FIVE STEPS FOR DELIVERING SELF-SERVICE BUSINESS INTELLIGENCE TO EVERYONE

Wayne Eckerson

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Self-service has been the holy grail of business intelligence (BI) for the past 15 years. It promises to liberate business users from their dependency on the information technology (IT) team so they can create the reports they need, when they need them, and how they want them. Yet, despite its promise and the many self-service BI tools on the market, few organisations have unlocked the mystery of self-service BI and reaped its benefits.

The problem with self-service BI is that it's more complex than it appears. There isn't one self-service BI tool that meets the needs of all business users. In fact, there are as many self-service BI tools as there are types of users. In many ways, self-service BI is in the eyes of the beholder. For an executive, self-service BI means he can click on a chart and drill down into detail, while a data scientist sees self-service as an analytical workbench with built-in support for ad hoc queries, data formatting, and visualisation.

Thus, the key to self-service BI involves mapping users and their information requirements to types of tools on the market. Follow the five steps below to expedite your pilgrimage to self-service BI success:

Information Builders

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STEP NO. 1:
KNOW YOUR BUSINESS USERS

Business users come in two varieties: casual users and power users. Casual users, such as executives, managers, and front-line workers, use information to do their jobs but don't spend much time analysing data. They want quick access to information to monitor processes for which they are accountable, to make decisions, and to perform a modicum of root-cause analysis. They need to access data via a Web browser or mobile devices, and while off-line. They want to view only data that is relevant to them, and they rarely go on information-fishing expeditions to uncover new trends and insights. In fact, if they spend too much time analysing data, they are probably not doing their real jobs.

In contrast, power users, such as business analysts and data scientists, are hired to access, manipulate, analyse, model, and share information on a full-time basis. They are data experts who combine their knowledge of the business, its processes and data to generate valuable insights. They access data anywhere they can find it, and the more the better. They share this information with business executives and managers to whom they report, usually in the form of spreadsheets or ad hoc reports and dashboards. The more sophisticated power users generate predictive models that anticipate customer and market behavior.

The classic mistake that BI managers make is to give casual users tools that are better suited to power users, and vice versa. Casual users are easily overwhelmed by the features, functions, and options available in power-user tools, while power users find little use for lightweight casual user tools, except as glorified extraction tools to dump data into Excel.

STEP NO. 2:
CREATE A TAXONOMY OF INFORMATION REQUIREMENTS

The second step is to create a taxonomy of information requirements that you can map to types of casual and power users that you've identified in your user classification above.

At a macro level, business users either consume or produce information. Casual users mostly consume information produced by others, and rarely produce it. Powers users both consume and produce information, which make them tricky to manage, at least for a BI professional. At a micro level, the requirements of both information consumers and producers range along a functional hierarchy from novice to advanced, as depicted in Figure 1.

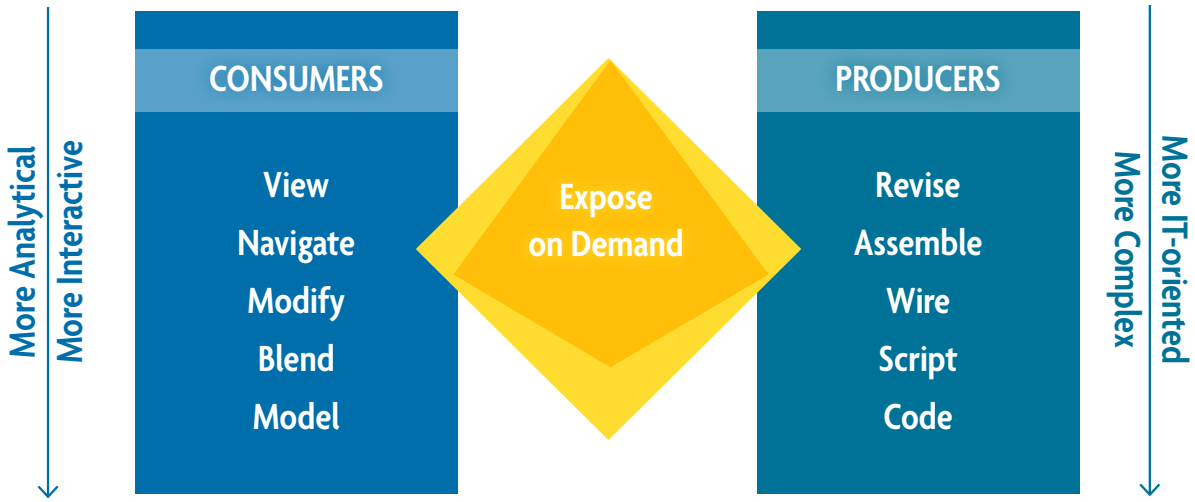

Figure 1. Hierarchies of Information Requirements

For example, novice consumers only view reports and don't interact with them. As their information needs and skills grow, novice consumers might navigate data dimensionally (i.e., drill down, up, or across) and later modify data by re-sorting columns, changing chart types, or adding new calculated columns. More sophisticated consumers blend existing data with new sources of data and model data using "what if" or more advanced statistical or machine learning algorithms.

Producers, on the other hand, produce new reports from scratch. A novice producer may simply revise an existing report by changing its look and feel or views of data. From there, producers assemble new reports from predefined set of data objects (i.e., a semantic layer) or libraries of predefined report objects (i.e. charts, tables, and controls). More sophisticated producers use graphical design tools that enable them to wire together data and functionality to create more robust applications. These producers may also write scripts or programming code to create robust custom analytic applications.

Establishing a hierarchy of information requirements is a critical step toward mapping users to the right self-service BI tools.

STEP NO. 3: MAP USERS TO REQUIREMENTS

The next step is to map types of users to their information requirements. This is a pretty straightforward process if you've classified your users and created an information requirements taxonomy. Figure 2 shows a high-level mapping for power and casual users and BI developers using the taxonomy from Figure 1. You will want to create a more detailed mapping based on the nuances of your users and their information requirements.

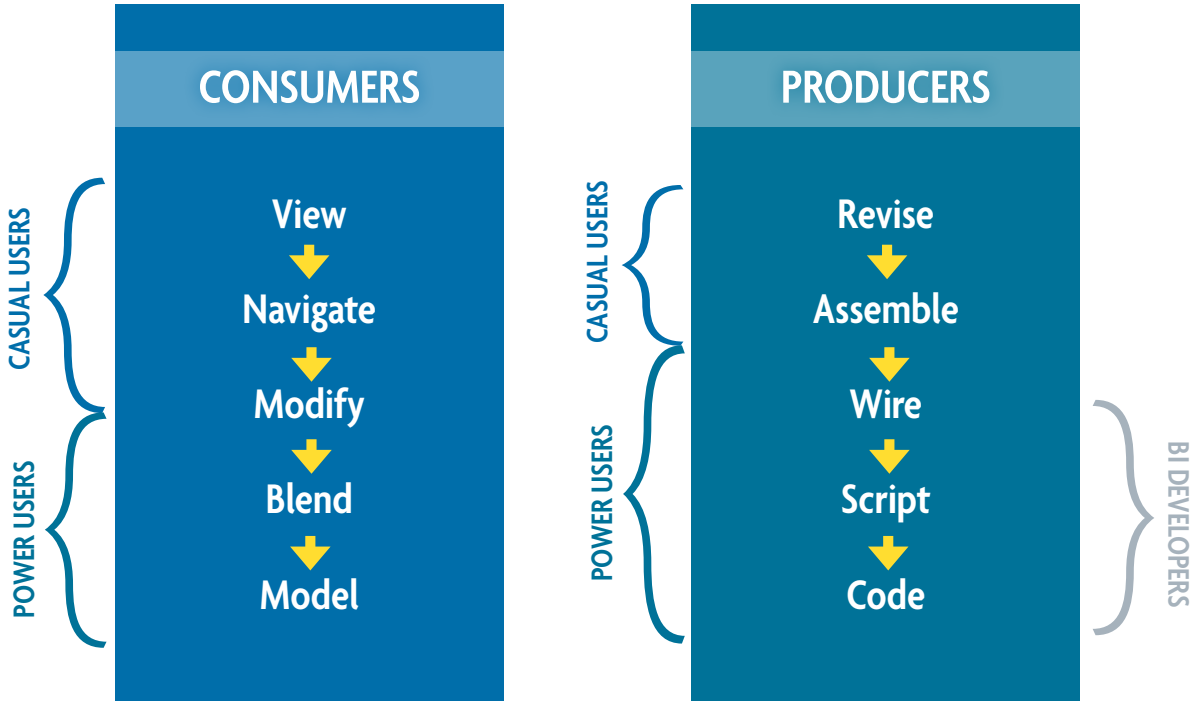

Figure 2. Mapping Requirements to Users

STEP NO. 4:
MAP USER TYPES TO TOOL TYPES

The next task is to identify appropriate types of tools for different kinds of business users in your organisation and the analytical tasks they perform. This requires some knowledge of the industry and its tools. If you don't have this expertise, you may need to talk to an industry analyst or obtain a relevant report from leading research firms, such as Eckerson Group, Gartner, or Forrester Research.

I typically use an 80/20 rule to map user types to tool types. (See Figure 3). In my experience, 80% of the time, casual users simply want to view or navigate metrics that represent the core processes for which they are accountable. They want data and views tailored to their individual roles and tasks, which makes the tools easy and intuitive to use. In most cases, the ideal self-service BI tool for casual users is an interactive dashboard.

	80% of the time		20% of the time	
CASUAL USERS	Task	Tools	Task	Tools
Executives	View	Interactive dashboard	Create queries	Super users
Managers	Navigate		Create plans	
Workers	View/Select	Custom	Create reports	
POWER USERS	Task	Tools	Task	Tools
Super users	Ad hoc reports	Self-service BI	View, navigate, and modify	Interactive dashboard
Business analysts	Explore, plan, share	Visual discovery		
Statisticians	Create models	Statistical tools		
Data scientists	Access/mash data	SQL, Java, Hive		
	Tailored Reporting		**Ad Hoc Analysis**	

Figure 3. Mapping Users to Tool Types

For example, executives usually view the high-level metrics in a dashboard without interacting with it, while managers typically drill down a level or two and perhaps modify the view by re-sorting the data or creating a new calculated column.

Front-line workers, on the other hand, need a custom dashboard or application with a built-in expert system that gives them a menu of options for completing a task. For instance, the custom application might give a shipping dispatcher three options for sending a package based on available trucks and drivers. The dispatcher selects one option based on his experience that will deliver the optimum results (i.e., on-time delivery at lowest cost). A sophisticated information producer, typically a trained application developer, will need to create this type of application.

Sticky point. A big problem with self-service BI is that users aren't easily confined to a single role or a single type of information requirement. About 20% of the time, casual users want to act like power users and modify, explore, and model data in an ad hoc fashion. Unfortunately, the current generation of casual users doesn't have the skills or patience to perform these types of tasks.

Consequently, I often recommend supplementing casual user tools with "super users"— business users who know how to revise or assemble new reports for their departmental colleagues. The need for super users will diminish over time as a new generation of workers weaned on computers and data-driven applications enters the workforce.

Power users have sizable information requirements, spanning most of the functional hierarchy of both information consumers and producers. They need a portfolio of tools to match the analysis they need to conduct and share. These tools range from ad hoc query and reporting and visual discovery tools to SQL, Hive, and data mining tools. Of course, sometimes (20%) power users act just like casual users and need to check the progress of their own business processes. In this case, all they need is a dashboard or standard report.

STEP NO. 5: SELECT A TOOL

The final step in self-service BI is to select tools that suit each user type and align with the information requirements for each. Fortunately, many BI vendors now offer the entire slate of BI capabilities so you can get everything you need from a single vendor. However, not every vendor offers best-of-breed capabilities for every type of requirement, so you need to carefully assess your options before selecting a product.

To support self-service BI, especially for casual users, BI applications need to gracefully expose functionality as needed. Casual users often get overwhelmed by features and functions designed for power users, which they'll never use. Casual users want simple, intuitive, easy-to-use applications. The best BI tools hide ad hoc functionality from casual users until they need and want it. Either users can turn on the functionality by clicking an icon, or administrators can expose the functionality from a back-end module.

Better yet, current BI tools, following in the footsteps of mobile applications, dynamically display functions based on tasks that users perform. So if a user views a chart, the tool exposes functions for switching chart types, formatting axes and adding trends lines, among other things. These functions disappear when users highlight another object in the display. The result is a clean, intuitive user interface that makes it easy to perform fairly routine tasks and activities.

CONCLUSION

Self-service BI has been an elusive goal for many BI managers. Most underestimate the complexity of self-service BI. They don't realise there are many types of self-service BI. And they never rigorously classify their business users and their information requirements. For self-service BI to succeed, BI managers need to map types of users to types of tools so users get a tailored experience that aligns with their skills, interests, and information requirements. This is not hard, but it takes discipline and time. Following the five steps in this report can simplify the process and help you achieve success with self-service BI.