GILDER
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REPORT

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Envoi

This is it for the *Gilder Technology Report*.
Long live the Gilder Telecosm Forum.

Inside:

I have just returned from a rousing speaking tour that took me from a former Turkish prison refurbished as a Four Seasons Hotel in Istanbul to a moonlit classroom beyond the wall in the old city of Jerusalem and then to an Amway Grand Hotel in Grand Rapids, Michigan, in circuitous preparation for this newsletter, which was a challenge to write. In Istanbul, I confidently discoursed on "Fact and Rumor in the Media" for the Discovery Institute and the Fjelstad Foundation. I concluded that the falsifiability of rumors rendered them more scientific than so-called "scientific facts" such as human-caused global warming that are deemed irrefutable by their proponents despite increasing evidence of their falsity (for example, from glacier records that show nearly all the shrinkage preceded human accumulations of CO2 and from the presence of warming on Mars, Jupiter, Neptune, Triton, and other bodies in the solar system untouched by SUVs and perhaps even unbribed by Halliburton).

From Istanbul, I proceeded to Israel to expound my critique of Darwinian materialism before several university crowds and to investigate the idea-rich companies lurking everywhere in this pullulating version of Silicon Valley East. (Sure, evolution happens, mostly to bacteria, but it does not explain EZchip or me.) I ended my tour in Grand Rapids, where I was attacked on the back of my neck by an indignant red-winged blackbird. Perhaps an avian Darwinian showing off its well-evolved Galapagan beak, it plunged down at me from behind both on the way out and on the way back as I ran along the Grand River. Chastened and confused by the bird, whose motives eluded me, I left for an auditorium to explain the altruistic sources of capitalist wealth. Selfishness, I told the crowd, leads as by an invisible hand to socialism, not capitalism, as greedy people spurn work and risk and seek guaranteed gains and pelf from government.

Now it is the next afternoon and I sit in Banjoe's Café near gate C-22 in the Lebron James International Airport in Cleveland. (I am guessing the name from the Chairman Mao ubiquity of James' image.) Thumbing my way through the June 26 edition of *PC Magazine*, I find it identifies **Verizon** (VZ) as "the best ISP [Internet service provider] in America." (Verizon also

Featured Company: Sigma Designs (SIGM)

Sigma's Bottlenecks and You

A stellar year is shaping up for Sigma Designs as its advanced media processors flood ascending digital-media markets. With the recent addition of **Korea Telecom**, fourteen telcos worldwide are deploying IPTV with Sigma inside their set-top boxes. Now contributing to 78 percent of the company's top line, sales of these chipsets should get a big boost during the second half of this year when ten unnamed telcos join the party. Thus, Sigma may well increase its dominant market share, now around three quarters, as new customers move toward the multiple codec solution that Sigma

has mastered and that rivals continue to struggle with.

Not only does Sigma silicon include all the new high-compression video codecs, it performs almost all the logic functions inside an IPTV set-top box. According to Sigma's marketing director, Ken Lowe, it's extremely challenging to produce a chip that pulls together all the video, audio, graphics, security, peripherals, and memory control to enable multistream live-television. Software integration is equally enormous; customers tell Ken that Sigma's unmatched software helps give his company a big edge. That's why Sigma powers most Linux based systems (still fueling much of Sigma's growth) and remains the only supplier to the **Microsoft** (MSFT) TV platform. Ken is not aware of a competitor that has developed a fully-working solution for MSTV. Which means a rival product will not likely deploy before next year at the earliest, since it takes at least half a year to deploy a solution once it's up and running.

What Sigma's media processors do for IPTV set-top boxes, they can also do for high-density DVD players, home wireless media networks, and television sets. Sigma plus memory form the heart of these products. Set to rise next is demand for HD DVD players. The Blu-ray format appears to be overtaking the new generation of high-density video disks, where **Sony** (SNE), **Pioneer**, **Panasonic**, and **Sharp** already rely on Sigma. Some industry analysts think 2.5 million Blu-ray players may ship this year, with the huge majority of those sales to come during the second-half holiday rush. Sigma believes it owns well over half of the market for Blu-ray media processors, and with its chipsets selling around $20, the company could well collect a good $20 million from Blu-ray sales during the final two quarters of fiscal 2008 ending January.

One year guarantee

Following a 15 percent sequential increase in revenue during the April quarter, a consistently conservative management projects another 5–10 percent rise this quarter. Take the mid-point of that forecast, add to it 10 percent increases in each of the last two quarters of the fiscal year to account for no more than a small boost from the ten new telcos, throw in a modest $10 million in the second half of the year to cover a potential Blu-ray surge, and revenue through January rises by half over fiscal 2007 to $174 million. Confirming the conservatism of this estimate are sales of IPTV set-top boxes, which alone are on track to double this year over 2006.

On the April-quarter conference call, new CFO Thomas Gay, relying on the leverage of Sigma's fabless operating model, forecasted overhead to rise more slowly than revenue this year while gross margin oscillates about the current 50 percent (depending on product mix) as the company increases operating efficiencies to offset price declines. Gay expects taxes to hold in the low–hundred thousand dollar range as foreign governments continue to be this year's only collectors. Thus, after-tax profit margin should at worst hold steady at the current pro-forma value of 23.6 percent. (Pro-forma results exclude stock-based compensation and other noncash expenses as well as one-time costs associated with the stock-options investigation.)

Combine our conservative estimate of margins with our subdued revenue outlook and earnings still reach $41 million this year or $1.52 per share based on 27 million diluted shares—almost triple last year's earnings of $0.55. This indicates that, barring bizarre mismanagement from within or a recession from without, sub $30 stock prices are fire-sale values for Sigma, almost as irrational as the $8 price was just eleven short months ago.

End game risks and rewards

"But before you send your investment checks, identify the bottlenecks," as rhymer George reminded us recently on the **Gilder Telecosm Forum**. "As high-resolution video streams increasingly dominate layer 7 and push to the extremes the performance of buffer memories and their management, Sigma media processors and their rivals must function at megapixel gigaspeed and are also on the critical path [along with **EZchip**'s (LNOP) network processors, which are the chief bottleneck breakers, as George explains in his post]. It is the missing element that enables Internet HDTV and all other video and graphics intensive applications that flow at the speed of eyes rather than of fingers. This function couples fiberspeed to digital electronic processing speeds and breaks a crucial bottleneck in what they are calling Internet 2."

With the digital media revolution still in its infancy, Sigma, with its bottleneck-busting silicon and software, should command a bright long-term future. In IPTV-land alone, market prognosticator iSuppli anticipates subscribers worldwide to increase by almost an order of magnitude from 13 million this year to 103 million in 2011. And remember that a majority of subscribers use more than one set-top box. Even earlier in their ascendancy are high-definition DVD players and televisions as well as digital adaptors for home media centers. In particular, Sigma's 8620 series of media processors has emerged with early sales into televisions, and interest is gathering to upgrade future models to the cutting-edge 8630 series. Also contributing a few dollars to revenue are sales of the 8500 series of processors into portable media devices.

In set-top boxes, Sigma's near-monopoly in early deployments will help protect it against future attacks by rivals. It's almost impossible to displace silicon that has been successfully designed into a product, and

customers thriving on Sigma's first-generation chipsets will likely give the company preference when developing future platforms. But significant risks remain. Many manufacturers feel naked without second-source suppliers, and Sigma must continue to leapfrog its technology deeper into "megapixel gigaspeed" territory while adding functionality to stay ahead of aggressive competitors such as **Broadcom** (BRCM) and **STMicroelectronics** (STM). The follow-on chip to the 8630 is now expected to sample during the second half of this year, well behind the initial schedule that had it sampling by late last year. That's not reassuring. Sigma plans to move the new chip both up and down market from the 8630 and believes it is still in time to fend off substantial gains by rivals beginning in 2008. Let us all hope so.

New products, along with more efficient processing and Moore's law advances, will also be critical to help Sigma protect its 50 percent gross margin as average selling prices tumble 14–15 percent per year. While these declines will hugely expand Sigma's end markets, they could also render the company less profitable compared to larger and more efficient rivals. To succeed in out years, Sigma must quickly attract new engineers and programmers to accelerate product development and must also overhaul its ancient accounting system. With the options inquiry behind him, CEO Thinh Tran now needs to push hard for an upgrade to company resources to match growth, something we are not sure he is willing to do.

If Sigma executes effectively, expect operating margin to fall toward management's target of 20 percent and for after-tax margins to drop to 16 percent (based on a guesstimated 20 percent tax rate) as the company uses up net operating losses for U.S. tax purposes. That would require Sigma to increase revenue to $466 million in 2009—an average annual ascent of 64 percent or 13 percent per quarter—to maintain a minimal earnings growth trajectory of 30 percent per year to $2.57 (off our conservative estimate for this year). That's certainly doable considering Sigma's bottleneck-breaking opportunities. But to succeed, the company must break its own operational bottlenecks in order to protect its lead against some powerful foes.

– Charlie Burger

runs the best cellular network, based as it is on the latest Qualcomm EV-DO technology.) But executive editor Jeremy Kaplan opens his article on ISPs with a strange paragraph on the word Gigabit [per second], which he declares to be merely "a hundred times faster than megabit." Oh, well. Someone nodded in the copy-editing department at *PC Magazine*. I proceed through Kaplan's interesting story on a *PC Magazine* project testing the bandwidth performance of ISPs around the globe over an 11-month period covering data from 40,000 users in 162 countries.

The results reaffirm the ascendancy of fiber to the home. To my surprise, passive optical networks (PONs) came first to the local loop rather than to the core of the network. But the technology is superior in both applications. For communications, optics will prevail. But photons cannot be stored and do not affect one another. Therefore, electronics will continue to dominate packet processing, computing, data processing, and memory. Software will harden into glass at the center of the network, while hardware will soften into programmable and flexible forms on the network edge.

This paradigm recalls my visit in Israel to a company called **BroadLight** in a spectacular skyscraper in a city named Ramat Gan outside Tel Aviv. BroadLight leads the world in GPON (gigabit passive optical network) silicon devices, which operate around a thousand times faster than megabit digital subscriber line (DSL) or T-1 systems. Enabling a wirespeed fiber-to-the-residence system, BroadLight is 5 percent owned by **Broadcom** (BCRM) and is apparently targeted to be bought by them. But if Broadcom nods, subscribers should watch for an important IPO from this potent company.

Also on the critical path of fiberspeed connections is **EZchip** (LNOP), the network processor company that I also visited in Israel. EZ's NP-2 provides routing and switching on a chip at 10 gigabits per second, with promises of NP-3 and NP-4 products that will accelerate the capability to 100 gigabits per second. According to the late Peter Drucker, profits go to suppliers of the missing element that can complete a system. As optical technology penetrates the network, the vendors of network processors that can sort and shuffle packets at fiberspeed become the crucial suppliers of the critical path components that can complete a fiber system, by linking it to the digital computers on its edges, from the datacenter to the home theater.

With the unexpected upsurge in fiber in the local loop and the efflorescence of video traffic on it, pressure continues to rise at the core. In a luxurious new office building outside Jerusalem, I was surprised to meet our old friend Krishna Bala, formerly CTO of Tellium, the erstwhile optical switch company, and co-author with Thomas Stern of a major text titled *Multiwavelength Optical Networks*. Bala is now President and CEO of **Xtellus**, which uses liquid crystal technology to create reconfigurable optical add/drop multiplexers (ROADMs) and mesh network switches. Eschewing

the intricate mazes of delicate three-dimensional microelectromechanical systems (MEMS) needed for optical packet switching, Xtellus follows our favored paradigm of slow switches that route not the gigaspeed onrush of packets but manage and shift wavelengths or lambdas across the country. Handling the packets on the edge will be EZ-based routers shuffling fiberspeed streams at 10 gigabit to 100 gigabit Ethernet rates. As Bala pointed out, the rate of adoption of 10 Gigabit Ethernet took the world by surprise. He expects 100 gigabit will break through in another couple years, when EZ will deliver the NP-4.

Morphing into the twenty-first century

While I peruse the *PC* article and reflect on my visits to BroadLight, Xtellus, and EZchip, however, Continental Airlines changes the departure gate. Lacking reconfigurable mental technology, I gaily move on through the magazine to lively columns by John Dvorak, missing my last flight to Hartford and home. But I am not particularly distressed. I have a lot to ponder.

After around one million five hundred thousand words of newsletters, articles, and books on technology, I contemplate the increasing obsolescence of the literary form and distribution model of the *Gilder Technology Report*. In the face of the upside surprise of the 24/7 company coverage in the **Gilder Telecosm Forum**, our exclusive subscriber-only message board on the web, and in comparison to the reach of the emailed *Gilder Friday Letter*, it no longer makes sense to compose, print, fold, and snail through the land a monthly eight-page review that often lags behind the coverage in the Forum and reaches a tenth of the audience of the *Friday Letter* email. It no longer makes sense even to post such a document on the web.

There was a time when the Gilder Publishing, LLC letters had a combined total of 107 thousand subscribers. That number is now down to under 2,100, respectable for an investment letter but replete with opportunity costs unacceptable to me today. So this is it for the *Gilder Technology Report* (GTR). Long live the **Gilder Telecosm Forum** (GTF), where Charlie Burger, Nick Tredennick, and I will post our reports and reflections, as we have been doing for the last ten years.

Creative entrepreneurship

Among high points of my trip to Israel were speeches before audiences of faculty at Jerusalem Institute of Technology and at Bar Ilan University outside Tel Aviv and before a gathering of investors at the Tel Aviv Stock Exchange. To all the groups I explained my paradigm of scalable technologies in an era of change that promises a thousandfold more technological progress during the twenty-first century than during the century just past.

I pointed out that materialism could neither explain these advances nor illuminate the immense accomplishments of the materially poor Israeli economy, which is now the world's leading source of technology short of Silicon Valley itself. For example, Paul Romer's acclaimed theory of entrepreneurship as the assembly of chemical elements in new combinations fails to confront the reality of entrepreneurial creativity based on ideas that by definition could be embodied on any of a nearly infinite variety of chemical substrates. Many leading Israeli-based companies, such as our EZchip and **Intel**'s (INTC) Pentium design team, are prominent in information technologies that stem from Alan Turing's definition of a computer as a Turing machine. By definition a Turing machine can be implemented on any material, from beach sand to matchsticks, from carbon to gallium arsenide, from Lego blocks to nano heterostructures. The Turing machine is not a material device but a hierarchical architecture of ideas.

I believe Israel will prevail and thrive long after its enemies are forgotten. In the meantime, investors will do well by investigating the thousands of its technology companies.

Similarly a network exhibits no fewer than six layers of abstraction above its physical layer. No knowledge of the material composition of a computer or network node will reveal what is its chosen function or what content it is processing. To understand the computer entails reading the source code of the program that it is running and that source code originates in a human mind. I make analogous points about biology and genetics, which are equally inexplicable in materialist terms (see Michael Behe's breakthrough analysis in *The Edge of Evolution*).

To grasp the paradigm, I cite my early meeting at **Qualcomm** (QCOM) with Irwin Jacobs and Andrew Viterbi, who first explained to me in the early 1990s that the superiority of their new code division multiple access technology (CDMA) stemmed from its basis in Claude Shannon's information theory. Shannon showed that information was best measured by its *surprisal* or entropy. Only unexpected bits comprised information.

At the time, most radio frequency experts believed that to carry more information the best strategy was to use more power. By contrast, Jacobs and Viterbi told me that to send more information the best strategy was to lower the power per bit and expand the bandwidth. Then the most efficient technique would be to modulate the bits into a stream that resembled random white noise. In information theory, a high entropy message, full of unexpected bits or news, is indistinguishable from a series of random bits reflecting noise.

That low power yields higher throughput was a principle that was familiar to me from my study of semiconductors. CMOS prevailed in microchips because it was lower power and higher performance. Similarly it seemed to me CDMA would prevail in wireless because it is lower power and higher performance. So I devoted several long articles in *Forbes ASAP* to the superiority of CDMA and made Qualcomm one of the first listed companies when I began this newsletter.

Now I grasp another lesson from the Jacobs and Viterbi insight. The apparent randomness of a phenomenon does not necessarily signify that it is caused by chance processes. Creativity always comes as a surprise to us. An apparently random pattern might signify a series of creative surprises as much as a roar of random noise.

In regard to investments, the apparent randomness of price movements and other market indices does not suggest a random or inexplicable process. It reflects the surprises of human creativity. To understand them you must use a microscope to investigate the details of their operations rather than an oscilloscope to measure the frequencies of their volatility.

From the distance, Israel looks like a country fraught with random violence and volatility. Visiting it one finds instead an incredible density of information and creative entrepreneurship. I believe it will prevail and thrive long after its enemies are forgotten. In the meantime, investors will do well by investigating the thousands of its technology companies. I intend to do so.

– George Gilder, June 18, 2007

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National Semiconductor Sprouts

Over the past several years Brian Halla has labored to build **National Semiconductor**'s (NSM) value-added standard linear lines while pruning nonaligning units and low-speed (legacy) linear.

Now his forward-looking efforts are beginning to pay off, as we have long been anticipating. With the pruning completed, revenue during the May quarter rose sequentially for the first time in three quarters, up 5.8 percent to $456 million, and gross margin rose to a record 62.5 percent as average selling prices for standard linear products increased 5 percent both sequentially and over the year-ago quarter. Buoyed by a more robust product line, National emerged from the recent downturn with gross margin barely dipping to 59 percent and now ascending despite factory utilization rates holding below 60 percent. Also impressive was free cash flow of $500 million over the past year.

National is introducing hundreds of products a year targeting new applications. For instance, consumers want better quality audio from their handhelds, especially for music, and National has responded with silicon that enhances sound from speakers or headphones by cleaning up digital signals at efficient battery levels. Precision and high-speed amplifiers led National's charge in the quarter along with audio amplifier subsystems with integrated audio and voice converters, RF detectors for 3G mobile phones, and ceramic speaker drivers that enable thin portable devices. Also driving growth were new, high-performance power-management chips, high-speed interfaces, and small display drivers.

Overall, sales of standard linear products increased 6 percent sequentially and contributed to 84 percent of revenue, while all analog products fed 89 percent of the top line. Power management, the fastest growing market in standard linear, supplied almost half of revenue. Bucking the typically slow summer, revenue during the current quarter is expected to bump up a few percentage points while gross margin tops 63 percent despite fab utilization of 60 percent. With operating margin holding around 25 percent, operating income should rise at about the same rate as revenue.

Looking to continue its analog ascent well into the future, National is preparing for emerging applications in fields as diverse as energy, surveillance, security, and medical that used to be electro-mechanical but are becoming semiconductor based. The company plans to ramp production at the larger 8-inch wafer size this fall while retiring fully-depreciated 6-inch equipment, yielding additional cost savings on the way to its targeted gross margin to 65 percent. Despite these and future upgrades and expansions, capex is expected to remain under 10 percent of revenue. Minus the distractions and drags of the discontinued lines, the largest remaining risk to the company is probably the chronic scarcity of analog designers.

Confident in National's prospects, management believes National's common stock is uncommonly cheap and therefore has begun leveraging its share repurchases. Specifically, the board has approved a new program to buy back $2 billion of common stock, of which $1.5 billion will be repurchased at an accelerated pace with the help of a senior unsecured bridge loan. The accelerated buy-back should be completed within a year, adding to the $2 billion of common stock already repurchased over the past three years. (In an anticlimactic note, the board has also declared a cash dividend of 4 cents per share.) National expects to easily generate the cash required to continue to repurchase shares and service its debt.

In the short term, the leveraged buy-back may put pressure on earnings, which popped to 28 cents per diluted share during the May quarter from 22 cents in February. Though operating income will rise about 3 percent sequentially during the summer, we estimate that earnings could drop back to 24 cents. Of that drop, about 2 cents will be precipitated by a higher tax rate following a quarter that benefited from one-time tax credits. The rest of the fall is due to added interest expense partially offset by the dwindling supply of shares.

Confident in their prospects, management believes National's common stock is uncommonly cheap.

Longer term, trading shares for debt will result in a better capital structure for National if earnings yield (the ratio of earnings-to-price) remains above the after tax interest rate on its bonds, which is clearly the scenario management is counting on. A surge in the stock price or a rapid rise in interest rates on new debt could change this outlook, and hopefully the company will respond accordingly if this situation develops. If we exclude options expensing, earnings for the summer quarter should hover around 30 cents for an annualized yield of 4.2 percent at the recent stock price of $28.50. (The corresponding price-to-earnings ratio is 24.)

If the standard linear market grows at its historic 15 percent per year over the next two years and National merely keeps pace, then look for earnings of around $1.80 (ex options) in fiscal year 2009 ending May—assuming the company boosts gross margin to 65 percent, operating expenses hold constant as a percentage of sales, the tax rate remains near 32 percent, and diluted share count falls to

260 million. That results in a forward-looking earnings yield of 6.3 percent at the current price. It also results in 22.5 percent per year growth in earnings, which would raise the price of the stock to $40.50 at a corresponding price-to-earnings ratio of 22.5 times. Thus, even after allowing for likely upsides to this outlook, don't expect the stock to double over the next two years.

However, *do* expect National to anchor your telecosm portfolio with steady, long-term growth. We have been preaching for some time that as a master of high frequency, lower power, precision analog, National will be a significant beneficiary of the move to mobile devices and to high-definition video, now taking off and a key part of the paradigm. In a quest for enhanced displays, improved audio, better wireless, and longer battery life, semiconductor content in consumer electronics is becoming increasingly analog and therefore increasingly National.

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Hittite Happenings

A company in transformation, **Hittite Microwave** (HITT) is building an arsenal of analog products that should drive serious long-term growth, and investors must resist microanalyzing the company on the myopic quarterly scale so prevalent on Wall Street. This was our thesis when we added the company to our list four months ago (see February 2007 *GTR*) and the story has not changed.

Though revenue has risen an average 36 percent over Hittite's first two decades, sales of $130 million in 2006 still represented only a fraction of a percent of the company's total addressable market. To continue to outgrow these markets and rivals such as **Agilent** (A), **Analog Devices** (ADI), and **Linear Technology** (LLTC), management is stoking its research and development engine.

In February, Hittite introduced its first pure silicon CMOS product, an advanced switch matrix for broadband satellite equipment. The switch replaces a gallium arsenide (GaAs)–based product while migrating from a 6-inch to an 8-inch wafer process, thereby improving manufacturing efficiency in a product that also increases performance and reduces power usage over previous solutions. Though most of Hittite's revenue is still GaAs-based, the move to CMOS reflects a steady progression into other processes, including the first silicon-germanium products introduced some three years ago followed by BiCMOS solutions two years later.

Furthering its leadership in low phase-noise performance, critical both for radar systems and for advanced modulation formats employed in fiber-optic networks, Hittite recently began offering two wideband amplifiers that use a GaAs HBT (heterojunction bipolar transistor) process and novel circuit designs to achieve significantly reduced phase-noise compared to field-effect transistor (FET)–based amplifiers. Also added were the company's first digital phase shifters.

Though some half of total revenues are still supplied by sales of custom products, Hittite is quickly expanding it lineup of high-end standard products, which are becoming increasingly linear to handle new, high-speed technologies. After introducing 80 new products in 2005 and 91 last year, the portfolio of catalog offerings has now reached 502 on its way past 600 this year. This has helped Hittite to spread its customer base and reach its vast, untapped markets, partially represented by ADI's 56,000 customers (compared to Hittite's 2,300). The company's top ten customers accounted for 40 percent of total revenue in March, down from 43 percent half a year ago, and no one customer exceeded 10 percent of revenue.

Also helping Hittite to take market share has been its accelerated thrust into global markets. In just six years, the company has gone from wetting its toes in international waters to spanning the world with nine sales offices; international sales now supply over half of Hittite's revenues.

Though management continues to plan its long-term operations around a model that assumes a gross margin of 68 percent, Hittite has now surpassed 70 percent for five straight quarters, the most recent being 71.3 percent, a stratospheric number expected again this quarter. Revving the margin engine are customers selecting Hittite's products based on performance as the company continues to bring to market very high-end products that other companies won't or can't introduce.

A HITTITE INVESTMENT COULD PROVIDE SOME NICE UPSIDE SURPRISES OVER THE NEXT HALF DECADE OR MORE AS IT ASCENDS ON THE BACK OF THE COMING ANALOG BOOM.

Climbing productivity has also helped to boost gross margin. Final assembly of modules and subsystems and final testing of all products are

done at company headquarters in Chelmsford, Massachusetts, where last summer Hittite upgraded its RF high-speed test capability to reduce the number of setups required to handle the rising tide of high-volume products. The effort included adding two wafer probing stations, microwave test equipment, and implementation of Hittite's proprietary test software. And new, faster lasers have given Hittite greater flexibility to customize markings without using hazardous chemicals.

In keeping with Hittite's ambitious goals, R&D spending has surged to 12 percent of rapidly rising revenues. Management expects to slightly increase that level over coming months as it bolsters its research staff and invests in cutting-edge design tools and equipment at its design centers in Chelmsford, Colorado Springs, Istanbul, and most recently Ottawa, now fully operational just five months after the center was conceived. To attract scarce analog and mixed-signal engineers (particularly scarce are those with microwave experience), the company has had to go where the talent is, expanding its design centers beyond the original one in Chelmsford.

To further support anticipated growth for the next one to two years, Hittite has begun converting unoccupied space in Chelmsford to production clean room facilities and engineering labs. The expansion should be completed over the summer. Not surprisingly, capex, which totaled $4.9 million for all of last year, climbed to $3.4 million during the March quarter on its way to as much as $8 million for the full year. Supporting these ambitious investments are increasingly positive cash flows. Net cash surged by $58 million (a two-thirds increase) over the past year to $142 million, with no debt and a highly-liquid ratio of cash to current liabilities of 8.6 times. Cash provided by operations has nearly tripled over the past two years to $38 million in 2006, relegating planned capex to financial noise.

During the March quarter three of Hittite's end markets—military, microwave and millimeter wave communications, and cellular infrastructure—provided two thirds of total revenue. The remaining markets—automotive, broadband, fiber optics, space, and test and measurement—supplied the remaining third. Most of these eight markets grew sequentially, particularly cellular infrastructure and space, but recent disruptions in Hittite's telecosm-based sales continue. Management blames the breather on industry consolidation and continues to believe that global demand for high frequency and high data-rate communications will drive their customers to upgrade and deploy new equipment. We agree, and therefore support their strategy to continue providing analog and mix-signal chips for this market.

Thus, *assuming* the telecom lull is not being caused by internal problems and that the company is not being squeezed out of vendors that are reducing suppliers, Hittite should soon resume a more rapid revenue ramp, which management expects to range in the mid- to upper 20s percent per year, a bit slower than the torrid pace of recent years but still well above forecasted 15 percent growth for the analog industry. As we warned at the outset, reaping rewards here will require patience. If Hittite achieves a 25 percent top-line advance, then forecasted revenue of $37 million for the current quarter would rise to $73 million in June 2010 for an earnings run-rate of $2.58 assuming a 30 percent after-tax margin based on management's subdued expectations, and a run-rate of $2.83 based on current margins. That translates to a stock price of $65 to $71 at today's ratio of 25x earnings.

Patience. The average lifespan of analog products ranges from 7–10 years, and many systems have been designed around specific silicon solutions. Thus, it could take some time for Hittite to edge out competing products. But as it does so, this investment could provide some nice upside surprises over the next half decade or more as Hittite ascends on the back of the coming analog boom.

– Charlie Burger, June 18, 2007

Got Questions?

Visit our subscriber-only discussion forum, the Telecosm Lounge, with George Gilder and Nick Tredennick, on www.gildertech.com

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291A MAIN STREET, GREAT BARRINGTON, MA 01230, TEL: (413) 644-2100, FAX: (413) 644-2122 • EMAIL: INFO@GILDER.COM

EDITOR	TECHNOLOGY ANALYST	MANAGING EDITOR	CONTRIBUTING EDITORS	ART DIRECTION	SUBSCRIPTION DIRECTOR	CUSTOMER SERVICE
George Gilder	Charlie Burger	Mary Collins	Brion Shimamoto Nick Tredennick Bret Swanson	Thomas McCarthy	Linda Bentley	Sandy Fleischmann

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