Merrill Lynch

GLOBAL

4 January 2002

TechStrat Barometer

Weekly Wisdom for Technology Investors

Technology Strategy

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The MLO may be enjoying the January effect with an 8% rise the last week compared with the S&P 500's 1% increase. Comm Equipment and Semiconductors led with double-digit gains.

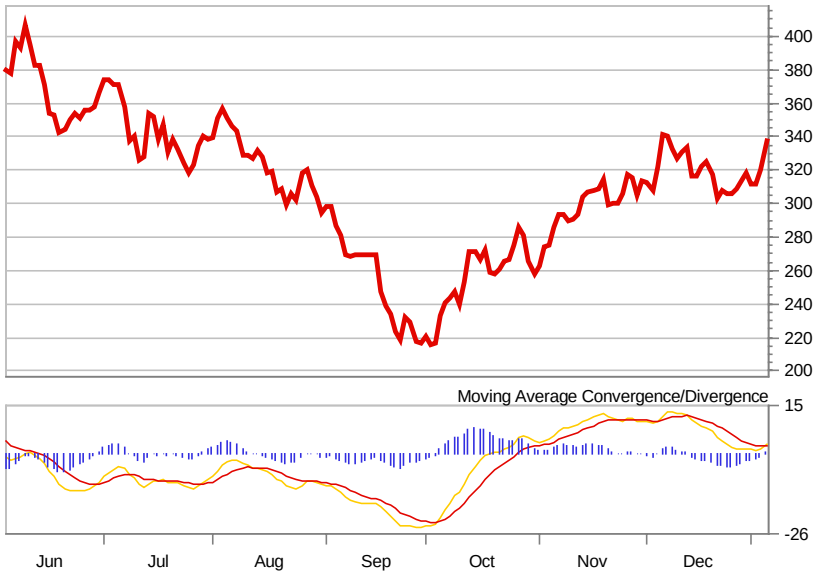
The SOX is knocking our socks off. The hike in DRAM prices, though more reflective of inventory replenishment than end user demand, is a bullish sign. The latest chip statistics (page 10) show a shipment bottom forming. Investors have anticipated the upturn more than in previous cycles.

In our comment we outline the evolution of the Internet to a distributed computing platform. Get familiar with grid computing and Globus protocols, which will allow resource sharing for virtual organizations. It's a ways off but getting lots of attention from vendors like IBM, Microsoft, and Sun.

In both 2000 and 2001 the S&P 500 was down about 10% and the MLO was off 33%. Third time is the charm, right? Despite the strong start, tech may still underperform this year given the combination of high valuations and a corporate profit recession.

Then wither the correction? Although we got an overbought sell signal two weeks ago, price momentum is strong. Short-term momentum is breaking through again; see page 13 for technical details. A correction may wait for 1Q preannouncements; the VIX is indicating complacency (page 12).

MLO with MACD



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Global Securities Research & Economics Group
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RC#30200431

1. TechStrat View

Table 1: Technology Sectors (Week ending January 3)

Sectors	TechStrat Weight	Price Change (%) Last Week	Last 3 Months	Last Year	P/S	P/E 2001E	P/E 2002E	Est. 5yr EPS Gr.	PEG
Comm Equip - Data Networking	Equal	*15*	99	-35	3	59	40	27	2.2
Semiconductor - Comm I/C	Equal	*14*	20	-25	6	265	116	32	8.4
Comm Equip - Photonics	Under	*13*	68	-75	4	27	111	29	0.9
Semiconductor - Memory	Equal	*13*	15	-36	3	60	25	24	2.5
Semiconductor - Logic	Over	*11*	25	14	7	69	67	25	2.8
Wireless	Equal	*10*	84	-57	3	43	40	37	1.1
Semiconductor Equipment	Equal	*9*	79	15	3	61	51	24	2.5
Software - Applications/Middleware	Equal	*9*	120	-46	4	57	47	34	1.7
Enterprise Storage	Equal	*9*	118	-50	9	159	77	30	5.4
Supply Chain	Over	*7*	31	5	1	31	27	17	1.9
Internet	Equal	*7*	74	20	5	141	72	35	4.1
Software - Infrastructure Mgmt	Over	*7*	89	4	5	69	34	32	2.1
Comm Equip - Wireline	Under	*7*	42	-21	2	37	28	21	1.8
Computer Hardware	Equal	*5*	44	1	1	27	25	14	1.9
Software - Technical Software	Equal	*4*	35	-9	3	28	19	22	1.3
Energy Technology	Under	*4*	24	-34	14	63	37	26	2.4
Computer Services	Over	*1*	41	12	4	31	26	19	1.7
MLO		8	45	-31	4	48	36	23	2.1
Nasdaq		3	29	-22	1	21	19	23	0.9
S&P 500		1	8	-14	1	22	19	13	1.7

Table 2: Techfolio

Company Name	Opinion	Symbol	Price 1/3/02	Last Week %	52-Week Range	Earnings Per Share C2001E	Earnings Per Share C2002E	P/S	P/E 2001E	P/E 2002E	Est. 5yr EPS Gr.	PEG
Adobe	C-1-1-7	ADBE	$31.84	4	$62-22	$1.17	$1.02	6	27	31	20	1.4
Affiliated Computer Services	C-1-1-9	ACS	105.23	-1	107-54	2.46	3.21	2	43	33	20	2.1
Dell	C-1-1-9	DELL	27.50	4	31-16	0.64	0.75	2	43	37	15	2.9
Extreme Networks	D-2-1-9	EXTR	14.13	18	53-6	-1.20	0.06	3	NA	236	30	NA
First Data	B-1-1-7	FDC	77.85	-2	80-50	2.47	2.80	5	32	28	16	2.0
Maxim Integrated Products	C-1-1-9	MXIM	54.94	9	70-32	1.04	0.99	13	53	55	18	2.9
Microchip Technology	C-2-1-9	MCHP	39.90	9	42-21	1.14	0.64	8	35	62	30	1.2
Qualcomm	D-2-1-9	QCOM	52.05	0	90-38	0.95	1.18	15	55	44	35	1.6
Satyam Computer Services	C-1-1-7	SAY	11.42	25	13-5	0.60	0.67	5	19	17	25	0.8
Scientific-Atlanta	C-1-1-7	SFA	25.06	10	66-16	1.39	1.27	2	18	20	3	6.0

Techfolio stocks are chosen from our 1-rated stocks with market caps above $1 billion, unless the analyst has no 1-rated names.

Table 3: Rating Changes

Company	Symbol	Old	New	Date	Price	Analyst	Reason
Cognos	COGN	D-3-2-9	**D-3-1-9**	12/21/01	$20.28	S. Phillips	Upgrading following strong F3Q earnings
Xerox	XRX		D-2-2-9	12/21/01	$9.00	S. Cross	Reinstating coverage
Cybersource	CYBS	D-3-3-9	6-6	01/03/02	$1.81	C. Shilakes	Terminating coverage
Daum Communications	DAUMF	D-3-2-9	6-6	01/03/02	W32,950	M. Yoon	Terminating coverage

2. TechStrat Global Performance

Table 4: Regional Performance (Week ending January 3)

	Price Change (%)							
Regions	**North America**		**Europe**		**Japan**		**Asia-Pacific**	
Last Week	9		7		1		9	
Last 3 Months	58		72		20		90	
Last Year	-33		-24		-26		20	
Top 3	Ariba	33	Spirent	21	Trend Micro	5	Acer	29
	Applied Micro	25	T-Online	17	Konami	5	Tatung	28
	i2 Technologies	23	Infineon	15	Hamamatsu Photonic	4	Satyam Computer	26
Bottom 3	EDS	-7	Intracom	-2	Ricoh	-2	CIS Tech	-24
	VeriSign	-4	Pace Micro	-1	Hirose Electric	-1	Compeq Mfg	-7
	Intuit	-3	Atos Origin	1	Tokyo Seimtsu	-1	VIA Tech	-5

Table 5: Global TechStrat Sectors (Week ending January 3)

	Price Change (%)						
Sectors	**Last Week**	**Last 3 Months**	**Last Year**	**Top Performer**	**% Change**	**Bottom Performer**	**% Change**
Storage	14	123	-55	EMC	22	Veritas	3
Communications Equipment	11	67	-66	ONI Systems	22	Intracom	-2
Semiconductors	11	88	-6	Powerchip Semi	26	Via Tech	-5
Software	6	50	-29	Ariba	33	VeriSign	-6
Wireless	6	46	-44	Palm	15	Matsushita Comm	-1
Consumer Electronics	6	53	4	Tatung	28	Pioneer	0
Internet	5	61	-12	T-Online Intl	17	AOL	-3
Computer Hardware	5	58	13	Acer	29	CIS Technology	-24
Semi Capital Equipment	5	82	7	Teradyne	12	Tokyo Seimitsu	-1
Computer Services	5	31	-26	Satyam Computer	26	EDS	-7
Supply Chain	5	50	-12	Siliconware Precision	18	Compeq Mfg	-7

Chart 1: World TechStrat Index

Table 6: World TechStrat Index Performance (Week ending January 3)

	Price Change (%)		
	Last Week	**Last 3 Months**	**Last Year**
World Tech Index	7	60	-18

Top Performers	**% Change**	**Bottom Performers**	**% Change**
Ariba	33	CIS Technology	-24
Acer	29	EDS	-7
Tatung	28	Compeq Mfg	-7

3. Globus Grid Computing—the Next Internet

by John Roy/Steve Milunovich

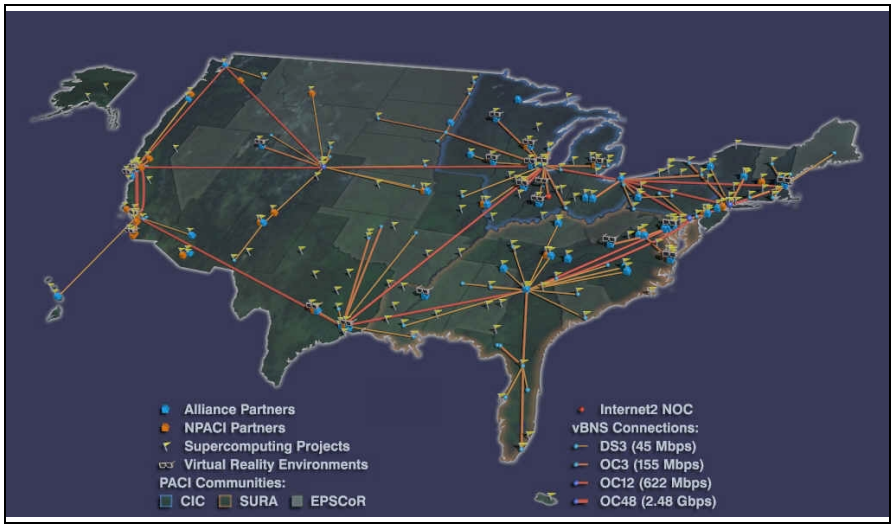
The Internet was first a network and is now a communications platform. The next evolutionary step could be to a platform for distributed computing. This ability to manage applications and share data over the network is called "grid computing." The grid is not an alternative to the Net but rather a set of protocols that build on the Internet. CERN, the European physics lab that was a founder of the Internet, now sports posters that cry "From the World Wide Web to the Grid." The grid addresses coordinated resource sharing and problem solving in multi-institutional virtual organizations. To make the grid a reality, an open set of protocols must be developed; that role is being filled by the Globus Project. Grid computing with Globus is the leading approach in the research community today.

Although it will take time, Globus protocols will likely migrate into the business world as have many research concepts. Symmetric multi-processing (SMP) was originally a research architecture for supercomputers. In fact, the Internet started as a research tool. Similarly, approaches from the mature mainframe have cascaded into newer products. Storage Area Networks (SANs) came from the mainframe ESCON director. Partitioning of large servers evolved from the mainframe's LPARs. Grid computing is taking the mainframe concept of a Geoplex (connecting systems over distances) and bringing it to the heterogeneous world of NT and Unix. Grid computing could change the way large and small corporations compute.

■ Globus Grid Computing 101

So what is grid computing and how does Globus fit in? Grid computing is a service-based infrastructure that runs on top of networks. The computers are usually geographically dispersed and the network is usually the Internet, though neither is necessary (see Figure 1). Globus is an open source tool kit for enabling computers and applications to be participants in a grid system.

Figure 1: Key Sites in the NSF PACI Grid



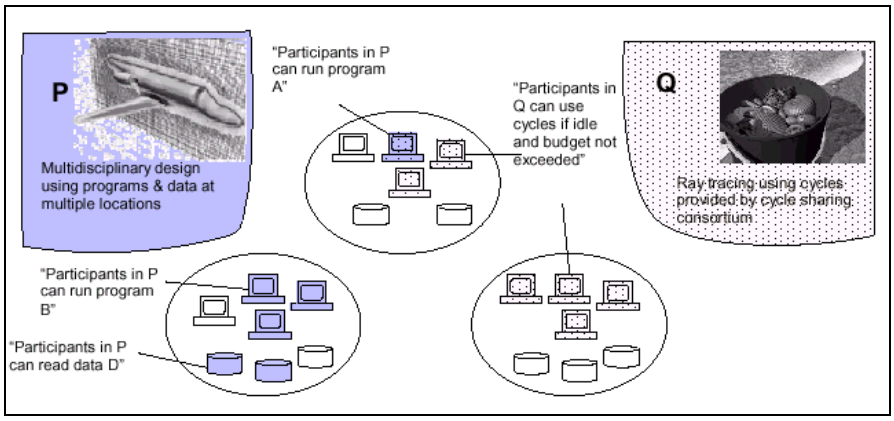
Source: National Science Foundation PACI

Grid Computing

Grid computing differs from the old object-oriented approaches (CORBA and COM) because it communicates at a much higher level. A request for grid computation uses *services*, which do not have a context. A context is a set of previously agreed definitions, variables, or security enablements. A problem arises when the context is lost before the interaction is complete, forcing complex error handling and security issues. With a service, the request is large enough that it makes sense to send the whole context with the request. Then there are fewer error handling and communication issues. High-end computers can handle sufficiently large problems to make this interaction viable. The desktop computers of tomorrow will be able to participate in grid services.

Figure 2 is from the seminal paper by Forster, Kesselman, and Tuecke that pulled together disparate grid concepts into a cohesive structure. The figure shows how an organization can participate in one or more virtual organizations by sharing resources. Three organizations (the ovals) have agreed to share resources through two virtual organizations, P and Q. The organization on the left participates in P, the one on the right participates in Q, and the third is a member of both P and Q. The policies governing access to resources (in quotes) vary according to the real organizations, resources, and virtual organizations involved.

Figure 2: Grid Computing Across Organizations



Sources: *The Anatomy of the Grid: Enabling Scalable Virtual Organizations*, Foster, Kesselman and Tuecke

A grid system makes computers more fungible since they can be used by others during non-peak hours. The grid represents a move to peer-to-peer computing and is part of our decentralization theme. Examples of virtual organizations are application storage providers, storage service providers, members of an industrial consortium or any group that wants to share resources. It goes beyond document sharing to include direct access to remote software, computers, data, or sensors.

One issue with grid computing is code modification; any code modification makes adoption of a new approach difficult. The benefits of switching must outweigh the costs by a significant margin. To reduce switching costs, researchers are working on open source toolkits for grid-enabling an application and computer system. Globus is the leading effort and looks to become the defacto standard.

Globus Toolkit

Globus (www.globus.org) targets resource management, data management and access, application development, services models, portability, and security. We believe the security elements will be critical to the adoption of Globus in the business community. If an organization can share its data without losing control, new partnerships and multi-organizational arrangements are possible.

In November, twelve vendors announced support for Globus as a standard within their organizations. Compaq, Cray, SGI, Sun Micro, Veridian, Fujitsu, Hitachi, and NEC will adopt the Globus Toolkit and develop an optimized form for their

platforms. Entropia, IBM, and Microsoft announced stronger commitments to Globus, while Platform Computing announced a commercial version.

Globus is supported by a number of U.S. research organizations and receives equipment from Cisco, which should benefit as grids become more common. The leading institutions are USC's Information Sciences Institute (ISI) and Argonne National Laboratory. See the following sites:

The Information Technologies Research Office The Defense Advanced Research Projects Agency (DARPA)

The Mathematical, Information, and Computational Science Division subprogram of the Office and Computational and Technology Research, U.S. Department of Energy

The National Science Foundation as part of the National Partnership for Advanced Computational Infrastructure and the National Computational Science Alliance.

The Numerical Aerospace Simulations (NAS) division of the National Aeronautics and Space Administration, as part of its Information Power Grid initiative.

■ Problems Addressed by Grid Computing

Today the research community uses Globus grid computing for large data applications. Current and near-term applications include:

Smart instruments: Advanced scientific instruments, such as electron microscopes, particle accelerators, and wind tunnels produce massive amounts of data. These machines are linked with remote supercomputers and databases to enable interactive, rather than batch, computation. Online comparisons with previous runs and collaborative data analyses are common.

Teraflop desktops: Chemical modeling, symbolic algebra, and other packages transfer computationally-intensive operations to remote supercomputers. Technical and simulation software companies such as MSC Software and Cadence Design Systems can exploit grid computing to accelerate product acceptance.

Teleimmersion: This is high-bandwidth access to shared virtual spaces that support interactive manipulation of shared data. Collaborative engineering is often needed to direct sophisticated simulations and design of complex systems.

Distributed supercomputing: Ultra-large virtual supercomputers are needed to solve problems too large to fit on any single computer. Examples include work on the human genome, weather prediction, climate studies, and encryption.

Monte Carlo simulations: These simulations are large-scale parametric studies, in which a single program is run many times to explore a multidimensional parameter space. Examples abound in finance, such as derivative market risk analysis and pricing.

Life sciences and medical research: Computation and data processing resources will be stressed as cancer and other complex diseases are attacked. IBM announced it will be building a grid computer system to link hospitals, doctors and researchers to study breast cancer.

Future applications are more business-oriented and should enjoy wider usage than the high-performance scientific applications. These include:

Data Mining: Data warehouses are getting larger and are expanding across corporate boundaries. The battle for customer profiles will likely cause corporations to partner. Allowing partners access to customer data without taking possession is an unexploited attribute of grid computing.

Homeland Security: As we discussed in our report of November 30th, homeland security will require large distributed databases. Grid computing could be the answer to state and local concerns over big brother-like national registries. The grid could provide the necessary computational power, reliability, and resiliency to make airport security an acceptable reality.

Enterprise computing: ERP, SCM, and CRM will continue to grow and cross national boundaries. Siebel, i2, SAP, and PeopleSoft should be exploring Globus for their products.

Application service provider utilities: The ASP model has run into trouble. Grid computing and Globus could provide the service standards needed to make ASPs viable.

Total cost of operations: More focus on cost containment and use of existing computational resources will drive corporations to find ways to better utilize idle servers. Spreading workloads across time zones can allow servers to run at higher utilization rates.

Grid Vendors

IBM

IBM has the most extensive research effort in the computing industry. When we met with Dr. Paul Horn, head of research, he put IBM's grid efforts in the context of autonomic computing. Autonomic computing would allow systems to maintain themselves without intervention, much like the human autonomic system. Two weeks later when we met with IBM's technology guru Irving Wladawsky-Berger his main topic was grid computing.

IBM's John Patrick, vice president of Internet technology, sees grid computing as directly applicable to e-business. The utility concept is big at IBM but needs further development. The biggest problem is that applications will have to be modified. But before that is undertaken, a balance must be struck between a common product that can be sold and leveraged and a custom product that enterprises will buy.

IBM's efforts in grid computing include the recently announced breast cancer system in the U.S. and the nine-center national grid in the U.K. IBM hopes to be the first to commercialize this new way of computing over the Internet. It hopes to sell e-utility services and grid-enablement tools as well as build and manage grids for others. IBM's links to the research community, its level of commitment to grid computing, and its support for open source and Linux put it in a position to become the grid computing leader.

Microsoft

Microsoft faces challenges in the academic and research worlds due to the dominance of Unix and Java. Windows has yet to make progress in the research community. Since service-based initiatives are likely to be led by researchers at universities, it is important for .NET to gain traction in academic research. .NET is Microsoft's software foundation for re-engineering its applications to be delivered as services via the Internet. Microsoft committed $1 million to Globus to ensure Windows is supported. In addition, Microsoft is becoming part of the British government's GEODIS Project, which is building U.K. grids for scientific computing.

Microsoft Research's Andrew Herbert recognizes the importance of grid computing, saying, "We wouldn't want to be excluded from the grid." As Microsoft moves up into the data center and as PCs get larger, Microsoft must address grid and services computing. Microsoft's efforts in clustering operating systems for the next generation of blade servers will help, but breaking the hold Unix and Java has on the academic community will require converting programmers, never an easy task.

Sun Microsystems

Sun's grid computing effort is ahead in products but has been overshadowed by IBM's solution wins. Sun's offerings include its Sun ONE services software, support for the Globus Toolkit, its Grid Engine Enterprise Edition beta, and a recently announced Grid Computing Certification Program. Sun has already scored wins, selling 64 of its Sun Blade 1000 workstations and a 24-way Sun Fire 6800 server for a cosmology research grid.

Sun says its Grid Engine allocation software already manages 118,000 servers. This is not one big grid, but it does show how resource allocation already is being implemented. Sun's certification program takes system administrators through a three-phase process with web courses and testing. We have emphasized that trained engineers and operators are critical to technology adoption. If Sun can get its installed base familiar with its grid tools, then its uphill battle against Linux will become less daunting.

By focusing on products, Sun is able to make faster progress. As TechBrains advisor Clay Christensen points out, early in the life cycle of a technology integrated vendors prosper because customers are willing to pay for a turnkey system that they do not have to put together. Usually the integration knowledge resides only at the vendor at this point. Eventually, the knowledge moves out to consultants, system integrators, and customers. This process of knowledge transfer is part of the natural commoditization of technology. Continuing innovation is key for technology companies, otherwise their margins get squeezed.

The challenge for Sun will be to exploit its installed base and Solaris software without alienating its customers via a tight lock-in. Sun is a proponent of choice, except when it comes to operating systems. Solaris is Sun's primary differentiation, but customers are becoming interested in Lintel and .NET because they offer flexibility. Lintel runs on all Intel-based servers while .NET supports multiple languages, such as COBOL, C++, Perl, Fortran, and even Java. We suspect that .NET will someday run on non-Microsoft operating systems via the Common Language Infrastructure. The Solaris-only, Java future Sun promotes is too constraining for many enterprises. New products (like Grid Engine EE) will be essential if Sun is to maintain its position.

4. Tech Quotes

No V Recovery

The U.S. economy's V-shaped recovery depends altogether on a double-digit burst in capital spending, both residential and non-residential. This is the indispensable, crucial condition for recovery. The widespread view of consumer spending as the critical demand component that leads all cyclical recoveries goes flagrantly against all empirical evidence. The V-shaped recovery cannot materialize because the present recession has its root causes in a profits and capital-spending crisis.

- Economist Kurt Richebacher

We're attracted to this analysis of the current downturn, which goes as follows. Net capital investment, which depends on profits and savings, is the key to economic success. "What a country wants to make it richer is never consumption, but production," said John Stuart Mill. The current recession is different from post-war downturns in that corporate profits have collapsed and with it capital spending. Moreover, personal savings are low. Previous recoveries have been led by residential and business investment. Consumer spending lags, so the attention on consumer confidence is misplaced. Home building has hung in at high levels, so a significant improvement is unlikely. Depressed corporate profits mean lackluster improvement in capital spending. Only a credit boom fueled by Greenspan kept the economy strong for so long, which resulted in deterioration of consume and corporate balance sheets. Result: no V recovery.

P&G Meets Microsoft

We found that imposing selective discipline resulted in tremendous cost savings and, ultimately, better services and information for employees. Standardizing specific practices and centralizing certain systems also provided, perhaps surprisingly, benefits associated with decentralization.

- Former Microsoft COO Robert Herbold in Harvard Business Review

Mr. Herbold describes his experience coming from Proctor & Gamble to Microsoft to manage finance, manufacturing, IT, HR, and corporate marketing. While the informality and delegation of responsibilities was exhilarating, Microsoft's freewheeling environment had drawbacks. Different financial metrics were used across businesses and geographies. Headcount wasn't tracked. No formal strategic planning existed. An ERP system was put in with standard data definitions and business templates imposed. An employee performance management system was implemented. Herbold credits these moves in part for the company's ability to grow revenue 4X but net income 7X from 1995-2001. Importantly, Gates and Ballmer were supportive of the increased discipline. The tenets of good management are universally true, new economy not withstanding.

x86 Forever

In unit volumes, PC microprocessors are an inconsequential part of the microprocessor market. But, as the world's myriad devices connect to the Internet, the PC's microprocessor standard will surge into embedded devices as the microprocessor on a system-on-a-chip. The x86 in these embedded devices will be a soft core that is unlikely to come from Intel or from AMD, but it could come from Transmeta or from VIA Technologies.

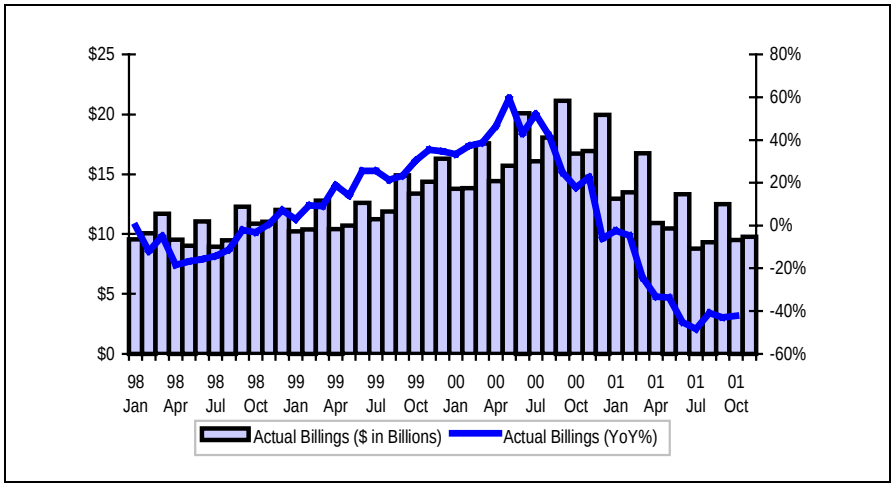
- Dr. Nick Tredennick in his Dynamic Silicon newsletter

Embedded microprocessors support a wide range of applications, tend to be self-sufficient, and can be designed by small teams. As a result, Intel's x86 architecture hasn't played much of a role. That could change, says Dr. Tredennick. Consumers will demand always-on connections to the Internet from untethered devices. This connection will drive the PC's standardization into the connected devices. Intel and AMD must change from supplying chips to providing soft-core x86 IP. That's where Transmeta and VIA excel. It's hard for us to believe that if the Internet reinforces the x86 standard in embedded devices Intel won't be there to benefit.

5. TechStrat Pictures

November semiconductor billings fell 42% from last year, about the same as the 43% decline in October. Sequential sales growth of 3% was a touch soft, but our analysts expect 30% growth in December.

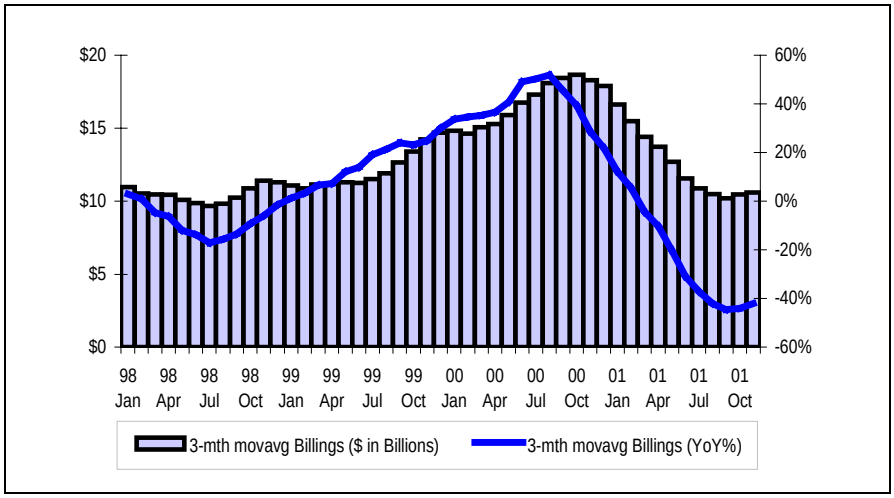
Chart 2: Semiconductor Monthly Billings, November 2001



Sources: WSTS, ML TechStrat

The three-month moving average improved to -42% from -44% in October. Semis are making a bottom. What's unusual is how far the stocks have moved in anticipation of improvement; usually investors are skeptical at the bottom.

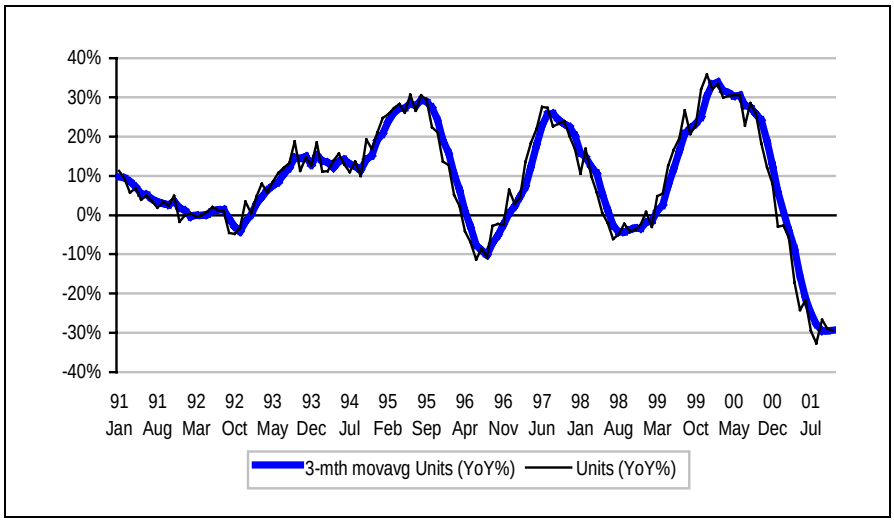
Chart 3: Semiconductor Three-Month Moving Average Billings, November 2001



Sources: WSTS, ML TechStrat

The three-month moving average of units is bottoming at -30%; microprocessors were especially stong. ASPs were down 18%.

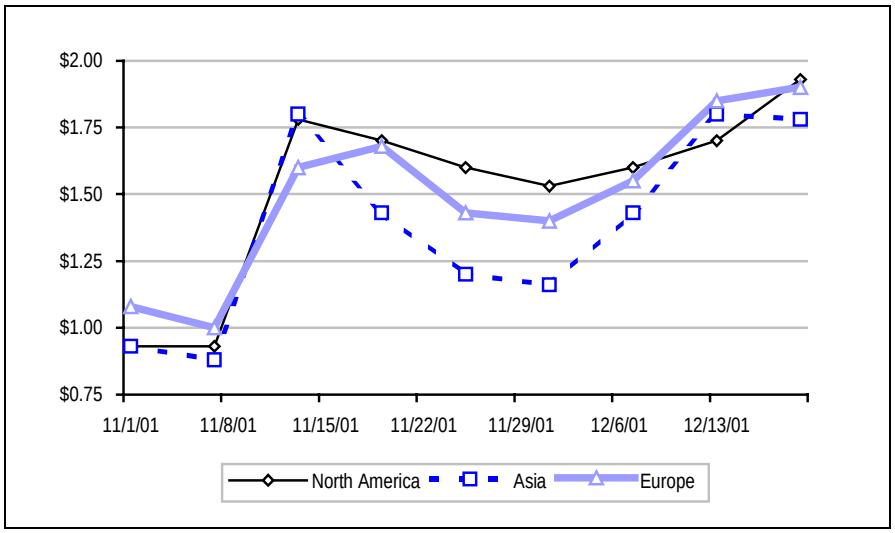
Chart 4: Semiconductor Unit Shipments (3mth vs. Year-to-Year Change), November 2001



Sources: WSTS, ML TechStrat

Hynix increased spot prices for DRAM by 30% and Micron is following. Joe Osha says the inventory of PC-related components is low, and DRAM demand is growing faster than supply. Prices should hold up through at least 1Q.

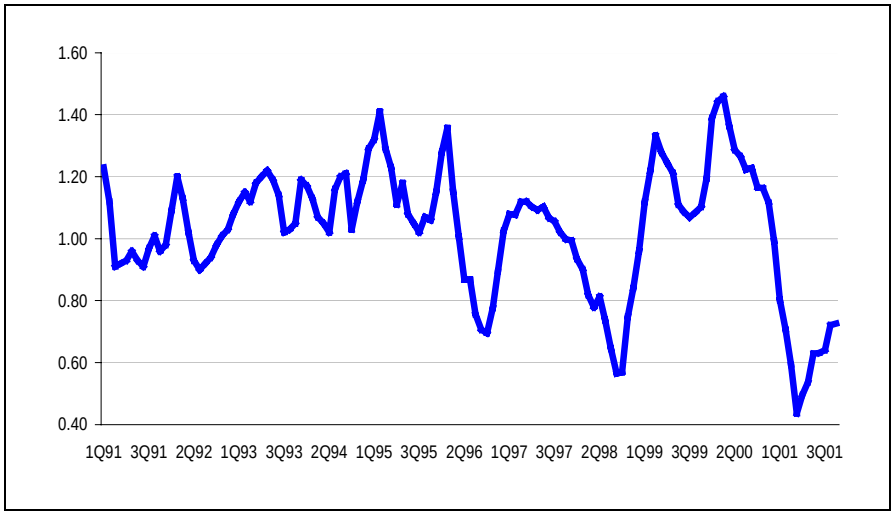
Chart 5: DRAM 128Mb 16x8 PC133 Price Movements



Sources: ICIS-LOR, ML TechStrat

The preliminary November semiconductor capital equipment book-to-bill ratio came out at 0.73, an increase from a revised 0.71 in October.

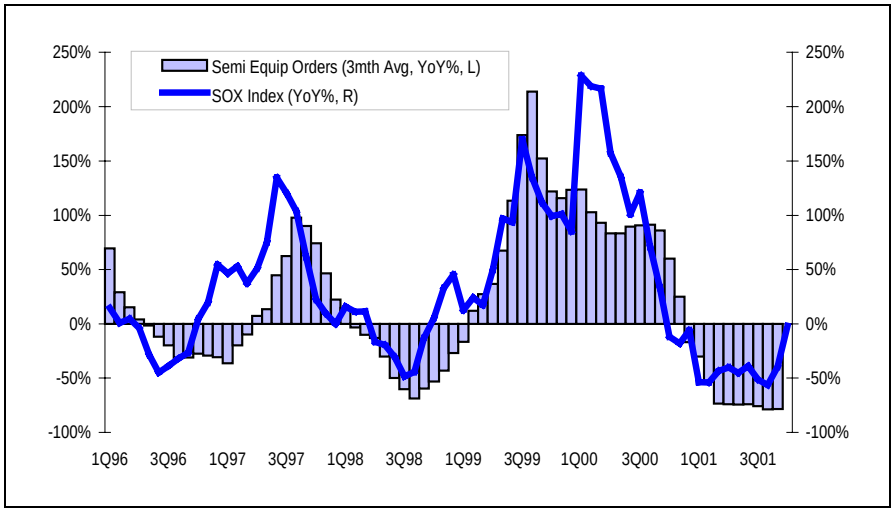
Chart 6: U.S. Semiconductor Capital Equipment Book-to-Bill, October (3mth Avg)



Sources: SEMI, ML TechStrat

Orders rose 5% sequentially; the SOX is anticipating an upturn.

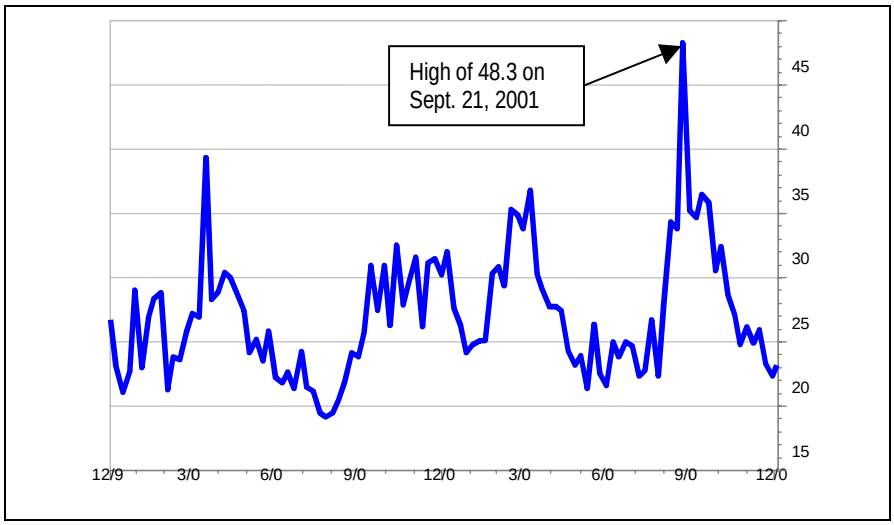
Chart 7: Semi Equip Orders (3mth Avg.) vs. SOX Index (Year-to-Year Change)



Sources: SEMI, Compustat, ML TechStrat

The VIX stands at 23.2, not far from its lows and indicative of investor complacency.

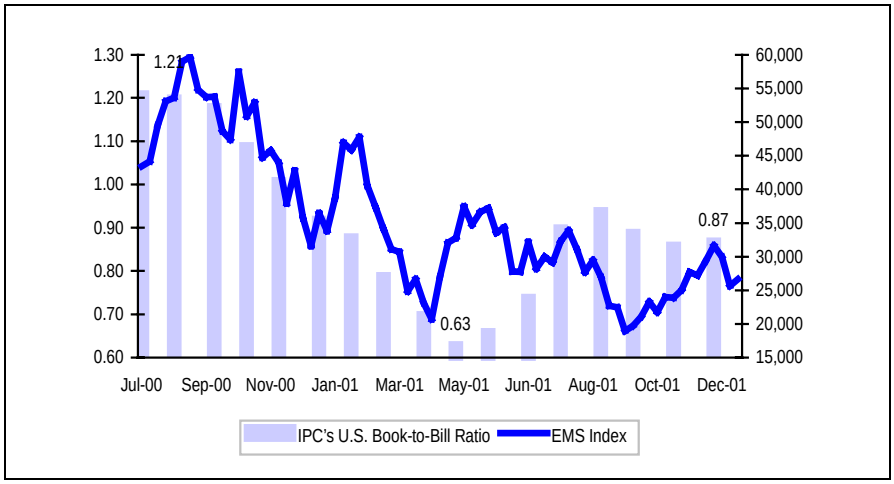
Chart 8: CBOE Market Volatility Index (VIX), Last Two Years



Sources: Compustat, ML TechStrat

The IPC book-to-bill ratio increased slightly in November to 0.87 from 0.86 in October. We expect this ratio to trend lower in the near term as the start of the calendar year is seasonally weak for technology.

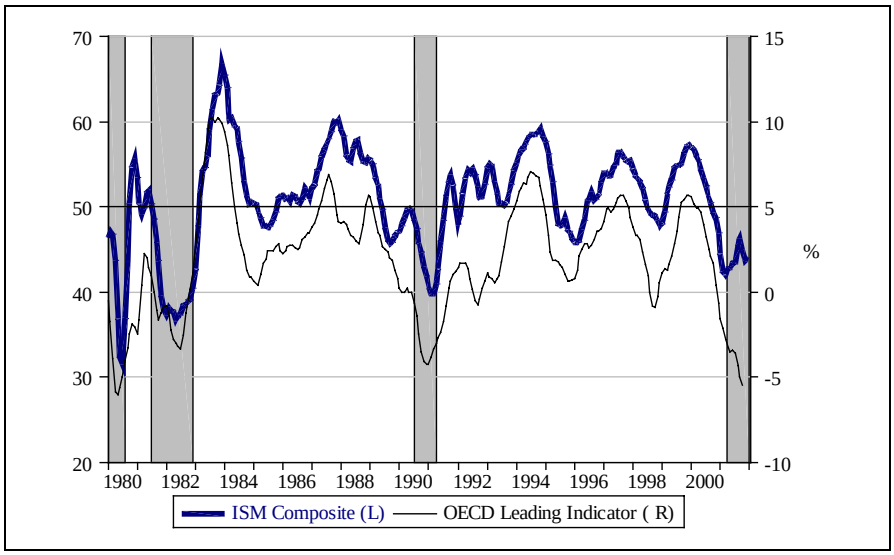
Chart 9: IPC's U.S. Book-to-Bill Ratio For the PCB Industry (3mth avg) vs. EMS Universe (Year-to-Year Change)



Sources: IPC, Compustat, ML TechStrat

The NAPM composite, now known as the Institute for Supply Mgmt (ISM), rose to 48.2 in December from 44.5 in November. Orders and production, which we view as leading indicators, jumped into expansionary territory above 50. We would like to see the OECD Leading Indicator show some life.

Chart 10: ISM Index For Manufacturing Activity (3mth avg) vs. OECD L.I. (YoY%)



Sources: ML TechStrat

6. Technician's Corner

Don Kapetanakis, Senior Market Analyst
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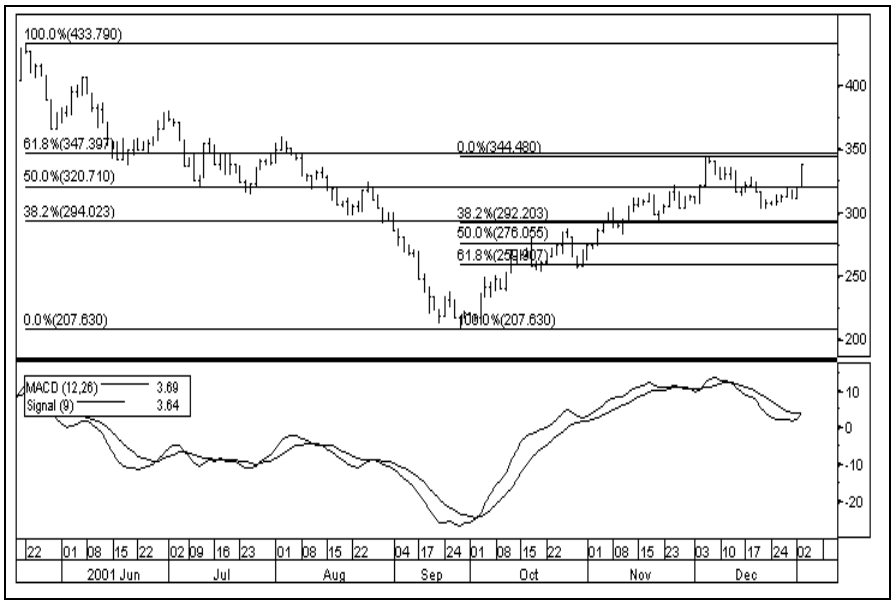
Merrill Lynch 100 Technology Index (MLO)



Source: Bloomberg

In the first two trading days of the year, technology has lead equity indices higher. It has been a decisively positive reversal from the deterioration seen in the last three weeks of 2001. As the chart shows above, the MLO is now threatening to break out to a new recovery high. That is, it is poised to break above 345, which was the last relevant high on the chart.

Although the intermediate-term trend remains positive, the shorter-term trend is neutral. A break through this line of key resistance at 345 will turn the shorter-term trend positive and will reinvigorate the intermediate-term trend. We would look for an initial target around 360-370. A subsequent target would involve a test of the May 2001 highs around 430-440.

The trigger for downside acceleration is not as clear-cut. The price progression identified nearby support at 303. We would take such a break as an indication of a shorter-term negative trend. There is, however, another line of potential support between 280 and 290. Because of the precarious position that the MLO finds itself over the shorter-term, we would focus on the more conservative support area at 303 as our cue to assume a defensive position. Beyond 280-290, we are looking at 260 as key intermediate-term support.

Our bias remains positive. There are seasonal tendencies that would argue for continued upside momentum into the latter part of January. Yes, this is quite short term, but it means that the MLO is likely to break through the key resistance barrier at 345. We would be very happy to attain a target of 360-370 and would look to raise cash once that goal is reached.

7. Calendar

Week of January 7

7 Monday	• Scientific Atlanta (SFA; $26.31; C-1-1-7) Analyst Meeting, Georgia
8 Tuesday	• Macworld Conference & Expo 2002, San Francisco • International Consumer Electronics Show 2002, Las Vegas
9 Wednesday	• Macworld Conference & Expo 2002, San Francisco • International Consumer Electronics Show 2002, Las Vegas
10 Thursday	• Infosys Technologies (INFY; $61.87; C-2-1-7) Earnings Conference Call (Mitali Ghosh) • Rational Software (RATL; $21.27; NR) Earnings Conference Call • Macworld Conference & Expo 2002, San Francisco • International Consumer Electronics Show 2002, Las Vegas
11 Friday	• Producer Price Index (Dec) 8:30am • Macworld Conference & Expo 2002, San Francisco • International Consumer Electronics Show 2002, Las Vegas

Note: Quarterly earnings estimates and reporting dates are included for companies included in the MLO Index.

Table 7: Recent Publications

	Form	Date Published	Title
TechStrat Insights	Comment	December 17, 2001	In Defense of HPQ, Part II
TechStrat Predictions	Comment	December 21, 2001	Technology Predictions for the New Year
Techonomics	Comment	December 28, 2001	Technology Durable Goods Report
TechStrat Survey	Comment	January 2, 2002	Survey of 75 U.S. and 35 European CIOs
TechStrat Picture Book	In-depth	January 3, 2002	An Illustrated View of Technology

Table 8: TechTalks

Date	Subject
October 19, 2001	John McKinley, Jr., ML Chief Technology Officer
October 30, 2001	Clay Christensen, Professor at the Harvard Business School
November 5, 2001	Adam Quinton, Global Telecoms Analyst

Replay available on http://researchmedia.ml.com
Event code: techtalk

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