I picked the washing machine for my embedded system analysis example.

Development challenges:

Throuhgput: handles a certain of information based on washing machine settings that is preprogrammed by the manufacturer then selected by the user. Depending on how complex the machine could be, there can be a large amount of conditions the machine might be set to before running a load of laundry(hot or cold water, load size, special conditions, etc).

Response: Fairly quick reactions based on if the machine encounters an error out of normal operations. This could be that the machine did a miscalculation of the laundry load so the machine might add on more time to the laundry cycle.

Testability: I can see this being very cumbersome to test off the assembly and out in the field (customer’s residents). I would imagine testing would be done on the internal embedded system electronics before final assembly.

Debugability: There are no keyboard or screen for a tester to use on the washing machine for someone to debug the electronics

Reliability: should be designed for long term reliability which many consumers would assume so in purchasing a washing machine

Memory space: is going to be limited to specific functions pre-programmed based on the washing machines expected behaviors.

Program Installation and upgrade: most likely a one time program installation and only essential updates needed after leaving the factory.

Security: most likely none given that there is low to no interest for individuals to tamper with the embedded software nor this is not connected to a home network.

Cost: most likely not a high priority for these washing machine embedded systems