

## **FRAMily 2018**

### **A method for visualizing functional dynamics and operational scenarios**

Doug Smith

Faculty of Engineering and Applied Science

Memorial University of Newfoundland

St. John's, NL, Canada

This presentation will show a method for visualizing the functional dynamics of an application using the FRAM. A FRAM model is a graph of the potential ways that the functions could be executed, however, at any point in time only a portion of those functions may be active. This method displays the active functions at a given time step and the functional outputs as they are produced. By collecting this information over multiple time steps in the operation a video of the functional dynamics can be generated. It is useful to use video to view the functional dynamics because this allows the time dimension to be examined as two dimensions are required to visualize the non-linearity of a FRAM model. By tracking the functional dynamics of an application over a range of outcomes for an operation, trends can emerge that represent good or bad practices. If these trends are identified, operations can be managed accordingly. Some examples will be presented from the maritime domain to demonstrate this method.

A software will also be presented that has capabilities to create videos of functional dynamics as described in the method above. It would be interesting to discuss the following with the FRAMily:

Is this a useful way for others to visualize the FRAM in their respective applications?

Would a software package be of use to their FRAM analyses?

If they have any suggestions on the software package?