**General data flow - Overalls**

Short Cycle (default every 10 s, settable): check which parameters have alerts set up and calculate **only them**. Then check for alerts. The data samples and calculated overalls are stored temporarily in a cache buffer, default last 10 min (or 60 last samples), settable.

Long cycle (default every 10 min, settable): calculate all parameters – all overalls and all band overalls for acceleration and velocity for one sample and store in DB along with that data sample.

List of parameters:

1. Overalls:
   1. Acceleration RMS
   2. Acceleration Peak
   3. Velocity RMS
   4. Velocity Peak
2. Band overalls – band definitions from DB, acceleration and velocity for each band

**Calculations - Overalls**

1. Acceleration RMS and Peak

Raw Data -> Convert to G’s -> DC Filter -> Overalls (RMS and Peak in one method) -> data out

1. Velocity RMS and Peak

Raw Data -> Convert to G’s -> DC Filter -> Integrator -> DC Filter -> Overalls (RMS and Peak in one method) -> data out

**Band Calculations (for each band)**

1. Acceleration Bands

Raw Data -> Convert to G’s -> DC Filter -> Windowing -> FFT -> Band RMS -> data out

1. Velocity Bands

Raw Data -> Convert to G’s -> DC Filter -> Integrator -> DC Filter -> Windowing -> FFT -> Band RMS -> data out

**General data flow - Graph Calculations**

Graph data is only calculated when requested by Flex client. When we develop the HTML client it will generate graphs from pre-processed data, so the server will be just sending data from DB and cache with minimum calculations.

**Calculations – Graph data**

1. Acceleration waveform
   1. Raw Data -> Convert to G’s -> DC Filter -> Waveform data out
   2. Sampling Rate -> Calculate Waveform Labels -> Waveform labels out
2. Velocity waveform
   1. Raw Data -> Convert to G’s -> DC Filter -> Integrator -> DC Filter -> Waveform data out
   2. Sampling Rate -> Calculate Waveform Labels -> Waveform labels out
3. Acceleration spectrum
   1. Raw Data -> Convert to G’s -> DC Filter -> Windowing -> FFT -> Resize array for plotting -> Spectrum data out
   2. Sampling Rate, Sample size -> Calculate Spectrum Labels -> Spectrum labels out
4. Velocity spectrum
   1. Raw Data -> Convert to G’s -> DC Filter -> Integrator -> DC Filter -> Windowing -> FFT -> Resize array for plotting -> Spectrum data out
   2. Sampling Rate, Sample size -> Calculate Spectrum Labels -> Spectrum labels out

**List of methods:**

Convert to G’s : convertToGs()

DC Filter DCFilter.filter()

Overalls calculateOverallLevels() //needs modification

Integrator DefaultIntegrator.integrateTDAccellerationToVelocity()

Windowing HanningWeightingAlg.weight() // This is the default. There are different classes for diff. types. Need to rewrite to one class and one method

FFT DefaultFFTTransformer()

Band RMS BandCalculator.getRmsForBand()

Resize array for plotting //it is not a separate method now, but it is in the wrong place. We just take the first out.size()/1.28+1 members of the out array for plotting on the graph. Same applies to the labels array

Calculate Waveform Labels // this will be a new method. The old way will be deprecated

Calculate Spectrum Labels // this will be a new method. The old way will be deprecated