

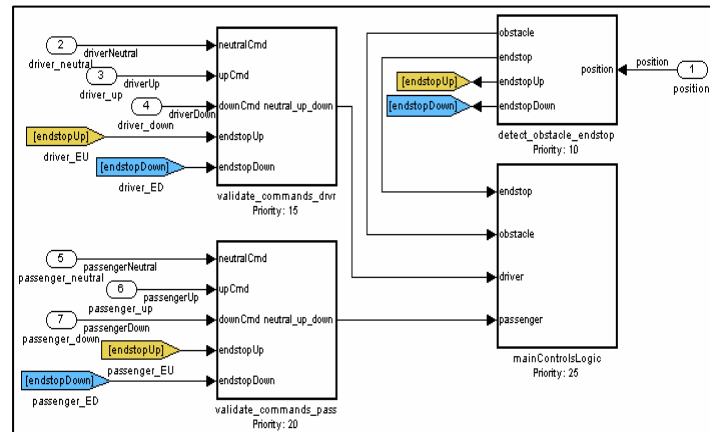
The Problem

- Companies have enormous investments in legacy code for embedded applications. This code is deployed in the field and well understood. There is incalculable risk in starting over.
- Advances in technology and increases in customer expectations are driving industry to develop ever more complex products.
- Global competition forces industries to shorten development cycles and achieve product goals with fewer resources.

```

aveTemp = get_average_proc_temp();

if(aveTemp >= 0
    && (nhs_enable == 1)
#ifdef BOARD == BTYPE1 || BOARD == BTYPE2
    && (rlt_val > RLT_THRESH)
#endif
)
{
    // Valid temperature - derive the fan speed based on it
    fanSpeed = interpolate(aveTemp, &{fanMap[0][0]}, FANMAP_LENGTH);
}
else
{
    fanSpeed = NORMAL; // Default to normal speed due to bad data
}
    
```



The Goal

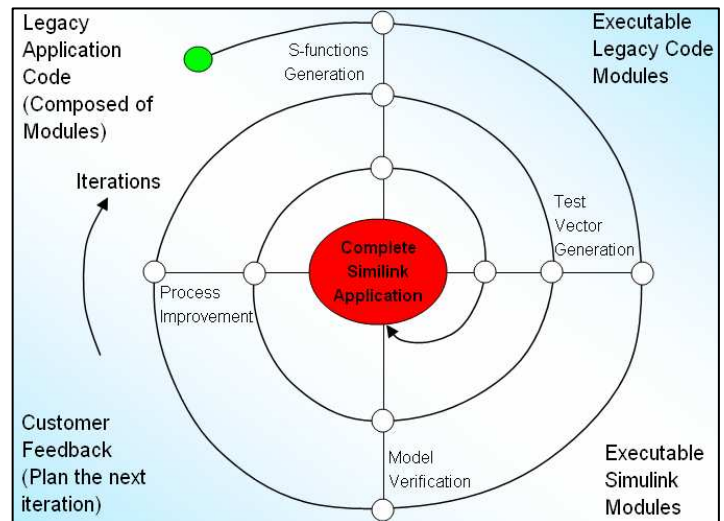
- Model-based systems development (MBSD) offers a new approach to manufacturing embedded systems.
- Models enable engineers to tackle complex algorithms and describe elaborate systems quickly and robustly.
- Hardware and software can be modeled and co-simulated – virtual integration identifies design faults early, saving time and money.
- Designs are graphically represented, controllable by API, easily managed, updated, and analyzed.

The Solution

- Emmeskey provides services to migrate entire legacy code applications to executable specification models using proprietary processes.
- Through an iterative approach, Emmeskey works with the customer to ensure the final product achieves the highest value.

Philosophy

- Emmeskey supports a wide number of legacy code to models conversion approaches:
 - Literal translation of legacy code to low-level Simulink® blocks
 - Intent-based translation from design requirements to Simulink®



Total Quality Assurance

- Verification technology ensures functional equivalence between the legacy code and Simulink® models.
- Emmeskey can also verify auto-generated code against the original legacy code – closing the loop on quality.
- Processes and tools support wide ranges of modeling styles.

References

“Key Considerations in the Translation of Legacy Embedded Control Software to Model Based Executable Specifications”
M. Baloh, G. Raghav and S. Sivashankar, 2006 Conference on Control Applications, Munich, October 2006.

