): 1...var116 t1/1...var111 t1. Must be a unique identity / key for a price matrix, never repeated in the same harvester file (pri/prd/stm/apt). Not to be changed by operator.
<u>441</u>	<u>TRNSDSC</u>	<u>12</u>	<u>integer</u>	<u>integer</u>	Unique identification information set automatically in forwarder computer (compare with var121 t6): 1...442 t1 / 1...440 t1. Must be a unique identity / key for a transport object, never repeated in the same forwarder file (prl). Not to be changed by operator.

The meeting decided that the following two new log and load codes will be added to the standard (description added to appendix):

Codes	Description
<u>Log code 20</u> <u>(var256)</u>	Unique identification information set automatically in bucking computer. Must be a unique identity / key for a price matrix, never repeated in the same harvester file (pri/prd/stm/apt). Not to be set/changed by operator.
<u>Load coade 21</u>	Unique identification information set automatically in forwarder computer. Must be a

Codes	Description
(var446)	unique identity / key for a transport object, never repeated in the same forwarder file (prl). Not to be set/changed by operator.

It was also decided that it should be clearly stated in the appendix that log code 20 and load code 21 are compulsory in prl/pri-files.

Example

Below is an example illustrating the problem with the present system of identifying the transport object of an individual load if the order of the transport objects is changed (step 2). The curved arrow indicates that load code 10 for load no 4 must be updated retroactively in order to be able to avoid mixing up the volumes of transport object 3 (Pulp) and 4 (Fuel wood).

Step 1) Starting point, three loads registered

Load (2)	Vol (401)	Mass (450)	Pos (760-764)	TrObj (10)
1	9	7200	218	1
1	3	2400	220	2
2	13	10400	230	3
3	12	9600	217	1

Order	Name	Date	PM	Lat
-	v441 t1	v441 t6	v442	v441 t3
1	Normal timber	12	218	60
2	Small timber	13	230	60
3	Pulp	14	217	60

Step 2) Transport object (Fuel wood) added

Load (2)	Vol (401)	Mass (450)	Pos (760-764)	TrObj (10)
1	9	7200	218	1
1	3	2400	220	2
2	13	10400	230	4?
3	12	9600	217	1
4	11	7660	234	3
5	12	8900	231	4

Order	Name	Date	PM	Lat
-	v441 t1	v441 t6	v442	v441 t3
1	Normal timber	12	218	60
2	Small timber	13	230	60
3	Fuel wood	21	450	60
4	Pulp	14	217	60

Below is a prl-example describing the use of the new suggested variables (load code 21 and var441_t12). The advantage with this solution is that load code 21 does not need to be updated if a transport object is added (Fuel wood) and the order of the transport objects is changed.

Step 1) Starting point, three loads registered

<u>Load</u>	<u>Vol</u>	<u>Mass</u>	<u>Pos</u>	<u>New ID</u>		<u>New ID</u>	<u>Order</u>	<u>Name</u>	<u>Date</u>	<u>PM</u>	<u>Lat</u>
(2)	(401)	(450)	(760-764)	(21)		v441_t12	-	v441_t1	v441_t6	v442	v441_t3
1	9	7200	218	101	↔	101	1	Normal timber	12	218	60
1	3	2400	220	102	↔	102	2	Small timber	13	230	60
2	13	10400	230	103	↔	103	3	Pulp	21	217	60
3	12	9600	217	101							

Step 2) Transport object (Fuel wood) added, new unique id automatically

<u>Load</u>	<u>Vol</u>	<u>Mass</u>	<u>Pos</u>	<u>New ID</u>		<u>New ID</u>	<u>Order</u>	<u>Name</u>	<u>Date</u>	<u>PM</u>	<u>Lat</u>
(2)	(401)	(450)	(760-764)	(21)		v441_t12	-	v441_t1	v441_t6	v442	v441_t3
1	9	7200	218	101	↔	101	1	Normal timber	12	218	60
1	3	2400	220	102	↔	102	2	Small timber	13	230	60
2	13	10400	230	103	↔	201	3	Fuel wood	21	450	60
3	12	9600	217	101	↔	103	4	Pulp	14	217	60
4	11	7660	234	201							
5	12	8900	231	103							

Observe that "Order" above is not stored in a variable, it only indicates the order of the transport objects in var441.

The following extraction from a prl-file

441 1 <LF>Normal timber<LF>Small timber <LF>Spruce Pulp<LF>Birch Pulp ~

means that the "Normal timber" has order number 1, "Small timber" has order number 2, "Spruce Pulp" has order number 3 and " Birch Pulp " has order number 4.

§6 Centre points in stm-file

The proposal was originally written by Fergal Mohan, TreeMetrics (2006-10-01). TreeMetrics is an Irish company developing a ground based laser scanning system that can be used to generate stm-files describing the scanned site.

The basis of the submission was that new scanner techniques are becoming available that will allow the centre points of a stem to be determined accurately at intervals (1 dm) up along the stem. This centre point information will allow any bend or sweep in the stem to be accurately measured. This information can be stored as a set of numbers in a format similar to diameter differences (compare with var273, type 3 and type 4) with the first number the absolute offset from the origin (coordinates in variables 520 – 523) and the following values a snapshot difference from that origin. The absolute offset (the first value) describes the position relative to the origin.

The origin of the plot (where the laser / measuring device is located) can be considered as the reference position which is the same location as the single

reference position (GPS-coordinates in var522, sometimes called the starting point). If the GPS coordinates are specified in the stm-file and var521_t1=1 then there should be agreement between the stem position specified in the var523_t1 var523_t3 pair and the centre point absolute values of the stem when the DBH is factored in. Obviously these measurements need to be in the same units and registered to ensure the same coordinate system rotation angle is used in both cases.

So if the offset from the Starting Position to a Stem position specified in the GPS coordinates is converted to X and Y offsets (via an intermediate distance and angle conversion if appropriate) then these values should coincide with the first value for the X and Y coordinates var273_t5 and var273_t6 (see below). If no GPS co-ordinates are specified (var520-523) then the Stem X and Y centre points can be considered relative to a local co-ordinate system.

In theory the centre point is defined as the intersection of 2 diameter measurements made at 90 degrees to each other (comparable with a normal diameter measurement with a calliper). However the centre point is defined as exactly halfway between the left-most and right-most points on the stem when using a laser scanner.

The X and Y directions describing the position of the centre point are polar coordinates of distance which get recorded (along with the Z coordinate for height) for example during a laser scan. TreeMetrics recommends the scanner begins the scan in a Easterly (X-direction) direction which allows the scan to be plotted on a computer screen with North pointing upwards. So long as the starting compass direction is known the information can be transformed to ensure coordinate system rotation angle is consistent.

It was decided to postpone the following proposal (with priority 3 in stm-files) to the spring meeting (Metsäteho will discuss the proposal in Finland before next meeting):

Var	Name	Type	Data type	Unit	Description
273	STEMDIA	5	Integer	Mm	Differential X position of the stem centre point, at heights defined by variable 273_t7. The first value is the absolute offset from the origin and the following values a snapshot difference from the first value. Var522 is the origin/reference point (x,y,z=0,0,0). X and Y centre points can be considered relative to a local co-ordinate system if no GPS co-ordinates are specified (var522).
		6	Integer	Mm	Differential Y position of the stem centre point, at heights defined by variable 273_t7. The first value is the absolute offset from the origin and the following values a snapshot difference from the first position. Var522 is the origin/reference point (x,y,z=0,0,0). X and Y centre points can be considered relative to a local co-ordinate system if no GPS co-ordinates are specified (var522).
		7	Integer	Mm	Differential Z (height) position of the stem centre point. The values should always be a multiple of the interval specified in var269_t2. The first value is the absolute offset from the origin and the following values a snapshot difference from the first position. Var522 is the origin/reference point (x,y,z=0,0,0). X and Y centre points can be considered relative to a local co-ordinate system if no GPS co-ordinates are specified (var522).

Here's an example of how the information would appear in the stm-file

273 5 8066 2 -2 2 5 6~

273 6 -2040 -20 -21 -22 -22 -20~

273 7 -660 100 200 300 400 500~

The absolute X,Y position of the Stem is 8.066m, -2.040m, away from the origin and -.66m below it (Z position). The next centre point (for the stem profile 10cm up the stem) would be the addition of the snapshot values to the absolute i.e. 8.068m (8066+2), -2.060m (-2040-20), then 8.064m (8066-2), -2.061m (-2040-21) and so on. The advantage of using snapshot differences is that you don't have to work your way through the whole sequence in order to work out any random value.

In order to simplify the parsing of the centre point information the number of centre points stored for each Direction (X,Y and Z) must always be equal (it could be just a single absolute value but this can already be handled with var523_t1, var523_t2, var523_t3, var523_t4). There must be a one-to-one correspondence between the number of centre points specified in var273, type 5-6.

Observe that TreeMetrics will store the information as defined above in user-defined variable 2273 (type 5-7) in stm-files generated based on scanner data. Skogforsk will together with TreeMetrics evaluate the precision of the scanner during the coming months and will therefore most certainly be able to present some more concrete results at the next StanForD meeting.

§7 Sound knot function & quality

It was decided that the description of var141_t2 is updated (new text underlined) as it refers to functions described in var147-149:

Var	Name	Type	Data type	Unit	Description
141	GRADE	2	Integer		Grade which extension is determined by a special function <u>as defined in var147-149 (normally automatic sound knot bucking)</u> / tree species: 1...var111_t1

§8 Use of binary format in StanForD

Jonas Gustafsson, Sveaskog, (2006-06-08) raised the issue of binary numbers used for Default grade (var144_t1, "Default grade/tree species when starting to operate the stem in the harvester: 1...var111_t1"). It has been implemented as a binary number by some manufacturers but not all (using the normal decimal numeral system).

It was suggested that we try to decide on a solution in order to some day reach a point where all manufacturers implement this variable in the same way. It was also suggested that var141_t2 is handled in the same way as var144_t1.

The meeting decided that:

1. It is to be clearly defined that the color marking matrixes (var151 and var152) and grades (var141_t1, var276_t1) always are to be in a binary format.
2. Two new variables indicating whether to interpret var141_t2 and var144_t1 as binary or decimal numbers are to be added to the standard according to the following table (new text underlined):

Var	Name	Type	Data type	Unit	Description
141	GRADE	2	Integer	Integer	Grade which extension is determined by a special function as defined in var147-149 (normally automatic sound knot bucking)/ tree species: 1...var111_t1 <u>Numeral system defined in var141_t3.</u>
<u>141</u>	<u>GRADE</u>	<u>3</u>	<u>Integer</u>	<u>Code</u>	<u>Numeral system used in var141_t2: 1...var111_t1</u> <u>0=decimal (default if variable is missing), 1=binary</u>
144	INITGRAD	1	Integer	Integer	Default grade/tree species when starting to process the stem in the harvester: 1...var11_t1 <u>Numeral system defined in var144_t2.</u>
<u>144</u>	<u>INITGRAD</u>	<u>2</u>	<u>Integer</u>	<u>Code</u>	<u>Numeral system used in var144_t1: 1...var111_t1</u> <u>0=decimal (default if variable is missing), 1=binary</u>

3. It will be clearly stated in the main document that all numbers are decimal except when stated differently in the description of the variables (var151, var152, var141_t1, var276_t1 are always binary and var141_t3, var144_t2 may be binary)

§9 Items for discussion and information

SPP-FILE, FINLAND

Proposal was suggested by the Finnish pre-StanForD meeting (2006-05-23).

It has been decided in Finland that the “official” spp file to be used in Finland is named FI_MMM_Asetus_15-06.spp. It is named after the new timber measurement act of Ministry of Agriculture and Forestry concerning harvester measurement. The file has been made by Metsäteho and it has been delivered to the machine manufacturers. The modification of the file with the machine specific data and checksums is allowed and even necessary. The machine manufacturer is responsible that the actual data in the file is kept unchanged. The file is considered to be the national application of spp files in Finland. If it is considered that the file should be available on StanForD web pages, this can be done.

The meeting decided that it is a good idea if the file is available at StanForD's web site.

GERMAN "SALES LENGTH" IN PRI-FILE

“Sales length” has a quite long history in Germany and comes from days when the wood was cut manually. It used all over the German wood market and is included in the HKS-law. The HKS rules relates to saw logs and long wood. It confirms that the buyer of the wood gets an extra length which is added to the sales length for free.

That means that only the volume within the "sales length" will be paid for. The extra length can vary. It is often 10cm, but more and more other lengths are negotiated in wood trade. That is the reason why you can not calculate the sales length from cut length.

So KWF would like to add the "sales length" to the PRI-file. Harvesters that conforms to HKS can enter both the sale length and extra length, meaning that the sales length is known in the machine. The extra length will be added to the sales length to get the cut length to produce the logs.

The meeting decided to postpone this suggestion to the next meeting.

A few comments/questions from Skogforsk:

As far as we understand it the extra length is handled through variable 135, type 1 (Additional length margin) in the apt-file. Sales length then ought to be the same as the lengths defined in var132 type 1 in the apt-file (length classes).

If this is correct it should be possible to calculate the sales length (stored in var132 type 1) based on the cut length in the pri-file if var132 is included with the pri-file.

Several, but not all, manufacturers include var132 with the pri-file making it possible to calculate what I have understood to be sales length.

Maybe the simplest solution would be to make certain that all manufacturers include var132_t1 in the pri-file? Perhaps giving it priority 1 instead of 3 in pri-files?

During the meeting an example was given by Lars Nick, KWF, which slightly confused us. The question was how to handle a situation where the required length is longer than the physical length?

CONTROL OF HARVESTER MEASUREMENTS IN GERMANY

Lars Nick, KWF, briefly described the present work in Germany concerning "quality certification of harvester measurements". A cooperation with SDC and Skogforsk will be arranged.

TIMBER VALUE TRIAL AUTUMN 2006 (VIRKESVÄRDETEST)

Johan J Möller, Skogforsk, described the plan for the tests in November and December.

The aim is to investigate how different bucking computers system work in practice, to support manufactures in developing their systems and to support users when using and buying systems. The test will be done in Tierp with StoraEnso/Bergvik as a land host. It will be carried out from the 14th of November to the 6th of December.

Practical test will be divided up into three parts:

1. 40 trees, 30 spruce and 10 pine:
value optimization, quality bucking, dimension accuracy, cutting splits, damage caused by knobs and debarking
2. 1000 logs

apportionment bucking, quality certification system (random stm)

3. General

Calibration functions, Communication with other media, (caliper, mail, cd, GPS), Administration of data (saving of data, backup, identities of harvesting objects), Functions for quality, log type and sound knot bucking, Data, file type, prd, pri, stm, ktr, drf, GIS-map according to StanForD, Other important functions implemented?

FUTURE OF STANFORD (MEETING IN AUGUST WITH MEMBERS)

A meeting with financiers of StanForD was held in August with representatives from all major manufacturers.

According to the meeting the main tasks of Skogforsk should be:

- Arrangement of two meetings per year
- Standard documents – updating
- Studies concerning new variables and functions
- Studies concerning old variables and explanation
- International contacts
- Supervising correct use of StanForD variables
- Telephone support
- StanForD on internet
- Other administration

The following issues should have a high priority during the coming years:

- Information about StanForD around the world.
Example of activities can be conferences (FEC), organization in other countries. Extended web-site with StanForD information incl credit to StanForD members. Printed information materials about StanForD, example results from Skogforsk which can be spread by the StanForD members. A StanForD logotype will be created. Can be used to facilitate accreditation of StanForD members.
- Cleaning up the standard
To clean up the standard and try to make a better structure and description of indistinct variables. Suggested to organize a small specific but representative group of members.
- Pre-work on a new version of StanForD
It was decided to aim at a new edition (major revision) of StanForD to be released at about 4 years from now, using the same data format as today. A preliminary title is StanForD 2010. New requirements on the developed standard have to be prepared and communicated.
We should also follow the development of XML standards within neighboring systems like Papinet etc. Conditions for cooperation should be investigated. No StanForD-member is today interested in converting the data format to XML or in joining the Papinet, but it is important to follow future needs of both users and members.

The opinion of the meeting was in other words that StanForD should stay with the present data format.

The meeting decided that :

- A fixed fee of 40.000 SEK will be paid per year and member (2007-2009), for 2006 36.000 will be paid according to the old agreement from 2002
- The fee will be paid in the end of the year
- Skogforsk and present members will try to recruit new members and to increase the number to at least 9
- The goal of the total budget will be 600.000 SEK and approximately 50% will be paid by Skogforsk. If the members fee are lower or higher than 300.000 a discussion of what to do with the difference will be hold at the annual members telephone meeting. If the members fee increase 300.000 for 2007 the surplus shall be used for extended international information .
- The meetings will continue to be open and free also for non-members
- Skogforsk have the right to charge for general support to non-members and for preparation of proposals from non-members.

The following issues will be discussed at the spring meeting 2007:

- Suggest a work group for cleaning up the standard and to work with the next generation of StanForD
 - Member companies
 - Skogforsk, Metsäteho
- Information plan
 - Web page
 - Preliminary printed information materials
 - Logotype
- Try to get more paying members
- Discuss the future organization with Metsäteho

INDISPUTABLE KEY (EU-PROJECT)

Indisputable Key is an EU-project which started in October 2006. The focus is identification (RFID) of logs and the information flow from forest to final product.

An XML-based “standard” is an important part of this project. Several parallel initiatives are under way, for example Metsäteho, SDC/Papinet, Scottish Forest Industries Cluster/Papinet, Indisputable Key, etc.

Skogforsk's aim is to keep the StanForD-group informed of the standardization work carried out within Indisputable Key.

§10 Other issues

No issues were discussed.

§11 Next meeting

Next meeting will take place on Tuesday March 27th, 2007, at Skogforsk in Uppsala, starting at 10.00 a.m. Proposals for the meeting shall be the secretary by hand preferably not later than March 1st 2007.

§12 End of meeting

Johan J Möller (chairman) closed the meeting.

Secretary

John Arlinger