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StanForD2010 – rules

V1P6

SKOGFORSK

VERSION HISTORY

Date	Version	Description	Authors
2011-02-02	1.0	First released finalized version	John Arlinger, Skogforsk Juha-Antti Sorsa,Metsäteho
2011-06-23	1.1	Rule 7.3 excluded since "Any element" is not used. Rule 4.19 modified and 4.20 added.	John Arlinger, Skogforsk
2011-10-11	1.2	Rule 2.1 and 4.1 modified. Rule 3.17, 4.21 added.	John Arlinger, Skogforsk
2011-11-09	1.3	Rule 2.3 added.	John Arlinger, Skogforsk
2012-12-21	1.4	Rule 2.2, 3.3 and 4.9 modified. Rule 2.4 and 4.22 added.	John Arlinger, Skogforsk
2014-11-20	1.5	Rule 2.5 added.	John Arlinger, Skogforsk
2016-12-19	1.6	Rule 2.6 and 4.23 added.	John Arlinger, Skogforsk

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Contents

1   Introduction

StanForD 2010 schemas are used for checking that StanForD 2010 messages are valid. However there are many kinds of requirements for StanForD 2010 messages that cannot be checked using schema validation. One example is if we want to pass some optional information coming from the company to the machine back to the company. These kinds of dependencies cannot be checked using pure schema validation. Additionally there might be different kinds of constraints inside one message that cannot be validated using schema but that we want to be obeyed. These kinds of rules may be validated in future using new versions of XML Schema language or implementing specific validation tools.

In this document we list and define rules that all the parties should follow when developing and manipulating StanForD 2010 messages. Usually these rules are mandatory (MUST or MUST NOT) but it is also possible to have weighty requests (SHOULD or SHOULD NOT) or very rarely if we want to define the possibility (MAY). Rules are divided in chapters that try to classify their target domain. Rules are numbered using letters R, chapter number, "." and sequential integer number inside chapter e.g. "R2.1"

2   General rules

Rule#	Rule	Description/Reason	Related messages	Date
R2.1	ZIP DEFLATE algorithm SHOULD be used as standard compression method in StanForD 2010 messages. A "z" SHOULD be added to the file extension of individual StanForD files that are compressed. A compressed hpr-file would those be given the file extension ".hprz"	Reasons for ZIP with DEFLATE: "De-facto" standard Most used Public and patent free Most tools support it Implementations are freely available in many languages	All	2010-09-21 2011-10-11
R2.2	A static folder (location) SHOULD be implemented where files are saved by default, it is acceptable to have separate folders for different file types	It is for example important that hpr messages are not saved in different folders depending on harvesting object or harvesting date. Observe that there is a separate Swedish recommendation.	All	
R2.3	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".	All	2011-11-09
R2.4	Third party (external) reporting softwares SHOULD by default be responsible for removing files after sending.	It is also recommended that external applications should have a setting for not deleting or deleting files after transmitting files.	All	2012-12-21
R2.5	Organizations SHOULD use organization specific namespace for everything that is included in extension structures.	In StanForD 2010 an Extension-element was designed as flexible as possible. The detailed documentation of the extension element can be found from the chapter 10 of "StanForD 2010 – Naming and design rules" –document. However there is slightly possibility that element and attribute names inside extension element may clashes between StanForD 2010 messages of different organizations. Therefore we should use organization specific namespaces to distinguish names between them. Namespace should be chosen so that we can be sure that other organizations don't use that name. Good candidate for namespace is derived from the domain name of organization.	All	2014-11-20

| R2.6 | The following file name suffixes SHOULD be used for envelopes in the cases specified below:
.hrv = Envelope including complete harvesting instruction
.frw = Envelope including complete forwarding instruction
.geo = Envelope including geographical data | Envelopes can be used for a large number of different purposes. The most common use is for packaging all types of harvester instruction files (oin/spi/pin). However, it can also be used for forwarder instructions (fdi/foi) and geographical instructions (ogi/shp/jpg/tif). Making it possible to distinguish between different envelope files through some kind of file naming recommendation would decrease the risk of mistakes being made in the harvester.

Observe that it is possible to continue using env for any type of file or message.

Examples illustrating the implementation of this rule:
• FileName.hrv.env → Harvesting instructions including oin/spi/pin
• FileName.frw.env → Forwarding instructions including foi/fdi
• FileName.geo.env → Geographical data including ogr/shp/jpg/tif/mif etc | Oin/spi/pin /foi/fdi/ogi/ ogr | 2015-04-05 |

3 Instruction rules

Rule#	Rule	Description/Reason	Related messages	Date
R3.2	The following instruction messages MUST not include machine specific information: oin, pin, spi, foi, fdi and ogi.		pin oin spi foi fdi ogi	
R3.3	Key and ModificationDate MUST be updated when modifying a Definition in the machine, e.g. updating prices and length classes of a ProductDefinition.	Not to be updated if ProductKey is updated only because SpecieGroupDefinition was modified and SpeciesGroupKey was updated.	pin oin spi foi fdi ogi	
R3.7	All product and species group definitions used for producing at least one log MUST be included in hpr message!		pin hpr	
R3.8	It MUST be possible for operator to edit products and species groups during production if attribute modificationRestricted is false. ProductKey and SpeciesGroupKey MUST be updated if product or species group is modified.		pin spi	
R3.14	A negative cutting window MUST always decrease the class length, both when LengthClassAdjustment is equal to "length class smaller or equal to log length" and when equal to "closest length class, normal rounding".		pin	
R3.15	Log length rounding MUST have a higher priority than cutting window when classifying a log into a length class.		pin	

Rule#	Rule			
R3.16	Upper limit of cutting window MUST not be above lower length class limit nor above lower length class limit for the "cutting window" (135_t3) of the next length class.		pin	
R3.17	PermittedGrades in a pin MUST refer to a grade included in an spi when creating a pin. A product is not to be used if PermittedGradeNumber does not refer to an existing GradeNumber in spi.		pin, spi	2011-10-11

4   Production and follow-up rules

Rule#	Rule	Description/Reason	Related messages	Date
R4.1	Volume unit m3sob MUST always be registered for all logs from SingleTreeProcessed stems in hpr-, and thp-messages, the same is true for m3sub if bark function is used. Volume unit Estimatedm3sob MUST always be registered for all logs from MultiTreeProcessed stems in hpr-, and thp-messages, this is true also Estimated3sub if bark function is used.		hpr thp	2009-12-18 2011-10-11
R4.2	MachineKey for each machine MUST be globally unique and set in the machine. All other "Key" elements under MachineKey MUST be unique for the machine (MachineKey), all set in the machine. This means that a combination of for example MachineKey, StemKey and LogKey must always be globally unique.	This means that a combination of for example MachineKey, StemKey and LogKey must always be globally unique.	hpr thp hqc fpr fqc ogr mom	
R4.3	All Keys except MachineKey, ObjectKey, SubObjectKey, OperatorKey and LocationKey MUST be updated if any changes or modifications to the definition (e.g. ProductDefinition) are carried out or when it is used by the machine for the first time. ObjectKey, SubObjectKey and OperatorKey MUST only be set when a new object, sub-objector operator definition is created in the forest.		hpr thp hqc fpr fqc ogr mom	
R4.4	All ModificationDates MUST be updated if any changes or modifications to the definitions are carried out.		hpr thp hqc fpr fqc ogr mom	
R4.6	Element StemNumber MUST be reset when starting on new harvesting object		hpr hqc	
R4.7	It MUST be possible to generate complete production messages including all harvested and forwarded production from one specific harvesting object (fpr, thp, hpr). This means that it is possible to generate an hpr-file including all data from StartDate of a harvesting object until the time the message was created.		hpr thp fpr	
R4.9	It MUST be possible to generate a time oriented mom-file. Element ReportFilterCategory MUST be used in version 2.1 even if it is optional.		mom	2012-12-21

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R4.11	HarvestDate is an optional element for stems that MUST be possible to activate. It SHOULD be easy for the operator to turn this on or off.		hpr hqc	
R4.13	Unclassified logs MUST be registered in the same structure as normal logs. However the ProductKey for these logs MUST refer to a hard coded ProductDefinition of the type UnclassifiedProduct. This ProductDefinition for unclassified logsMUST not be sent to machine from logging organization.		hpr hqc	
R4.18	All registered diameters incl top diameters MUST be based on filtered values (no increasing values allowed) at the position. No average values allowed..		hpr hqc	
R4.19	The hqc sent to control and calibration system MUST include historical log regarding rejected stems and calibration. Element StemDiameter MUST be included with diameters per each dm module. This means that StanForD2010 harvesters MUST "offer" a complete hqc (including M1 data and calibration/reject log) to the control and calibration system (for example a caliper together with a com driver).	Com driver: communication software located either in sending or receiving part of the system (harvester / caliper / measuring sensor). When using com driver it will be machine manufacturer's and caliper manufacturer's joint decision which communication protocol and what type of files are to be used used. It was decided, in order to avoid the problem described above, that the hqc files sent from control and calibration system is not to be modified in any way by the harvester.	hqc	
R4.20	Control and calibration system MUST always use the log diameter vector (element ControlLogDiameter) when sending hqc from caliper. Diameters are registered at any position (all relevant M1, M2 and M3 shall be registered).	Rule 4.19 and 4.20 means we avoid a situation where both caliper and harvester are supposed to write diameter data to the same element. It is not mandatory for caliper to send original stem diameter vector back in hqc.	hqc	2011-06-22
R4.21	Forest machine application MUST always use LoggingForm data in instruction (oin or foi), if it exists, as default value to be registered in hpr, hqc, thp, mom and fpr. Operator MUST be allowed to: • Select LoggingForm from a default-list. • Modify LoggingForm list and to add their own values to the list.	A default list might be compiled by Metsäteho.	Oin hpr thp hqc fpr mom	2011-10-11
R4.22	All of the following randomization alternatives (RandomFrequencyCategory) SHOULD be implemented "Number of stems", "Time" ,"Volume" and "Not in use".	There is a separate document regarding how these alternatives are to be implemented.	Hqc	2012-12-21
R4.23	ButtEndProfileExtrapolation and BarkFunction should always be used in volume calculations if they exist in the hqc.		hqc	2016-11-23

5   Other message specific rules

Rule#	Rule	Description/Reason	Related messages	Date
R5.2	If the optional identity elements ProductInfo, ProductVersion, ProductBuyer, LoggingOrganization, ForestOwner, ContractNumber, RealEstateIDObject and AuditingOrganization are included in pin-message, that information SHOULD be copied as it is to the hpr-, thp- and hqc -messages.	Certain identity elements will be used by some organization while other organization will use other elements. A certain identity element might also only be used in certain cases. This rule makes certain that all identities sent from the logging organization are always included in the production messages.	pin oin spi hpr thp hqc	2009-12-03

6   National schema rules

Rule#	Rule	Description/Reason	Related messages	Date
R6.1	National transformation schemas MUST be designed so that they only reduce the properties of StanForD 2010 messages. The national version of the StanForD 2010 message MUST be valid StanForD 2010 message.		hpr	2010-11-10
R6.2	The file names of the national transformation schemas MUST have the national identification abbreviation with underscores between the message type name and version number.	For example Finnish national schema for harvested production message is named HarvestedProduction_fin_V1p0.xsd	hpr	2010-11-10
R6.3	The versioning of the national transformation schemas MUST be the same as in StanForD 2010 schemas.	It's too complicated to manage schemas if they don't follow same versioning policy.	hpr	2010-11-10

7   StanForD2010 envelope rules

Rule#	Rule	Description/Reason	Related messages	Date
R7.1	It SHOULD be possible to use StanForD 2010 envelope as a StanForD 2010 message container for communication but it MUST also be possible to generate the basic individual StanForD 2010 messages without envelope wrapper in the forest machines		Envelope	2010-02-10
R7.2	An "escape sequences"(refering to XML-standard section 2.4. http://www.w3.org/TR/REC-xml/#syntax) MUST be used for "<" and ">"	Embedded documents in envelope message are implemented using Any-element. The content of the Any-element have to be well-formed XML. The StanForD 2010 messages are not totally well-formed because of the general structure of XML-documents. So all characters "<" and ">" have to be changed to escape sequences < and >.	Envelope	2010-11-10
~~R7.3~~	~~The content of Any-elements in StanForD 2010 Envelope message when implementing embedded documents MUST contain Content element.~~	~~Embedded documents in envelope message are implemented using Any element. The content of the Any element have to be well formed XM. Therefore the content of it must contain at least one element (start and end tags). The actual document is put inside that element. It is important that everyone is using same name for that element for the implementation reasons of the systems/applications.~~	~~Envelope~~	~~2010-11-10~~
R7.4	All binary files (for example compressed files and pictures) that are embedded in StanForD 2010 envelope message MUST be encoded using Base64 encoding.		Envelope	2010-11-10
R7.5	StanForD 2010 Envelope SHOULD be used to enclose additional files in case of ogi and ogr.	Management of additional files in messages is easier if they are wrapped with envelope.	Envelope	2010-11-10