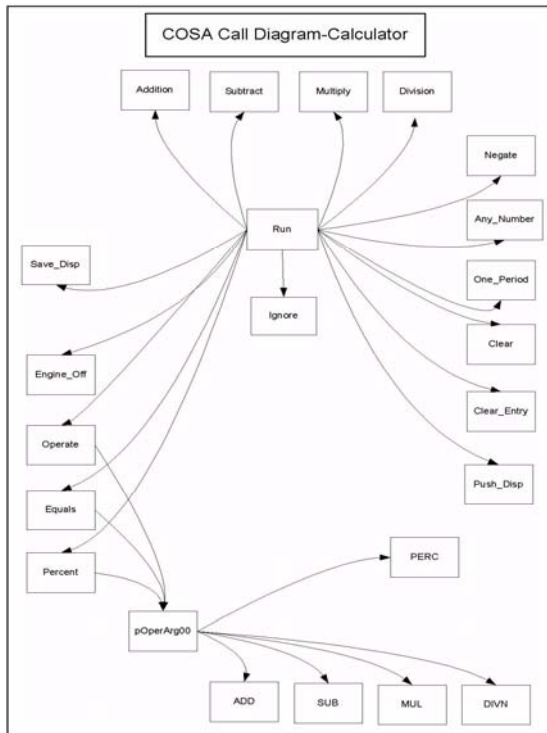
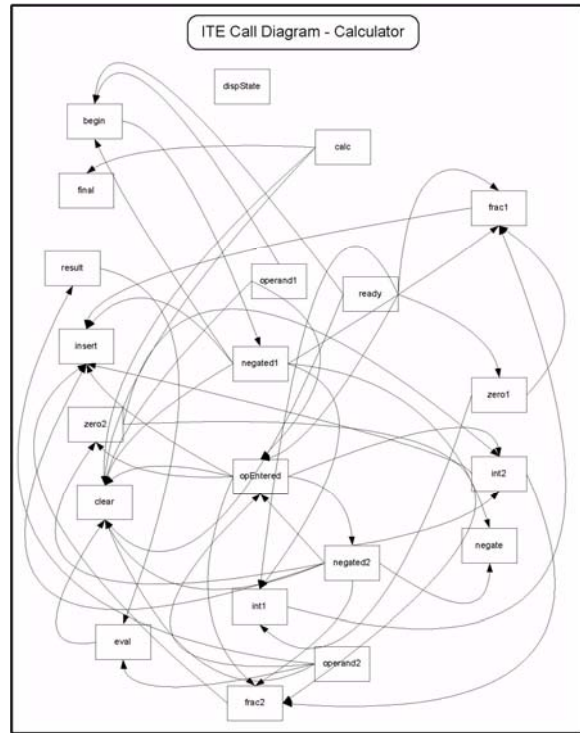


# Finding Quality in Temporal vs. Spatial Call Diagrams by Gordon Morrison

The exact same calculator functionality is compared in the two figures on this page and the two figures on the next page. The Temporal Engineering<sup>1</sup> approach is on the left and traditional spatial If-Then-Else (ITE) engineering approach is on the right. Testing, debugging, and quality assurance are impacted by the complexity shown in these figures.



**COSA Temporal Engineering**

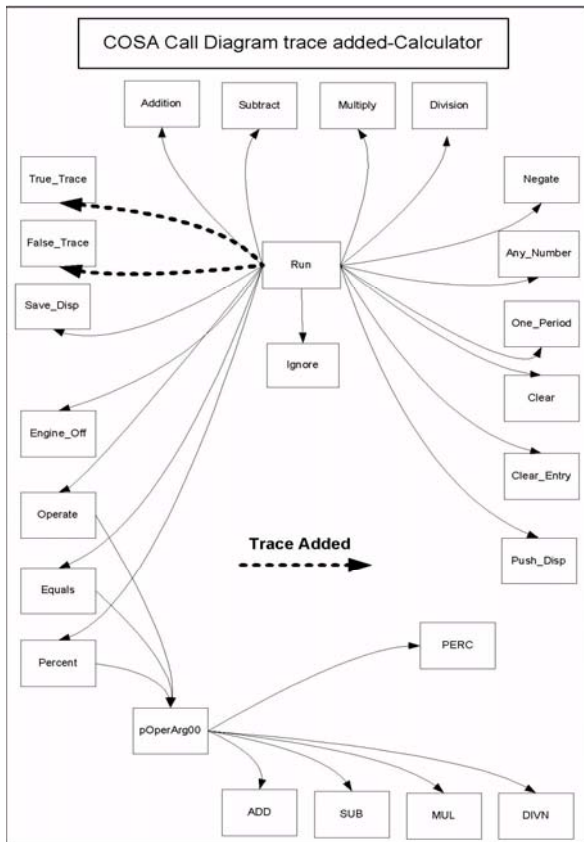


**ITE Spatial Engineering**

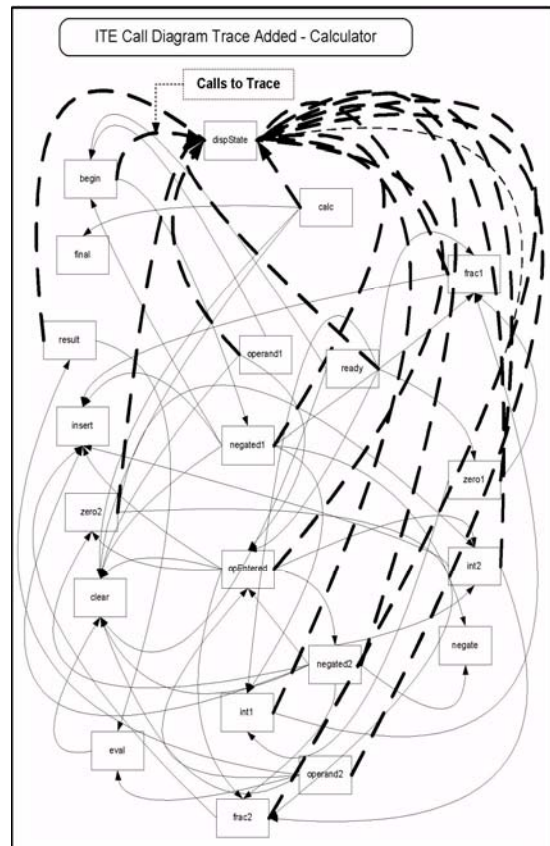
<sup>1</sup> From the book *Breaking the Time Barrier* by Gordon E. Morrison

## Temporal vs. Spatial Call Diagrams with Trace

Then look at what happens when trace is added to both applications. The temporal engineering approach is much simpler and provides full coverage. The spatial approach does not show full coverage because the lines started covering too much of the diagram.



**COSMA Temporal Engineering  
With Trace**



**ITE Spatial Engineering  
With Trace**

This was a simple thousand lines of code application. Imagine what applications and systems look like that consists of millions of lines of code and how difficult they are to test, debug, and control quality.

Temporal Engineering provides the next new paradigm for software engineering.

