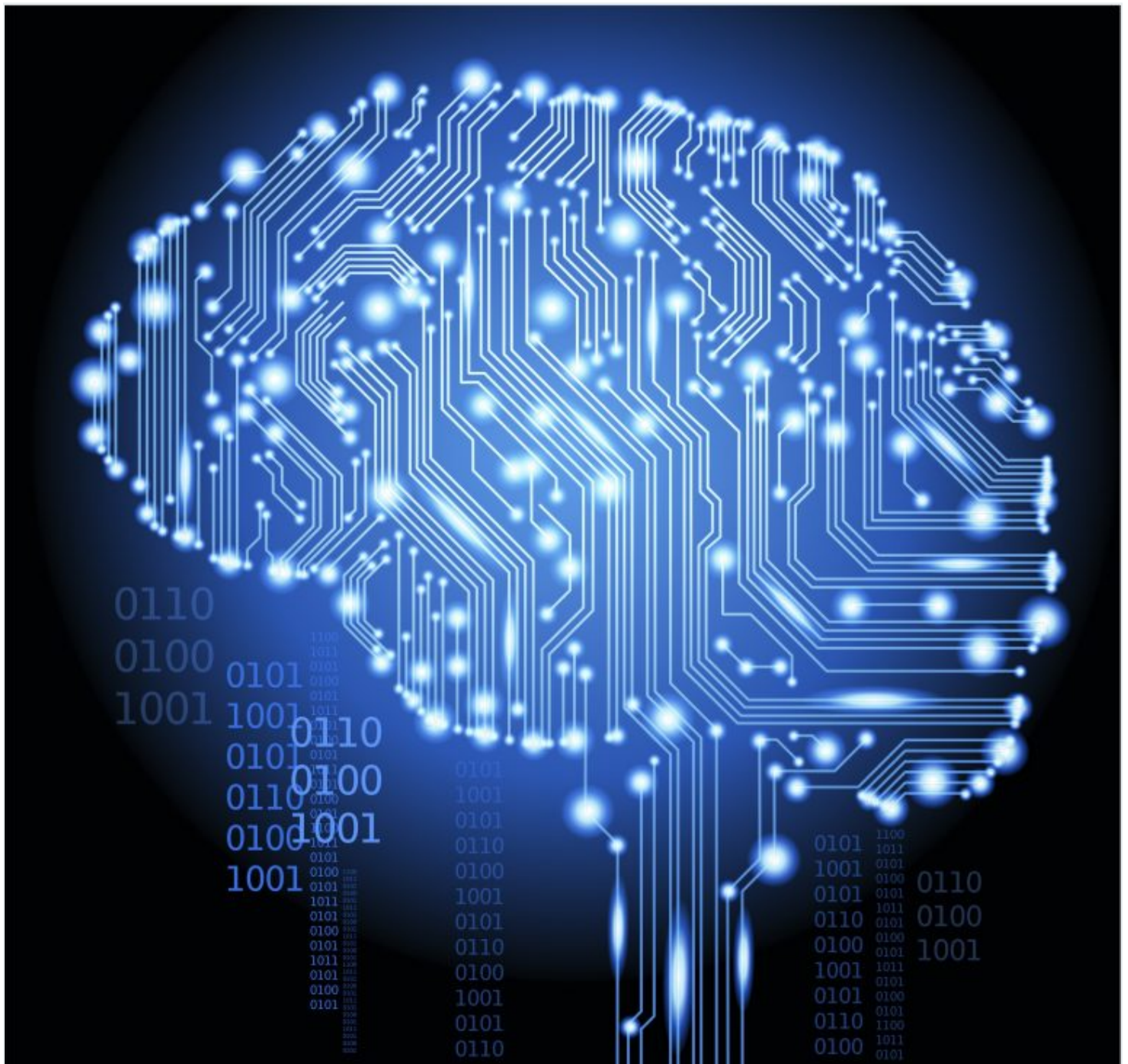


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Emerging technology is no longer "emerging" when it becomes mainstream.

Randy Johnston • Mar. 19, 2018



From the March 2018 Issue.

Emerging technologies have always changed the practice of accounting. Further,

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building a framework to understand emerging technologies. Most of these emerging technologies have a relationship, much like the [Grand Unified Theory](#) (GUT) of particle physics. You'll see the overall relationships in a later column. In the first column, you were introduced a structure to understand each of the emerging technologies in a simple table. Each why and how column will contain a table summarizing the main concepts, as you can see below. Now, for the subject at hand.

Cognitive Computing (CC) is based on the scientific disciplines of [artificial intelligence](#) and [signal processing](#). These platforms encompass [machine learning](#), [reasoning](#), [natural language processing](#), [speech](#) recognition and [vision](#) (object recognition), [human-computer interaction](#), [dialog](#) and narrative generation, among other technologies. Cognitive Computing applications link [data analysis](#) and adaptive page displays ([AUI](#)) to adjust content for a particular type of audience. Another definition of CC is: hardware and/or software that mimics the functioning of the [human brain](#) and helps to improve human decision-making.

Because of the way researchers position CC, it is close to the GUT of emerging technologies. Making computers act and respond like humans is what CC is all about. Various research areas of computing largely lead back to CC.

Why?

After reflection, you'll find that the concept behind Cognitive Computing is obvious. The goal is to build sufficient technology to meet or exceed what a human can do in the same role. While this sounds futuristic, much progress has been made in the last 40 years, particularly after a major shift in the strategies, called [algorithms](#) changed in the 1990's. Instead of trying to program computers to do each step, computer scientists and developers started using statistical models to help computers learn. These statistical machine learning techniques are used by companies like Receipt Bank and Zoho in the software products they have brought to market.

But note that the definition of CC includes data analysis and adaptive page displays.

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in the early days of spreadsheets with Lotus 1-2-3, SuperCalc and Excel each introducing new features and innovation in each release. The pace is frenetic, although sometimes not well-tested in SaaS products today because managers don't understand how to properly manage developers in scrum techniques...but that's a topic for a different column. Competition was good and led to superior functionality.

So why do we want cognitive computing? To provide automation of routine tasks giving us and our clients time to focus on the more important business goals. As I learned from Brock Philp, now CEO of [Newforma](#) in 2016 while he was President of [Doc.It](#) workflow and document management systems, "If you say it real fast, it sounds easy", applies to cognitive computing and most emerging technologies. CC has required a mighty effort to build and understand, and the hardware and software computing resources needed to make it all work well have just become available in the last ten years or so.

How?

So how do Cognitive Computing approaches work? They are:

- **Adaptive:** They may learn as information changes, and as goals and requirements evolve. They may resolve ambiguity and tolerate unpredictability. They may be engineered to feed on dynamic data in real time, or near real time.
- **Interactive:** They may interact easily with users so that those users can define their needs comfortably. They may also interact with other processors, devices, and Cloud services, as well as with people.
- **Iterative and stateful:** They may aid in defining a problem by asking questions or finding additional source input if a problem statement is ambiguous or incomplete. They may "remember" previous interactions in a process and return information that is suitable for the specific application at that point in time.

- **Contextual:** They may understand, identify, and extract contextual elements such

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[web site](#) for marketing by the firm R&G Brenner Income Tax

- KPMG – Audit Services with IBM Watson, reported by [AI Business](#)
- [Deloitte – Center for Technology, Media and Telecommunications](#)

The next step will be to get these approaches simplified, less expensive and gain the ability to work in the mass market with mid-size and small accounting firms and their clients.

As development continues and cognitive computing transitions from an emerging technology to a mainstream technology, they will choose from many open source and proprietary suites that have cognitive computing capabilities. Examples today include:

- SparkCognition
- Microsoft Cognitive Services
- Expert System
- IBM Watson
- Numenta
- Cisco Cognitive Threat Analysis
- Facebook Deepmind
- Customer Matrix
- Cognitive Scale
- HPE Haven OnDemand

In future articles, if there are other examples of products **available today that are working**, they will be included here. We are not convinced that many of the vendors really have cognitive computing applications working. They are simply riding the band wagon of popular marketing terms or the latest fad.

For example, at CES 2018, it was clear that there were emerging technologies that

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When you see a tool listed at this point in future articles, you'll know that it has been vetted to be the "real deal". The best example of a tool for accounting that is working today is:

- Receipt Bank [1Tap](#), used for small business tax Schedule C automatic accumulation and classification. With the company's current strategy, you can pay one annual fee and use this product with an unlimited number of clients. It is a marvelous value.

Here's a summary of what you need to know about Cognitive Computing:

Key Information

Technology: Cognitive Computing

Why is the new technology better?

It is the overall container for most emerging technologies

How can you do this today?

[SparkCognition](#), [Microsoft](#), [Expert System](#), [IBM](#)

Risks

Need to properly define needs

Where/When to use

When you need human/machine interfaces

How Much?

Depends on platform

Displaced technology or service

Traditional computing

Other resources

[CPAPA](#)

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Recommended Next Steps

Watch for applications that have automatic classification and can interface to many different systems. Products that are just arriving in the market will probably be built with new generation development tools that leverage emerging technologies. There will be hype and lies, so you'll need to be careful that you don't get a solution that is not built properly to work at scale and in all situations. We saw that mistake made over the last ten years with 1040 Workpaper products. With today's development tools ([SDKs](#) and [APIs](#)), it is possible to build a more sophisticated product rapidly. One caution that even the developers frequently miss: be aware of vendor lock-in. Vendors want to tie you to their products, much like the Eagles' old song "Hotel California". "You can check out any time you like, But you can never leave!". Be flexible enough and wise in your choices so you can chart your own destiny.

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