



1 INTRODUCTION

1.1 Overview

The Sustainable Development Report (SDR) reviews progress made each year on the Sustainable Development Goals since their adoption by the 193 UN Member States in 2015. At the halfway mark to 2030, the Sustainable Development Report 2023 takes stock of progress made and discusses priorities to restore and accelerate SDG progress. Published on the eve of the 2023 Paris Summit for a New Global Financial Pact, this year's edition focuses specifically on the need to scale up development finance and to reform the global financial architecture to support the SDGs.

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1.2 Purpose

The **Data Analytics with Cognos** sessions are to help in identifying valuable insights, conveying data through engaging and interactive narratives, creating comprehensive reports and designing visually appealing dashboards that are both informative and insightful.

By attending Virtual Faculty Buildathon, we can earn IBM skill badges, free access to IBM Cloud, exclusive access to IBM Skills Build courseware and Red Hat Code Ready workspaces, tech mentorship and industry connect and Project completion certificates, subject to valid project submissions. It helps us to build practical skills in emerging technologies.

2 LITERATURE SURVEY

2.1 Existing problem

- Inefficient Reporting Processes:

Organizations may struggle with manual and time-consuming reporting processes, leading to delays and inaccuracies in decision-making.

- Lack of Data Visibility:

Businesses often have data stored in disparate systems, making it challenging to gain a unified view of the organization's performance.

- Data Analysis Complexity:

Users may find it difficult to analyze and derive insights from complex datasets, hindering their ability to make informed decisions.

- Lack of Mobile Accessibility:

Decision-makers may require access to critical business information while on the go, and traditional reporting tools may lack mobile accessibility.



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- Security and Compliance Concerns:

Organizations need to ensure that sensitive data is secure and that reporting processes comply with industry regulations and internal policies.

- Ineffective Collaboration:

Teams may face challenges in collaborating on data analysis and reporting, leading to silos and a lack of shared insights.

- Difficulty in Forecasting and Planning:

Organizations may struggle with forecasting and planning due to a lack of accurate and timely data.

2.2 Proposed solution

A literature survey on the Sustainable Development Report 2023 dataset reveals a growing body of research and analysis centered around sustainability and the progress of countries toward achieving the United Nations' Sustainable Development Goals (SDGs). Scholars, policymakers, and organizations have recognized the significance of this dataset in assessing and advancing sustainability efforts on a global scale. The dataset has become a critical resource for policymakers, guiding the development and adjustment of policies and strategies to address specific SDGs. It assists in identifying areas requiring improvement and highlighting successful strategies. Some studies critically evaluate the dataset itself, discussing data accuracy, sources, and limitations. Researchers emphasize the importance of transparent and reliable data for meaningful sustainability assessments.

Social Impact: The Sustainable Development Report 2023 dataset holds significant social impact by promoting global sustainability and monitoring progress toward Sustainable Development Goals (SDGs). It empowers countries to assess their sustainability scores, regional standing, and performance on specific SDGs, fostering informed decision-making.

Business Model/Impact: Access to the Sustainable Development Report 2023 dataset can have a profound business impact. Companies can utilize this rich source of sustainability data to make informed decisions regarding market expansion, supply chain optimization, and investment strategies.

- Cognos Analytics automates the reporting process, allowing users to create, schedule, and distribute reports efficiently. This can lead to faster decision-making based on accurate and up-to-date information
- Cognos Analytics provides data integration and connectivity features, allowing users to access and analyze data from various sources. This promotes better data visibility and a holistic understanding of business operations
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- Cognos Analytics supports mobile access, allowing users to view reports and dashboards on smartphones and tablets. This ensures that decision-makers can stay informed even when away from their desks.
- Cognos Analytics includes security features such as role-based access control and supports data governance. This helps organizations maintain data security and comply with regulatory requirements.

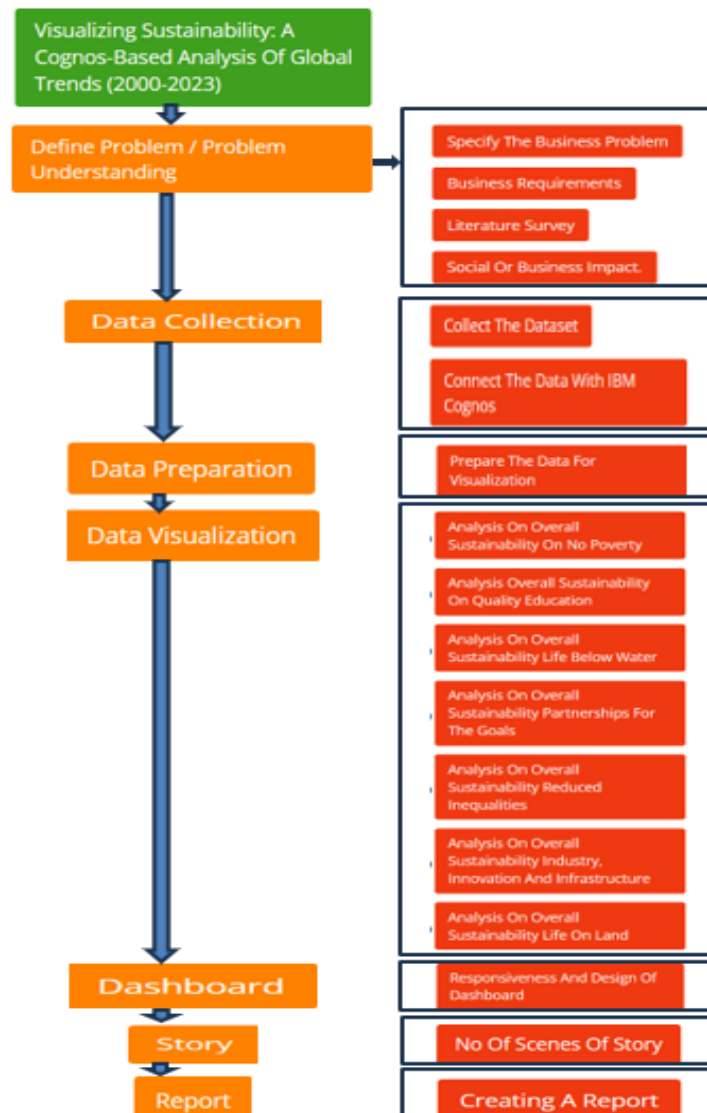


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- Cognos Analytics provides collaboration features, allowing users to comment on reports, share insights, and work together on analytics projects. This fosters a collaborative and data-driven culture within the organization.
- Cognos Analytics supports advanced analytics and predictive modeling, enabling organizations to use historical data to make more accurate forecasts and informed strategic plans.

3 THEORITICAL ANALYSIS

3.1 Block diagram





3.2 Hardware / Software designing

Skills Required:

Python, Python for Data Analysis, Python for Data Visualization, Exploratory Data Analysis, IBM Cognos Analytics

4 EXPERIMENTAL INVESTIGATIONS

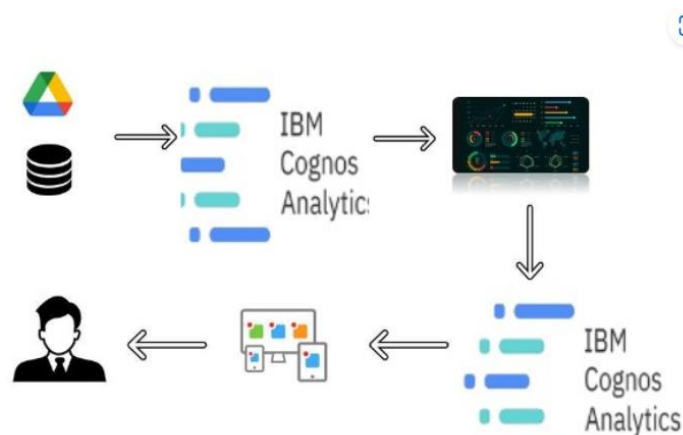
Connect your data effortlessly: Import data from CSV files and spreadsheets. Connect to cloud or on-premises data sources, including SQL databases, Google Big Query, Amazon, Redshift and more.

Introducing Cognos Assistant: AI Use your own words to ask the assistant for answers and insights from any data source you select. Then ask it to build charts and dashboards so that you can quickly visualize and share information

Prepare and connect data automatically: Save time cleaning your data with AI-assisted data preparation. Clean and prep data from multiple sources, add calculated fields, join data and create new tables.

Create dynamic dashboards easily: Quickly create compelling, interactive dashboards. Drag and drop data to create auto-generated visualizations, drill down for more detail and share using email or Slack.

5 FLOWCHART

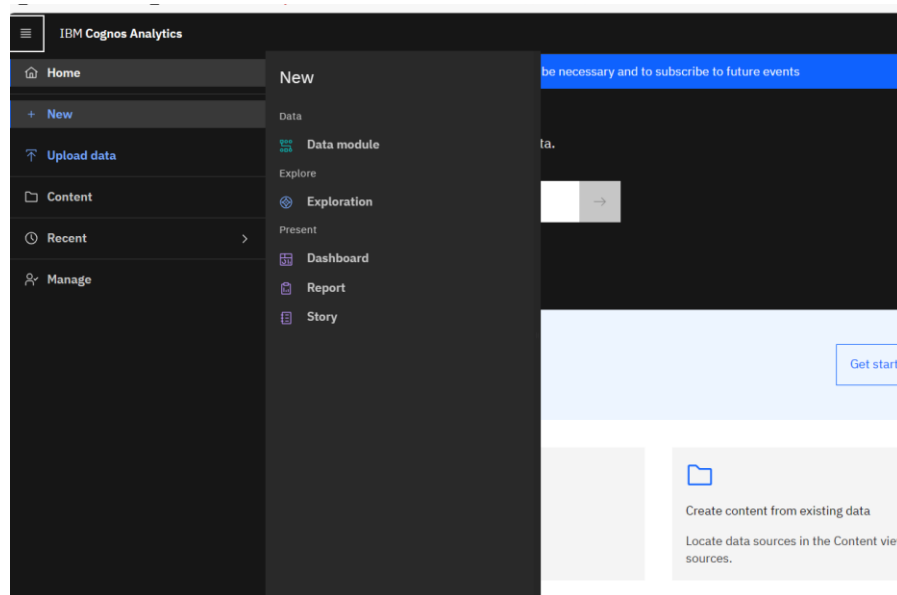
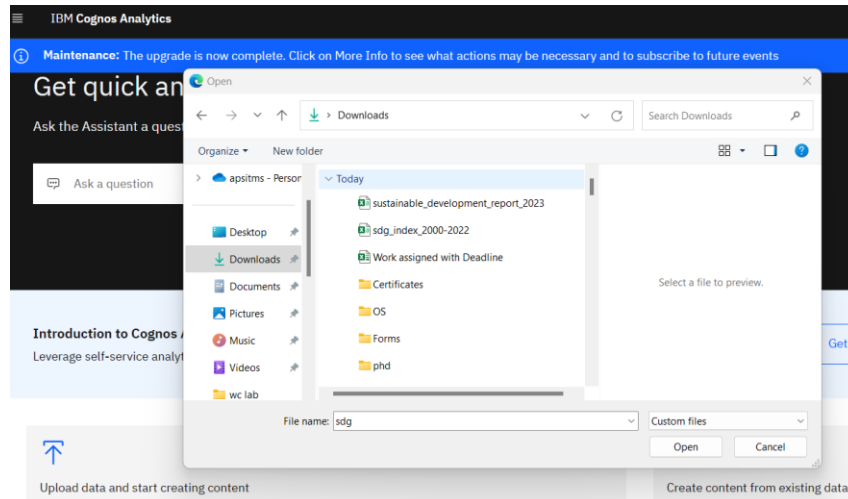




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6 RESULT

Data Collection:

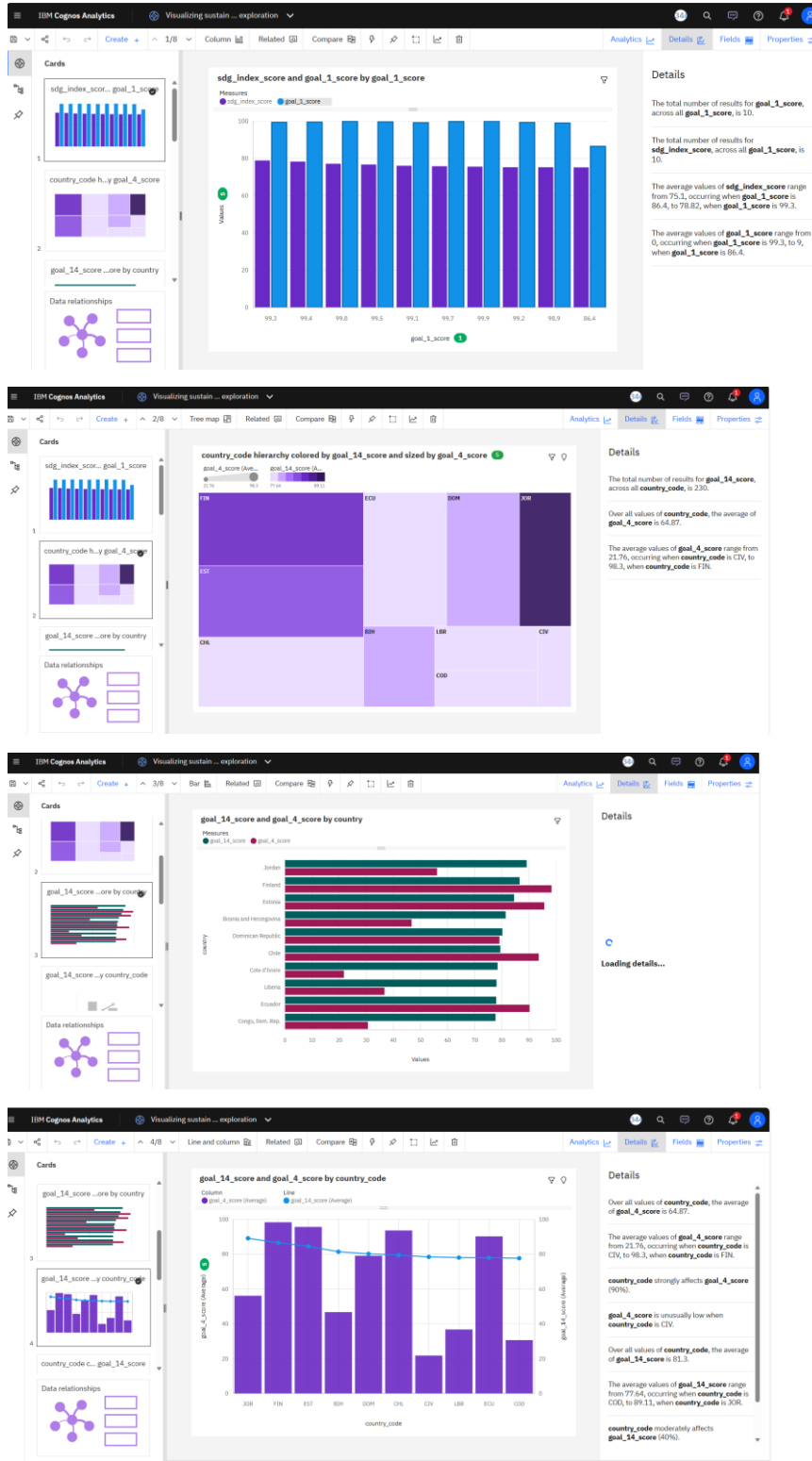


Data Preparation:

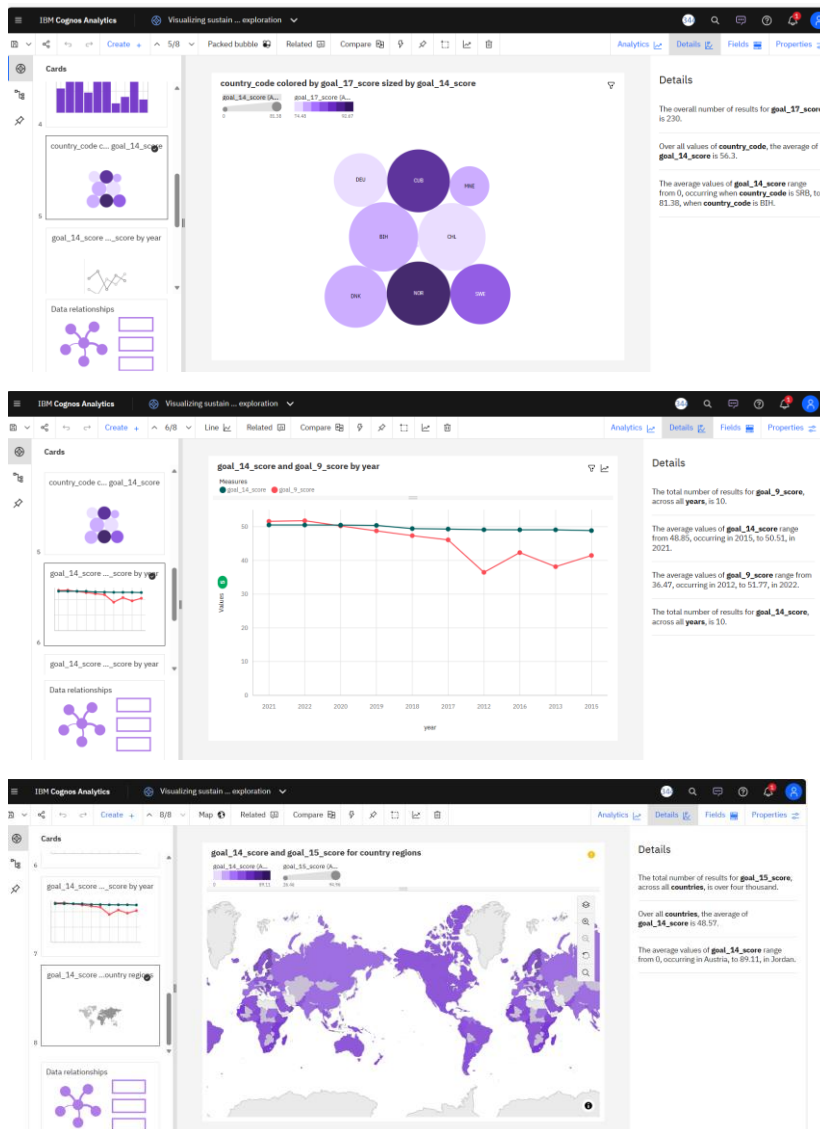
Row Id	country_code	country	year	sdg_index_score	goal_1_score	goal_2_score
1	AFG	Afghanistan	2000	36	28.8	27.3
2	AFG	Afghanistan	2001	36.3	28.8	30.6
3	AFG	Afghanistan	2002	36.3	28.8	30.7
4	AFG	Afghanistan	2003	36.7	28.8	32.5
5	AFG	Afghanistan	2004	37.1	28.8	32.1
6	AFG	Afghanistan	2005	37.5	28.8	35.9
7	AFG	Afghanistan	2006	37.6	28.8	36.5
8	AFG	Afghanistan	2007	38	28.8	39.5
9	AFG	Afghanistan	2008	37.3	28.8	37.8
10	AFG	Afghanistan	2009	38.3	28.8	43
11	AFG	Afghanistan	2010	38.8	28.8	43.2
12	AFG	Afghanistan	2011	38.4	27.9	42

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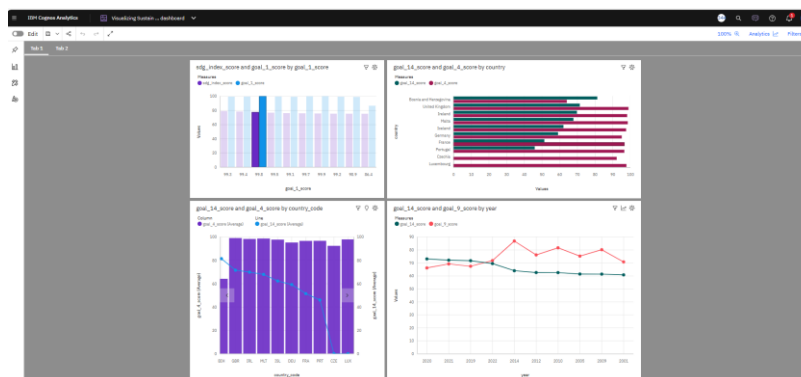
Data Visualization:



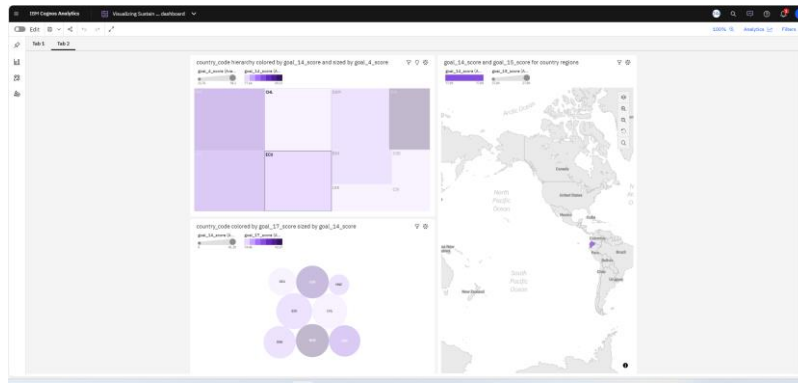
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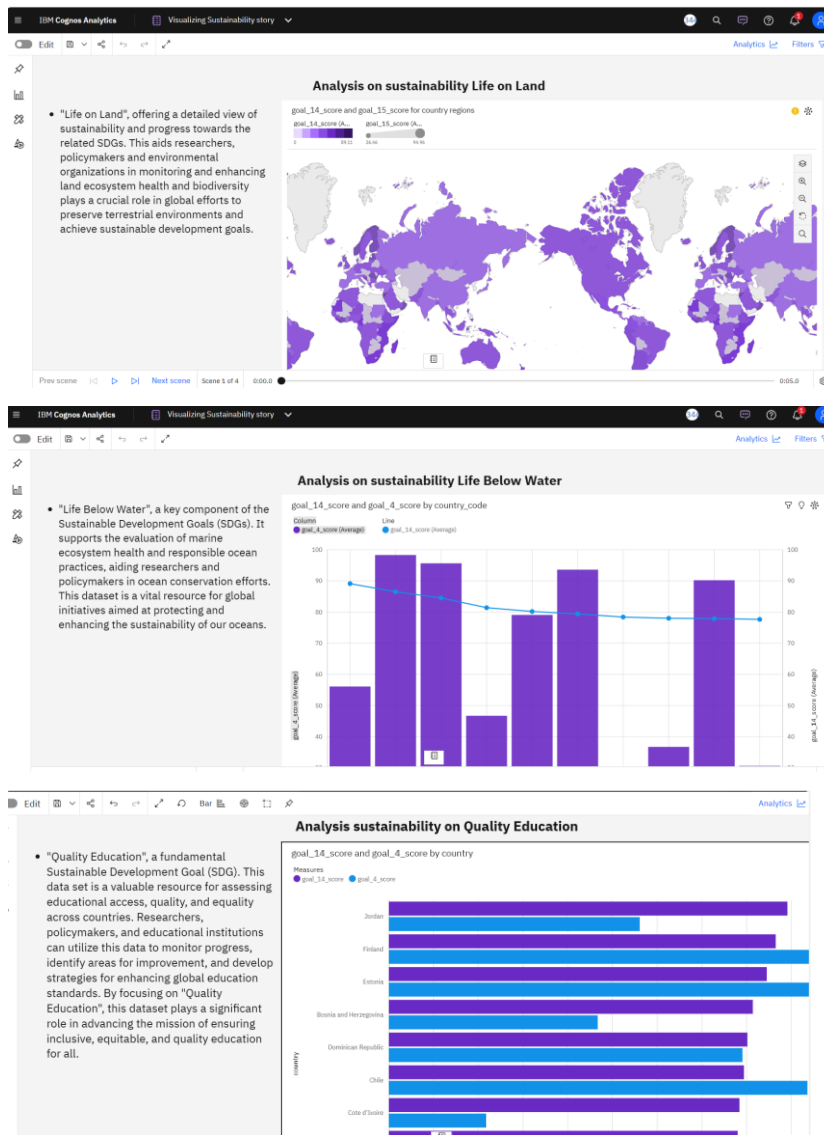
Dashboard:



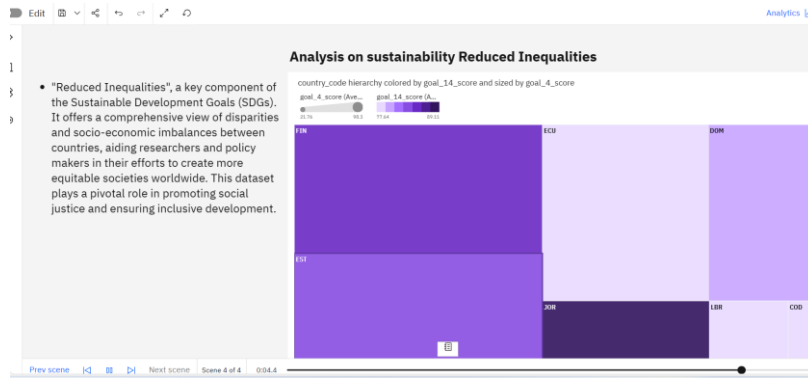
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Story:



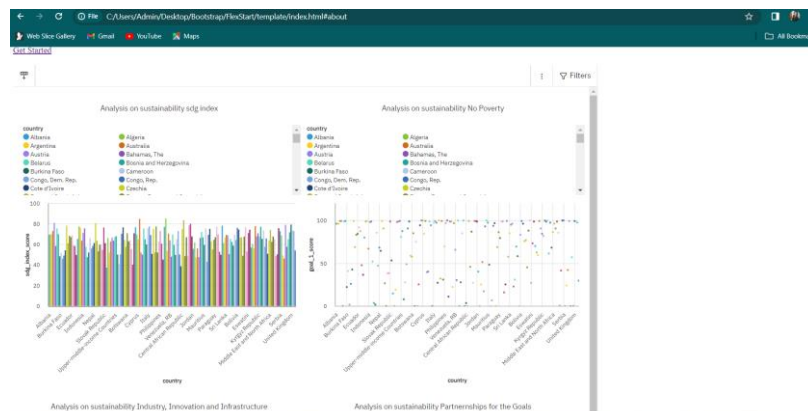
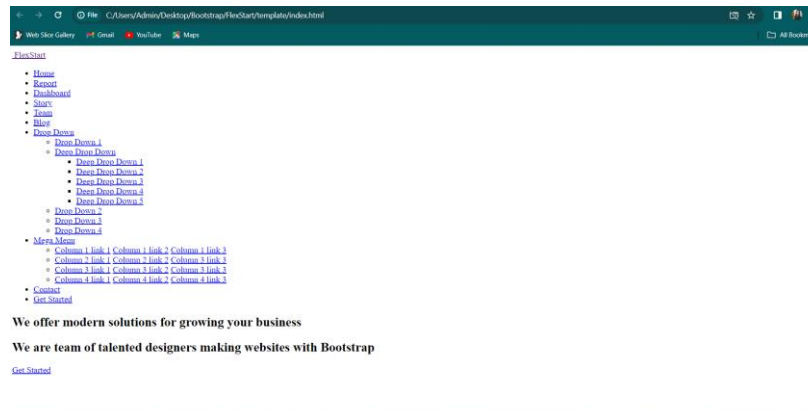
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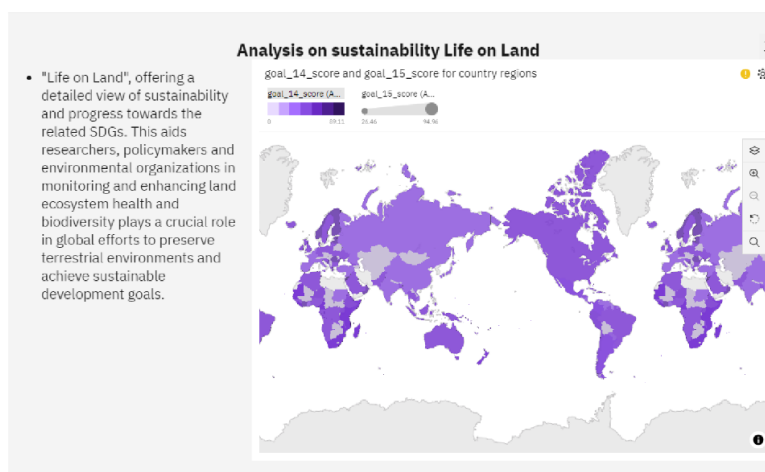
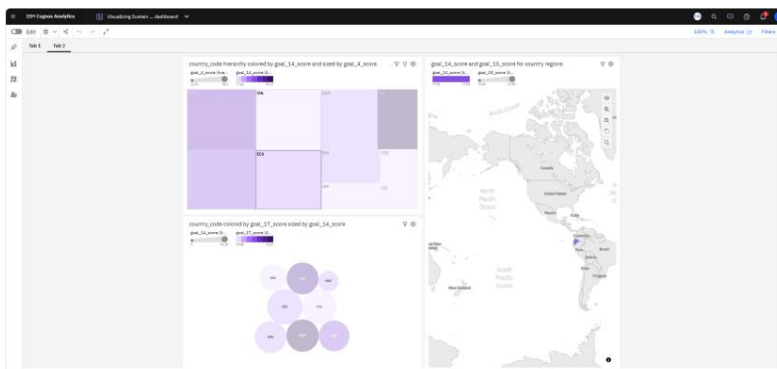
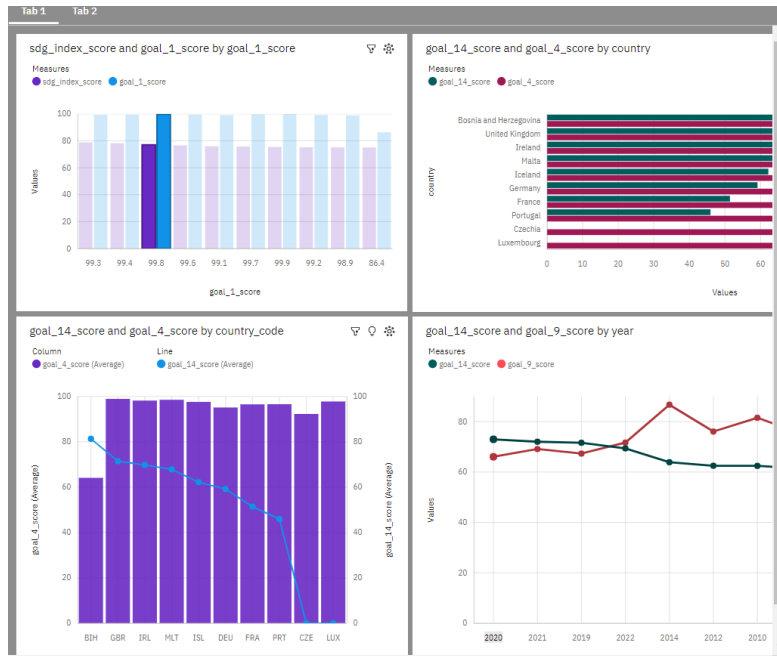


Report:



web integration:







7 ADVANTAGES & DISADVANTAGES:

Pros:

- It can be connected to multiple data sources.
- Easily integrates with any other tool.
- Combination of data sources.
- Favourable technical service, always attentive.
- It is fully scalable.
- It is possible to link tools that help to work with different data sources and AI
- It is also possible to visualize the data in a personalized control panel with a direct or indirect classification to all the obtaining system Automated data storage in data center.
- The reports are created in different formats for each project; there are PDF formats and also Excel files that can be imported and exported to different external sources without problems and automated and classified in each central control panel of each tool; this helps reduce the time of manual analysis of reports and to have a better visualization.
- Being a stable and robust tool, it has been very useful for managing all the data in report and content management, allowing you to be connected from any device or data source or on the web

Cons:

- Publish non-sensitive data to websites, URL, etc
- Provide drill-through in Dashboards
- Provide robust architecture rather than just fail-over

8 APPLICATIONS

- Reporting and Dashboards:

Executive Dashboards: Create interactive and visually appealing dashboards for executives to monitor key performance indicators (KPIs) and track organizational goals.

Operational Reports: Generate detailed operational reports for day-to-day business activities, providing insights into various aspects of the organization.

- Data Exploration and Analysis:

Ad Hoc Reporting: Enable users to create their own reports on the fly without relying on IT, allowing for quick data exploration and analysis.

Interactive Data Exploration: Conduct in-depth analysis through interactive exploration of data using features like drag-and-drop functionality and filters.

- Business Intelligence:

Decision Support: Empower decision-makers with the information they need to make informed and strategic decisions based on data-driven insights.

Trend Analysis: Identify and analyze trends over time to understand patterns and make predictions for future business trends.

- Data Integration:

Data Warehousing: Integrate data from various sources, including databases, spreadsheets, and other applications, into a centralized data warehouse for a unified view of information.



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ETL (Extract, Transform, Load): Cognos Analytics can be used in conjunction with ETL tools to extract, transform, and load data into a data warehouse for analysis.

- Performance Monitoring:

Scorecards and Metrics: Monitor organizational performance through the creation of scorecards and key performance indicators (KPIs) to track progress against goals.

Alerts and Notifications: Set up alerts to notify users when predefined thresholds or conditions are met, ensuring timely responses to critical changes.

- Predictive Analytics:

Data Modeling: Use Cognos Analytics to create and implement data models, enabling predictive analytics and forecasting to identify future trends.

Machine Learning Integration: Integrate machine learning models for advanced predictive analytics and more accurate forecasting.

- Collaboration and Sharing:

Collaborative BI: Foster collaboration by allowing users to share reports, dashboards, and insights with colleagues, promoting a data-driven culture.

Mobile Access: Enable users to access and interact with reports and dashboards on various devices, facilitating remote and mobile decision-making.

- Regulatory Compliance:

Audit Trails: Maintain audit trails and logs to ensure compliance with regulatory requirements and provide transparency into data usage.

- Financial Reporting:

Financial Statements: Generate financial reports, including income statements, balance sheets, and cash flow statements, to support financial analysis and planning.

- Custom Applications:

Embedding Analytics: Embed Cognos Analytics into custom applications to provide users with analytics capabilities within the context of their workflows

9 CONCLUSION

By using Cognos Analytics your business team can transform into power users, so your data analysts can focus on finding deeper insights to boost results. Move to the new generation of BI with AI capabilities that not only bring an accurate, trusted and complete picture of your business, but forecast what's coming in the future, predict outcomes and explain why they may happen.

10 FUTURE SCOPE

- Integration with AI and Machine Learning:

Increased integration with artificial intelligence (AI) and machine learning (ML) technologies to enhance predictive analytics, automate insights generation, and provide more advanced data-driven decision-making capabilities.



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- **Augmented Analytics:**

Further development of augmented analytics features, including natural language processing (NLP) and automated insights, to make data analysis more accessible to users with varying levels of technical expertise.

- **Enhanced Data Governance and Compliance:**

Continued focus on strengthening data governance and compliance features to meet the evolving regulatory landscape and address concerns related to data security and privacy.

- **Cloud-Based Innovations:**

Ongoing improvements and innovations in cloud-based solutions, providing organizations with scalable, flexible, and cost-effective options for deploying and managing their analytics platforms.

- **Collaborative BI and Social Analytics:**

Emphasis on collaborative business intelligence, facilitating teamwork and knowledge sharing within the platform, and incorporating social analytics features for improved collaboration.

- **Advanced Visualizations and Storytelling:**

Evolution of data visualization capabilities, including more advanced and interactive visualization options, and enhanced support for data storytelling to communicate insights effectively.

- **Real-Time Analytics:**

Increased emphasis on real-time analytics, allowing organizations to analyze and act upon data as it is generated, supporting faster decision-making processes.

Mobile Accessibility and User Experience:

Continuous improvement in mobile accessibility and user experience, enabling users to access and interact with reports and dashboards seamlessly across various devices.

- **Customization and Extensibility:**

Expanded opportunities for customization and extensibility, allowing organizations to tailor the platform to their specific needs, integrate with other tools, and develop custom applications.



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- Focus on Industry-Specific Solutions:

Development of industry-specific solutions and templates to cater to the unique analytics requirements of different sectors, aligning Cognos Analytics with specific industry needs.

- Continuous Support and Updates:

Regular updates and support from IBM to ensure that Cognos Analytics remains compatible with emerging technologies, addresses security vulnerabilities, and meets the evolving demands of the analytics landscape.

- User Empowerment and Self-Service Analytics:

Continued efforts to empower users through self-service analytics, allowing business users to create and customize reports and dashboards without heavy reliance on IT teams.

11 BIBLIOGRAPHY

1. [Cognos Analytics offerings - IBM Documentation](#)
2. [IBM Cognos. Scalable and flexible, but watch out...it's expensive. | TrustRadius](#)
3. <https://smartinternz.com/educator>
4. [Free Skills-Based Learning From Technology Experts | IBM SkillsBuild](#)

APPENDIX

A. Source Code

Web integration:

Dashboard:

```
<div class="container" data-aos="fade-up">
  <header class="section-header">
    <h2>Services</h2>
    <p>Veritatis et dolores facere numquam et praesentium</p>
  </header>
  <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=dashboard&pathRef=.my_folders%2FVisualizing%2BSustainability%2Bdashboard&closeWindowOnLastView=true&ui_appbar=false&ui_navbar=false&shareMode=embedded&action=view&mode=dashboard&subView=model0000018c6792f89c_00000002"
width="1100" height="1000" frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe>
</div>
```

Report:

```
<div class="container" data-aos="fade-up">
  <div class="row gx-0">

    <iframe
src="https://us1.ca.analytics.ibm.com/bi/?pathRef=.my_folders%2FVisualizing%2BSustai
nability%2BReport&closeWindowOnLastView=true&ui_appbar=false&ui_
navbar=false&shareMode=embedded&action=run&format=HTML&pr
ompt=false" width="1100" height="1000" frameborder="0" gesture="media"
allow="encrypted-media" allowfullscreen=""></iframe>

  </div>
```

Story:

```
<div class="container" data-aos="fade-up">

  <header class="section-header">
    <h2>Portfolio</h2>
    <p>Check our latest work</p>
  </header>
  <iframe
src="https://us1.ca.analytics.ibm.com/bi/?perspective=story&pathRef=.my_folders%2
FVisualizing%2BSustainability%2Bstory&closeWindowOnLastView=true&ui_
appbar=false&ui_nabbar=false&shareMode=embedded&action=view&
sceneId=model0000018c67b53daa_00000000&sceneTime=0" width="1100"
height="1000" frameborder="0" gesture="media" allow="encrypted-media"
allowfullscreen=""></iframe>

</div>
```