

Business Process Management

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DIPARTIMENTO
DI INFORMATICA



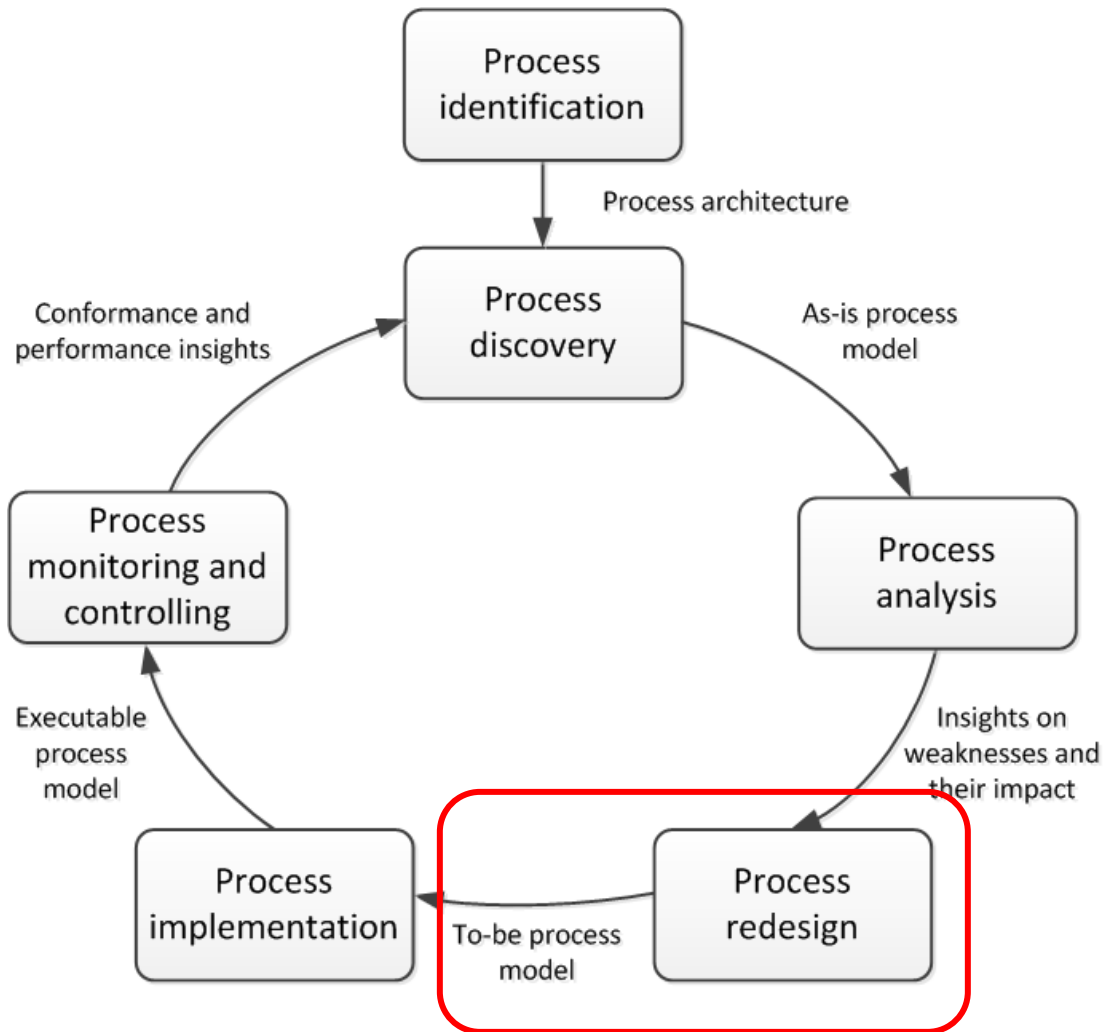
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Block 10: Process Re-design

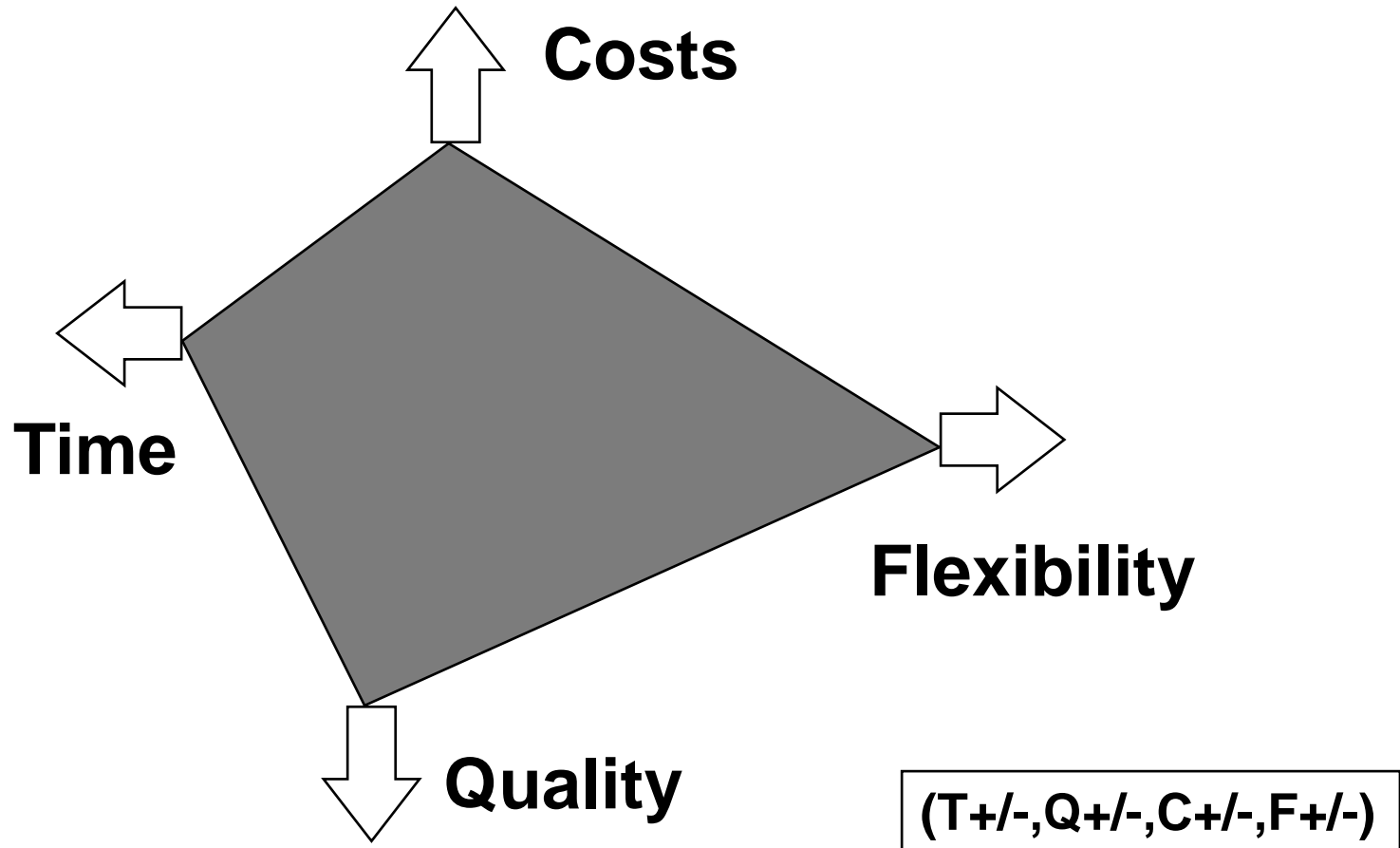
Adapted from the slides for the book :
Dumas, La Rosa, Mendling & Reijers: Fundamentals of Business Process Management, Springer 2013

<http://courses.cs.ut.ee/2013/bpm/uploads/Main/ITlecture7.ppt>

Where are we?



The Devil's Quadrangle



Design criterion 1: Time

- Cycle time, including
 - service time (including set-up)
 - transport time (can often be reduced)
 - waiting time
 - Due to resource contention (limited capacity)
 - Due to external communication (waiting for client/partner)
- Several ways to improve time properties:
 - Improve average
 - Improve variance
 - Increase ability to meet due dates
 - Increase perception of wait time

Design criterion 2: Quality

- Product
 - Product meets specifications and/or expectations
- Process, e.g.
 - Promises made to customers and (reasonable) customer expectations are met
 - Data and documents are handled correctly
 - Decisions made in the process are correct
 - Correct & timely information is provided to the customer

Design criterion 3: Cost

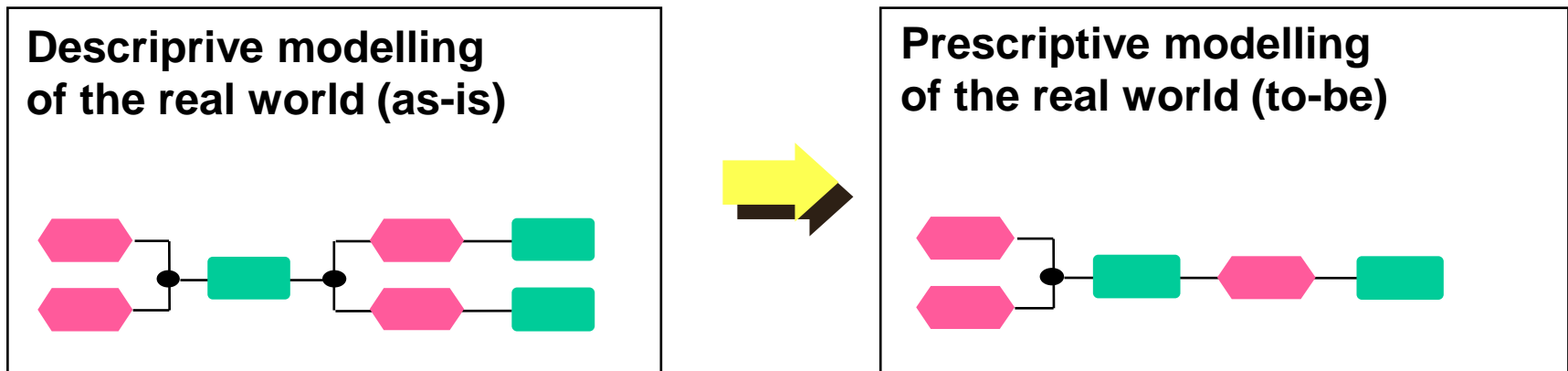
- Type of costs
 - fixed or variable
 - per time unit, per use (consumable resources)
 - processing, management, or support.
 - human, system (hardware/software), or external,

Design Criterion 4: Flexibility

- Ability to react to changes.
- Flexibility of
 - resources (ability to execute many tasks/new tasks)
 - process (ability to handle various cases and changing workloads)
 - management (ability to change rules/allocation)
 - organization (ability to change structure / responsiveness to demands of market or business partners)

Process Redesign

- Purpose: Identify possibilities for improving the design of a process: “as is” → “to be”



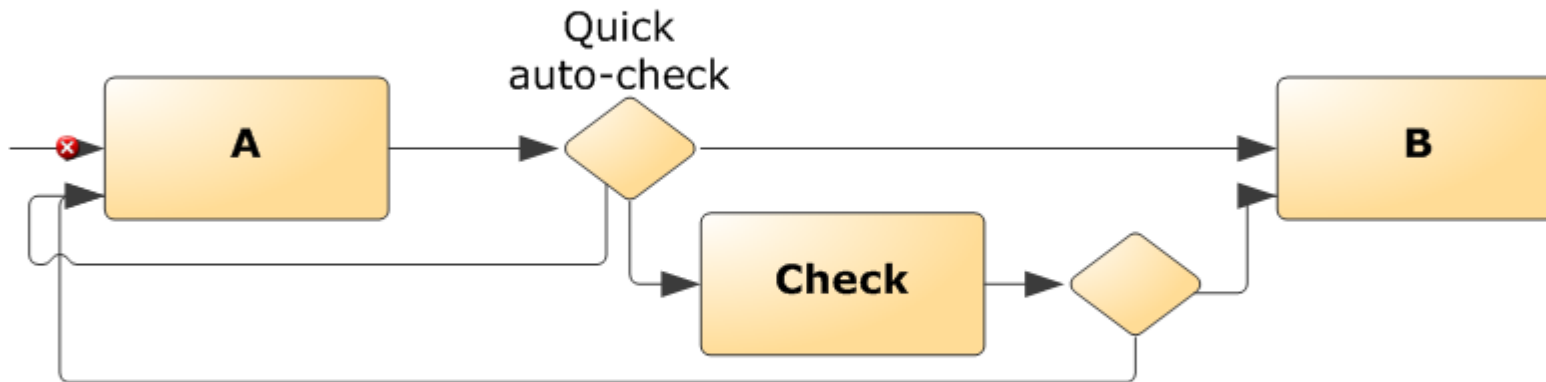
- No silver-bullet: requires creativity
- *Redesign heuristics* can be used to generate ideas

Re-Design Heuristics

1. Task elimination
2. Task composition
3. Triage
4. Resequencing
5. Parallelism
6. Process specialization and standardization
7. Resource optimization
8. Communication optimization
9. Automation

(1) Task Elimination

- Sometimes "checks" may be skipped: trade-off between the cost of the check and the cost of not doing the check.

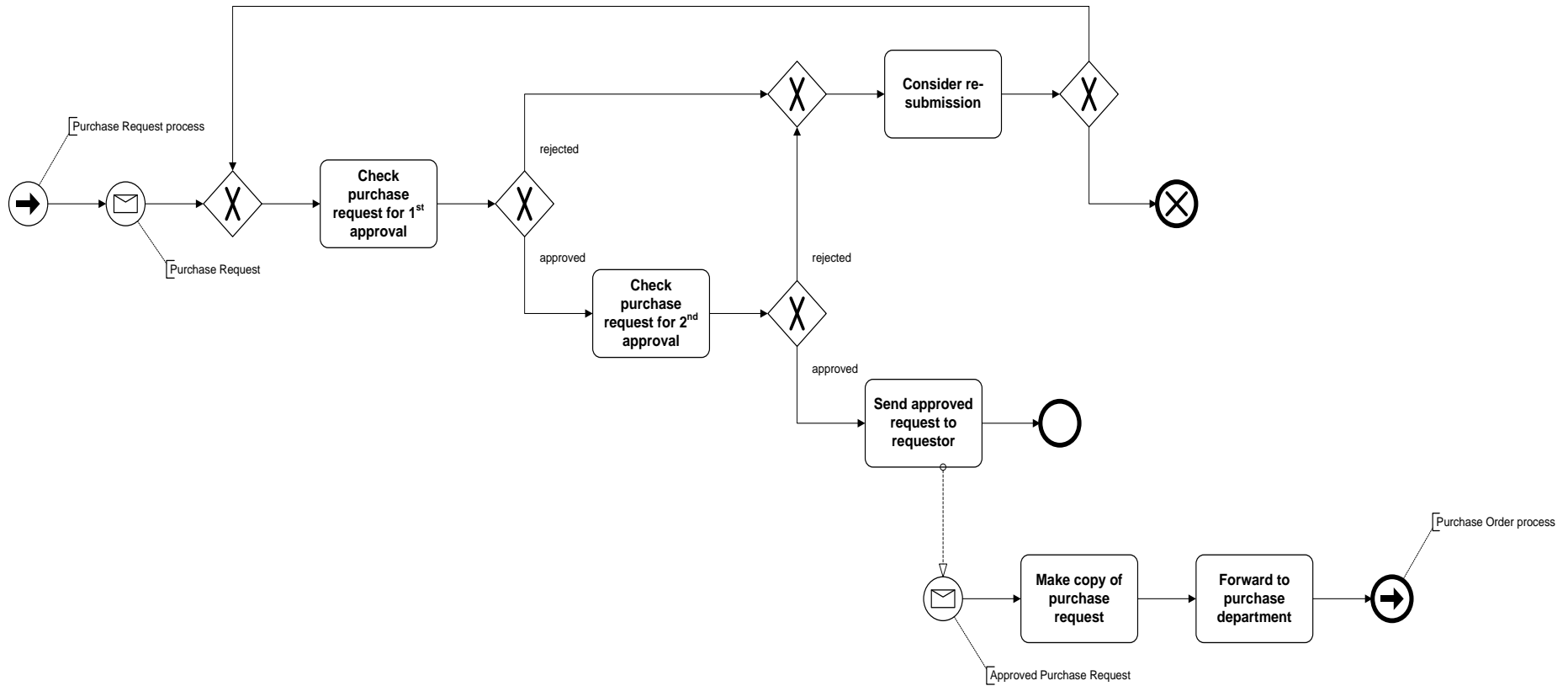


(T+,Q-,C+/-)

(1) Task Elimination (cont.)

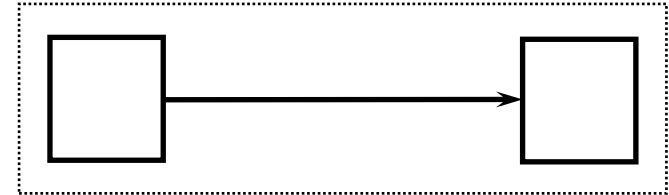
- Other tasks to consider for elimination:
 - Print
 - Copy
 - Archive
 - Store
 - More generally: non-value adding activities
- Task elimination can be achieved by delegating authority, e.g.
 - No need for approval if amount less than Y
 - Employees have budget for small expenses

Example



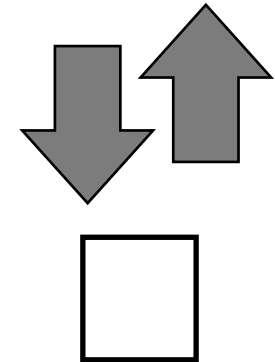
(2) Task composition (merge or split)

Pros: less work to commit, allows for specialization.
Cons: setup time, fragmentation, less commitment.



Pros of merging: setup reduction, no fragmentation, less transportation time, more commitment

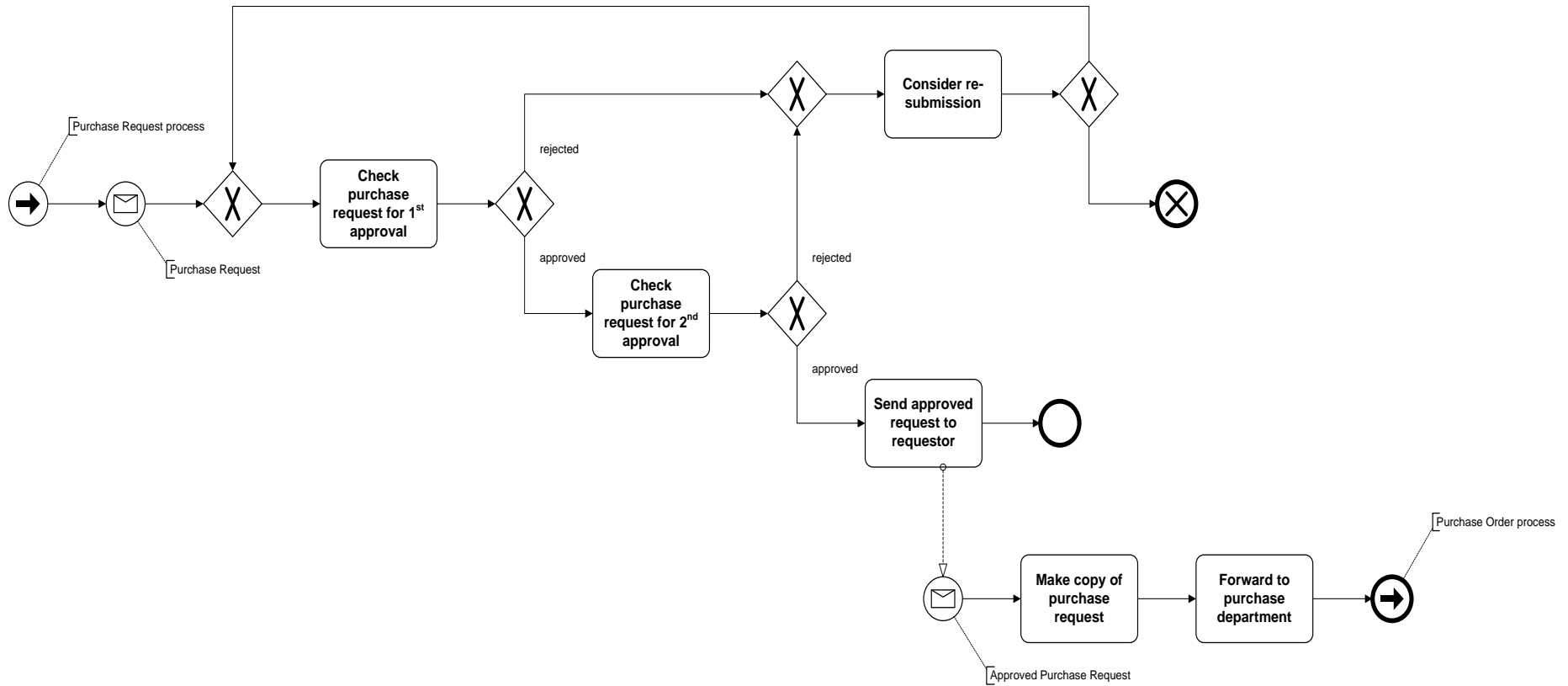
Cons of merging: more work to commit, one person needs to be qualified for both tasks being merged



Splitting can be an opportunity to enable partial self-service, e.g. decouple scanning and payment in a supermarket

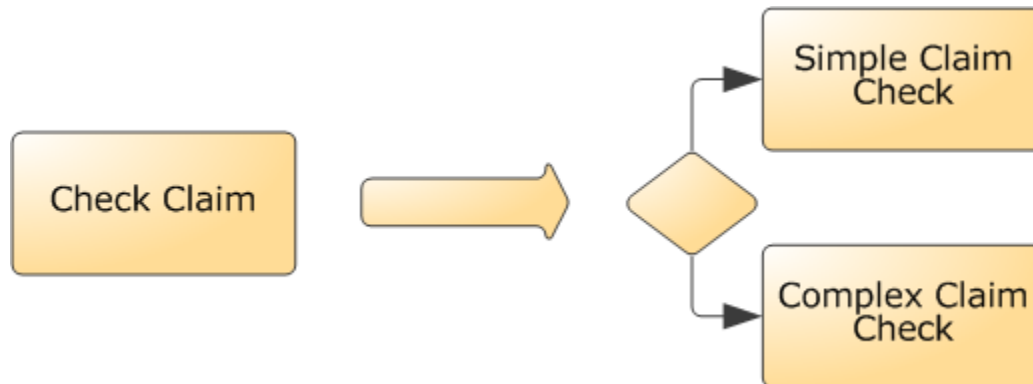
(T+,F-)

Example



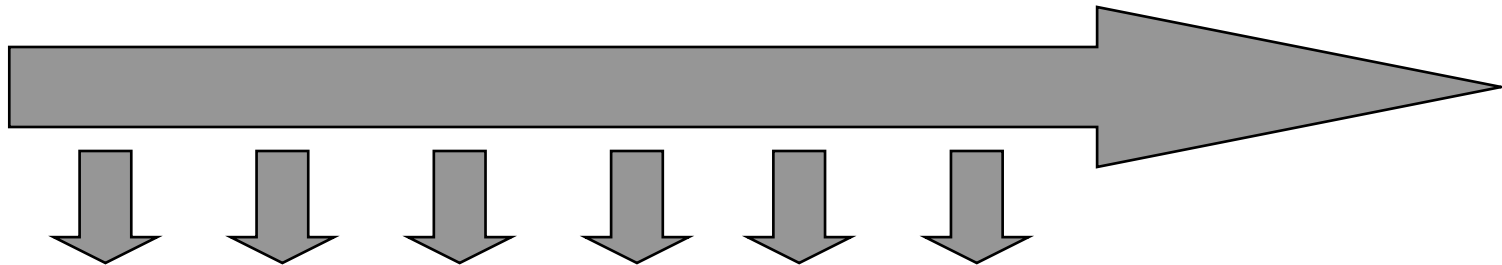
(3) Triage

- Consider dividing a general task into two or more alternative tasks or the integration of two or more alternative tasks into one general task.



(T+,F-)

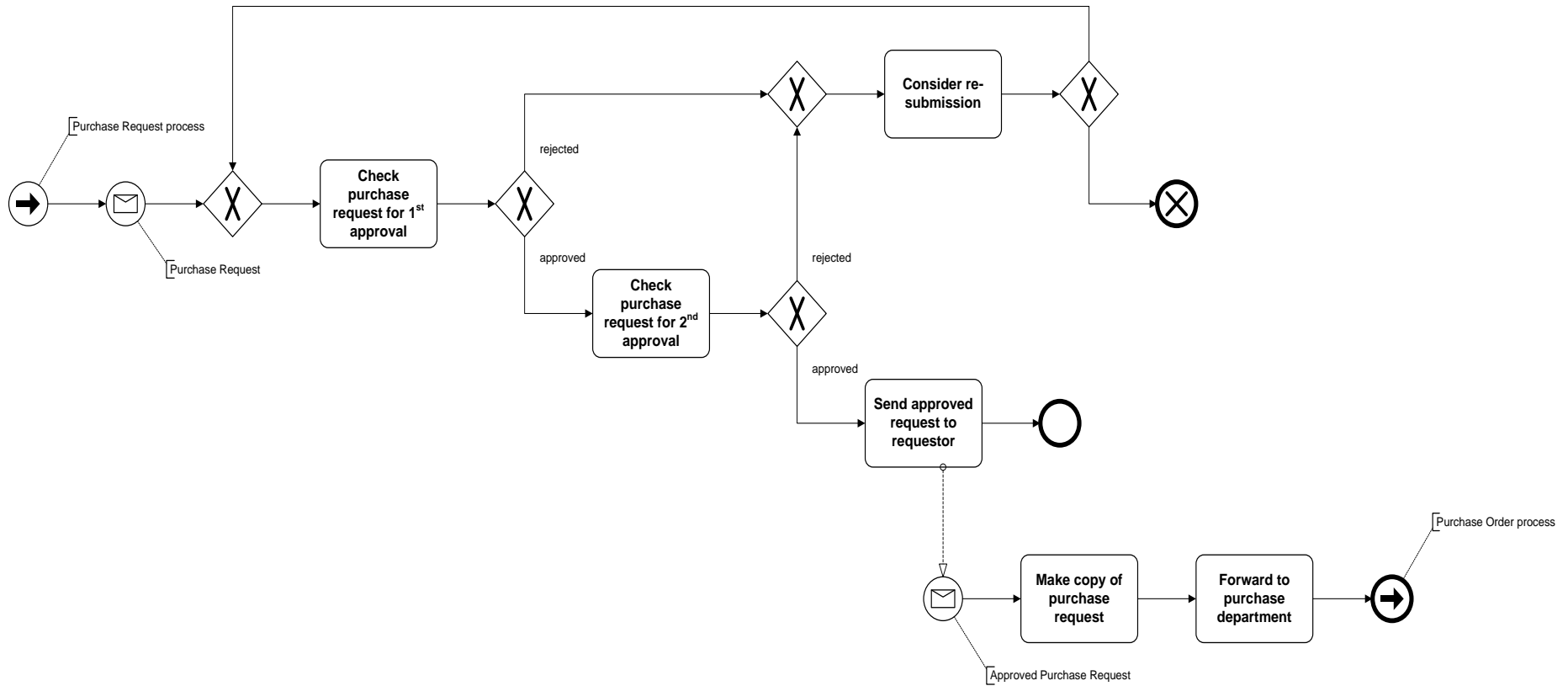
(4) Resequencing



- Order tasks based on cost/effect
- Put “knock-out checks” first – identify problems early
- Postpone expensive tasks until the end.
- In other words: order the tasks using the ratio “costs/effect”.

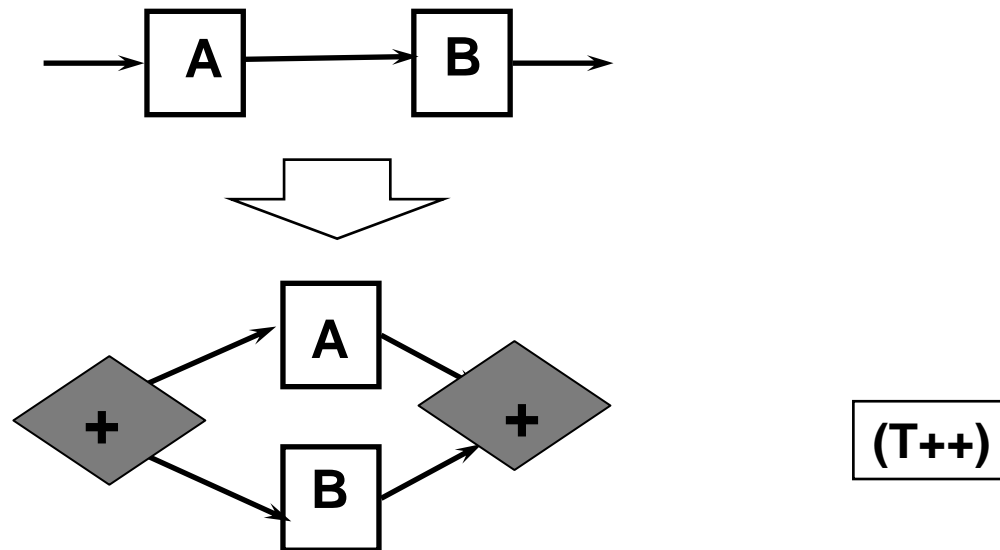
(T+,C-)

Example

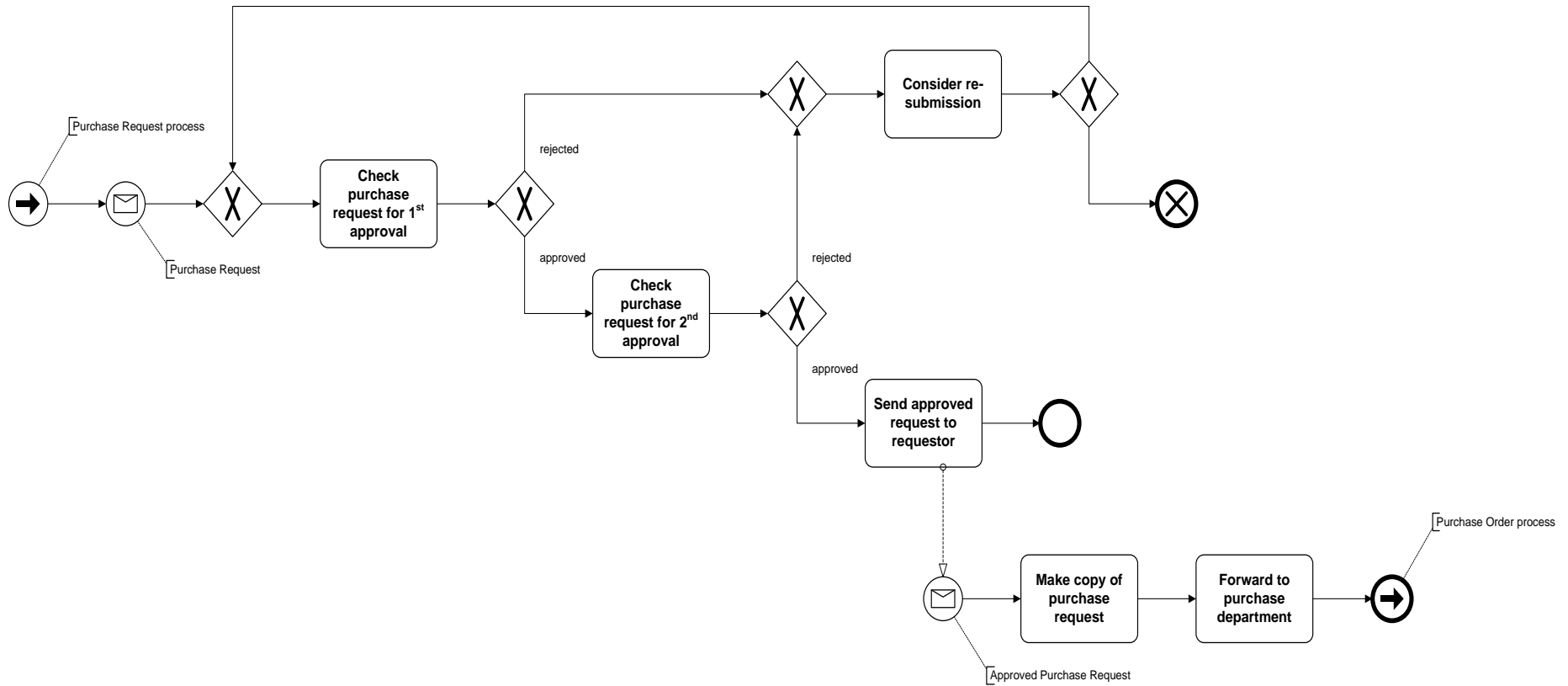


(5) Parallelism

- More parallelism leads to improved performance: reduction of waiting times and better use of capacity.
- Two types of parallelism: semi and real parallelism.
- IT infrastructures which allow for the sharing of data and work enable parallelism.



Example



Exercise: Process for the admission of graduate students at a university I

In order to apply for admission, students first fill in an online form. Online applications are recorded in an information system to which all staff members involved in the admissions process have access to. After a student has submitted the online form, a PDF document is generated and the student is requested to download it, sign it, and send it by post together with the required documents:

- Certified copies of previous degree and academic transcripts.
- Results of English language test.
- Curriculum vitae.

Exercise: Process for the admission of graduate students at a university II

When these documents are received by the admissions office, an officer checks the completeness of the documents. If any document is missing, an e-mail is sent to the student. The student has to send the missing documents by post. Assuming the application is complete, the admissions office sends the certified copies of the degrees to an academic recognition agency, which checks the degrees and gives an assessment of their validity and equivalence in terms of local education standards. This agency requires that all documents be sent to it by post, and all documents must be certified copies of the originals. The agency sends back its assessment to the university by post as well. Assuming the degree verification is successful, the English language test results are then checked online by an officer at the admissions office. If the validity of the English language test results cannot be verified, the application is rejected (rejection notifications sent by e-mail).

Exercise: Process for the admission of graduate students at a university III

Once all documents of a given student have been validated, the admission office forwards these documents by internal mail to the corresponding academic committee responsible for deciding whether to offer admission or not. The committee makes its decision based on the academic transcripts and the CV. The committee meets once every 2 to 3 weeks and examines all applications that are ready for academic assessment at the time of the meeting. At the end of the committee meeting, the chair of the committee notifies the office of the selection outcomes. This notification includes a list of admitted and rejected candidates. A few days later, the admission office notifies the outcome to each candidate via e-mail. Additionally, successful candidates are sent a confirmation letter by post.

Questions

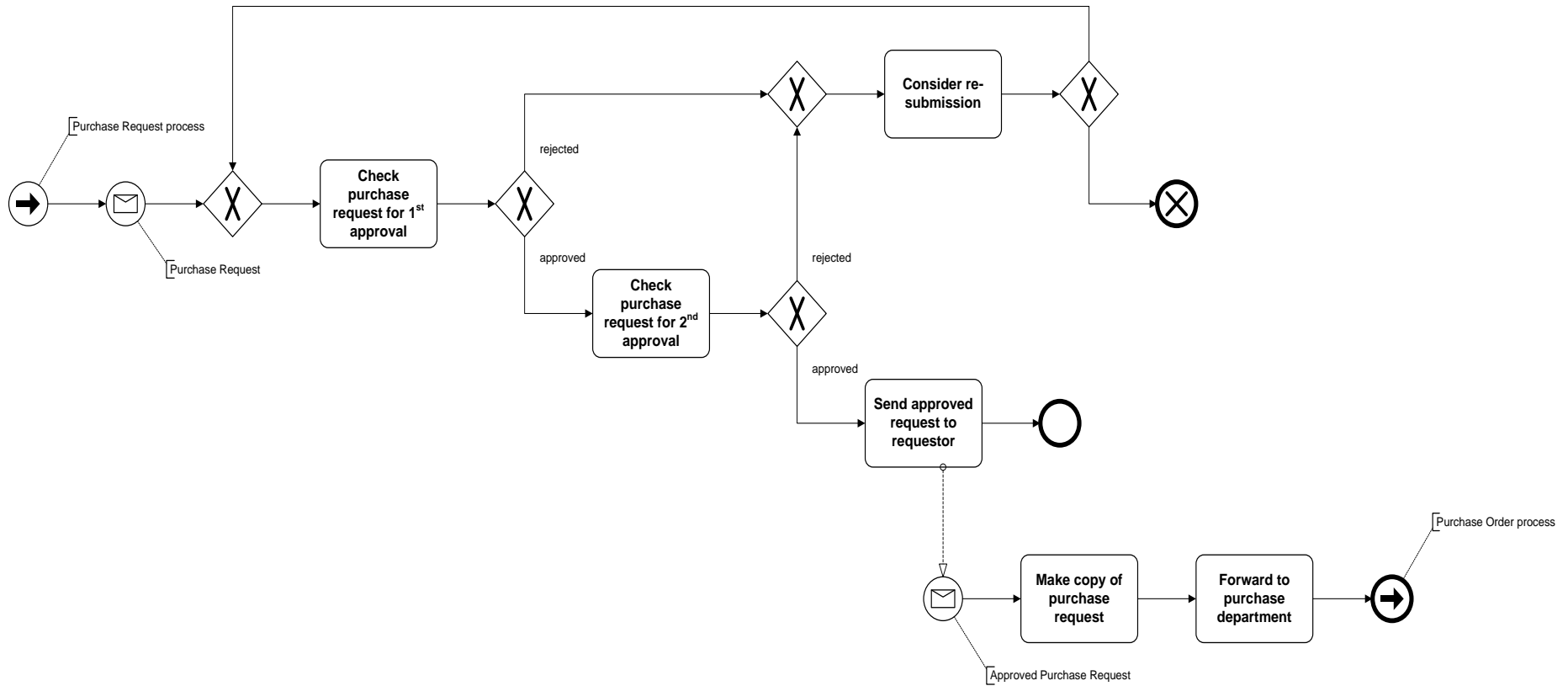
- Who are the actors in this process?
- Which actors can be considered to be customers?
- What value does the process deliver to customer(s)?
- What are the possible outcomes of this process?
 - What tasks could be re-ordered to address current customer service problems?

(6) Process specialization / standardization

- Process specialization
 - Differentiate by customer classes, geographical locations, time periods (winter, summer), ...
 - Different activities, different resource pools,
- Process standardization
 - All cases treated equally (as much as possible)
 - Resources are pooled together

F+/-, C+/-

Example

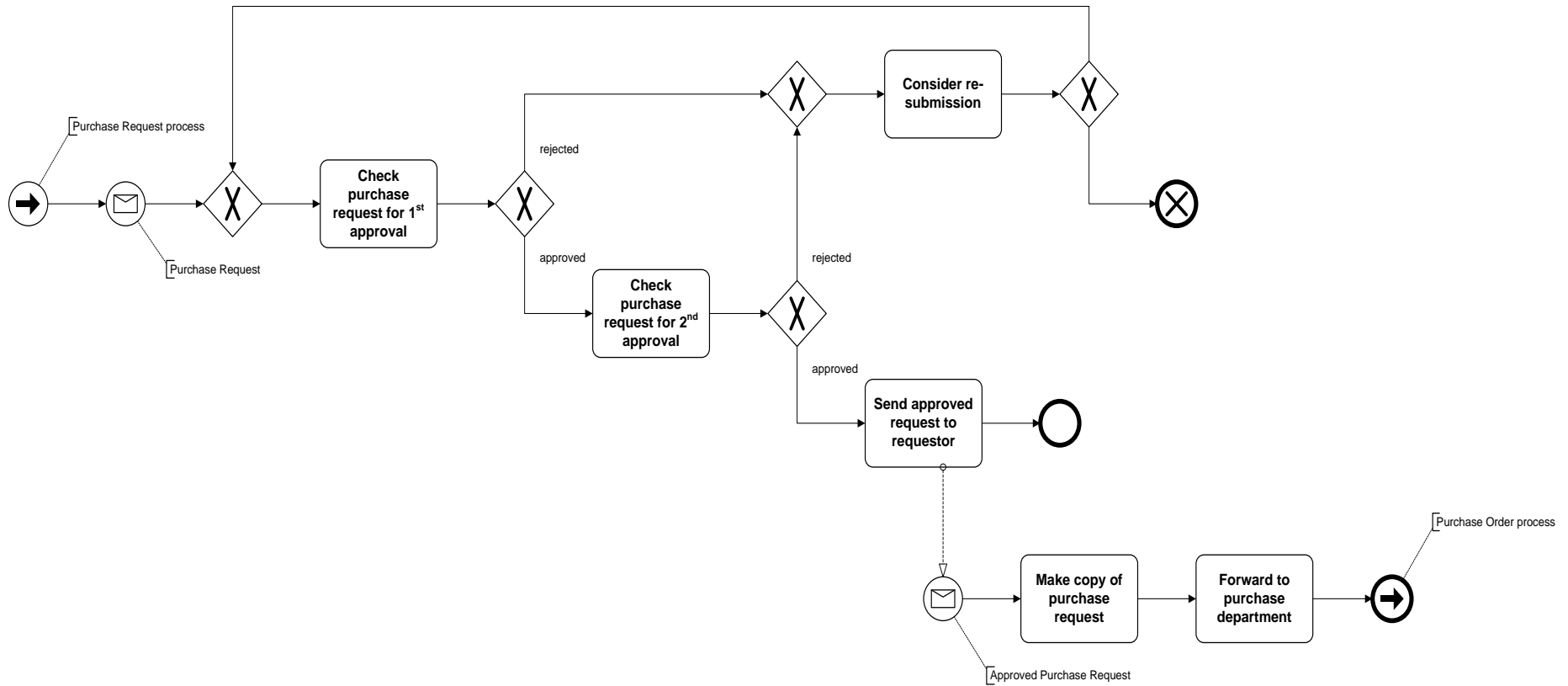


(7) Resource optimization

- Centralization: Treat geographically dispersed resources as if they were centralized
 - Avoid one group of people overloaded and another (similar) group waiting for work.
- Case assignment: “Let workers perform as many steps as possible for single cases”
 - The extreme scenario is to have “case managers”
- Flexible assignment: “Assign work in such a way that maximal flexibility is preserved for the near future”
- Empower: “Give workers most of the decision-making authority instead of relying on middle management”
 - Empowerment should go hand-in-hand with accountability

(T+,Q-)

Example



(8) Communication optimization

- Reduce the number of messages to be exchanged with customers and business partners
 - But avoid overly front-loading the process
- Try to automate the handling of messages (send/receive).
- Use standardized, programmatic tools whenever economical (EDI, XML, Web services)
 - Prevents communication errors
- If possible, use asynchronous instead of synchronous communication.

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

Interlude: the Complete Kit Concept

- Many processes follow the “complete kit” concept:
 - Work should not begin until all pieces necessary to complete the job are available
- In such cases, consider three principles:
 - *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 and roundtrip to revise and resubmit a request.*

Michael zur Muehlen: “Service Processes: The Customer at the Center?”
<http://tinyurl.com/5tunkxy>

Exercise

- With reference to the previous process
 - What is the current communication structure?
 - What issues arise from the current communication structure?
 - How can the communication structure be improved?

(9) Automation

- Use data sharing (Intranets, ERPs) to:
 - Increase availability of information to improve decisions or visibility (subject to security/privacy)
 - Avoid duplicate data entry, paper copies
- Use network technology to:
 - Replace materials (e.g. paper document) flow with information flow
 - E.g. querying government agency DBs replacing document flow
 - Increase communication speed: e-mail, SMS
 - Note: e-mails are unavoidable, but not always desirable
 - Enable self-service (e.g. online forms)

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

(9) Automation (cont.)

- Use tracking technology to identify/locate materials and resources where reasonable
 - Identification: Bar code, RFID
 - Location: indoor positioning, GPS
- Automate tasks and decisions
 - Capture and automate business rules where effective
- Automate end-to-end processes
 - See next lecture (BPMS)

Exercise

- With reference to the previous process
 - How can automation be applied in this process?

Acknowledgments

- Some material in this lecture is taken from www.workflowcourse.com
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