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TECHNOLOGY AUDIT

ABACUS

Avolution

SUMMARY

IMPACT

The awareness and adoption of specialized tools for documenting and communicating enterprise architecture has increased, driven by regulatory pressures, the need to communicate enterprise architecture to all stakeholders, and the benefits of using a framework. Not surprisingly, the developments around architecture-modeling tools have created a lot of interest. ABACUS, Avolution's modeling tool, stands out in the enterprise-architecture and business process management space on the basis of its strength in architecture-based analysis and its inherent flexibility.

- The ABACUS suite enables enterprise modeling and simulation of architecture options using a number of different metrics.
- Avolution's approach of providing scenario analysis is a strong competitive differentiator from the rest of the market which has largely focused on traditional modeling requirements.
- ABACUS offers a noteworthy option for organizations looking to adopt an architectural approach, either as a stand-alone modeling tool or in combination with other tools such as Excel and Visio.

KEY FINDINGS

Strengths:	✓ XML-based file format that allows flexibility to change meta model. Ships with more than 30 libraries and meta models. ✓ Ability to analyze to-be scenarios using multiple metrics. ✓ Data can be imported from a range of sources and modeling solutions.
Weaknesses:	✗ Avolution's small size puts it at a disadvantage in terms of marketing spend when compared with larger players, although this is mitigated by partnerships with tier one consultancies.
Key Facts:	i ABACUS is based on Microsoft .NET.

OVUM VIEW

Enterprise architecture as a discipline still lacks the data and performance analytics-driven approach that is becoming pervasive in IT. Without a fact-based assessment of each architecture option, enterprise architecture is prone to be guided by opinion, which can prove expensive, open to manipulation, and inefficient. This is where a metrics-based tool such as ABACUS holds a distinct advantage.

Avolution's ABACUS suite enables enterprise modeling and simulation of architecture options using a number of different metrics. ABACUS ships with a library of architecture frameworks and a large number of architecture patterns for common platforms, as well as supporting data imported from a range of modeling solutions and infrastructure-management sources. Ovum likes the company's focus on metrics-based evaluation that addresses the key challenge of fact-based objective scenario analysis for driving architecture decisions, which is something that will become increasingly more important.

Through ABACUS, Avolution has expanded the scope of enterprise modeling solutions by choosing to provide scenario analysis that differentiates it from the traditional modeling market populated by established modeling-tools vendors. Simulation and comparison do not appear to be a focus area for other modeling vendors, which are concentrating on developing standard reference architectures for governance, compliance, and best-practice initiatives. ABACUS includes these capabilities, but its focus on metric-based evaluation of architecture options and scenarios is what makes it stand out. Ovum believes that Avolution's approach is innovative and will become more relevant with the increasing adoption of analytics by IT management and the enterprise.

Recommendations

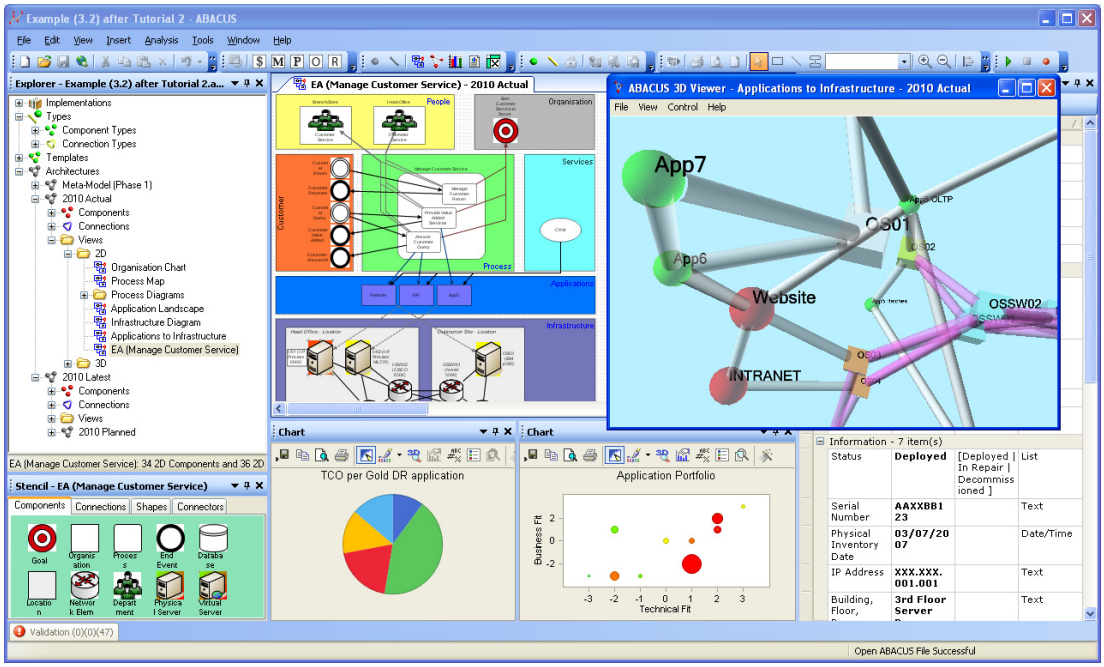
- ABACUS is of particular interest to organizations where flexibility is an important requirement.
- ABACUS is a solution well aligned with the requirements not only of enterprise architecture, but also a variety of infrastructure initiatives and process-optimization projects.
- As a strong enterprise modeling solution, ABACUS offers value beyond enterprise architecture for medium-sized and large enterprises, software companies, and SIs.

FUNCTIONALITY

SOLUTION OVERVIEW

Avolution supplies ABACUS Standard and Professional. The Professional products provide the full set of architecture-modeling and scenario-analysis capability, and the Standard products offer mostly architecture-modeling functionality. The solution enables enterprise modeling based on the component, connection, and constraints framework, with features for assigning properties for components and connections accessible through a tabular view alongside the graphical models (see Figure 1).

Figure 1: ABACUS overview



Source: Avolution

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The ABACUS Standard edition is the entry-level solution that offers comprehensive architecture-modeling functionality, some analytical capability, a common repository, and extensive data import and export capabilities. ABACUS Professional provides additional evaluation functionality, such as comparison of architecture options by performance, TCO, reliability, and other metrics. The Enterprise Edition is a collaborative solution where users connect to the enterprise server to synchronize their local copy with the server repository, resolving conflicts if they occur. This minimizes network traffic and allows organizations to avoid physical or performance limitations on the number of user clients that can work collaboratively.

The ABACUS Designer ships as an add-on to the Professional and Standard editions and enables the creation of meta models based on pre-defined ABACUS libraries or entirely new frameworks. The ABACUS Publisher, which is also shipped as an add-on to both editions, allows publishing of 2D and 3D models along with metrics to a secure web site to provide a customizable environment where if required only specific portions of models can be made available. Avolution also offers the Data Entry option, which is the stripped-down version, to allow use of the basic forms and grids in a CMDB/operational deployment.

The ABACUS solution is focused on three key aspects. First is the flexibility of meta model creation, including easy import from existing models, especially those built on Visio and Excel. Second is the simulation of architecture options, enabled partly by the capability to quickly create multiple scenarios through architecture and attribute property modification. And third is the integration with a range of infrastructure data sources.

SOLUTION ANALYSIS

Ease of Use

ABACUS Standard allows users to access the traditional scope of enterprise modeling (documentation, communication, collaboration, and monitoring). The ABACUS solution provides a set of key features such as model querying, model check-in/check-out, and policy-based notification in the event of a repository rule violation. Users can set their own rule/constraint definition, and can progressively delineate their definitions and enforcement.

ABACUS has a rich iconography that can be used to build components and create 3D models. ABACUS's ability to create 3D models is a unique feature that allows users to view models at a much higher level of detail than that of a 2D view. Ovum is impressed with the visual richness of the 2D and 3D models, including the component and connector iconography and the intuitiveness of the charts and graphs.

Tool Architecture

An ABACUS file comprises meta models and multiple architectures, along with views for each architecture. The solution provides a large set of libraries comprising standard frameworks such as The Open Group Architecture Framework (TOGAF), ArchiMate, and PeaF, as well as common architecture patterns.

At the heart of ABACUS is an XML-based file format (tree-based hierarchical file storage structure) that acts as an objects database. A new component or connection (the building blocks of ABACUS architecture models) is saved as another object in the objects database. This is significant because creation of new architecture meta models or enhancements to existing meta models can be implemented using simple "right-clicks" in the standard user interface, as opposed to making changes to the internal database that many modeling tools need to do. The changing of meta models solely by updating the internal database typically leads to long implementation times for customizing meta model frameworks, which again remain rigid and offer limited scope for expansion or enhancements.

The ABACUS approach to defining meta models uses three key units: component, connection, and constraints; a structure that conforms to the IEEE1471 standard (Avolution's founders were contributors to the IEEE standard). ABACUS ships with various libraries of such components, connectors, and constraints. There are more than 30 libraries or meta models, including TOGAF 8.1, 2008 and 9, Zachman, Capgemini IAF, PeaF, ArchiMate, BMM, BPMN, and DoDAF/MoDAF. The list of libraries includes over 50 common architectural patterns. The flexibility of the Avolution approach provides a much larger number of standard architectural frameworks compared to other modeling solution providers. The solution permits users to create new libraries or merge existing libraries to create an organization-specific framework in minutes.

Administration

To ensure integrity in a distributed repository environment, ABACUS makes use of the concurrent versioning system (CVS) approach (Subversion). The ABACUS server is built on top of a freely available CVS and can be deployed either centrally or distributed with synchronization between distributed servers that are managed automatically by the solution.

For managing system-user rights, ABACUS Administrator allows the management of a complete set of users and user groups with full CRUD (Create-Read-Update-Delete) permissions all the way to individual attribute level. Permissions are defined at the role or group level, as opposed to the individual user level, so that while membership of the groups may change, permissions remain fixed. For specific user permissions, a group needs to be created with a user as the sole member. To simplify administration, a graphical UI is included with ABACUS Administrator that allows the management of users, the membership of user groups, and permissions. ABACUS also allows users and user groups to be imported from standard directory systems such as Microsoft Active Directory.

Lifecycle Support

A typical usage scenario would involve the creation of architecture models either by modifying ABACUS libraries, importing models from tools such as Visio and Excel, or from scratch, and creating multiple architecture scenarios by editing properties (the data can be imported from databases, spreadsheets, and service-desk solutions) and components and connectors. The user would then run simulation models that generate metrics on the parameters to be evaluated. Simulations around the TCO comparison work by assigning life-cycle costs to components in an architecture, while reliability evaluation uses Monte Carlo simulations with mean time to repair and mean time between failure of the components and connections. ABACUS also provides simulations around environmental metrics such as power, heat, and carbon footprint, which are becoming an increasingly important consideration for organizations.

All components in the models can have properties such as behavior and cost attached to them and can be viewed in the context of the architectural models, allowing for a flexible solution. The properties provide the base data for simulation capabilities to help users make fact-based decisions on architecture trade-offs, understand performance, reliability, and cost considerations of comparable architectures, and analyze the impact of change. ABACUS's data model allows enforcement/warning constraints around data types to ensure high data quality.

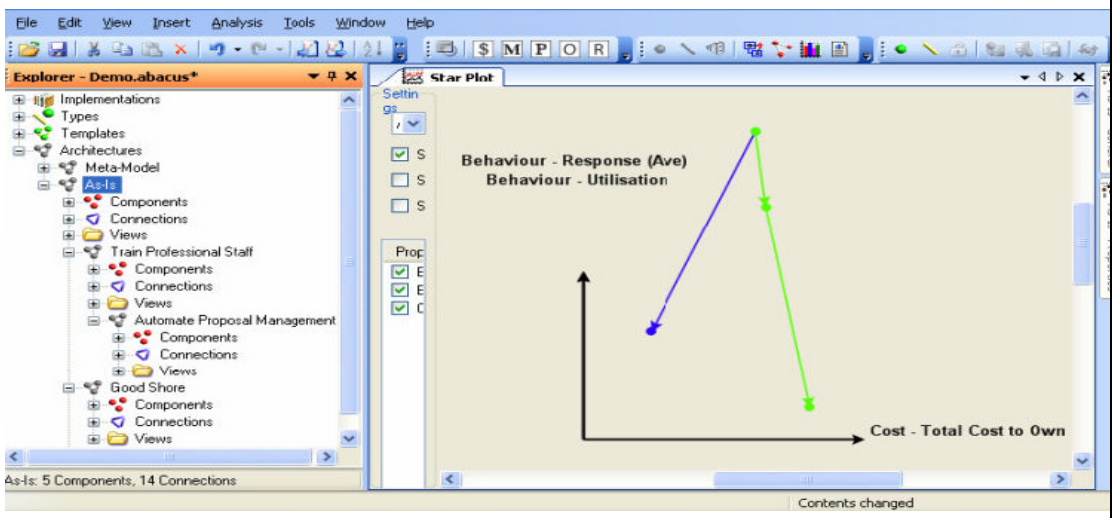
ABACUS Professional allows users to create many architectures in the same repository. This allows users to view as-is and to-be architecture(s) in the same model. Users can have more than two architectures, allowing true comparative analysis and not just the filtering or tagging of objects that most of the other tools do. The solution allows users to modify properties of the components to simulate the performance and cost impact of the changes. Simulations include a performance evaluation, which uses a discrete event simulator (DEVS) that assesses the flow of messages through the architecture across various components. Performance simulation is based on layered queuing network models and activity cycle diagrams.

Visualization

Simulation models that generate metrics are displayed through a set of charts and graphs. ABACUS provides three primary charts for analysis: timelines, capability space charts, and trade-off diagrams. The timelines offer snapshot visualization to provide a collated view of historic events, and the capability space charts offer options analysis for tentative roadmaps. The trade-off diagrams rate architectural scenarios against multiple parameters and can include factors such as openness and security, in addition to performance, reliability, and TCO. The trade-off diagram allows easy visual determination of the evolution of architectures and allows users a high degree of flexibility in prioritizing decision parameters.

2D views can be exported to standard image formats, SVG, and HTML, and 3D views are exported to VRML or HTML. Reports are exported to HTML, PDF, Crystal Reports, Microsoft Word, and Microsoft Excel, with graphs exported to BMP. The entire model can be exported/published to XML, Microsoft Access, or HTML.

Figure 2: Trade-off analysis



Source: Avolution

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SOLUTION STRATEGY

Avolution focuses on large enterprises that have more than 250 people and complex technology infrastructures with a combination of legacy systems and a strong pipeline of new developments. Avolution's target markets include architecture practitioners in complex environments, SIs, consultancies, software/system development houses, and infrastructure providers. Avolution's recent partnerships will also allow it to broaden its reach and move up the stack to target larger customers.

Return on investment cannot be measured exactly and depends on benefits such as increased re-use of existing solutions/resources, reduced time for product transformations, and improved architecture-related decision making. Avolution claims that ABACUS practitioners have reported a reduction in process analysis time, an improvement of between 20% and 30% in the success rate of proposals, and have avoided additional costs by not making wrong decisions. The common meta-model approach can provide up to 20% in overall efficiency improvement across an organization.

Avolution sells its products through a direct sales force, strategic partnerships with companies that influence corporate IT decision-making, and channel partnerships with organizations that advise corporations on their IT and business strategies.

Avolution has business partnerships with Logica, BT Global Services, Capita, Arismore, Edarat, Resultex, and ArchAngel IT, as well as technology partnerships with Microsoft, The Open Group, and Pragmatic EA. The partnership with Logica in particular is noteworthy because ABACUS is Logica's preferred global solution for enterprise architecture and SOA. Avolution is developing the capability for ABACUS to guide an architect to a preferred to-be architecture from a set of potential architectures, according to pre-defined metrics and patterns. The company continues to collaborate with the University of Technology, Sydney.

Ovum believes the Avolution metrics-based approach will become increasingly pertinent and there is a strong possibility that a large vendor will enter this space in the next three years. Avolution's continued relevance is therefore contingent upon expanding its direct sales and channel partnerships, something that might prove difficult because of the small size of the company. Although this is mitigated by partnerships with tier one consultancies. In addition, the company needs to build closer relationships with other ISVs in areas such as business intelligence, software development, and systems management.

ABACUS can be supplied as an integrated suite or as individual component modules. Licenses need to be purchased upfront and there is an optional annual 20% maintenance fee for general maintenance. The average project value over the first year is £100,000 with services comprising 40% of the cost, with the average cost for the following three years at £40,000 per annum (primarily maintenance). Avolution typically targets a quarterly minor and an annual major release strategy for its products, with beta releases available one to two months prior to this for refinement purposes.

IMPLEMENTATION

According to Avolution the deployment effort for ABACUS is minimal for basic implementation where organizations can easily download and install ABACUS. Implementation takes about an hour, and there are no significant business procedures that need to be changed because ABACUS integrates with many standard business methods, processes, and frameworks.

The company has partnerships with several SIs for value-added services, but usually not much expertise is required for installation. Unlike a lot of focused modeling solutions, ABACUS is aimed at enabling the individual architect to quickly define architecture models and perform trade-off simulations. Therefore installation does not have to involve the usual model-building phase. ABACUS can be deployed using a modular approach and organizations can implement ABACUS Standard as the base product and deploy the other suite products (ABACUS Professional, ABACUS Designer, ABACUS Administrator and ABACUS Publisher) as add-ons.

Avolution's typical deployment involves between three and five seats for the architecture team, in addition five to 10 business analyst seats for BPM and about 10 data-entry seats. ABACUS clients are Windows .NET applications, which run on Microsoft Windows 2000, Windows XP SP2, or later platforms, and the ABACUS server requires the Subversion platform which is available for Red Hat 8.0 and 9, SPARC/Solaris 2.5–10, Mac OS X, Windows NT, 2000, XP and 2003, HP UX, AIC, and IBM i5/OS. ABACUS Standard requires Microsoft Office 2003 or higher version for Visio and Excel import/export features. The ABACUS Publisher also runs on these platforms as well as accommodating Linux and Mac OS. The Publisher client requires Firefox 1.5, or higher, or Microsoft Internet Explorer 6, or higher, and the SVG and VRML Viewers, which are freely available.

The company offers half and full-day training courses either on site or at the nearest Avolution office, in addition to self-guided computer-based learning courses. Avolution hosts an online community that contains tutorials, case studies, libraries, and user forums for assistance. Product support is based on the type of contract selected by organizations, which can be general, gold, or platinum maintenance. The general category provides only minor upgrades of ABACUS (unlimited) with 24x7 hour email support. The gold and platinum cover offer unlimited major and minor upgrades with 24x7 hour email support, nine-hour-per-day phone support, and extra hours of on-site support at a discounted rate depending on the license scheme purchased.

Deployment examples include:

Birmingham City Council (BCC): The council is one of the largest local authorities in the world and is several years into a 10-year/£450 million business-transformation program. One of the first initiatives undertaken was to construct the "Council in a Box" enterprise model in ABACUS as a single point of truth for the council. Once populated, the ABACUS repository was used to support various portfolio-management and transformation initiatives and to analyze and communicate the trade-offs and benefits of various alternatives across people, processes, and technology. One such program, the corporate services transformation (CST), recently used ABACUS to successfully navigate an optimal path for cost and complexity.

AXA: Customer contact centers are the front line of customer support, and with over 50 million customers globally pose a significant and critical challenge. Their stability is paramount to good customer satisfaction so optimizing this stability requires more than "back of an envelope" analysis techniques. This is where AXA is using ABACUS. The current state architecture was discovered and entered in ABACUS and then various simulations were run against the model to expose the root causes of any stability issues. Several alternative solutions were proposed before deciding on the final solution. On implementation of the proposed solution, the actual performance was measured and it perfectly matched the predicted results from ABACUS.

BT: Carbon credits and energy-use issues have the attention of many large organizations looking to benefit from enterprise-modeling techniques for current and future modes of operation. British Telecom has a strong reputation of engineering for sustainability, and has used ABACUS to analyze the environmental impact of various architectural options from start-up, through operational life, to decommissioning. ABACUS has been used to look at various flexible working options, build structural models of each alternative, and analyze the energy footprint. Using ABACUS, British Telecom ultimately chose a recommendation that could clearly show a significant reduction in environmental impact.

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