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inside the contract manufacturing industry

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The worldwide contract manufacturing (CM) market experienced better growth in 2013 than it did in the previous year, according to a report published by New Venture Research, increasing 4.1 percent in revenue, compared to only 1.6 percent revenue growth in 2012. The *Worldwide Contract Manufacturing Services Market, 2014 Edition* estimates that the EMS industry expanded by 2.2 percent in 2013, driven by significant demand for smart phones, yet this was offset by the slump in demand for desktop computers. The ODM industry appears to have grown at a stronger rate, but this is only because of better reporting by these suppliers of their manufacturing services revenue—particularly that of Pegatron—thus correcting past years' lower estimates.

Table 1 summarizes the contract manufacturing space, consisting of the EMS and ODM sectors. NVR's latest projections reveal that contract manufacturing revenue will rise to almost \$600 billion by 2018. According to the report, the contract manufacturing business grew to \$436 billion in 2013, with growth continuing in subsequent years, except in 2016 (an election year, when there is traditionally a

dip in growth of the electronics market). Both supplier segments are expected to grow somewhat equally, with the EMS sector having slightly better growth due to its diversification into other industries such as transportation, medical, and industrial.

The CM market was sustained by strong demand for tablets and smart phones, whereas orders for notebooks declined and went negative for desktop computers. The ODM market was sustained by good demand for notebooks and tablets, plus a strong supply of LCD monitors and televisions across several applications. Nearly all of the high-mix/high-complexity products (medical, industrial, transportation) experienced positive growth—especially the automotive and transportation market sectors. Defense suffered a decline due to budget constraints, but commercial avionics experienced a strong rebound absent in previous years.

For the fourth year in a row, the industry was profitable, establishing record earnings of nearly \$9.5 billion among public CM companies. Foxconn accounted for three-fourths of all the money made by the EMS industry in 2013, and almost half of CM industry revenue. Very few companies lost money in 2013 (five total), and those that did had minor losses. Hopefully, the large losses of the past are finally behind us.

Plant closures were quite limited in 2013, as most companies have rationalized away all excess capacity. Although there were a number of capacity expansions, most were the result of acquisitions.

Figures 1 and 2 summarize the worldwide OEM electronics assembly market for 2013. The overall market for electronic components (semiconductors, passives, connectors, etc.) accounted for approximately 40

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Table 1 - The Worldwide Contract Manufacturing Services Market Forecast (\$B), 2013-2018

	2013	2014	2015	2016	2017	2018	CAGR
EMS	273.4	291.7	311.8	325.0	347.5	372.9	6.4%
Growth	2.2%	6.7%	6.9%	4.2%	6.9%	7.3%	
ODM	163.3	175.0	186.2	194.1	206.4	220.6	6.2%
Growth	7.4%	7.2%	6.4%	4.2%	6.4%	6.9%	
Total Contract Manufacturing	436.7	466.8	498.0	519.0	553.9	593.5	6.3%
Growth	4.1%	6.9%	6.7%	4.2%	6.7%	7.1%	

Source: New Venture Research Corp.

percent of total cost. The cost of goods sold for the assembly of electronics products (minus labor, overhead, and markup) is estimated to be 70 percent on average (*all revenue figures presented within are COGS figures*). For high-volume/cost-sensitive products such as mobile phones, computer motherboards, and many consumer electronics products, the COGS percent is higher—an estimated 80–85%. Low-volume/high-mix electronics assemblies have COGS ranging from 50% to 65%. For contract manufacturers, their total cost is equivalent to an OEM’s COGS assembly costs.

Consumer, communications, and computer products will continue to be the leading segments driving the largest growth of the electronics industry. In 2013, the total industry spend for these three segments was an estimated almost \$0.9 trillion in annual assembly value (COGS), as consumption and replacement of electronic products continues and new products fuel demand. Outsourcing has become a critical element in keeping the electronics assembly industry expanding and driving costs to the margin each year—a leading factor in stimulating continuous consumer demand. The trend to move price-sensitive manufacturing to low-cost regions has impacted the manufacturing footprint in the past, but for the most part, all leading suppliers have established their low-cost facilities within their respective regions, and if anything, there is a trend back to near-shoring. Table 2 summarizes the

worldwide electronics assembly market in terms of COGS revenue for 2013.

Communications

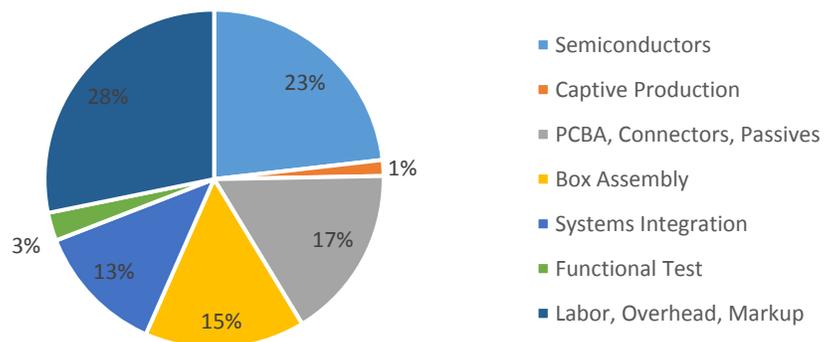
By far the most dominant communications product to be introduced in recent years is the so-called “smart phone,” which is for all intents and purposes a fully functional computer in a smaller form factor. As significant as this product innovation is in itself, it also drives other critical industries, such as the wireless infrastructure and wide-area backbone switched and packet networks that move massive amounts of digital data. While the handheld mobile phone is the primary instrument, the sophisticated switching infrastructure that makes it all happen is often overlooked. Today, the majority of these technologies are wireless in

transmission, although a substantial proportion of the backbone network remains “wired,” as can be seen in fiber-optic channels.

The communications market consists of cellular handsets, cellular infrastructure, other phones, enterprise LAN equipment, wireless LAN equipment, DSL and cable modems, PBXs and other customer-premises equipment (CPE), carrier-class equipment, and a host of other equipment—such as emergency-services radio and communications satellites—lumped into an “Other” category.

The communications segment is the largest electronics market. The communications market experienced an enormous surge in revenue as a result of explosive demand for mobile phones—especially feature-rich smart phones such

Figure 1 - Worldwide Electronics Production Assembly by Cost (\$1.3T), 2013



Source: New Venture Research Corp.

as the iPhone by Apple. Apple products are in high demand the world over, and, particularly in China, the Apple iPhone is a symbol of status and wealth. Other product areas that experienced good growth include DSL/cable modems.

The top OEMs for communications include Apple, Samsung, Nokia, Huawei, Ericsson, Cisco, Sony Ericsson, Alcatel-Lucent, Google (formerly Motorola Mobility), NEC, and NokiaSiemens. These vendors account for more than two-thirds of global communications assembly value. All of these vendors outsource a substantial part of their product assembly work.

This will continue and increase in the coming years.

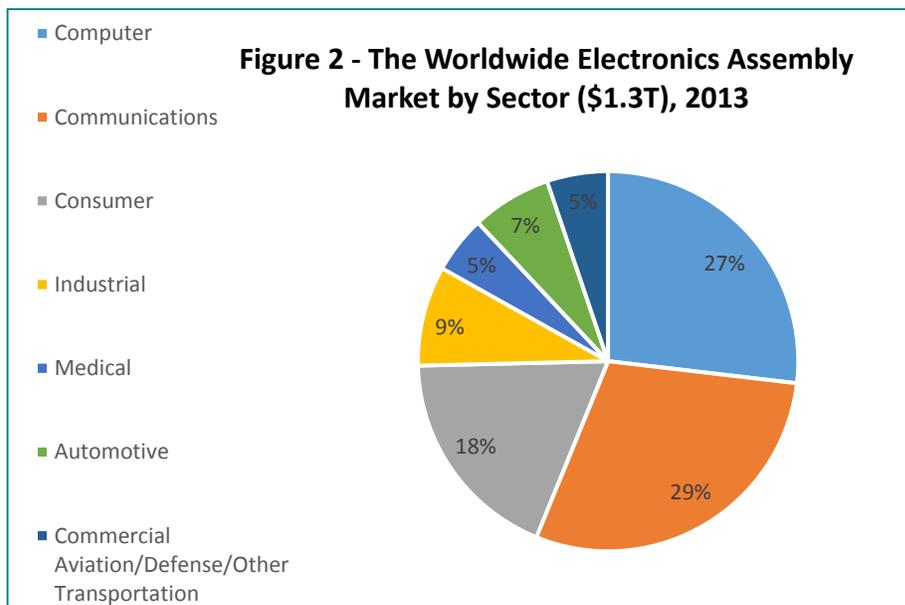
Computers

The computer market consists of PCs (desktop, notebook, and tablet), servers, workstations, enterprise storage systems, flash drives, monitors, printers, e-readers, and a host of other commercial office and retail equipment—such as copiers and fax machine units—lumped into an “Other” category.

The various products that make up the computer industry represent about 26 percent of total electronics assembly value. This should be the case for the foreseeable future.

The desktop PC market expanded continuously until the first half of 2011, but since then has gone into a gradual decline. Most of the decline has involved desktops, which are being replaced by powerful notebooks, ultrabooks, and tablets. The market for desktops is not expected to recover until 2015, when buyers begin replacing aging legacy systems.

The tablet market has experienced spectacular growth, with almost 200 million units being shipped in 2013. Tablets will have the highest growth rate of any computer product over the next five years, at an estimated 19 percent CAGR. Tablets will evolve as the leading computing tool, outstripping



Source: New Venture Research Corp.

notebooks, ultrabooks, and desktops in unit shipments and assembly revenue. Desktop computers now appear to be passé notebooks, which are just as powerful and have the convenience of mobility.

An estimated 309 million PCs were sold worldwide in 2013, both notebook and desktop, compared to 332 million in 2012. Tablet shipments are expected to rise to 471 million units versus 389 million units for PCs in 2018. The average assembly value for all PCs will continue to decline over the forecast period for all computer types, as cost reductions take assembly costs to the margin for nearly all companies except Apple.

Tablets have become the rage of the computing industry. While Apple maintained its initial lead in 2013, other suppliers such as Samsung, ASUS, Amazon, Microsoft, and others are quickly gaining share. The tablet is appealing because it is powerful, light, and the most portable personal computer on the market today. Assembly revenue is expected to reach over \$110 billion in 2018 because of the lower ASP when compared to the notebook computer.

Consumer

The consumer electronics market consists predominantly of televisions,

set-top boxes (including DVRs), audio systems, games, audiovisual players, recorders, camcorders, digital cameras, and an “Other” category that contains home appliances as well as a huge array of miscellaneous products. Changes continue to abound as consumer products are upgraded from analog to digital. Key items are briefly discussed below.

Televisions

The worldwide production of digital TV sets was 225 million units in 2013, virtually all of them LCD or LED display technology. A few other display technologies survive, such as PDP, projector, and home theater, but are quickly becoming noncompetitive as the massive scale of LCD production is so great that costs are significantly less.

The market for digital televisions is very crowded and includes OEM companies such as Samsung, LGE, Visio, Toshiba, Sony, Sharp, Sanyo, Panasonic, Konka, Hisense, Haier, Funai, and ChangHong, and ODM suppliers such as Pegatron, TPV, Tatung, TCL, Compal, and AmTran.

Set-Top Boxes

A set-top box is defined here as a converter of a signal received from any system (typically cable, satellite, and, increasingly, Internet) for use by any

television set. Many of these boxes will include integrated digital video recorders, or DVRs—devices that perform signal conversion and digital recording. Recent streaming video media technology is ushering in a new generation of set-top boxes as companies such as Netflix begin delivering content via the Internet.

Google (formerly Motorola Mobility) remained the leading OEM in this market in 2013, with Cisco Systems and Humax close behind. Google and Cisco command a large portion of the North American market. Worldwide, these market leaders are challenged by Humax, Pace, Pioneer, and Philips.

The set-top box market grew to 269 million units in 2013 and will expand to 364 million units in 2018, depending on the evolution of technology and whether or not the storage capacity remains external or internal. Integration of recording and conversion of media as a trend cannot be ascertained at this point in the market, although it seems logical. It may be that suppliers prefer to have these functions performed externally (due to changing standards and end-user preferences) than have it integral according to some semiconductor chip standard.

Console Video Games

This category includes only the major console video games: Sony PlayStation, Microsoft Xbox, and the Nintendo Wii. The Nintendo Wii has been the real hit among the three products. Game manufacturers' hype tends to make the game console market appear larger than it is. This is a small market, with only 37 million units created and sold in 2013, but it will grow at 8.2 percent CAGR through 2018 to 82 million units.

Industrial

The industrial segment contains a vast variety of mostly low-volume products. We have defined industrial products into four market segments as defined by the following product definitions:

- **Process Control:** Automation/Programmable Logic Controllers, Construction/Agricultural/Mining, Electric Motors, Electrical Power Distribution/Transmission/Smart Grid, Elevator Systems, Environmental Management, Fluid Control/Hydraulics, Marine/Waste Water, Oil/Gas, Power Supplies, Robotics, Smart Meters, UPS/Batteries
- **Test & Measurement:** Inspection Equipment, Instruments/Metrology, Semiconductor Manufacturing Equipment, Test Hardware
- **Other Industrial:** ATM/Gaming/Vending, HVAC, Laundry/Home Appliances, Lighting/LEDs, Security/Safety, Tools, Handling/Specialty/Other
- **Clean Energy:** Fuel Cells, Inverters, Solar PV, Tidal/Other, Wind Energy

The subsegments have varied growth prospects for the coming years. In 2013, they all recovered significantly as demand for all manner of production equipment drastically improved and capital spending in the semiconductor industry resumed. This market will continue positively, albeit modestly for the next five years unless another recession occurs in 2016—the election year, when such economic downturns seem to recur on a predictable basis.

The most positive product segments for economic growth continue to be PLCs, smart grid hardware, oil/gas technology investment (think fracking), power supplies/batteries, semiconductor capital equipment, robotics, LED lighting, and clean energy (more toward fuel cells, wind, tidal, and incremental improvements in solar electrical conversion).

Medical

Similar to the industrial segment, the medical market segment contains a huge variety of products, yet as no specific product in this segment is dominant, it has

been organized into three generic subsegments: medical diagnostics, therapeutic, and the monitoring and surgical sectors:

- **Medical Diagnostics:** X-ray, MRI, nuclear, in vitro diagnostics, tomography imaging, dialysis, pacemakers, oncology, endoscopy, blood glucose measuring devices, molecular and life sciences, and home test equipment
- **Therapeutic:** pacemakers, stents, catheters, wire guides, orthopedics, medication/nutrition delivery, ventilation, respiratory care, exercise therapy
- **Monitoring and Surgical:** patient, cardiac, anesthesia, molecular/life sciences, defibrillators, ophthalmic, life support, ventilation, dental

The medical subsegments will continue to experience solid growth, in spite of the overall trend and struggle to contain medical costs. Medical diagnostics will experience the strongest gain and these products (and many monitoring and surgical technologies) continue to benefit from advances in semiconductor innovation. Therapeutic technologies, frequently mechanical or electromechanical, are projected to have less positive growth, except where innovative developments in electronics technologies prevail.

As a result, growth in the medical segment will vary based on the results of product innovation and the deflating effects of constrained capital spending and investment.

Automotive

Automotive electronics are any electrically generated systems used in road vehicles, such as “carputers,” telematics, in-car entertainment systems, and engine control.

Automotive electronics originated from the need to control engines. The first electronic pieces were used to control engine functions and were referred to as engine control units (ECU). As electronic controls began to be used for more automotive applications, the acronym ECU took on the more general meaning of “electronic control unit,” and then specific ECUs were developed. Now, ECUs are modular. Two types include engine control modules (ECM) and transmission control modules (TCM).

A modern car may have up to 100 ECUs and a commercial vehicle up to 40.

Automotive electronics or automotive embedded systems are distributed systems, and according to different domains in the automotive field, they can be classified into:

- Engine electronics
- Transmission electronics
- Chassis electronics
- Active safety
- Driver assistance
- Passenger comfort
- Entertainment systems

NVR has established four key product subsegments within the automotive segment for electronics which include engine control, instrumentation, safety, and entertainment systems. Engine controller units, antilock braking systems, traction control, electronic stability, air bags, hill descent control, speed/blind spot/parking assistance, automatic climate control/wipers/headlamps, embedded safety systems, and sophisticated entertainment and navigation equipment are a few of the innovations that have added greatly to the electronics content of the average automobile in recent years.

Commercial Aviation, Defense, and Other Transportation

This segment includes avionics systems for ground and air, a wide

variety of defense-related electronics, and an “other transportation” category that includes rail and water transportation products, as well as infrastructure electronics for all forms of transportation.

The military and avionics markets are developing advanced electronics for surveillance, communications, and warfare. Most of the defense programs are geared toward replacement and replenishment of older systems and so the industry growth has not been as high as expected. The growth prospects for this segment are modest but positive going forward.

Military spending is likely to be constrained for the next several years, although aerospace production, particularly as a result of electronics innovation (imaging, signal processing, and smart weapons), will grow. Most of this expansion will occur in the United States and Western Europe. “Other transportation” (off-road, recreational, etc.) is expected to grow substantially within the developed economies.

The above information has been abstracted from NVR’s comprehensive market research report, *The Worldwide Contract Manufacturing Services Market, 2014 Edition*. Please contact Karen Williams at 408-244-1100 or for more information see www.newventureresearch.com/

Some Quarterly Results

Jabil Circuit Inc. For its fiscal Q3 ended May 31, 2014, net sales decreased 9.8% to \$3.8 billion compared to \$4.2 billion during the three months ended May 31, 2013. Generally accepted accounting principles (GAAP) operating loss for the third quarter was (\$1.6) million and GAAP net diluted income per share was \$0.93. The company indicated that \$12.4 million in restructuring costs during the quarter negatively impacted GAAP operating income and that \$238.5 million in gain on sale of discontinued operations, net of tax positively impacted GAAP net income.

Jabil's three reporting segments delivered the following revenue results for the company's third fiscal quarter (a) Diversified Manufacturing Services: \$1.6 billion. (b) Enterprise and Infrastructure: \$1.3 billion. (c) High Velocity Systems: \$0.9 billion.

Plexus Corp. For its fiscal Q3 ended Jun. 28, 2014, the company recorded sales of \$621 million, an increase of 11.3% from the prior quarter and 8.5% from the comparable quarter last year. GAAP diluted EPS was \$0.71, including \$0.10 per share of stock-based compensation expense.

Gross margin was 9.4%, selling and administrative expenses were \$29.2 million, GAAP operating margin was 4.5%, and non-GAAP operating margin was 4.7%. Representing 33% of total sales, Networking & Communications segment had \$203 million in sales and decreased by 5% on a year-on-year basis.

Non-GAAP operating margin for the fiscal third quarter excludes after-tax restructuring charges of \$1.2 million primarily related to the previously announced manufacturing facility transition from Juarez, Mexico to Guadalajara, Mexico.

Sanmina Corp. For its fiscal Q3 ended June 28, 2014, Sanmina reported sales of \$1.60 billion, compared to \$1.48 billion in the prior quarter and \$1.49 billion for the same period of fiscal 2013.

GAAP operating income in the third quarter was \$53.3 million or 3.3% of revenue, compared to \$35.7 million or 2.4% of revenue for the same period ended June 29, 2013. GAAP net income in the third quarter was \$20.7 million, compared to \$18.7 million for the same period a year ago.

Non-GAAP operating income in the third quarter was \$60.9 million or 3.8% of revenue, compared to \$49.7 million or 3.3% of revenue in the third quarter of fiscal 2013. Non-GAAP net income in the third quarter was \$45.3 million compared to \$34.0 million in the same period a year ago.

New facilities opened...Celestica Inc. (Toronto, Canada) announced the opening of its new microelectronics laboratory at its headquarters in Toronto. The new facility will enable start-ups, small and medium enterprises (SMEs) and large original equipment manufacturers (OEMs) to quickly commercialize their latest ideas for miniaturizing electronics products through prototyping to volume production. The laboratory features a unique 1,100-square-foot, ISO class-6 clean room, a controlled environment for temperature, humidity, and airborne particles.

Swedish firm continues expansion in Poland... **PanLink AB** (Malmö, Sweden) as part of its expansion strategy will invest €6 million to build a new factory in Poland. The factory will be located in the economic trade zone in Tczew and will support customers in Poland, Scandinavia, and the rest of Europe.

Johnson Controls Inc. (Milwaukee, WI) has expanded its automotive battery footprint in China by opening a new battery plant in Western China. The new 133,000 square meter facility in Chongqing City reflects an investment of \$154 million as reported by Evertiq.

UK-based firm gains presence in Vietnam... **Laird PLC** (London, UK) has opened a new manufacturing plant in Bac Ninh (Vietnam). The company intends to better serve manufacturers of smart phones, portable electronics and other devices and also expand its reach and proximity to key Asian markets.

Samsung planning new display factory in Vietnam... **Samsung Electronics** (Suwon, South Korea) is reportedly interested in building a new facility in Vietnam. The company has been in talks with the Vietnam government, regarding building a new factory that would manufacture display modules for mobile phones, according to a Reuters report.

Electronics manufacturer **Benchmark Electronics** (Angleton, TX) will be expanding business operations and opening a new facility in Round Rock, Texas. The manufacturer will add new technical manufacturing jobs to the regional economy at its new location in Corridor Park.

LACROIX Electronics Solutions (Saint-Herblain, France) moves into new premises at Echirolles (France) with a facility of 170 square meters. The new facility will be used for research and development (R&D).

ODM company **congatec AG** (Deggendorf, Germany) has opened a subsidiary in China. The new office is located in Shanghai, one of the fastest growing markets for Computer-On-Modules.

CCS Group (Bratislava-Ružinov, Slovakia) has added a new production location to its portfolio in Slovakia. CCS Slovensko s.r.o. has officially opened its doors on July 1, 2014. The new location will focus mainly on production for customers from the DACH region (Germany, Austria, and Switzerland).

Management changes... EMS provider **The Morey Corp.** (Woodridge, IL) announced the appointment of David A. Smith as President and CEO. Mr. Smith is a proven executive with a multi-decade history of creating and implementing successful growth strategies for manufacturing and advanced technology companies. Prior to joining Morey Corp., Smith was the President and CEO of Optellios, a designer and manufacturer of sophisticated fiber-optic sensing technology for long-distance monitoring, detection and security for critical infrastructures.

Incap Corporation (Helsinki, Finland) appoints Mr Ville Vuori as new President and CEO. Ville Vuori

had previously been employed by Kumera Drives Oy and Skyhow Ltd. as Managing Director and ABB Group in several managerial positions.

Contract Wins... **Ducommun Inc.** (Carson, CA) has been awarded several contracts by **Spirit AeroSystems Inc.** (Wichita, KS) to produce structural assemblies for the Boeing 737 MAX (single-aisle airplane) commercial jetliner. Production on these initial contracts is expected to begin later this year.

Saab AB (Bromma, Sweden) has been awarded a \$10.9 million Training Systems order by the U.S. Army for radio systems to improve communication capabilities during live training exercises.

RENA GmbH (Berg, Germany) received large orders for wet process texturing and junction isolation equipment for the new Xian-fab from Chinese cell customer Shaanxi Non-ferrous Photovoltaic Technology Co., Ltd., which belongs to Youser Group.

Kongsberg Gruppen (Buskerud County, Norway) has signed a Phase III contract with the Norwegian Defence Logistics Organization (NDLO) to complete the development of the Joint Strike Missile (JSM). This contract is valued at NOK 1.1 billion (€130 million).

Flextronics Nets Contract **Flextronics International** (Singapore) has been selected by **Aviage Systems** (Shanghai, China) to manufacture integrated modular avionics (IMA) cabinet units to support commercial aircraft programs in China.

Expanding partnership... **Flextronics International** (Singapore) is expanding its open innovation platform by introducing submersible thin film

protective technology for any kind of electronics assembly, device or component through an expanding partnership with HZO, Inc. (Draper, UT).

Increase in production capacity... **Lite-On Mobile** (New Taipei, Taiwan) has been investing in more than 60 injection-molding machines with a capacity of 350 tons. This is in addition to last year's investment in more than 20 units of the same capacity. The addition of new capacity is in response to the increasing trend toward larger products.

Acquisitions reported... Through a subsidiary, **Sparton** (Schaumburg, IL) has acquired the assets of contract manufacturer **Electronic Manufacturing Technology, LLC** (Irvine, CA) a \$25 million revenue business in an all-cash transaction. Electronic Manufacturing Technology is engaged in the contract services business of manufacturing electromechanical controls and electronic assemblies.

Saab acquires ThyssenKrupp Marine Systems AB Swedish defense company **Saab AB** (Bromma, Sweden) has signed a contract with **ThyssenKrupp AG** (Essen, Germany) to acquire the company's Swedish submarine business ThyssenKrupp Marine Systems AB (formerly named Kockums) with operations in Malmö, Karlskrona, and Muskö. The company will pay 340 million Swedish kronor (\$50.5 million). The Swedish government this month awarded Saab a 467 million kronor contract to work on new and existing submarines. The agreement includes a letter of intent for future work potentially valued at around 11.2 billion kronor.

Vishay Intertechnology, Inc. (Malvern, PA) entered into an agreement to acquire Taiwan based **Capella Microsystems Inc.** (New Taipei City, Taiwan) for approx.

NT\$6,051 million (US\$205 million). Capella is a leading IC design company for optical sensors.

Selektro Group A/S (Møldrup, Denmark) has acquired EMS provider **HLH Electronics** (Korsør, Norway). Selektro now controls all of HLH Electronics' activities. Customer management and production are being transferred to the Selektro facilities in Moeldrup near Viborg.

Orbotech, Ltd. (Yavne, Israel) has signed a definitive share purchase agreement to acquire **SPTS Technologies Group Limited** (Newport, UK), a manufacturer of etch, deposition, and thermal processing equipment for the microelectronics industry.

Visteon Corp. (Van Buren, MI) has completed the acquisition of the automotive electronics business of **Johnson Controls** (Milwaukee, WI) for \$265 million. The acquisition will enhance Visteon's competitive position in the fast-growing vehicle cockpit electronics segment.

exceet Group SE (Luxembourg) has acquired **Valtronic Technologies** (Romania) strengthening its development and engineering competencies in the sphere of miniaturized electronics for medical technology uses.

Latest Divestures... **M+W Group GmbH** (Stuttgart, Germany) has sold its automation business to **ATS Automation Tooling Systems, Inc.** (Ontario, Canada) an automation specialist. The selling price amounts to approximately €255 million.

Venture into new markets... **Qisda Corp.** (Taoyuan County, Taiwan) has announced its foray into medical equipment and system integration services, while continuing cultivation of its existing lines, including focusing more on high-end and

dedicated displays and opto-mechanics electronics, as well as development of systems and peripherals for industry automation.

Monthly Sales Releases - June

Accton Technology Corp. (Hsinchu, Taiwan), a provider of communication solutions, announced that the consolidated sales revenue for June 2014 was NT\$2,076 million, a decrease of 12.86% year on year. The cumulative consolidated sales revenue totaled approximately NT\$11,204 million, an increase of 2.06% year on year.

Compal Electronics (Taipei, Taiwan), a provider of computer and peripheral equipment, reported that the consolidated sales revenue for June 2014 was NT\$76.7 billion, an increase of 34.6% year on year.

Pegatron Corp. (Taipei, Taiwan) reported June sales of NT\$68.9 billion (up 5% m/m, up 4% y/y). In June, the company shipped 700–800K units of notebooks and 600–700K units desktops/notebooks. Notebook shipments were lower than forecast due to customers' inventory adjustment, while desktop/notebook shipments slightly beat estimates due to good demand driven by the Windows XP upgrade cycle. In all, 2Q14 preliminary sales came in at NT\$207.3 billion (down 5% q/q) and Pegatron shipped 2.5 million units of notebooks (down 7% q/q) and 1.9 million units of desktops/notebooks (up 3% q/q).

Quanta (Taipei, Taiwan) reported June sales of NT\$71.8 billion (up 2% m/m). The company shipped 4.3 million units of notebooks in June. In all, 2Q14 preliminary sales came in at NT\$214.5 billion (down 1% q/q), with notebook shipment of 11.5 million units (up 9% q/q), in line with management's guidance.

Wistron Corp. (Hsinchu, Taiwan) reported June sales of NT\$49.2 billion (up 12% m/m, down 8% y/y). The company shipped 1.85 million units of notebooks in June (up 16% m/m). In all, 2Q14 preliminary sales were NT\$135.8 billion (up 8% q/q, down 17% y/y), with notebook shipments of 5 million units (up 11% q/q).

Inventec Corp. (Taipei, Taiwan) reported June sales of NT\$34.5 billion (down 1% m/m, down 7% y/y). The company shipped 1.6 million units of notebooks in June.

Gigabyte Technology Co. (New Taipei, Taiwan) reported June sales of NT\$4.0 billion (down 7% m/m, down 2% y/y). The company shipped 1.6 million units of motherboards in June (down 3% m/m); given limited contribution from new products, this was slightly below

management's guidance. In all, 2Q14 preliminary sales were NT\$12.5 billion (down 18% q/q, up 8% y/y) with desktop/ motherboard shipments of 5.0 million units (down 3% q/q, up 13% y/y).

Elitegroup Computer Systems Co. (Taipei, Taiwan) reported June sales of NT\$6.6 billion (up 32% m/m, up 20% y/y). The company shipped 1.1–1.2 million units of motherboards in June (up 5% m/m), in line with management's guidance. The soft growth in June was due to model transition. In all, 2Q14 preliminary sales came in at NT\$15.8 billion (up 28% q/q, up 1% y/y), with desktop/motherboard shipments of 3.4 million units (up 3% q/q, down 19% y/y).

Micro-Star International Co. (New Taipei, Taiwan) reported

June sales of NT\$6.2 billion (down 8% m/m, up 15% y/y). The company shipped 1.4–1.5 million units of motherboards in June. In all, 2Q14 preliminary sales came in at NT\$20.9 billion (up 1% q/q, up 27% y/y), with motherboard shipments of 4.5 million units (up 13% q/q), the strongest shipment momentum amid Taiwanese peers.

Upcoming Key Events for the month of August

Event Name	Date	Location
Advancements in Thermal Management 2014	August 6-7, 2014	Denver, Colorado
Philadelphia Expo & Tech Forum	August 12, 2014	Cherry Hill, New Jersey
West Penn Expo & Tech Forum	August 14, 2014	Monroeville, Pennsylvania
IPC Southeast Asia High Reliability Conference	August 20, 2014	Penang, Malaysia
NEPCON South China	August 26-28, 2014	Shenzhen, China
Vietnam Manufacturing Expo	August 27-29, 2014	Hanoi, Vietnam
Electronics Assembly	August 27-29, 2014	Hanoi, Vietnam
Assembly Technology Vietnam	August 27-29, 2014	Hanoi, Vietnam

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