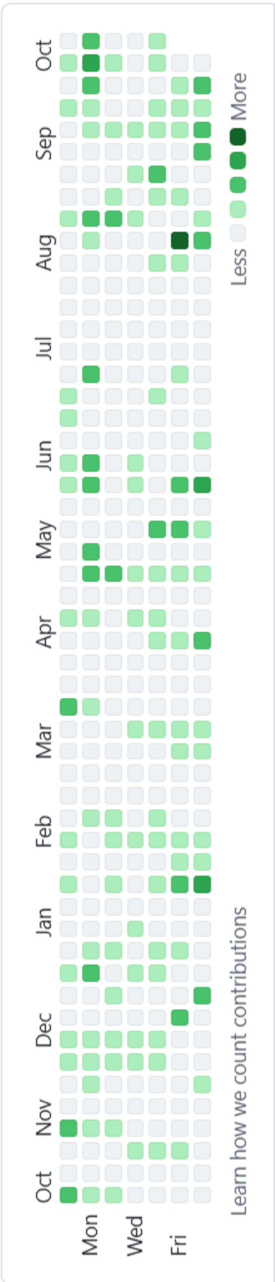
Visualization Diary

BDM-02 - Visual Analytics

S. Chapuis

February 8, 2026



How I found the visualization (and why I picked it)

I encountered this visualization directly on my GitHub profile dashboard. I chose it because it represents the trace of my own programming activity over the past year. It immediately attracted my attention because it condenses an entire year of work into a single, minimal grid of color.

What this visualization shows

The chart displays the number of GitHub contributions I made over the last twelve months (commits, pull requests, and issues). Each cell represents one day, colored from light to dark green according to the number of contributions. The layout follows a calendar logic, allowing users to see long-term rhythms of activity—periods of intense coding and quieter phases—at a glance.

Context

This visualization is automatically generated by GitHub to summarize user activity and encourage engagement. It is meant to highlight consistency, productivity, and growth within the open-source and developer community. The design is familiar to millions of programmers and serves both as a personal motivator and a public indicator of involvement.

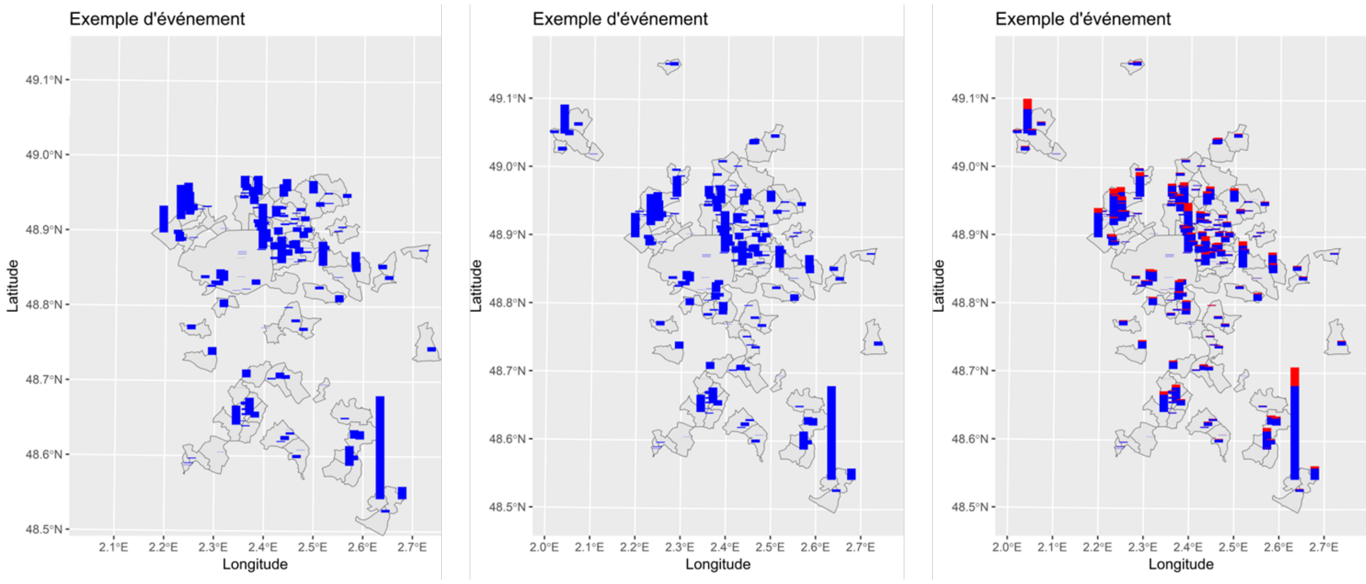
Design choices

The simplicity of the grid and the sequential green color scale make it intuitive to read. However, the color contrast could be problematic for color-blind users, and the absence of numeric labels makes quantitative comparison difficult. The alignment by weeks and days supports quick temporal reasoning, though transitions between years can feel abrupt.

Improvements

For a more analytical audience, I would add interactive tooltips showing exact contribution counts and repository names. A second line chart could reveal trends in monthly or weekday averages. Finally, alternative palettes with higher contrast or color-blind-friendly schemes (e.g., blue–orange) would improve accessibility without losing aesthetic clarity.

Week 2 — Sinistres Visualization



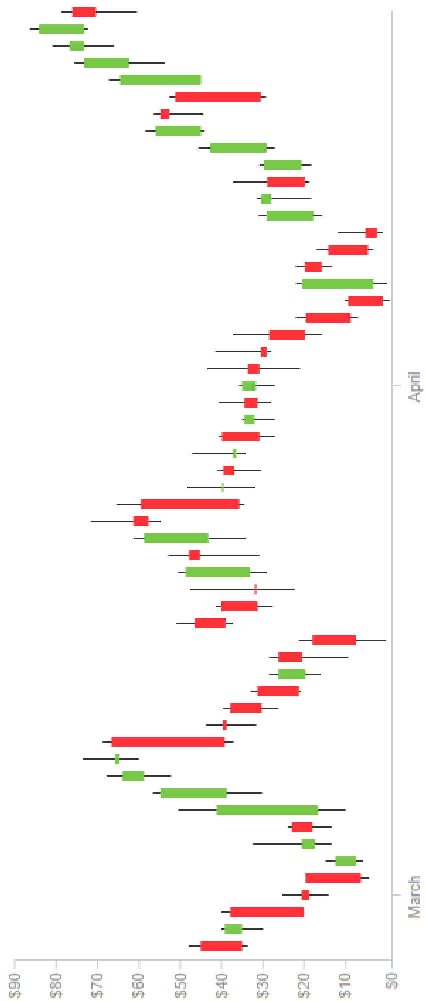
How I found the visualization (and why I picked it)
My dad made this visualization for his work at the insurance company. I chose it because it represents a real-world application of data visualization in a professional context. It immediately caught my attention because it condenses a large amount of information about insurance claims into a single, visually appealing chart.

What this visualization shows
The chart displays the cost per block of insured building in multiple sinistres (claims) for the year 2023. Each block represents a building, and the height of the block corresponds to the cost of the claim. The layout allows users to quickly identify which buildings had higher claims and to compare costs across different blocks.

Context
This visualization is used by the insurance company to analyze the distribution of claims and to identify area where the claims can be regrouped. It is meant to help the company understand the risk associated with different buildings and to make informed decisions about insurance policies and premiums. The design is tailored to the needs of insurance professionals, providing a clear overview of claim costs.

Design choices
The use of vertical blocks allows for an intuitive comparison of claim costs, while the map background provides geographical context.

Improvements
For a more analytical audience, I would add interactive tooltips showing exact claim costs and building details. A second line chart could reveal trends in claim costs over time. Finally, alternative color schemes could be used to differentiate between types of claims or to highlight areas with higher risks.



How I found the visualization (and why I picked it)

I encountered this visualization directly on my bank account dashboard. I chose it because it represents the trace of one of my investments in the stock market. It immediately attracted my attention because it condenses an entire year of stock performance into a single chart.

What this visualization shows

The chart displays the performance of a stock over the last two months using a candlestick visualization. The x-axis represents time, while the y-axis represents the stock price. Each candlestick shows the opening, closing, high, and low prices for a given period, with the body indicating the open-close range and wicks showing the price extremes. This format allows users to see trends, volatility, and key price movements at a glance. The layout follows a standard financial chart format, making it familiar to users who track investments.

Context

This visualization is automatically generated by the bank to summarize the performance of the stock in which I have invested. It is meant to provide a quick overview of how the stock has performed over time, helping investors make informed decisions about buying, holding, or selling their shares. The design is tailored to the needs of investors, providing a clear and concise representation of stock performance.

Design choices

The use of candlesticks allows for a detailed view of price movements, while the time-series layout supports trend analysis. However, the chart could benefit from additional annotations to highlight significant events (e.g., earnings reports, market news) that may have influenced stock performance. The color scheme typically uses green for upward movements and red for downward movements, which is intuitive but may not be accessible to color-blind users.

Improvements

For a more analytical audience, I would add interactive tooltips showing exact price values and dates. A second line chart could reveal moving averages or volume trends. Finally, alternative color schemes with higher contrast or color-blind-friendly options (e.g., blue–orange) would improve accessibility without losing the financial context.

Week 4 — Streamline over Wing

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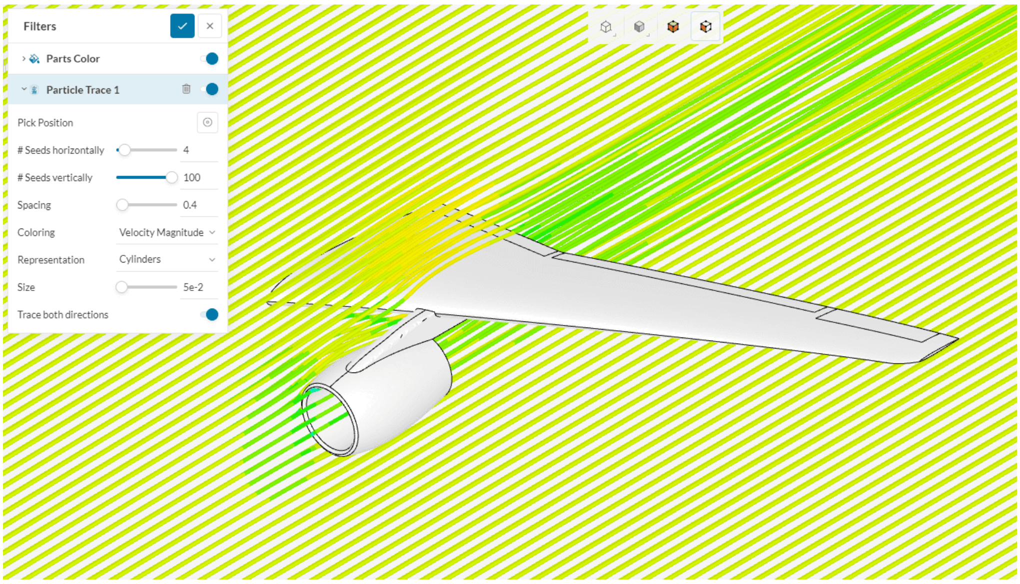


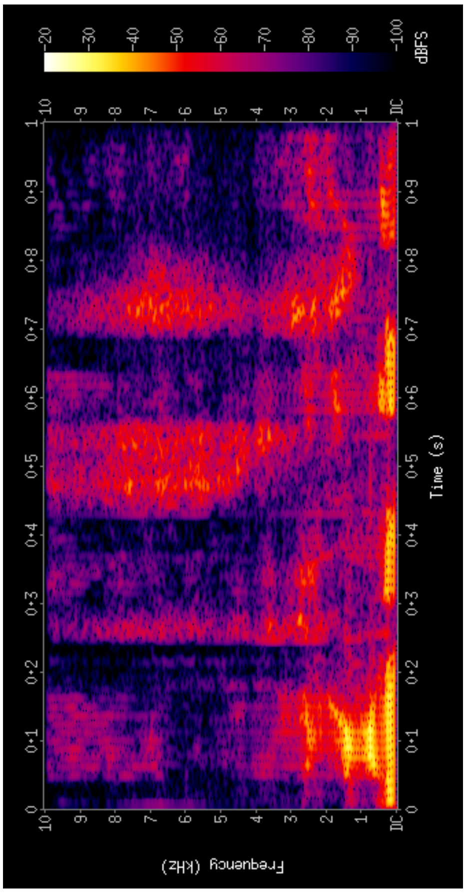
How I found the visualization (and why I picked it)
As a Aerospace engineering, I have been exposed to various visualizations related to aerodynamics and fluid dynamics. I chose this particular visualization because it represents the flow of air over a wing, which is a selfexplanatory and fundamental concept in aerospace engineering. It immediately caught my attention because it condenses complex aerodynamic phenomena into a single, visually appealing chart that illustrates the behavior of airflow around a wing.

What this visualization shows
The chart displays the streamline patterns of airflow over a wing. Each line represents the path that air particles take as they flow around the wing, with the density and curvature of the lines indicating the speed and direction of the airflow. The layout allows users to quickly identify areas of high and low pressure, as well as regions of turbulence and separation.

Context
This visualization is common output of computational fluid dynamics (CFD) simulations used in aerospace engineering to analyze and optimize the aerodynamic performance of wings and other aircraft components. It is meant to help engineers understand the complex interactions between airflow and wing geometry, enabling them to make informed design decisions that improve lift, reduce drag, and enhance overall aircraft performance.

Design choices
The use of streamline patterns allows for an intuitive visualization of airflow behavior, while the wing shape provides a clear reference for the aerodynamic context.

Improvements
For a more analytical audience, I would add interactive tooltips showing exact airflow velocity and pressure values at different points. A second visualization could reveal pressure distribution or turbulence intensity. Finally, alternative color schemes could be used to highlight different flow characteristics or to improve accessibility.



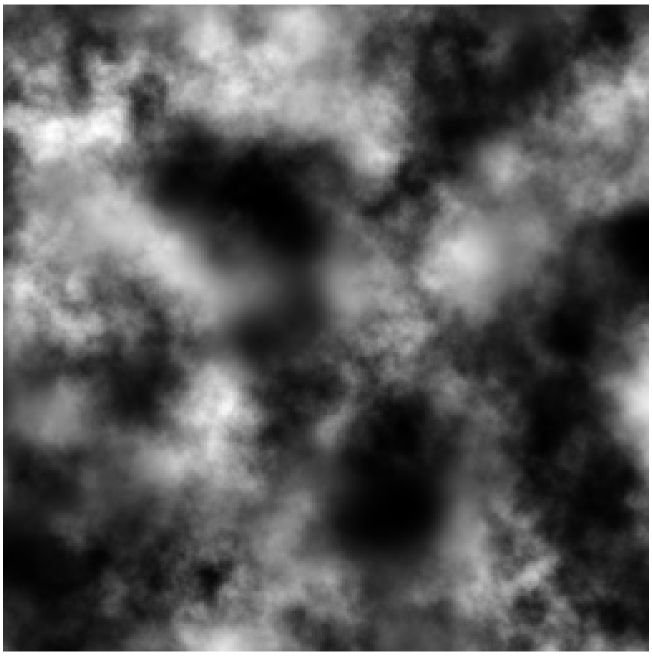
How I found the visualization (and why I picked it)
I encountered this visualization while analyzing laser data for my research project during my past internship. I chose it because it represents the trace of the frequency content of a signal over time. It immediately attracted my attention because it condenses an entire signal's behavior into a single, visually appealing chart.

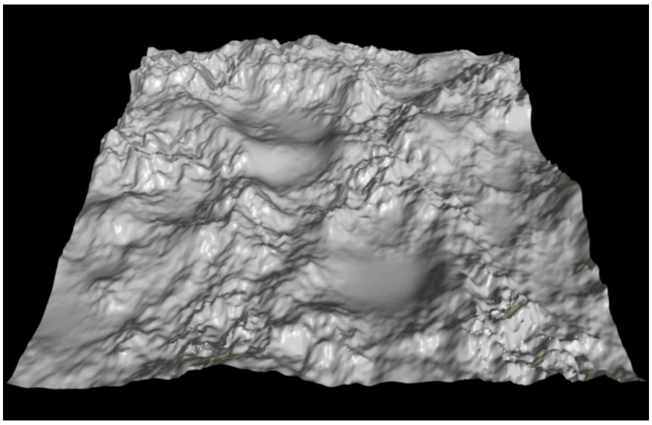
What this visualization shows
The chart displays the spectrogram of a signal, which is a visual representation of the spectrum of frequencies as they vary with time. The x-axis represents time, while the y-axis represents frequency. The color intensity at each point indicates the amplitude of the signal at that particular frequency and time. This format allows users to see how the frequency content of the signal evolves over time, making it easier to identify patterns, trends, and anomalies in the data.

Context
This visualization is commonly used in signal processing, audio analysis, and various scientific fields to analyze the frequency content of signals. It is meant to provide insights into the behavior of signals over time, helping researchers and analysts make informed decisions based on the frequency characteristics of the data. The design is tailored to the needs of professionals working with time-varying signals, providing a clear and concise representation of frequency content.

Design choices
The use of a color map to represent amplitude allows for an intuitive visualization of frequency content, while the time-frequency layout supports analysis of signal behavior over time. However, the choice of color map can significantly impact the readability of the spectrogram, and it may not be accessible to color-blind users. Additionally, the resolution of the spectrogram can affect the level of detail visible in the frequency content.

Improvements
For a more analytical audience, I would add interactive tooltips showing exact frequency and amplitude values at different points. A second visualization could reveal the time-domain signal for comparison. Finally, alternative color schemes with higher contrast or color-blind-friendly options (e.g., blue–orange) would improve accessibility without losing the scientific context.





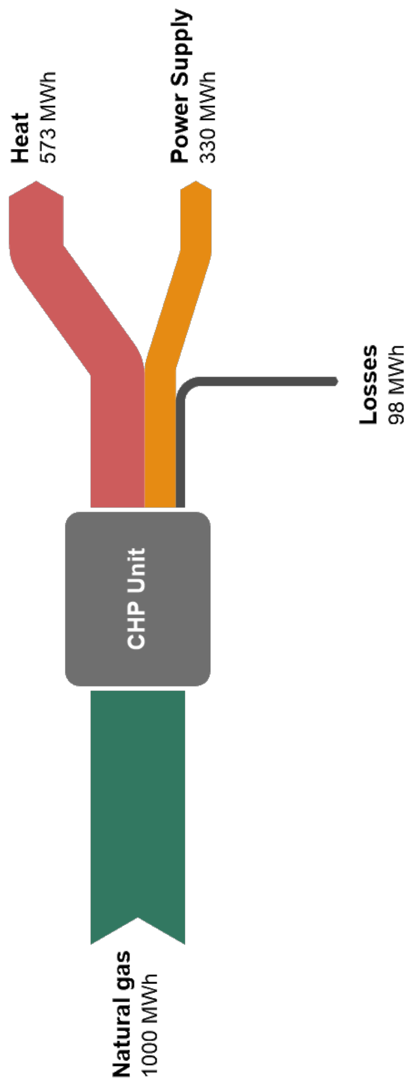
How I found the visualization (and why I picked it)
I founded this visualization while browsing through my minecraft world generation mod. I chose it because it represents in 2D the height of the terrain in a minecraft world. It immediately caught my attention because it condenses complex 3D terrain information into a single, visually appealing chart that illustrates the behavior of the terrain in a minecraft world.

What this visualization shows
The chart on the left displays the height map of a terrain, where each pixel's intensity corresponds to the elevation at that point. The brighter the pixel, the higher the elevation. The layout allows users to quickly identify areas of high and low elevation, as well as the overall topography of the terrain. The chart on the right is a 3D rendering of the same height map, providing a more immersive view of the terrain's features.

Context
This visualization is commonly used in game development, particularly in procedural terrain generation, to analyze and design landscapes. It is meant to help developers understand the topography of the terrain they are creating, enabling them to make informed design decisions that enhance the gaming experience. It is also used in graphic design to create some textures and patterns. The design is tailored to the needs of game developers and graphic designers, providing a clear and concise representation of terrain elevation.

Design choices
The use of only grayscale allows for an intuitive visualization of elevation, while the 2D layout supports analysis of terrain features. The 3D rendering provides a more immersive view of the terrain, allowing users to better understand the spatial relationships between different features. However, the grayscale color scheme may not give all the necessary information about the terrain, such as the type of terrain (e.g., water, grass, mountains) or the presence of specific features (e.g., trees, buildings). Additionally, the 3D rendering may not be accessible to users with certain visual impairments.

Improvements
For a more analytical audience, I would add add colors for different types of terrain (e.g., blue for water, green for grass, brown for mountains) to provide more information about the terrain. A second visualization could reveal the distribution of specific features (e.g., trees, buildings) on the terrain.



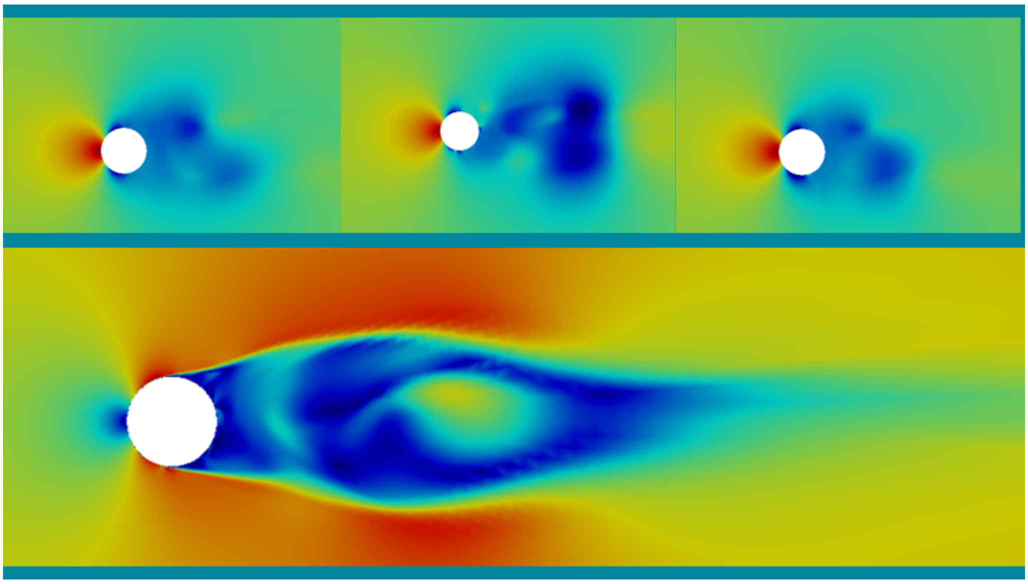
How I found the visualization (and why I picked it)
I encountered this visualization as an exemple of a Matlab project during my last internship. I chose it because it represents the flow of energy in a system, which is a fundamental concept in physics and engineering. Even if its simplicity, it immediately caught my attention because it condenses complex energy interactions into a single, visually appealing chart that illustrates the behavior of energy flow in a system.

What this visualization shows
The chart displays the energy flow in a system, where each arrow represents the flow of energy from one component to another. The thickness of the arrows indicates the magnitude of the energy flow, while the color may represent different types of energy (e.g., kinetic, potential, thermal). The layout allows users to quickly identify the main sources and sinks of energy, as well as the overall structure of energy interactions within the system.

Context
This visualization is commonly used in physics and engineering to analyze and understand energy interactions in various systems, such as mechanical systems, electrical circuits, or thermodynamic processes. It is meant to provide insights into the behavior of energy flow, helping researchers and engineers make informed decisions based on the energy dynamics of the system. The design is tailored to the needs of professionals working with energy systems, providing a clear and concise representation of energy flow.

Design choices
The use of arrows to represent energy flow allows for an intuitive visualization of energy interactions, while the layout supports analysis of the overall structure of energy flow.

Improvements
For me there is not much to improve in this visualization it is already very clear and concise.



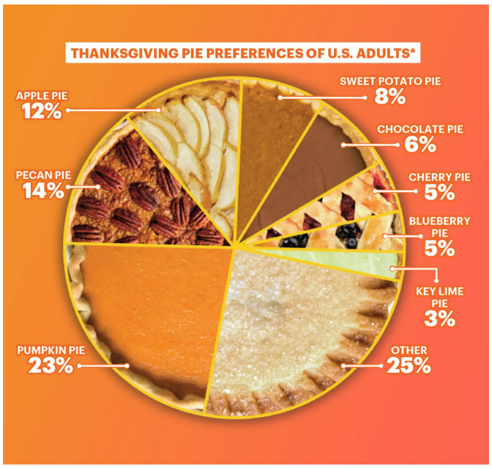
How I found the visualization (and why I picked it)
I found this visualization while browsing through my physics textbook. I chose it because it represents the evolution of the turbulence over a sphere, which is a fundamental concept in fluid dynamics. I picked it because I have seen this kind of visualization in many scientific classes during my aerospace engineering studies.

What this visualization shows
The chart displays the pressure gradient around a sphere, where each color represents a different pressure level. The layout allows users to quickly identify areas of high and low pressure, as well as the overall structure of the pressure distribution around the sphere.

Context
This visualization is commonly used in fluid dynamics to analyze and understand the behavior of fluids around objects, such as spheres, cylinders, or airfoils. It is meant to provide information about the pressure distribution, which is crucial for understanding phenomena like lift, drag, and turbulence.

Design choices
The use of a color map to represent pressure levels allows for an intuitive visualization of pressure distribution, while the layout supports analysis of the overall structure of pressure around the sphere. However, the choice of color map can significantly impact the readability. Here the gradiant goes from blue to red which is a common choice for pressure visualizations, but it needs to be familiar with this color scheme.

Improvements
A video demonstrating the pressure gradient evolution over time around the sphere would provide better understanding of how pressure distribution changes dynamically. This would be especially useful for analyzing transient phenomena and fluid behavior in different flow conditions.



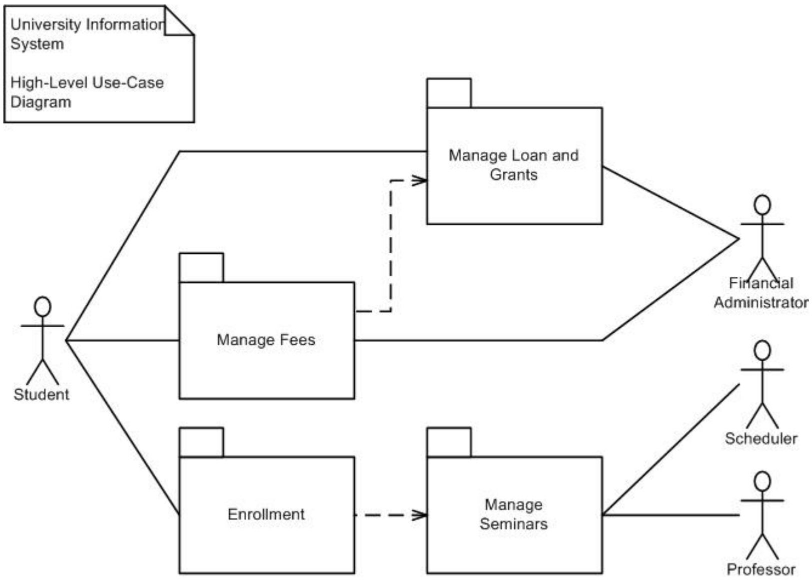
How I found the visualization (and why I picked it)
This is obviously a joke visualization that I found on the internet. I chose it because it represents a humorous take on the traditional pie chart, which is a common type of data visualization. It immediately attracted my attention because it subverts the expectations of what a pie chart should look like, using actual pies to represent data segments in a playful and visually engaging way.

What this visualization shows
The chart displays a pie chart made out of actual pies, where each slice of the pie represents a different category of pie filling (e.g., apple, cherry, pumpkin). The size of each slice corresponds to the proportion of each pie filling in the overall chart.

Context
This visualization is meant to be a humorous and creative representation of data, rather than a serious analytical tool. It is designed to entertain and engage viewers by using a familiar format (the pie chart) in an unexpected way (with real pies).

Design choices
The use of actual pies to represent the segments of the pie chart adds a playful and visually engaging element to the visualization. The layout mimics a traditional pie chart, making it easy to understand while adding a humorous twist.

Improvements
As this is a joke visualization, there is not much to improve in terms of design or functionality.



How I found the visualization (and why I picked it)
I found this visualization while browsing through my software engineering textbook. I chose it because it represents the structure of a software system using UML (Unified Modeling Language), which is a fundamental concept in software design. I picked it because I have seen this kind of visualization in many software engineering courses during my studies.

What this visualization shows
The chart displays a UML class diagram, where each box represents a class in the software system. The lines connecting the boxes indicate relationships between the classes, such as inheritance, association, or dependency. The layout allows users to quickly identify the main components of the software system and understand how they interact with each other.

Context
This visualization is commonly used in software engineering to analyze and understand the structure of software systems. It is meant to provide insights into the design and architecture of the system, helping developers and engineers make informed decisions based on the relationships between different components. The design is tailored to the needs of professionals working with software systems, providing a clear and concise representation of class structures and interactions.

Design choices
The use of boxes to represent classes and lines to represent relationships allows for an intuitive visualization of software structure, while the layout supports analysis of the overall architecture of the system. However, the complexity of the diagram can make it difficult to read for those unfamiliar with UML notation.

Improvements
The diagram could be improved by adding contextual elements, such as annotations or color coding, runtime information, or interactive features that allow users to explore the relationships between classes in more detail.

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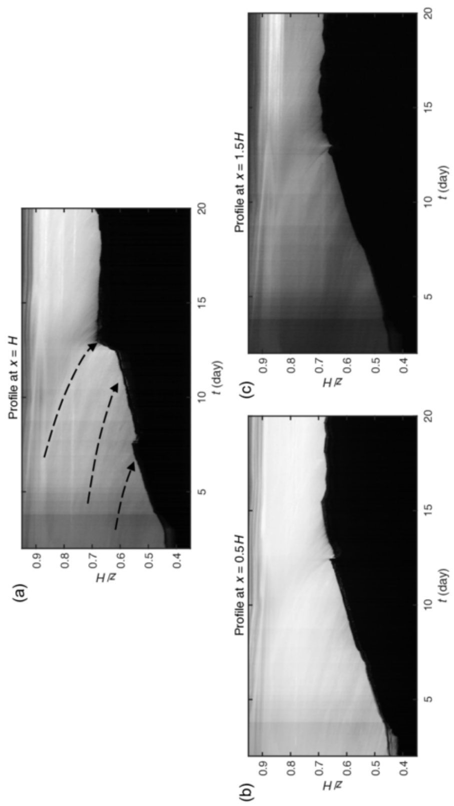


How I found the visualization (and why I picked it)

I encountered this visualization while reading scientific literature related to phase-change phenomena in cold environments (snow and ice modeling). I selected it because it is not a conventional chart (e.g. time series or map), but a space–time diagram, a representation frequently used in physics and geosciences yet rarely discussed from a visualization-design perspective.

What this visualization shows

The visualization shows the temporal evolution of the ice layer profile at several horizontal positions x/H.

- The horizontal axis represents time.
- The vertical axis represents ice layer thickness or vertical position.
- Color encodes the state or magnitude of the ice layer (e.g. thickness, presence/absence of ice).

The diagram allows the reader to observe:

- Growth and decay phases of the ice layer,
- Temporal synchronization or delay between different horizontal positions,
- The presence of moving fronts or phase-transition boundaries.

Context

This type of visualization is typically used in cryospheric physics, thermodynamics, and phase-change modeling, where understanding the coupling between spatial heterogeneity and temporal evolution is crucial. In the context of ice formation and melting:

- Local conditions vary with horizontal position,
- Phase transitions occur over time rather than instantaneously,
- Interfaces between ice and water (or air) are key physical objects.

The space–time diagram is therefore used as an analytical tool rather than a purely descriptive one, aiming to reveal dynamic patterns rather than precise numerical values.

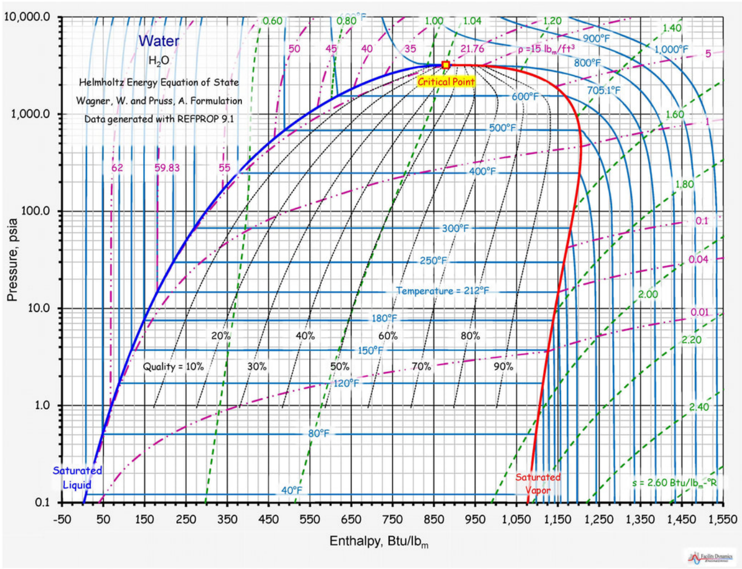
Design choices

Several deliberate design choices are visible:

- **Space–time encoding:** Time is treated as a geometric dimension rather than a sequence of frames, enabling pattern recognition across long durations.
- **Color mapping:** Color is used to encode the magnitude or state of the ice layer, allowing phase boundaries to appear as continuous structures.
- **Multiple panels:** Separate subplots for different x/H values reduce overlap and allow comparison between spatial locations.
- **Continuous representation:** The absence of explicit gridlines emphasizes continuity but reduces precision.

While these choices support qualitative understanding, they prioritize pattern recognition over exact reading.

Improvements



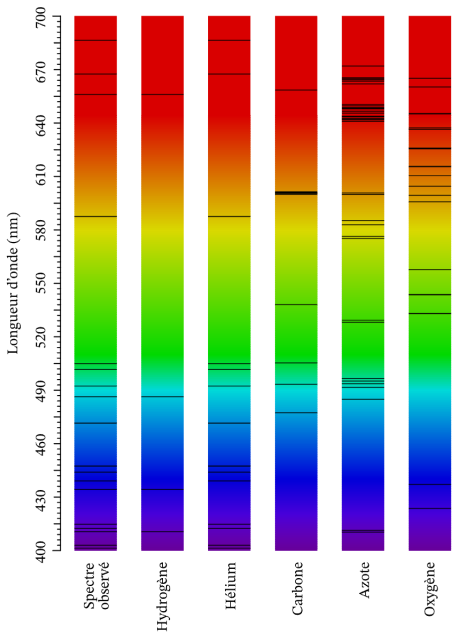
How I found the visualization (and why I picked it)
This visualization is a pressure-enthalpy (P-h) diagram for water and come from my thermodynamics class. I chose it because it is probably one of the most complex and information-dense visualizations I have ever seen.

What this visualization shows
The diagram displays the thermodynamic properties of water, with pressure on the y-axis and enthalpy on the x-axis. The various lines and curves represent different phases (solid, liquid, gas) and processes (isothermal, isobaric, isentropic) that water can undergo. The layout allows users to analyze the behavior of water under different conditions and to understand the relationships between pressure, enthalpy, and phase changes.

Context
This type of diagram is commonly used in thermo-hydrolic to analyse the phase of the water in a system. It could be for example used to understand the behavior of water in a power plant, where water is heated to produce steam that drives turbines.

Design choices
The use of a pressure-enthalpy diagram allows for a comprehensive visualization of the thermodynamic properties of water, while the layout supports analysis of phase changes and processes. However, the complexity of the diagram can make it difficult to read for those unfamiliar with thermodynamics, and the dense information may require careful study to fully understand.

Improvements
For me having a computational interface would actually be a great improvement for this visualization. Because this for me shouldn't be a static diagram but an interactive tool where you can input different parameters (e.g., temperature, pressure) and see how the diagram changes in real-time.



How I found the visualization (and why I picked it)
This visualization is are multiple line plots showing wavelengths of light absorbed by different gases. I've been using this to see how the laser we were using during my internship was absorbed by the different gases in the air. I chose it because it is a very clear and concise way to visualize the absorption spectrum of different gases, which is a fundamental concept in spectroscopy and atmospheric science.

What this visualization shows
The chart displays the absorption spectrum of different gases, where the x-axis represents the wavelength of light and the black lines represent the absorption features of different gases. Each line corresponds to a specific gas, and the depth of the line indicates the strength of absorption at that wavelength.

Context
This visualization is commonly used in spectroscopy and atmospheric science to analyze the absorption characteristics of different gases.

Design choices
The use of the color and the layout allows for an intuitive visualization of the absorption spectrum, while the line plot format supports analysis of the absorption features of different gases.

Improvements
To improve this visualization i would extend it in the infrared range to see the absorption of the different gases in this range as well. I would also add a legend to indicate which line corresponds to which electron transition and maybe add a second plot showing the emission spectrum of the same gases for comparison.