Enabling Agile Business Intelligence with Balanced Insight Consensus®
Executive Summary

Agile BI has reached a tipping point. Broadly recognized by analysts and technologists as a powerful alternative to traditional business intelligence (BI) development approaches, Agile BI offers viable solutions to many longstanding delivery challenges, including:

- Insufficient IT-business collaboration
- Excessively long development cycles
- Blown budgets
- Static documentation that is out-of-date before go-live
- Low end-user satisfaction and adoption rates.

The bottom line is that organizations in a wide range of industries have adopted Agile BI approaches to reduce BI project costs, shorten delivery timelines, and promote stronger collaboration between IT and business users.

As you will see, the question has become not if or whether to embrace Agile BI, but rather exactly when and precisely how. Specifically, that means choosing which projects or business units would benefit most from the rapid development of an easy-to-consume BI application. And it also means selecting an Agile BI delivery tool that enables efficient, cost-effective and low-risk migration to Agile BI. The ideal tool also complements existing and future BI technology investments.

As highlighted on the ensuing pages, Balanced Insight Consensus® offers unique advantages in BI project delivery, as well as superior functionality and flexibility for Agile BI. The Consensus vision is for business-driven BI – putting users (traditionally the missing link in BI development) at the heart of the process through “top-down” requirements definition and rapid prototyping.

This white paper will highlight the key business issues and typical project delivery challenges addressed by Agile BI and Balanced Insight Consensus, and demonstrate why Consensus has been hailed as the leader in the Agile BI space.
Introducing Agile BI

Given the difficulty that many organizations have faced in delivering the BI applications their managers and executives need to understand performance and make critical business decisions, it’s not surprising that an alternative development approach is being embraced. Indeed, there is a broad and growing consensus that Agile BI’s time has come. Significant momentum has been building, and Agile BI is on its way to becoming the industry standard for BI project delivery. In April 2010, Forrester published “Agile BI Out of the Box,” which defined key selection parameters for Agile BI tools and recommended that companies make the change. Other analysts (including Gartner) issued reports that highlighted how best to apply Agile BI principles and the specific ways in which it is superior to traditional delivery approaches.

At the simplest level, Agile BI refers to the use of the agile software development methodology for BI projects. (See sidebar for our holistic definition of Agile BI.) BI delivery teams have discovered they can realize significant benefits from these methods because the agile approach solves several fundamental and longstanding challenges to effective BI delivery:

- **Rising Demand:** Demand for information about business performance has risen dramatically. (The Information Age could just as well be called the BI Age.) BI delivery teams have a large backlog of projects from business users looking for more information to support their decisions. But it’s not just more information users want; it’s more information faster. Agile BI helps IT meet the imperatives for quantity and speed in unlocking the full value of data assets.

- **Flexibility:** The agile methodology is designed to adjust to changing requirements – and BI requirements change more frequently and profoundly than those for nearly all other types of software projects. In fact, in a 2010 survey of 200 business and IT executives conducted by Forrester, 67% of respondents said that BI requirements change at least monthly. A full 20% of respondents said their BI requirements change on a daily basis. Such changes wreak havoc on the traditional waterfall delivery cycle, yet they are inevitable during the lifetime of any BI project.

- **User Engagement:** The great strength of the agile methodology is that it fosters collaboration between IT and the business. While traditional approaches have struggled to place user needs at the core of the process. Agile BI is all about giving users faster access to functionality and more opportunities to provide feedback. Ultimately, user engagement equates to higher user satisfaction and adoption rates.

**Defining Our Terms: What is Agile BI Delivery?**

For more than 20 years, custom software development teams have used a mature toolset of agile delivery methods like Scrum and Extreme Programming (XP) to deliver a broad range of software in critical business functions. Agile BI refers to the application of the agile software development methodology to the project delivery and development of business intelligence applications. Specifically, that means an iterative process noted for rapid prototype development through a series of “Sprints” to produce specific functionality that is shared with users, who are given full and repeated opportunities to provide feedback.

But the principles of Agile BI extend beyond the realm of software development to enable operational and organizational agility – the ability to execute nimbly and efficiently, and respond rapidly to new markets and opportunities. The point is, Agile BI is as much about how BI applications are used and what they enable businesses to do, as it is about how the applications themselves are built.
Manageable Scope: Budget overruns and blown schedules can damage IT's credibility, besides costing the company real money. Because Agile BI focuses on the delivery of smaller sets of functionality in shorter time periods, projects are driven by business defined scope and value. Project timelines and budgets can be tracked in smaller units, and users pay for the value defined. Avoiding scope creep is good news, but it's better news that these budgets are significantly smaller and the project timelines much shorter.

Lower Costs, Higher Value: Agile methods in BI have a strong track record in reducing project costs and shortening timelines. Further, because project budgets are aligned to high-priority deliverables and outcomes – that is, high-powered, easy-to-consume applications that users like and that meet real and urgent business needs – overall technology ROI also increases.

Agile BI with Balanced Insight Consensus®

The key to driving an Agile BI project is minimizing project management overhead, reusing existing assets, and automating inefficient manual tasks. Aligning your project budgets to deliverables and outcomes generates more value – that is, high-powered, easy-to-understand, easy-to-consume business intelligence solutions that users like and that meet real business needs.

The following high level workflow illustrates how an organization would use Balanced Insight Consensus® to automate their Agile BI process. See figure 1.

Figure 1. Balanced Insight Consensus automates the Agile BI process.

Now let’s look more closely at these process steps and the unique features and capabilities of Balanced Insight Consensus, and how it fulfills the promise of Agile BI at each step of the development process, from requirements gathering and engagement with the business, to scope management, to execution and delivery. The drivers we will investigate are:

- User Stories & “Just in Time” Elaboration
- Product & Sprint Backlog Management
- Sprinting ahead to “Potentially Shippable Code”
User Stories & “Just-in-Time” Elaboration

User stories are project components consisting of two to three sentences that serve as a starting point for a conversation between business sponsors and developers. The dialog that ensues between the key stakeholders elaborates on the details and tasks involved to deliver the specific functionality within a BI solution. In Consensus, Requirement and Question Artifacts are leveraged to capture user stories and the broad parameters of a feature set. See figure 2.

Figure 2. User stories are captured in Balanced Insight Consensus Requirement and Question artifacts.

Compare this approach to traditional waterfall methods and you will find your team spending weeks fleshing out verbose requirements documents with massive amounts of detail. While the documents may seem impressive, the time to develop them is not well spent, because the requirements have changed before the documents can be printed or emailed. The documentation will be stale well before the team writes a line of code. Agile BI, and Consensus, embraces this reality with the user story approach, allowing the business sponsor to elaborate on requirements in a “just-in-time” manner, immediately prior to the beginning of the new feature’s development. Further, User Stories codify the “voice of the business” in the development process and, ultimately, in the final solution.
Product and Sprint Backlog Management

A BI project consists of a collection of user stories and the development team must manage them carefully, both in terms of their importance to users and the degree of difficulty in implementing them. User stories need to be categorized in one of two ways: Product Backlog or Sprint Backlog.

A Product Backlog is simply a list of things that need to be done. A key tenet of the agile methodology, a Sprint is a miniature delivery lifecycle designed to produce specific functionality. The Sprint Backlog is a highly visible “to-do” list of user stories prioritized for the team to deliver in the current or next Sprint.

Managing the backlog is all about speed to implementation. Based on a team's velocity – that is, the approximate number of story points historically possible for the team to complete during the multi-week sprint timeframe – the highest priority user stories in the Product Backlog become the Sprint Backlog.

The Product Backlog in Consensus represents the set of defined, unimplemented user stories currently prioritized for delivery. The user stories are ordered by their relative priority, and they are given a story point estimate, which is a high-level, relative weighting that measures difficulty of implementation. For example, a user story that is difficult to implement might be rated with 3 story points, whereas a simple user story might be rated only 1.

The Product Backlog and Sprint Backlog can be viewed and managed in Consensus by tagging Requirement and Question artifacts with Consensus Organizational Unit Artifacts. See figure 3.

Figure 3. Sprint and Product Backlogs are easily managed in Consensus.
After a Sprint and with every business sponsor and user interaction, the team can consider how changing business priorities may warrant a re-prioritization of user stories in the Product Backlog. Further, reflecting on each previous Sprint, the team may also identify lessons learned and delivery innovations that can be used to increase quality and speed of future Sprints and functionality.

The Product and Sprint backlogs within Consensus very simply keep BI project teams focused on delivering the highest-priority functionality, even as priorities change, month to month and quarter to quarter. Further, they offer a record of ongoing dialogue with the business, making reprioritizations of functionality and requirements just that much easier to manage. Waterfall methods, by contrast, try to fix priorities once and for all in impractical and unrealistic fashion. The “development in a vacuum” approach that results is a significant factor in low satisfaction rates with BI tools developed by traditional means. Lessons learned are largely lost and continuous improvement becomes nearly impossible in the context of long development cycles and irregular feedback loops.

Sprinting Ahead to “Potentially Shippable Code”

Each Sprint follows a series of clearly defined steps as the team:

1. takes a user story from the Sprint Backlog,
2. discusses and validates the user story with a business representative or user,
3. rapidly builds a prototype aligned to requirements and scope,
4. develops and tests potentially shippable code, and
5. reviews and gains acceptance from an end-user or representative of the business.

During the Sprint, user stories recorded in Consensus Requirements Artifacts are elaborated and refined with the business representative. The design is fleshed out in detail and modeled as the business sees them in Consensus Topic and Information Package artifacts. A simple user story like “As a sales manager I need to see total profit per salesperson” might be elaborated into an Information Package as shown in Figure 4.

Information Packages

An Information Package is a technology-agnostic requirements consolidation and modeling format unique to Consensus. Information Packages are critical to organizing data so that users can ultimately view it in a variety of helpful ways, supporting a group of related questions that the business representative is implying based on their requirements. Figure 4 highlights how a user may answer questions regarding both profit and revenue measures, by date and by salesperson. Further, Consensus supports aggregations of the measure data by sales manager, geographical areas, and various time periods. Flexibility is built in.
Figure 4. Consensus Information Packages are multi-dimensional, so they can answer questions regarding profit and revenue measures, by date and by salesperson, and then aggregate data by sales manager, geographical areas, and various time periods.

Though users may articulate the lowest grain of the information they need, it is also important to understand the navigation path users would likely to take to reach granular data. Conversely, it’s valuable to consider how that data might be aggregated upward into broader reports. Consensus is designed to support such logical navigation and aggregation through reusable Topic Artifacts. For instance, a senior sales executive can view results by country, region, and/or territory, as well as by individual sales rep. See figure 5.

Consensus Topic and Information Package artifacts consolidate user requirements in a non-technical way and serve as an excellent discussion tool to facilitate collaboration with business sponsors. Users can more clearly see the relationship between data sets and types of information, and also gain a stronger sense of what BI tools are capable of.
Figure 5: Consensus breaks down simple user stories into broader sets of related questions and views during Sprints.

Rapid Prototyping

The heart of the agile methodology, particularly as it’s used in BI, is rapid prototyping that enables developers to take user stories, consolidate them in business models, and create a working sample solution within existing BI tools that can be reviewed with a business representative. These prototypes help development team members understand user stories to the appropriate level of detail, and business users recognize the technical challenges involved in delivering effective BI apps. They are also useful in garnering valuable buy-in and excitement from business users by showing them that the solution will answer the business questions they’ve defined, as well as related secondary questions that they are likely to ask in the future. (See sidebar, The Three Immutable Laws of Rapid Prototyping.)

The Three Immutable Laws of Rapid Prototyping

In our experience, rapid prototyping is the heart of Agile BI and subject to three immutable laws, and Consensus is designed to help organizations take full advantage of them:

1. The Agile Law of Prototype Malleability: The value of a prototype is directly proportional to how easy it is to modify. If it takes effort to change a prototype in response to user feedback, then fewer prototyping iterations will be undertaken and the value of the prototyping effort diminishes. Prototype generation in Consensus requires only a few clicks and a few minutes. Valuable feedback from business representatives can then be incorporated in Consensus and a new prototype can be generated with the same small effort. This approach allows for multiple iterations to occur during a single meeting. Compare that to traditional approaches which require long waits between major “releases.”

2. The Agile Law of Prototype Commutability: A prototype is only as valuable as it is representative of the end solution. Users do not need the extra challenge of imagining what given functionality will look like in their standard tool. Creating a prototype in the BI platform already in place for users, giving them an opportunity to interact with the prototype in the same way they will interact with the end solution. The prototype has all the functionality of the end solution, including standard functionality provided by the BI tool (like save as PDF and export to Excel). Thus, they will be able to articulate exactly what works and which features need improvement. After a few iterations, if your users tell you they are happy with the prototype, you can be confident they will be happy with the end solution. And the confidence levels of the business sponsors and the BI delivery team increase dramatically.

3. The Agile Law of Prototype Lucidity: A prototype is only as valuable as the new insights it brings to what ultimately needs to be built. Prototypes created with Consensus allow delivery teams to gain a new perspective and keener understanding on requirements, and provide business users an opportunity to see that some of their ideas may have been strong in theory, but aren’t necessary in practice.

These three prototyping laws are critical guardrails to ensuring that your Agile BI delivery approach delivers all the quality and rigor that users expect.
Consensus automatically will produce these prototypes for you, as well as going a step further – generation of a full working prototype with sample data in the BI tool used by the business every day. See Figures 6-7

Figure 6: Consensus makes it easy to generate full working prototypes in the very BI tools and platforms used by the business every day.

Figure 7: A solution generated by Consensus in Oracle OBIEE and Oracle Answers. With automation driving rapid prototyping, BI delivery teams can quickly move from requirements to functionality.
Consensus allows the same Information Package(s) to be deployed to any number of other business intelligence environments simply by selecting a new target BI tool, like Microsoft Analysis Services, IBM Cognos, SAP Business Objects, Microstrategy or various other popular tools. In this way, Consensus bridges the gap between requirements gathering and actual outputs. See figure 8.

Figure 8. A solution generated by Consensus in Microsoft SQL Server Analysis Services utilizing the same Information Package from Figures 6-7.

From a technical perspective, Consensus generates the star schema data mart tables and builds the Business Intelligence tool semantics and potentially Online Analytical Processing (OLAP) Cube on top of them. The rich metadata and well-defined hierarchies pushed from Consensus make self-service capabilities available “out of the box” from tools such as Microsoft Excel or IBI WebFOCUS. This approach provides a perfect tool to verify that all expected business questions can be answered correctly and all needed usability features are present. Reports, interactive dashboards and other user-friendly features can be built upon this environment to evolve the prototype into the end solution, ensuring traceability from prototype approval to final solution.

Consensus ensures that code is reusable for new BI apps, or for other projects seeking to leverage solution designs across platforms. This speaks to core of the Agile promise, and the unique benefits of Consensus. It’s not architected as “rip and replace.” Existing information assets are reusable, as well as the new assets (User Stories, Information Packages and code) created by Consensus. They can be quickly and efficiently deployed for new apps and functionalities across the business, different projects, and different tools.

The output of each Sprint is an iteration of the solution that is potentially production ready and could be shipped to give end users a subset of target functionality. After a sprint, queries might be slow, full drill-down capabilities may not yet be available and data not fully scrubbed. But it’s critical to remember that partial functionality in a few weeks is better than no functionality for several months. The idea is to give users a sense of the end product. This early view will help elucidate any data surprises that would have otherwise shown up dangerously close to the full solution go-live date. But, to some extent, the sprint is just the beginning, as further business-IT interaction enables the solution to keep getting better.
By automating the prototyping process, Consensus offers a significant advantage over conventional BI software and tools, and traditional waterfall approaches, where prototyping is often manual and occurs very early in the requirements process, if at all. Consensus allows changes to be made easily at multiple levels of the prototype (like at the Information Package level). This means new, updated prototypes can be more quickly regenerated – literally, with only a few clicks. Prototypes with incremental enhancements of functionality give the business a constant flow of new information support based on prioritized needs, leading to stronger decision making as the project progresses. Strong buy-in and support from the business usually follows as users experience firsthand the power and benefits of advanced BI applications.

When prototypes are created manually within a BI tool, developers must touch multiple systems – writing new SQL scripts to generate data marts, generating those marts in the platform, refining the semantic layer in the BI tools and so on. Consensus generates all of this, maximizing your staff productivity and standardizing your technical architecture.

Consensus prototypes also look and feel like end solutions, with real data and interfaces that mimic the end environment, where many traditionally developed prototypes are mocked-up wire frames with little or no interactivity. The more accurately prototypes reflect end solutions and all requirements, the more effective the end solution will be. See sidebar, The Three Immutable Laws of Rapid Prototyping.

**Bridging the Delivery Gap**

Traditional waterfall methods are overwhelmed by changing requirements. The end result is a delivery gap (see Figure 9), which occurs when IT delivers a solution that meets requirements as stated during previous gathering phases, not what the business needs at the time of delivery. BI veterans are all too familiar with this situation.

*Figure 9. The delivery gap is a common problem in business intelligence.*

Within Agile BI and Balanced Insight Consensus, this challenge is the engine by which solutions are delivered. In a fixed and finite world, where one set of requirements applies forever (or even for a year), there would be no need for Agile BI. But Agile BI reflects the reality that requirements change when business conditions and informational needs change. The delivery of a series of controlled-scope releases in quick succession puts practice over theory and gives users a chance to refine requirements, restate preferences and make suggestions on usability based on hands-on experience with a working prototype.
A leading energy/utility company was focused on a simple but profound business question: What is the effect of customer notification activities on revenue collection? The goal was to understand which channel – email, snail mail or outbound calls – yielded the best results in terms of increased collections.

The company first attempted to extend its existing business intelligence solution using traditional approaches, but gave up on the project because it was too expensive and time consuming. Then, the delivery team turned to Agile BI and Consensus.

With Consensus, the Balanced Insight Agile BI solution resulted in a clear definition of the required functionality. In just two weeks, operational managers had access to the data and insights necessary to optimize collection activities and boost cash flow. The benefits of Agile BI and Consensus also included reduced delivery cycle times and lower project costs.

### Fast – 1/2 the time
Customers go live 50-75% faster than with traditional approaches

<table>
<thead>
<tr>
<th></th>
<th>Traditional Approach</th>
<th>With Consensus</th>
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<tbody>
<tr>
<td>People</td>
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<td>4 people</td>
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<tr>
<td>Duration</td>
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<td>2 weeks</td>
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<tr>
<td>Hours</td>
<td>3,600 hours</td>
<td>350 hours</td>
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### Productive – 1/2 the cost
Business intelligence delivery productivity doubles, while reducing budgets 50-75%  

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<tr>
<th></th>
<th>Traditional Approach</th>
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### Engaging – IT-Business Collaboration – Early and Often
With user involvement in the development process, adoption rates soar and projected benefits get realized.

<table>
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Next Steps: Making the Move to Agile BI

Organizations often want to know how to facilitate the move to Agile BI. Specifically, what’s the first step to take? In our experience, a small-scale BI delivery project aligned to meet a discrete business need is the best place to start.

When bringing Agile BI delivery to your organization, consider the following checklist:

- Assemble a team of developers and business representatives to work together
- Decide whether business representatives on the team should be business stakeholders or technical leads/liaisons with a strong handle on business needs
- Identify and prioritize appropriate user stories or requirements to address during an initial project
- Select specific functionality for a two- or three-week Sprint
- Assess various Agile BI delivery tools that can integrate with your existing data warehouse and BI environment
- Move into development and prepare to iterate.

Certainly organizations new to Agile BI should recognize how it’s something of a way of life once you get started. Many organizations never view traditional development the same way again. We believe this is all the more reason to move forward with Agile BI.

The Industry on Balanced Insight Consensus

“Consensus is the “missing ingredient” for our Agile Data Warehousing(TM) methodology. Consensus gets business users thinking and agreeing about warehouse requirements and designs instead of trading endless emails. With Consensus we arrive at approved prototypes quickly, bypassing lengthy committee reviews and getting us a green light to start development months earlier than before.”

–Ralph Hughes, Chief Systems Architect, Ceregenics, and lead author of Agile Data Warehousing.

“Consensus delivers an unbelievable value to the clients by really addressing data warehouse agility and bridging the business/IT gap. Companies that take advantage of Consensus’ features will develop more accurate scope based on the ability to assist business people in articulating their needs and then rapidly deliver a mock up of the BI solution.”

– Wayne Eckerson, Director of Research, The Data Warehouse Institute (TDWI)
“Balanced Insight Consensus has had a profound impact on how ICC delivers business intelligence solutions. We view Consensus as a true differentiator for ICC and been able to drive down implementation timelines for BI solutions.”

– Don Jackson, Director of Business Intelligence, Information Control Corporation

“I was blown away on how fast Balanced Insight Consensus translated my business requirements into the proper data model. Literally this occurred with a push of a button.”

– Julie Shannon, Independent BI Consultant

About Balanced Insight

Balanced Insight is revolutionizing how IT and business users experience business intelligence delivery. Delivering Agile BI capabilities “out of the box,” Balanced Insight Consensus® enables IT to provide unprecedented value to business users, empowering them to engage in BI development like never before. The results? Consensus enhances speed of deployment, collaboration and productivity throughout the development process, increases end-user satisfaction, reduces costs, and complements existing BI technologies. Balanced Insight was founded in 2008 by technologist, innovator and author Tom Hammergren.