

IT Observability Transformation

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ABSTRACT

There is an ever-increasing focus on collecting and analyzing data in almost all industry verticals ranging from retail and hospitality to banking and finance. But today's businesses struggle when it comes to understanding data or data-driven insights. The data is too much to consume, and the data-driven insights are too complex to process. This is creating a rampant gap between the potential of data analytics and its adoption by businesses.

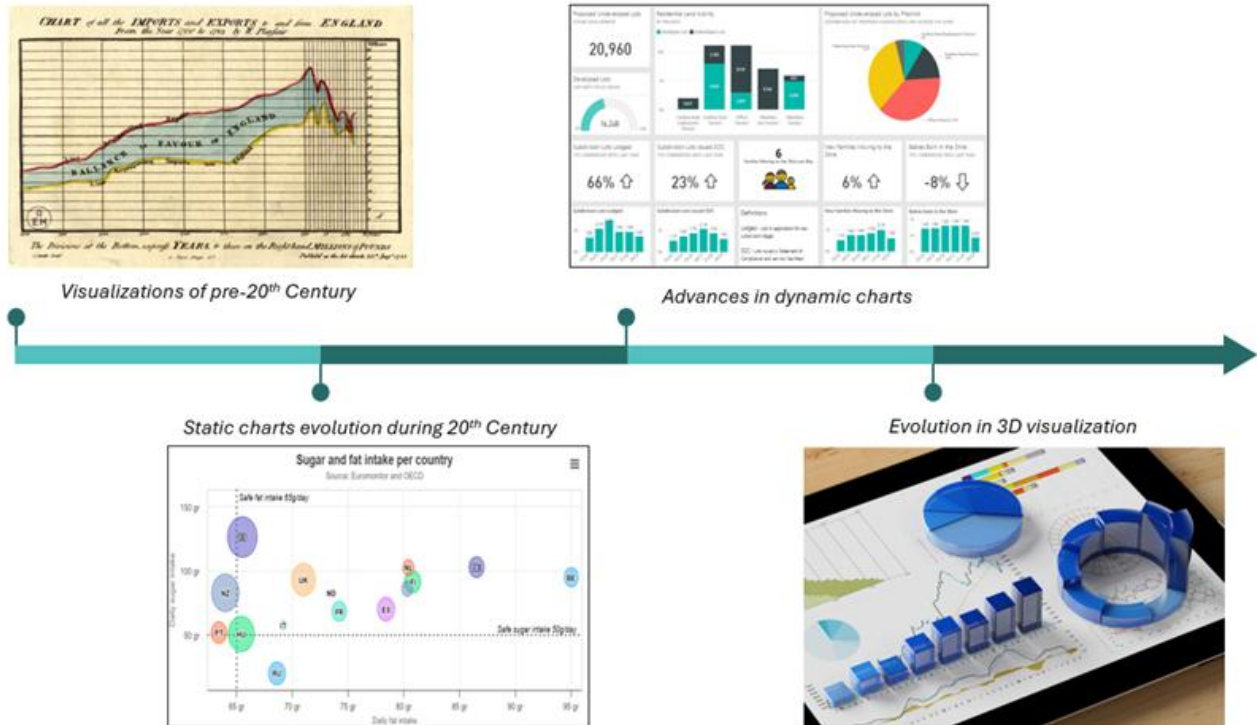
Enterprise observability can act as a very effective vehicle to bridge this gap. Enterprise observabilitytoday is not just limited to generating reports and dashboards, instead, it is becoming a system of engagement for the end-user to get familiar with the data and make use of the data in the best possible way.

Keywords: - Data Visualization, Observability, Operational Efficiency, Time Series Graph, AIML, Autonomous IT Ops, Data Driven RCA, Single Pane of Glass, Advanced Analytics, Realtime Dashboards.

INTRODUCTION

Data visualization and observability has come a long way. Its evolution has been driven by the advances in technology, the advances in data, and the advances in the creative ways in which businesses are using data.

- Before the advancement of modern technology, early visualizations of pre-20th century primarily relied on simple visualization representations such as tables, charts, and maps.
- The 20th century then saw more standardized techniques of static charts. The data was represented using tools such as line charts, bar charts, pie charts, scatter plots. These representations allowed users to visualize data in a structured and comprehensible manner.
- Advances in computer graphics in the late 20th century then paved the way to graphical user interfaces. Data visualization entered the space of dynamic and interactive visualization.
- The rise of bigdata, led to greater depth and sophistication in visualizing multi-dimensional and complex data sets through heatmaps, tree maps, network graphs, and 3-D visualizations. Platforms such as D3.js, and tools such as Power BI and Tableau enabled users to interpret massive amounts of data quickly and intuitively.



Going forward, data visualization is headed to revolutionize how we interact with data by creating immersive, interactive, and personalized experiences. Different factors are playing a crucial role in shaping the future of data visualization. We did extensive research to collate three critical aspects that are driving the trends in data visualization and overall enterprise observability

Critical Drivers in Observability Transformation: -

1. **Data Availability** — Businesses have an increasing focus on observability. Data is getting collected and analyzed across all layers of business, application, and infrastructure. The need to analyze such large, complex, and multi-dimensional data is influencing the future of data visualization and observability.
2. **AI/ML** — Like most industries, AI has a strong influence in shaping the future of data visualization. New possibilities are opening with low-code and no-code development and automated UI generation. Generative AI is making technology accessible in never-before-seen ways.
3. **Interactive UI for Visualization**— Technology advances are driving the trends to create animated, interactive, intuitive and immersive visualizations.

Impact of Data Availability on Observability Transformation: -

Data observability is the process to understand, measure, and track the health of data as it flows through the system to ensure accurate and trustworthy decision making. Data observability drives 3 key scenarios for enterprise observability –

360-Degree Views for Business Operations— With so much data being collected, there is an increasing focus on presenting a comprehensive 360-degree view of the system by connecting the dots across a wide-variety of data sources. Various industries are making use of such views and are coming with more requirements for such bird’s-eye views. Some of the most common use cases are listed below –

1. CFOs of ecommerce websites often make use of such views to quickly glance on the area from where maximum hits come to the website.

2. Hospitals make use of such views to get a clear view of their overall performance and identify the gaps to improve the overall patient experience.
3. Aviation industry makes use of such views to understand the performance of an airport in terms of delays and cancellation.

Real-time Visualization of Customer Events — Providing a real-time view of data is another fast-picking visualization trend. It is often used to bring transparency, track inconsistencies, and better understand the current system state. Flight tracking presents an interesting example of such visualization that gives a real time picture of number of flights flying across at a particular point in time. With real time information, the quick data processing and immediate visualizations help users to conclude on any business-critical decisions.

Intuitive narrow-downs to derive Actionable Insights — Once an effective visualization is presented to the end user, based on the user persona who is analyzing the charts or graphs there should be handles to highlight the area which needs attention. There is an increasing demand to provide ways to aggregate data, filtering out the unwanted data, concatenate multiple charts/graphs together for faster decision making, and other such tools to make it easy to narrow down the insights of interest.

Impact of AI on Observability Transformation: -

AI is empowering the UI designers and developers to focus on core creativity by giving them several tools as disposal. GenAI will play a pivotal role in augmenting data visualization platforms where AI and user can collaborate on the same canvas, empowering users to curate their own experiences.

- **Automated dashboards for Enterprise Data** — AI/ML algorithms are heading towards automating the process of data visualization. These algorithms can generate visualizations that best present the data and data-driven insights. AI Augmented tools are able to convert data into dashboards without any manual intervention.
- **Natural language-based customer interactions** — Advances in Natural Language Processing (NLP) and Natural Language Generation (NLG) are paving the way for simpler interaction metaphors where users can interact in natural language queries through voice or text. Instead of staring at elaborate dashboards, data visualization is likely to head towards simpler interfaces allowing users to simply ask for the information of interest.
- **Personalized End User Experience** — AI is sharpening the ability to analyze user behavior and assess user's preferences. This can be leveraged in powerful ways to create adaptive visual experiences. AI can adjust the dashboard layout, the content, the visualization metaphors, etc., based on the user's behavior and preferences.
- **AI Driven Low Code Observability Platform for Observability**- AI is offering low-code and no-code solutions to create dashboards. This will make it very easy to create insightful visualizations without the technical skills of data visualization. There are several tools in the market that are now offering such capabilities. For Ex - With Polymer's AI capability, data can be quickly transformed into customized dashboards.

Impact of Advanced UI On Observability Transformation: -

Technology has played a strong driving force behind the evolution of data visualization, and it continues to do so. With powerful computing systems, sophisticated algorithms, and advanced visualization software, data visualization is reimagining the way end users engage with data and data-driven insights.

- **Mobile-friendly visualization** — Today, mobile impressions are often the first impressions. Mobile-friendly and mobile-optimized visualization continue to drive trends in data visualization. There is an increasing need to focus on properties that allow visualization that can be viewed seamlessly across multiple platforms.
- **Animated and interactive visualization** — Static data visualization is no longer sufficient. The attention span of the users is reducing. Animations provide an effective tool to catch-up with this trend to keep the user engaged. Basic data animations have been present since last few decades, but they offered flashy and imprecise visuals. Latest advancements in animated and interactive visualizations provide effective vehicles to summarize insights without excessive text and to provide interactive drilldowns into the areas of interest.

- **AR/VR immersive experiences** — Traditional data visualization technologies restrict the facts and imaginations derived from the data. This problem further accentuates as the data cuts across different layers of technology and business. Many data scientists strongly believe that AR/VR can transform the way users interact with and interpret data-driven insights. AR/VR driven visualizations are still in the initial stages, but it is certainly gaining popularity.

CONCLUSION

Over the last two years, the accelerating complexity of modern distributed systems and application architectures has highlighted the limits of legacy observability approaches, which remain fixated on collecting and reporting errors against known rules, restricting effectiveness in today's dynamic and ephemeral environments. The future of event driven insights is visual. Data continues to grow in volume and complexity, and so does the number of people using it. By embracing emerging trends, enterprise visualization and observability is all set to play a powerful role in interrogating system behavior without the limits imposed by legacy methods and help you see and operate your environment like never before.

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