CTO Corner

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Technology Trends and Potential Impact on Financial Institutions

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It's that time of year again – New Year's resolutions and a flood of technology predictions. Some of these predictions[1] [2] come as no surprise, claiming 2012 will see more growth in Cloud, Mobility (with the continued explosion of apps at home and at work[3]), Social Media, and a commensurate explosion of data[4]. What is different, in my opinion, is that they are no longer isolated trends, but are all intertwined. For example, we will increasingly see mobile apps linked to the cloud (e.g., photos, music and check images stored in the cloud and accessible from your mobile device). As the use of these technologies grow and evolve, they will impact the way we conduct business, interact with each other, shop, and manage our finances.

In 2012, BITS will continue to focus on these technologies – Mobile, Social, Cloud – working with our members to ensure our industry's products and services remain secure and trusted; that our customers' privacy is preserved; and that customers are protected against fraud. We are also collaborating to address the data explosion by working on Data Governance best practices and processes.

Further along the technology timeline, IBM predicts the following five big tech developments over the next five years[5]:

1. New ecosystems of power generation and capture created by actions like people walking and water moving through pipes (removing your dependence on utility supplied power).

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[1] Outlook 2012 – 5 Twists on Coming Year's Big Trends, Tom Pohlmann, Managing Director of IT Client Group, Forrester Research, Information Week, Dec 19, 2011, pages 19-20.

[2] 8 Bank Technology Trends That Will Shape the Industry in 2012, Bryan Yurcan, Jan 3, 2012, Bank Systems & Technology, http://www.banktech.com/management-strategies/232300804.

[3] Companies will get more serious abut leadership, governance and processes needed to deliver effective apps. Largest companies will appoint a leader of a mobility council, responsible for the portfolio of employee, partner and consumer apps. Device-resident apps that rely on cloud services will continue their ascent – that's in direct contrast to the browser-based web model that dominated the pc world for 10 years. At Forrester, it is called the "app Internet." Companies will start creating their own app stores. For most, these app stores will remain in the planning stage in 2012. Eventually employees will be able to download preapproved apps they need and charge them back to their business unit or let their managers sign off on employee app downloads like they do with travel expenses.

[4] Going Big on Data, Rajashekara V. Maiya on December 9, 2011, "Each year, we add 2 billion hexabytes (that's 2 billion, billion bytes) of data just in social conversation. American companies, across 15 sectors, with more than 1,000 employees each store on an average more data than the U.S. Library of Congress! Banks, which are privy to more data than most other industries, must drive home their advantage with a well thought out big data strategy. Finally, they must ensure that their big data strategy is aligned with the overall strategy for the business."

[5] IBM in the next 5 years, http://bits.blogs.nytimes.com/2011/12/19/whats-behind-i-b-m-s-big-predictions/, Behind IBM's Big Predictions, by Quentin Hardy, New York Times, Dec 19, 2011.

2. No more passwords; increased use of biometrics from uniquely identifiable smart phone devices for machines to automatically know who you are (changing the way you identify and trust people).

3. Mental control of sensors and objects (improving the bandwidth and ease of use).

4. Powerful mobile devices capable of precise language translation – ubiquitous voice recognition and language translation (dramatically improving global communications).

5. Personalized information services that can filter search engines to bring on the information you want, inverting the premise of today's marketing paradigm, making phones your advocate for recognizing what is near and dear to you and getting it.

These advances can be used by financial institutions to redefine the customer experience, and drive up the revenue per employee, creating a leap in value[6] for both customers and the enterprise. They can also be used by new market entrants to challenge the status quo. To add to the challenge, these changes are occurring against the backdrop of continued economic malaise, increased regulation and erosion of trust and confidence in the financial sector

Will these technology advances bring about change to the finance sector similar to what is already being experienced by the media and publication businesses? Jouko Ahvenainen in his blog "New Models Destroying Old Ones, The Finance Sector is Next" certainly thinks so[7], noting that to date, we have mainly seen the first wave of the Internet revolution, with the finance sector offering new access channels to traditional services. There hasn't yet been much impact on the traditional structures and business models. I believe that the dual forces of technology advances and the impact of the economic crisis are likely to result in real change within the finance sector, including the breakthrough of new business models[8] and forms of financial services, where the ease of use is dramatically improved, trust is restored and cost is dramatically reduced.

Examples of the type of changes we are already beginning to see include the following themes:

- *Convergence of social media, mobility and payments* [9] – Payments are posed to become a more integrated component of an integrated multi-channel shopping and social experience. For example, rather than being confined to something that occurs at the point of transaction, we are likely to see payment-related services that include assisting in product comparison research, integrating discount and merchant-funded rewards into consumers' transactions, allowing orders and payment to be made before even entering the store, and offering price

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[6] 'Blue Oceans' in Mobile Commerce by Robert Voth Dec 16, 2011, "Innovative Business Models are a necessity for banks to thrive in mobile commerce, but this requires value innovation rather than simply following the Herd."
[7] http://www.growvc.com/blog/2011/08/new-models-destroying-old-ones-is-the-finance-sector-next/, Grow Venture Capital Community Blog, "New Models Destroying Old Ones, The Finance Sector is Next," by Jouko Ahvenainen.

[8] Why US banks need a new business model, by Toos Daruvala, Hasan Malik, and Fritz Nauck, *McKinsey Quarterly*, January 2012. Key points include: "Investors want radical plans to boost ROE above the cost of capital"**; "**estimates show that if banks maintain their existing business models, their average return on equity (ROE) would fall to 7 percent by 2015, from its current level of 11 percent, against a cost of equity projected to be more than 9 percent"; "These forces of change will compel banks to reinvent four of their core banking businesses: retail branch banking, payments, mortgages, and fixed-income OTC trading."

[9] For examples of this convergence, look at the announcement of the April 11-12, 2012 The Social : Mobile : Payments | Conference & Exhibition and related postings, http://www.socialmobilepayments.com/?p=550.

protection options.[10] Similarly, as we move to the age of the mobile wallet, we are also likely to see a tighter integration into the social experience of how we meet, identify, share and exchange information, funds, and other valuable goods and services with one other[11]. This suggests changes in how we trust and learn about each other and the products and services we buy.

- *Personalized financial management* - Financial advice and management are likely to become more specific to our individual needs and preferences, and better integrated into our lives through the introduction of individually customizable, proactive and actionable financial advice and alerts, to help us in our budgeting, and investments and loans *at the moment we need it*. Perhaps we will see personalized, virtual customer service teams, with the same people available and accessible wherever you happen to be.
- *Reinventing the branch* – Branches are likely to come under increasing scrutiny as users continue in growing numbers to transact remotely with their financial institution at Call Centers, over the Internet and increasingly via smart mobile phones[12]. A growing number of branches are no longer profitable causing a total re-thinking of the economics, role, purpose and design of the branch,[13] and its staffing and functions, including greater automation and integration with the remote channels.
- *From virtual data centers to virtual organizations* – Over the past 10 years we have seen increasing use of outsourcing across a growing number of enterprise departments and functions. More recently, we have seen the growth of cloud computing, data center virtualization and in-memory computing, where the data processing platform, data and applications are increasingly being run outside the enterprise, using a more real-time, elastic, flexible pay-per-use approach. These technologies provide the enterprise with the tools to run a geographically distributed organization. They hold the promise for more organizational flexibility and the shedding of assets and fixed costs. We are likely to see these two trends combine to produce organizations with much smaller full time staff who manage a virtual organization[14], contracting with (often short-lived) teams of individuals and external organizations to perform a greater proportion of the firms activities and processes. *Welcome to consultant nation***,** where the pace of business operations will require CIOs, in particular, to quickly assemble groups of highly qualified employees and

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[10] PayPal: Mobile payments and location-based offers go hand-in-hand, by Ryan Kim, Jan 3, 2012, http://gigaom.com/2012/01/03/paypal-mobile-payments-and-location-based-offers-go-hand-in-hand/#comments; Can PayPal deals compete against Groupon? By Chantal Tode, Mobile Commerce Daily, December 15, 2011, "PayPal will look to integrate its payment capabilities at the point of sale so the customer can, for example, pick up a coffee order and pay for it without having to stand in line."

[11] December 2011, CTO Corner, Privacy in the 21st Century: The Impact of Technology on Privacy and What It Means for the Financial Services Industry.

[12] Deconstructing the Branch, BAI Banking Strategies, by Kenneth Cline, Sept. 2, 2011, "Wells Fargo executive David Faulkner says the traditional branch layout needs to move beyond the 'all-in-one' service model as customer needs change."

[13] Getting Rid of 'Zombie' Branches, Dec 29, 2011, by Dave Kaytes and Kevin Travis, BAI Banking Strategies, Based on a recent Novantas study of the entire US branch system, nearly 16,000 units (about 18% of the industry total) are facing closure over the next three years.

[14] The Virtual Organisation, The Economist, Nov 23, 2009.

contractors to deliver new corporate capabilities. The ability to find, hire and create high performance groups on the fly and then manage those groups, much in the manner movies have been made since Hollywood freed itself from the studio system, will challenge the traditional development and performance models[15].

I believe that we are likely to see these sorts of changes happen over the next five to ten years. Their exact form and how they will evolve is unclear because the outcome is likely to be very path dependent. Exactly how things evolve is dependent on a number of factors including:

- Who partners with who
- How well different implementations are executed, marketed and accepted
- What new products, applications and services get introduced and in what order
- A number of environmental factors, such as the impact of new regulations and legislation, and the economy.

Although we are unlikely to see many dramatic changes in 2012 and 2013, seemingly small changes can greatly influence the future direction and competitive landscape for years to come. As these changes start to accelerate over the next 5+ years we can expect to see possible shifts in the competitive landscape with some big winners and losers.

What can a financial institution do about these trends, how do they stay relevant and maintain their competitive posture? This is not a spectator sport, to keep in the game, financial institutions will have to get familiar with these new technologies, run pilots, innovate, learn and adapt, observe and learn from the competition, and above all, listen to the feedback they get from their customers.

[15] The Future of Work, by Charles Hardy, Basil Blackwell, Oxford, 1984