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Performance Dashboards: Measuring, Monitoring and Managing Your Business

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Ben Plummer: Hello everyone. Welcome to the "Performance Dashboards: Measuring, Monitoring and Managing Your Business – Business Analytics Virtual Summit" presented by IBM Cognos. I'm Ben Plummer; I'm the Director of the Mid-Market Business Unit here at Cognos and we are very glad every one of you could join us today. We talk a lot about business analytics here and I would like to take just a moment and tell you a little bit more about what that really means.

Business analytics is broader than business intelligence, broader than performance management, broader than the regular planning and budgeting applications you are hearing. It is really about taking all of these disciplines and linking them together to be able to actually turn data into information, uncover the insights and value in that data, and then not stop there but really take action and be able to change your business and take a deeper look into what is impacting it and make the changes that are going to make your business more efficient.

Now this means a lot of things to a lot of different people and there are a lot of ways to enter this cycle and exit this cycle in any of these particular disciplines. But what we are really here to talk about today is the concept of how dashboarding and the value of dashboards in this particular cycle can change the way your business operates.

When we talk about dashboards in the business analytics vernacular, we are really talking about an entry point or a gateway to understanding what is going on in your business. It is a place where key performance indicators, plans, reports, style gauges, various points in your business that you want to keep close are actually presented and made available to you but that should never be a stopping point. And in a lot of technologies today that is exactly what it is. We believe it has to go deeper than that. We believe it has to be linked to many other parts of your overall business analytics solution.

And things like querying and reporting, analysis, the actual plans that you drive your business on have to be successful through this technology. And all of these things coming together is a bit of a different thing in a lot of organizations today and there is a lot out there in the market place to help you understand this. What we actually want to do today is introduce you to an expert in this field, someone we believe can give you deeper insights and understanding into how these technologies work in

businesses like yourselves in mid-sized companies today; and how you can bring these technologies to bear.

With that I would like to introduce you to our keynote speaker today. Wayne Eckerson is the Director of Research at the Data Warehousing Institute, a noted author and a recognized expert in the area of dashboarding and business intelligence, performance management and ultimately business analytics. So with that what I would like to do now is turn the presentation over to Wayne. Wayne?

Wayne Eckerson: Thanks Ben. It is certainly an honor to speak here at the IBM Cognos Virtual Summit. And I welcome everyone who is attending at this moment. So my topic is "Performance Dashboards: Measuring, Monitoring and Managing Your Business." I wrote a book by the same title that was published in 2005. And the second edition is being updated as we speak and should be available in the fall.

So when we look at the software market for mid-sized companies, a couple of requirements come to the forefront. First, since many mid-market companies don't have extensive IT departments or teams of developers, they typically want to purchase complete solutions, not component parts that IT specialists have to stitch together and maintain.

They also want solutions that are scaled to their environment and thus affordable, rather than an enterprise software that is geared to larger Fortune 500 companies.

Now from the user perspective, the solution typically needs to be tailored to their industry, functional area and the role that individuals play. And it also has to be very easy to use. The software shouldn't require extensive training which only adds to the cost and increases the risk that users won't remember how to use the products.

Finally, to ease the burden on understaffed IT departments at mid-sized companies, software solutions for mid-market should be easy to deploy and inexpensive to maintain. The solution should be close to a load-and-go as possible in order to speed deployment times and minimize costs.

So that is just a little bit about mid-market companies from a software perspective. I recently read a report titled "BI on a Limited Budget: Strategies for doing more with less." And this report should that

almost half of the companies that are executing or planning a BI project, a business intelligence project, are mid-sized companies with revenues under $500 million. And in fact if you look closely at the dark blue shaded area, 26% or just over one quarter of those companies have less than $100 million in annual revenues.

So at the Data Warehousing Institute where I work we have noticed the ascendancy of small mid-sized companies in the BI market for the past several years. Back in 2005 for example this was a trickle but now it seems to be a raging river. So if you are a small or mid-sized company, welcome to the world of business intelligence. As you will see from this session and other materials that we deliver at TDWI and present at our conferences, we firmly believe that BI is a powerful agent of organizational change.

From the same report I just mentioned, this chart shows that small and mid-sized companies are in various stages of BI maturity. In fact, except for the spike in companies with $100 million to $500 million in annual revenues in the beginner phase, small and mid-sized companies seem fairly evenly spread among beginner, intermediate and advanced deployments of business intelligence. So, while many SMB companies are just starting out, many are also well along the way in their BI journey.

This chart shows that small and medium sized businesses typically have fairly small BI budgets and that is not surprising. If you look closely at maturity, have less than $100,000 budget for BI which essentially means when you break it down they have one or two part-time people and maybe a software license or two to support on an annual basis. And not surprisingly even smaller companies have smaller budgets than they have on average.

So why BI teams at all companies were pinching pennies during this recent economic downturn, doing more with less is a normal state of affairs for small and medium sized businesses.

That report also delved into the strategies that companies of all sizes are using to do more with less during the downturn. At the top of the list as you see here among about two dozen different items was implementing self-service and BI tools, in other words tools that enable end users themselves to create their own views or reports. And this was followed by BI Competency Centers, cultivating a network of super users in each department and creating small, cross-functional BI teams.

So the blue bars in the chart represent a rating of very high and the maroon bars represent a rating of high. So self-service if we just focus on that which is something that a role-based interactive dashboard,

for instance, might deliver, achieved a 42% very high rating which is far greater than even the top vote getters listed here. So this indicates the power of self-service BI and I think by extension performance dashboards which do deliver self-service to help companies get the most out of their BI investments.

Now this chart and this will be the last for awhile, I promise, also shows dashboards topping the list. In this case the category of tools that companies have replaced in the past three years, which is indicated by the blue bars, or plan to replace in the next three years, indicated by the maroon bars. So you might ask, why are dashboards at the top of this list which also includes extract transformation and load tools, ad hoc reporting, standard reporting, integrated BI suites. Well until recently few vendors really offered bonafide dashboard products, at least in my opinion. Most were pedaling [wonderful] reporting or OLAP products and as a result many companies that really wanted a performance dashboard ended up having to build one for themselves.

And at this point as vendors have caught up to the market and have begun delivering legitimate and very robust dashboard products, many of those same companies have recently replaced their dashboard products with off-the-shelf products or plan to do so in the next couple of years. So at least that is my perspective.

So let's talk a little bit about why performance dashboards seems to be pervasive today. First of all, they are a visual metaphor that resonates with lots of users. We have finally found in a dashboard an interface that conforms to the way the majority of your users want to view and consume information and doesn't force them to conform to the way a tool works. More specifically users like performance dashboards because, one, they can monitor the status of several areas at once instead of using multiple tools to access various systems that they want to monitor data on on a regular basis. Two, the dashboard not only gathers all relevant data in one place, it displays it visually so that users can assess performance at a glance and take action. And three, better yet, dashboards alert users when there is something relevant to look at. In fact the best dashboards don't require users to log on and look at the dashboard to find something relevant, those dashboards find the users where they are be it wireless device or pager and alert them when there is something worth looking at.

And from there a dashboard lets users drill into details to find root causes. So what most people consider a dashboard, the graphical display of charts, is really just the tip of the iceberg. A dashboard as we will talk about later has all the supporting information users need to assess a situation and take action.

In addition, the best dashboards are tailored to individual roles. This improves usability, keeping users from having to navigate through lots of data to find what is relevant to them. And it makes it easier for developers to deploy new dashboards without having to recreate a solution from scratch each time.

Also dashboards are intuitive so users typically require very little training to get up and using them. And this obviously saves cost and time. And with the right skill and interactivity and level of detail, these performance dashboards can replace dozens, hundreds, or even thousands of existing reports.

Now this is a chart from my BI Maturity model which has five stages which are arrayed across the top as you can see, Pre-natal – Infant being one stage, Child, Teenager, Adult and Sage being the other four. The focus of BI evolves at the early stages from finding out what happened via reports to why it happened in the child stage, the OLAP and interactive reports, to what is happening now in the teenager stage via dashboards. To what will happen in the adult stage using predict models. And finally to what do we offer in the final stage using rules-based engines.

So if you look at the red and blue lines at the bottom which correspond to decision latency and data freshness, you see that the focus of BI during the first three stages is actually backward looking. It uses historical data to help an organization increase its awareness and understanding of what has happened in the past for the purpose of gaining insights and hopefully improving what they do in the future.

So now the next three stages flip the equation as you see those lines flip flop at the teenager stage right when we deploy dashboards. And here BI becomes more real-time and predictive, thanks to dashboards, and rules engines. And the focus is on delivering actionable information. A well designed dashboard really gives users timely information so they can proactively impact the outcome of something before it falls to the bottom line and it is too late to do anything about it.

So essentially good dashboards compel users to action.

So we have talked about the benefits of dashboards and their impact on user behavior. We haven't talked about what they are. To me a performance dashboard is a layered information delivery system that parcels out information, insights and alerts to users on an as-needed basis. A good performance dashboard doesn't force users to consume all of the data at once as if they are drinking from a fire hose. Rather it delivers the information that users need at the moment and fills out more information only as they request it. The beauty of a performance dashboard is really that the screen, the dashboard screen

itself, has limited real estate. As such, it really forces companies to make hard choices about what information is relevant to the people who are looking at that dashboard, what information do they really need to make impactful decisions and manage their areas. You can't fit everything on the screen so it really forces businesses to prioritize and select the metrics that display the things that will have the most impact on the business if managed properly.

Now, a lot of people think of dashboards as flat displays of objects with nothing behind them. Now to me, hopefully by this point you realize that is anathema. That is the furthest thing from the truth. So there are many pretenders to the throne of dashboards out there. And here are some of them: They are too flat. These dashboards as I have said have no layers and don't enable users to drill down into more information to find the root cause of a problem or obtain detailed data via reports. Often these types of dashboards are just prettified spreadsheets. Kind of like putting lipstick on a pig as some people say.

"Too isolated." The real danger with these dashboards is that they become another analytical silo in the organization that must eventually be integrated with common semantics and unified within an enterprise data architecture – isolated systems or shadow IT systems or spread marts or perhaps in this case we could call them dash marts.

"Too manual." People import data by hand into these types of dashboards which are usually an Excel spreadsheet, an Access database or a PowerPoint deck. This is fine for awhile but eventually collapses under its own weight. People spend more time collecting and massaging data than analyzing and acting on it.

And finally, "Too cheap." As in life, you get what you pay for in performance dashboards. As I have said, performance dashboards are full-fledged information systems, not technical tinker toys that can solve real problems for less than a few thousand dollars. So ultimately you are going to get what you pay for.

Now how do you design dashboards? This MAD framework that I am about to talk about I think is an ideal way to implement performance dashboard. It depicts the layers of information, the KPIs and the data, that a performance dashboard delivers on-demand.

So if we look at the shape of the pyramid, that represents the amount of data in KPIs at each layer. Most performance dashboards have about 10 to 12 top level KPIs, each of which cascades into 10 or

more KPIs or views of those top level KPIs at the middle layer. And each of those subsequently cascades into 10 more views at the bottom level for about a total of 1000 metrics or views. And this is a sufficiently sized sandbox for departmental solution.

Graphical data at the top layer is delivered via dashboards, core quad or portal interface. Summarized data at the middle layer is delivered via an OLAP tools such as a ROLAP or MOLAP tool. And detailed data at the bottom layer is delivered via query into the data warehouse or transaction system and returned typically in a report format.

Now each layer has an accompanied activity or application, monitor, analyze and drill for detail. Hence, the acronym MAD. And each level is used by all users, but each major group may start in a different place. Executives, for example, may start at the graphical layer, analyst typically start at the summarized layer, and workers at the detail layer. And each can go up or down a layer as desired. And typically the metrics or KPIs cascade down and the data rolls up these layers.

So a performance dashboard creates, as I have said, an interactive information sandbox that really is ideal for the needs of your casual users. These information sandboxes are typically a more elegant way to deliver self-service to casual users. And they usually contain about 12 metrics and 20 dimensions as I have already hinted at. And this size of a sandbox is big enough so most people, the executives and managers in each department will usually find what they are looking for but it is not something that they are going to get lost.

And finally, this size sandbox will typically meet 60% of the needs of 80% of the users, those casual users represented by your executives, your managers, and your frontline workers. Unfortunately most companies turn the pyramid upside down and to me this is insane not MAD. Systems that look like this overwhelm users with too much data delivered as reports. And each layer, as you can see, is supported by a different tool so that users have to switch between tools to move from one layer to the next. And usually the data is not well synchronized. So too much data, too many tools, too little consistent information resulting in too much confusion and inefficiency.

Now, performance management system contains or consists of an interlink business and technical architecture as depicted here. Performance metrics, which are circled, are the lynch pin that fasten the business and the technical architectures into a seamless whole. As you can see, the metrics sit at the bottom of the business architecture and as a result they really, if done properly/designed properly, embody an organization's approach to the layers above. In essence, performance metrics distill an

organization's strategy to serve its stakeholders, linking strategy to plans, tactics and processes using that common vocabulary. Obviously this is a lot to ask and it is no wonder that many organizations struggle to define performance metrics.

At the bottom of the screen, the performance dashboard which represents the technical architecture, encapsulates performance metrics in a layered information delivery system that lets users measure, monitor and manage the effectiveness of their tactics and progress towards achieving strategic objectives. A performance dashboard may consist of one or more dashboards, scorecards, reports and analytical tools that run off a common set of data and metrics. And collectively they enable users to identify problems and opportunities, collaborate on an approach, take action and adjust plans and goals accordingly. And each performance dashboard as depicted here uses a subset of components displayed in each level of the technical architecture based on the metrics and strategic objectives it is designed to support.

Dashboard sits in the middle of many applications, some of which are shown here. Many of these adjacent applications are being pulled closer into the dashboard orbit. For instance, planning and budgeting applications contribute goals that appear as targets in a dashboard. A predictive analytics application contributes scores that manifest themselves from reports on customer behavior in the detailed reporting layer of a dashboard. Collaboration software is increasingly being used to help people disseminate and discuss the results of dashboard insights. And finally transaction systems both contribute data to the dashboard and the dashboard can be used to update those transaction systems where appropriate.

So when I look at the future of performance dashboards, I think of double MAD. Next generation dashboards, I think, will incorporate functionality from some of these adjacent applications. For instance at the top layer a dashboard will incorporate what-if modeling tasks that are currently done in planning the applications. And the middle layer will incorporate predictive analytics and advanced visualization techniques while the bottom layer will enable users to deliberate with each other via collaboration software and act on the results by closing the loop of transaction systems. So by incorporating these adjacent applications, the modeling, the advanced analytics and the deliberation and acting creates another set of MAD capabilities to add with the existing MAD to create double MAD.

So that is the end of my presentation as really just a primer on performance dashboards. So at this point I would like to turn it back over to Ben Plummer to give you more details.

Ben Plummer: Thanks Wayne. That was a fantastic overview of a number of things, first of all, the challenges facing mid-market organizations today in terms of what they want to do and the resources they have there to do it. The fundamentals around what dashboards really mean and what they are and I think very importantly the concept of MAD and how that implies inside organizations to effectively define the way dashboards drive information down through their organizations and deliver the key performance indicators out there that organizations are really trying to get.

You made a lot of very interesting points about this needing to operate as a complete system, operate in an integrated manner and operate as dashboarding with a key component. And for all of the reasons that you just outlined, the last year we spent a lot of time designing, developing and delivering what we believe is one of the most integrated reporting analysis and planning application platforms in the mid-market with the IBM Cognos Express product. And I would like to take just a couple of minutes now to tie this back to some of the thoughts that you heard Wayne put out there and let you understand how we have developed and designed in some of these concepts directly into the Cognos Express technology.

IBM Cognos Express was designed, developed and delivered to market specifically with mid-market organizations in mind. And that means a lot of the things that you heard Wayne talk about in terms of budgets being stressed and the need to deliver full functionality, all of those things have gone directly into the design of the IBM Cognos Express product.

And what we really set out to do with this technology was deliver a product that was easy to install, easy for users to pick up and get value out of, and very easy for organizations to buy. And to do this we knew that we were going to have to purpose build this for companies of this type. We knew we had to deliver an integrated platform that delivered all functionality, not just bits and pieces that as you heard Wayne say had to be tied together by programming. We knew we had to take all those moving parts out. And for that reason we have really set out to have a pre-configured downloadable off of the web technology that has a set price point per each user class, whether that be users that need to start in dashboards as we have talked about or simply users that do reporting, analysis or operate exclusively in Excel doing budgeting and planning type of allocations.

So the IBM Cognos Express platform really has these core fundamentals that try to offset some of the IT challenges that mid-sized companies have when they are trying to deliver the functionality that you have heard Wayne talk about in terms of dashboarding and really full-function business analytics applications.

Now at the core of any good dashboarding system and that is truly what these are, systems, as you heard Wayne talk about, they are not standalone flat applications or spreadsheets from steroids so to speak. Technology like this has to exist. And with IBM Cognos Express we believe that that fits at the heart of any try dashboarding system. As you heard Wayne talk about in his MAD implementation, many of our customers today deliver dashboards at the executive and senior management level. These dashboards either being authored in the IBM Cognos Express Advisor Technology or in the Xcelerator technology for people who are more familiar with developing dashboard style reports in that product. But none of these are standalone. They really let you go completely through the cycle of gaining insight into the data, actually being able to drive down into the analysis of that data, whether that be through an OLAP environment which is, by the way, another piece of the technology that is completely integrated into Cognos Express. It comes with an in-memory OLAP technology that is capable of allowing you to twist and turn the data to gain the insight that you need to really go in and begin to make decisions. And then derive you directly into your planning and budgeting and forecasting style applications that operates, by the way, on that same integrated technology set using that same in-memory data structure where you can begin to make changes in your business plans, changes in your modeling, doing what-if analysis and driving that back into your dashboard, literally seeing the results, redelivered immediately, and seeing the impact of those decisions on your KPIs and your metrics within your organization.

And this circular approach being enabled through this completely integrated IBM Cognos Express technology with the underlying in-memory technology behind it really allows mid-sized companies to accelerate their delivery of these types of applications and gain the maximum value that larger enterprises with much larger budgets are getting today using some of the enterprise technologies out there on the market.

So we believe that IBM Cognos Express is a complete enabler to this concept of dashboarding, and as we like to say it is the only integrated reporting, analysis and planning solution on the market today for mid-sized companies, purpose built for them. And actually after listening to Wayne's presentation today, I would probably take that a step further and say that it is the only integrated dashboarding analysis, reporting and planning solution for mid-sized companies today, allowing them to gain the value out of everything you heard Wayne talk about in his presentation.

With that, I would like to thank each and every one of you for attending the presentation. There is going to be a lot of other opportunities through the Virtual Summit to actually gain some additional insight into the IBM Cognos Express technology, how it is going to add value to your dashboarding application inside your mid-sized organization. And I encourage all of you to take advantage of the various capabilities and the various presentations being delivered throughout the day. Thank you once again to Wayne. Fantastic presentation. And thanks and enjoy the rest of your time in the Virtual Summit.