

# Requirements Document for UM-BBD/PPS

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# **Part I**

## **User Requirements**



**UR001**

**Statement** *The system shall provide the functionality to analyze one dimensional time scale datasets in the field of atmospheric chemistry.*

**Priority** *A*

**UR002**

**Statement** *An extension of the system should provide the analysis of multidimensional datasets.*

**Priority** *B*

**UR003**

**Statement** *The system should provide a set of basic algorithms to analyze the dataset. These set includes peak-detection, correlation and clustering.*

**Priority** *A*

**UR004**

**Statement** *The system shall provide an export function to download the results of the analysis.*

**Priority** *A*

**UR005**

**Statement** *The results of the analysis should be visualized in a graphical manner.*

**Priority** *A*

**UR006**

**Statement** *The system shall provide the possibility to apply different kinds of filters for the visualization of datasets. At least the functionality to set the number of occurrences of a given molecule should be available in the first release.*

**Priority** *A*

**UR007**

**Statement** *The system shall be extendable via a plugin mechanism. A plugin can contain additional algorithms or support for new file formats.*

**Priority** *A*

**UR008**

**Statement** *The system shall provide additional information for molecules as a hyperlink referring to chemical databases like MassBank, ChemSpider or ToxBank.*

**Priority** *A*

**UR009**

**Statement** *The system shall provide the functionality to search for specific datasets and molecules. Therefore, the system provides the possibility to annotate the datasets and its content.*

**Priority** *A*

**UR010**

**Statement** *The system shall provide the possibility to compare two datasets. The comparison should be done via dynamic-time-warping.*

**Priority** *A*

**UR011**

**Statement** *The user should have to possibility to set various view options. This includes the basic zooming and pruning of molecules of no interest.*

**Priority** *A*

**UR012**

**Statement** *The system shall provide the functionality to reapply filters to already processed data.*

**Priority** *A*

**UR013**

**Statement** *The system analysis of datasets must not modify the original dataset.*

**Priority** *A*

**UR014**

**Statement** *The visualization of the data should provide feedback within 5 seconds.*

**Priority** *A*



**UR015**

**Statement** *The user should have to possibility to abort a running analysis.*

**Priority** *A*

**UR016**

**Statement** *The system shall provide a user management.*

**Priority** *A*

**UR017**

**Statement** *There shall be three different types of users: guests, registered users and administrators.*

**Priority** *A*

**UR018**

**Statement** *Guests shall only be able to view uploaded public datasets and its analyses.*

**Priority** *A*

**UR019**

**Statement** *Registered users shall be able to upload, modify and delete own datasets. All edits made to the dataset should be logged.*

**Priority** *A*

**UR020**

**Statement** *The administrators shall be able to manage and view all datasets.*

**Priority** *A*

**UR021**

**Statement** *Users can create new user groups to which they can add other users.*

**Priority** *A*

**UR022**

**Statement** *Users can grant rights on their own datasets.*

**Priority** *A*

**UR023**

**Statement** *Uploaded datasets and their analysis shall be stored for an undefined timespan.*

**Priority** *A*

**UR024**

**Statement** *The system shall be accessible through a web interface. Uploaded and analyzed data shall be stored and located using individual URLs.*

**Priority** *A*

# Part II

## System Requirements



# Chapter 1

## Non-Functional Requirements

### 1.1 Product Requirements

#### 1.1.1 Usability Requirements

##### NFR001

**Aussage** *Das System soll in jedem der folgenden Webbrowser nutzbar sein:*

- Internet Explorer 9 oder höher
- Firefox 12 oder höher
- Chrome 11 oder höher
- Safari 5 oder höher

**Priorität** *A*

##### NFR002

**Aussage** *Eine Desktop-Anwendung und eine mobile App werden nicht benötigt.*

**Priorität** *A*

##### NFR003

**Aussage** *Mitgliedern des Forschungsteams soll es ermöglicht sein, die Funktionen des Systems innerhalb von vier Stunden zu erlernen.*

**Priorität** *A*

**NFR004**

**Aussage** *Das System soll einfach zu verwalten sein. Eine im Verwalten von Systemen erfahrene Person soll alle notwendigen Funktionen in weniger als 8 Stunden erlernen können.*

**Priorität** *A*

**1.1.2 Efficiency Requirements****1.1.2.1 Performance Requirements****NFR005**

**Aussage** *Normale Operationen sollen in weniger als 30 Sekunden ausgeführt werden können.*

**Priorität** *A*

**NFR005**

**Aussage** *Komplexe Operationen sollen in weniger als 15 Minuten durchgeführt werden können.*

**Priorität** *A*

**1.1.2.2 Space Requirements****1.1.3 Dependability Requirements****NFR001**

**Aussage** *Ein Server soll auf Grund von Wartungsarbeiten nicht länger als 3 Stunden am Stück ausfallen.*

**Priorität** *A*

**NFR001**

**Aussage** *Das System soll nicht länger als 5 Sekunden pro Tag ausfallen.*

**Priorität** *A*

**NFR001**

**Aussage** *Sollte ein Server ausfallen, soll das System andere noch betriebsfähige Server nutzen.*

**Priorität** *A*

### 1.1.4 Security Requirements

#### NFR001

**Aussage** *Eine Verschlüsselung der Verbindung zwischen Server und Client wird nicht benötigt.*

**Priorität** A

#### NFR001

**Aussage** *Das System soll vor verbreiteten Formen des Vandalismus geschützt sein.*

**Priorität** A

## 1.2 Organizational Requirements

### 1.2.1 Environmental Requirements

#### NFR001

**Aussage** *Jeder Nutzer des Systems soll einer der folgenden Nutzergruppen angehören:*

- Gast
- Registrierter Nutzer
- Administrator

**Priorität** A

### 1.2.2 Operational Requirements

#### NFR001

**Aussage** *Alle Berechnungen des Systems sollen auf der Serverseite stattfinden.*

**Priorität** A

### 1.2.3 Development Requirements

#### NFR001

**Aussage** *Ein Großteil des Funktionsumfangs des Systems soll durch eine API erweiterbar sein, bereits bestehende Funktionen sollen diese API bereits weitestgehend nutzen.*

**Priorität** A

## 1.3 External Requirements

### 1.3.1 Regulatory Requirements

### 1.3.2 Ethical Requirements

**NFR001**

**Aussage** *Die Entwicklung des Systems soll die entsprechenden IEEE-Standards berücksichtigen.*

**Priorität** *A*

### 1.3.3 Legislative Requirements

#### 1.3.3.1 Accounting Requirements

#### 1.3.3.2 Safety / Security Requirements

**NFR003**

**Statement** *The system shall implement patient privacy provisions as set out in HStan-03-2006-priv.*

**Priority** *A*



## Chapter 2

# Functional Requirements



## Chapter 3

# Scenarios

### 3.1 Scenario for collecting medical history

**INITIAL ASSUMPTION:** *The patient has seen a medical receptionist who has created a record in the system and collected the patients personal information (name, address, age, etc.). A nurse is logged on to the system and is collecting medical history.*

**NORMAL:** *The nurse searches for the patient by family name. If there is more than one patient with the same surname, the given name (first name in English) and date of birth are used to identify the patient. The nurse chooses the menu option to add medical history. The nurse then follows a series of prompts from the system to enter information about consultations elsewhere on mental health problems (free text input), existing medical conditions (nurse selects conditions from menu), medication currently taken (selected from menu), allergies (free text), and home life (form).*

**WHAT CAN GO WRONG:** *The patients record does not exist or cannot be found. The nurse should create a new record and record personal information. Patient conditions or medication are not entered in the menu. The nurse should choose the other option and enter free text describing the condition/medication. Patient cannot/will not provide information on medical history. The nurse should enter free text recording the patients inability/unwillingness to provide information. The system should print the standard exclusion form stating that the lack of information may mean that treatment will be limited or delayed. This should be signed and handed to the patient.*

**OTHER ACTIVITIES:** *Record may be consulted but not edited by other staff while information is being entered.*

**SYSTEM STATE ON COMPLETION:** *User is logged on. The patient record including medical history is entered in the database.*