



Technology Brief...

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Research, Analysis, Strategy, Insight

Why Mobile must go AI

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Mobile devices powered with AI is not an if, it's a when. In the next 2-3 years, we'll see an emphasis on AI in devices, even beyond the early examples of today. Why? Because the tasks and interfaces are becoming so complex that users will spend too much time trying to get to apps/info that's required for them to be productive.

AI will be a journey that will take several years to complete. In the current early stage, we have some voice assistants (e.g., Bixby, Siri, Google) that can navigate a limited set of tasks. In the future (3-4 years) with new, more powerful, on device AI components, we will transition to more extensive AI where the device not only can parse some simple commands, but can actually learn about what we do and what we desire, and make the proper suggestions to enhance our overall experience. In the final stage, we'll likely see a highly dynamic and simple user interface based on AI's knowledge of what we need to accomplish at a given time and in a given circumstance, but this is likely 5-7 years away.

AI is really the next phase of UI development

Current generation assistants are not really AI – rather they are voice commanded automated lookup tables that return preprogrammed results. They have very rudimentary capabilities – cloud services monitor what we've done in the past and run that against a tree of possible actions, like an enhanced search engine. This is a programmed approach, but not truly AI. Learning about what we do personally, as opposed to comparing us to the majority of users and then picking a suggested workflow, will move the needle dramatically. Continuously monitoring and learning about us will allow or devices to become true concierges – knowing what we want, based on specific preferences and current conditions.

So what does this all mean? Devices in the future powered with AI will provide a number of benefits. First, they will become much more secure. As they learn about us, they will be able to understand if we are using the device or if someone else is. This will prevent stolen credentials allowing someone to hijack our devices. And it will allow us to eliminate passwords to all the sites we access, making life far easier.

Next, true AI will allow us to actually manage all those hundreds of apps we download and carry as a result of devices with increasingly more compute power and memory. Ultimately, the various and different user interfaces across the apps will become invisible as the AI system transparently interfaces with the apps for us. Based on what we did and what we want to do, the device will select the next app to make it happen, deal with whatever data is necessary, and perhaps interact with

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a series of needed apps. No more opening up a variety of apps to get things done.

Finally, because AI truly understands our needs, it can actually make us safer by monitoring our usage and determining if there is something going on that makes it look like we are ill or under stress, and take some required actions. With a whole series of sensors and monitors connected to our mobile device, which essentially becomes our personal edge server, the AI capabilities on our devices will have massive amounts of data to analyze for our benefit and react to issues far faster than we can manually.

It's not that far away

While much of this sounds highly futuristic, it's not that far off. Apple, Samsung, Qualcomm, Google, Huawei and others are already started down this path at the chip, OS and device level. Specialized AI subsystems in current devices with somewhat limited capabilities will improve over the next 1-2 years and morph into a much more powerful capability. There will be some hiccups along the way, but I estimate that in the next 3-5 years, virtually all of us will be carrying around a full fledged AI powered device, although it will start at the higher end of the device market before eventually making its way into mid and lower level devices. As a result, our typical use of devices, the types of apps we have, and the variety of interactions between us and our devices will change dramatically. It will bring an increasingly complex interaction environment down to something that is manageable. And that would be a very good thing.

A version of this article also appeared in Computerworld

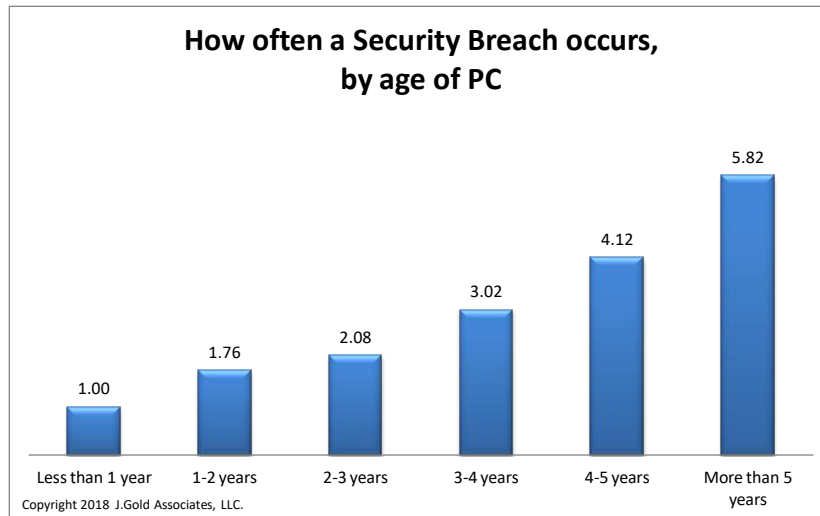
How likely are you to be hacked? Depends on how old your PC is

We recently conducted a survey of more than 3200 SMBs in 16 countries worldwide, to assess their use of PCs, and to discover what kinds of issues they faced by keeping machines in use for longer periods of time. There were approximately 35 questions covering major aspects of productivity, security, failure rates, performance issues, preferred vendors, etc., but one key data point that we'll address here is, how often do older machines get hacked compared to new machines.

In one question, we asked the survey respondents how often they have seen a security breach of user PCs within their organization based on the age of the machines being used, for each of 6 age categories. The categories of machine age were: less than 1 year, 1-2 years, 2-3 years, 3-4 years, 4-5 years, and 5 or more years. The results were analyzed and tabulated. Figure 1 shows the averaged results across all respondents from all 16 countries. We have exact numbers for each of the categories and for each of the individual countries, but for this analysis, we thought it easier to show the comparisons between the machine ages in relative terms, with a less than 1 year old machine being the base line (in this case being equal to 1).

Figure 1: How often a security breach occurs, by age of PC, averaged across 16 countries and 3297 respondents,

...We recently conducted a survey of more than 3200 SMBs in 16 countries worldwide, to assess their use of PCs,.. our survey respondents indicated that a 4-5 year old machine has more than 4 times as many security breaches compared to a PC less than 1 year old, and a more than 5 year old machine has nearly 6 times more security breaches than a PC less than 1 year old....



Our analysis shows a dramatic increase in the number of security breaches as machines age beyond 3 years. Indeed, our survey respondents indicated that a 4-5 year old machine has more than 4 times as many security breaches compared to a PC less than 1 year old, and a more than 5 year old machine has nearly 6 times more security breaches than a PC less than 1 year old.

Our survey also asked about the cost of each breach, and our respondents provided data we analyzed and found that the average cost of a data breach across all responding organizations and countries was \$103,705. Clearly older PCs are costing organizations significant expense when compared to a newer machine.

Much deeper analysis is available from our survey results. Contact us if you are interested in gaining additional insights.

Intel accelerates vision and goes OpenVINO

Intel recently introduced its Vision Accelerator Reference Designs that consist of both hardware options as well as an open sourced software development environment - the OpenVINO toolkit for developing neural networking based image processing systems which supports many development frameworks for deep learning and classical image processing. The hardware options being offered include designs with either an Aria FPGA or a Movidius VPU. These reference designs are built to accelerate computer vision systems by as much as 8-10 times beyond the performance available from standard CPUs by employing specially designed deep learning engines, and are targeted for use in edge servers, with scalability up to large cloud data centers.

With this approach, Intel is targeting a rapidly growing segment of the AI and ML space and one that will be critical to a variety of markets long term. Visual processing, particularly as it relates to surveillance, has a huge footprint in the world with tens of millions of cameras deployed, and more coming online every day. While the cameras are getting smarter and have much more localized processing available, there is still a compelling need for edge based and cloud based visual processing systems to identify people, read visual data like license plates, analyze events for safety and security concerns, and identify suspicious activity in retail and public places. But companies that need such capability and look to build their own systems from scratch find it difficult to do and are seeking help. Indeed, Dell recently targeted this market with a special visual processing server utilizing Intel's accelerator technology (see "Dell has its EyeOT on you", J.Gold Associates Technology Brief, October 2018), and we expect others to follow Dell's lead and offer similar vertically-oriented specialized systems.

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Recent Research

Contact us to request the following research reports:

Market Studies

- The Challenges and Costs of Older PCs in SMB
- The State of Enterprise Mobile Management (EMM)

Emerging Technology Trends

- Highlights our key emerging trends for the next 3-4 years

Commentary and Analysis

- Why Most EoT is a Waste of Money
- Is Your Company Part of the GDPR “Mobile Loop-hole”?
- Can Microsoft fix IoT Security?
- Meltdown and Spectre exploits: Cutting through the FUD
- Moore’s Law is Dead - Or is it?

Research Reports

- Your PC has an Identity Crisis: Saving the cost of hacks and other benefits of enhanced identity
- Replacing Enterprise PCs: The Fallacy of the 3-4 Year Upgrade Cycle
- Keeping Notebooks Past Their Prime: A Study of Failures and Costs



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While surveillance is a large and growing current market, the need for visual processing systems in the future will expand greatly, as all manner of autonomous devices (vehicles, robots, drones, tools, etc.) will require visual processing. Visual processing will also become a key component of future healthcare, smart cities, retail, emergency response, and many other next generation systems. It’s why so many companies are focusing efforts in this space, including the major cloud vendors (e.g. Google, Microsoft, AWS). It’s also a focus area for many of the chip vendors, especially those with graphics processing background like AMD and Nvidia, but also those with DSP related technology capabilities often found within the Arm ecosystem (e.g., Qualcomm, Samsung, Huawei, Mediatek). Coming from the primarily mobile background where visual processing was needed for the onboard cameras, they see a compelling market developing for image processing well beyond the internal needs of the smartphone. All envision a robust marketplace going forward that will allow them to expand beyond the slowing mobile device market into new and potentially massive markets.

The vendors are competing to become the core image processing enablers for next generation systems – from low end embedded devices all the way up to larger cloud-based servers. But not all vendors can solve the higher end system needs, particularly those with expertise in the device end of things (e.g., Arm, Qualcomm, Mediatek, etc.) Intel has squarely set its sights on the server-based processing market, where its installed base can be leveraged to increase its presence in this growth area. As such, this initiative is a smart move by Intel to create a hardware reference design that, along with the OpenVINO design toolkit, can be leveraged by customers to quickly create customized solutions to fit their needs. Intel followed a similar successful model in the PC world with its reference platforms, and will no doubt see success here as well.

Bottom Line: Intel cannot hope to compete with the Arm ecosystem at the device end of the high volume consumer image processing market, where companies like Qualcomm will be dominant. But the mid to high end of the image processing market, particularly based on an AI/ML approach, is open to higher end and larger scale processing where Intel is a dominant player. As a result, entering the market now and providing a platform for customers to develop final products is a wise move on its part. Intel’s seeding of this potentially massive market should pay long term dividends in market share and position it to take great advantage of its acquired investments in Altera and Movidius.

About J. Gold Associates, LLC.

J. Gold Associates provides advisory services, syndicated research, strategic consulting and in-context analysis to help its clients make important technology choices and to enable improved product deployment decisions and go to market strategies. We work with our clients to produce successful new product strategies and deployments through workshops and reviews, business and strategic plan coaching and reviews, assistance in product selection and vendor evaluations, needs analysis, competitive analysis, and ongoing expertise transfer.

J. Gold Associates provides its clients with insightful, meaningful and actionable analysis of trends in the computer and technology industries. We have acquired a broad based knowledge of the technology landscape and business deployment requirements, and bring that expertise to bear in our work. We cover the needs of business users in enterprise and SMB markets, plus focus on emerging consumer technologies that will quickly be re-purposed to business use.

We can provide your company with a trusted and expert resource to maximize your investments and minimize your risk. Please contact us to see how we can help you.