We analysed the new EU AI Act

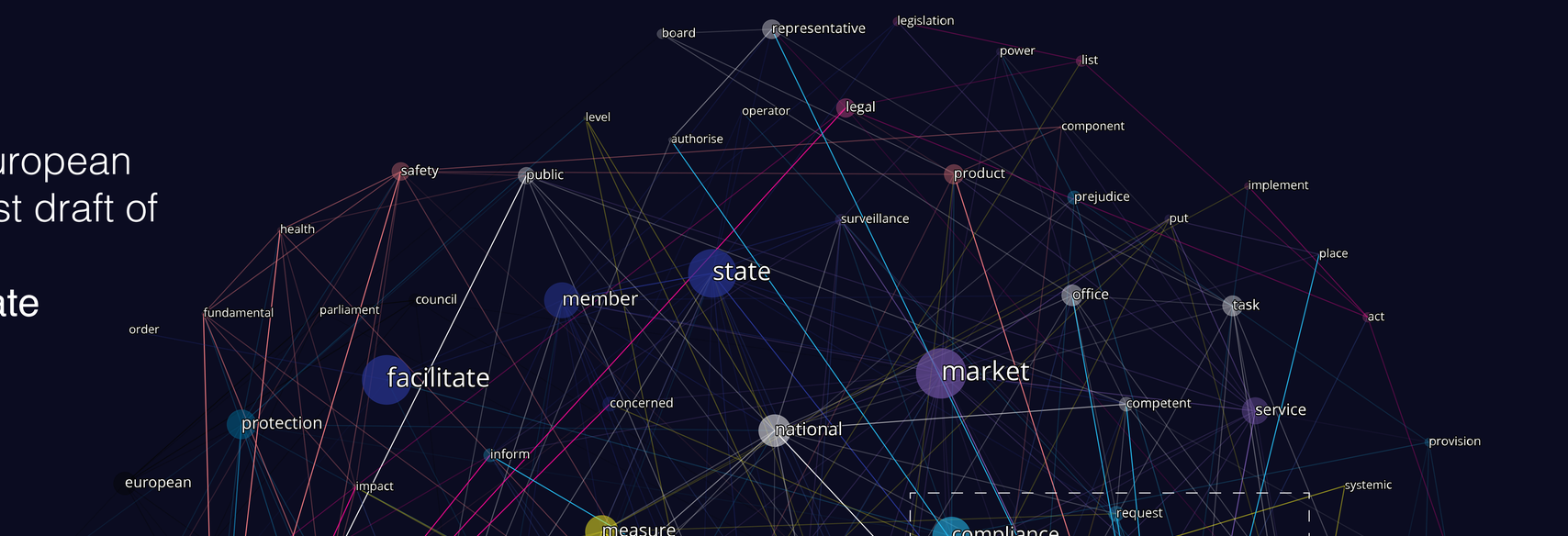
Can we uncover the regulatory focus?

On January 21, 2024, the European Parliament unveiled the latest draft of the AI Act: **The world's first comprehensive law to regulate artificial intelligence.**[1]

While AI technology offers numerous benefits, it also poses significant risks, necessitating clear regulation that clarifies the responsibilities of various AI stakeholders. **This analysis aims to visualize and pinpoint the regulatory focus of this legislation.**

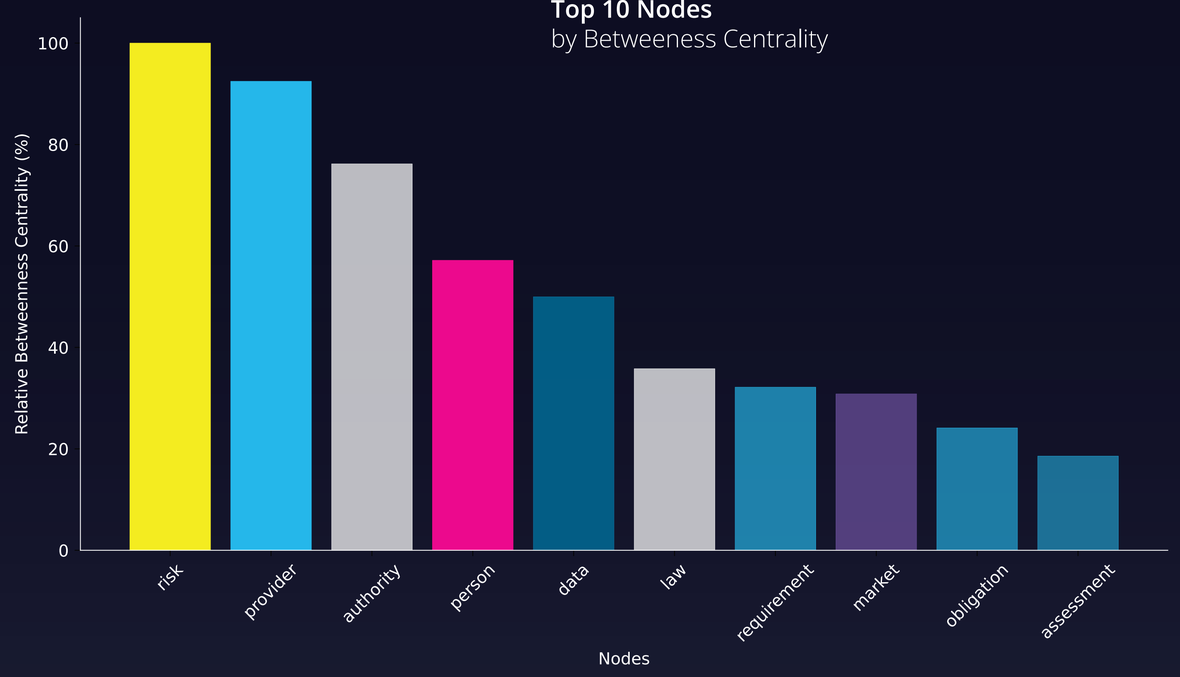
These visualizations employ **four principal techniques** for text analysis:

1. **Keyword Extraction**: Identifying words that contain significant information.
2. **Co-occurrence Analysis**: Examining the frequency with which these words appear together.[3]
3. **Centrality Measures**: Determining the most influential words based on their connections.[4]
4. **Cluster Analysis**: Grouping words that frequently appear in the same context, offering a clear insight into the primary themes.



After the initial text-analysis data was created, it became necessary to manually **remove common but trivial terminology**, such as "artificial", "intelligence", and "paragraph", **to reveal the underlying hierarchy of topics**. As a result, the plots displayed exclude 32 of these less relevant terms.

Below, you will find a **bar chart displaying the terminology central to the AI Act**. From a special centrality measurement, we determined that "**risk**" is the most central term within the AI Act. The next most central terms include the three stakeholders of AI systems: the **provider**, **authorities**, and the **persons**, i.e., the end users.



On the top, you can see the entire modified **word network of the AI Act**. Larger nodes represent **greater importance**, while **closeness** signifies **stronger connections**. The **colors identify clusters** of words that frequently appear together, forming a cloud of strongly related keywords.

Our **key finding** indicates that the term '**provider**' is **closely linked with regulatory words** such as 'requirement,' 'obligation,' 'compliance,' and 'assessment.' This suggests that the legislation will focus on providers to ensure AI safety. In contrast, the cluster associated with 'person' contains little to no regulatory terminology. Consequently, **the responsibility for AI alignment and risk mitigation will predominantly rest with the providers of these systems**. For example, the AI Act may mandate that providers ensure their AI systems adhere to robust transparency and accountability measures, particularly for high-risk AI applications.[1]

Given the **limitations of Text Network Analysis** in providing objective interpretations, such interpretation is **more qualitative than quantitative**. Therefore, we invite viewers to form their own conclusions and hypotheses by analyzing the displayed interconnections of this network analysis.

[4] Please note that the 'authority' node was removed from the main network plot to improve readability, as it appears trivial in the context of this legislation.
[3] Louvain community detection: It works by grouping nodes into communities in a way that maximizes the density of the connections within communities compared to connections between communities.
[2] Betweenness centrality: It quantifies the number of times a node acts as a bridge along the shortest path between two other nodes.
[1] European Parliament and Council. (2021). Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Acts (COM(2021) 206 final; 2021/0106 (COD)). Brussels.

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