

# The Embedded Muse 3

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## Mars Pathfinder

Mars Pathfinder withstood its spectacular descent and landing on Mars intact; the rover Sojourner is now happily scurrying about the planet's surface acquiring data.

The rover is quite a fascinating device. With an 11 minute time delay between the Earth and Mars it has to be rather autonomous, yet clearly there's not much of an energy or size budget for a lot of computer horsepower. Sojourner is quite a little fellow after all, with a rather small solar array. Apparently it's capable of producing about 16 watts at peak solar illumination - not a lot of energy.

At <http://mpfwww.jpl.nasa.gov/rover/descrip.html> there's a short but surprising description of Sojourner's power and computer subsystems. A single 80C85 processor controls the rover, handling communications, navigation, power management and science. 176K of PROM contains the firmware, with 576K of RAM used for data. Since the 80C85 has a only 64k address space, hardware maps sections of this memory in and out in 16k chunks.

It would be fascinating to understand the decision process that led the engineers to select a 20 year old CPU for this very modern mission. Certainly radiation hardening must have been important, as well as low power consumption and high reliability.

My hat's off to all of the engineers who built this amazing mix of the modern and the old, that has performed so well for the last week. It's exciting to extend our presence - even if only virtually - to another planet.

## Thought for the Week

The World's Last C Bug:

```
while (1)
{
    status = GetRadarInfo();
    if (status = 1)
        LaunchMissiles();
}
```

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## **About The Embedded Muse**

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