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Harness Your SAP Data with User-Driven Dashboards

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Introduction

It isn't unusual for SAP ERP owners to feel pangs of buyer's remorse. It's not that the data collected isn't useful or that the process automation doesn't help. But any large implementation of an ERP system is a two-step process. First, the software must be configured and implemented and the whole company must start using it. For most companies, this process, however unpleasant or painful, leads to a better situation.

The remorse comes in the second step, when it comes time to get the data *out* of the ERP system and make use of the data to optimize a company's business. There are two major problems that fall into the domain of business intelligence. The first is getting the data out of many applications like SAP R/3 or SAP ERP, SAP CRM, SAP SCM into one unified, non-duplicated form. The second is combining that data with other sources to enrich it, add context, and make it useful for analyzing business performance. SAP customers have often been frustrated at the time and expense involved in these two steps so that users can get information to answer urgent questions. Horror stories abound of companies spending years and millions of dollars installing such systems, with little to show for the effort. These are inevitably the result of the inflexible, monolithic software architecture shared by solutions from SAP, IBM, Oracle, and Microsoft—which might be collectively referred to as "Big BI." One solution is to provide business users with tools marrying the powerful backend of Big BI with a more flexible interface, offering them the opportunity to answer their own questions and unlock their capacity for innovation.

This paper aims to explain how SAP owners and other Big BI customers can unlock the value of their data by putting a new generation of tools in the hands of their employees—an idea known as "user-driven innovation."

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The Problems of Big BI

SAP ERP was invented to solve the problems of human error: how do you calculate, automate, and illuminate processes that are inefficient and undefined? ERP's task was to distill the essence of a business into information and then to harness that information to automate processes and drive improved performance.
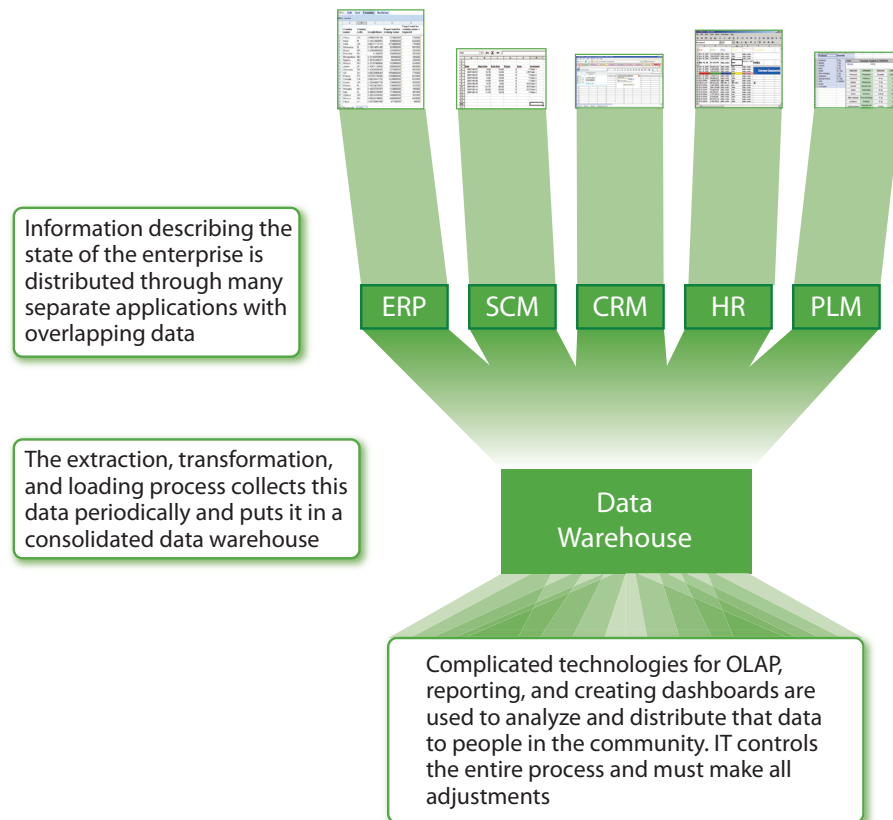
The Road to Big BI

Business intelligence was later created to solve the corresponding problem of creating one version of the truth from many overlapping sources, extracting, transforming and loading data into data marts and warehouses, and then analyzing it for insights as shown in Figure 1. Business intelligence applications had to be as robust as the ERP systems they complemented, hence the industrial-strength offerings of Big BI.

Big BI was up to the challenge of cleansing and consolidating many disparate streams of data, but when it came time to mine the data for insights and deliver discoveries to business users, Big BI broke down completely. Companies now routinely expend significant resources on teams of consultants to create reports from crucial repositories of ERP like the sales orders, invoices, or the materials master, often with mixed results and occasionally with disastrous ones. And any attempt to make changes to analysis and reporting structures after the fact only guarantees the process will drag on forever.

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User-Driven Innovation Is Impossible with Big BI Systems

Information describing the state of the enterprise is distributed through many separate applications with overlapping data

| ERP | SCM | CRM | HR | PLM |

The extraction, transformation, and loading process collects this data periodically and puts it in a consolidated data warehouse

Data Warehouse

Complicated technologies for OLAP, reporting, and creating dashboards are used to analyze and distribute that data to people in the community. IT controls the entire process and must make all adjustments

Big BI serves a useful purpose in most companies, consolidating data to create a single version of the truth

But with Big BI, creating reports, dashboards, and other visualizations of data is too difficult for users without help from IT

Figure 1: The Typical Structure of Big BI

Unacceptable Delays

At one company we spoke with that was attempting to use a traditional data warehouse, the consultants estimated it would take a year to create all the needed reports to provide the ability to track inventory. A decade ago perhaps that would have been acceptable, but not in today's business world.

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Too often, business intelligence never lived up to its name—it failed to offer actual *intelligence* to organizations, delivering only static reports measuring a handful of standard KPIs. It's never been capable of extending its abilities to managers on the front lines where BI's insights are needed most and where decisions are made. Instead of granular reports or oversimplified dashboards, users need information they can analyze and explore on their own terms, hunting for their own answers. ERP's potential to continuously improve an enterprise will never be fulfilled unless we find a way to bring the data locked in SAP (or other Big BI systems) to the users. How can we empower them to make their own associations and intuitive leaps?

Big BI and Sticky Information

Why is it important to put the ability to ask and answer questions into the hands of everyday users? When data is stored inside Big BI, it is trapped because only those with advanced knowledge of how to create queries can get the information out. MIT professor Eric von Hippel coined the term "sticky knowledge" to describe information that is difficult to obtain, transfer, and employ in contexts other than where it originated. Perhaps the stickiest form of knowledge is the highly specific context in which you perform your job. How many of your personal insights and inspirations are unspoken? How many of your relationships are informal and unmapped on any org chart? And how would you go about explaining this to anyone? Would you even know which questions to ask? The sticky information is not the data in your SAP system but is endemic to the business context you are exploring.

Seen through this lens, the reason Big BI has such difficulties addressing the needs of users is that IT must first accurately understand the needs of business users, which is sticky knowledge, and communicate it to the analysts creating the mechanisms and reports meant to serve the needs of business users. By its very nature, much can be lost in the translation. IT professionals do not always understand what business users want and need. If someone wants to answer a question, first they must explain that question to someone who can write the query and extract the information. The problem is only compounded by the intermediation of complicated analysis and reporting tools that introduce delays.

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This is why any ERP or BI implementation inevitably creates a mountain of work for IT—because the IT department is engaged in trying to consolidate an unknowably vast quantity of decentralized, unstructured, organic, and very sticky information in the hopes of understanding it better than the users themselves. It is not impossible to make traditional dashboards work, just difficult and frustrating most of the time because of the need to explain requirements, translate them into dashboards, and revisit each time something gets lost in the translation (which then forces another round of revisions to the dashboards in question).
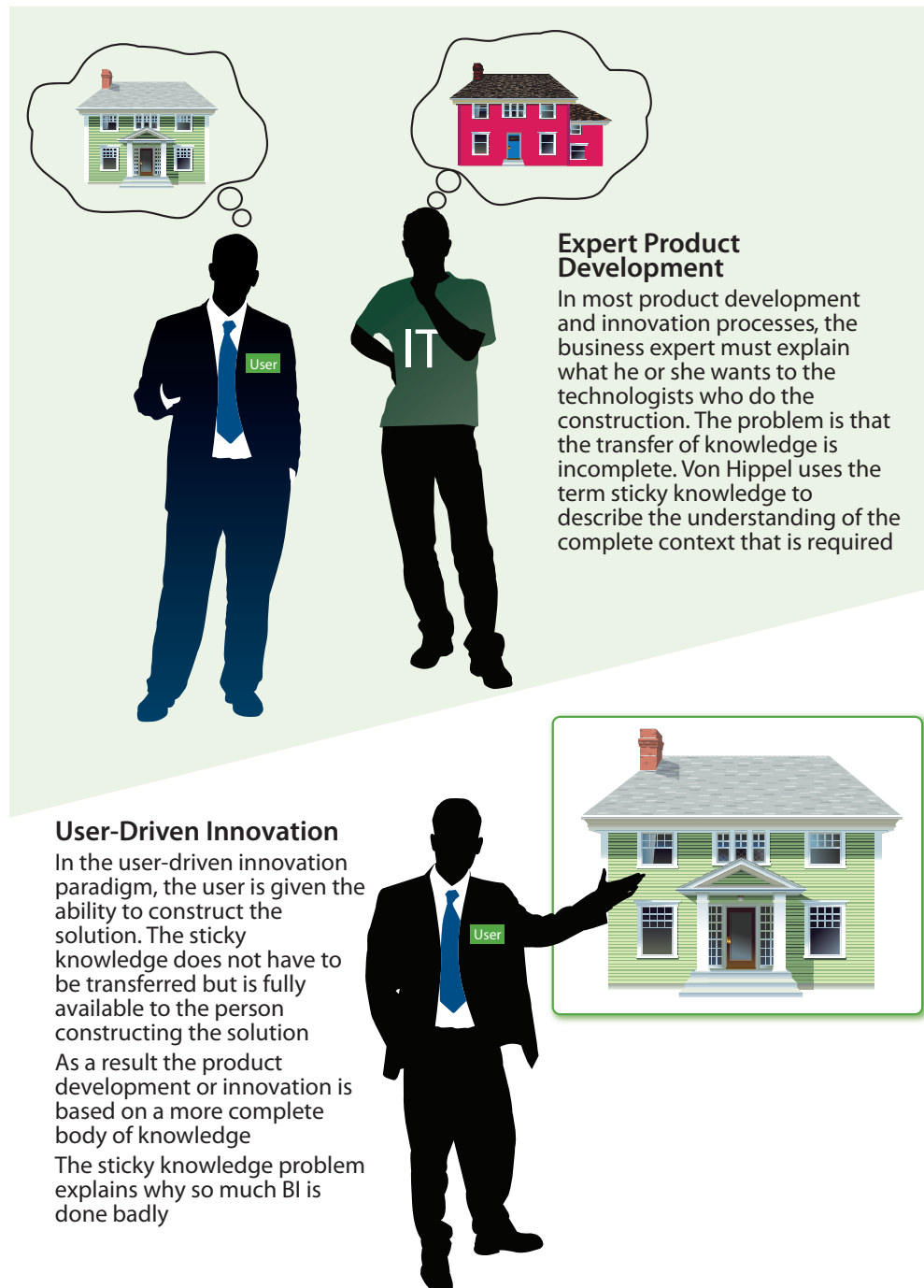
Power to the People: User-Driven Innovation

As a solution to the problems caused by sticky knowledge, Eric von Hippel proposed that users do the work themselves, an idea he dubbed "user-driven innovation" (see Figure 2). Users, he noted, have a tendency to refine and improve products and services to meet their needs, and then pass the improvements back to the creator. In this way, he argued, users could help companies innovate more quickly and inexpensively than the IT department could. The key was placing the right tools in the hands of the people, an untapped force von Hippel described in his books *Sources of Innovation* and *Democratizing Innovation* as "the dark matter of innovation."

With that in mind, why not provide business users with the means to perform their own analysis? Thanks to Moore's Law[1] and falling memory prices, it's now possible to combine SAP ERP and other systems such as CRM and supplier management with applications like QlikView built on associative in-memory architectures. These tools allow anyone to access data from ERP, create associations between the pertinent data sets, and hunt for insights themselves. These associations might be based on the common view of the data consolidated by Big BI or they might be spontaneously defined by users based on their own hunches. Given the opportunity to ask and answer their own questions, users produce immediate results instead of waiting a year for the materials master to be finished. They're able to harvest their own low-hanging fruit and continue a dialogue uninterrupted by ERP and IT's intermediation.

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1 Formulated by Intel co-founder Gordon Moore, Moore's Law states that computing power, as measured by the number of transistors that can be efficiently placed on an integrated circuit, doubles every two years.

Expert Product Development

In most product development and innovation processes, the business expert must explain what he or she wants to the technologists who do the construction. The problem is that the transfer of knowledge is incomplete. Von Hippel uses the term sticky knowledge to describe the understanding of the complete context that is required

User-Driven Innovation

In the user-driven innovation paradigm, the user is given the ability to construct the solution. The sticky knowledge does not have to be transferred but is fully available to the person constructing the solution

As a result the product development or innovation is based on a more complete body of knowledge

The sticky knowledge problem explains why so much BI is done badly

Figure 2: Sticky Knowledge and User-Driven Innovation

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The result of deploying user-controlled tools like QlikView is a flood of sudden under-standing followed by innovation as users discover previously hidden insights in the data and gradually comprehend how the business processes truly operate. It's not just that they have a better view of the business; it's that the ERP system itself becomes fine-tuned over time, as the people using it are finally able to see the results of their decisions and actions—and what they can do to make it better.

QlikView: Helping You Unlock the Power of Big BI

QlikView is a new kind of business intelligence application built around associative in-memory architecture. QlikView's goal is simple: to help customers explore and visualize data that enables them to personally find answers and share sticky knowl-edge. Because QlikView allows users to control the means of asking and answering questions and of building dashboards, the benefits of user-driven innovation can be applied to Big BI. QlikView's alternative view of BI can be summarized in three steps:

- Consolidate: Identify related data sets, map the associations between them, and load them all into memory
- Search: Explore the data using "list boxes," which display the unique values in each field and that can be highlighted and aggregated. Both information included and excluded from the selection criteria is displayed and updated instantly
- Visualize: Maps, charts, and assorted graphics can be created and instantly updated

QlikView aims to increase your chances of making genuine discoveries and eliminates much of the grind of Big BI:

- No SQL queries, no middleman: You click to select data and click again to de-select it
- Matching and non-matching data are displayed: You can see what is highlighted, and what is not highlighted. You can see which data was excluded and see what happens when you mix it in
- No waiting: The answers are right in front of you

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The idea behind QlikView is that closing the loop on asking questions and encouraging individual exploration leads to better answers, insights, and innovation. It does this by replacing database queries and cubes with its associative in-memory architecture. Rather than precalculating answers, the software loads data sets into memory and maps the associations between them. Because it's associative, there are no predetermined paths and no precalculations—you can layer as many metrics and ask as many questions as you like. Because it's all done in-memory, the answers are returned instantly and updated continuously. Your BI is no longer as good as your IT department's last cube—it's as good as the questions you ask.

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