

# A123 Systems, Inc. AONE (NAS)

Last Close	Industry	Sector
1.88 USD	Electronic Components	Technology

## Profile

Pricing data through 09 Feb 2012

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A123 Systems, Inc. was incorporated in Delaware on October 19, 2001. The Company designs, develops, manufactures and sells advanced rechargeable lithium-ion batteries and battery systems and provides research and development services to government agencies and commercial customers. The Company shipped its first products in 2006. Its batteries and battery systems provide a combination of power, safety and life. The Company is working with major global automotive manufacturers and tier 1 suppliers to develop batteries and battery systems for HEVs, PHEVs and EVs. It is also implementing battery technology for use in heavy-duty vehicles. Its cylindrical batteries are in volume production and are commercially available for use in automotive and heavy duty vehicles. Manufacturing processes could be modified to manufacture battery products for different applications and could be replicated to meet increasing customer demands. There are two types of batteries for consumer applications: high-energy batteries and high-power batteries. High-energy batteries are designed to store large amounts of energy for long periods. High-power batteries could transform appliances, tools and equipment traditionally powered from electric outlets into more convenient, portable devices. Its current product offerings include batteries in different sizes and forms as well as packaged modules and fully-tested battery systems. Its energy solutions group offers fully packaged systems as well as sub-module building blocks for battery system development. Eg: BAE Systems Energy Storage Solution: It produces an energy storage solution for BAE Systems' HybriDrive drive train for the Orion VII hybrid-electric bus. Hymotion L5 Battery Range Extender Module: Through its Hymotion brand, it offers an aftermarket conversion module to augment the performance of a standard Toyota Prius HEV. Grid Service System: It has developed multi-megawatt battery systems for AES capable of performing ancillary electric grid services, including standby reserve capacity and frequency regulation services. Prismatic Module: working with Chrysler and other manufacturers such as Better Place and Daimler to develop and supply prismatic battery systems. It also sells its batteries and battery systems directly to end-user

customers as well as through reseller and distributor channels. Its competitors who has announced the availability of either lithium-ion or other competing rechargeable battery products include Panasonic, BYD, LG, Lithium Energy Japan (Mitsubishi-GS Yuasa), Blue Energy Company (Honda-GS Yuasa), and LiMotive and Samsung, among others.

# A123 Systems, Inc. AONE

A123 designs, develops, and manufactures advanced lithium ion batteries for high-energy density applications. The firm supplies Li-ion batteries to Black & Decker and Daimler from manufacturing locations in China and South Korea. A123 generated revenue of \$68.5 million in 2008.

**Sales USD Mil** 143 **Mkt Cap USD Mil** 237 **Industry** Electronic Components **Sector** Technology

**Morningstar Rating** **Last Price** 1.88 **Fair Value** **Uncertainty** **Economic Moat™** **Stewardship Grade**  
 per share prices in USD

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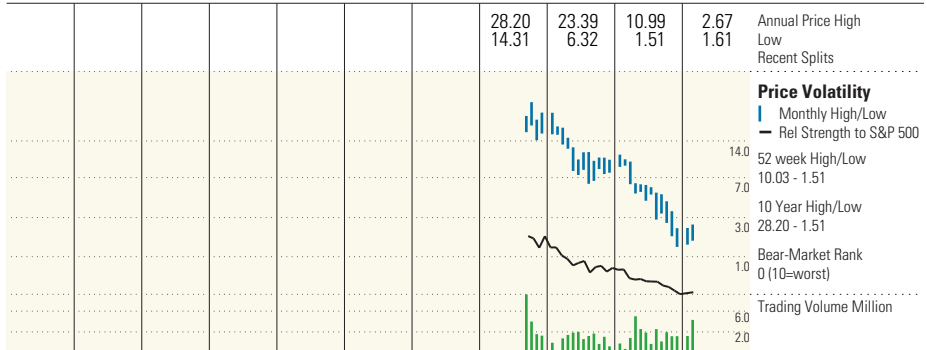
Employees: 2032

Growth Rates	Compound Annual				
	1 Yr	3 Yr	5 Yr	10 Yr	
Revenue %	6.9	33.0	—	—	—
Operating Income %	—	—	—	—	—
Earnings/Share %	—	—	—	—	—
Dividends %	—	—	—	—	—
Book Value/Share %	-26.5	—	—	—	—
Stock Total Return %	-80.7	—	—	—	—
+/- Industry	-62.2	—	—	—	—
+/- Market	-83.1	—	—	—	—

Profitability Analysis				
	Current	5 Yr Avg	Ind	Mkt
Return on Equity %	-55.2	—	14.7	22.3
Return on Assets %	-33.7	-34.3	8.6	9.5
Fixed Asset Turns	0.9	1.8	2.8	7.5
Inventory Turns	2.9	—	4.8	16.1
Revenue/Employee USD K	70.3	47.7*	—	1050.6
Gross Margin %	-43.4	11.5	32.9	38.4
Operating Margin %	-147.7	-97.4	20.0	16.7
Net Margin %	—	-97.9	12.8	11.2
Free Cash Flow/Rev %	—	—	8.7	0.1
R&D/Rev %	51.6	0.5	—	9.7

Financial Position		
	12-10 USD Mil	09-11 USD Mil
Cash	217	226
Inventories	49	99
Receivables	28	59
Current Assets	311	408
Fixed Assets	144	161
Intangibles	10	10
Total Assets	576	711
Payables	44	66
Short-Term Debt	13	42
Current Liabilities	119	158
Long-Term Debt	5	143
Total Liabilities	178	358
Total Equity	398	353

Valuation Analysis				
	Current	5 Yr Avg	Ind	Mkt
Price/Earnings	—	—	11.9	14.6
Forward P/E	—	—	—	13.5
Price/Cash Flow	—	—	8.9	7.4
Price/Free Cash Flow	—	—	16.9	17.0
Dividend Yield %	—	—	1.2	2.0
Price/Book	0.7	—	1.6	2.0
Price/Sales	1.5	—	1.5	1.2
PEG Ratio	—	—	—	1.4



2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	YTD	Stock Performance
—	—	—	—	—	—	—	—	-57.5	-83.1	16.8	Total Return %
—	—	—	—	—	—	—	—	-70.3	-83.1	9.3	+/- Market
—	—	—	—	—	—	—	—	-77.4	-62.4	2.5	+/- Industry
—	—	—	—	—	—	—	—	—	—	0.0	Dividend Yield %
—	—	—	—	—	—	—	2302	1004	203	237	Market Cap USD Mil

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	TTM	Financials
—	—	—	—	—	34	41	69	91	97	143	Revenue USD Mil
—	—	—	—	—	100.0	-3.6	-17.9	-3.0	-17.9	-43.4	Gross Margin %
—	—	—	—	—	-16	-32	-80	-85	-149	-211	Oper Income USD Mil
—	—	—	—	—	-45.3	-78.2	-116.1	-93.8	-153.5	-147.7	Operating Margin %
—	—	—	—	—	-16	-31	-81	-86	-153	-218	Net Income USD Mil
—	—	—	—	—	—	-0.69	-1.47	-2.55	-1.46	-1.89	Earnings Per Share USD
—	—	—	—	—	—	—	—	—	—	—	Dividends USD
—	—	—	—	—	—	—	—	—	—	—	Shares Mil
—	—	—	—	—	—	—	5.15	3.79	2.80	2.80	Book Value Per Share USD
—	—	—	—	—	-19	-29	-35	-74	-128	-239	Oper Cash Flow USD Mil
—	—	—	—	—	-8	-15	-41	-39	-177	-183	Cap Spending USD Mil
—	—	—	—	—	-27	-44	-76	-113	-305	-423	Free Cash Flow USD Mil

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	TTM	Profitability
—	—	—	—	—	-33.1	-40.6	-51.3	-20.8	-25.6	-33.7	Return on Assets %
—	—	—	—	—	—	—	—	-43.5	-32.9	-55.2	Return on Equity %
—	—	—	—	—	-46.0	-75.0	—	-94.3	—	—	Net Margin %
—	—	—	—	—	0.72	0.54	0.44	0.22	0.16	0.22	Asset Turnover
—	—	—	—	—	—	—	—	1.2	1.5	2.0	Financial Leverage

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	09-11	Financial Health
—	—	—	—	—	14	31	69	470	192	250	Working Capital USD Mil
—	—	—	—	—	3	2	6	7	5	143	Long-Term Debt USD Mil
—	—	—	—	—	-34	-63	-133	528	398	353	Total Equity USD Mil
—	—	—	—	—	—	—	—	0.01	0.06	0.45	Debt/Equity

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	TTM	Valuation
—	—	—	—	—	—	—	—	—	—	—	Price/Earnings
—	—	—	—	—	—	—	—	—	—	—	P/E vs. Market
—	—	—	—	—	—	—	8.3	10.2	1.3	1.5	Price/Sales
—	—	—	—	—	—	—	4.4	2.5	0.6	0.7	Price/Book
—	—	—	—	—	—	—	—	—	—	—	Price/Cash Flow

Quarterly Results						
Revenue USD Mil	Dec 10	Mar 11	Jun 11	Sep 11		
Most Recent Period	24.0	18.1	36.4	64.3		
Prior Year Period	24.5	24.5	22.6	26.2		
Rev Growth %	Dec 10	Mar 11	Jun 11	Sep 11		
Most Recent Period	-2.1	-26.0	60.8	145.3		
Prior Year Period	3.7	5.4	—	11.1		
Earnings Per Share USD	Dec 10	Mar 11	Jun 11	Sep 11		
Most Recent Period	-0.43	-0.51	-0.44	-0.51		
Prior Year Period	3.51	-0.28	-0.33	-0.42		

Industry Peers by Market Cap				
	Mkt Cap USD Mil	Rev USD Mil	P/E	ROE%
A123 Systems, Inc.	237	143	—	-55.2
Hitachi, Ltd.	24991	118188	—	7.1
Johnson Controls Inc	22502	41713	13.8	15.4

Major Fund Holders	
	% of shares
	—
	—
	—

\*3Yr Avg data is displayed in place of 5Yr Avg

TTM data based on rolling quarterly data if available; otherwise most recent annual data shown.

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## Management & Ownership

### Management Activity

Name	Position	Shares Held	Report Date*	InsiderActivity
DAVID P. VIEAU	CEO/Director/President,Director	1,127,093	19 Dec 2011	-
RILEY JR. GILBERT N	Chief Technology Officer/Director/ Vice President, Divisional,Director	478,671	19 Dec 2011	70,000
RILEY JR. GILBERT N	Chief Technology Officer/Director/ Vice President, Divisional,Director	478,671	19 Dec 2011	70,000
RILEY JR. GILBERT N	Chief Technology Officer/Director/ Vice President, Divisional,Director	478,671	19 Dec 2011	70,000
MR. DAVID J. PRYSTASH	CFO	127,093	19 Dec 2011	-
FORCIER JASON	Vice President, Divisional	125,328	19 Dec 2011	1,236
FORCIER JASON	Vice President, Divisional	125,328	19 Dec 2011	1,236
ANDREW COLE	Vice President, Divisional	111,726	19 Dec 2011	1,236

\*Report date represents the date on which the owner's common shares held was audited.

### Fund Ownership

Top Owners	Morningstar Rating	% of Shares Held	% of Fund Assets	Change (k)	Portfolio Date
Vanguard Explorer Inv	QQQ	2.75	0.15	-46	30 Sep 2011
Vanguard US Total Market Shares (AU) ETF		1.44	0.00	80	30 Sep 2011
RI CBF AllianceBern Gbl Thematic Gr RI	Q	2.84	0.65	0	31 Dec 2011
Vanguard Small Cap Index Inv	QQQ	1.11	0.02	2	30 Sep 2011
PowerShares WilderHill Clean Energy	Q	1.89	1.96	1,146	31 Dec 2011
Concentrated Holders					
PowerShares Lux Nanotech	Q	0.53	4.84	383	31 Dec 2011
Global X Lithium ETF		1.39	3.76	0	02 Feb 2012
Firsthand Alternative Energy	Q	0.02	2.31	0	30 Jun 2011
PowerShares WilderHill Clean Energy	Q	1.89	1.96	1,146	31 Dec 2011

### Institutional Transactions

Top 5 Buyers	Morningstar Rating	% of Shares Held	% of Fund Assets	Shares Bought/ Sold (k)	Portfolio Date
PowerShares WilderHill Clean Energy	Q	1.89	1.96	1,146	31 Dec 2011
Royce Opportunity Invmt	QQ	0.41	0.05	519	31 Dec 2011
SSgA Russell Small Cap Idx Fund Class A	QQQ	0.46	0.04	384	30 Jun 2011
PowerShares Lux Nanotech	Q	0.53	4.84	383	31 Dec 2011
Deutsche New Resource Mother Fund		0.35	0.73	321	10 Dec 2010
Top 5 Sellers					
OP-Ilmasto B	QQQ	0.37	1.51	-134	31 Jan 2012
AB SICAV Thematic Research I USD		0.46	0.65	-51	31 Dec 2011
Vanguard Explorer Inv	QQQ	2.75	0.15	-46	30 Sep 2011
SSgA Russell 2000 Growth Index Strategy	QQQ	0.01	0.02	-37	30 Jun 2011

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## Industry Focus: Computer Hardware

### Is Apple's Momentum Sustainable?

28 December 2011

Michael Holt, CFA  
Senior Stock Analyst

Software is the key to this hardware firm's success.

The list of once-great consumer electronics companies is long. Brand loyalty is largely dead, forcing hardware manufacturers to compete on features and price each product cycle. This makes it difficult to sustain a leadership position. Temporary advantages are easy to identify--namely the number of available applications and first-mover advantage on tablets. More relevant and meaningful to a sustainable competitive edge is how a firm applies software to establish user switching costs that will pull customers from one generation of devices to the next. The heart of Apple's AAPL strategy is to create a bond with the user that transcends device cycles.

The mobile phone market is full of cases where a dominant position proved fleeting. Motorola MMI hit a home run with its RAZR product cycle, but after a couple of years, it stumbled. More important, there was nothing that compelled RAZR customers to purchase the RAZR2, so they didn't. One stumble at Motorola was enough to send customers fleeing to competitors.

The smartphone market is not immune to this trend, as Research in Motion's RIMM circumstances vividly demonstrate. Hardware companies must compete for the consumer's attention with the latest and greatest gadgets, and design expertise alone does not convey a sustainable competitive advantage. Vendors are instead turning to software to create a sticky bond with the end user. Failure to keep pace in design and software has crippled RIM, and Apple will have to overcome these same challenges to avoid a similar fate.

Inability to respond to changing market conditions can trigger a catastrophic loss of customers from one device cycle to the next. The story of iPod unit sales shares some similarities with Motorola and RIM, but it has two key differences. First, Apple largely maintained its share even as demand for stand-alone portable music players declined, reflecting decay in the market, not in the firm's products.

Second, Apple was able to capture much of its base by offering the device that was cannibalizing the demand. For many iPod-wielding consumers, the ease of transition from the iPod to the iPhone was a material selling point. The Apple family of devices has maintained its momentum.

#### Building a Moat With Software

To prove its economic moat, Apple must demonstrate that it has locked-in customers, rather than wager on the product development team's ability to hit home runs on every product launch. This lock-in is established by the software. A Dell PC is easily replaced with a Hewlett-Packard PC, but for decades the user will probably be running Microsoft's MSFT Windows software. Apple is replicating what worked for Microsoft, minimizing the risk of losing customers between product cycles by using software to connect the user to an ecosystem of applications and content spanning multiple devices, creating a relationship that transcends the useful life of any single device.

Apple's focus on usability over technology will deliver the masses. When the original iPhone was launched in 2007, it ran on the abysmally slow EDGE network in the United States. Nonetheless, the device began winning customers despite superior 3G transfer speeds on competing devices, because Apple delivered a device that a nontechnical user could operate without an instruction manual. Even today, Apple's latest phone, the iPhone 4S, offers less cutting-edge technology, yet it continues to pull new customers into the Apple ecosystem.

The heart of Apple's strategy is to create a bond with the user that is more powerful than any given device cycle. Current momentum and execution should deliver many years of customer acquisition, but Apple is building a moat around software that locks in customers. Given the loss of visionary leader Steve Jobs and growing competition from Google GOOG, Facebook, and Microsoft, we believe Apple will not be able to sustain its leadership by delivering great design. Great design and execution enable Apple to build its customer base, but it is the firm's software that makes it difficult for consumers to switch to another device.

Historically, moving your contacts from one phone to the next was a mild inconvenience. But as users adopt

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### Industry Focus: Computer Hardware

smartphones, the expanded functionality leads to a transition that includes importing music, photos, video, applications, and other services that never existed before. Therefore, the transition from feature phones to smartphones is the critical point for driving customers into the Apple ecosystem.

Apple will have its setbacks, but it is beginning to deliver software and services that should help it navigate future challenges with its customer base intact. The true test of the moat is not how sales are when products are at peak public perception, but rather what happens to the customer base when flops occur. Just as Microsoft easily weathered the fallout from Windows Vista's incredibly negative reception, Apple is positioned to retain its customer base through challenging times. In contrast, product launch missteps were the beginning of the end of Motorola's temporary dominance. Vista was the byproduct of bad vision and worse execution, but users still could not break free of Microsoft's ecosystem. Instead, they simply skipped the product and moved on to Windows 7.

Apple is building that type of power over its user base by redefining the relationship. In Microsoft's case, the unbreakable bond was between the user and the applications. The unbreakable bond for Apple is the firm's control over users' music, movies, books, data, photos, files, and other services. If the iPhone 8 flops, Apple's customers won't rush into the arms of competitors; they will simply wait for the iPhone 9. Switching costs will enable Apple to weather the storm, like Microsoft, and not end up in Motorola's situation.

#### Moat Is Narrow but Widening

Apple's narrow economic moat is based on modest consumer switching costs. Apple's iOS software immerses the user in an ecosystem of applications and content that makes it inconvenient to subsequently switch to another vendor's device. Many Apple users have already spent significant sums of money on media and apps purchased through the iTunes Store, and while music purchased through that channel is portable to other platforms, movies, TV shows, and apps are not. Competitors will eventually deliver comparable hardware devices, but we think

consumers would require a very compelling reason to switch away from iTunes. Therefore, once the consumer enters the market for a replacement phone or additional device like a tablet, the cards are stacked in Apple's favor. Tomorrow's decision will be guided by the switching costs the various vendors are hoping to establish.

Apple's moat may be widening with new software introductions such as iCloud. With the introduction of iOS 5, Apple has eliminated the PC as the hub for devices, replacing it with the iCloud service. This service breaks the tether between the user and any specific device, replacing it with a bond between the user and Apple's cloud. In this cloud is a virtual presence that encapsulates all of the consumer's communications, preferences, and content. This bond is perpetual and much stronger than the bond with any one device.

The switching costs Apple has established to date are tied to content and not yet strong enough to ensure long-term lock-in to the Apple ecosystem. Movies, video, and books are often consumed only once. Multiuse content, such as music, is much less convenient to have split across ecosystems. Ultimately, Apple must establish stronger ties to the customer than just music. Momentum is strong, and we believe the firm is on track with iCloud and SIRI to materially raise switching costs, but a lack of progress with these initiatives would be detrimental to Apple's long-term success.

#### Misconceptions About Apple's Advantages

Apple will not successfully maintain its design lead in every product category. Eventually, comparable substitutes will emerge. Our confidence in the Apple story stems from the firm's dominant share via iTunes, the software controlling user music libraries and establishing itself as the premier online music service. This bond with the user is what survives the decline in stand-alone music players in favor of phones with integrated music players.

Although iPhones are dominant at the high end of smartphone segment, more Android smartphones are sold every day than iOS smartphones. The number of applications and the amount of other content currently available to iOS

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users has increased barriers to entry for new challengers (helping to explain the shockingly quick demise of Hewlett-Packard's webOS), but Google's Android and possibly others are securing meaningful market share, so a monopoly on developer mind share will not exist for Apple.

Having the largest app store helps Apple acquire customers today, but it is not a long-term differentiator. Without dominant market share, developers will choose to work with all the major platforms, eliminating the virtuous cycle between developers and end users that propelled Microsoft's success.

Apple users will not restrict their purchases exclusively to Apple products, either. We view the iPhone as a gateway device that, in many cases, will lead to iPad and other Apple purchases, but many types of content do not need to be shared among devices. We envision a future where a material number of households are likely to have mixed environments, perhaps with smartphones from Apple but tablets from Amazon or other Android providers.

#### iPhone Is the Cornerstone

The iPhone will be the device most responsible for Apple's ability to generate attractive returns during the next decade. We estimate that the iPhone already accounts for about 50% of Apple's gross profit, and we expect this percentage to increase over time as the iPhone segment grows faster than other product segments, while sustaining a gross margin above the company average.

No other consumer electronics device matches the opportunity presented by smartphones in terms of annual unit shipments. Tablets and e-readers are experiencing explosive growth, but we believe it is unlikely that the ultimate end market demand for these products will exceed the current levels we see for mature segments, such as televisions and PCs. In contrast, the smartphone market is likely to approach the current size of the mobile phone market (currently 1.4 billion units) during the next decade. Portability, high daily usage, and subsidies that mask true cost encourage device turnover. As a result, a short smartphone refresh cycle of roughly two years will continue to be a key driver for this elevated rate of adoption.

The iPhone is the hub of the consumer's connected lifestyle,

because it is the only device that is always present. Therefore, the iPhone is the most logical device to consolidate content and from which to drive new services, such as the e-wallet. The concentration of services with higher switching costs makes the phone the stickiest consumer device. The iPad or iTV may offer some of these services and even offer a better user experience for certain tasks, but they may not always be convenient to carry, creating a merely optional linkage for the user.

Apple may have unit share of only around 19%, but we estimate it is collecting nearly 40% of the gross profit in the smartphone market. Apple's premium price point is not saddled with materially higher build or component costs. Therefore, each iPhone sold delivers a higher gross profit than most competing devices.

Concentrated success in the \$600-plus price bands positions Apple for customer growth in the premium segment and by moving downmarket. We anticipate that the smartphone market will continue to grow rapidly as smartphones--which accounted for just 30% of mobile phones during the third quarter--continue to replace feature phones.

#### Emerging-Market Opportunities

With PCs, the Apple strategy never resonated in emerging markets as well as it did in developed markets. The iPhone and, from what we can tell, the iPad are driving demand. Sales in Asia Pacific (excluding Japan) have grown from 7% of total revenue to 21%. This is especially impressive given the robust growth Apple delivered across geographic regions; during the past two years, the Asia Pacific region has delivered triple-digit sales growth.

China is a key driver of Apple's success, growing from just 2% of sales to more than 16% in the most recent quarter. High-end Apple products are a status symbol in countries like China and India, and the growing purchasing power and size of the middle class provides a strong tailwind for sales in these regions. Additionally, we expect Apple's strategy of offering lower prices on older phones and tablets to resonate most strongly in these markets. Often there is no carrier subsidy for the devices, so the difference between the iPhone 3GS and iPhone 4 is often much greater than in

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the U.S., a difference that is magnified as Apple attempts to expand the potential customer base to include lower-income individuals.

#### Uncertainty and Risks to the Apple Story

Despite our enthusiasm, there are several risks to consider with Apple's strategy. The most common factor cited for upside with Apple is the next great device that we haven't discovered. We have no doubt that there will be new devices down the road, but we do not expect any to hold the same upside as the iPhone.

We do anticipate Apple will make a push into TVs. However, this market is incredibly price-sensitive, so it is not clear that Apple can differentiate on the hardware side. In addition, consumers have recently transitioned en masse from bulky CRT technologies to flat-panel screens. And the lines between traditional TV and the Internet are blurring rapidly, with Apple, Google, and other Internet giants targeting the legacy model.

Many emerging trends could prevent Apple from establishing a wide economic moat as well. As more developers reach consumers through platform-independent technologies such as HTML5, Apple's app store could be cut out of the loop as customers gain freedom to transfer their chosen applications from one device to another. Furthermore, if music subscription models such as Spotify gain traction, iTunes could be forced to follow suit. Subscriptions are easier to port than a purchased music library. Nonetheless, we believe customers will continue to embrace Apple's closed system, considering the lock-in a small price to pay for what is widely perceived to be the best user experience.

Though we are bullish on the company's near- and medium-term prospects, it is difficult to forecast Apple's exact size and market penetration 10 years from now. Our \$530 fair value estimate is based on our belief that Apple not only has established a critical mass, but will continue to capture more than its fair share of the emerging markets for smartphones and other portable computing devices.

If we have overestimated the switching costs away from Apple, our fair value estimate would fall to \$337. In this scenario, we would expect several solid years before the

shine wears off the Apple ecosystem. At that point, we would anticipate margin declines, with phone and tablet unit shipments falling to half of our original forecast by 2020.

However, there is also the possibility that we aren't giving Apple enough credit for the feasible size of the market for handsets, tablets, and other new computing devices. We currently assume that market share gains in smartphones and explosive growth of the iPad will stop after fiscal 2013, and therefore have revenue growth slowing into the single digits starting in 2015. Another new product category, further market share gains for the iPhone, or stronger long-term growth in the tablet market would all result in higher revenue growth and higher margins, leading to a bull-case fair value estimate of \$775.

We expect Apple's blend of phone offerings to secure just 31% of the total smartphone market in our base case. This reflects our belief that Apple will avoid the very bottom of the smartphone market, despite a clear intention to have premium and budget options. The most sensitive variables in our analysis are our estimates of the mix and margins between premium and budget iPhones. Apple must offer lower-cost/lower-margin phones to be competitive in price-sensitive emerging markets, leading to a risk that margins could fall faster than we anticipate.