eReview
Whitepaper

...bringing people and documents together

eReview bridges the gap between document viewing technologies and generic Web-based conferencing technologies with best for breed features for real-time collaboration and decision making across the enterprise.

BPO
management services

Introduction

The maturity of Internet and concurrent advances in Information Technology have redefined the fundamentals of enterprise information exchange and have altered the institutions and mechanisms for the delivery of products and services forever. Collaboration has joined the ranks of integration and automation as a benchmark of business innovation and a hallmark of competitive advantage. In today's fast-paced world, successful organizations, whether large or small, are increasingly global in nature and whether they work on products or projects, such organizations interact daily with globally dispersed offices, suppliers, contractors, vendors, partners, and customers. Working collaboratively within this global environment is a challenge, as people and businesses must perform across geographical, cultural and temporal boundaries. Project and product teams are not only dispersed, but the work is increasingly cross-functional, cross-enterprise and multi-disciplinary, requiring inputs from individuals from both inside and outside an organization. During the last decade, organizations have also realized that effective knowledge management is the key to an organization's collective expertise. This knowledge exists in two primary forms.

- Tacit or unstructured knowledge that include ad-hoc ideas, brainstorming, etc.
- Explicit or recorded knowledge in the form of documents and structured data.

While there are solutions available to manage the structured data, organizations increasingly feel the need for a single environment that enables users across the enterprise to capture, manage, annotate, present, collaborate, distribute and share information created individually or put forth in meetings, conferences, trainings or ad-hoc discussion sessions, anytime, anywhere. BPOMS' *eReview* is a Web-based view and redline tool where multiple attendees or reviewers meet in simultaneously or sequentially to collaborate in real time on multiple scanned images, office documents, drawings or CAD files. Documents, drawings, and files and markup (redline) files can reside inside as well outside an ECM. With eReview, team members can address design issues, engineering change orders, project revision history, or other decisions by participating in web-based view and markup, sequential and parallel review sessions as well as live meetings supported by color-coded redlining, annotations, white-board, and textual and graphical chat, audio-video, polling and various other modes of communication. Saving the review session and meeting log as minutes will insure that a company will never lose track on how important decisions were reached.

Why eReview is Unique

- Combines web-based view and markup with sequential, parallel and simultaneous review process
- Team members can address project issues, track change requests, control revision history, or other decisions through sequential and parallel review sessions as well as live meetings using web-based view, markup and collaboration tool
- Intuitive and customizable user interface with role-based profiling
- Secured annotations with color-codes and access rights associated per user basis
- Server-centric solution with zero client administration

The features that gains eReview to be significantly competitive over other viewers are discussed in following sub section.

Zero-Client Administration:

eReview is deployed on a Web Application Server and lets the client download the applet to load on a web browser to view and annotate documents. Browsers compatible with Java 2 technology do not require any further installation. Application upgraded on the server is transparent to the client. The recent jar files are automatically download to the JRE catch and upgraded viewer is refreshed on the client machine instantly. This automated process saves administrative cost on the client machine.

Scalability:

The load on the server to serve larger audience is possible to be distributed over multiple load balanced servers on a server farm. The clustering and load balancing provides failover support and hence all the benefits of global Web clustering can be reaped. It detects the nearest server that has the document and markups for check-out and check-in purposes as well as directs the reviewer or meeting participant to the respective review sessions or meetings from among multiple servers running multiple collaboration sessions. The ultimate scalability is achieved through true web application architecture built into the product.

Customizability:

eReview User Interface is highly customizable. The tools available in eReview user interface can be removed or added to meet the exact customization required for a specific client. The client here means the end-user using eReview viewer through a web browser from a eReview deployed server. The user interface includes action buttons in toolbar; menus in menu bars, popup menu on right click, different work panels can all be tailored according to requirements. External actions can be furnished into customized new tool buttons or menus to execute actions not related to eReview such as launch new applications, kill external applications. etc. Role-based user profiling allows the administrator to create various role based user groups and assign a specific set of tools to each group to use. This helps to block certain viewing, printing or annotation features from a specific user group to achieve better control. When integrated with a DMS, the UI design and access privileges are assigned respecting the user roles of the DMS.

BPM Compatibility:

eReview easily fits into the exact business process management needs of an organization. Not only can the user interface be customized to match the precise requirements of an organization, but also a tight integration is possible adhere to BPM process or workflow requirements. Whether it is the insurance claims processing, engineering change order management, sequential design review or parallel design decision, eReview can practically fit into the business process of any enterprise. Server- side integration hooks available with the view and annotation activities let the integrator incorporate business rules to create tight integrations to match the workflow requirements.

Superior Viewing:

eReview reads and displays multiple formats (more than 200) natively without the need of the original applications that created the files. More importantly, viewing technology is far superior to other viewers. When viewed in eReview, the intelligence of the original file (for example, layers , blocks and views of 2D CAD formats, bookmarks of Portable Document Formats, brightness, contrast, aliasing of scanned images) are built into the product. Each document type in eReview is handled separately and the inherent characteristics of the original file are exposed through a special "Drawing Controls" tool. Hence consequently, all markups and annotations are placed as separate layers on the base document itself and not on a "viewable" format of the original file, thereby greatly reducing the complexity of maintaining multiple revisions of the same document.

Rich Annotation:

eReview annotations are capable of capturing both textual and graphical comments in each annotation type. The annotations are organized to support multiple file, multiple layers and multiple authors. They are mathematically formulated to move across multiple documents through copy and paste operations. Annotations are used to measure drawing units at different scale level in pixels, inches and feets. They can be calibrated to any possible units on-the-fly. WYSIWYG is one of most popular features in eReview annotations.

Printing and Plotting:

Printing and plotting into large scale is one of the most powerful strengths of eReview Viewer. The applet based printing develops a distributed printing capability. Also server centered printing capability make it easy to print to a remote printer that is available to the sever machine but not available to your current client system. Print with redaction and predefined watermark is one of the fancy printing features available in the product. Print preview with markup and without markup is the handy tool available to eReview users. Print to fit and current view let the user print entire drawing or part of the drawing.

Compliance:

eReview supports an open, heterogeneous platform and helps achieve and adhere to regulatory corporate compliance guidelines. It leaves audit trails of review sessions and keeps track of important decisions that have been made.

eReview Viewer Framework:

eReview Viewer has for different forms to be used by the end users. The most generic form is eReview applet that is based on zero client installation and server out of a web application server line Web Logic, Web Sphere, JBoss or Tomcat. Other three forms are derived from eReview applet to be used in different enterprise requirements. The core viewing technology is developed using Java 2 technology to provide extensive support for write once and run any where on any platform. Following section has described different viewer framework available to eReview viewer.

JAVA Applet:

- Applet allows using a generic document viewer on any web browser
- View many document formats without having any originating application
- Automatic software updates available from Web Application Server
- Support for secured server side document viewing imposing absolute restriction to the end user to access the physical document content

JAVA Application:

- Install as a windows desktop Application
- Associate file extension with eReview mime type to view and annotate documents from your local hard drives

Viewlet (eReview Proprietary Viewing Framework):

- Install *eReview* Application through a thin client applet (Viewlet) from the Application Server
- View and annotate documents from both eReview Application Server and client Desktop
- Automatic software updates available from eReview Application Server

ActiveX Component:

- An ActiveX wrapper is layered around eReview Java Beans to provide viewer extension for customized windows applications
- eReview events are controlled through ActiveX to Java bridge
- Develop custom viewers in Visual Basic or Visual C++ with eReview ActiveX Component

eReview Product Profile

Viewing:

- Support for true multiple document interfaces (MDI) as opposed to SDI. The host of files in different formats can be viewed within the single instance of the viewer. Tile, Cascade, and Navigation tools help organize multiple documents and switch one document to the other quickly

- The PDF documents are supported with reading original built-in bookmarks in the document. This allows switching to respective section of a large document easily

- A host of file formats (over 200), including Microsoft Office documents, printer outputs, CAD drawings (such as AutoCAD DWG, DXF, DWF, Microstation DGN), Portable Document Formats (PDF), Scanned and other Raster Images (such as TIFF, PNG, GIF, and JPEG) and many more supported.
  The entire list of supported file formats at http://www.ereviewonline.com/pdf/file_format.pdf

- eReview framework supports both server-side and client-side viewing. The server-side viewing adds one more level of security by preventing entire original document streaming to the client. As opposed to this client side viewing stream entire document to the client desktop and provides faster zoom and pan operations.

- Standard document viewing actions like interactive zoom, zoom to scale, pan, scroll, rotate, fit-to-windows, fit – to-image are all possible in eReview

- Interactive traversing through pages and different region of a complex document is possible through Over-View (birds-eye-view) window

- Both Side by side and overlay compare are available as a tool for visual document comparison. This is applicable for different file formats

- Document previewing is supported in eReview to provide faster access to the document content

- Large multiple page tiff and PDF files are stripped down to single pages on the server before streaming to the client. This let the client view documents faster without waiting for all the pages to arrive on his screen

- Control images image viewing brightness, Flip Images vertically and horizontally, display Image in Monochrome, Invert Image Colors

- Same user interface for viewing and annotating on hundreds of different document formats

- Enhanced and better PDF viewing by supporting PDF bookmarks

Navigation:

- Easy-to-use, simple, explorer-like navigation controls to navigate documents, pages within documents and markups/annotations
- Navigate between all pages or only pages with annotations with a click
- Get instant, on-the-fly summary of all comments/annotations within a collaborative session
- Audit trail by seeing author name, date and timestamp of the markup being created or modified
- See instant information about comments, documents, and pages within a document-review
- Full-text search capabilities on text-based documents; Search for text in MS Office, PDF and text documents Search annotations within pages of documents

Printing:

- WYSIWYG Printing
- Multi-page, multiple document printing
- Printing header, footer and watermarks
- Printing with or without annotations
- Options to print using local print drivers

Annotation:

- Extensive multi-layer, Multi-layered and multi-author markup paradigm
- Very easy-to-use and intuitive text-based and graphical markup/annotation tools, intelligent markups retain the information about the authors

- Color coding is applied to individual reviewer's annotations. Easy to trace each others annotation in a collaborative simultaneous redline operation
- Composite Markups allows to create many derivatives of markups such as Markers(Yellow lines), Question Marks, Exclamation Marks to name a few
- Associate text messages with specific parts of a document with Call-outs
- Create customized stamps for user action in a approval workflow system
- Add customized text-stamps and note-stamps specifying date, timestamp, author-names
- View area, perimeter for graphical markups ,add textual comments for all graphical markups
- Comment on documents through easy-to-use, threaded comment markups. Multiple users can add their comments anywhere on the documents that get saved as threaded   comments, providing history of all discussions
- Save and load markups created on whiteboard
- Exchange markups across documents of different types. Copy-paste of markups across document types
- Optionally burn annotations into the document using eReview save as tool. It makes easy to create quick snaps of the current state of the annotated document. These files can be sent as an email or even inserted into the workflow of an external DMS
- Iconize annotations to get more viewing area on the base document
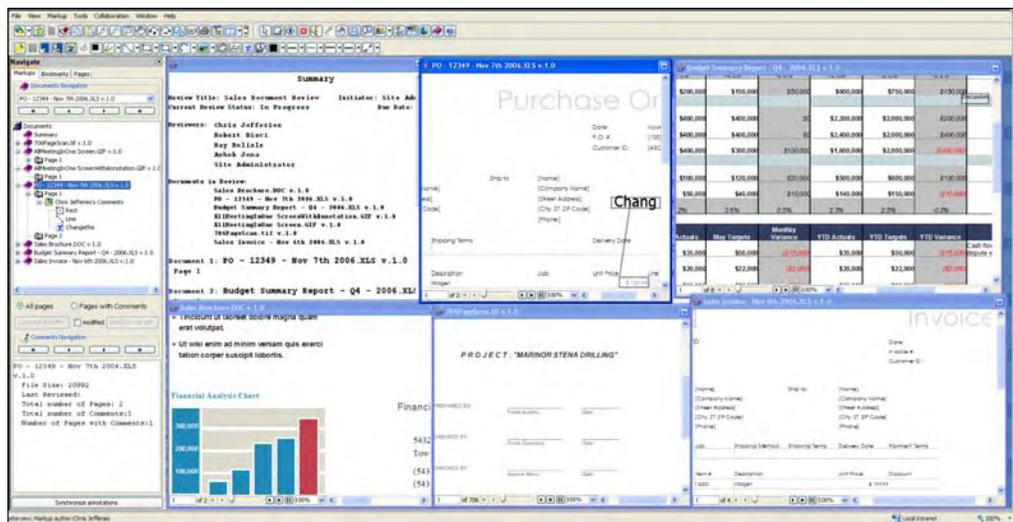- Add overall comments to be seen by all users at any time

Fig - 1: eReview MDI

Customization:

- Present toolbars with configurable tools (buttons), according to selected preferences on user roles
- Configuration parameters are in XML format for easy to read and change
- Configure menus and menu options
- Change your applet user interface layout by dock, undock, move or float toolbar operations
- Enhance or reduce toolbar size by adding or deleting buttons

- *eReview* integrates well with all document management systems, but also works outside of document management system
- Create new buttons and new actions to add new features in base eReview application
- Full-fledged administration module for eReview administrators
- Control Server-side parameters through "Administration Module" interface
- Create and modify "User Roles" on demand. Set "User Profiles" to provide role-based user access. Set User's Interface (UI), according to the ones saved in "user profiles"
- Intuitive graphical user interface to have an instant preview of the changes made
- Customize color scheme of the graphical user interface
- Create new buttons and new actions to add new features in base eReview application

Modularity:

- Full viewing modularity: When viewing different formats, only the required viewing modules load, resulting in a very thin and on-demand applet
- Thin-client, lightweight java applet with minimum size of 1MB
- Integrated with eReview Collaboration Portal that has extensive meeting scheduler and meeting management features

Collaboration and Conferencing:

- Sequential and parallel review processes as well as synchronous (live meetings) and asynchronous sessions supported by color-coded redlining, annotations, white-board, textual and graphical chat, audio-video, polling and various other modes of communication augment the core view and markup features of eReview.
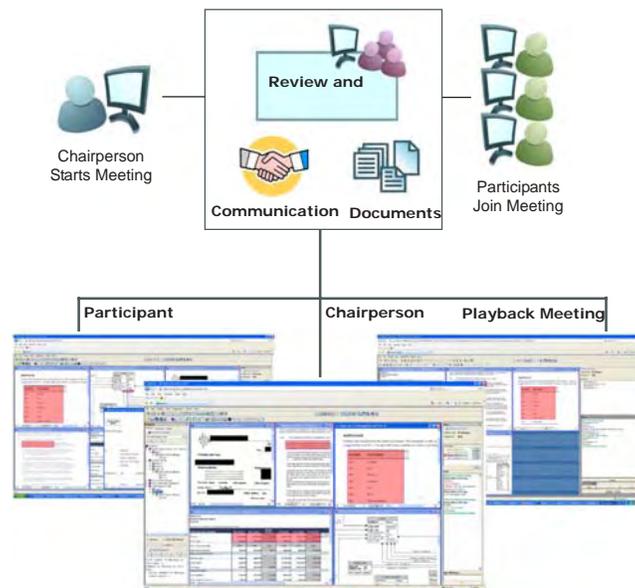

Fig - 2: Online Meeting and Playback

Asynchronous mode in eReview can support both sequential and parallel review document workflows. In sequential review sessions, after an originator starts a review session, the participating users carry on their review in a pre-defined order. Annotations created by a reviewer are visible to other reviewers in the workflow. In fact, each reviewer is presented using a predefined color coding schema, which is also reflected in the markup color created by each reviewer. In a parallel eReview session, after an originator starts the session, multiple reviewers can review a particular set of documents asynchronously (in their own time).

Review related documents

Initiator starts an Asynchronous Document-review

Reviews are invited to put their necessary comments

Initiators and Reviewers can "Accept" or "Reject" after each document review

Asynchronous Document Review

Participated reviewers join review session in their own time from anywhere on any platform

Easy to use threaded chats annotation to get a collective decision on any specific part of the document

Annotations and comments made on each document are saved on a central server for easy access to any participant

Subject exparts are invited instantly to join the session through integrated email interface
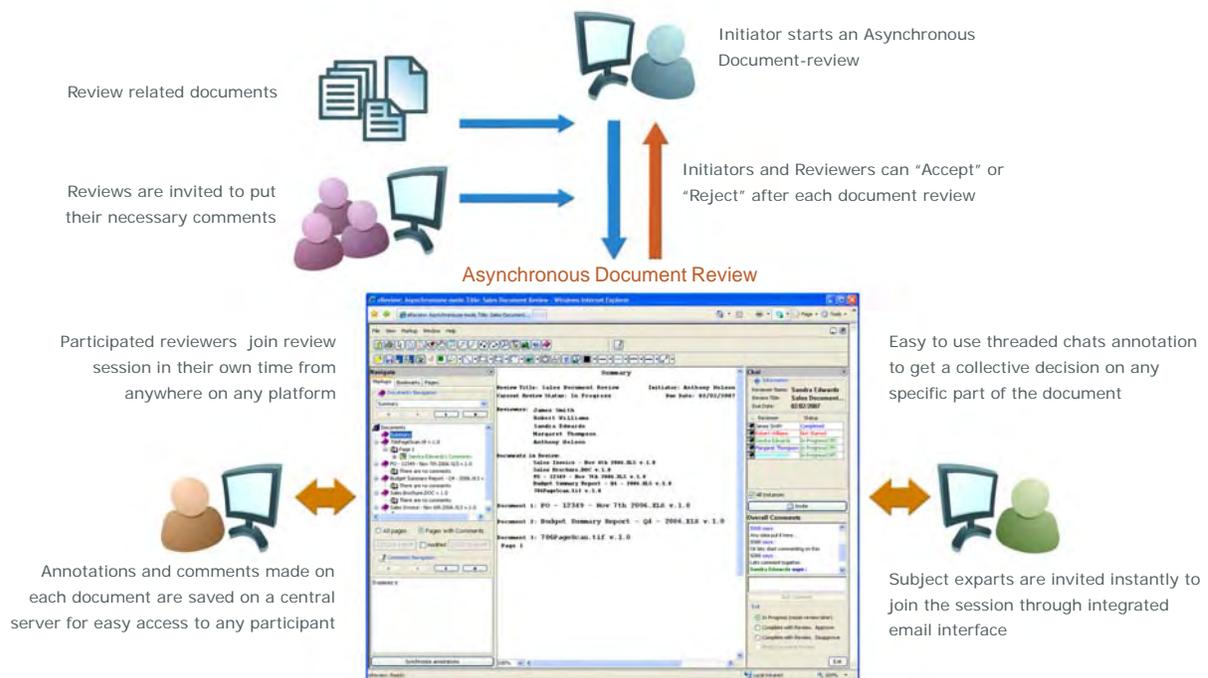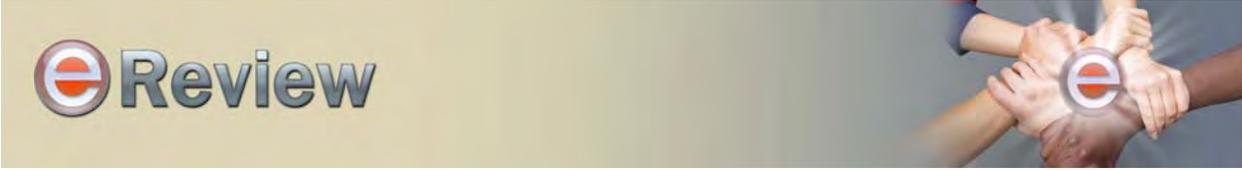
Fig - 3: Asynchronous Document Review

- Switch instantly between real-time collaborative and individual reviewing
- Embed threaded discussions/chat sessions on selected portions of the documents
- Utilize User Pointer to locate different viewing sections in an online meeting
- Modify eMail invitation text to any content according to choice
- Whiteboard and polling tools enable collaboration and conferencing
- Audio and video conferencing tools within the same document-sharing environment to facilitate effortless audio/video communication
- Desktop and application sharing features present
- Webcast sessions of ongoing meetings to multiple passive attendees
- Save the review sessions and meeting logs as minutes - insure that a company will never lose track on how important decisions were reached
- Save or playback collaborative sessions in a lightweight XML files
- Restore finished sessions through history module

Interoperability of eReview

eReview is more than people collaborating with other people. To create true collaboration, organizations also need application-to-application interoperability. While choosing your collaborative platform, you must ensure that it is not a closed one and can integrate and interoperate with other systems easily and effectively. For this, the system must have a good interface to integrate with other applications.

eReview has a rich set of APIs to allow integration at various levels. There are four major ways to integrate another system with eReview:

- **HTTP Request to eReview Servlet** takes API parameters as request header and in return sends a thin applet instance to end user browser.
- **eReview Applet public API** available for Java Script language programming. An embedded eReview applet inside HTML page is exposed as a object to Java Script. Users invoke the applet API to load document and load annotations.
- **eReview Applet as a OEM Viewer engine** inside third party applets. Customized applets are possible to create using eReview and collaboration engine.
- **eReview Java Beans exposed for ActiveX** client to utilize eReview power of view and collaboration.

eReview's integration with EDM/PDM systems allows project participant to view, annotate and collaborate on centralized documents in different user interface modules. In a business workflow process eReview is treated as single unique universal tool for view, annotate, print and collaborate on documents of many file formats. Following diagram illustrates an overall architecture of eReview integration with any DMS client.
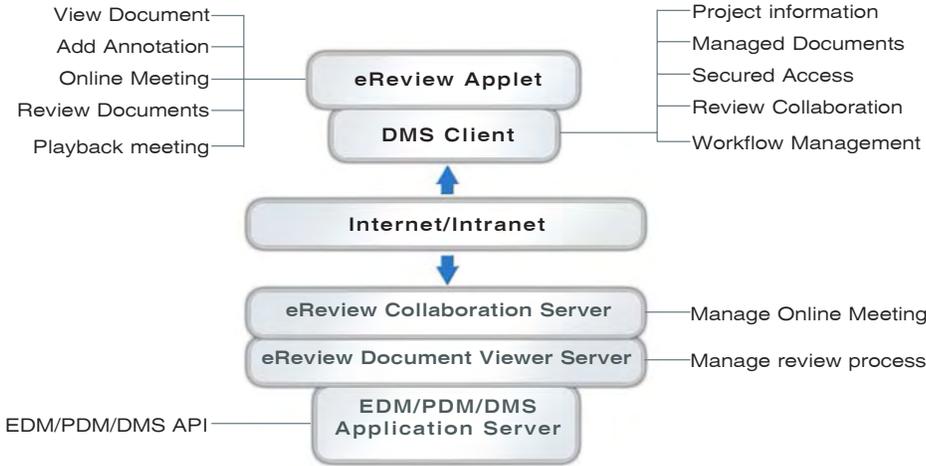
Fig - 4: Integration Architecture

ROI with eReview

- Eliminates the cost of maintaining multiple software to view, print and comment on myriad of documents. The originating application is not required; eReview can view and print hundreds of file formats, including raster and scanned images, Office documents, CAD models, and many other file formats

- Reduces total time-to-market significantly-Document centric on-line meetings, parallel and sequential review processes, synchronous and asynchronous review sessions ensure multiple reviews and approvals take lot less time

- Reduces travel costs, as geographically dispersed team members can meet in online, sequential or parallel review sessions as and when required

- Centralizes communication with clear tracing through color code and user signature mechanism – cuts down on fax, phone, e-mail, and courier

- Fits into the exact business process in an organization

- Enables all types of users across the enterprise to quickly provide feedback using one simple-to-use Web based product. Profiling also helps scale the product interface according to the user's profile, novice or advanced. For example, a purchasing agent can point out a problem in an engineering drawing without the knowledge of a CAD system

- Helps avoid costly errors through document-centric collaboration between departments, divisions, teams, projects, customers, consultants, vendors, contractors and suppliers sooner. Inputs from a broader spectrum of customers, employees, suppliers and stakeholders

- Helps achieve and adhere to   regulatory corporate compliance, leaving audit trails of review sessions, keeps track of important decisions

- Minimizes the learning curve. The software can be easily configured to match the user's current experience

- Eliminates the migration cost involved from hardware or software perspectives as the software is cross-platform, server-centric and runs on all flavors of UNIX,Windows,Sun-Solaris, Red-Hat Linux and MAC-OS/X

Conclusion

Business today is ruthlessly competitive on a global scale. To be successful, companies need to focus on improving internal processes to accelerate time-to-market and achieve higher return on investment. Many new methodologies are being employed to achieve the desired levels of success – from small, focused project teams, to outsourcing, to using resources scattered around the world. Companies must strive to find the right solution that enables them to connect with their global team and knowledge base. Suppliers, vendors, partners, and customers make up "virtual organizations" or value chains. Global collaboration among all members of the "value-chain" during the product or project demands that they have proper access to all information and documents when they require it – in the correct version – irrespective of where the persons or the documents are located. eReview provides a digital collaborative platform where geographically distributed team members can view and co-view, review, markup and co-markup; approve, reject and take joint decisions; subscribe to event notifications; schedule and hold online real time meetings; and use online discussions to find solutions to business issues. Global virtual teams with proper asynchronous and synchronous collaboration tools running on robust, scalable and secure platform can increase the innovation, speed, and effectiveness of an organization many fold.

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