

FMC User Group

Hybrid meeting (Beckbury Suite, Telford International Centre / MS Teams)

6 September 3.20-4.20PM

Minutes

Present

In person: Paul Wilcox (PW); David Lines; Joe Buckley; Cyril Thibault; Tom Bertenshaw; Muhammad Khalid Rizwan.

Online: Ray Ten Grotenhuis; Andreas Schumm (AS); Andrew Ouellette; Adri van den Biggelaar; Jim Skelton; Benoit Lepage; Mark Sutcliffe (MS); Yann Gelebart; Ralph Abirizk; Vincent Bergeaud; Nicolas Budyn; Parhaam Parikhaah; Eskil Skoglund; Casper Wassink; George Connolly; David Reilly; Larissa Fradkin (LF); Olivier Burat; Abhishek Saini; Wilson Vesga; Liam Penaluna; Ralph Abi-Rizk.

Welcome

PW introduced himself as the new Chair of the User Group and acknowledged the work of previous chairs Tom Bertenshaw and Martin Mienczakowski.

Review of scope

Agreed overall aim remained same.

Agreed to drop “Production of a guide of agreed terminology” as this had been superseded by the now published ISO standard (ISO 23865:2021) and add following objectives:

- Sharing of experiences and best practice in qualifying FMC-based inspections
- Review FMC-based training courses / manuals to identify gaps and produce a recommended syllabus if necessary

Action: PW to update website

Update on MFMC file specification

PW briefly summarised current state of MFMC specification, which is that Version 2.0.0 of specification and example Matlab code to read/write MFMC files has been available on Github since 2019. Various organisations are known to have used it.

AS gave a short presentation on EDF’s experience of implementing and using the MFMC specification. Key points include:

- Basing MFMC on proven binary format (HDF5) with established libraries is positive.
- An MFMC file contains almost all information necessary to form images from FMC data (example of missing information are physical dimensions of solid coupling wedges which may be needed for imaging in some cases to exclude non-physical ray-paths).
- As internal archival format (as opposed to information interchange), the MFMC specification has limitations as it does not include key inspection information (e.g. element pitch for 1D arrays, probe angle in degrees) as explicit meta-data; while this information can be recovered from other meta-data, this is complex.
- To facilitate use of the MFMC specification, EDF had produced a thin “business layer” to act as an Application Programming Interface (API) so that users do not have to deal directly with the HDF5 API from which only a small subset of functions is required.

- A final question: “Do we want MFMC to be more than just a format for TFM imaging?”

MS reported that TWI had also undertaken a short project to add MFMC compatibility to their software and echoed AS’s point that the inability to directly read and write key inspection data limited the format’s utility.

PW acknowledged these were fully recognised limitations of the MFMC specification in its current form and undertook to suggest some possible solutions to resolve them. PW noted that the MFMC effort currently only provided a specification for the file content and did not include the provision of an FMC-specific API (e.g. something like the “business layer” described by AS), which potentially limited both uptake and flexibility.

Action: PW to produce document describing options for discussion

The question of how to support the MFMC format going forward was discussed. PW noted that if a formal library for reading/writing MFMC files was to be developed then there would need to be a system for development, testing, maintenance, and version control, most likely requiring the services of a professional software engineer. The possibility of obtaining government funding to start the process was discussed. PW stated that (a) the research council funding situation at present was not good and (b) that a sustainable steady state model could not be funded by this route. LF believed she could raise some funds to do some initial work.

Action: All to provide PW with suggestions of possible people / organisations who might be able to offer the necessary software engineering services.

Proposal to become ICNDT Specialist International Group

Agreed (NB slide incorrectly described on PW’s slides as ECNDT not ICNDT). Also, PW to investigate possibility of having an FMC User Group meeting at ECNDT (Lisbon, 3-7 July 2023) and WCNDT (South Korea, 27-31 May 2024).

Action: PW to ensure ICNDT page contains necessary details about FMC User Group

Action: PW to discuss options for future talks / meetings with relevant conference organisers

Suggestions for future meeting topics and volunteers for speaking

It was noted that Chris Kirby had delivered a talk at BINDT on training in FMC/TFM provided by IMechE Argyll Ruane. This could be a possibility, especially given the interest from the group in training.

Another possibility was from someone who had successfully qualified an inspection involving FMC/TFM.

Action: All to feed suggestions to PW

Any other business

Agreed to aim for 3 meetings per year. Where possible, synchronise with other meetings and conferences to enable hybrid in-person / online meetings.

Action: PW to organise next meeting in early 2023

In email communication following the meeting, AS suggested setting up an online discussion forum for the group.

Action: PW to investigate most suitable option