

# Low Level Design

## NBA Data Analysis

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## DOCUMENT CONTROL

### Change Record:

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## 1. Introduction

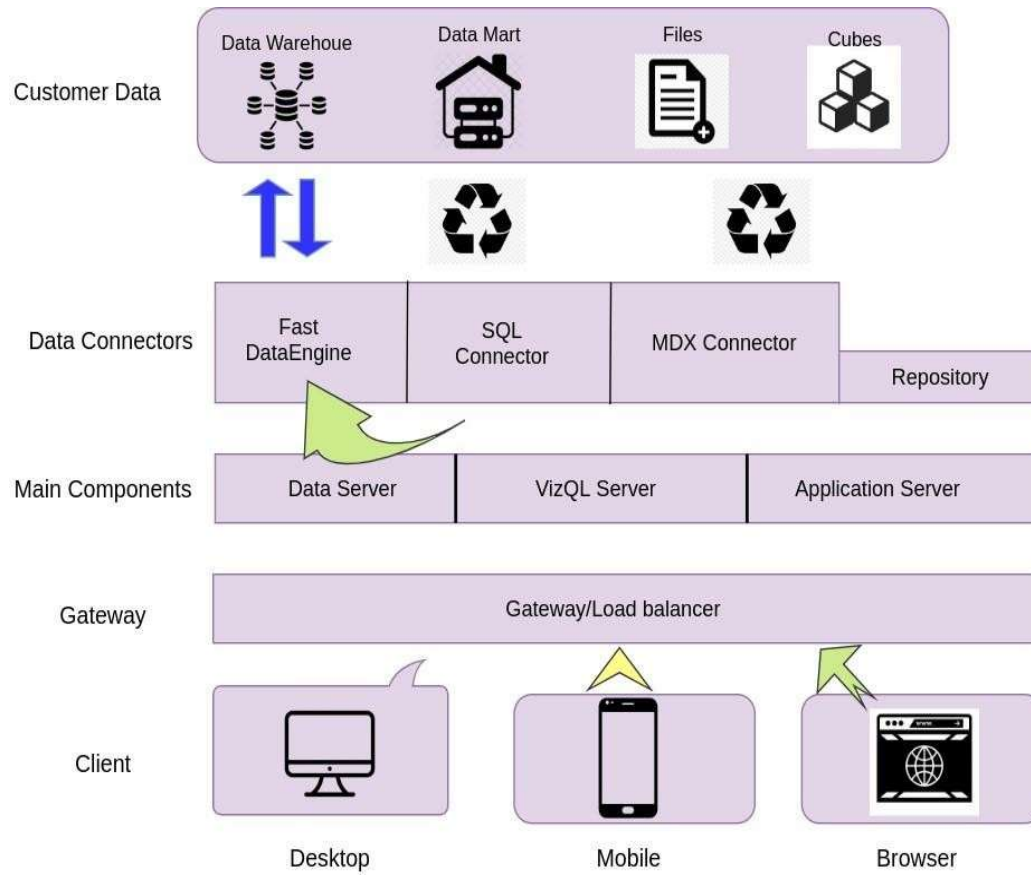
### 1.1 What is Low-Level design document?

The goal of the LDD or Low-level design document (LLDD) is to give the internal logic design of the actual program code for the House Price Prediction dashboard. LDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

### 1.2 Scope

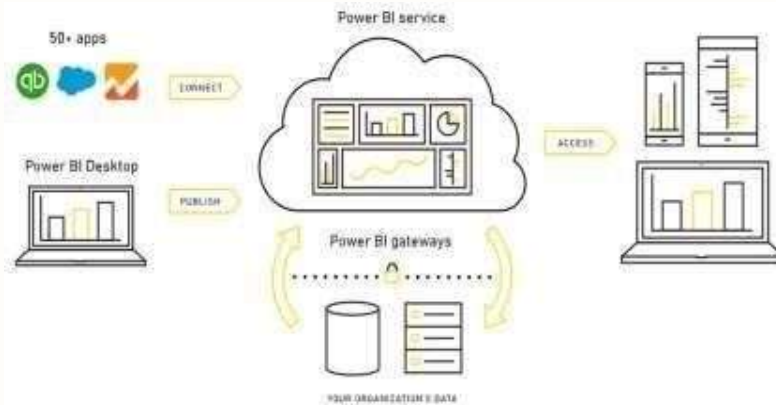
Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

## 2. Architecture

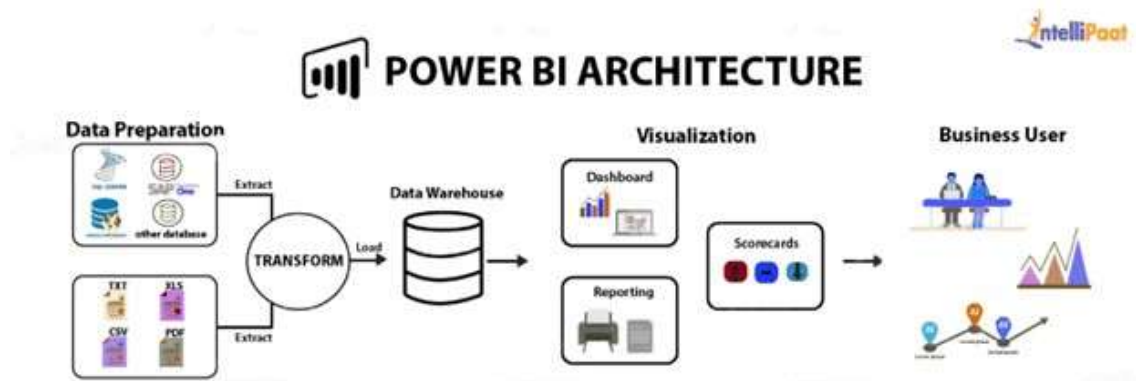


## Power BI Architecture

Power BI has a highly scalable architecture that serves mobile clients, web clients and desktop-installed software. Power BI architecture supports fast and flexible report and dashboard creation to drive business insights. The following diagram shows Power BI's architecture:



Power BI architecture is a service built on top of Azure. There are multiple data sources that Power BI can connect to. Power BI Desktop allows you to create reports and data visualizations on the dataset. Power BI gateway is connected to on-premise data sources to get continuous data for reporting and analytics.



### 1. Gateway/Load Balancer

It acts as an Entry gate to the Power BI Server and also balances the load to the Server if multiple Processes are configured.

## 2. Application Server

Application Server processes handle browsing and permissions for the Power BI Server web and mobile interfaces. When a user opens a view in a client device, that user starts a session on Power BI Server. This means that an Application Server thread starts and checks the permissions for that user and that view.

## 3. Architecture Description

### 3.1 Data Description

The Dataset contains NBA DRAFT PICK

1. Player: Player Name.
2. Year: which Year Player Pick.
3. Draft Pick: how many times Player pick.
4. Height (No Shoes): Player Height without Shoes.
5. Height (With Shoes): Player Height with Shoes.
6. Wingspan: Player arm length from fingertip to fingertip.
7. Standing Reach: Player stand reach.
8. Vertical (Max) : measure player vertical jump .
9. Vertical (Max reach): measure player max vertical jump.
10. Vertical (No step): Measure player vertical (No step).
11. Vertical (No Step reach): Measure player by vertical (No step reach).
12. Weight: player Weight.
13. Body Fat: Player Body Fat Level.
14. Hand (Length): Measure Player Hand Length.

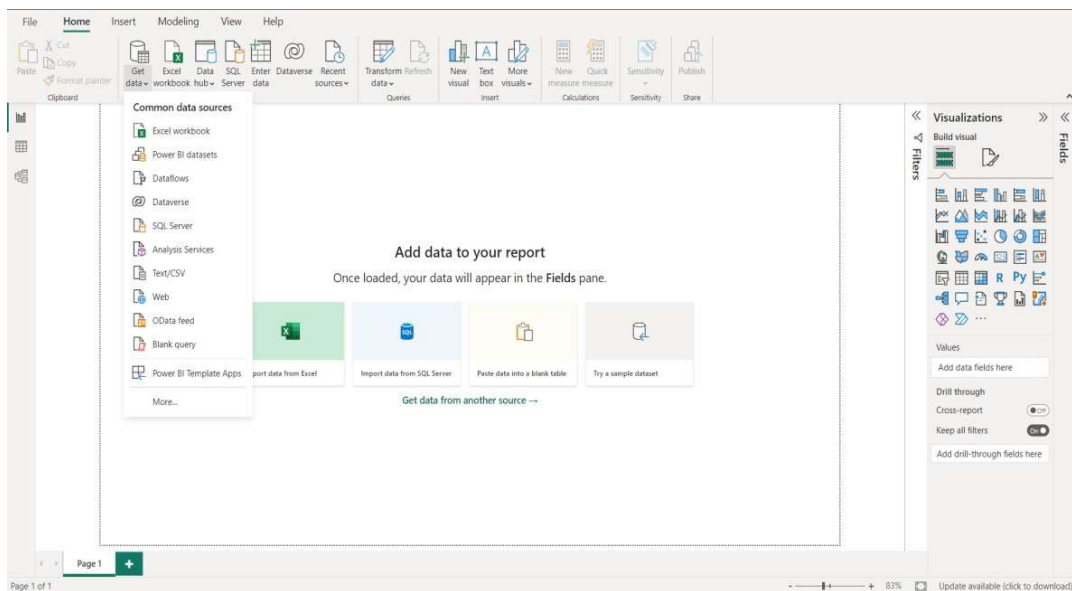
15. Hand (width): Measure Player Hand Width.
16. Bench: Measure Player by Bench.
17. Agility: Agility of Player.
18. Sprint: Sprint of Player.

### 3.2. Data Cleaning

Data Cleaning is crucial stage before we start creating visuals. The dataset given some time has impurities such as missing values or incorrect data types. Data cleaning can be performed in Python using Pandas library to remove missing values and make dataset ready for building visuals.

### 3.3. Data Importing

In Power BI, we have options to connect to our dataset via various options such as SQL Server, MySQL, Excel, CSV and so on. We have our clean data in CSV file. We will import it in Power BI with import data option and start working with it.





### 3.4 Data Transformation in Power BI

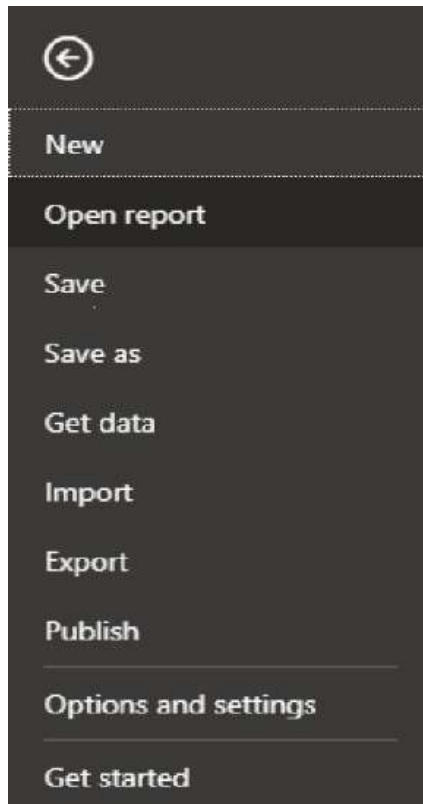
Once the data is imported in Power BI, we do 'transform data' i.e. using Power Query Editor to perform certain operation on the data. Ensuring correct data types, removing errors in data, creating custom/conditional columns are some fundamental tasks performed in Power Query.

The screenshot displays the Power Query Editor window for a query named 'NBA Draft Combine'. The main area shows a table with 18 columns and 403 rows. The columns are: Player, Year, Draft pick, Height With No Shoes, Height With Shoes, Weight, Wingspan, and Standing Reach. The data is sorted by Year (2010) and then by Draft pick (1 to 28). The right sidebar shows the 'Query Settings' pane with the 'Properties' tab selected, showing the query name 'NBA Draft Combine' and the 'Applied Steps' list, which includes 'Changed Type1'.

Player	Year	Draft pick	Height With No Shoes	Height With Shoes	Weight	Wingspan	Standing Reach
1. Darnell James	2009	24	78.25	79.5	84.75		
2. Grevin Vazquez	2009	28	79.75	78	79.25		
3. Gani Laval	2009	46	79.75	81	84		
4. Luke Harangody	2009	52	78.25	80	81.75		
5. John Wall	2010	1	74.75	76	81.25		
6. Cole Aldrich	2010	11	81	83.25	88.75		
7. Xavier Henry	2010	12	77.25	78.5	83.25		
8. Ed Davis	2010	13	81	81.75	84		
9. Patrick Patterson	2010	14	80	81.25	85.25		
10. Larry Sanders	2010	15	81.25	82.5	89.75		
11. Luke Babbitt	2010	16	79.5	80.75	81.25		
12. Avery Bradley	2010	19	74	75.25	79.25		
13. Evan Turner	2010	2	77.75	79	80		
14. James Anderson	2010	20	76.75	77.75	80.5		
15. Craig Brackins	2010	21	80.5	81.75	84		
16. Trevor Booker	2010	23	78.25	79.5	81.75		
17. Dominique Jones	2010	25	75.25	77	81.25		
18. Jordan Crawford	2010	27	75	76.5	79		
19. Daniel Orton	2010	29	80.75	81.5	88.25		
20. Derrick Favors	2010	3	80.75	82.25	88		
21. Lazar Hayward	2010	30	76.5	77.75	84.75		
22. Hassan Whiteside	2010	33	82.5	83.5	91		
23. Armon Johnson	2010	34	74	75.25	80		
24. Terrico White	2010	36	75.75	77	81		
25. Darrington Hobson	2010	37	77.25	78.5	81.25		
26. Andy Rautins	2010	38	76.25	77	79		
27. Wesley Johnson	2010	4	78.25	79.25	85		
28. Lance Stephenson	2010	40	76.5	77.75	82.5		

### 3.5 Deployment

In Power BI, you can directly publish the report online to your workstation. If you do not have the work email-id then you can save the file in '.pbix' version. This helps another viewer see your work and understand the story or insights you are communicating.



#### 4. Unit Test Cases

TEST CASE DESCRIPTION	EXPECTED RESULTS
Player Slicer	When clicked on the slicer, a dropdown should occur which has various player's name. Selected player shows result for that player.
Year Slicer	When clicked on the slicer, a dropdown should occur which shows list of years. Selected particular year shows result for that year.
Draft Picks by Player	This visual shows Total Draft Picks by Player. This is descending order i.e. Most draft picks Player at top. This visual shows overall performance of player by draft picks.
Top 5 Players by Draft Picks	This visual shows, top 5 player according to Draft Picks.
Top 5 Players by Vertical Max Reach	This visual shows, top 5 player according to Vertical Max Reach i.e. top 5 player high jump wise.
Top 5 Players by Wingspan	This visual shows, top 5 player according to wingspan.
Relationship between Player and Agility & Sprint	This visual shows a line chart displaying relation between Player and Agility & Sprint. This visual shows us how player is agility and sprint wise.