

Project Title: SpaceTech Big Data Analytics Dashboard

Alternative Title: DeepTech SpaceTech Dashboard

Project Type: 5 Big Data Analytical Systems / Dashboards

Project Tier: 3 Moderate Projects

Executing Company: Deep Knowledge Analytics

Beneficiary Company: SpaceTech Analytics

Project URL: <https://www.deep-innovation.tech/deeptech-spacetech-dashboard>

Project Lead: Andrey Savitskiy

Date: 2022

Components:

- Dashboard

Description:

The Global SpaceTech Ecosystem Dashboard generates data-driven insights about emerging areas in the fields of space technologies and solutions, including Space Exploration, Spaceflight, Space Medicine, and Satellite Tech industries. The Dashboard is a well-suited tool for both private and institutional investors looking for an additional enhancement to their market analytics, providing sufficient means for the development of competitive advantages.

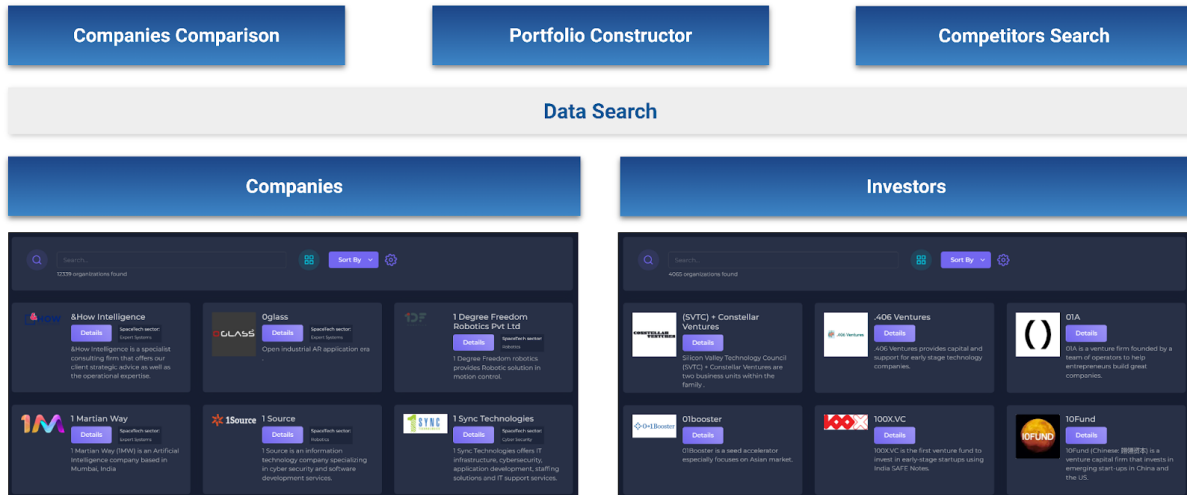
- The platform provides real-time analytics and data feeds on potential investment candidates, providing insight into their development prospects over time and their future growth potential.
- It provides advanced, sophisticated and quantitative Big Data analysis on SpaceTech companies and SpaceTech investment strategy.
- It includes a data mining engine, infrastructure for expert data curation, and advanced visualization dashboards, including mindmaps, knowledge graphs, advanced SWOT analysis, and 3-dimensional visualizations.
- Results of the analysis will be used to provide tailored recommendation packs to hedge risk and maximize diversification.

The analytics can deliver funding targets to investors, funding to companies, and detailed analysis of the companies represented there.

Who can benefit: investment institutions, private and public companies in the SpaceTech sphere, research institutions, universities, etc.

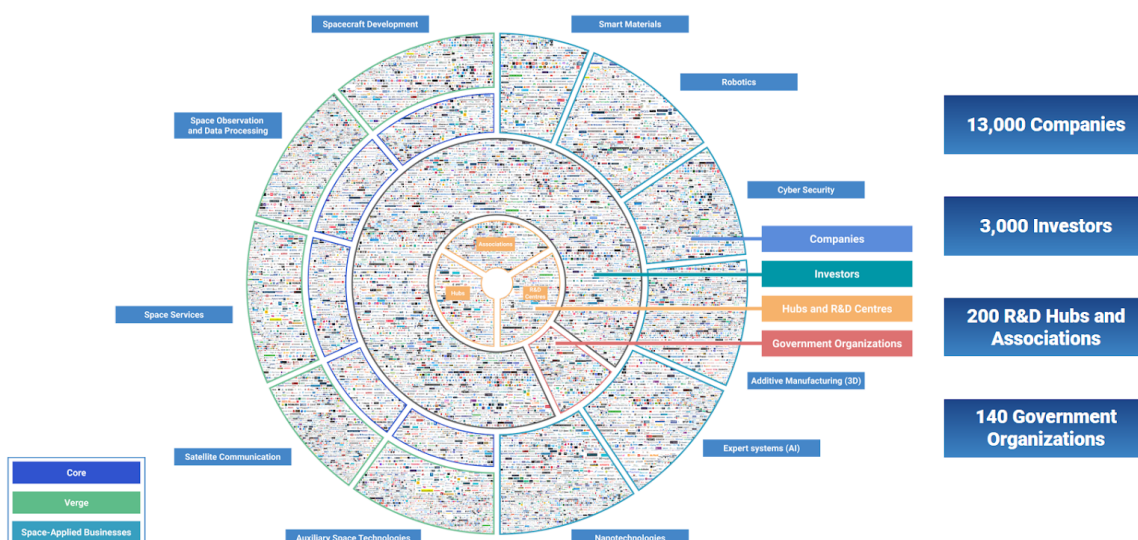
Features Available

At the moment, analytical reports on the industry, methodology for creating a database, and interactive mindmaps for all categories of the SpaceTech Industry are already available in the SpaceTech Big Data Analytics Dashboard. Furthermore, the following tools are available:



Interactive Mindmaps

This online interactive IT system uses advanced modes of data aggregation, structuring, filtering, and visualization to deliver a deeper, more comprehensive understanding of Industry landscape than was ever previously attainable. It allows for complex interactions between industry entities and stakeholders to be visualized, filtered, researched, and more easily understood, providing a more dynamic lens for viewing emerging trends.

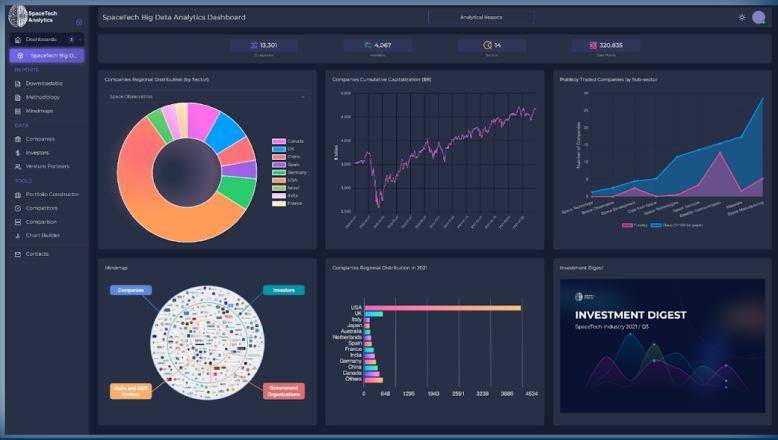


Introduction the new home for SpaceTech:

SpaceTech Analytics: Dashboard

Access now!

Navigate 12,000 spacetechnologies companies & more



The screenshot shows the 'SpaceTech Big Data Analytics Dashboard'. It features a sidebar with navigation options like 'Dashboard', 'Overview', 'Companies', 'Investors', 'Partners', 'R&D Hubs', 'Portfolio', 'Competition', 'Challenges', and 'Contacts'. The main area contains several charts: a donut chart for 'Companies Regional Distribution By Sector', a line chart for 'Companies Cumulative Capitalization (\$B)', a bar chart for 'Publicly Traded Companies by Industry', a network diagram for 'Mindmap', a horizontal bar chart for 'Companies Regional Distribution in 2021', and an 'INVESTMENT DIGEST' section with a line chart.



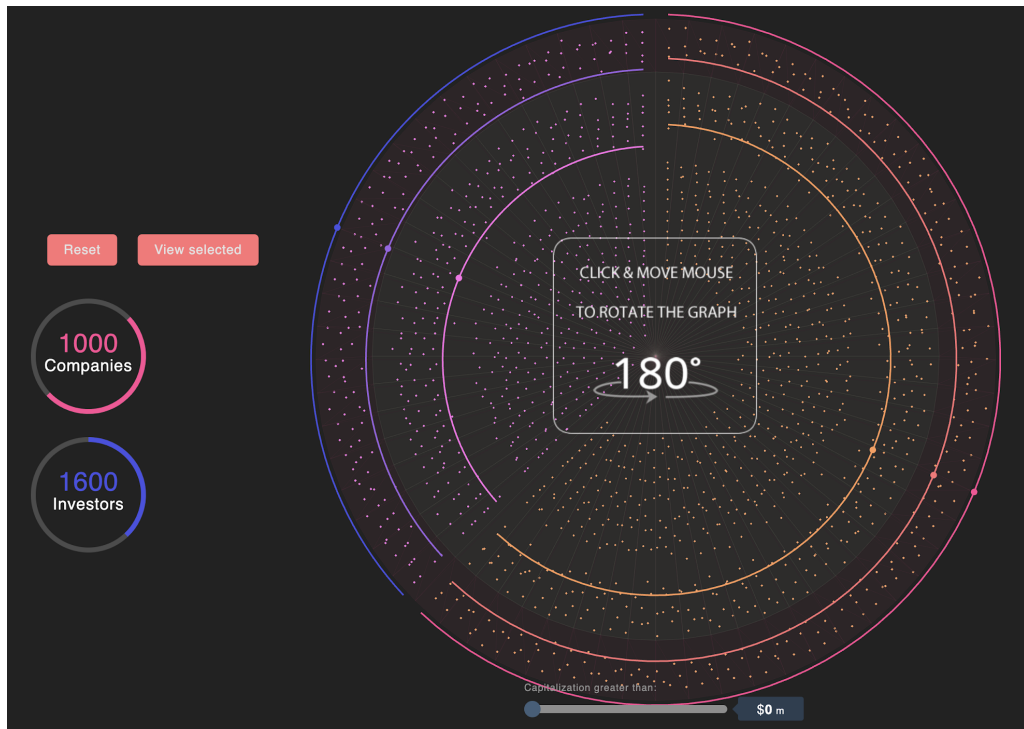
SpaceTech
Analytics

www.spacetechnologies.global

<https://www.deep-innovation.tech/deeptech-spacetechnologies-dashboard>

The Global SpaceTech Ecosystem dashboard will be in the form of an interactive mind map with 20,000+ entities, containing individual profiles of space-focused companies, investors and R&D Hubs.

- Mindmaps are sophisticated tools for visualizing market segmentation and connections between Spacetechnologies Industry entities and stakeholders, particularly companies, investors, personalities, government organizations, non-profits and R&D Hubs.
- This online interactive IT-system represents a Intelligence Landscape occupies a major strategic position the economies and potential of most developed space companies in terms of the space technologies. This system shall become the first-of-its kind prototype of “Spaceness Index”*.
- SpaceTech Analytics Agency’s interactive mindmaps and IT-system are a unique and major hallmark of their brand, and one of the main factors that has established them as the leader of sophisticated, quantitative and multidimensional SpaceTech Industry analytics.



Project Procedures:

Data collection:

- **Collecting the list of data sources** (12,000 + companies, nearly 4,100 investors, more than 320,000 data points, and 14 SpaceTech sectors). The first step in the data collection process involves identifying and compiling a comprehensive list of data sources that are relevant to the scope of the dashboard. This could range from academic journals, government databases, and industry reports to social media feeds and company websites. The aim is to cast a wide net initially, then narrow down the list based on criteria such as credibility, timeliness, and relevance. Specialised tools like web scrapers or APIs may be employed to access these sources. This list serves as the foundation upon which the entire data collection strategy is built.
- **Applying proprietary data parsing engine to extract unstructured data from these data sources.** Once the data sources are identified, the next step is to use a proprietary data parsing engine to extract unstructured data. This engine is a sophisticated piece of software designed to crawl through the selected data sources and pull out relevant information. It can handle various data formats like text, images, and audio. Advanced algorithms and machine learning techniques are often employed to ensure that the engine can understand context, semantics, and nuances, thereby reducing the amount of irrelevant or redundant data collected.
- **Creating a structured database from the raw data collected.** After the raw data is extracted, it is then organised into a structured database. This involves

categorising the data into tables, rows, and columns, making it easier to manipulate and analyse. Data types are defined for each field, and relationships between different pieces of data are established through keys and indexes. This structured format enables efficient querying and ensures that the data is ready for subsequent analysis. Tools like SQL databases, NoSQL databases, or specialised data warehousing solutions were used for this purpose.

- **Conducting data validation.** Data validation is a crucial step to ensure the accuracy and quality of the data collected. This involves cross-referencing the data with other reliable sources, checking for inconsistencies, and verifying that it meets predefined quality standards. Automated scripts are used to flag potential errors, such as outliers or missing values, which are then manually reviewed. This step helps in building a robust dataset that can be relied upon for making informed decisions.
- **Conducting database improvement (management of outliers, NaN values, etc.).** Improving the database involves cleaning and preprocessing the data to make it more useful for analysis. This includes managing outliers, handling missing or 'Not a Number' (NaN) values, and normalising the data. Outliers may be capped, transformed, or removed, depending on their impact on the analysis. NaN values could be filled using statistical imputation methods or removed altogether. These improvements enhance the quality of the dataset, making it more reliable for analytical models and interpretations.
- **Establishing an automated process of regular database update.** To keep the database current and relevant, an automated process for regular updates is established. This involves scheduling periodic crawls or queries to the data sources, followed by automated data validation and database improvement steps. Version control systems may be used to track changes over time. Alerts and monitoring systems are often set up to notify the team of any issues or updates, ensuring that the database remains a dynamic and evolving resource.
- **Grouping data points by thematic categories.** This could be based on various criteria such as geographical location, industry, intellectual property, finance, etc. Grouping data thematically makes it easier to perform targeted analyses and draw meaningful insights, especially based on the SWOT analysis. It also aids in data visualisation, as it allows for the creation of more focused and interpretable charts and graphs. This categorization is often an iterative process, refined over time as more data is collected and as the research or business needs evolve.

Analytical components integration according to the database collected:

- **Database search engine.** The Database Search Engine for this industry serves as a comprehensive and versatile tool designed to streamline the search for various entities and activities within the industry. Equipped with multiple filters, the engine allows users to conduct targeted searches across a range of categories including companies, investors, funding rounds, and more.
- **Portfolio constructor.** Automated tool to construct portfolios of publicly traded companies based on multiple algorithms, selecting from a database of:

12,000 + companies, nearly 4,100 investors, more than 320,000 data points, and 14 SpaceTech sectors. It features a collection of performance and risk parameters to adjust the structure of the portfolio in real time and optimise its composition.

- **Financial forecasting tool.** This tool is specifically designed to provide short-term forecasts, covering a time span of up to one year, on a broad array of specialized stocks. In addition to historical data, the tool also examines the statistical properties of the return distributions for each financial instrument. This includes metrics such as mean, variance, skewness, and kurtosis, the properties of the tails of the distributions, which help in understanding the risk and return profile of the instrument. By analysing these statistical properties, the tool can more accurately predict potential gains and losses. Lastly, the tool employs various approaches to stochastic simulation, including but not limited to Monte Carlo simulations and Geometric Brownian Motion models. These advanced simulation techniques allow the tool to model a wide range of possible future scenarios, thereby providing a more comprehensive view of potential outcomes.
- **Comparative SWOT analysis of the companies and investors.** Automatized SWOT analysis system allows to replace long, resource-requiring, manual, and unsystematic process of due diligence, investment analytics, and investment targeting by a real-time available product extracting insights from the largest industry database with the help of deep learning algorithms and multidimensional polynomial formulas calibrated by combining expert opinions with big data analysis. The tool allows to conduct initial data-driven due diligence of the companies instantly, automatically, and holistically by comparing 200-300 data points for each company combined in the 10-20 vectors of business development.
- **Network diagrams.** This tool enables investors or competitors to evaluate the prospects of the company by looking at its place in the industry networks, including collaborations, partnerships, funding rounds, scientific cooperation, connections of R&D teams and higher management, and the level of the similarity of the markets, in a form of an interactive network graph.
- **Heatmap.** This is a tool for conducting in-depth visual comparisons of a wide array of financial indicators pertaining to a corporation. The tool's user-friendly interface presents these complex financial metrics in an easily digestible visual format. One of the standout features of this tool is its ability to simultaneously display multiple financial indicators for each asset. This could include key performance indicators like return on investment (ROI), volatility, liquidity, as well as more specialised metrics like Sharpe ratio, alpha, and beta coefficients. By offering a side-by-side visual comparison, the tool allows users to quickly identify strengths and weaknesses in each asset, thereby streamlining the decision-making process.
- **Interactive mind maps.** Mind Maps are interactive circle diagrams representing the state and the company and investor composition of the industry with corresponding profiles and industry connections visualised.

Dashboard design:

- **Defining the layout specifications for the dashboard, including the types of graphics to be displayed, and implementing them.** The initial phase of dashboard design involves defining the layout specifications, which serve as the blueprint for how the dashboard will look and function. This includes deciding on the types of graphics to be displayed—whether it's bar charts, pie charts, heat maps, or line graphs. The layout also considers the placement of these graphical elements, the colour schemes, and how interactive features like dropdowns or sliders will be incorporated. Once the specifications are defined, they are implemented using dashboard design tools or custom coding. This step is crucial because a well-thought-out layout enhances user engagement and facilitates easier data interpretation.
- **Testing and validating UX/UI features of the dashboard.** After the initial implementation, the next step is to rigorously test and validate the User Experience (UX) and User Interface (UI) features of the dashboard. This involves conducting usability tests where real users interact with the dashboard while their actions and feedback are monitored. The goal is to ensure that the dashboard is not just visually appealing but also intuitive and user-friendly, thereby encouraging more frequent and meaningful interactions with the data.
- **Implementing custom user dashboard constructor.** To provide a more personalised experience, a custom user dashboard constructor is implemented. This feature allows users to modify the dashboard according to their specific needs and preferences. They can add or remove visual components, rearrange the layout, and even import custom data sets for analysis. The custom dashboard constructor empowers users to create a tailored analytical environment, thereby increasing the utility and adoption rate of the dashboard.
- **Integrating advanced 3D visualisations for analytical components.** These could range from 3D scatter plots and surface plots to complex geographical maps, 3D SWOT analysis graphs. etc. Advanced 3D visualisations offer a deeper level of data exploration and can reveal insights that might be missed in traditional 2D graphics, for example adding time dimension to the graph. However, they also require more computational power and expertise to implement effectively. Specialised libraries and software, often leveraging GPU acceleration, are used to render these complex visuals. The integration of 3D visualisations not only elevates the aesthetic appeal of the dashboard but also enhances its analytical capabilities, providing users with a more comprehensive understanding of the data.

Custom Dashboard Development:

- The IT team receives requests regarding the design and the functionality of the dashboard according to the feedback received from the business development team and users.
- When analytical components and visualisation tools are updated on the level of the whole dashboard platform, their release and validation happens for a specific dashboard.