
# Applying UML and Patterns

## An Introduction to Object-oriented Analysis and Design and Iterative Development

## Part II Inception

# Chapters

4. Inception is not the requirement phase
5. ***Evolutionary requirement***
6. ***Use cases***
7. Other requirements


# Chap 4
# Inception is Not the Requirements Phase

# Inception Phase 1

- Inception phase: envision the product scope, vision, and business case.
  - Buy and/or build this system?
  - Rough unreliable range of cost ? Is it $10K, $100K, millions?
  - Should we proceed or stop?
  - Do the stakeholders have basic agreement on the vision of the project, and is it worth investing in serious investigation?
- Most requirements analysis during the elaboration phase, in parallel with early production-quality programming and testing

# Inception Phase 2

- Some activities and artifacts in inception
  1. A short requirements workshop
  2. Most actors, goals, and use case named
  3. Most use cases written in brief format; 10~20% of the use cases are written in fully dressed detail to improve understanding of the scope and complexity
  4. Most influential risk and quality requirements identified
  5. Version one of the Vision and Supplementary Specification written
  6. Risk list
  7. Technical proof-of-concept prototypes and other investigations to explore the technical feasibility of special requirements (e.g. Does Java Swing work properly on touch-screen displays?)

# Inception Phase 3

- Some activities and artifacts in inception
  1. User interface-oriented prototype to clarify the vision of functional requirements
  2. Recommendations on what components to buy/build/reuse, to be refined in elaboration (a tax calculation package)
  3. High-level candidate architecture and components proposed
  4. Plan for the first iteration
  5. Candidate tools list

# Inception Phase 4

- Inception phase should be relatively short for most projects
  - one or a few weeks long.
  - On many projects, if it is more than a week long, then the point of inception has been missed: It is to decide if the project is worth a serious investigation


# Sample Inception Artifacts

| Artifact | Comment |
|---|---|
| Vision and Business Case | Describes the high-level goals and constraints, the business case, and provides an executive summary. |
| Use-Case Model | Describes the functional requirements. During inception, the names of most use cases will be identified, and perhaps 10% of the use cases will be analyzed in detail. |
| Supplementary Specification | Describes other requirements, mostly non-functional. During inception, it is useful to have some idea of the key non-functional requirements that have will have a major impact on the architecture. |
| Glossary | Key domain terminology, and data dictionary. |
| Risk List & Risk Management Plan | Describes the risks (business, technical, resource, schedule) and ideas for their mitigation or response. |
| Prototypes and proof-of-concepts | To clarify the vision, and validate technical ideas. |
| Iteration Plan | Describes what to do in the first elaboration iteration. |
| Phase Plan & Software Development Plan | Low-precision guess for elaboration phase duration and effort. Tools, people, education, and other resources. |
| Development Case | A description of the customized UP steps and artifacts for this project. In the UP, one always customizes it for the project. |

# “愿景(vision)”陈述

- 目标：在10-20分钟内描述产品，说服决策者；
- 核心：creative(创新)、Simple(简单)
- 演讲常见检查项：
  - 陈述目标：用一句话陈述产品做什么与价值
  - 定义问题：用故事或调查数据，说明业务与市场问题
  - 强调焦点；用几个关键词标识产品
  - 发现“奶酪”：识别市场及受益人
  - 发掘价值：受益人的问题与产品的故事
  - 产品模型：关键界面或业务解决方案
  - 市场竞争：相关竞争产品
  - 技术可行性：相关技术与成功案例
  - 分析工具：SWOT
- 不要受模板约束，最能打动人的是“利益”“价值”

# 愿景案例：微信

- 目标：跨平台……门户（？？？）
- 问题：语音市场？社交业务-方便、粘性…？
- 标签：语音聊天，通讯录，社区
- 奶酪：电信语音业务，“吊丝”男女
- 核心业务方案：Push （相关业务故事见官方博客）
  - Push to talk(PTT) 一键通话（好友、群）
  - **Push friends by 通讯录，**位置（线上线下社区融合）
  - Push news, mail … …
- 竞争产品：QQ，Skype，YY语音，微薄，飞信
- 相关技术：
  - PTT，Netel(全美第六运营商)1993年推出，被证明是最有粘性的语音业务，技术成熟。
  - SNS，使用手机通讯录是最疯狂，却有效的想法。



**以上内容依据微信博客（http://blog.weixin.qq.com/）推测，仅用于教学**

# 系统“目标”制定

- 是指一个组织未来一段时间内要利用系统实现的目的。它是管理者和组织中一切成员的行动指南，是组织决策、效率评价、协调和考核的基本依据。
- 案例：微信
  - 移动语音聊天社区portal。
    - 上市一年内用户达xx千万。
    - 目标用户语音业务迁移率达到xx%；节省费用xx%。
    - 交友比QQ更高效、方便。
- “目标”必须满足的基本原则
  - SMART原则（S=Specific（明确性）、M=Measurable（可衡量性）、A=Attainable（可达成性）、R=Relevant（相关性）、T=Time-bound）（时限性）

# 系统目标识别Skills

- 规则1：必须来自“老大”——他是衣食父母
  - 问题1：“老大”难以接近，很难揣摩它的想法
  - 问题2：“老大”不喜欢功能，不懂技术，只要效果
- 规则2：目标是恰如其分——很好的识别系统
- 规则3：目标满足SMART原则——客户一看就懂
- 规则4：体现利益相关人最关注的利益——得与失
  - 问题：注意不同人的感受
- 规则5：保持简捷——最好不超过10条

- 应用案例：
  - ATM将通过客户自助完成50%的柜台取款业务。

# 识别“利益相关人”

- 利益相关人是指与软件系统的生产、运营、使用等有一定利益关系的个人或组织群体。
  - 通常指投资人、开发者、客户、使用者、运营商等等

- 案例

| | 微信 | 新浪微博 | 教务系统 |
|---|---|---|---|
| 投资人 | 腾讯移动 | 新浪 | 中大教务处 |
| 客户 | 吊丝 | 白骨精 | 中大教务处 |
| 使用者 | 吊丝 | 白骨精 | 教师<br>教务员<br>学生 |
| | | | |

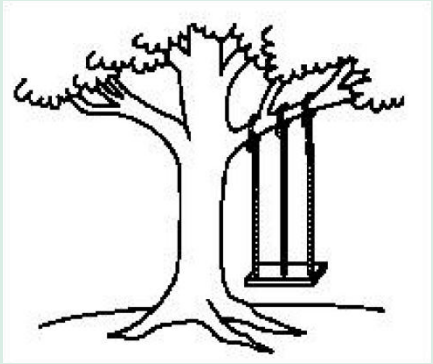
# 讲“故事”技巧

- 讲发现问题，解决问题的故事（参我爱发明）
  - 不能讲技术先进、功能强大的故事
  - 讲获取奶酪（市场）的故事，不讲奶酪是我的的故事
- 业务建模
  - 假设没有系统，可能的业务模型
    - 业务流程图
    - 业务用例图，顺序图
  - 假设有系统
    - 业务如何流程如何改进
    - 识别系统在业务中的职责（软件用例的目标）
    - 分析系统目标的实现
- 系统建模（见教材后面的内容）

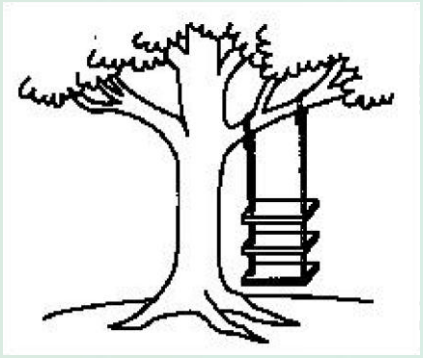

# Chap 5
# Evolutionary Requirements

# 软件—设计师的“乌托邦”

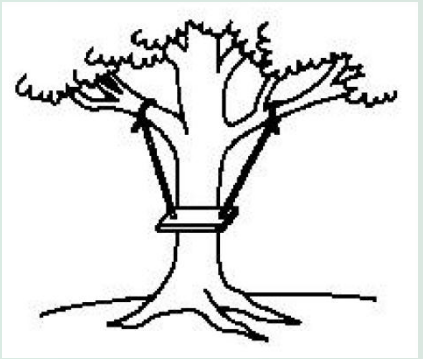
# 需求的挑战



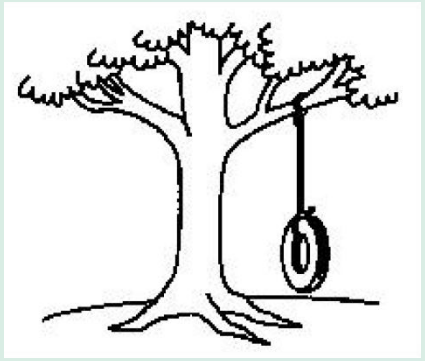
As Engineering designed it.



As Marketing requested it.



As Production manufactured it.



What the customer wanted.


# Evolutionary Requirement 1

- Requirement are a description of need or desired for a product.
  - **Goal -** to **identify** and **document** what is really needed, in a form that clearly communicates to the client and to development team members.
  - **Challenge -** to define the requirement unambiguously.

# Evolutionary Requirement 2

- In UP, requirements are categorized according to the FURPS+ model.
  - Functional: features, capability, security
  - Usability: human factors, help, documentation
  - Reliability: frequency of failure, recoverability, predictability
  - Performance: response times, throughput, accuracy, availability, resource usage.
  - Supportability: adaptability, maintainability, internationalization, configurability

# Evolutionary Requirement 3

- The "+" in FURPS+ indicates sub-factors
  - Implementation: resource limitation, languages and tools, hardware, ..
  - Interface: constraint imposed by interfacing with external systems
  - Operations: system management in its operational setting
  - Packaging: a physical box
  - Legal

# Evolutionary Requirement 4

- The UP offers several requirements artifacts
  - Use case Model
  - Supplementary Specification (Non-functional requirements)
  - Glossary (Data dictionary)
  - Vision: a short executive overview document for quickly learning the project's big picture (summary).
  - Business rules (e.g. government tax laws)

# 需求文档编写注意事项

- 模型在需求文档中的地位
  - 系统是复杂的，不是所有的内容都可以用模型描述
  - 模型只能描述关键、核心的内容。
- 需求中不能出现词
  - 不能出现“最好……”，“可能”等猜测性词汇
  - 不能出现技术实现相关的词汇
- 案例：需求中有哪些BUG
  - When the user selects the Compact Memory option, the program will compress the mailing list data as small as possible using a Huffman-sparse-matrix approach.
  - The software will allow up to 100 million simultaneous connections, although no more than 1 million will normally be used.

# KIS – Keep It Simple


# 总结

- 请一句话描述 Inception 的任务
  - 利益相关人就产品范围、愿景、使用场景达成一致
- 创新产品陈述必须的元素

- 获取需求的挑战
  - Stakeholders利益冲突
  - 自然语言表述的二义性
  - 需求无法调查和表达
- 如何管理进化的需求
  - FPURS+模型

- 保持简单，让你的创新更有力！