



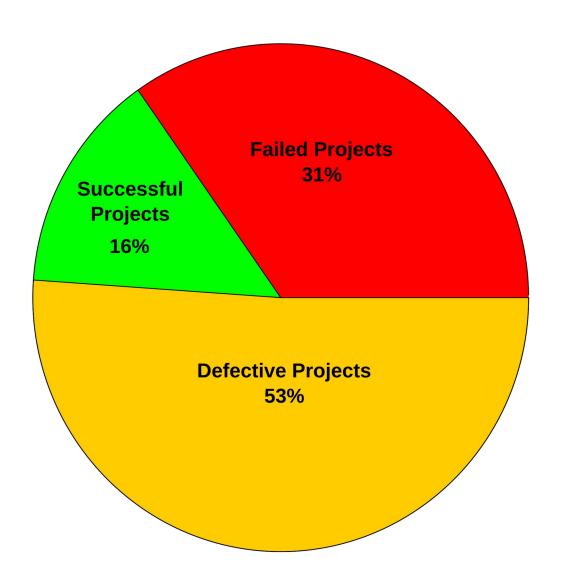
Everything really interesting that happens in software projects eventually comes down to people.

James Bach

Software development is fundamentally a human activity. Forget that and you are lost.

Bjarne Stroustrup Inventor of C++r

# The Chaos Report



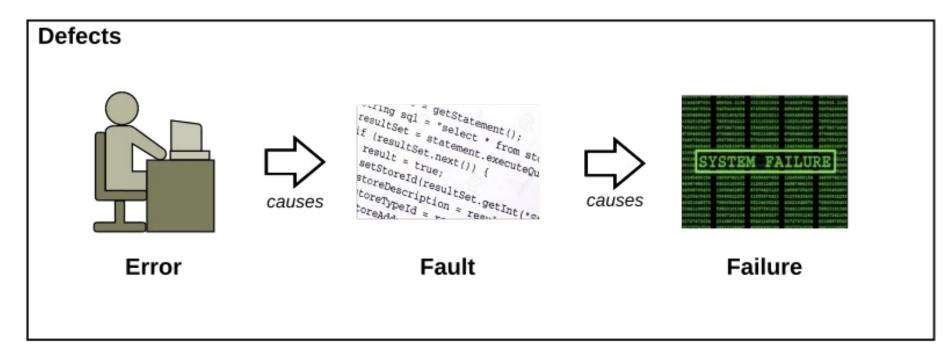
# The Chaos Report – Factor Analysis

Failure Factors	%
Incomplete Requirements	13
Lack of User Involvement	12
Lack of Resources	11
Unrealistic Expectations	10
Changing Requirements & Specs	9
Lack of Management Support	9
Lack of Planning	8
Didn't Need It Any Longer	8
Lack of IT Management	6
Technological Illiteracy	4
Other	10

Defective Factors	%
Lack of User Involvement	13
Incomplete Requirements & Specs	12
Changing Requirements & Specs	12
Lack of Executive Support	8
Technology Incompetence	7
Lack of Resources	6
Unrealistic Expectations	6
Unclear Objectives	5
Unrealistic Time Frames	4
New Technology	4
Other	23

Success Factors	%
User Involvement	16
Executive Management Support	14
Clear Statement of Requirements	13
Proper Planning	10
Realistic Expectations	8
Smaller Project Milestones	8
Competent Staff	7
Ownership	5
Clear Vision and Objectives	3
Hard Working and Focused Staff	2
Other	13

#### **Root Causes of Defects**



Error: a human action that eventually leads to a fault

Fault: an incorrect step in building the system at any point that results in failure

Failure: any place the software does not perform as required

**Defect:** a generic term for any of the above

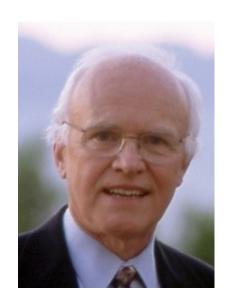
### The Standard BA Process

- Determining why we are doing the project. (Establishing project scope)
- Determining who has requirements (who the stakeholders are)
- Eliciting the requirements from stakeholders
- Analyzing the initial requirements to produce quality requirements
- Helping stakeholders modify their requirements where necessary
- Identifying potential solutions
- Producing a specification to describe the solution to be built
- Helping stakeholders modify their requirements where necessary

[requirements gathering] is frustrating, full of complex interpersonal relationships, indefinite and difficult.

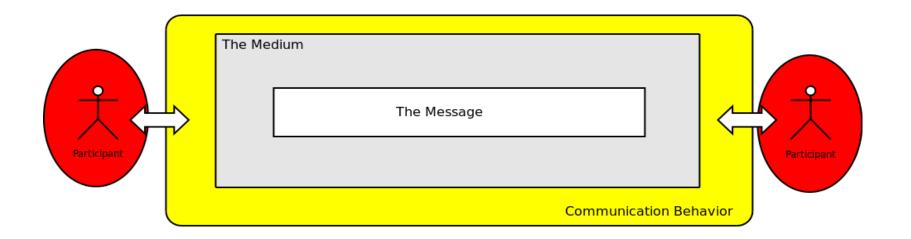
In a word, it is fascinating.

Once you're hooked, the old easy pleasures of building a system are never again enough to satisfy you.

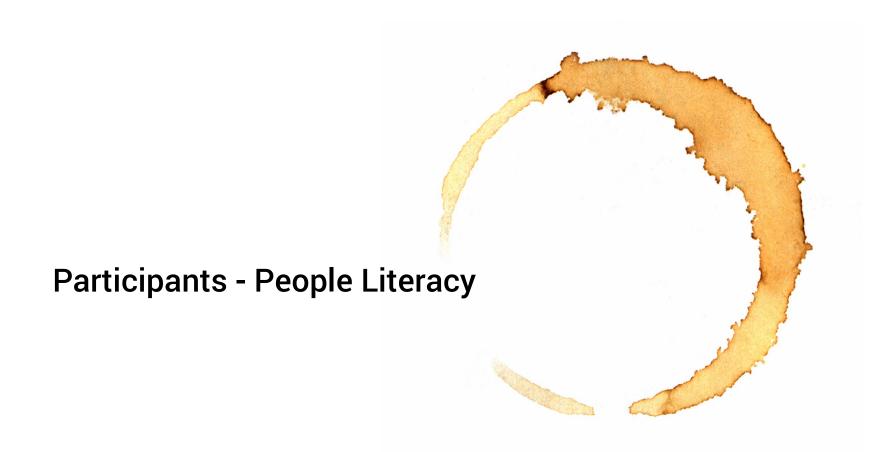


Tom DeMarco

# Modeling the Communication Act



- Message: What is being communicated
- Medium: The way the message is "packaged"
- Communication Behaviour: How the message is delivered
- Participants: The intentions of the sender and the interpretation of the message by the receiver



If you talk to a man in a language he understands, that goes to his head. If you talk to him in his language, that goes to his heart.

Nelson Mandela

# People Literacy

- The ability to adopt another person's point of view
  - To understand their style of acting, thinking and feeling in a given environment
  - To understand how they interpret information (their models)
  - To identify their motivations within a specific environment
  - To understand their perceptions of that environment
- The ability to communicate with others that
  - "Speaks their language" so that they will listen
  - Gets our messages across in a way that produces results

### **Fundamental Axioms**

- All actions are self-motivated even the choice to take no action
- We cannot motivate others
  - But we can create an environment that will motivate people to action
  - People do things for their reasons, not our reasons.
- If you understand what motivates me better than I understand what motivates you, then you control the communications between us
- If you understand what motivates me better then I do, then you can control me
- My environment is what I perceive it to be, not necessarily what is objectively there

If we spoke a different language, we would perceive a somewhat different world.

Ludwig Wittgenstein

# Behavioural Style

- A pattern preferred behaviours used to analyze and respond to a stimulus
  - People often display different styles in different environments.
  - Styles are not fixed, they are learned from life experiences
- Our natural style in an environment is one that:
  - Takes the least amount of energy for us to manifest, and can actually energize us as we manifest it.
  - We tend to go to when we are tired or under stress.
  - Tends to be consistent with our own personal beliefs and opinions.
  - Is the one we tend to display when we are "being ourselves."
  - As we mature, we may find our preferred styles changing as a result of our life experiences.

### The Two Drivers

Motivated to make the environment conform to them

Change Oriented

Behavioural Pattern: Tendency to active positive actions in a favourable environment

Behavioural Pattern: Tendency to active positive actions in an antagonistic environment

### People Oriented

Tends to see the environment as favourable

Behavioural Pattern: Tendency to passivity in a favourable environment

Task Oriented

Tends to see the environment as antagonistic

Behavioural Pattern: Cautious response to reduce antagonistic factors in an unfavourable environment

**Stability Oriented** 

Motivated to conform to environment – Focus on "how" and "why"

### Change Oriented

**Influencing:** chooses to effect change in their environment by working through and with other people. Very attentive to other peoples' needs and goals – often looks for the "win-win." Not interested in the "how" type issues.

**Dominant:** chooses to change the environment through direct action with low importance placed on "correct actions." Focus is on the bottom line, directing others to get the job done. Direct and blunt but have no problems making decisions, even unpopular ones.

### **People Oriented**

Task Oriented

**Stable:** interested in the "why" and "how." Interested in maintaining personal stability and stability in the environment. Reluctant to take actions before knowing how to do things or understanding the impact on their environment, especially their personal and professional relationships.

**Compliant:** concerned with the constraints of the environment and quality standards. Chooses actions that are compliant to their own standards. Concerned about doing things correctly and accurately. Reluctant to accept change unless the "whys" are acceptable to their standards.

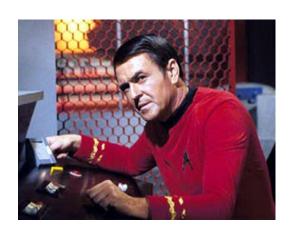
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**Change Oriented** 



People Oriented Task Oriented



**Stability Oriented** 



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Stability Oriented

# Working with Dominants

- Be clear, specific, brief and to the point use communication time efficiently
- Stick to business; come prepared with all requirements, objectives and support material in a well-organized package
- Present the facts logically and plan your interaction efficiently and concisely
- Stick to factual and "what" questions
- Provide key alternatives and present the choices they can decide among
- Provide facts and figures about the probability of success and effectiveness of the options
- If you disagree, take issue with the facts, not the person
- Motivate and persuade by referring to objectives and results
- Support, maintain and use discretion
- Always end the communication graciously

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Stability Oriented

# Working with Influencers

- Plan an interaction that supports their dreams, feelings and intuitions; use time to be stimulating with enough time to be sociable yet fast-moving
- Allow time for relating and socializing
- Talk about people and their goals; opinions they find stimulating
- Don't deal with extensive details; put them in writing; pin them down to modes of action
- Ask for their opinions and ideas regarding people
- Provide ideas and suggestions for implementing action
- Provide evidence for your statements in the form of testimonials from people they see as important or prominent
- Offer special, immediate and extra incentives for their willingness to take risks
- Continue supporting the relationship in a casual and informal way

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Stability Oriented

# Working with Stables

- Always break the ice and spend time being agreeable and to reaffirm a personal commitment
- Show sincere interest in them as people; find areas of common involvement and be candid and open
- Patiently draw out personal goals and work with them to help them achieve these goals; listen and be responsive
- Present your case softly and in a non-threatening manner, use lots of "how" questions to draw out their opinions
- If they agree too easily, probe for areas of disagreement; if you disagree look at personal reasons or hurt feelings as a possible cause
- Keep things informal but organized
- Identify ways to minimize risk if they are balking at change and provide assurances that the results of change will be positive
- Backup personal assurances with concrete guarantees, with individual contributions in writing

### Change Oriented

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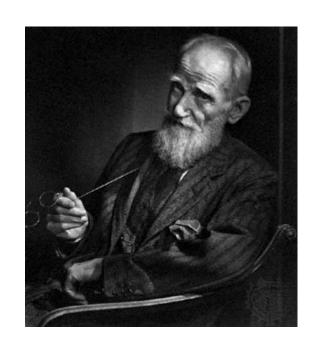
Stability Oriented

# Working with Compliants

- Know your case in advance and be accurate. Never try to con a Compliant
- Approach then in a direct but laid-back manner and stick to business.
- Use a methodical approach with a fair evaluation of the pros and cons of your positions.
- Present specifics and be sure you deliver on what you say you will.
- Draw up step by step timelines for implementing action with them and assure them that there won't be any surprises.
- If you agree, follow through and if you disagree, make an organized presentation of your position and ask them for input.
- Be prepared to verify your statements and to give the time to verify your facts. That means be accurate and realistic in your statements.
- Back up your claims with solid, tangible and practical evidence.
- Don't make guarantees over the long term without providing "what if" options.

The greatest problem in communication is the illusion that it has been accomplished.

George Bernard Shaw

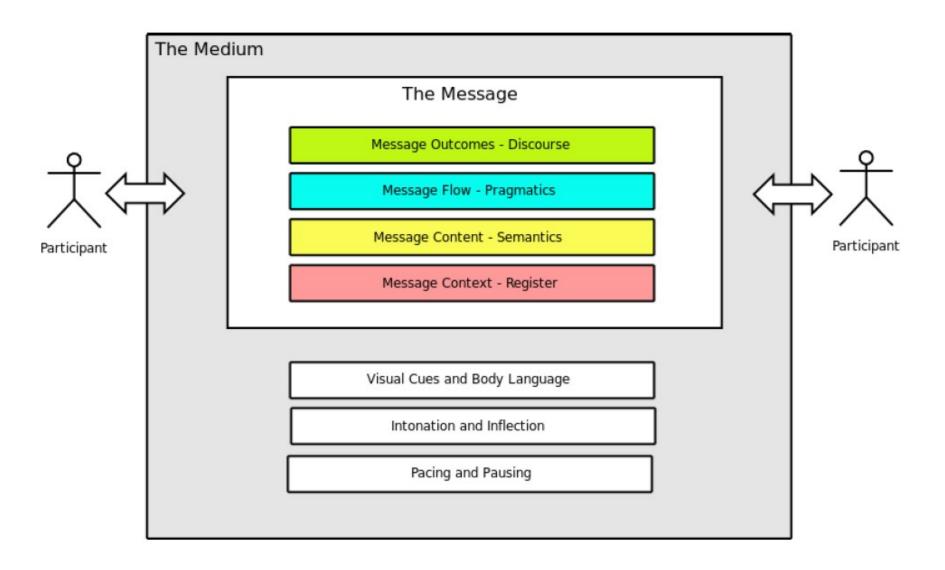




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Nelson Mandela

### Structure of a Communication



### **Discourse Modes**

- A discourse is a way of structuring and presenting a message to get a certain outcome
- The main discourse modes are:
  - *Narrative*: About specific people, events and things. The flow of the narrative is tied to the progression of the story.
  - *Description*: About events and things. The flow of the discourse moves spatially through the scene being described.
  - Report: About specific events and things and their relationships. The flow of the discourse follows logical sequences described from "speech time."
  - *Information*: General descriptions of relationships. Flow of the discourse is through a series of topics and is atemporal.
  - Argument: Presentation of general facts, propositions and relationships to convince or persuade. The flow of the discourse is through the logical steps of the arguments.

# Pragmatics and Message Flow

- The pragmatics of message is how the various "thoughts" or "topics" of the message are structured so that they can be understood by the receiver of the communication
  - Poor pragmatics in a message usually results in the listener wondering "What is that person talking about anyway?"
- The basic rules of pragmatics are:
  - Talk about one topic at a time.
  - If you switch topics, let the listener know.
  - If you deviate from the expected flow of the discourse, let the listener know.
  - Follow the rules of flow for the discourse mode you are using.
  - Backtrack and try again if the listener does not understand.

# Why Topic Flow is Important

- The person that controls the flow of topics controls the communication.
- It is possible to subvert the normal flow of control over the flow of topics.
  - An effective communications skill is learning how to prevent someone else from hijacking a communication by being able to identify and block these subversions.
- The most effective way of controlling a topic flow is by asking a question.
  - Questions are used to introduce new topics or return to old topics.
  - The social context of the conversation makes questions very powerful.

# Discourse Iconicity

- The distance between two things in discourse mirrors the actual distance between them
  - Distance is measured in terms of logical connectedness, or their separation in time or space.

#### Examples

John when to the movies and Mary went to the movies. John and Mary went to the movies.

I cooked a steak. I ate it.

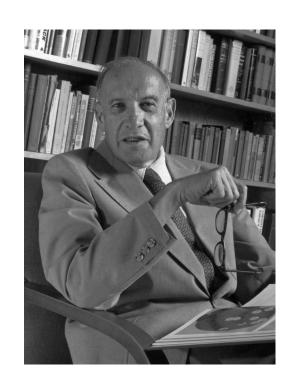
I cooked and ate a steak.

I saw a horse today and I saw a wagon.

I saw a horse and wagon today.

The most important thing in communication is to hear what isn't being said.

Peter Drucker



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I cooked a steak. I ate it.

I cooked and ate a steak.

I saw a horse today and I saw a wagon.

I saw a horse and wagon today.

Paul was fired today. We lost the Bowman account.

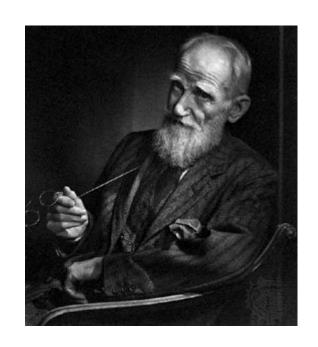
We lost the Bowman account today. Paul has been let go.

# Why Iconicity is Important

- Wow a discourse is structured adds meaning to the semantics of the words and sentences.
  - People use these discourse elements to add "unstated" implications and meanings to their messages.
- it can be used to make "deniable assertions"
  - Because these deniable assertions are not associated with a specific sentence or statement, it is possible to innocently state afterwards "But I never said that!"
- Understanding how these pragmatic mechanisms works allow you to:
  - Identify when these are being used on you.
  - Be able to challenge someone in order to force them to assert exactly what they imply and
  - Prevent you from implying something you don't mean.

England and America are two countries separated by a common language.

George Bernard Shaw



# Social Register

- Two primary of social information encoded into every discourse.
- The level of social formality.
  - The perceived social distance between the participants.
- The axis of solidarity and power.
  - Describes either a bond between the two participants, or a subservient relationship.
- In every communication, this social information is used to enhance or modify the effectiveness of the communication.

# Linguistic Register

- A register is a form of a language that is used in a specific social context.
  - Every aspect of a language may vary within a register:
    - Pronunciation, word choice, sentence structure, discourse forms, grammar, inflections, pitch, intonation patterns, pacing etc
- A common register is the gender register.
  - English has a special register that only women use.
  - In some languages, women actually speak a distinct dialect among themselves.
- Jargon and slang are also linguistic registers
- Using a register you should not (axis of power and solidarity) is often an insult

# The Hymes Universal

- Social distance is iconically represented in a message.
  - The length of the message mirrors the amount of social distance.
  - The length of the message may be represented by:
    - The pacing and time to deliver the message.
    - The length and complexity of the words

*Isn*'t versus *is not Car* versus *automobile*.

• The complexity of the grammatical constructions and number of words

John submitted the report.

The report has been submitted by John.

The report has been properly and duly submitted by an individual identified as John.

You can use the Hymes Universal to modify the social distance as well.

### **Semantics**

- The semantics of a communication refers to what the communication means.
- What we say can mean something other than what is stated or can imply things without saying them.
- Fact 1. Meanings of words interact with pragmatics to create different kinds of messages.

He stood up. He stood himself up. He stood up himself.

Or

He went shopping for a car.

He went car shopping.

### **Semantics**

- Fact 2: There are no synonyms.
  - For every pair of synonyms, there is always at least one place where you could use one of the pair but not the other.
- Fact 3: Word meanings are not fixed.
  - All of our word meanings are idiosyncratic.
  - We have a set of more or less common meanings that we more or less agree on.
  - But my meanings are not your meanings.
  - Effective communication means that we are aware of the imprecision and variation in the meanings of the words we hear and use.

### Media Elements

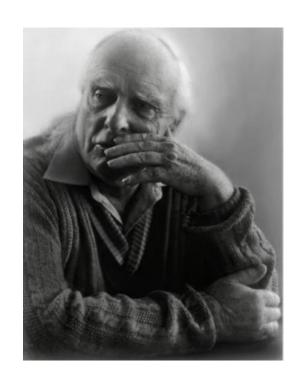
- Intonation tonal contour of an utterance
- Inflection emphasis on the individual word groups within a sentence
- Pacing speed of utterance
- Gestures
  - Add a visual component to the communication.
  - Can be stylized and register specific
  - Can be idiocyncratic
- Body Language
  - Can only be accurately interpreted if you know the person
  - Is usually idiosyncratic and cultural (along different social dimensions)
  - Only universals are basic facial expressions

# Recall The Speech Contact

We might then formulate a rough general principle which participants will be expected to observe, namely:

Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.

One might label this the COOPERATIVE PRINCIPLE.



## **Implicature**

- The speech contract allows us to understand implicature or cases where what a speaker means differs from the meaning of the message used by the speaker.
- These are often called indirect speech acts.

"I'm not going to Bob's party. I have to work."

"Bob must be doing well at his new job. He hasn't been arrested yet."

Speaker A: "Bob doesn't seem to have a girlfriend these days"

Speaker B: "He does spend a lot of time in Montreal."

• A powerful example of implicature is the fact that when we are asked a question we either have to answer it or explicitly state that we will not answer it – ignoring it is not an option.

# **Implicature**

 Implicature is a mechanism that is used to make communication more efficient.

Speaker A: I only have a quarter of a tank of gas.

Speaker B: There's a gas station a block from here.

- This implicature makes sense if A and B are in A car; it makes less sense if the two are taking on the phone.
- Implicature is the whole chain of unstated assertions that are assumed by two participants.
- Deliberately ignoring the speech contract is also a form of implicature.
  - John asks Mary if he did some thing wrong. Mary continues to stare at the TV screen in silence.
  - Mary asks her manager Sue if she thinks Mary got her promotion. Sue winks and says "You really shouldn't be asking."



### The Interview

Constantly talking isn't necessarily communicating.

Charles Kaufmann

### Formal Discourses



- Every communication has three phases:
  - *Initiation*: The terms of the speech contract are brought into play and the nature of the communication (discourse mode for example) is established.
  - *Dialog*: The actual communication.
  - Closing: The ending of the dialog and the completion of any loose ends that need to be tied up to fulfill the speech contract.

### The Initiation

- During the initiation, either party may reject the dialog (in most cases) which ends the communication.
- Basic speech contract and social contract ground rules are established:
  - What language we will use.
  - Physical parameters: location, time allocated.
  - Type of dialog or discourse.
  - The social distance between the participants and the establishment of any power or solidarity relationships.

### The Initiation

- One of the other functions of the initiation is to establish rapport.
  - One dimension of rapport is the degree of trust that is established between the parties.
  - Another dimension of rapport is the degree of intimacy that is allowed between the parties (in terms of how revealing the dialog should be)
  - Another dimension of rapport where either one or both participants adjust their behavioural styles to accommodate the other.

# The Dialog

- There are three main types of dialogs:
- Formal: These have a structure that is followed by both parties
  - Examples: Giving testimony, serving a customer in a restaurant, a wedding, a meeting.
  - The structure may be embodied in rules of procedure.
- Ritual: These have a structure that is informally known and, while there is no requirement to follow the structure, people tend to anyway.
  - Examples: Going on a date, asking for directions, asking your boss for something.
- **Informal**: These have no structure and are characterized by a free give and take the structure evolves with the dialog.

# The Closing

- All dialogs must have a closing.
  - A closing can be initiated by either party in most dialogs, but in some formal and ritual dialogs may be the prerogative of only the one who controls the dialog.
- Closings allow for a finalization of any social requirements.
  - Thanking the other person for their time.
  - Making arrangements for the next encounter.
- Closings may be the result of a formal dialog coming to an end.
  - In this case a closing formally frees the participant from their obligations.

"The witness is excused."

"Am I free to go now officer?"

"I have no further questions. We'll be in touch if you make the short list."

# Preparing for the Interview

- Identify
  - Define your ideal outcome and our minimal acceptable out come
  - Be prepared to end the interview if you can achieve your minimal acceptable out come
- Prepare
  - Create a list of questions you want answered
  - Think of this a script essential until you are experienced enough to improv
- Rehearse
  - Practice until you can focus on the answers and not the questions
  - Anticipate all the things that can go wrong and how you will respond
- Research the person or people who you will be interviewing

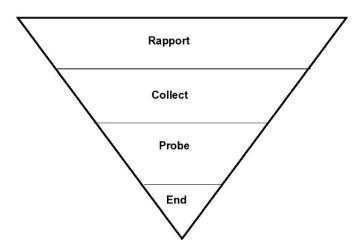
# Types of Questions

- Polar: Yes or No, True or False, etc
- Closed: Require a single answer, usually factual
- Open: Requires a description or narrative or other discourse
- Probing: Requires an opinion of statement of feelings
- Examples
  - Polar: "Are you the production manager?"
  - Closed: "How many people report to you?"
  - Open: "Can you walk me through your approvals process?"
  - Probing: "How do you feel about the proposed new computerization?"

# Conducting the Interview

- Always confirm the appointment in advance
- Provide and agenda if appropriate
- At the start of the interview
  - Confirm that it is still a "good time" and be prepared to postpone
  - Confirm the purpose of the interview
  - Review the outcomes that you are looking for
- Get agreement do not assume any off this!

# The Communication Triangle



- Rapport: Establish rapport to "open" the lines of communication.
- Collect: Using a variety of open ended and probing questions, we allow the client to explain their requirements.
- **Probe**: Using primarily polar and closed questions, we validate the responses in the previous section and drill down on specific issues.
- End: Bring closure to the interview by agreeing on what our next steps are.

### Mechanics of the Interview

- If you are talking, you are not collecting information.
  - Client should be talking 80% of the time
- Don't argue. Don't fawn. Avoid arguments or judgments
- Keep the client talking
  - Use silence and prompts

```
"How do you mean?"

"Can you give me an example?"

"Why do you think that is?"

"Does that reflect everyone's thinking? What do others think?"

"Can you explain that in a little more detail?"
```

- Don't do things that would annoy you if you were being interviewed
- STAY IN CONTROL!!!

### Mechanics of the Interview

- In the Probing stage
  - Feed back what you know for validation
  - Do not use cliches "So I hear you saying..." but be natural

    Let me go over the process you described to see if I got it right..
  - Follow up with probing questions
- In the End stage
  - Clients are more likely to open up if the interview is officially over
  - Be prepared to go "off the record"
  - Always incorporate an "door opener"

Is there anything we didn't cover today that you think we should have? Is there anything I didn't ask that I should have?
Is there anything else that is important that we didn't discuss

### Mechanics of the Interview

Always define a next action

I'll write up my notes and send them over for you to review

• Keep the door open for future contact

### Other Data Collection Methods

- Surveys
- Focus Groups
- JAD sessions



Man is not what he thinks he is, he is what he hides

André Malraux

# Working with Stakeholders

- There are a number reasons actually getting the requirements from stakeholders is difficult:
  - Different groups of users and stakeholders may have different or conflicting requirements for the same system.
  - Stakeholders may not know what their requirements are.
  - Stakeholders may think they know their requirements, but really don't.
  - Stakeholders may not trust us with their requirements.
  - Stakeholders may lie about their requirements.
  - Stakeholders may tell us what they think their requirements should be and not what they really are.
  - Stakeholders may not know how to describe their requirements.
  - Requirements may change at any time.

# Problems with New Technology

- Stakeholders do not understand how they could use the new technology
- They need to experience the technology first
- Predictions are always suspect because people have no experience to base their answers on.
- "I think there is a world market for maybe five computers." Thomas Watson, chairman of IBM, 1943
- "I have traveled the length and breadth of this country and talked with the best people, and I can assure you that data processing is a fad that won't last out the year." The editor in charge of business books for Prentice Hall, 1957
- "But what ... is it good for?" Engineer at the Advanced Computing Systems Division of IBM, 1968, commenting on the microchip.

# Requirements Gathering Activities

- Requirements gathering involves a number of activities:
- Eliciting: Getting the requirements from the stakeholder
- Validating: Reality checking "Are you sure this is what you want?"
- Organizing: Stakeholders don't organize their requirements for us.
- Documenting: Use the documentation that is easiest to understand and simplest to maintain.
- Verifying: Reality checking ourselves "Am I sure I understood the stakeholder correctly?"
- Maintaining and Updating: Change is inevitable (except from vending machines)
- Managing stakeholder expectations about requirements

- There are two fundamental processes that make up the requirements review.
- Robustness Analysis: Review, triage, correct, enhance and sometimes discard requirements based on how robust they are.
- Feature Baseline: Propose specific features to satisfy requirements and see what the ultimate design implications would be if those features were part of the specification.

- Ensures that inputs from four sources are all integrated and reviewed
  - The functionality described the various process requested or needed by the various stakeholders
  - Domain objects the use cases
  - Stakeholder functional and non-functional requirements.
  - System constraints and factors that will constrain the design
- Sanity check: ensure specification is correct and that doesn't require unreasonable or impossible system behaviour given the constraints that we have to work with
- Completeness check: make sure that the requirements address all the necessary alternate courses of action and that all of the stakeholder requirements are fulfilled

- Consistency Check: make sure that the various parts of the specification are not contradictory and that the same requirement is not fulfilled differently in different parts of the system.
- Exception Check: make sure that the system recovers appropriately from all the abuse cases and exceptions identified in the use cases and requirements, including time-out conditions.

Ivar Jacobson introduced the concept of robustness analysis to the world of OO in 1991. It involves analyzing the narrative text of your use cases and other requirements and synthesizing the requirements models into a single conceptual specification model. Doug Rosenberg

- The requirements review usually investigates the following areas.
- Verify that there is a complete and accurate description of each of the following:
  - The desired functionality expressed as a user capability.
  - A description of the input and output required for that capability
  - States and modes of the functionality.
  - Response time requirements
  - Interfaces for both the user and, where known, other systems.
- Ensure specifications are included for error detection and recovery, reliability, maintainability, performance, and accuracy.

- Ensure the traceability of requirements from higher level documents.
- Verify that the requirements provide a sufficient base for the software feature description.
- Verify that the requirements are measurable, consistent, and testable.

### The Feature Baseline

- Given the list of candidate requirements, we produce a baseline, which is:
  - "an itemized set or features, intended to be delivered in a specific version of the system"
- The baseline is described in terms of features that meet stakeholder requirements. The objective of the baseline is to create list of features that
  - Meet the most important requirements -- and is acceptable to the customer; and
  - Have a reasonable probability of success from a development perspective

# Planning the Baseline

- In order to establish the baseline, we assign planning values to the candidate feature
- Planning values can be assigned in a variety of ways -- there is no one right way to do it
- What is of critical importance is to actually assign planning values
- Planning values are computed by looking at a number of different criteria and determining how each contributes to the overall ranking or score for that feature

# Ranking Criteria

- Some common ranking criteria are:
  - Importance to system How important is the requirement that the feature satisfies?
  - Feature Status what is the current status of the feature and underlying requirement?
  - Difficulty to Implement What sort of resources and time would implementing this feature require?
  - Cost how much would adding this feature to the system cost?
  - Stability how likely is this feature to change?
  - Project risk is there any risk incurred to completing the project if we include this feature?
  - Obligatory are we required by law or contract to include this feature?

### **Evaluation**

- Ranking criteria should be developed as part of your project methodology
- Can incorporate other ranking schemes
  - Functional Point Analysis
  - Use Case Points Analysis
  - Agile Planning Poker and other Agile methods
  - Ranking is any sort of ordinal scale
    - Critical, important, useful and ancillary
    - Numeric 1-10
    - High, medium, low
- It is not the score that is important but the analysis that is done
- Each feature is assigned a final rank based on ALL the criteria



# **Useful Tools**

A fool with a tool is still a fool

Martin Fowler

### **User Stories and Processes**

- Robustness analysis for user stories
  - What people say they do may not be what the really do
  - Use direct observation with examples
- Diagram out the process or user story
- Use different examples (test cases) to exercise the logic
- Do the walkthroughs with the people that actually do the work
  - Don't rely on what managers tell you their people are doing
  - Don't do a walkthrough with a manager present
- Ask about the "What ifs"

# Working with the Domain Model

- People have idiosyncratic domain models
- A group of stakeholders will have a common model as it relates to the business
  - Develop the domain model with groups
  - CRC Cards are an excellent tool
- Use domain specific language for the scope of the project
  - Work with stakeholders to develop a clearly defined glossary where each term is
    - Testable a yes or no rule to determine if something meets the definition
    - Valid everyone agrees on what the term means
    - Verifiable there is a way to apply the yes or no rule
  - This can be done in conjunction with the CRC analysis

# **CRC Modeling**

