

TejasVI

Empowering Data Driven Governance

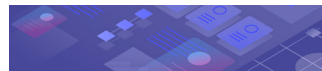
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TejasVI transforms data analysis/visualisation for eGovernance through its user-centric design, integrating various data sources, and offering a wide range of visualisations. Notably, its features like predictive analytics, Dashboard Data Question Answering, multilingual dashboards enhance the value proposition for all dashboards developed. By harnessing technology, TejasVI paves the way for more informed and effective eGovernance.

Key Features

TejasVI is not just a data visualisation tool; it is a comprehensive solution that addresses the diverse needs of modern governance. Its robust features redefine how government entities can interact with data and insights.

- **Intuitive Design Interface:** TejasVI boasts a simple drag-and-drop interface that empowers users to craft interactive and powerful dashboards effortlessly, ensuring data analysis is accessible to users of varying technical backgrounds.
- **Integration with External Data Sources:** TejasVI's integration capability extends to various data sources. It accommodates flat files like Excel, CSV,



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JSON, XML, and connects seamlessly with databases such as Microsoft SQL Server, PostgreSQL, MySQL, Oracle, and MongoDB. API integration with RESTful APIs using JSON array requests/responses is also supported.

- **Visualization Charts:** With over 45 default visualisation options, TejasVI enables users to choose from a wide range of chart types. These visuals enhance the clarity and depth of insights derived from data analysis.
- **Seamless Integration with Existing Applications:** TejasVI's API-based integration allows dashboards, pages, and visuals to seamlessly interact with existing applications, ensuring data-driven insights are readily available.
- **Geospatial Insights:** Integration with Bharat Maps, Google Maps, Geo, and World Maps at state and district levels enriches data analysis with location-based insights, enabling governments to

make location-centric decisions.

- **Data-Driven Alerts:** TejasVI introduces a data-driven conditional alert feature that proactively notifies users of significant changes or patterns in data. This feature ensures that government entities remain responsive to emerging trends.
- **Advanced Data Preparation:** TejasVI's commitment to data excellence extends to its advanced data preparation features. It offers tools for data quality improvement, joining multiple datasets, and creating custom columns, ensuring that data is not just visualised, but refined for accuracy.
- **Integration with other NIC Products:** With integration with other NIC products like Bharatmaps, Sandes, Parichay, eForms and Collabfiles, TejasVI streamlines data utilisation and analysis, fostering efficiency.
- **Effortless Collaboration:** Dashboards can be easily shared with teams, stakeholders and public via public URL sharing, enabling a more informed and engaged governance process.
- **Online Help Documentation:** Through, online help documentation equips users with the knowledge they need to maximise the platform's potential effectively.

Application Workflow

At the core of TejasVI lies its application workflow, a process that empowers a journey of connectivity, transformation, creativity, and clarity where data evolves into insights that drive informed decisions. It forges the path toward informed decision-making, ensuring that data does not merely remain raw information but evolves into a catalyst for progressive governance.

Data Source Connectivity: TejasVI journey commences with data source connectivity. The platform effortlessly connects with various data sources, including flat files, databases, and APIs.

Visual Representation: TejasVI provides users with a visual paradise, offering over 45 types of visuals and HTML components to choose from, allowing them to best convey their insights.

Tailored Customization: TejasVI offers unparalleled customization, with over 100 properties per visual, allowing users to fine-tune elements to perfection for each unique dataset.

Dashboard Creation: TejasVI revolutionizes dash-



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▲ Fig 10.1 TejasVI's Application Workflow

board creation with a seamless drag-and-drop interface for intuitive visual arrangement.

Technology Stack

TejasVI's potential lies not only in its features but also in its architecture and the advanced technology that underpins its functionality.

- **Frontend:** Angular, React Framework for building intuitive web interfaces.
- **Middleware:** Spring Boot, Flask for creating scalable and modular backend services.
- **Backend:** PostgreSQL for efficient data storage and retrieval.
- **Analytics:** Custom-built visualisation engines for creating interactive dashboards and charts.
- **Other Tools:** Docker-compose or Kubernetes for efficient deployment and scalability.

Key Innovations Applied

- **Microservices:** TejasVI uses microservices for efficient resource use. Each microservice operates independently, making updates easy and adapting to evolving data needs.
- **Docker:** TejasVI utilizes Docker containers for streamlined deployment, ensuring compatibility and reducing conflicts, enhancing flexibility and portability.
- **Multi-Layered Caching:** TejasVI employs multi-layered caching, including Hazelcast, to accelerate data retrieval by storing frequently accessed data in memory. This boosts performance and provides real-time insights even under heavy workloads.
- **Integration with external data sources:** It accommodates a range of data formats, from flat files to various databases and APIs.

- **Integration with emerging technologies:** AI-driven analytics in TejasVI enables government entities to anticipate trends and make smarter decisions, aligning with the future of data-driven governance.

Impact

TejasVI empowers governments and stakeholders with data-driven decisions, benefiting various sectors across states and user departments.

2023 Highlights:

- **Deployments:** In 2023, TejasVI expanded its reach to over 20 states and user departments.
- **User Base:** TejasVI's portal and dashboards saw engagement from 128,000+ users.
- **User Interaction:** Logged 1.3 million users interactions, demonstrating its utilization and impact.

Award

TejasVI has been conferred upon the Award of Recognition by CSI SIG eGovernance Awards 2022 under the Project Category.

Way Forward

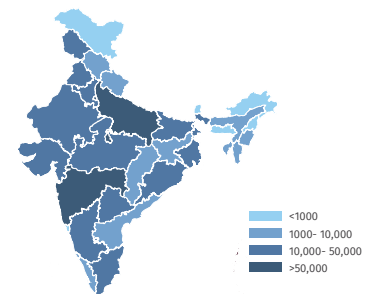
- **Empowering Predictive Analytics with Time Series Forecasting:** TejasVI's commitment to data-driven decision-making extends beyond visualising historical data. The platform now embraces predictive analytics with its time series forecasting feature. By analysing historical trends, TejasVI can provide projections and forecasts, empowering government entities to anticipate future patterns. This predictive prowess equips decision-makers with the insights needed to proactively address challenges and capitalise on emerging opportunities.
- **Unlocking Insights with Dashboard Data Question Answering:** Recognizing that insights are only

as valuable as the questions they answer, TejasVI introduces the Dashboard Data Question Answering feature. Users can now directly query their dashboard data and receive instant responses. This interactive functionality not only expedites data exploration but also enhances user engagement by facilitating quick and targeted information retrieval. The integration of natural language processing capabilities transforms TejasVI into a responsive data analysis partner.

- **Bridging Language Barriers with Multilingual Dashboards:** Recognizing the significance of linguistic diversity, with the integration of NIC PaniniAI translation, TejasVI dashboards are multilingual enabled.

These additions enhance TejasVI's ability to

▼ Fig 10.3 Statewise Usage Events



20+ TejasVI deployments for States & other User Departments	128k+ Users Accessed TejasVI portal/ dashboard during Year 2023	1.3M+ Users Accessed Events on TejasVI portal/ dashboard during year 2023
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empower data-driven governance, offering actionable insights from historical and predictive analysis, as well as interactive querying. TejasVI continues to lead in technological innovation, bridging the gap between data and impactful decision-making.

In the age of exponential data growth, TejasVI leads the way in technology-driven governance. Its microservices, Docker integration, and multi-layered caching showcase the fusion of technology and governance. TejasVI propels government entities beyond data analysis, forging a future where insights drive tangible societal improvements. It reflects India's commitment to technology as a force for positive change. TejasVI's journey continues with a vision for the future, integrating emerging technologies like AI and ML to anticipate trends, optimize resources, and proactively address societal challenges.

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▼ Fig 10.2 TejasVI's software architecture

