

LIVE TIMING LIVE SCORING

1. Changes log	2
2. Definition	7
3. Support	7
4. Structure	7
5. livetiming section	9
6. raceinfo	10
7. command (must be transmitted to activate the display of information)	20
8. meteo	24
9. message	26
10. startlist	27
11. raceevent	29
12. Correction	43
13. Race event samples	43
14. Keepalive	47
15. Credits (alphabetical order)	48

1. Changes log

V. 42

- + CC: correction standings example

V. 41

- + startsin, startlight not mandatory
- + update snow conditions
- + CC: rank, diff optional

V. 40

- + CC update values gender

V. 39

- + CC add standings element
- + CC/NK add precision attribute for raceevent inter, finish, standings

V. 38

- + CC: add currentlucky

V. 37

- + CC: add explanation for activerun usage in sprint final
- + add BIB color turquoise

V. 36

- + All : <keepalive/> message
- + text precisions and corrections
- + add support information

V. 35

- + CC : add BIB color attribute on start list
- + CC : add sanction to raceevent

V. 34

+ CC : add example <start> for CC Sprint Final in definition

V. 33

+ NK : add discipline NCG2 and changed runno logic for NK Ski Jumping and Cross-Country, p. 19

V. 32

+ CC : add run 2 to final round, p. 22

+ CC : remove run information from text output example sprint. p. 18

V.31

+ CC : precision of example for Sprint Finals for run and heat information in raceinfo, startlist and activerun, p. 22

+ AL : add <nps> p. 29

V.30

+ All : initialisation messages p. 5

+ NK : add NCT (Team Sprint) and NCR (Relay) as discipline for raceinfo, p. 30

+ NK : add T1-T4,Q,PR,TRI as discipline for run, p. 30

+ CC : precision of example for Sprint Finals for run and heat information in raceinfo, startlist and activerun, p. 22

V.29

- JP: attribut Gate compensation – ~~gatecomp=float~~ p. 27

* JP : raceevent <wind> → <windcompensation> p. 29, p. 35, p. 38

- JP: ~~<compensation>~~ in <windcompensation> p. 29, p. 35, p. 38

+ JP: <windcompensation><points></windcompensation> p. 29, p. 35, p. 38

+ JP: <gatecompensation> p. 29, p. 36, p. 40

+ All : raceevent <nextstart><startsin></nexstart> p. 31, p. 39, p. 40

+ All : raceevent <nextstart><startlight></nexstart> p. 31

+ JP,CC : raceevent <tobeat> p. 30, p. 37

+ All : raceevent <toqualify> p. 30, p. 37



- + JP : raceevent <judge><discard /></judge> p. 33
- + All : command <postponed/> p.19, p. 20
- + All : command <interrupted/> p. 19, p. 20
- * All : command <delayed/> description p.18, p. 20

V.28

- + raceevent <difftime> p. 29, p. 34

V.27

- + command <rescheduled>
- + add sample <rescheduled> <scheduled>
- + add sample <activrun> for Cross-Country p. 19
- * command <delayed> p. 17, p. 18
- * command <cancelled> p. 17, p. 18
- * command <rescheduled> p. 17
- * <meteo> p. 21



V. 26

- + command <scheduled/> p.17
- + command <readytostart/> p. 17
- + command <inprogress/> p.17
- + command <runcompleted/> p. 17
- + command <cancelled/> p. 17
- + command <delayed> p.17
- + Reschedule part p. 18
- + Update Credits p. 37

V. 25

- + Changes log section p. 2
- tds tag
- + bonustime tag in racedef p. 7
- + bonuspoint tag in racedef p.7
- + raceevent <bonustime> p. 25
- + raceevent <bonuspoint> p. 25
- + definition of <bonustime> tag p. 30
- + definition of <bonuspoint> tag p.30
- * update CC sample p. 10, 34, 35

2. Definition

Live timing/scoring is obtained through a TCP connection between Timing/Scoring system and FIS Live timing server.

To produce live timing/scoring data, an active internet connection near the timing/scoring system is needed. An LAN/ADSL/DSL cable connection is preferred but the system can also work with an ISDN line. Wireless or mobile connections are not recommended.

The necessary TCP port must be opened on a local firewall.

3. Support

For support requests, questions and feedbacks please contact FIS IT department: it@fisski.com.

Support requests should at least contain the FIS race codex and a short description of the issue. Preferred support language is English.

4. Structure

Data are transmitted in XML stream through the active TCP connection. Charset encoding should be UTF8.

Data are divided in the following sections:

- `<?xml version="1.0" encoding="UTF-8"?>` at the beginning of all files
- `<livetiming>` XML message header
- `<raceinfo>` this section contains all general information regarding the race
- `<command>` define the state of the race
- `<meteo>` weather condition
- `<message>` general information for the race in progress
- `<startlist>` start list
- `<raceevent>` event (time, score etc.)
- `<keepalive/>` to keep the TCP connection to FIS Live server alive after certain time of inactivity
- `<...>` Global information that change during the race



Each message transmitted to the FIS live server must contain at least the following sections:

- <livetiming> as first tag
- any combination of all other tag

A message for a certain data item should be sent only once when the contained data has changes.

For initialisation of a competition please send at least following messages in order:

1. raceinfo
2. command activerun with current runno
3. startlist

After that raceevent messages will be accepted.

5. livetiming section

tag	Type	AL	JP	CC	Mandatory
<livetiming>	Tag with attribute	codex=integer (race codex defined in the FIS calendar, must match the FIS database) passwd=string (password for the race defined by the live timing administrator) sequence=integer (control string, this string will be returned in the same form when the TCP packet as been received by the live server) timestamp=HH:MM:SS(for control purpose only)			yes

Sample :

```
<livetiming codex="1636" passwd="mypassword" sequence="00000" timesamp="20:06:41">
  ...other tags...
</livetiming>
```

6. raceinfo

No attributes are defined, but the following tags could/must be used

tag	Type	AL	JP / NK	CC / NK	Mandatory
<event>	Alpha free	Event name displayed as title in the live animation 1 st line title			yes
<name>	Alpha free	Future use			no
<slope>	Alpha free	Slope name, Hill name (2 nd line of title)			no
<discipline>	Alpha code	See table below			yes
<gender>	Alpha code	M,L or A (Ladies, Men, Mixed)			yes
<category>	Alpha code	See FIS categories table			yes
<place>	Alpha	Future use			
<tempunit>	Alpha unit	The unit of the Temperature (C,F,K)			no
<longunit>	Alpha unit	Unit of length (km,m,inc)			no
<speedunit>	Alpha unit	Unit of speed (kmh, mph)		Not used	no
<hillsize>	integer	Not used	Hs in meter	Not used	yes
<kpoint>	integer	Not used	K point in meter	Not used	yes
<mvalue>	numeric	Not used	Points/m	Not used	
<team>	empty	Not used	only for a team event		yes if team
<run>	Tag with at-tribute	no=numeric (run/round 1 to 9)			yes

Definition of children tags of <run>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<discipline>	Alpha code	See table below			yes
<start>	Num free	Start altitude	Not used		no
<finish>	Num free	Finish altitude	Not used		no
<height>	Num free	Vertical drop	Not used	Height Difference (HD)	no
<length>	Num free	Slop length	Not used		no
<mclimb>	Num free	Not used		Maximum Climb (MC)	no
<tclimb>	Num free	Not used		Total Climb (TC)	no
<nblaps>	Num free	Not used		Number of Laps	no
<gates>	Integer free	Number of gates	Not used		no
<turninggates>	Integer free	Number of turns (tech discipline)	Not used		no
<year>	Integer (4)	Future use			
<month>	Integer (2)	Future use			
<day>	Integer (2)	Future use			
<hour>	Integer (2)	Future use			
<minute>	Integer (2)	Future use			
<gatesnumber>	Num	Not used	Gates number (Value change auto, if we have a value in <gatesnumber> in finish tag)	Not used	yes
<racedef>	Tag	Tag with definition of different raceevent			yes

Definition of children tags of <racedef>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<inter>	Tag with attribute	i=numeric (1 to 9)	Not used	i=numeric	no
<speed>	Tag with attribute	s=numeric (1 to 9)	s=1	Not used	no
<judge>	Tag with attribute	Not used	j=numeric (1 to 5)	Not used	yes
<finish>	Tag	Not used		tag to give the finish distance	yes
<bonustime>	Tag with attribute	Not used		bt=numeric	no
<bonuspoint>	Tag with attribute	Not used		bp=numeric	no

Definition of children tags of <inter>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<distance>	numeric 2 decimal	Not used		Distance from start to intermediate time line	yes

Definition of children tags of <judge>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<nation>	Alpha nat code	Not used	Nation of judge	Not used	yes

Definition of children tags of <finish>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<distance>	numeric 2 decimal	Not used		Distance from start to finish line	yes

Definition of children tags of <bonustime>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<distance>	numeric 2 decimal	Not used		Distance from start to the bonus time line	yes

Definition of children tags of <bonuspoint>

tag	Type	AL	JP / NK	CC / NK	Mandatory
<distance>	numeric 2 decimal	Not used		Distance from start to the bonus point line	yes

Sample 1 jumping:

```

<raceinfo>
  <event>Kuusamo, FIS Nordic World Cup Opening</event>
  <name>LH</name>
  <slope>Test</slope>
  <discipline>LH</discipline>
  <gender>M</gender>
  <category>WC</category>
  <place>Kuusamo</place>
  <tempunit>c</tempunit>
  <longunit>m</longunit>
  <speedunit>Kmh</speedunit>
  <hillsize>145</hillsize>
  <kpoint>130</kpoint>
  <mvalue>1.8</mvalue>
  <run no="1">
    <discipline />
    <gatesnumber>15</gatesnumber>
    <year>2007</year>
    <month>03</month>
    <day>16</day>
    <hour>20</hour>
    <minute>06</minute>
    <racedef>
      <speed s="1"/>
      <judge j="1"/>
      <judge j="2"/>
      <judge j="3"/>
      <judge j="4"/>
      <judge j="5"/>
    
```

Sample 2 Cross-Country:

```

<raceinfo>
  <event>Kuusamo, FIS Nordic World Cup Opening</event>
  <name></name>
  <slope>Test</slope>
  <discipline>DI</discipline>
  <gender>M</gender>
  <category>WC</category>
  <place>Kuusamo</place>
  <tempunit>c</tempunit>
  <longunit>m</longunit>
  <speedunit>Kmh</speedunit>
  <run no="1">
    <discipline />

    <year>2007</year>
    <month>03</month>
    <day>16</day>
    <hour>20</hour>
    <minute>06</minute>
    <racedef>
      <inter i="1">
        <distance>3</distance>
      </inter>
      <inter i="2">
        <distance>5.50</distance>
      </inter>
      <inter i="3">
        <distance>8</distance>
      </inter>
    
```



<pre></racedef> </run> </raceinfo></pre>	<pre><finish> <distance>10</distance> </finish> <standing st="1"> <title>TOUR DE SKI</title> </standing> <bonustime bt="1"> <distance>10</distance> </bonustime> </racedef> </run> </raceinfo></pre>
--	--

Discipline code and translation text for animation

Discipline	<discipline> values in		attribut no in run <run no= > if no >1 then results are added to previous runs	attribut level in run <run level= >	Text 1st line Text 2nd line
	<raceinfo>	<run>			
ALPINE	SL	Not used	1	Not used	SLALOM First run
			2		SLALOM Second run
	GS	Not used	1-2	Not used	GIANT SLALOM First run .. Second Run
	SG	Not used	Empty	Not used	SUPER G One Run Race
	DH	Not used	Empty	Not used	DOWNHILL One Run Race
			1-2	Not used	DOWNHILL First Run .. Second Run
		T1, T2, T3, T4	Empty	Not used	DOWNHILL First Training .. Second Training
	SC	Empty	1-2	Not used	SUPER COMBINED First run .. Second Run
		SG		Not used	SUPER COMBINED Super G
		DH		Not used	SUPER COMBINED Downhill
		SL		Not used	SUPER COMBINED Slalom

SKI JUMPING	SJI	T1, T2, T3, T4	empty	Not used	SKI JUMPING INDIVIDUAL First training..Fourth Training
		Q	1	Not used	SKI JUMPING INDIVIDUAL Qualification
		TRI	1	Not used	SKI JUMPING INDIVIDUAL Trial round
		empty	1	Not used	SKI JUMPING INDIVIDUAL First Round
			2	Not used	SKI JUMPING INDIVIDUAL Second Round
			3	Not used	SKI JUMPING INDIVIDUAL Third Round
			4	Not used	SKI JUMPING INDIVIDUAL Fourth Round
	SJT	T1, T2, T3, T4	empty	Not used	SKI JUMPING TEAM First training..Fourth Training
		Q	1	Not used	SKI JUMPING TEAM Qualification
		TRI	1	Not used	SKI JUMPING TEAM Trial round
		empty	1-4	Not used	SKI JUMPING TEAM First Round .. Fourth Round
	SJK	T1, T2, T3, T4	empty	Not used	SKI JUMPING KO First training..Fourth Training
		Q	1	Not used	SKI JUMPING KO Qualification

		TRI	1	Not used	SKI JUMPING KO Trial round
		KO	1-4	Not used	SKI JUMPING KO First Round .. Fourth Round
	SJF	T1, T2, T3, T4	empty	Not used	FLYING HILL First training..Fourth Training
		Q	1	Not used	FLYING HILL Qualification
		TRI	1	Not used	FLYING HILL Trial round
		KO/empty	1-4	Not used	FLYING HILL First Round .. Fourth Round

CROSS-COUNTRY	DI	Not used	1	Not used	DISTANCE
	PUR	Not used	1	Not used	PURSUIT first run
			2	Not used	PURSUIT second run
	SP	empty	1	empty	
		Not used	1-4 (phase number)	0 = final 1= 1/2 final 2 = 1/4 final 3 = 1/8 final	SPRINT final SPRINT small final SPRINT 1/2 final SPRINT 1/4 final
		Q	1	Not used	SPRINT Qualification
	TE	Not used	1	Not used	RELAY
	TSP	empty	1	empty	For the full racers list
		Not used	1-4 (phase number)	0 = final 1= 1/2 final 2 = 1/4 final 3 = 1/8 final	TEAM SPRINT final if run=2 TEAM SPRINT 1/2 final TEAM SPRINT 1/4 final TEAM SPRINT final

NORDIC-COMBINED	NCT	T1, T2, T3, T4 Q, PR, TRI	1,3	Not used	NORDIC COMBINED TEAM SPRINT
	NCR	T1, T2, T3, T4 Q, PR, TRI	1,3	Not used	NORDIC COMBINED RELAY
	NCM	T1, T2, T3, T4 Q, PR, TRI	1,3	Not used	NORDIC COMBINED MASS START
	NCG	T1, T2, T3, T4 Q, PR, TRI	1,3	Not used	NORDIC COMBINED GUNDERSEN
	NCG2	T1, T2, T3, T4 Q, PR, TRI	1,2,3	Not used	NORDIC COMBINED GUNDERSEN

runno=1 is always Ski Jumping

runno=3 is always Cross-Country race

runno=2 is only used for NCG2 Ski Jumping with 2 rounds

7. command (must be transmitted to activate the display of information)

tag	Type	AL	JP	CC	Mandatory
<clear/>	empty	Clear all live data for current race codex			yes
<endrun>	empty	Run / round is finished			yes
<scheduled>	Tag with attributes and children	runno=integer (number of the run/round) Confirm the schedule or add start times of the event			no
<rescheduled>	Tag with attributes and children	runno=integer (number of the run/round) If the event is rescheduled			no
<readytostart/>	empty	Status of the schedule for a run (send approximately 5min before the start)			no
<inprogress/>	empty	Status of the schedule for a run			no
<official_result/>	empty	Display the result validity			no
<runcompleted/>	empty	Status of the schedule for a run (for race in 2 runs, the 1 st run is official)			no
<cancelled/>	Empty with children	If the complete competition is cancelled (if no results). I.E. : In case of a cancellation after round 1, this message must be not send, only the official_result must be send after round 1.			no
<delayed/>	Tag with attribute and children	runno=integer (number of the run/round) Did not start as scheduled, should start in the current ticketing session			no
<postponed/>	Tag with attribute and children	runno=integer (number of the run/round) Did not start as scheduled, or has been interrupted, and the expected postponement exceeds the current ticketing			no
<interrupted/>	Tag with attribute and children	runno=integer (number of the run/round) Unplanned interruption after the start, and is expected to resume in the current ticketing session			no
<unofficial_result/>	empty	Display the result validity (default)			no

<activerun>	Tag with attributes and children	To active the run no=integer	Not used	only for sprint: no=integer heat=integer	yes
-------------	----------------------------------	---------------------------------	----------	--	-----

Definition of children tags of <rescheduled> or <scheduled>

This message will be sent only when the schedule of the current race has been changed

tag	Type	AL	JP	CC	Mandatory
<year>	Integer (4)	integer			yes
<month>	Integer (2)	integer			yes
<day>	Integer (2)	integer			yes
<cettime>	Time	CET start time			no
<loctime>	Time	LOC start time			no
<info>	Text	The reason of the reschedule			no



Definition of children tags of <delayed>, <cancelled>, <interrupted> or <postponed>

This message will be sent only when the schedule of the current race has been changed

tag	Type	AL	JP	CC	Mandatory
<info>	Text	The reason of the delay or the cancellation			yes

Samples

<p>Clear</p> <pre><command> <clear/> </command></pre> <p>Activerun for alpine</p> <pre><command> <activerun no="1"/> </command></pre>	<p>Rescheduled</p> <pre><rescheduled runno="1"> <year>2014</year> <month>02</month> <day>20</day> <cetime>18:30</cetime> <loctime>10:30</loctime> <info>Due to weather condition</info> </rescheduled> <rescheduled runno="2"> <year>2014</year> <month>02</month> <day>20</day> <cetime>20:30</cetime> <loctime>12:30</loctime> <info>Due to weather condition</info> </rescheduled></pre>
---	---

Samples for raceinfo, startlist and activerun Sprint Finals Cross-Country

raceinfo	run no	level	Example 1/2 Final : <raceinfo> ... <run no="2" level="1"> ... </run> </raceinfo>
1/4 Final	1	2	
1/2 Final	2	1	
Final	3	0	

startlist	runno	heat	Example 1/2 Final : <startlist runno="2" heat="1"> </startlist> <startlist runno="2" heat="2"> </startlist>
1/4 Final	1	1 to 4/5	
1/2 Final	2	1 to 2	
Final	3	1 (to 2)	

activerun	no	heat	Example 1/4 Final heat 1: <command> <activerun no="1" heat="1"/> </command>
1/4 Final	1	1 to 5	
1/2 Final	2	1 to 2	
Final	3	1 (to 2)	

If only Final A : A : heat=1

If Final A and B: B : heat=1

A : heat=2

If a result of a previous heat needs to be updated (i.e. time correction, RAL, DSQ, sanction) an activerun message has to be sent to switch to the previous heat. After that the raceevent message with the updated result information can be sent to change the heat result. To return back to the current heat the activerun message of the current heat has to be sent.

8. meteo

tag	Type	AL	JP	CC	Mandatory
<weather>	Alpha code	See table below			no
<temperature>	Num free	Temperature in celsius or fahrenheit			no
<wind>	Alpha code	See table below			no
<snowtemperature>	Num Free	Temperature in celsius or fahrenheit			
<snowcondition>	Alpha code	See table below			
<humidity>	Num Free	percentage			

Weather and wind code for display

tag	value	Legend
<weather>	sun, pcl, clo, sno, rai, fog, clr	sun: 'Sunny' pcl: 'partially cloudy' clo: 'Cloudy' sno: 'Snowing' rai: 'Raining' fog: 'foggy' clr: 'Clear night'
<wind>	no, lo, me, hi	no: no wind lo: low me: medium hi: strong
<snowcondition>	sft, wt-pwd, wt, cmp, f-g, grn, hrd, hrd-p, hrd-p-v, icy, p, ppwd, pwd, sp-c	f-g Fine grained gri Grip grn Granular hrd Hard hrd-p Hard packed hrd-p-v Hard packed variable icy Icy p Packed ppwd Packed powder pwd Powder sft Soft sp-c Spring conditions wt Wet wt-pwd Wet & powder

Sample :

```
<meteo>
  <weather>sun</weather>
  <temperature>-4.2</temperature>
  <wind>lo</wind>
</meteo>
```

9. message

tag	Type	AL	JP	CC	Mandatory
<text>	Alpha free	Horizontal scrolling on the top of animation			no
<startinfo>	Alpha free	Message at level of start information			no
<texttemp d=ss>	Alpha free with attribute	Temporary message ss- display time in second			no

Sample :

```
<message>
  <text>this a sample of text</text>
</message>
```

10.startlist

tag	Type	AL	JP	CC	Mandatory
<startlist>	Tag with attributes	runno=integer (number of the run/round)		runno=integer (number of the phase) heat=integer (heat number, only for sprint)	yes
<racer>	Tag with attributes	Start order - order=numeric (1 to 9)			yes

Definition of children tags of <racer>

tag	Type	AL	JP	CC	Mandatory
<bib>	Integer Tag with attributes	Bib number		Bib number color=[color] (yellow, red, green, blue, black, purple, turquoise)	yes
<lastname>	Alpha DB	Last name of racer from FIS database			yes
<firstname>	Alpha DB	First name of racer from FIS database			yes
<nat>	Alpha DB	Nation code of racer from FIS database			yes
<fiscode>	Alpha DB	FIS code of racer from FIS database			yes
<starttime>	Time (HH:MM:SS)	Not used		Time of start for the Pursuit (gap from the first start) or individual start (TOD)	yes



Be careful: a Startlist erase all result of the run, if exist.

Sample run/round 1:

```

<startlist runno="1">
  <racer order="1">
    <bib>1</bib>
    <lastname>RAICH</lastname>
    <firstname>Benjamin</firstname>
    <nat>AUT</nat>
    <fiscode>50625</fiscode>
  </racer>
  <racer order="2">
    <bib>2</bib>
    <lastname>BLARDONE</lastname>
    <firstname>Massimiliano</firstname>
    <nat>ITA</nat>
    <fiscode>292000</fiscode>
  </racer>
</startlist>

```

Sample run/round 2:

```

<startlist runno="2">
  <racer order="1">
    <bib>26</bib>
    <lastname>ROBERTO</lastname>
    <firstname>Alessandro</firstname>
    <nat>ITA</nat>
    <fiscode>291768</fiscode>
  </racer>
  <racer order="2">
    <bib>29</bib>
    <lastname>BYGGMARK</lastname>
    <firstname>Jens</firstname>
    <nat>SWE</nat>
    <fiscode>501101</fiscode>
  </racer>
  <racer order="3">
    <bib>31</bib>
    <lastname>HIRSCHER</lastname>
    <firstname>Marcel</firstname>
    <nat>AUT</nat>
    <fiscode>53831</fiscode>
  </racer>
</startlist>

```

11.raceevent

tag	Type	AL	JP	CC	Mandatory
<nextstart>	Tag with attributes and children	Bib number at start - bib=integer			yes,if not mass start
<start>	Tag with attributes and children	Bib number started bib=integer	Bib number started – bib=integer Gates number – gatesnumber=integer (last value as default value)	Bib number started – bib=integer or Mass start or Sprint Final – bib = 'all'	yes
<inter>	Tag with attributes and children	Intermediate number - i=integer Bib number – bib=integer	Not used	Intermediate number - i=integer Bib number – bib=integer Timing precision – preci- sion=integer	no
<speed>	Tag with attributes and children	Speed number - s=integer Bib number – bib=integer			no
<finish>	Tag with attributes and children	Bib number – bib=integer	Not used	Bib number – bib=integer Timing precision – preci- sion=integer	no
<judge>	Tag with attributes and children	Not used	Bib number – bib=integer judge number – j=integer	Not used	no
<judgetotal>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	no
<length>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	No
<points>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	Yes
<cumul>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	yes
<dnf>	Tag with attributes	Bib number – bib=integer			no

		(did not finish)			
<dq>	Tag with attributes	Bib number – bib=integer (disqualified)			no
<dqp>	Tag with attributes	Bib number – bib=integer (potentially disqualified)			no
<dns>	Tag with attributes	Bib number – bib=integer (did not start)			no
<pq>	Tag with attributes	Not used	Bib number – bib=integer (prequalified)	Not used	no
<nps>	Tag with attributes	Bib number – bib=integer (Not Permitted to Start)	Not used	Not used	no
<q>	Tag with attributes	Not used	Bib number – bib=integer (qualified)		no
<nq>	Tag with attributes	Not used	Bib number – bib=integer (not qualified)		no
<lucky>	Tag with attributes	Not used		Bib number – bib=integer (lucky loser)	No
<ff>	Tag with attributes	Not used		Bib number - bib = integer (foto finish)	no
<lapped>	Tag with attributes	Not used		Bib number - bib = integer (lapped racer)	no
<ral>	Tag with attributes	Not used		Bib number - bib = integer (ranked as last)	no
<windcompensation>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	
<gatecompensation>	Tag with attributes and children	Not used	Bib number – bib=integer	Not used	

<bonustime>	Tag with attributes and children	Not used	Not used	Bib number – bib=integer Bonustime line number - bt=integer	no
<bonuspoint>	Tag with attributes and children	Not used	Not used	Bib number – bib=integer Bonuspoint line number - bp=integer	no
<difftime>	Tag with attributes and children	Not used	Bib number – bib=integer FOR NC Time difference	Not used	no
<tobeat>	Tag with attributes and children	Not used	Virtual value to beat	Timing precision – precision=integer Virtual value to beat	no
<toqualify>	Tag with attributes and children	Value to qualify	Virtual value to qualify	Value to qualify	no
<sanction>	Tag with attributes and children	Not used	Not used	Bib number – bib=integer sanction type (yc=yellow card, tpXXX=time penalty+seconds)	no
<currentlucky>	Tag with attributes	Not used	Not used	Bib number – bib=integer	no
<standing>	Tag with attributes	Not used	Not used	Standing ID – st = integer Bib number – bib=integer Timing precision – precision=integer	no



- Be careful: A finish event erase status dnf, dq, dqp, dns. If the bonus point or time ranking change (special case : bonus line in an individual race at an intermediate line), you have to resend all updated value also if a value change to "0".

Definition of children tags of <nextstart>

tag	Type	AL	JP	CC	Mandatory
<startsin>	Tag with children	Time remaining in seconds to the next start (message can be send each 15 sec., the sending interval of this message must not be below 15 sec.)			no
<startlight>	Tag with children	Color of the start light			no

Definition of children tags of <startsin>

tag	Type	AL	JP	CC	Mandatory
<time>	Integer	Time in seconds			yes

Definition of children tags of <startlight>

tag	Type	AL	JP	CC	Mandatory
<color>	Color code	red, yellow, green			yes

Definition of children tags of <start>

tag	Type	AL	JP	CC	Mandatory
<versus>	integer	Not used	Versus competitor only for KO	Not used	yes

Definition of children tags of <inter>

tag	Type	AL	JP	CC	Mandatory
<time>	Time	Intermediate time in 1/100	Not used	Intermediate time in timing precision (in 1/10 or in 1/100 for sprint)	yes
<diff>	Time	Gap with current leader in 1/100	Not used	Gap with current leader in timing precision (in 1/10 or in 1/100 for sprint) (optional)	yes
<rank>	integer	Rank		Rank (optional)	yes

Definition of children tags of <speed>

tag	Type	AL	JP	CC	Mandatory
<speed>	numeric	Speed expressed according race definition		Not used	yes

Definition of children tags of <finish>

tag	Type	AL	JP	CC	Mandatory
<time>	Time	Finish time in 1/100	Not used	Finish time in timing precision (in 1/10 or in 1/100 for sprint)	yes
<diff>	Time	Gap with current leader in 1/100	Not used	Gap with current leader in timing precision (in 1/10 or in 1/100 for sprint)	yes
<rank>	integer	Current rank	Not used	Current rank	yes

The Finish event can be send with a value or with all value tags

Definition of children tags of <judge>

tag	Type	AL	JP	CC	Mandatory
<points>	Points	Not used	Points of judge	Not used	yes
<rank>	integer	Not used	Current rank	Not used	no
<discard />	empty	Not used	Empty tag for the discarded judge	Not used	no

Definition of children tags of <judgetotal>

tag	Type	AL	JP	CC	Mandatory
<points>	Points	Not used	Total points of judge	Not used	yes

<rank>	integer	Not used	Current ranks	Not used	no
--------	---------	----------	---------------	----------	----

Definition of children tags of <length>

tag	Type	AL	JP	CC	Mandatory
<length>	Length	Not used	Length of the jump	Not used	yes
<diff>	Length difference	Not used	Length difference with the leader	Not used	yes
<points>	Points	Not used	Jump points	Not used	yes
<rank>	integer	Not used	Current rank	Not used	no

Definition of children tags of <points>

tag	Type	AL	JP	CC	Mandatory
<points>	Points	Not used	Total points of the run included the compensations	Not used	yes
<rank>	integer	Not used	Current rank of the run	Not used	yes

Definition of children tags of <cumul>

tag	Type	AL	JP	CC	Mandatory
<points>	Points	Not used	Total points of the race included the compensations	Not used	yes
<rank>	integer	Not used	Current rank of the race	Not used	yes



This event must be send in the same message as the Run point event

Definition of children tags of <ff>

tag	Type	AL	JP	CC	Mandatory
<rank>	integer	Not used		Rank	no

Definition of children tags of <windcompensation>

tag	Type	AL	JP	CC	Mandatory
<wind>	Float	Not used	Wind	Not used	yes
<points>	Float	Not used	Points compensation	Not used	yes

Definition of children tags of <gatecompensation>

tag	Type	AL	JP	CC	Mandatory
<gate>	Float	Not used	Gate	Not used	yes
<points>	Float	Not used	Points compensation	Not used	yes

Definition of children tags of <bonustime>

tag	Type	AL	JP	CC	Mandatory
<time>	Time	Not used	Not used	Bonus time in 1/100 for sprint	yes

Definition of children tags of <bonuspoint>

tag	Type	AL	JP	CC	Mandatory
<points>	Integer	Not used	Not used	Bonus point at this line	yes

Definition of children tags of <difftime>

tag	Type	AL	JP	CC	Mandatory
<diff>	Time	Not used	Time difference for NC (behind time)	Not used	yes

Definition of children tags of <tobeat>

tag	Type	AL	JP	CC	Mandatory
<distance>	Float	Not used	Length of the jump	Not used	yes
<time>	Time	Not used	Not used	Lucky loser to beat time	yes

Definition of children tags of <toqualify>

tag	Type	AL	JP	CC	Mandatory
<distance>	Float	Not used	Length of the jump	Not used	yes
<time>	Time	Time to qualify	Not used	Time to qualify	yes

Definition of children tags of <standing>

tag	Type	AL	JP	CC	Mandatory
<time>	Time	Not used	Not used	Time in standing in precision (in 1/10 or in 1/100 for sprint)	yes

<diff>	Time	Not used	Not used	Time difference in precision (in 1/10 or in 1/100 for sprint)	no
<points>	Float	Not used	Not used	Points in standing	yes
<rank>	integer	Not used	Not used	Current rank	Yes

If attribute precision is used the time sent will be displayed with the provided precision. If attribute precision is not sent default precision according ICR are used.
The times can be sent in a higher precision as used for displaying the results.

Values for attribute precision:

0 = time in seconds

1 = time with 1/10 seconds

2 = time with 1/100 seconds

3 = time with 1/1000 seconds

Example:

Time sent: 3:23.123

precision = 0: 3:23

precision = 1: 3:23.1

precision = 2: 3:23.12

precision = 3: 3:23.123

Samples:

SKI JUMPING		
<i>partial finish</i>	<i>complementary finish</i>	<i>full finish</i>
<pre> <raceevent> <length bib="2"> <length>148.0</length> <diff>5.2</diff> <points>92.4</points> <rank>2</rank> </length> <judge j="1" bib="2"> <points>18.5</points> <rank>2</rank> </judge> <windcompensation bib="2"> <wind>1.33</wind> <points>2</points> </windcompensation> </raceevent> </pre>	<pre> <raceevent> <judge j="1" bib="2"> <points>18.5</points> <rank>2</rank> </judge> <judge j="2" bib="2"> <points>18.5</points> <rank>2</rank> </judge> <judge j="3" bib="2"> <points>19</points> <rank>2</rank> <discard/> </judge> <judge j="4" bib="2"> <points>18</points> <rank>2</rank> </judge> <judge j="5" bib="2"> <points>17</points> <rank>2</rank> </judge> </raceevent> </pre>	<pre> <raceevent> <length bib="2"> <length>148.0</length> <diff>5.2</diff> <points>92.4</points> </length> <judge j="1" bib="2"> <points>18.5</points> </judge> <judge j="2" bib="2"> <points>18.5</points> </judge> <judge j="3" bib="2"> <points>19</points> <discard/> </judge> <judge j="4" bib="2"> <points>18</points> </judge> <judge j="5" bib="2"> <points>17</points> </judge> <judgetotal bib="2"> <points>17</points> </judge> </pre>



```
<windcompensation bib="2">
  <wind>1.33</wind>
  <points>2</points>
</windcompensation>
<points bib="2">
  <points>149.9</points>
  <rank>2</rank>
</points>
<cumul bib="2">
  <points>149.9</points>
  <rank>2</rank>
</cumul>
</raceevent>
```

CROSS-COUNTRY		
Intermediate	Finish	Standing
<pre> <raceevent> <inter i="1" bib="2" precision="1"> <time>12:24.1</time> <diff>5.2</diff> <rank>2</rank> </inter> </raceevent> </pre>	<pre> <raceevent> <finish bib="2" precision="2"> <time>1:34.74</time> <diff>5.2</diff> <rank>3</rank> </finish> </raceevent> </pre>	<pre> Time <raceevent> <standing st="1" bib="2" precision="1"> <time>30:34.7</time> <diff>15.2</diff> <rank>3</rank> </standing> </raceevent> Points <raceevent> <standing st="1" bib="2"> <points>524</points> <rank>3</rank> </standing> </raceevent> </pre>

You can send several raceevent in the same message.

12. Correction

For the Tags inter, speed, finish, dnf, dq, dqp, dns:

if you need to change a existing result, add the attribute Correction – correction="y".

To erase a time in AL, CC and NK, you have to enter a 0 as time.

13. Race event samples

ALPINE	SKI JUMPING	CROSS-COUNTRY
<i>Next at start</i> <code><raceevent></code> <code><nextstart bib="1"></code> <i><!-- Startsin must be NOT send with a interval below 15 seconds --></i> <code><startsin></code> <code><time>75</time></code> <code></startsin></code> <code></nextstart></code> <code></raceevent></code>	<i>Next at start</i> <code><raceevent></code> <code><nextstart bib="1"></code> <code><startsin></code> <code><time>75</time></code> <code></startsin></code> <code></nextstart></code> <code></raceevent></code>	<i>Next at start</i> <code><raceevent></code> <code><nextstart bib="5"></code> <code><startsin></code> <code><time>75</time></code> <code></startsin></code> <code></nextstart></code> <code></raceevent></code>
<i>Started</i> <code><raceevent></code> <code><start bib="1"/></code> <code></raceevent></code>	<i>Started</i> <code><raceevent></code> <code><start bib="1" /></code> <code><gatecompensation bib="1"></code> <code><gate>9</gate></code> <code><points>-1.3</points></code> <code></gatecompensation></code> <code></raceevent></code>	<i>Started</i> <code><raceevent></code> <code><start bib="4"/></code> <code></raceevent></code>
<i>Did not start</i> <code><raceevent></code> <code><dns bib="1"/></code> <code></raceevent></code>		

<i>Did not finish</i> <raceevent> <dnf bib="1"/> </raceevent>		
<i>Did not finish</i> <raceevent> <dnf bib="1"/> </raceevent>		
<i>Disqualified</i> <raceevent> <dq bib="1"/> </raceevent>		
<i>Speed</i> <raceevent> <speed s="1" bib="3"> <speed>72.4</speed> </speed> </raceevent>		
<i>Intermediate time</i> <raceevent> <inter i="1" bib="1"> <time>19.82</time> <diff>0.00</diff> <rank>1</rank> </inter> </raceevent>	<i>Started versus a another competitor</i> <raceevent> <start bib="1"> <versus>50</versus> </start> </raceevent>	<i>Intermediate time</i> <raceevent> <inter i="1" bib="4" precision="1"> <time>19.8</time> <diff>1.5</diff> <rank>2</rank> </inter> </raceevent>
<i>Finish</i> <raceevent> <finish bib="2"> <time>1:03.46</time> <diff>0.00</diff>	<i>Correction</i> <raceevent> <dns bib="1" correction="y"/> </raceevent>	<i>Bonus point</i> <raceevent> <bonuspoint bp="1" bib="4"> <points>15</points> </bonuspoint>

<code><rank>1</rank></code> <code></finish></code> <code></raceevent></code>		<code></raceevent></code>
<i>Correction</i> <code><raceevent></code> <code><inter i="1" bib="1" correction="y"></code> <code><time>19.82</time></code> <code><diff>0.00</diff></code> <code><rank>1</rank></code> <code></inter></code> <code></raceevent></code>	<i>Finish</i> <code><raceevent></code> <code><length bib="2"></code> <code><length>148.0</length></code> <code><diff>5.2</diff></code> <code><points>92.4</points></code> <code></length></code> <code><judge j="1" bib="2"></code> <code><points>18.5</points></code> <code></judge></code> <code><judge j="2" bib="2"></code> <code><points>18.5</points></code> <code></judge></code> <code><judge j="3" bib="2"></code> <code><points>19</points></code> <code><discard/></code> <code></judge></code> <code><judge j="4" bib="2"></code> <code><points>18</points></code> <code></judge></code> <code><judge j="5" bib="2"></code> <code><points>17</points></code> <code><discard/></code> <code></judge></code> <code><judgetotal bib="2"></code> <code><points>54</points></code>	<i>Lapped</i> <code><raceevent></code> <code><lapped bib="2"/></code> <code></raceevent></code>
		<i>Foto Finish</i> <code><raceevent></code> <code><ff bib="2"></ff></code> <code><ff bib="10"></ff></code> <code></raceevent></code> <code><raceevent></code> <code><ff bib="2"></code> <code><rank>3</rank></code> <code></ff></code> <code><ff bib="10"></code> <code><rank>4</rank></code> <code></ff></code> <code></raceevent></code>
<i>Correction -> erase a time</i> <code><raceevent></code> <code><inter i="1" bib="1" correction="y"></code> <code><time>0.00</time></code> <code></inter></code> <code></raceevent></code>		<i>Finish</i> <code><raceevent></code> <code><finish bib="4" precision="2"></code> <code><time>8:03.46</time></code> <code><diff>0.00</diff></code> <code><rank>1</rank></code> <code></finish></code> <code></raceevent></code>

	<pre> </ judgetotal > <points bib="2"> <points>149.9</points> <rank>2</rank> </points> <cumul bib="2"> <points>149.9</points> <rank>2</rank> </cumul> </raceevent> </pre>	<p><i>Sanction</i> <i>time penalty 60 sec</i></p> <pre> <raceevent> <sanction bib="2">tp60</sanction> </raceevent> </pre> <p><i>yellow card (written reprimand)</i></p> <pre> <raceevent> <sanction bib="3">yc</sanction> </raceevent> </pre>
		<p><i>Correction result</i></p> <pre> <raceevent> <inter i="3" bib="1" correction="y" precision="1"> <time>19.9</time> <diff>1.6</diff> <rank>2</rank> </inter> </raceevent> </pre>
		<p><i>Correction -> erase a time</i></p> <pre> <raceevent> <inter i="1" bib="1" correction="y"> <time>0.00</time> </inter> </raceevent> </pre>
		<p><i>Current lucky loser</i></p> <pre> <raceevent> <currentlucky bib="1"/> <currentlucky bib="23"/> </raceevent> </pre>

14. Keepalive

Keepalive message is used to keep the TCP connection to the FIS Live server alive in case of longer inactivity. FIS Live server has a defined timeout and disconnect the TCP connection after longer time of inactivity on an established connection. We recommend to send the keepalive message after each 5 to 10 minutes of inactivity.

Example:

```
<livetiming codex="1234" passwd="xxxx" sequence="00005" timestamp="10:21:24">  
  <keepalive/>  
</livetiming>
```

15. Credits (alphabetical order)

- Cattaneo Francesco
- Defago Daniel
- Kottelat Yann
- Lichtenstein Erik
- Meyrat Pierre
- Rotival Hervé
- Seehase Ulf
- Winkler Christian