

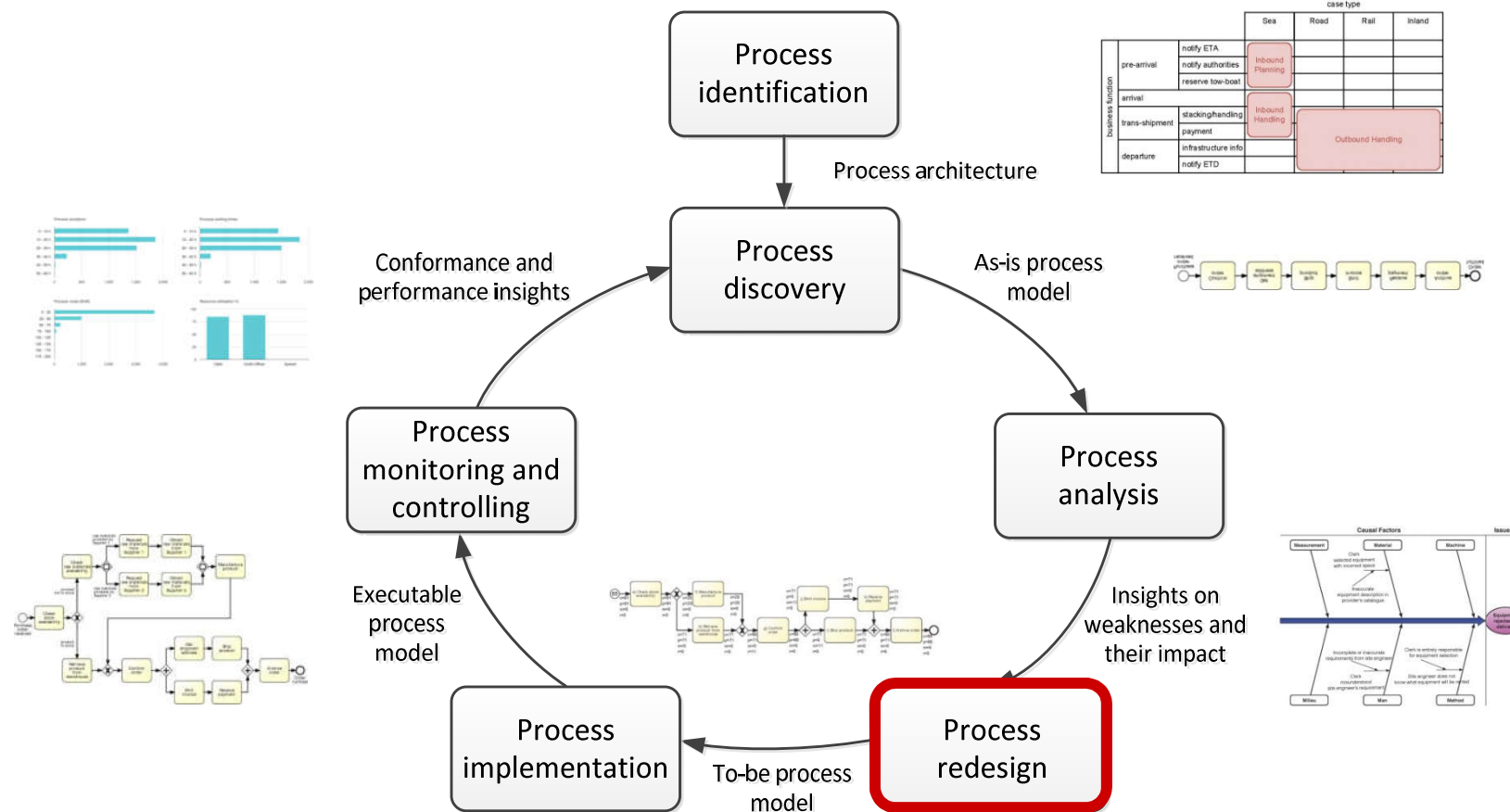
MTAT.03.231  
Business Process Management

# **Lecture 8 –Process Redesign II**

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# Process redesign



# Process redesign approaches

## Exploitative Redesign (transactional)

- Doesn't put into question the current process structure
- Seeks to identify problems and resolve them incrementally, one step at a time
- **Example: Heuristic redesign**

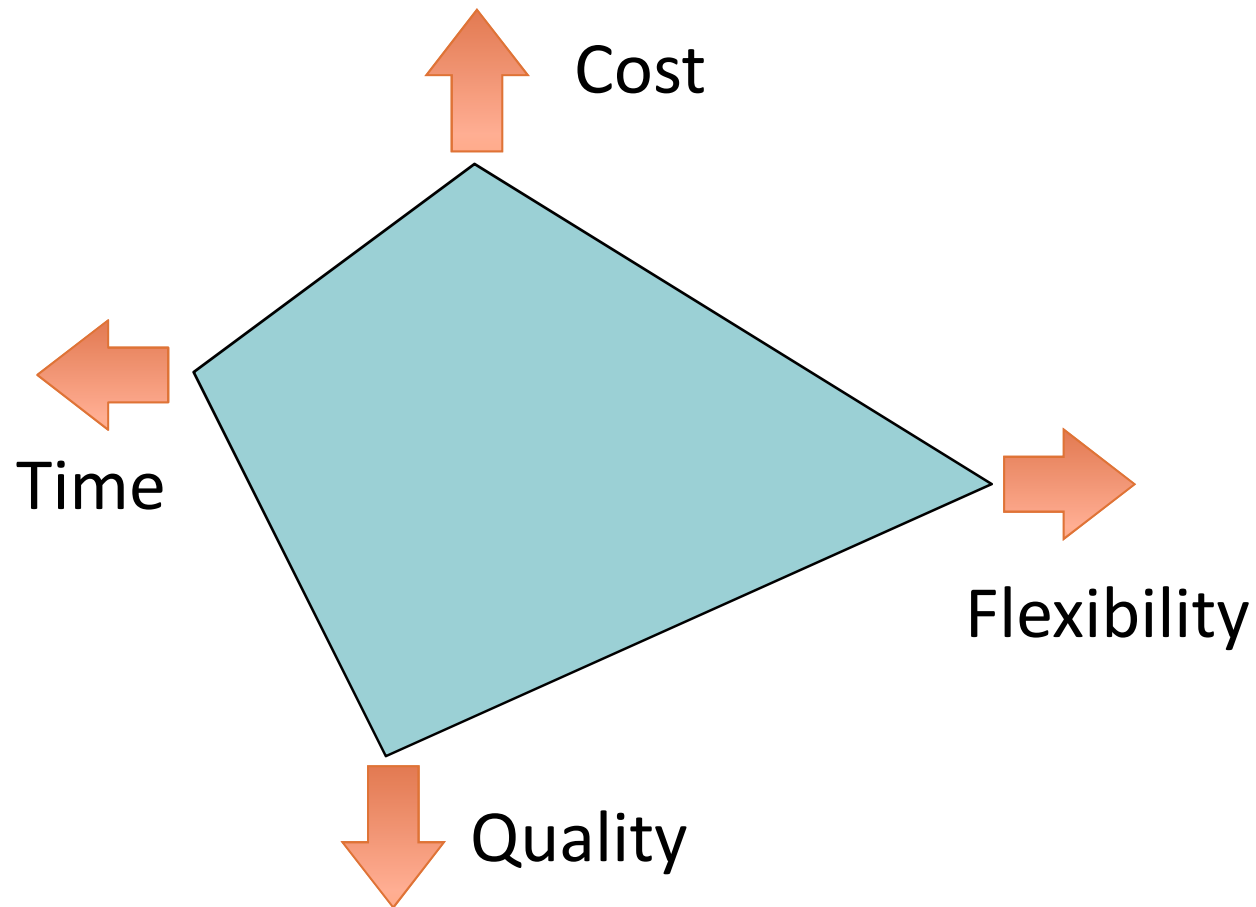
## Explorative Redesign (transformational)

- Puts into question the fundamental assumptions and principles of the existing process structure
- Aims to achieve breakthrough innovation
- **Example: Business Process Reengineering (BPR)**

# Heuristic process redesign

- **Transactional:** changes the “as is” process incrementally
- **Inward-looking:** operates within the scope and context of “as is” process
- **Analytical:** based on redesign heuristics that strike tradeoffs between:
  - Cost
  - Time
  - Quality
  - Flexibility

# Performance measures: the Devil's Quadrangle



# Flexibility

- Ability to react to changes in:
  - Workload
  - Customer demands and expectations
  - Resource and business partner availability and performance
- Example: Following natural disasters (e.g. storms), the number of home insurance claims increases by tenfold
- To address this surge, flexibility is required at:
  - Resource level: Staff redeployment, faster performance
  - Process level: Performing tasks differently to speed up the front-end
  - Management: Relaxing business rules and controls where possible

# Redesign heuristics

## Task-level

- Task elimination
- Task composition/decomposition
- Triage

## Flow-level

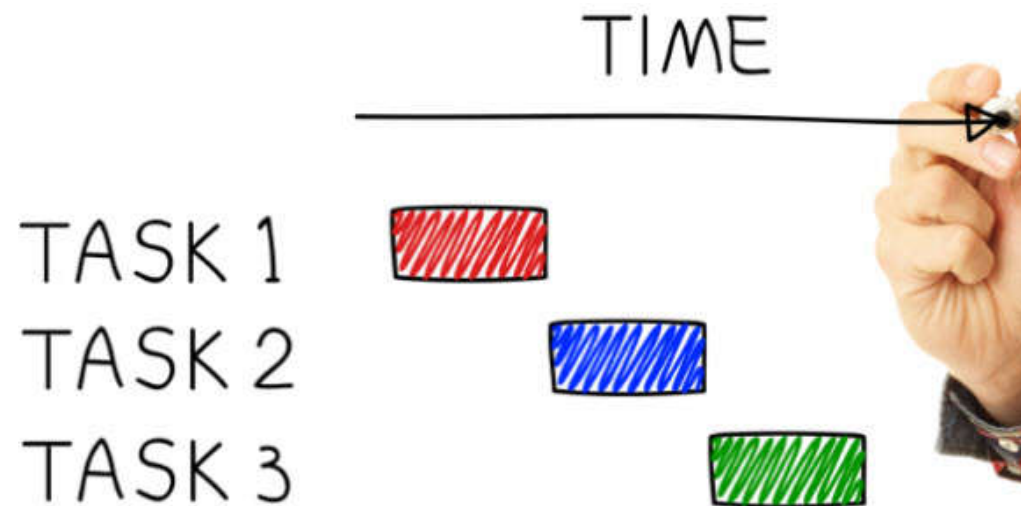
- Re-sequencing
- Parallelism enhancement

## Process-level

- Specialization & standardization
- Resource optimization
- Communication optimization
- Automation

# Task-level redesign heuristics

1. Task elimination
2. Task composition/decomposition
3. Triage





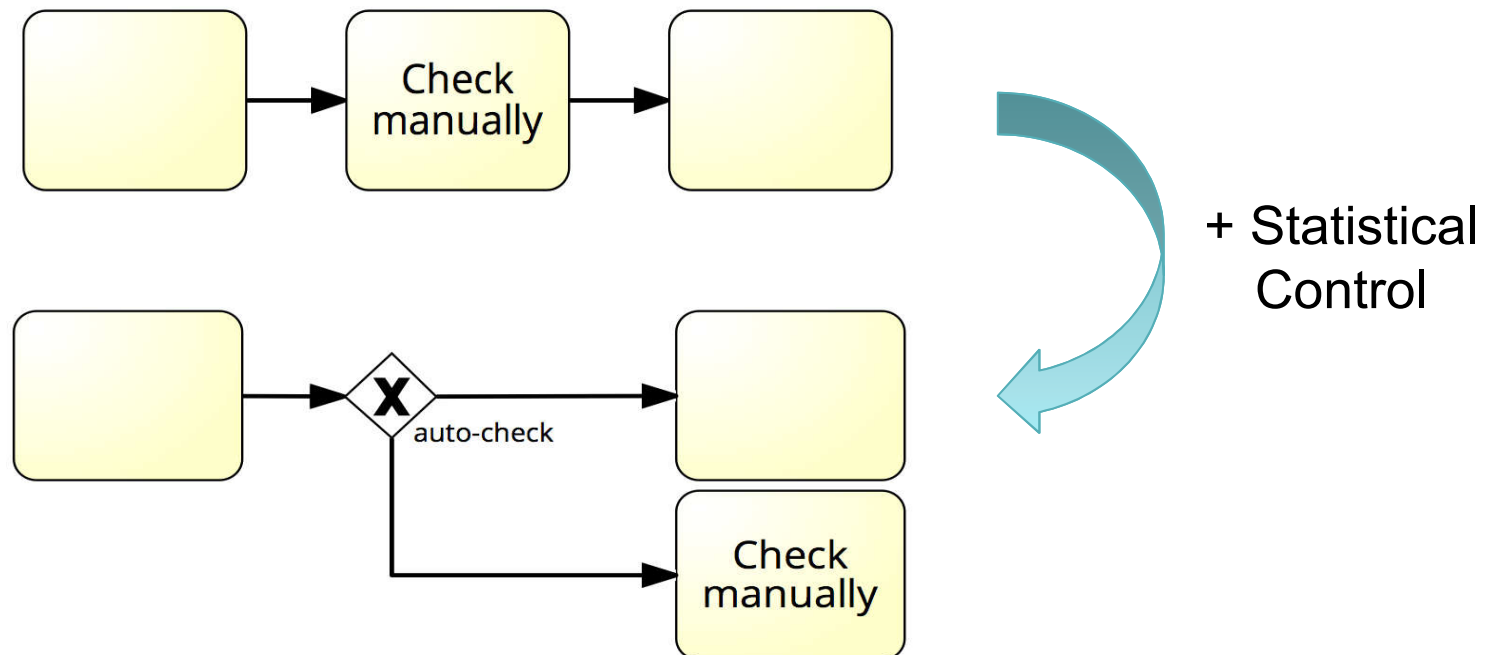
# H1. Task elimination

Eliminate non-value-adding steps wherever these can be isolated

- Forward, send, receive, ...

Consider reducing manual control steps (checks & approvals) by:

- Skipping them where feasible
- Replacing them with statistical controls
- Skipping them selectively



# H1. Task elimination

(T+, C+/-, Q-)

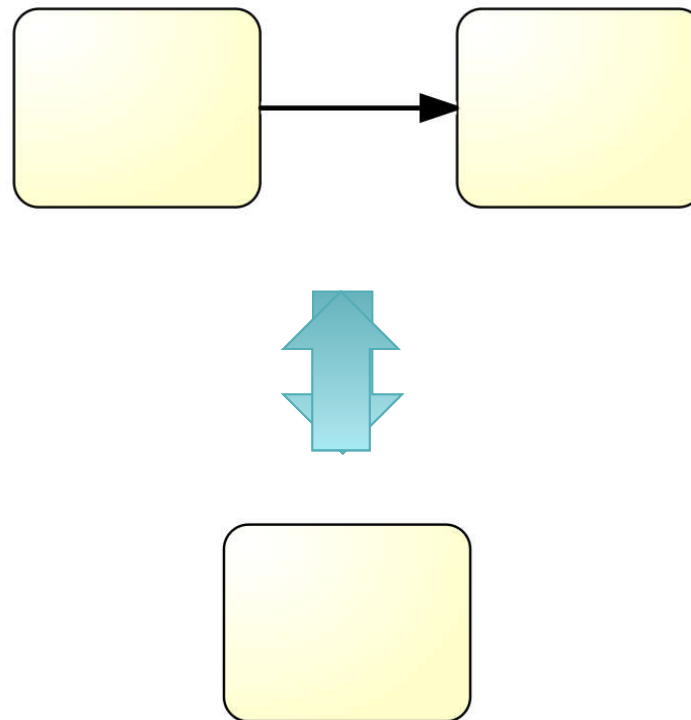
Consider trade-off between the cost of the check and the cost of not doing it

Examples:

- Procure-to-pay process: some types of employees are empowered to trigger isolated purchases below \$500 without supervisor approval
- Order-to-cash process: invoices from trusted suppliers under \$1000 are not checked on a one-by-one basis
- University admission process: authenticity check is very expensive, yet it leads to only 1% of applications being rejected

## H2. Task composition/decomposition

- Consider composing two tasks to eliminate transportation and reduce “context switches”, OR
- Consider splitting a task into two and assign to separate, specialized resources



## H2. Task composition and decomposition

### Composition example:

- Procure-to-pay process: Merging two checks: “Check necessity of purchase” and “Check budget”

### Decomposition example:

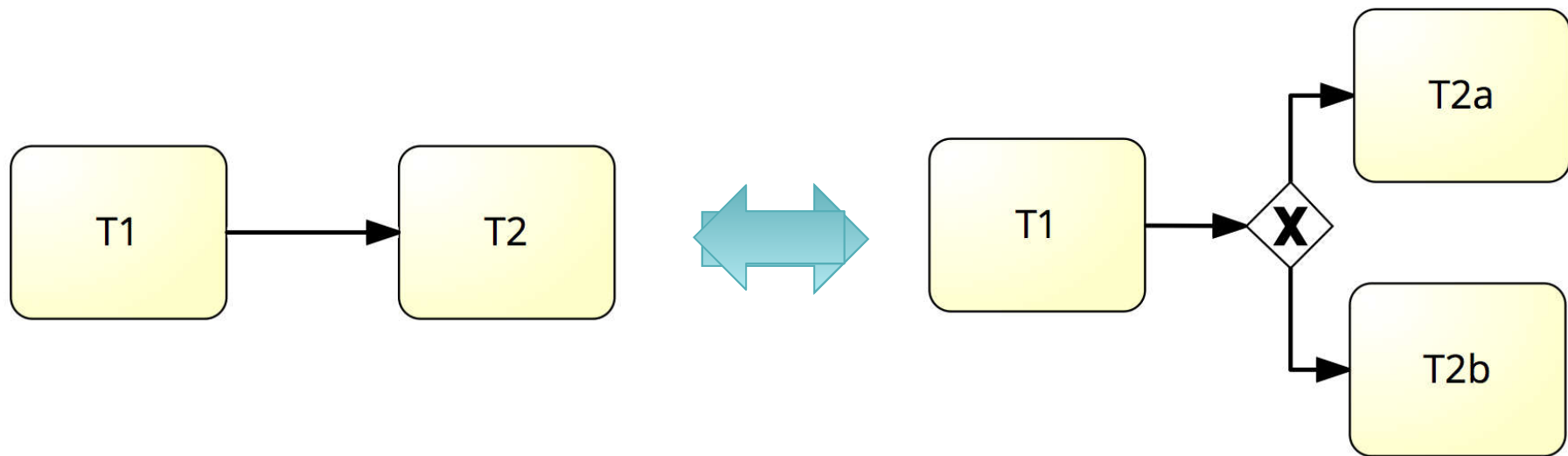
- Make-to-order process: Separate a single thick “prepare quote” task into “prepare bill of materials”, “prepare production plan” and “estimate costs and delivery time”

**Composition: (T+, C+/-, F+)**

**Decomposition: (T-, C+, F-)**

## H3. Triage

- Specialize a task: divide a *general* task into two or more alternative tasks
- Generalize tasks: integrate two or more alternative tasks into one general task



## H3. Triage

Specialization example:

- Procure-to-pay process: Separate approvals of *small* purchases, *medium* purchases and *large* purchases

Generalization example:

- Make-to-order process: Integrate quote preparation for two product lines into one single task

**Specialization: (T+, C+/-, F-)**

**Generalization: (T-, C+/-, F+)**

# Flow-level redesign heuristics

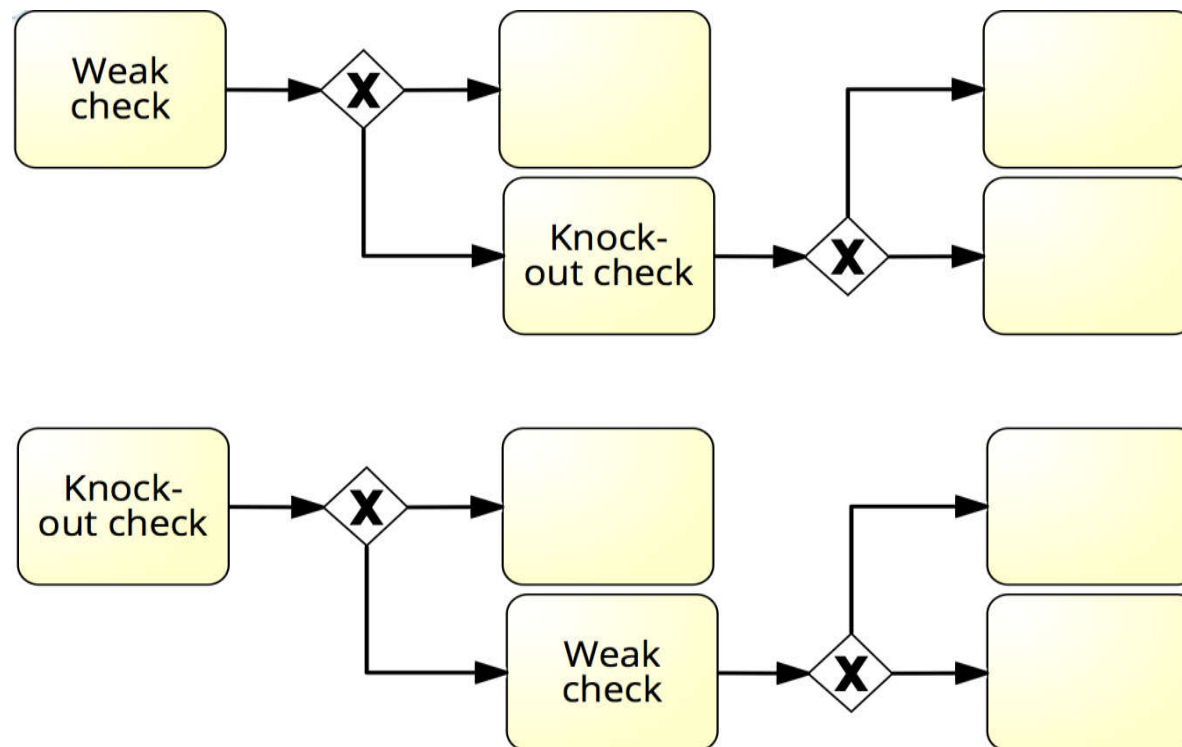
4. Re-sequencing
5. Parallelism enhancement



## H4. Re-sequencing

Re-order tasks according to their cost/effect ratio to minimize over-processing

- Postpone expensive tasks that may end up not being necessary until the end
- Put *knock-out* checks first in order to identify problems early





## H4. Re-sequencing

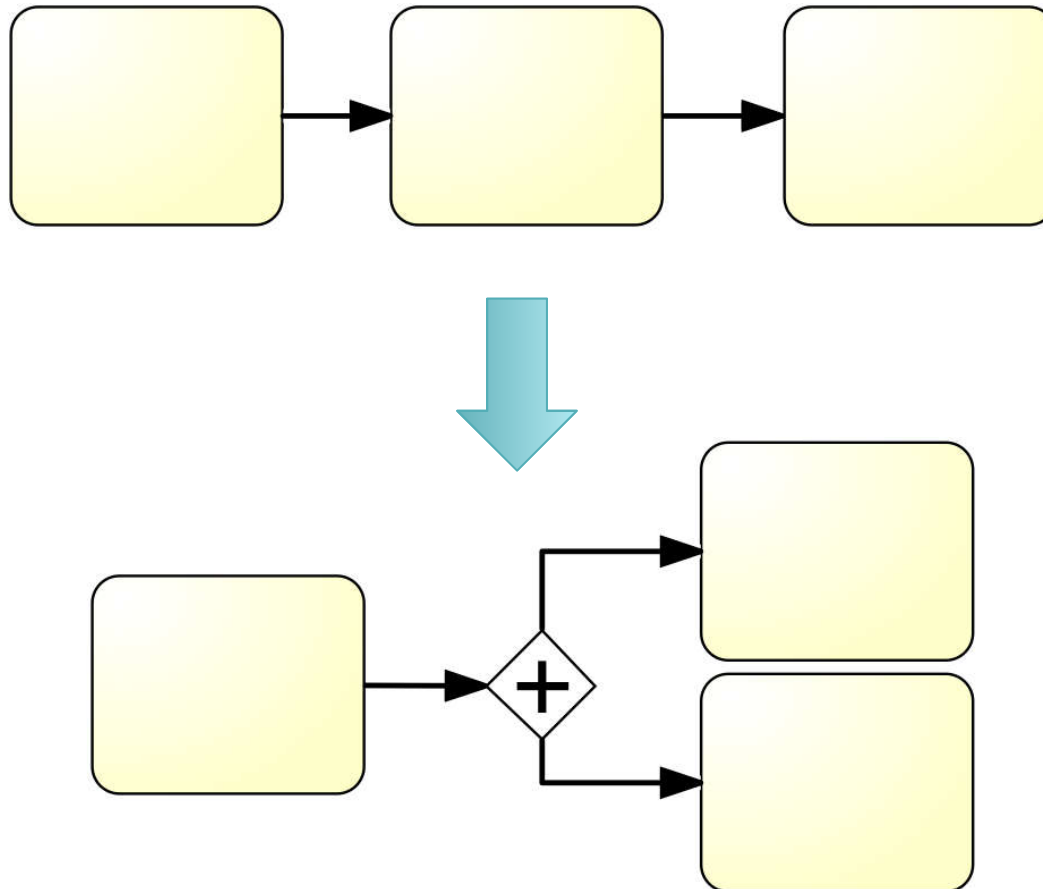
(T+,C+)

### Examples:

- Make-to-order process: If “Prepare production plan” is time-consuming, postpone it until after the quote price has been tentatively accepted by the customer
- Procure-to-pay process: If “Check necessity of purchase” leads to 20% of knock-outs and “Check budget” leads to 2%, perform “Check necessity of purchase” first
- University admission process: authenticity check (very slow) leads to 1% of applications being rejected while committee’s check leads to 80% of applications being rejected. Put committee’s check first

## H5. Parallelism enhancement

Parallelize tasks where possible in order to reduce cycle time

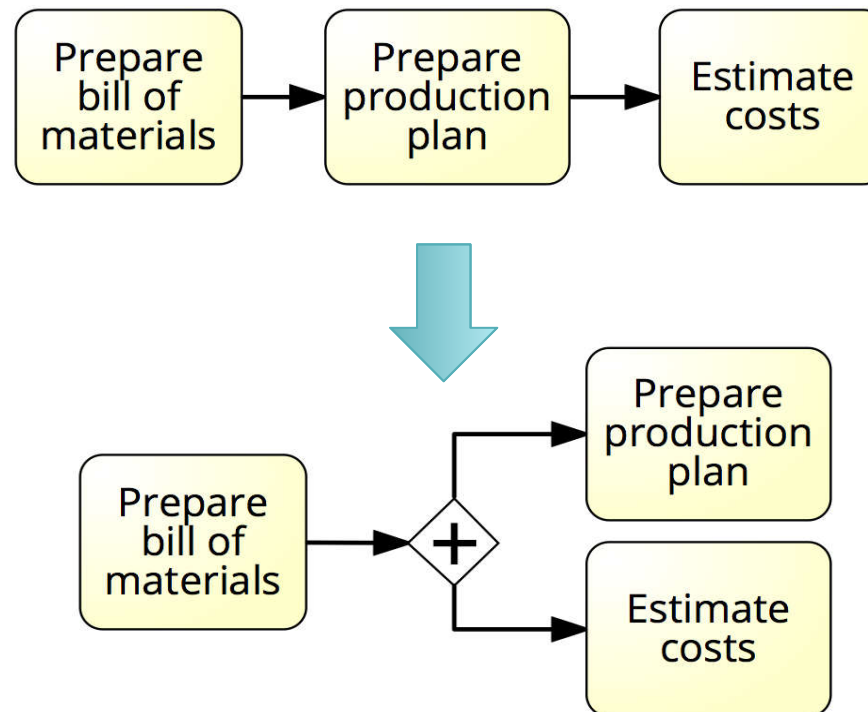


## H5. Parallelism enhancement

(T+,C-)

Examples:

- Procure-to-pay process: Parallelize “Approve budget” and “Approve necessity of purchase”
- Make-to-order process: After “Prepare bill of materials”, perform “Prepare production plan” and “Estimate costs” in parallel



# Process-level redesign heuristics

6. Process specialization & standardization
7. Resource optimization
8. Communication optimization
9. Automation



## H6. Process specialization/standardization

### Process specialization

- One process is split into multiple ones: by customer class, by geographic location, by time period (winter, summer), etc.
- Resources are split accordingly

### Process standardization

- Two processes are integrated
- Resources are pooled together



## H6. Process specialization & standardization

### Specialization example:

- Procure-to-pay process: One process for Direct procurement (e.g. raw materials) and one for Indirect procurement (MRO - Maintenance, Repair and Operations)
- Claims handling process: One claims handling process for the summer season (stormy season - peak) and one for the winter season (off-peak)

### Standardization example:

- Claims handling process: Integrate claims handling for motor insurance across different brands of a group

**Specialization: (C+/-, Q+/-, F-)**

**Standardization: (C+, Q+/-, F+)**

## H7. Resource optimization

Use resources of a given type as if they were in one room

- Avoid one group of people overloaded and another (similar) group idle

Let people do work that they are good at

- However, avoid inflexibility as a result of specialization

When allocating work to resources, consider the flexibility in the near future

- Allocate work to specialized resources first

Avoid setups as much as possible

- *Chain* multiple instances of the same task [sequential]
- *Batch* multiple instances of the same task [parallel]

## H7. Resource optimization

Resource integration example:

- Claims handling process: Share resources across different types of claims (e.g. motor and personal insurance)

Batching example:

- Claims handling process: Batch all claims for a given geographic area and assign them to the same resources
- University admission process: Batch all applications and handle them to the assessment committee

(T+, C+, F+/-)



## H8. Communication optimization

Automate handling, recording and organization of messages

Monitor customer interactions, record exceptions

Optimize

1. Number of interactions with customers and business partners
2. Type of interaction (synchronous vs. asynchronous)
3. Timing of interactions

**(T+,Q+,C+/-,F-)**

## H8. Communication optimization

### 1. Optimize number of interactions

- Gather sufficient information to get to the next milestone (reduce external interactions)

### 2. Optimize type of interaction

- *Synchronous* interactions effective to resolve minor defects
- *Asynchronous* to notify, inform, resolve major defects, request additional information to reach next milestone

## H8. Communication optimization

### 3. Optimize timing of interactions:

- *Front-loaded process*: bulk of information exchange and processing happens upfront
  - Complete-kit concept
- *Back-loaded process*: bulk of information exchange and processing happens downstream
  - Example: CVS Pharmacy in early 2000s

## H8. Communication optimization

Complete-Kit Concept: *“Work should not begin until all pieces necessary to complete the job are available”*

Boaz Ronen

Principles for complete-kit process design:

- Provide complete and easy-to-follow instructions for those who will initiate the process.
- If a process cannot start, the client should be notified of all defects that could be reasonably identified at the onset of the process
- Consider the tradeoff between “incomplete-kit” process initiation vs. roundtrip to revise and resubmit a request

## H9. Automation

Use data sharing (Intranets, packaged enterprise systems) to:

- Increase availability of information to improve visibility and decision-making (subject to security/privacy requirements)
- Avoid duplicate data entry and transportation

Use network technology to:

- Replace physical flow (e.g. paper documents) with information flow
- Enable self-service via e.g. online forms and Web data services



## H9. Automation

Use tracking technology to identify and locate materials and resources

- Identification: Bar code, RFID
- Location: GPS, indoor positioning

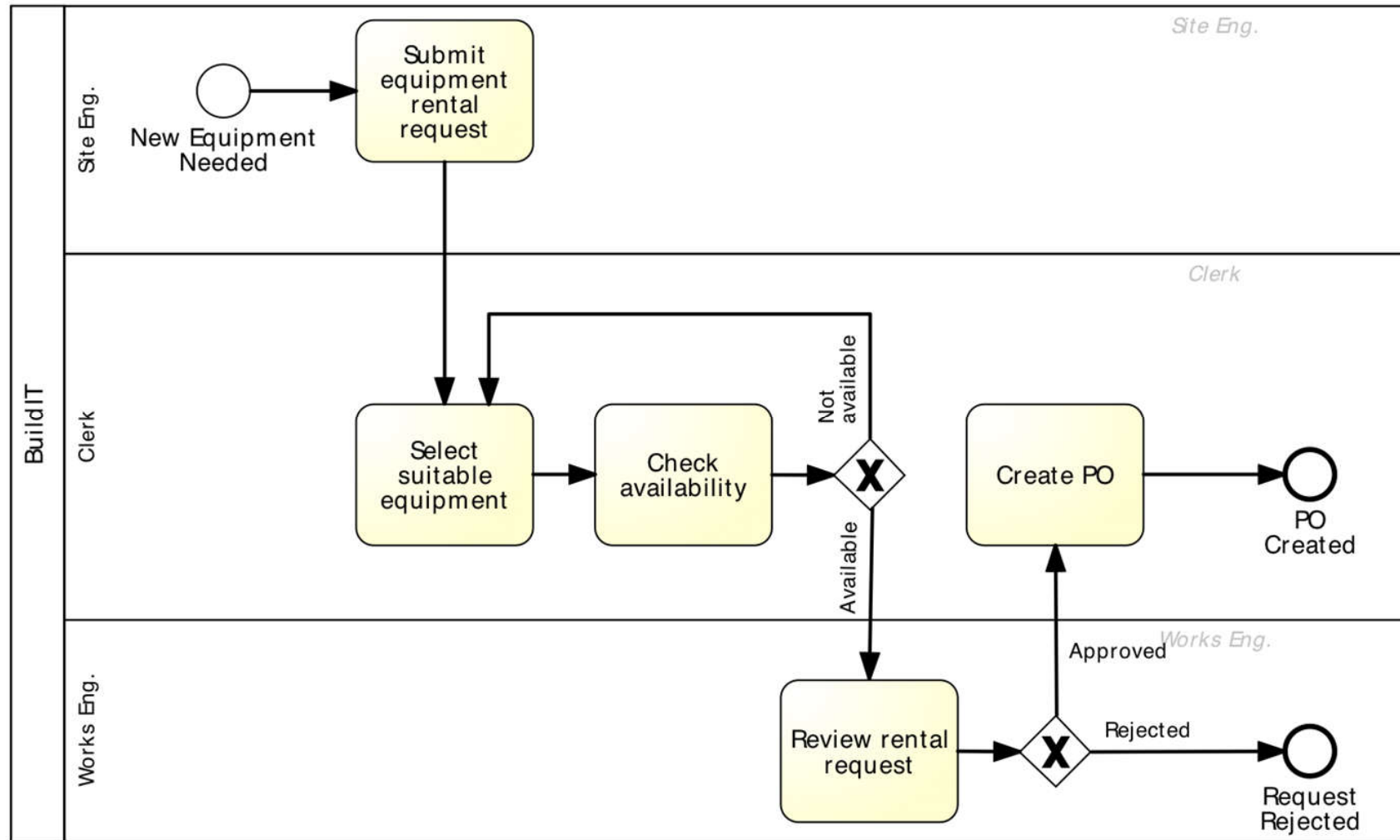
Use business rules technology to automate information processing tasks (including decisions)

Automate end-to-end processes with a dedicated BPM system or system with process automation functionality

(T+,C+/-, Q+/-, F-)

# Applying redesign heuristics

## Example: Equipment rental process

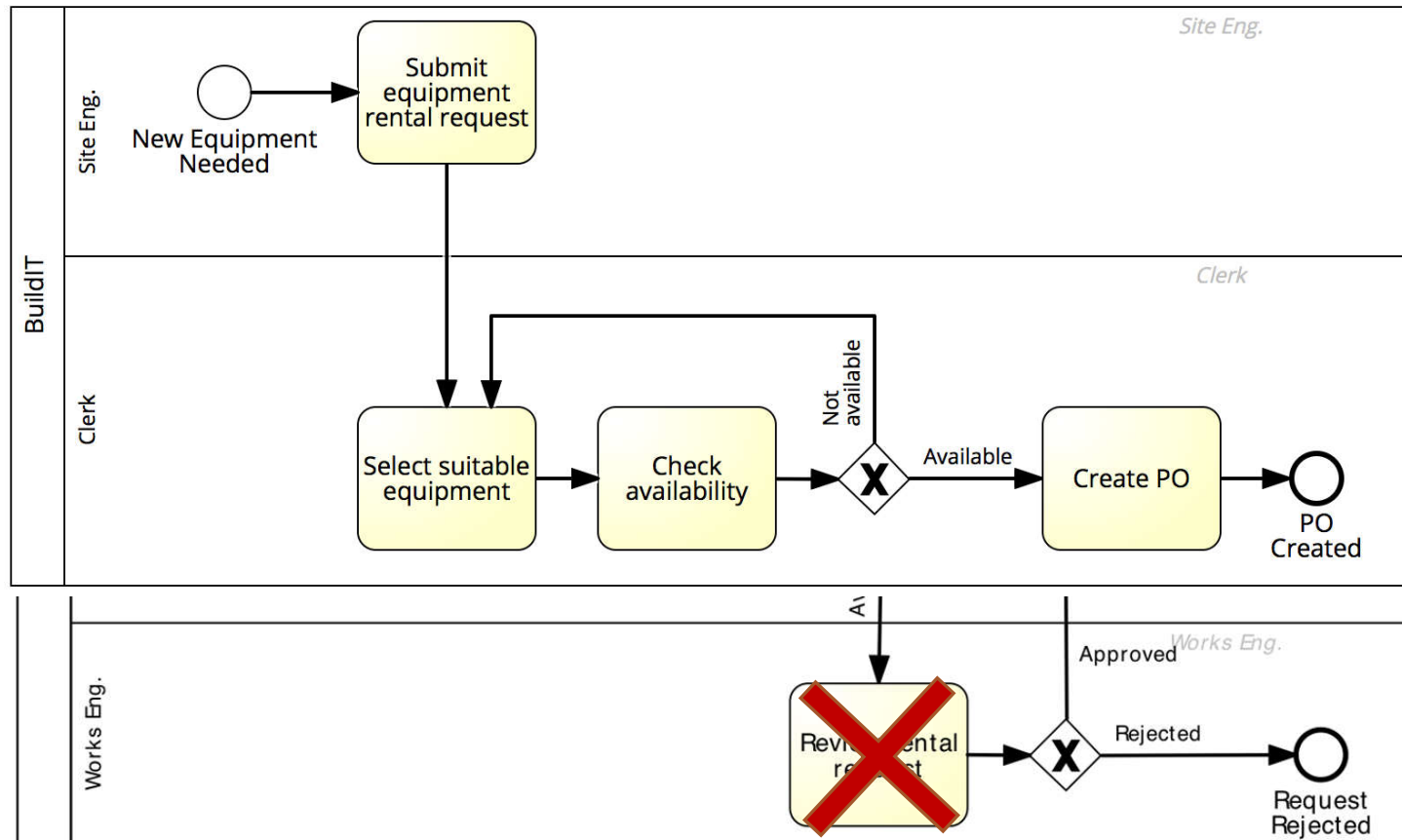


# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 1: Task elimination

- Eliminate “Request for approval” for *small* equipment



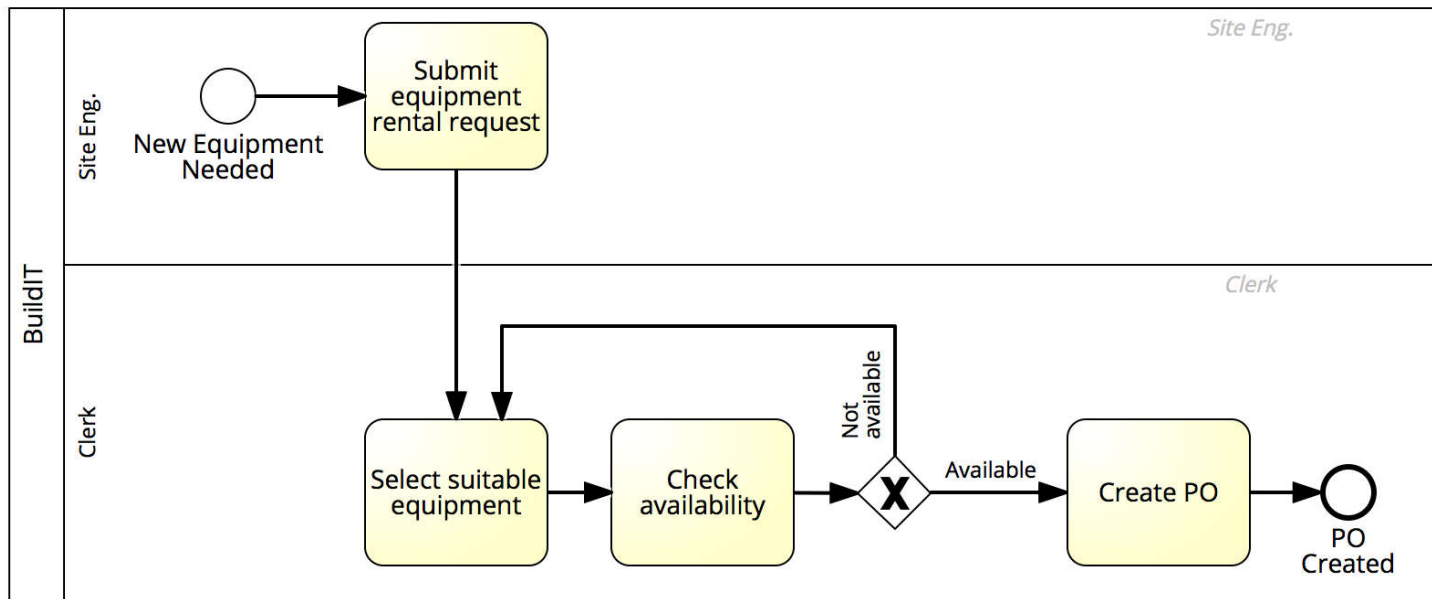


# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 1: Task elimination

- Eliminate request for approvals for small equipment
- Replace approval in all cases, with empowerment and statistical controls

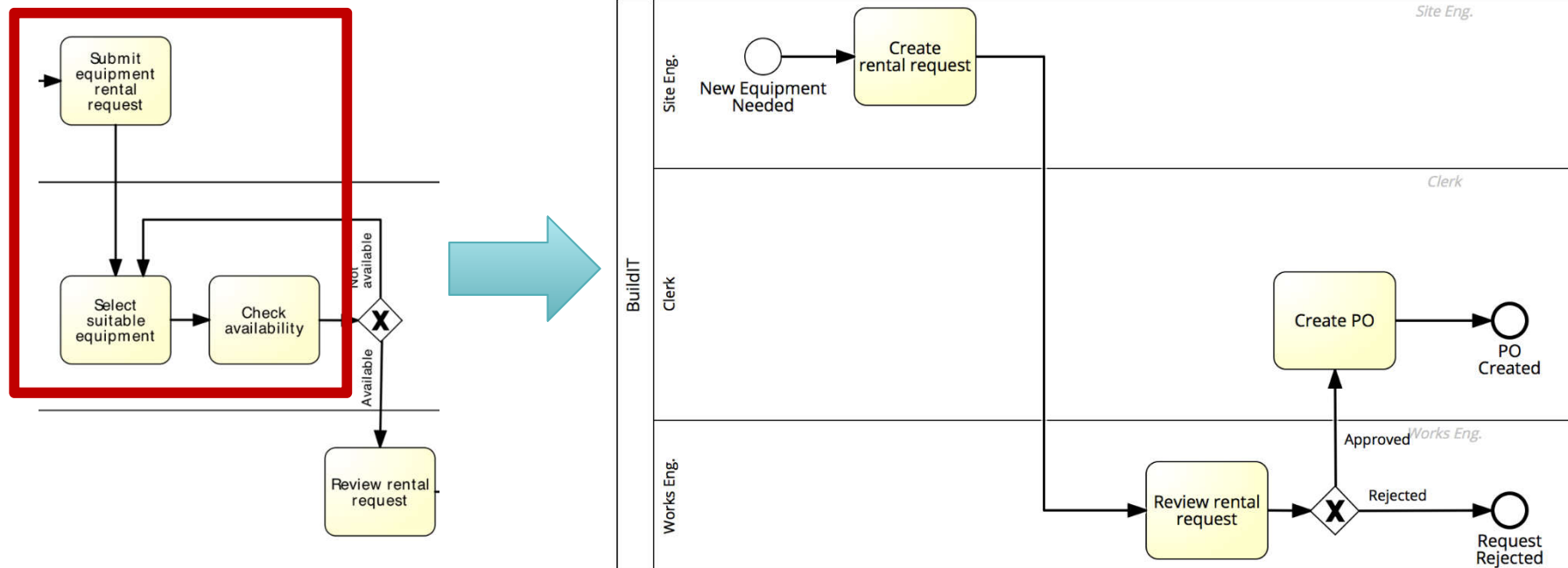


# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 2: Task composition

- Merge equipment selection, availability check and rental request creation



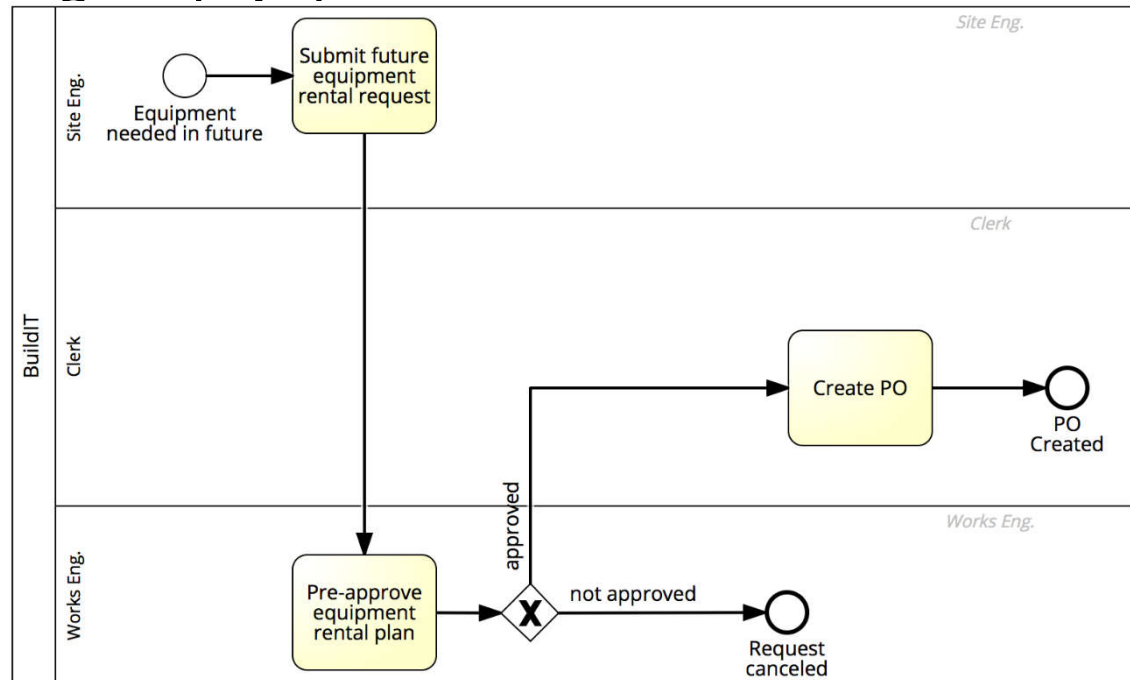
# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 6: Process specialisation and standardisation

- Separate the process for small versus large equipment and streamline the process for small equipment

### Large equipment

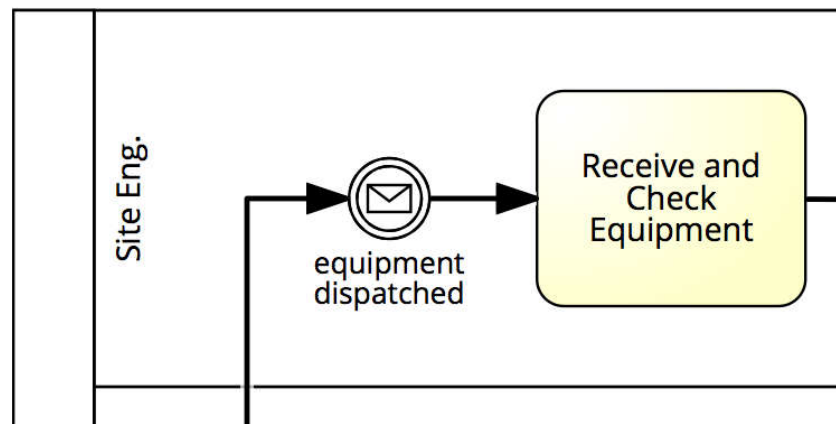


# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 8: Communication optimisation

- Inform the site engineer when the equipment is dispatched

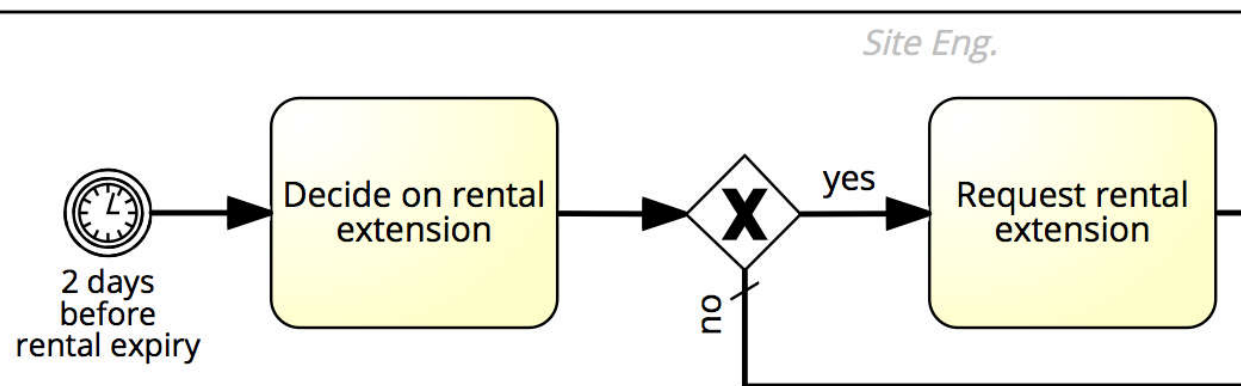


# Applying redesign heuristics

## Example: Equipment rental process

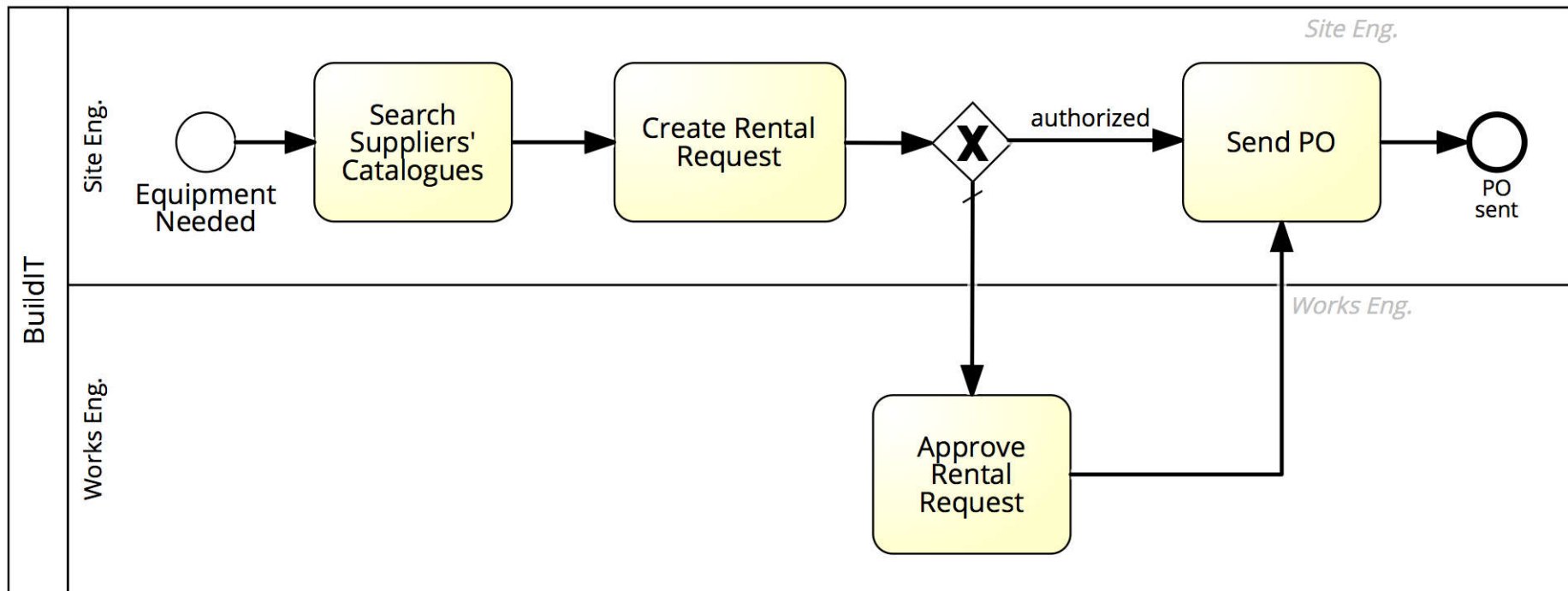
### Heuristic 8: Communication optimisation

- Inform the site engineer when the equipment is dispatched
- Add interaction to handle extensions



# Redesign output: to-be process model

## Example: Equipment rental process





# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 9: Process automation

- Use self-service for the equipment search and availability checking

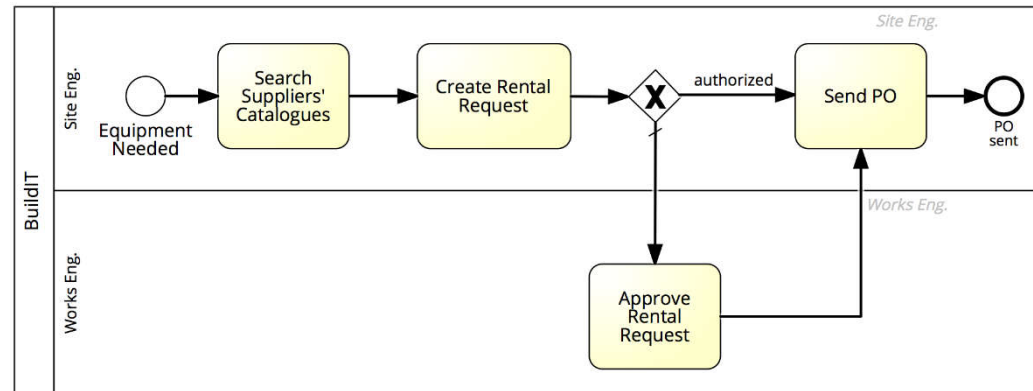
ID of the site engineer:	<input type="text" value="1234"/>
Requested start date:	<input type="text" value="5/22/2012"/> 
Expected end date:	<input type="text" value="5/9/2012"/> 
Project:	<input type="text" value="Skydrive"/>
Construction site:	<input type="text" value="Riia 15a"/>
Description of the required equipment:	<input type="text" value="Motosaw"/>
Expected rental cost per day:	<input type="text" value="66"/>
Preferred supplier:	<input type="text" value="Rasto"/>
Supplier equipment reference nr:	<input type="text" value="12345"/>
Comments to the supplier:	<input type="text" value="Must be with battery"/>

# Applying redesign heuristics

## Example: Equipment rental process

### Heuristic 9: Process automation

- Use self-service for the equipment search and availability checking
- Use process automation to coordinate handovers



Process Support



# Redesign heuristics for Equipment rental process

## Heuristic 1

- I1. Eliminate request for approvals for small equipment
- I2. Replace approval with empowerment & stat. controls

## Heuristic 2

- I3. Compose equipment selection, availability check and rental request creation

## Heuristic 6

- I4. Separate process for small vs. large equipment, streamline “small” process

# Redesign heuristics for Equipment rental process

## Heuristic 8

- 15. Inform site engineer when equipment dispatched
- 16. Ask site engineer if extension required

## Heuristic 9

- 17. Use self-service for equipment search and availability checking
- 18. Use process automation to coordinate handovers

# Prioritizing redesign options

## PICK chart

