

Answer the questions in the spaces provided or check the adequate checkbox.

Sujet 02

User Name : _____

Date: 08/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

KAOS, SecureTempos, S1*

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

Model transformation, federation

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
 A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
 A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

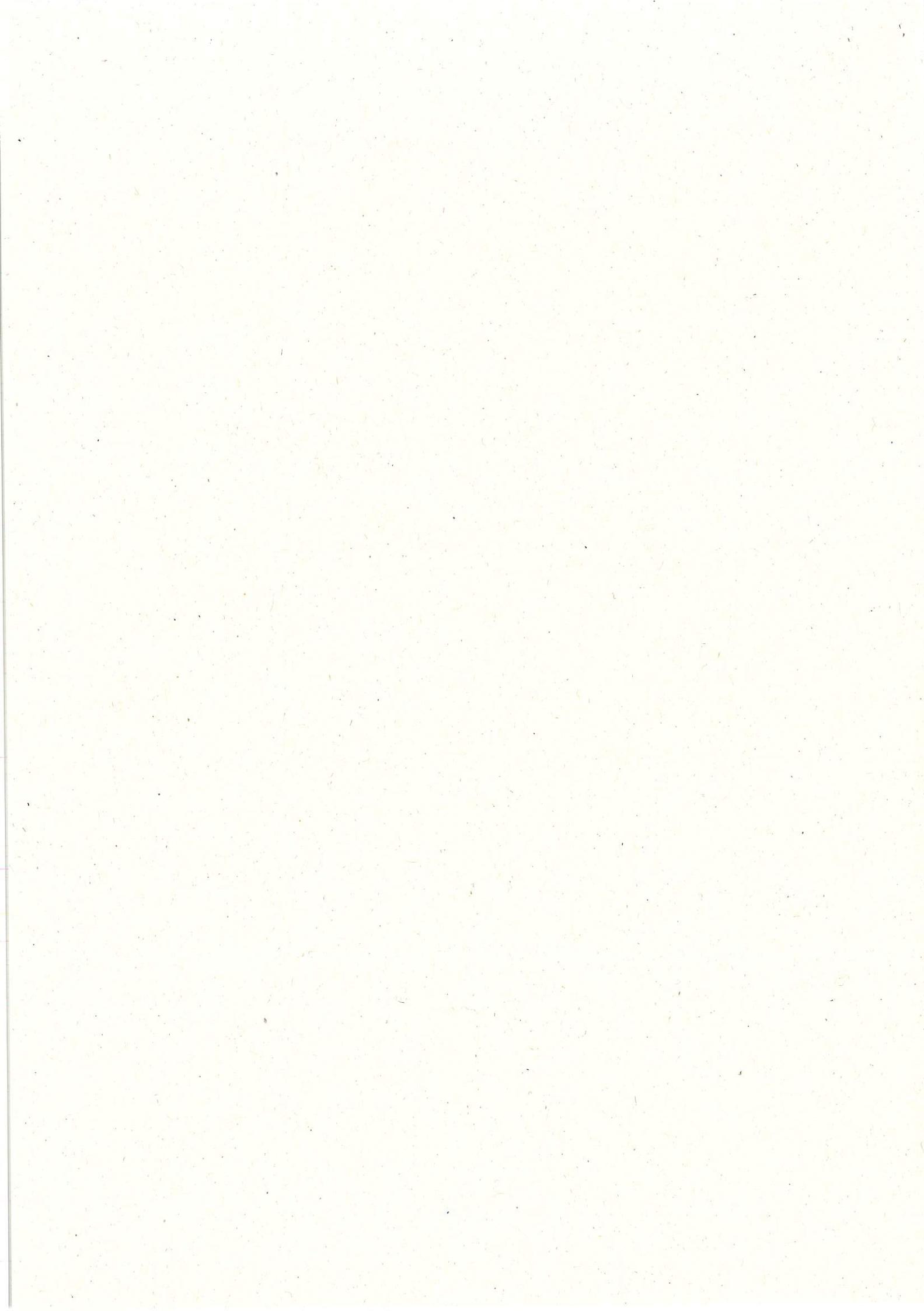
5. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
 A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
 A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
 A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
 A. Easy B. Medium C. Difficult D. Depends on the correspondence



10. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

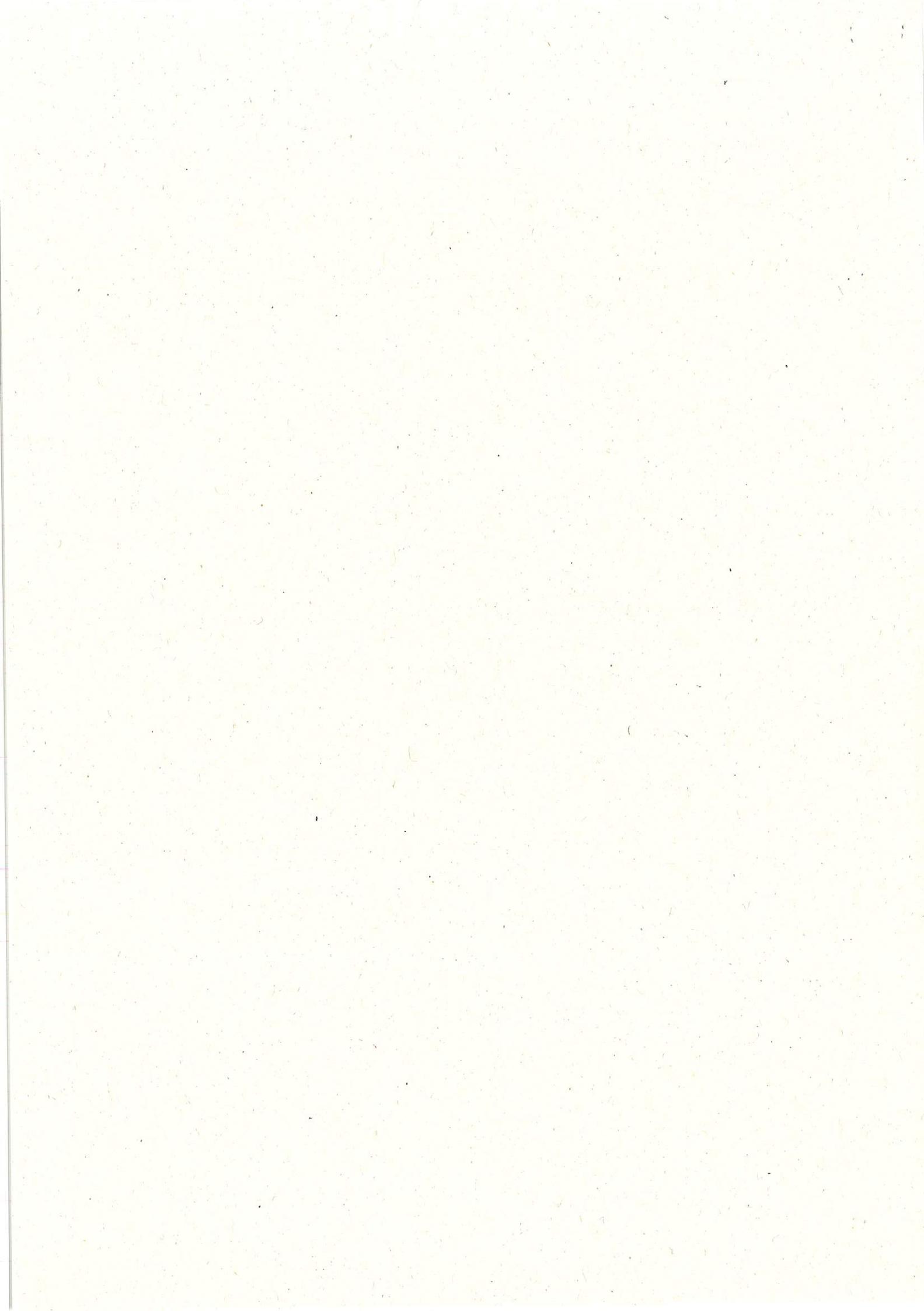
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium
C. Difficult

13. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

14. Which task of the methodology that you found particularly challenging? None

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)



3 Post-Experience Survey for iTrust case study

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 A. Easy B. Medium C. Difficult
4. How would you rate your overall understanding of the Access Control model provided?
 A. Easy B. Medium C. Difficult
5. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult
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15. Which task of the methodology that you found particularly challenging?

Understanding the provided files

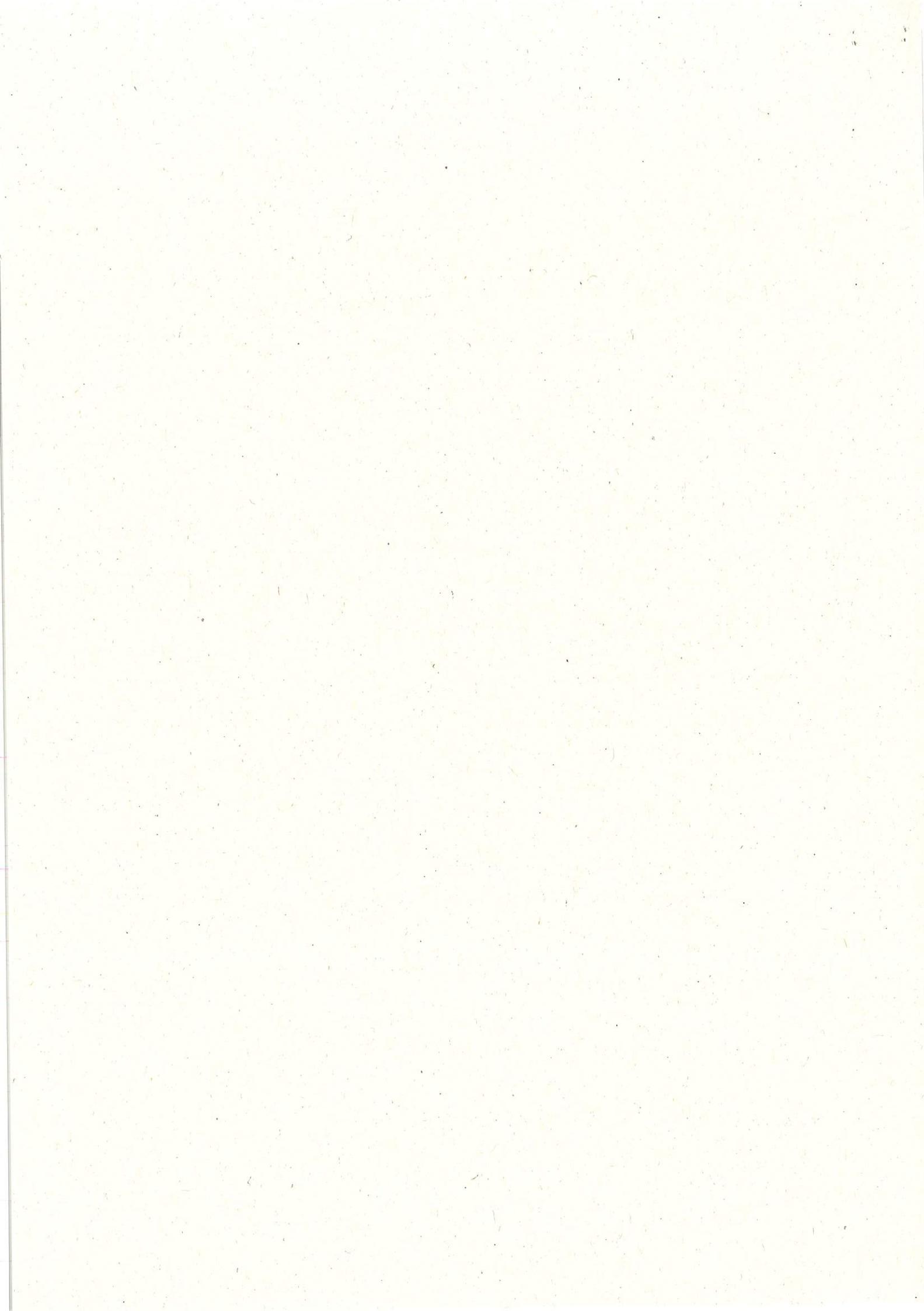
Identifying the correspondences between elements of models

Understanding the security specifications

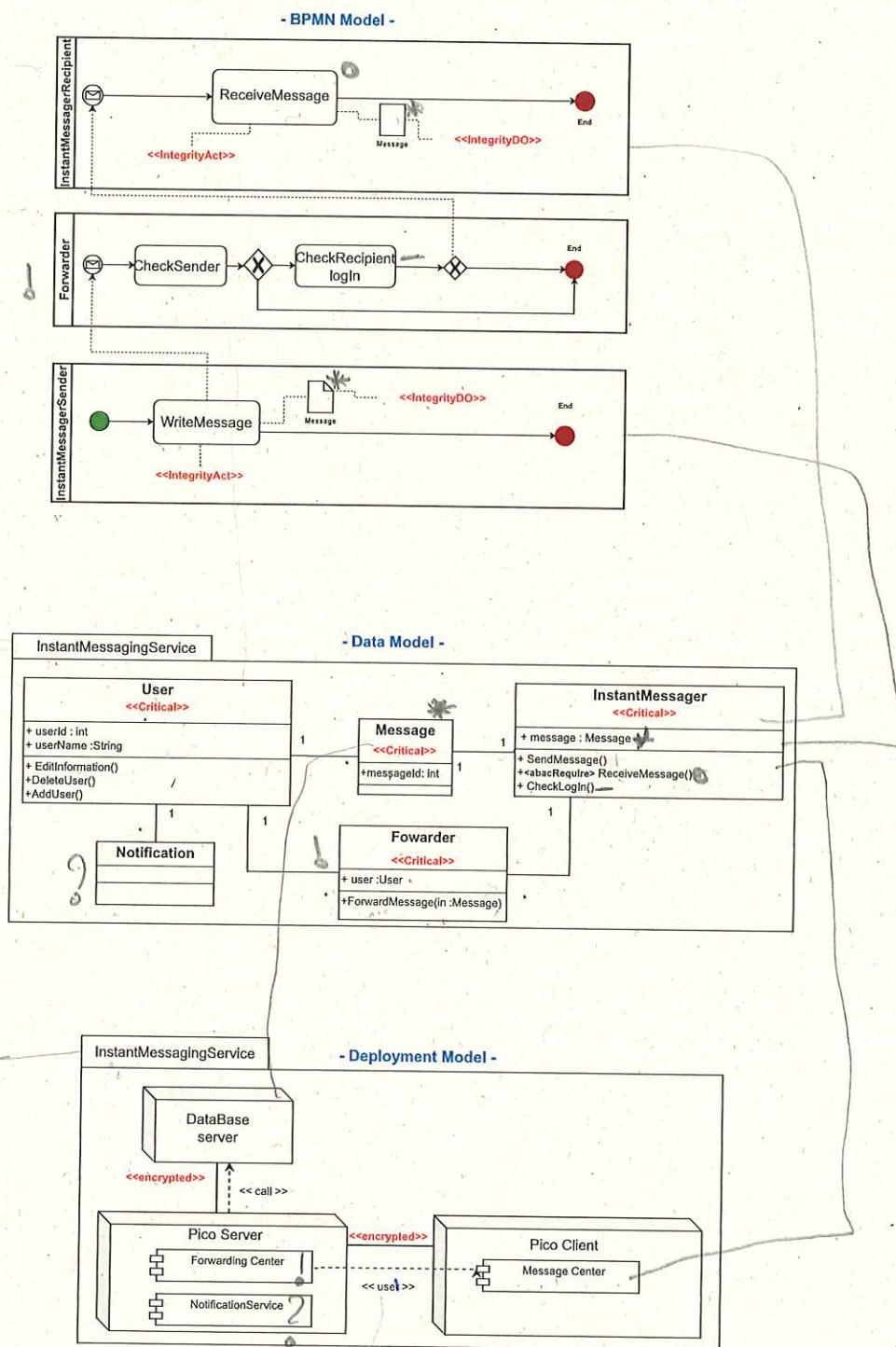
Establishing the correspondences

Attaching the security specification to the correspondences

Implementing the security specifications (for user who implement them)

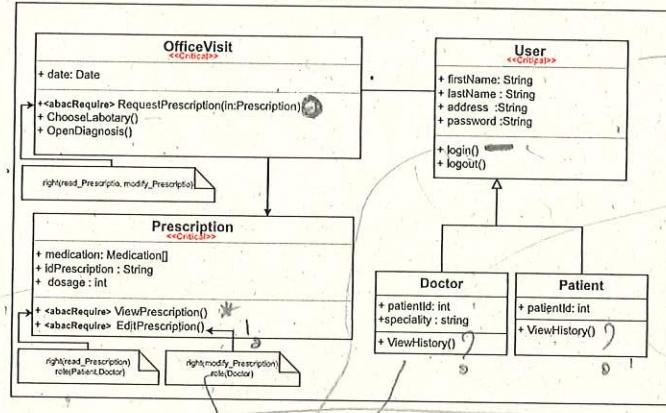


Models for case study 1 : Instant messaging service

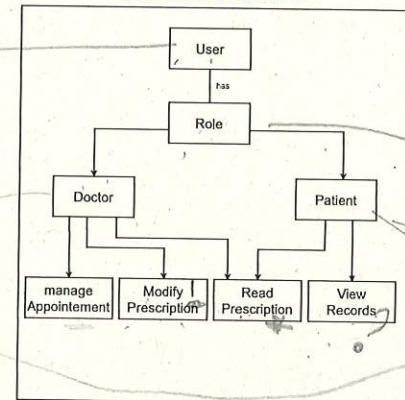


Models for case study 2 : ITrust system medical

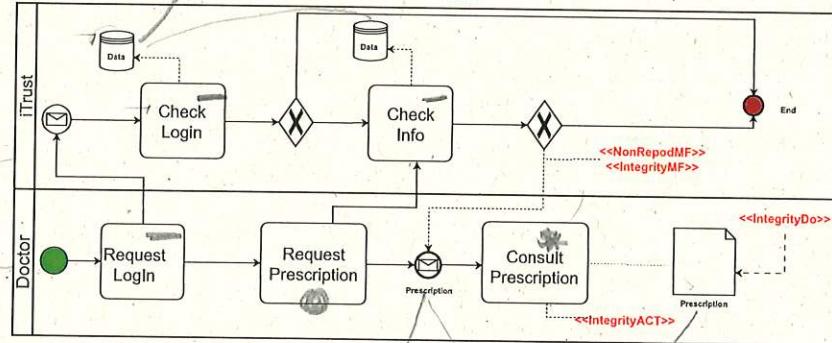
- Data Model -



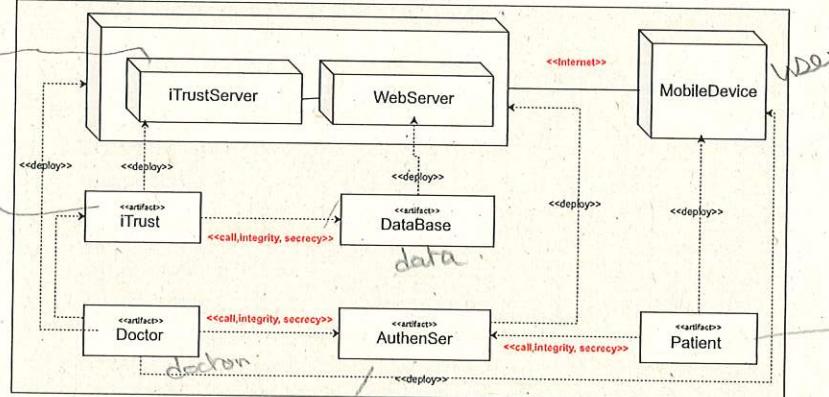
- Access Control Model -



- BPMN Model -



- Deployment Model -



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	S3 S2 S3 S2	Request Prescription Data Model View Prescription Data Model View Prescription View History Data Model	Request Prescription BPMN Model Consult Prescription View Prescription View Records AC Model
Correspondence2	S1 S1 S1	User Data Model Doctor Data Model Patient Data Model	User AC Model Doctor AC Model Patient AC Model
Correspondence3		Prescription Data Model User Data Model login() Data Model	Prescription BPMN Data BPMN Check login BPMN
Correspondence4		iTrust BPMN Data Base Dep. Model	iTrust + Server + Trust + AuthenSev Dep. Model Prescription Data model + User Data Model.

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	<i>S₂</i> <i>S₃</i>	Receive Message BPMN Check Recipient login BPMN	zabor Req Received Message Data Model check login() Data Model
Correspondence2		Message BPMN	message Data model
Correspondence3		<i>S₃</i> Instant Message sender BPMN Instant Message Recipient BPMN Forwarder BPMN	Instant Messger Data Model Instant Messger Data Model Forwarder Data Model

Instant Messaging Service Data Model

Instant Messaging Service Dep. Model

Forwarder Data Model

Forwardingcenter Dep. Model

Notification Data Model

Notification Service Dep. Model

Instant Messager Data Model

Message Center Dep. Model

Message Data Model

Database Server Dep. Model

S₁

14

Answer the questions in the spaces provided or check the adequate checkbox.

User Name :

Sujet 03

23 ans

Date: 07/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

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5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

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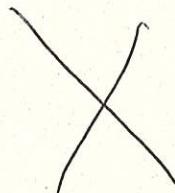
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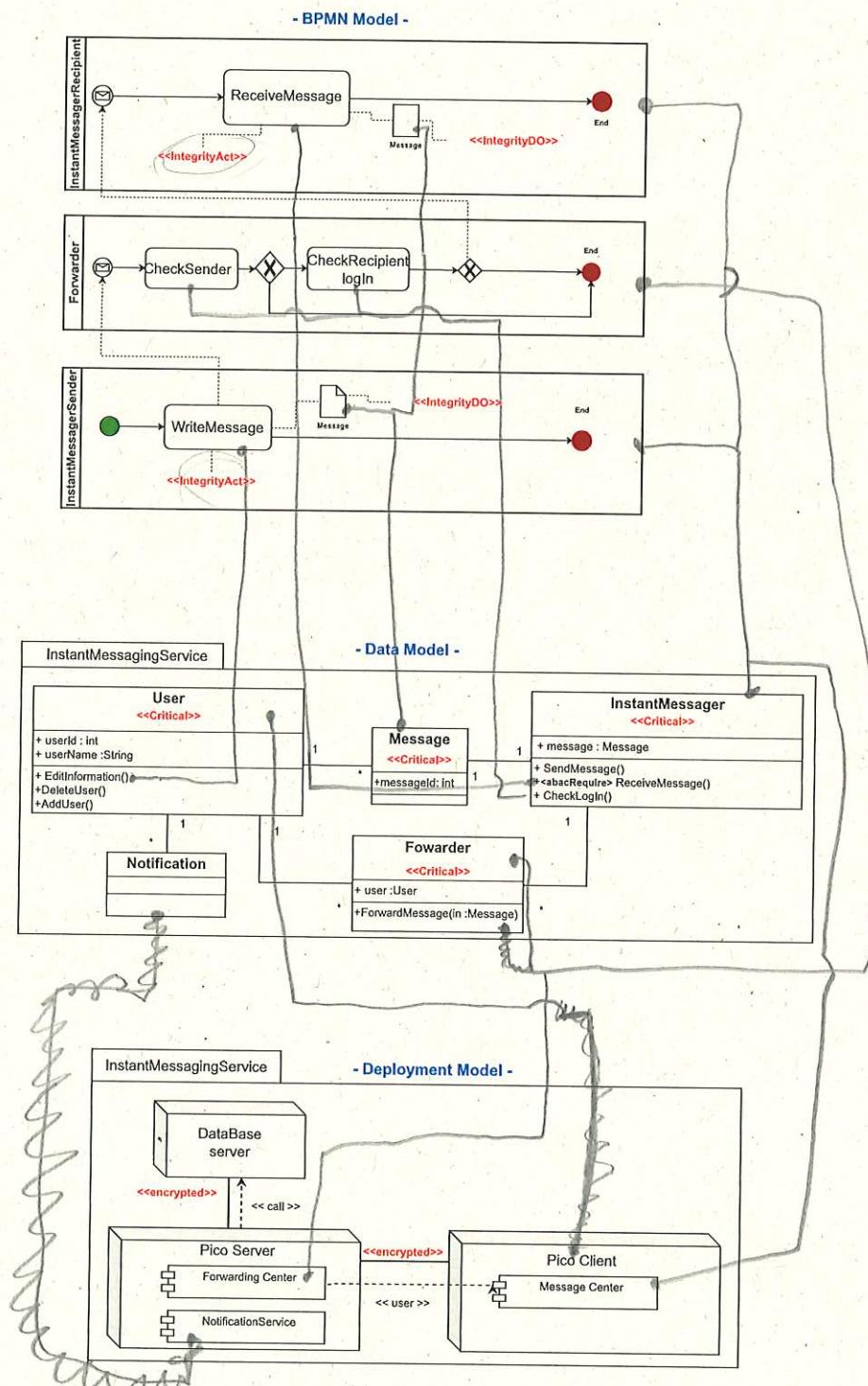
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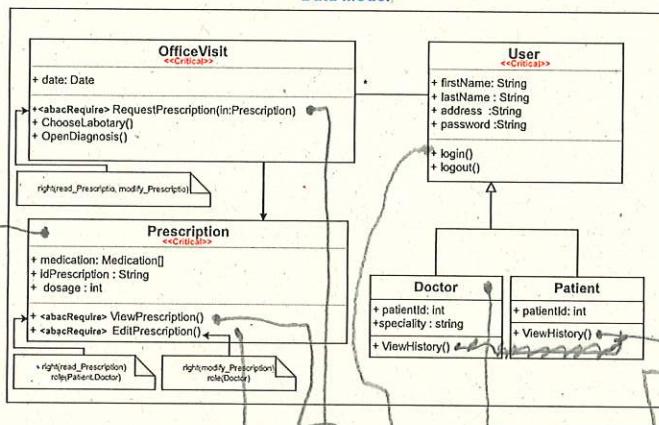
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Models for case study 1 : Instant messaging service

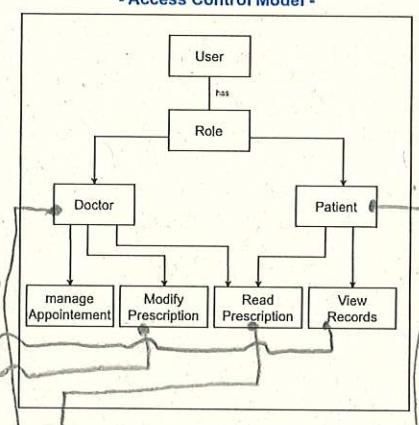


Models for case study 2 : ITrust system medical

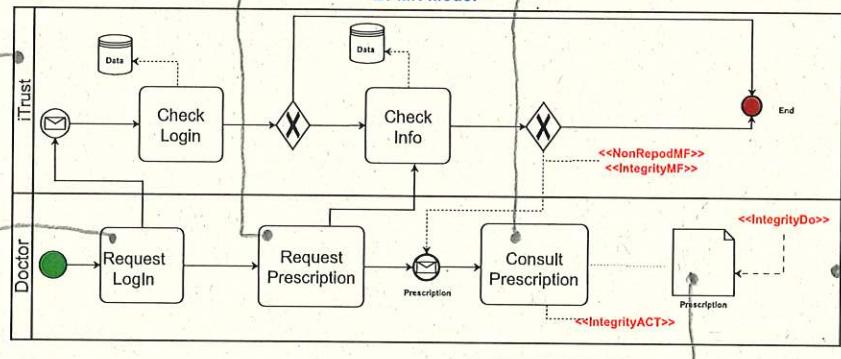
- Data Model -



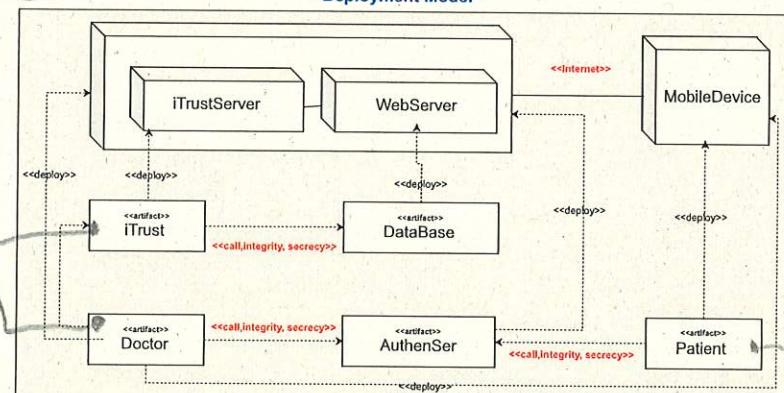
- Access Control Model -



- BPMN Model -



- Deployment Model -



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	2	Receive Message Check tender BPMN Check Recipient Log In	Receive Message Check Log In Data Edit Information
Correspondence2		Message BPMN	Message Data
Correspondence3	3	Instant Message Recipient Instant Message Sender Forwarder BPMN	Instant Message Forwarder Data
4	1	Data Instant Message Forwarder	Deployment Message Center Forwarding Center
5		Data User	Deployment Pico Client

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1		Data Prescription	BPMN Prescription
Correspondence2	1	Access Control Patient Doctor	Data Patient Doctor
Correspondence3		Data Patient Doctor	Deployment Patient Doctor
Correspondence4	4	BPMN Doctor +1 Trust	Deployment Doctor 1 Trust
	(2 1/2)	BPMN Request login Consult Prescription Request Prescription Data View Prescription Edit Prescription View History	Data View Prescription login Request Prescription Access Control Read Prescription Modify Prescription View Records
	3		

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : _____

Sujet 01

24

Date: 07/08/21

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

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5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

X

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

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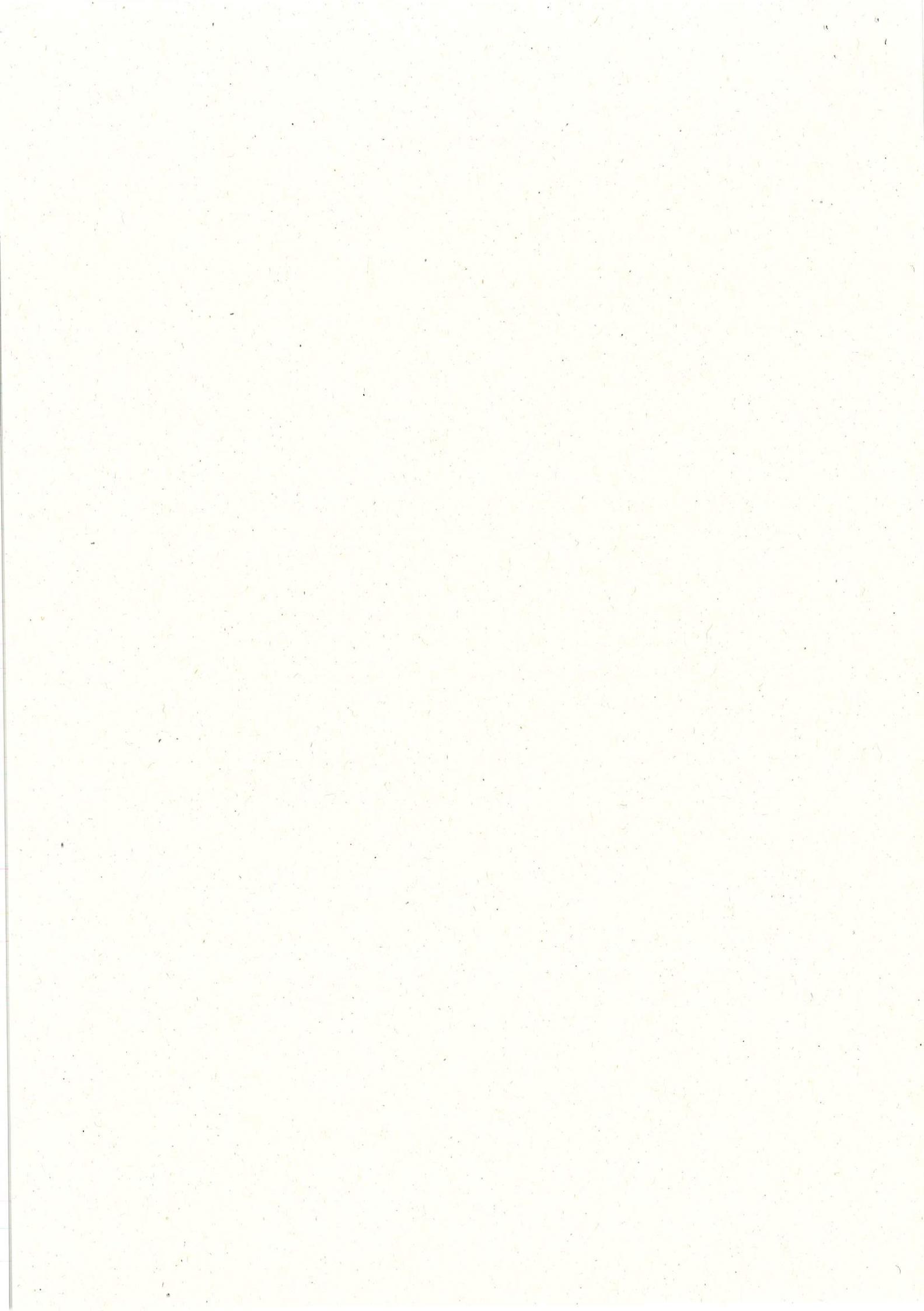
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2 Post-Experience Survey for Instant messaging case Study

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3 Post-Experience Survey for iTrust case study

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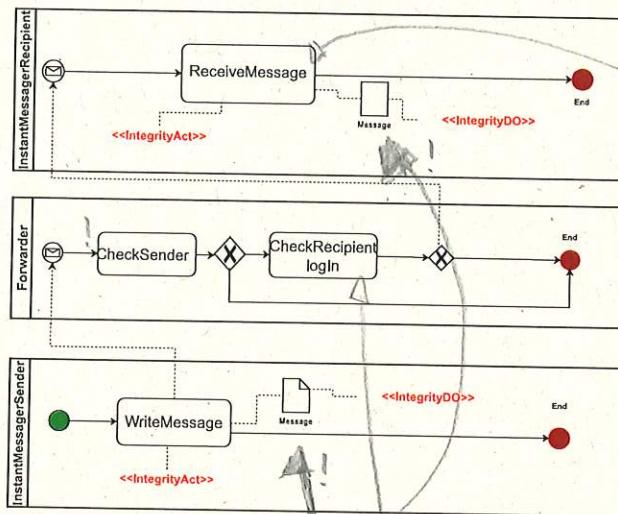
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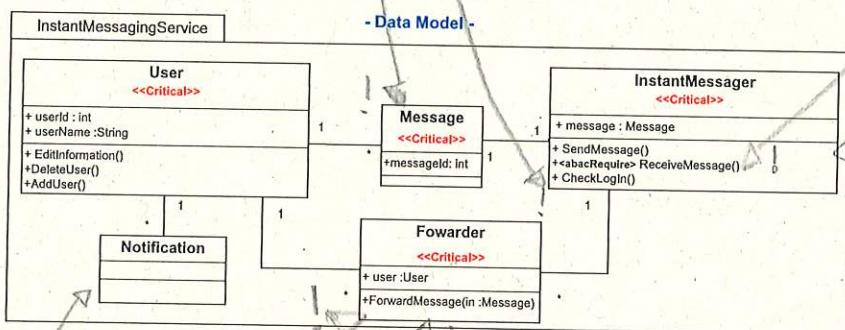
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Models for case study 1 : Instant messaging service

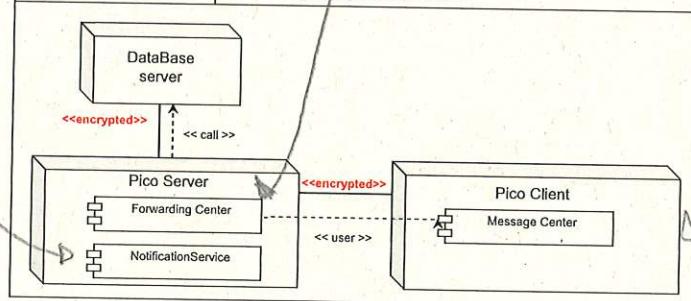
- BPMN Model -



- Data Model -

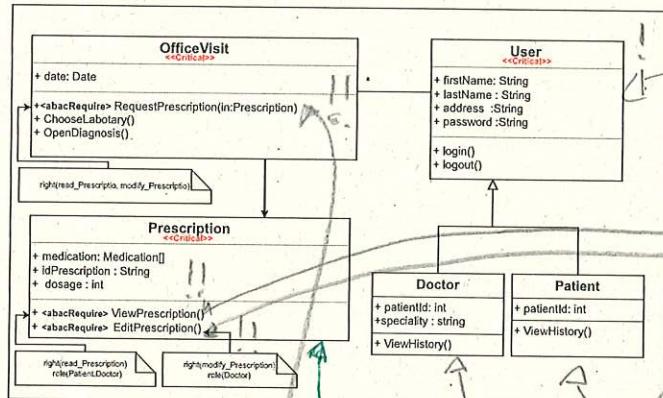


- Deployment Model -

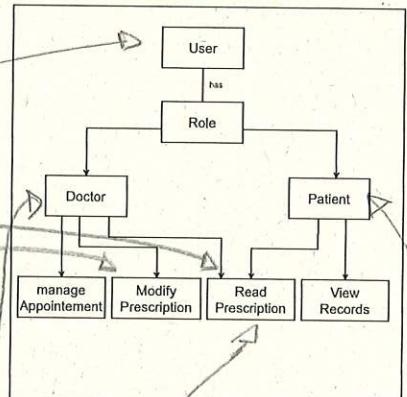


Models for case study 2 : ITrust system medical

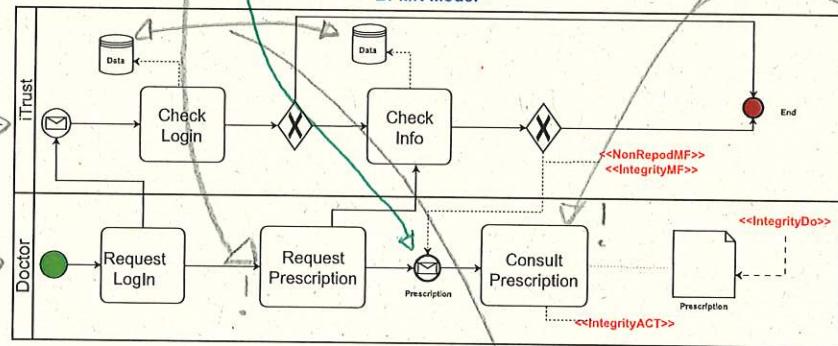
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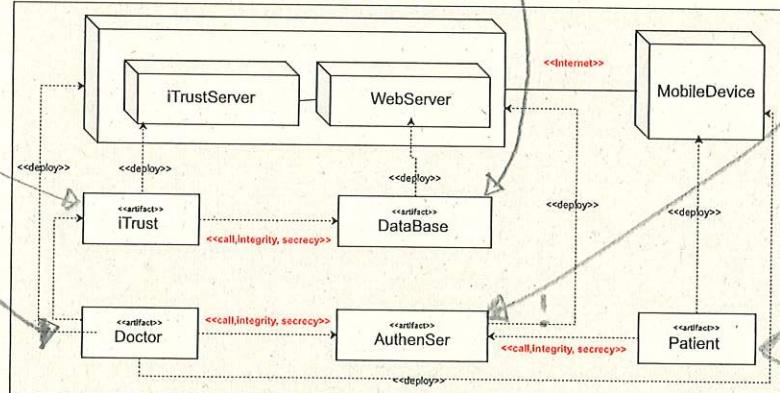
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Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	3	Instant Message Recipient / BPMN Instant Message Sender / BPMN Forwarder / BPMN	Instant Message / UML Data Model Forwarder / UML
Correspondence2	2	Object Receive Message / BPMN	+ (Alice Requires) Receive Message / operation
Correspondence3	Possible d'avoir 1 règle de sécurité	Message / BPMN	Message / Data Model
4	Possible d'avoir 1 règle de sécurité	Proxy Client / Deployment Model	Instant Message Recipient & Sender / BPMN

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	3	RequestPrescription() / Data Model ViewPrescription / Data Model	Request Prescription / BPMN ConsultPrescription / BPMN
Correspondence2	1	User / Data Model Doctor / DM Patient / DM	User / Access Control Doctor / AC Patient / AC
Correspondence3	4	Doctor / BPMN iTrust / BPMN	Doctor / Deployment Model iTrust / DM
Correspondence4	Possible d'avoir une règle de sécurité.	Data / BPMN	DataBase / Deployment Model

Answer the questions in the spaces provided or check the adequate checkbox.

User Name :

Sujet 04

Date:

23/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

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I have never used model management!

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2. How would you rate your overall understanding of the case study provided?
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6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult *Sémantique des annotations manquante !*

8. How would you rate your overall understanding the security specifications?
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9. How did you find the identification of correspondences between elements of the models?
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14. Which task of the methodology that you found particularly challenging?
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 Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

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 A. Easy B. Medium C. Difficult

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A. Easy B. Medium C. Difficult
- Ideas ave 2*
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 A. Easy B. Medium C. Difficult

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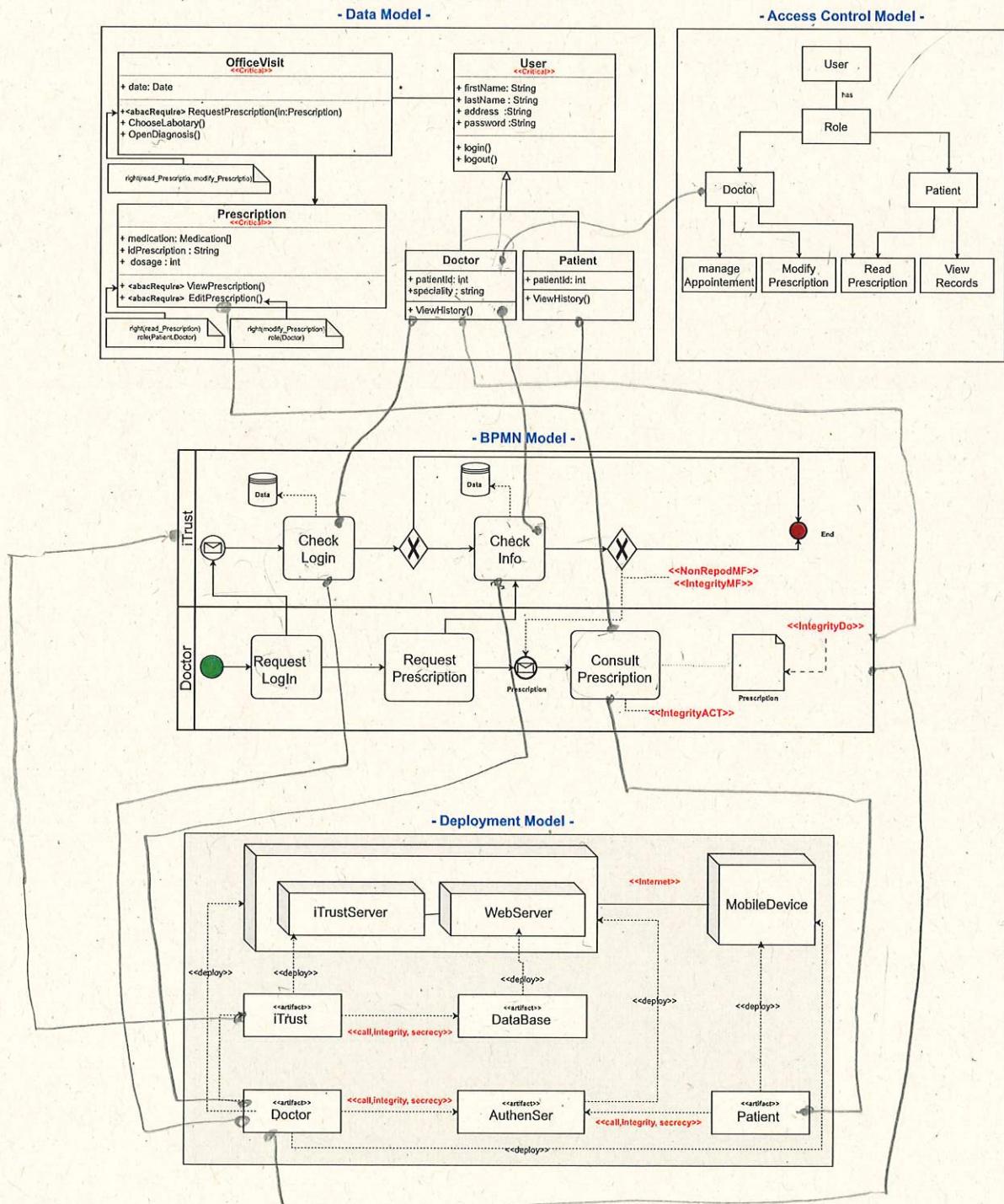
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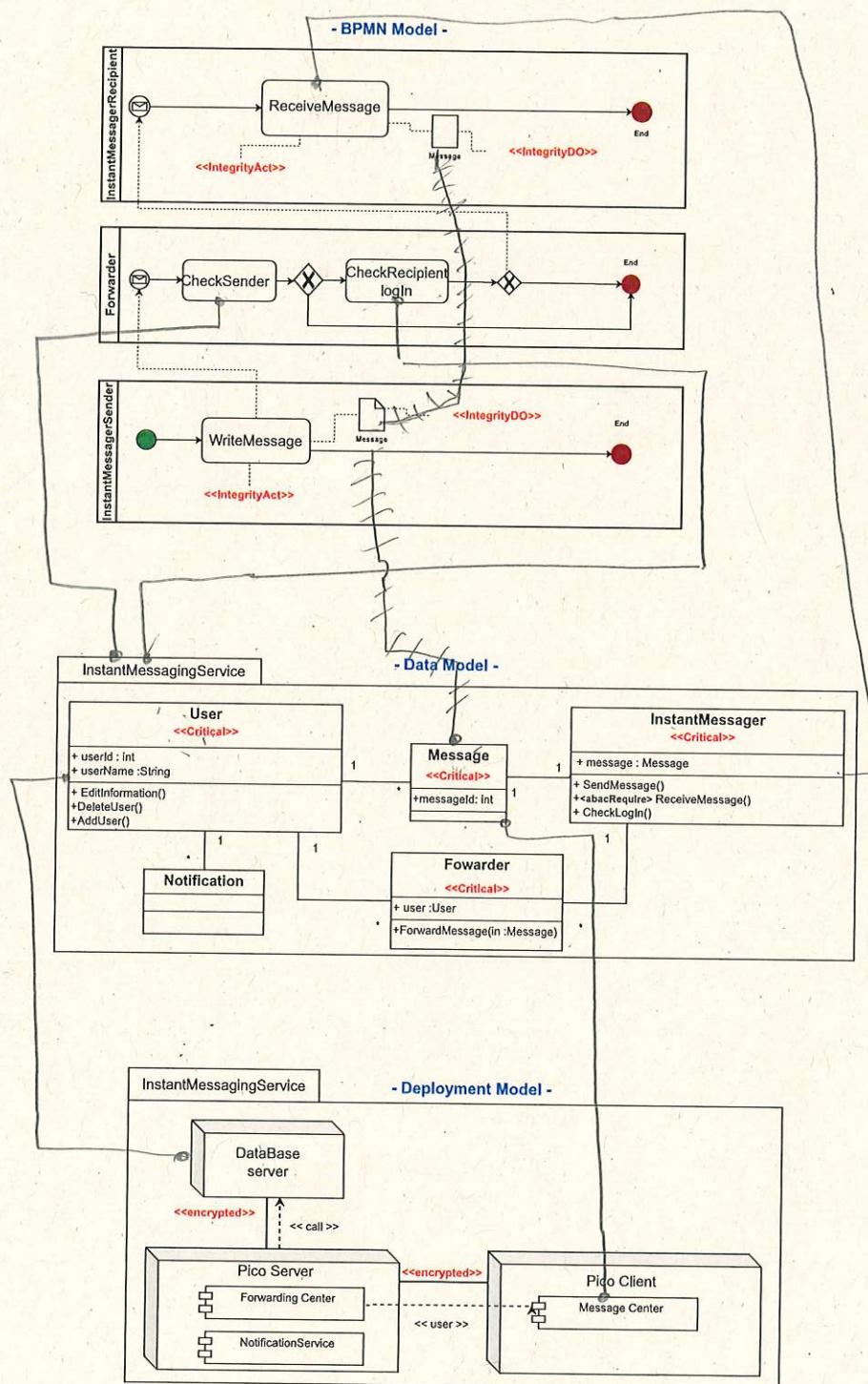
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 Attaching the security specification to the correspondences
 Implementing the security specifications (for user who implement them)

Models for case study 2 : ITrust system medical



Models for case study 1 : Instant messaging service



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1		<ul style="list-style-type: none"> - Database - Server - Message Center
Correspondence2	2		<ul style="list-style-type: none"> - Instant Messenger - User
Correspondence3			<ul style="list-style-type: none"> - message - Message Center

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	3	- Prescription - patient	- consult prescription - patient
Correspondence2	4	- Doctor - check info	- Doctor - Doctor
Correspondence3	4	- Doctor (xsd)	- Doctor (artifact)
Correspondence4	/	- check info	- Doctor

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 05

Date: 26/08/24

Do you accept that your answers may be used for research purposes?

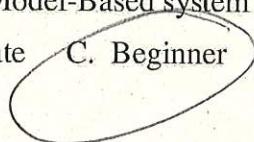
Yes

No

1 Pre-Experience Survey

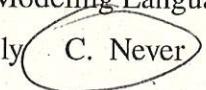
1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner



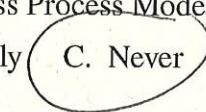
2. Have you used UML (Unified Modeling Language)?

- A. Regularly B. Occasionally C. Never



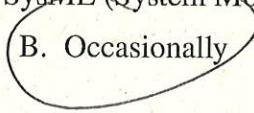
3. Have you used BPMN (Business Process Model and Notation)?

- A. Regularly B. Occasionally C. Never



4. Have you used SysML (System Modeling Language)?

- A. Regularly B. Occasionally C. Never



5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?



10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult **D. Depends on the security specification**
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
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2 Post-Experience Survey for Instant messaging case Study

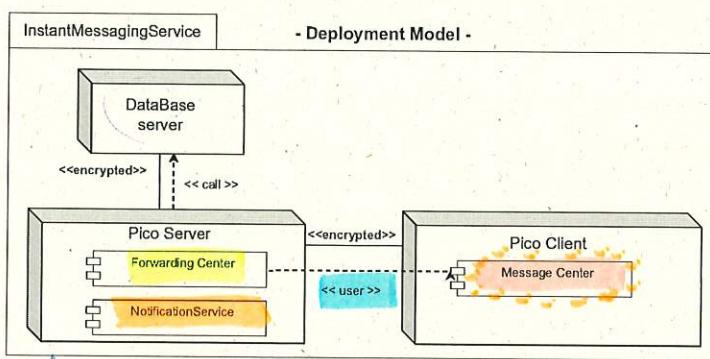
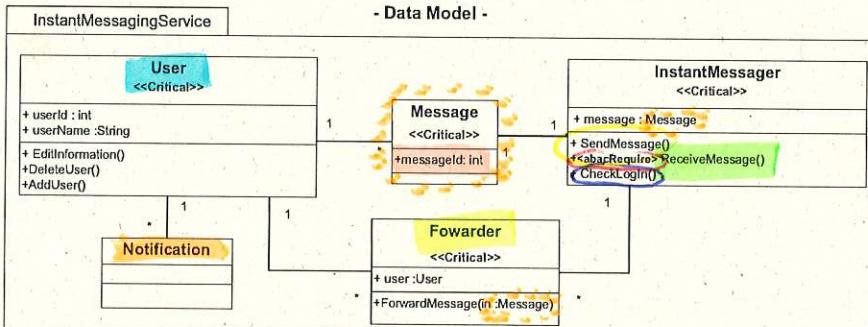
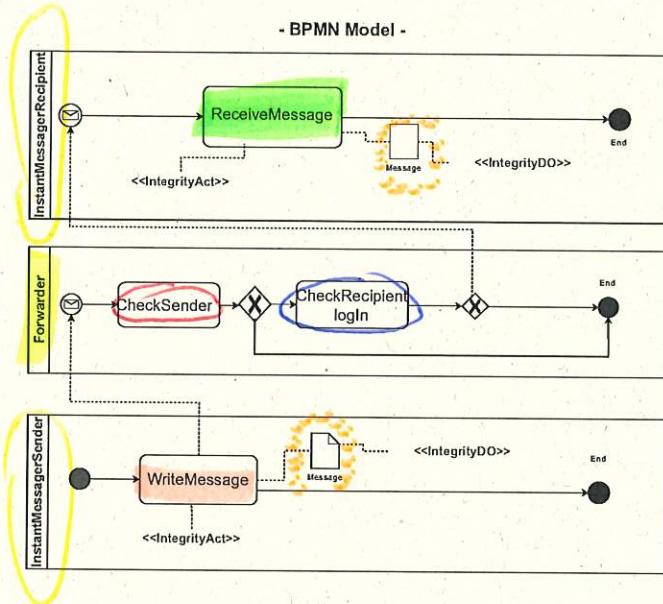
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8. How would you rate your overall understanding the security specifications?
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9. How did you find the identification of correspondences between elements of the models?
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3 Post-Experience Survey for iTrust case study

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Models for case study 1 : Instant messaging service

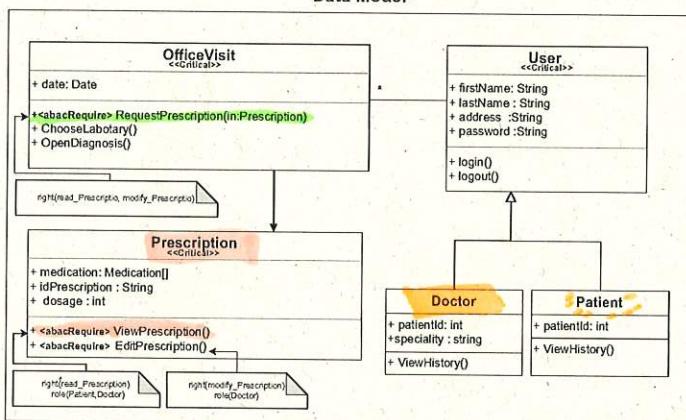


3.1.3 Case Study for the evaluation of the Methodology

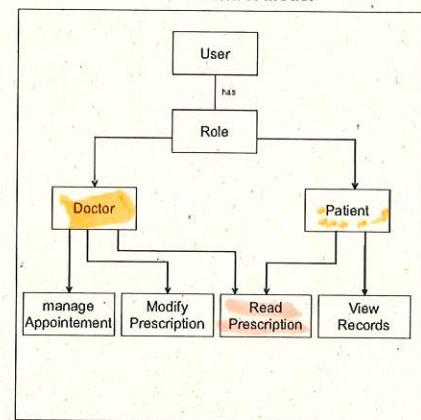
1. *Case Study 1 : Instant messaging service* PICO (Presence and Instant Communication) a very simplified representation of ICQ or America Online Instant Messenger. Initially, users need to register with a PICO server. Once registered, they can indicate their availability and exchange brief instant messages with each other.
 - *Security Requirements :*
 - (a) Messages sent must be transmitted using secure channels
 - (b) Messages must be Confidential
 - (c) Sender user must be authenticated
 - (d) Users information must be private
 - *Models and Meta-Models :* The BPMN model is constructed using the secBPMN language, while the Deployment and Data models are developed using UMLsec.
 - Data Model
 - BPMN model
 - Deployment model
2. *Case Study 2 : iTrust is an open-source medical system developed in 2005 at the University of North Carolina with the aim of providing software engineering students with a complex real-world system for experimentation. In this sense, it has already been used in many different research works as a realistic use case. Regarding security, iTrust has requirements related to privacy, confidentiality, and integrity*
 - *Security Requirements :*
 - (a) User's ID are private
 - (b) The patient information are not updated by unauthorised person
 - (c) Support an actor with multiple role
 - (d) Users information must be private
 - *Models and Meta-Models :* The BPMN model is constructed using the secBPMN language, while the Deployment and Data models are developed using UMLsec.
 - Data Model
 - BPMN model
 - Access Control Model

Models for case study 2 : iTrust system medical

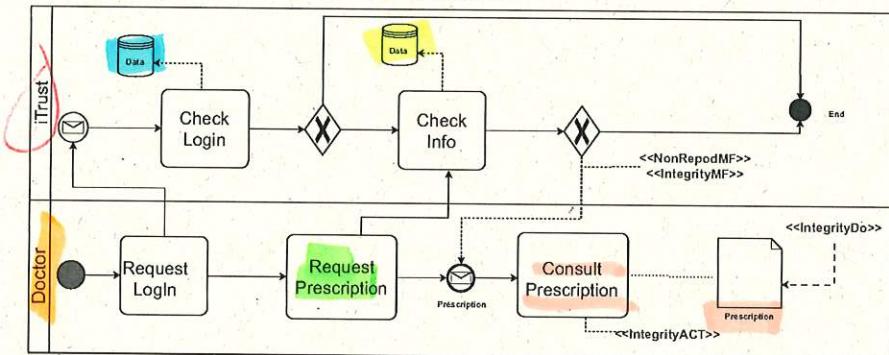
- Data Model -



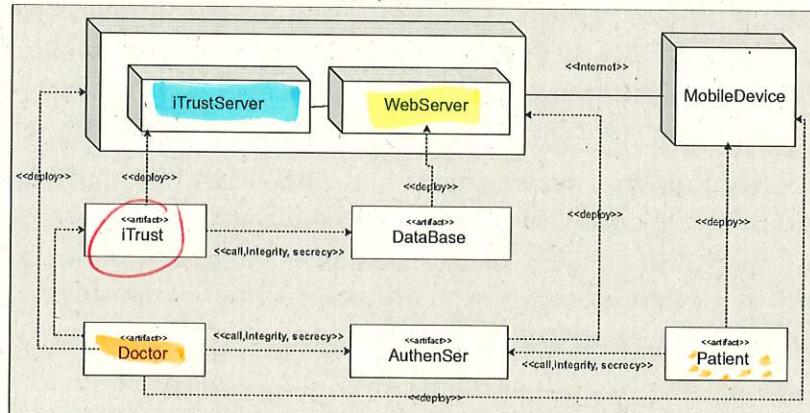
- Access Control Model -



- BPMN Model -



- Deployment Model -



4 Security Specification

1. *security Rules for case Study 1: Instant messaging service*

Security Rule-1 : When two associated classes in the data model (which corresponds to component in the model deployment), contains critical security annotation, the communication Path between the corresponding component must contains encrypted annotation. This rule attached to the correspondences between class and component.

Security Rule-2 : When the Operation in the data model (which corresponds to a Task in the BPMN model) annotated "abacRequire" then the Task must be annotated "integrityAct" or "PrivacyAct". This rule is attached to the correspondences between Operation and Task.

Security Rule-3 : When a Class in data model(which corresponds to Pool in the BPMN model), annotated as "Critical" contains an Operation related to a Task of the corresponding Pool, the Task must be preceed by "LogIn" Task. This rule is attached to the correspondences between class and pool

2. *security Rules for case Study 2: ITrust system medical*

Security Rule-1 : each user in the defined data model must have an associated role in the Access Control model. This rule is added to the correspondences between User and Role.

Security Rule-2: when the Pool in the BPMN model (that corresponds to Class in the data model), contains a task which is the source or target for a MessageFlow that is linked to security annotations. The operation representing the task must have security annotation "abacRequire" with tag "right=Message/Attribute". This Security Rule is attached to the correspondences between Pool and Class.

Security Rule-3: when the Operation in the data model (that corresponds to Task in the BPMN model), contains "AbacRequire" annotation . The Task in the BPMN Pool must be annotated IntegrityACT . This Security Rule is attached to the correspondences between operation and task.

Security Rule-4: when two pools in the BPMN model (that correspond to artifacts in the deployment model), communicate security-critical data and are deployed in different devices, communication between the two devices must occur through an encrypted channel. This rule is attached to correspondences between Pool and artifact.

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	security rule 3	view prescription + data model	consult prescription + BPMN model
Correspondence2	security rule 1	doctor + data model patient + data model	doctor + access control model patient + access control model
Correspondence3	security rule 4	doctor + BPMN	doctor + deployment model
Correspondence4		iTrust BPMN iTrustSewer BPMN	iTrustSewer + deployment model

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1		user + data model	user + deployment model
Correspondence2		message + BPMN model	message + data model
Correspondence3	security rule 1	Provider message + data model	Forwarding center message center + deployment model
		Check recipient Login + BPMN model	Check login () + data model

receive message BPMN → receive message data model

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 07 29

Date: 20 Août 2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

- A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

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4. Have you used SysML (System Modeling Language)?

- A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

✓

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

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12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

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3 Post-Experience Survey for iTrust case study

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A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
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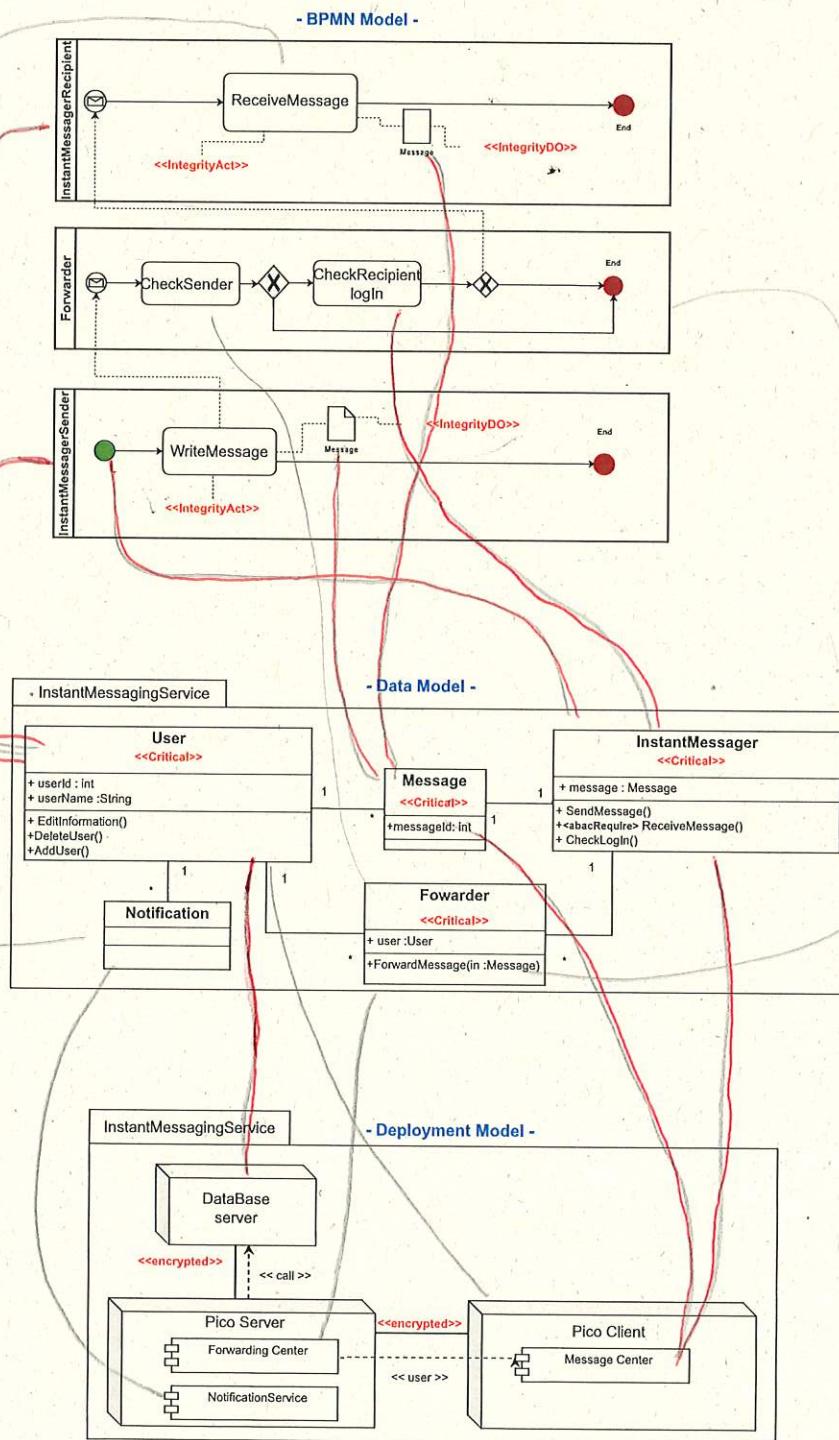
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9. How would you rate your overall understanding the security specifications?
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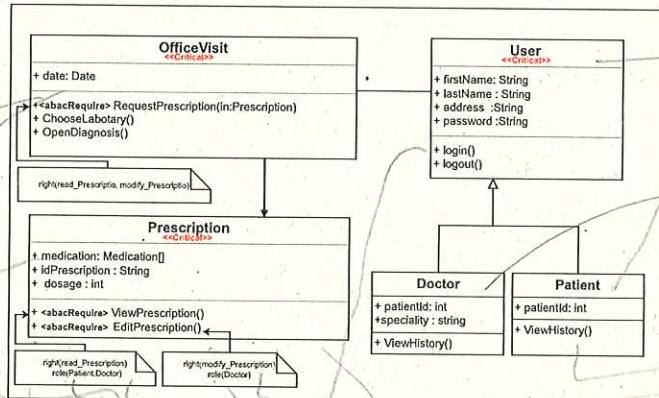
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Models for case study 1 : Instant messaging service

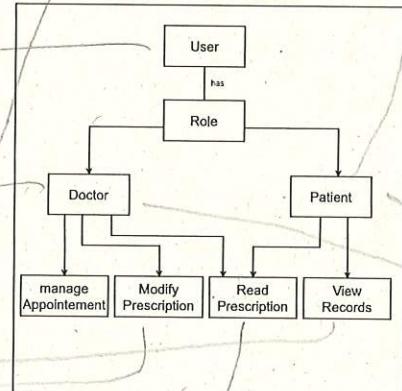


Models for case study 2 : iTrust system medical

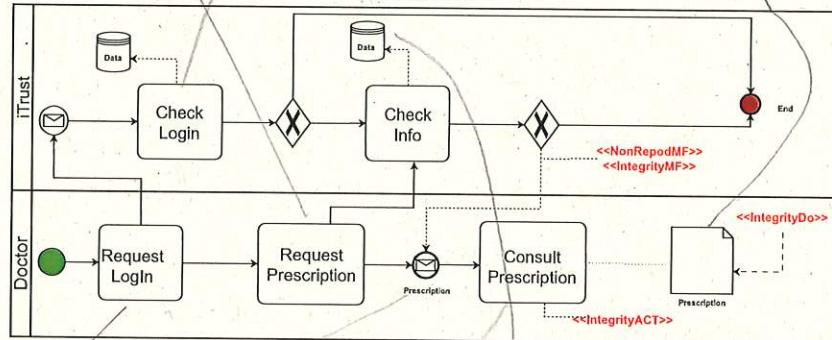
- Data Model -



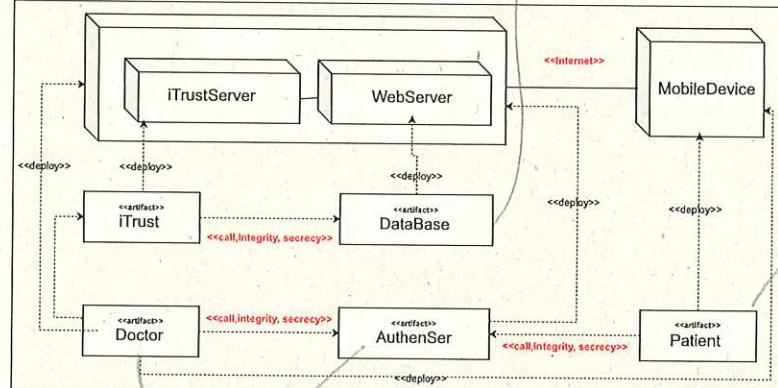
- Access Control Model -



- BPMN Model -



- Deployment Model -



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1		Message BPMN	Message Data
Correspondence2		IM Recipient BPMN	User Data
Correspondence3		IM Sender BPMN	User Data

	Start Event BPMN	Check login Data
1	CheckRecipient login BPMN	Check login Data
	User Data	Database server
1	Data	Deployment
14	Message Data	Message center
1	Instant Messenger Data	Deployment
1	Message center Data	Message center Deployment

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	Nº Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	User Data Doctor Data Patient Data	User ACM Doctor ACM Patient ACM
Correspondence2	1	Modify prescription ACM	Edit Prescription Data
Correspondence3	2	Read prescription ACM	View prescription Data
Correspondence4	3	Modify/Read prescription ACM	Request prescription Data
3, 2		prescription BPMN	prescription Data
3, 2		Consult prescription BPMN	prescription Data
15		Check Login BPMN	User Data
Request Login		Deployment Authenserver	Deployment
Doctor ACM Patient ACM		Doctor Deployment Patient	Deployment

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 06

Date: 13/18/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

TSD

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

I used to define links and properties among elements of different models/views of a same system.

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?

- A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?

- A. Easy B. Medium C. Difficult

→ need the presence of
the modeller

3. How would you rate your overall understanding of the UML model provided?

- A. Easy B. Medium C. Difficult

↓
"service"
enlightening understanding

4. How would you rate your overall understanding of the BPMN model provided?

- A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?

- A. Easy B. Medium C. Difficult

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- A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?

- A. Easy B. Medium C. Difficult

many "interpretations" (points de
vue/semantics)

8. How would you rate your overall understanding the security specifications?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification [3]
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
- ~~as seen~~ Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

EP

$E \Rightarrow P$

env. context
pp. neg

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
 A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
 A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

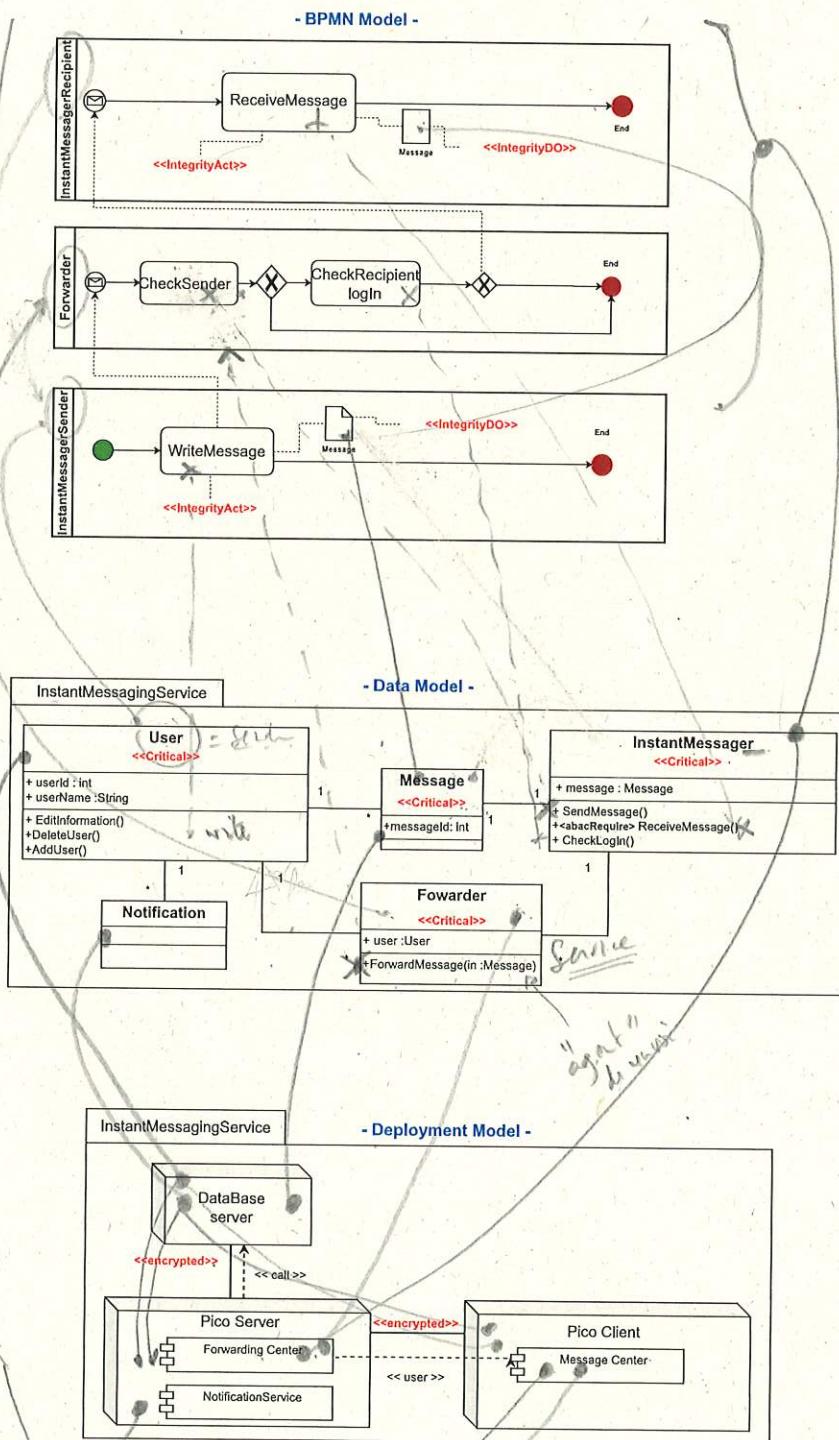
7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

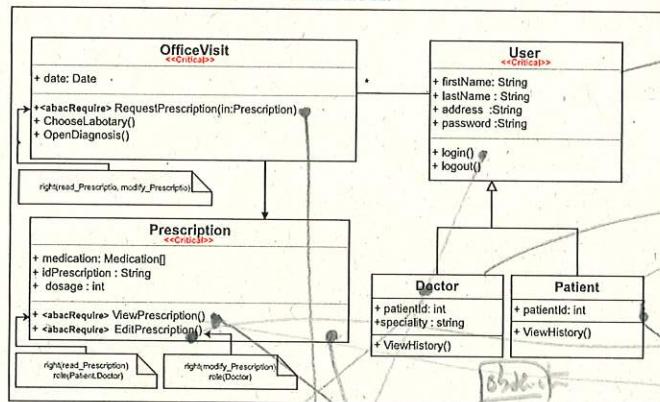
10. How did you find the identification of correspondences between elements of the models?
- A. Easy B. Medium C. Difficult D. Depends on the correspondence
11. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
14. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
15. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 Identifying the correspondences between elements of models
 Understanding the security specifications
 Establishing the correspondences
 Attaching the security specification to the correspondences
 Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service

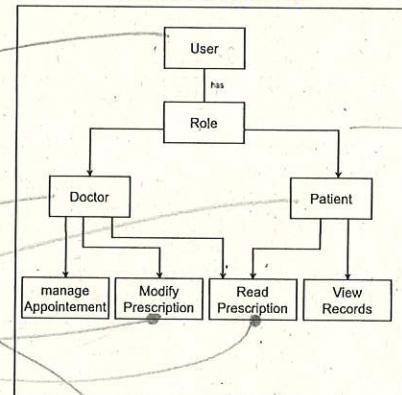


Models for case study 2 : ITrust system medical

- Data Model -

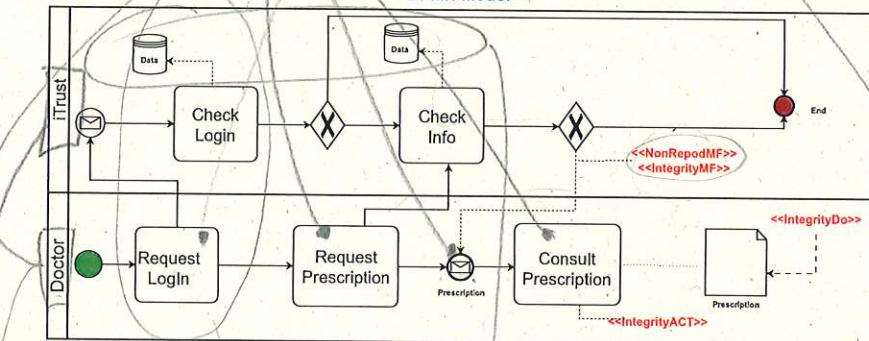


- Access Control Model -

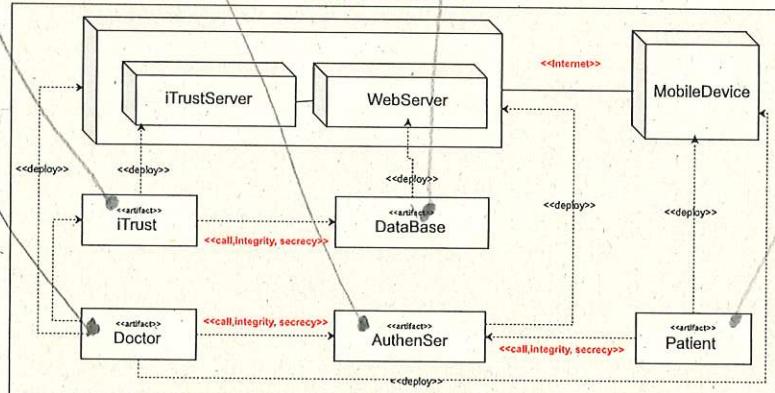


SR3

- BPMN Model -



- Deployment Model -



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	SR 3	Instance Request Forward	IA Recipient Forwarder
Correspondence2	point de vente émission génération	Message « emitted »	Range « Obj of D »
Correspondence3	SR 1 SR 1	User « emitted » Forwarder	DB user Forwarder
C4	SR 2 SR 3	Review Proj « emitted »	Review Proj « completed »

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	SR2	User Doctor Patient view Prescrip edit	User Doctor Patient read prescrip modify prescrip
Correspondence2	SR3/SR2	view prescrip Doctor Patient regist prescrip Office	consult prescrip Doctor Patient regist log regist prescrip
Correspondence3	SR4	Doctor [BP] Patient Data	Doctor [DN] Patient Database
Correspondence4		Prescrip.	Prescrip.

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 08

Date: 26 August 2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
A. Easy B. Medium C. Difficult D. Depends on the correspondence

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 Identifying the correspondences between elements of models
 Understanding the security specifications
 Establishing the correspondences
 Attaching the security specification to the correspondences
 Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

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A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

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C. Difficult
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- Understanding the provided files
 Identifying the correspondences between elements of models
 Understanding the security specifications
 Establishing the correspondences
 Attaching the security specification to the correspondences
 Implementing the security specifications (for user who implement them)

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	Rule - 1	User du Data Model	User du Access Control Model
Correspondence2	Rule - 2	RequestPrescription (in: Prescription) du Data Model	Request Prescription du BPMN Model
Correspondence3	Rule - 2	ViewPrescription() du Data Model	Consult Prescription du BPMN Model
Correspondence4	J	Check Login du BPMN Model	AuthenSer du Deployment Model

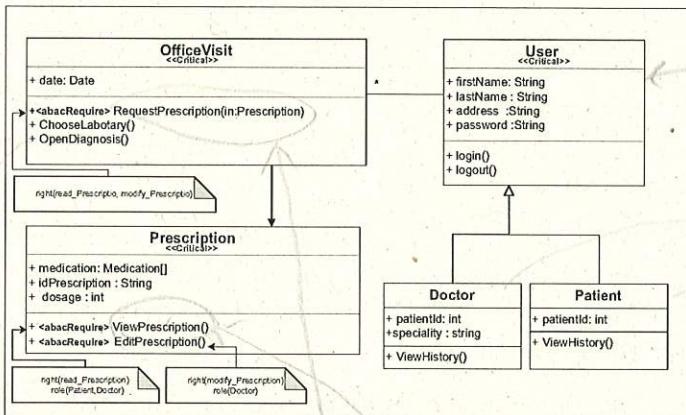
Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

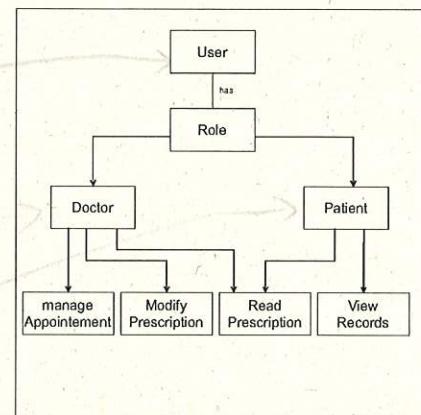
Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1		Receive Message du BPMN Model	User du Data Model
Correspondence2	Rule-1	Forwarder Instant messenger du Data Model	Pico Server du Deployment model
Correspondence3		User du Data Model	Pico client du Deployment model

Models for case study 2 : iTrust system medical

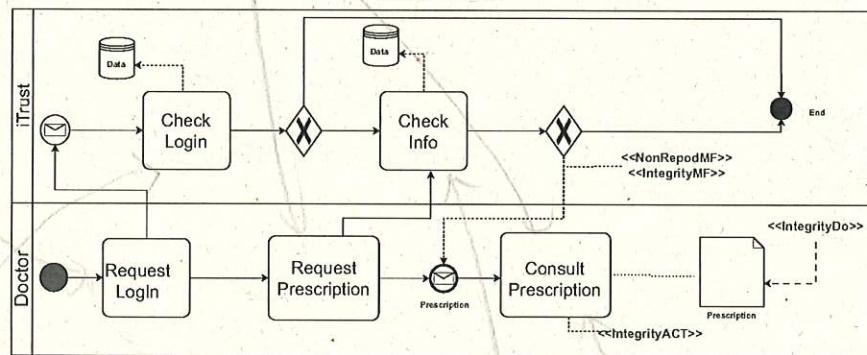
- Data Model -



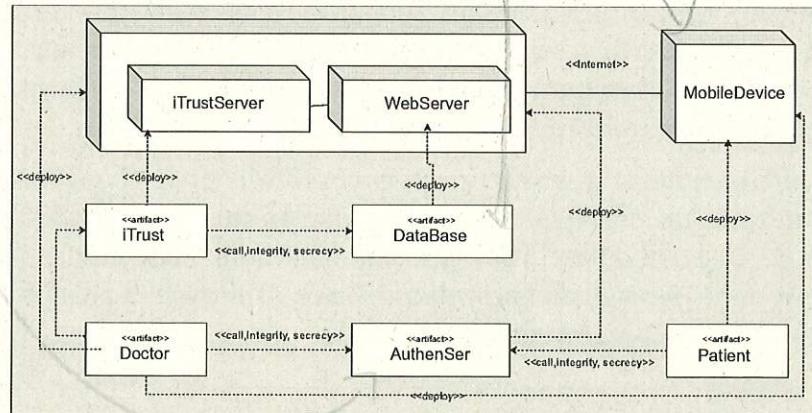
- Access Control Model -



- BPMN Model -



- Deployment Model -



4 Security Specification

1. security Rules for case Study 1: Instant messaging service

Security Rule-1 : When two associated classes in the data model (which corresponds to component in the model deployment), contains critical security annotation, the communication Path between the corresponding component must contains encrypted annotation. This rule attached to the correspondences between class and component.

Security Rule-2 : When the Operation in the data model (which corresponds to a Task in the BPMN model) annotated "abacRequire" then the Task must be annotated "integrityAct" or "PrivacyAct". This rule is attached to the correspondences between Operation and Task.

Security Rule-3 : When a Class in data model(which corresponds to Pool in the BPMN model), annotated as "Critical" contains an Operation related to a Task of the corresponding Pool, the Task must be preceed by "LogIn" Task. This rule is attached to the correspondences between class and pool

2. security Rules for case Study 2: ITrust system medical

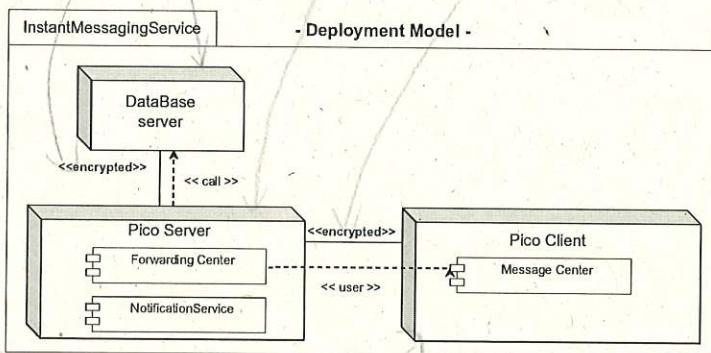
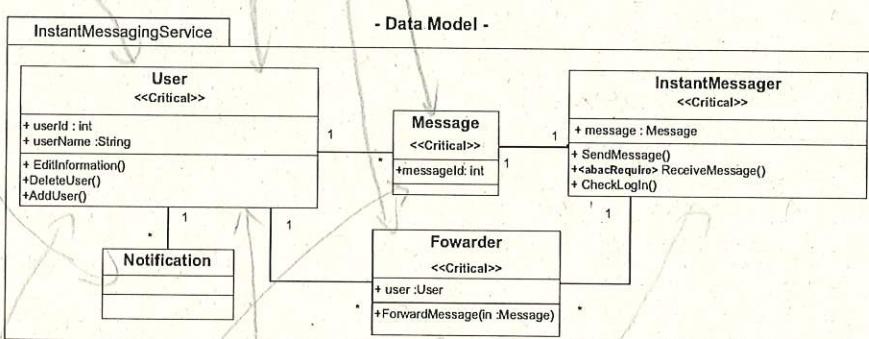
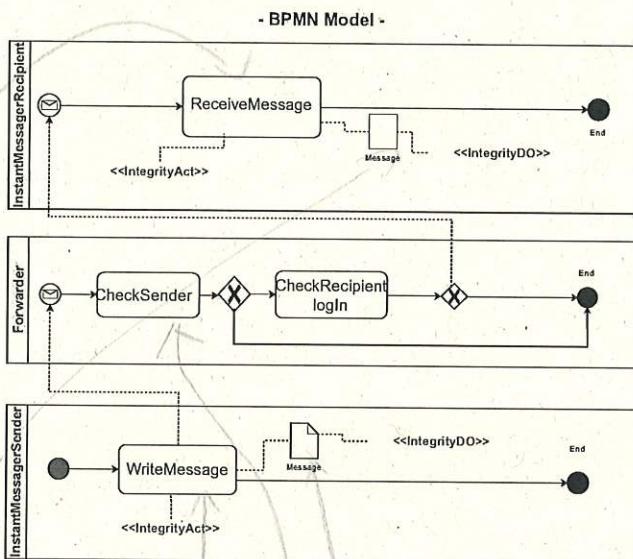
Security Rule-1 : each user in the defined data model must have an associated role in the Access Control model. This rule is added to the correspondences between User and Role.

Security Rule-2: when the Pool in the BPMN model (that corresponds to Class in the data model), contains a task which is the source or target for a MessageFlow that is linked to security annotations. The operation representing the task must have security annotation "abacRequire" with tag "right=Message/Attribute". This Security Rule is attached to the correspondences between Pool and Class.

Security Rule-3: when the Operation in the data model (that corresponds to Task in the BPMN model), contains "AbacRequire" annotation . The Task in the BPMN Pool must be annotated IntegrityACT . This Security Rule is attached to the correspondences between operation and task.

Security Rule-4: when two pools in the BPMN model (that correspond to artifacts in the deployment model), communicate security-critical data and are deployed in different devices, communication between the two devices must occur through an encrypted channel. This rule is attached to correspondences between Pool and artifact.

Models for case study 1 : Instant messaging service



3.1.3 Case Study for the evaluation of the Methodology

1. *Case Study 1 : Instant messaging service* PICO (Presence and Instant Communication) a very simplified representation of ICQ or America Online Instant Messenger. Initially, users need to register with a PICO server. Once registered, they can indicate their availability and exchange brief instant messages with each other.

- *Security Requirements :*
 - (a) Messages sent must be transmitted using secure channels
 - (b) Messages must be Confidential
 - (c) Sender user must be authenticated
 - (d) Users information must be private
- *Models and Meta-Models :* The BPMN model is constructed using the secBPMN language, while the Deployment and Data models are developed using UMLsec.
 - Data Model
 - BPMN model
 - Deployment model

2. *Case Study 2 : iTrust is an open-source medical system developed in 2005 at the University of North Carolina with the aim of providing software engineering students with a complex real-world system for experimentation. In this sense, it has already been used in many different research works as a realistic use case. Regarding security, iTrust has requirements related to privacy, confidentiality, and integrity*

- *Security Requirements :*
 - (a) User's ID are private
 - (b) The patient information are not updated by unauthorised person
 - (c) Support an actor with multiple role
 - (d) Users information must be private
- *Models and Meta-Models :* The BPMN model is constructed using the secBPMN language, while the Deployment and Data models are developed using UMLsec.
 - Data Model
 - BPMN model
 - Access Control Model

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 10

24 ans

Date: 06/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

OWL

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

No

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
 A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
 A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
 A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
 A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
 A. Easy B. Medium C. Difficult D. Depends on the security specification

*Security Rule 1 : Hard
n a 2 et 3 : Easy*

9. How did you find the identification of correspondences between elements of the models?
 A. Easy B. Medium C. Difficult D. Depends on the correspondence

*BPMN - Data M ; ✓
Dept M - Any ; hard*

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult \Rightarrow Il spécifie le type des correspondances dans les établissements.
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications [tableau = pas très communiqué, pas évident / trivial à comprendre]
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
 A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
 A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
 A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
 A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
 A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
 A. Easy B. Medium C. Difficult D. Depends on the security specification

10. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

11. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium
C. Difficult

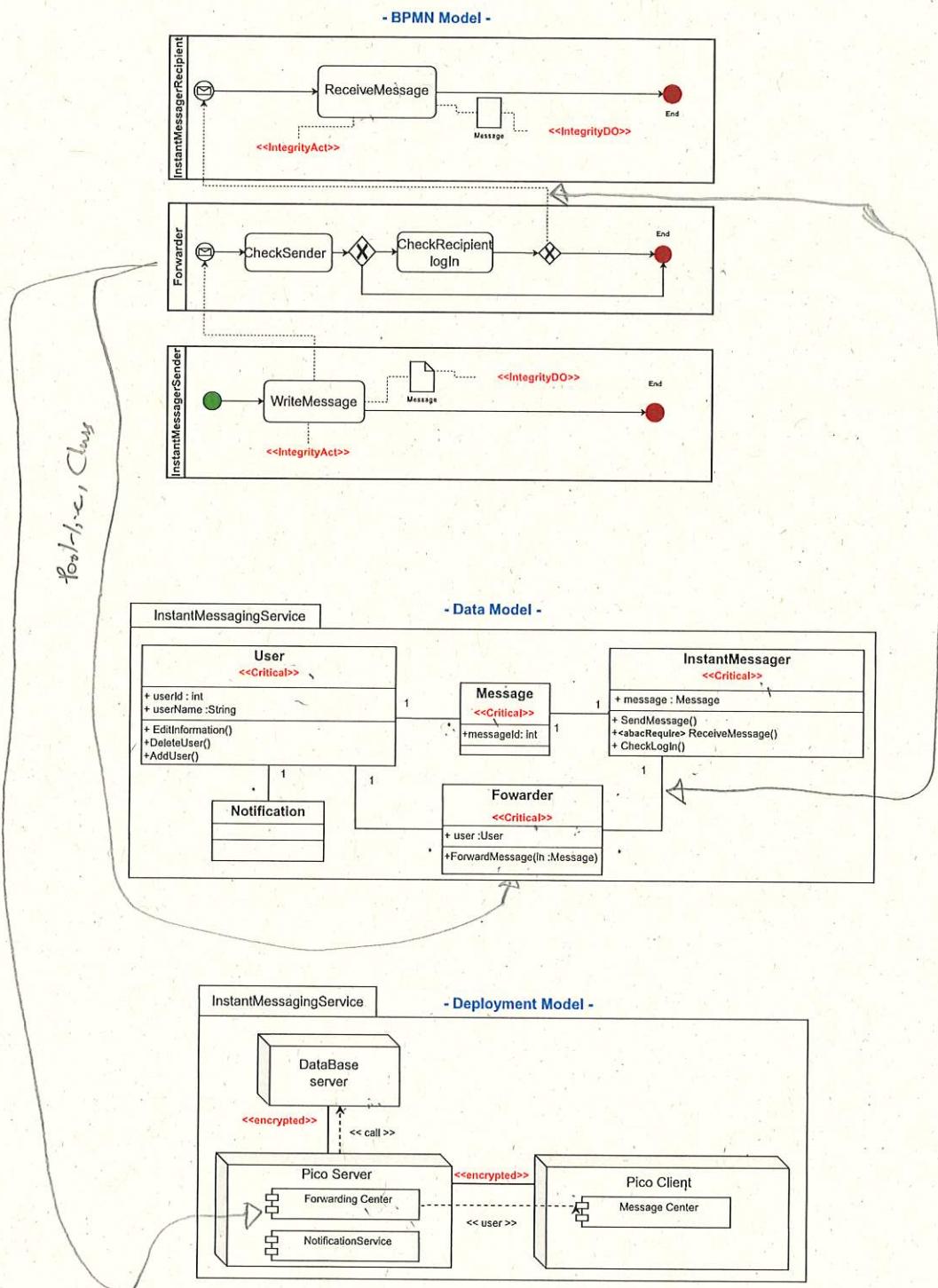
14. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

15. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1 Art° - User		(Doctor, Dept° H) (Patient, Dept° H)	(User, ACM) (User, ACM)
Correspondence2 Art° - Pool line	④	(iTrust, Dept° H) (Doctor, Dept° H)	(iTrust, BPMN) (Doctor, BPMN)
Correspondence3 Auth° - Operations		(View Prescription) Data M (Edit Prescription) Data M	(Read Prescription) ACM (Modify, Prescription) ACM
Correspondence4 DataObject - Class		(Prescription) BPMN	(Prescription) Data M

Post-line - User	(Doctor) BPMN	(User) ACM	✓
class - User	(User) (Doctor) Data M (Patient)	(User) (User) (User)	✓ ✓ ✓

Pool Line - Class	(Doctor) BPMN	(Doctor) Data M	✓
	15 (iTrust) BPMN	(OfficeVisit) Data M	✓

TASK - Op°	③ (Consul Prescript) BPMN	(View Prescription) Data M	✓
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Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1 Class - Node/comp	①	(User & Message) + Data M Forwarder	Database Server + Depl° Model Forwarding Center + Depl° Model
Correspondence2 pool-lane - Class	③	IHR, BPMN Forwarder, BPMN	IM, Data M Forwarder, Data M
Correspondence3 Task - Operation	②	(Receive Msg, BPMN) (CheckRecipient, LogIn, BPMN)	(Receive Msg, Data M) (CheckLogin, Data M)

pool - Comp°

(Forwarder, BPMN) (Forwarding Center, Depl° M) X

Data Obj - Class

(Message, BPMN) (Message, Data M) ✓

Message flow - Ass°

(Forwarder → IHR) (Forwarder → IM)
BPMN Data M ✓

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 11

Date: 06/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

- A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

- A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

- A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

Never

10. Have you used any specific tool to manipulate models in system engineering projects?

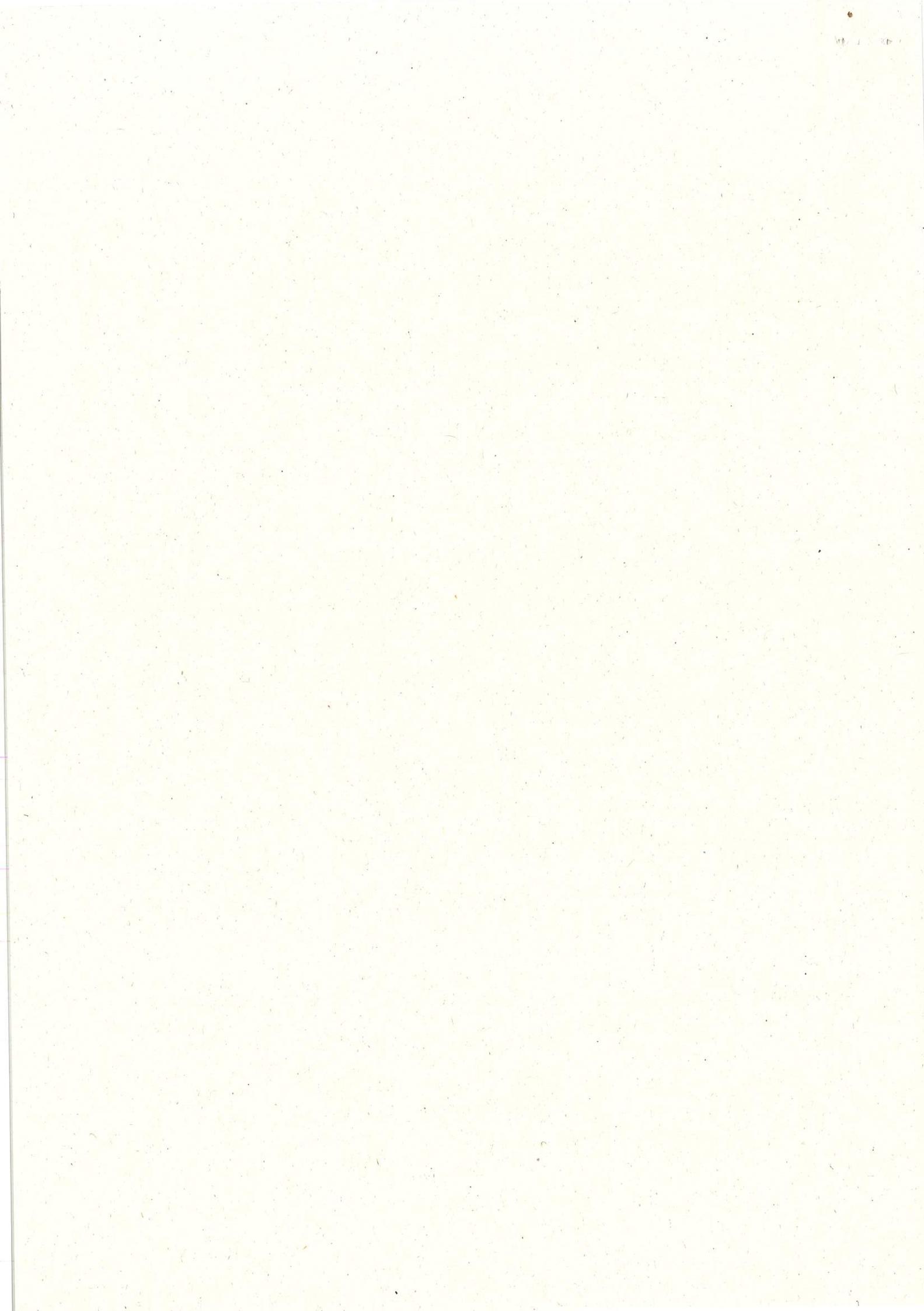
- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner



2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
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- A. Easy B. Medium C. Difficult
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 - Identifying the correspondences between elements of models
 - Understanding the security specifications
 - Establishing the correspondences
 - Attaching the security specification to the correspondences
 - Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

10. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

11. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium
C. Difficult

14. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

15. Which task of the methodology that you found particularly challenging?

- Understanding the provided files (Deployment)
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	Security Rule 2	ReceiveMessage BAMN	cabacReqvise ReceiveMessage DataModel
Correspondence2	Security Rule 3	Forward BAMN	Forwarder DataModel
Correspondence3	Security Rule 1	Message Center Forwarding List Deploy	InstantMessenger Forwarder DataModel

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	Doctor Patient Access Control	Doctor Patient Data Model (Patient, Role)
Correspondence2	2	Consult Prescri Request Prescri BPWN	View Description Request Prescri Data Model
Correspondence3	3	Consult Prescri Request AD BPWN	(Request) View Description Data Model
Correspondence4	4	Doctor iTrust BPWN	Doctor - iTrust Deploy



Answer the questions in the spaces provided or check the adequate checkbox.

Sujet 12

User Name : _____

Date: 24/07/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

many DSNL

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

I applied this to research prototypes only.

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
A. Easy B. Medium C. Difficult D. Depends on the correspondence

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 - Identifying the correspondences between elements of models
 - Understanding the security specifications
 - Establishing the correspondences
 - Attaching the security specification to the correspondences
 - Implementing the security specifications (for user who implement them)

I did not know.
I was an expert defining
rules at internal
level

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult
2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult
3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult
4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult
5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult
6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult
7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult
8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult
9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

10. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

11. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

ps de "ty page" de la règle
sur le corresp

12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

N/A

13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult

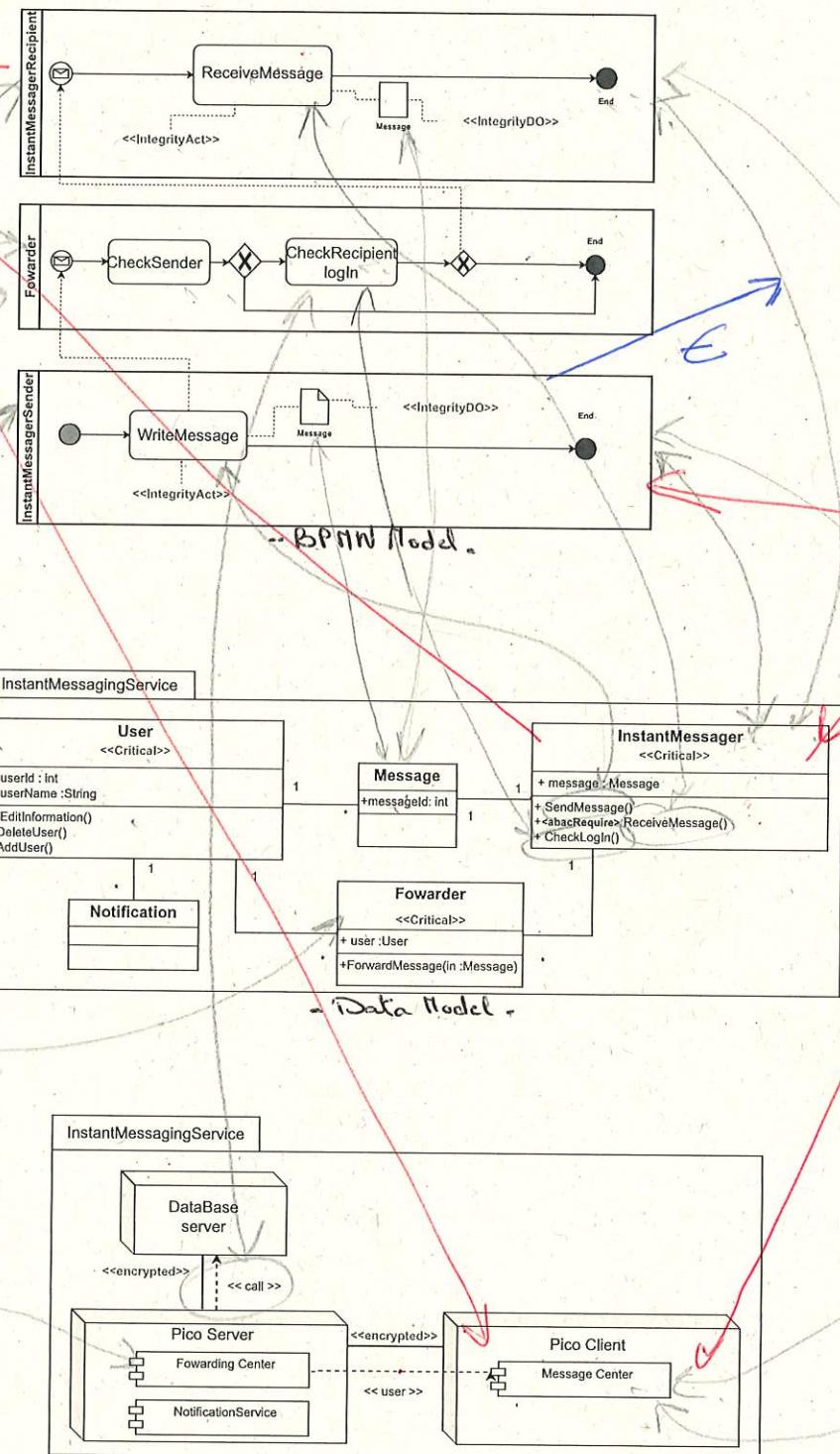
14. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

15. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service



9
~ deployment Model ~

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	NºSecurity Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	IM / DM IN / DN F / DN	INS / BPMN INR / BPMN F / BPMN
Correspondence2	2	Recive Request IN / DN	Recim Request INR / BPMN
Correspondence3	3	IM / DN Send Request	INS / BPMN Write Request

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	Doctor / Data Patient / Data model	Doctor Patient ACD ACD
Correspondence2	2	Consult Prescription / BPNN	View Prescription / DDI
Correspondence3	3	View Prescription / DDI	Consult Prescription / BPNN
Correspondence4	4		

~~non applicable~~

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : Sujet 09 24

Date: 71 08 2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

- A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

- A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

- A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?
A. Regularly B. Occasionally C. Never
7. How would you rate your understanding of security by design principles?
A. Advanced B. Intermediate C. Beginner
8. Have you applied security by design principles in your previous projects?
A. Regularly B. Occasionally C. Never
9. Could you explain your usage of the concept of model consistency (model management)?



10. Have you used any specific tool to manipulate models in system engineering projects?
A. Regularly B. Occasionally C. Never
11. Have you used any specific tool for modeling security aspects in system engineering projects?
A. Regularly B. Occasionally C. Never
12. What is your familiarity with the Openflexo framework?
A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult
2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult
3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult
4. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult
5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult
6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult
7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult
8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification
9. How did you find the identification of correspondences between elements of the models?
A. Easy B. Medium C. Difficult D. Depends on the correspondence

10. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 Identifying the correspondences between elements of models
 Understanding the security specifications
 Establishing the correspondences
 Attaching the security specification to the correspondences
 Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

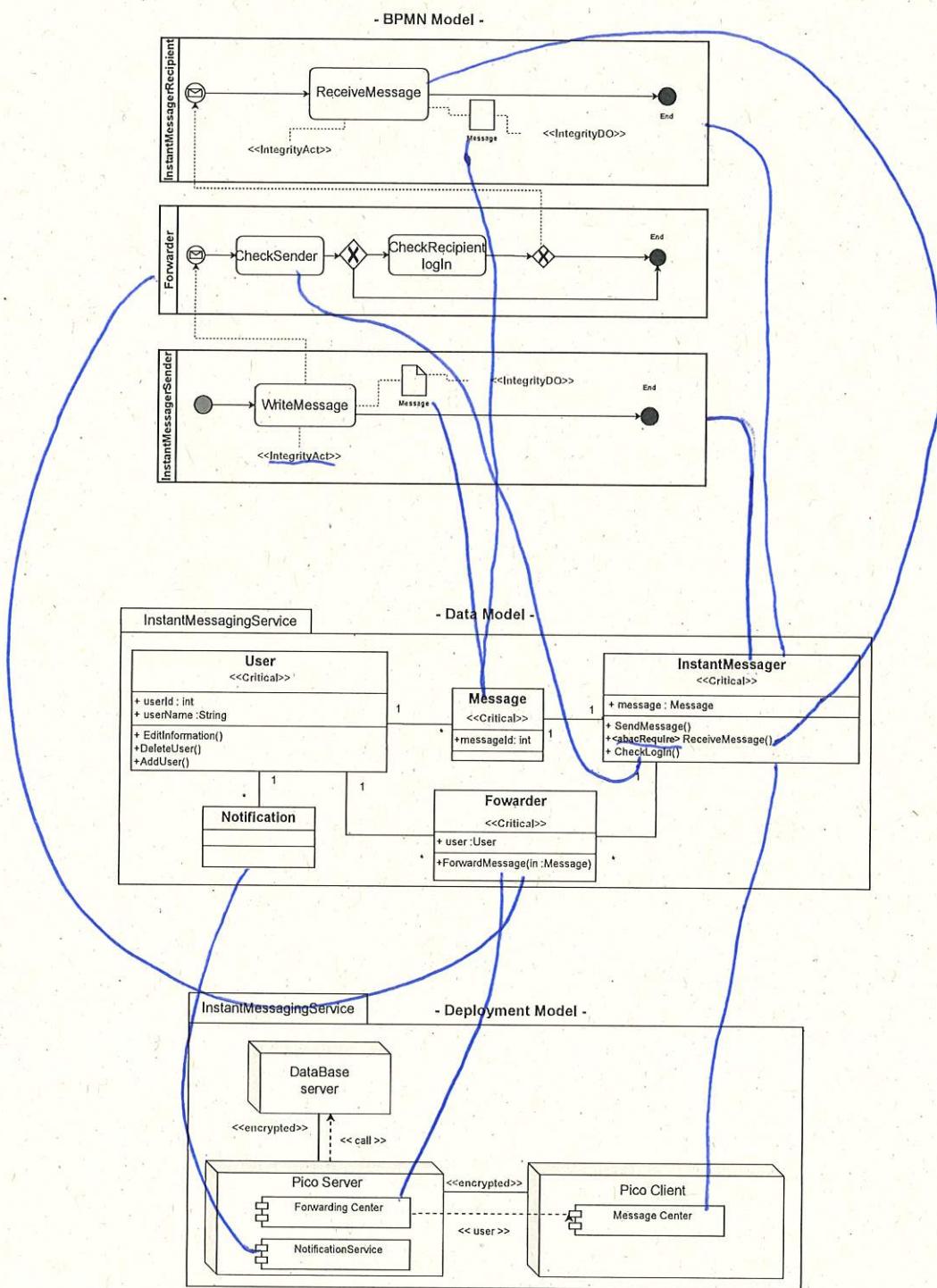
8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

Règles 2
et 4
pas appliquées

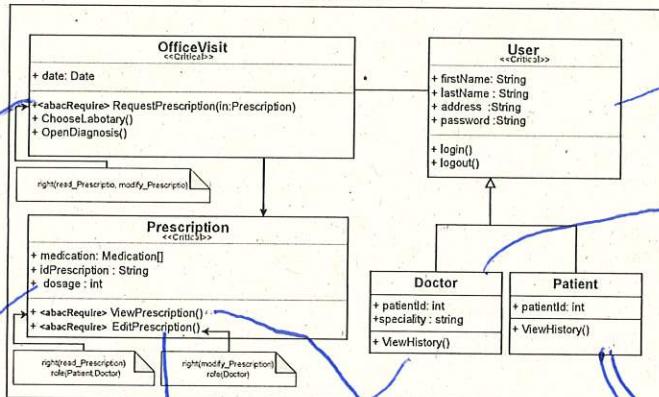
10. How did you find the identification of correspondences between elements of the models?
- A. Easy B. Medium C. Difficult D. Depends on the correspondence
11. How did you find the identification of which security specification to attach to the correspondence?
- A. Easy B. Medium C. Difficult D. Depends on the security specification
12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?
- A. Easy B. Medium C. Difficult
13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult
14. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
15. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 - Identifying the correspondences between elements of models
 - Understanding the security specifications
 - Establishing the correspondences
 - Attaching the security specification to the correspondences
 - Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service

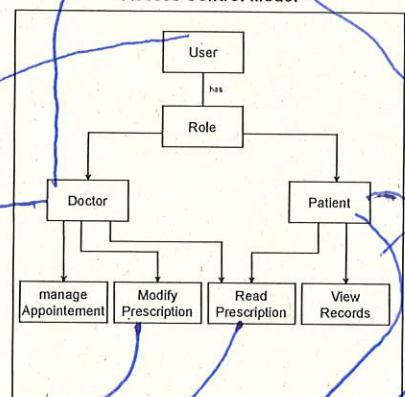


Models for case study 2 : ITrust system medical

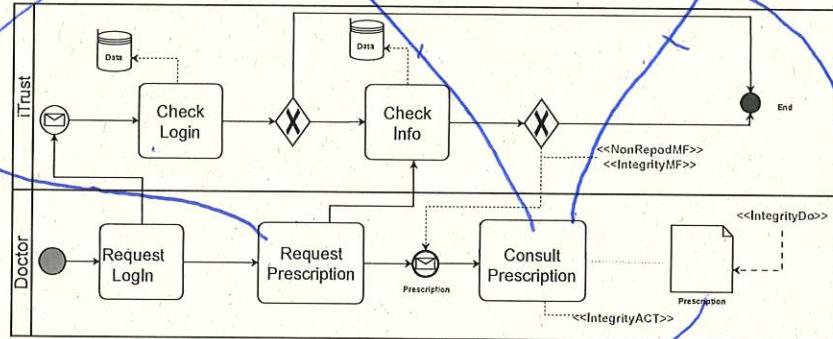
- Data Model -



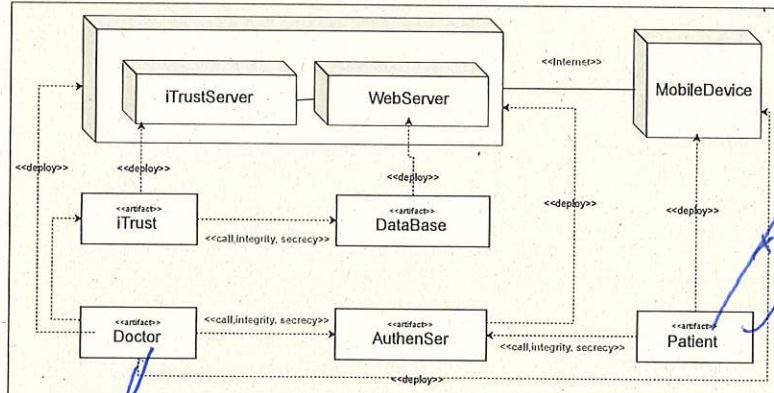
- Access Control Model -



- BPMN Model -



- Deployment Model -



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	Instant messenger data Model Forwarder data Model	Message center deployment model Forwarding center (Deployment model)
Correspondence2	2	receive message data Model	receive message BPMN
		check Sender BPMN	check login data model
Correspondence3	3	Instant messenger Recipient (BPMN) Instant messenger data Model Forwarder (BPMN)	Instant messenger (data model) Instant messenger (data model)

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N° Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	(3) →	Request Prescription (data model) View Prescription (data model)	Request Prescription (BPN) Consult Prescription (BPN)
Correspondence2		Consult Prescription (BPN)	Read Prescription (Access control model)
Correspondence3		Modify Prescription (Access control model)	Edit Prescription (data model)
Correspondence4		Doctor (Deployment model) Patient (Deployment model)	Doctor (data model) Patient (data model)

Doctor (Deployment model) Doctor (Access control model)
 patient (Deployment model) Doctor (Access control model)

① Doctor (Access control model) Doctor (data model)
 Patient (Access control model) Patient (data model)
 User (Access control model) User (data model)

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : _____

Sujet 14

Date: 09/08/2024

age : 21

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

- A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

- A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

- A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

- A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

DFD (Data Flow Diagram), secDFD (security version)

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

Yes, Management model between secDFD
and java Code

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
A. Easy B. Medium C. Difficult D. Depends on the correspondence

Links

10. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium
C. Difficult

13. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

14. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

10. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

11. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult

14. How did you find the process of attaching security rules ?

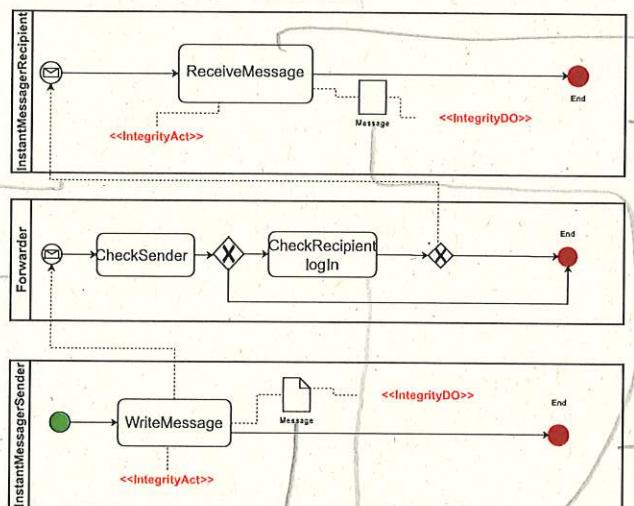
- A. Easy B. Medium C. Difficult

15. Which task of the methodology that you found particularly challenging?

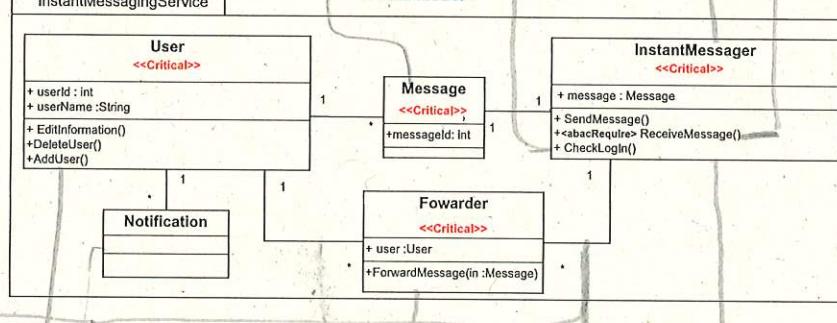
- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service

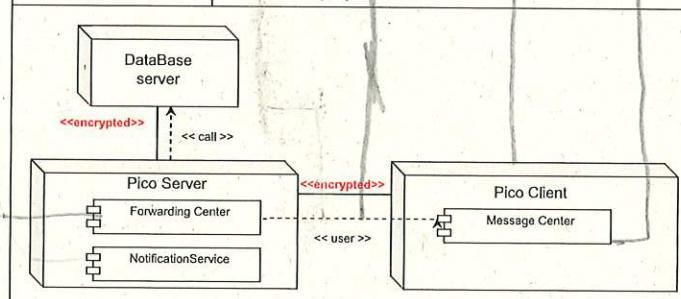
- BPMN Model -



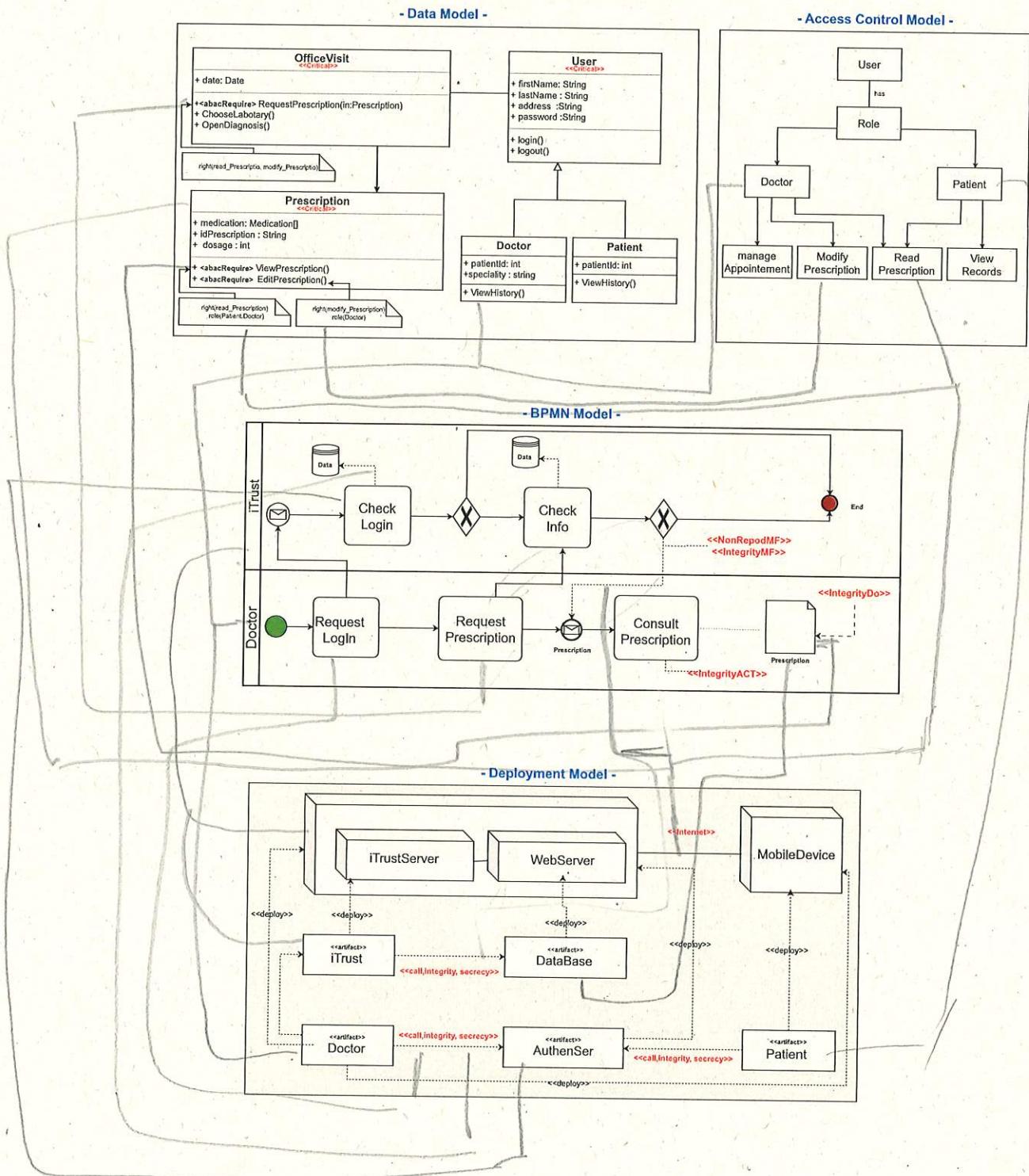
- Data Model -



- Deployment Model -



Models for case study 2 : ITrust system medical



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	2	Receive Message BPMN	Receive Message Data Model
Correspondence2		Message BPMN	Message Data Model
Correspondence3	1	Link between Instat Manager and Forwarder Data Model	Link between Pico Client and Pico Server Deployment Model

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	3	View Prescription Data Model	Consult Prescription BPMN
Correspondence2		Link to Prescription BPMN	Link between Mobile Device and Web Server Deployment Model
Correspondence3	3	Request Prescription BPMN	Request Prescription Data model
Correspondence4		Link between Check login and data BPMN	Link between Doctor and Authorizer Deployment Model

4 I trust
Doctor
BPMN I trust
Doctor
Deployment Model

Answer the questions in the spaces provided or check the adequate checkbox.

User Name :

Sujet 15

Date:

13/08/2024

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
 A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the security annotation table provided?
 A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

9. How did you find the identification of correspondences between elements of the models?
A. Easy B. Medium C. Difficult D. Depends on the correspondence

10. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

11. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

12. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium
 C. Difficult

13. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

14. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
 A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
 A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
 A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding of the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification

10. How did you find the identification of correspondences between elements of the models?

- A. Easy B. Medium C. Difficult D. Depends on the correspondence

11. How did you find the identification of which security specification to attach to the correspondence?

- A. Easy B. Medium C. Difficult D. Depends on the security specification

12. How did you find the implementation environment (Openflexo) provided for establishing correspondences and attaching security rules?

- A. Easy B. Medium C. Difficult

13. How did you find the establishing of correspondences using Openflexo? A. Easy B. Medium C. Difficult

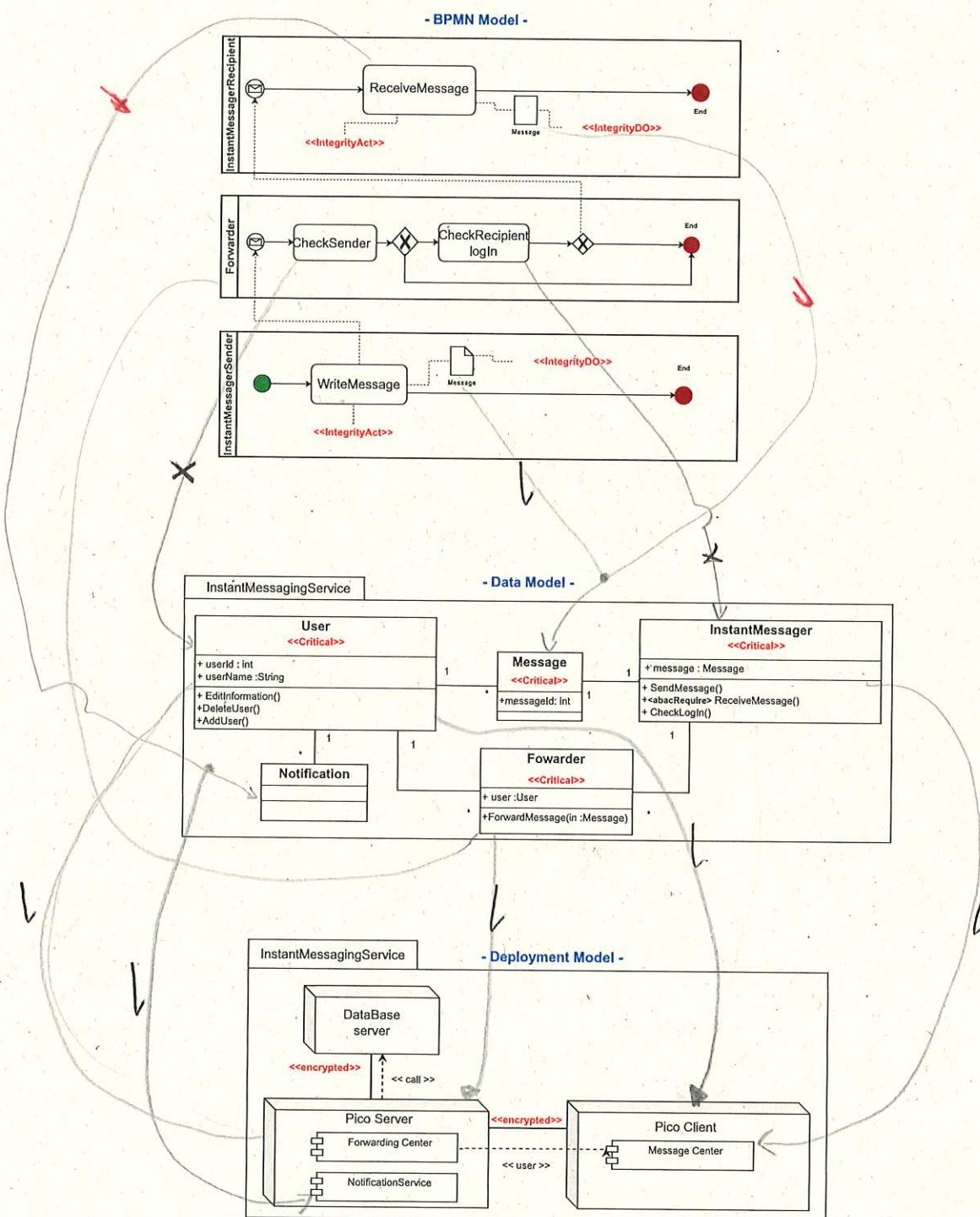
14. How did you find the process of attaching security rules ?

- A. Easy B. Medium C. Difficult

15. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service

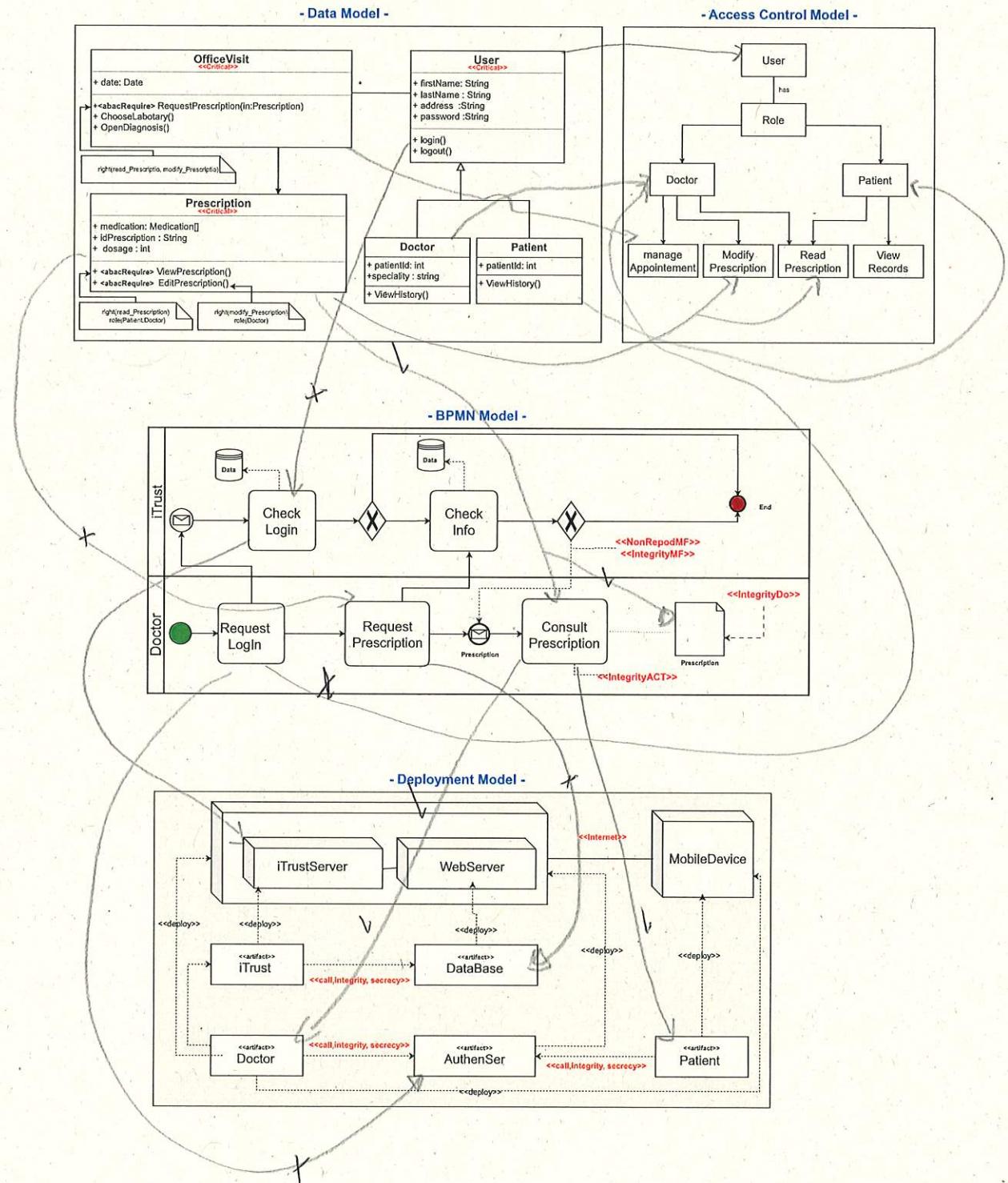


Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N°Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	+	ReceiveMessage /BAMN	Notification / Data Node
Correspondence2	+	Message /BAMN	Message /Data Node
Correspondence3	1	User InstantMessage /Data Node	Pico setup Pico client Deployment Node

Models for case study 2 : iTrust system medical



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	1	User / Data Model Office Visit Doctor Patient Prescription	User / Acc. C.N Strange Appoin. Doctor Patient Read / Modify
Correspondence2	2	Prescription Data Model	Consult Prescription BPN
Correspondence3		Consult Presip BPN. n	Doctor Patient Deployment. n
Correspondence4			

Answer the questions in the spaces provided or check the adequate checkbox.

User Name : **Sujet 13**

Date: **08/09/2024**

Do you accept that your answers may be used for research purposes?

Yes

No

1 Pre-Experience Survey

1. What is your familiarity with Model-Based system engineering?

A. Advanced B. Intermediate C. Beginner

2. Have you used UML (Unified Modeling Language)?

A. Regularly B. Occasionally C. Never

3. Have you used BPMN (Business Process Model and Notation)?

A. Regularly B. Occasionally C. Never

4. Have you used SysML (System Modeling Language)?

A. Regularly B. Occasionally C. Never

5. Have you used an other modeling language other than UML , BPMN, SysML? If yes, please list it.

Yes

No

6. Have you used the Eclipse Modeling Framework?

- A. Regularly B. Occasionally C. Never

7. How would you rate your understanding of security by design principles?

- A. Advanced B. Intermediate C. Beginner

8. Have you applied security by design principles in your previous projects?

- A. Regularly B. Occasionally C. Never

9. Could you explain your usage of the concept of model consistency (model management)?

X

10. Have you used any specific tool to manipulate models in system engineering projects?

- A. Regularly B. Occasionally C. Never

11. Have you used any specific tool for modeling security aspects in system engineering projects?

- A. Regularly B. Occasionally C. Never

12. What is your familiarity with the Openflexo framework?

- A. Advanced B. Intermediate C. Beginner

2 Post-Experience Survey for Instant messaging case Study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult
2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult
3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult
4. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult
5. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult
6. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult
7. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult
8. How would you rate your overall understanding the security specifications?
A. Easy B. Medium C. Difficult D. Depends on the security specification
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- A. Easy B. Medium C. Difficult
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13. How did you find the process of attaching security rules ?
- A. Easy B. Medium C. Difficult
14. Which task of the methodology that you found particularly challenging?
- Understanding the provided files
 - Identifying the correspondences between elements of models
 - Understanding the security specifications
 - Establishing the correspondences
 - Attaching the security specification to the correspondences
 - Implementing the security specifications (for user who implement them)

3 Post-Experience Survey for iTrust case study

1. How would you rate your overall understanding of the methodology presented?
A. Easy B. Medium C. Difficult

2. How would you rate your overall understanding of the case study provided?
A. Easy B. Medium C. Difficult

3. How would you rate your overall understanding of the UML model provided?
A. Easy B. Medium C. Difficult

4. How would you rate your overall understanding of the Access Control model provided?
A. Easy B. Medium C. Difficult

5. How would you rate your overall understanding of the BPMN model provided?
A. Easy B. Medium C. Difficult

6. How would you rate your overall understanding of the Deployment model provided?
A. Easy B. Medium C. Difficult

7. How would you rate your overall understanding of the matching table provided?
A. Easy B. Medium C. Difficult

8. How would you rate your overall understanding of the security annotation table provided?
A. Easy B. Medium C. Difficult

9. How would you rate your overall understanding the security specifications?
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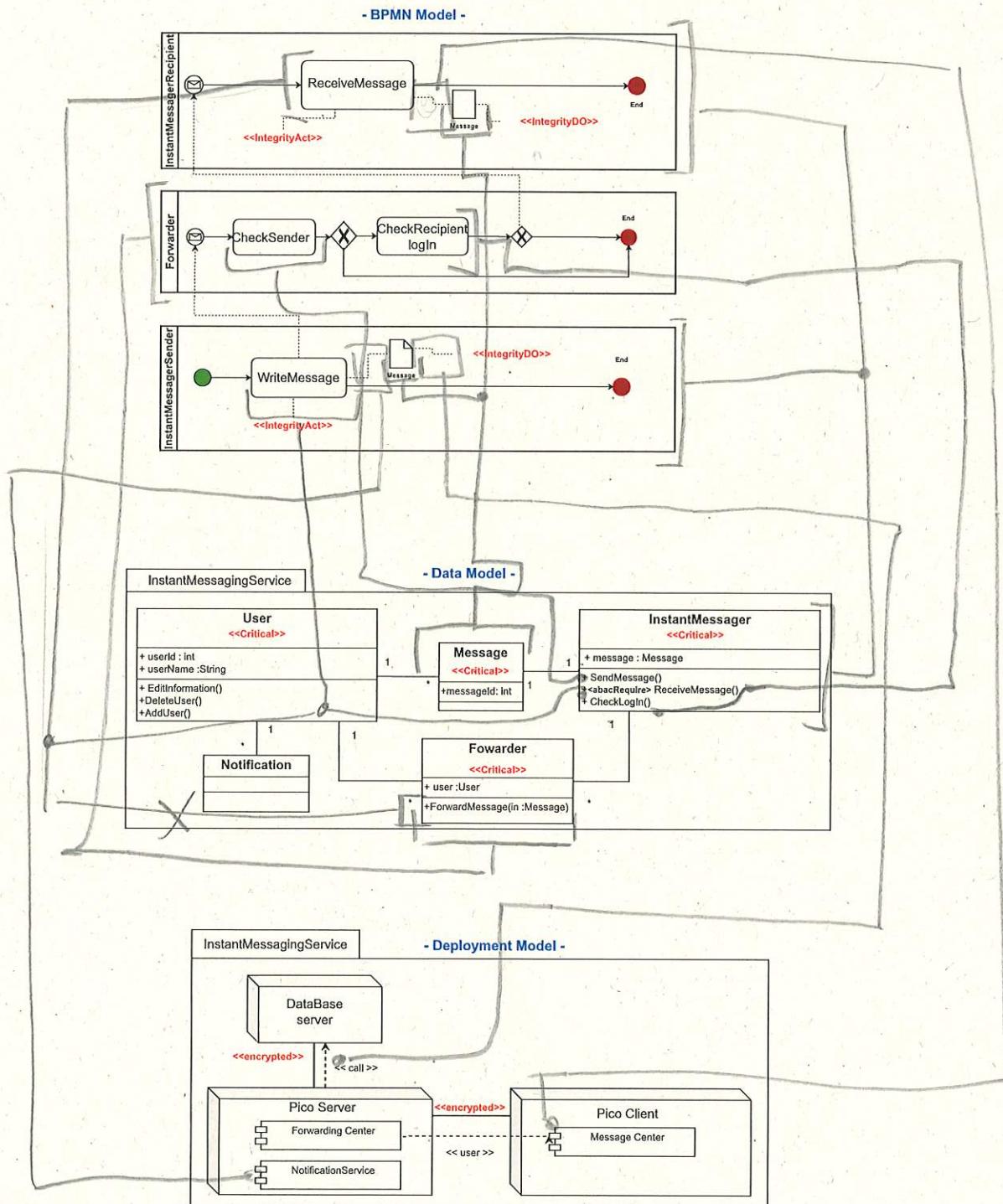
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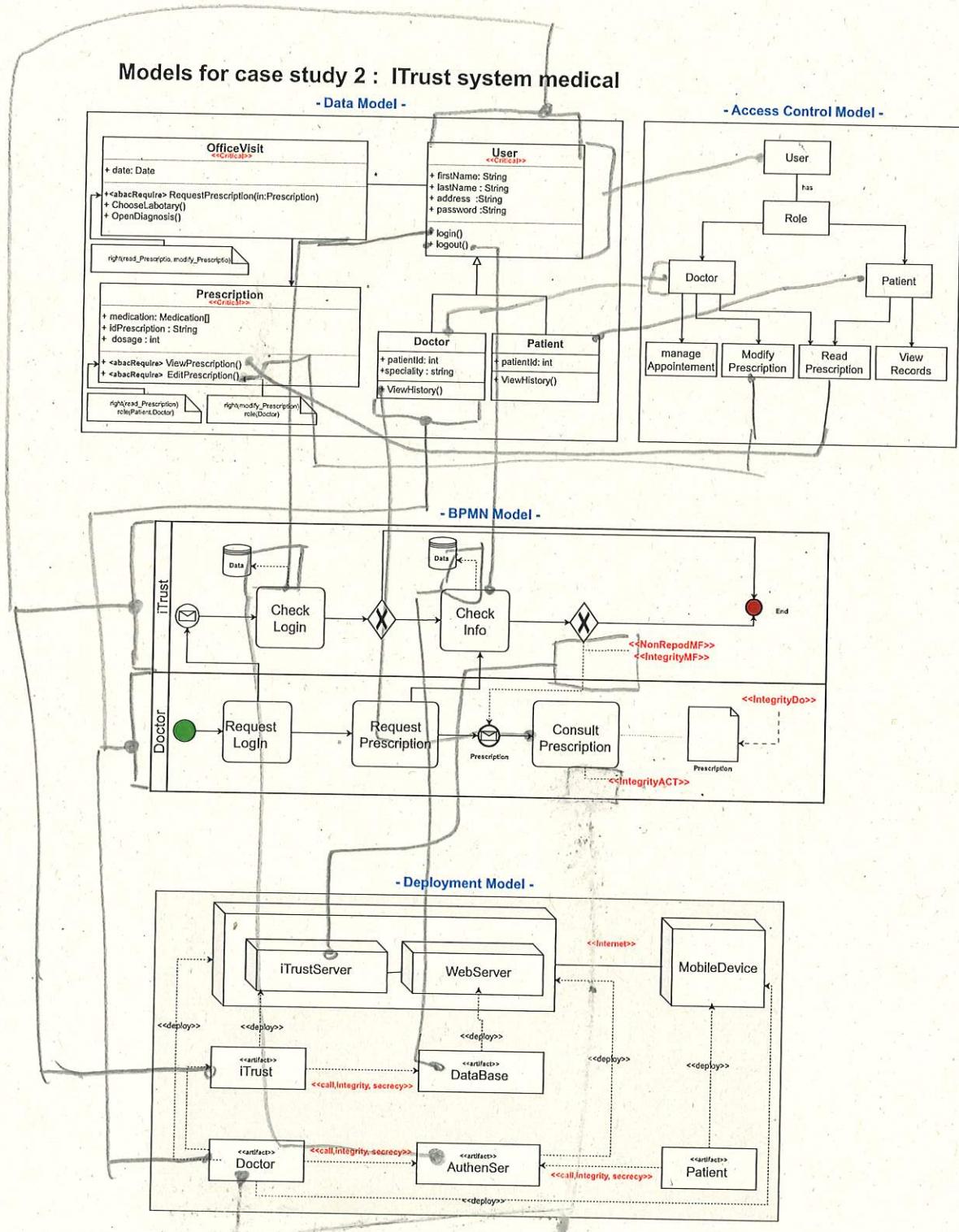
15. Which task of the methodology that you found particularly challenging?

- Understanding the provided files
- Identifying the correspondences between elements of models
- Understanding the security specifications
- Establishing the correspondences
- Attaching the security specification to the correspondences
- Implementing the security specifications (for user who implement them)

Models for case study 1 : Instant messaging service



Models for case study 2 : ITrust system medical



Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 1.

Table 4: Identify correspondences and security specification

Correspondence	N° Security Rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1	2	Receive Message BPMN Write message BPMN	Receive Message DATA Model Receive Message DATA Model
Correspondence2	3	Instant message Recipient BPMN Instant message Sender BPMN	Instant message DATA Model Instant message DATA Model
Correspondence3		Message BPMN	Message DATA Model

message flow
your
Receive Message | BPMN | Message center
Deployment Node

Identify and complete the elements constituting each correspondence, and associate the appropriate security specifications with the correspondences for case study 2.

Table 5: Identify correspondences and security specification

Correspondence	N°Security rule	Elements of correspondences and models	
		Element1 + Model	Element2 + Model
Correspondence1		Doctor DATA Node User DATA Node	Doctor BPMN iTrust BPMN
Correspondence2	3	View History DATA Node	Consult Prescription BPMN
Correspondence3		iTrust Deployment model Doctor Deployment model	iTrust BPMN Doctor BPMN
Correspondence4	1	User Data Node Doctor DATA Node	User AC Doctor AC
		Patient DATA Node	Patient AC
		View Prescription DATA Node	Read Prescription AC

