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IS YOUR COMPUTER SMARTER Than You?

"THE CLOUD"

was yesterday's technology buzzword.
The industry and the CFM's job are about
to get turned inside out by Web 3.0.

BY SCOTT G. WOLFE



"HI JOHN.

I'd be happy to meet up next week. Please work with Amy (CC'ed) to get this on the calendar. Looking forward to it."

"HI AMY.

Can we do 2:30pm on Tuesday at my office?"

"HI JOHN.

Michael can certainly do 2:30, but given meetings that come right after, I would politely ask if the meeting can be at his office on 100 Broadway."

"OK.

I'll pop by Michael's office Tuesday afternoon. Have a great day, Amy."¹

HERE'S THE DEAL:

Amy isn't a real person. She's a computer program, and within the next five years, she's going to change the job of every knowledge worker across the globe.

Some people develop a slight tremble whenever the words "automation" or "artificial intelligence" are uttered. They exclaim, "*A computer can't do my job!*"

This may be especially true of CFMs, who typically spend a lot of time managing and comparing data, and who become frustrated after watching computers make errors or perform automated tasks blindly without any human touch.

CFMs may be happy to hear that automation is dead. However, it is survived by something a lot more powerful and interesting, and something they need to understand, fast.

The "Internet of Things," artificial intelligence, and what many have labeled as "Web 3.0" are now upon us. "The cloud" was just the opening act for technologies that are going to fundamentally change the CFM's role.

Many of these technologies are already here, and as this article will explore, savvy organizations and CFMs must move past their intuitive fears and learning curves because the benefits could be explosive.

How "The Cloud" Changed Everything

The cloud has been used by so many to mean so much that it has lost most of its meaning. Fundamentally, however, the cloud is simply the maturation of the Internet's capabilities.

In the early 1990s, the Internet was full of websites that acted as glorified business cards. Computer scripting quickly grew more sophisticated in tandem with improved Internet speeds and computing power, all of which combined to introduce a more interactive Internet.

Conversations about Web 2.0 evolved into discussions of the cloud, which is the promise of having everything everywhere, and taking all the complications of computing and packing them into a single application: your Internet browser.

The cloud barged into our lives and promised the following high-level changes.

INFORMATION TECHNOLOGY DEMYSTIFIED

IT departments are traditionally staffed by folks with networking or Microsoft certifications who maintain the company's server, internal phone system, software licenses and updates, desktop performance, and more.

In the cloud, most of these functions are not required, literally eliminating the complicated role of traditional IT workers. The IT department is now empowered to leverage its technology for more "big picture" goals, as opposed to being riddled with performance and software inconveniences.

APPLICATION PROGRAMMING INTERFACES (APIs)

APIs enable any two applications to immediately integrate and are enormous benefits to cloud technologies. Simply explained, APIs are a mapping engine to connect data fields in one platform to fields in another platform. While this sounds simple, it has big practical implications.

In fact, since moving an entire ERP system into the cloud is such a monumental and risky task, many large companies are starting to (knowingly or not) demote their ERP systems to makeshift databases, connecting cloud-based technologies to their ERPs through APIs and using those technologies to perform key functions.

SOFTWARE DEMOCRACY

Creating a software company used to require significant resources; then, once the software application was built, it

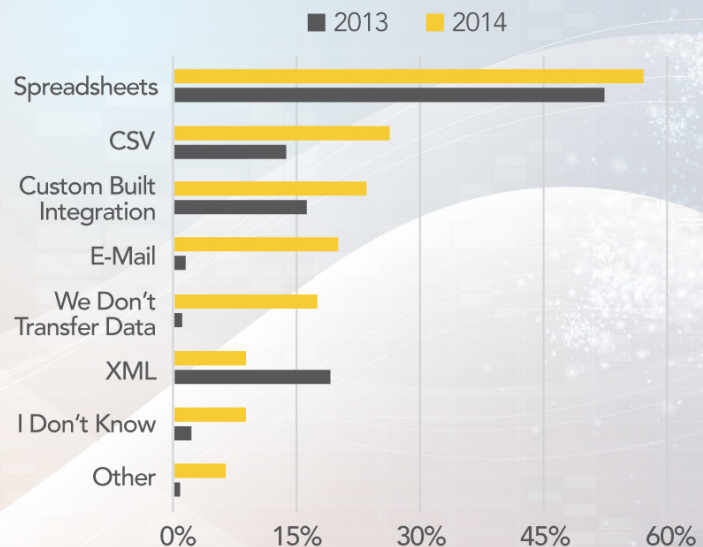
would have a big price tag and clunky functionality. In fact, it's quite hard to imagine how software was built before the cloud. That's likely why new cloud-based technologies are zip-ping through improvements at the speed of sound while many enterprise organizations still wake up to a green screen.

Nevertheless, one massive change provided by cloud technologies is the democratization of software development. It's much easier and cheaper to make *good* software, which has injected tons of very capable applications into the marketplace.²

Just as a construction jobsite requires foundation work before framing and building up, so too did our computing future require this transition to the cloud.

More important than all the individual improvements and promises brought by cloud technologies is the fact that these

DATA TRANSFER METHOD Between Software That Do Not Integrate



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technologies now serve as a foundation for new advancements. That advancement is called Web 3.0, and it's going to heavily leverage artificial intelligence.

The Artificial Intelligence Debate

Whereas Web 2.0 was about making the Internet a more interactive experience, Web 3.0 is about making the Internet a more personal experience. Machines can learn about what a person likes to read, eat, and do, and then personalize the interaction.

Think about that last sentence, particularly the phrase “*machines can learn.*” Web 3.0, artificial intelligence, the Internet of things, big data, and other popular phrases all rely on the idea that a machine can be programmed to learn things. There is a heated debate about whether machine learning will amount to true, useful artificial intelligence.

The “doubters” champion the position that computers will never be able to replace human intuition. This perspective appreciates human thought and decision-making as being impossible to completely replicate. In “Why Big Data Will Never Beat Human Intuition,” for example, author Tim Leberecht argued that big data “is not social,” “doesn't give or forgive,” and “makes us smarter, not wiser.”³

A similar argument was made in *The Atlantic's* “Why Computers Will Never Replace Us,” suggesting that “even if machines do take over the world...it will pay for them to keep humans around [because]...there will always be elements of tacit knowledge and common sense” unique to humans.⁴

In other words, humanity is unique.

The “believers” don't argue far-fetched promises that machines “will replace humans,” but they do appreciate the machine's ability to process data, learn, and make decisions. Intuition, after all, is not a paranormal feat. Intuition is simply the processing of data very quickly to make a guess – a snap judgment; computers are excellent at processing data quickly.

Financial articles in The Associated Press are generated using machines.⁵ Computer programs can confuse people into thinking that it is actually a human.⁶ And overall, a lot of money is being poured into the quest to blur the lines between man and machine.⁷

Which viewpoint will ultimately prevail, and when? The answers may not actually matter. The fact is that technology doesn't need to replace human thought to spawn revolutionary change. A lot of machine learning and artificial intelligence is already starting to work. For example, Nest can figure out if a family is home and adjust the thermostat accordingly. Google can safely drive a car 400,000 miles without a driver.

This is reality. Web 3.0 is knocking on our door and it has huge implications for CFMs.

The Machine-Enabled CFM


CFMs review, process, interpret, and master a high volume of complicated financial data.

The “believers” will argue that these are ideal conditions for artificial intelligence. The “doubters,” however, will point to the CFM's need to crunch financial data while simultaneously considering and accommodating for industry relationships and strategies.

CFMs and their companies should fight the urge to look at artificial intelligence (and technology in general) with skepticism. In the construction industry, this urge is especially strong. The industry is a renowned under-spender in technology platforms, and according to the 2014 JBKnowledge Construction Technology Survey (published in partnership with CFMA), industry workers have a heavy reliance on Microsoft Excel, and in general, businesses processes are riddled with paper, manual, and Web 2.0 practices.⁸

Those happy with the status quo will not find the world caving beneath them. Nevertheless, in “The Gifted Technology Driven Contractor,” Thomas W. Emison, Darwin D. Braunagel, and Timothy M. Gray urge a succinct and critical point: that “[t]echnology is not a necessary evil, but rather a competitive differentiator.”⁹

This may be especially true for those technologies that embrace and leverage machine learning, artificial intelligence, and predictive analytics. Whether believers or doubters, CFMs will find themselves in a desired position if they shake off the skepticism and consider closely how interesting technology offerings can be used to better enable their job.



While CFMs may be among the last to get allocated robust technology resources, what follows is a bit of dreaming about how the spawn of the cloud (i.e., artificial intelligence, machine learning, and Web 3.0) can be leveraged to change CFM positions for the better.

ARTIFICIAL INTELLIGENCE TO MANAGE WORKING CAPITAL

Managing working capital serves as the very core of CFMs' responsibilities. In "Cash and Liquidity Management" published by CFO.com, the authors broke down working capital management into three components: 1) receivables performance, 2) inventory control, and 3) payables performance.¹⁰ Exciting work is happening on technologies that touch all three of these areas.

In the receivables performance space, CFMs must make decisions about the size of credit lines, available payment terms, escalation of collection pressures, and when to leverage such security rights as liens and bond claims. These decisions are traditionally guided by strategic policies, and then implemented by CFMs who mix intuition, experience, and data to engage in the process.

However, machines are becoming capable of not only learning these policies and processes to establish time-saving automations, but also to actually learn from the success and failures of the policies and to make governing changes.

For example, what if a company could crunch all of its financial data and receivables history? The machine could establish different credit lines and collection practices for different parties based on historical performance, and based on the company's overall risk tolerance at that particular moment.

In the inventory control space, knowledge about how much inventory is on hand and how much must be ordered has been automated for quite some time. These programs, however, are glorified calculators.

What if inventory control software started to learn macro and micro business trends, salesperson performances, etc., and then blend that data together to maintain inventory? Many in the construction industry have a watchful eye on Amazon Supply (i.e., their patent on "predictive shipment," which aims to ship your next package before you even buy it).¹¹

And finally, in the payables performance and procurement space, dynamic discounting platforms are really starting to gain steam. These platforms use algorithms and artificial intelligence to dynamically enable buying companies to take advantage of early payment discounts from suppliers.

ARTIFICIAL INTELLIGENCE TO MANAGE RISKS

Managing the risk of contractor default or nonpayment is important to CFMs, who manage the risk of contractor default downstream through prequalification practices, and manage upstream risks by preserving security and lien rights.

Historically, technology offerings in this area have been glorified databases. Prequalification software helps CFMs make decisions by enabling them to organize all of the relevant data and proceed through established checklists. Security rights software, to the extent that it existed, enabled CFMs to keep track of lien deadlines and requirements.

Machines, however, are extraordinarily capable of taking a lot of data and drawing relevant conclusions. CFMs should expect their prequalification software to leverage artificial intelligence and big data to make recommendations about contractors, and to predict defaults. In the world of security rights, software should likewise be capable of guiding the security and lien policies, and to maintain security positions dynamically with the company's risk tolerances and projected needs.

BEWARE OF SNAKE OIL

The cloud is a buzzword and so abused that it barely holds meaning. Marketers have plastered this term (and its close relatives) all over their product specs as they cater to an industry of technology buyers looking "to go to the cloud." "Artificial intelligence" and "predictive analytics" will be the buzzwords of tomorrow.

Be wary of snake oil, but temper skepticism with the understanding that real artificial intelligence and predictive analytics technology could be a legitimate boon for a company. Invest in learning about these technologies so that you can make informed decisions.¹²

Predictive analytics and artificial intelligence are going to become very popular, very quickly. In many applications, it's a great opportunity for a company's top and bottom line. Still,

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organizations must understand the technology and make strong ROI calculations.¹³

Conclusion

It's an exciting time for technology. While some of this may sound like science fiction, it is quickly becoming reality. The construction industry has been traditionally slow at adopting new technology, but that is not an excuse for CFMs to table the potential use of Web 3.0 technologies for later. On the contrary, it presents an enormous opportunity for innovative CFMs to gain a sizeable competitive advantage.

Those fearful of automations should celebrate automation 2.0. Rather than blindly performing tasks, artificial intelligence promises to have a human touch, and perhaps even more interestingly, promises to sort through all of the data and information available to an organization and present it to CFMs at a high level to request their human decision.

These exciting artificial intelligence technologies exist, and the role of the CFM will change drastically over the next few years as these technologies provide more insight. There is a ripe opportunity for innovative CFMs to grab onto these technologies and make a leap for their company. ■

Endnotes

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