

# Data modeling – concept definition

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***Data modeling*** is a process used to define and analyze ***data requirements*** needed to support the ***business processes*** within the ***scope of corresponding information systems*** in organizations.

Therefore, the process of data modeling involves professional ***data modelers*** working closely with ***business stakeholders***, as well as potential ***users*** of the information system.

(see: [http://en.wikipedia.org/wiki/Data\\_modeling](http://en.wikipedia.org/wiki/Data_modeling), visited Oct. 2023)

# Library system - interaction

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## ➤ Our business case

- We need to support the development of an IT system, that support and optimize the activities / processes of a library (e.g. university library) - i.e. an application that support all library processes
- We are responsible for the definition of a data model

## ➤ Suggestions how to start?

# Library system – interaction - answer

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## ➤ Suggestions how to start?

- Stakeholder analysis
  - Library manager / Customer (Student) / Library staff / public users (potentially)
- Entities
  - books / DVDs / journals / academic publications / digital media to accessed online /
- Process analysis
  - borrow a book
  - returning a book
  - buying a book
  - finding a book
  - library support
    - asking for help to find materials on certain information (finding information)
    - asking for help with finding a book
  - making copies of contents provided by the library

# Library system – interaction - answer

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- Borrow a book (maybe extent the scope to physical items to be borrowed)
  - Create an account
  - Authenticate & authorize usage of library
    - Student id / library id /
    - search a book (use system / ask library staff / ...)
    - Eligibility for borrowing
    - Check out for borrowing
    - Picking up items for borrowing
    - Update borrow book record /update borrow status/
    - Update borrowed book status of customer
  
- Returning a book (maybe extent the scope to physical items to be returned)

# Library system - interaction

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In our library system example – what are the processes to run a library?

- Process name & description
- Process name & description

## Process decomposition

# Business Process Example – Process Decomposition

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# Borrow a book – business process analysis - interaction

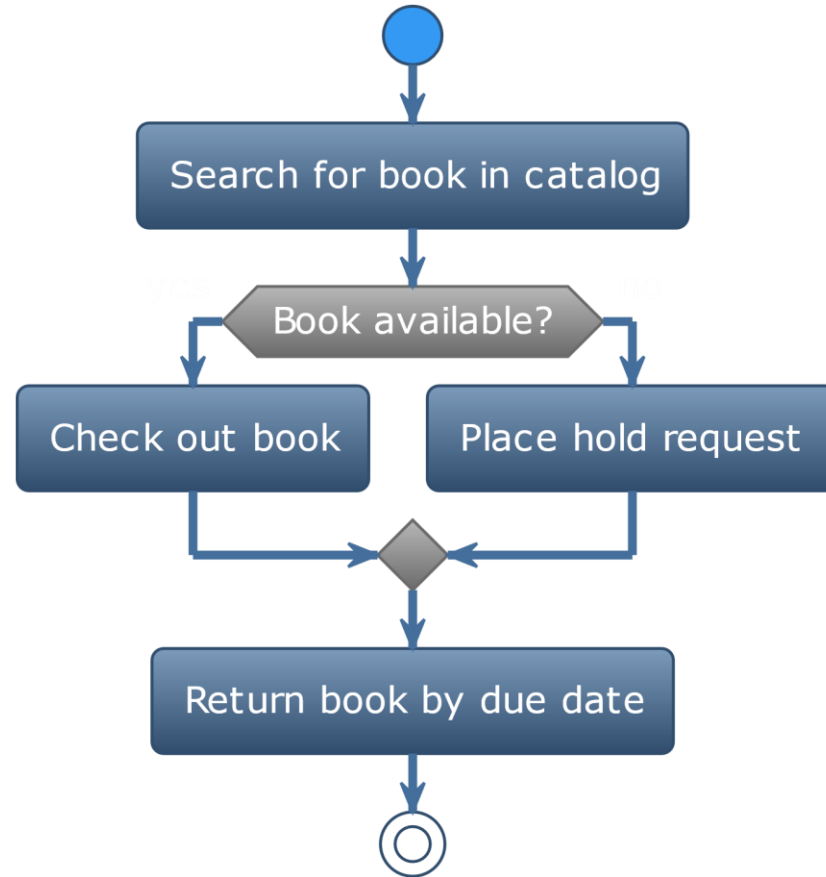
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- Processing step: ....
  - Description of interactions
- Processing step: ....
  - Description of interactions
- Step: ....
  - Description of interactions
- Step: ....

**Analysis of process flow (processing steps / activity flow)**

# Business Process Example – Borrow a book

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- Note: for the scope of the class we do not focus on the details of a correct BPM modelling notation – but rather use the methodology to assess the information requirements.



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# **Identification of Information Entities via the means of Business Process Modelling (BPM)**

# Business process & stakeholder – concept definition

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## ➤ **Business process**

...a collection of related, structured activities or tasks by people or equipment which in a specific sequence produce a service or product (serves a particular business goal) for a particular customer or customers. Business processes occur at all organizational levels and may or may not be visible to the customers.

(see: [https://en.wikipedia.org/wiki/Business\\_process](https://en.wikipedia.org/wiki/Business_process), visited Oct 2022)

For another definition of business process see: ITIL 2011 Glossary

[https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL\\_2011\\_Glossary\\_GB-v1-0.pdf](https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL_2011_Glossary_GB-v1-0.pdf)

## ➤ **Stakeholder**

A person who has an interest in an organization, project, IT service etc. Stakeholders may be interested in the activities, targets, resources or deliverables. Stakeholders may include customers, partners, employees, share holders, owners etc.

(see: ITIL 2011 Glossary, [https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL\\_2011\\_Glossary\\_GB-v1-0.pdf](https://www.axelos.com/Corporate/media/Files/Glossaries/ITIL_2011_Glossary_GB-v1-0.pdf))

# Borrow a book – information requirement - interaction

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- For the process "borrow a book", what information needs be processed by our "Library application"?
  - Book (or physical item)
    - Distinct ID
    - Title / Author / year of publishment / keywords / genre / edition / language /
    - In case we replace book with “physical item” we need to collect different information item
  - Availability record
    - availability of book
  - Eligibility information
    - Type of item
    - Type of user classification
  - Library Card
    - Library card id
    - Card status (active / inactive)
    - User ID
  - User
    - User ID / First Name / Last Name / type of user / borrow record / eligibility info / email / phone / address (street name / street number / city / zip code / photo / field of interest / date of birth

# Business Process Example – Borrow a book

