



**NIGERIAN INSTITUTE OF
QUANTITY SURVEYORS**
The professional construction cost managers.

**ABUJA ZONAL
WORKSHOP**

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PROJECTS ACADEMY- TRAINING AND CONSULTANTS

Theme:
**Innovative and Sustainable Construction
Practice:**
**Building a Resilient Cost Based Knowledge
Driven Industry with Integrity.**

PAPER TITLE:

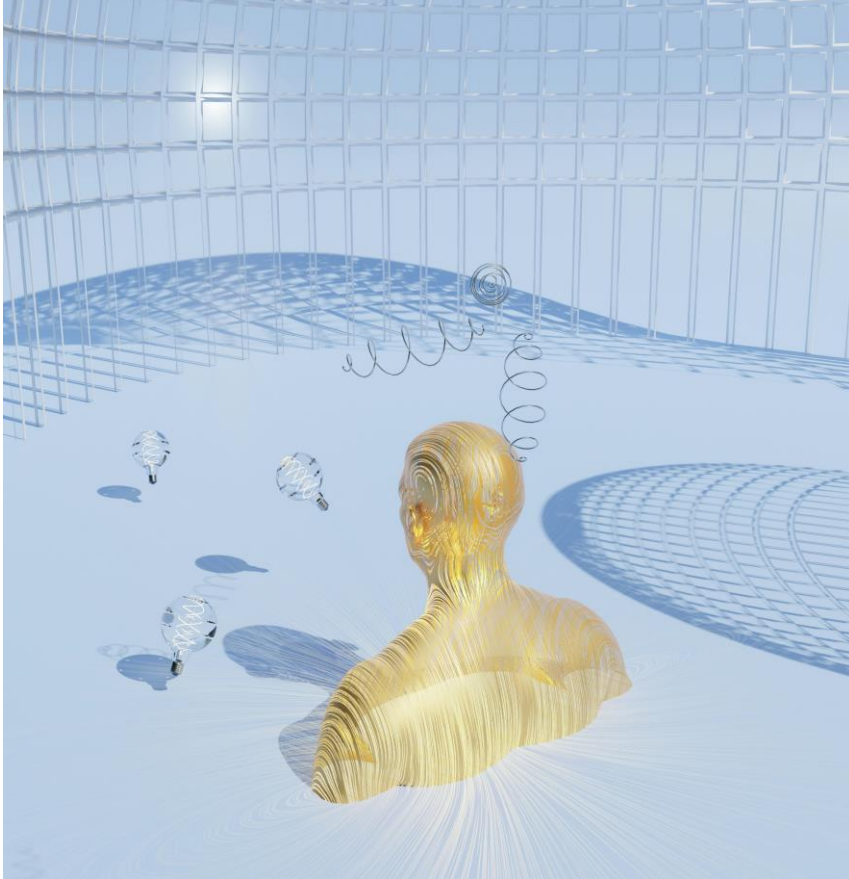
**Developing and Implementing a Comprehensive
Cost Database for Accurate estimation and
Effective cost management in the Nigerian
Construction Industry (NCI):**

A case Study of the NIQS Cost databank Project

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Learning Outcomes



Characteristics of a comprehensive database

Developing and Implementing a database

Effective Cost management

The NIQS Experience

Outline

01. Introduction

- Cost
- Cost data
- Cost Database
- Sources of Cost data

03. Implementation

- The Framework
- The Process

02. Development of a Cost Data

- Components of an Effective Project Cost Database
- Types of estimate

04. Cost Management

- Cost data and Cost management –The Nexus
- Data-Driven decision making
- Case study- NIQS

05. Conclusion

- Challenges
- Summary

Cost Database
Accurate estimation
Effective cost
management



Introduction – Key Concepts and definitions

“factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation [Cambridge]”

“facts and statistics collected together for reference or analysis [Oxford]”

” information output by a sensing device or organ that includes both useful and irrelevant or redundant information and must be processed to be meaningful”- [Merriam-Webster]

What is data?



Introduction-

“complete and including everything that is necessary” [Cambridge]

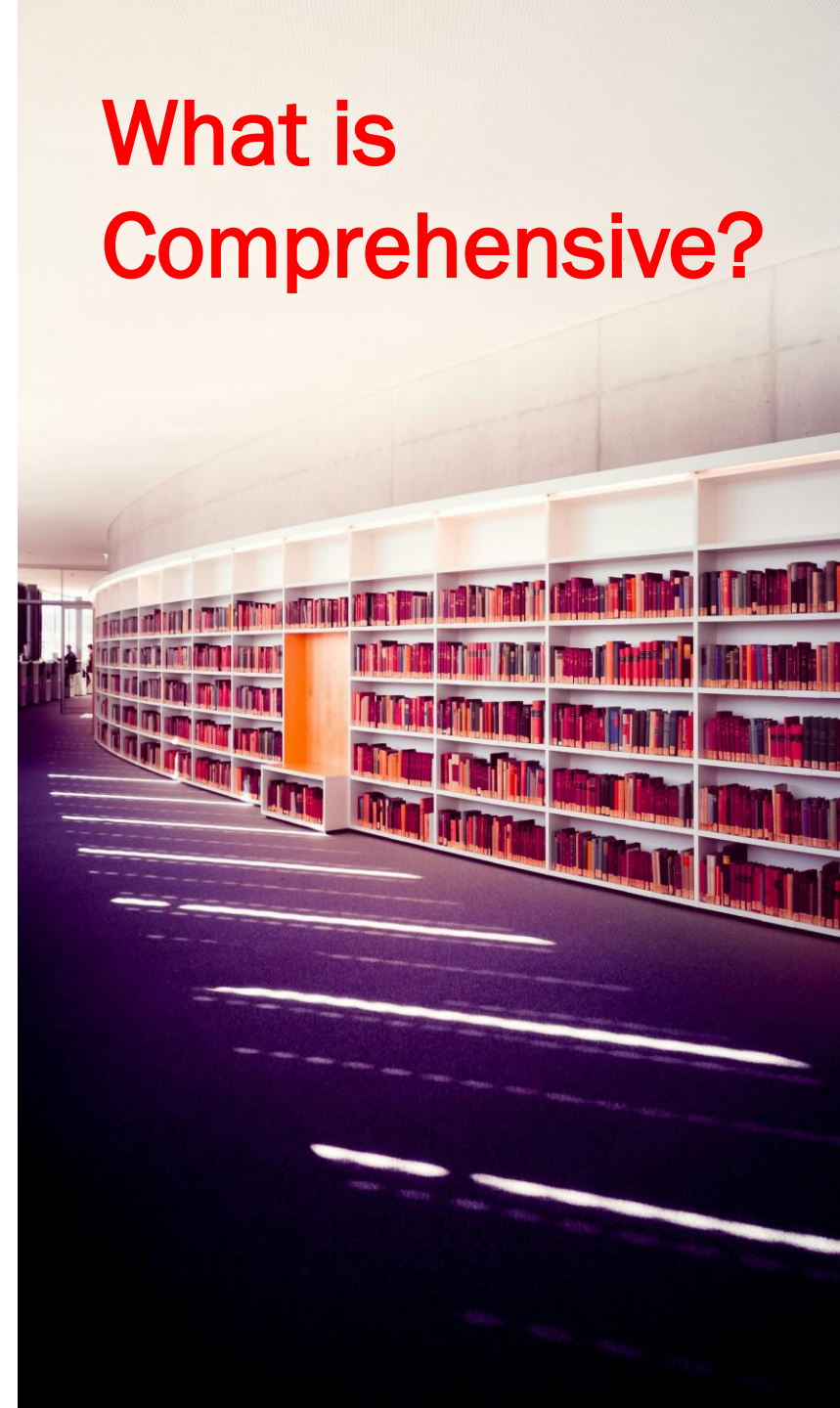
“Covering completely or broadly” [Merriam-Webster]

: including or dealing with all or nearly all elements or aspects of something

<https://dictionary.cambridge.org/dictionary/english/comprehensive>

<https://www.merriam-webster.com/dictionary/comprehensive>

What is Comprehensive?



What is COST, COST DATA & COST DATABASE?

“COST”

- Costs are the value of all resources or input needed to produce a product, service, or outcome of interest. It generally comprises different types of expenditures incurred

COST DATA

- Cost data is developed from cost measurement which refers to a process of **collecting, processing, analyzing, and reporting** on costs

COST DATABASE

- A **cost database** is a computerized database of cost-estimating information, which is normally used with construction estimating software to support the formation of **cost estimates**. A cost database may also **simply be an electronic reference of cost data**.
- https://en.wikipedia.org/wiki/Cost_database

The efficiency of a **Cost database** is its ability to offer information in a form that makes it useful for **decision-making, control, or planning**, else there is no value.



**Costs responds
to stimuli**

**"The line between disorder
and order lies in
Coordination,"
Sun Tzu**



Sources of cost data

1] Contract Data

Information that states particular costs, mostly generic.

2] BOQ or Schedule of Rates

This is the basic and fundamental primary source of cost data in a contract.

4] Appendices

These are a huge source of uncaptured or unassigned cost modifiers.

Site instructions

3] Planning or Programming

Tells you how resources were to be deployed



Sources of cost data

SECONDARY

By gathering reliable cost data from these sources, you can ensure that your **estimates are precise** and **reflect the current market conditions**

1] Market surveys

Used to gather information on the current costs of resource inputs. This can involve contacting suppliers, contractors, or industry experts to obtain prices.

2] Industry publications

provide cost data specific to type. They may contain cost indices, trends, or benchmarks that can be used to estimate or evaluate costs

4] Cost databases

These databases often include information on materials, labor, and equipment, etc **culled from Work measurement, market surveys, Industry publications, and Historical data.**

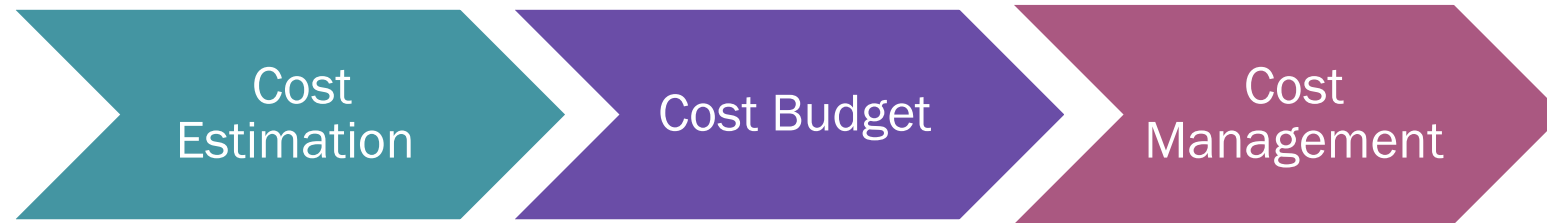
3] Historical cost data

This is a record of cost over time. This can be particularly useful for assets that have a long lifespan, or for which cost data is limited



Cost – The Life Cycle

COST CONTROL



Types of Construction Estimates

Order of magnitude.

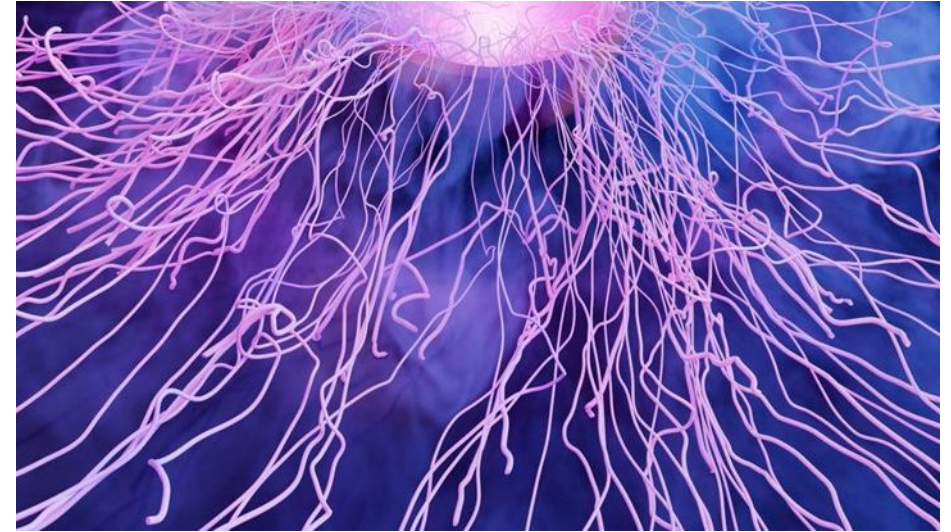
- The order of magnitude estimate refers to a rough approximation made during the early phases of project conception. ...

Feasibility Estimate. ...

Preliminary Estimate. ...

Substantive Estimate. ...

Detailed Estimate.



Each type has a
degree of
accuracy $\pm 50\%$



Developing and Implementing a database



Key Components of an Effective Cost Database

Data Collection and Organization

- The foundation of any effective cost database is the data itself. This means establishing a consistent process for collecting and organizing project cost information from a variety of sources.

Cost Breakdown Structure

- To make the cost data more meaningful and actionable, it's essential to organize it using a well-defined cost breakdown structure (CBS)

Metadata and Contextual Information

- In addition to the raw cost data, a cost database should also include relevant metadata and contextual information

Data Validation and Quality Control

- To ensure the integrity and reliability of your project cost database, it's essential to implement robust data validation and quality control processes

Analysis and Reporting Capabilities

- maximize the value of your project cost database, it's important to develop robust reporting and analysis capabilities.



Framework for Implementating a Cost Database

Training:

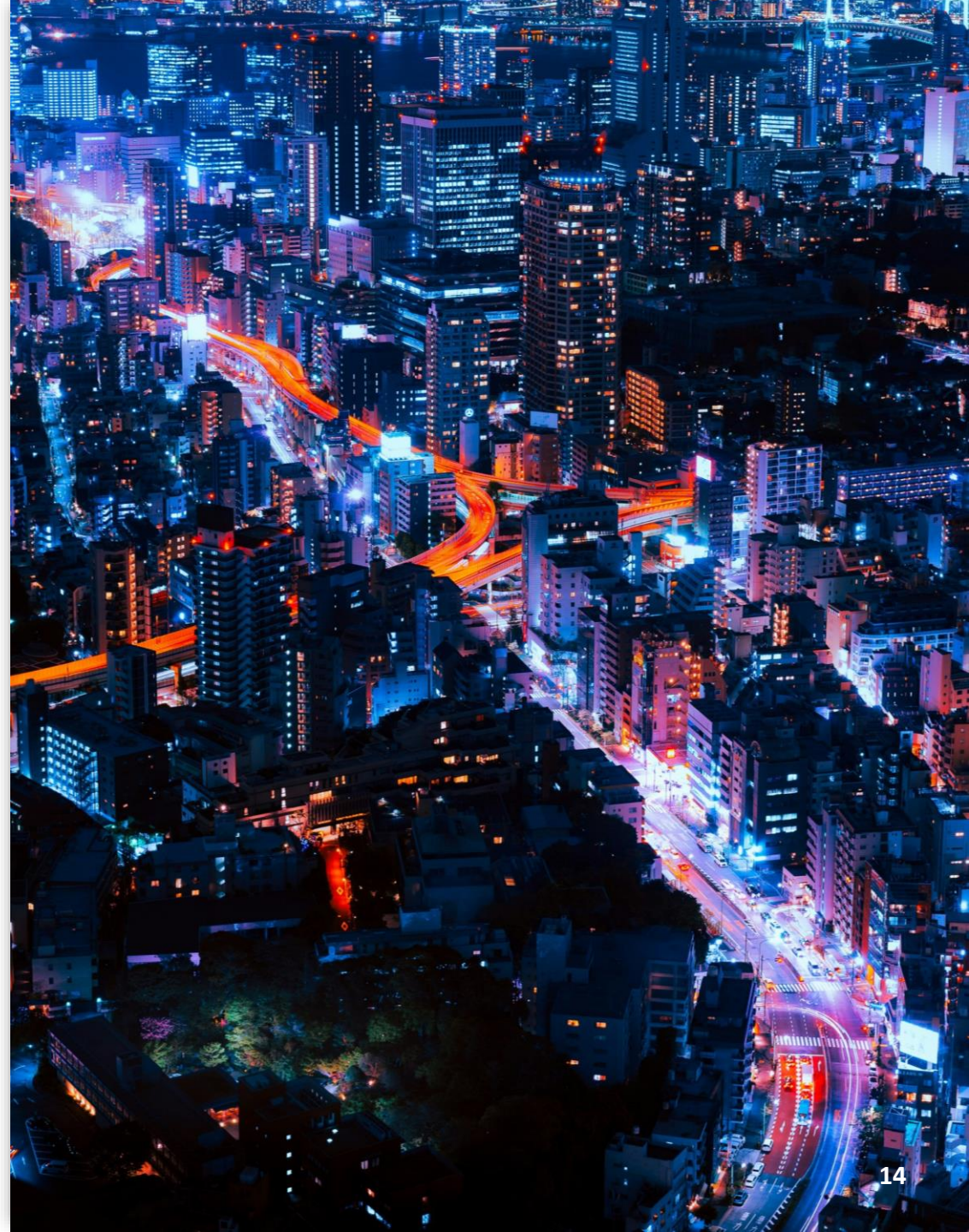
- Educate stakeholders on using the database.

Maintenance:

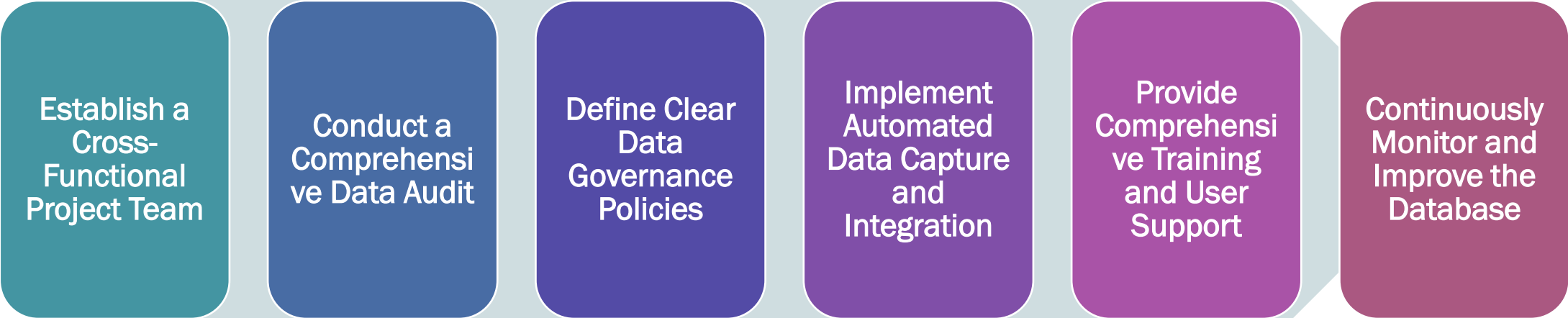
- Regularly update and validate data.

Monitoring:

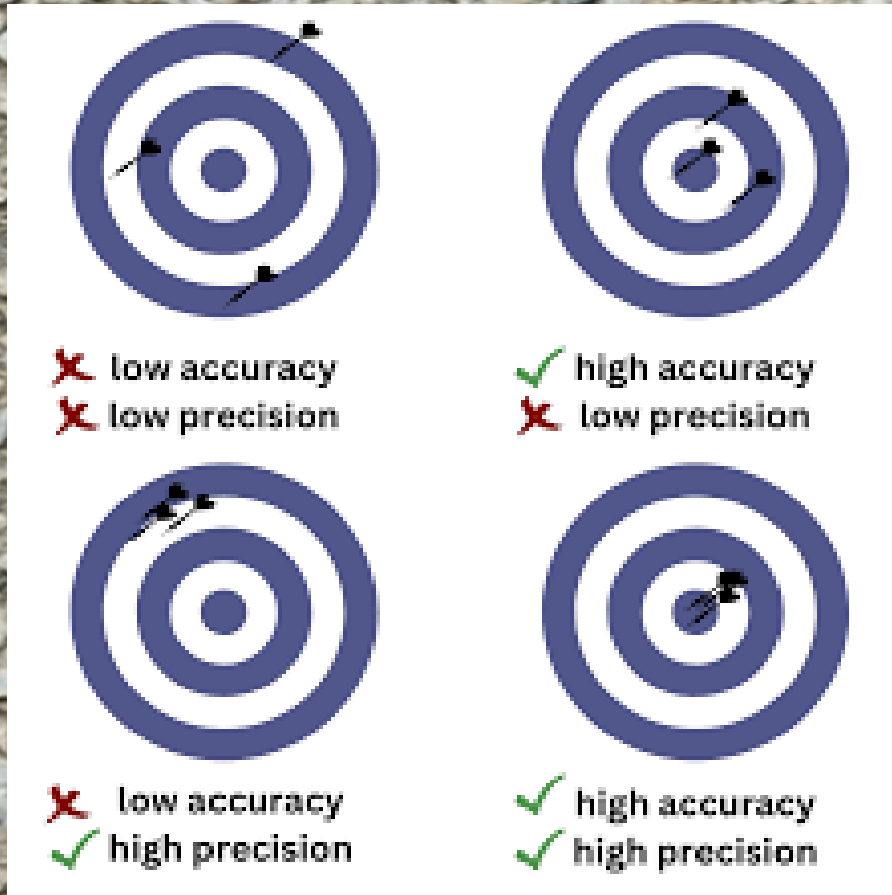
- Track usage and performance to ensure effectiveness



Process for Building and Maintaining a Successful Cost Database



**The level of
granularity of
data
determines the
degree of
precision.**



Accuracy of database



Effective Cost management



Cost data and Cost management –The Nexus

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ACTIVITY =

Cost

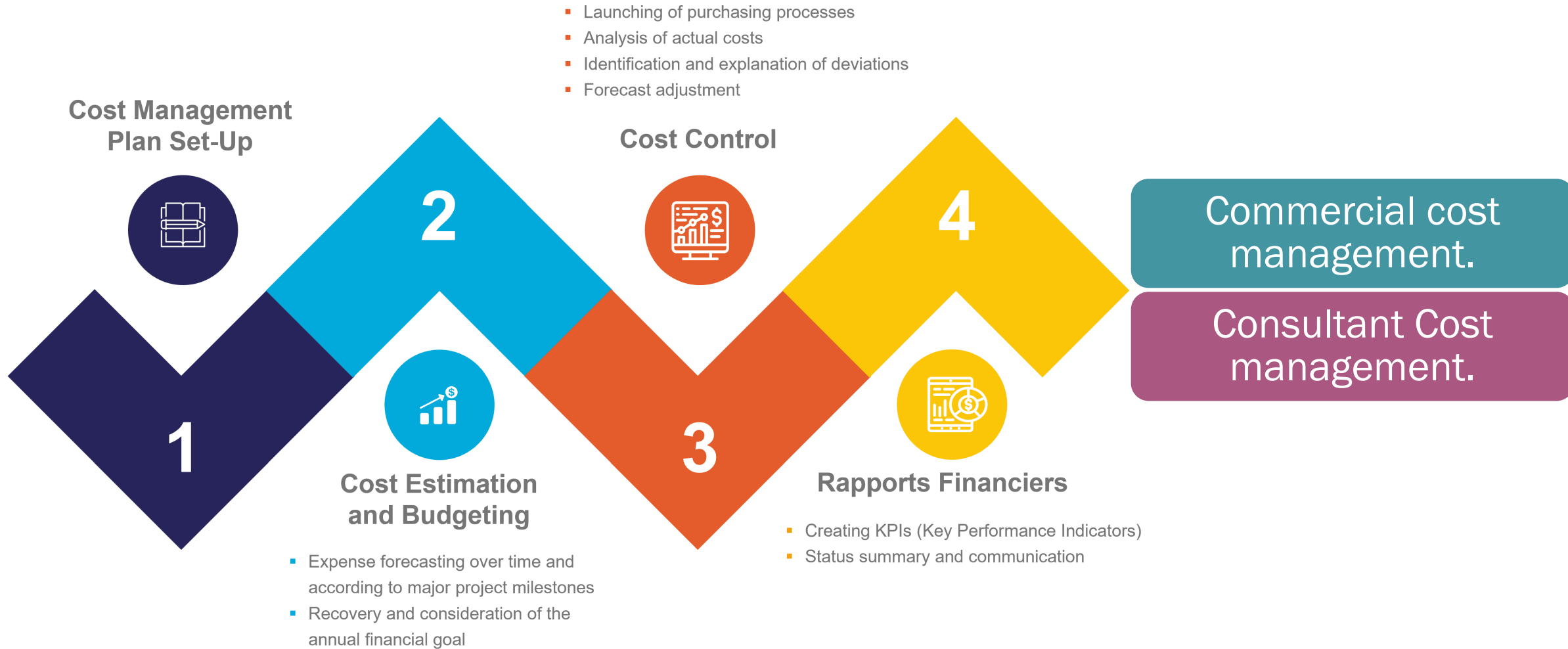
+

Time



Cost Management Process

Construction Cost management refers to the activities concerning planning and controlling a project's budget



Data-Driven Decision Making



Data-driven decision-making (DDDM) is the process of using data to make informed and verified decisions

WHAT?

- Knowing the process of data-driven decision making and how it relates to cost decisions

WHY?

- The importance of DDDM to Cost estimating and management.

HOW?

- Gather Data now, Analyse and Understand



**Cost is in the
numbers**

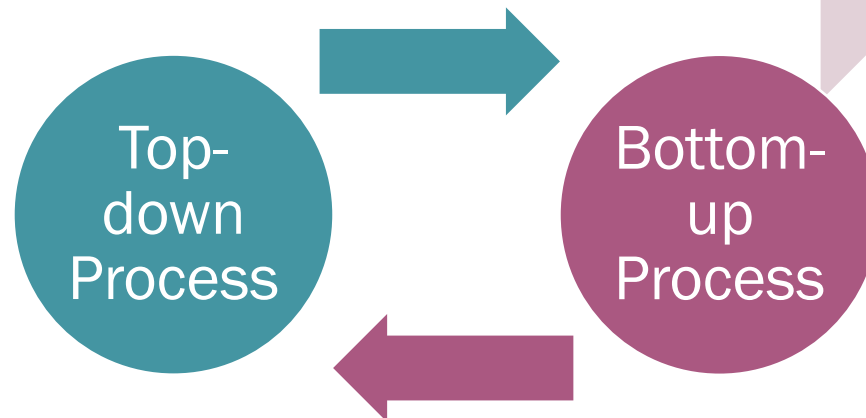
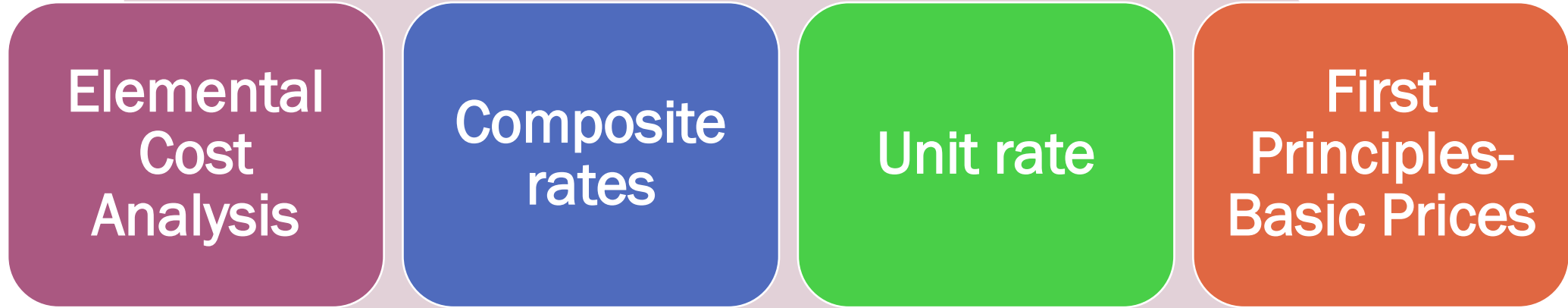
**Quantity has a
quality all its
own.**



CASE STUDY- NIQS Cost Portal



NIQS Cost Data Portal - NCDP



Estimation Cost Development – The NIQS experience

Comprises current market prices of materials used in the Construction Industry. Information contained in this section is useful to Consultants, Clients' Organizations, Contractors and Suppliers.

Basic Price List

These are compressed (omnibus) rates that combine a number of items into a single rate, thereby considerably reducing estimating time. They are useful to Consultants, Clients' Organizations and Contractors.

Composite Rates For Approx. Estimating

COMMERCIAL

- THINKS BOTTOM-UP

CONSULTING

- THINKS TOP-DOWN

Each rate includes the cost of materials, labour, plant, incidental expenses, profit and overheads. The rates cover major items in Building and Civil Engineering works. These rates are useful to Consultants and Contractors' Estimators.

Unit Rates

This is used for budgeting, cost planning and cost control of projects from inception to completion. It can also be used as a basis for advising Clients on future projects. This section covers different types of projects: Residential, Commercial, Edu...

Elemental Cost Analysis



Challenges Of Developing Cost database in EMDEs

“

Data Collection:

- Inconsistent and fragmented data sources.

Standardization:

- Lack of standardized data formats, data collection and management practices.
Unstructured Database Policy.

Technology:

- Limited access to advanced data management tools.



Conclusion

Advantages of Database

Information is key to making informed decisions,

Accurate Estimation:

- Reduces the risk of underestimating project costs.

Budget Management:

- Helps track and compare actual costs against estimates.

Financial Planning:

- Supports both short-term and long-term financial planning.

DDDM

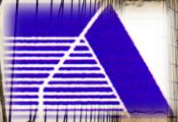
Data is necessary for informed decisions void of bias.

Limitations

The limits of what you can infer from cost data must be appreciated to avoid confirmation bias.

Cost databases are sine qua non to inform decision-making related to cost management





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Thank you
for listening

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