Foreign Runtime System Integration Using Aspects
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Where It All Began
The Problem, From an SDL View

drawbacks:

• single pixel updates are long latency operations
• in a multithreaded setting access to the display quickly becomes a bottleneck
• the SDL output window is unresponsive during SAC computations
Make It Asynchronous
The Problem, From an SDL View

thread #0

SAC main function/program

Interface Code

Event Handler

SAC SDL Binding

SDL Runtime Library

thread #1
Along Came Mac OS X
The Problem, From an SDL View
Lets Solve It The Shuffle Way
The Problem, From an SDL View

thread #0

Event Handler

SDL Runtime Library

thread #1

SAC SDL Binding

Interface Code

SAC main function/program
So What Do We Need?
The Magic Silver Bullet That Touched The Holy Grail
An Aspect-Ish Extension Mechanism
Let's Look At Some Code

```c
int main( int argc, char **argv)
{
    /* some init code here */

    res = SACwf__MAIN_main();

    /* some tear down code here */

    return( res);
}
```

Ahh, I feel like an aspect today. I want to be rewritten!
An Aspect-Ish Extension Mechanism
Lets Look At Some Code

```c
int main( int (*cont)(int argc, char **argv), int argc, char **argv)
{
    /* some init code here */
    res = cont( argc, argv);
    /* some tear down code here */
    return( res);
}
```

Look, I now have a continuation instead of a hard-wired main.
An Aspect-Ish Extension Mechanism
Let's Look At Some Code

```c
int SDL( int (*cont)(int argc, char **argv), int argc, char **argv)
{
    /* some SDL init code here */

    spawn( cont( argc, argv));
    res = wait( cont);

    /* some SDL tear down code here */

    return( res);
}
```

```c
int main( int (*cont)(int argc, char **argv), int argc, char **argv)
{
    /* some init code here */

    res = cont( argc, argv);

    /* some tear down code here */

    return( res);
}
```
An Aspect-Ish Extension Mechanism
Let's Look At Some Code

```c
int SDLcont( int argc, char **argv) {
    return( SDL( &mainCont, argc, argv));
}

int mainCont( int argc, char **) {
    return( main( &SACwf_MAIN_main, argc, argv));
}
```

I am the new main function of the overall C program!