Requirements Engineering

(Summer 2021)

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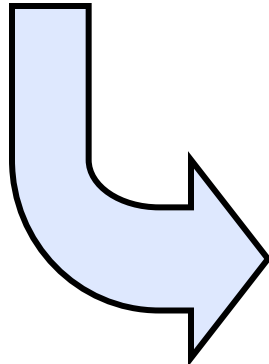
https://github.com/nanniu/RE-Summer2021
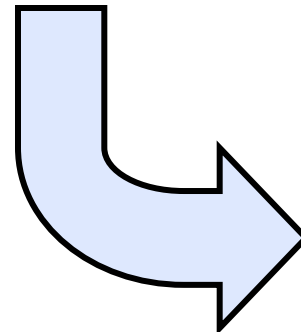
Today's Menu

Monday (July 19)
Req.s Modeling
ASN2 Release

Tuesday (July 20):
$i*$
ASN3 Release

Wednesday (July 21):
RE Research
(ASN2, ASN3 Q&A)

Yesterday's Take-Aways

→Most common form of requirements is: <u>NL</u>

→Characteristics of a good SRS are: <u>8</u>

→Agile req.s are often expressed in: <u>user stories</u>

→Assignment 2 is about: <u>Your RE story</u>

Today's Take-Aways

→ i^*: what, why, & how?

→ Assignment 3: what & when?

Assignment 3

→Given 15 functional requirements (FRs)

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📄 ASN3-FRs-July20.pdf

→Objectives

  ↪Understand the 15 FRs and build an i^* model based on your understanding

  ↪Describe your i^* modeling process & softgoal tradeoff analysis

→Due: before 9am on Thursday (July 22)

Year	Category of Paper	Authors	Title of Paper
2007		Eric Yu	Towards Modelling and Reasoning Support for Early-Phase Requirements Engineering

*i**

Two views (SD & SR)

Five nodes (actors, goals, softgoals, tasks, resources)

Three edges (dependency, decomposition, softgoal contribution)

Practical Impacts of $i*$

→ **International standard**

↳ **User Requirements Notation (URN)**

➤ Goal Requirements Language (GRL) www.itu.int/rec/T-REC-Z.151/en

↳ **Initiated from the telecom industry**

↳ **ITU-T Recommendation Z.151**

→ **Real-world applications**

↳ **Air traffic control**

➤ N. Maiden *et al.* "Model-Driven Requirements Engineering: Synchronising Models in an Air Traffic Management Case Stud", CAiSE, 2004.
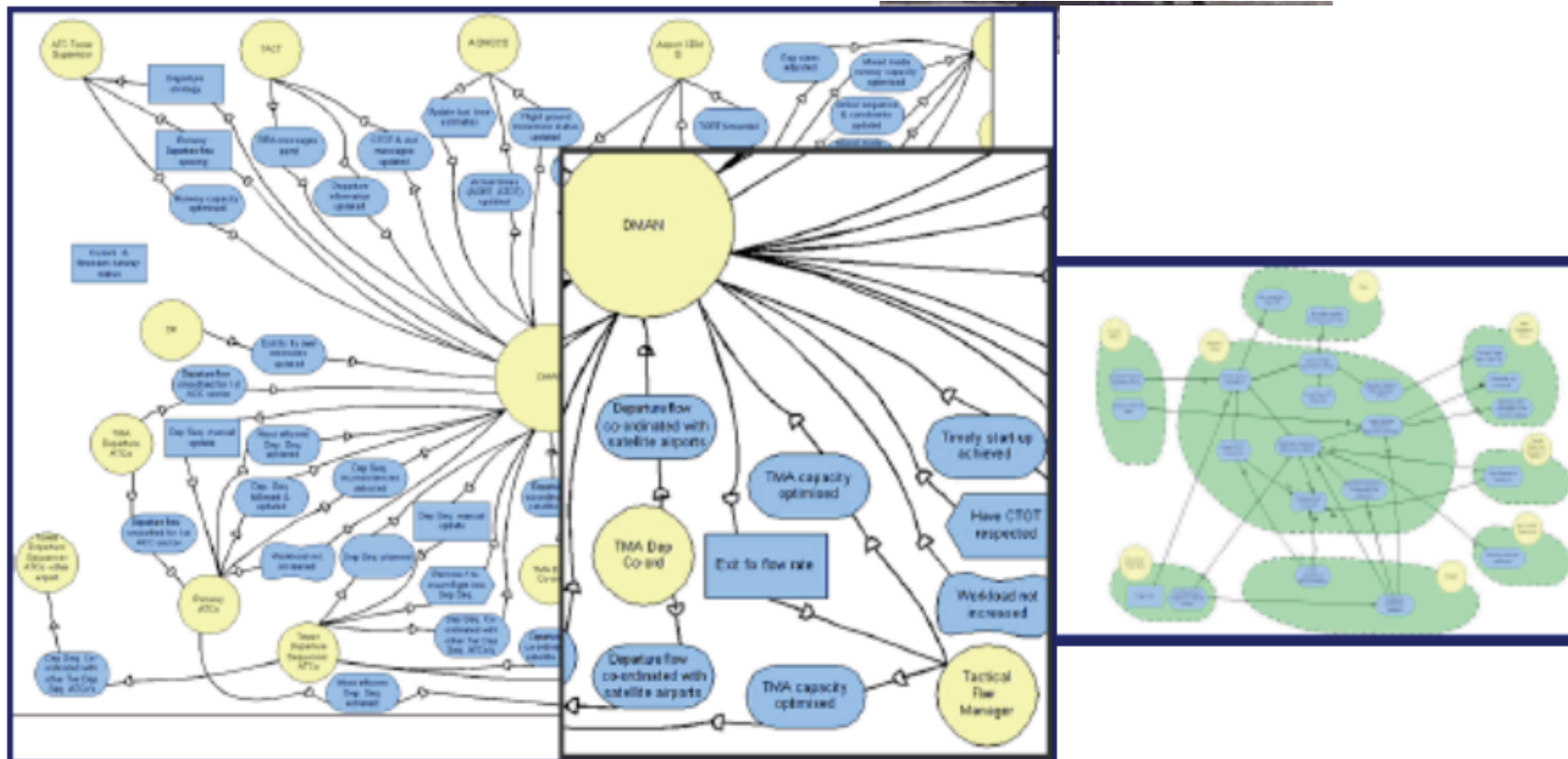
↳ **Food safety**

➤ A. Perini and A. Susi. "Designing a Decision Support System for Integrated Production in Agriculture: An Agent-Oriented Approach", Environmental Modelling and Software Journal, 19(9), September 2004.

↳ **Hospital wards**

➤ S. Kethers *et al.* "Modelling Trust Relationships In A Healthcare Network: Experiences With The TCD Framework", ECIS 2005.
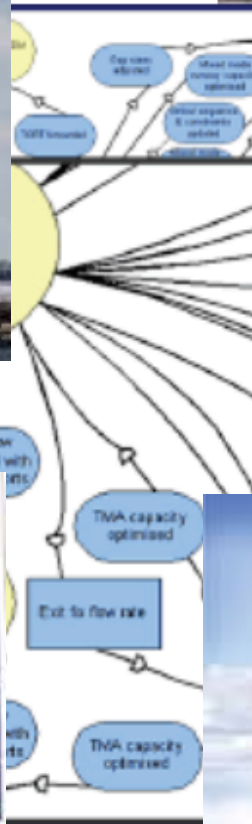
Air Traffic Control
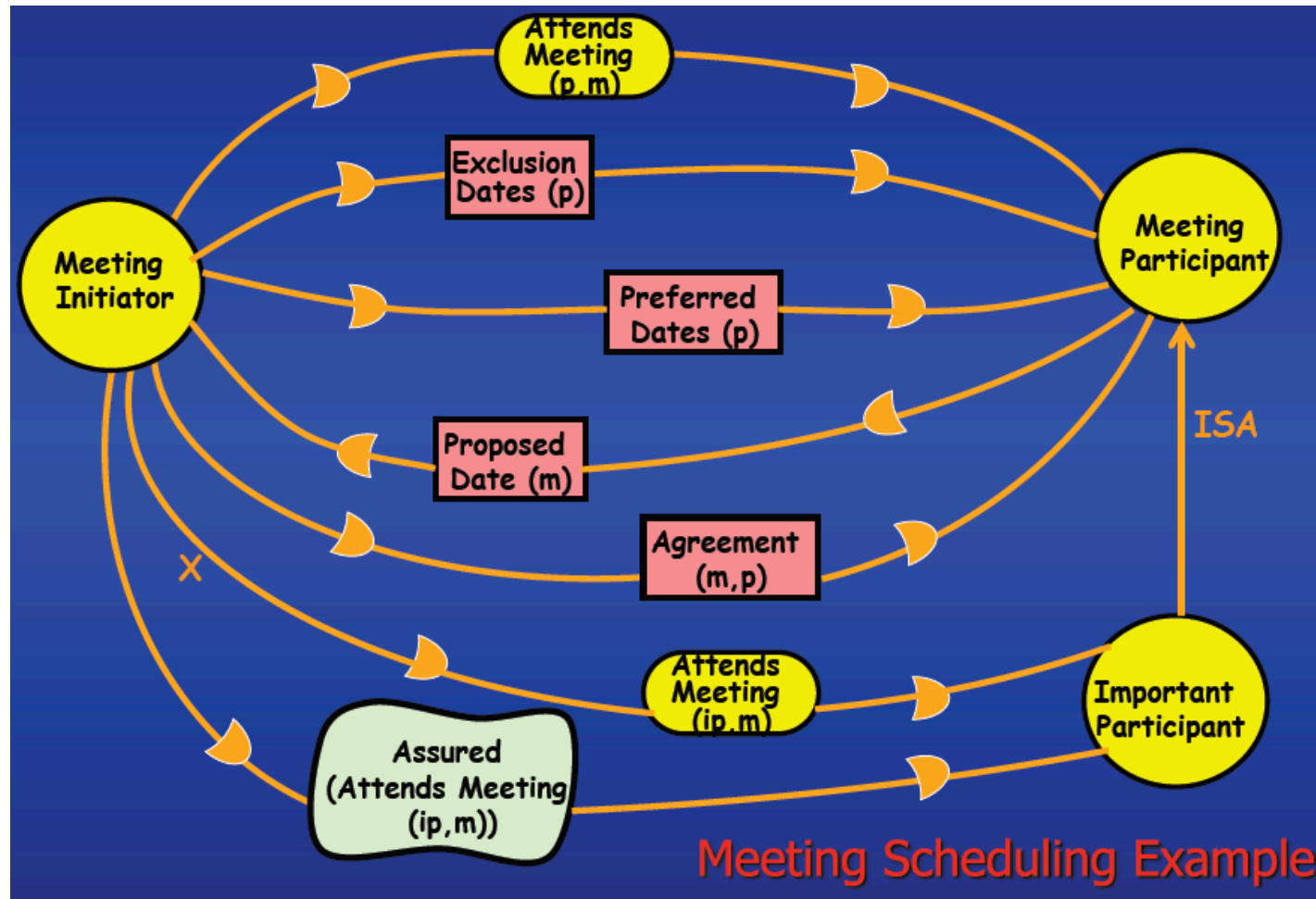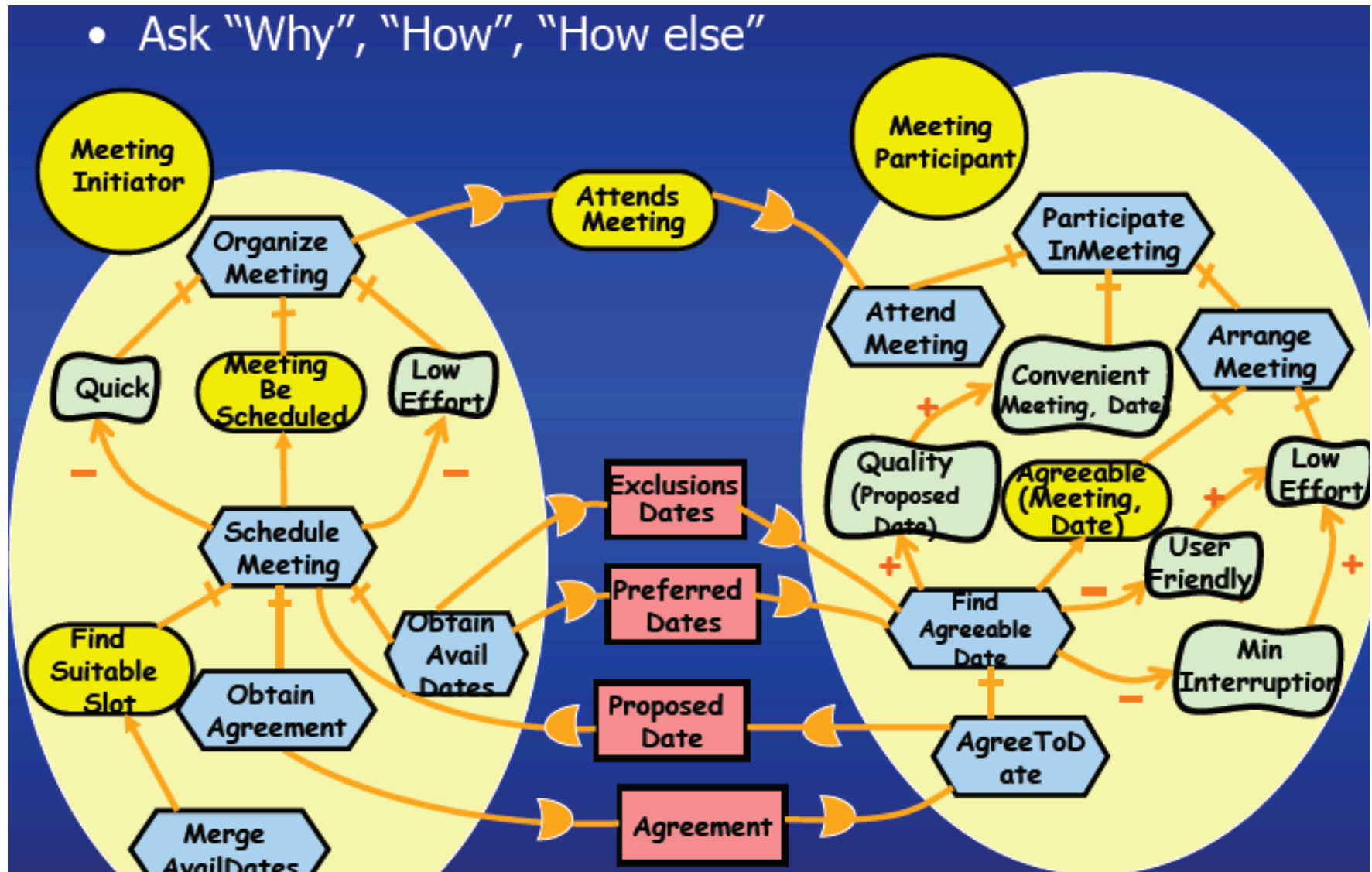
Air Traffic Control

Strategic Dependency (SD)

Meeting Scheduling Example

Strategic Rationale (SR)

Class Exercise – *i** Modeling

→ Let's model our summer course

- ↳ Who're the key stakeholders/actors?
- ↳ How're they depended on each other?
- ↳ What're their goals?
- ↳ How to decompose the goals?
- ↳ What're the means and/or alternatives to achieve the goals?
- ↳ Are there any softgoals?
- ↳ How're the softgoals supported or hindered?
- ↳ Does software-intensive system play any role here?

→ Let me do SD with you first followed by SR

Assignment 3

→**Given 15 functional requirements (FRs)**

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→**Objectives**

↳**Understand the 15 FRs and build an $i*$ model based on your understanding**

↳**Describe your $i*$ modeling process & softgoal tradeoff analysis**

→**Due: before 9am on Thursday (July 22)**

Goal Analysis

→ **Goal Elaboration:**
- ↳ "Why" questions explore higher goals (context)
- ↳ "How" questions explore lower goals (operations)
- ↳ "How else" questions explore alternatives

→ **Relationships between goals:**
- ↳ One goal **helps** achieve another (+)
- ↳ One goal **hurts** achievement of another (-)
- ↳ One goal **makes** another (++)
  - ➢ Achievement of one goal guarantees achievement of another
- ↳ One goal **breaks** another (--)
  - ➢ Achievement of one goal prevents achievement of another
- ↳ Precedence ordering (must achieve goals in a certain order)

→ **Obstacle Analysis:**
- ↳ Can this goal be obstructed, if so how?
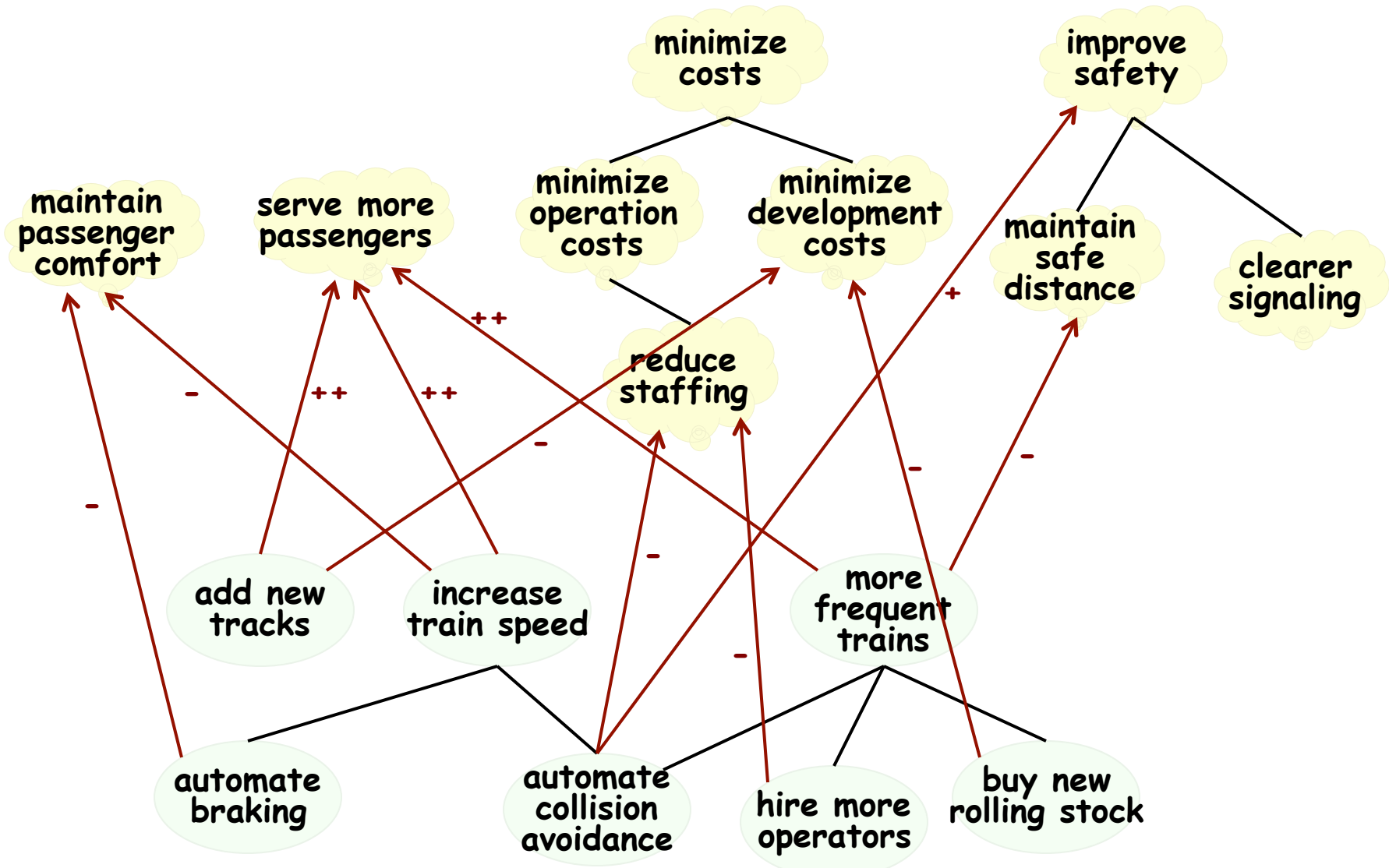- ↳ What are the consequences of obstructing it?

Softgoals as Selection Criteria

BART
ba

**Bay Area
Rapid Transit**

What're (high-level) softgoals of BART?

Softgoals as Selection Criteria

Assignment 3

→**Given 15 functional requirements (FRs)**

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→**Objectives**

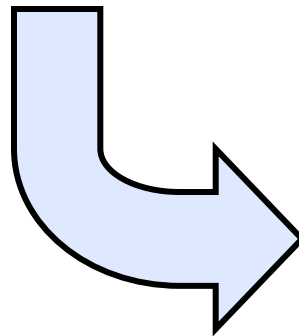↳**Understand the 15 FRs and build an $i*$ model based on your understanding**

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Tomorrow, we're heading to ...

Wednesday (July 21):
RE Research
(ASN2, ASN3 Q&A)