Functional Specification of HRM

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Contents

Chapter 1

Introduction

This document[1] defines the functionality of an information system called 'HRM'. It defines the database and the business services of HRM by means of business rules[2]. Those rules are listed in chapter 2, ordered by theme.

[1] This document was generated at 16-5-2014 on 08:36:15, using Ampersand v3.0.2.1338, build time: 02-May-14 15:35:25 UTC.

[2] Rule based design characterizes the Ampersand approach, which has been used to produce this document.

Chapter 2

Shared Language

This chapter defines the natural language, in which functional requirements of 'HRM' can be discussed and expressed. The purpose of this chapter is to create shared understanding among stakeholders. The language of 'HRM' consists of concepts and basic sentences. All functional requirements are expressed in these terms. When stakeholders can agree upon this language, at least within the scope of 'HRM', they share precisely enough language to have meaningful discussions about functional requirements. All definitions have been numbered for the sake of traceability.

2.1 HRM

In the company, the HRM department is responsible for keeping track of the issuing and returning of portable/mobile equipment to employees, such as cell-phones, laptops, cars etc., depending on the organizational function they have been assigned. The reason for assigning this responsibility to the HRM department is that they will be aware of any event where an employee's orgnizational function changes, e.g. in the case of a new employee, termination of employment, or the moving to another department.

At this point, the definitions of *employee*, *employeeName*, *organizational Function*, *eqtKind*, and *equipment* are given.

In order to distinguish between people that work for the company and those that are not, we define the term 'Employee'.

Definition 1: a person that has a working contract with the company. *Employee*

In order to refer to employees within the HRM system in a way that is recognizable by people as well, we need each employee to be assigned a unique name.

Definition 2: a human readable text that uniquely identifies an employee *EmployeeName*

Within the company, responsibilities are grouped in sets that indicate what kind of work is to be done, and that is meaningful to the organization. We introduce the term 'organizational function' to refer to such sets. Examples include 'manager', 'programmer', 'salesperson'.

Definition 3: a set of (related) responsibilities as defined by the organization. *Organizational Function*

In order to express requirements for equipment that should be be assigned to employees, the kind of equipment must be identifyable. Examples include 'cell-phone', 'laptop', 'car'.

Definition 4: A class of equipment *EqtKind*

Employees need all sorts of things in order to do their job. Things such as cell-phones, computers etc. are assets that need to be managed e.g. because they are associated with subscriptions, licenses etc.

Definition 5: An (identifiable) object, owned by the company, that may be issued to employees but also needs to be managed. *Equipment*

Within the company every employee has precisely one name, that identifies the employee. This allows the unambiguous registration of employees.

Agreement 6: Employees have a name

Phrases that can be made are for instance:

E10961 is referred to by ' Jean-Pierre Chanod '.

E20962 is referred to by ' Sean Alespy '.

E31423 is referred to by ' Thierry Jacquin '.

Every employee must do work that is useful for the company. Since the company has defined organizational functions to define responsibilities associated with the kind of work an employee may do, every employee must be assigned at least one organizational function.

Agreement 7: Employees have been assigned (at least) one organizational function that indicates the kind of work they do

Phrases that can be made are for instance:

Jean-Pierre Chanod has been assigned the function Director.

Sean Alespy has been assigned the function Salesperson.

Thierry Jacquin has been assigned the function Programmer.

The company has decided to issue equipment to employees based on their organizational function. Hence, for every organizational function, it must be possible to define the kinds of equipment that people in such a function must be assigned.

Agreement 8: Employees that serve in a function must be assigned equipment of specific kinds

Phrases that can be made are for instance:

Every Director must be issued a Phonenumber.

Every Director must be issued a Cellphone.

Every Director must be issued a Computer.

In order to keep good track of portable/mobile equipment that has been issued to employees, every equipment issued to an employee must be registered as such.

Agreement 9: An employee can be issued company equipment (for which it then is responsible)

Phrases that can be made are for instance:

Jean-Pierre Chanod has been assigned Vodafone Mobile 0693826586.

Jean-Pierre Chanod has been assigned Nokia N32 407-21.

Sean Alespy has been assigned Volkswagen Polo 1-TNO-24.

2.2 Equipment

This theme defines the terminology that the company needs to address concerns related to (portable/mobile) equipment

The responsibility for every piece of equipment must be assigned uniquely. This holds in particular for equipment that is issued to employees.

Agreement 10: Equipment can be issued to no more than one employee

Chapter 3

Conceptual Analysis

This chapter defines the formal language, in which functional requirements of 'HRM' can be analysed and expressed.The purpose of this formalisation is to obtain a buildable specification. This chapter allows an independent professional with sufficient background to check whether the agreements made correspond to the formal rules and definitions.

3.1 HRM

In the company, the HRM department is responsible for keeping track of the issuing and returning of portable/mobile equipment to employees, such as cell-phones, laptops, cars etc., depending on the organizational function they have been assigned. The reason for assigning this responsibility to the HRM department is that they will be aware of any event where an employee's orgnizational function changes, e.g. in the case of a new employee, termination of employment, or the moving to another department.

Figure 4.1 shows a conceptual diagram of this pattern.

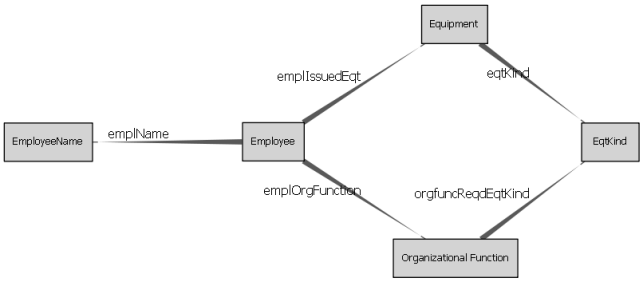

Figure 3.1: Concept diagram of HRM

The definitions of concepts can be found in the glossary.

3.1.1 Declared relations

This section itemizes the declared relations with properties and a meaning.

Within the company every employee has precisely one name, that identifies the employee. This allows the unambiguous registration of employees.
For this purpose, the following function has been defined

$$emplName \quad : \quad Employee \rightarrow EmployeeName \tag{3.1}$$

Employees have a name

Every employee must do work that is useful for the company. Since the company has defined organizational functions to define responsibilities associated with the kind of work an employee may do, every employee must be assigned at least one organizational function.
For this purpose, the following total relation has been defined

$$emplOrgFunction \quad : \quad Employee \times Organizational\ Function \tag{3.2}$$

Employees have been assigned (at least) one organizational function that indicates the kind of work they do

The company has decided to issue equipment to employees based on their organizational function. Hence, for every organizational function, it must be possible to define the kinds of equipment that people in such a function must be assigned.
For this purpose, the following relation has been defined

$$orgfuncReqdEqtKind \quad : \quad Organizational\ Function \times EqtKind \tag{3.3}$$

Employees that serve in a function must be assigned equipment of specific kinds

In order to keep good track of portable/mobile equipment that has been issued to employees, every equipment issued to an employee must be registered as such.
For this purpose, the following relation has been defined

$$emplIssuedEqt \quad : \quad Employee \times Equipment \tag{3.4}$$

An employee can be issued company equipment (for which it then is responsible)

3.1.2 Formal rules

This section itemizes the formal rules with a reference to the shared language of stakeholders for the sake of traceability.

3.2 Equipment

This theme defines the terminology that the company needs to address concerns related to (portable/mobile) equipment

Figure 4.2 shows a conceptual diagram of this pattern.

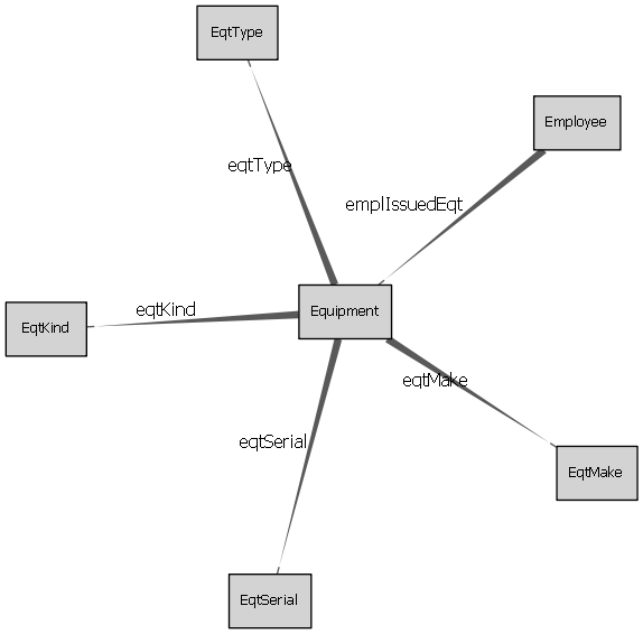

Figure 3.2: Concept diagram of Equipment

The definitions of concepts can be found in the glossary.

3.2.1 Declared relations

This section itemizes the declared relations with properties and a meaning.

The following function has been defined

$$eqtMake \quad : \quad Equipment \rightarrow EqtMake \tag{3.5}$$

Every Equipment has a manufacturer/brand, e.g. 'Dell' or 'Nokia'

The following function has been defined

$$eqtType \quad : \quad Equipment \rightarrow EqtType \tag{3.6}$$

Every Equipment may have one type specified, e.g. 'Inspiron 1234' or 'Passat'

The following function has been defined

$$eqtSerial \quad : \quad Equipment \rightarrow EqtSerial \tag{3.7}$$

Every piece of equipment has a (unique) serial number (identifier)

The following function has been defined

$$eqtKind \quad : \quad Equipment \rightarrow EqtKind \tag{3.8}$$

Every Equipment has been assigned (at least) one 'kind', e.g. 'computer', 'cellphone'

In order to keep good track of portable/mobile equipment that has been issued to employees, every equipment issued to an employee must be registered as such.
For this purpose, the following relation has been defined

$$emplIssuedEqt \quad : \quad Employee \times Equipment \tag{3.9}$$

An employee can be issued company equipment (for which it then is responsible)

3.2.2 Formal rules

This section itemizes the formal rules with a reference to the shared language of stakeholders for the sake of traceability.

The responsibility for every piece of equipment must be assigned uniquely. This holds in particular for equipment that is issued to employees.
Therefore the following requirement has been defined in section 2.2 p. 6:
Equipment can be issued to no more than one employee
This is formalized - using relations 4.9, 4.8, 4.7 - as

$$emplIssuedEqt \vdash I_{Employee} \dagger \overline{emplIssuedEqt} \tag{3.10}$$

Chapter 4

Data structure

This chapter contains the result of the data analisys. It is structured as follows:

We start with the classification model, followed by a list of all relations, that are the foundation of the rest of the analisys. Finally, the logical and technical data model are discussed.

4.1 Classifications

No classifications have been defined

4.2 Fact types

This section enumerates the fact types, that have been used in the design of the datastructure. For each fact type its name, the source and target concept and the properties are documented.

emplName : ***Employee*** × ***EmployeeName*** Employees have a name

Properties: UNI, TOT

emplOrgFunction : ***Employee*** × ***Organizational Function*** Employees have been assigned (at least) one organizational function that indicates the kind of work they do

Properties: TOT

orgfuncReqdEqtKind : ***Organizational Function*** × ***EqtKind*** Employees that serve in a function must be assigned equipment of specific kinds

Properties: --

emplIssuedEqt : ***Employee*** × ***Equipment*** An employee can be issued company equipment (for which it then is responsible)

Properties: --

eqtMake : ***Equipment*** × ***EqtMake*** Every Equipment has a manufacturer/brand, e.g. 'Dell' or 'Nokia'

Properties: UNI, TOT

eqtType : ***Equipment*** × ***EqtType*** Every Equipment may have one type specified, e.g. 'Inspiron 1234' or 'Passat'

Properties: UNI, TOT

eqtSerial : ***Equipment*** × ***EqtSerial*** Every piece of equipment has a (unique) serial number (identifier)

Properties: UNI, TOT

eqtKind : ***Equipment*** × ***EqtKind*** Every Equipment has been assigned (at least) one 'kind', e.g. 'computer', 'cellphone'

Properties: UNI, TOT

4.3 Logical datamodel

The functional requirements have been translated into a data model. This model is shown by figure 5.1.

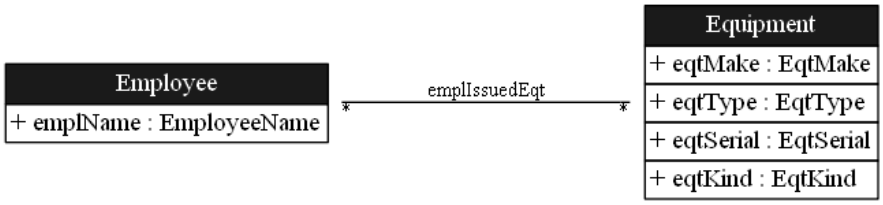

Figure 4.1: Logical data model of HRM

There are two entity types.The details of each entity type are described (in alfabetical order) in the following paragraphs:

4.3.1 Entity type: *Employee*

This entity type has the following attributes:

Attribute	Type	
Id	Employee	Primary key
emplName	EmployeeName	Mandatory

Employee has the following associations:

1. Every *Employee* 'emplIssuedEqt' zero or more *Equipment*. For the other way round, for this relation holds that each *Equipment* zero or more *Employee*.

4.3.2 Entity type: *Equipment*

This entity type has the following attributes:

Attribute	Type	
Id	Equipment	Primary key
eqtMake	EqtMake	Mandatory
eqtType	EqtType	Mandatory
eqtSerial	EqtSerial	Mandatory
eqtKind	EqtKind	Mandatory

Equipment has the following associations:

1. Every *Employee* 'emplIssuedEqt' zero or more *Equipment*. For the other way round, for this relation holds that each *Equipment* zero or more *Employee*.

4.4 Technical datamodel

The functional requirements have been translated into a technical data model. This model is shown by figure 5.2.

The technical datamodel consists of the following 15tables:

4.4.1 Table: Employee

This table has the following 3 fields:

- **Employee**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.
- **emplName**
  This attribute implements the relation $Employee \xrightarrow{emplName} EmployeeName$.
  `SQLVarchar 255`, Optional.
- **emplStatus**
  This attribute implements the relation $Employee \xrightarrow{emplStatus} Status$.
  `SQLVarchar 255`, Optional.

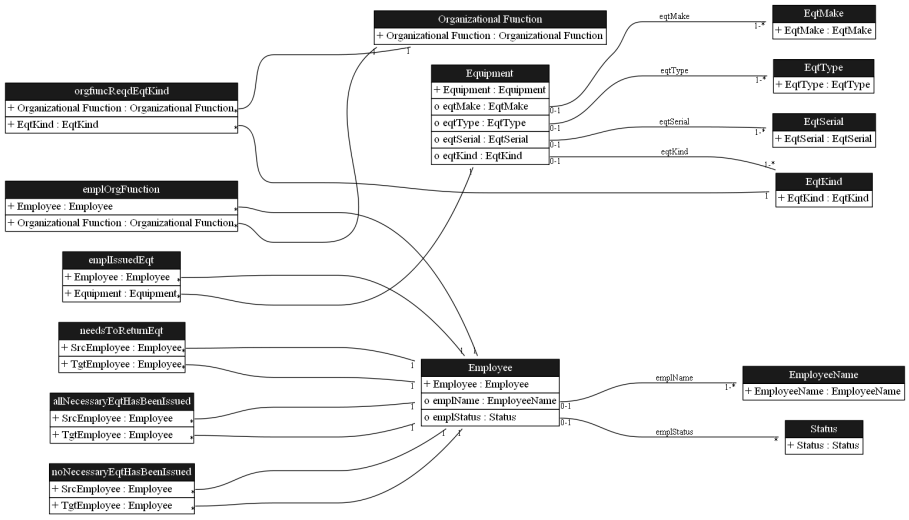

Figure 4.2: Technical data model of HRM

4.4.2 Table: EmployeeName

This table has the following 1 fields:

- **EmployeeName**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.3 Table: EqtKind

This table has the following 1 fields:

- **EqtKind**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.4 Table: EqtMake

This table has the following 1 fields:

- **EqtMake**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.5 Table: EqtSerial

This table has the following 1 fields:

- **EqtSerial**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.6 Table: EqtType

This table has the following 1 fields:

- **EqtType**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.7 Table: Equipment

This table has the following 5 fields:

- **Equipment**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.
- **eqtMake**
  This attribute implements the relation $Equipment \xrightarrow{eqtMake} EqtMake$.
  `SQLVarchar 255`, Optional.
- **eqtType**
  This attribute implements the relation $Equipment \xrightarrow{eqtType} EqtType$.
  `SQLVarchar 255`, Optional.
- **eqtSerial**
  This attribute implements the relation $Equipment \xrightarrow{eqtSerial} EqtSerial$.
  `SQLVarchar 255`, Optional.
- **eqtKind**
  This attribute implements the relation $Equipment \xrightarrow{eqtKind} EqtKind$.
  `SQLVarchar 255`, Optional.

4.4.8 Table: Organizational Function

This table has the following 1 fields:

- **Organizational Function**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.9 Table: Status

This table has the following 1 fields:

- **Status**
  This attribute is the primary key.
  `SQLVarchar 255`, Mandatory, Unique.

4.4.10 Table: allNecessaryEqtHasBeenIssued

This is a link-table, implementing the relation $Employee \xrightarrow{allNecessaryEqtHasBeenIssued} Employee$.
It contains the following columns:

- **SrcEmployee**
  This attribute is a foreign key to Employee
  `SQLVarchar 255`, Mandatory.
- **TgtEmployee**
  This attribute implements the relation $Employee \xrightarrow{allNecessaryEqtHasBeenIssued} Employee$.
  `SQLVarchar 255`, Mandatory.

4.4.11 Table: emplIssuedEqt

This is a link-table, implementing the relation $Employee \xrightarrow{emplIssuedEqt} Equipment$.
It contains the following columns:

- **Employee**
  This attribute is a foreign key to Employee
  `SQLVarchar 255`, Mandatory.
- **Equipment**
  This attribute implements the relation $Employee \xrightarrow{emplIssuedEqt} Equipment$.
  `SQLVarchar 255`, Mandatory.

4.4.12 Table: emplOrgFunction

This is a link-table, implementing the relation $Employee \xrightarrow{emplOrgFunction} OrganizationalFunction$.
It contains the following columns:

- **Employee**
  This attribute is the primary key.
  `SQLVarchar 255`, Optional.
- **Organizational Function**
  This attribute implements the relation $Employee \xrightarrow{emplOrgFunction} OrganizationalFunction$.
  `SQLVarchar 255`, Mandatory.

4.4.13 Table: needsToReturnEqt

This is a link-table, implementing the relation $Employee \xrightarrow{needsToReturnEqt} Employee$.
It contains the following columns:

- **SrcEmployee**
  This attribute is a foreign key to Employee
  `SQLVarchar 255`, Mandatory.
- **TgtEmployee**
  This attribute implements the relation $Employee \xrightarrow{needsToReturnEqt} Employee$.
  `SQLVarchar 255`, Mandatory.

4.4.14 Table: noNecessaryEqtHasBeenIssued

This is a link-table, implementing the relation $Employee \xrightarrow{noNecessaryEqtHasBeenIssued} Employee$.
It contains the following columns:

- **SrcEmployee**
  This attribute is a foreign key to Employee
  `SQLVarchar 255`, Mandatory.
- **TgtEmployee**
  This attribute implements the relation $Employee \xrightarrow{noNecessaryEqtHasBeenIssued} Employee$.
  `SQLVarchar 255`, Mandatory.

4.4.15 Table: orgfuncReqdEqtKind

This is a link-table, implementing the relation $OrganizationalFunction \xrightarrow{orgfuncReqdEqtKind} EqtKind$.
It contains the following columns:

- **Organizational Function**
  This attribute is a foreign key to Organizational Function
  `SQLVarchar 255`, Mandatory.
- **EqtKind**
  This attribute implements the relation $OrganizationalFunction \xrightarrow{orgfuncReqdEqtKind} EqtKind$.
  `SQLVarchar 255`, Mandatory.

Glossary

Employee a person that has a working contract with the company.. 4

EmployeeName a human readable text that uniquely identifies an employee. 4

EqtKind A class of equipment. 5

Equipment An (identifiable) object, owned by the company, that may be issued to employees but also needs to be managed.. 5

Organizational Function a set of (related) responsibilities as defined by the organization.. 5