BCIT 2: Tutorial

1 Prefaces

1.1 Goal

The goal of this tutorial is to model the motivation scenario introduced in the paper (Figure 1). Additionally, we demonstrate the feasibility of modeling the interrelations of alternative compliance processes and their integration into the business process (Figure 2).
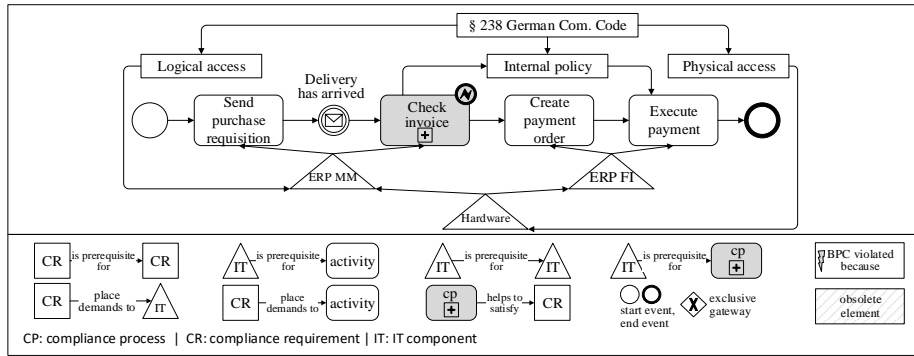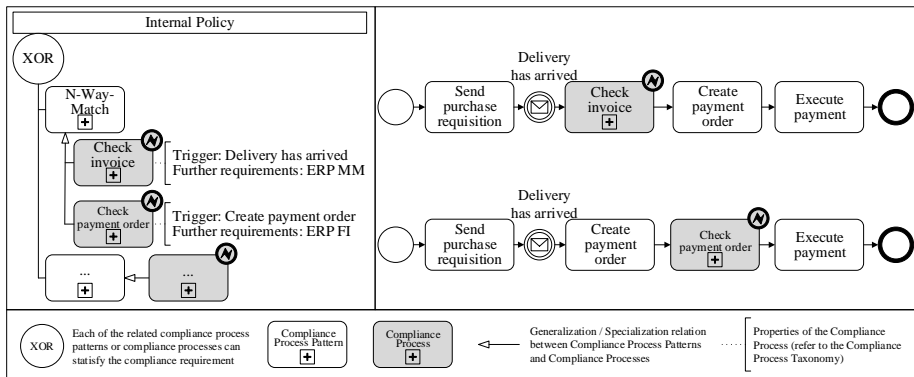

Fig. 1. Motivation scenario

Fig. 2. Alternative compliance processes and their integration into the business process

1.2 Structure of the Tutorial

In this tutorial we follow the steps offered by BCIT 2 that is divided in four main areas as Figure 3 shows:

1. Import Models: import compliance requirements modelled as JSON, import bussiness processes modelled as BPMN and import IT infrastructure modelled as ArchiMate models.
2. Connect elements: connect compliance requirements to other compliance requirements, connect business process activities to supporting IT components, connect business process activities to demanding compliance requirements and connect IT components to demanding compliance requirements.
3. Define alternative compliance processes: define and connect alternative compliance processes to compliance requirements.
4. Analyze: automatically analyze the interactions between business process compliance and business process change.
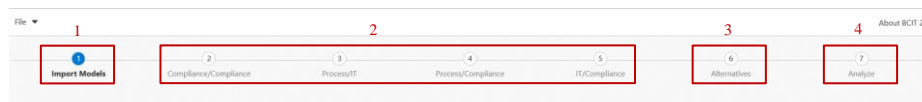
Fig. 3. Areas of BCIT

2 Import Models

The step `import models` offers the possibility to import the models of compliance requirements, business process and IT infrastructure. Alternatively, previously build project models can also be imported (`File → Open Project`).
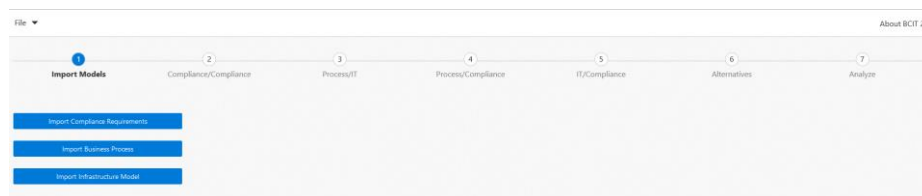
Fig. 4. Import models

3 Connect Elements

The imported models have to be manually connected together. Further, at least one business activity in the business process must be defined as a compliance process.

Technically, the all imported models are transformed into directed graphs. Each node represents an element within the imported model (e.g. a flow element of the business process, an IT component of the IT infrastructure model, …). The graph can be viewed using the menu item `File → View Graph`. *Please note, that sometimes the graph is not displayed directly. In this case, close the graph window and open it again.*

3.1 Connect Compliance and Compliance

In the step `Compliance/Compliance` we link the compliance requirements to-gether (Figure 5). The list on the left side represents the compliance requirements that are specialized by the ones on the left side. The **connection can be established** by taping the `yellow connect button`. In our example we connect the following compliance requirements:

- § 238 German Commercial Code → Logical access,
- § 238 German Commercial Code → Internal policy, and
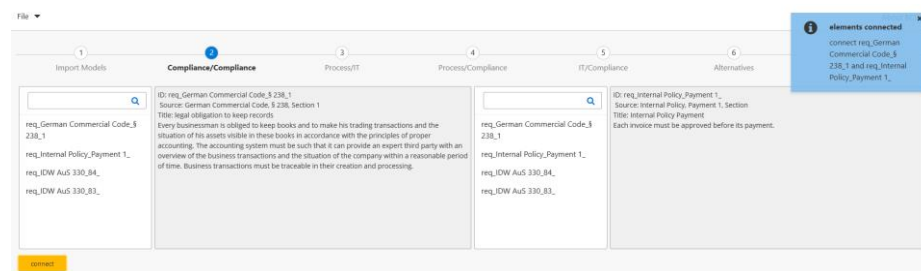- § 238 German Commercial Code → Physical access.

Fig. 5. Connect Compliance Requirements

3.2 Connect Business Process and IT Components

In the step `Process/IT` we link the business activities to supporting IT components. The upper part of the window shows the imported business process model, whereas the lower part shows the IT infrastructure model (Figure 6).

The respective **business activity and IT component** can be **selected** by a click. The elements are connected by press the `yellow connect button`. After that BCIT visualizes the connection through the data store. Note, that BCIT only displays the IT component that is directly connected to the flow element within the process model. Additionally, the `property list` on the right side displays the id of the connected IT component. A **connection can be removed** by selecting the respective property and tapping on the `blue remove button`.
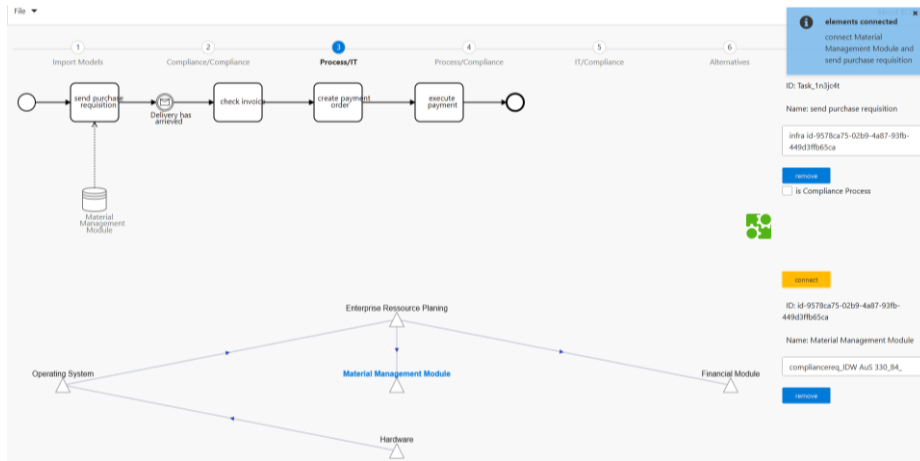
Fig. 6. Connect Business Process Activities and IT Components

3.3 Connect Process and Compliance Requirements and Define a Compliance Process

In the step `Process/Compliance` we link business activities to demanding compliance requirements (Figure 7). This is done in the same way as the previous step. In our example we connect the compliance requirement 'internal policy' to the business activity 'execute payment'. BCIT indicates the connection to a compliance requirement through a data object. Note that BCIT visualizes only the compliance requirement that is directly connected to the business activity. All previous compliance requirements are not visualized in the process model

Further, we **define** the business activity 'check invoice' as a **compliance process**. This is done through enabling the checkbox `is Compliance Process`. BCIT highlights a compliance process in grey. Besides that, we also connect the compliance requirement 'internal policy' to the compliance process.
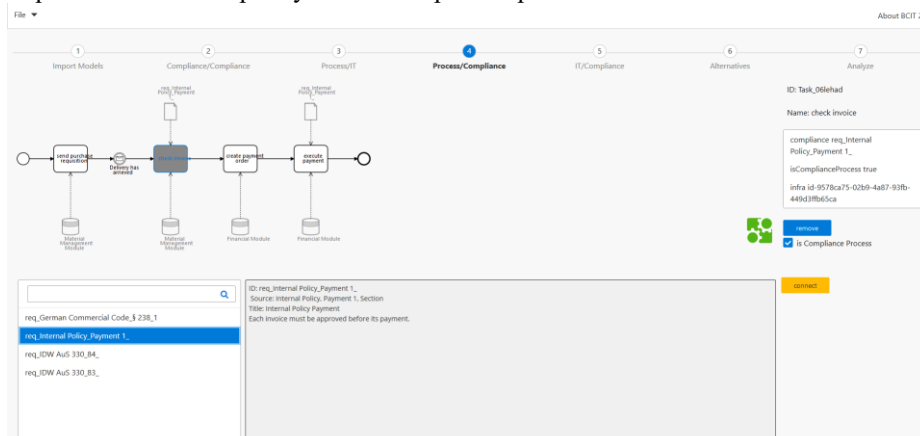

Fig. 7. Connect Business Process Activities and Compliance Requirements

3.4   Connect IT and Compliance Requirements

In the step `IT/Compliance` we link IT components to demanding compliance requirements (Figure 8). This is done in the same way as the previous connections. Similarly, the connection can be released again. In our example, we define the following connections:

- Logical access → ERP MM and
- Physical access → Hardware.

Fig. 8. Connect IT Components and Compliance Requirements

4   Define Alternative Compliance Processes

After connecting the elements together, we can either analyze the interactions between BPC and change (section 5) or we can define alternative compliance processes. In order to put forward proposals for a business process adaptation, we first define alternative compliance processes in the step `Alternatives`. Therefore, three steps has to be done:

1. Add and specify the compliance requirement,
2. Add compliance process patterns, and
3. Add and specify compliance processes.

In our example we select and **add the compliance requirement** 'internal policy' from the list on the left side. Next, we **add the compliance process pattern** named 'n-way-match' (Figure 9).

Fig. 9. Add and specify the compliance requirement

After that, we **add compliance processes.** Each new element is added to the selected element. First, we select the defined compliance process 'check invoice' (Figure 10). The name and the further requirements for execution are automatically filled out. We manually define the trigger 'Deliver has arrived'.

Fig. 10. Define the compliance process

Second, we **define an alternative compliance process** 'check payment order' which specializes the previous defined compliance process pattern 'n-way-match' (Figure 11). The trigger is the existence of the business activity 'create payment order'. Further requirements for the execution of this compliance process is the IT component 'Financial Management Module'.

Fig. 11. Define an Alternative Compliance Process

Finally, Figure 12 shows the **modelled interrelations** between the compliance requirement 'internal policy', the compliance process pattern 'n-way-match' and the compliance processes 'check invoice' and 'check payment order'. Each node can be edited or removed at the panel on the right side.
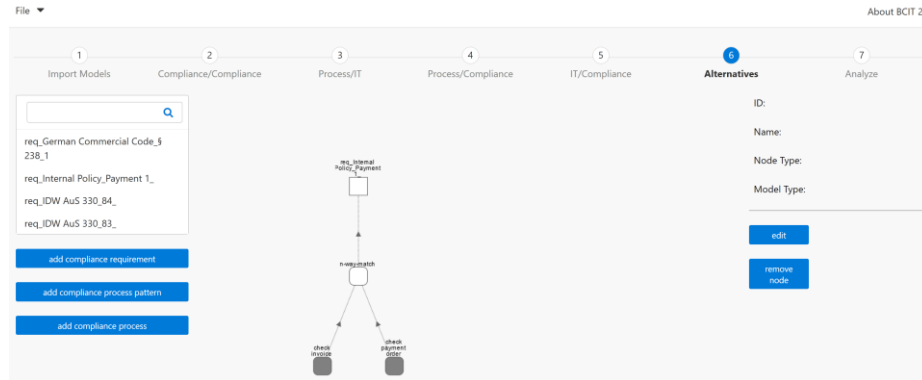
Fig. 12. Alternative Compliance Processes and Compliance Process Pattern

5   Analyze the Interaction between BPC and Change

In the step `Analyze` the interactions between BPC and change are analyzed. BCIT offers three different views to select the changed element: first the user can select every compliance requirement that is connected to another element (e.g. business activity or IT component), second the user can select elements from the process view and third the user can select an element based on the IT infrastructure model. We can define every element as the changed element.

Basically, we differentiate between the change patterns 'change element' and 'delete element' [1, 2]. The pattern 'change element' shows the direct and indirect demands by compliance requirements when replacing the selected element by another one. The pattern 'delete element' shows the impacts on compliance requirements when removing the selected element. In the following, we will refer to the change pattern 'delete element'.

The **element that shall be changed** can be selected through tapping on it. The selected element is shown on the right side (Figure 13).
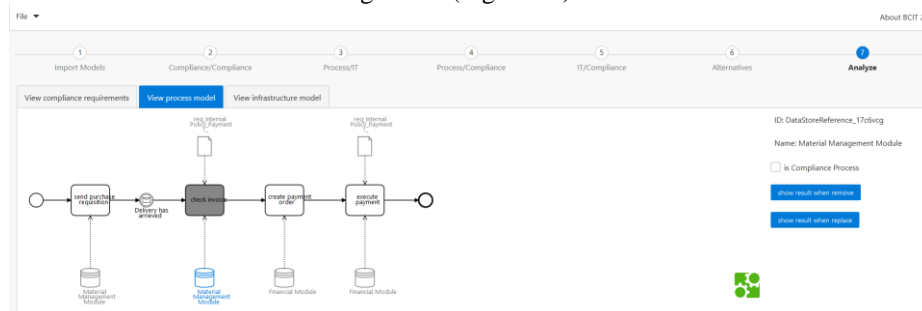

Fig. 13. Selecting the element that shall be changed from a process perspective

Figure 14 **shows impacts on the compliance requirements when removing** the IT component 'Material Management Module'. The violated and obsolete elements shown in the graph and listed on the right side.
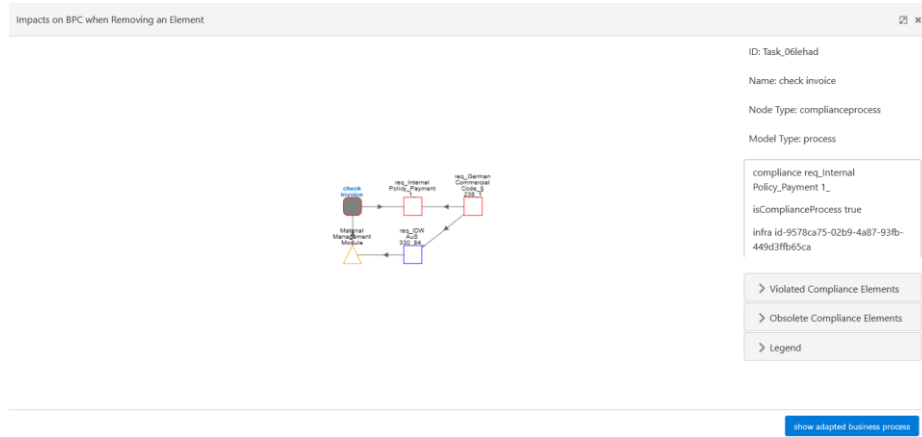

Fig. 14. Impacts on Compliance when Removing an Element

Table 1 contains the meaning of the graph shapes and their border colors. In this example the compliance process 'check invoice' cannot be executed. Thus, the compliance requirements 'internal policy' and '§ 238 German Commercial Code' are violated.

Table 1. Meaning of the Graph Elements

Shape		Border color	
Rectangle	Compliance Require-ment	Orange	Changed Element
Rounded rectangle	Business Activity	Blue	Obsolete Element
Triangle	IT component	Red	Violated Element

In order to get **proposals for a business process adaptation** the button `show adapted business process` has to be click.

6   Get Proposals for a Business Process Adaptation

In this example BCIT 2 proposes the integration of the compliance process 'check payment order' to satisfy the compliance requirement 'internal policy' and thus further ensure BPC.

The left side of Figure 15 shows a list of the original process and all business processes that are adapted by alternative compliance processes. Each process can be exported as a BPMN model and opened in any modeling tool, such as Camunda Modeler. Figure 16 shows the adapted business process by the alternative compliance process 'check payment order'.
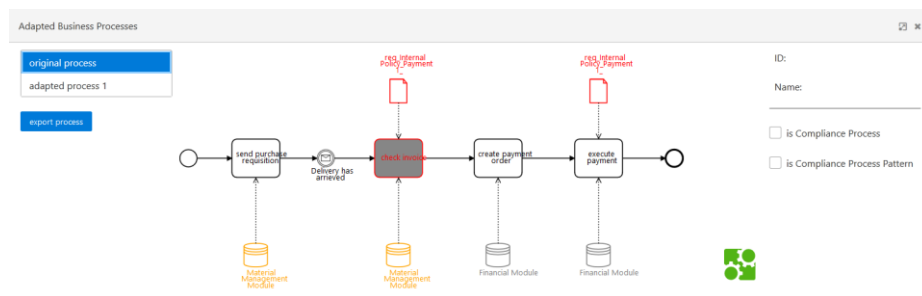

Fig. 15. Original Business Process including the compliance process 'check invoice'
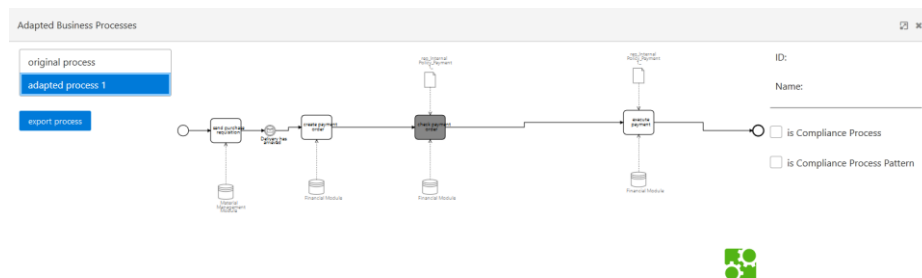

Fig. 16. Adapted Business Processes including the
alternative compliance process 'check payment order'

References

1. Seyffarth, T., Kuehnel, S., Sackmann, S., Business Process Compliance and Business Process Change. An Approach to Analyze the Interactions, in: Business Information Systems. BIS 2018. Lecture Notes in Business Information Processing (2018), pp. 176–189.
2. Seyffarth, T., Raschke, K., BCIT. A Tool for Analyzing the Interactions between Business Process Compliance and Business Process Change, in: Proceedings of the Dissertation Award and Demonstration, Industrial Track at BPM 2018 (2018), pp. 81–85.