

Bayer

Embed/Comm Isolates Signals in Noisy Environment



"[Embed] is a very easy program to teach people. It was designed from the ground up as a visual simulation language, plus it's intuitive, which gets people up to speed very quickly."

Glen Williams  
Senior Engineer  
Bayer

Bayer's slogan is "Science for a Better Life." Glen Williams, senior engineer at Bayer, has been using Embed/Comm (formerly called VisSim Comm) for over a decade to fulfill this vision. Working on equipment that directly interacts with the human body in critical situations, Williams uses Embed/Comm because it helps him quickly develop and test complex, dynamic systems.

### Designing Filtering Algorithms

"Take for example Magnetic Resonance Imaging, or MRI, for patients with heart problems," explains Williams. "What doctors need is a reliable method to monitor a patient's heart rate during MRI scanning." To solve this problem, Williams faced several challenges. First, the MRI is an electronically noisy environment. The scanner generates signals that are 200 times stronger than the signal created by the human body. Second, scanner noise is unpredictable. "It's not just one kind of noise," says Williams. "Imagine trying to pick out one specific person's whisper from across the room in a nightclub, and you begin to understand the challenge."

Using Embed/Comm, Williams developed sophisticated filtering algorithms that let him isolate the patient's heart signal from the noisy environment and display a realistic ECG waveform for a doctor to examine. "I did a lot of this with data analysis in [Embed/Comm], looking at real physiologic



### INDUSTRY

Medical Devices

### CHALLENGE

Isolate specific signals in a noisy environment and display realistic ECG waveform

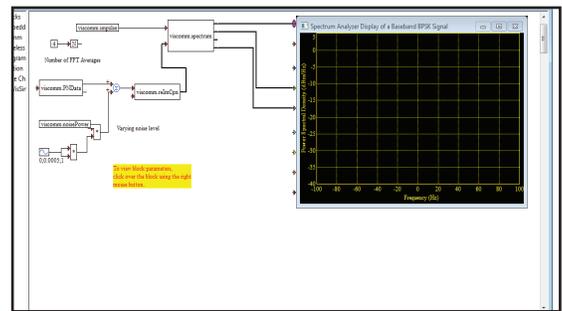
### SOLUTION

Develop sophisticated filtering algorithms to zero in on a patient's heart signal

### BENEFITS

- Filtering techniques can be easily simulated before implemented in products
- Intuitive development environment speeds up development process of complex fluid delivery systems

signals. [Embed/Comm] allowed me to produce far superior outputs from the devices that had been used previously.” Mr. Williams also states, “I used [Embed/Comm] to demonstrate the effectiveness of our new filtering techniques before they were implemented in our products. This was critical for convincing management to commit the resources to build a new ECG subsystem.”



## Modeling Dynamic Systems

Although he focuses on data analysis, Williams also uses Embed/Comm for its primary purpose: modeling dynamic systems. Most of what Bayer makes are injectors that introduce fluids, or agents, into patients’ bloodstreams during MRI scans. These agents are administered to improve the picture of the blood vessels and tissues. According to Williams, “Doctors have to inject very precise quantities with very precise timing at very accurate rates.” Embed/Comm has provided a platform to both model and test these very complex fluid delivery systems. Since signals are organic and unpredictable, it makes them more complicated than your average signal processing problem.

Williams’ affinity for Embed/Comm has not gone unnoticed by his fellow engineers at Bayer, especially since he began offering a course in using Embed/Comm. “[Embed/Comm] is a very easy program to teach people. It was designed from the ground up as a visual simulation language, plus it’s intuitive, which gets people up to speed very quickly,” he says. “I’m a bit of an [Embed/Comm] evangelist here at Bayer, and I’ve converted a number of colleagues into [Embed/Comm] users.”

Williams says he will continue to use Embed/Comm while he pursues “Science for a Better Life” at Bayer. “I think this is an excellent tool,” he says.

The VisSim™ product line has been renamed to Embed™ and Embed SE™



## For more information

Authorized Distributors



**EMBEDDED SYSTEMS  
SOLUTIONS**  
www.embeddedindia.com

#S 606, World Trade Center, Bangalore  
altairsales@embeddedindia.com  
080-6764 8888/36, +91 98450 83528  
www.embeddedindia.com/contact.html