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**Research Article**

# IMPLICIT INTEGRATED PROJECT MANAGEMENT TOOL FOR RESEARCHERS AND IT MANAGERS TO IMPROVE SOFTWARE PRODUCTIVITY AND COMPETENCE

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**Abstract**

The objective is to build an integrated software engineering and management tool to improve efficiency and productivity in software projects. This integrated project management tool will be used by researchers and particularly IT managers in their daily time table. This project management tool will encapsulate all major parameters, responsibilities and tasks of IT manager. This project management tool will include major functionalities like planning, scheduling, risk management, deadlines, tracking, strategy, data analytics, status and progress, report generation etc. This paper proposes a sophisticated integrated project management software model called "*Drishti*' which summarize all major software project metrics.

**Keywords:** Project management tool, Jira, Project manager

## INTRODUCTION

The IT industry is a global sector encompassing software, hardware, networking, and services, which are essential for managing data and communication. It includes IT services, business process outsourcing (BPO), and software product development, and plays a major role in economic growth, employment, and innovation. Current trends include the increasing importance of artificial intelligence (AI), cloud computing, and cyber security, alongside navigating challenges from new global tax regulations. India has become a global hub for technology and innovation, with its IT industry playing a pivotal role in shaping the digital landscape. With its remarkable growth and global impact, it has become a symbol of innovation, agility, and technological excellence.The IT sector has emerged as a global powerhouse, fuelling the nation's economic growth and bolstering technological advancements.In this blog, we will explore the dynamic landscape of the Indian IT sector, the key factors that have propelled its success, and its prospects.IT project management is the process of planning, executing, and controlling technology-related projects, such as software development, network upgrades, and cloud migrations, to achieve specific business goals on time and within budget. It involves managing resources, timelines, and technical complexities to ensure IT initiatives align with organizational objectives, making it a specialized discipline that blends project management principles with technical expertise. Some examples of IT project include Building websites or software applications, Migrating IT systems to new servers, Deploying new IT infrastructure, such as networks and hardware, Updating or migrating database systems, implementing new IT processes, like disaster recovery or cloud computing rollouts and Managing information security and cyber security initiatives. IT project management (ITPM) is the planning, scheduling, execution, monitoring and reporting of IT projects. While many industries focus exclusively on IT projects, IT is unique in that most, if not all, industries have some level of an IT component.Since they are often very wide in scope, IT project managers must deal with risk, interdependent integrations, software updates, scope creep and so on. Therefore, IT projects require more than the typical project management tools and skills to complete.Specialized IT project management software complete with online Gantt charts, kanban boards, dashboards and reports provide the essential functions necessary for successful IT projects.


**Fig. 1. Project Management Challenges**

### Role of IT managers and their challenges

An IT manager's role is to oversee an organization's information technology infrastructure, ensuring systems like hardware, software, and networks run smoothly and securely. This involves managing and leading IT staff, planning and implementing technology strategies that align with business goals, and overseeing IT projects from start to finish. Key responsibilities include maintaining systems, providing technical support, ensuring data security, and collaborating with other departments to meet their technology needs. IT Managers are at the forefront of minimizing downtime and reducing maintenance costs. This means that they constantly innovate and develop strategies to troubleshoot network issues efficiently. This ensures that a company's servers, websites, and databases are secure and functioning optimally.IT Managers play a crucial role in ensuring the smooth operation of the company's network in the face of the growing threat of

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cyber-attacks and data breaches. They prepare for disasters and put those plans into action so that disruptions are kept to a minimum.The IT field is no longer an all-for-one department. IT Managers work closely with other department managers to assess the growth needs and maintenance of the company's network. This collaborative approach ensures that IT aligns with the overall business strategy.An IT manager oversees a company's information technology systems and ensures that everything runs smoothly. They are responsible for managing the hardware, software, and networks that employees use every day, making sure systems are secure, efficient, and up to date. IT managers also coordinate technical support, plan upgrades, and develop strategies to help the organization use technology more effectively.

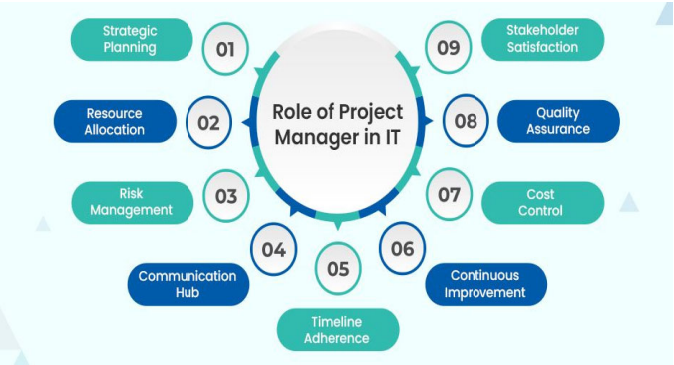


**Fig. 2. Role of Project manager in IT**

Beyond the technical side, IT managers often lead a team of IT professionals and act as a bridge between technical staff and other departments. They help identify the company's technology needs, manage budgets, and ensure projects are completed on time. In short, an IT manager keeps the digital side of the business organized, reliable, and aligned with company goals.The workplace of an IT manager is usually in an office environment, though it can vary depending on the size and type of organization. IT managers spend much of their day at a computer, reviewing system performance, planning projects, and coordinating with team members. They also attend meetings with department heads, executives, or other managers to discuss technology needs, budgets, and strategies. While the work is largely desk-based, IT managers may also move around the office or data centres to check on hardware, servers, or networking equipment.


**Fig. 3. Duties of Agile Project Manager**

IT managers often work regular business hours, but the role can require flexibility. They may need to respond to urgent technical issues or oversee system updates outside of normal hours to minimize disruption. The job can involve multitasking and prioritizing, as IT managers are responsible for ensuring that technology supports the organization efficiently while keeping systems secure and operational. Collaboration is a big part of the workplace. IT managers interact with IT staff, project teams, vendors, and other departments to ensure that projects and daily operations run smoothly. Strong communication skills are important, as they need to explain technical concepts in a way that non-technical colleagues can understand.Agile project management is designed to be flexible enough to handle projects with potentially moving, changing and evolving requirements and agile enough to be able to provide the end customer with functional portions of the overall final solutions promptly and as needed. It transcends the rigidity of the Waterfall process by embracing the change in scope that can so often accompany a project of even the most dedicated requirements.The Agile method of project management and software development is designed to be ready for change. Agile project management refers to an iterative approach to planning and guiding project processes. Just as in agile software development, an agile project is completed in small sections.

These sections are called iterations. In Agile software development, for instance, iteration refers to a single development cycle.Agile projects are managed by the entire team, primarily at the iteration level. The team must work together to select features from the backlog that will be built into the current iteration, estimate time, schedule work, and drive the project towards the product vision. The project manager maintains the plan, but it is really the team that owns the plan and is responsible for meeting plan requirements and deadlines.Agile is about individuals and interactions, but it is also about teamwork and team ownership. In traditional project management, it can feel as though the project manager is in a lonely position, gathering data to put together a plan that is then handed down to task owners. In Agile the project manager is a task owner among task owners and everyone contributes.Many new project managers focus heavily on tasks and timelines, forgetting the importance of leading people. Leadership involves more than assigning tasks—it's about building trust, inspiring collaboration, and resolving conflicts. Without strong leadership, teams can become disengaged or unclear about their roles.Start by understanding your team's strengths and challenges. Set clear expectations and goals, and make yourself approachable. Leadership isn't about having all the answers, but about empowering your team to contribute their best. Projects can quickly derail if the objectives aren't clear. A common mistake for a new project manager is assuming that everyone is aligned on the goals without actually defining them. Vague objectives lead to confusion, missed deadlines, and frustrated team members.For many new project managers, time feels like the enemy. Meetings, emails, and last-minute tasks can consume your day, leaving little room for strategic thinking. Without proper time management, you may find yourself constantly reacting to problems instead of proactively steering the project.Making decisions that affect timelines, budgets, or team morale can feel overwhelming for a new project manager. The fear of making the wrong choice can lead to indecision or second-guessing.Many new project managers overlook the importance of proactive risk management. Without a plan, even minor risks can escalate into major issues that derail the project.During the planning phase, identify potential risks and categorize them by

likelihood and impact. Assign mitigation strategies to each risk and ensure the team understands their roles in addressing them. Regularly update your risk log as the project progresses to stay prepared for new challenges.

**Glimpse of few existing models and importance of project management tools**

Project management tools improve efficiency and outcomes through better planning, enhanced collaboration, and improved tracking. They help teams manage resources, budgets, and risks more effectively, while centralizing all project information in one place. This leads to increased productivity, better communication, and a higher chance of completing projects on time and within budget. Project management tools are physical resources such as software that help manage and execute various aspects of a project. Other examples of tools include Gantt charts, kanban boards, project calendars, task lists or project management templates. Think of tools as "how" you manage projects to achieve goals like improving communication, monitoring performance or facilitating planning.

***Gantt Chart***: Gantt charts are one of the most important project management tools due to their versatility. Gantt charts can be used throughout the various phases of your projects to help with project planning, project scheduling and project tracking.Gantt charts facilitate the process of creating a project timeline. If you're using the online Gantt chart in ProjectManager, you simply need to add tasks and due dates to automatically create interactive project plans. Then you can adjust your project schedules as needed and link dependent tasks by clicking and dragging items on the timeline. Gantt charts can also be used to make roadmaps to monitor the execution of multiple projects in a program or project portfolio.

***Cost Breakdown Structure***: A CBS, or cost breakdown structure is a hierarchical framework that categorizes and organizes the costs associated with a project. It breaks down the overall project cost into more manageable chunks including labour, equipment and overheads. This cost structure tool helps with budgeting, cost tracking and financial analysis, offering a clear breakdown of where money is being spent.

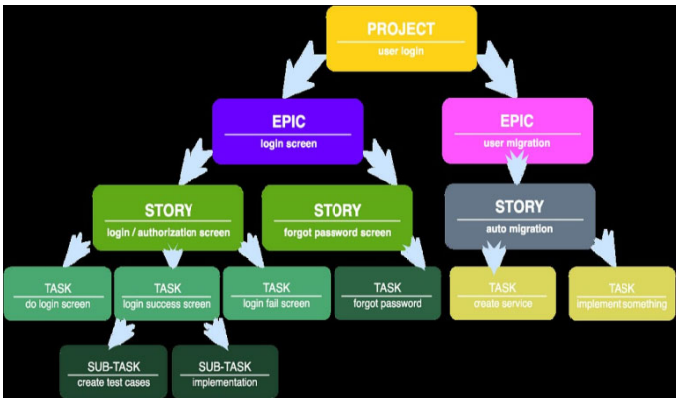


**Fig. 4. JIRA tool Description**

***Risk Matrix***: A risk matrix is another key project management tool that any project manager should know. They're a simple tool that helps you to figure out the likelihood and severity of potential project risks. By having the means to access risk this way, you can chart their impact on the project. This allows project managers to assign a priority to the risk and determine the response if it becomes an issue in the project. For these reasons, you should always use a risk matrix, risk log or other risk management tools when planning your projects, regardless of the project management techniques you choose.

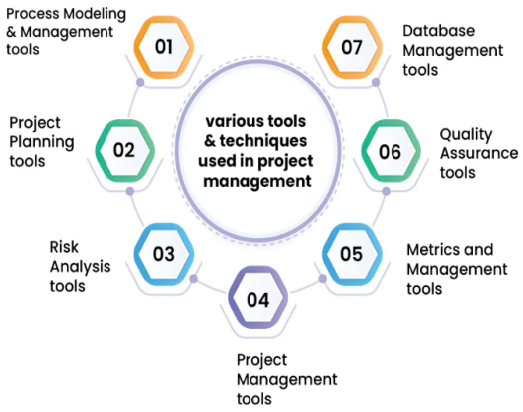


**Fig. 5. Project Management Tools description**

***Asana***: Asana is one of the more popular project management software platforms available. Built for businesses of many sizes, this multifaceted tool combines file storage, project roadmaps, dashboards, and more in one attractive interface. Asana is all-in-one project management software that offers various work organization features, resource management tools, and an attractive interface. However, from my experience, it appears that Asana doesn't have a robust approach to capacity and workload planning, which could lead to tasks being disconnected from the allocated team member.

***JIRA***: Jira is part of the Atlassian Group now, but it originated as a software development solution many years ago. Today, Jira offers a wide range of advanced features designed to help teams of all sizes plan, track, and manage their work effectively. One thing I appreciate about Jira is its customization. I've set up workflows, issue-tracking systems, and dashboards that align perfectly with specific Agile processes, and it does this exceptionally well. If your team follows Scrum, Kanban, or both, Jira provides everything you need to track sprints, assign tasks, and monitor progress. Plus, importing and exporting project data is easy, making it convenient when working across multiple projects.Jira is an issue and project management tool developed by Atlassian that helps teams plan, track, and manage their work. Originally created as a bug and issue tracker for software development teams, it has evolved into a versatile platform that supports various agile methodologies like Scrum and Kanban. Teams can use Jira to organize projects, track the progress of tasks, and generate reports.

***Kanban Boards***: Kanban boards are a visual task management tool that consists of a board and moving cards that represent activities. Project managers and team members use them to collaborate as they work on projects. Kanban boards let project managers visualize their workflows, assign tasks and report on their progress. Kanban boards can be used for workflow management by a variety of teams, from marketing to agile software development. They're also used as part of techniques such as lean manufacturing.

***Zoho***:It is a project management tool. It helps in planning your projects, tracking work efficiently and collaborates with global teams.

***Aha***:It serves as a roadmap and project planning software designed to help teams define their strategy and manage product development projects. It's mainly used by product managers and strategic planning teams looking to align their organization's goals with their product development efforts. The tool provides clarity on what to build and why, ensuring team efforts are always linked to business objectives.Aha! Addresses common pain points such as lack of strategic direction, disjointed planning processes, and the difficulty in prioritizing features. Its standout features include robust roadmapping capabilities, idea management, project management, and features for setting strategy and goals.

**Proposed project management and software engineering model "Drishti"**

There is an immense need to build a project management software engineering model. The new model should encapsulate all major functionalities and parameters required for IT managers and software industry.The existing models though give solutions to software industry but there is a need for models which give more functionality which will be helpful in proper project execution. Hence in this paper we propose a sophisticated and integrated "***Drishti***" model. Below are the 25 Modules described for "***Drishti***".

**Table 1. Describes Modules**

| | |
|---|---|
| Module 1 | Analysis and requirement gathering |
| Module 2 | Design |
| Module 3 | Coding |
| Module 4 | Quality Assurance |
| Module 5 | Documentation |
| Module 6 | Deployment and Release |
| Module 7 | Client relationship |
| Module 8 | Strategy and Business goals |
| Module 9 | Planning |
| Module 10 | Scheduling |
| Module 11 | Budgeting |
| Module 12 | Monitoring |
| Module 13 | Team Handling and disputes |
| Module 14 | Assigning tasks |
| Module 15 | Mitigation Techniques |
| Module 16 | Contingency Techniques |
| Module 17 | Report Generation |
| Module 18 | Project Status |
| Module 19 | Project Progress |
| Module 20 | Project timelines and deadlines |
| Module 21 | Project resources |
| Module 22 | Project Deliverables and Versioning |
| Module 23 | Data Analytics |
| Module 24 | Technology and Hardware selection |
| Module 25 | Domain analysis |

A project manager's day-to-day activities include overseeing project progress, managing communication with teams and stakeholders, and resolving issues.


**Fig. 6. It describes benefits of *Drishti* model**

Project Management tool ***Drishti*** transforms the manner teams collaborate, plan, execute, and monitor projects. It has the potential to streamline procedures, enhance communication, and increase efficiency across the commercial enterprise. Key tasks involve leading daily stand-up meetings, updating project management tools, reviewing emails for updates, and allocating resources to keep projects on track and within budget. ***Drishti*** tool will improve efficiency and project outcomes through enhanced planning and scheduling, better collaboration and communication, and centralized organization.

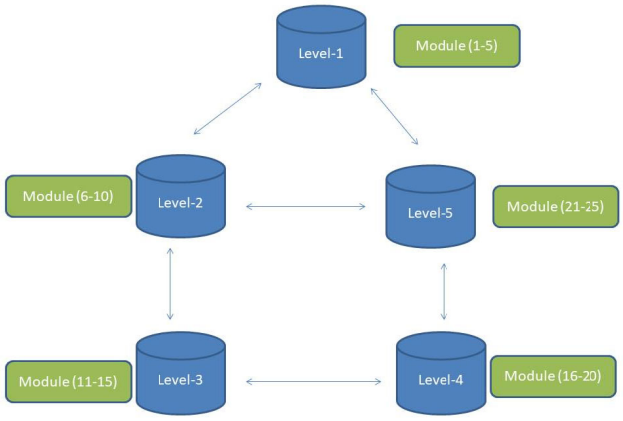


**Fig. 7. *Drishti* Proposed Model**

These widely used tools have many blessings that can affect the outcomes of initiatives and teamwork.They offer advantages like real-time progress tracking, streamlined reporting, effective resource and budget management, and increased accountability, which helps teams stay on track and mitigate risks. Heuristic Principlesare needed for ***Drishti*** tool. Heuristic Evaluation is a usability inspection method for computer software that helps to identify usability problems in the user interface (UI) design. It specifically involves evaluators examining the interface and judging its compliance with recognized usability principles (the "heuristics").Heuristic principles are important because they provide a quick and effective way to identify and fix usability issues early in the design process, saving time and resources. They ensure consistency; reducing cognitive load and helping users navigate systems more efficiently.

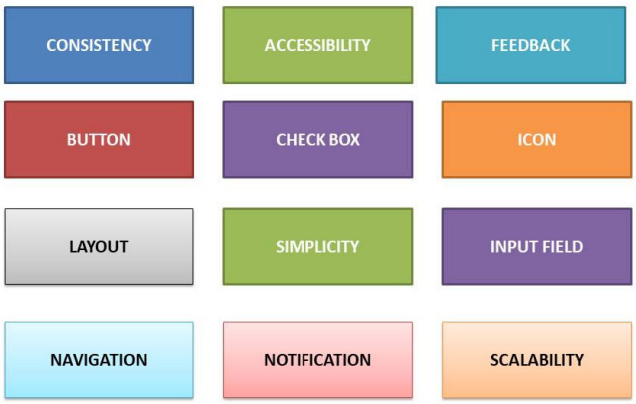


**Fig. 8. UI design Features for *Drishti***

Additionally, they focus on user needs, enhancing satisfaction and engagement, which are critical for the success of any product.10 usability heuristics for user interface design for ***Drishti***:

1. **Visibility of System Status:** Keep users informed about system status with timely feedback.
2. **Match Between System and the Real World:** Use familiar language and concepts for users.
3. **User Control and Freedom:** Provide options to undo actions and exit states easily.
4. **Consistency and Standards:** Maintain uniformity and follow platform conventions.
5. **Error Prevention:** Design to prevent errors before they occur.
6. **Recognition Rather Than Recall:** Make information and actions visible to minimize memory load.
7. **Flexibility and Efficiency of Use:** Cater to both novice and expert users with adaptable interfaces.
8. **Aesthetic and Minimalist Design:** Avoid irrelevant information to keep the interface clean.
9. **Help Users Recognize, Diagnose, and Recover from Errors:** Offer clear error messages and solutions.
10. **Help and Documentation:** Provide easy-to-find, task-focused help and documentation.

**Conclusion**

***Drishti*** is a project management software engineering model. It can be useful to researchers and IT managers in software industry. The developers can convert the given model into a sophisticated tool. This tool can be utilized for various purposes and it will increase efficiency in delivering software project. The proposed model encapsulates all major functionalities hence it will be immensely supportiveto users. The developers and researchers can use necessary architecture and technologies to develop this model into a tool.

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