True Business Analysis Tools are Finally Ready for Prime Time

A Comparison of Three Tools Built to Support the Needs of Business Analysts

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Introduction

Computer Aided Software Engineering (CASE) tools have been around since the 1980s. These tools combined modeling techniques such as data flow diagrams and entity relationship diagrams with repositories that could capture attributes that described the detail required to fully document their meaning. Early vendors in this space included tools such as Excelerator from Index Technology, System Architect from Popkin, and Bachman, among others.

Over time, CASE tools evolved to include Unified Modeling Language (UML) diagrams and definitions that could support object-oriented modeling, and eventually Business Process Modeling Notation (BPMN) diagrams and process definitions were included as well. As these tools continued to grow, support was added for everything from high-level architecture frameworks such as Zachman and TOGAF down to the detail required to document data fields as part of a screen design using wireframes.

On a separate but somewhat parallel track, other vendors started offering tools to manage textual requirements. Tools such as DOORS and RequisitePro provided the capability to link documents and textual requirement statements to one another, to track the status of the requirements and to trace requirements to one another as well as downstream artifacts such as tests. These requirements management tools were adopted by companies in industries such as automotive, defense, and aerospace that required a high level of rigor to build and manage complex system requirements, but the solutions were seen as too heavy for widespread adoption in other sectors.

This situation has led to a number of drawbacks from the business analyst's point of view. On the one hand, many modeling tools have tried to become all things for all project roles and have left the business analyst behind. These tools offer too many options – ones that are targeted for developers or for enterprise architects, but that business analysts don't need and that, quite honestly, get in the way. On the other hand, having separate tools for modeling and for requirements management has meant that the key capabilities that business analysts need aren't in one place. On still another hand, most modeling and requirements definition tools are missing support for the critical business analysis need of conducting review sessions and allowing reviewers to provide comments.

For a company such as mine that focuses exclusively on business analysis and requirements and has used tools for over twenty years, it has often been a challenge introducing them to our clients in a way that 'sticks'. We've found ourselves hiding things in the tools to make them easier to use, or writing special scripts to add functionality that the tools don't natively provide. In short, everything BAs have needed hasn't been in one tool; at the same time, the usability of some tools has been compromised because they're just too complex for most users.

What's Needed?

In recent years, a new set of tools has appeared that specifically targets the sweet spot for business analysis. Unlike other requirements or CASE products that were originally designed as requirements management tools or requirements definition tools and later extended, these tools were designed from the beginning as a single, unified requirements solution, and they bring together the three capabilities that support the needs of the business analyst: requirements definition, requirements management and requirements review. This is great news.

An additional factor that comes into play when evaluating these new tools is whether they are capable of supporting today's business environment and providing an overall solution that is both comprehensive and easy to deploy. In short, they must be true enterprise level solutions – able to scale from ten users to thousands, support the distributed environment of a global organization, and integrate with other best-of-breed solutions. The vendor of an enterprise level solution is a partner for success and should provide comprehensive product support and professional services, as well as have a large installation base and be recognized by leading analyst groups (Gartner or Forrester, for example). The decision to partner with them should be an easy one.

In this article, I'll describe the benefits that business analysis-focused tools can provide, identify the basic features to require from such tools, and then review several commercial tools in this space.

With our four criteria in mind – requirements definition, requirements management, requirements review and the ability for the vendor to provide enterprise support – I've identified the following three tools for inclusion in this paper:

- Blueprint Software System's Blueprint v5 (formerly Requirements Center)
- IBM's Requirements Composer, version 4.0
- MicroFocus' Caliber RDM, version 2010 SP2

Capabilities of Tools Targeted for Business Analysts

The sweet spot for business analysis combines three basic capabilities:

- Requirements Definition
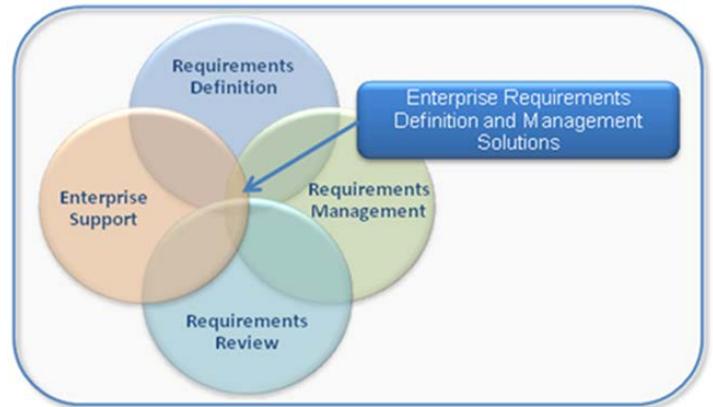
1-1: The Ideal Tool for Business Analysis Combines Capabilities

- Requirements Management
- Review and Collaboration

In addition to these three core capabilities, successful tools must also:

- Be easy to use and quick to learn
- Provide good documentation and test generation capabilities
- Integrate with quality assurance tools and development tools so that the artifacts housed within the tool can be used to jump start later phases of the project
- Be architected on a single, relational database repository
- Support the BABOK knowledge areas

Requirements Definition. Business analysts need a tool that supports the elicitation of requirements using either a model-driven technique, a text-based technique, a user interface driven technique, or a combination of all three, depending on the needs of a particular project.

- What models are critical? We believe that a business analyst must have the ability to build business process diagrams aligned with BPMN notation. These are necessary because good business analysis requires ensuring the requirements are business-driven and that means understanding the business process (or processes) that require a solution, whether automated or

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not. Second, the business analyst must have a diagram that can be used to illustrate things such as the context of the proposed solution. Finally, the business analyst must have the ability to build use cases and should have the option of building a use case diagram, of defining use cases with a detailed internal structure of user and system steps as well as alternate paths, and of visualizing each use case in a diagram view.

- What about modeling the user interface? A tool that targets the business analyst must include a capability to mock up screens. Often this the best way for end users to envision their needs and for business analysts to help them define their business rules, including data validation. Ideally, the tool should provide the means to mock up a screen from scratch, along with a built-in capability to capture an existing screen from an external source and to annotate that screen to illustrate modifications. It should also provide the ability to simulate the screen interaction and sequencing. Requirements tools should allow screen mockups to be linked back to other artifacts within the repository and use those artifacts to drive any simulations so that they mimic the solution as closely as possible.

- Isn't there also a need for textual requirements? Absolutely. The classic "The system shall..." statement has been a hallmark of business analysis and is still by far one of the most popular techniques for documenting requirements. Your tool needs to be flexible enough to account for the wide range of requirements from functional to performance to business rules, while also providing the ability to organize requirements in a hierarchical structure and to create relationships from one requirement to another. A tool that provides the ability to configure requirement types and to add attributes is

key to supporting the different approaches that different organizations need. Finally, many text requirements are initially defined using spreadsheets and word processing documents generated by the users and stakeholders. Any tool should be able to import from external materials such as these.

- Do requirements need to be uniquely identified? Without question a unique identifier that can be used for reporting and traceability is a must-have. Your tool should provide the ability to automatically provide unique IDs, as well as offer the option of a user-defined prefix.

Requirements Management. Even if you've done a magnificent job gathering your requirements, you need to manage them throughout the SDLC progresses and even beyond (things ALWAYS change) and an automated tool provides invaluable help. Things to look for:

- The tool should help you manage versions and changes, both at the project level and at the individual requirement level. A history of changes to each requirement helps explain previous decisions and lets you revert to a previous version if necessary. The ability to baseline a collection of requirements helps you define what a particular release will contain.

- The tool should have the capability of storing a variety of information about each requirement, based on the requirement type. For example, a requirement about performance should store information on the timeframe and performance metrics; a requirement about data should store information on capacity and quantity. In addition, all requirements must have attributes that specify things such as the date created, version number, status, and priority. You may have additional attributes important to your organization –

risk level, difficulty, and so forth – and so the ability to define custom attributes is important.

- You must be able to link requirements to other system elements. When a change is proposed, this traceability will allow you to reveal all elements that the change might affect.

- Tracking the status of each requirement during development supports overall project management. If the project manager knows that 55% of the requirements allocated to the next release have been implemented and verified vs. 17% that are not yet fully implemented, then the PM has good insight to the project status.

Collaboration and Review. The ability to communicate with reviewers has long been a known issue and those of us in the business have struggled with how to best conduct reviews. Many requirements and modeling tools have offered the ability to generate html and, from a tool vendor perspective, that was often offered as the answer. Just let your reviewers look at the html – what could be easier? But the html usually represented everything – and reviewers were left with the task of figuring out how to find what they really needed to look at. A tool that truly supports the collaboration and review process should provide easy ways to communicate, especially for distributed teams, and features that encourage interaction. It should provide the following capabilities:

- BAs should be able to group use cases and their associated screens and simulate the screen flow for reviewers.

- Team members should be able to discuss requirements issues and make review comments electronically. Affected individuals should be notified when a change is made or there's a new discussion entry.

- The tool should allow a group of requirements to be identified for review and for the reviewer to see that subset using a "review-only" copy of the software providing only those features needed for reviewing.

- The tool should track who has provided review comments, whether a requirement has been approved by a reviewer, and what reviews are still outstanding.

- The tool should provide ways for BAs to stay aware of things that are important to them, while filtering out the noise.

Additional Features:

- Usability: Tools targeted for business analysts need to have a user interface that's easy to work with and easy to understand. This is more important than you may think – we've seen many tool implementations lose traction and be abandoned when BAs feel that the barrier to working successfully within the tool is too high.

- Document Generation: Once information is within the tool someone will want to get it out. If you can't generate good documentation from a tool, it can be perceived as not worth using because your information becomes "trapped". The best tools provide templates that are easily customizable, letting you add headers and footers, and allowing you to easily move sections or add/subtract detail. Ideally, they will also track changes in documents based on requirements version differences.

- Test Generation: Use Cases have been widely accepted as a key business analysis capability, and one of the reasons is that a Use Case scenario can be the foundation for testing. A good tool should allow you to generate user acceptance test scripts from the steps of a single Use Case or across multiple, related Use Cases. They should create traceability from

requirements to tests, and integrate with quality assurance tools, maintaining the alignment of information across tools when something changes.

- Single, Relational Repository: A repository is what allows you to take advantage of traceability and reuse, both key to long-term requirements success. It is also what guarantees you a single version of the truth, where everyone is looking at the same information. Without a single repository, you're faced with patching things together. Without a repository based on a relational structure, you're faced with limitations on organizing, reporting on and extracting the information you want. A good repository will let you tweak the meta model as well, should the need arise, and in the best of cases will allow for cross-project linking and re-usability.

- Support for IIBA® BABOK® knowledge areas: The International Institute of Business Analysis® (IIBA®) is an organization that promotes the growth of the business analysis profession. To guide business analysts towards best practices, the IIBA has created the Business Analysis Body of Knowledge (BABOK®), consisting of knowledge areas that define the different roles that a business analyst undertakes and the tasks they need to perform. In order for a requirements definition and management tool to support the needs of the business analyst it must enable them to perform work in each of the BABOK® knowledge areas. The chart at the conclusion of this paper illustrates how completely each of the three tools under study provides support for these knowledge areas.

Three Business Analysis Tools

We have selected three tools that meet our four criteria: requirements definition, requirements management, requirements collaboration and review, and enterprise-level support.   Each of

these tools is still evolving, so their specific features might change with future releases, but we've done our best to describe their strengths and weaknesses as they currently stand and then to recommend our favorite.

First we provide an overview of each of the tools. Next, we summarize our assessment of how well they meet our basic criteria for requirements definition, requirements management, requirements collaboration and review, and additional features. This is followed by a chart that describes how well each tool meets the criteria, organized into 11 categories, described within this paper.

IBM's Requirements Composer

Requirements Composer (RRC) is an integral part of a bundle which includes Rational Team Concert and Rational Quality Manager, together referred to as "Collaborative Lifecycle Management." It combines requirements elicitation and capture, takes over the requirements management function from RequisitePro, and helps communicate with non-technical people. It is targeted for less formal project environments.

On the positive side, Requirements Composer is very configurable and provides many different diagram types, however each must be downloaded as a plug-in when you first invoke an editor. It also has a very nice review workflow capability, a user-configurable dashboard, and a global search capability within a single project or across projects. On the negative side, to get full capabilities you need the three tools mentioned above and they are distinct products with different databases – not the easiest solution when a business analyst is looking for the support he or she needs.

In addition, Requirements Composer has some major flaws. It does not manage the internal structure of a Use Case (its steps, it pre-conditions, etc.) as distinct artifacts that can be managed, manipulated or reported on. Because of this, it provides no support for simulation or test generation because these features rely on use case steps.   It does not provide support for data

definitions or data models. It does not provide a separate, simplified review experience for those who are not experienced with the tool. It does allow multiple users to work on the same artifact – the problem is that users have no way of knowing who else may be accessing an artifact simultaneously. Only when finished and ready to save their work is the user notified that the database version has changed. At that point, the options are to overwrite the other person's work, discard their work, or do a manual merge. All in all, although IBM is definitely an enterprise solution vendor, their Requirements Composer tool does not seem to have all the capabilities a BA should expect.

Microfocus' Caliber RDM

Caliber RDM is the elicitation and visualization component of Caliber's solution for business analysts. It must be combined with Caliber RM in order to provide support for requirements management. While this is not ideal, the two tools point to the same underlying repository, which means that work you do in one appears in the other – you are simply using a different front end. Note also that Caliber intends to bring the two tools into a single user interface in 2012.

Caliber RDM provides two views for visualizing your requirements. The first is what they call the "Scenario". This is a diagram that contains steps, decision points and swim lanes and can be used to illustrate a business process as well as a piece of user-system functionality. While this may be all that some projects need, the diagram is limited in that it supports neither true business process modeling nor true use cases. Advantages? Steps on the diagram can link to requirements and you can send a link to the diagram to your reviewers, which they can open and comment on without having to purchase a copy of the product.

The second visualization view is for user interface mockups. Here Caliber RDM shines. You can take snapshots of existing screens and build overlays, or you can design a screen from scratch. There's a nice feature for building out the screen form and you can link data with actual values to test against. Requirements can be linked to specific screen fields. You can build a scenario diagram to help step through a series of screens, although there isn't a true simulation capability.

Once you've built your visualizations and defined requirements tied to them (this is the way we like to work; note that you could also start by defining requirements and work in the other direction), you move to the Caliber RM interface where all your requirements are shown. You can put these requirements into folders and categories, add attributes, and set up and/or manage traceability, which you can view visually in a nice "spider" diagram. Caliber RM keeps a history log of each requirement and allows you to baseline a set of requirements. It also links with HP Quality Center and updates Caliber RM automatically with changes made in HP QC.

The requirements management capabilities in this toolset are quite good, as is the user interface mockup feature. However, the lack of diagrams other than the "Scenario" is a real drawback in our opinion and one that knocks this tool out of the running.

Blueprint Software System's Blueprint v5

OK, to be up front about it, Blueprint is our top choice. Let's start with diagrams. Blueprint has business process diagrams, which we believe are absolutely key to defining business need and the right requirements, and they have recently upgraded their business process modeling support to full BPMN compliance. Their implementation allows a single diagram editor for novice users with a simple palette of shapes as well as for power users who want the full extent of BPMN. They've also added a domain diagram (useful for a conceptual data model) and a generic diagram that we like to use for things like process hierarchies or context models. Blueprint has excellent support for Use Cases, both in text form and in visual form. With their newest release, they've enhanced the ability to create true Activity Diagrams alongside textual Use Case scenarios and they do a nice job of keeping the two in sync. So whichever way you prefer to work – build the diagram first or describe the steps – the tool can give you what you need. Importantly, steps in

Use Cases are treated as individual artifacts, meaning that requirements, actors and screens can be related at the step level.

An especially nice feature is Blueprint's ability to step through a Use Case and simulate the screen flow using the interaction documented within the use case and screens that have been built in Blueprint. If you've ever tried to review requirements with end users, this is one of the most effective ways to get their comments and their buy-in before going too far down the road. During simulation, any included or extending use cases can be expanded to become part of the simulation, allowing you to go into different parts of the application as a real user could.

For other review capabilities, Blueprint provides a simplified, web-based reviewer experience and allows business analysts to identify a subset of requirements for review. This helps reviewers focus on what you want them to see – they can comment, conduct discussions with others while they're reviewing, or indicate their approval. Blueprint is striving to move collaboration online by providing stakeholders the ability to hold a conversation within the context of the business analysis artifacts. During review, the new version of Blueprint also provides a dashboard with metrics to help project participants see how the process is progressing. It has an activity center for each user and provides automated email notifications when something changes.

Blueprint provides good support for requirements definition and management as well. It supports a range of requirement types and allows you to define additional types, and to define new attributes. We've found that the ability to add attributes and/or types is almost always necessary for client projects – each client is different and while one may need an attribute to identify requirement complexity to support their project management needs, another may want an attribute for the cost of a process step to help estimate the value of making a change. The ability to customize a tool in this way is a top feature, in our opinion.

Traceability is easy to set up and the tool allows you to do a simple compare of artifacts. In future releases, a more detailed comparison will be available and you will be able to track project metrics as well. There is a smooth integration with HP Quality Center, including the ability to configure mapping of fields between the two tools. And information can be aligned, so that when something changes in Blueprint, related information in HP Quality Center can be updated.

Perhaps the biggest change with the new release of Blueprint is the re-architecting of the tool, which allowed the company to make two major steps forward. The first: Blueprint is now built on a single, relational database repository and this decision means the tool can provide all of the benefits of that technology, including scalability. It also has the capability for cross-project (not just intra-project) traceability and re-use – a fantastic advantage for organizations using a tool across the enterprise. The second step forward is that Blueprint has become a cloud-based product that makes enterprise-wide use by a distributed organization not only possible, but relatively easy. The tool can also be hosted on-premise in a private 'cloud', if you prefer.

With all of these improvements, the first release of Blueprint has lost a few things that we are told will be in future releases: for example, comparisons are not as sophisticated or detailed as they were in Requirements Center, and you no longer have the ability to capture existing screens from an external source directly from the tool and to annotate modifications.

One of the very best things about Blueprint is that it is focused very specifically on the needs of the business analyst: diagrams, user interface mockups, requirements definition, requirements management and requirements collaboration/review. Blueprint has recognized the expanding role of the business analyst, for example into the process modeling sphere, and is providing the support that the BA needs. We've found it easy to learn and use, although, as with any tool, to get the most benefit from it organizations would be well-advised to look for advice and training from experienced users when

first implementing the tool. This can speed the learning curve and shorten the time to configure appropriate attributes and types.

Summary and Recommendation

Each of the three tools described in this paper are targeted for business analysis needs. They are not trying to be all things to all roles. This is all to the good. And each of these tool vendors can support large installations, providing implementation and installation services, consulting and training services, user forums, and online help.

Yet one tool stands out among the three and that's Blueprint.   Its combination of usability and the features it provides for the business analyst, make it a top option when you're considering tools.

The next figure summarizes the support that each tool provides for the important categories that we've described earlier in this paper.   These categories are organized into 11 subcategories. Within these subcategories, we identified 95 specific criteria and ranked each tool against each criterion, assigning scores of 10 for full support, 5 for partial support and 1 for little or no support. The results are represented below. If you would like to see the full table of 95 criteria, contact us for a copy (for contact information, see the end of this article). If nothing else, when you're looking for a tool to support your business analysts, you can use this list of detailed criteria to ask questions of the vendors you're considering and to help rank what they provide.
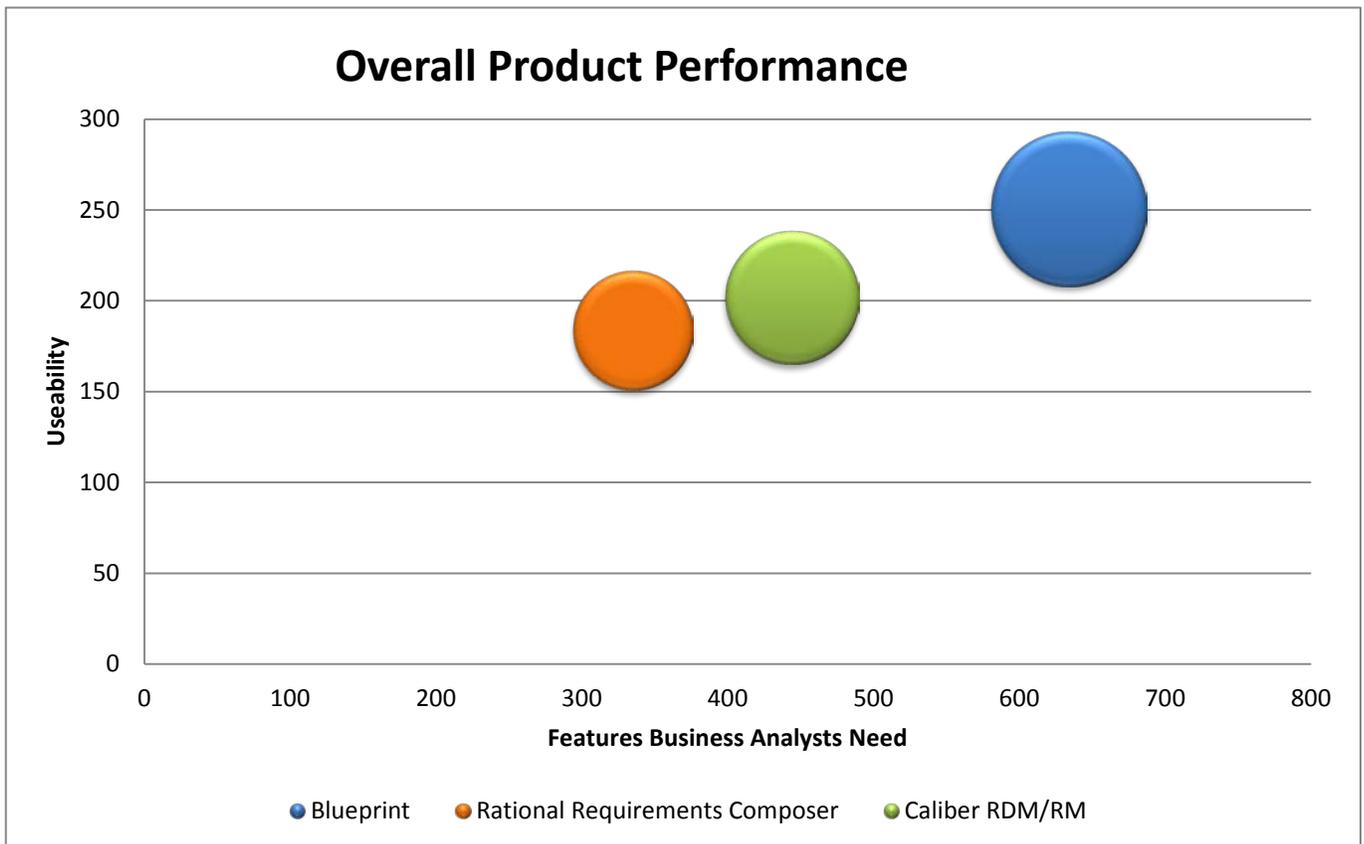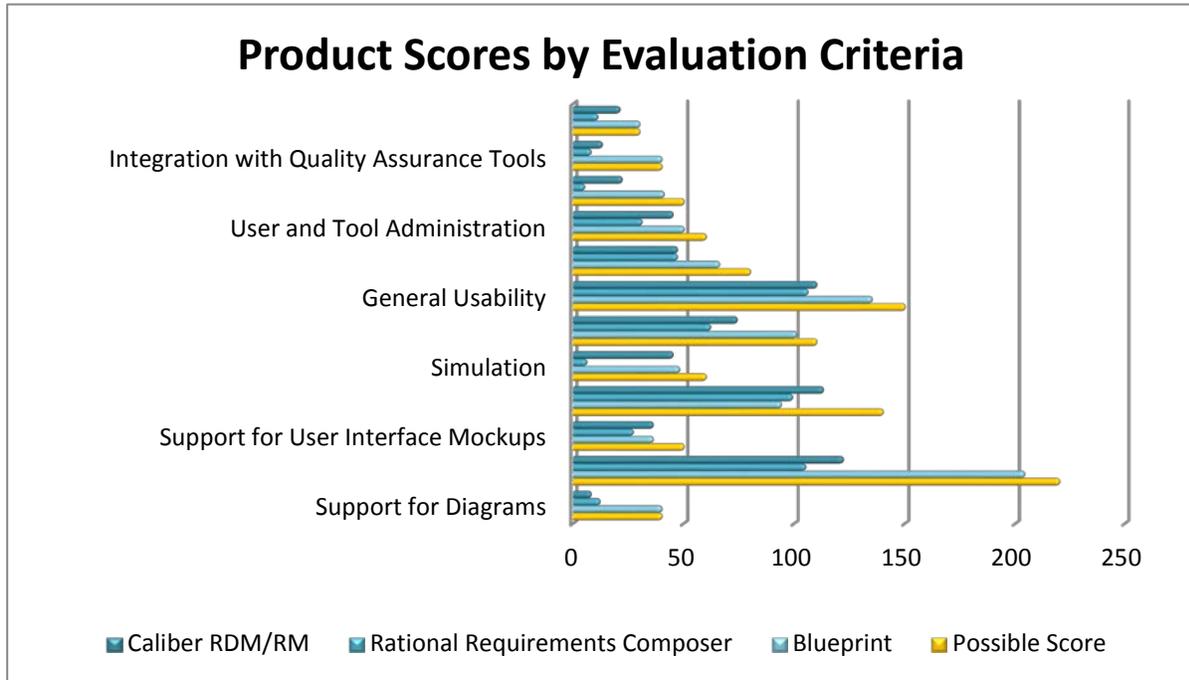

Figure 1: Overall Performance

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Product Scores by Evaluation Criteria

Figure 2: Scores by Evaluation Criteria

Addendum: Support for IIBA BABOK® Knowledge Areas

The International Institute of Business Analysis® (IIBA®) is an organization which promotes the growth of the business analysis profession. To guide business analysts towards best practices the IIBA has created the Business Analysis Body of Knowledge (BABOK®), which consists of knowledge areas that define the different roles that a business analyst undertakes and the tasks they need to perform. In order for a requirements definition and management tool to support the needs of the business analyst it must enable them to perform work in each of the BABOK® knowledge areas shown below:

- Enterprise Analysis: This knowledge area focuses on how business analysts work to identify, refine, and quantify a business need. The business need is then refined into a manageable solution scope which the organization can realistically accomplish.

- Business Analysis Planning and Monitoring: This area encompasses a set of tasks that must be performed in order to complete and support business analysis efforts.

- Requirements Elicitation: The Requirements Elicitation knowledge area focuses on how business analysts work with stakeholders to understand their environment, needs, and concerns in order to identify requirements for a proposed solution.

- Requirements Analysis: This knowledge area focuses on how business analysts refine and elaborate on the requirements that they have gathered to the point where they accurately depict a solution that can be implemented.

- Requirements Management and Communication: The Requirements Management and Communication knowledge area focuses on how business analysts maintain requirements and

communicate those requirements to stakeholders.

- Solution Validation and Assessment: This knowledge area focuses on tasks around validating the solution and writing requirements for implementation.

The following figure summarizes the support provided by each of the three tools under study for the BABOK®.

BABOK Knowledge Areas	Key Tasks	Enterprise Requirements Definition and Management Solutions		
		Blueprint	IBM Requirements Composer	Microfocus Caliber RDM/RM
Enterprise Analysis	• Define Business Need • Determine Gap in Capabilities • Determine Solution Approach • Define Solution Scope • Develop Business Case	●	◔	◔
Planning and Monitoring	• Plan BA Approach • Conduct Stakeholder Analysis • Plan BA Activities • Plan, Monitor & Report on Performance • Plan Requirements Management • Plan, Report & Monitor BA Communication	◔	◔	◑
Requirements Elicitation	• Prepare for Elicitation • Conduct Elicitation • Confirm Results • Document Results	●	◑	◑
Requirements Analysis	• Organize Requirements • Prioritize Requirements • Specify & Model Requirements • Validate Requirements • Verify Requirements • Determine Assumptions & Constraints	●	◑	◑
Requirements Management and Communication	• Manage Solution Scope & Requirements • Manage Requirements Traceability • Maintain Requirements for Reuse • Prepare Requirements Package • Communicate Requirements	●	◑	◕
Solution Validation and Assessment	• Assess Proposed Solution • Allocate Requirements • Assess Organization Readiness • Validate Solution • Validate Solution Performance • Determine Transition Requirements	●	◔	◑

Note: The Underlying Competencies KA has been left out because it contains activities not generally supported by a software tool

Figure 3: BABOK Knowledge Areas

About the Author

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Susan is Managing Director, Client Delivery for RG, LLC, which recently acquired the requirements and business analysis consultancy, Doreen Evans Associates, Inc. (DEA), where Susan was a founding member. At DEA and now serving on the Business Analysis/ Requirements Best Practice team, Susan has had more than 20 years of experience in planning and delivering business analysis services. She oversees the quality of deliverables produced by project teams during client engagements and serves as product manager for the DEA-developed LINK™ suite of processes and tools. Susan is a trained facilitator and has conducted many sessions in process redesign, business requirements development and business rules identification.

About RG

RG is a recognized leader in program management services, dedicated to helping organizations optimize business processes, accelerate change, and establish lasting quality improvements. Headquartered in Alexandria, VA, we deliver groundbreaking management solutions to public and private sector clients across the globe.