

The Story of Intel MMX™ Technology

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Today, it's clear that Intel's MMX™ technology is a success. But the technology almost never happened. In the beginning, there was little management support for it. But a dedicated engineering team believed so strongly in the concept that they continued to drive the project. The project eventually spanned five years and four Intel sites. At its peak, more than 300 engineers worked to design, build, and test the technology. Despite geographical, linguistic, and time barriers, Intel employees from around the world worked together to create a great new product.

Planting the Seed

MMX technology was first proposed in 1992. For a year and a half, a small group of engineers tried to generate interest in their concept. Ultimately, a group of technical and marketing experts in the Microprocessor Products Group sensed the potential and supported the concept. I also saw its value and asked them to develop a detailed proposal.

A great deal of creativity and innovation went into the proposal, but acceptance within the rest of Intel was still slow. "Some people were ready to quit," remembers Uri Weiser, director of the Architecture group at the Israel Development Center (IDC) in Haifa and one of the people driving the project. Uri (named an Intel Fellow for work that included developing the architecture for MMX technology) co-authors a paper in this

issue entitled "MMX™ Technology Architecture Overview."

Support Grows

The moment of truth came in February, 1994, when this team presented their findings and proposal at a Group Strategic Review. The presentation was attended by Chairman and CEO Andy Grove, President and COO Craig Barrett, and Chairman Emeritus Gordon Moore. For two hours, the merit of MMX technology was debated. Although the performance figures were impressive, there were questions about their validity. Some doubted that the architecture was viable. The deciding moment came when Andy asked a critical question about consumer benefits. The team was thrown off—nobody answered him immediately. Andy rejected the proposal, telling them to go back and do their homework.

The team followed Andy's advice. For the next two weeks they re-ran the tests, performed more simulations, and clearly spelled out the benefits of MMX technology. They presented the new results at a second Group Strategic Review three weeks later and the MMX technology project was approved.

Into the Pentium® processor

Since we had approval, we decided that MMX technology should go first into the Pentium processor and then into all future Intel processors. This was a huge risk for us.

Intel faced a brand-new technology where lots of details were not developed yet. Furthermore, it was going into the "crown jewel" of Intel's product line — the Pentium processor. Not since the Intel386™ processor had Intel made such significant enhancements to the instruction set. Intel's Israel Design Center in Haifa was chosen to design and build the MMX microprocessor. This too was a major risk for Intel. This was the first time Intel had developed a mainstream microprocessor outside the United States. But I was convinced that the team would pull it off successfully with the support of the rest of Intel.

Intel also took a significant risk in putting so much of its marketing prowess behind the new microprocessor. Our marketing group worked hard to persuade software vendors to create programs that took advantage of MMX technology. The result: at product introduction a large number of MMX technology-based software titles were available. The 57 new instructions increased the speed and quality of these multimedia applications such that they really shone.

Leaving a Legacy

MMX technology has been a resounding success in the marketplace. Many members of the MMX technology team have moved on to their next assignments, but their remarkable achievement will go down in Intel history as an example of how Intel's risk-taking values and constant innovation can pay off. This quarter's ITJ describes their research and development efforts in making MMX technology a reality.

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