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## Document history

Version	Date	Author (Unit)	Description
v0.3			First draft finished

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# 1 Executive summary

## 2 Use Case - Data Bases (DB)

**Priority:** Must

**Deadline:** M15

**Responsible:** Sigve

**Code-Package:** core.database

### Description of the Use Case

Enter a textual description of the functionality. Link to other functionalities if needed.

### Must-Requirements List of the Use Case

- **Requirement-ID:** Short Description

### Should-Requirements List of the Use Case

- **Requirement-ID:** Short Description

### Could-Requirements List of the Use Case

- **Requirement-ID:** Short Description
-

## 2.1 Attributes

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

### Must-Requirements List

- **Requirement-ID:** Short Description

### Should-Requirements List

- **Requirement-ID:** Short Description

### Could-Requirements List

- **Requirement-ID:** Short Description
-

## 2.2 Data File Reader

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

1. DataRow.
2. Weka wrapper reader.
3. AMIDST arff reader.

### Must-Requirements List

- **Requirement-ID:** Short Description

### Should-Requirements List

- **Requirement-ID:** Short Description

### Could-Requirements List

- **Requirement-ID:** Short Description
-

## 2.3 Data Instance

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

- StaticDataInstance.
- DynamicDataInstance: TimeID, SequenceID.

### Must-Requirements List

- **Requirement-ID:** Short Description

### Should-Requirements List

- **Requirement-ID:** Short Description

### Could-Requirements List

- **Requirement-ID:** Short Description
-

## 2.4 Scalable DataInstance management

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

- Static:
  - Data on memory
  - Data on disk
  - Data on stream.
- Dynamic:
  - Data on memory
  - Data on disk
  - Data on stream.

### Must-Requirements List

- **Requirement-ID:** Short Description

### Should-Requirements List

- **Requirement-ID:** Short Description

### Could-Requirements List

- **Requirement-ID:** Short Description
-



### 3 Use Case - Basic Data Structures (BS)

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

#### Description of the Use Case

Enter a textual description of the functionality. Link to other functionalities if needed.

#### Must-Requirements List of the Use Case

- **Requirement-ID:** Short Description

#### Should-Requirements List of the Use Case

- **Requirement-ID:** Short Description

#### Could-Requirements List of the Use Case

- **Requirement-ID:** Short Description

#### 3.1 Static Variables

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

#### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

#### Must-Requirements List

- **Requirement-ID:** Short Description
-

**Should-Requirements List**

- **Requirement-ID:** Short Description

**Could-Requirements List**

- **Requirement-ID:** Short Description

**3.2 Dynamic Model Header**

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

**Description**

Enter a textual description of the functionality. Link to other functionalities if needed.

**Must-Requirements List**

- **Requirement-ID:** Short Description

**Should-Requirements List**

- **Requirement-ID:** Short Description

**Could-Requirements List**

- **Requirement-ID:** Short Description

**3.3 Directed Acyclic Graph**

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

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## Description

Enter a textual description of the functionality. Link to other functionalities if needed.

## Must-Requirements List

- **Requirement-ID:** Short Description

## Should-Requirements List

- **Requirement-ID:** Short Description

## Could-Requirements List

- **Requirement-ID:** Short Description

## 3.4 D - Distributions

**Deadline:** M15

**Responsible:** Antonio Fernández

**Code-Package:** eu.amidst.core.distributions

## Description

This functionality addresses the set of conditional probability distributions considered to be included in the toolbox. Variables with Gaussian and multinomial distributions are modeled. The variables arrangement in the model structure gives rise to the different types of probability distributions, one for each variable in the network.

This functionality is tightly connected to functionality **Variable** (REF) and **DAG**, **StaticModelHeader** REF to know both the nature of the variables and also the set of parents involved.

## Detailed functionality

The type of each variable and its parents determine the different probability distributions detailed next:

- Multinomial variable with no parents
  - Multinomial variable with multinomial parents.
-

- Gaussian variable with no parents.
- Gaussian variable with multinomial parents.
- Gaussian variable with Gaussian parents.
- Gaussian variable with a mixture of multinomial and Gaussian parents.

Note that a multinomial variable is not allowed to have Gaussian parents and therefore it has not been included in the list above. Multinomial parents are only used for indexing the set of possible distributions of the variable, so the functionality when no multinomial parents reduces to the general case.

### 3.5 Bayesian Network

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

#### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

#### Must-Requirements List

- **Requirement-ID:** Short Description

#### Should-Requirements List

- **Requirement-ID:** Short Description

#### Could-Requirements List

- **Requirement-ID:** Short Description
-

### 3.6 2TDBN

**Priority:** Must/Should/Could

**Deadline:** M?

**Responsible:**

**Code-Package:**

#### Description

Enter a textual description of the functionality. Link to other functionalities if needed.

#### Must-Requirements List

- **Requirement-ID:** Short Description

#### Should-Requirements List

- **Requirement-ID:** Short Description

#### Could-Requirements List

- **Requirement-ID:** Short Description

## 4 Time Tables

### 4.1 Use Case DB

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Version	Phase	Author(s)	Deadline	Start Date	End Date
0.1	Design	Post-docs	00/00/00	00/00/00	00/00/00
0.2	Prototype	Post-docs	00/00/00	00/00/00	00/00/00
0.3	Code Review	Post-docs	00/00/00	00/00/00	00/00/00
0.4	Testing	Post-docs	00/00/00	00/00/00	00/00/00
0.5	Java-Doc	Post-docs	00/00/00	00/00/00	00/00/00
0.6	First Release	Post-docs	00/00/00	00/00/00	00/00/00

Table 1: Time Table - Attributes/UseCase DataBases

Version	Phase	Author(s)	Deadline	Start Date	End Date
0.1	Design	Post-docs	00/00/00	00/00/00	00/00/00
0.2	Prototype	Post-docs	00/00/00	00/00/00	00/00/00
0.3	Code Review	Post-docs	00/00/00	00/00/00	00/00/00
0.4	Testing	Post-docs	00/00/00	00/00/00	00/00/00
0.5	Java-Doc	Post-docs	00/00/00	00/00/00	00/00/00
0.6	First Release	Post-docs	00/00/00	00/00/00	00/00/00

Table 2: Time Table - DataFileReader/UseCase DataBases

Version	Phase	Author(s)	Deadline	Start Date	End Date
0.1	Design	Post-docs	00/00/00	00/00/00	00/00/00
0.2	Prototype	Post-docs	00/00/00	00/00/00	00/00/00
0.3	Code Review	Post-docs	00/00/00	00/00/00	00/00/00
0.4	Testing	Post-docs	00/00/00	00/00/00	00/00/00
0.5	Java-Doc	Post-docs	00/00/00	00/00/00	00/00/00
0.6	First Release	Post-docs	00/00/00	00/00/00	00/00/00

Table 3: Time Table - DataInstance/UseCase DataBases



Version	Phase	Author(s)	Deadline	Start Date	End Date
0.1	Design	Post-docs	00/00/00	00/00/00	00/00/00
0.2	Prototype	Post-docs	00/00/00	00/00/00	00/00/00
0.3	Code Review	Post-docs	00/00/00	00/00/00	00/00/00
0.4	Testing	Post-docs	00/00/00	00/00/00	00/00/00
0.5	Java-Doc	Post-docs	00/00/00	00/00/00	00/00/00
0.6	First Release	Post-docs	00/00/00	00/00/00	00/00/00

Table 4: Time Table - ScalableDataInstanceManagement/UseCase DataBases

Version	Phase	Author(s)	Deadline	Start Date	End Date
0.1	Design	A. Fernández	03/09/14	15/09/14	03/11/14
0.2	Prototype	A. Fernández	15/11/14	04/11/14	15/11/14
0.3	Code Review	A. Fernández	10/11/14	03/11/14	07/11/14
0.4	Testing	A. Fernández	30/11/14	7/11/14	00/00/00
0.5	Java-Doc	A. Fernández	00/00/00	00/00/00	00/00/00
0.6	First Release	A. Fernández	00/00/00	00/00/00	00/00/00

Table 5: Time Table - Distributions D

## 4.2 Use Case BS