TDWI BEST PRACTICES REPORT

Achieving Greater Agility with Business Intelligence

Improving Speed and Flexibility for BI, Analytics, and Data Warehousing

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TDWI RESEARCH

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Agenda

- About this report: Why agility is important
- Disruptive factors driving need for agility
- Managed self-service BI, analytics, and data access
  - *Overcoming barriers to self-service*
- Addressing new and changing data requirements
  - *Data virtualization and unified access to structured/unstructured*
- Data management and integration to address agility needs
- Agile methods for better user-developer collaboration
  - *Increasing speed, productivity, and quality*
- Recommendations and Q&A

Getting Agile: Important Topic at TDWI

TDWI Educational Activities

- This TDWI Best Practices Report & Webinar, “Achieving Greater Agility with Business Intelligence”
- June 2012: Began joint research by TDWI and Ceregenics, Inc.: “Adoption of Agile Methods Among Business Intelligence and Data Warehousing Development Teams”; more to come
- 2013 TDWI Executive Summit (August 19-21, San Diego): Agile will be the theme
- TDWI World Conference and other educational events with sessions devoted to agile methods & best practices
- Webinars, blogs, and more about how to improve overall agility with BI, analytics, and data warehousing

About the TDWI Best Practices Reports Series

- Educating technical and business professionals about new technologies, concepts, or approaches that address a significant problem or issue
- Survey of business/IT pros focused on business intelligence, analytics, data warehousing, and information management
- Research interviews with user organizations and technology experts in the industry
- The result: 30+ page report, Webinar, presentations, blogs, tweets, and more

Recent Best Practices Report Topics

- High-Performance Data Warehousing
- Customer Analytics in the Age of Social Media
- Next-Generation Master Data Management
- Mobile Business Intelligence & Analytics
- Big Data Analytics

Why Agility is “The Talk” of BI & Data Warehousing

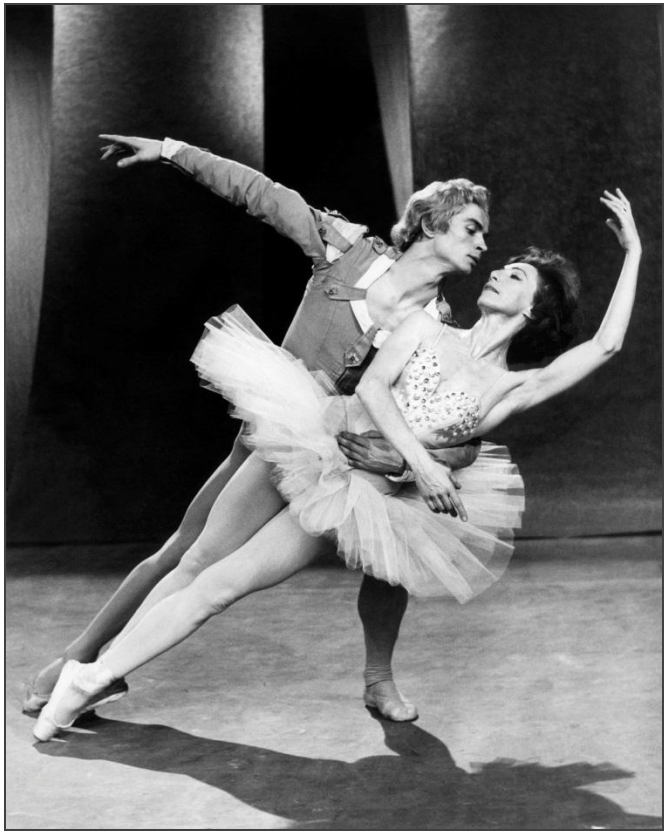
- **Agility:** Ability to sense change, adjust, and take advantage of unexpected opportunities
- Speed and flexibility are competitive advantages
- TDWI Research: Most organizations regard their agility as “average”; 1:6 say “poor” and just 1:10 say “excellent”
- TDWI June 2012 Tech Survey: slow development time is the biggest “big data” challenge (more than the three “V’s”)

Agility and Growth of the Analytics Culture

- Data is the fuel for “competing on analytics”
- Demand rising for data access and analysis across enterprise
- Expectation that all decisions, strategic, tactical, and operational, be data-driven
- Analytics is about discovery, innovation, and flexibility
- Data investments under scrutiny: Are you getting enough value from your data? Raising value with business analytics

“Quick, Easy Grace”: Agile Is About More Than Speed

- **Balance and direction**: relying on a strong but flexible core infrastructure that can deliver when called upon
- Using BI, analytics and DW to find the right decision-making balance between snap, one-off decisions and rigid, “the way we’ve always done it”



Flexibility, Speed – And Better Business/IT Collaboration

- Agile innovation depends on a collaborative relationship between business users and IT developers
- Need ability to refine BI apps over time as users become familiar with the data and visualizations
- With big data flowing in, users turn to “shadow” IT when too frustrated

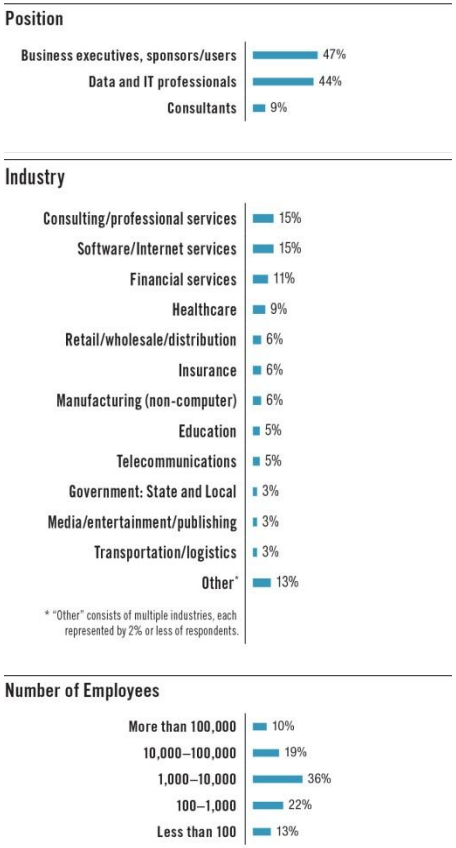
Three Key Areas of Tech and Practice Innovation

- **Managed Self-Service BI and Analytic Data Discovery**
  - *Tools that allow users to access, analyze, profile, cleanse, transform, and share information without having to wait for IT developers*
  - *Unified access to structured and unstructured data*
  - *Access to current (even real-time) information in operational systems, but without degrading performance*

- **Data Warehousing and Integration Options, Including Virtualization**
  - *Data federation and virtualization for managed self-service access*
  - *Potential for common data access layer and better governance*

- **Agile Development Methods**
  - *Removing wait and waste due to waterfall development methods*

Research Methodology and Demographics



Survey Methodology

- August 2012: Invitations sent via e-mail to TDWI professional community (business/IT executives, directors of BI/DW, business/data analysts, IT application managers, other data management professionals)
- 408 total responses; 295 fully complete survey responses

Survey Demographics

- Largest percentage was business executives and sponsors/users; includes business/data analysts (47%)
- Data and IT professionals (44%); Independent consultants (9%)
- *Industries:* Consulting/professional services (15%); software/Internet services (15%); financial services (11%); healthcare (9%); 53% U.S. respondents; 18% Europe
- 36% from organizations with 1,000 – 10,000 employees; 29% with 10,000+ employees (10% with more than 100,000)

Other Research Methods

- Interviews with executives and managers, data architects, business/data analysts, industry experts

Disruptive Factors Driving the Need for Agility

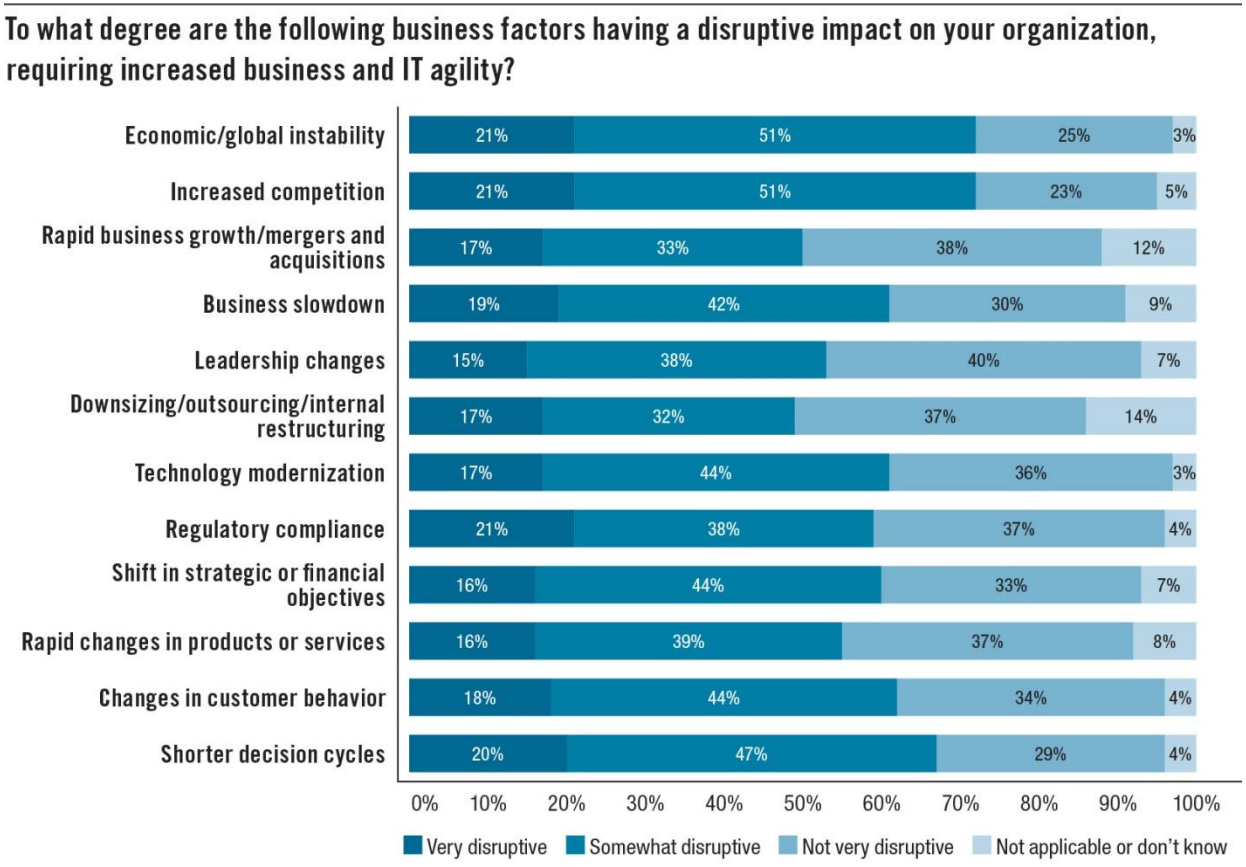


Figure 1. *Based on answers from 402 respondents; about 12 responses per respondent, on average.*

Faster Decision Cycles: Applying Speed to Insight

- TDWI Research: 2/3 of respondents say shorter decision cycles are “disruptive” and require increased agility
- Using information to speed the process of getting from the beginning to the end of a “decision cycle”
- Analyzing data and feeding insights to decision makers sooner and more frequently
- Automated decisions: turning insights into algorithms

Responding to Disruption: The City of Charlotte

- "Decision cycles are getting tighter….The downside of making the wrong decision – or not making the right one quickly enough – is getting deeper." – *Jim Raper, Mgr. of Technology Dept.'s data admin team for the City of Charlotte*
- Innovative "BI Olympiad": Finding most innovative way of visualizing and analyzing data in the face of major disruption
- Using Tableau to quickly dig into data and create visualizations

User Satisfaction with Data: Critical to Business Agility

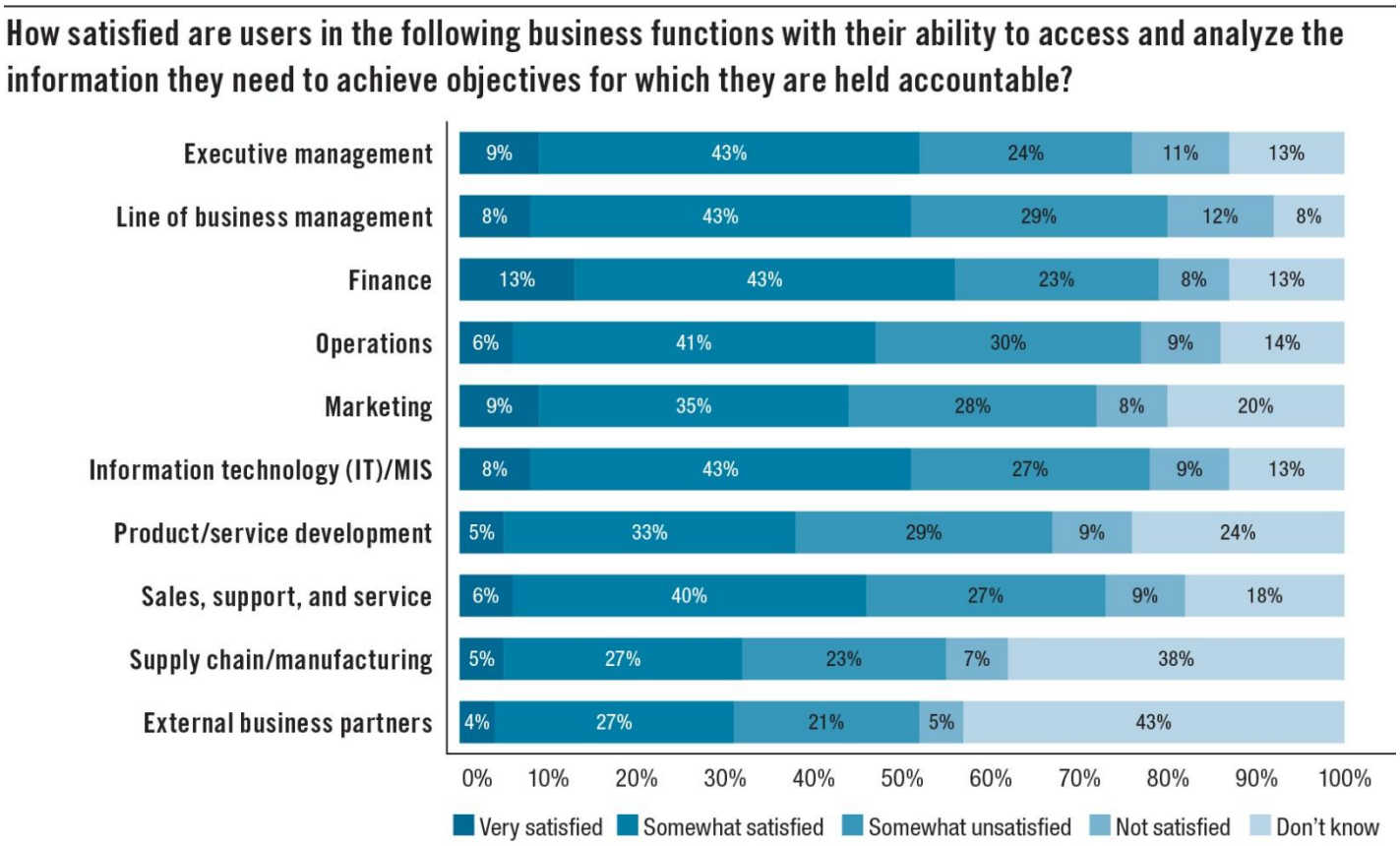


Figure 2. *Based on answers from 408 respondents; about 10 responses per respondent, on average.*

Supplying Users with Diverse But Relevant Data

- **The big data paradox:** Capturing more data and more diverse data can lead to information overload and inability to isolate what is most relevant
  - *Needed: tools and practices to reduce the noise and improve focus on critical data*
  - *Demand for semantically rich, context-sensitive data integration, enabling querying of more varied data sources; role for virtualization*

- **Unifying access to structured and unstructured data**: More than 3/4 of TDWI Research respondents said this is important to users' analysis and collaboration on information
  - *Unified information access (UIA) tools integrate search, text analytics, and BI to reduce the need for multiple interfaces*
  - *Users need to reach sources that are relevant but not represented in the BI system's metadata*

Meeting the Challenge of Satisfying Diverse Users

- Executives, managers, and front-line workers have distinct needs, which are difficult to satisfy with "one size fits all" BI systems
- Educating users about *the data*, not just how to use the tools; pushing technology into the background
- **Cleveland Clinic**: Using SAP BusinessObjects for enterprise performance management: putting focus on what the data says
- Giving authority to governance boards to share performance metrics definition, ensure buy-in

“Managed” Self-Service BI and Analytics: Hot Trend

What are your organization’s main reasons for implementing self-service BI and analytics?

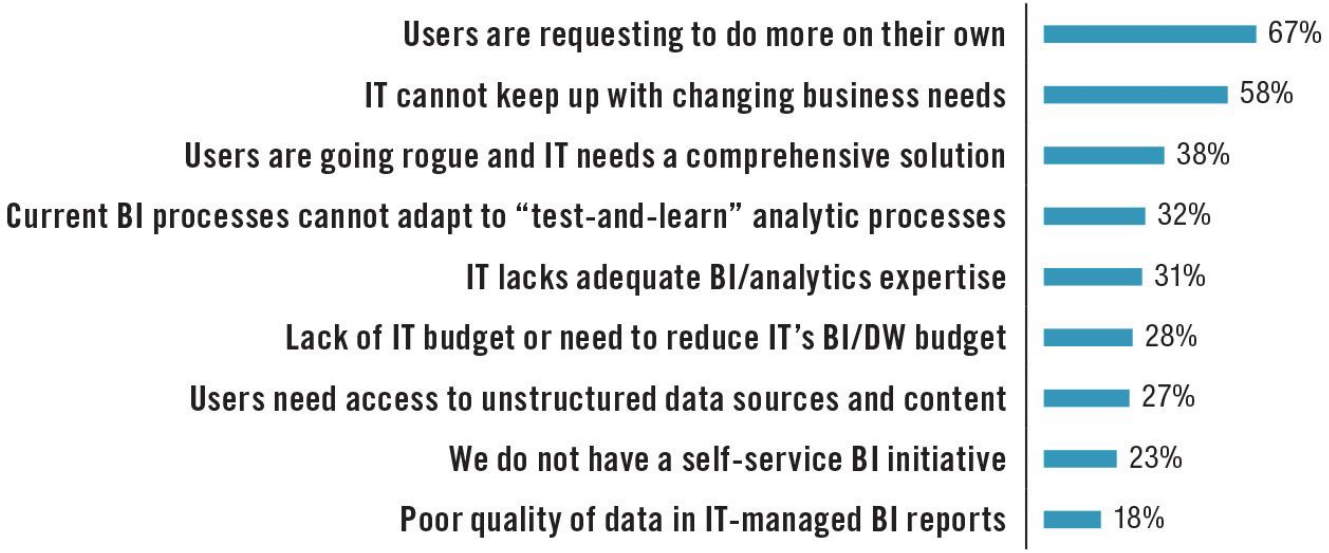


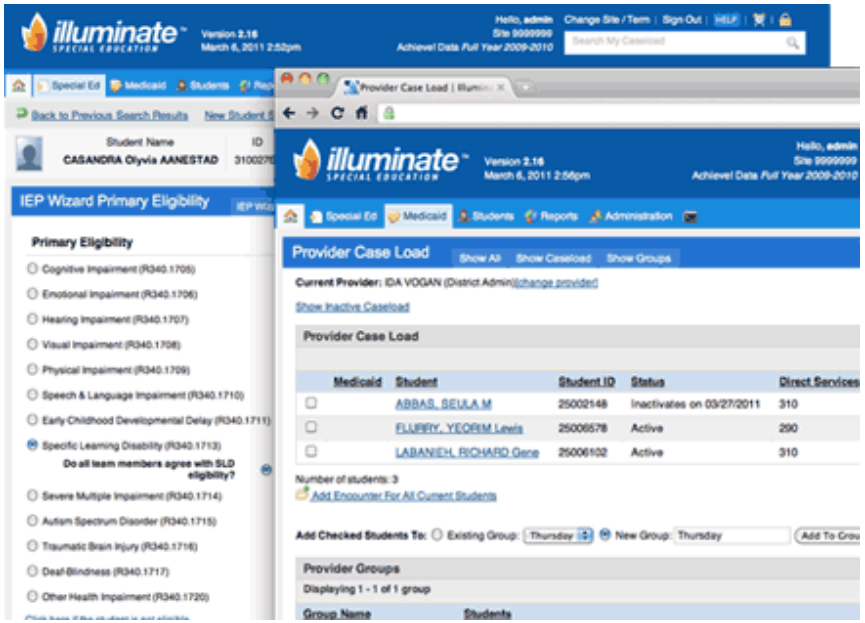
Figure 3. *Based on answers from 377 respondents; respondents could select more than one answer.*

Why “Managed”: To Avoid Chaos, Improve Productivity

- **Dangers of “going rogue”:** Self-service BI/DW technologies are important because users will resort to other measures if unsatisfied
- **Spreadmarts and shadow IT**: Organizations already know how hard it is to manage data consumption in spreadsheets, spreadmarts and other uncontrolled sources
- **Balance:** IT and business have a mutual interest in taking a managed approach: Goal is a balance between user freedom and proper data management and governance
- **Rise of analytics**: Adding greater need for access to raw data to existing demands for report/dashboard flexibility
- **Needed**: Reliable and organized data supply chain

Illuminate Education: Agility with BI and ETL

- Illuminate Education provides software solutions to school districts: focus on performance and accountability
- Prebuilt reports and query tools using Jaspersoft BI Suite
- Objective: Avoid having to employ developers for every new report
- Central management of report creation
- Scripts deployed inside apps use Jaspersoft ETL so users do not need to be hands-on



Where Authority Resides for BI/Analytics Updates

Who in your organization is authorized to develop and deploy BI/analytics tools and/or implement updated features and data access for existing systems?

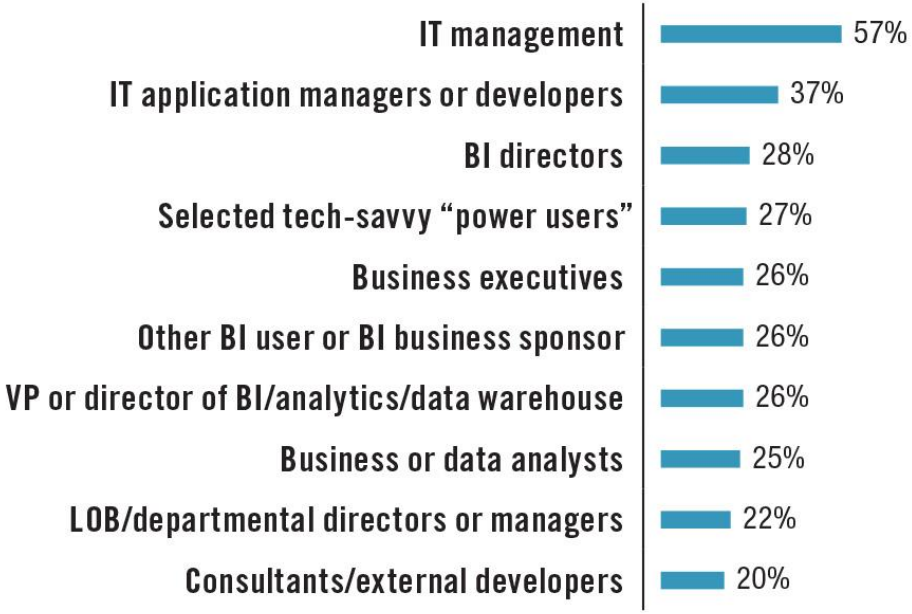


Figure 4. *Based on answers from 364 respondents; respondents could select more than one answer.*

Overcoming Barriers to Managed Self-Service

- **Topmost Concern**: Whether user have requisite skills, training, and budget
- Data governance and security: IT's role critical
- Data quality
- Delays due to slow DW and ETL processes
- "If we're not careful with self-service BI, we could create a new hairball in the fraction of the time it took to create the old hairball."

Addressing New and Changing Data Requirements

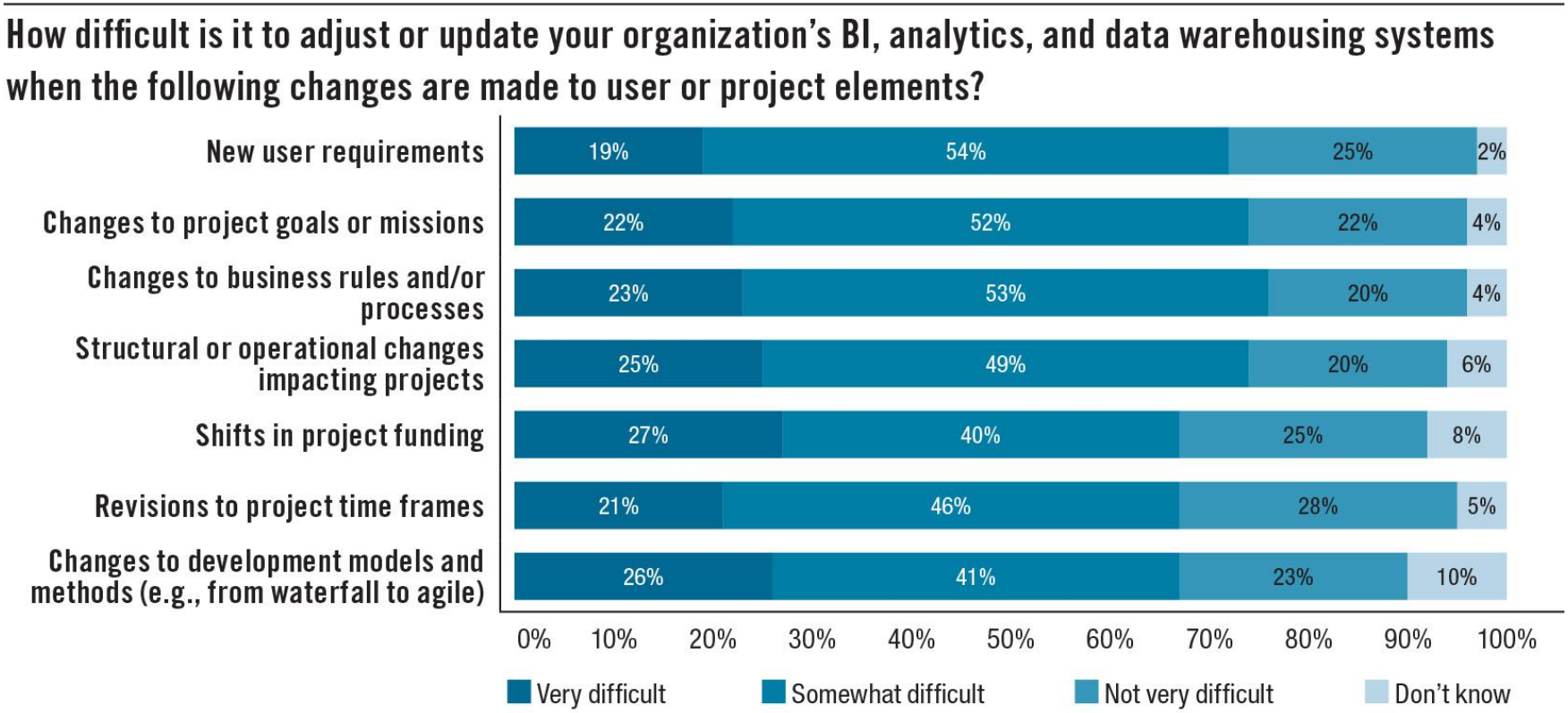


Figure 5. *Based on answers from 401 respondents; about seven responses per respondent, on average.*

Handling Changes to Data Elements and Processes

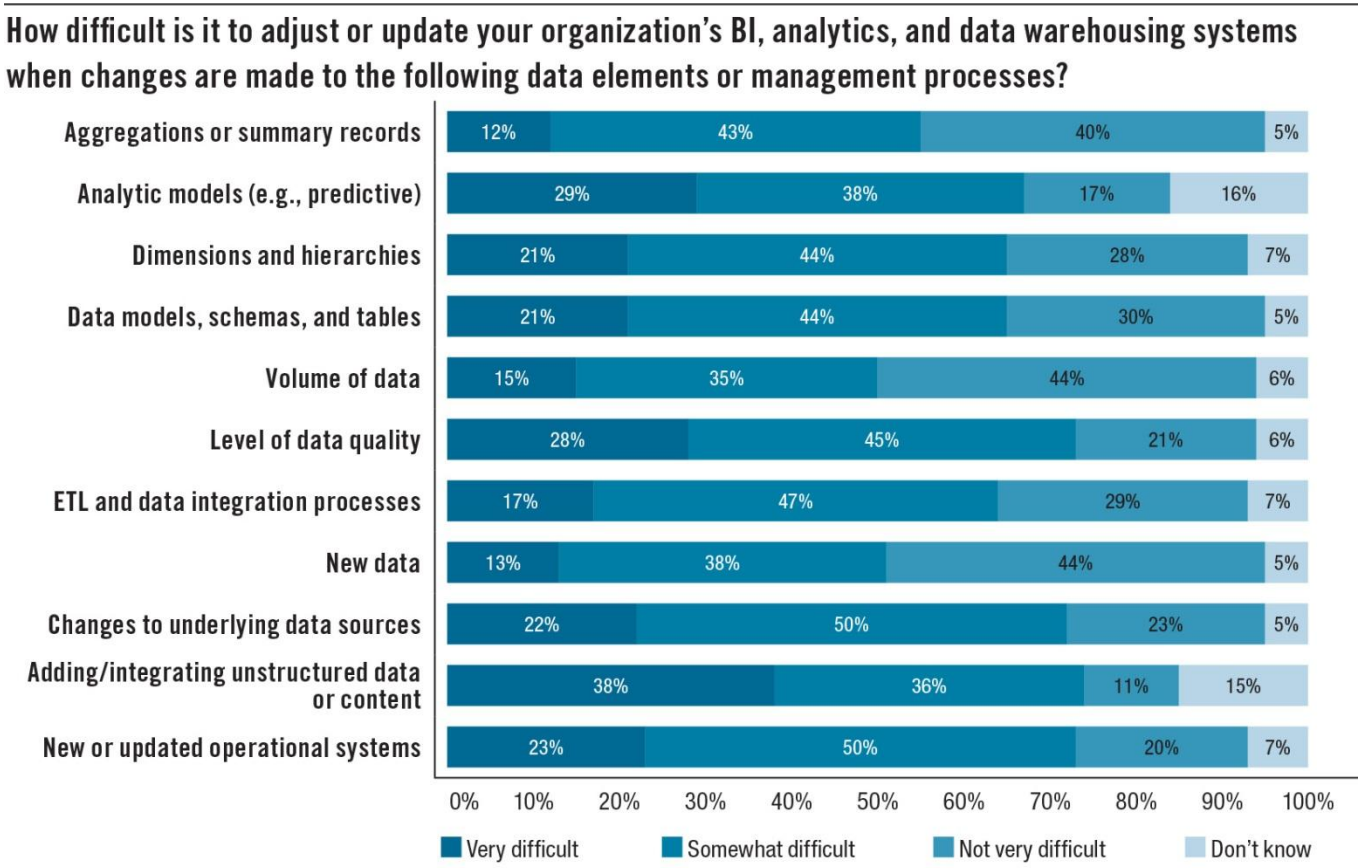
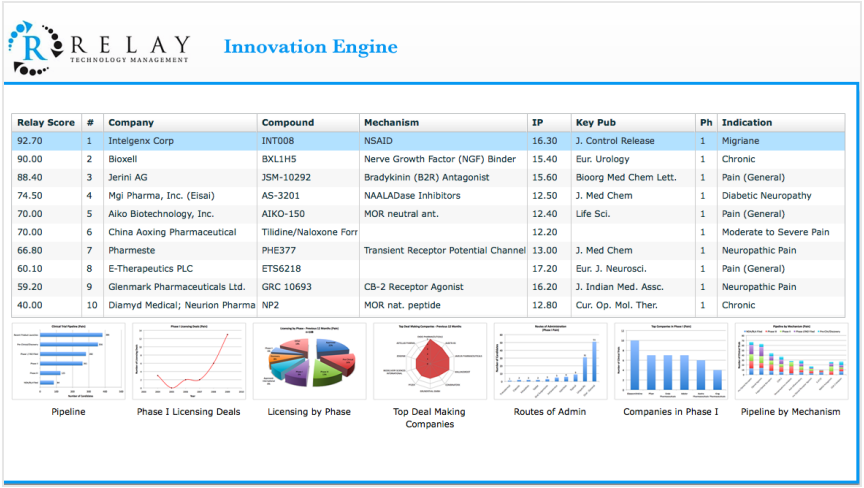


Figure 6. *Based on answers from 381 respondents; about 11 responses per respondent, on average.*

Relay Analytics: Business Value of Unified Information

- Big data in the life sciences industry: patent records, clinical trials, scientific lit, disease alerts, pharma news, and more
- Life sciences under pressure to be agile in face of new information; adjusting R&D, manufacture, trade
- Relay Technology Management, using Attivio Intelligence Engine, offers solutions that go beyond structured data limits
- Finding correlations between sources through integration of quantitative analysis with search and text analytics



Relay Score	#	Company	Compound	Mechanism	IP	Key Pub	Ph	Indication
92.70	1	Intelgenx Corp	INT008	NSAID	16.30	J. Control Release	1	Migriane
90.00	2	Bioxell	BXL1H5	Nerve Growth Factor (NGF) Binder	15.40	Eur. Urology	1	Chronic
88.40	3	Jerini AG	JSM-10292	Bradykinin (B2R) Antagonist	15.60	Bioorg Med Chem Lett.	1	Pain (General)
74.50	4	Mgi Pharma, Inc. (Eisai)	AS-3201	NAALADase Inhibitors	12.50	J. Med Chem	1	Diabetic Neuropathy
70.00	5	Aiko Biotechnology, Inc.	AIKO-150	MOR neutral ant.	12.40	Life Sci.	1	Pain (General)
70.00	6	China Aoxing Pharmaceutical	Tilidine/Naloxone Forr		12.20		1	Moderate to Severe Pain
66.80	7	Pharmeste	PHE377	Transient Receptor Potential Channel	13.00	J. Med Chem	1	Neuropathic Pain
60.10	8	E-Therapeutics PLC	ETS6218		17.20	Eur. J. Neurosci.	1	Pain (General)
59.20	9	Glenmark Pharmaceuticals Ltd.	GRC 10693	CB-2 Receptor Agonist	16.20	J. Indian Med. Assc.	1	Neuropathic Pain
40.00	10	Diamyd Medical; Neurion Pharma	NP2	MOR nat. peptide	12.80	Cur. Op. Mol. Ther.	1	Chronic

Agility Demands Rapid Development and Availability

What is the highest level of frequency with which IT/data or business teams are able to launch new features and functions for BI/analytics systems?

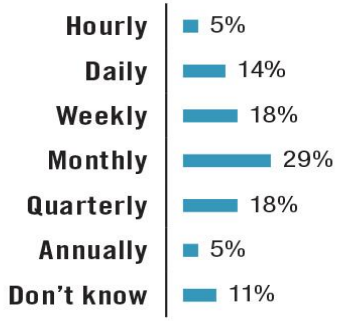


Figure 7. *Based on answers from 364 respondents.*

On average, how long does it take to add new data into the data warehouse and make it available for reporting?

Figure 8. *Based on answers from 361 respondents.*

HealthNow: Virtualization for User, IT Satisfaction

- Rapid growth created “a hodgepodge of legacy stores built on top of each other, with no true enterprise view.” *George Yuhasz, Dir. Of Data Process and Governance*
- Goal: Develop a single, common enterprise framework and data integration architecture
- Data virtualization with Informatica Data Services
- Governance: “heavily managed yet open environments in sandbox facilities”

Technology Strategies for Meeting Agile Demands

TDWI Research: Front-End BI Trends

- Current BI technologies used: Reporting and performance metrics (65%), OLAP (56%), and dashboards or portal interfaces (54%); visual analysis and discovery currently used by 25%, with 20% planning to deploy
- Mobile BI/Analytics: Currently only 14%, but three times that many respondents say they plan to implement BI/analytics on mobile
- Example: Novation, winner of 2012 TDWI Best Practices Award for Emerging Technologies and Methods
  - *Implementing MicroStrategy Mobile in solutions for physicians and healthcare procurement line personnel*

TDWI Research: Back-End DI/DW/ETL Trends

- Moderate satisfaction with data quality
- ETL widespread, but difficulty managing ETL processes, including "orphaned" processes with no clear owner or purpose

Data Management and Integration for Agile Needs

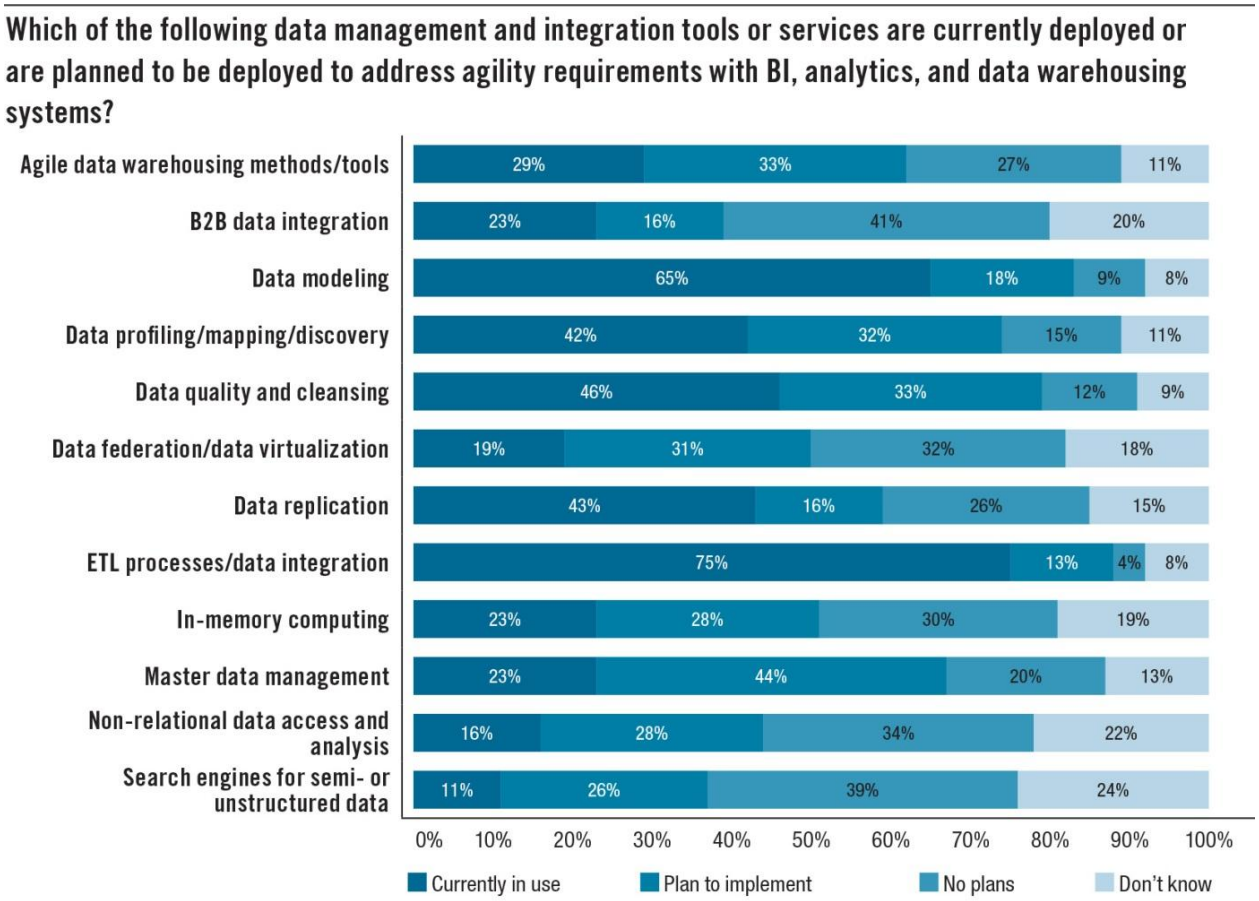


Figure 9. *Based on answers from 343 respondents; nearly 12 responses per respondent, on average.*

Technology to Watch for BI/DW Agility Objectives

- **In-memory computing**: 23% currently using, 28% plan to; support for discovery analytics, putting data closer to users
- **Unified information access**: 77% regard UIA as important
- **Data virtualization**: complement or alternative to DW; governance potential
- **Cloud and SaaS**: Not yet mainstream; 47% have no plans to implement, 14% are currently implementing

Agile Methods for Better User-Developer Collaboration

- **Collaboration:** User and developers work more closely together to guide projects, identify bottlenecks, and incorporate changes in an ongoing fashion
- **TDWI Research**: 30% say IT and data teams work “moderately closely” with business teams and 26% work “very continuously and closely”
- **Learning Care Group**: Getting data in front of users early in the process to determine quality and usefulness
  - *Data warehouse project included weekly, face-to-face discussions with users to gather feedback about development; enabled acceleration of project pace*
  - *Using WhereScape RED tools to increase agility*
  - *Able to stay within confines of a limited budget; time-to-value critical for BI/DW, which meant avoiding extended development cycles*
- **Agile software development methods:** Alternative to “waterfall” processes, which demand perfecting requirements up front and long waits for changes
  - *BI/DW requirements often evolve as users explore data and presentation*

Agile Development Processes, Using Scrum

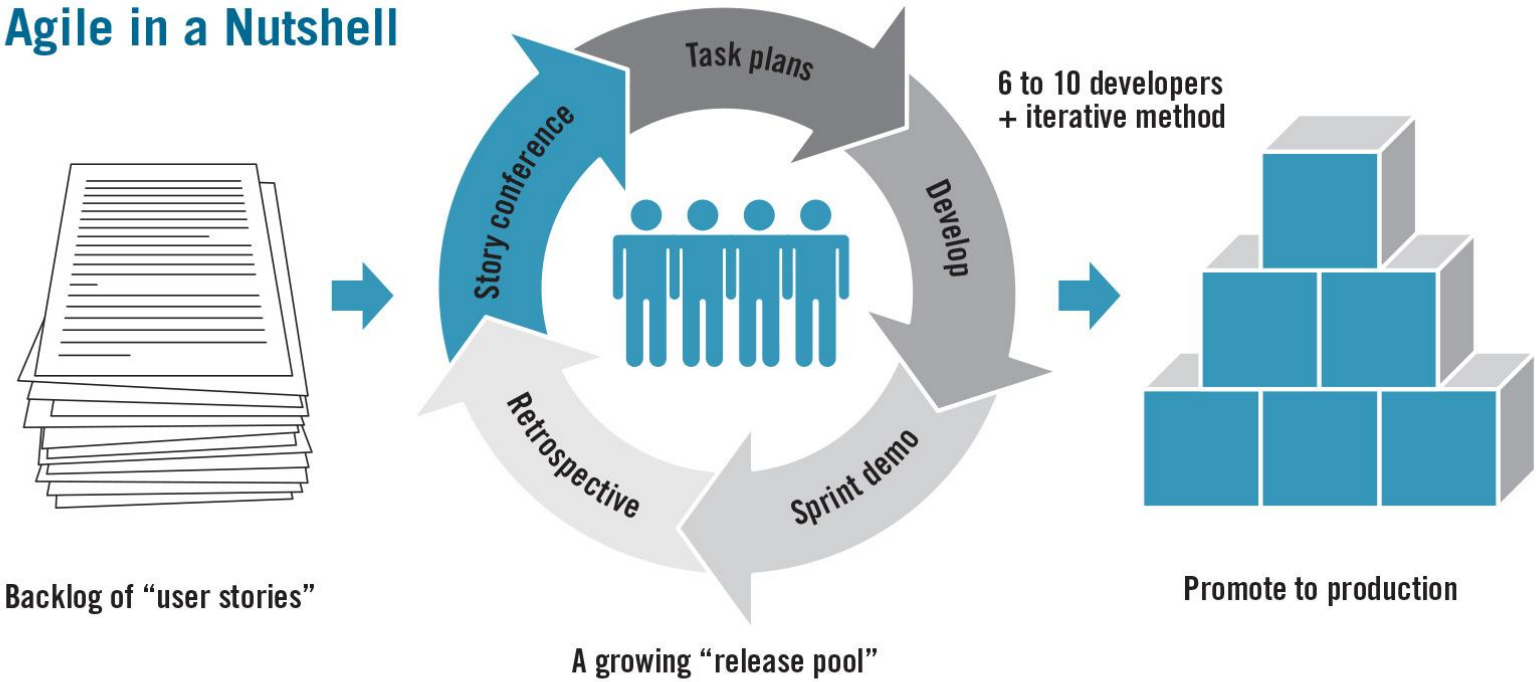


Figure 10. *Agile development in a nutshell based on scrum method use. Courtesy of Ralph Hughes, Ceregenics.*

TDWI – Ceregenics Agile BI/DW Research Project

- "Adoption of Agile Methods Among Business Intelligence and Data Warehousing Development Teams"
- Research study conducted jointly by **Ceregenics, Inc.,** led by Chief Systems Architect Ralph Hughes, and **TDWI,** led by David Stodder, Director of Research for Business Intelligence
- Conducted in May and June, 2012
- 395 total participants; 299 finished surveys; TDWI demographics

Maturity with Agile Projects: Number of Projects

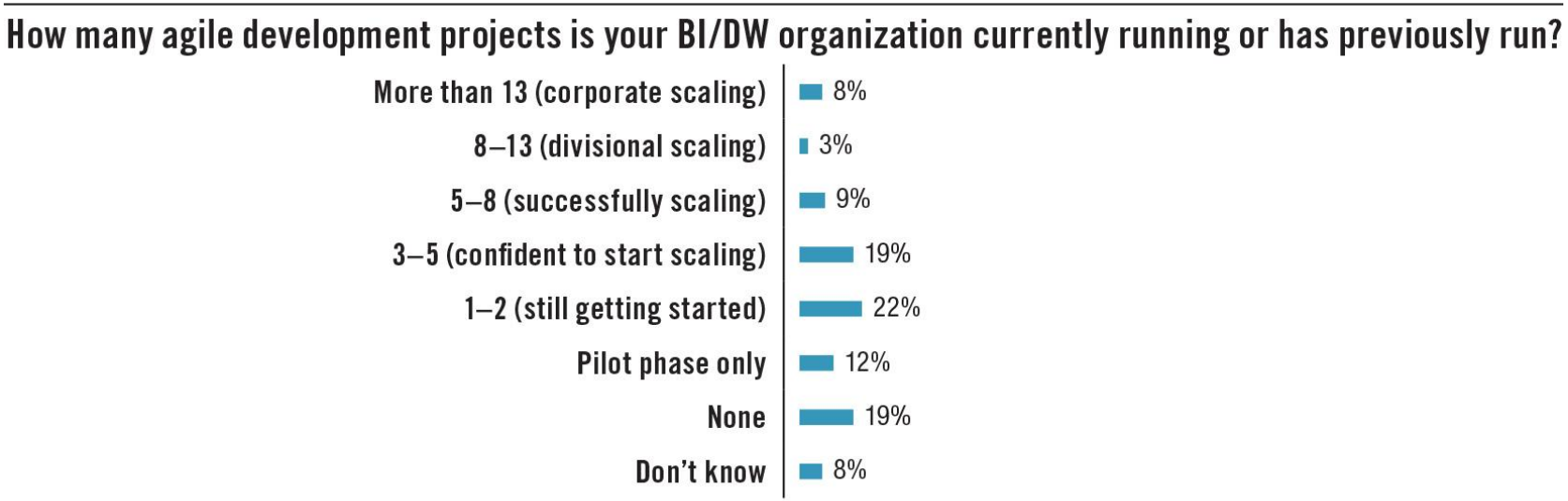


Figure 11. *Based on answers from 394 respondents. Research survey and analysis conducted jointly by TDWI and Ceregenics.*

Agile Development Methods Most Used for BI/DW

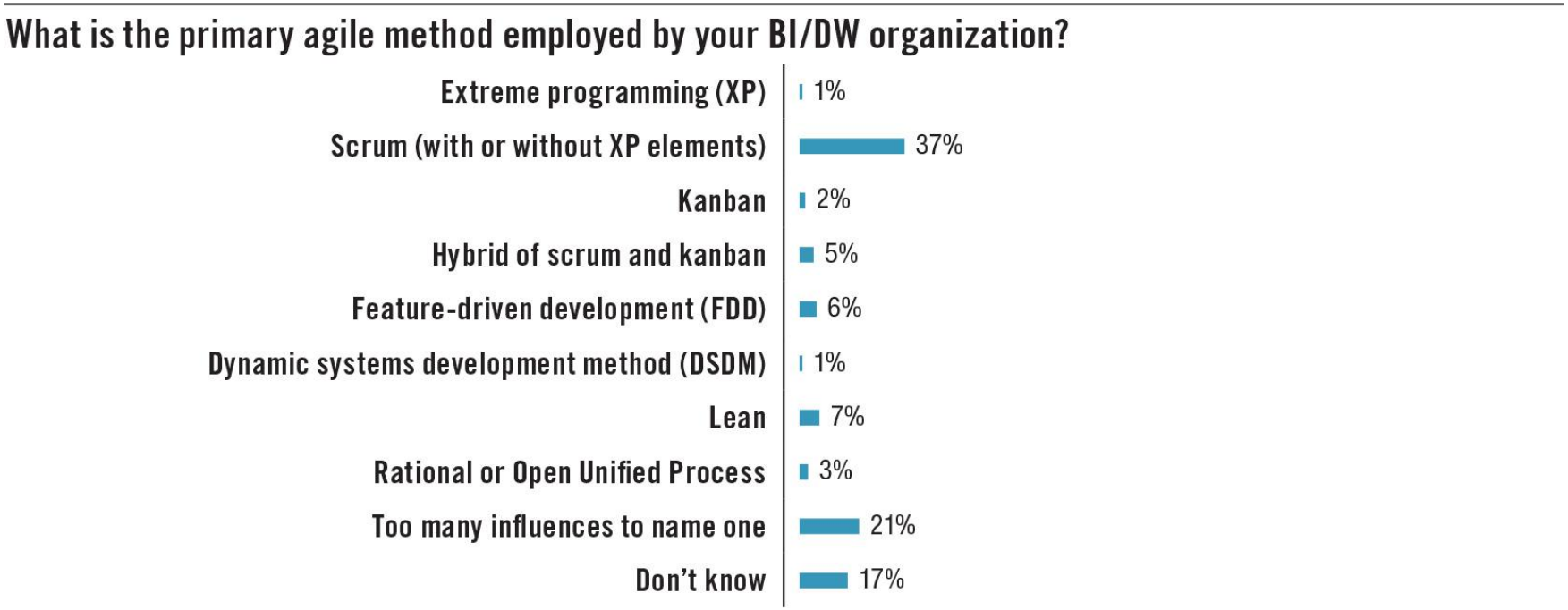


Figure 12. *Based on answers from 399 respondents. Research survey and analysis conducted jointly by TDWI and Ceregenics.*

Keeping It Small: Agile Team Size for BI/DW Projects

What is the largest number of team members with which your BI/DW organization has been successful with agile approaches?

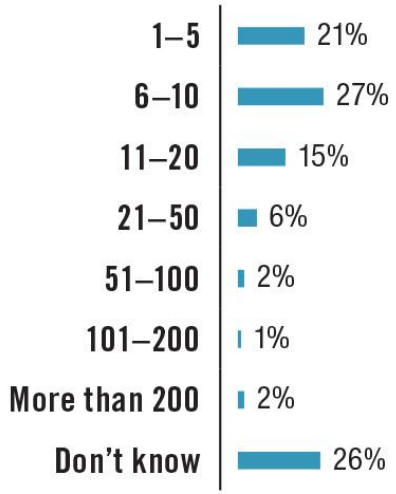


Figure 13. *Based on answers from 325 respondents. Research survey and analysis conducted jointly by TDWI and Ceregenics.*

Goals and Challenges of Implementing Agile Methods

- **Key objective**: Delivering continuous, incremental value
- **Brief time boxes spur value creation**
  - *Scrum projects typically implement two- to four-week "sprints" as the time box, or unit of development time for each increment of a project*
  - *Errors and changes can be addressed more quickly*
  - *But: make sure projects have enough sprints to catch all errors and changes*
- **Small, self-organizing teams:** Agile teams should include members from different functions and not necessarily be organized by corporate or IT hierarchies; scrum master is facilitator, not project leader
- **Project management tools may mislead:** "With agile, you actually reverse some of the usual processes. You build before you get a thorough design. Project tools may not understand this." – Ralph Hughes
- **Costs remain a challenge**: Agile methods can improve productivity and quality but research shows organizations are still challenged by costs
  - *Longer, continuous team involvement could be the reason*

Agility: Recommendations

Adding Flexibility and Depth to Users' BI and Analytics

- Increase self-service options
  - *Evaluate self-service and self-directed functionality in tools*
  - *Aim for managed self-service with a strong IT role*
- Improve analytical power through better interactivity and discovery
  - *Being limited to static, tabular reports holds back agility*
  - *"Discovery" capabilities allow users to explore data and iterate to gain insight*
- Provide better data visualization and analysis
  - *Dashboards that support many chart types is a good beginning, but most users need a managed, guided experience*
- Address agile BI and analytics needs of mobile device users
  - *With mobile device use growing, users will need easy access to data and analytics from them*
  - *Review data security and governance to ensure protection and policy adherence; revise governance policies*

Recommendations

Providing Broader, Faster, and More Diverse Data Access

- Evaluate unified information access
  - *Human- and machine-generated data sources are exploding*
  - *Need strategies for providing integrated access*
- Examine data virtualization technology
  - *Organizations need options for queries to reach multiple and diverse data sources, without data movement*
  - *Look at whether virtualization (and even cloud) could simplify and centralize data profiling, quality, security, and governance at a single layer*
- Uncover and address ETL and data integration bottlenecks
  - *Numerous and poorly managed ETL processes can choke performance and productivity – and reduce agility*
- Improve how BI/DW systems handle new and changing data
  - *TDWI Research finds that adding new sources, particularly unstructured, continues to be among the toughest challenges*
  - *Revise development methods to anticipate constant data change*

Recommendations

Applying Agile Methods to BI/DW Development

- Focus on producing quality deliverables and design excellence
  - *Speed is not the only goal*
  - *Collaboration between users and developers must aim at quality*
- Address changing requirements through iterations
  - *Agile method implementation should capture changing requirements as part of iteration cycles between development teams and users*
  - *Consider technologies that could enable users to examine data earlier as part of agile iterations and before formal ETL processes*
- Create small, cross-functional agile development teams
  - *TDWI/Ceregenics research supports view that smaller teams are more successful than larger ones*
  - *Agile teams should include stakeholders from all business and IT functions that have a role in the project*

Thank You!

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Questions & Answers

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