

# IMMW15 Session Summary: Software for Magnetic Measurements

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Software is ubiquitous and integral to magnetic measurements, needed at different levels: for control of current, probe motion & readout; measurement configuration, data acquisition and data handling; (re)processing, analysis and presentation, and long-term management

*My impression from coffee-break discussions: Software tends to evoke strongly polarized opinions, suggesting a sort of a dipole-like “love-hate” relationship*

There are many issues, considerations, and problems for each aspect, with different solutions and approaches taken by various groups

Only two groups presented talks in this session

Discussion of software could be expanded at a future workshop – it would be interesting to get a sense of what solutions and tools are being adopted by the many groups represented at this workshop

# Summary: Software for Magnetic Measurements

Talks presented: both on “Software Frameworks”

M. Buzio, CERN “FFMM” (requirements & plans)

J. Nogiec, FNAL “EMS” (features & capabilities)

## Common Themes Expressed:

Solutions needed for long-term (>10yr) maintainability

Build from re-usable (versus disposable) elements

Structured architectures for flexibility (R&D, vs Production)

Focus on Control/Data Handling/Analysis aspects of  
Magnetic Measurements

Not Real-time “DAQ” elements

Not Data Management tools

# Summary: Software for Magnetic Measurements

## Structured Architectures for control, data handling, analysis

### EMS features:

#### “Extensible Measurement System”

Reuseable components – xml structures

define the behavior, attributes

Scriptable, graphical config<sup>n</sup> of components

Software n-bus communication (control, data, error, ... events)

Java implementation

“platform independence, maintainable”

In principle, but hasn't evolved that way  
plus new language special<sup>2</sup>n required

In use: Rotating coil PDI, DSP; SSW DVM  
systems (C/C++ DAQ);

Fixed-coil array (Labview DAQ)

### FFMM features:

#### “Flexible Framework for Mag. Meas.”

“NON needs” also drive design

not production – modular/reusable  
flexible, for rapid R&D

not distributed (but remotely  
connected)

not necessarily user friendly

Script based meas. program generation

scripted system description

& test sequence

Design to Common Platforms(PC,PXI),  
Operating Systems(linux, win),  
familiar lang's (C,C++)

Basic Elements: Rotating Coil Demo level

# Summary: Software for Magnetic Measurements

## Future evolution: not yet clear

### EMS future:

Not being actively developed for new measurement applications

(SSW ready,  
not yet commissioned)

Maintenance continues

### FFMM future:

Evaluating FFMM (1<sup>st</sup> iteration) against other options

(e.g., Labwindows, Matlab  
Control Toolbox)

Decisions to be taken “in a few months”