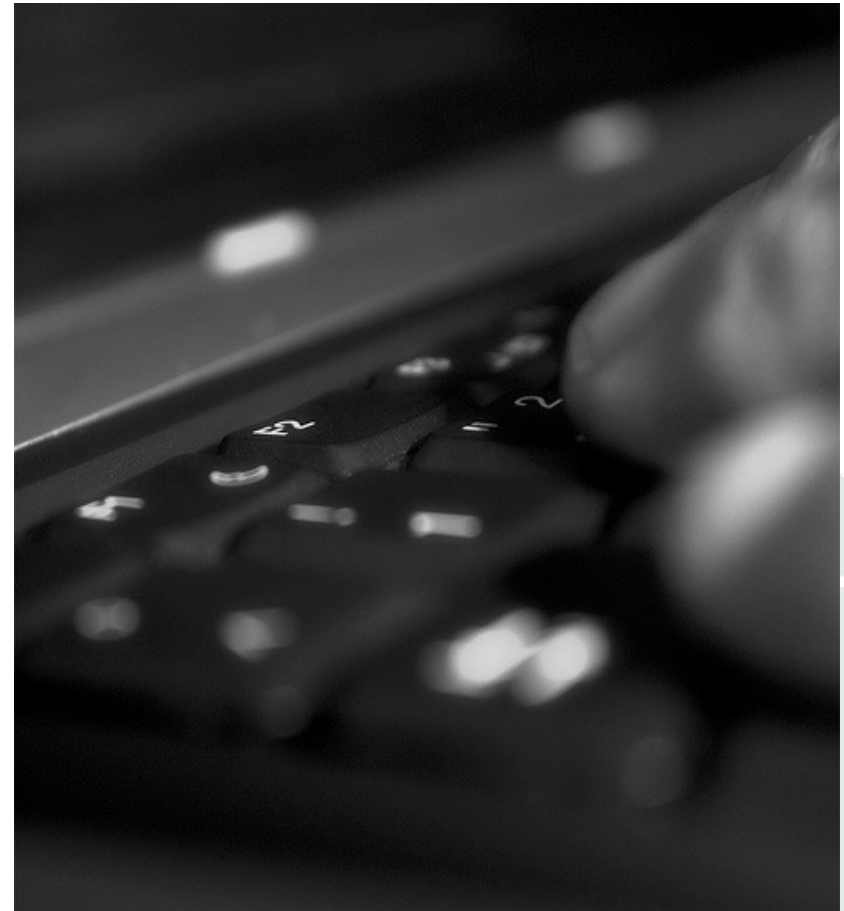


Exercise 5  
Business Informatics 2 (PWIN)

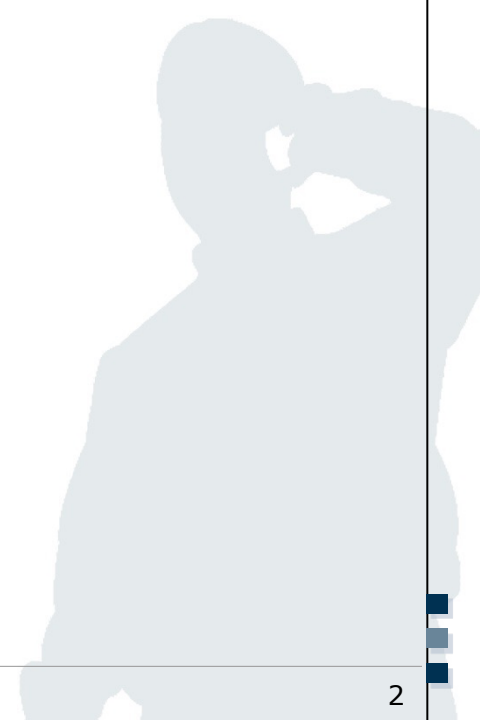
Markup Languages &  
Unified Modeling Language

Sascha Löbner, M.Sc.  
[www.m-chair.de](http://www.m-chair.de)

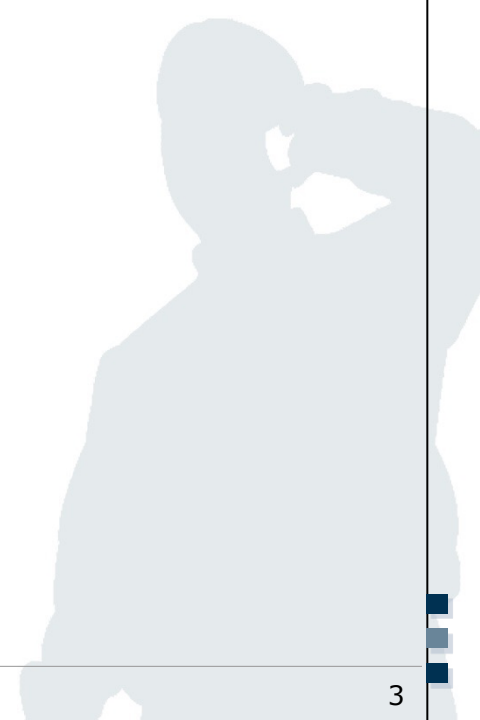


Jenser (Flickr.com)

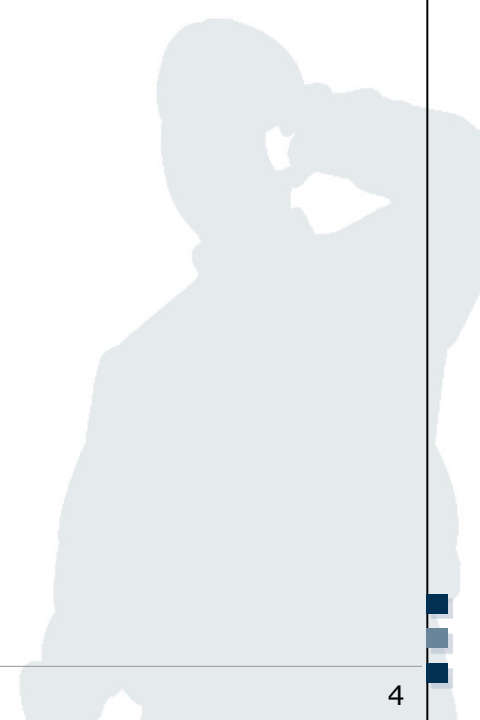
- Exercise 1: Well-formed XML Documents
- Exercise 2: Document Type Definition
- Exercise 3: Unified Modeling Language



- Exercise 1: Well-formed XML Documents
- Exercise 2: Document Type Definition
- Exercise 3: Unified Modeling Language



1 a) What is meant by a well-formed XML document?



An XML document is **well-formed**, if:

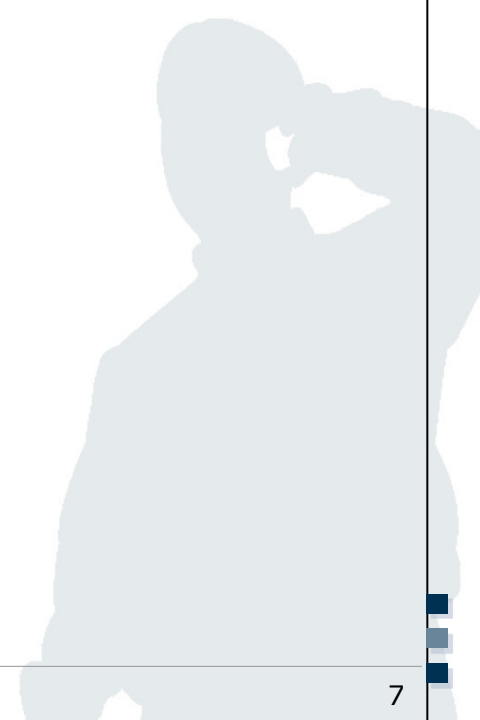
```
<?xml version="1.0"?>
<flirt>
  <name>Daisy</name>
  <mobile>436508469249</m
obile>
  <email>daisy@m-
chair.de</email>
  <city>Innsbruck</city>
  <first date>2020-01-
23</first date>
  <last date>2020-05-
01</last date>
  <birthday>1993-11-
13</birthday>
  <vegetarian>no</vegetar
ian>
  <status>single</status>
</flirt>
```

An XML document is **well-formed**, if:

- The element tags are case-sensitive
- No un-escaped special syntax characters:  
& ' < > "
- The element tags are correctly nested
- Only one "root" element
- Properly encoded legal unicode characters

```
<?xml version="1.0"?>
<flirt>
  <name>Daisy</name>
  <mobile>436508469249</m
obile>
  <email>daisy@m-
chair.de</email>
  <city>Innsbruck</city>
  <first date>2020-01-
23</first date>
  <last date>2020-05-
01</last date>
  <birthday>1993-11-
13</birthday>
  <vegetarian>no</vegetar
ian>
  <status>single</status>
</flirt>
```

1 b) Indicate which of the following XML documents are well-formed? Mark the mistakes and correct them.




```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

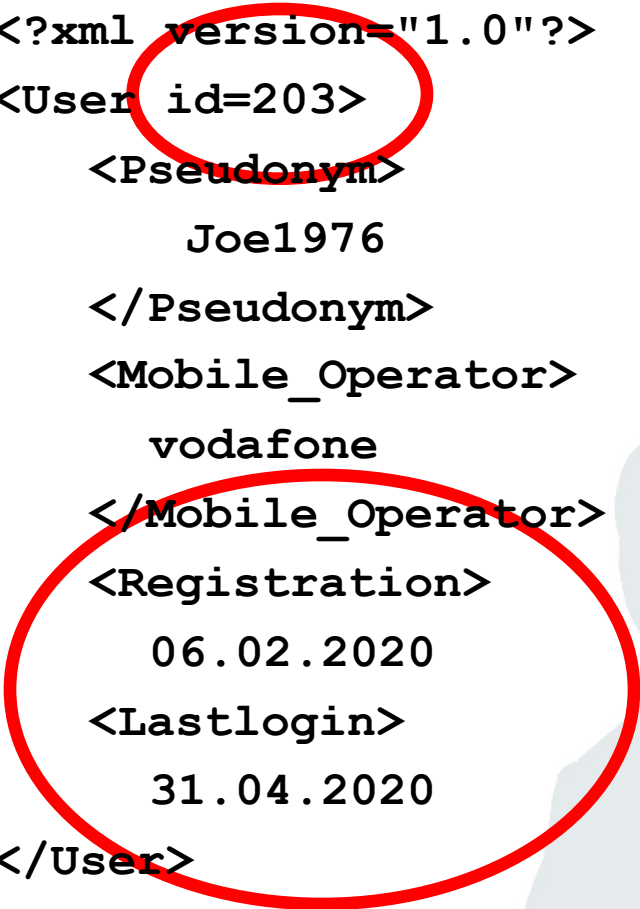
```
<?xml version="1.0"?>
<User id=203>
  <Pseudonym>
    Joe1976
  </Pseudonym>
  <Mobile_Operator>
    vodafone
  </Mobile_Operator>
  <Registration>
    06.02.2020
  <Lastlogin>
    31.04.2020
</User>
```



```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```



```
<?xml version="1.0"?>
<User id=203>
  <Pseudonym>
    Joe1976
  </Pseudonym>
  <Mobile_Operator>
    vodafone
  </Mobile_Operator>
  <Registration>
    06.02.2020
  <Lastlogin>
    31.04.2020
  </User>
```



```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<?xml version="1.0"?>
<User id="203">
  <Pseudonym>
    Joe1976
  </Pseudonym>
  <Mobile_Operator>
    vodafone
  </Mobile_Operator>
  <Registration>
    06.02.2020
  </Registration>
  <Lastlogin>
    31.04.2020
  </Lastlogin>
</User>
```

```

<?xml version="1.0"?>
<Date>
  <Places>
    An der Hauptwache 7
  </Place>
  <Time>
    25.03.2020, 21:15-0:15
  </Time>
  <Meeting_Point>
    Starbucks
  <People>
    Gina
  </Meeting_Point>
  </People>
  <People>
    Jimmy
  </People>
  <Activity>
    Cocktails
  </Activity>
  <Comment>
    Spend Gina 2 Caipis
  </Comment>
</date>

```

```

<?xml version="1.0"?>
<Date>
  <Place>
    Theodor-W.-Adorno-Platz 5
  </Place>
  <Time>
    25.03.2020, 16:15-19:15
  </Time>
  <Meeting_Point>
    Sturm und Drang
  </Meeting_Point>
  <People>
    Joe1976
  </People>
  <People>
    Jenny23
  </People>
  <Activity>
    Drinking beer
  </Activity>
  <Comment>
    Joe1976 wears sun glasses!
  </Comment>
</Date>

```

```

<?xml version="1.0"?>
<Date>
  <Places>
    An der Hauptwache 7
  </Place>
  <Time>
    25.03.2020, 21:15-0:15
  </Time>
  <Meeting_Point>
    Starbucks
  <People>
    Gina
  </Meeting_Point>
  </People>
  <People>
    Jimmy
  </People>
  <Activity>
    Cocktails
  </Activity>
  <Comment>
    Spend Gina 2 Caipis
  </Comment>
</date>

```

```

<?xml version="1.0"?>
<Date>
  <Place>
    Theodor-W.-Adorno-Platz 5
  </Place>
  <Time>
    25.03.2020, 16:15-19:15
  </Time>
  <Meeting_Point>
    Sturm und Drang
  </Meeting_Point>
  <People>
    Joe1976
  </People>
  <People>
    Jenny23
  </People>
  <Activity>
    Drinking beer
  </Activity>
  <Comment>
    Joe1976 wears sun glasses!
  </Comment>
</Date>

```



```

<?xml version="1.0"?>
<Date>
  <Places>
    An der Hauptwache 7
  </Place>
  <Time>
    25.03.2020, 21:15-0:15
  </Time>
  <Meeting_Point>
    Starbucks
  </Meeting_Point>
  <People>
    Gina
  </People>
  <People>
    Jimmy
  </People>
  <Activity>
    Cocktails
  </Activity>
  <Comment>
    Spend Gina 2 Caipis
  </Comment>
</Date>

```

```

<?xml version="1.0"?>
<Date>
  <Place>
    Theodor-W.-Adorno-Platz 5
  </Place>
  <Time>
    25.03.2020, 16:15-19:15
  </Time>
  <Meeting_Point>
    Sturm und Drang
  </Meeting_Point>
  <People>
    Joe1976
  </People>
  <People>
    Jenny23
  </People>
  <Activity>
    Drinking beer
  </Activity>
  <Comment>
    Joe1976 wears sun glasses!
  </Comment>
</Date>

```

1 c) Explain why the following XML document is not well-formed. Correct the syntax error.

```
<?xml version="1.0"?>
<User id="203">
  <Sex>
    Male
  </Sex>
  <Age>
    21
  </Age>
</User>
<User id="194">
  <Sex>
    Female
  </Sex>
  <Age>
    23
  </Age>
</User>
```

Two root elements are defined.  
But well-formed XML documents  
only allow one root element.

```
<?xml version="1.0"?>
```

```
<Users>
```

```
  <User id="203">
```

```
    <Sex>
```

```
      Male
```

```
    </Sex>
```

```
    <Age>
```

```
      21
```

```
    </Age>
```

```
  </User>
```

```
  <User id="194">
```

```
    <Sex>
```

```
      Female
```

```
    </Sex>
```

```
    <Age>
```

```
      23
```

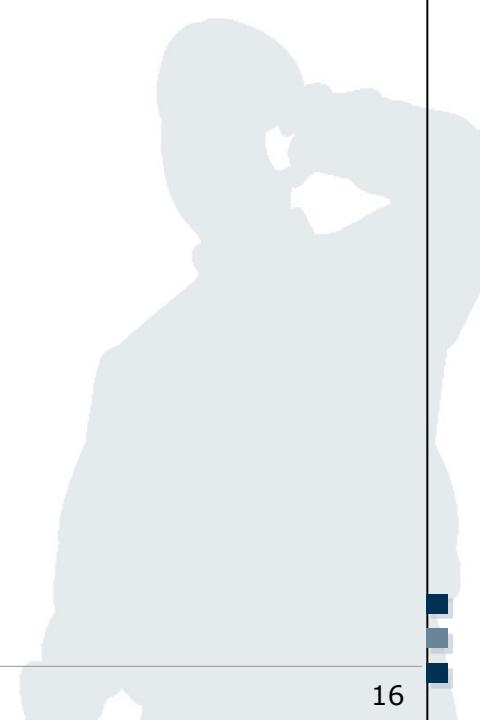
```
    </Age>
```

```
  </User>
```

```
</Users>
```

1 d) Create an XML document representing your two favorite dating locations.

Use at least two different tags for describing the locations and at least one attribute.





```
<?xml version="1.0"?>
```

```
<?xml version="1.0"?>
```

```
<Locations>
```

```
</Locations>
```

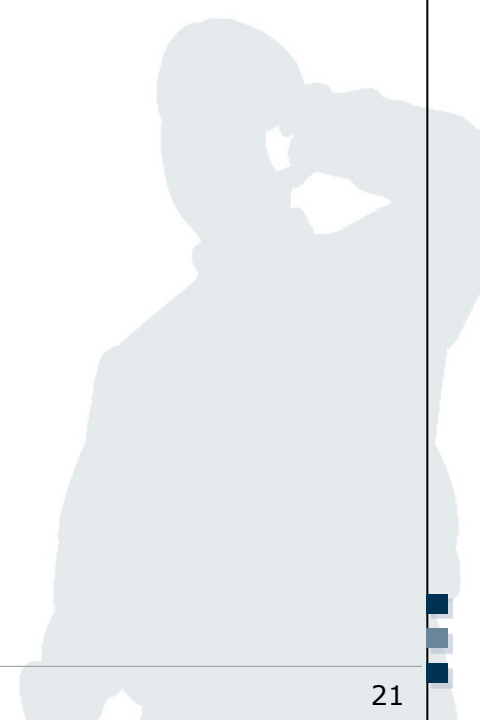
```
<?xml version="1.0"?>
<Locations>
  <Location id="332">

  </Location>
  <Location id="143">

  </Location>
</Locations>
```

```
<?xml version="1.0"?>
<Locations>
  <Location id="332">
    <Name>DASEIN</Name>
    <Rating>Good</Rating>
  </Location>
  <Location id="143">
    <Name>Sturm und Drang</Name>
    <Rating>Good</Rating>
  </Location>
</Locations>
```

- Exercise 1: Well-formed XML Documents
- Exercise 2: Document Type Definition
- Exercise 3: Unified Modeling Language



Create a DTD for the XML document  
from Exercise 1 b).

```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
] >
```



```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
<!ELEMENT User
(Pseudonym,Mobile_Operator,
Registration,Lastlogin)>
]>
```





```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
<!ELEMENT User
(Pseudonym,Mobile_Operator,
Registration,Lastlogin)>
<!ELEMENT Pseudonym (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
  <!ELEMENT User
    (Pseudonym,Mobile_Operator,
    Registration,Lastlogin)>
  <!ELEMENT Pseudonym (#PCDATA)>
  <!ELEMENT Mobile_Operator (#PCDATA)>
]>
```



```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
  <!ELEMENT User
    (Pseudonym,Mobile_Operator,
    Registration,Lastlogin)>
  <!ELEMENT Pseudonym (#PCDATA)>
  <!ELEMENT Mobile_Operator (#PCDATA)>
  <!ELEMENT Registration(#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<User id="194">
  <Pseudonym>
    Jenny23
  </Pseudonym>
  <Mobile_Operator>
    t-mobile
  </Mobile_Operator>
  <Registration>
    03.02.2020
  </Registration>
  <Lastlogin>
    29.04.2020
  </Lastlogin>
</User>
```

```
<!DOCTYPE User [
  <!ELEMENT User
    (Pseudonym,Mobile_Operator,
    Registration,Lastlogin)>
  <!ELEMENT Pseudonym (#PCDATA)>
  <!ELEMENT Mobile_Operator (#PCDATA)>
  <!ELEMENT Registration(#PCDATA)>
  <!ELEMENT Lastlogin(#PCDATA)>
]>
```

Validate and correct the following XML document against the corresponding DTD document. Assume the given DTD is correct.

```
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
  </Address>
  <City>Berlin</City>
  <Age>23</Age>
  <Gender>male</male>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
  <Event>Networking</Event>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
  </Address>
  <City>Berlin</City>
  <Age>23</Age>
  <Gender>male</male>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
  <Event>Networking</Event>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
  </Address>
  <City>Berlin</City>
  <Age>23</Age>
  <Gender>male</male>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
  <Event>Networking</Event>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
Address, Age, Gender,
Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```



```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
  </Address>
  <City>Berlin</City>
  <Age>23</Age>
  <Gender>male</male>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
  <Event>Networking</Event>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
Address, Age, Gender,
Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
  </Street>
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
  </Street>
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
    Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
    Address, Age, Gender,
    Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
    ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

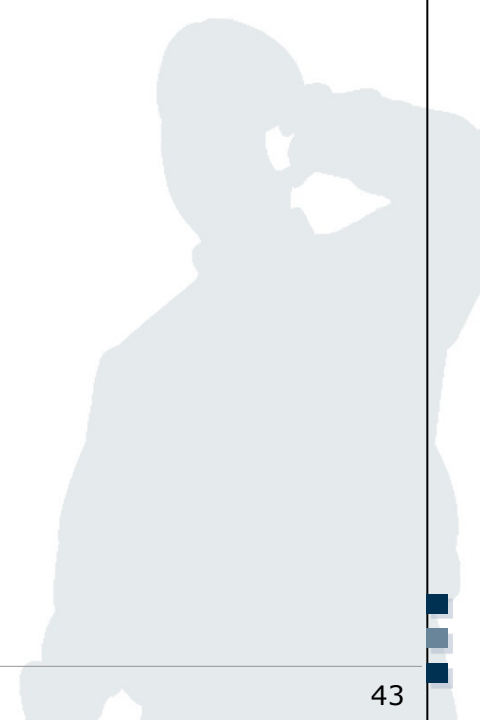


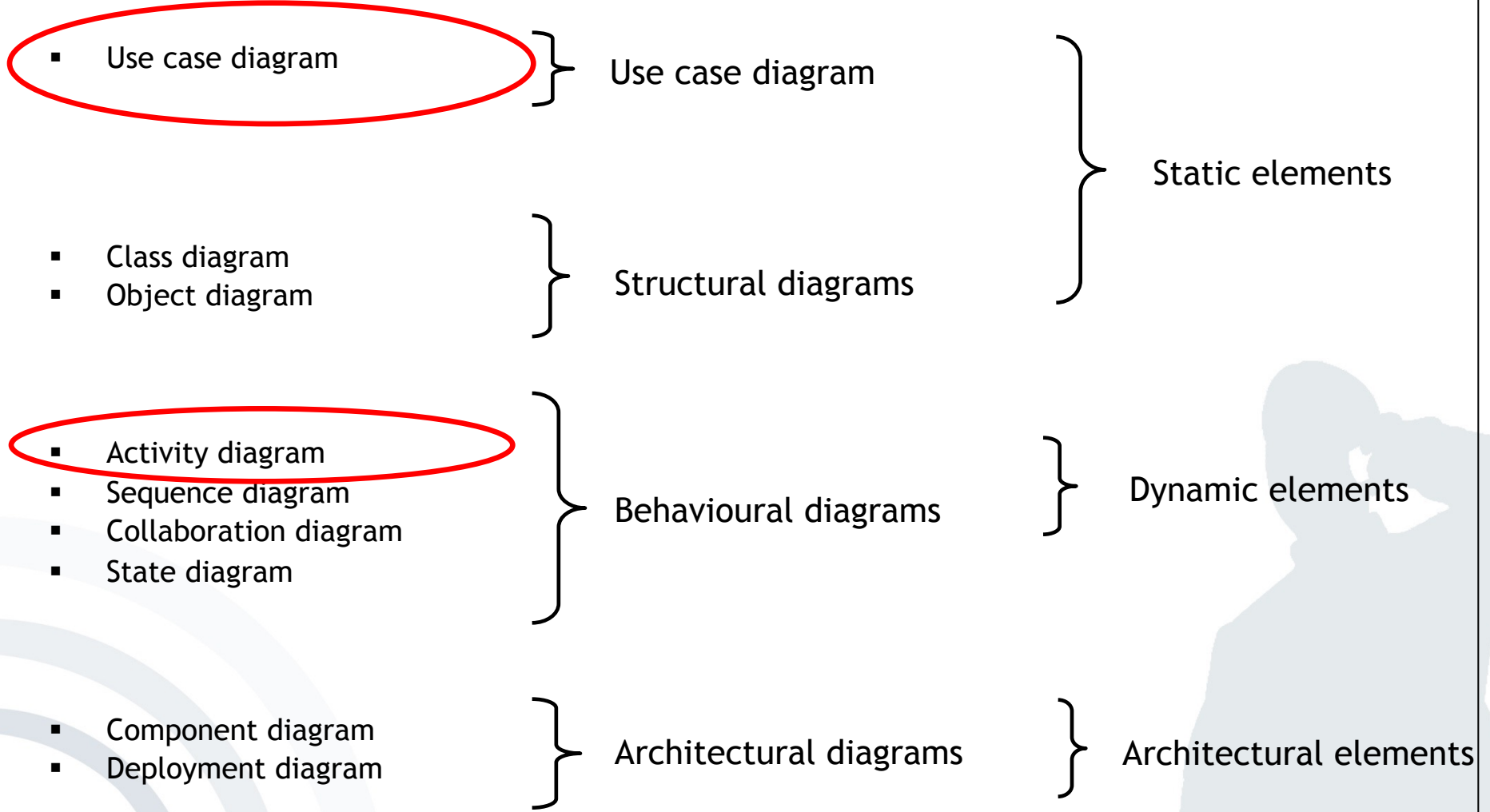
```
<?xml version="1.0"?>
<Student>
  <Name>Guenther M</Name>
  <Address>
    <Street>Cluestreet
    </Street>
    <ZipCode>63743</ZipCode>
    <City>Berlin</City>
  </Address>
  <Age>23</Age>
  <Gender>male</Gender>
  <Course>Scientific
  Work</Course>
  <Course>Economics</Course>
</Student>
```

```
<!DOCTYPE Student [
  <!ELEMENT Student (Name,
  Address, Age, Gender,
  Course*, Subject*)>
  <!ELEMENT Name (#PCDATA)>
  <!ELEMENT Address (Street,
  ZipCode, City)>
  <!ELEMENT Street (#PCDATA)>
  <!ELEMENT ZipCode (#PCDATA)>
  <!ELEMENT City (#PCDATA)>
  <!ELEMENT Age (#PCDATA)>
  <!ELEMENT Gender (#PCDATA)>
  <!ELEMENT Course (#PCDATA)>
  <!ELEMENT Subject (#PCDATA)>
]>
```

- Exercise 1: Well-formed XML Documents
- Exercise 2: Document Type Definition
- Exercise 3: Unified Modeling Language

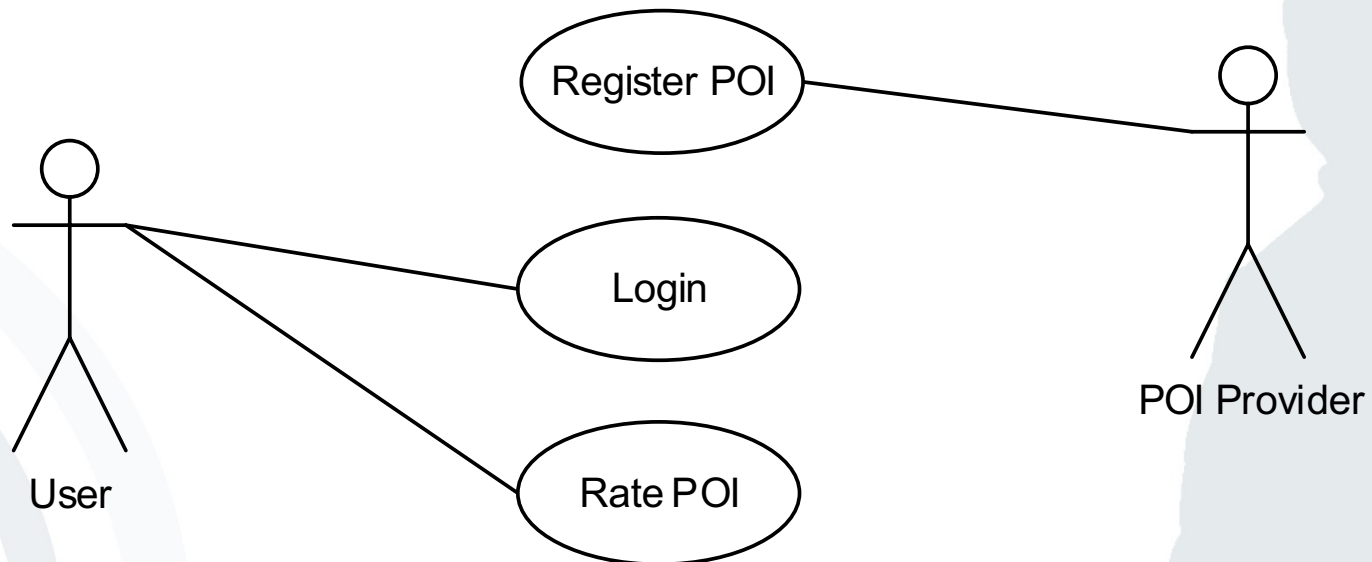
3 a) What are the differences between use case and activity diagrams?





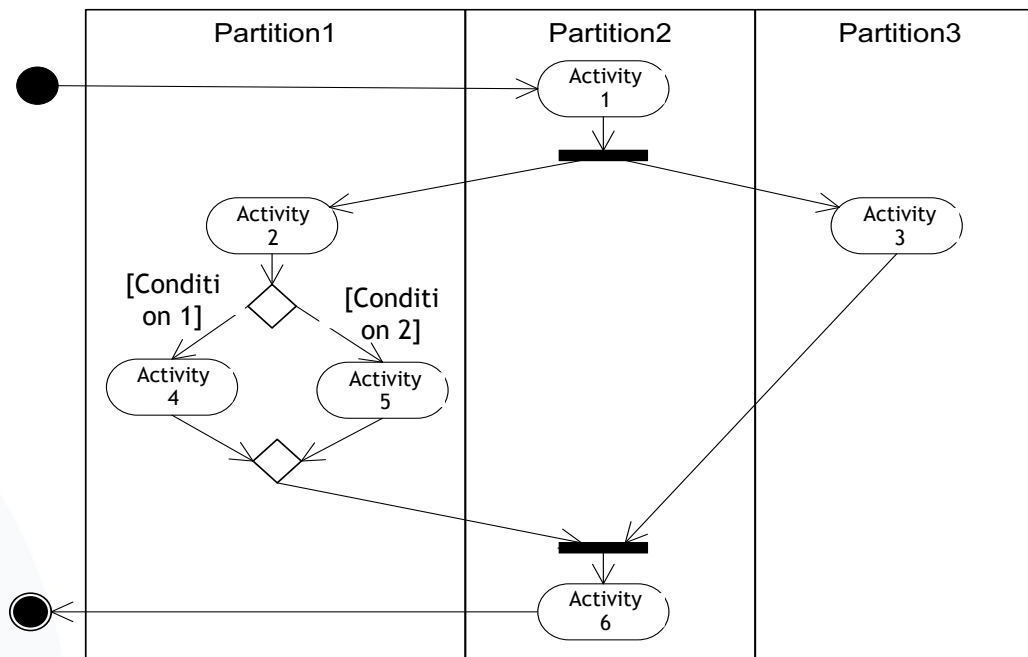
### Use case diagrams

- Use cases describe the functionality, which a system has to provide
- The sum of all “use cases” comprises the technical requirements of a system.
- Use cases define the interfaces between a user and the system
- Specification is developed together with the client/customer

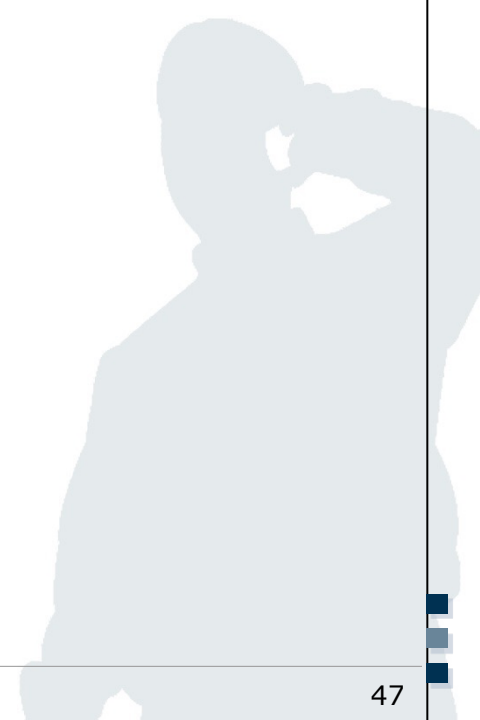


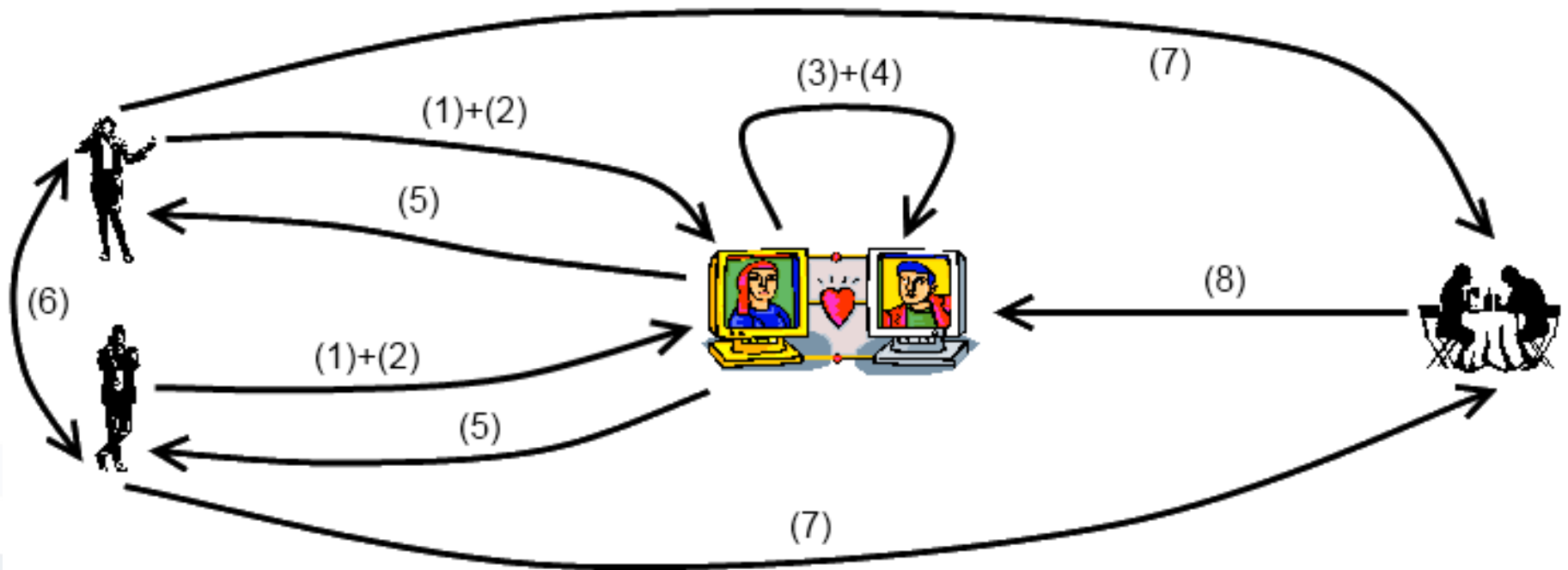
## Activity diagrams

- Activity diagrams are used to model workflows in a system.
- Central element: Activity  
An activity is an “action” within a process.
- Activities are structured by responsibilities.



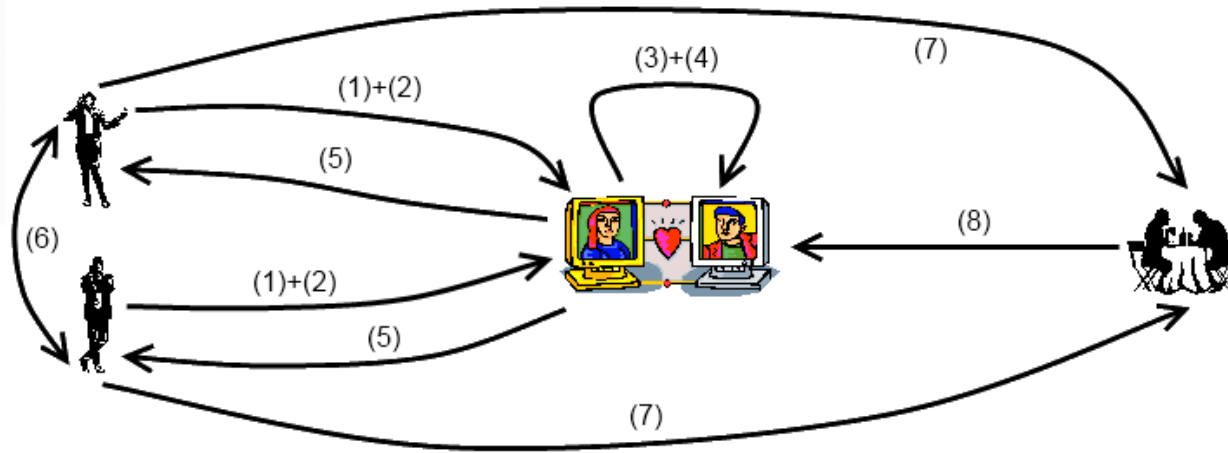
4 b) Develop a **use case** and an **activity diagram** for the InstaMatch<sup>®</sup> service based on Figure 1 of the InstaMatch scenario.





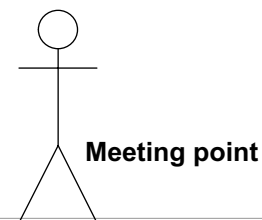
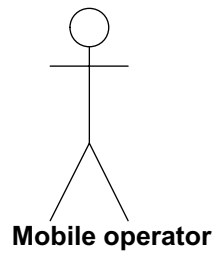


## Exercise 3 b): Unified Modeling Language



1. **Users register at InstaMatch®.** Thereby, they receive their pseudonyms and submit their personal profile information. Subsequently, InstaMatch® attempts to certify the profile attributes of the users.
2. In order to start searching for a date, users have to **activate the InstaMatch®** app on their mobile device.
3. InstaMatch® attempts to **find other InstaMatch® users in close proximity** who are also currently looking for a date.
4. **InstaMatch® matches the personal profiles** of all users in close proximity with each other.
5. If there is a match, **InstaMatch® informs the corresponding users** by presenting them with a list of matching pseudonyms.
6. InstaMatch® enables matching users to **communicate with each other** using text messages, chat or voice.
7. If users want to arrange a meeting, InstaMatch® **suggests a list of appropriate meeting points** based on the personal interests of the corresponding users as well as their current geographic location. Then, InstaMatch® **navigates the users to their meeting point.**
8. After the date, the **users can rate their date** on the InstaMatch® app. This rating is used to improve their next date matching process.

Use case diagram



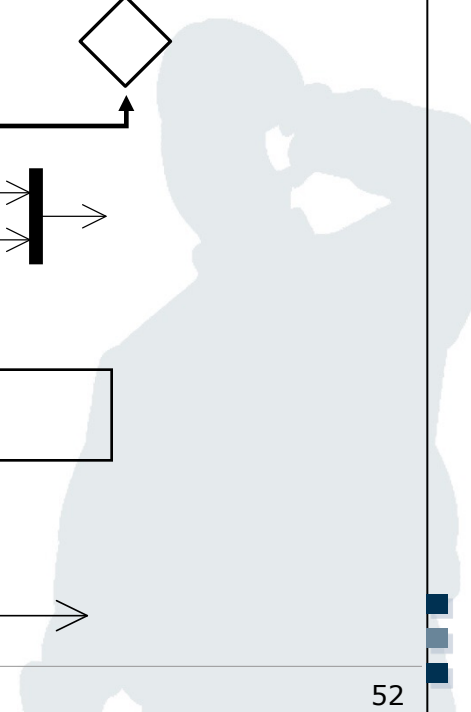
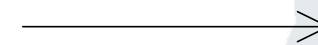
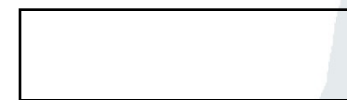
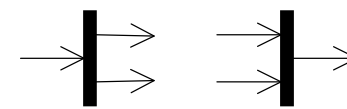
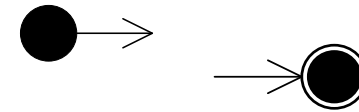
Use case diagram



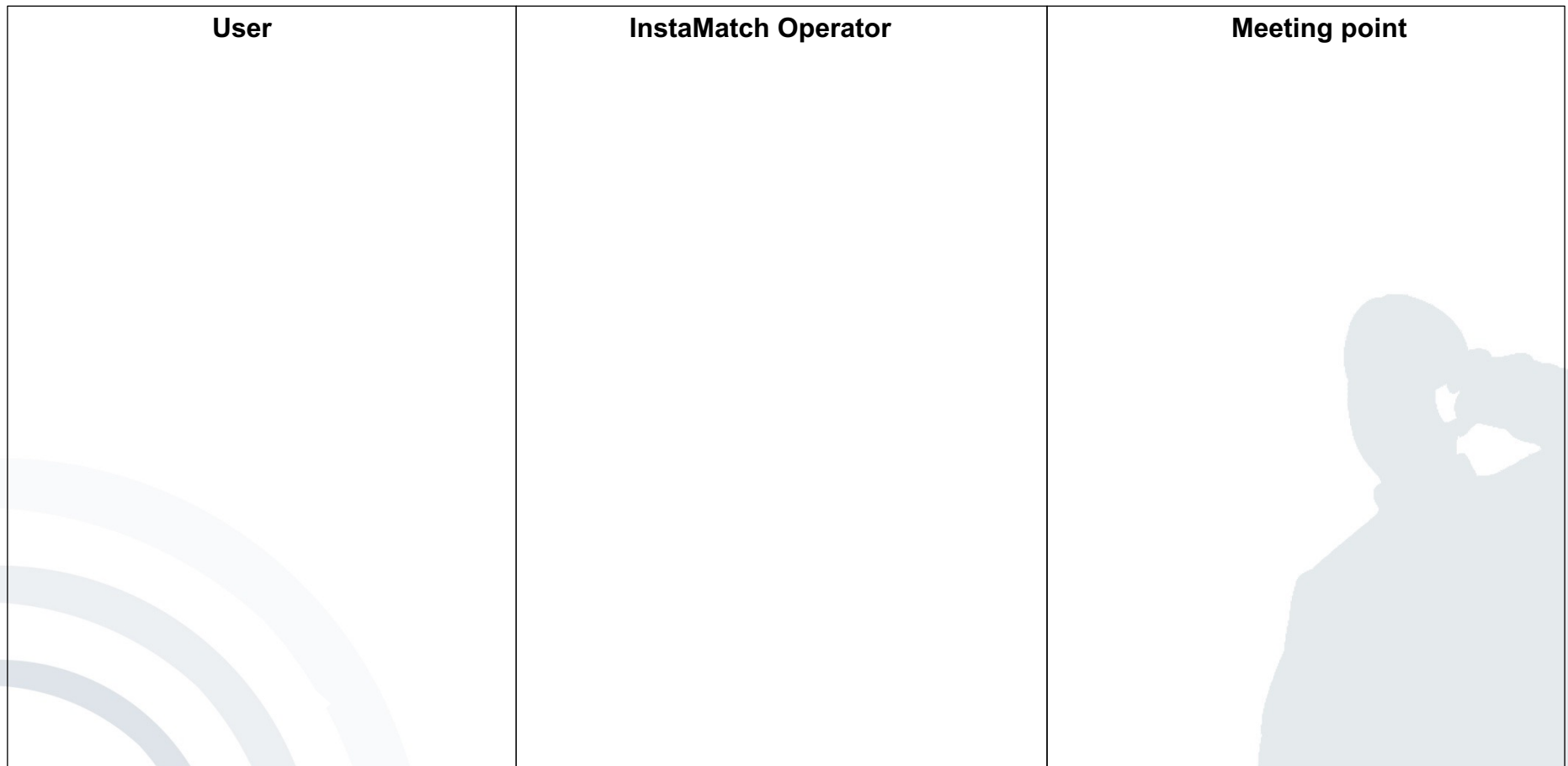
# Repetition: Activity Diagram Notation Elements

## Notation elements

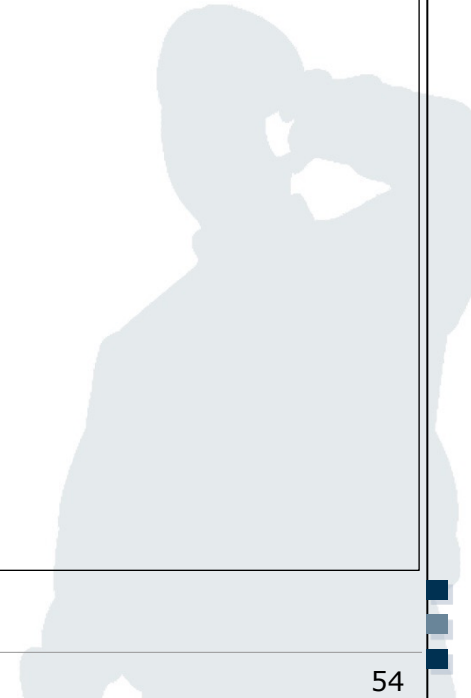
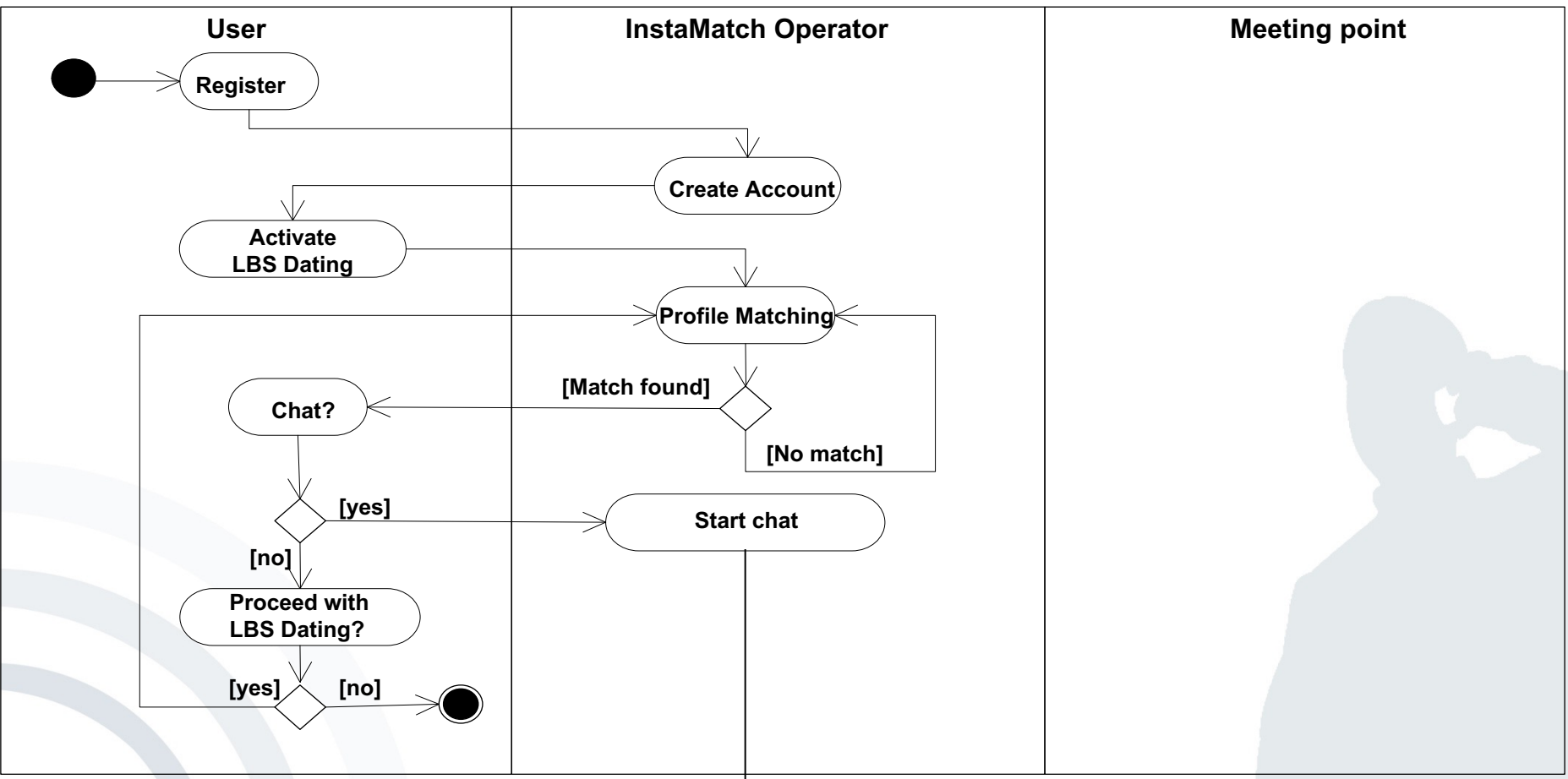
- Initial state/final state
- Activity
- Decision
- Split/join
- Responsibility
- Activity flow



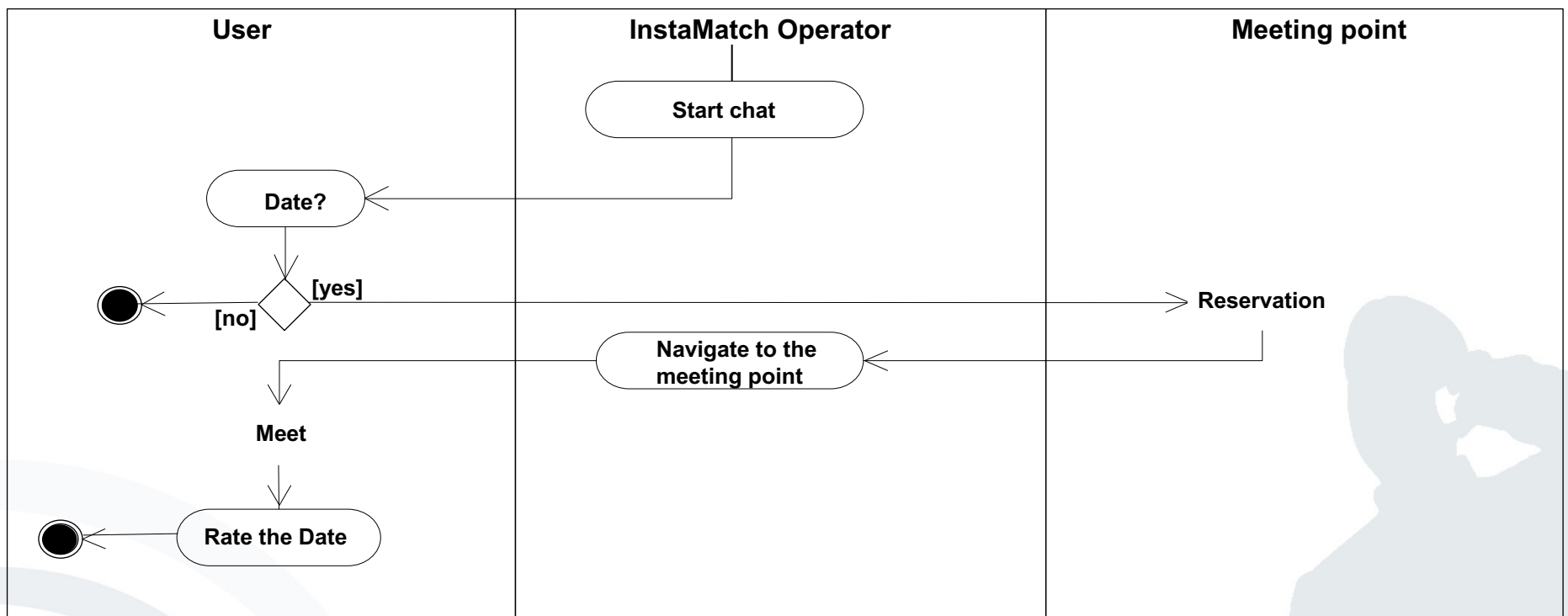
Activity diagram (1/2)



Activity diagram (1/2)



Activity diagram (2/2)



# Open Questions?

