



QUALITY ASSURANCE AND ENGAGEMENT OF DATA USERS

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QA is All About Decision-Making

- **Gov't Agencies, like EPA, make decisions, requires some through regulations & policies to make decisions, and enables/empowers many to make voluntary decisions.**
- **Data and modeling results can be collected to support decision making at all levels.**
- **Decision makers & providers need to work together to identify the “minimum quality” that is required in the data and from the models.**

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From observations systems

Earth observations &
earth system models

Data-to-Information
archiving & services

Decision support tool
development

Decision making

Assessment of benefits



Earth system scientists
and modelers

Earth system service
providers

Environmental process
modelers & researchers

Policy Makers &
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Public officials, advocacy
groups & the Public

To Societal Benefits

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NOVICE USERS



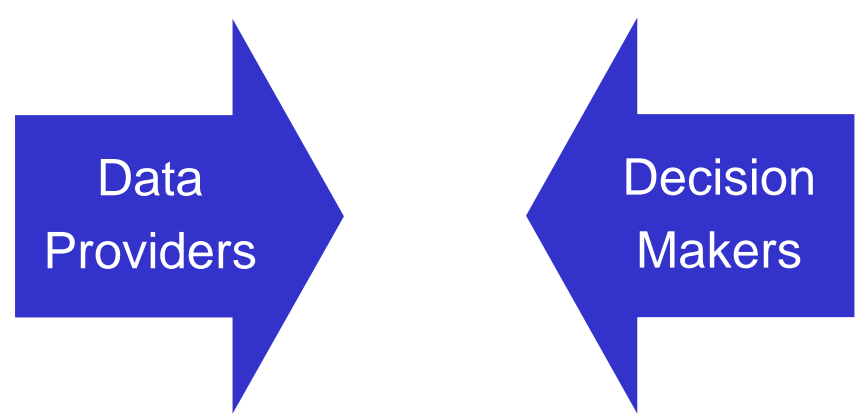
The “Novice” User

- science-to-policy analysts, decision makers, public officials, & the public
- working/interested in specific issues that fall within one or more SBAs
- looking for any and all observational data relevant to their issues
- 1st, want to **easily** find it and **VIEW it**
- 2nd, examine the quality-does it fit?



? *What is User Engagement in GEO?*

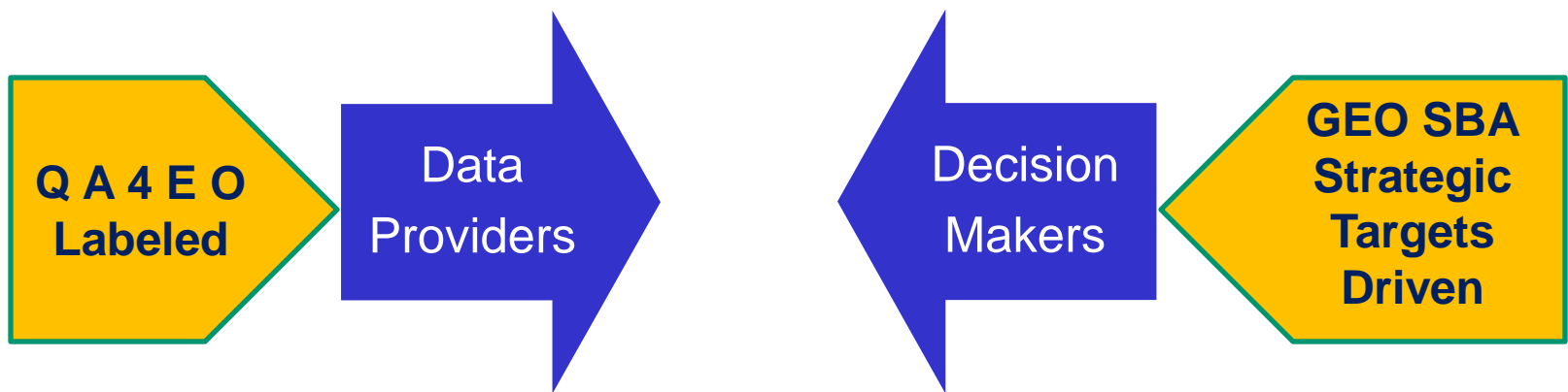
- It **starts** with the face-to-face engagement by Data Providers with potential Users (often decision-makers) to learn about what they do and what from GEOSS could help them do it better.





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GEO SBA Strategic Targets

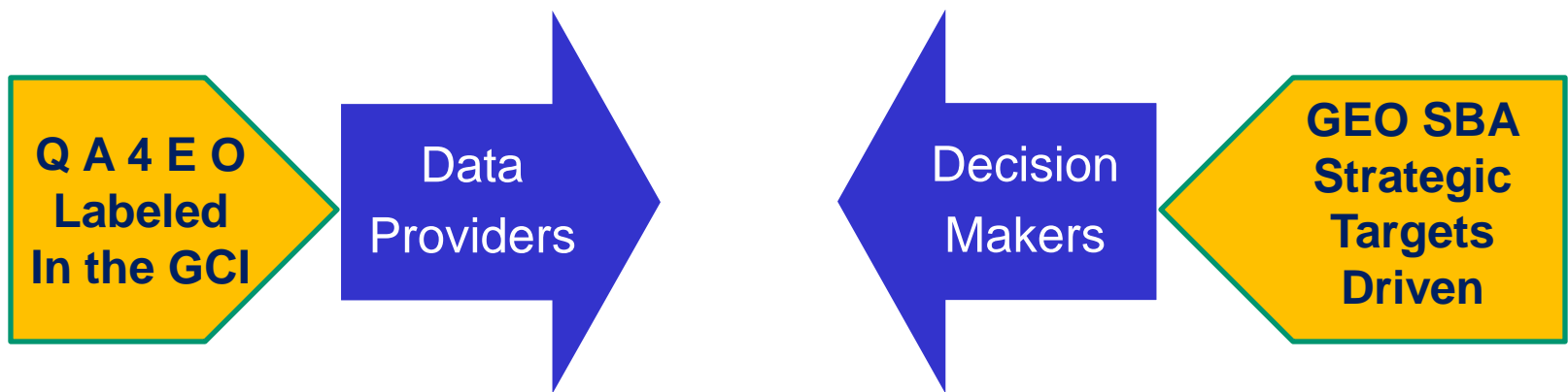
WATER -- Before 2015, GEO aims to:

- Produce comprehensive sets of data and information products to support decision-making for efficient management of the world's water resources, based on coordinated, sustained observations of the water cycle on multiple scales.



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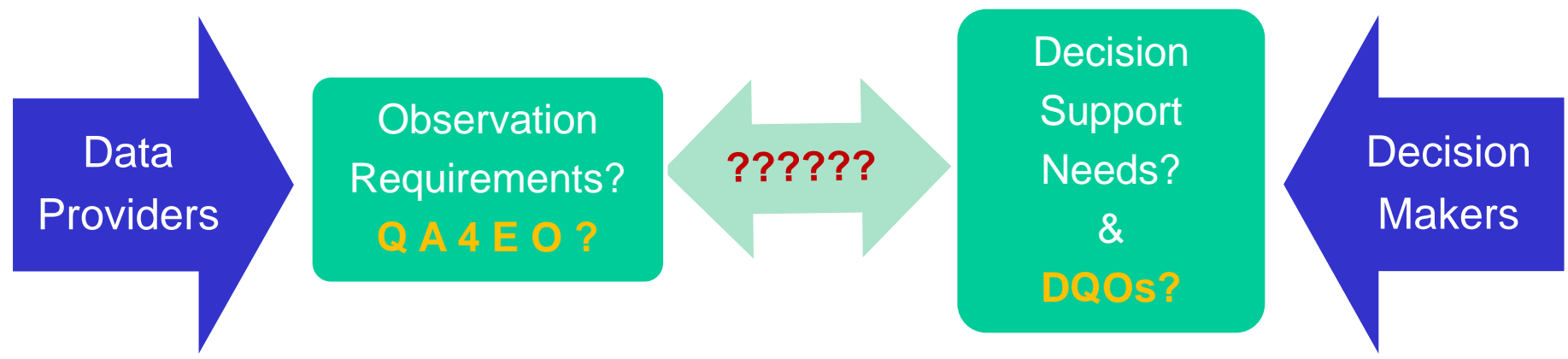
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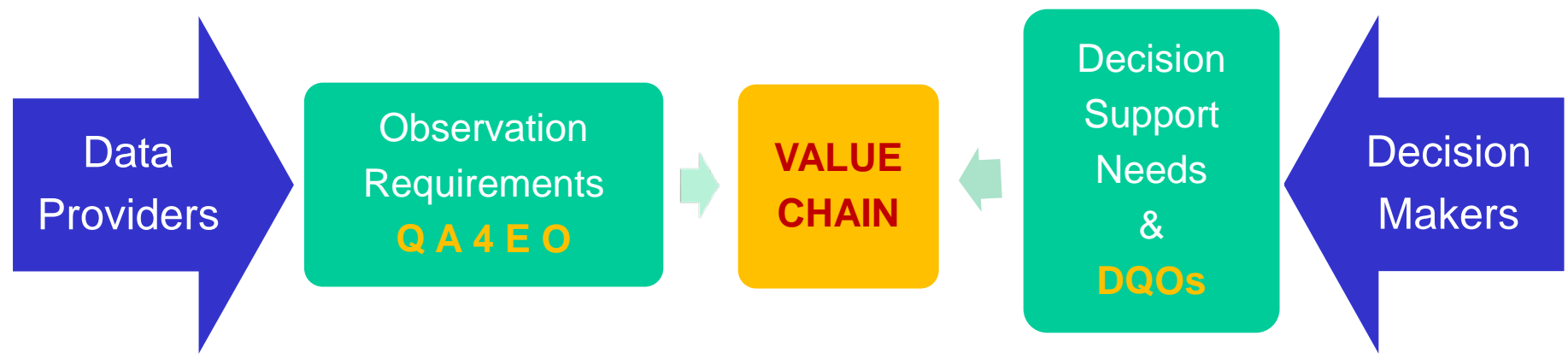
DQO = “Data Quality Objectives”

- Engage the Data Collectors and potential “primary Users” before collecting any data
- Ensure that the “Value Chain” is understood
- Determine from the Users the minimum quality that is required for the intended use
- Determine if the minimum quality can be achieved by the Data Collector



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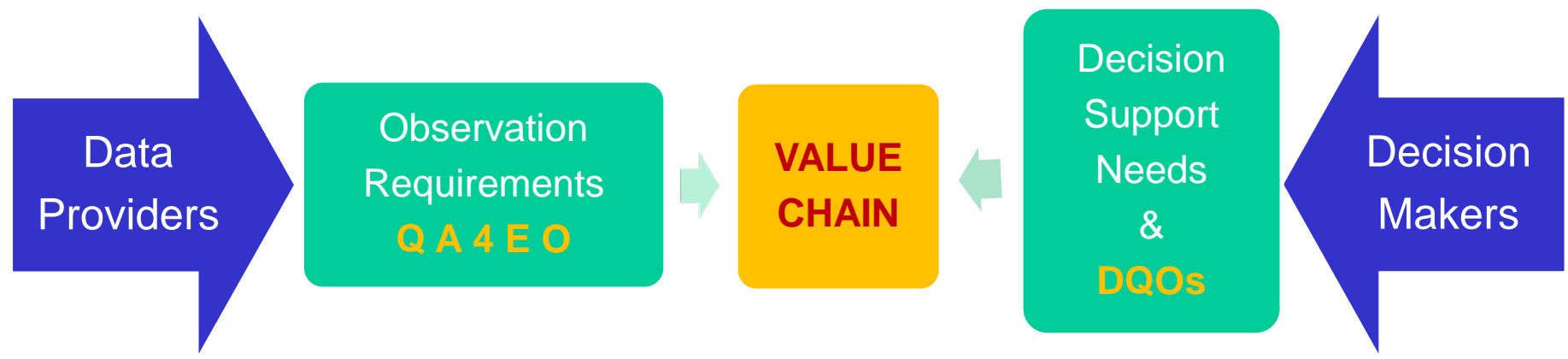
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- It ***starts*** with the face-to-face engagement by Data Providers with potential Users (often decision-makers) to learn about what they do and what from GEOSS could help them do it better.
- It ***ends*** with feedback from the Users on whether the science or decision-making improved and ***the anticipated impacts and societal benefits were realized.***

Water Strategic Targets: Information Needed

This will be achieved through:

- water resources in terms of quantitative availability and water quality;
- integrated data products that cover different spatial and temporal scales, combining *in-situ measurements with* satellite data.
- water cycle data sets and related products,
- local, regional and global hydrological risk assessment, prediction and management;

Water Strategic Targets: Measurable Outcomes

This will be demonstrated by:

- An operationalized and sustained global network of *in-situ observation sites*.
- Increased availability of data and information products and services for monitoring changes in the water cycle, including clouds & precipitation, and measuring quantity and quality of surface and groundwater.
- “Watershed” and human health indicators.



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MEETING STRATEGIC TARGETS ↓ ***WITH A USER DRIVEN GEO***

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Quality Assurance at EPA

1970 – EPA is created,

1979 – embraces QA in its collection of data,

1982 – introduces the term “Data Quality Objectives” into research data collection,

1993 – introduces EPA-wide QA audits

1996 – combines QA with information mgmt

2000’s – introduces the broad Quality Policy



EPA QA Documents

http://www.epa.gov/quality/qa_docs.html#EPArqts

Look at the Section on “General Guidance”

Guidance on Systematic Planning using the Data Quality Objectives Process (**QA/G-4**)

Case Studies: Hazardous Waste (**QA/CS-1, QA/G-4HW**) and Air Quality (**QA/CS-2**)

Decision Error Feasibility Trials (DEFT) Software (**QA/G-4D**)

Guidance for Geospatial Data Quality Assurance Project Plans (**QA/G-5G**)

Guidance on Choosing a Sampling Design for Environmental Data Collection (**QA/G-5S**)

Guidance on Environmental Data Verification and Data Validation (**QA/G-8**)

THE DQO PROCESS

Step 1. State the Problem.

Define the problem that necessitates the study;
identify the planning team, examine budget, schedule



Step 2. Identify the Goal of the Study.

State how environmental data will be used in meeting objectives and solving the problem, identify study questions, define alternative outcomes



Step 3. Identify Information Inputs.

Identify data & information needed to answer study questions.



Step 4. Define the Boundaries of the Study

Specify the target population & characteristics of interest,
define spatial & temporal limits, scale of inference



Step 5. Develop the Analytic Approach.

Define the parameter of interest, specify the type of inference, and develop the logic for drawing conclusions from findings

*Decision making
(hypothesis testing)*

*Estimation and other
analytic approaches*

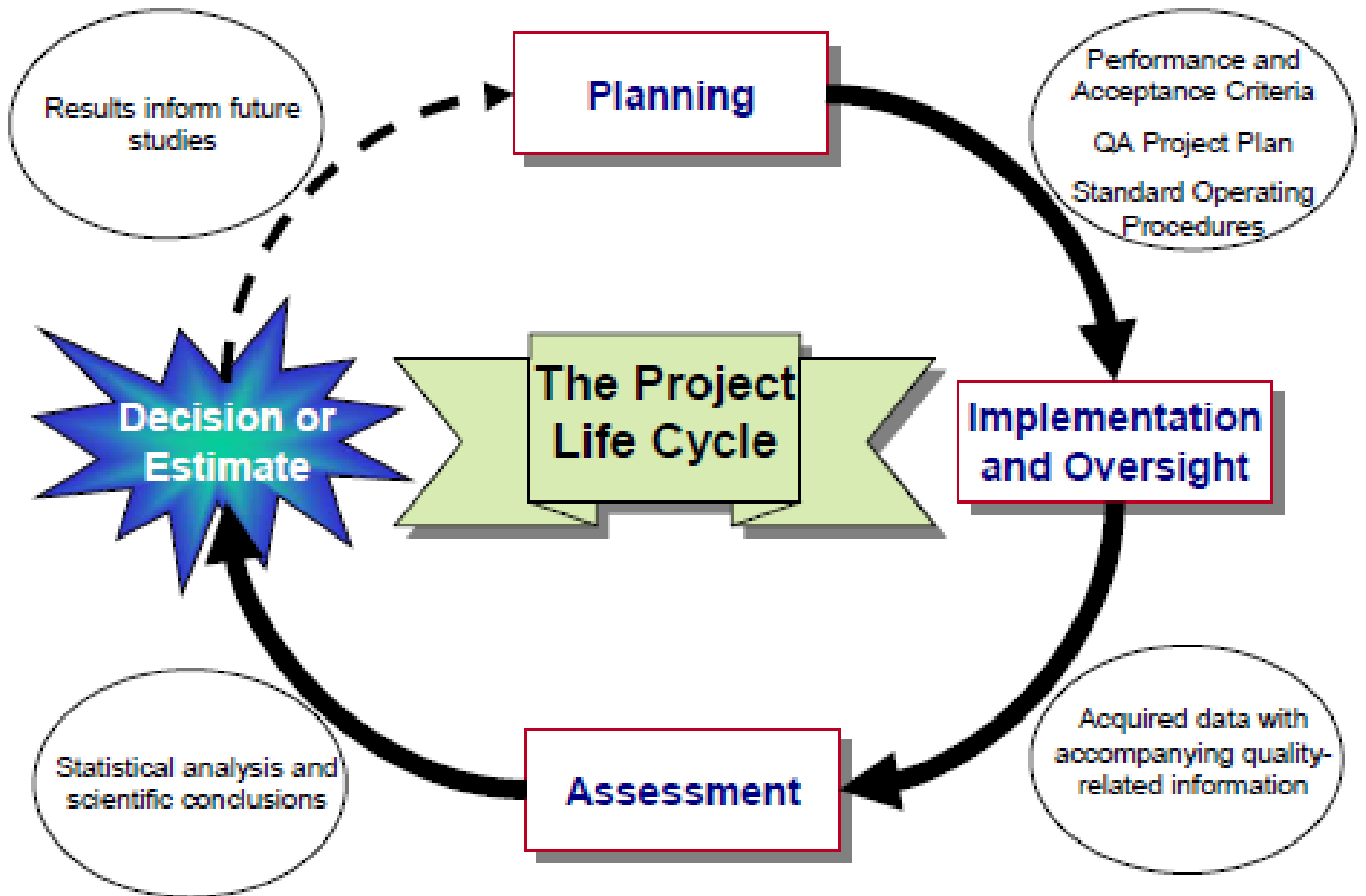
Step 6. Specify Performance or Acceptance Criteria

Specify probability limits for false rejection and false acceptance decision errors

Develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use

Step 7. Develop the Plan for Obtaining Data

Select the resource-effective sampling and analysis plan that meets the performance criteria





IN SUMMARY
