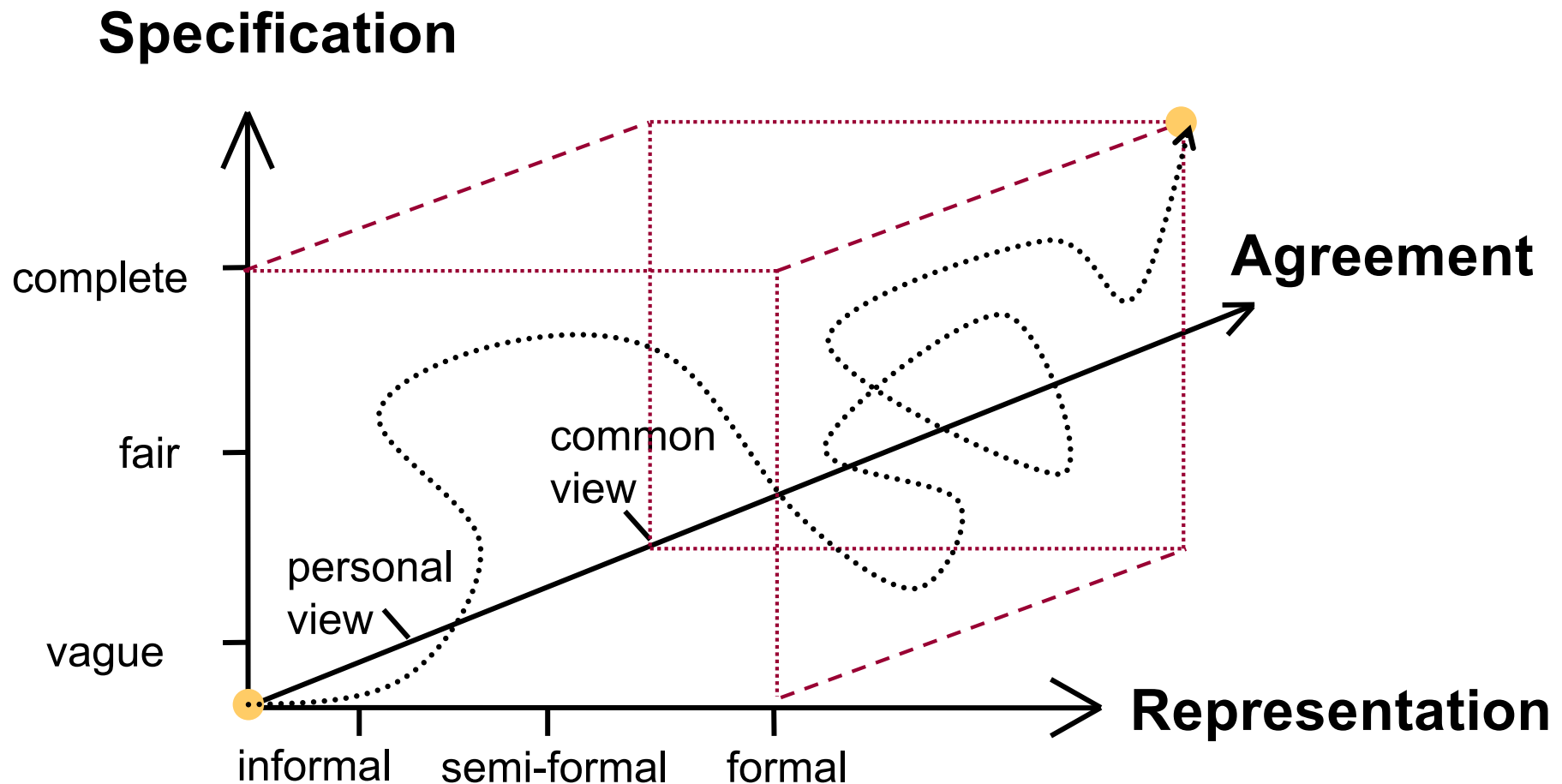


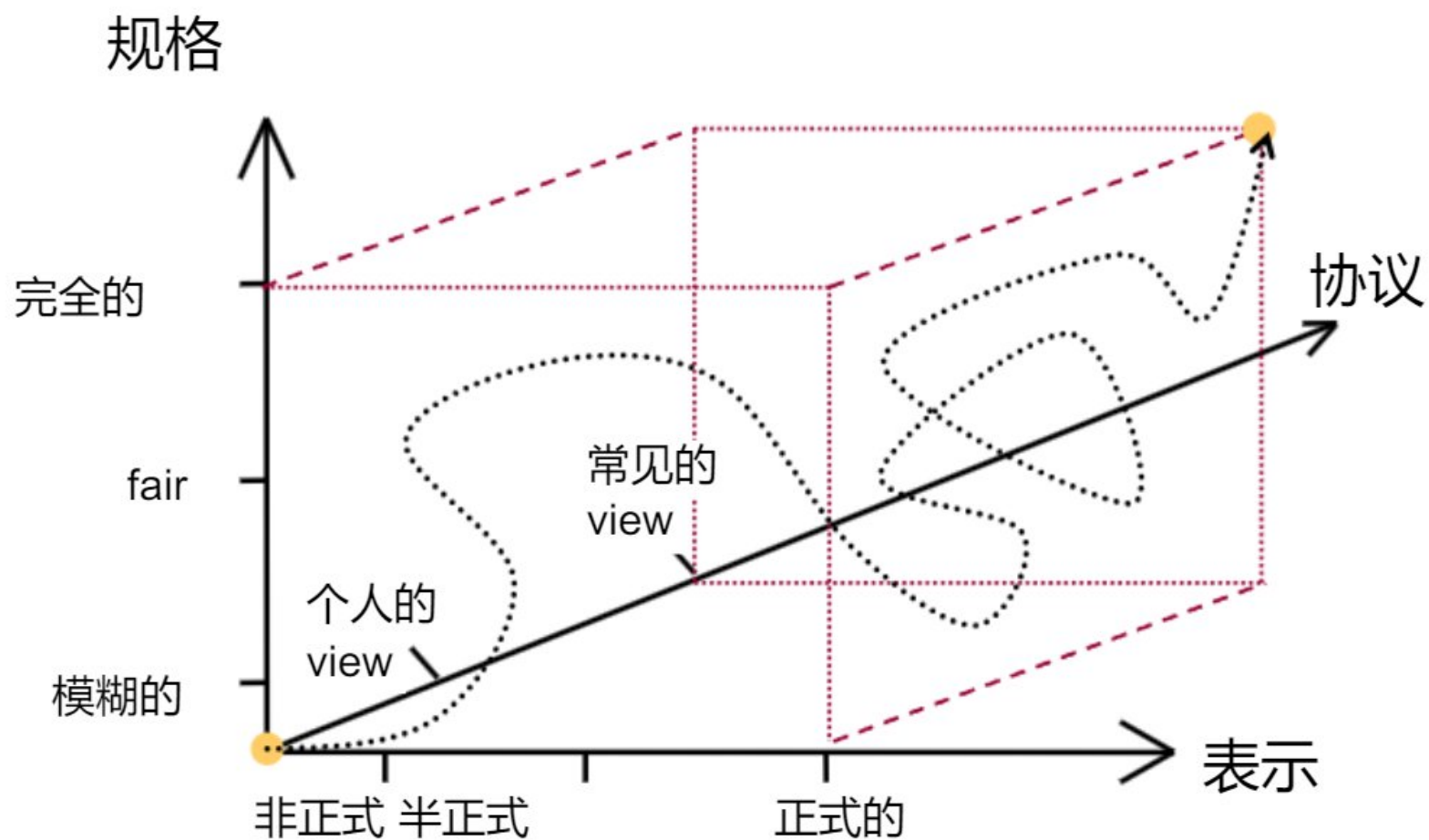
Requirements Lifecycle

Source: Adapted from Pohl, CAISE 1993



需求生命周期

资料来源：改编自 Pohl , CAISE 1993



What is Conflict?

什么是冲突？

Conflict

- In **RE**, focus typically is on **logical inconsistency**:
 - E.g. conflict is a divergence between goals - there is a feasible boundary condition that makes the goals inconsistent
[van Lamsweerde et al. 1998]

Note:

- conflict may occur between individuals, groups, organizations, or different roles played by one person

冲突

- 在 RE 中，重点通常是逻辑不一致：
 - 例如。冲突是目标之间的分歧——存在可行的边界条件使目标不一致
[van Lamsweerde 等人, 1998]

笔记:

- 冲突可能发生在个人、团体、组织或一个人扮演的不同角色之间

Conflicts

- **Conflict (in RE)**

- Exists if the needs and wishes of different stakeholders (or groups of stakeholders) regarding the system contradicts each other,
- Exists if some needs and wishes cannot be taken into account

- **Risks of unresolved conflicts**

- Compromise acceptance of the system by stakeholders
- If conflict disregarded or suppressed, some stakeholders may not support development of the system
- May result in failure of the project

- **Involve relevant stakeholders**

冲突

- 冲突 (**RE**)
 - 如果不同利益相关者（或利益相关者群体）对系统的需求和愿望相互矛盾，则存在， – 如果无法考虑某些需求和愿望，则存在
- 未解决的冲突的风险
 - 损害利益相关者对系统的接受度 – 如果冲突被忽视或抑制，一些利益相关者可能不支持系统的开发 – 可能导致项目失败
- 让相关利益相关者参与

Requirements negotiation

- **The goal of negotiation**
 - Identify conflicts
 - Analyse the causes of each conflict
 - Resolve the conflicts by means of appropriate strategies
 - Document the conflict resolution and the rationale
- **Resolve conflicts at the goal level**
 - Goals document rationale of the solution-oriented requirements
 - Fundamental contradictions can be resolved before the stakeholders go into technical details (of the goals realisation)

需求洽谈

- 谈判的目标
 - 识别冲突 – 分析每个冲突的原因 – 通过适当的策略解决冲突
 - 记录冲突的解决方案及其理由
- 解决目标层面的冲突
 - 目标记录了以解决方案为导向的要求的基本原理 – 在利益相关者进入（目标实现的）技术细节之前可以解决基本矛盾

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- **Conflict dependency**

- **G1:** It shall be possible to localise the car via GPS
- **G2:** The country-specific privacy laws shall be observed

G1 and G2 are conflicting...

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- G1: 应能够通过 GPS 定位汽车 – G2: 应遵守特定国家/地区的隐私法

G1和G2是冲突的.....

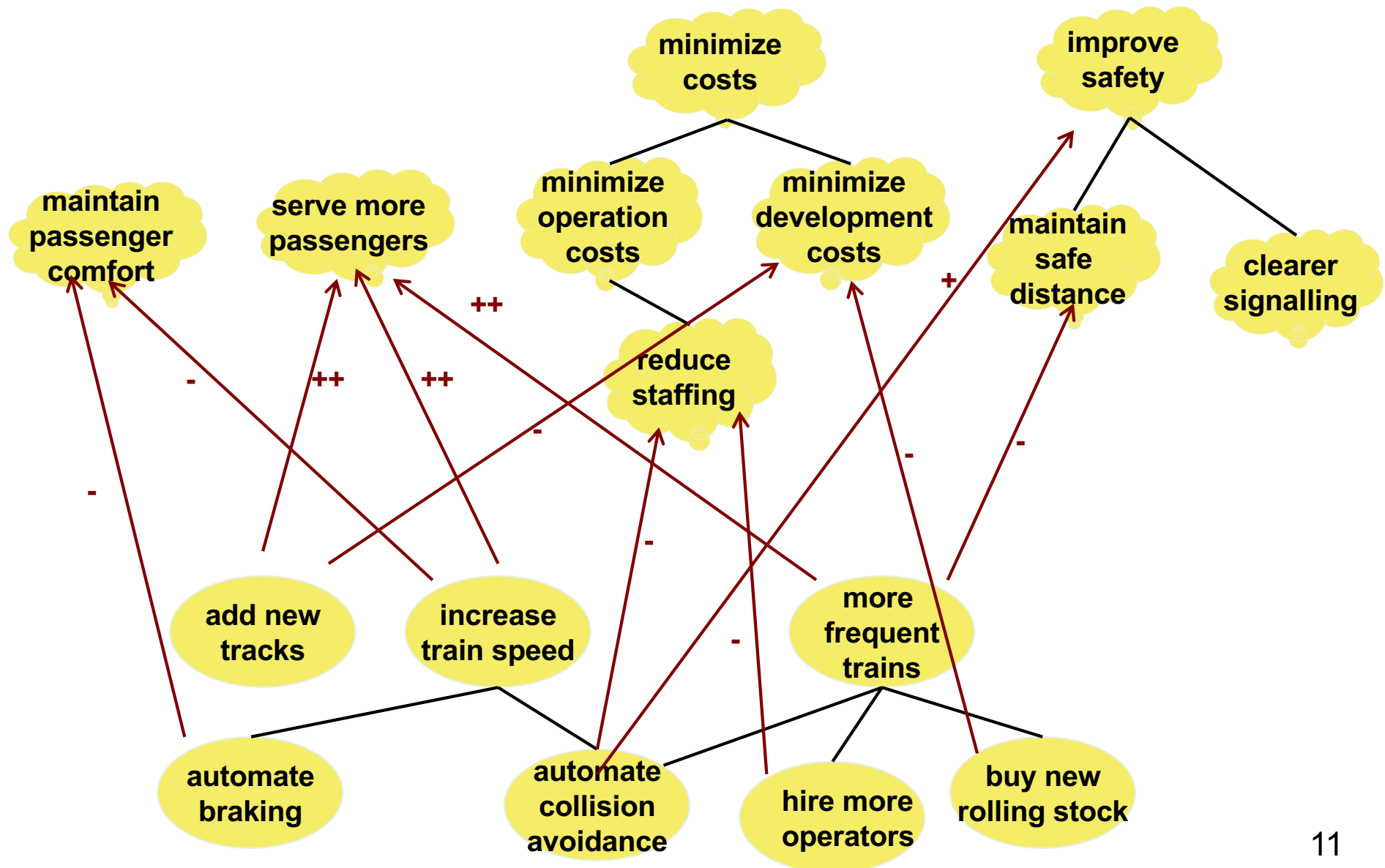
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 - **Goals support decision making**
 - Choose realisation that satisfies most of the defined goals

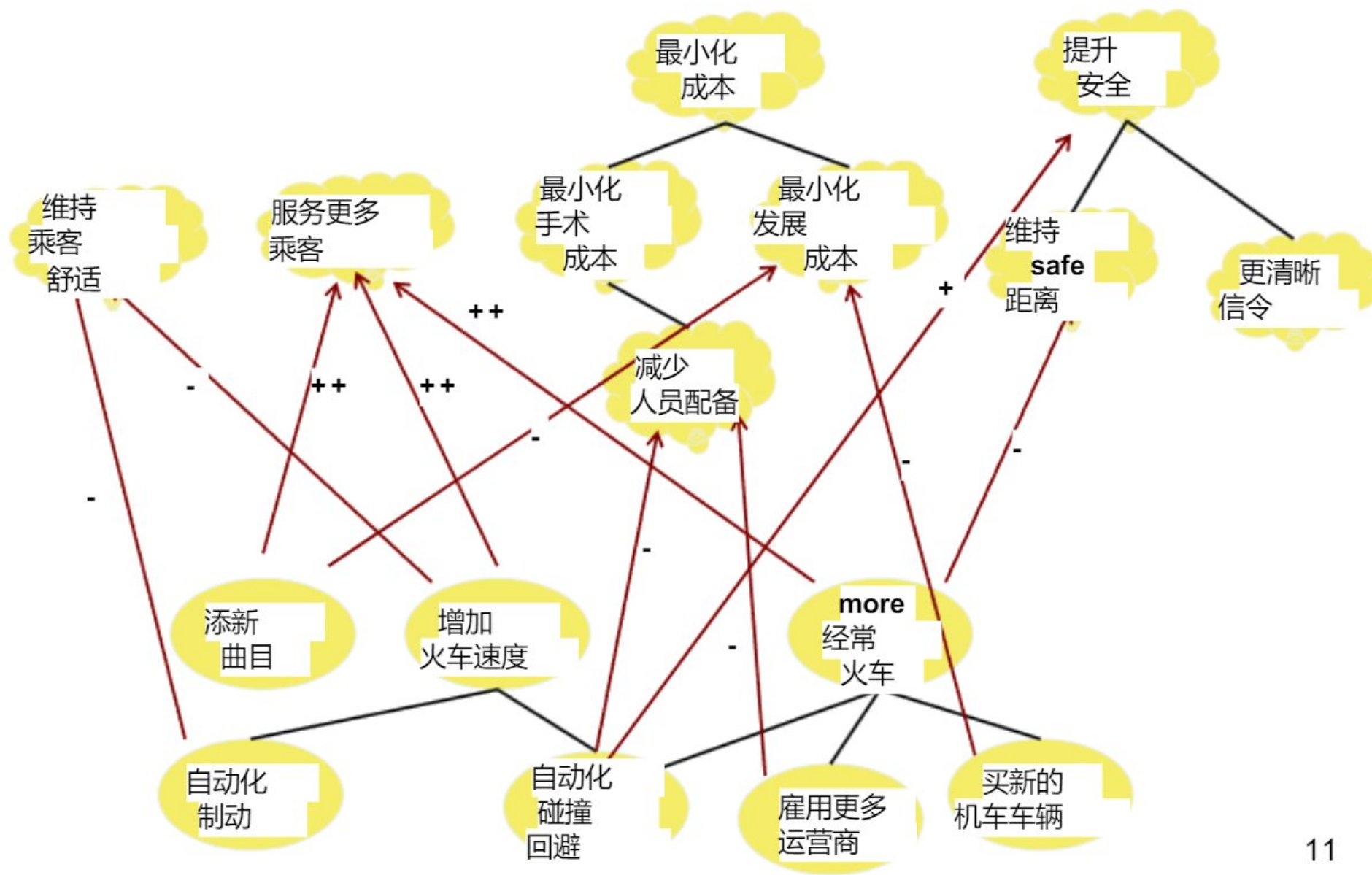
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- 选择满足大部分既定目标的实现

Softgoals as selection criteria



将软目标作为选择标准



Resolving Stakeholder Conflict

Identify
Analyse
Resolve
Document

- **Observations:**

- deviant behaviour & conflict are normal in small group decision making
- more aggression and less co-operation when communication is restricted
 - a decrease in communication tends to intensify a conflict
 - the contact hypothesis
- heterogeneous teams experience more conflict
- homogeneous groups are more likely to make high risk decisions
 - groupthink
- effect of personality is overshadowed by situational and perceptual factors

冲突

- 观察结果：
 - 在小组决策中，异常行为和冲突是正常的 – 当沟通受到限制时，更多的攻击性和更少的合作
- 沟通的减少往往会加剧冲突
 - 接触假设
 - 异质团队经历更多冲突 – 同质团队更有可能做出高风险决策
- 群体思维
 - 个性的影响被情境和感知因素所掩盖

Conflicts in different RE activities

Identify
Analyse
Resolve
Document

- **During the elicitation workshop**
 - Two stakeholders state requirements that contradict each other and hence cannot be realised together
- **When documenting requirements**
 - The stakeholders detect a conflict between two requirements that originate from different interviews
- **Requirements management**
 - Conflict occurs during requirements prioritisation – different stakeholders have different opinions regarding the requirements priority
- **Requirements validation**
 - Conflicts occurs while stakeholders check the specified requirements for correctness
 - One stakeholder considers a requirement correct – another objects

不同情况下的冲突

可再生能源活动

确认
分析
解决文档

- 在启发研讨会期间
 - 两个利益相关者提出的要求相互矛盾，因此无法共同实现
- 记录需求时
 - 利益相关者发现来自不同访谈的两个要求之间存在冲突
- 需求管理
 - 需求优先级划分过程中出现冲突 – 不同的利益相关者对于需求优先级有不同的看法
- 需求验证
 - 当利益相关者检查指定要求的正确性时，会发生冲突 – 一个利益相关者认为某项要求正确 – 另一个利益相关者反对

Conflict types

- **Data conflict**
- **Interest conflicts**
- **Value conflicts**

冲突类型

- 数据冲突
- 利益冲突
- 价值观冲突

Data conflict

- **Data conflict exists**

- if stakeholders are wrongly or incompletely informed about the requirement
- If stakeholders interpret the meaning of the requirements differently

- **Example:**

R4: The DVD player shall be able to **handle** re-writable CDs (CD-RW) and DVDs (DVD-RW).

A stakeholder disagrees with the requirement. In his opinion it does not make sense for a DVD player in the car to be able to **write** data onto CDs or DVDs.

数据冲突

- 存在数据冲突
 - 如果利益相关者对需求的了解错误或不完整 – 如果利益相关者对需求的含义有不同的解释
- 例子：
 - R4: DVD 播放器应能够处理可重写 CD (CD-RW) 和 DVD (DVD-RW)。

利益相关者不同意该要求。在他看来，汽车中的 DVD 播放器能够将数据写入 CD 或 DVD 上是没有意义的。

Interest conflict

- **Interest conflict exists**

- if stakeholders' interests or goals contradict each other

- **Example:**

- A stakeholder wants the car entertainment system to be equipped with MP3 functionality, and optional hard disk, and a USB interface in order to attract technology-oriented customers.

- Another stakeholder wants the system to be equipped merely with standard CD player functionality and a radio. His goal is to reduce the cost in order to attract price-conscious customers.

利益冲突

- 存在利益冲突
 - 如果利益相关者的利益或目标相互矛盾
- 例子：
 - 一位利益相关者希望汽车娱乐系统配备MP3功能，并可选配硬盘和USB接口，以吸引注重技术的客户。

另一位利益相关者希望系统仅配备标准 CD 播放器功能和收音机。他的目标是降低成本，以吸引对价格敏感的客户。

Value conflict

- **Value conflict exists**

- if different stakeholders evaluate a requirement differently
- Each stakeholder considers the importance of requirement differently

- **Example:**

A stakeholder demands that the DVD player of the car entertainment system shall support the OGG format in addition to MP3 format.

Another stakeholder objects to this requirement since he thinks that supporting the OGG format is unimportant.

价值观冲突

- 存在价值冲突
 - 如果不同的利益相关者对需求的评估不同 – 每个利益相关者对需求重要性的考虑不同
- 例子：

有利益相关者要求车载娱乐系统的DVD播放器除支持MP3格式外，还应支持OGG格式。

另一位利益相关者反对这一要求，因为他认为支持 OGG 格式并不重要。

Heuristic of Conflict Analysis

- **Checking for conflict analysis**
 - Let stakeholders explain the conflicting requirements
 - Does one of the explanations deviate from the actual requirements?
 - **If so, a data conflict exist**
- **Asking for the stakeholders' interests**
 - Ask the stakeholders for their goals with regard to the conflicting requirements
 - Check the resulting goals for contradictions
 - **If there is a contradiction, an interest of conflicts exists**
- **Clarify the stakeholders' evaluation background**
 - Ask the stakeholder why he/she evaluates the conflicting requirements in the way he/she does
 - Check the evaluation backgrounds of the different stakeholders for differences that may cause the detected conflicts.
 - **If there is such a difference, a value conflict exists**

启发式冲突分析

- 检查冲突分析
 - 让利益相关者解释相互冲突的要求 – 其中一项解释是否偏离实际要求？
 - 如果是，则存在数据冲突
- 询问利益相关者的利益
 - 询问利益相关者关于冲突要求的目标 – 检查最终目标是否存在矛盾
 - 如果有矛盾，就存在利益冲突
- 明确利益相关者的评价背景
 - 询问利益相关者为什么他/她以他/她的方式评估冲突的需求 – 检查不同利益相关者的评估背景是否存在可能导致检测到的冲突的差异。
 - 如果存在这样的差异，则存在价值冲突

Resolving Conflicts

- The approach used to settle a conflict
 - Methods include negotiation, competition, arbitration, coercion, and education
 - Not all conflicts need a resolution method: not all conflicts need to be resolved

» **Negotiation**

» **Creative solution**

» **Decision**

- Example
 - A car safety shall be equipped with radar technology in order to be able to monitor the traffic ahead of the car. There is a conflict among two groups of stakeholders regarding the distance up to which the radar sensor shall monitor the traffic in front of the car. One group demands 1000 m, the other one demands 500 m.

解决冲突

- 用于解决冲突的方法
 - 方法包括谈判、竞争、仲裁、强制、教育 – 不是所有的冲突都需要解决方法：不是所有的冲突都需要解决
 - » 谈判
 - » 创意解决方案
 - “ 决定
- 例子
 - 汽车安全装置应配备雷达技术，以便能够监控汽车前方的交通情况。关于雷达传感器监控汽车前方交通的距离，两组利益相关者之间存在冲突。一组要求 1000 m，另一组要求 500 m。

Resolving Conflicts: Negotiation

Identify
Analyse
Resolve
Document

- **Agree on the solution by means of negotiation**
 - Exchange argument
 - Agree upon solution
- **Example**
 - The stakeholders resolve the conflict using the negotiation strategy by agreeing on a detection range of 750 m.

- **Negotiation**
 - **...is collaborative exploration:**
 - participants attempt to find a settlement that satisfies all parties as much as possible
 - **also known as:**
 - integrative behaviour
 - constructive negotiation
 - **distinct from:**
 - distributive/competitive negotiation

解决冲突： 谈判

确认
分析
解决
文档

- 同意解决方案
谈判手段
 - 交换论点
 - 就解决方案达成一致
- 例子
 - 利益相关者通过协商策略解决冲突，商定检测范围为 750 m。

- 谈判
 -是协作的
勘探：
 - participants attempt
找到一个解决办法
使各方都满意
尽可能多
 - 也称为：
 - 整合行为
 - 建设性谈判
 - 区别于：
 - distributive / competitive

Resolving Conflicts: Negotiation

Identify
Analyse
Resolve
Document

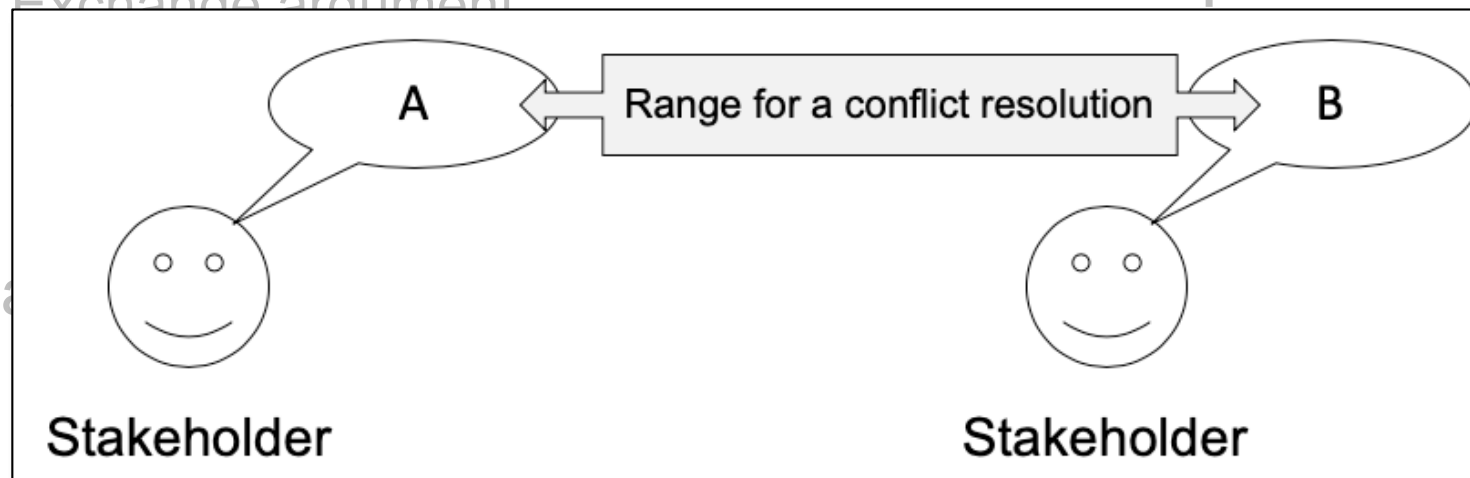
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-

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-



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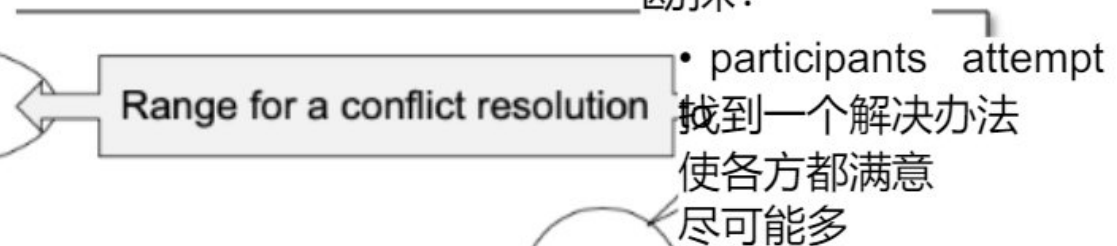
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- 也称为：

- 整合行为
• 建设性谈判

Stakeholder

- 区别于：

- distributive / competitive

Resolving Conflicts:

Creative solution

Identify
Analyse
Resolve
Document

- Original viewpoints are **discarded**
- A **new, creative solution** is developed to harmonise the viewpoints
- Example
 - The stakeholders resolve the conflict by proposing a novel solution. By equipping the car with laser sensor instead of a radar sensor the detection range is increased to 1000 m without causing additional cost.

解决冲突： 创意解决方案

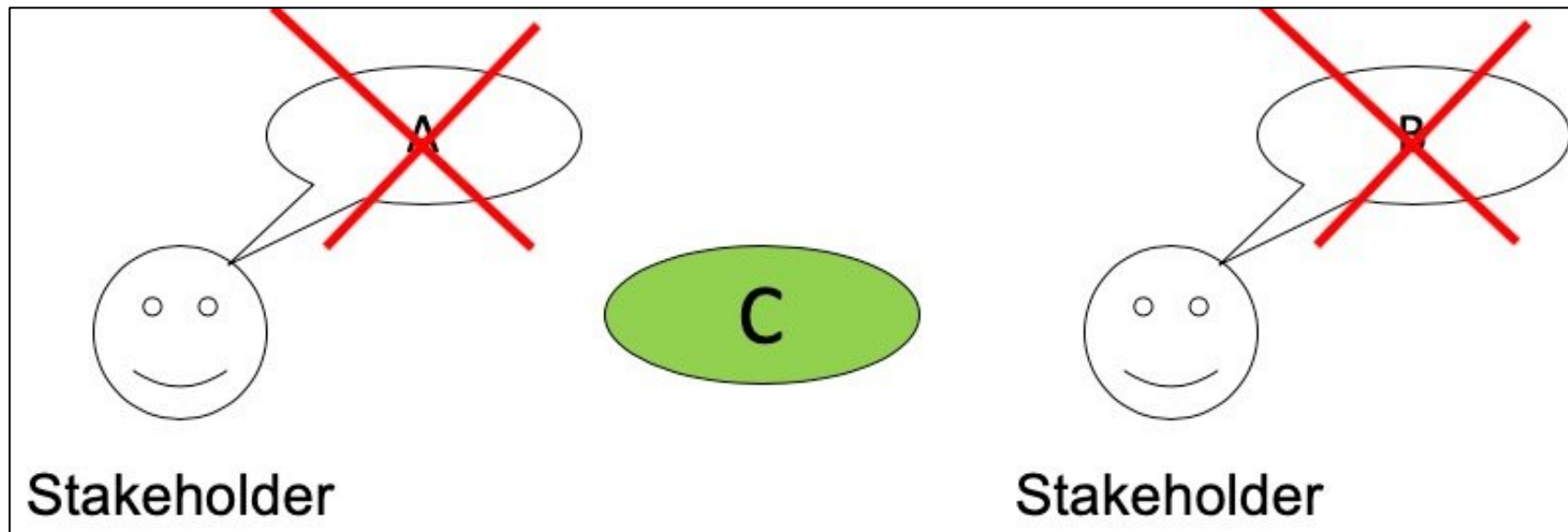
确认
分析
解决
文档

- 原有的观点被抛弃
- 开发了一种新的、创造性的解决方案来协调观点
- 例子
 - 利益相关者通过提出新颖的解决方案来解决冲突。通过为汽车配备激光传感器而不是雷达传感器，检测范围可增加至 1000 m，且不会产生额外成本。

Resolving Conflicts: Creative solution

Identify
Analyse
Resolve
Document

- Original viewpoints are **discarded**
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解决冲突： 创意解决方案

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Stakeholder

Stakeholder

Decision

- Higher **authority** makes a decision
 - in favour of one conflicting party
- **Example**
 - The client is involved as a higher authority. The client decides that the detection range shall be 500 m.
- **Voting**

- **Third Party Resolution**
 - **participants appeal to outside source**
 - the rule-book, a figure of authority, or the toss of a coin.
 - can occur with the breakdown of either negotiation or competition as resolution methods.
 - **types of third party resolution**
 - **judicial**: cases presented by each participant are taken into account
 - **extra-judicial**: a decision is determined by factors other than the cases presented (e.g. relative status of participants)
 - **arbitrary**: e.g. toss of a coin

解决冲突： 决定

确认
分析
解决
文档

- 上级机关作出决定
 - 有利于冲突一方
- 例子
 - 客户作为更高权威参与其中。客户确定检测范围为500m。
- 表决

• 第三方解决方案

– 参与者呼吁外部资源

- the rule - book , a figure 权威, 或者抛硬币。 • 可以通过谈判或竞争作为解决方法的失败而发生。

– 第三方解决方案的类型

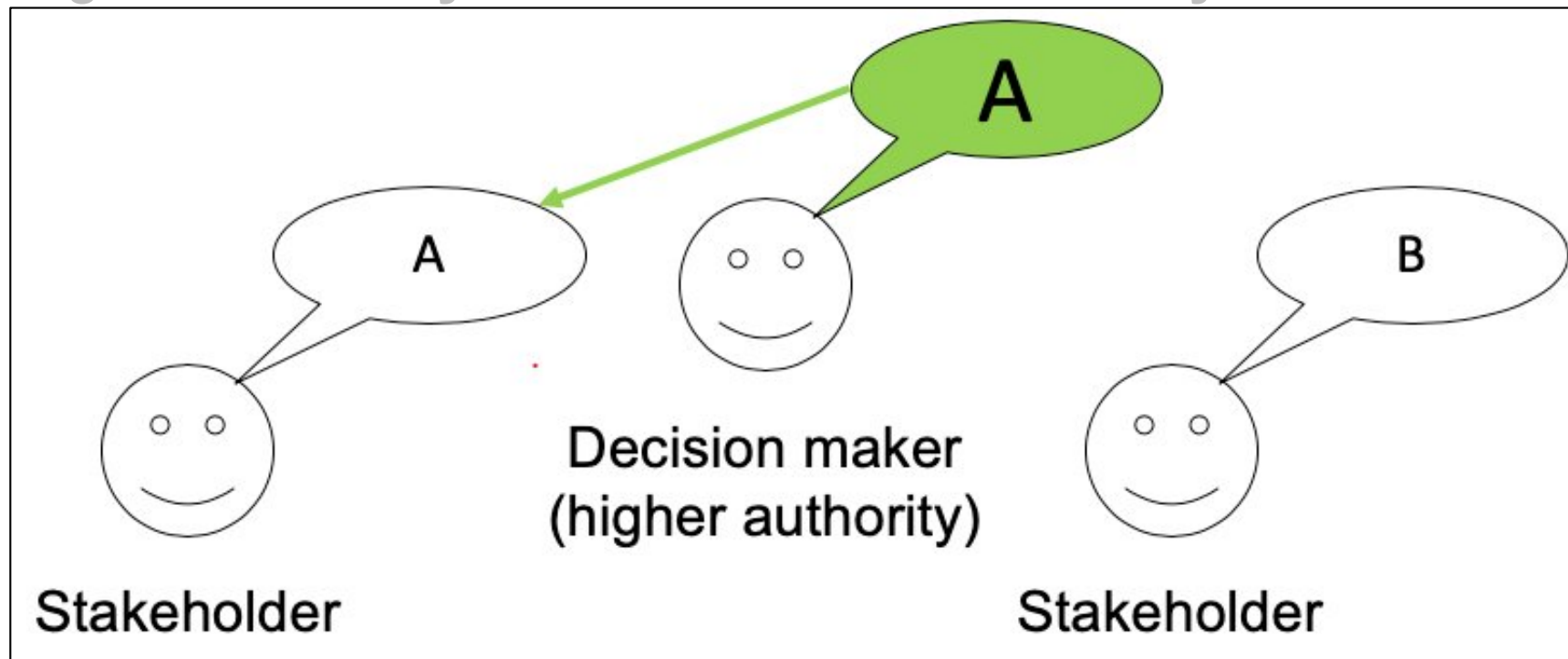
- 司法：考虑每个参与者提出的案件 • 司法外：决定由所提出的案件以外的因素决定（例如参与者的相对地位）

- 任意：例如抛硬币

Resolving Conflicts: Decision

Identify
Analyse
Resolve
Document

- Higher authority makes a
- Third Party Resolution



- Voting
- arbitrary: e.g. toss of a coin

解决冲突： 决定

确认
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- 表决

- 任意：例如抛硬币

Documenting Conflict Resolution

- Document resolutions
 - To make them traceable
 - The achieved solution may be forgotten and conflict may reoccur in other/related requirements
- Document central arguments
 - Conflict resolution
 - Arguments of the conflicting parties
 - Pros and cons of each viewpoint

记录冲突解决

- 文件决议
 - 使它们可追溯 – 实现的解决方案可能会被遗忘，并且其他/相关需求中可能会再次发生冲突
- 记录中心论点
 - 冲突解决 – 冲突各方的论点 – 每种观点的利弊

Message to Take Home

- Requirements Negotiation
 - Conflict identification and resolution
 - Causes of conflicts
 - Types of conflicts
 - Resolution



带回家的信息

- 需求洽谈

– 冲突识别和解决 – 冲突原因 – 冲突类型 – 解决方案

