MTAT.03.306
Requirements Engineering

RE Framework

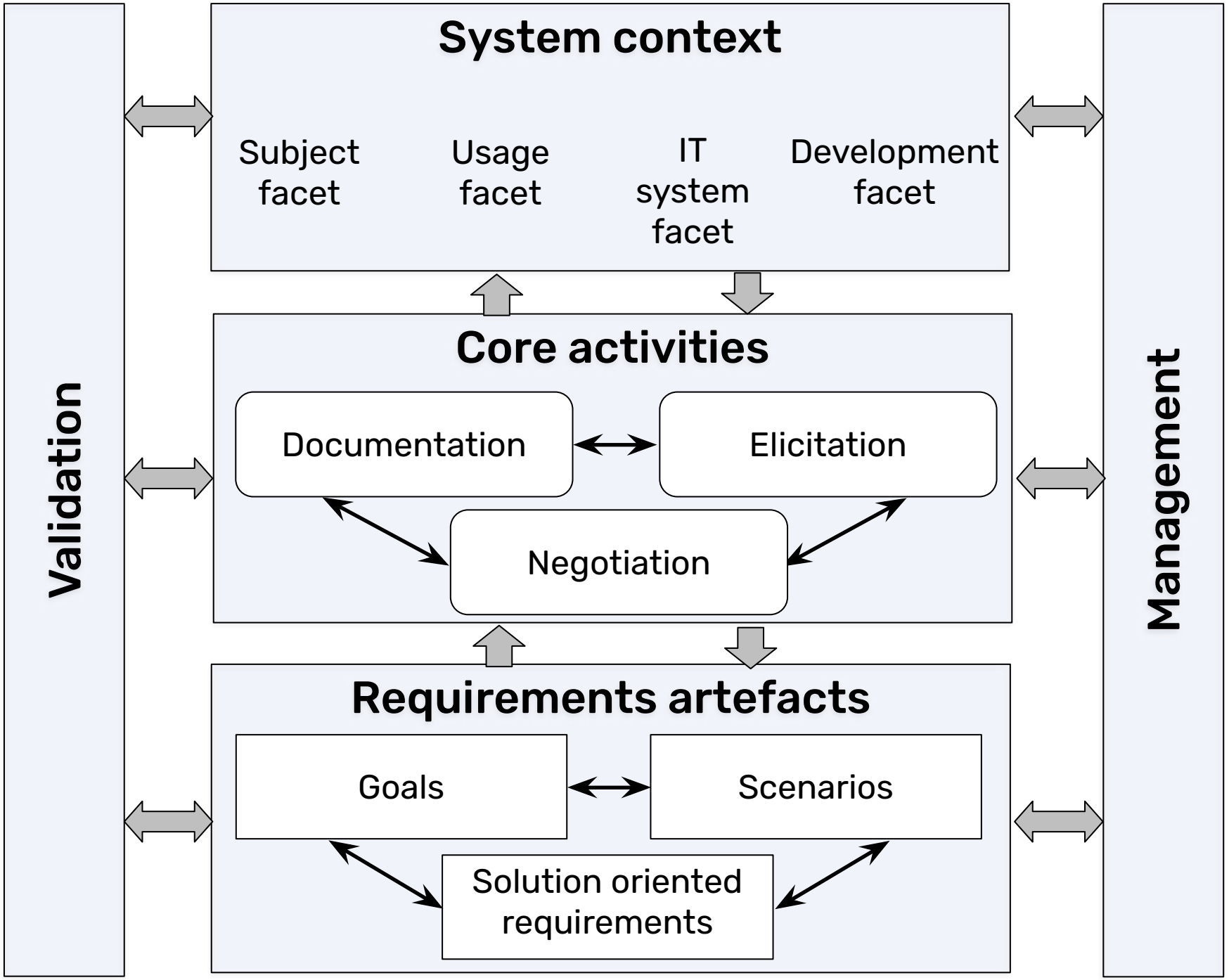
Elicitation

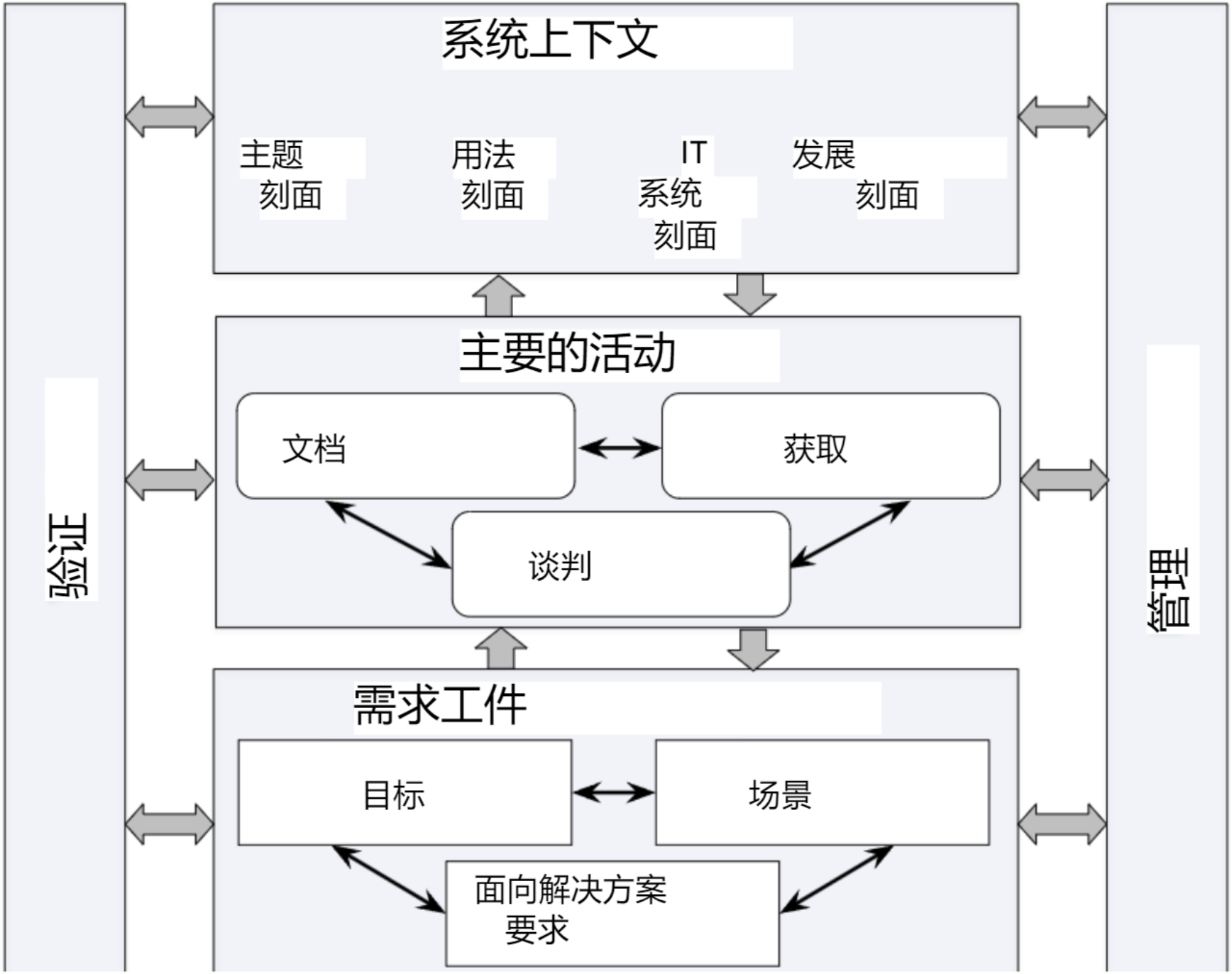
MTAT.03.306

需求工程

需求工程框架

启发


System context
Subject facet
Usage facet
IT system facet
Development facet
Core activities
Documentation
Elicitation
Negotiation
Requirements artefacts
Goals
Scenarios
Solution oriented requirements
Validation
Management


系统上下文
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面向解决方案
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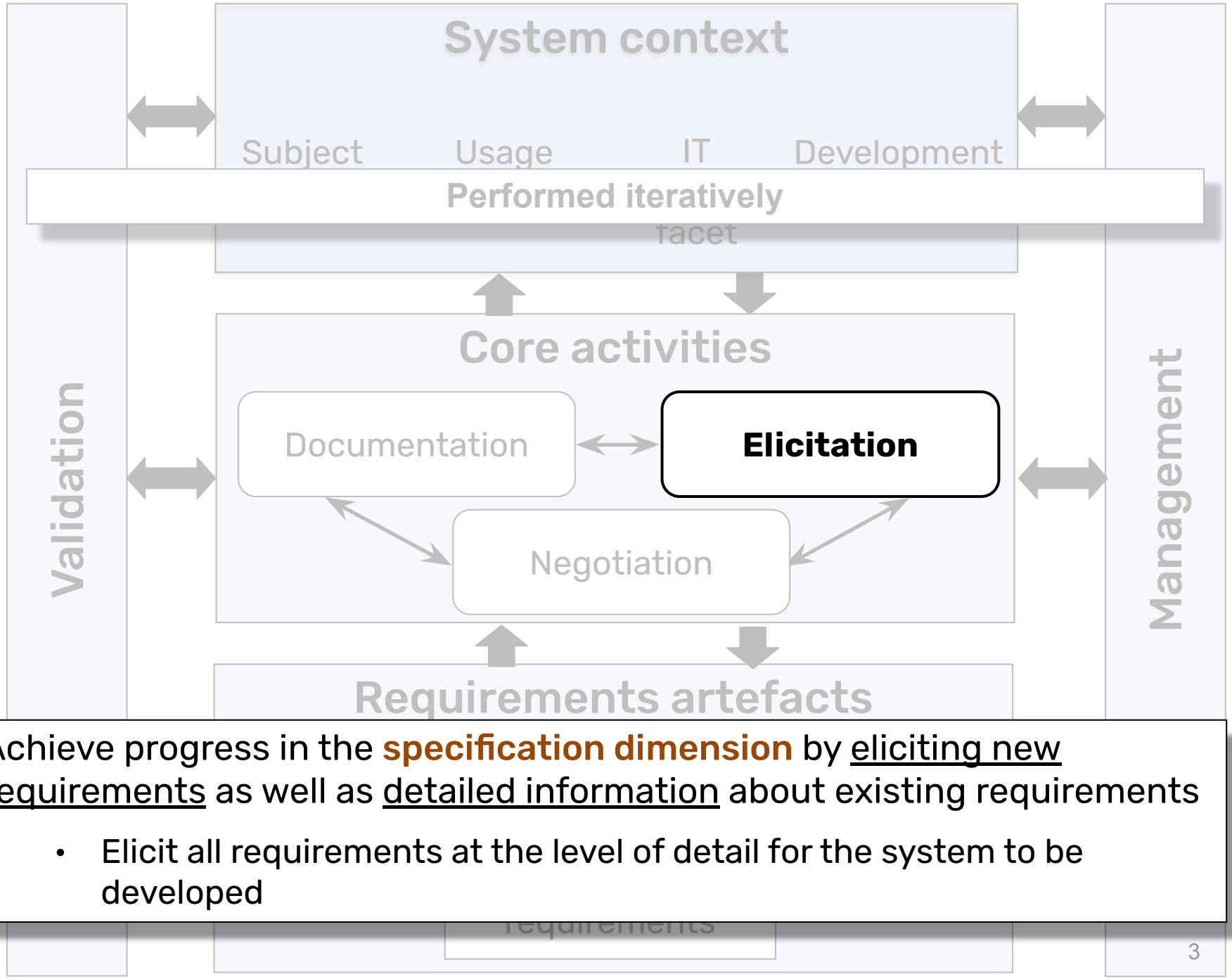
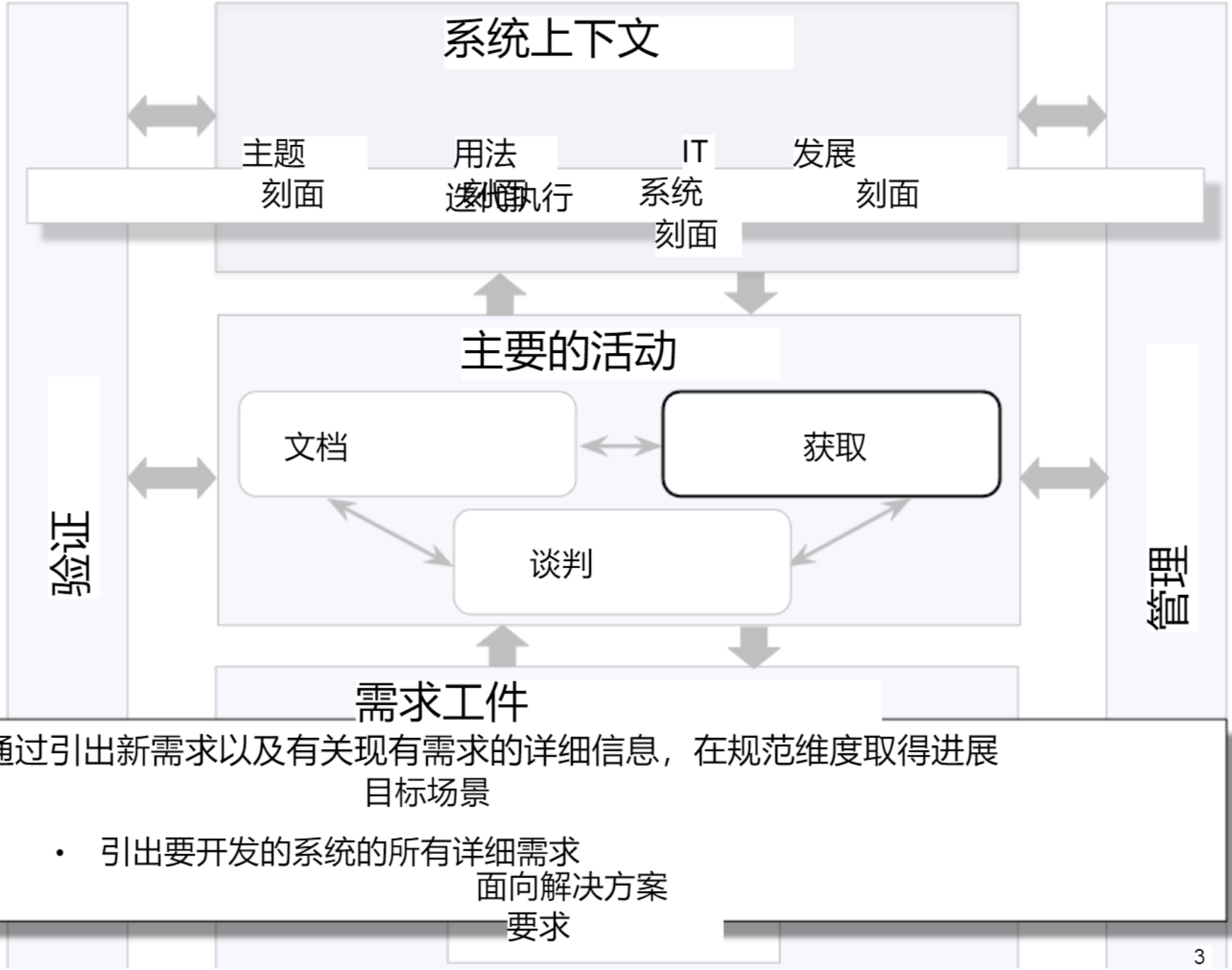
管理



Achieve progress in the **specification dimension** by eliciting new requirements as well as detailed information about existing requirements

- Elicit all requirements at the level of detail for the system to be developed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通过引出新需求以及有关现有需求的详细信息，在规范维度取得进展
目标场景
• 引出要开发的系统的所有详细需求
面向解决方案
要求

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- Where do we start?
- Stakeholders
- Requirements elicitation technique

- Prof. Steve Easterbrook, Requirements engineering course, University of Toronto
- Pohl K. (2010) Requirements Engineering, Springer

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- 我们从哪里开始?
- 利益相关者・需求获取技术

- Steve Easterbrook 教授，多伦多大学需求工程课程
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Requirements Elicitation

Starting point

- Some notion that there is a “problem” that needs solving
  - e.g. dissatisfaction with the current state of affairs
  - e.g. a new business opportunity
  - e.g. a potential saving of cost, time, resource usage, etc.

A requirements analyst is an **agent of change**

需求获

初始点

- 一些认为存在需要解决的“ 问题” 的想法 ○ 例如对现状的不满 ○ 例如新的商机 ○ 例如潜在地节省成本、时间、资源使用等。

需求分析师是变革的推动者

Requirements Elicitation

The requirements analyst must:

- **identify the "problem"/"opportunity"**
  - Which problem needs to be solved? (identify problem Boundaries)
  - Where is the problem? (understand the Context/Problem Domain)
  - Whose problem is it? (identify Stakeholders)
  - Why does it need solving? (identify the stakeholders' Goals)
  - How might a software system help? (collect some Scenarios)
  - When does it need solving? (identify Development Constraints)
  - What might prevent us solving it? (identify Feasibility and Risk)
- **and become an expert in the problem domain**
  - although ignorance is important too -- "the intelligent ignoramus"

需求获取

需求分析师必须：

- 识别“问题”/“机会”
  - 需要解决什么问题？（确定问题边界） ○ 问题在哪里？（理解背景/问题领域） ○ 这是谁的问题？（确定利益相关者）

  - 为什么需要解决？（确定利益相关者的目标） ○ 软件系统可以提供什么帮助？（收集一些场景） ○ 什么时候需要解决？（确定发展限制） ○ 什么可能阻止我们解决它？（确定可行性和风险）

- 并成为问题领域的专家
  - 尽管无知也很重要——“我们忽视了聪明人”

Where do we start?

- **Identify the problem**
  - what is the objective of the project?
  - the "vision" of those who are pushing for it?
    - e.g., "Meeting scheduling is too costly right now"
- **Scope the problem**
  - given the vision, how much do we tackle?
    - e.g. "Build a system that schedules meetings", …or…
    - e.g. "Build a system that maintains people's calendars" …or…
- **Identify solution scenarios**
  - given the problem, what is the appropriate business process for solving it?
    - e.g. "Anyone who wants to schedule a meeting goes to the secretary, gives details and the secretary handles the rest", …or…
- **Scope the solution**
  - Given a business process, what parts should be automated, and how?
    - e.g. "Solution arrived at interactively by secretary and computer" …or…
    - e.g. "Computer takes in scheduling request details, outputs a solution" …or…

我们从哪里开始?

- 找出问题所在
  - 该项目的目标是什么? - 那些推动它的人的“愿景”?
    - 例如,“现在安排会议成本太高”
- 确定问题范围
  - 考虑到愿景,我们要解决多少问题?
    - 例如“建立一个安排会议的系统”,……或者……
    - 例如“建立一个维护人们日历的系统”……或者……
- 确定解决方案场景
  - 给定问题,解决该问题的适当业务流程是什么?
    - 例如“任何想要安排会议的人都可以去找秘书,提供详细信息,然后秘书处理其余的事情”,……或者……
- 确定解决方案的范围
  - 给定一个业务流程,哪些部分应该自动化,如何自动化?
    - 例如“秘书和计算机交互得出解决方案”……或者……
    - 例如“计算机接收调度请求详细信息,输出解决方案”……或者……

Identifying the Problem

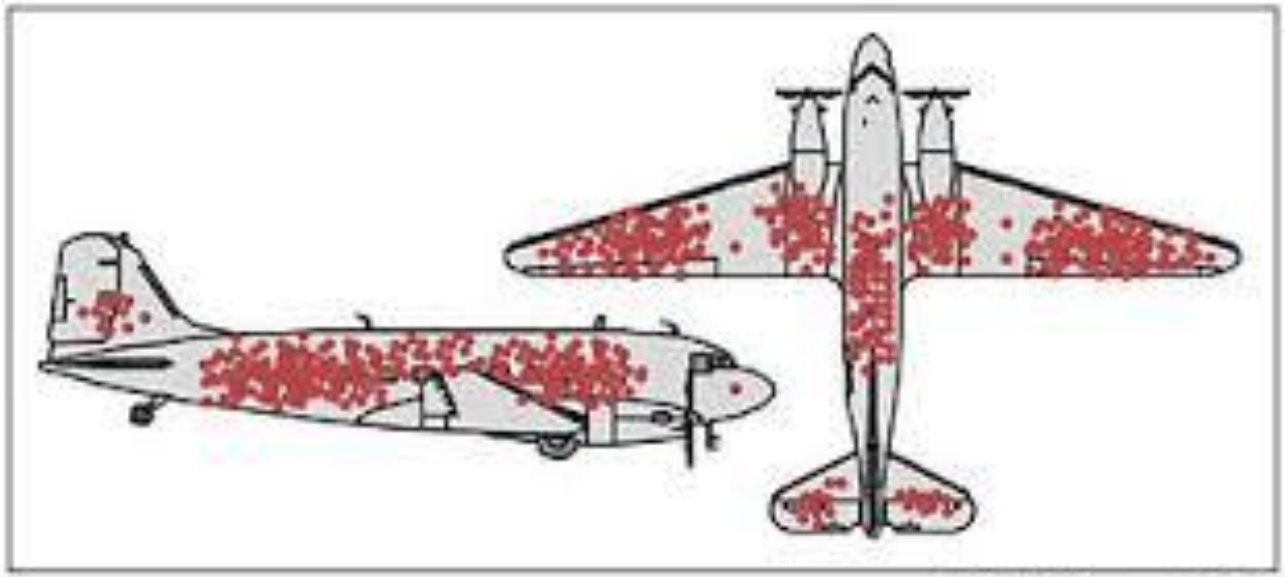
- **Vague problem stated by the customer:**
  - E.g. university textbook store:
    - Manager wants to computerize the book order forms filled out by instructors;
  - E.g. A large insurance company:
    - Claims manager wants to cut down the average time it takes to process an insurance claim from 2 months to 2 weeks
  - E.g. A telecommunications company:
    - CIO wants to integrate the billing system with customer record systems of several affiliates, so there is only one billing system…
  - E.g. Large Government Aerospace Agency:
    - The president wants to send a manned mission to Mars by the year 2020
- **Often you only see symptoms rather than causes:**
  - E.g. “Ontario patients needing X-ray scans have to wait for months”

确定问题

- 客户提出的模糊问题： – 例如大学教科书店：
  - 经理希望将教师填写的图书订购表电脑化；
  - 例如某大型保险公司：
    - 理赔经理希望将处理保险理赔的平均时间从 2 个月减少到 2 周
  - 例如某电信公司：
    - CIO 想要将计费系统与多个分支机构的客户记录系统集成，因此只有一个计费系统……
  - 例如大型政府航空航天局：
    - 总统希望在 2020 年之前向火星发射载人任务
- 通常您只看到症状而不看到原因：
  - 例如“ 需要 X 光扫描的安大略省患者必须等待数月”

British Planes

https://en.wikipedia.org/wiki/Abraham_Wald



Credit: Cameron Moll

英国飞机

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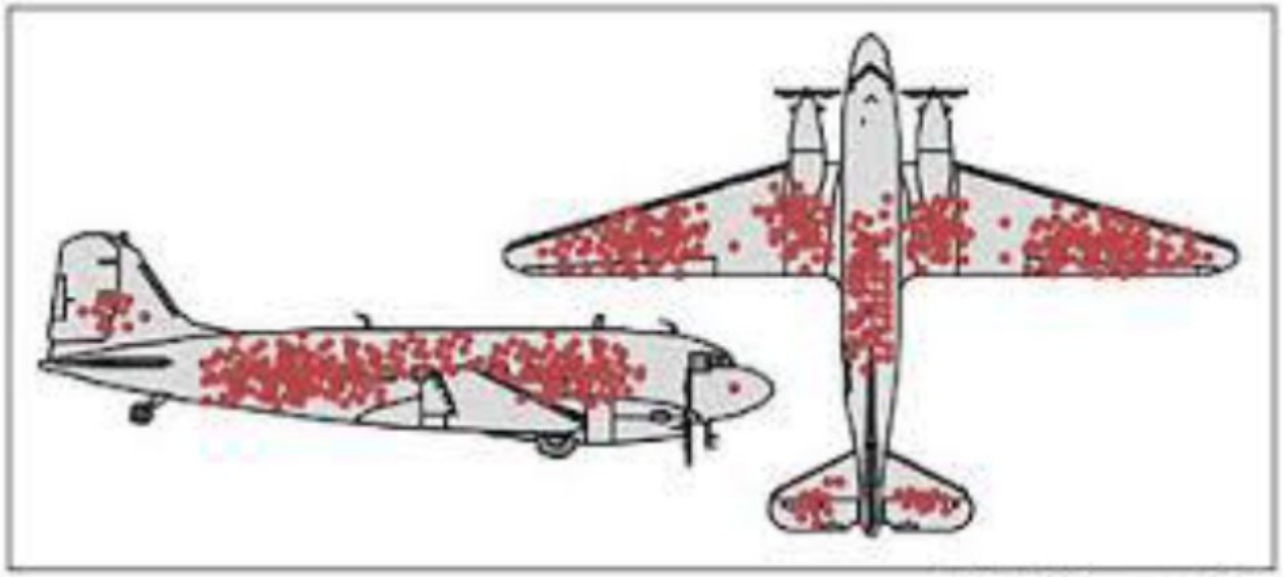

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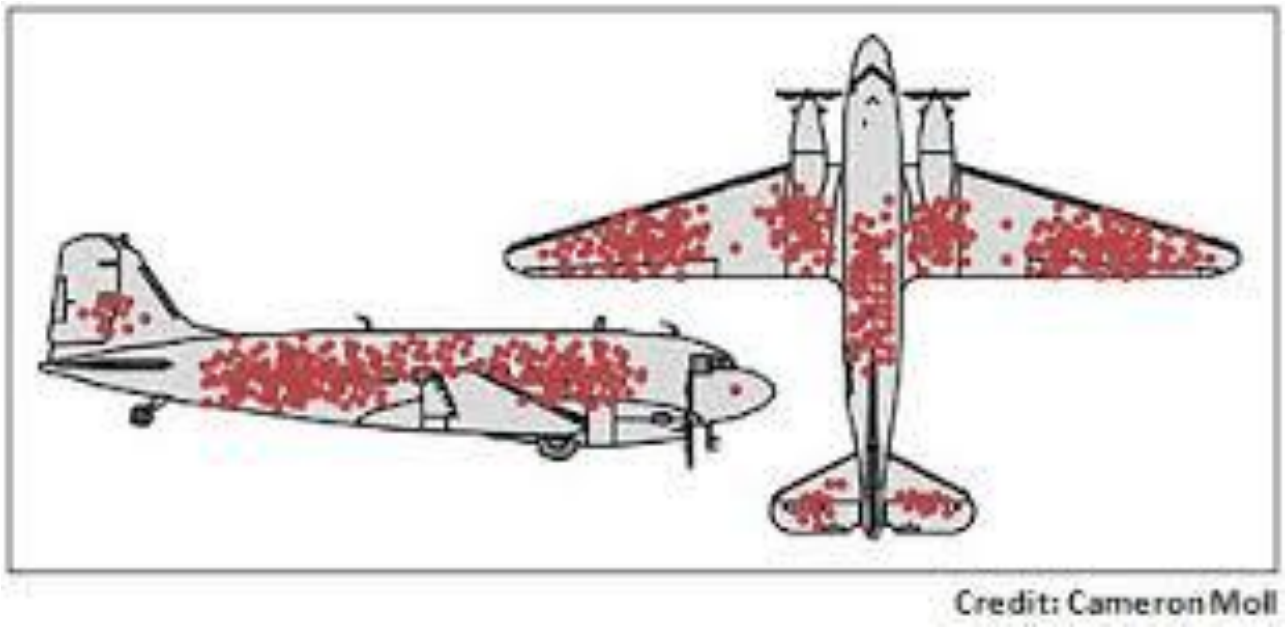
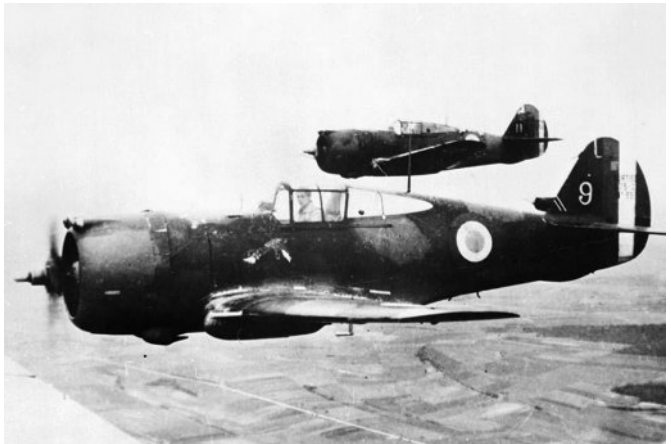


Credit: Cameron Moll

Abraham Wald
1902-1950

- The holes in the returning aircraft represent areas where a bomber could take damage and still return home safely
- The Navy should reinforce the areas where the returning aircraft were unscathed, since those were the areas that, if hit, would cause the plane to be lost



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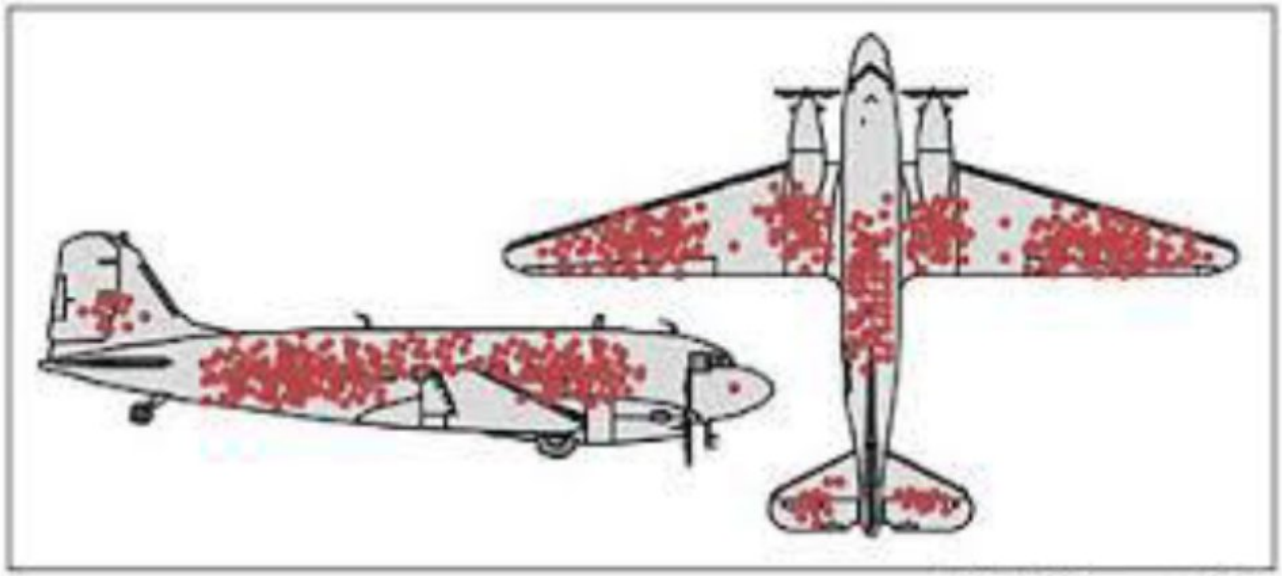

Credit: Cameron Moll

亚伯拉罕·瓦尔德
1902 -1950

- 返航飞机上的孔代表轰炸机可能受到损坏但仍能安全返航的区域
- 海军应该加强返航飞机未受伤的区域，因为这些区域一旦被击中，就会导致飞机失踪

Difficulties of Elicitation

- **Thin spread of domain knowledge**
  - The knowledge might be distributed across many sources
    - It is rarely available in an explicit form (I.e. not written down)
  - There will be conflicts between knowledge from different sources
    - Remember the principle of complementarity!
- **Tacit knowledge (The "say-do" problem)**
  - People find it hard to describe knowledge they regularly use
- **Limited Observability**
  - The problem owners might be too busy coping with the current system
  - Presence of an observer may change the problem
    - E.g. Probe Effect; Hawthorne Effect
- **Bias**
  - People may not be free to tell you what you need to know
  - People may not want to tell you what you need to know
    - The outcome will affect them, so they may try to influence you (hidden agendas)

启发困难

- 领域知识的薄弱传播
  - 知识可能分布在许多来源
    - 它很少以明确的形式提供（即没有写下来）
  - 不同来源的知识之间会存在冲突
    - 记住互补原则！
- 隐性知识（“说做”问题）
  - 人们发现很难描述他们经常使用的知识
- 可观察性有限
  - 问题负责人可能太忙于处理当前系统 – 观察者的存在可能会改变问题
    - 例如。探针效应；霍桑效应
- **Bias**
  - 人们可能无法自由地告诉您您需要了解的信息 – 人们可能不想告诉您您需要了解的信息
    - 结果会影响他们，所以他们可能会试图影响你（隐藏议程）

Example

Loan approval department in a large bank. The analyst is trying to elicit the rules and procedures for approving a loan

Why this might be difficult:

- **Implicit knowledge:**
  - There is no document in which the rules for approving loans are written down
- **Conflicting information:**
  - Different bank staff have different ideas about what the rules are
- **Say-do problem:**
  - The loan approval process described to you by the loan approval officers is quite different from your observations of what they actually do
- **Probe effect:**
  - The loan approval process used by the officers while you are observing is different from the one they normally use
- **Bias:**
  - The loan approval officers fear that your job is to computerize their jobs out of existence, so they are deliberately emphasizing the need for case-by-case discretion (to convince you it has to be done by a human!)

例子

一家大型银行的贷款审批部门。分析师试图找出批准贷款的规则和程序

为什么这可能很困难：

- 隐性知识：
  - 没有文件记载贷款审批规则
- 相互矛盾的信息：
  - 不同银行工作人员对规则的理解不同
- 说做问题：
  - 贷款审批官员向您描述的贷款审批流程与您对他们实际操作的观察结果有很大不同
- 探头效果：
  - 在您观察期间，官员使用的贷款审批流程与他们通常使用的流程不同
- 偏见：
  - 贷款审批官员担心你的工作就是将他们的工作计算机化，从而使他们的工作消失，因此他们故意强调需要根据具体情况进行判断（以说服你这必须由人类来完成！）

Expert Bias

- **What is bias?**
  - **Bias only exists in relation to some reference point**
    - **can there ever be "no bias"?**
  - **All views of reality are filtered**
  - **All decision making is based partly on personal values**
- Types:
  - Motivational bias
    - expert makes accommodations to please the interviewer or some other audience
  - Observational bias
    - Limitations on our ability to accurately observe the world
  - Cognitive bias
    - Mistakes in use of statistics, estimation, memory, etc.
  - Notational bias
    - Terms used to describe a problem may affect our understanding of it

Examples of Bias

- Social pressure
  response to verbal and non-verbal cues from interviewer
- Group think
  response to reactions of other experts
- Impression management
  response to imagined reactions of managers, clients,…
- Wishful thinking
  response to hopes or possible gains.
- Appropriation
  Selective interpretation to support current beliefs.
- Misrepresentation
  expert cannot accurately fit a response into the requested response mode
- Anchoring
  contradictory data ignored once initial solution is available
- Inconsistency
  assumptions made earlier are forgotten
- Availability
  some data are easier to recall than others
- Underestimation of uncertainty
  tendency to underestimate by a factor of 2 or 3.

专家偏见

- 什么是偏见？ – 偏见仅存在于某些方面

  参照点
  - 能有“没有偏见”吗？

  – 所有对现实的看法都经过过滤 – 所有决策都部分基于个人价值观

- 类型： – 动机偏见
  - 专家做出调整以取悦面试官或其他观众

  – 观察偏差
  - 我们准确观察世界的能力受到限制

  – 认知偏差
  - 使用统计、估计、记忆等方面的错误

  – 符号偏差
  - 用于描述问题的术语可能会影响我们对问题的理解

偏见的例子

– 社会压力
对面试官言语和非言语线索的回应

– 集体思考
对其他专家反应的回应

– 印象管理
对经理、客户的想象反应做出反应… …

——一厢情愿的想法
对希望或可能的收获的回应。

– 拨款
支持当前信念的选择性解释。

– 失实陈述
专家无法准确地将响应适合所请求的响应模式

– 锚定
一旦初始解决方案可用，矛盾的数据就会被忽略

– 不一致
先前所做的假设被遗忘

– 可用性
有些数据比其他数据更容易回忆

– 低估不确定性
低估 2 或 3 倍的倾向。

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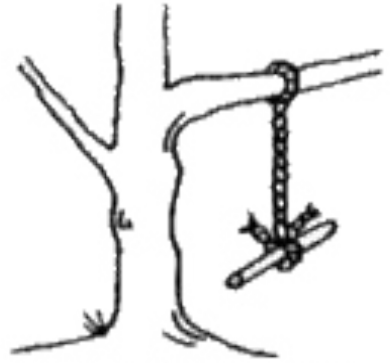
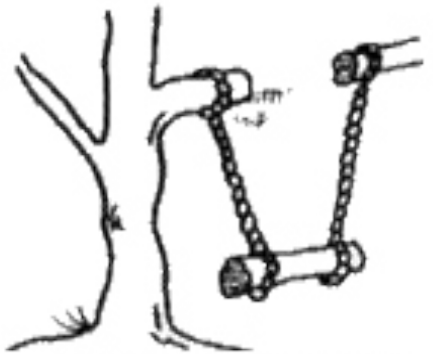
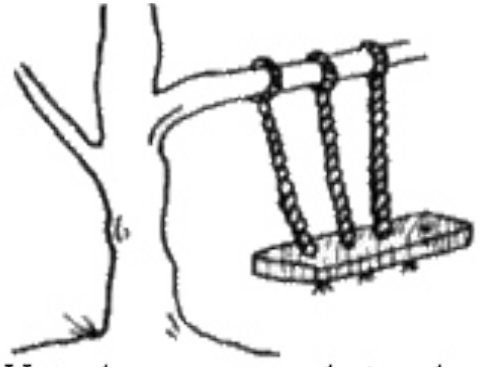


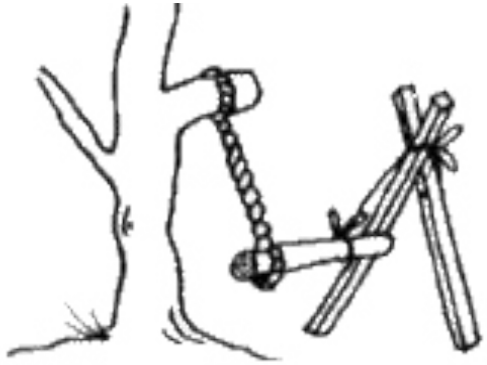
What the user asked for



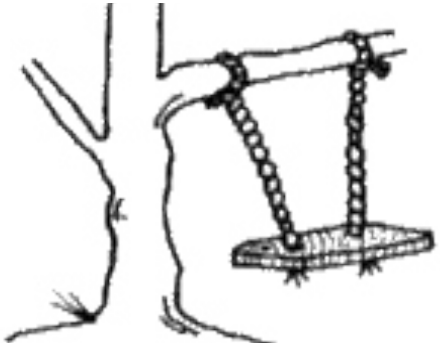
How the analyst saw it



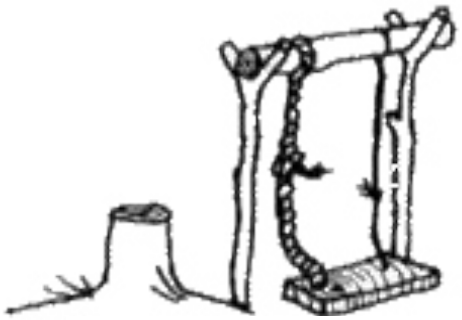
How the system was designed



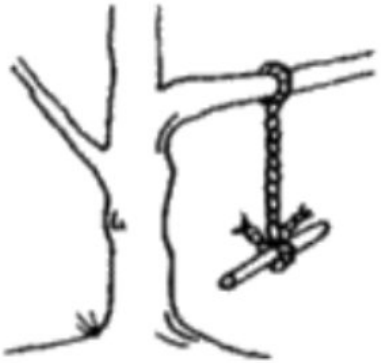
As the programmer wrote it

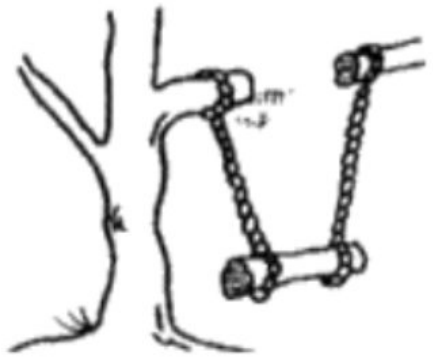


What the user really wanted

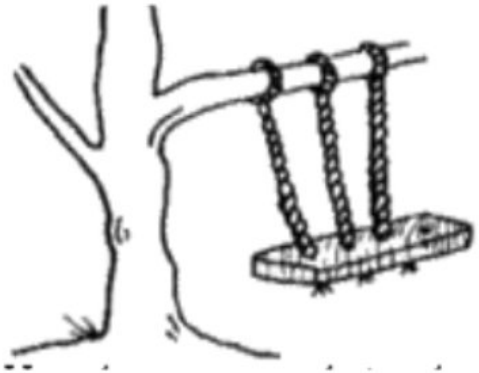


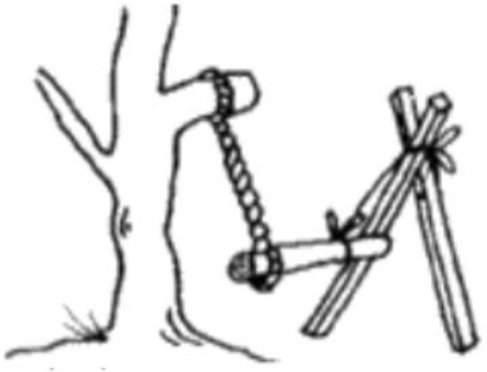
How it actually works



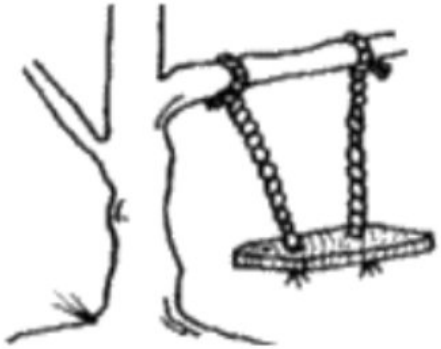


用户询问什么 分析师如何看待





系统是如何设计的 正如程序员所写的



用户真正想要什么 它实际上是如何运作的

Stakeholders

Stakeholder analysis:

- Identify all the people who must be consulted during information acquisition

Example stakeholders

- Users
  - concerned with the features and functionality of the new system
- Designers
  - want to build a perfect system, or reuse existing code
- Systems analysts
  - want to “get the requirements right”
- Training and user support staff
  - want to make sure the new system is usable and manageable
- Business analysts
  - want to make sure “we are doing better than the competition”
- Technical authors
  - will prepare user manuals and other documentation for the new system
- The project manager
  - wants to complete the project on time, within budget, with all objectives met.
- “The customer”
  - Wants to get best value for money invested!

利益相关者

利益相关者分析：

- 确定信息获取过程中必须咨询的所有人员

利益相关者示例

- 用户
  - 关注新系统的特性和功能
- 设计师
  - 想要构建一个完美的系统，或者重用现有的代码
- 系统分析师
  - 想要“满足正确的要求”
- 培训和用户支持人员
  - 希望确保新系统可用且易于管理
- 商业分析师
  - 希望确保“我们比竞争对手做得更好”
- 技术作者
  - 将为新系统准备用户手册和其他文档
- 项目经理
  - 希望在预算范围内按时完成项目并实现所有目标。
- “顾客”
  - 想要获得最物有所值的投资！ 17 号

Table of Contents

- Where do we start?
- Stakeholders
- **Requirements elicitation techniques**

- Prof. Steve Easterbrook, Requirements engineering course, University of Toronto
- Pohl K. (2010) Requirements Engineering, Springer

目录

- 我们从哪里开始?
- 利益相关者
- 需求获取技术

- Steve Easterbrook 教授，多伦多大学需求工程课程
- Pohl K. (2010) 需求工程，Springer 18

Requirements Elicitation

需求获取


THE PROJECT REQUIREMENTS ARE FORMING IN MY MIND.
S. Adams E-Mail: SCOTTADAMS@AOL.COM
NOW THEY'RE CHANGING... CHANGING... CHANGING... OKAY. NO, WAIT... CHANGING... CHANGING... DONE.
9-22 © 1994 United Feature Syndicate, Inc.
NATURALLY, I WON'T BE SHARING ANY OF THESE THOUGHTS WITH ENGINEERING.
I BUDGETED FOR SOME GOONS TO BEAT IT OUT OF YOU.

Elicitation Techniques

- **Traditional techniques**
  - Reading existing documents
  - Analyzing hard data
  - Interviews
    - Open-ended
    - Structured
  - Surveys / Questionnaires
  - Meetings
- **Collaborative techniques**
  - Focus Groups
    - Brainstorming
    - JAD/RAD workshops
  - Prototyping
  - Participatory Design
- **Contextual (social) approaches**
  - Ethnographic techniques
    - Participant Observation
    - Enthnomethodology
  - Discourse Analysis
    - Conversation Analysis
    - Speech Act Analysis
  - Sociotechnical Methods
    - Soft Systems Analysis
- **Cognitive techniques**
  - Task analysis
  - Protocol analysis
  - Knowledge Acquisition Techniques
    - Card Sorting
    - Laddering
    - Repertory Grids
    - Proximity Scaling Techniques

启发技巧

- 传统技术
  - 阅读现有文件
  - 分析硬数据
  - 采访
    - 开放式
    - 结构化的
  - 调查/问卷
  - 会议
- 协作技术
  - 焦点小组
    - 头脑风暴
    - JAD/RAD 研讨会
  - 原型制作
  - 参与式设计
- 情境（社会）方法
  - 民族志技术
    - 参与者观察
    - 民族方法论
  - 话语分析
    - 对话分析
    - 言语行为分析
  - 社会技术方法
    - 软系统分析
- 认知技术
  - 任务分析
  - 协议分析 ○ 知识获取技术
    - 卡片分类
    - 爬梯
    - 剧目网格
    - 邻近缩放技术

Elicitation Techniques

- **Traditional techniques**
  - Background reading
  - Hard data analysis
  - Interviews
  - Questionnaire
  - Meetings
- **Collaborative techniques**
  - Group elicitation techniques
- **Contextual (social) approaches**
  - Participant observation

启发技巧

- 传统技术
  - 背景阅读
  - 硬数据分析
  - 采访
  - 问卷调查
  - 会议
- 协作技术
  - 小组启发技巧
- 情境（社会）方法
  - 参与者观察

Background Reading

- Sources of information:
  - company reports, organization charts, policy manuals, job descriptions, reports, documentation of existing systems, etc.
- Advantages:
  - Helps the analyst to get an understanding of the organization before meeting the people who work there
  - Helps to prepare for other types of fact finding
    - e.g. by being aware of the business objectives of the organization.
  - may provide detailed requirements for the current system
- Disadvantages:
  - written documents often do not match up to reality
  - Can be long-winded with much irrelevant detail
- Appropriate for
  - Whenever you not familiar with the organization being investigated

背景阅读

- 信息来源：
  - 公司报告、组织结构图、政策手册、职位描述、报告、现有系统的文档等。
- 优点：
  - 帮助分析师在会见该组织的工作人员之前了解该组织 - 帮助为其他类型的事实调查做好准备
    - 例如通过了解组织的业务目标。
  - 可以提供当前系统的详细要求
- 缺点：
  - 书面文件通常与现实不符 - 可能冗长且包含许多不相关的细节
- 适合于
  - 当您不熟悉被调查的组织时

“Hard Data” and Sampling

- **Hard data includes facts and figures…**
  - Forms, Invoices, financial information,…
  - Reports used for decision making,…
  - Survey results, marketing data,…
- **Sampling**
  - Sampling used to select representative set from a population
    - Purposive Sampling - choose the parts you think are relevant without worrying about statistical issues
    - Simple Random Sampling - choose every k*th* element
    - Stratified Random Sampling - identify strata and sample each
    - Clustered Random Sampling - choose a representative subpopulation and sample it
  - Sample Size is important
    - balance between cost of data collection/analysis and required significance
- **Process**
  - Decide what data should be collected - e.g. *banking transactions*
  - Determine the population - e.g. *all transactions at 5 branches over one week*
  - Choose type of sample - e.g. *simple random sampling*
  - Choose sample size - e.g. *every 20th transaction*

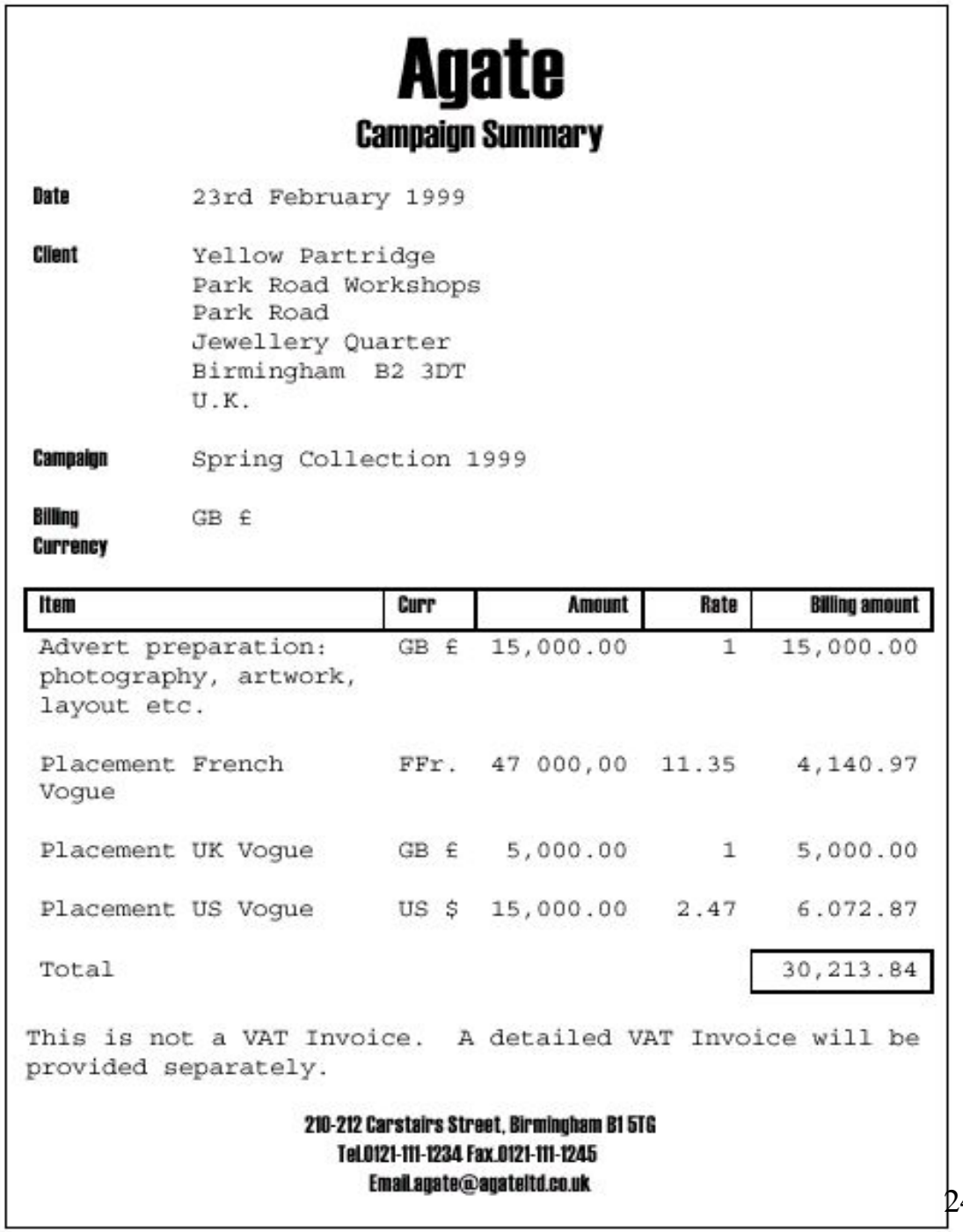
“硬数据”和抽样

- 硬数据包括事实和数据……
  – 表格、发票、财务信息……– 用于决策的报告……– 调查结果、营销数据……

- 采样
  – 用于从总体中选择代表性集合的抽样
    - 有目的的抽样 - 选择您认为相关的部分，而不必担心统计问题
    - 简单随机采样 - 选择每个第 k 个元素
    - 分层随机抽样 - 识别分层并对每个分层进行抽样
    - 聚类随机抽样 - 选择一个有代表性的子群体并对其进行抽样
  – 样本量很重要
    - 数据收集/分析成本与所需重要性之间的平衡
- 过程
  – 决定应收集哪些数据 - 例如银行交易
  – 确定人口 - 例如一周内 *5* 个分行的所有交易
  – 选择样品类型 - 例如简单随机抽样 – 选择样本大小 – 例如每20笔交易

Example of hard data

- Questions:
  - What does this data tell you?
  - What would you do with this data?



Agate

Campaign Summary

Date 23rd February 1999

Client Yellow Partridge
Park Road Workshops
Park Road
Jewellery Quarter
Birmingham B2 3DT
U.K.

Campaign Spring Collection 1999

Billing Currency GB £

Item	Curr	Amount	Rate	Billing amount
Advert preparation: photography, artwork, layout etc.	GB £	15,000.00	1	15,000.00
Placement French Vogue	FFr.	47 000,00	11.35	4,140.97
Placement UK Vogue	GB £	5,000.00	1	5,000.00
Placement US Vogue	US $	15,000.00	2.47	6.072.87
Total				30,213.84

This is not a VAT Invoice. A detailed VAT Invoice will be provided separately.

210-212 Carstairs Street, Birmingham B1 5TG
Tel.0121-111-1234 Fax.0121-111-1245
Email.agate@agateltd.co.uk

的例子

硬数据

- 问题：
  - 这是做什么的数据告诉你?
  - 你会怎么办有了这个数据?

Agate

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Interviews

Types

- **Structured** - fixed agenda of fairly open questions
- **Semi-Structured** - fixed set of question, may be follow up questions
- **Open-ended** - no pre-set agenda

Advantages

- Rich collection of information
- Good for uncovering opinions, feelings, goals, as well as hard facts
- Can probe in depth, & adapt follow-up questions to what the person tells you

Disadvantages

- Large amount of qualitative data can be hard to analyze
- Hard to compare different respondents
- Interviewing is a difficult skill to master

Source: *Adapted from Goguen and Linde, 1993, p154.*

采访

类型

– 结构化 - 相当开放的问题的固定议程 – 半结构化 - 一组固定的问题，可能是后续问题 – 开放式 - 没有预设议程

优点

– 丰富的信息收集 – 有助于发现观点、感受、目标以及确凿的事实 – 可以深入探究，并根据对方告诉你的内容调整后续问题

缺点

– 大量定性数据可能难以分析 – 难以比较不同的受访者 – 访谈是一项很难掌握的技能

资料来源：改编自 *Goguen* 和 *Linde*，1993 年，第 154 页

Interviewing Tips

- **Starting off…**
  - Begin the interview with an innocuous topic to set people at ease
    - e.g. the weather, the score in last night's hockey game
    - e.g. comment on an object on the person's desk: "My,… what a beautiful photograph! Did you take that?"
- **Ask if you can record the interview**
  - Make sure the tape recorder is visible
  - Say that they can turn it off at any time.
- **Ask easy questions first**
  - perhaps personal information
    - e.g. "How long have you worked in your present position?"
- **Follow up interesting leads**
  - e.g. if you hear something that indicates your plan of action may be wrong,
    - e.g.,"Could we pursue what you just said a little further?"
- **Ask open-ended questions towards the end**
    - e.g. "Is there anything else you would like to add?"

面试技巧

- 开始……
  - 以无伤大雅的话题开始采访，让人们放松下来
    - 例如天气、昨晚曲棍球比赛的比分
    - 例如评论此人桌子上的一个物体：“ 天哪，……多么漂亮的照片啊！你拿了那个吗？”
- 询问是否可以录制采访内容
  - 确保录音机可见 – 说明他们可以随时将其关闭。
- 先问简单的问题
  - 也许是个人信息
    - 例如“ 您在现在的职位上工作了多久？”
- 跟进有趣的线索
  - 例如如果您听到一些表明您的行动计划可能是错误的信息，
    - 例如，“ 我们可以进一步探讨一下你刚才说的吗？”
- 在最后提出开放式问题
    - 例如“ 您还有什么要补充的吗？”

Questionnaires

Advantages

- Can quickly collect info from large numbers of people
- Can be administered remotely
- Can collect attitudes, beliefs, characteristics

Disadvantages

- Simplistic (presupposed) categories provide very little context
  - No room for users to convey their real needs

Watch for:

- Bias in sample selection
- Bias in self-selecting respondents
- Small sample size (lack of statistical significance)
- Open ended questions (very hard to analyze!)
- Leading questions (*"have you stopped beating your wife?"*)
- Appropriation (*"What is this a picture of?"*)
- Ambiguous questions (I.e. not everyone is answering the same question)

NB: Questionnaires MUST be prototyped and tested!

Source: Adapted from Goguen and Linde, 1993, p154.

问卷调查

优点

– 可以快速收集大量人员的信息 – 可以远程管理 – 可以收集态度、信仰、特征

缺点

– 简单的（预设的）类别提供的上下文很少

- 没有空间让用户表达自己的真实需求

注意：

– 样本选择的偏差 – 自选受访者的偏差 – 样本量小（缺乏统计显着性） – 开放式问题（很难分析！）

– 引导性问题（“ 你停止殴打你的妻子了吗？ ”） – 挪用（“ 这是什么照片？ ”） – 模棱两可的问题（即并非每个人都回答相同的问题）

注意：调查问卷必须进行原型设计并进行测试！

资料来源：改编自 *Goguen* 和 *Linde*，*1993* 年，第 *154* 页

Meetings

- **Used for summarization and feedback**
  - E.g. meet with stakeholders towards the end of each stage:
    - to discuss the results of the information gathering stage
    - to conclude on a set of requirements
    - to agree on a design etc.
  - Use the meeting to confirm what has been learned, talk about findings
- **Meetings are an important managerial tool**
  - Used to move a project forward.
  - Every meeting should have a clear objective:
    - E.g. presentation, problem solving, conflict resolution, progress analysis, gathering and merging of facts, training, planning,...
  - Plan the meeting carefully:
    - Schedule the meeting and arrange for facilities
    - Prepare an agenda and distribute it well in advance
    - Keep track of time and agenda during the meeting
    - Follow up with a written summary to be distributed to meeting participants
    - Special rules apply for formal presentations, walkthroughs, brainstorming, etc.

会议

- 用于总结和反馈
  - 例如在每个阶段结束时与利益相关者会面：
    - 讨论信息收集阶段的结果
    - 得出一组要求
    - 就设计等达成一致
  - 利用会议确认所学到的内容，讨论发现的结果
- 会议是一种重要的管理工具——用于推动项目向前发展。
  - 每次会议都应有明确的目标：
    - 例如。演示、解决问题、解决冲突、进度分析、收集和合并事实、培训、规划……
  - 仔细计划会议：
    - 安排会议并安排设施
    - 提前准备好议程并分发
    - 跟踪会议期间的时间和议程
    - 跟进书面摘要并分发给会议参与者
    - 特殊规则适用于正式演示、演练、头脑风暴等。

Group Elicitation Techniques

Focus Groups

Brainstorming

Advantages

- More natural interaction between people than formal interview
- Can gauge reaction to stimulus materials (e.g. mock-ups, storyboards, etc.)

Disadvantages

- May create unnatural groups (uncomfortable for participants)
- Danger of Groupthink
- May only provide superficial responses to technical questions
- Requires a highly trained facilitator

Watch for

- sample bias
- dominance and submission

小组启发技术

焦点小组头脑风暴

优点

– 人与人之间的互动比正式面试更自然 – 可以衡量对刺激材料（例如模型、故事板等）的反应

缺点

– 可能会产生不自然的群体（让参与者感到不舒服） – 群体思维的危险 – 可能只能对技术问题提供肤浅的回答 – 需要训练有素的协调员

留意

– 样本偏差

– 支配与服从

Joint/Rapid Application Development

Focus Groups

- **JAD & RAD Principles**
  - Group Dynamics - use workshops instead of interviews
  - Visual Aids
    - Lots of visualization media, e.g. wall charts, large monitors, graphical interfaces
  - Organized, Rational Process
    - Techniques such as brainstorming and top-down analysis
  - WYSIWYG Documentation Approach
    - each JAD session results in a document which is easy to understand and is created and agreed upon during the session
- **Notes**
  - Choose workshop participants carefully
    - they should be the best people possible representing various stakeholder groups
  - Workshop should last 3-5 days.
    - Must turn a group of participants into a team - this takes 1-2 days.
    - Session leader makes sure each step has been completed thoroughly.
    - Session leader steps in when there are differences of opinion - “open issues”.
    - Meeting room should be well-equipped for presentations, recording etc.

联合/快速应用程序开发

专门小组

- **JAD和 RAD** 原则
  - 团体动力 – 使用研讨会代替访谈 – 视觉教具
    - 许多可视化媒体，例如挂图、大显示器、图形界面
  - 有组织、合理的过程
    - 头脑风暴和自上而下分析等技术
  - 所见即所得文档方法
    - 每次 JAD 会议都会产生一份易于理解的文件，并在会议期间创建并达成一致
- 笔记
  - 仔细选择研讨会参与者

他们应该是代表各个利益相关群体的最佳人选——研讨会应持续 3-5 天。

- 必须将一组参与者变成一个团队 - 这需要 1-2 天。
- 会议负责人确保每个步骤都已彻底完成。
- 当存在意见分歧时，会议主持人介入——“ 未解决的问题” 。
- 会议室应配备齐全，可用于演示、录音等。

Participant Observation

Approach

- Observer spends time with the subjects
  - Joining in long enough to become a member of the group
  - Hence appropriate for longitudinal studies

Advantages

- Contextualized;
- Reveals details that other methods cannot

Disadvantages

- Extremely time consuming!
- Resulting ‘rich picture’ is hard to analyze
- Cannot say much about the results of proposed changes

Watch for

- going native!

参与者观察

方法

- 观察者花时间与受试者相处
  - 加入足够长的时间才能成为该团体的成员
  - 因此适合纵向研究

优点

- 情境化； - 揭示其他方法无法揭示的细节

缺点

- 非常耗时！ - 由此产生的“丰富的画面”很难分析 - 无法对拟议变更的结果说太多

留意

- 本土化!

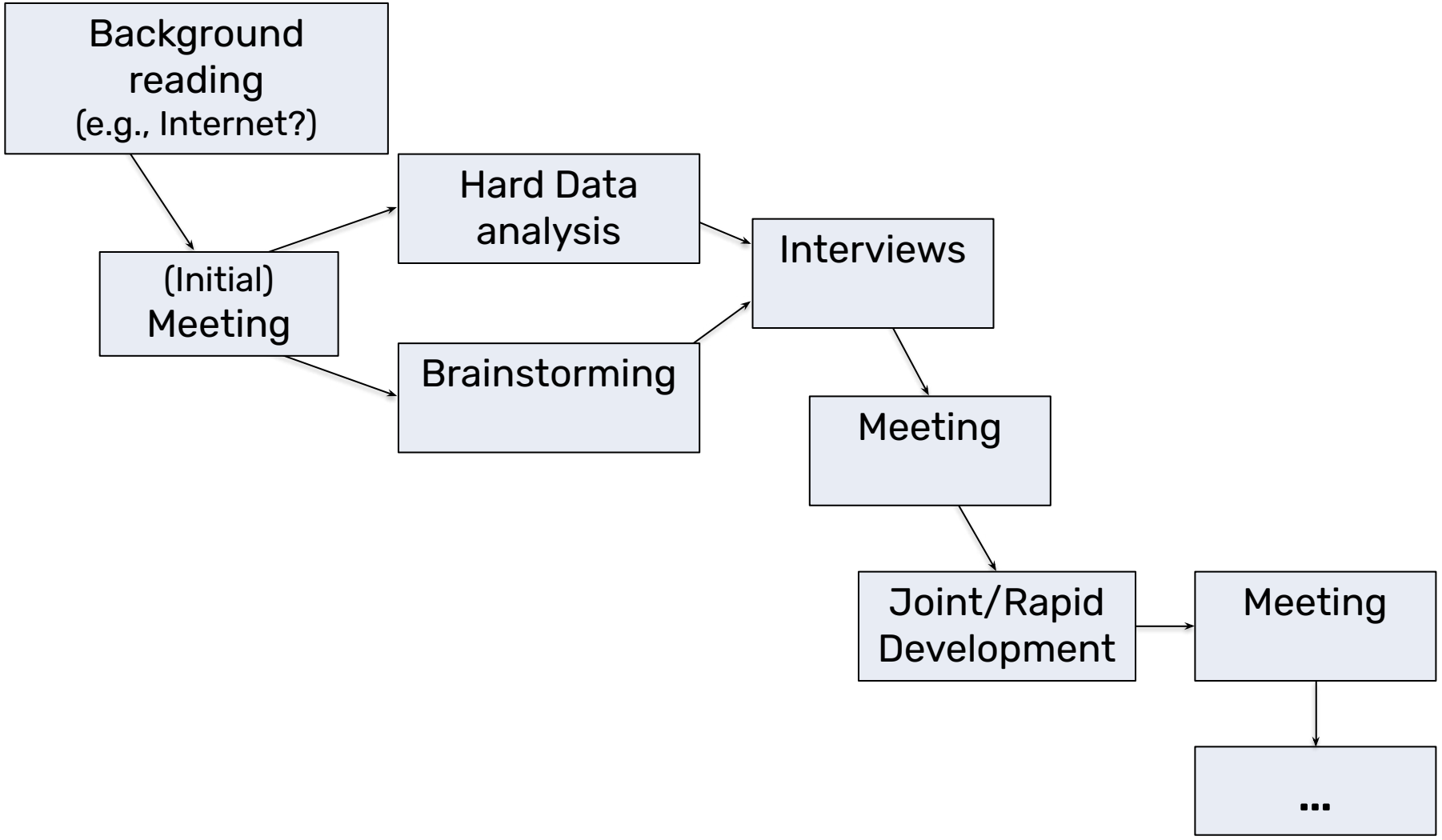
Suitability of the Techniques for Elicitation Sub-activities

Suitability of the techniques for the sub-activities		Identifying requirements sources	Eliciting existing requirements	Developing new and innovating requirements
Technique	**Effort**			
Interview	*Medium to high*	x	x	x
Workshop	*High to very high*	x	x	x
Focus groups	*Medium to high*		x	x
Observation	*High to very high*		x	
Questionnaire	*Low to medium*	x	x	
Perspective-based reading	*Medium to high*		x	

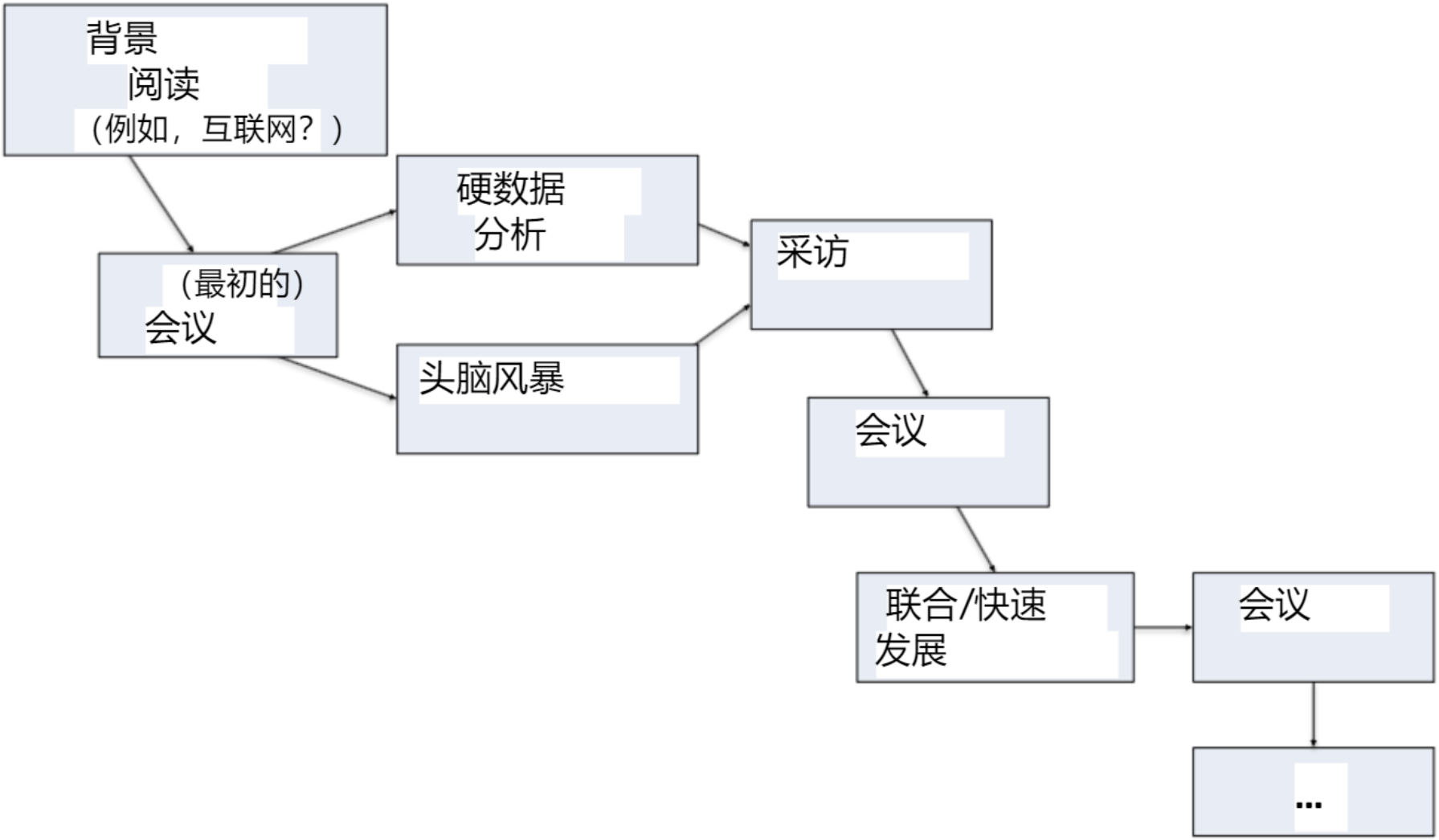
启发子活动技术的适用性

子活动技术的适用性		识别 要求 来源	引发 现存的 要求	发展 新的和 创新 要求
技术努力				
访谈 中到高 x x x	研讨会 高到非常高 x	x x 焦点小组 中	到高 x x 观察 高	到非常高 x
问卷调查 低至中	x x			
看法- 基础阅读	中到高x			

Combine Different Techniques

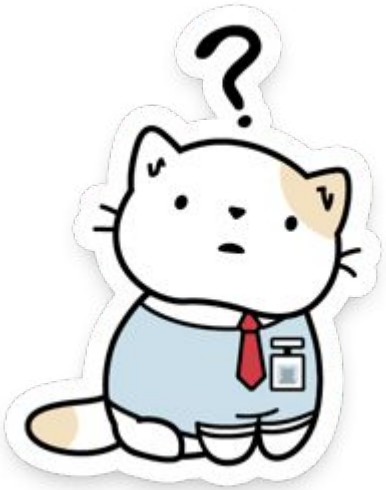


结合不同的技术



Take Home!

- Where do we start?
- Stakeholders
- Requirements elicitation techniques
  - Background reading
  - Hard data analysis
  - Interviews
  - Questionnaire
  - Meetings
  - Group elicitation techniques
  - Participant observation



带回家!

- 我们从哪里开始?
- 利益相关者・需求获取技术 – 背景阅读

  – 硬数据分析
  – 采访
  – 问卷调查
  – 会议 – 小组启发技术 – 参与者观察