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## Is PXI Test Here to Stay?

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### O V E R V I E W

In 1998, at [Frost & Sullivan](#), we authored a study on CompactPCI based test & measurement and data acquisition markets. That study also included discussions on PXI (CompactPCI eXtensions to Instrumentation), which at that time was a relatively new development spearheaded by [National Instruments](#) (NI). During the course of the research, we were queried by several vendors such as “what is PXI?”, “is PXI really a platform to comprehend with?”, “why do we need PXI when we have VXI?” These were pertinent questions considering that VXI (VME eXtensions to Instrumentation) was an established and popular modular platform and more importantly, that it was an open standard platform. At that time, PXI was still considered predominantly a NI technology, although the company had announced that it was opening up the specifications.

Over the past three years, at Frost & Sullivan, we have been monitoring the developments in the PXI industry, which has gained a significant momentum with growth rates closely aligned with our then forecasts. At Frost & Sullivan, we are convinced that this market is indeed a growing phenomenon, thus motivating an update of our earlier PXI test study. Accordingly, a new updated study on the PXI markets for T&M applications was just published (A084-30- World VXI and PXI Test and Measurement Equipment Markets). Recent estimates indicate availability of several hundred PXI test modules and a variety of controller and chassis options including the larger 6U version.

A few months ago, I was at the NI week in Austin, TX, where I had the opportunity to meet and talk to several users of T&M products as well as PXI vendors. This meeting was another clear evidence to the growing popularity of PXI as a test platform that has gained significant industry attention. In contrast to my previous interactions with many of the users, gone were the many concerns such as “will this technology work?”, “will I be locked into a NI-solution trip?”, “will PXI be able to meet my performance goals?”, and “will I have enough products to choose from?” Most users were very comfortable with the architecture, performance, prices, and choice of test modules.

PXI, today, is a growing market in the T&M market with growth rates of 246% to 37.9% over the past 3 years; it is not yet a threat to VXI or other platforms, but gaining the critical mass momentum required to snowball into a mainstream platform to consider. So, what really happened in the last three years? How did this transformation take place? What are the continuing misgivings? This discussion attempts to throw some light on these aspects.

**Figure 1**  
**Total PXI-Based Test & Measurement Market: Revenue Growth Rates (World)**

Figure 1

Total PXI-based Test & Measurement Equipment Market: Revenue Growth Forecasts (World), 1998-2008

Year	Rev Growth Rate (%)
1998	--
1999	246.2
2000	108.7
2001	37.9
2002	47.0
2003	37.6
2004	28.7
2005	22.9
2006	19.2
2007	16.3
2008	13.7

Compound Annual Growth Rate (2001-2008): 26.0%

*Note: All figures are rounded; the base year is 2001. Source: Frost & Sullivan*

Perhaps, the most important move by NI was to initiate the formation of the [PXI Systems Alliance](#) and invite vendors from across the globe to participate in. This enabled a bunch of interested vendors to come together and develop specifications with individual inputs. More importantly, it has sent a clear message to users that PXI is no longer a dedicated NI solution- it is an open platform. The result has been an increased number of PXI vendors and a choice of products for the user. This has enabled users to choose from a wider range of products that has helped create a momentum. Additionally, the lower entry level pricing of the system is attractive enough to let users experiment with the platform at a lower risk level. However, still there exist several questions in the minds of users and vendors about this platform.

### PXI vs VXI

A most often asked question is about the positioning of PXI, specifically since some of the vendors have projected optimism that PXI will replace VXI in the mid-term. Others are more cautious to state that PXI will continue to grow by penetrating a new customer base that does not currently use modular platforms and by taking some business away other platforms. Hence, there is intense

debate if PXI a serious competition to VXI and if it will eliminate VXI, specifically with the increasing availability of the PXI 6U platform that offers more real estate?

Research at Frost & Sullivan indicates that PXI is best positioned as a complementary platform to VXI rather than a competing platform. True, we anticipate some low-end test applications being handled currently by VXI to be serviced by PXI, but VXI is a well-established platform that is embedded into several defense, aerospace, manufacturing test, and high performance R&D applications. The platform has been written into military specifications and many of these are long-term programs. New products on VXI continue to be launched and software is abundantly available now. Tremendous investments have been made by several user organizations into VXI technology and hence, it will be impossible to replace those requirements with PXI in the short to mid-term.

Recently, Chandran Nair, Instrumentation Product Manager at NI stated, "National Instruments continues to invest in the software and controllers that are the heart of today's VXI systems. National Instruments recognizes that almost all test systems contain a variety of hardware platforms, and that's why we focus on providing users integration and interoperability among all common measurement platforms, including VXI, GPIB, PC, and PXI. We've also introduced new VXI control options based on MXI-3 technology that enables long distance, high performance control of VXI systems using a flexible copper or fiber-optic cable connected to a PC." This statement is of great significance coming from NI, a leader in PXI test equipment and a participant in VXI test industry, and goes to underscore our belief at Frost & Sullivan that VXI will continue to flourish along with PXI.

Our sentiment is echoed by Fred Bode, Director of Services of the VXI bus Consortium by what he said in his VXI/PXI bus newsletter earlier this year, "I do not believe that VXI will be driven out of the market, or even seriously affected by PXI for the foreseeable future. There is still too great a product availability discrepancy and enough of a performance gap that this will not happen for a few years. However, Fred also said " It would be a mistake to automatically assume that PXI products are lower performance. Some of the newer PXI products may actually outperform some VXI products."

## THE CHALLENGES AHEAD

So, where does PXI go from here? The answer is clear- only up! It is quite clear that PXI is a compelling platform for T&M applications. Early adoption rates and product availability rates are significantly much higher than what VXI had years ago. PXI offers a price point threshold that is less painful than VXI and that is likely to be a great driver. In addition, 3U size PXI is still portable to an extent allowing for some field applications in automotive and aerospace testing applications. Performance of PXI modules are increasing rapidly and controllers are getting faster- NI just introduced a 1.26 GHz Pentium III Processor embedded controller. Products targeting applications in automotive, factory automation, optical communications test, machine vision, data acquisition and a host of others are available opening up a wide range of options for building a custom modular test system.

However, one of the challenges that the PXI vendors face is the lack support from heavyweight leaders of the T&M industry. Conspicuous by their absence are [Agilent](#), [Tektronix](#), [Acterna](#), and others. The lack of endorsement by such major players is perceived by some non-PXI vendors as evidence to a short-lived platform. Additionally, Several users have a concern that apart from NI, practically all the players in the PXI market place are smaller companies in niche markets and some of them have little track record. These factors may potentially hinder a dramatic large-scale adoption of PXI, notwithstanding its impressive growth until now.

Answering to the question of what would be critical for PXI to be a mainstream test platform, John Graff, VP of Marketing at NI said, "increasing the PXI product range and System Alliance participation are the keys to PXI's continued growth. We are thrilled to see so many new products being introduced so rapidly. And the performance of these products is far greater than what some skeptics initially thought possible in PXI."

To the question of lack of industry majors other than NI in the PXI market, John said, "we are pleased to have reputable companies such as LeCroy, RACAL, and GenRad backing the platform. Obviously, if a company such as Agilent embraces this technology, PXI would gain another significant endorsement, and we would welcome that. It will certainly introduce healthy competition in the market, too. However, we do not think that adoption by specific vendors is imperative to PXI's success. It has its own following by many smart vendors and users who have realized this is a high performance and cost-effective platform."

## CONCLUSION

In conclusion, one can clearly say that PXI is here to stay. Many of the questions that were asked of us three years ago did not surface during this recent study. Respondents in the test industry easily recognized PXI- we did not have to explain what it was. Awareness of the PXI alliance was high based on the alliance's marketing efforts and coverage of PXI in the VXI bus newsletter has certainly helped. Merits and issues with the PXI platform were debated knowledgeably, which is a good thing. There are many hundreds of users today that have implemented PXI and can talk about performance, applications, and cost of ownership issues.

At the same time, concerns on lack of major vendors participation also surfaced. In our opinion, support of PXI by a company such as Agilent would certainly help to propel this technology rapidly. Agilent is a long-term player and a trendsetter and hence, we feel that the company will be carefully evaluating PXI before committing to the market place. Meanwhile, the platform is being implemented in new applications every day and the product range is expanding.

It is our assessment that PXI will continue to evolve with strides in the PCI bus and chipset technology. Its initial successes are likely in the ATE, Data Acquisition, Visual Test, and Optical Test areas for customized implementation. We also anticipate that PXI systems will be used to complement VXI systems as it offers the ability to incrementally upgrade at lower costs. However, as the concept and need for multifunction testers increase, PXI may well find itself increasingly a choice as a OEM platform for vendors to implement in a variety of integrated test systems for R&D, manufacturing, and monitoring applications in R&D labs, telecom services, electronics manufacturing, and automotive industries.

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**Brief Description/Promo:** A brief discussion on the status of the growing PXI (CompactPCI Extensions for Instrumentation) modular platform and the challenges it faces. The author traces the past, discusses its current rapid growth, and dwells upon the future for this platform.

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