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Butler Group
a Datamonitor Company

TECHNOLOGY AUDIT

OutSystems Agile Platform 4.2

OutSystems

BUTLER GROUP VIEW

ABSTRACT

OutSystems Agile Platform (OAP) is a software development platform for composing Web-based business applications, whether targeted at Microsoft .NET or Java environments. The product comprises: OutSystems Service Studio, an Integrated Visual Environment for program-less design and composition of an application; OutSystems Service Center, which is a deployment and monitoring engine and has a centralised management console for Application Management; OutSystems Integration Studio, for building integration components; and OutSystems Embedded Change Technology, a framework which facilitates collaboration between developers, project managers, business analysts, QA professionals, and end users. The product can offer fast development turnaround and is highly suited to rapidly changing business requirements. OAP is suitable for companies adopting Agile development methodologies, or which have long project backlogs and limited in-house resources for custom development. The system is less suited to companies that have heavily invested in traditional software development departments. The facility to target either .NET or Java from one single application source is attractive for businesses with heterogeneous environments.

KEY FINDINGS

- ✓ Java or .NET deployment from the same source.
- ✓ 1-Click-Publishing process achieves fast deployment.
- ✗ Testing tools beyond validation are not in-built.
- ℹ Can be installed on Windows or Linux platforms.
- ✓ Highly visual, coding-free development for many business applications.
- ✓ Integrates Agile development with model-driven development.
- ✗ Not suitable for well-established custom-development operations.
- ℹ Extensible platform enables creation of reusable components.

Key: ✓ Product Strength ✗ Product Weakness ℹ Point of Information

LOOK AHEAD

OutSystems releases a new version and three minor versions of OAP on an annual basis.

FUNCTIONALITY

Product Analysis

OutSystems Agile Platform combines Rapid Application Development (RAD) and Agile techniques with the Model Driven Development (MDD) approach for creating and managing Web-based business applications. OutSystems' offering comprises the OutSystems Agile Platform (OAP) for application development and the Agile Network, an on-demand solution for Agile Project scoping and management. The combined offering (OAP + Agile Network) provides end-to-end application lifecycle management capabilities including creation, deployment, maintenance, Agile Project management and ongoing application change management. OutSystems has incorporated the essence of Agile methodologies in its platform and automated them, leading to a significant reduction in development efforts, a shorter development cycle, and low overall cost of development. Butler Group also agrees with the vendor's claim that most significant benefits will be realised in the form of reduced application maintenance costs.

An important aspect of OutSystems' technology is that it allows organisations to build and deploy applications on their platform of choice. Applications built using OAP can be deployed either on a Microsoft .NET platform or on a Java-based machine; the developed applications are either pure .NET or pure Java with no dependencies on the OutSystems platform itself. Furthermore an application built for one platform can easily be transitioned to the other; the process does not require any code changes. Butler Group considers this to be an important differentiator as customers are no longer prepared to be locked into proprietary platforms.

OutSystems has rebranded its development platform as Agile; the move signifies the vendor's emphasis on Agile development methodologies and is reflected in the OAP's capabilities. The OAP however is not tied to any specific Agile method; instead it focuses on managing rapid and inexpensive change in applications' functionality driven by feedback from business users. Applications can be quickly created using the OAP, and can be modified during any project phase to incorporate requirement changes based on user feedback or business needs. This built-to-change approach ensures that applications are constantly aligned with business requirements, and have high adoption rates.

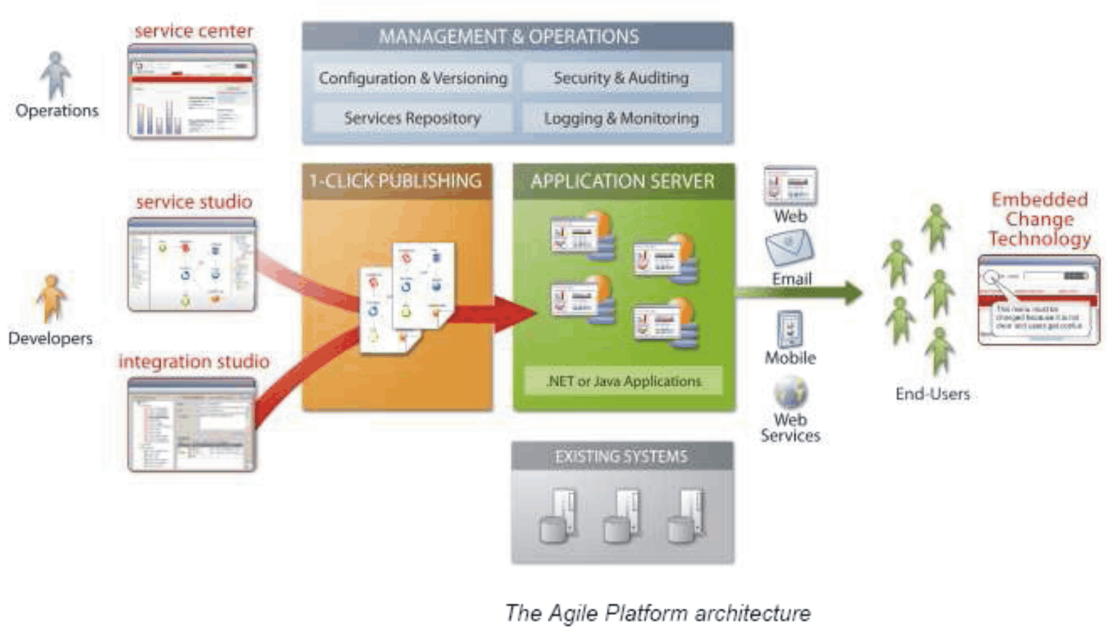
The OAP adopts the MDD approach towards development. The solution ships with various pre-built code components exposed as icons in a visual development environment, enabling developers to create Web-based composite applications with relative ease, without having to write custom code. Most back-end database connectivity and transactions are also automated by the solution, with an option to write custom SQL for advanced operations. Furthermore, the solution automates the build, deployment, and ongoing change management for such applications. The product is positioned for use by developers with some coding expertise, however, since it uses a visual coding model it simplifies development and makes it easy for developers to learn to work with the product, reducing the skills overheads required in using programming languages. Certain specialist tasks may warrant custom coding efforts for which a skilled developer would be required. Developers can take advantage of the platform's extensibility features, such as JavaScript, HTML, and advanced SQL, to create components or connectors which can be exposed in the development environment for reuse.

Another innovative aspect of the solution is the integrated change management functionality; OutSystems' platform offers integrated change management from an application development perspective, whereas the on-demand project management component helps collect business-user or test-engineer feedback in the form of comments and screenshots to be delivered to project managers and developers.

The OAP contains an embedded True Change engine which validates changes made to applications or their components across all dependencies, and automates the change process wherever possible, ensuring that all impacted components are updated. In case such automatic correction is not possible, the solution prompts users to manually change components for consistency.

All applications developed and deployed using the OAP can be managed from a central console which leverages an underlying repository for details such as versions, configuration, and dependencies, thereby simplifying the administration tasks. It also allows stakeholders to implement security policies for all applications in one place. OAP automatically validates a design as it is built, however, Butler Group would like to see additional testing tools built in to the platform to cover, system testing, Web design, and security. The product is also best suited to business applications and will not fit in with heavy investments in traditional custom development. In Butler Group's opinion, OutSystems Agile Platform and Agile Network v4.2 is a mature offering which enables client IT teams to rapidly develop and deploy portable business applications.

Figure 1: OAP Architecture



Source: OutSystems

DATAMONITOR

Product Operation

OutSystems Agile Platform is an on-premise solution that can be deployed on either the Microsoft .NET framework running on Windows Server 2003, or on a Java EE application server running on Linux. The solution supports Microsoft SQL Server and Oracle 9i databases. The product has been designed for developing Web-based composite business applications, and thus its architecture closely follows the Service Oriented Architecture (SOA) approach. The OAP (see Figure 1) comprises the Service Studio, Integration Studio, Service Center, Agile Platform Server, and Embedded Change Technology. A brief description of these components is given below:

Service Studio: This is the component which has been referred to as the visual development environment in the previous section. It is a desktop development environment aimed at developers who prefer model driven development over traditional development approaches. The module enables users to quickly create business applications using visual code components which can be selected from a side pane. Users can assemble components together to create a solution model which defines the intended business application. The module supports modelling of rich Web 2.0 User Interfaces, business logic, database components, integration components, Web services, application security rules, and scheduling activities. The previously mentioned True Change engine is also embedded in this module. Applications created using the Service Studio can be compiled and published to the Agile Platform Server within minutes to work with various client access tools such as Web browsers, mobile devices, and e-mail clients. Developed applications are also reflected in the Service Center module. Managers can deploy the application to the server farm mapped to the Service Center.

Integration Studio: This is a desktop development environment aimed at developers. Integration Studio enables users to extend the functionality of the platform by creating additional code components which can be exposed in the Service Studio for use by other programmers. Integration Studio provides Wizards to identify, map, and integrate databases, code libraries, and SAP components. Additionally, users can leverage an Integrated Development Environment (IDE) such as Microsoft Visual Studio or Eclipse to create custom integration adapters, which can be published to the Agile Platform Server, thereby making them available for reuse and extending the platform's capabilities.

Service Center: This module enables Web-based centralised management of the application development platform and the various applications developed through it. IT managers and stakeholders can put in place solution-wide access control policies, and can perform version management and configuration management for applications, services, components, adapters, and other resources alike. IT teams can also monitor application performance through the Service Center, and create performance and event logs for auditing and for identifying quality issues. The module further allows IT managers to govern their hardware infrastructure.

Agile Platform Server: This is the server module of the OutSystems Agile Platform, which comprises various components and services. The module includes a collection of server-side components grouped under Build and Change Services. It also includes a metadata repository (implemented in an Oracle 9i or SQL Server database) which contains information about all resources managed by the platform. Applications built using the Service Studio module are published to the Server module, and simultaneously reflected in the Service Center module. When a user chooses to deploy the application in the Service Center, the server module creates the target executable based upon the platform chosen by the user.

Key Features of the offering are as follows:

Time-to-Market – Projects are typically delivered in six to ten week time-boxes. User feedback can be included throughout the creation phase, ensuring final adoption of the solutions and resulting in project success rates exceeding 80%. The quick turnaround on changes reduces maintenance costs, and helps ensure applications are constantly aligned with business needs.

Learning Curve and Knowledge Transfer – A point-and-click visual environment is provided to rapidly compose, change, and deploy applications, including the design of user interfaces, business rules, persistent data repositories, Web services, and other integration interfaces without resorting to programming. The visual interface shortens the learning curve and, coupled with the graphical definitions of all application layers, it also eases the knowledge transfer between project members.

Hot Deployment and Rollback – Deployment into production is done with one click and with virtually no downtime. This eliminates the need to schedule time slots for deployments, avoiding downtimes and consequent business disruption. Rollback to a previous working version is also performed with one single click, as previous versions are held in a repository – a valued feature for administrators.

Service Oriented Architecture (SOA) Strategies – The OAP natively imports and exposes Web services, and offers an interface to define custom integration components with existing systems. All components can be reused by new applications, ensuring maximum leverage of existing investments. Components can be fully integrated with the existing IT landscape to help implement a Service Oriented Architecture.

The product also facilitates user collaboration over projects, and provides personal as well as team sandboxed environments, and a distributed visual debugging tool. Users may even 'detach' applications created using OAP from the platform, and deploy them on a different server.

Horizontal scaling from small to large installations is easily achieved by simply plugging in a new Application Server, configuring it in the Service Center, and then the next time an application is published the Service Center will automatically deploy the application to all Application Servers, including the recently added ones. In more complex architectures, load balancers can be included in the architecture to distribute requests and transactions. Failover is automatic in case of machine failures in application server clusters; in case all servers go down at once, new servers can be added and OAP deployment services ensure that all applications are compiled and published to these servers, minimising the downtime.

Product Emphasis

The OAP is a code-free visual development platform for creating, deploying, and managing Web-based business applications for .NET or Java EE environments, and can be easily learned by developers. The product helps reduce overall costs of development by shortening the development cycle, increasing resource productivity, and improving the time to value with a short learning curve. In Butler Group's opinion the foremost benefit of the solution is the low cost of ongoing change management and application maintenance. For typical IT projects, 60-80% of the cost of an application is incurred in the operations and maintenance phases. The built-to-change functionalities of the OutSystems platform reduce this cost by simplifying and automating application change management. Butler Group believes OAP can significantly improve the time to market and the quality of business applications.

DEPLOYMENT

OAP installation can be completed in a few hours depending upon the infrastructure complexity at the customer end. Furthermore the deployment can be handled by client resources themselves; the vendor provides technical services and assistance if requested by the client. Post-deployment resource requirements are minimal as the solution provides a centralised management console (Service Center) which simplifies and automates various administration tasks. The vendor believes that clients need not increase the size of IT operations teams to accommodate new applications, as OAP applications require significantly lower support and maintenance resource utilisation.

Once the platform is deployed, time required for application development can vary depending on complexity. Customer projects take on average six to ten weeks to be implemented. Large projects can take up to four months. OutSystems provides a set of pre-built solutions that can be used as building blocks to further accelerate the delivery of enterprise applications. These can be purchased separately and customised to address the customer's specific needs. The standard offering provides a built-in mobile engine with multi-device rendering and out-of-the-box integration with SMS and Multimedia Messaging Service gateways, and e-mail capabilities.

The resources required to work with OAP include application designers with general programming skills who work with OutSystems Service Studio. The learning curve in developing with Service Studio is very short (e.g., two days to start building applications). The formal certification programme requires ten days, after which the trainees are able to create complete applications with medium complexity. System Integrators work with OutSystems Integration Studio to design integration components, for example, against external databases. Complex customisations may require developers with C# or Java knowledge.

OutSystems provides various online as well as classroom training and certification courses through the Agile Network Academy. The courses are designed to suit various user roles and categories. The vendor also offers integrated skill management which includes tracking and maintaining skill profiles for users. There are several levels of support available, with clear Service Level Agreements. Support can be provided via e-mail and a telephone hotline, on site, or remotely. The OutSystems implementation partner's network can also provide support. A complete support certification process is in place to ensure the quality of the resources providing this support to customers.

OutSystems' product is based on a distributed and scalable double-stack architecture (Java Enterprise Edition, .NET). Thus the same application model can be deployed on two platforms:

- JavaServer Faces and Java on a Java Application Server on Linux.
- Microsoft ASP.NET and C# on Microsoft Internet Information Server on Microsoft Windows Server.

OAP has built-in support for Microsoft SQL Server and Oracle databases.

Integration can also be achieved through legacy systems' existing Service APIs. The creation of integration components is performed using OutSystems Integration Studio which automatically generates a stub Java or C# project to implement the connector. System Integrators then use this stub to implement the desired behaviour of each method. The integration component is then compiled and published (with 1-Click) and becomes available as visual building blocks inside OutSystems Service Studio to compose applications. Wizards are also available to automatically wrap existing .NET and Java libraries, simplify and accelerate the integration with SAP, and easily create connectors to external databases.

The Agile Network Community provides further value to customers by allowing them to share solutions, components, and accelerators. The company has contributed Single sign-on, document workflow, e-mail tracking, issue management, mobile messaging, centralised third-party entities (providers, customers, and partners) management, external system connectors (SAP, salesforce.com, etc.), auditing, charting, Asynchronous JavaScript And XML (Ajax) components, time management, and many more modules. These can be downloaded, modified, and used to compose new applications.

PRODUCT STRATEGY

OAP is industry agnostic and is suitable for solving a large set of business needs. OutSystems' customers span several industries and markets, such as Utilities, Telecommunications, Transportation, Government, Consumer Goods, Retail, Manufacturing, Technology Companies, Pharmaceuticals, and Financial Services.

There is a need for development solutions such as OAP, given that IT departments face an increasingly pressured and complex environment to support and service. OAP's rapid time to market can give businesses a competitive edge, bearing in mind that many Web-based applications have a short lifetime, and a quick development turnaround is of the essence. Traditional 8-12 month long projects that require large teams of consultants are beginning to be outdated for many business requirements. The cost of evolving such traditional applications is also prohibitive, whereas OAP puts the change process and implementation of its solutions in the hands of more business-oriented developers, leading to a far more flexible and responsive business.

OutSystems Agile Platform is targeted at medium-to-large companies (300-3,000 employees) with a considerable application backlog, limited IT resources, and no build capacity. Butler Group considers OAP to be particularly applicable to organisations that need to develop and maintain a large number of customer facing Web business applications. The product is sold both directly and indirectly. Direct sales channels operate in the USA, Portugal, and the Netherlands. Indirect sales channels include System Integrators, consultancy firms, and other technology partners that use OAP to create custom applications for their customer base. The indirect channel is being leveraged locally (through local partners in each territory) and globally (through global partners). OutSystems launched a new channel partner programme last year through the on-demand Agile Network. It involves partner training, certification, opportunity identification and communication, and relationship management. The key technology and business partnerships that support OAP include: Microsoft, SAP, Cap Gemini, Oracle, SF Data, Waterfield Technologies, Zest Group, Logica, COOL*Profs*, Normatica, and Glintt.

OAP pricing is based on infrastructure setup, users, and installed capacity which is measured in terms of Software Units (function-point-based capacity evaluation metric defined by OutSystems). The product is available in three different editions, namely Basic, Professional, and Enterprise. Named user, and concurrent client access licences are available for each of the three editions.

- **Basic edition:** includes one production server and one development box. In terms of installed capacity, the Basic edition supports up to 150,000 SUs for production as well as the non-production server. Number of concurrent sessions is limited to 100 for production and 20 for the non-production box, and five platform server logins are provided. This edition is suitable for small business and department-level usage.

- **Professional edition:** supports a production server cluster, a development box, and a QA box. The total capacity is limited to 300,000 SUs which can be scaled up to 600,000 SUs for an additional price for both production and non-production boxes. Platform server logins are limited to 25. This edition limits the number of concurrent sessions to 200 for production and 20 for non-production boxes. Professional edition is suitable for mid-sized enterprises.

- **Enterprise edition:** includes a production server cluster, a development server, and a QA server. Capacity starts from 600,000 SUs for both production and non-production boxes which can be scaled up according to client needs. This edition supports an unlimited number of concurrent sessions and platform server logins in case of production. Concurrent sessions are limited to 40 in case of non-production boxes. This edition is suitable for global organisations and their subsidiaries.

SUs follow the new "utility computing" trend where a customer gets all the software and pays for what is used. In the case of OAP, usage is reflected in the size and complexity of the applications that are hosted in the platform. The number of SUs of an application is computed by adding the SUs that correspond to the number of Service Studio visual elements that are used to make up the application.

Through extensive benchmarking, OutSystems has concluded that its metrics reflect the size of an application and can be directly translated in equivalent software metrics, such as Function Points or Lines of Code. OutSystems licences are perpetual or term. Applications that are no longer used can be removed from the installation and thus free up licences to be used by new applications. Support contracts are annual and a percentage of the installed capacity (18% or 21% of the licences, depending on the support level); the extended support option is not available with the Basic edition.

COMPANY PROFILE

OutSystems is a privately owned company based in Lisbon, Portugal, and has offices in San Ramon (US), and Maarssen (the Netherlands). It was created in March 2001 and has secured seed funding from Dutch venture capital fund Nesbic CTe Fund – Fortis Bank, and series B round of financing from PME Investimentos. Current investors are ES Ventures and INOV Capital. In 2003 the company reached its operational breakeven point.

Currently the company has just over 100 employees. All research and development, administration, and marketing activities are centralised in the company's headquarters. OutSystems' staff is split into activities as follows: Services and Support – 43%, Sales & Marketing – 19%, Research & Development – 26%, and Finance and Administration – 9%. OutSystems does not expect to grow in terms of headcount in the next 12 months. The size of OutSystems' customer base is 123; key clients include XDx, BSH, Wasco, Bristol-Myers Squibb, E.ON, UNILEVER, Van Ameyde, and OPTIMUS among others.

SUMMARY

OutSystems offers a highly versatile software development platform that fits well with the needs of businesses today, particularly the need to deploy to the Web. Its approach fits well with Agile development methodologies and moves towards SOA. The degree of automation in OAP raises the level of business-aware personnel who can be trained to use the system and develop applications far closer to the heart of business requirements than with traditional software development teams. The problem of bridging the IT and business cultural divide is considerably reduced through OAP. Should specialised business logic or components be required it is always possible to build these in standard Microsoft Visual Studio .NET or Java – this flexibility means that businesses are never restricted by the automated system.

Butler Group believes that most businesses can benefit from using OAP in their IT development projects. When coupled with the suitability of the tool within an Agile way of development, this makes the offering from OutSystems a persuasive proposition.

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