

SYSTEMS ANALYSIS & DESIGN

Information Gathering Techniques

Interactive & Unobtrusive methods — explained through
the 5W1H framework

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WHY IT MATTERS

The analyst's first real job

Before a single diagram is drawn, the system analyst must understand the organization: its people, processes, data, and problems. Information gathering (requirements elicitation) is how that understanding is built.

Get this wrong and every later step — DFD, UML, database, code — inherits the mistake.



Accuracy

Requirements reflect what users really need, not what we assume



Completeness

Nothing critical is missed across departments and roles



Evidence

Decisions rest on facts and data, not opinion alone

Garbage in, garbage out

The quality of the final system can never exceed the quality of the information gathered at the start.

THE FRAMEWORK

The 5W1H lens for requirements

For every process or requirement we examine, six simple questions expose what we still don't know.

W WHO

Which stakeholders, users, and actors are involved?

W WHAT

What data, processes, and functions does the system handle?

W WHERE

Where does the work happen — units, locations, systems?

W WHEN

When do events occur — timing, frequency, deadlines?

W WHY

Why is it needed — goals, problems, business rules?

H HOW

How is the work actually performed, step by step?

OVERVIEW

Two families of techniques

Interactive

You engage people directly and ask them.

- 1 Interview**
One-to-one, in-depth Q&A
- 2 JAD**
Facilitated group workshop
- 3 Questionnaire**
Written survey at scale

Unobtrusive

You study evidence without disturbing people.

- 1 Sampling**
Examine a representative subset
- 2 Document Investigation**
Analyze existing records & forms
- 3 Statistical Analysis**
Study quantitative hard data

PART 01

Interactive Methods

Interview · JAD · Questionnaire — gathering information by engaging people directly.

Interview

WHAT IT IS

A one-to-one conversation in which the analyst asks a stakeholder structured or open questions to gather rich, detailed insight. It allows immediate follow-up and clarification.

HOW TO RUN IT

- 1 Identify the right interviewee and prepare an objective
- 2 Design questions — open for depth, closed for facts
- 3 Conduct: build rapport, listen, probe, take notes
- 4 Summarize and confirm findings with the interviewee

THE 5W1H

- | | |
|--------------|--|
| WHO | Analyst with a key user, manager, or expert |
| WHAT | Detailed needs, rules, pain points, exceptions |
| WHERE | The interviewee's workplace or a meeting room |
| WHEN | Early analysis; when depth or clarification is needed |
| WHY | Rich, qualitative detail; can adapt in real time |
| HOW | Structured or unstructured Q&A, recorded & followed up |

Joint Application Development (JAD)

WHAT IT IS

A *structured*, facilitated workshop that brings users, analysts, and decision-makers into one room to define requirements together and reach consensus quickly.

HOW TO RUN IT

- 1 Appoint a neutral facilitator and a scribe
- 2 Gather the right mix of users, sponsors, analysts
- 3 Run focused sessions with an agenda & ground rules
- 4 Document decisions live and validate before closing

THE 5W1H

- | | |
|--------------|--|
| WHO | Facilitator, scribe, sponsor, users, analysts |
| WHAT | Shared, agreed requirements across departments |
| WHERE | A dedicated workshop room, often off-site |
| WHEN | When many stakeholders must align fast |
| WHY | Cuts elapsed time; resolves conflicts on the spot |
| HOW | Facilitated group sessions with live documentation |

Questionnaire

WHAT IT IS

A set of written questions distributed to a large or dispersed group of respondents. Ideal for collecting standardized, comparable input at low cost.

HOW TO RUN IT

- 1 Define what you need to learn and from whom
- 2 Write clear items — closed (scales) and a few open
- 3 Pilot-test with a few users, then refine
- 4 Distribute, collect, and analyze the responses

THE 5W1H

- | | |
|--------------|---|
| WHO | Analyst designs; many users respond |
| WHAT | Broad opinions, frequencies, satisfaction, facts |
| WHERE | Anywhere — paper or online forms |
| WHEN | Large, spread-out audiences; need breadth |
| WHY | Cheap, fast, scalable, easy to quantify |
| HOW | Open & closed questions, Likert scales, then analysis |

PART 02

Unobtrusive Methods

Sampling · Document Investigation · Statistical Analysis — gathering facts without disturbing people.

Sampling

WHAT IT IS

Selecting and examining a representative subset of a large population of data, documents, or people — so conclusions can be drawn without inspecting everything.

HOW TO RUN IT

- 1 Define the population and what you want to measure
- 2 Choose a method: random, systematic, stratified
- 3 Determine an adequate sample size
- 4 Examine the sample and generalize with care

THE 5W1H

- | | |
|--------------|--|
| WHO | Analyst selects and reviews the sample |
| WHAT | Patterns, error rates, typical vs. exception cases |
| WHERE | Transaction records, forms, log files |
| WHEN | The full population is too large to examine |
| WHY | Saves time & cost while staying representative |
| HOW | Random / systematic / stratified selection |

Document Investigation

WHAT IT IS

Examining an organization's existing documents — forms, reports, manuals, procedures, and records — to learn how the current system really works.

HOW TO RUN IT

- 1 Collect forms, reports, policies, org charts
- 2 Trace how data enters, moves, and is stored
- 3 Compare documented procedures with actual practice
- 4 Note gaps, redundancies, and bottlenecks

THE 5W1H

- | | |
|--------------|---|
| WHO | Analyst reviews organizational artifacts |
| WHAT | Actual data, flows, rules, and structures |
| WHERE | Files, manuals, forms, databases, archives |
| WHEN | To understand the current system & its history |
| WHY | Objective and factual; reveals real vs. described |
| HOW | Collect, read, and analyze existing documents |

Statistical Analysis

WHAT IT IS

Analyzing quantitative 'hard data' the organization already keeps — volumes, frequencies, performance metrics — to quantify workload and spot trends.

HOW TO RUN IT

- 1 Identify relevant metrics and data sources
- 2 Compute volumes, rates, ratios, and trends
- 3 Look for peaks, bottlenecks, and outliers
- 4 Turn findings into measurable requirements

THE 5W1H

- | | |
|-------|--|
| WHO | Analyst working with organizational data |
| WHAT | Volumes, frequencies, performance, workloads |
| WHERE | Reports, transaction logs, KPIs, dashboards |
| WHEN | To size the system and justify decisions |
| WHY | Evidence-based; exposes scale and patterns |
| HOW | Compute rates & trends from existing hard data |

PUTTING IT TOGETHER

Choosing the right technique

No single method is enough. Strong analysis triangulates — what people say (interactive) checked against what the evidence shows (unobtrusive).

Technique	Family	Data type	Reach	Best when...
Interview	Interactive	Qualitative	One person	You need depth & clarification
JAD	Interactive	Consensus	Group	Many stakeholders must align fast
Questionnaire	Interactive	Quantitative	Many / dispersed	You need broad input cheaply
Sampling	Unobtrusive	Factual subset	Representative	The population is too large
Document Investigation	Unobtrusive	Factual	Records	Understanding the current system
Statistical Analysis	Unobtrusive	Quantitative	Aggregate	Quantifying volume & trends

Rule of thumb: start unobtrusive to learn the terrain, then interview to fill the gaps.

KEY TAKEAWAYS

What to remember

1

Ask the six questions

5W1H — Who, What, Where, When, Why, How — drives every technique.

2

Two complementary families

Interactive engages people; unobtrusive studies evidence.

3

Match method to purpose

Depth → interview/JAD · breadth → questionnaire · facts → documents & data.

4

Always triangulate

Cross-check what people say against what the data shows.