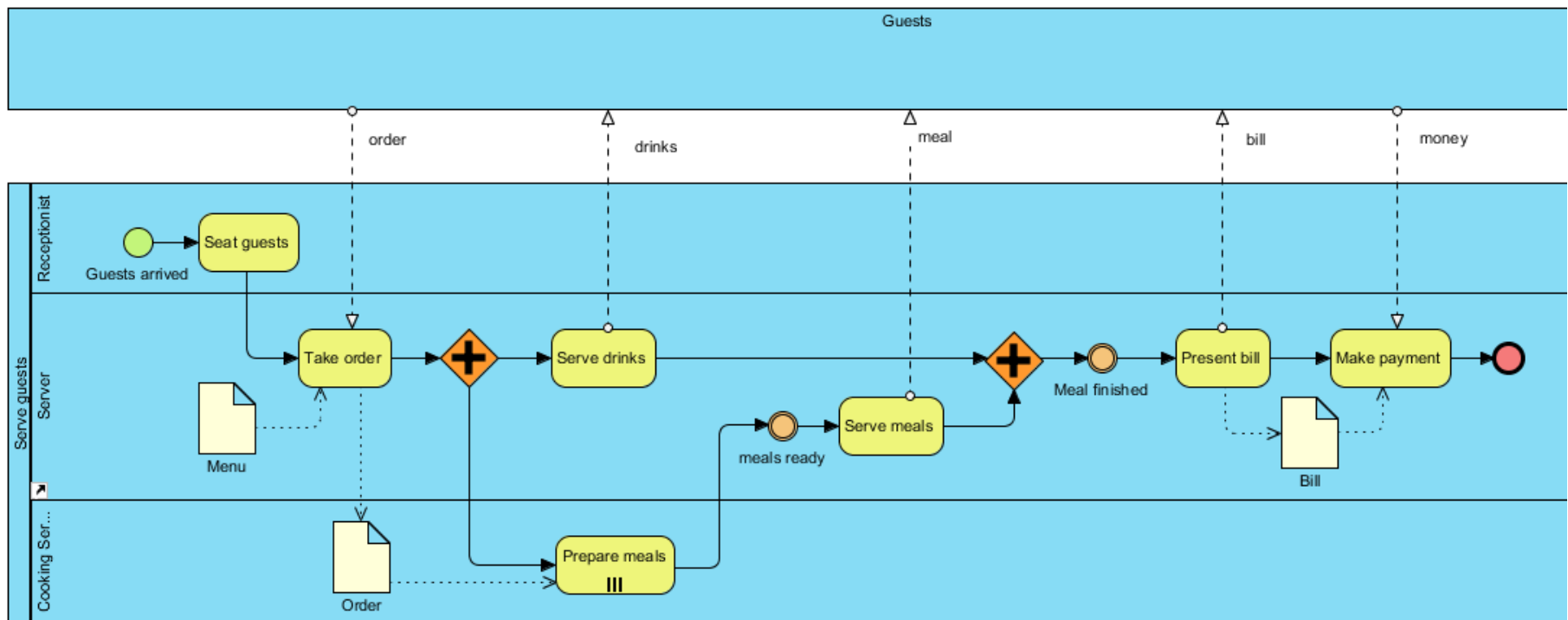# Modeling Data and Documents

An Example Process

- This is a simplified version of the process for serving guests

- There are three data objects. Can you see a difference between these data objects?

Modelling Data

Data objects in BPMN can represent different kinds of data

■ **Structured data**

■ **Documents**, which either represent

   ♦ a **specific document**

     ● Examples: An application form, the terms and conditions, the menu from which the guests can choose their meals

     ● Hint: For a specific document we can specify a file name or a URL

   ♦ **a document class,** i.e. a generic documents for which a specific instance is created during process execution

     ● Examples: A bill or a filled application form
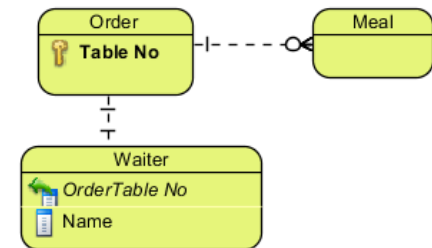
Modelling Structured Data

■ Structured data can be represented for example as

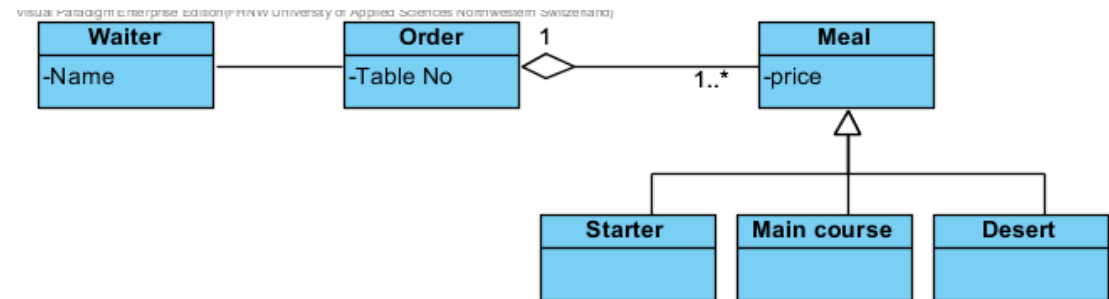 ♦ Entity Relationship Diagram

 ♦ UML Class Diagram/Object Diagrams

■ Data models represent

 ♦ entities/classes

 ♦ columns/attributes

 ♦ relations/associations

ERD:

UML Class Diagram:

Document modeling

ADONIS document model:

- Although some tools like ADONIS have a model type for documents, there is no standard for modeling documents

- However, we can use UML class diagrams and object diagrams to model documents [1]

  - ♦ A document class is represented as a class object with attributes describing the meta-data

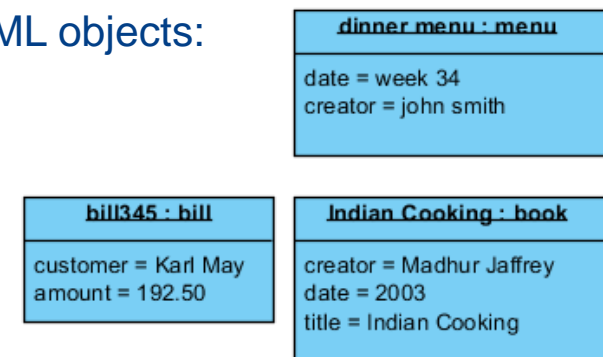 - ♦ A specific document is an object (i.e. an instance of a class)
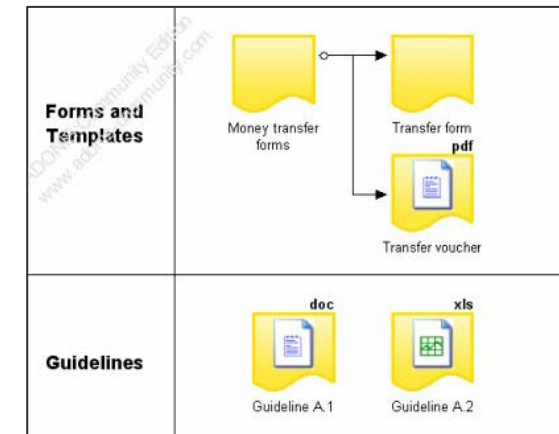
Document classes as a UML class diagramm:
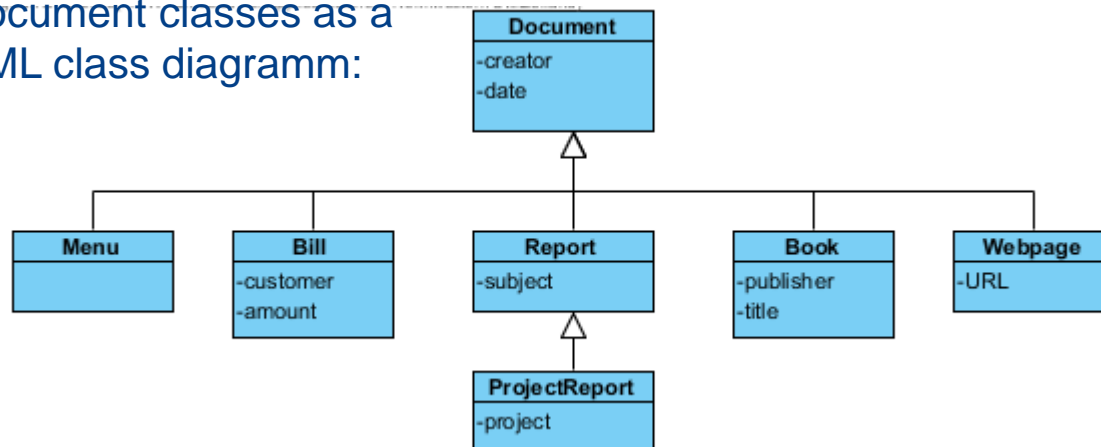
Specific documents as UML objects:

Document Models

■ Documents can be grouped into ***document classes*** (also called document types) according to their usage:

♦ Examples: invoice, application, menu, report

■ There can be specialisations of document classes.

♦ Example: There can be special kinds of reports like project report, expert opinions, or reviews.

■ ***Metadata*** are attribute values which describe documents.

♦ Example: a report might have an creator, a creation date and a subject.

■ There are standards for metadata like the Dublin Core Metadata Initiative (http://dublincore.org)
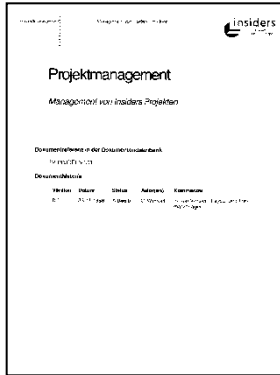
Information as product
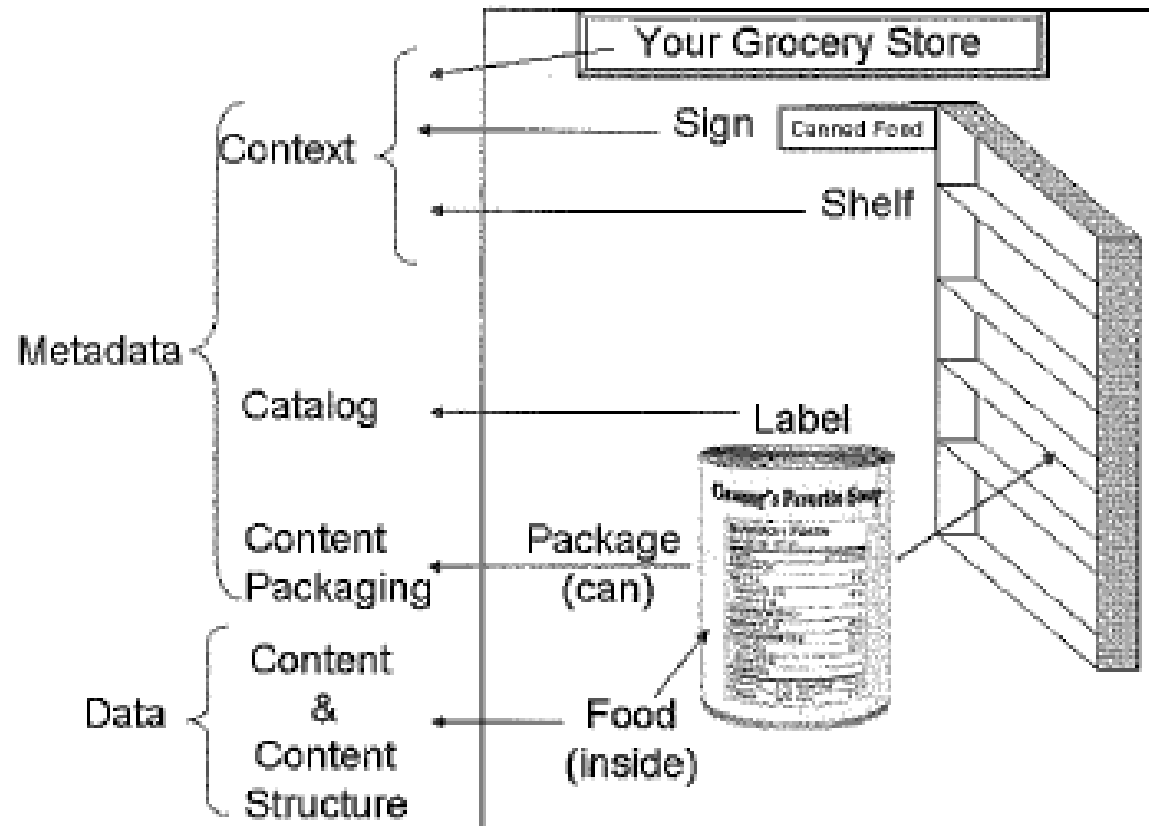
Michael C. Daconta: Information as Product, 2007
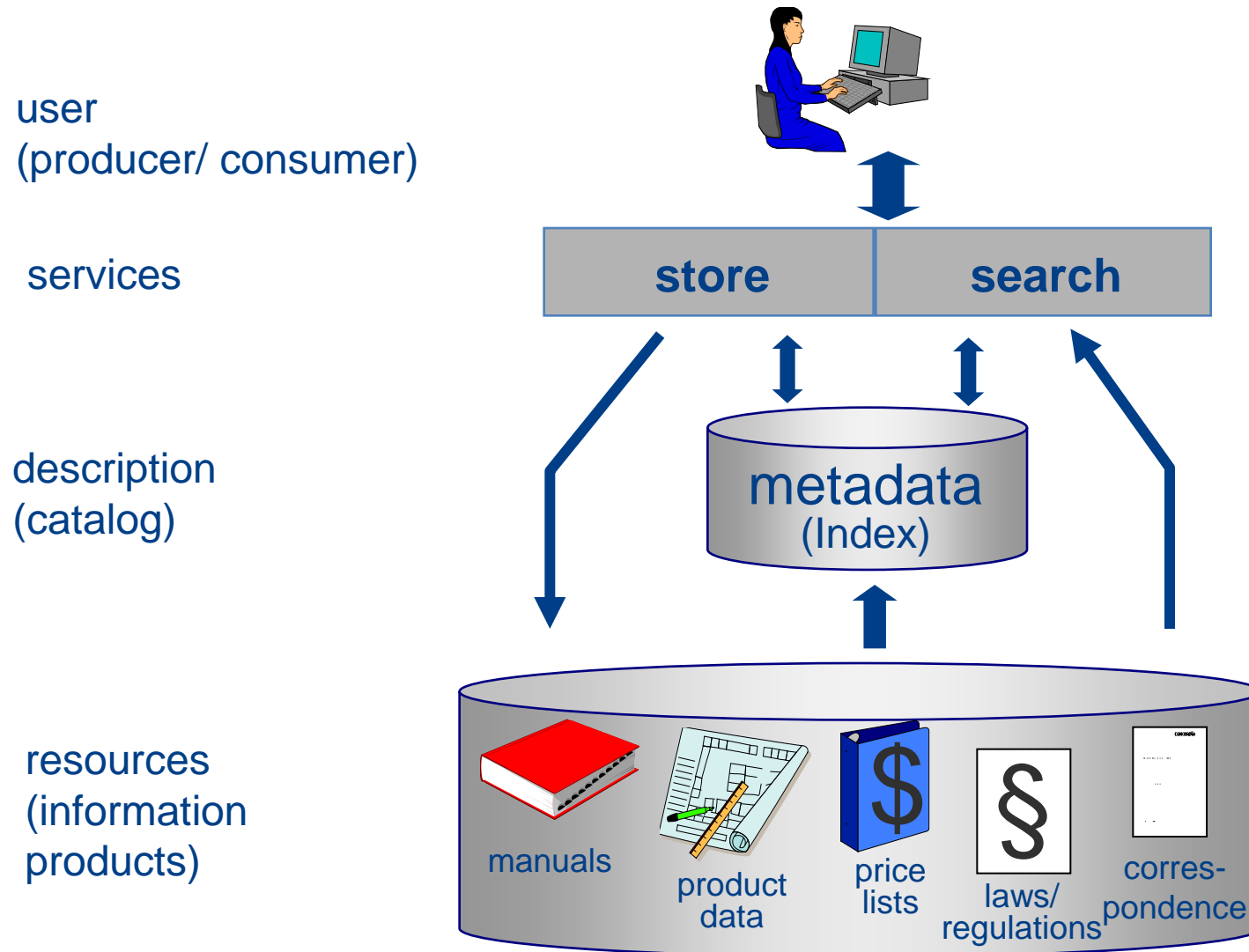
Data and Meta-data – Examples

usage data (document)

meta-data

|	
name:	Projektmanagement
creation:	18.3.2011
modification:	25.6.2011
format:	PDF
document type:	report
recipient:	All Life Insurance Inc.
author:	Smith

■ Each document consists of the

♦ usage data (document itself, content)

♦ meta-data

■ Kinds of meta-data

♦ General metadata

● can be used for any kind of information

● Examples: author, date of creation, subject

♦ Application-specific metadata

● Examples:

– For a letter: sender and recipient

– For a report: project name

♦ Meta-data are structured data and can easily be modeled in UML

Meta-data

user
(producer/ consumer)

services

store	search

description
(catalog)

metadata
(Index)

resources
(information
products)

manuals

product
data

price
lists

laws/
regulations

corres-
pondence

Modeling Documents in ArchiMetric

■ In the ArchiMetric tool we can use stereotypes to specialize UML class diagrams for modeling documents.

■ We can define a new stereotype "Document" and

♦ change color

♦ add an icon
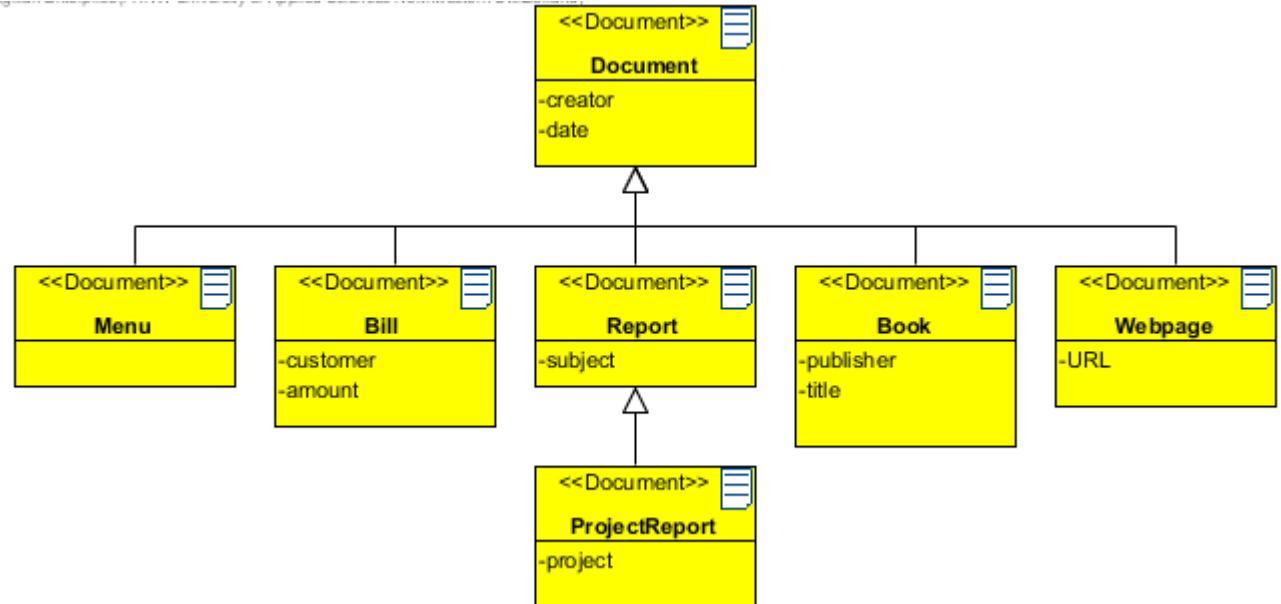
Combining Document and Data Modeling

Information about Documents and Data can be combined in one model

♦ Document classes

♦ Objects

♦ Structured Data

♦ Associations