DASHBOARD DESIGN

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Business Intelligence & Data Warehousing

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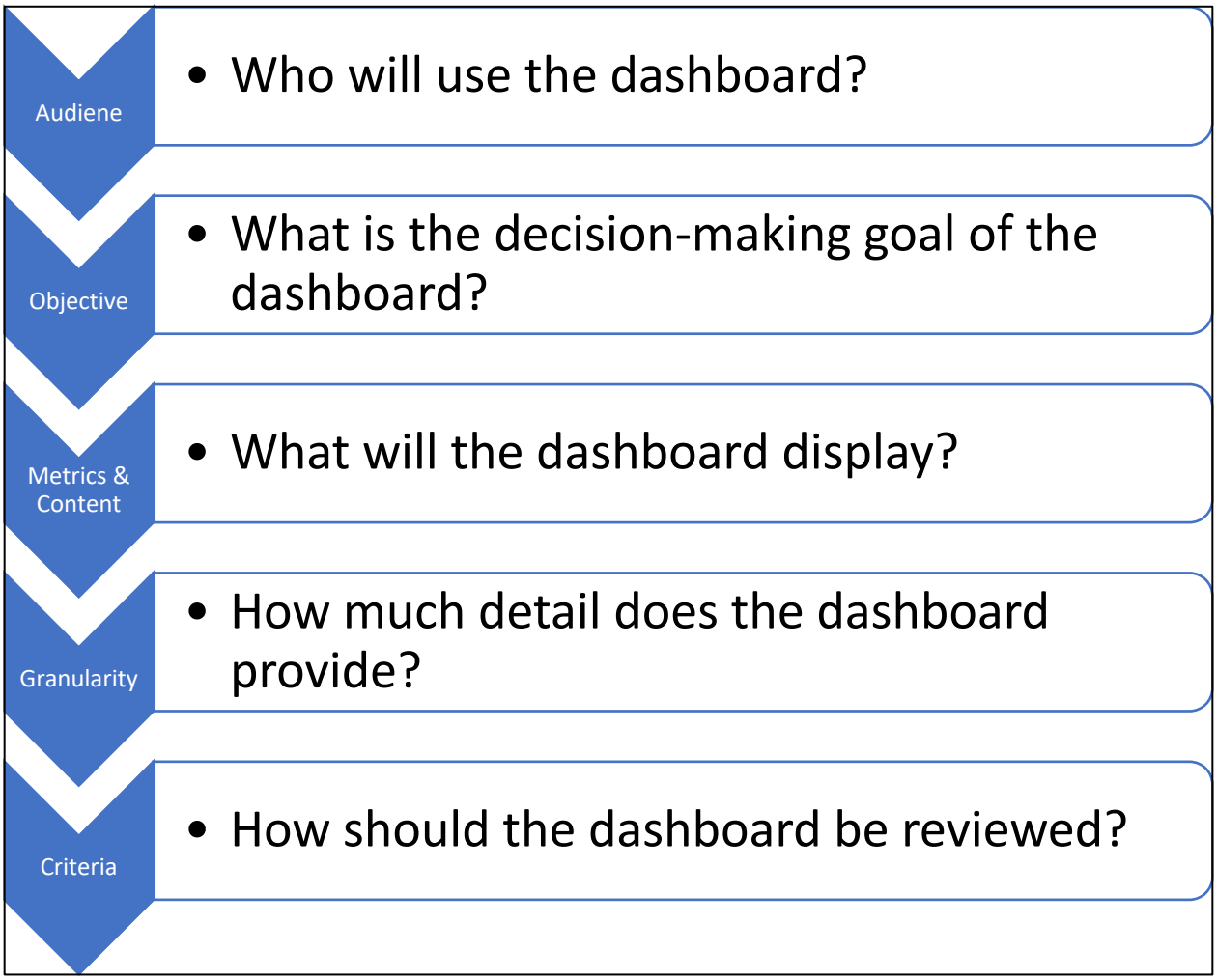
Dashboard Design

Introduction

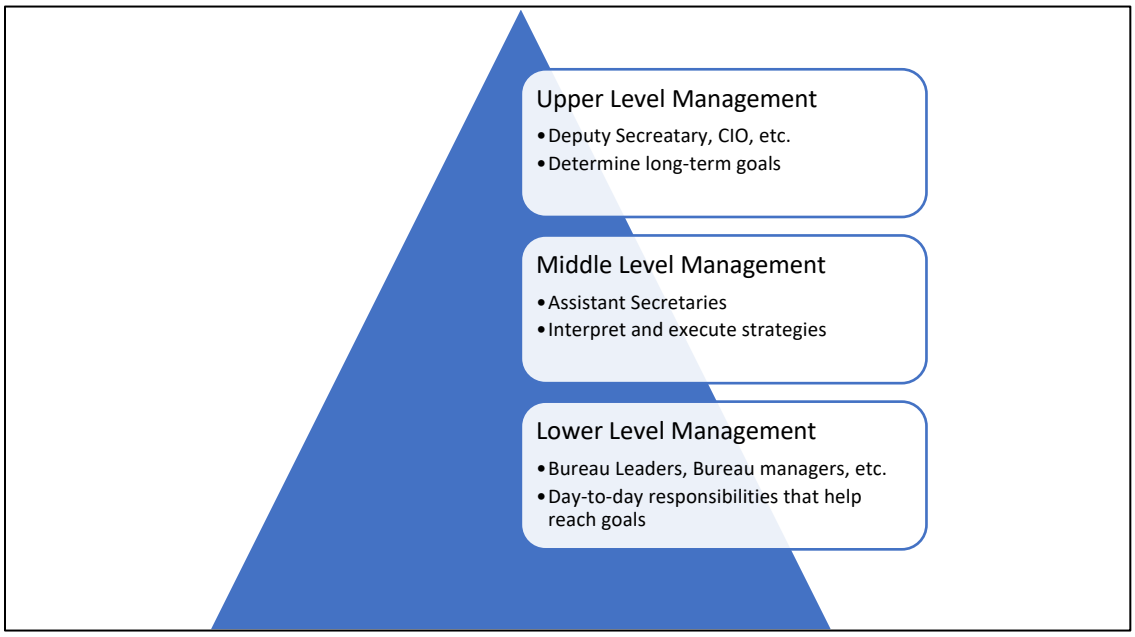
Team A created a data warehouse and data integration process using SQL Workbench and Pentaho Data Integration (PDI) for the Oil, Gas, and Water Production dataset. With both complete, now each team member can generate value from the data by building a dashboard in Tableau. The purpose of this document is to discuss the overall Dashboard Design:



Dashboard Design Process

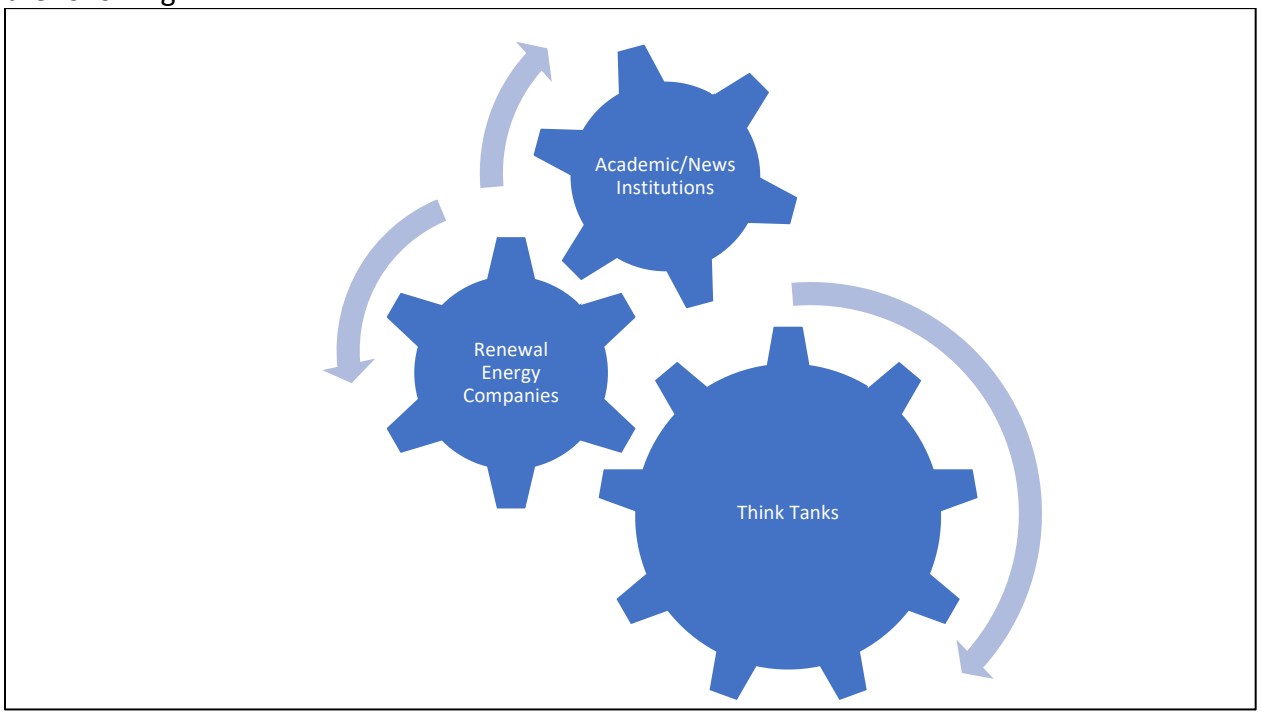
Audience

Although the primary audience of this dashboard is upper level management of the US Department of the Interior and the US Department of Energy, middle level management can use this dashboard to understand the overall state of the business as well. The reason why these groups have been chosen as the primary audience is because the US Department of the Interior is one of the largest institutions in the United States that is most interested in domestic natural resources. Similarly, the US Department of Energy is interested in oil and gas even though their primary concern is nuclear energy and waste. Here is a figure of the levels of management:



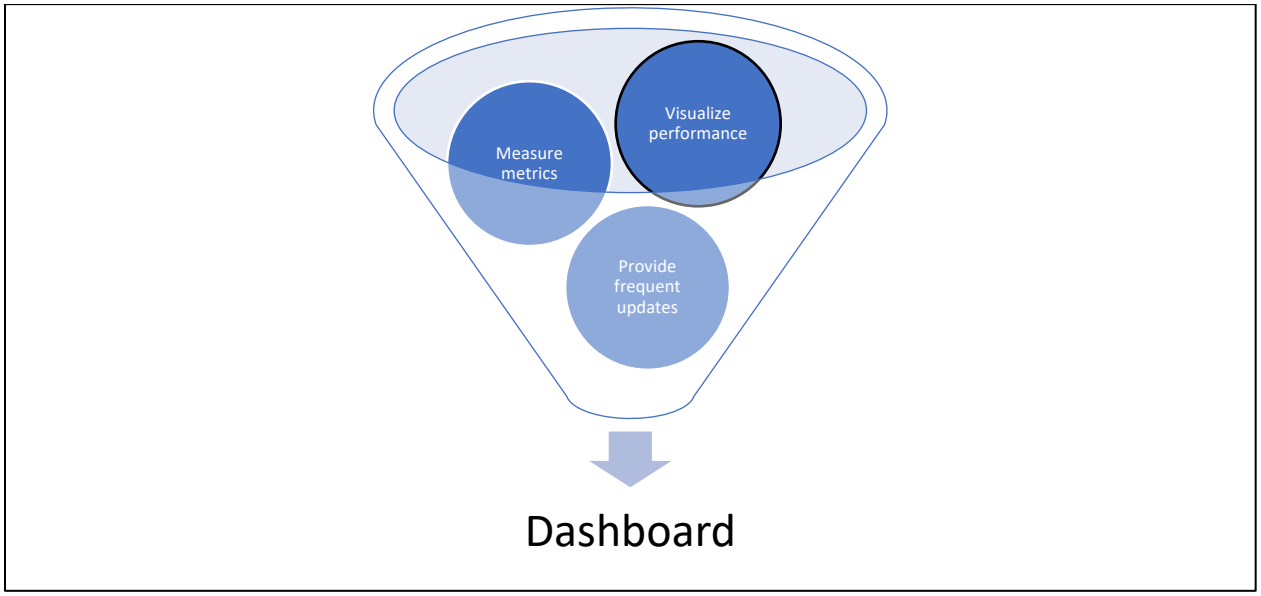
Audience: *Upper Level Management & Middle Level Management*

Additionally, the audience could include other non-governmental institutions such as the following:



Objective

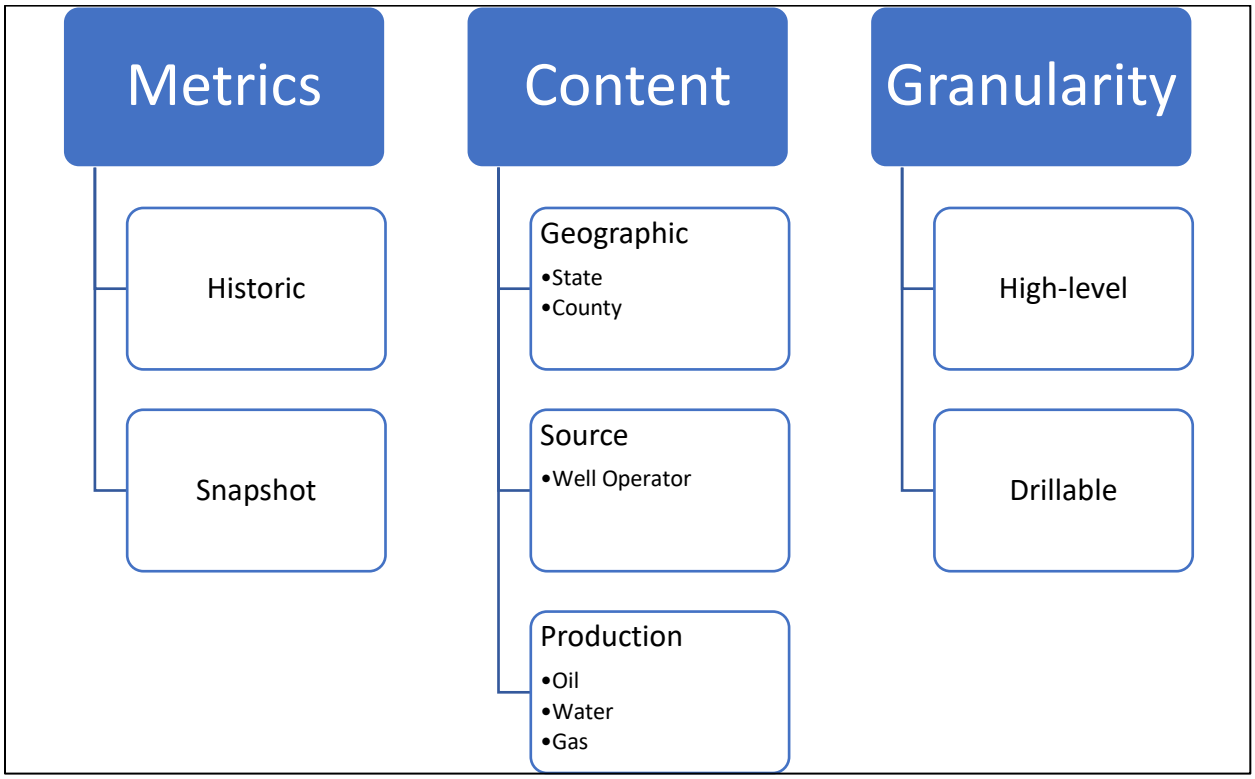
The objective of this dashboard is to provide both levels of management an opportunity to monitor long-term goals and fine-tune their execution to reach those goals. Here is a figure of the dashboard's objective:



Objective: *Equip the audience with visualizations and metrics to monitor performance*

Metrics, Content, & Granularity

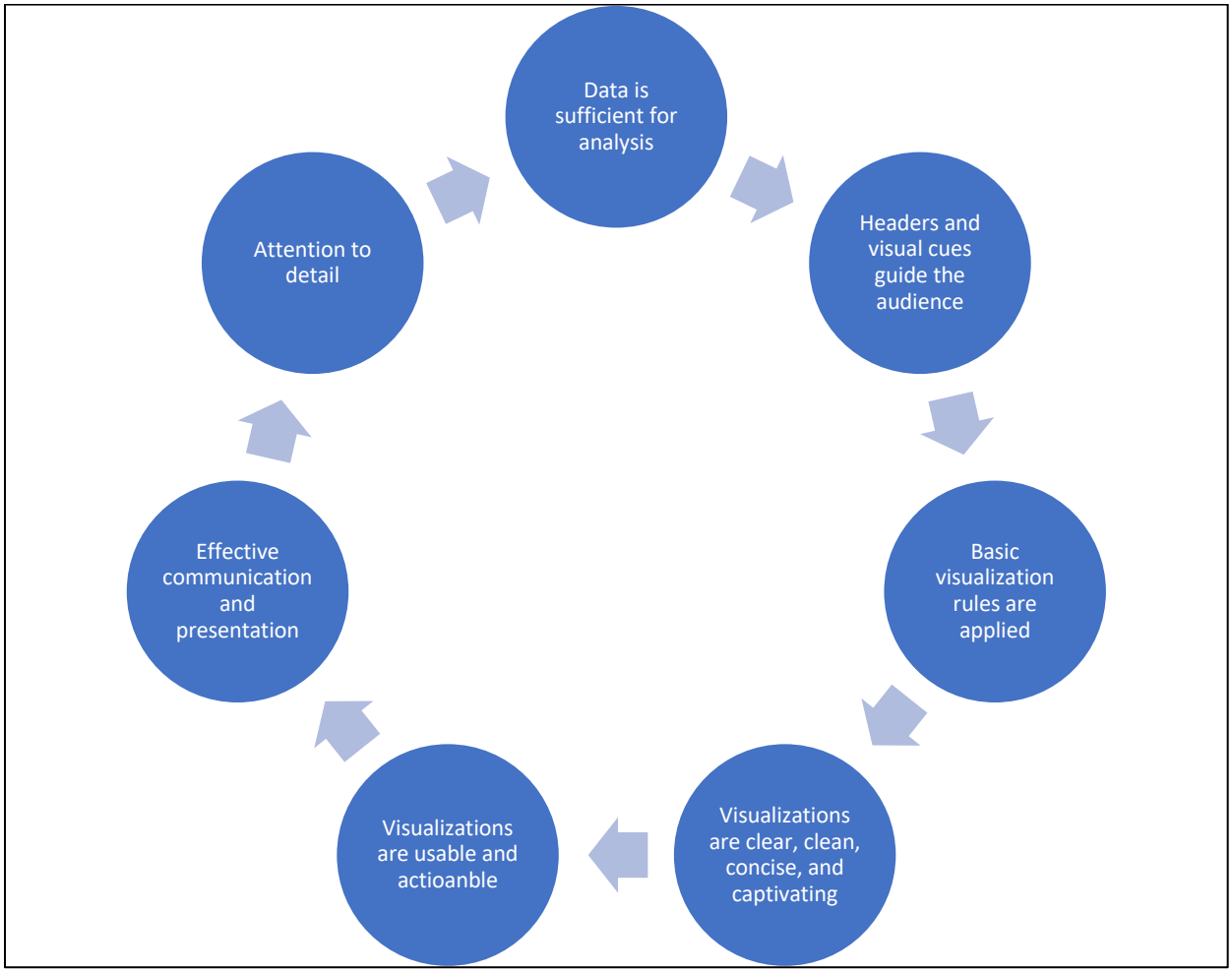
Given that upper level and middle level management are primarily interested in monitoring performance, the content and metrics must provide insight on performance. For example, to ensure performance is improving over time, time series visualizations must be included. Additionally, the audience must have access to all relevant business domains. In this case, those domains include production performance by county and well operator. Similarly, the dashboard must equip the audience with the ability to further focus their analysis. Not only will an end user be interested in performance over time and a specific business domain, an end user might also want to focus on a specific domain in a specific time period – a more granular view. Here is a figure summarizing the metrics and content of the dashboard:



Metrics, Content, & Granularity

Criteria

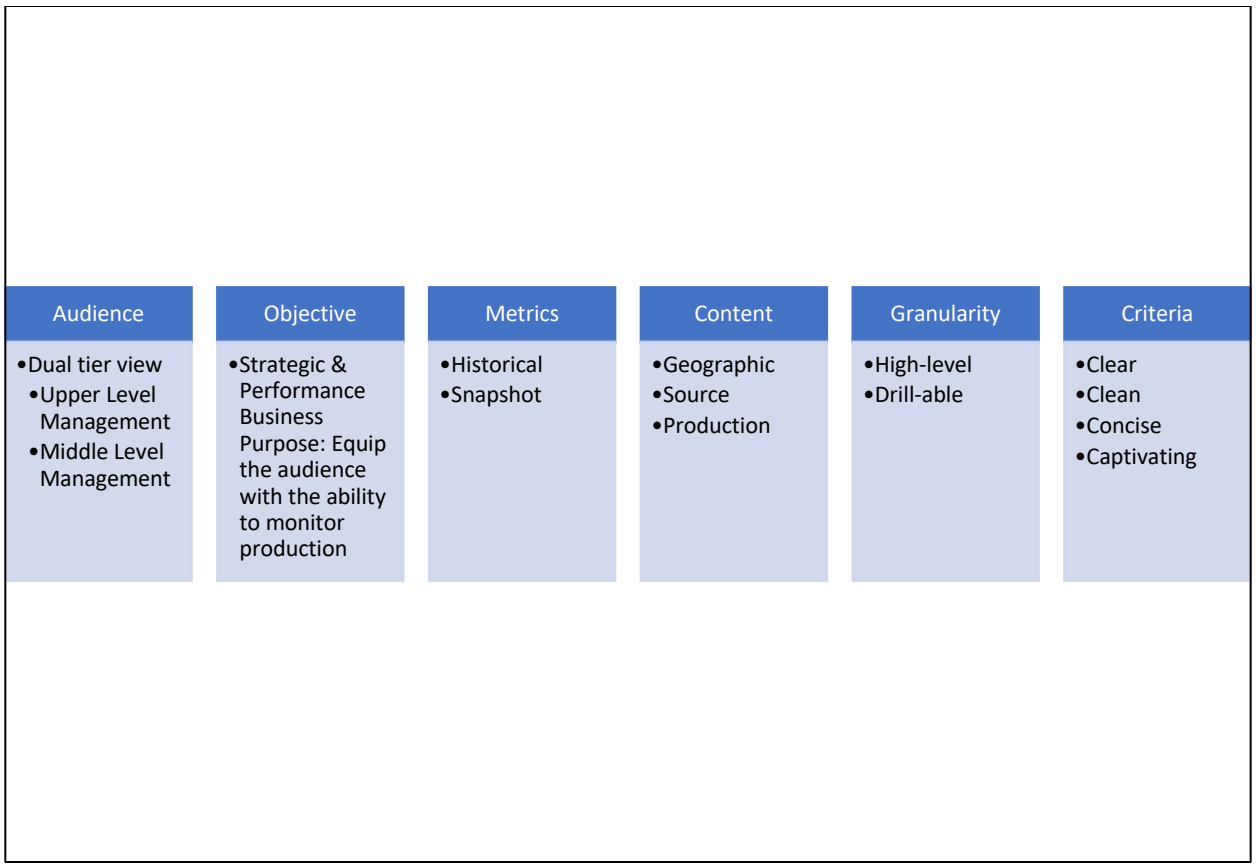
Dashboard builders should leverage a criterion when building visualizations for a data story. Per the Session 12 Forum, here is the general criteria followed to create the dashboard:



Criteria: *How to Review a Dashboard*

Conclusion

Dashboards tend to be a final product of an extensive data project that includes retrieving the data, cleaning the data, and interpreting the data. For this multifaceted project, the first step was understanding the provided datasets before organizing it in a data warehouse with multiple dimensions and a fact table. Then, Team A had to complete the star schema and an ETL process to make the data accessible for presentation. Although the presentation is the only part of the process recognized by the audience, this does not mean it is the most important part. As a matter of fact, without a clean and sensible data warehouse and integration approach, the presentation could fall short. The Tableau Dashboard for the Oil, Gas, and Water Production dataset can be summarized by the following figure:



Summary: *Dashboard Definition Document*