5 KEY TRENDS IN THE EVOLUTION OF BI TOOLS AND THEIR IMPLEMENTATION

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Not very long ago, the world of business intelligence tools was a relatively sleepy and stable market, deployed to an array of executives and business analysts. Of course, in reality, it was much more complicated but in the grand scheme, it was homogenous. All tools essentially generated some strain of SQL, often used a business layer of terms (semantic layer) to hide the complexity, and sometimes produced cubes, which were special offline files. While everyone pretended these were the primary reporting and analysis tools, the truth was that they just continued to depend more and more on Microsoft Excel.

There has been a dramatic change in the past six years and an enormous explosion of tools that use completely new approaches and architectures. There are a number of causal factors, some of the more significant ones are:

- The Cloud emerged as a viable enterprise platform (thanks to Amazon) providing a new model for technology startups that dramatically lowered development and marketing cost barriers. Significantly, the economic downturn of 2009 coincided with the first serious enterprise adoption of the Cloud Software as a Service (SaaS) models. Companies such as SalesForce had already been growing rapidly but the need to cut enterprise costs broke the core resistance to adoption.

- The rise of the app culture or the consumerization of IT has raised expectations. What we have gotten used to in our personal lives is being demanded in our working lives. This means mobile apps that serve a specific purpose, not unwieldy applications with hundreds of features. In contrast, small apps do a few things very well and serve up data just the way we want it. If we do not like an app, we just delete it and get another one.

- The adoption of big data is challenging data warehousing. This indirectly challenges Business Intelligence (BI) because it has been strongly associated with data warehousing and the use of relational databases. Big data has ushered in relational data storage options. In turn, this has led to the creation of new BI tools to support them, energized the concept of data science, and brought it into the mainstream. The result has been another wave of tools that sit in a grey area between BI and data science. These tools are cutting edge and exciting but also are the least ready for an average business user.

- The big tool vendors became complacent, slowed their pace of innovation, and lost track of the competition around them. Maybe it was due to being acquired, maybe not. Now, they are desperately trying to prevent the erosion of market share.

- Open Source has proven to be a powerful catalyst for innovation. It is not new, but looking back you can really see the tremendous impact of associations and communities such as Apache. They have provided a model for big data, NoSQL, and BI tool development projects and their momentum is steadily accelerating.
These causal factors have resulted in the following trends:

**Trend #1 – SaaS applications are increasing the amount of build-in reports and report building tools**

SaaS applications are gaining widespread adoption and are being used to run larger and larger portions of the enterprise—for example, Workday, SuccessFactors, and SalesForce (for sales, service, support).

These very comprehensive applications include a robust set of management reports, and reporting and analysis tool capability that is native to the application. This capability is consuming the traditional domain of BI tools, where applications would first replicate data into a data warehouse and then a third party BI tool would take over. Now the user can sit in the same comfortable application environment and work on built reports or building custom reports.

**Trend #2 – Rise of the data scientist and their wide array of tools**

BI is gradually giving way to embedded intelligence (see trend #5 below) and the emphasis is on shifting from historic reporting to prediction. The result is the emergence of data science as a key enterprise role and core discipline. The responsibilities of this role are to explore, test, hypothesize, and discover new advanced statistical models that can be used to optimize business functions. In order to accomplish it, the data scientist needs access to a broad array of specialized tools including: programming languages, statistical, advanced visualization, machine learning, data transformation, and BI. The implication is that analytic work that was once the responsibility of business analysts is being put in the hands of these specialists. As a result, the need for sophisticated BI and statistical tools deployed to the masses is being reduced.

**Trend #3 – Renewed importance of the developer - Mobile Apps and dashboards**

The general theme behind BI has been to remove the developer from the equation by providing tools with rich functionality and ease of use. Consequently, power users’ could develop their own reports, dashboards, and analytics. The major change has been the evolution of mobile apps and the desire for a consumer level experience in the corporate world. This is pushing up expectations for interactivity, visualization, and ease of use, across a broad spectrum of devices. Tool vendors have responded with capabilities that are geared for developers, and packed with JavaScript, HTML5, and CSS. This is a clear sign that we have reached a level of sophistication that business analyst, will never reach.

**Trend #4 – Blending of real-time and in-memory, blurring the line between operational and data warehouse reporting**

The holy grail of management reporting has always been the desire to provide results in real-time without the lag between the time business transactions occur in an operational system and the time it takes for the data to replicate into the data warehouse. With the rise of in-memory computing, that goal is being realized and will soon be fully achieved. While this is a good thing, it will blur the distinction between
what is an operational system and what is an analytics system. Consequently, it will be no longer be acceptable for BI to use one tool for running the business and switch to other tools for reporting and analyzing how the business is doing. Users, irrespective of being a desk clerk or an executive, will not find it acceptable to flip between tools just because they think of an operational vs. analytic question. The result will be a single unified reporting environment with pre-built content that will cut deeply into the desire for a general BI tool that sits apart from core business applications.

**Trend #5 – Embedded intelligence replacing self-service BI**, the central theme of BI, was to empower the user community by providing data and a good BI tool. The notion was that they would service their own needs by performing analysis and building reports. The degree to which this was successful is debatable. A cynic might argue that it was really just an effort by IT to push cost to the business and it never worked effectively. An optimist may say it worked very well and it forced the business to develop a level of data skills that are the basis for the next generation of innovation. However, a realist might conclude that the results were mixed and largely tied to the people and process skills in each organization. What is also clear is that the simple notion of empowerment of the general workforce is a thing of the past. The best organizations are no longer asking people to pull their own information, analyze it, and decide what to do. Instead, they are using analytic models that alert, make recommendations and predictions that are pushed out as needed to their employees. Increasingly they are pushing that information inside the operational applications that they use every day. For example, in the old days, supply-chain managers may wait until the end of the week to pull supplier on-time performance trends. They would sit with that report next to their computer and negotiate contracts during the following week. Their manager would trust that they have actually pulled accurate information and that they are faithfully applying it to all the deals they are negotiating. The catch is that the information will become more stale every day and therefore less accurate. Contrast this with embedded intelligence. As the supply chain manager is working on a draft PO within the purchasing system, an alert notifies them of the suppliers recent out of threshold on-time performance, based on their history and the track record of competing suppliers. The system also alerts them to a raw material constraint in the market that is the legitimate cause for the delay. Finally, a recommendation on the terms is made based on this analysis. This is an example of the seamless use of embedded intelligence, where historical data, algorithms, open market data, and business rules were all used in real-time to assist the employee to make the optimal decision. This is clearly more desirable and the next generation beyond self-service BI.

**Recommendation**

The general conclusion is to stop making large investments in general SQL based BI tool suites with the intent to deploy them to everyone in the organization. Instead, step back and examine your existing application portfolio against the trends mentioned above, and plan to shift investment over time to the appropriate tool categories. In parallel, initiate an effort to assess the inventory of existing reports with an eye on retiring unused reports or turning them into opportunities for implementing embedded intelligence. Finally, grow your internal data science and development expertise, and the processes around it, to support the emerging trends.
How HCL can help

HCL’s Business Analytics Services provides a reference architecture for making key BI decisions about architecture, tools, organizational structure, security and processes.

It is used by CIOs and businesses with large shadow IT budgets to prescribe how to move forward with the adoption of an array of emerging BI options including:

- Cloud
- Real-time
- In-memory
- Mobile
- Embedded intelligence

HCL has incorporated its 18 years of experience implementing 150+ large, complex BI implementations into the unique BI Pathways strategy assessment and roadmap approach that aligns with current and future business requirements and key trends.

For more information, please contact HCL at ets.bis@hcl.com.

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John Wills leads HCL’s global Center of Excellence Business Analytic Services with responsibilities for solution development, labs, intellectual property and knowledge management.

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