SRE

ASSIGNMENT-1: EXPLORING REQUIREMENT ENGINEERING TOOLS

GROUP 9:

1.	ZUNAIRA ABDUL AZIZ	BSSE23058	JAMA CONNECT
2.	FAIQA ARSHAD	BSSE23028	SCRUM WORKS PRO
3.	HAMNA FATIMA	BSSE23080	REQVIEW
4.	AREEBA SHAHBAZ	BSSE23097	VISUAL PARADIGM

TABLE OF CONTENT

SCRUMWORKS PRO

Overview:

ScrumWorks Pro is an effective Agile project management software that is suitable for the Scrum and Kanban methodologies. It helps in planning, tracking and reporting of Agile projects and assists in managing product backlogs, sprint and releases. As such, the ScrumWorks Pro provides small to medium-sized teams with the ability to work in parallel with each other but still have complete transparency to the progress of the project.

Purpose:

ScrumWorks Pro is targeted at the Agile teams and their project management requirements to help them implement Scrum and Kanban. It provides a single platform to write user stories, manage backlog, plan tasks, track sprints and monitor releases all in a manner that is consistent with Agile principles.

Version Control and Customization:

It can also be integrated with the version control system to track the progress of the project and together with ScrumWorks Pro, it offers a detailed level of flexibility in the reports including sprint report, velocity report, burn-down chart among others. It also allows Agile project managers to modify the features and the process of tracking projects according to the needs of the particular team. Furthermore, the ScrumWorks Pro enables the users to export reports in different formats such as Excel and PDF which can be used to share important information with other parties.

Parent Company:

ScrumWorks Pro is the product of CollabNet; a US based software company that was founded in the year 1999. CollabNet is an Agile project management and DevOps company, which focuses on helping an organization to go Agile in software development. The purpose of the company is to assist the teams in speeding up the innovation and providing high-quality software with the help of collaboration and visibility.

Primary Features:

- **Backlog Management:** A tool that will allow easy creation, prioritization and management of product backlog and user stories.
- **Sprint Tracking:** Monitor the progress of sprints in real-time and measure the completion of tasks and velocity of the team.
- **Kanban Support:** Kanban boards for teams that are using the Kanban system.
- **Customizable Dashboards:** Display project metrics by the configurable dashboard.
- **Reporting and Analytics:** Create burn-down charts, sprint reports and any other metrics related to team and project performance.

- **Integration with Version Control Systems:** Is fully compatible with Git, Subversion, and other VCS systems.
- **Cross-Team Collaboration:** Ensures that all the teams and departments are on the same page as far as the project objectives are concerned.
- **Import/Export Functionality:** Allows copying data from Excel, CSV or other formats for easy manipulation of data.

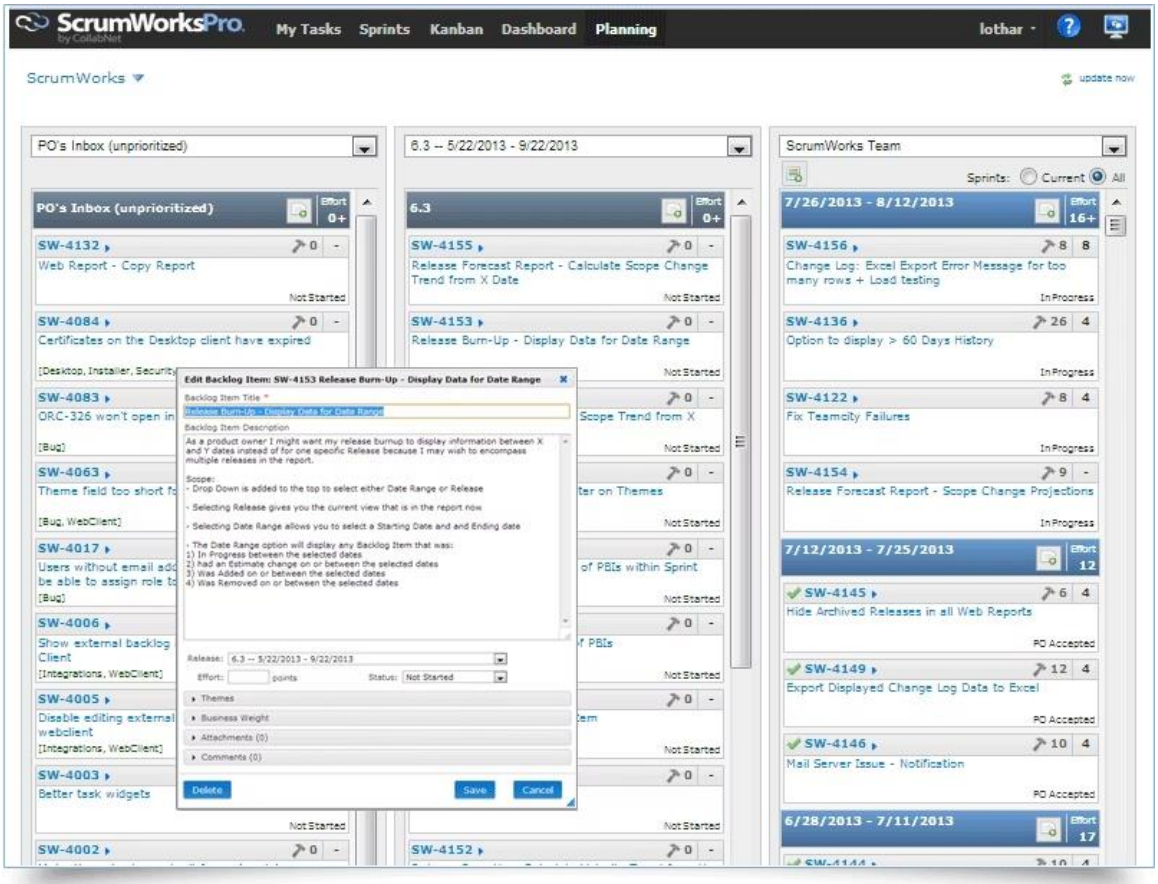
ScrumWorks Pro is an ideal solution for any team who wants to improve their Scrum or Kanban processes or who is already using it and needs a tool to help Agile teams stay on schedule and deliver projects on time.

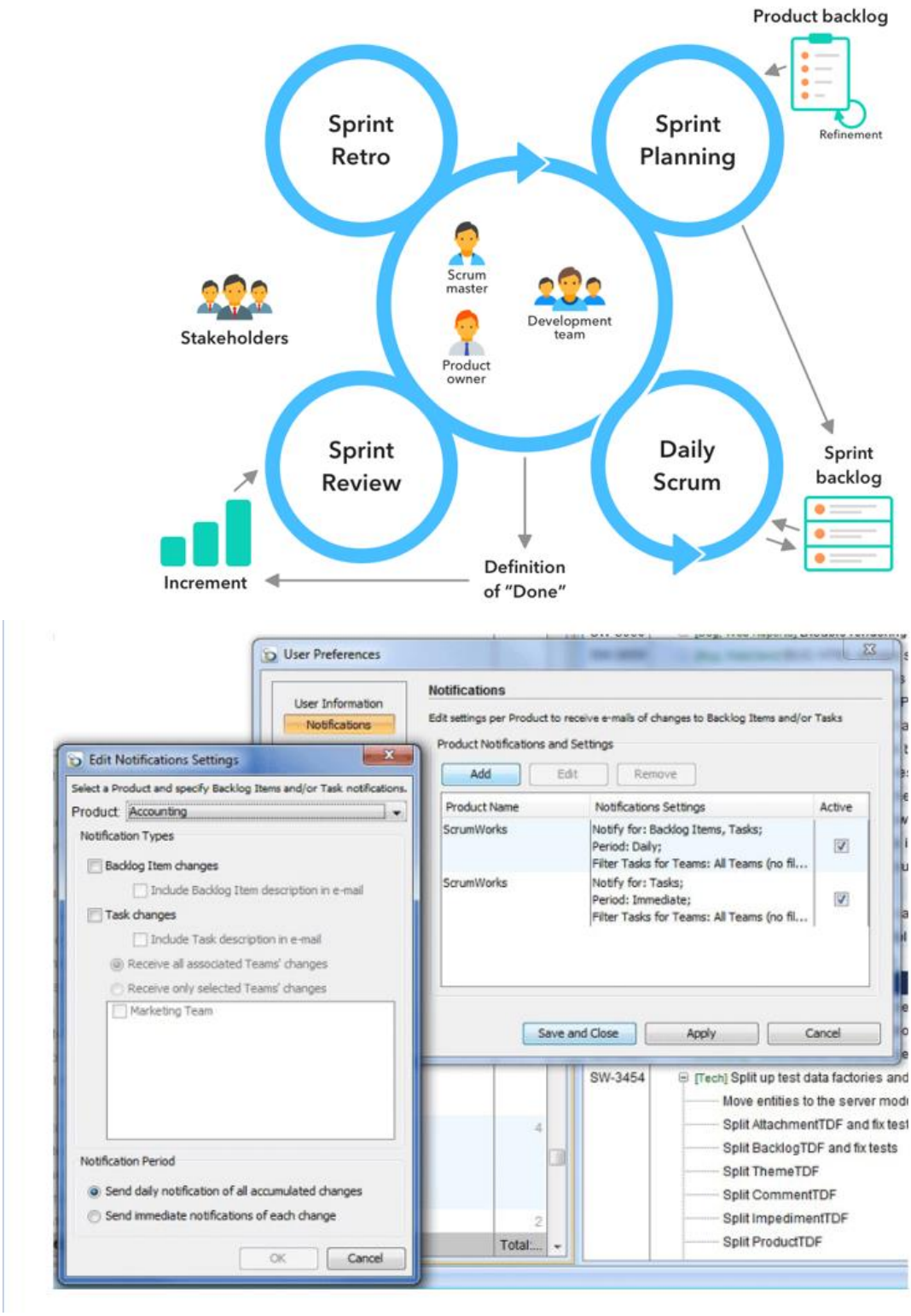
Tool Owner: CollabNet (now a part of Digital.ai), is an Agile and DevOps software company.

How ScrumWorks Pro Supports Systematic Requirement Engineering Processes:

ScrumWorks Pro supports various stages of requirement engineering in Agile frameworks, including:

- **Requirement Gathering:** A team is able to capture and prioritize requirements in form of user stories in the product backlog.
- **Analysis:** In ScrumWorks Pro, requirements are easily decomposed into smaller work items which can be prioritized and estimated during the sprint planning process.
- **Documentation:** Information about each user story or a requirement is provided in detail and there is no loss of traceability.
- **Management:** It provides real time updates on the progress of the project through burn down charts, and sprint reviews to ensure that the requirements are being worked on throughout the lifecycle of the project.





Case Study Application:

In the Traffic Monitoring Project, the task is to optimize a big municipal traffic control system for a city website that will display current traffic situation and inform drivers about traffic jams. The work includes the collection and regulation of a complex of demands from various government agencies, engineers, and customers. Because the system is intricate and there are numerous stakeholders involved, you opt to use ScrumWorks Pro to make the project go through the systematic requirement engineering process.

How ScrumWorks Pro Supports the Systematic Requirement Engineering Process:

Requirement Gathering:

ScrumWorks Pro assists in capturing requirements of various stakeholders by adding user stories to the product backlog. For this project, user stories might include: For this project, user stories might include:

Real-time traffic data integration.

- Alert to the drivers about traffic congestion on the roads.
- Ease of use of the interface through which traffic conditions can be displayed.

Requirement Analysis:

The tool helps to decompose the high-level requirements into tasks or epics, identify the dependencies between the tasks and prioritize them according to the goals of the project. For instance, real-time data integration may involve analysis of various data feeds while the notification system may need different events depending on traffic.

Requirement Documentation:

In ScrumWorks Pro, every user story requirement is well described with some additional information like acceptance criteria, users, and expected results. This makes sure that all the team members have a clue what is being developed.

Requirement Management:

During the course of the project, some of the features that are available in ScrumWorks Pro include burn-down charts, velocity and other reports that give live updates of the development. It is convenient for the team to determine which of the requirements has been met and which of them requires attention. Also, the stakeholders can get reports that will present the current position of the project in order to enhance the aspect of accountability.

Cross-Team Collaboration:

Since there are many governmental organizations, engineers, and end-users involved in the process, ScrumWorks Pro facilitates cross-organization cooperation, making sure that all the participants have the same vision of priorities and achievements. It also manages the creation of shared backlogs and assigning the tasks to the teams to guarantee proper communication and coordination on the goals of the project.

Critical Analysis:

Limitations or Challenges with ScrumWorks Pro:

Learning Curve for Non-Technical Stakeholders: Although ScrumWorks Pro is useful for Agile teams, other non-technical users like the government agencies may find the user interface challenging and may need to learn how to use the software properly.

Mitigation: Offer specific trainings for stakeholders or make their participation less complicated by offering them access to only specific reports.

Limited Customization for Complex Requirement Engineering: Limited Customization for Complex Requirement Engineering: ScrumWorks Pro is very useful for Agile teams but it may not have the capability of capturing the complex requirement hierarchies that touch on the formal traceability matrices or requirement dependencies that are well defined in the systems engineering discipline.

Dependency on Agile Methodology: ScrumWorks Pro is designed for Agile processes which may not be suitable for all types of projects especially those that do not follow Agile development (e. g. Waterfall).

Limited Scalability for Large Projects: Limited Scalability for Large Projects: ScrumWorks Pro may be difficult to handle in very large projects with huge backlogs, several teams, and intricate relationships within the project.

JAMA CONNECT

Tool's Purpose:

Jama Connect is applied to support the requirements management and the product development by the means of the platform that enables product development and systems engineering teams overcome the challenges of modern processes of product development and manage requirements and risks. It helps maintain order to ensure that all the people that are involved are synchronized. This way they are able to monitor the changes, work in groups, and ensure that some of their products have to meet specific rules and safety measures that are provided. It is most pertinent for projects that stand to benefit from a comprehensive approach and that have many detailed specifications that cannot be glazed over; some examples of industries that may require project management include engineering, software development or health.

Primary Features:

Compliance and Risk Management:

Jama Connect assists teams in being in line with the standards to design, develop, test and manage risks. It adds meaning to requirements and in the process helps minimize incidence of mistakes and ease on the assessment of risks.

Process Efficiency:

Jama Connect can also help teams reuse and manage requirements thus eliminating confusions and disagreements that are associated with testing. This also helps to enhance efficiency of processes involved in the overall system.

Traceability:

Jama Connect provides Live Traceability with links between requirements in the course of development. This is handy in managing changes, assessing impacts as well as decision making since it provides visibility of dependencies.

Review Center:

It also consolidates requirements and feedbacks hence reviewing and approving is easy to track in real-time within the Review Center. This makes it possible to respond quickly as well as review various cycles.

Collaboration:

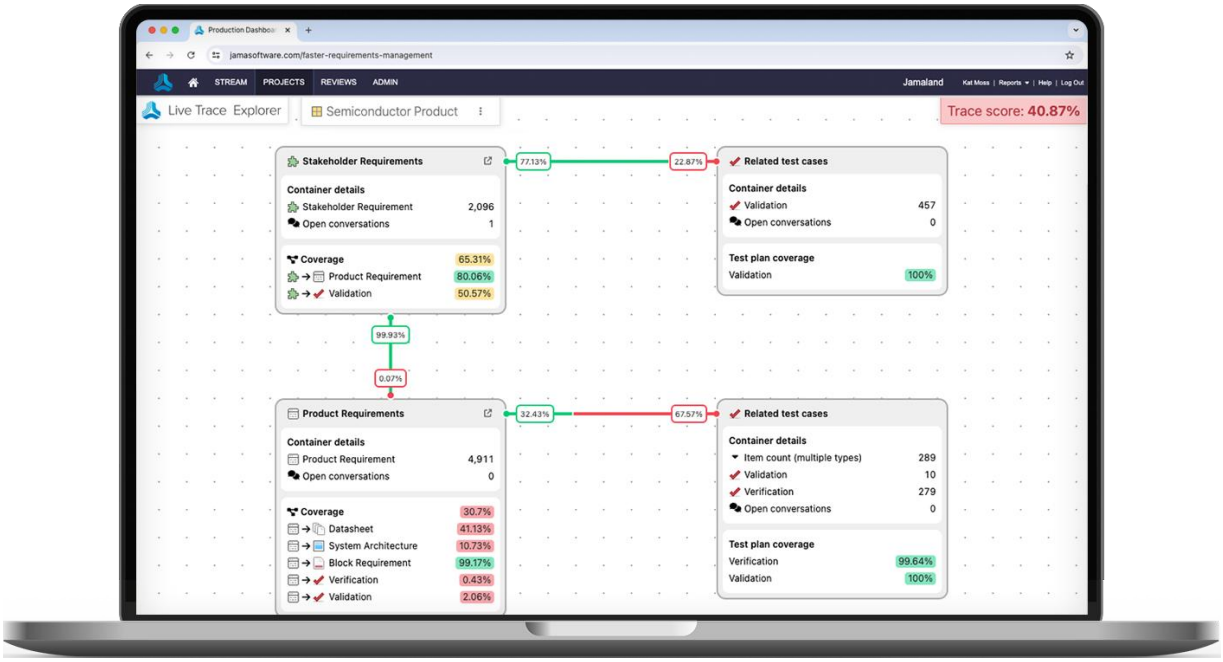
Jama Connect is a reliable one-stop solution which enables the team to be in sync and take better decisions. Ef manageable and supports real time interaction with other teams and stakeholders.

Integration with Jira:

Using Jama Connect along with Jira keeps track of requirements in agile, avoids rework and keeps all software, embedded software, hardware integrated teams informed.

Owners:

Jama Connect is developed by Jama Software, a private venture company situated in Portland, Oregon in the United States of America. The company was established in the year 2007 by Eric Winquist. However there are several Jama investors who work together to support Jama Software, the owner and developer of Jama Connect.



How it supports systematic requirement engineering processes:

Jama Connect supports systematic requirements engineering processes through several key features:

Centralized Requirements Management: Jama Connect stores all the requirements, test cases and other attendant papers in one central repository where teams can always access the most current data and monitor change in real-time.

Traceability: It helps to trace requirement to design, development, and testing of system and enables to ensure compliance with goal every step of the way.

Collaboration and Communication: Team members can enter comments, share suggestions and ideas, and participate in discussions in the platform, and therefore contribute feedback from all participants of the team tasks.

Change Management: Jama Connect allows you to see all the changes that have occurred to the requirements and their history as well as the main changes that you make to the project so that you can always be on top of it.

Compliance and Standards: In addition, it aligns with the industry standards such as ISO and FDA through templates that would guarantee your project complies with the required legal requirements.

Reporting and Analytics: It affords you with requirements and even project reports which enable you in making choices and keep the project moving.

Integration: Jama Connect also interacts with tools such as Jira and GitHub, so that requirements do not get out of step with the rest of the project.

In general, Jama Connect assists in the systematic handling of requirements, thus assisting in keeping the project on track and matched to needs.

Case Study Application:

Developing a Law Enforcement Management System (LEMS)

The project is to create a framework that will provide for the police work, cases, and personnel in a city's police force. In dealing with this system, it requires to function under the legal provisions as well as directives, safeguard gains and losses, preserve valuable information and integrate with government networks. Main users are police officers and staff, IT department, as well as the legal department.

Jama Connect's Role in the Requirement Engineering Process:

- **Requirement Gathering and Collaboration:** Jama Connect enables the gathering of ideas from the police, staff, and one's legal team. People can express themselves about what they need at the same place and time, and thus such needs can be more easily identified.
- **Requirement Documentation:** After collecting ideas, Jama Connect groups them into areas for example functional- how does the system to function, non-functional-how fast it is or how available it is, and legal- how it addresses privacy policies. It assists in monitoring what is required to be done.
- **Requirement Analysis and Prioritization:** Some things cannot be accomplished as soon as one gets the job. Some tasks are prioritized over the others by Jama Connect, such as security features while other tasks such as reporting tools are decided to be implemented later.
- **Requirement Traceability:** Jama Connect also allow for the management of each requirement in an easy manner. For example, security rules can go back to legal needs and testing so that each aspect would be addressed.
- **Change Management:** If laws or needs change, Jama Connect allows to track these changes, check their effects, and get approval for modification.

- **Requirement Validation and Verification:** Before the system is used, Jama Connect assists in getting the system ready for testing. It ensures that features like secure logins provide all persons and the organization's legalities, as well as operations, with what they require.
- **Regulatory Compliance and Reporting:** Jama Connect can assist with the tracking of the following of legal rules. It can generate reports as a way of proving compliance with the laid down regulations hence making audit and review processes easier.

Jama Connect assists in capturing, storing and tracking requirements for the LEMS. It makes certain that the system for the police is developed bringing into consideration the need for the rules of law.

Critical Analysis:

1. Complex Interface

Challenge: Jama Connect's interface can be confusing for new users, making it hard to learn.

Solution: Provide tutorial, make it easier for new users to navigate, and enhance help needed within the application.

2. Integration with Other Tools

Challenge: With Jira or Confluence, for example, it can be complex to integrate and be error-prone.

Solution: APIs should also be employed to enhance integration processes as well as the underlying data model in these tools for increased coherence.

3. Scalability for Large Projects

Challenge: Jama Connect may slow down with very large projects.

Solution: Divide a large application into modules and make sure that server implementation is fine.

4. High Cost

Challenge: Although Jama Connect has a powerful potential and a number of valuable features, some of its.tf Jama Connect can be costly in particular for small enterprises.

Solution: Agreeable licensing arrangement should be offered and user access should be restricted to only those who require it.

5. Traceability Gaps

Challenge: Lack of traceability between requirements and other artefacts can however compromise the process.
Solution: It is recommended to automate the whole traceability checking process and make linking compulsory in subsequent work flows.

6. Limited Customization

Challenge: It is also important for Jama's built-in workflows not to cope with intricate processes.
Solution: For the rest use scripting or some third-party plugins to add the needed customization.

7. Collaboration Issues

Challenge: They are not as effective as dedicated chat tools which are used by Jama.
Solution: Share and work with such tools as Slack, Teams, etc., in order to improve the flow of communication between the teams.

REQVIEW

ReqView Overview:

ReqView is a simple and powerful requirements management tool enabling to capture requirements in structured documents, manage traceability links and collaborate offline in a small team by storing project data on a shared network drive.

Purpose:

It's first address for purpose disorder requests of regular users provides a platform for building a system or software by employing the model software development cycle with end-to-end traceability.

Version Control System customization of reports caption requirements and analyzing requirements traceability while also managing requirements and risk import facility from word excel requiem Rec view also allows storing data on sharers like SVN jira Cloud Google Drive and share Drive it is easy to export in different formats extension including docx x|s6 PDF HTML CSV administrative Rec view can be accessed through the command line there is also deamination provided for data format license server.

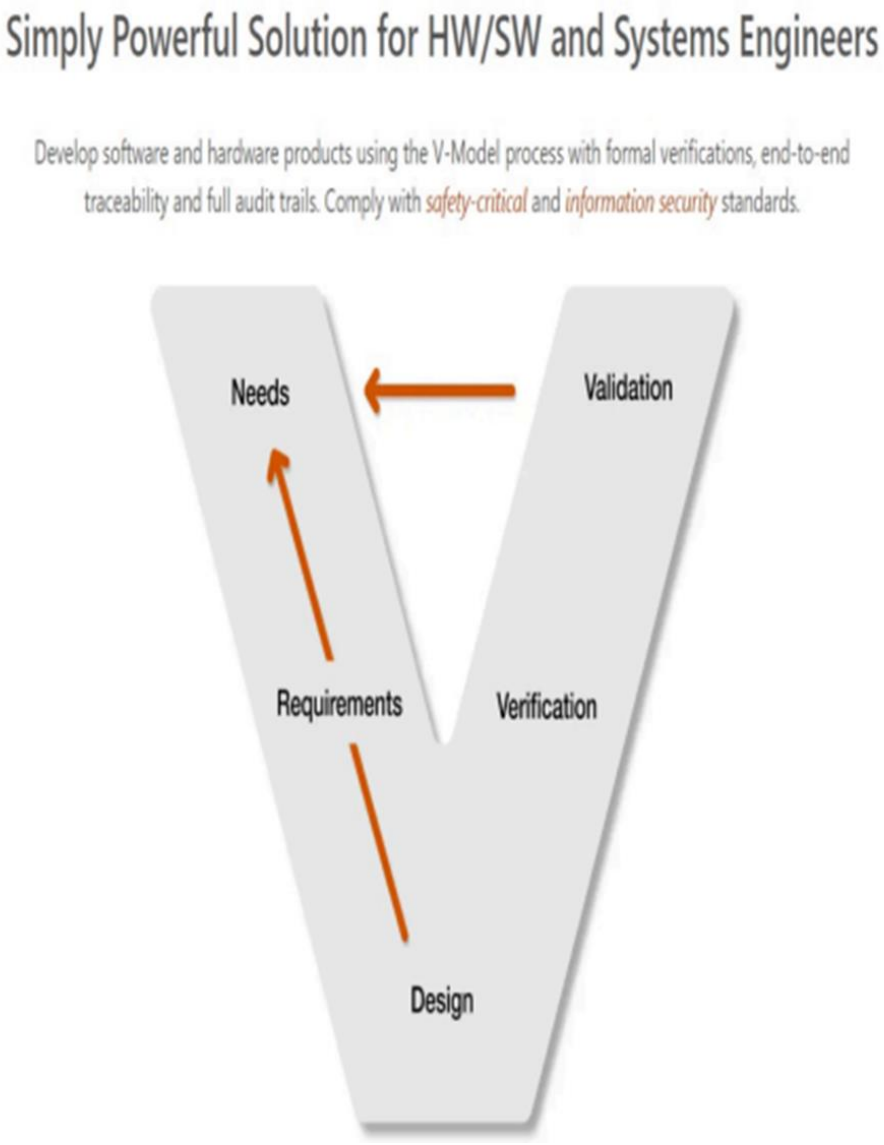
Parent Company:

ReqView is developed and deployed by an independent software engineering enterprise centered in Prague, Czech Republic founded in 2004 by Eccam. Their core competence in design and development of embedded software with the goal of developing clean resilient and reusable software solution with the support possible there areas of experience include car navigation map rendering routing visual guidance traffic info destination search, Diagnostic and embedded application, development like Linux qnx, Android wincy computer Graphics in which they worked on GPU programming navigation map rendering optimization for embed in in gpus user interfaces include QT HTML5 JavaScript computer Visions object recognition and test automation.

Primary Features:

- End- to- End Traceability
- Version Control System
- Customization of reports

ReqView provides end-to-end traceability and takes deliberative action based on reports covering many levels of traceability. You may export the reports and specs to share them with your team. Version control systems using a Version Control System manage the requirement as source code takes the use of Json format readability by humans and integrates with the tools you like to use the most. Customization of reports can get a project started in a few minutes reuse the templates developed according to the international standards Define and manage requirements using views that are intuitively organized as tables. It also includes capturing requirements & analyzing requirements traceability managing requirements & risks import options from Word Excel & ReqIF.



How it supports systematic requirement engineering processes:

- Requirement Gathering:

  ReqView lets you gather and organize all the requirements from different people in one place. This helps you keep track of everything everyone needs.

- Requirement Analysis:

  ReqView helps you link each requirement to the design and development stages. This way, you can see how each requirement fits into the project and make sure everything is prioritized correctly. This helps you see which requirements are most important and make sure they're handled properly.

- Requirement Documentation:

  ReqView makes it easy to create simple and clear documents for all the project's requirements. This ensures that everything needed is included.

- Requirement Management:

  ReqView helps you track any changes, manage different versions, and keep everything linked together. This keeps the project organized and up to date.

Case Study:

Using ReqView for a Traffic Monitoring Project:

A Case Study Application Putting in Place a Municipal Traffic Control System:

Assume that your main responsibility in this example is to enhance a large-scale city website visitor management system, which will be used to show real-time website visitor conditions and notify drivers of traffic jams. The undertaking includes accumulating and dealing with a various set of requirements from government organizations, engineers, and end customers. To make certain all requirements are correctly documented and tracked, you decide to apply ReqView.

How ReqView Supports This Scenario:

Collecting Requirements:

The first step inside the mission is amassing necessities from numerous stakeholders. For instance, city officials may specify that the machine has to provide actual-time site visitors facts, while site visitors engineers may emphasize machine performance and records accuracy. With ReqView, these requirements can be entered right into a based report, ensuring nothing is unnoticed and anybody's wishes are taken into consideration.

Tracking Requirements:

As the undertaking actions ahead, ReqView helps hold a clear line of traceability. Each requirement, whether it involves data. accuracy or device performance, is connected to its related design and development tiers. This traceability is critical in making sure that each requirement is addressed well, from concept thru to implementation and checking out. For example, a request for "provide congestion signs" can be related to document formatting and plan review, ensuring that the feature is implemented as intended.

Handling Changes:

It is inevitable that the requirements will change as the process progresses. For example, following early sorting, the city may ask to have the device expanded to include other areas. The version management and alternate monitoring feature of ReqView.

Critical Analysis:

ReqView It is essential to check the ReqView Tool for system requirements engineering

1. Large and complex projects:

    Challenge: Although ReqView is constructed to efficiently handle necessities control, handling and navigating a couple of necessities can be difficult on large tasks whilst the necessities set is tremendous, and the tool may have performance problems records or inconvenience.

    Mitigation: To overcome this, enterprises should use ReqView's filtering, ranking, and traceability functions to manage complex content. With the help of tagging or custom attributes, large sets of facts can be organized and navigated efficiently, as well as by using a hierarchical structure for the need

2. Connecting other devices:

    Challenge: ReqView can also face difficult conditions when interfacing with different tools used during the software improvement lifecycle, to encompass configuring

duties, configuring environments, or testing tools. This can lead to statistics silos and inefficiencies.

Mitigation: ReqView has import/export talents and APIs that may be used to synchronize information with system to mitigate integration problems. To optimize business enterprise techniques, companies have to test their integration dreams

3. Modifications and Adjustments:

Challenge: ReqView doesn't have as many customization options as some other specialized tools. It can be harder to fit specific needs or unique processes because of this.

Mitigation: To handle customization issues, users can explore the tool's settings and, if possible, use scripting or automation features. If the built-in options aren't enough, you might need to investigate adding extra tools or plugins to make ReqView work better for you. And find out present day networks or 1/three-party integration answers.

5. Version Control and Change Management:

Challenge: Keeping track of changes and managing different versions in ReqView can be difficult. It's important to ensure your requirement files stay accurate and current.

Mitigation: Use ReqView's built-in tools for version control and change tracking. These features help you keep your files updated and manage changes easily.

6. Cooperation and Communication:

Challenge: Even though ReqView helps with collaboration, working with different people and keeping everyone on the same page can still be tough, especially if the team is spread out.

Mitigation: Use additional tools or methods for communication to ensure everyone stays connected and informed. Regular updates and check-ins can help keep the team coordinated.

VISUAL PARADIGM

Overview and Purpose:

Visual Paradigm is a flexible modeling tool developed with the intention to address a wide range of tasks related to the software development process such as **requirement engineering, system modeling** as well as **software design.** Its support of **UML diagrams, Business Process Modeling Notation** and the most essential are the core or set of basic tools. **BPMN stands for Business Process Modeling Notation; UML, which stands for the Unified Modeling Language; and ERD or Entity-Relationship Diagram.** Another advantage that is attributed to the use of the tool is the availability of functionalities. The fourth is in **requirement gathering, analysis, documentation and management.**

Tool Owner:

Visual Paradigm International Ltd. It was developed in the year 2002, its purpose was to make the requirement mechanisms of engineering and software developing, regarding the lack of a

systematic and user
as friendly tool especially when it comes to complicated projects.

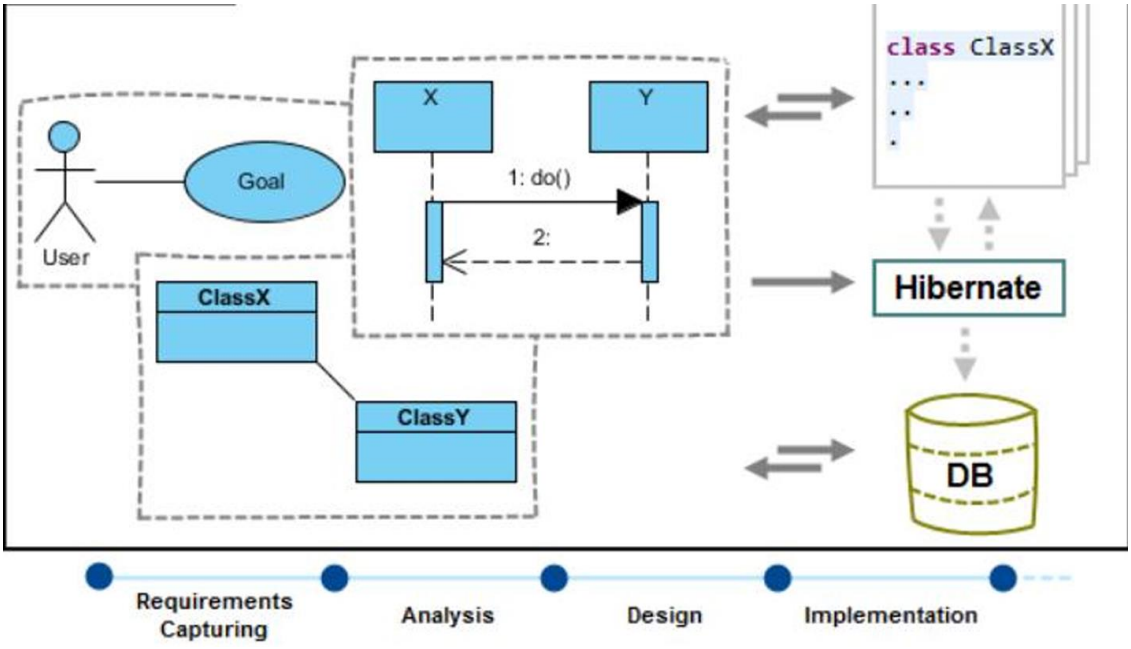
Primary Features:

- **Requirements Diagram:** Graphical modelling of the system requirements.
- **Requirement Management Tools:** Come up with, categorize, and document the requirements.
- **Traceability:** Enables one to link requirements to use cases, models and test cases etc.
- **Version Control and Collaboration:** Allows the requirement document to be worked on by teams and also helping in keeping track on changes.
- **Documentation Generation:** Generates requirement documents on its own and the reports which are required.

Supports systematic requirement Engineering Processes:

Visual Paradigm facilitates systematic requirement engineering by providing:

- Requirement Gathering: Allows for gathering and outlining the requirements of teammates, against the background of which one can understand what has to be created.
- Requirement Analysis: Provides ways of depicting the analyzing depAending relationships, and verifying that the modeling process covers everything keep feasible. Requirement Documentation: The captured models are translated directly into-formal requirement documents, which are automatically produced ensuring coherency and accuracy.
- Requirement Management: Records evolutions in requirements through time, links requirements to design items and helps in managing requirement baselines in an efficient manner in order to support the recursive development model.
- Integration: It can fully work with the JIRA and there will not be a problem when it comes to sharing information between the requirement management and the project tracking. Trello can be integrated with it and you can use the Kanban boards to manage the requirements and tasks being a visual and agile approach to track the requirement and tasks and use the work items. It also supports the integrated version control system of Git and Subversion for its version control. It can also interface with tools used in MS Office suite (for instance, Word, Excel) that can help ITP import and export on requirement documents and data, thus making it easy to share information with stakeholders who use these apps.



Case Study Application:

The use of Visual Paradigm also benefited the process of requirement engineering on the side of the **University Management System (UMS)** as it provided the necessary tool to organize the process of collaboration, documentation and system modeling. The university sought to streamline some of its major functions such as students' admission, course registration and faculty dealings.

Use case, class, and activity diagrams have been made using tool known as the Visual Paradigm, which enabled the architectural representation and modeling of the functional behaviors of the system. This way, we also applied its Requirement Diagram to track both functional and non-functional needs and make sure they meet stakeholders' requirements.

The collaboration elements enabled in the tool enabled it to track the changes made, manage the requirements and control the versions. Automated documentation eliminated the issue of sharing out-of-date information to other stakeholders thus improving communication.

Furthermore, linking with JIRA helped to locate feature implementation and project development. Due to the ability to trace requirements, design models as well as the use cases offered by Visual Paradigm, it was possible to confirm that requirements identified were indeed achieved.

In summary, this paper affirms that Visual Paradigm made a lot of contributions to the UMS project by categorizing the requirement, system modeling, and integrating the team which ended up with successful implementation of the system.

Critical Analysis:

Critical Analysis of Visual Paradigm in Systematic Requirement Engineering

1. Complexity of Features

> **Limitation:** Visual Paradigm covers almost all the processes involved in requirement engineering hence providing the user with numerous tools, which might be confusing especially when working on a project with a small team or little knowledge over requirement engineering. However the tool has very many features which can be quite overwhelming and make its usage difficult, complex or require a steep learning curve.

Mitigation: To counter this, there ought to be simpler interfaces or modes to cater for new users or for small scale projects. Furthermore, specific training material as well as guided and self-guided tutorials that would give the users a gradual transition to the tool could also be created. The feature which may also be helpful in minimizing complexity is giving users specific boards and particular views of what interests them.

2. Integration Challenges

Limitation: It is important to note that the integration, as any process, can be messy, sometimes taking hours to set up and, in general, not always working smoothly, despite this software humming integration with JIRA, Trello, Git, SVN, & Microsoft Office etc. When several tools are in use, the lack of proper synchronization makes data compare and lowers collaboration efficiency.

Mitigation: Better reliability and thus integration processes have to be a goal in any way. There are a few areas wherein Visual Paradigm could extend the integration capacities: better connectors and their interface, documentation, and the support of integration problems. Likewise, incorporating features such as automated synch and periodic update on integration plugins may go a long way in establishing standardization.

3. Cost and Licensing

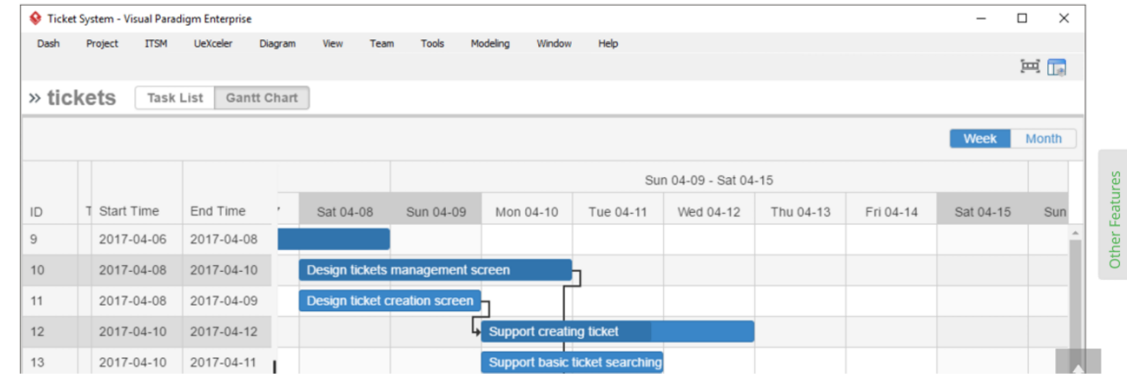
Limitation: Licensing for Visual Paradigm might be a bit costly depending on the necessity hence it might not be friendly to organizations with small teams or with limited budgets. This cost can turn into a considerable factor, especially for early-stage companies or for small projects, which do not require all the core functions of a CRM.

Mitigation: Thus, Visual Paradigm could broaden its offer, for instance, by changing it to the one which includes options for separate prices for a certain set of features or by applying the model of subscriptions depending on organizational size. There could be a stripped-down edition, free or cheaper, that could be deployed for example, to less intricate projects or schools: users of this type of version could be offered a license to ‘level up’ when their project necessitates it.

4. Performance Issues

Limitation: For very big projects and when there are many requirements and complex diagrams, Visual Paradigm is known to run slow for instance, in terms of loading times and other performance related hitches. This can have negative effects on the business operation and also on the users’ experience.

Mitigation: Improving the efficiency of the tool requires increasing its backend performance and streamlining the processes which the tool deals with. Combining peculiarities like caching, indexing, several non-critical peripheral loading of large diagrams can enhance operativity. Another way of preventing slowdown in performance could also be to guide the users on how to approach and manage large projects in the tool.



COMPARISON OF THE TOOLS:

Comparison of Requirement Engineering Tools

Criteria	Jama Connect	Reqview	Scrumworks Pro	Visual Paradigm
Systematic Process Support	Provides a robust framework for requirement management, including traceability, version control, and change management.	Supports structured requirements management with version control and traceability, but might be less extensive compared to Jama Connect.	Focuses on Scrum methodologies, with support for backlog management and sprint planning but less emphasis on traditional requirement management.	Offers extensive support for requirement engineering with UML modeling, traceability, and change management.
Features	Advanced traceability, real-time collaboration, customizable workflows, integration with	Lightweight requirements management, visual tracking of requirements, basic	Sprint planning, backlog management, burndown charts, and task tracking.	Comprehensive UML modeling, requirement management, traceability, project management

Criteria	Jama Connect	Reqview	Scrumworks Pro	Visual Paradigm
	development tools.	traceability and version control.		tools, and collaboration features.
Collaboration	Strong collaboration features with real-time updates, shared workspaces, and comment threads.	Allows for collaborative editing and sharing of requirements, though might lack some advanced features of larger tools.	Enables team collaboration through shared boards and task management, but primarily supports Scrum teams.	Facilitates collaboration through shared diagrams, model reviews, and version control with real-time updates.
Integration	Integrates with a variety of tools including JIRA, GitHub, and other ALM tools, allowing for a cohesive workflow.	Integrates with tools like JIRA, Confluence, and other development tools for enhanced workflow management.	Integrates well with tools used in Agile environments but may have limited integration options compared to others.	Strong integration capabilities with development tools, project management systems, and version control systems.
Cost	Pricing varies based on the number of users and features; typically higher-end with custom quotes.	Offers a free version with limited features; paid plans vary based on number of users and feature set.	Pricing based on the number of users; typically has a lower cost compared to enterprise solutions.	Pricing varies; offers both standard and enterprise licenses with different feature sets.

Software Comparison Statistics

	Jama Connect for Requireme...	ReqView	Visual Paradigm Online for G ...
	Optimized for quick response		

At a Glance

Star Rating	144 reviews	3 reviews	2 reviews
Market Segments	Mid-Market (49.3% of reviews)	Enterprise (66.7% of reviews)	Mid-Market (50.0% of reviews)
Entry-Level Pricing	No pricing available	€0.00	No pricing available

Pricing

Entry-Level Pricing	No pricing available	FREE €0.00 Capture requirements for small single-document projects with up to 150 requirements and a single custom attribute. › Open any Project Read Only › Capture Structured Requirements › Manage Requirements with Single Custom Attribute Browse all 4 pricing plans	No pricing available
Free Trial	Free Trial is available	Free Trial is available	No trial information available

Reviewers' Company Size

Small-Business (50 or fewer emp.)	16.0%	0%	0%
Mid-Market (51-1000 emp.)	49.3%	33.3%	50.0%
Enterprise (> 1000 emp.)	34.7%	66.7%	50.0%

Reviewers' Industry

	Medical Devices 23.6%	Biotechnology 66.7%	Computer Software 100.0%
	Information Technology and Services 9.0%	Telecommunications 33.3%	-
	Computer Software 7.6%	-	-
	Electrical/Electronic Manufacturing 6.3%	-	-
	Telecommunications 5.6%	-	-
	Other 47.9%	Other 0.0%	Other 0.0%

ASSIGNMENT-1:

by Zunaira Abdul Aziz

Submission date: 12-Sep-2024 03:24PM (UTC+0500)
Submission ID: 2451871240
File name: SRE_Group_9_2.pdf (1.43M)
Word count: 5295
Character count: 34273

SRE

ASSIGNMENT-1:
EXPLORING REQUIREMENT ENGINEERING TOOLS

GROUP 9:

1.	ZUNAIRA ABDUL AZIZ	BSSE23058	JAMA CONNECT
2.	FAIQA ARSHAD	BSSE23028	SCRUM WORKS PRO
3.	HAMNA FATIMA	BSSE23080	REQVIEW
4.	AREEBA SHAHBAZ	BSSE23097	VISUAL PARADIGM

TABLE OF CONTENT

SCRUMWORKS PRO

Overview:

ScrumWorks Pro is an effective Agile project management software that is suitable for the Scrum and Kanban methodologies. It helps in planning, tracking and reporting of Agile projects and assists in managing product backlogs, sprint and releases. As such, the ScrumWorks Pro provides small to medium-sized teams with the ability to work in parallel with each other but still have complete transparency to the progress of the project.

Purpose:

ScrumWorks Pro is targeted at the Agile teams and their project management requirements to help them implement Scrum and Kanban. It provides a single platform to write user stories, manage backlog, plan tasks, track sprints and monitor releases all in a manner that is consistent with Agile principles.

Version Control and Customization:

It can also be integrated with the version control system to track the progress of the project and together with ScrumWorks Pro, it offers a detailed level of flexibility in the reports including sprint report, velocity report, burn-down chart among others. It also allows Agile project managers to modify the features and the process of tracking projects according to the needs of the particular team. Furthermore, the ScrumWorks Pro enables the users to export reports in different formats such as Excel and PDF which can be used to share important information with other parties.

Parent Company:

ScrumWorks Pro is the product of CollabNet; a US based software company that was founded in the year 1999. CollabNet is an Agile project management and DevOps company, which focuses on helping an organization to go Agile in software development. The purpose of the company is to assist the teams in speeding up the innovation and providing high-quality software with the help of collaboration and visibility.

Primary Features:

- **Backlog Management:** A tool that will allow easy creation, prioritization and management of product backlog and user stories.
- **Sprint Tracking:** Monitor the progress of sprints in real-time and measure the completion of tasks and velocity of the team.
- **Kanban Support:** Kanban boards for teams that are using the Kanban system.
- **Customizable Dashboards:** Display project metrics by the configurable dashboard.
- **Reporting and Analytics:** Create burn-down charts, sprint reports and any other metrics related to team and project performance.

- **Integration with Version Control Systems:** Is fully compatible with Git, Subversion, and other VCS systems.
- **Cross-Team Collaboration:** Ensures that all the teams and departments are on the same page as far as the project objectives are concerned.
- **Import/Export Functionality:** Allows copying data from Excel, CSV or other formats for easy manipulation of data.

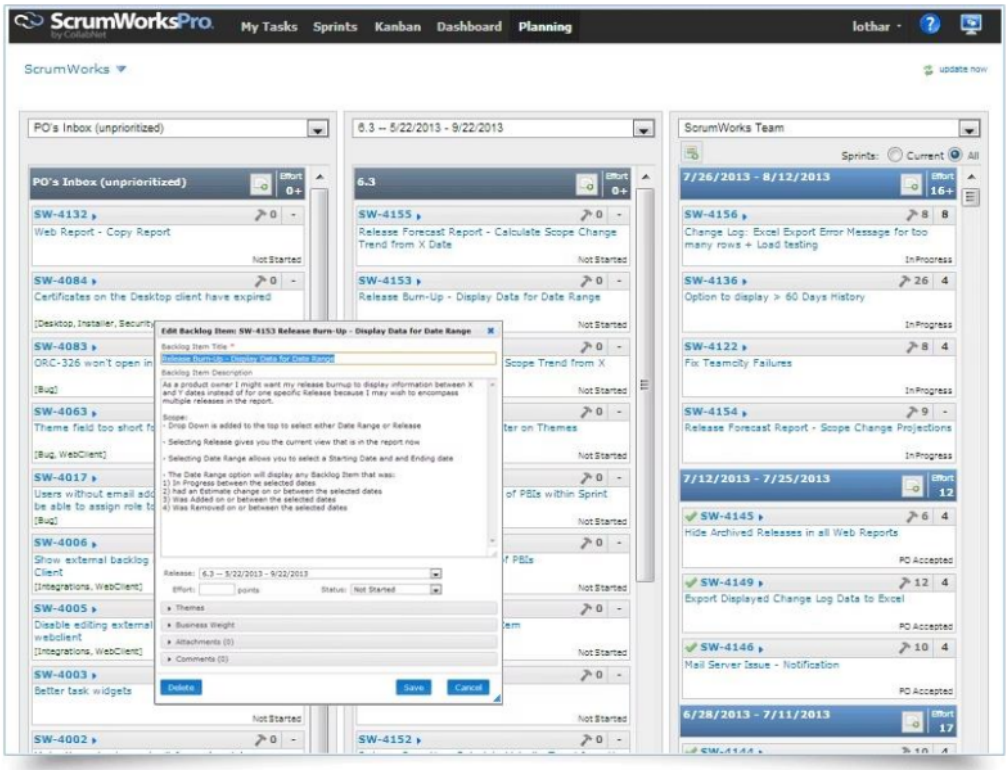
ScrumWorks Pro is an ideal solution for any team who wants to improve their Scrum or Kanban processes or who is already using it and needs a tool to help Agile teams stay on schedule and deliver projects on time.

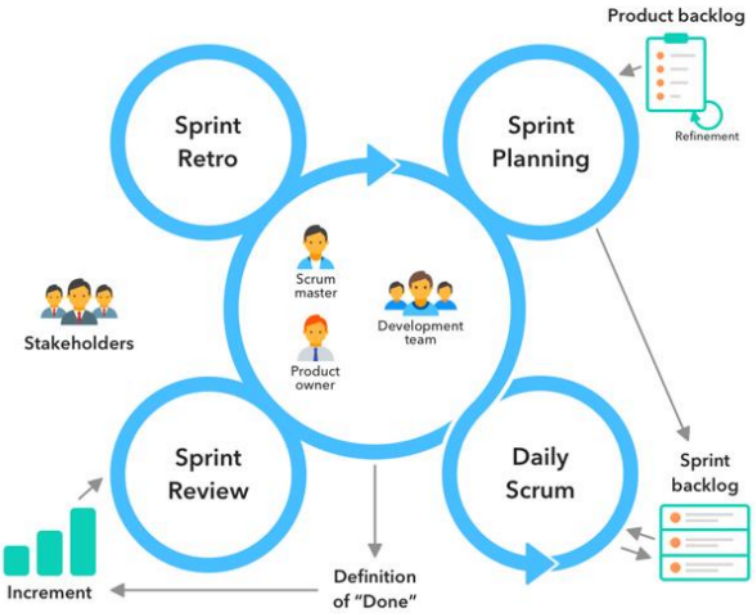
Tool Owner: CollabNet (now a part of Digital.ai), is an Agile and DevOps software company.

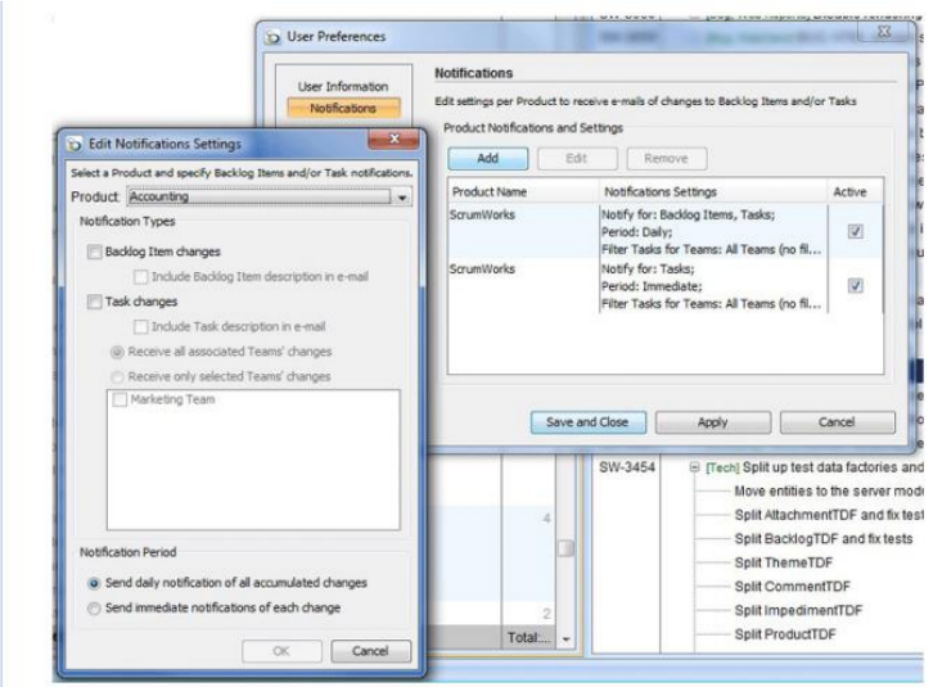
How ScrumWorks Pro Supports Systematic Requirement Engineering Processes:

ScrumWorks Pro supports various stages of requirement engineering in Agile frameworks, including:

- **Requirement Gathering:** A team is able to capture and prioritize requirements in form of user stories in the product backlog.
- **Analysis:** In ScrumWorks Pro, requirements are easily decomposed into smaller work items which can be prioritized and estimated during the sprint planning process.
- **Documentation:** Information about each user story or a requirement is provided in detail and there is no loss of traceability.
- **Management:** It provides real time updates on the progress of the project through burn down charts, and sprint reviews to ensure that the requirements are being worked on throughout the lifecycle of the project.







Case Study Application:

In the Traffic Monitoring Project, the task is to optimize a big municipal traffic control system for a city website that will display current traffic situation and inform drivers about traffic jams. The work includes the collection and regulation of a complex of demands from various government agencies, engineers, and customers. Because the system is intricate and there are numerous stakeholders involved, you opt to use ScrumWorks Pro to make the project go through the systematic requirement engineering process.

How ScrumWorks Pro Supports the Systematic Requirement Engineering Process:

Requirement Gathering:

ScrumWorks Pro assists in capturing requirements of various stakeholders by adding user stories to the product backlog. For this project, user stories might include: For this project, user stories might include:

Real-time traffic data integration.

- Alert to the drivers about traffic congestion on the roads.
- Ease of use of the interface through which traffic conditions can be displayed.

Requirement Analysis:

The tool helps to decompose the high-level requirements into tasks or epics, identify the dependencies between the tasks and prioritize them according to the goals of the project. For instance, real-time data integration may involve analysis of various data feeds while the notification system may need different events depending on traffic.

Requirement Documentation:

In ScrumWorks Pro, every user story requirement is well described with some additional information like acceptance criteria, users, and expected results. This makes sure that all the team members have a clue what is being developed.

Requirement Management:

During the course of the project, some of the features that are available in ScrumWorks Pro include burn-down charts, velocity and other reports that give live updates of the development. It is convenient for the team to determine which of the requirements has been met and which of them requires attention. Also, the stakeholders can get reports that will present the current position of the project in order to enhance the aspect of accountability.

Cross-Team Collaboration:

Since there are many governmental organizations, engineers, and end-users involved in the process, ScrumWorks Pro facilitates cross-organization cooperation, making sure that all the participants have the same vision of priorities and achievements. It also manages the creation of shared backlogs and assigning the tasks to the teams to guarantee proper communication and coordination on the goals of the project.

Critical Analysis:

Limitations or Challenges with ScrumWorks Pro:

Learning Curve for Non-Technical Stakeholders: Although ScrumWorks Pro is useful for Agile teams, other non-technical users like the government agencies may find the user interface challenging and may need to learn how to use the software properly.

Mitigation: Offer specific trainings for stakeholders or make their participation less complicated by offering them access to only specific reports.

Limited Customization for Complex Requirement Engineering: Limited Customization for Complex Requirement Engineering: ScrumWorks Pro is very useful for Agile teams but it may not have the capability of capturing the complex requirement hierarchies that touch on the formal traceability matrices or requirement dependencies that are well defined in the systems engineering discipline.

Dependency on Agile Methodology: ScrumWorks Pro is designed for Agile processes which may not be suitable for all types of projects especially those that do not follow Agile development (e. g. Waterfall).

Limited Scalability for Large Projects: Limited Scalability for Large Projects: ScrumWorks Pro may be difficult to handle in very large projects with huge backlogs, several teams, and intricate relationships within the project.

JAMA CONNECT

Tool's Purpose:

Jama Connect is applied to support the requirements management and the product development by the means of the platform that enables product development and systems engineering teams overcome the challenges of modern processes of product development and manage requirements and risks. It helps maintain order to ensure that all the people that are involved are synchronized. This way they are able to monitor the changes, work in groups, and ensure that some of their products have to meet specific rules and safety measures that are provided. It is most pertinent for projects that stand to benefit from a comprehensive approach and that have many detailed specifications that cannot be glazed over; some examples of industries that may require project management include engineering, software development or health.

Primary Features:

Compliance and Risk Management:

Jama Connect assists teams in being in line with the standards to design, develop, test and manage risks. It adds meaning to requirements and in the process helps minimize incidence of mistakes and ease on the assessment of risks.

Process Efficiency:

Jama Connect can also help teams reuse and manage requirements thus eliminating confusions and disagreements that are associated with testing. This also helps to enhance efficiency of processes involved in the overall system.

Traceability:

Jama Connect provides Live Traceability with links between requirements in the course of development. This is handy in managing changes, assessing impacts as well as decision making since it provides visibility of dependencies.

Review Center:

It also consolidates requirements and feedbacks hence reviewing and approving is easy to track in real-time within the Review Center. This makes it possible to respond quickly as well as review various cycles.

Collaboration:

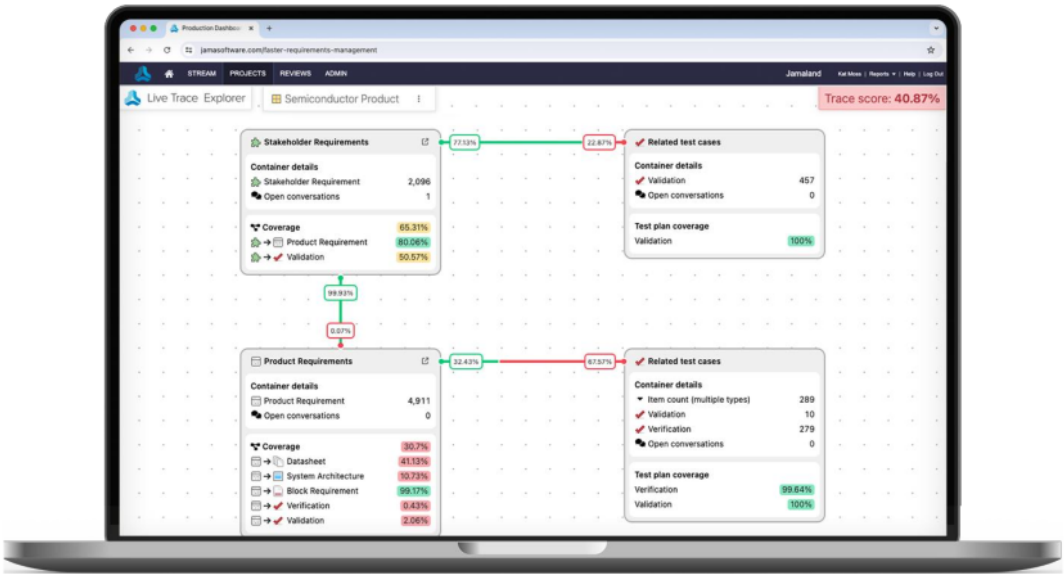
Jama Connect is a reliable one-stop solution which enables the team to be in sync and take better decisions. Ef manageable and supports real time interaction with other teams and stakeholders.

Integration with Jira:

Using Jama Connect along with Jira keeps track of requirements in agile, avoids rework and keeps all software, embedded software, hardware integrated teams informed.

Owners:

Jama Connect is developed by Jama Software, a private venture company situated in Portland, Oregon in the United States of America. The company was established in the year 2007 by Eric Winquist. However there are several Jama investors who work together to support Jama Software, the owner and developer of Jama Connect.



How it supports systematic requirement engineering processes:

Jama Connect supports systematic requirements engineering processes through several key features:

Centralized Requirements Management: Jama Connect stores all the requirements, test cases and other attendant papers in one central repository where teams can always access the most current data and monitor change in real-time.

Traceability: It helps to trace requirement to design, development, and testing of system and enables to ensure compliance with goal every step of the way.

Collaboration and Communication: Team members can enter comments, share suggestions and ideas, and participate in discussions in the platform, and therefore contribute feedback from all participants of the team tasks.

Change Management: Jama Connect allows you to see all the changes that have occurred to the requirements and their history as well as the main changes that you make to the project so that you can always be on top of it.

Compliance and Standards: In addition, it aligns with the industry standards such as ISO and FDA through templates that would guarantee your project complies with the required legal requirements.

Reporting and Analytics: It affords you with requirements and even project reports which enable you in making choices and keep the project moving.

Integration: Jama Connect also interacts with tools such as Jira and GitHub, so that requirements do not get out of step with the rest of the project.

In general, Jama Connect assists in the systematic handling of requirements, thus assisting in keeping the project on track and matched to needs.

Case Study Application:

Developing a Law Enforcement Management System (LEMS)

The project is to create a framework that will provide for the police work, cases, and personnel in a city's police force. In dealing with this system, it requires to function under the legal provisions as well as directives, safeguard gains and losses, preserve valuable information and integrate with government networks. Main users are police officers and staff, IT department, as well as the legal department.

Jama Connect's Role in the Requirement Engineering Process:

- **Requirement Gathering and Collaboration:** Jama Connect enables the gathering of ideas from the police, staff, and one's legal team. People can express themselves about what they need at the same place and time, and thus such needs can be more easily identified.
- **Requirement Documentation:** After collecting ideas, Jama Connect groups them into areas for example functional- how does the system to function, non-functional-how fast it is or how available it is, and legal- how it addresses privacy policies. It assists in monitoring what is required to be done.
- **Requirement Analysis and Prioritization:** Some things cannot be accomplished as soon as one gets the job. Some tasks are prioritized over the others by Jama Connect, such as security features while other tasks such as reporting tools are decided to be implemented later.
- **Requirement Traceability:** Jama Connect also allow for the management of each requirement in an easy manner. For example, security rules can go back to legal needs and testing so that each aspect would be addressed.
- **Change Management:** If laws or needs change, Jama Connect allows to track these changes, check their effects, and get approval for modification.

- **Requirement Validation and Verification:** Before the system is used, Jama Connect assists in getting the system ready for testing. It ensures that features like secure logins provide all persons and the organization's legalities, as well as operations, with what they require.
- **Regulatory Compliance and Reporting:** Jama Connect can assist with the tracking of the following of legal rules. It can generate reports as a way of proving compliance with the laid down regulations hence making audit and review processes easier.

Jama Connect assists in capturing, storing and tracking requirements for the LEMS. It makes certain that the system for the police is developed bringing into consideration the need for the rules of law.

Critical Analysis:

1. Complex Interface

Challenge: Jama Connect's interface can be confusing for new users, making it hard to learn.

Solution: Provide tutorial, make it easier for new users to navigate, and enhance help needed within the application.

2. Integration with Other Tools

Challenge: With Jira or Confluence, for example, it can be complex to integrate and be error-prone.

Solution: APIs should also be employed to enhance integration processes as well as the underlying data model in these tools for increased coherence.

3. Scalability for Large Projects

Challenge: Jama Connect may slow down with very large projects.

Solution: Divide a large application into modules and make sure that server implementation is fine.

4. High Cost

Challenge: Although Jama Connect has a powerful potential and a number of valuable features, some of its.tf Jama Connect can be costly in particular for small enterprises.

Solution: Agreeable licensing arrangement should be offered and user access should be restricted to only those who require it.

5. Traceability Gaps

Challenge: Lack of traceability between requirements and other artefacts can however compromise the process.
Solution: It is recommended to automate the whole traceability checking process and make linking compulsory in subsequent work flows.

6. Limited Customization

Challenge: It is also important for Jama's built-in workflows not to cope with intricate processes.
Solution: For the rest use scripting or some third-party plugins to add the needed customization.

7. Collaboration Issues

Challenge: They are not as effective as dedicated chat tools which are used by Jama.
Solution: Share and work with such tools as Slack, Teams, etc., in order to improve the flow of communication between the teams.

REQVIEW

ReqView Overview:

ReqView is a simple and powerful requirements management tool enabling to capture requirements in structured documents, manage traceability links and collaborate offline in a small team by storing project data on a shared network drive.

Purpose:

It's first address for purpose disorder requests of regular users provides a platform for building a system or software by employing the model software development cycle with end-to-end traceability.

Version Control System customization of reports caption requirements and analyzing requirements traceability while also managing requirements and risk import facility from word excel requiem Rec view also allows storing data on sharers like SVN jira Cloud Google Drive and share Drive it is easy to export in different formats extension including docx xls6 PDF HTML CSV administrative Rec view can be accessed through the command line there is also deamination provided for data format license server.

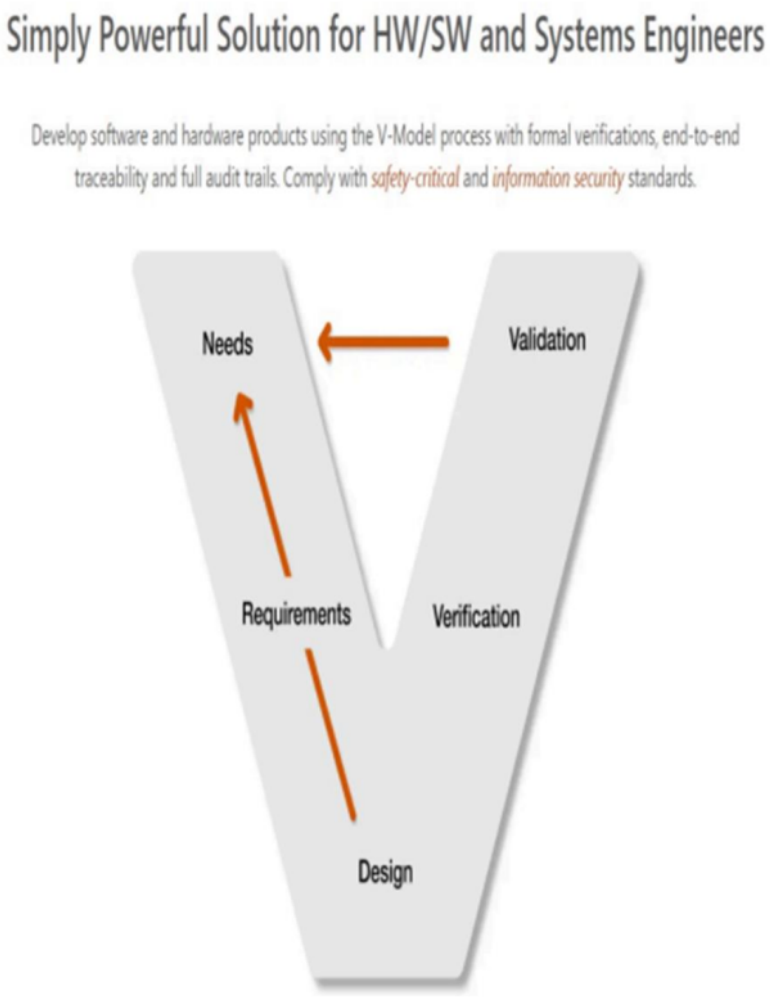
Parent Company:

ReqView is developed and deployed by an independent software engineering enterprise centered in Prague, Czech Republic founded in 2004 by Eccam. Their core competence in design and development of embedded software with the goal of developing clean resilient and reusable software solution with the support possible there areas of experience include car navigation map rendering routing visual guidance traffic info destination search, Diagnostic and embedded application, development like Linux qnx, Android wincy computer Graphics in which they worked on GPU programming navigation map rendering optimization for embed in in gpus user interfaces include QT HTML5 JavaScript computer Visions object recognition and test automation.

Primary Features:

- End- to- End Traceability
- Version Control System
- Customization of reports

ReqView provides end-to-end traceability and takes deliberative action based on reports covering many levels of traceability. You may export the reports and specs to share them with your team. Version control systems using a Version Control System manage the requirement as source code takes the use of Json format readability by humans and integrates with the tools you like to use the most. Customization of reports can get a project started in a few minutes reuse the templates developed according to the international standards Define and manage requirements using views that are intuitively organized as tables. It also includes capturing requirements & analyzing requirements traceability managing requirements & risks import options from Word Excel & ReqIF.



How it supports systematic requirement engineering processes:

- Requirement Gathering:

  ReqView lets you gather and organize all the requirements from different people in one place. This helps you keep track of everything everyone needs.

- Requirement Analysis:

  ReqView helps you link each requirement to the design and development stages. This way, you can see how each requirement fits into the project and make sure everything is prioritized correctly. This helps you see which requirements are most important and make sure they're handled properly.

- Requirement Documentation:

  ReqView makes it easy to create simple and clear documents for all the project's requirements. This ensures that everything needed is included.

- Requirement Management:

  ReqView helps you track any changes, manage different versions, and keep everything linked together. This keeps the project organized and up to date.

Case Study:

Using ReqView for a Traffic Monitoring Project:

A Case Study Application Putting in Place a Municipal Traffic Control System:

Assume that your main responsibility in this example is to enhance a large-scale city website visitor management system, which will be used to show real-time website visitor conditions and notify drivers of traffic jams. The undertaking includes accumulating and dealing with a various set of requirements from government organizations, engineers, and end customers. To make certain all requirements are correctly documented and tracked, you decide to apply ReqView.

How ReqView Supports This Scenario:

Collecting Requirements:

The first step inside the mission is amassing necessities from numerous stakeholders. For instance, city officials may specify that the machine has to provide actual-time site visitors facts, while site visitors engineers may emphasize machine performance and records accuracy. With ReqView, these requirements can be entered right into a based report, ensuring nothing is unnoticed and anybody's wishes are taken into consideration.

Tracking Requirements:

As the undertaking actions ahead, ReqView helps hold a clear line of traceability. Each requirement, whether it involves data. accuracy or device performance, is connected to its related design and development tiers. This traceability is critical in making sure that each requirement is addressed well, from concept thru to implementation and checking out. For example, a request for "provide congestion signs" can be related to document formatting and plan review, ensuring that the feature is implemented as intended.

Handling Changes:

It is inevitable that the requirements will change as the process progresses. For example, following early sorting, the city may ask to have the device expanded to include other areas. The version management and alternate monitoring feature of ReqView.

Critical Analysis:

ReqView It is essential to check the ReqView Tool for system requirements engineering

1. Large and complex projects:

    Challenge: Although ReqView is constructed to efficiently handle necessities control, handling and navigating a couple of necessities can be difficult on large tasks whilst the necessities set is tremendous, and the tool may have performance problems records or inconvenience.

    Mitigation: To overcome this, enterprises should use ReqView's filtering, ranking, and traceability functions to manage complex content. With the help of tagging or custom attributes, large sets of facts can be organized and navigated efficiently, as well as by using a hierarchical structure for the need

2. Connecting other devices:

    Challenge: ReqView can also face difficult conditions when interfacing with different tools used during the software improvement lifecycle, to encompass configuring

duties, configuring environments, or testing tools. This can lead to statistics silos and inefficiencies.

Mitigation: ReqView has import/export talents and APIs that may be used to synchronize information with system to mitigate integration problems. To optimize business enterprise techniques, companies have to test their integration dreams

3. Modifications and Adjustments:

Challenge: ReqView doesn't have as many customization options as some other specialized tools. It can be harder to fit specific needs or unique processes because of this.

Mitigation: To handle customization issues, users can explore the tool's settings and, if possible, use scripting or automation features. If the built-in options aren't enough, you might need to investigate adding extra tools or plugins to make ReqView work better for you. And find out present day networks or 1/three-party integration answers.

5. Version Control and Change Management:

Challenge: Keeping track of changes and managing different versions in ReqView can be difficult. It's important to ensure your requirement files stay accurate and current.

Mitigation: Use ReqView's built-in tools for version control and change tracking. These features help you keep your files updated and manage changes easily.

6. Cooperation and Communication:

Challenge: Even though ReqView helps with collaboration, working with different people and keeping everyone on the same page can still be tough, especially if the team is spread out.

Mitigation: Use additional tools or methods for communication to ensure everyone stays connected and informed. Regular updates and check-ins can help keep the team coordinated.

VISUAL PARADIGM

Overview and Purpose:

Visual Paradigm is a flexible modeling tool developed with the intention to address a wide range of tasks related to the software development process such as **requirement engineering, system modeling** as well as **software design.** Its support of **UML diagrams, Business Process Modeling Notation** and the most essential are the core or set of basic tools. **BPMN stands for Business Process Modeling Notation; UML, which stands for the Unified Modeling Language; and ERD or Entity-Relationship Diagram.** Another advantage that is attributed to the use of the tool is the availability of functionalities. The fourth is in **requirement gathering, analysis, documentation and management.**

Tool Owner:

Visual Paradigm International Ltd. It was developed in the year 2002, its purpose was to make the requirement mechanisms of engineering and software developing, regarding the lack of a

systematic and user
as friendly tool especially when it comes to complicated projects.

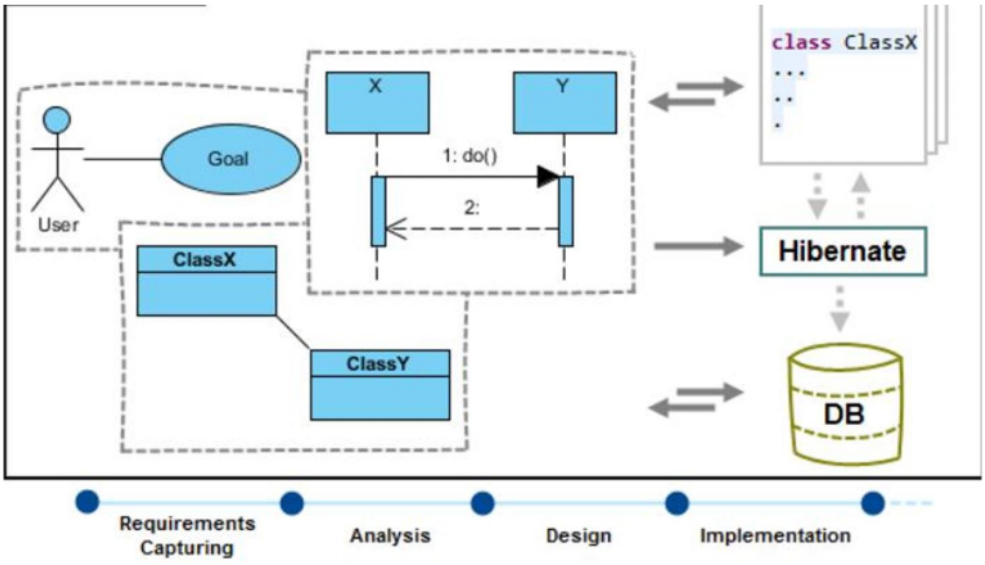
Primary Features:

- **Requirements Diagram:** Graphical modelling of the system requirements.
- **Requirement Management Tools:** Come up with, categorize, and document the requirements.
- **Traceability:** Enables one to link requirements to use cases, models and test cases etc.
- **Version Control and Collaboration:** Allows the requirement document to be worked on by teams and also helping in keeping track on changes.
- **Documentation Generation:** Generates requirement documents on its own and the reports which are required.

Supports systematic requirement Engineering Processes:

Visual Paradigm facilitates systematic requirement engineering by providing:

- Requirement Gathering: Allows for gathering and outlining the requirements of teammates, against the background of which one can understand what has to be created.
- Requirement Analysis: Provides ways of depicting the analyzing depAending relationships, and verifying that the modeling process covers everything keep feasible. Requirement Documentation: The captured models are translated directly into-formal requirement documents, which are automatically produced ensuring coherency and accuracy.
- Requirement Management: Records evolutions in requirements through time, links requirements to design items and helps in managing requirement baselines in an efficient manner in order to support the recursive development model.
- Integration: It can fully work with the JIRA and there will not be a problem when it comes to sharing information between the requirement management and the project tracking. Trello can be integrated with it and you can use the Kanban boards to manage the requirements and tasks being a visual and agile approach to track the requirement and tasks and use the work items. It also supports the integrated version control system of Git and Subversion for its version control. It can also interface with tools used in MS Office suite (for instance, Word, Excel) that can help ITP import and export on requirement documents and data, thus making it easy to share information with stakeholders who use these apps.



Case Study Application:

The use of Visual Paradigm also benefited the process of requirement engineering on the side of the **University Management System (UMS)** as it provided the necessary tool to organize the process of collaboration, documentation and system modeling. The university sought to streamline some of its major functions such as students' admission, course registration and faculty dealings.

Use case, class, and activity diagrams have been made using tool known as the Visual Paradigm, which enabled the architectural representation and modeling of the functional behaviors of the system. This way, we also applied its Requirement Diagram to track both functional and non-functional needs and make sure they meet stakeholders' requirements. The collaboration elements enabled in the tool enabled it to track the changes made, manage the requirements and control the versions. Automated documentation eliminated the issue of sharing out-of-date information to other stakeholders thus improving communication. Furthermore, linking with JIRA helped to locate feature implementation and project development. Due to the ability to trace requirements, design models as well as the use cases offered by Visual Paradigm, it was possible to confirm that requirements identified were indeed achieved.

In summary, this paper affirms that Visual Paradigm made a lot of contributions to the UMS project by categorizing the requirement, system modeling, and integrating the team which ended up with successful implementation of the system.

Critical Analysis:

Critical Analysis of Visual Paradigm in Systematic Requirement Engineering

1. Complexity of Features

> **Limitation:** Visual Paradigm covers almost all the processes involved in requirement engineering hence providing the user with numerous tools, which might be confusing especially when working on a project with a small team or little knowledge over requirement engineering. However the tool has very many features which can be quite overwhelming and make its usage difficult, complex or require a steep learning curve.

Mitigation: To counter this, there ought to be simpler interfaces or modes to cater for new users or for small scale projects. Furthermore, specific training material as well as guided and self-guided tutorials that would give the users a gradual transition to the tool could also be created. The feature which may also be helpful in minimizing complexity is giving users specific boards and particular views of what interests them.

2. Integration Challenges

Limitation: It is important to note that the integration, as any process, can be messy, sometimes taking hours to set up and, in general, not always working smoothly, despite this software humming integration with JIRA, Trello, Git, SVN, & Microsoft Office etc. When several tools are in use, the lack of proper synchronization makes data compare and lowers collaboration efficiency.

Mitigation: Better reliability and thus integration processes have to be a goal in any way. There are a few areas wherein Visual Paradigm could extend the integration capacities: better connectors and their interface, documentation, and the support of integration problems. Likewise, incorporating features such as automated synch and periodic update on integration plugins may go a long way in establishing standardization.

3. Cost and Licensing

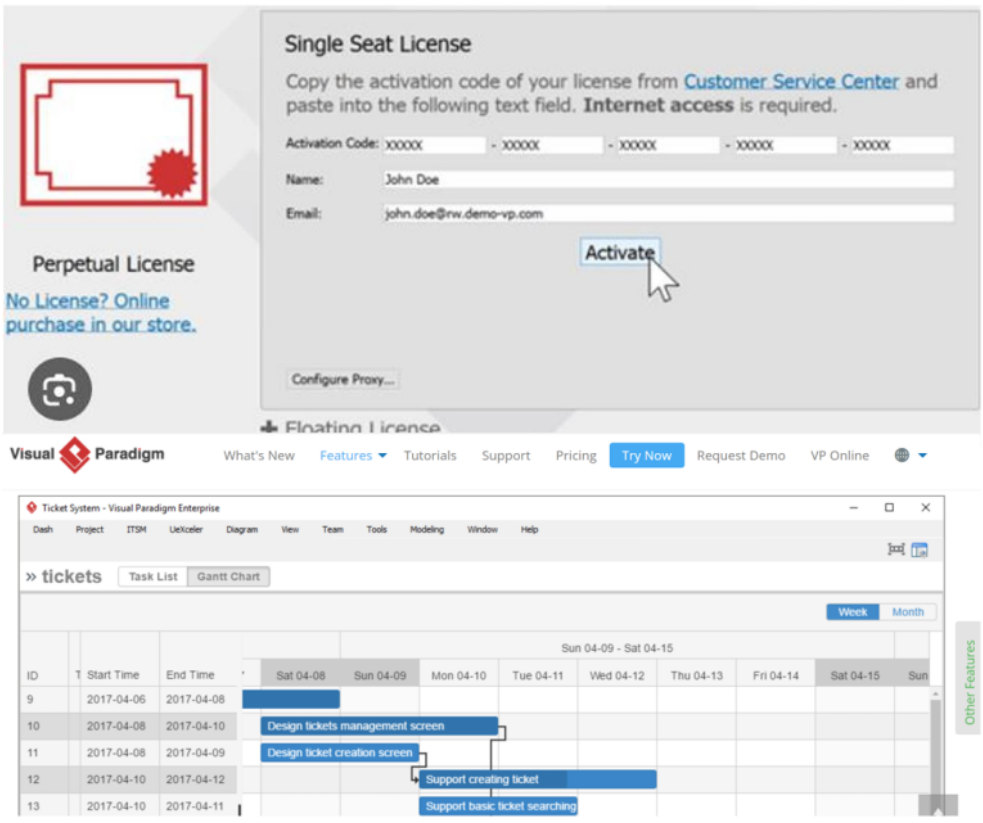
Limitation: Licensing for Visual Paradigm might be a bit costly depending on the necessity hence it might not be friendly to organizations with small teams or with limited budgets. This cost can turn into a considerable factor, especially for early-stage companies or for small projects, which do not require all the core functions of a CRM.

Mitigation: Thus, Visual Paradigm could broaden its offer, for instance, by changing it to the one which includes options for separate prices for a certain set of features or by applying the model of subscriptions depending on organizational size. There could be a stripped-down edition, free or cheaper, that could be deployed for example, to less intricate projects or schools: users of this type of version could be offered a license to ‘level up’ when their project necessitates it.

4. Performance Issues

Limitation: For very big projects and when there are many requirements and complex diagrams, Visual Paradigm is known to run slow for instance, in terms of loading times and other performance related hitches. This can have negative effects on the business operation and also on the users’ experience.

Mitigation: Improving the efficiency of the tool requires increasing its backend performance and streamlining the processes which the tool deals with. Combining peculiarities like caching, indexing, several non-critical peripheral loading of large diagrams can enhance operativity. Another way of preventing slowdown in performance could also be to guide the users on how to approach and manage large projects in the tool.



COMPARISON OF THE TOOLS:

Comparison of Requirement Engineering Tools

Criteria	Jama Connect	Reqview	Scrumworks Pro	Visual Paradigm
Systematic Process Support	Provides a robust framework for requirement management, including traceability, version control, and change management.	Supports structured requirements management with version control and traceability, but might be less extensive compared to Jama Connect.	Focuses on Scrum methodologies, with support for backlog management and sprint planning but less emphasis on traditional requirement management.	Offers extensive support for requirement engineering with UML modeling, traceability, and change management.
Features	Advanced traceability, real-time collaboration, customizable workflows, integration with	Lightweight requirements management, visual tracking of requirements, basic	Sprint planning, backlog management, burndown charts, and task tracking.	Comprehensive UML modeling, requirement management, traceability, project management

Criteria	Jama Connect	Reqview	Scrumworks Pro	Visual Paradigm
	development tools.	traceability and version control.		tools, and collaboration features.
Collaboration	Strong collaboration features with real-time updates, shared workspaces, and comment threads.	Allows for collaborative editing and sharing of requirements, though might lack some advanced features of larger tools.	Enables team collaboration through shared boards and task management, but primarily supports Scrum teams.	Facilitates collaboration through shared diagrams, model reviews, and version control with real-time updates.
Integration	Integrates with a variety of tools including JIRA, GitHub, and other ALM tools, allowing for a cohesive workflow.	Integrates with tools like JIRA, Confluence, and other development tools for enhanced workflow management.	Integrates well with tools used in Agile environments but may have limited integration options compared to others.	Strong integration capabilities with development tools, project management systems, and version control systems.
Cost	Pricing varies based on the number of users and features; typically higher-end with custom quotes.	Offers a free version with limited features; paid plans vary based on number of users and feature set.	Pricing based on the number of users; typically has a lower cost compared to enterprise solutions.	Pricing varies; offers both standard and enterprise licenses with different feature sets.

Software Comparison Statistics

	Jama Connect for Requireme...	ReqView	Visual Paradigm Online for G ...
	Optimized for quick response		
At a Glance			
Star Rating	4.5 144 reviews	4.5 3 reviews	4.5 2 reviews
Market Segments	Mid-Market (49.3% of reviews)	Enterprise (66.7% of reviews)	Mid-Market (50.0% of reviews)
Entry-Level Pricing	No pricing available	€0.00	No pricing available
Pricing			
Entry-Level Pricing	No pricing available	FREE €0.00 Capture requirements for small single-document projects with up to 150 requirements and a single custom attribute. › Open any Project Read Only › Capture Structured Requirements › Manage Requirements with Single Custom Attribute Browse all 4 pricing plans	No pricing available
Free Trial	Free Trial is available	Free Trial is available	No trial information available
Reviewers' Company Size			
Small-Business (50 or fewer emp.)	16.0%	0%	0%
Mid-Market (51-1000 emp.)	49.3%	33.3%	50.0%
Enterprise (> 1000 emp.)	34.7%	66.7%	50.0%
Reviewers' Industry			
	Medical Devices 23.6%	Biotechnology 66.7%	Computer Software 100.0%
	Information Technology and Services 9.0%	Telecommunications 33.3%	-
	Computer Software 7.6%	-	-
	Electrical/Electronic Manufacturing 6.3%	-	-
	Telecommunications 5.6%	-	-
	Other 47.9%	Other 0.0%	Other 0.0%

ASSIGNMENT-1:

ORIGINALITY REPORT

2%	2%	0%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.eccam.cz Internet Source	1%
2	www.g2crowd.com Internet Source	1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		