Ford Sync Changes Infotainment Picture

Beyond Back to Basics

Despite enormous financial losses in 2006 and big cutbacks in its engineering organization, Ford has managed to position itself back on the leading edge, at least in infotainment. Ford has a rich history in automotive electronics. In the early 1990s Ford was building some of the world's most advanced engine controllers, the EEC series. In 1996 Ford introduced telematics to the world; its RESCU emergency call system was the first of its kind. Since then it got out of the telematics business and in 2003 the carmaker made a conscious decision to limit its development of new electronics and instead focus only on the basics.

But by now everyone has heard about the Ford Sync infotainment platform loudly introduced by Ford and Microsoft to an appreciative audience last month at the Consumer Electronics Show in Las Vegas. By any measure the announcement was a smashing publicity success.

In case you have been vacationing on an island in the Caribbean for the last month, the Ford Sync platform will be introduced in the fall of 2007 on 12 Ford vehicle lines and will be rolled out across all Ford car lines by the end of 2008. It is built on Windows Automotive from Microsoft, a well-iterated and proven infotainment software platform based on Windows CE 5.0. With Ford Sync, drivers can effortlessly connect almost any portable music player, iPod or not, to their vehicles via a USB 2.0 connector to take advantage of vehicle-mounted switches, displays and the car’s speakers. Cell phones that can play music can automatically be connected through a wireless Bluetooth link, through which audio information from a millimeter-wave radar sensor to accurately determine that an obstacle is detected and that automatic braking can occur. Braking force is limited to a maximum of 0.5 g (4.9 meters-per-second-squared deceleration), roughly half the force of full braking.

The forward-looking stereo CCD cameras are also used to inform a lane-keeping assist system, which provides an audio-visual warning and a brief corrective steering force when it detects lane departure. The Lexus driver monitor uses a separate CCD camera mounted on the steering column. The system monitors the driver's face, and if he is looking away from the road when an obstacle is detected, gives a warning and even briefly applies the brakes to alert him.

The next carmaker to combine camera and radar sensors for obstacle detection that is sufficiently accurate for automatic braking will be Volvo, on the S80 coming out in late 2007. A according to a Volvo official, the new system will be supplied by Delphi, which makes the ACC (adaptive cruise control) system used on the current S80. While the ACC system on the S80 already does radar-based collision warning and pre-crash braking (pre-charging of driver-initiated braking), the new system also includes a CMOS camera sensor. Data from the camera enables autonomous braking when either stationary or moving obstacles are detected. The camera also serves the lane-departure warning system.

The CMOS camera module, the ACM 100, which includes the imager and camera, will be supplied by Cypress Semiconductor. Volvo has been deploying cameras in its Blind Spot Information System (BLIS) on the S60, V 70 and XC 70 models since 2004 and made the optional safety feature available on all Volvo models in 2006.

Camera Market is Taking Off

Active Safety Systems Fuse Video and Radar

The demand for cameras to monitor the environment both inside and outside the vehicle has accelerated lately, spurred on in large part by last year’s introduction of breakthrough safety technology on Lexus LS vehicles. The active safety system on the LS 460 was the first to automatically actuate the brakes to avoid collisions, not only with other vehicles or objects but with pedestrians as well.

The Advanced Pre-Collision System, available on the LS in Japan and Europe and coming to the U.S. this year, employs two near-infrared CCD (charge-couple device) cameras mounted 350 mm apart, which look forward through the windshield. Near-infrared projectors built into the high-beam headlamps illuminate the scene up to 25 meters ahead. Digital images from the cameras complement information from a millimeter-wave radar sensor to accurately determine that an obstacle is detected and that automatic braking can occur. Braking force is limited to a maximum of 0.5 g (4.9 meters-per-second-squared deceleration), roughly half the force of full braking.

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Video Camera Applications

According to suppliers, by 2010 or 2011, roughly 25 million automotive video cameras will be produced annually, accounting for a global market of at least $1 billion.

Forward Looking
Automatic high-beam control
Lane keeping
Near-range sensing for ACC
Night vision
Pedestrian detection
Sign reading
Rear Looking
Collision mitigation
Backup cameras
Side View
Blind spot
Interior
Occupant sensing for airbags
Driver monitoring
Driver distraction
Drowsy/drunk driver
2006 Roundup of Auto Electronics Suppliers

A utoliv Inc.
2006 Sales: $6,188 million
Change from 2005: down 0.3%
2006 Net Profit: $402.3 million, 6.5% of sales, compared with $292.6 million net profit in 2005
Outlook for 2007: 3% increase in organic sales, based on improved vehicle mix in North America and Europe, wider penetration of side curtain airbags and growth in Asia

A irbag sales fell by 1%, to $4.1 billion in 2006 due to lower production by North American and European carmakers. Ford is Autoliv’s largest customer, accounting for 20% of 2006 sales; GM accounted for 12%; Volkswagen is the third-largest customer, contributing 10% of Autoliv sales. More than half of Autoliv’s revenues are generated in Europe.

Sales to Asian OEMs accounted for 27% of total sales. Autoliv grew sales in Japan by 5%, aided by strong demand for curtain airbags, along with market share gains in steering wheels and seatbelts.

In January 2007 Autoliv purchased the remaining 35% of Autoliv-Mando, the joint venture it formed with the Korean supplier Mando in 2000. In 2006 Autoliv-Mando’s sales were approximately $230 million.

In February 2007, Autoliv announced it was part of a new telematics partnership that includes WirelessCar and two other unnamed partners. The service will include automatic crash notification, roadside assistance and stolen vehicle tracking for a one-time fee, with no recurring charges. Autoliv will supply the hardware.

D elphi Corp.
(Preliminary unaudited results)
2006 Net Sales: $17,839 million
Change from 2005: up 4.4%
2006 N et Loss: $707.5 million, compared with a net loss in 2005 of $1,382 million
Outlook for 2007: $15 billion in net sales with core operating earnings (before interest, taxes, restructuring costs, other special items and expense) between $560 million and $600 million. The earnings improvement is based on additional new business and cost improvements, partially offset by an unfavorable platform mix.

Since its 1999 spin-off from General Motors, one of Delphi’s major goals was to become increasingly less dependent on its former parent, and it had been making good progress. In 1999 GM accounted for 76% of Delphi’s sales. That percentage fell to 61% by 2002, to 54% in 2004 and down to 48% in 2005. But in 2006, sales to GM were back up, to 58% of net sales.

J ohnson Controls Inc.
A utomotive Experience
Fiscal year ending September 30, 2006
FY 2006 N et Sales: $18,274 million
Change from FY 2005: down 3%
FY 2006 O perating Income: $371 million, 2.0% of sales, including restructuring costs; operating income was down 24% from the prior year.
Outlook for FY 2007: 3% to 5% decrease in sales

GM, Ford and DaimlerChrysler are JCI’s top three customers, and the Detroit carmakers’ production cuts and falling market shares contributed to a 5% decline in JCI’s North American sales and a 59% drop in operating income in the region. Lower volume sales with Ford, GM and Nissan offset higher volumes at DaimlerChrysler and Hyundai in North America. Sales in Europe were down 2% compared with 2005, but operating income in Europe increased 52%. Net sales in Asia grew 4%.

More than 56% of JCI’s 2006 automotive revenue came from outside North America and the company hopes increased sales in emerging markets such as China, India, Eastern Europe and Russia will help offset continuing vehicle production cuts by U.S. manufacturers.

JCI formed a 50/50 joint venture in November 2006 with Chinese carmaker Chery to provide Chery with interior systems starting in 2008. Increased business with Asian carmakers manufacturing in the U.S. is another opportunity for growth.

According to JCI, integrated electronics is the fastest growing segment of the auto interiors industry; the company employs more than 1,000 electronics systems engineers. New electronic products introduced in the past year include a mobile device gateway for connecting portable consumer electronic devices to the car’s controls and display; and a monochrome touch screen display suitable for automotive interior controls. At the NAIAS in Detroit last month, JCI announced that its HomeLink integrated garage door opener would be available with voice control in the near future.

The Automotive Experience segment accounted for 57% of JCI’s total sales in 2006; automotive battery sales, through the Power Solutions segment, accounted for 11% of total sales. The company’s 2006 restructuring plan called for eliminating 2,200 automotive positions and moving more production to low labor cost countries.

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The Hansen Report on Automotive Electronics
© 2007 Paul Hansen Associates, 150 Pinehurst Rd., Portsmouth, NH 03801, USA. Telephone: 603-431-5859. Fax: 603-431-5791. Email: info@hansenreport.com. All rights reserved. Materials may not be reproduced in any form without written permission. The Hansen Report on Automotive Electronics is published 10 times a year, monthly; July/August and December/January are combined issues. The annual subscription rate is $747 (North America), $787 (elsewhere). Back issues are available for $50 each; see our online index at www.hansenreport.com. Paul Hansen Associates is a strategy and market research firm consulting to the electronics industry. Publisher/Editor Paul Hansen Managing Editor/ Brianne Wolfe Circulation Manager ISSN 1040-1105
Continental hardware. The hardware will be built by Ford for software, and it produced the reference design in job one,” noted Mr. Jablonski.

The tough part now is deciding which features should be in the platform.” While many automakers are connecting to iPod through the Apple-specific iPod connector at the bottom of the device, Ford Sync connects to iPod via the USB connector, the same cable used to plug an iPod into a computer. “Ford played a key role in brokering an arrangement between Microsoft and Apple to make sure that Sync would provide the full rich interface to the Apple device as well as to the Microsoft Zune and PlaysForSure devices,” said Mr. Jablonski. The Sync platform will include the necessary hardware to enable a secure connection to the iPod over USB. Sync is designed to handle nearly every digital music player available.

Bluetooth Compatible

Sync will use the Bluetooth 2.0 EDR (Enhanced Data Rate) Profile, which enables faster communication with newer Bluetooth devices. Sync is backward compatible with previous Bluetooth versions. Also used is the latest version of the Bluetooth Hands-Free Profile. Depending on the capabilities of the phone, Sync will automatically download your phone book using the Phone Book Access Profile, SyncML, or the AT command set. For phones that do not support automatic phone book download, Sync can still receive phone book contacts using a manual method enabled by the OBEX (Object Exchange protocol).

Audio streaming from Bluetooth uses the A2DP (Advanced Audio Distribution Profile) and AVRCP (Audio/Video Remote Control Profile). “[With those] you can play, pause and go to the next or previous track, but those profiles don’t support the metadata related to the songs, like artist, title and genre. The Bluetooth SIG [special interest group] is working on that,” explained Mr. Jablonski.

“Since Bluetooth standards have been plagued by interoperability issues, we will do very thorough testing, not only against the standard but against our application,” said Mr. Jablonski. Ford will post on the Sync users’ Web site a list of the Bluetooth phones that will work with the platform.

High Tech Revival at Ford

By automotive standards, Ford will get Sync to market very quickly. Conversations about the new platform started at Ford less than two years ago, and the contracts with suppliers that kicked off the work are less than a year old. “We got tremendous support from our senior leadership,” noted Mr. Reitz, “and that includes Derrick Kuzak, in charge of global product development, Mark Fields, president of the A mericas, and Paul Mascarenas, vice president of engineering for the A mericas. It has really been a cross-functional effort with tremendous alignment and cooperation like we’ve never seen before.”

What spurred everybody on? “It will be a good profit maker for each of the vehicle lines, and it demonstrates that Ford is focused on innovation and technology,” declared Mr. Reitz.

While Mr. Jablonski concedes that two or three years ago was a difficult time for electronics engineering at Ford, he points out that Ford Sync is not the first evidence of a high-tech revival at Ford. “We rolled Sirius out across the whole product lineup in 18 months. We introduced a brand new navigation system in the 2006 model year and in 18 months rolled that out across the entire line.” The Pioneer navigation system on the Lincoln Zephyr ranked number one in J.D. Power and Associates’ 2006 Navigation Satisfaction Study.
Elektrobit Automotive Software

Business Unit (formerly 3SOFT)

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Telephone: 49 9131-7701-690;
Fax: 49 9131-7701-333
E-mail: info.automotive@elektrobit.com

2005 Sales: €27.1 million ($35.1 million)
2006 Sales: €38.9 million ($50.3 million)

Net Margin: 5.4%

Products: Software engineering services, development tools and embedded software

Employees: 452 at year-end 2006
Sales per Employee: €86,062

Elektrobit Automotive Software Busi-ness Unit Background

Elektrobit Automotive Software Business Unit (formerly 3SOFT) was established in 1996 when business founders bought 80% of 3SOFT from their two managing directors. The deal valued 3SOFT at €21 million, 1.4 times its 2003 sales of €15.5 million. 3SOFT’s operating margin in 2003 was 7.1% of sales.

Elektrobit A utomotive Software

Elektrobit Group Plc headquarters in Finland, the Elektrobit Group Plc. provides engineering services and embedded software for three markets: test and automation, wireless communications, and automotive software, which is served by the business formerly known as 3SOFT, which accounts for 21% of total sales. Approximately 72% of Elektrobit Group sales are made to customers in Europe.

Mr. Haas’s interest in telecommunications stems from his view that sooner or later mobile communications will merge with automotive electronics.

A ccording to Mr. Haas, not much has changed with the business since the 2004 acquisition by Elektrobit, except for the company’s name. “We have access to more money, but we always were able to develop our business from our own cash flow. Since its founding in 1988, 350 FT has always been profitable, making operating margins between 5% and 10% each year,” he said.

Elektrobit Automotive Software’s sales are expected to grow in 2007 at the rate of 40%, slowing to between 25% and 30% per year from 2007 to 2011. A ccording to the company, the market for automotive software grew by 15% in 2006.

With automotive software one of Elektrobit Group’s three targeted, high-growth businesses, Mr. Haas is confident that the company will fund Elektrobit Automotive Software’s goal to expand its business well beyond its German roots. Within five years time automobile software intends to get 50% of its sales from customers located outside of Germany. “We will invest what is necessary to reach this goal,” declared Mr. Haas. Outside of the automotive industry, Elektrobit Group is also focusing on its 3G smart-phone reference design business and its Internet Protocol radio base-station businesses.

Elektrobit Automotive has four offices in Germany from which it covers each of the major German carmakers. Volkswagen is served by the Braunschweig office, near Wolfsburg; A udi from Ingolstadt; B M W from M unich; and M ercedes from the Stuttgart office. Elektrobit Automotive opened offices in Tokyo and N ov i, M ichigan, in 2004, and one in Paris in 2007.

Competitive Strengths

Elektrobit Automotive Software competes most directly with Vector Informatics and the Bosch affiliate E T A S, in Germany, and with Infosys and Patni Computer Systems in India.

Elektrobit believes it stands apart from other customers listed alphabetically: Alpine, ContiTemic, Fresenius Medical Care, Visteon, VW, ZF Lenksysteme

Elektrobit Memberships in Standards Consortia

A SAM e.V. – Supplier Member
A U T O S A R – Premium Member
F lexRay Consortium – Premium Associate Member
J asPar – Premium Member
O S E K / O D X – Technical Committee, co-author O SE K/OS and O SE Ktime specifications
A E S A S – Founding Member

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its competitors because it is known for technical innovation and for high quality. “We started in the medical market where software quality is extremely important,” said Mr. Haas. “Here at Elektrobit quality is a conviction.” Elektrobit A utomotive Software has been certified to the ISO 9001 quality standard since 1994.

Software Trends
With his close connections to the German auto industry, which pioneered the use of most of the standard operating systems and standard communications software used in cars around the world today, Mr. Haas is in a good position to comment on trends in automotive electronics software.

◆ Operating Systems
As electronics get more complex, and as in-vehicle data communications networks proliferate, operating systems should be an essential ingredient of any electronics system. Powertrain, body, chassis and infotainment domains all would benefit from a common OS. “The operating system itself is not so necessary, but all the basic software components around it are: the communications drivers, network management, boot loading features and diagnostics,” Mr. Haas suggested. “Unless you use a common operating system, you’ll always have problems with integration, with making all of the components of the system work together. With an operating system, integration is a whole lot easier.”

Today anywhere from 50% to 70% of the software developed for electronic control units is basic software, such as operating systems, which could be standardized. “Using an operating system like O SEK or one that conforms to AUTOSAR is a strategic decision that has to be made by top management, because it does add some cents more to the cost of the microcontroller and memory used in each ECU,” said Mr. Haas. “But if you want long-term quality, you have to invest.”

Elektrobit sells O SEK software along with only three other major players—the German automotive software company, Vector, Freescale Semiconductor and ETA S. O SEK software produced by Elektrobit is presently installed in all current BM W cars and the M ercedes C-Class, among others.

While nearly every German carmaker employs O SEK to some degree, in powertrain, body and chassis control systems, O SEK plays no role in Japan where microTRON would be the choice if a standard OS is applied. In the United States a number of small real-time operating systems—some of which are commercially available and some proprietary—are being used, mostly in powertrain systems, according to Mr. Haas.

Infotainment systems require different operating systems from those used in vehicle control systems. Makers of portable navigation devices, widely used in Europe, frequently opt for Microsoft W indows CE or Linux. In embedded infotainment systems in Europe, QNX has been especially popular in the high-end systems, while V xWorks is often applied in lower-priced units. Japanese infotainment systems have used W indows CE and microTRON.

◆ AUTOSAR
Mr. Haas is confident that the AUTOSAR standard software platform will be a success, though it will take another five years before we see it in high-volume applications. “This was our experience with O SEK, which began with a BMW implementation in 1998. By now, if it weren’t for AUTOSAR, O SEK would have been much more widely used,” said Mr. Haas. “Operating systems based on AUTOSAR will replace O SEK.”

Elektrobit has positioned itself among the world’s leading providers of AUTOSAR implementations, design tools and engineering services. “We provide the whole AUTOSAR package; we’re a one-stop shop,” noted Mr. Haas. If AUTOSAR is widely adopted around the world, Elektrobit’s investments in the technology should pay off handsomely some years from now. “We stand behind the idea that in the future AUTOSAR will be used in all domains, including infotainment,” he said.

Among the German carmakers, BM W has been the leading advocate of AUTOSAR. Other enthusiastic advocates of the standard software architecture are PSA and Volkswagen, which has the lead on this technology for the Volkswagen Group, which includes Audi. Elektrobit has been working in partnership with Volkswagen, Hella and NEC Electronics on an evaluation project to develop a body control ECU based on AUTOSAR for a Passat Limousine. The ECU is not scheduled for series production.

Elektrobit has been a premium member of the AUTOSAR partnership since 2004 and is also a member of JasPar. JasPar is the Japanese consortium working on the FlexRay high-speed, safety-critical protocol pioneered by the Germans. It will soon begin working on AUTOSAR standards. Elektrobit is one of only a few non-Japanese participants in JasPar. “We were asked to enter the Japanese consortium because of our expertise in AUTOSAR,” noted Mr. Haas. Since meetings are conducted in Japanese, JasPar is attended by Japanese-speaking employees of Elektrobit.

◆ FlexRay
While Elektrobit is a premium associate member of the FlexRay consortium and has developed some FlexRay networking components, Mr. Haas isn’t certain of the future of FlexRay. “Two or three years ago market analysts were saying FlexRay would be here in high volume
by now, but that hasn’t happened. ... Personally, I’m not sure we really need FlexRay when we already have CAN, the controller area network. While FlexRay does offer some safety aspects, it is not all that fast.” Instead, Mr. H. as thinks that Ethernet (IEEE 802.3) should have a future in the auto industry.

**Application Focus**
Elektrobit is concentrating its business development efforts on four vehicle domains: infotainment, driver assistance, navigation and body/chassis/comfort electronics. Those were selected because they are software-driven and not completely covered by Elektrobit’s competition.

Among the targeted vehicle domains, Elektrobit sees the greatest near-term opportunity in navigation, where personal navigation devices are particularly hot right now. “In contrast with some of our other products, for example, our AUTOSAR operating systems where it could take five or six years to get into series production, we have gotten quicker revenue flow from our private-label navigation software,” said Mr. Haas. Elektrobit software is used in smart phones, personal digital assistants, portable navigation devices and navigation systems embedded in the vehicle including these brands: Medion, Falk, Delphi Grundig and Fiat, among others.

A latecomer to navigation software, Elektrobit was able to start from scratch and develop a very flexible navigation kernel, on which a great number of new product features can be added. Of particular interest to portable device makers was the ability to vary performance depending on whether the user is in a car, on foot or on a bicycle. Conversant in 16 languages,
### Sensors...

**Sensor Fusion**

Active safety systems, especially those that activate the brakes or modulate steering behavior, will rely on two or more sensors working in complementary fashion. “Safety systems should function in any environment, and that’s one reason for fusing forward-looking radar with a camera,” said Peter Knoll, recently retired Bosch vice president in charge of new driver-assistance product engineering.

“Radar is a very good sensor to measure distance and relative speed very quickly and precisely, but radar sees only echoes and cannot evaluate what kind of obstacle it is approaching. To know if the obstacle is relevant you need an additional sensor. With radar alone you can’t tell the difference between a motorbike and a Coke can, because the signals are comparable,” he explained. Dr. K noll believes the number of sensor fusion systems in the market will increase significantly next year.

Just as cameras improve the reliability of radar obstacle detection systems, radar improves the reliability of video lane departure warning systems. The two sensors operating in different domains complement each other. “The camera provides information about the edges of the vehicle and gives you really good position information on the car. You can’t get that with radar alone, because radar has a tendency to wander around,” said Larry Humm, Delphi manager of advanced collision avoidance systems.

While fusing cameras with radar sensors in forward-looking obstacle detection systems is new, enabled by the ample processing power available in today’s high-end vehicles, sensor fusion is not at all new. Indeed, stability control systems—first brought to market in 1994 on the Mercedes S-Class—make use of multiple sensors: for yaw, steering wheel position, lateral acceleration and wheel speed.

What’s next in sensor fusion? In the future, says Mr. Humm, once low cost gyro systems with GPS become available, “Video and radar sensors will be combined with more accurate location information, so the vehicle will know precisely where it is, for example, whether it’s negotiating a curve or approaching an intersection.”

**Backup Cameras**

Although a number of active safety applications for video cameras are ramping up, today their biggest automotive application is in rearview safety systems. “If you are looking for immediate volume, then the rearview camera market is the place to be,” said Steve Johnson, senior business development manager for Cypress Semiconductor. “But you’ve got to be there with a low-cost color camera, as low as $30 each,” he said. Cypress makes both CMOS imagers and camera modules based on those imagers.

Backup cameras have been used for years in Japan, but those are based on CCD cameras, technology that has been around since the 1970s. “The cameras being used today in Japan are of low cost and poor quality. The images are distorted. And if you try to use that system to back out of your garage when the sun is shining, all you’ll see is a big blur,” explained Mr. Johnson.

Micron Technology’s CMOS imager has been used in the backup camera on the Hummer H2 Special Edition for about a year and on a vehicle produced in Europe for about two months. Curtis Stith, Micron’s director of marketing, believes that ultimately CMOS will be the technology of choice for this and other automotive applications. “We can now match the performance of very good CCDs, but at a lower system cost, because we can integrate logic on our chip. We require less supportive circuitry, so it’s a smaller bill of materials and a smaller camera.”

Micron’s CMOS imager is also used by a Korean carmaker in a lane-departure warning system, and by a Japanese carmaker in an ACC system. According to Mr. Stith, by 2010 CMOS cameras will be used in at least half of all automotive camera applications; the rest will be CCDs.

Mr. Stith believes that eventually a single, forward-looking CMOS camera capable of switching from one configuration to another will be used for multiple applications. Lane-departure warning has a different field of view than headlamp control or near range sensing for A CC. “So we are starting to look at context switching, having different setups for different applications. You could change exposures or white balance, depending. Remember, we are constrained in these applications by a fixed lens.”

### Roundup...

In February 2007 Lear’s board consented to Lear’s acquisition by American Real Estate Partners, a holding company affiliated with investor Carl Icahn, for approximately $5.3 billion, including assumption of Lear’s debt. The agreement gives Lear 45 days to seek a better offer.

Lear’s Electronic and Electrical segment, wiring harnesses mostly, totaled $3.0 billion in sales, or 16.8% of total Lear sales; E/E profits were $102.5 million for the year, or 3.4% of E/E segment sales.

In October 2006, Lear sold its European Interiors business, which includes instrument panels, cockpit systems, overhead head systems, door panels, flooring and acoustics, to International Automotive Components Group (IAC), Lear’s joint venture with W.L Ross & Co. in exchange for 33% equity in IAC. Lear reported a loss of $636 million related to a similar divestiture of its North American Interiors business to IAC-North America; that transaction should be completed in the first quarter of 2007. In 2006, the Interiors segment’s net sales were $3.2 billion, or 18% of Lear’s total sales.

Like its main competitor, Johnson Controls, Lear Corp. is heavily dependent on the financial health of its top two customers, General Motors and Ford, which together accounted for 55% of Lear’s 2006 sales. Lear’s net loss in 2006 was smaller than in 2005, and it plans to continue its restructuring activities including plant closings, workforce reduction and increased production in low labor cost countries. The restructuring plan calls for 22 new facilities to be opened in 2006 and 2007, including seven in China and six in India, to support both Asian and Western OEM’s production. The company remains focused on its Seating and Electronic/Electrical businesses.