Technische Universität Berlin

Zentrum für internationale und interkulturelle Kommunikation

Systemenwicklung für ein Entwicklungsland

Requirements

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1. Introduction

The requirements document contains all mandatory requirements of the platform. They define the framework conditions and main goals we strive to achieve. Their core are functional and non-functional requirements, as well as a sketch of the overall system design. The draft takes into account the future environment and infrastructure in which the system will operate.

The details of the implementation will be published later by the programming team. In fact, the current requirements do not specify any technical solutions, in order to not restrict them while designing the technical aspects of the platform.

2. Main Objectives

2.1. Overview

The goal of this project is to design, implement and provide a guidance platform for the developing country Afghanistan. Taking the circumstances in such a developing country in account, the platform should provide the users of IT-systems with the knowledge to assure the sustainability of IT-systems in their countries. Besides providing general information on IT-systems, the platform should provide, similar to the "BSI Grundschutzkatalog", information aiming to localize and solve problems that may occur in the IT-systems as a result of a human error, technical failure or a catastrophe etc.

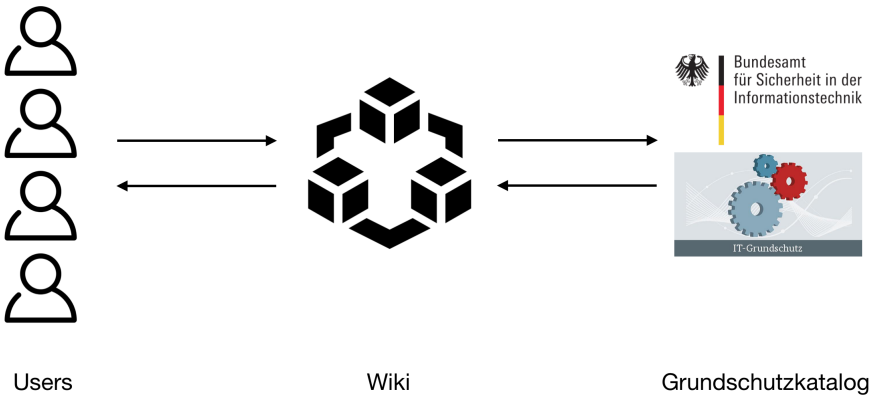

Figure 2.1.: Abstract System Design

2.2. Wiki

Considering the limited availability of IT-specialists in most of the developing countries, and after reviewing the possible ways to design and provide the platform, our team considers it convenient to create an open platform on which people can collaboratively add, edit, delete or archive content, similar to Wikipedia. This should allow the platform to constantly grow and stay relevant to current circumstances. The user created content beyond the BSI catalogue could make remarks about national peculiarities that do not play a role in Germany, aid further understanding or offer updates on more recent developments. However, this should not mean that everyone can simply write any

potentially false content for everybody to read. To assure that we have to set rules and access permission levels (see section 2.2.4). Concretely the wiki should have the following parts:

- News
- BSI catalogue
- Articles
- Archive

which will be further explained in next subsections. In general, it should be possible to link from any page in the wiki to any other page.

2.2.1. News

News are written by users but have to be approved by mods. If a mod approves a news article it is automatically published on the home page. The mod can decide to make a news article an important news article.

2.2.2. BSI Catalogue

The BSI catalogue spans over 5000 pages which makes browsing, or even searching a specific information, a difficult task for beginners. Converting such a big text volume into wiki content by hand would be an extended task. Accordingly, a parser is needed. This parser will crawl and analyse the BSI Grundschutzkatalog website and create and sort the content automatically. The BSI catalogue is the most restrictive part in the wiki and should only be modifiable by administrators.

While browsing any page of the BSI catalogue a tree view of the catalogue should be displayed at the side.

UPDATE 13/11/2017

The tree view adopts the structure as also found in pdf versions of the BSI catalogue. See Appendix C.
The tree view should not automatically expand or collapse itself without direct guest manipulation. This means for instance, that when a guest, clicks on the link of a threat on a building block page that the tree view does not expand to show this threat. Merely the highlighted row in the tree view changes to the new item. If the item is hidden in a collapsed level the highlighted row should change colour. BSI pages which show building blocks should be displayed slightly modified from their appearance in the catalogue. Instead of listing threats and measures seper-

ately in lists, it should be obvious only after a quick glance which measures corresponds to which threats. For this, cross-reference tables provided by the BSI should be used. These tables clearly assign each threat its measures. Thus, those pages show firstly the related text to the building block. Then a dropdown menu which allows the guest to sort the linked threats and measures by either threats or measures. Lastly, a tree view where the first level are layers, the second level the category by which the tree is sorted and the third level the other category. See Appendix C for examples.

2.2.3. Archive

The website should always present up-to-date information for interested guests. Sometimes though a person might be interested in information on older systems which are not covered anymore in the most recent version of the BSI catalogue but in older versions. Those older versions and ideally their related wiki content should be available in the archive. On the matter of the related content see section 3.11.2.

For example: if users are looking for an information on a no longer supported operating system and there are none in the wiki regarding this problem, the user could find older approaches in the archive.

2.2.4. User Types

First of all, the platform will need one or multiple administrators (admins) who will update the platform from a technical perspective and ensure that policies are being respected. However, building a wiki-like platform about IT-Security for developing countries comes also with the big responsibility of the content it will provide. If everybody could publish and/or modify content without checks or labels for flaws, or malicious informations, it would present a major security risk for any layman reading it. Admins will have enough workload so we need another team of volunteers, like moderators (mods), who will check content and remove, modify or label it as unsafe if necessary. Moderators will be appointed by admins and will be responsible for policy enforcement for specific topics. Further, users who would like to publish and/or modify content will need to register to the platform and be logged in. All other users who are not logged in will be considered as guests and will only be able to read content. These multiple user roles are needed to create a trustworthy platform.

The following section will discuss the different user roles and their functions. This is illustrated in the appendix by the use case diagrams.

Guest, the guests have the possibility to browse and search in the archive and also in the wiki, which includes the BSI catalogue. The search can be refined with several options (more information about the search in the text search section 2.3) If guests are

not sure how to find their problems they can use the wizard (more information in the wizard section 2.4). The wiki contains news from different topics which guests can check out.

User, every registered user (registed by email address and a password) can write articles in the wiki and change them with the functions: create content and edit content. Created content can be linked in a certain part of the BSI catalogue. If the BSI catalogue updates, users who have linked content get a notification to transfer this link to the new BSI catalogue or to archive the linked wiki article with it. They can also edit their profile. After a User has logged in, he can still use the functions of a guest.

Moderator (mod), mods are managing the content published by the users. Managing or Moderating content means to delete wrong or inappropriate content or make checked content recognizable for guests that the content is verified. Mods manage the news which means they can show certain news on the home page to get more attention or delete/change incorrect news. Mods are also responsible, if necessary, to ban users. Mods can use all functions users can use.

Administrator (admin), the admin sets or changes permissions like banning users, assign topics and manage news. One of the most important tasks of the admin is to update the BSI catalogue as soon as a new one is available and to move the old one to the archive. There should be two admins for the website in case one is non-available. The admin can use all functions mods can use.

The table 2.2.4 shows the rights of each user.

	-Browse catalogue	-Add/edit articles/news -Link to BSI	-Moderate articles/news	-Assign roles -Update BSIc
Guest	✓	▭	▭	▭
User	✓	✓	▭	▭
Mod	✓	✓	✓	▭
Admin	✓	✓	✓	✓

Figure 2.2.: user rights table

2.3. Text Search

A text search function allows users of the platform to make a free text search request and browse the results containing the key-words. Users should also have the opportunity to narrow down their search request by selecting a specific domain in which they would like to find results:

- "All": counts as every domain
- "News": domain where news are published
- "Module": modules of the BSI Grundschutzkatalog
- "Threats": threats of the BSI Grundschtzkatalog
- "Measures": measures of the BSI Grundschutzkatalog
- "Archive": archived content (no longer visible in the wiki)

Choices should be available as a dropdown list.

The search field should be well placed on the home page. The system should have a function "Back to the search results". The search function should have fault tolerance, as well as the ability to deal with synonyms. Fault tolerance means that the user will get the result even if he misspells a word or if he uses singular or plural. While a non-fault-tolerant search will let the visitor go nowhere, the system should nevertheless display the appropriate results. In addition, search functions which also master synonyms, do even more. For example, the system should derive results from the search input "laptop" in which the word "notebook" appears and for this purpose access an extensive database of words of the same meaning. The automatic completion of search terms is very welcome.

2.4. Wizard

Beginners who are not familiar with the terminology may have a hard time finding solutions to problems they encounter. To help them, we would like to implement a wizard, which will ask them a set of yes/no questions to filter out what problems they could have, similar to the game Akinator[1].

2.5. Home Page

The home page is the entry point to the different services offered by the website. As such its design should provide a clear overview of and a dead on target guidance to

[1] `http://en.akinator.com`

all available functions for users of all levels of experience. Firstly, the home page also displays the always present top section (see section 2.6) but no side bar to use the full available space for the sections defined below and in order to not overwhelm the user with two detailed lists of items. Directly below the top section is a distinguished area for time-critical news which inform of widespread threats or important updates. Those are important to all users and should therefore be on top. In times of no imminent danger time-critical news might not be displayed but instead a few of the most recent regular news which are part of the wiki. The third area in a vertical sense is a wide and inviting search bar that allows experienced users the quick access to the BSI catalogue and other parts. Should a user not know what to search he can browse the BSI catalogue following a link in the top section (see section 2.6). The search offers the full functionality as described in section 2.3. As a last section before the always present bottom section is an overview of introductory tutorials on how to implement the guidelines of the BSI catalogue while developing, building and maintaining a basic IT system. Equally visible as the tutorials should be the offer to use the wizard to help and find security gaps and other system flaws. Both the tutorials and the wizard are aimed at users of no or little knowledge or overview of the BSI catalogue. For detailed explanations of the wizard see section 2.4. The bottom section shows links to items as contact, legal notice, possibly FAQ and copyright.

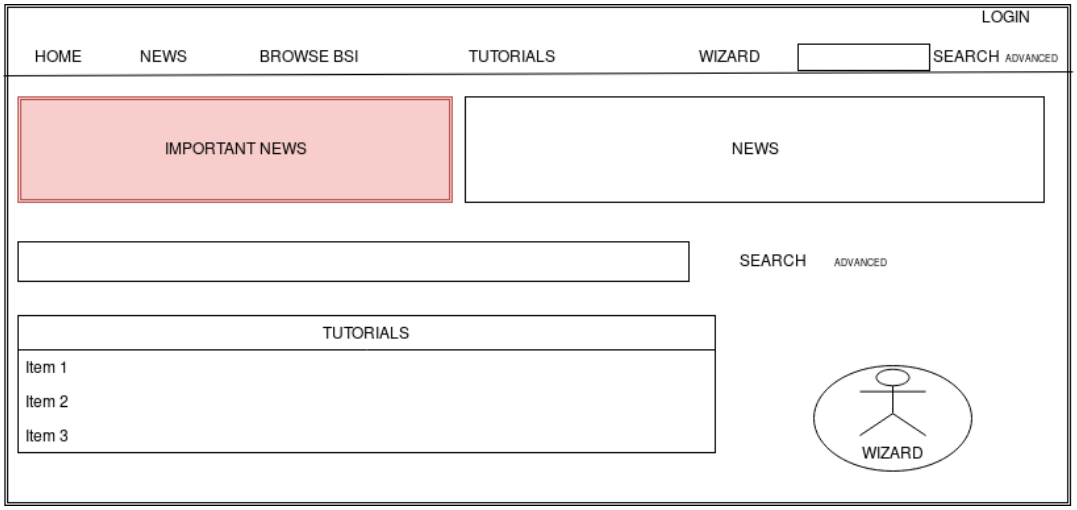

Figure 2.3.: Schematic Home Page Design

2.6. Top Section

The top section is an always present area at the top of each subpage that connects the different services and allows for quick access. It should feature the following items whose order and wording might be changed appropriately:

- Home Page

- News
- Browse the BSI catalogue
- Tutorials
- Wizard
- Search
- Login .

3. Secondary Objectives

3.1. API for BSI Catalog - Priority: HIGH

The application programming interface (API) should offer straightforward REST access to read, create, edit and possibly manage the content of the wiki heeding the permission settings in place. This includes the News section, tutorials as well as the BSI catalogue itself. Such access could be used for a future integration into a mobile application. Existing wiki-frameworks might already include ready-to-use API functionalities and could be used.

3.2. FAQ (Work in Progress) - Priority: MEDIUM

3.3. Forum (Work in Progress) - Priority: MEDIUM

3.4. Labels (Work in Progress) - Priority: HIGH

3.5. Up/Down Votes (Work in Progress) - Priority: HIGH

3.6. Karma Points (Work in Progress) - Priority: MEDIUM

3.7. User Access to BSI Catalogue Pages (Work in Progress) - Priority: HIGH

While the general access to alter the pages of the BSI catalogue should be restrictive (see section 2.2.2) users who write an article should still be allowed to link their article in the pages of the BSI catalogue. This can be done in two ways:

1. a text link where a word becomes the link; the linked page directly comments on a word or phrase or
2. a bottom page link after the BSI catalogue content that is commenting on the wider scope of the whole page .

This means that after or while users write their articles they are presented with the option to link it to the BSI catalogue. Users then navigate to the page in question which is greyed out/non-editor/read-only. In the first case, users click on/mark the word they want to link their article to. In the second case, they click on/mark the "See also" section on the BSI catalogue page.

3.8. Automatically archiving News (Work in Progress) - Priority: LOW

3.9. Automatically publishing User News without Approval (Work in Progress) - Priority: LOW

3.10. One Sentence News (Work in Progress) - Priority: LOW

3.11. Archiving old Articles (Work in Progress) - Priority: MEDIUM

3.11.1. User Prompt to relink Article (Work in Progress)

3.11.2. Auto-Archiving

Related content to a BSI catalogue version refers to wiki content created by users which is obsolete with the new catalogue version. An indicator for the obsolescence is that during a BSI catalogue update the article is only linked to the current catalogue but will not get relinked to the new version.

3.12. Extended Wizard (Work in Progress) - Priority: LOW

A. Glossar

Guest - a visitor of the website.

User - the user type relating to the wiki permissions.

Mod - the user type relating to the wiki permissions.

Admin - the user type relating to the wiki permissions.

(Wiki) Content - a page in the wiki. Could belong to News, BSI catalogue, articles or archived versions of all of the above.

Article - a page in the wiki which was created by a user and does not belong to the News or BSI catalogue.

Threat - as defined by the BSI Grundschutzkatalog (Gefährdung).

Measure - as defined by the BSI Grundschutzkatalog (Maßnahme).

B. Use Case Diagrams

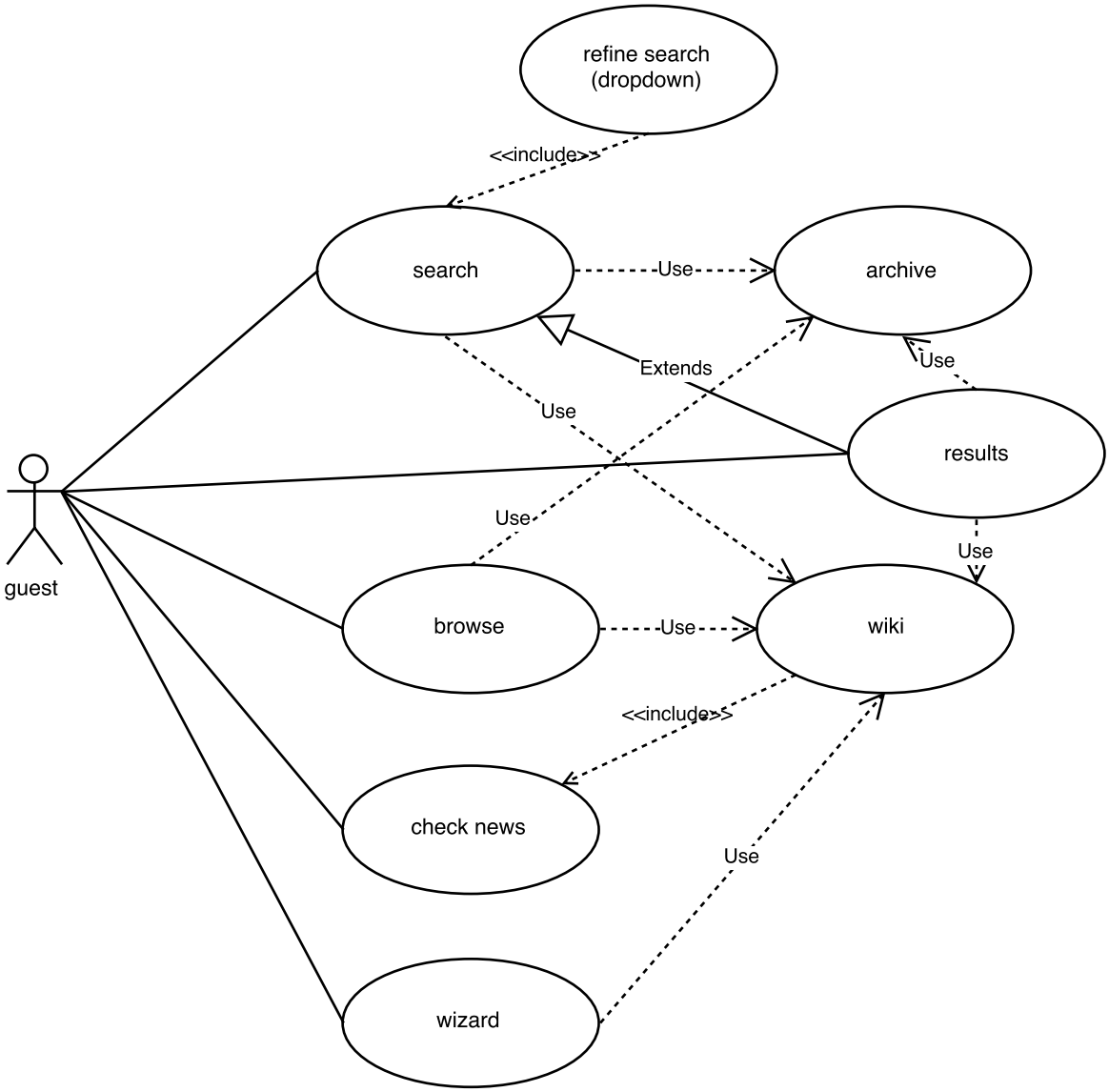

Figure B.1.: guest - use case

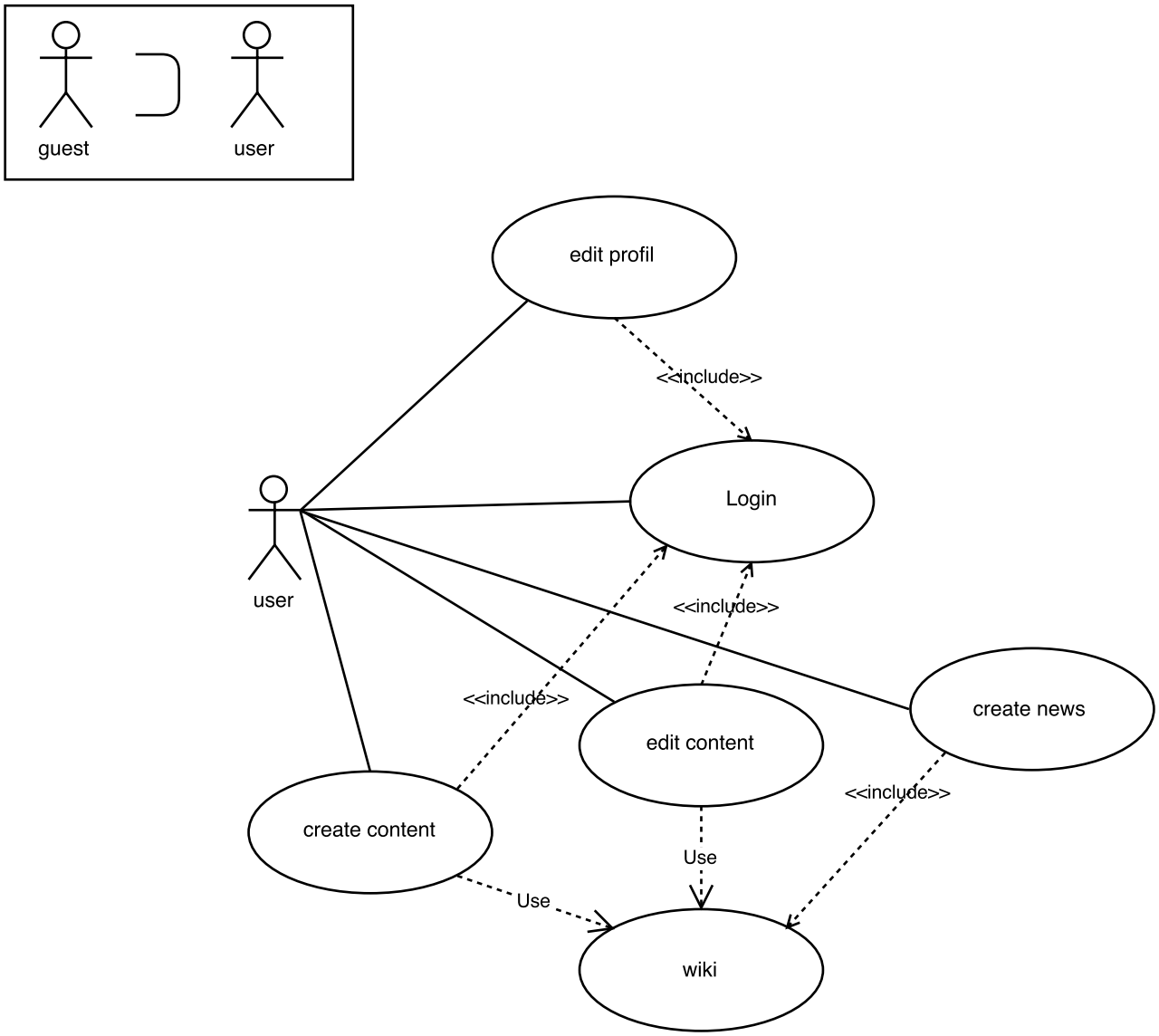

Figure B.2.: user - use case

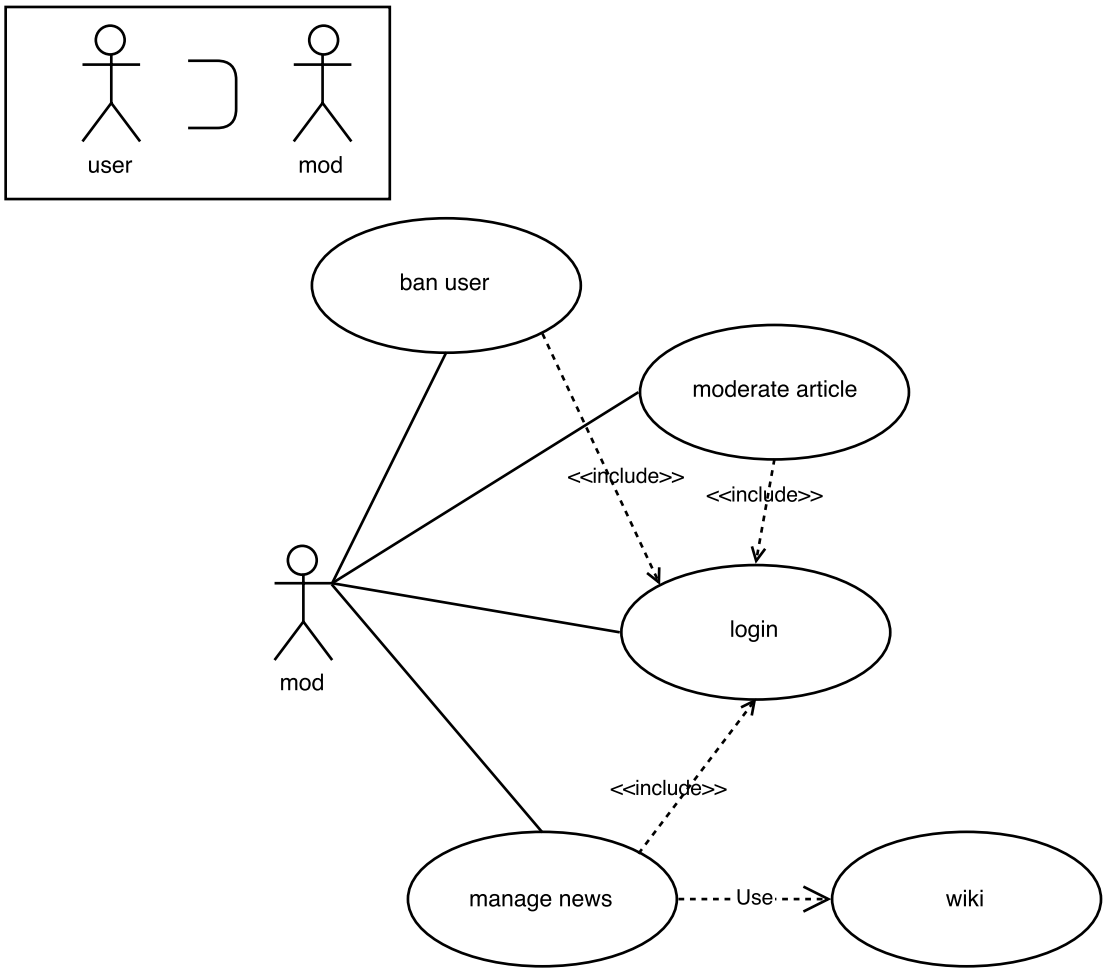

Figure B.3.: mod - use case

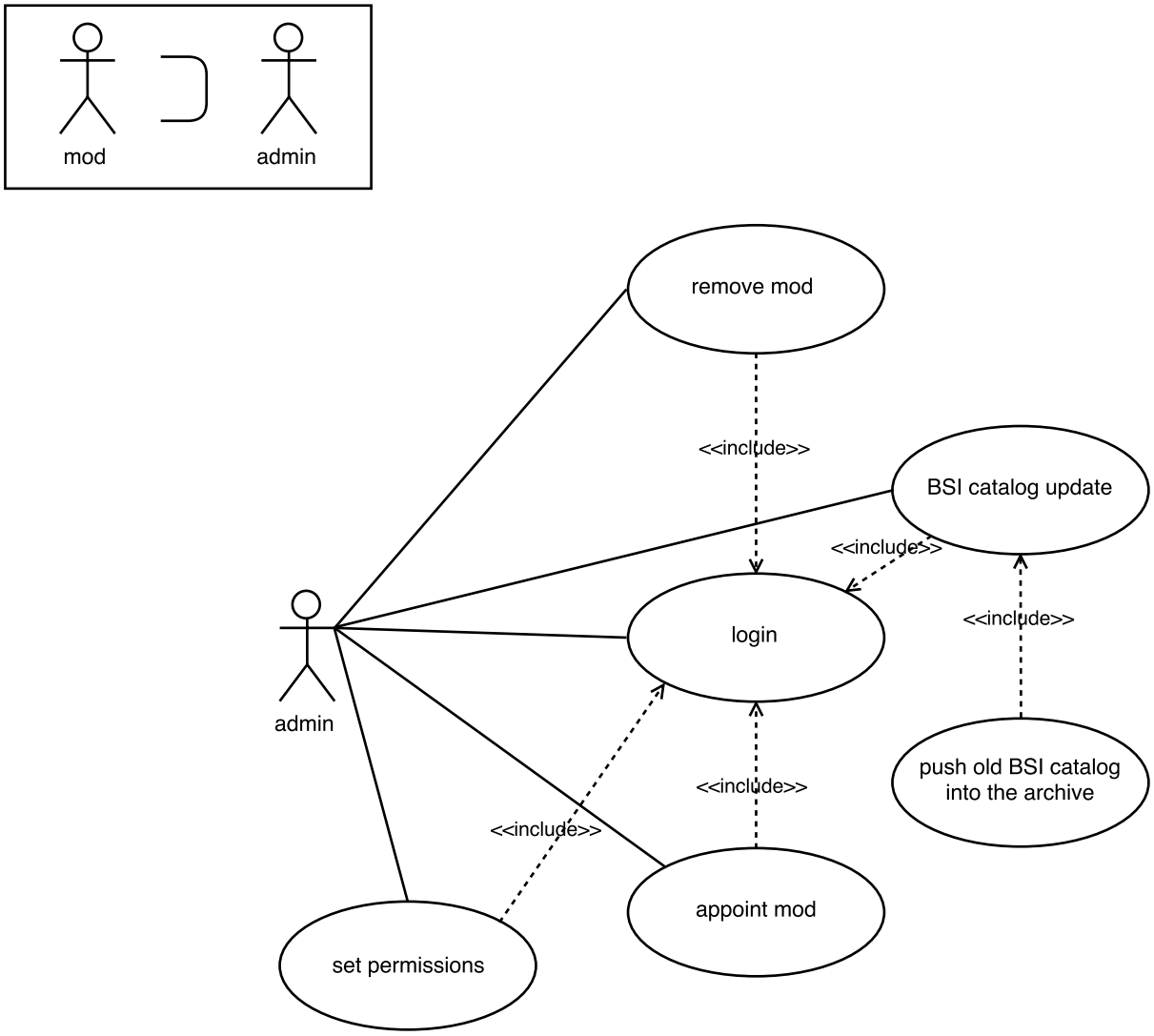

Figure B.4.: admin - use case

C. BSI Pages

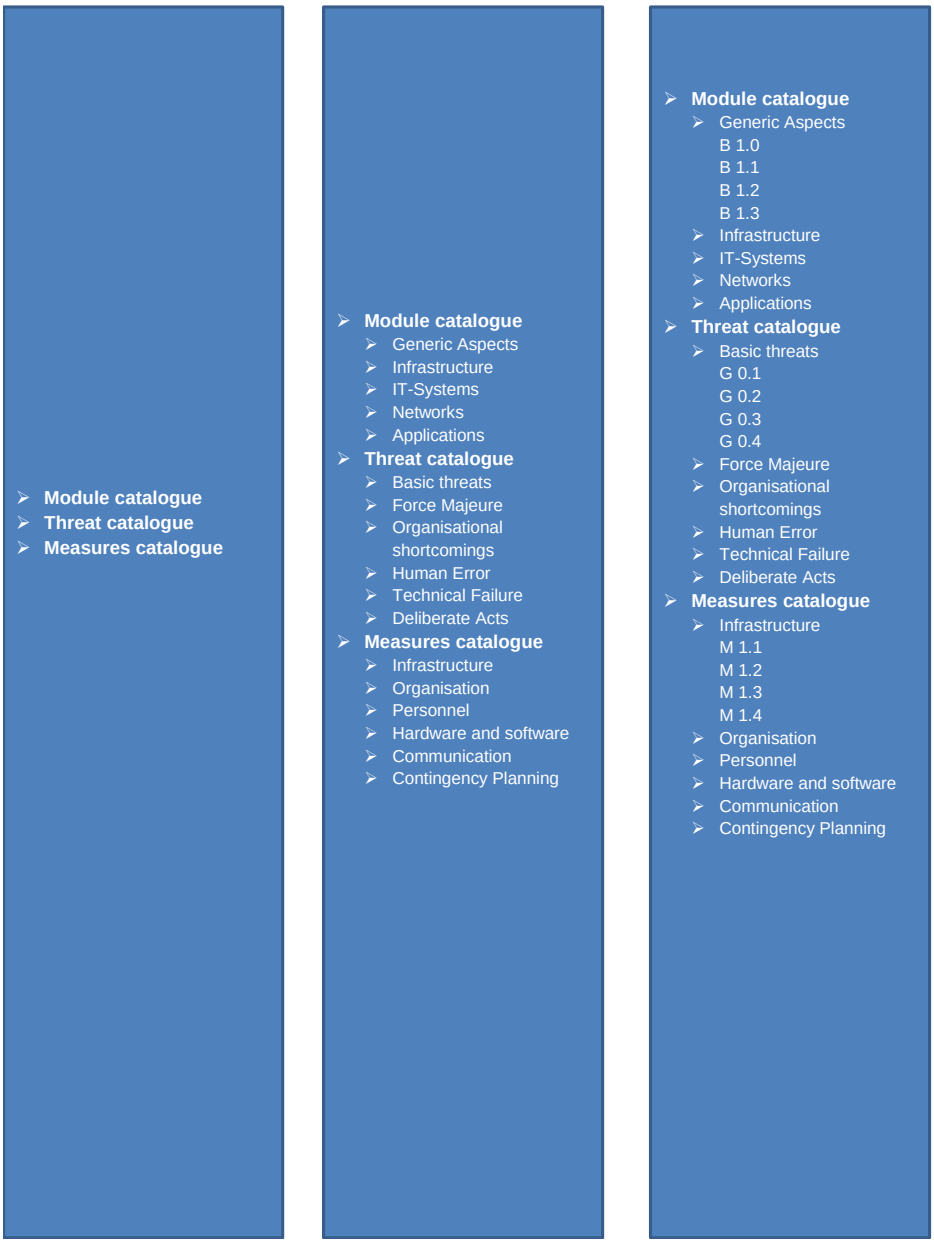

Figure C.1.: Tree view of BSI pages.

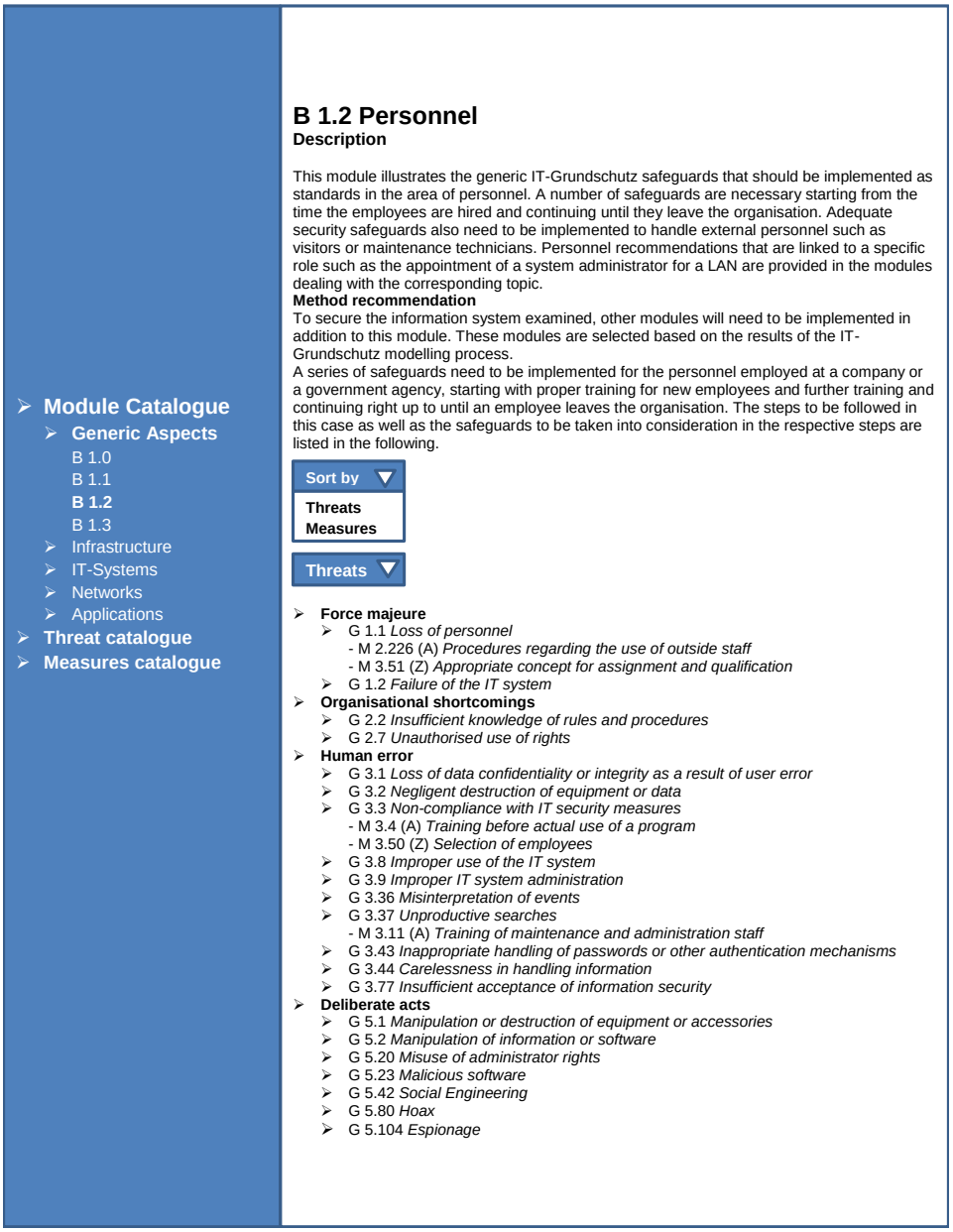

Figure C.2.: BSI page showing a building block page sorted by threats.

Figure C.3.: BSI page showing a building block page sorted by measures.