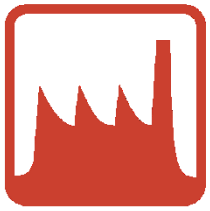


SignalPlant

ıd 1-D signals

Filip Plešinger

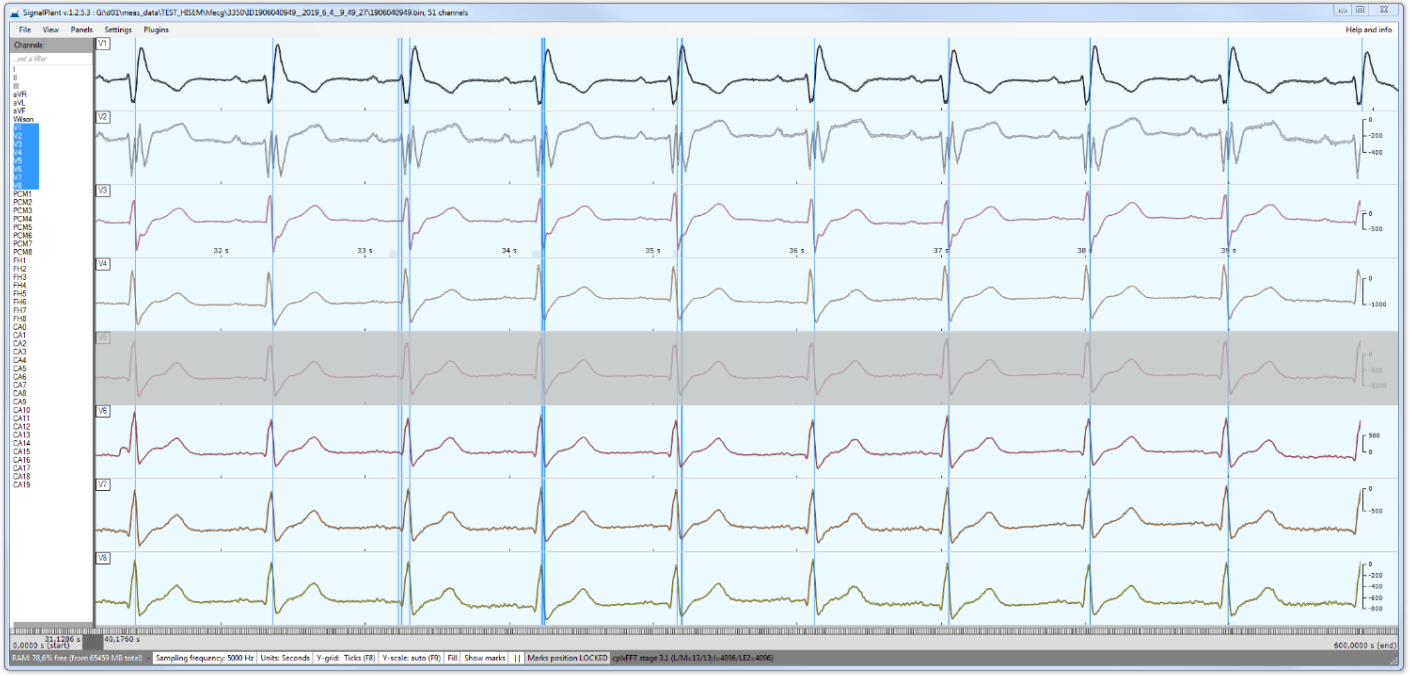
Outline

- About **SignalPlant** (www.signalplant.org)
- Why was the **SP** built
- Where is the **SP** used
- **SP** live demonstration

About SignalPlant

What is the **SignalPlant ?** (www.signalplant.org)

- Inspection & scoring tool for multichannel/multimodal 1-D signals
- Processing tool
- Analyzer
- **Recorder**



About SignalPlant

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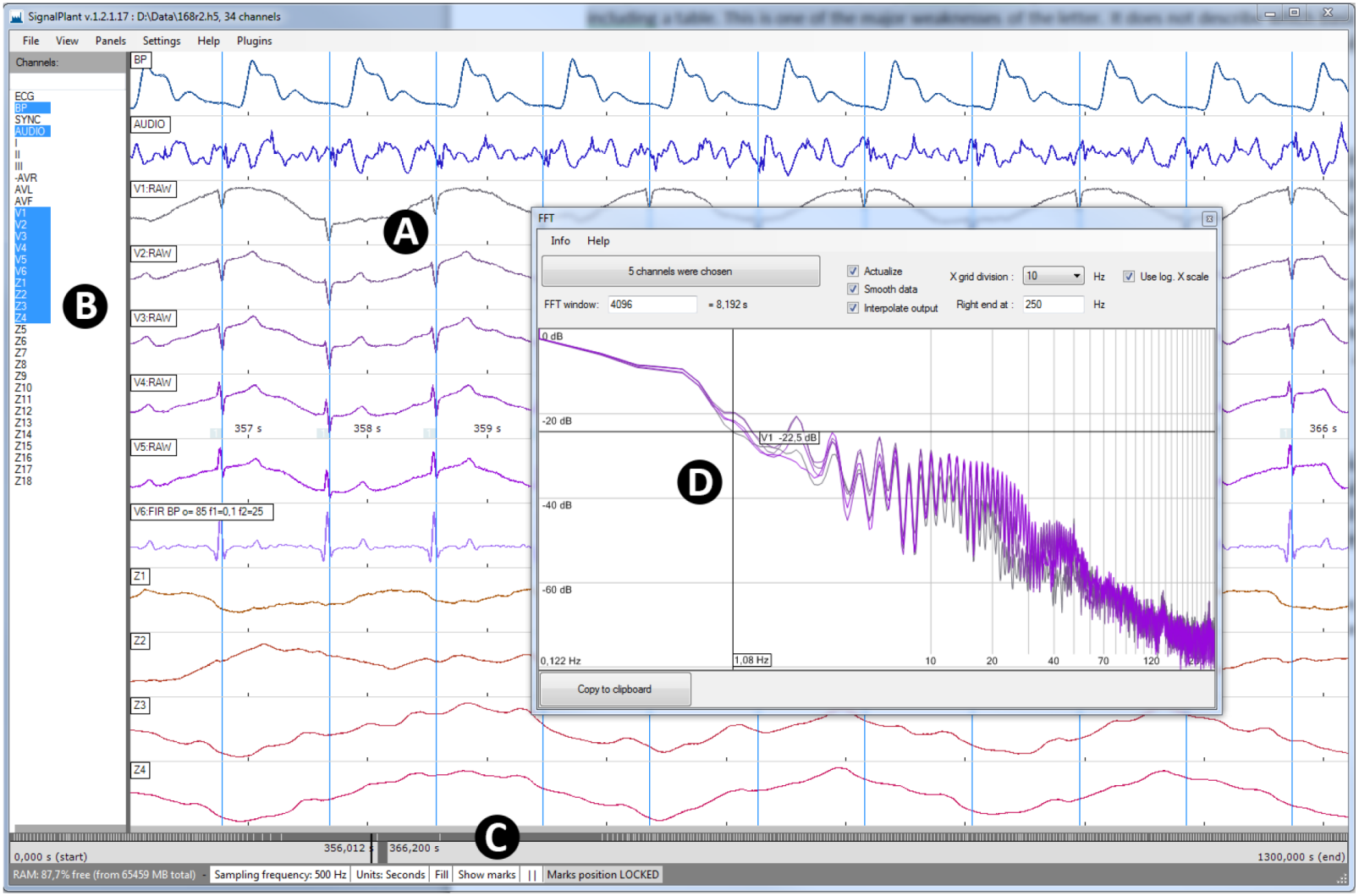
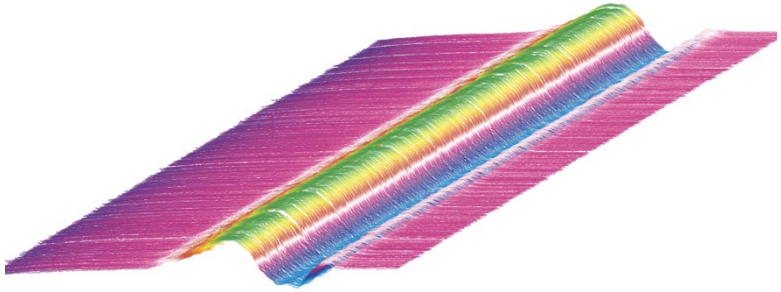
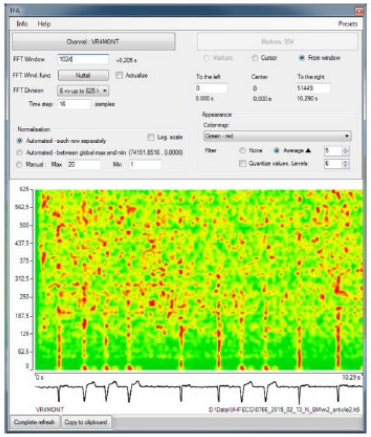


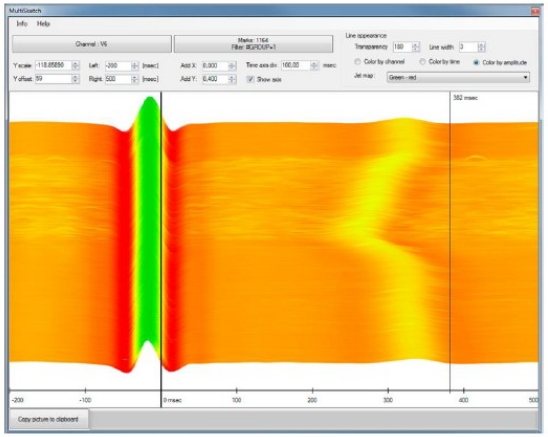
About SignalPlant

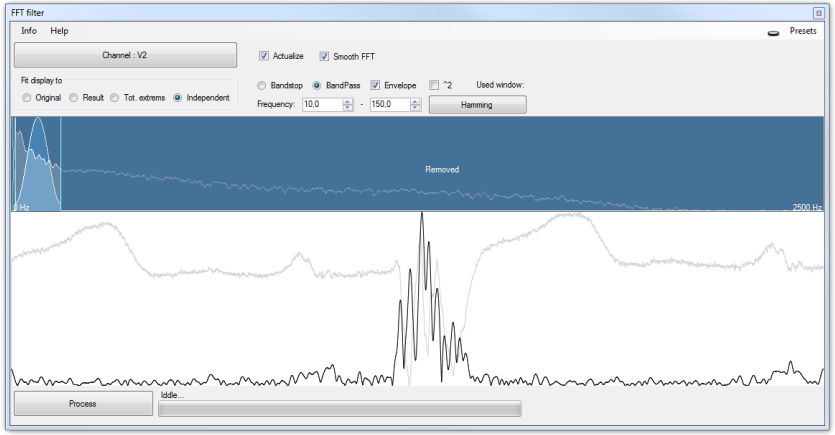
SignalPlant



- is Windows – based 64-bit app.
- is **free**, but not open-source
- might be **extended** by 3rd parties
- is a tool for **easy experimenting** with 1D signals



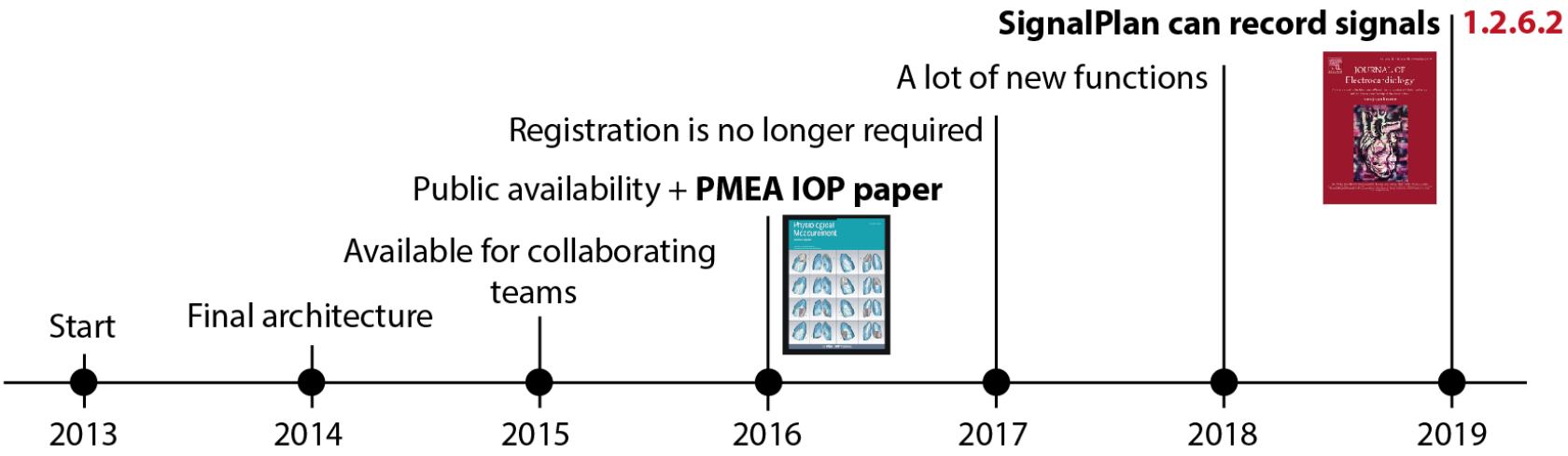




Why was the SP built

A bit of SignalPlant history

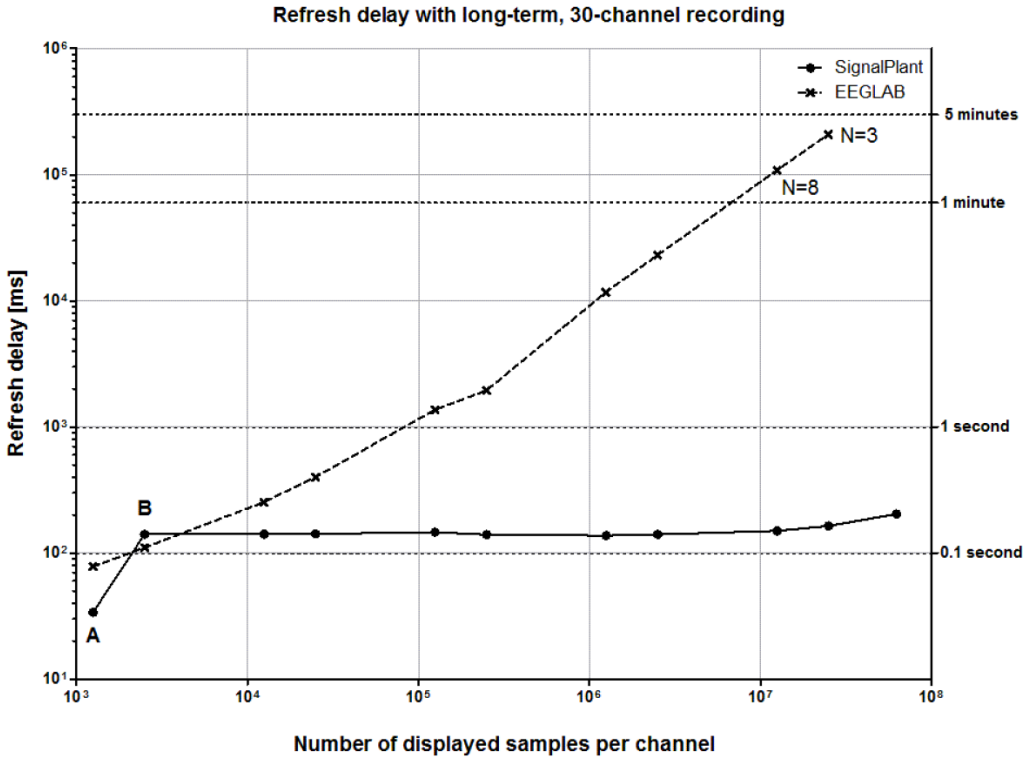
- The reason: lack of tools for agile signal inspetion of dense ECG/EEG recodings (high-frequency, 100+ channels)
- Developed by **Medical Signals** department of this institute from 2013
- Due to the increasing requiremens it quickly evolved into multi-purpose signal processing tool



Why was the SP built

A bit of SignalPlant history: PMEA IOP publication

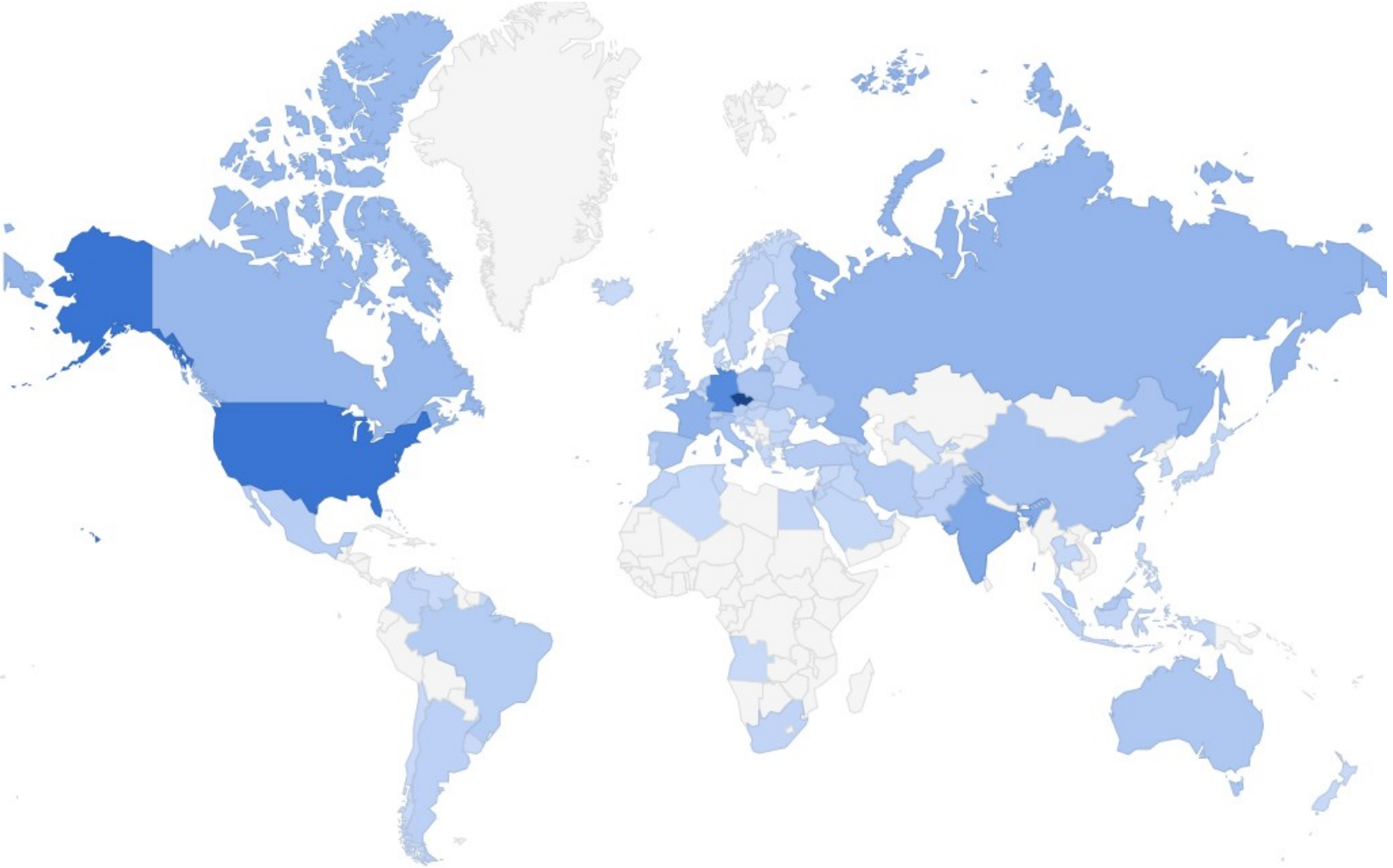
SignalPlant: an open signal processing software platform
(Physiological Measurement, 2016)
http://iopscience.iop.org/article/10.1088/0967-3334/37/7/N38



Where is the SignalPlant used

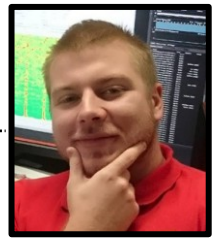
SignalPlant in the world

>1000 registered instalations in 80+ countries (October **2017**)

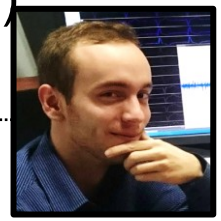


People **who develope(d)** SignalPlant (1):

- Juraj Jurčo (now in SolarWinds, Brno, CZ)
  (Statistics plugins, memory optimization)



- Petr Nejedlý (now in Mayo clinic, MN, US)
  (CUDA FFT plugins, PhysioCrate plugins)

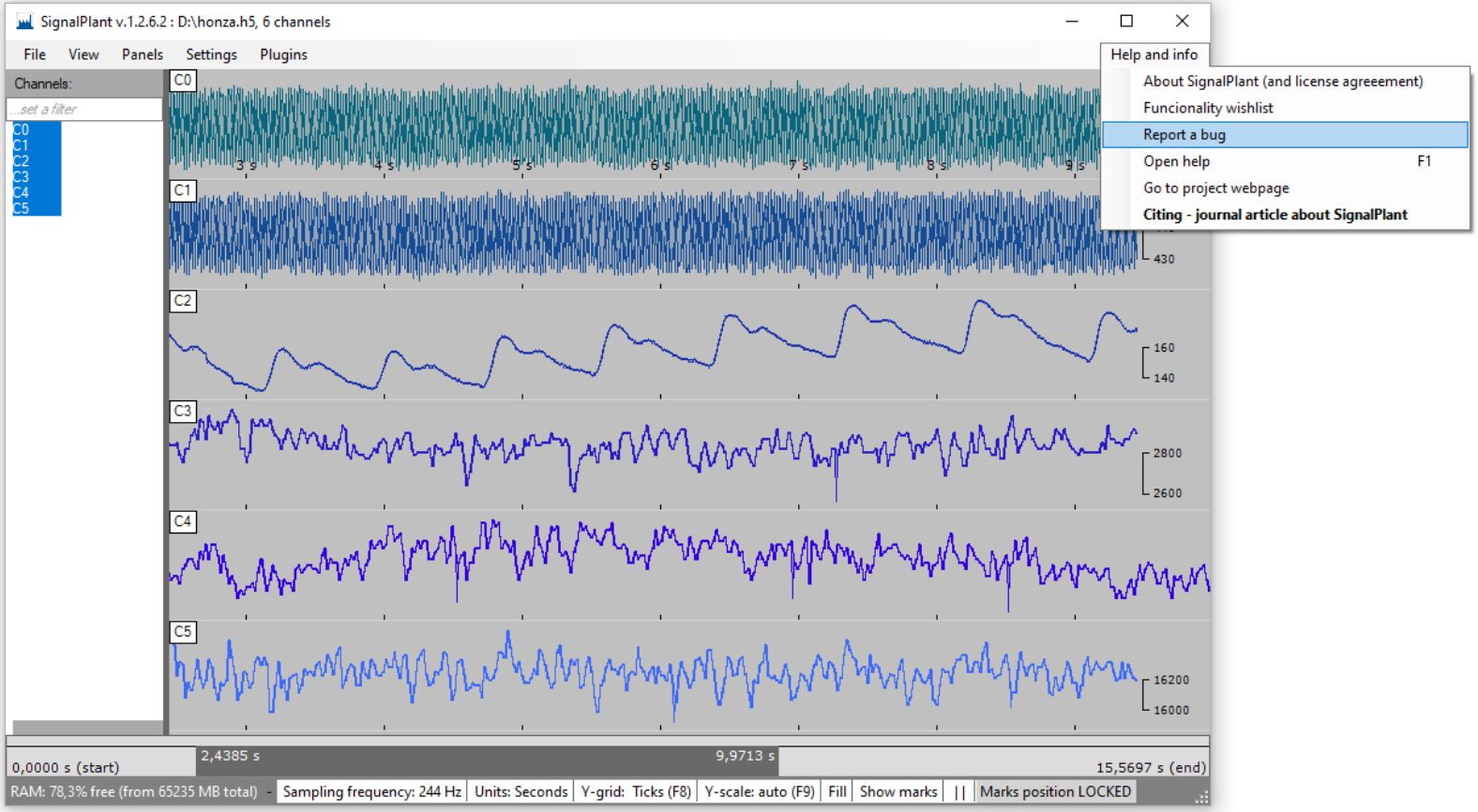


- Ján Virgala (now in Edinburgh, GB)
  (PhysioCrate plugins)

- Me (now here, having a speech)
  (Architecture, main program, plugins)

People **who contributed to** SignalPlant (2):

- All users – through the feedback



SignalPlant installation:

- publically available at www.signalplant.org
- Latest release: 1.2.6.5 (autumn 2019)
- SP is just unpacked; do not use **Program Files** folder
- SP might ask for location of required folders

Key points

SignalPlant key points:

- **Multichannel signals** (same length required)
- Single **sampling frequency** for the whole file
- **Layers** (called „Datacaches“) => non-destrucive experimentation
- **Marks** for annotations (e.g. QRS complexes or region selections)
- **Optimized** for parallel processing

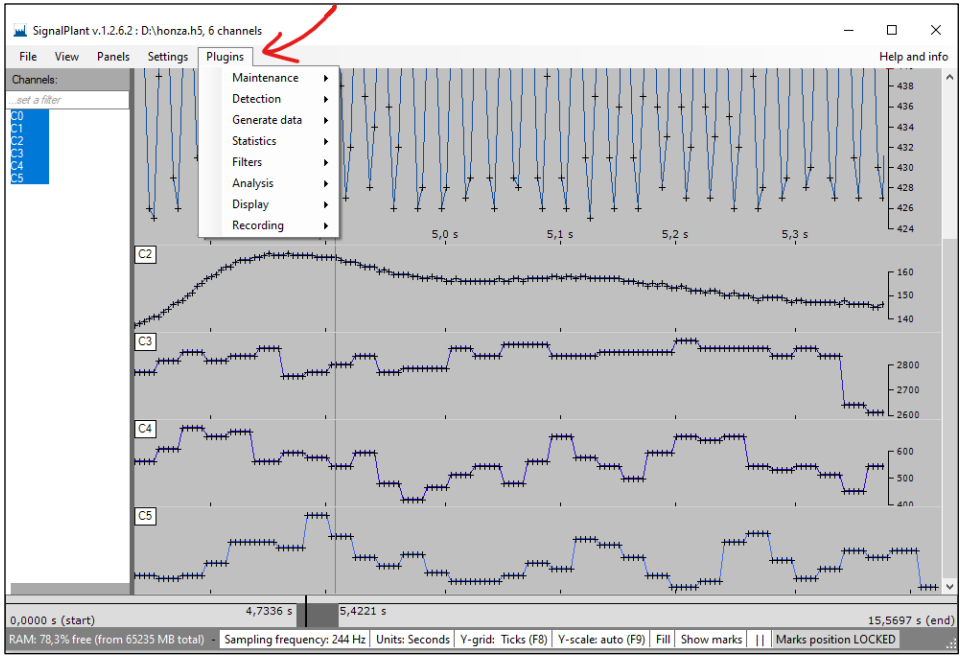
SignalPlant file formats

File format	I/O operation	Data	Marks	Keep layers	Note
.w (ScopeWin)	Read	Yes	No	No	
.d (M&I)	Read	Yes	Yes - reduced	No	
EGI files	Read	Yes	Yes	No	
.csv	Read & write	Yes	No	No	
.mat (Matlab)	Read & write	Yes	No	No	Needs Matlab(R)
.sel	Read & write	No	Yes	No	
.wav	Read & write	Yes	No	No	
.edf	Read	Yes	No	No	
.h5 (HDF5)	**Read & write**	**Yes**	**Yes**	**Yes**	

(File formats can be extended since they are defined as plugin modules in external dlls)

SignalPlant Plugins

- provide most of the SP functionality (I/O, filters, detections…)
- are located in /plugins folder in *.dll files
- are usually seen in SP/Menu/Plugins
- can be developed (C#) by 3rd parties
- Most of plugins implement „presets“
- Most (+/-) of plugins have „help“



Let us focus on some real signals now!

Let us focus on some real signals now!

Thank you for your attention

Filip Plešinger
fplesinger@isibrno.cz