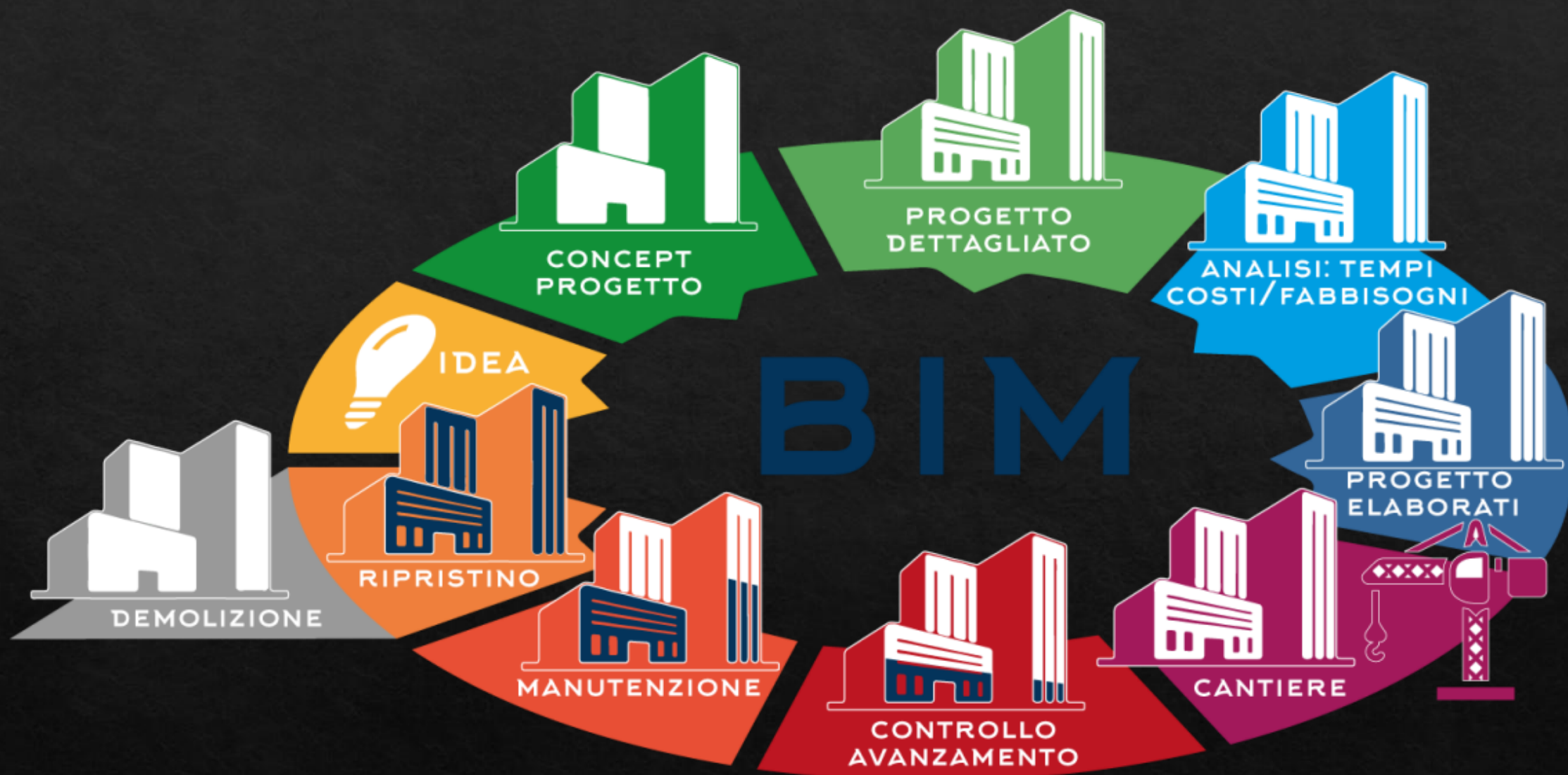




CIVIL ENGINEERING CONSTRUCTION DATA



*Create and use
database*

Create databse
civildataset;

Use civildataset;

*1. Counts
the total
number of
projects*

```
SELECT COUNT(*) AS  
Total_Projects
```

```
FROM  
bim_ai_civil_engineering_dataset;
```


*2. Calculates
project-wise
profitability
and
profitability
percentage*

```
SELECT Project_ID, Planned_Cost,  
Actual_Cost, (Planned_Cost -  
Actual_Cost) AS Profitability,
```

```
ROUND(((Planned_Cost - Actual_Cost)  
/ Planned_Cost) * 100, 2) AS  
Profitability_Percentage
```

```
FROM bim_ai_civil_engineering_dataset;
```

*3. Finds
average
profitability
grouped by
project type*

```
SELECT Project_Type,  
AVG(Planned_Cost -  
Actual_Cost) AS Avg_Profitability
```

```
FROM  
bim_ai_civil_engineering_dataset  
GROUP BY Project_Type;
```

*4. Calculates
Schedule
Performance
Index (SPI) for
each project*

```
SELECT Project_ID,  
Planned_Duration, Actual_Duration,
```

```
ROUND(Planned_Duration /  
NULLIF(Actual_Duration, 0), 2) AS SPI
```

```
FROM  
bim_ai_civil_engineering_dataset;
```

*5. Calculates
Cost
Performance
Index (CPI)
for each
project*

```
SELECT Project_ID, Planned_Cost,  
Actual_Cost,
```

```
ROUND(Planned_Cost /  
NULLIF(Actual_Cost, 0), 2) AS CPI
```

```
FROM  
bim_ai_civil_engineering_dataset;
```


6. Summarizes projects by risk level with count and average profitability

```
SELECT Risk_Level,
```

```
COUNT(*) AS Total_Projects,
```

```
AVG(Planned_Cost - Actual_Cost) AS  
Avg_Profitability
```

```
FROM bim_ai_civil_engineering_dataset
```

```
GROUP BY Risk_Level;
```

*7. Calculates
accident rate
per 1000
labor hours
for each
project*

```
SELECT Project_ID, Accident_Count,  
Labor_Hours,
```

```
ROUND((Accident_Count * 1000.0) /  
NULLIF(Labor_Hours,0), 2) AS  
Accident_Counts_per_1000_Hours
```

```
FROM bim_ai_civil_engineering_dataset;
```

*8. Finds
maximum
values of
material, labor
hours, and
equipment
usage*

```
WITH MaxValues AS ( SELECT  
MAX(Material_Usage) AS MaxMaterial,
```

```
MAX(Labor_Hours) AS MaxLabor,
```

```
MAX(Equipment_Utilization) AS MaxEquipment
```

```
FROM bim_ai_civil_engineering_dataset )
```

```
SELECT * FROM MaxValues;
```

*9. Computes
Resource
Allocation
Index
(normalized
resource usage)
per project*

```
WITH MaxValues AS ( SELECT MAX(Material_Usage) AS  
MaxMaterial, MAX(Labor_Hours) AS MaxLabor,  
MAX(Equipment_Utilization) AS MaxEquipment
```

```
FROM bim_ai_civil_engineering_dataset )
```

```
SELECT d.Project_ID, ( (d.Material_Usage * 1.0 / m.MaxMaterial) +  
(d.Labor_Hours * 1.0 / m.MaxLabor) + (d.Equipment_Utilization *  
1.0 / m.MaxEquipment) ) / 3 AS Resource_Allocation_Index
```

```
FROM bim_ai_civil_engineering_dataset d CROSS JOIN MaxValues  
m ORDER BY Resource_Allocation_Index DESC;
```


*10. Lists top
ten projects
with the
highest delays
(Actual >
Planned
duration)*

```
SELECT Project_ID, Planned_Duration,  
Actual_Duration, (Actual_Duration -  
Planned_Duration) AS DelayDays
```

```
FROM bim_ai_civil_engineering_dataset
```

```
WHERE Actual_Duration >  
Planned_Duration ORDER BY  
DelayDays DESC LIMIT 10;
```

*11. Shows
average
completion
percentage
grouped by
project type*

```
SELECT Project_Type,  
AVG(Completion_Percentage) AS  
Avg_Completion
```

```
FROM bim_ai_civil_engineering_dataset
```

```
GROUP BY Project_Type;
```