ECG Annotations file

The annotation file will have a header, exactly the same as the ISHNE header, in this way the two files:

1. ISHNE binary waveforms file
2. binary annotation segment file

will always be linked.

Also, using the ISHNE header will facilitate analyses requiring 'only' the annotation file (for example HRV), as the user will be able to obtain information related to the original ECG (nb leads, sample freq…).

Following the header and the first annotation position, each annotation segment will consist of a 4-bytes binary data structure organized as follows:

- Label 1 [char]: beat annotation
- Label 2 [char]: internal use (for example for further beat description)
- toc (Δ Sample): digital samples from last beat annotation [unsigned int]

Label 1	Label 2
Toc	

Label 1: generic beat label short list
N: Normal beat
V: Premature ventricular contraction
S: Supraventricular premature or ectopic beat
C: Calibration Pulse
B: Bundle branch block beat
P: Pace
X: Artefact
!: Timeout

U: Unknown

The Timeout label is only used when the sample from last annotation is higher than the maximum number that can be expressed by an unsigned int, i.e. when it is larger than 65535.
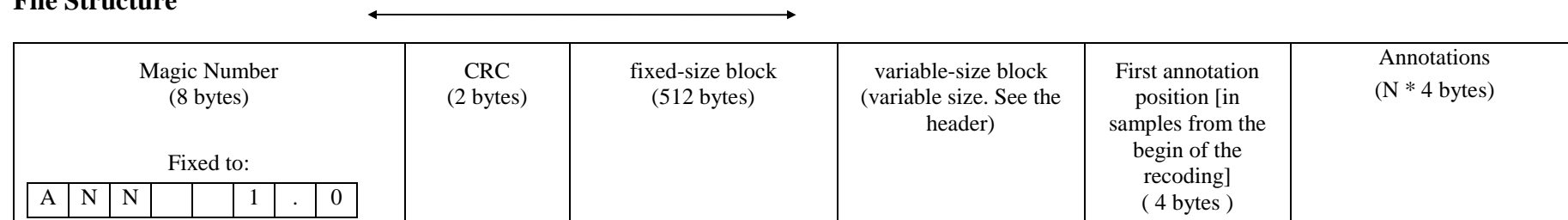In this scenario the following annotation will be present in the file :

!	....
65535	

Label1/Label 2 examples

B/L: Left Bundle branch block beat
V/J: Ventricular Junctional Beat
P/A: Atrial Spike

File Structure

Magic Number (8 bytes) Fixed to:	CRC (2 bytes)	fixed-size block (512 bytes)	variable-size block (variable size. See the header)	First annotation position [in samples from the begin of the recoding] (4 bytes)	Annotations (N * 4 bytes)
A | N | N | | 1 | . | 0					

Example of annotation segment

N	………
1011	
N	………
1033	
N	………
888	
N	………
890	
V	………
500	
N	………
1436	
N	………
1011	