"Moving from 'Big' monolithic applications to 'Small' granular services"

Noteworthy

Andy Mulholland joined Capgemini in 1996 with thirteen years experience in senior roles in the IT industry. Andy has written two major white papers in the last five years that have proposed technology architectural models and have subsequently been adopted throughout the technology industry. He is a regular guest speaker at IT events in the USA and Europe, with frequent quotes in the press and television appearances.

His role as Global Chief Technology Officer includes advising the Capgemini group management board on all aspects of technology driven market changes. Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. Capgemini and Teradata have had a strategic partnership relationship since 2001.

An interview with Andy Mulholland, Global Chief Technology Officer, Capgemini

1. First, let's set some definitions for our discussion.... how do you define 'big' monolithic applications versus 'small' granular services?

What kicked off the whole change was the World Wide Web, in terms of showing people how to use standardized services. It's interesting to compare what happened around 2000 when people started to set up exchanges and they became part of our lives. At that time there was a very, very hot company called Commerce One. We can use them as an example because they're hardly with us these days. Commerce One was successful in selling an application to businesses and enterprises that felt that they had to set up business exchanges on the WWW. Large companies from every industry decided they needed to set up exchanges, but the application was rigid – an e-commerce attempt at one-size-fits-all. Today, most of those companies have found these exchanges didn't deliver business value, and even Commerce One's business model has changed focus.

Contrast this with the comparative flexibility of eBay, which started in 1996, and has over 106 million users. eBay began as a user-driven, web-based business, but has increasingly become business-to-business focused. In fact, the balance between business-to-business versus client-to-business and client-to-client is nearly 50-50 now. eBay, which is actually a major Teradata account, was built totally out of continually adding small service elements that clients wanted.

Big applications are inflexible and demand conformity, and end up becoming straightjackets in a world where people are continually changing. It's very difficult to insist that everyone does everything the same way, because just like people, processes are invariably different. Even shared elements are somewhat different in the way they're used.

2. Can you give us a brief history of what led to 'big' monolithic applications in so many companies?

A hundred years ago, everyone went to the same place to work because if they didn't, they couldn't communicate. As businesses became larger, it became necessary to separate out functions. If you think about it, departmental structure is really nothing more than subdividing one process into elements that could be understood by individuals. As businesses became bigger in the 1930s, companies realized that they couldn't work successfully with anything that didn't fit within that model. They began buying up other businesses for necessary functions such as transportation that didn't have anything to do with their core business, simply because it was inefficient to work with external companies for functions of infrastructure. Eventually, this led to monolithic enterprises, characteristic of recent decades.

Likewise, computer business applications were written to follow this departmental, monolithic model. Early on, because of technical constraints, if a company didn't think through everything it needed from

the application and build it into this at the beginning, it was very hard to do anything about it later. This meant we ended up with monolithic applications that covered all possibilities.

But now we're starting to see enterprises return to their core businesses, and to spin off what doesn't fit. Along with that, the evolution toward web services is really about how everyone in an enterprise have shared services … yet a model of flexibility.

3. Organizations are struggling with getting decent Business Intelligence, single versions of the truth, compliance issues, and governance across their whole enterprise. Doesn't it suggest that a big system, all on one platform, is better as it helps enable this?

This question brings up the struggle that many companies face: if they have too many small pieces of data, and a lack of coordination about how they are managed, the company can end up suffering a cost financially as well as in terms of efficiency. And today, auditors insist that companies actually understand the whole picture about their processes, data, finances, and so forth. In fact, auditors say that systems must be compliant with the real world – what's stored in a company's records must match what the company is actually doing. This requirement, and the fact that so much of business is now faster and based on electronic communications, is breaking up that monolithic departmental structure.

This model is a fact of life. Compliance, Business Intelligence is all about reliable data and the pressure for reliable data is growing.

Data itself is inflexible. Enterprises must have a single version of the truth across the whole company. That's where data warehouses come in.

But running against that one set of data, that one data model, can be any number of services. This ends up providing the enterprise with the best of both worlds: one copy of the truth, but flexibility to use this truth in many ways.

4. Haven't most companies spent millions building these "big monolithic" systems. Are you suggesting they should replace them?

No. I'm suggesting that how businesses use monolithic applications is changing. Monolithic applications are great for capturing and protecting data about what companies do. But there is focus on how marketing can be better done, how to better understand customers, and how to build web services that actually drive revenue.

An article two years ago in Harvard Business Review asked the question, how can companies today really differentiate their businesses in the marketplace? The article concluded that in the back office, i.e. cutting costs or creating cheaper products, companies have a really hard time differentiating themselves competitively in this way these days. But in the front office, i.e. how they build and market services, how they connect with customers, they have a chance of creating that valuable differentiation.

This is why it is so important to be able to make decisions faster, and have multiple processes and possibilities all playing off the same set of data.

5. Why is it important for enterprises to move from 'big' monolithic applications to 'small' granular services… in other words, why change now?

The driving force in today's marketplace is externalization. After 9-11, everyone sought to cut back office costs as much as possible. But there comes a point when "one cannot save one's self to greatness." We've reached the bottom of the trough in what we can do to cut costs and save money. Now we need to find ways to penetrate newer niche markets, or grow business with customers with special interests or needs.

The only place left to grow business is in the marketplace. The only way to do that quickly and efficiently is with nimble applications which operate flexibly off a data set and that provide a single version of a particular company's truth.

6. What are the competitive benefits of making this transition?

You can't control the marketplace. All a company can do is ride with the marketplace changes and use them to create success. Of course, as soon as you say that, you've ruled out monolithic applications, because they are too hard to change. Earlier we talked about eBay, and that's really the perfect example here, too. eBay is never the same offering two months running. New services are continually being added as eBay keeps evolving to be what its customers want and need at that moment.

7. What are the challenges of making this transition?

The business challenge is that business people need to change the way they think about how they do things and start to start consider the art of what's possible. If people don't know what's possible or don't think about what's possible, they tend not to commission work. It's important for business people to rethink what business opportunities might be and how it would be possible to play the market or industry better.

The technical challenge is that now, there's a need to train people to do business analysis not on the big but on the small, to know how to assess and understand the granularity of each service.

8. What are three things enterprises must do to make this transition?

First, enterprises must decide on their business model. If a company is mostly cost driven, then this model won't work. If it is highly driven by change, then this model will work quite well. Some businesses, because of their industry, have a natural fit with this model. Also, an enterprise should define clearly how its business and IT models fit together.

Second, an enterprise must know how it will manage compliance. How will it transition from departmental management of compliance to a horizontal, enterprise wide management of data compliance? For many companies, that's quite a big change.

And third, an enterprise must pick the right strategic partners, such as Teradata, for technological help in achieving this model. It must choose the right partners for each technological layer, such as integration, architecture and so forth.

9. Are some industries more suited than others for this kind of transition?

Any industry which is inherently market driven, such as the financial and retail industries, or which must respond to change quickly will benefit more from this transition than industries which are less change driven, such as coal mining or the oil industry. One good example of this is Capital One. This company doesn't offer just a one-size-fits-all credit card; instead it offers many niche credit cards. As a result, Capital One has outgrown every other credit card vendor with its small application model playing off one set of data.

10. Any illustrative stories you can share of enterprises that have made the transition – or are in the process of doing so – and the benefits they've enjoyed?

One example is the success stories in the transportation industry – companies such as DHL, FedEx, and UPS. They're service orientated in the front office, but in the back office they operate from a consolidated infrastructure. This enables them to provide merchant services for small companies. They're quite well known for their flexibility built over a well-structured, well-managed core infrastructure. What's more, this combination of flexibility and infrastructure enables them to cope with an infinite variation of demands from their customers.

11. Do you foresee a business future in the next 3-5 years in which many or even most enterprises will make this transition? If so, why... and how will this transition across industries and enterprises impact the overall marketplace?

The last big change in the marketplace saw users empowered by the availability of IT on their desktops. Now that technology is ubiquitous, this has redefined the way people think and work.

Likewise, people have individually latched onto the World Wide Web and said, "that works for me." This means web services will keep building to the next level and customers will expect companies to provide these services flexibly and in a niche, more defined way.

12. Surely this means that data will need to be stored and used in smaller pieces?

What's imperative is the cohesiveness of data. Enterprises rely on data more than ever, so the data model must be more consistent and it becomes more important than ever.

In summary, information and the ability to use it flexibly is the lifeblood of any business.