



**SAVONIA**

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TECHNOLOGY, COMMUNICATION AND TRANSPORT

# ITEM CODING

Profile Vehicles Oy

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<p><b>Abstract</b></p> <p>The topic of this thesis is to make one profile item coding at Profile Vehicles Oy. The aim was to make a new item codes for all the items of the company with the definitions and in the end give an instructions guideline for how to make a new item code of the updated items in the future.</p> <p>The thesis was started by getting familiar with the project proposal, product description and the company. For the theoretical part ERP, PDM, PIM, PLM were familiarized with. Studying literature related to PLM helped to understand how the item codes are used through these systems and how the company's items can be replaced with the new item codes.</p> <p>This practical part of the thesis follows PDM and ERP tools in order to get ideas about the original groups and sub-groups. Translated all the groups and subgroups from PDM. Used MS Excel file to collect and merged all the item's list from different productions and removed duplicates. Used the recently purchased item list as a reference to form item code beginnings. Moreover, made defeminations for the new item code beginnings in Finnish and English for making understandable to the company's employees.</p> <p>As a result of the thesis, all the items which were able to work was ready with item code beginnings in English form. And instructions guideline template had been made to understand the items and easy to make order or purchase or even add new item in the PDM and ERP system.</p>			
Keywords ERP, PDM, PIM, PLM			

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## 1 INTRODUCTION

This introduction part presents a brief explanation about purpose of this thesis project, description of the thesis project and a short introduction about the Profile vehicles oy.

### 1.1 Purpose of the thesis project

This project was offered to the Savonia University of applied sciences as an internship or thesis project for students. Eventually one student, author was contracted for the third practical training and making a thesis. This project is a good opportunity to get knowledge about item codes, commodities sub commodities and how to form those. Another important chance is to get familiar with 'Aton' PDM system and 'Visma L7' ERP system which are currently being used in the Profile's production. From the company's point of view, they will get their item codes harmonized for their new ERP system and clean the item list from obsolete products.

### 1.2 Description of the thesis Project

In the beginning some targets were set by the Project's supervisor Erkki Jämbäck. The author was provided with a list of the items, with all the updated and outdated ones from Iisalmi (Figure 1) as well as a list of purchasing groups in Finnish (Figure 2) was given. The purchasing item list was translated into English (Figure 3) later and such as if it could be used as a base for sub commodities ideas were generated. Eventually, assigned with the Hungarian item data, after then had got Estonian item list and in the last protection vehicles product item list. Moreover, it was necessary to get familiar with the current PDM and ERP system. After collecting all the data, the author was proceeding to combine all the items, decrease amount of item codes and removing the duplicates. And then finding the suitable groups and subgroups for the items, forming the codes of each item. Finally, comes up with an instruction guideline including definitions in order to form a new code for incoming and updated items in the future.

A	B	C	D	E	F	G	H	I
PRODUCT CODE	NAME (FINNISH)	NAME (ENGLISH)	SIZE	SUPPLIER	SUPPLIER CODE	UNIT	PRICE	
000003	Ley S35K2G3 (EN10025) 4mm Kuumara	Plate S35K2G3 (EN10025) 4mm hot ro		ROLLCO	0004089		34.70	
0000071	Putki Sk37 (EN10130) 22x2 huonekalu	Tube Sk37 (EN10130) 22x2 furniture		BE GROUP	RA88	M	1.19	
0000072	Putki Sk37 (EN10130) 32x1.5 huoneka	Tube Sk37 (EN10130) 32x1.5 furnit	32x1.5x6000	BE GROUP	AO01	M	1.48	
0000128	Lasikuitu nuskulaminaatti 3mm	Fiberglass 3mm spray laminate compo		PROFILE	0000128	M2	0.00	
0000134	Katto ulko neo	Exterior roof neo	Neo	MUOVITEK	0000134	KPL	1,031.30	
0000135	Katto sisä neo sisäkatto	Interior ceiling neo	Neo	MUOVITEK	0000135	KPL	415.57	
0000136	Katto sisä neo kattokaaret	Interior ceiling neo ceiling archs	Neo	MUOVITEK	0000136	KPL	322.95	
0000138	Poistopuhallin kokoonpano neo	Exhaust blower neo assembly		PROFILE	0000138	KPL	79.87	
0000140	Kotelo neo poistopuhallinkotelo	Cover for exhaust blower neo	Neo	MUOVITEK	0000140	KPL	50.00	
0000141	Kinnike neo poistopuhallin kiinni	Attachment for exhaust blower neo	Neo	IS-VET	0000141	KPL	5.50	
0000142	Laippa neo poistopuhallin	Flange for exhaust blower neo	Neo	IS-VET	0000142	KPL	6.00	
0000143	Katto kokoonpano neo	Rule capsule 401 011.2 F/B		PROFILE	0000143	KPL	3,631.00	
0000148	Ritila taka ulkokatko	Grid rear outer roof Neo	Neo	PROFILE	0000148	KPL	0.00	
0000149	Enste kokoonpano neo katto	Insulation assembly neo roof		PROFILE	0000149	KPL	6.19	
0000154	Valo kokoonpano neo katto dc-891	Light assembly neo roof dc-891		PROFILE	0000154	KPL	15.98	
0000155	Seinä kokoonpano neo oikea hotopöy	Wall assembly neo right nurse's tab		PROFILE	0000155	KPL	349.75	
0000157	Kanava ilma neo oikea seinä	Pull-out drip accumulator		PURVAC	0000157	KPL	11.25	
0000158	Luukku lämmitys neo oikea seinä	Hatch for heater neo right wall	Neo	MUOVIRA	0000158	KPL	17.99	
0000160	Seinä vasen 15 neo vasen seinä 4-ov	Left wall 15 neo 4 doors	Neo	MUOVITEK	0000160	KPL	350.40	
0000162	Pöytä neo tyhjöpöytäkaappi 4-ov	Base for vacuum mattress locker 4 d		PURVAC	0000162	KPL	49.14	
0000165	Paneeli väli neo väliseinä kulkusauk	Gas bow 16-4-353-300-200N	Neo	PROFILE	0000165	KPL	0.00	
0000166	Suoja vasen neo väliseinä johto	Cover left neo partition wall wire		PURVAC	0000166	KPL	18.28	
0000168	Kotelo väli neo lämmityslaitte	Box for heater neo partition wall		PURVAC	0000168	KPL	14.55	
0000169	Runko kokoonpano neo väliseinä	Body assembly neo partition wall		PROFILE	0000169	KPL	75.36	
0000171	Putki ala neo väliseinä runko alapu	Tube neo partition wall lower part		PROFILE	0000171	KPL	1.39	
0000172	Kinnike ala neo väliseinä runko	Attachment low neo partition wall	2kpl/väliseinä	HT LASER	0000172	KPL	1.45	
0000173	Putki vino neo väliseinä runko	Tube diagonal neo partition wall		PROFILE	0000173	KPL	2.35	
0000174	Putki ylä neo väliseinä runko	Tube upper neo partition wall		PROFILE	0000174	KPL	1.39	
0000175	Putki neo väliseinä runko pystytyn	Tube neo partition wall vertical		PROFILE	0000175	KPL	2.35	
0000178	Kinnike ylä neo väliseinä runko yf	Attachment neo partition wall upper	1kpl/väliseinä (ei norjan)	HT LASER	0000178	KPL	4.47	
0000179	Kinnike ylä neo väliseinä runko yf	Attachment neo partition wall upper	Neo	HT LASER	0000179	KPL	6.65	
0000180	Kinnike ylä neo väliseinä runko yf	Attachment neo partition wall upper	Neo	HT LASER	0000180	KPL	6.65	
0000181	Kinnike ylä neo väliseinä runko y	Attachment neo partition wall upper	1kpl/väliseinä (ei norjan)	HT LASER	0000181	KPL	5.55	
0000185	Kinnike neo väliseinä runko tunna	Attachment neo partition wall seatb	1kpl/väliseinä	HT LASER	0000185	KPL	2.34	

FIGURE 1. Item List Iisalmi.

ILMA	Ilmastointi	
SISÄ	Sisävalot	
TEIP	Kalvotapetit, tarrat ja tarvikkeet	
SAMM	Sammutuskalusto ja raivausväl.	
KONE	Koneistettavat ja sorvattavat osat	
HIIL	Hiilikuituosat	
ABS	ABS-osat	
POLT	Polttoainelämmittimet	Webasto, Eberspächer ym. ja niiden osat
LÄMP	230V lämmitysjärjestelmä	Defa, Calix
LUKI	Lukitus	
TURV	Turvavyöt	
MATT	Matot	Lattiamatot
SÄHK	Sähköjärjestelmä	IWS, Standby
INVE	Invertterit, varaajat	
HÄLY	Hälytysvalot, hälyttimet, kaiuttime	
PAAR	Paarivarustus	
HOIT	Hoitovalineet	
MUOL	Muovilevyt	
LÄMM	Lämmitys	Kennolämmittimet ja niiden osat
METK	Metallikokoonpanot	Hitsatut ja maalatut metalliosat (sis. ohutle)
SUOJ	Suojaimet	
MUOV	Muoviosat	
RADI	Radio- ja viestintävarusteet	
TYÖV	Työvalot	
VALO	Valotelineet ja helmaputket	
KAAS	Kaasujouset	
PUH	Puhelimet ja tarvikkeet	
ASOS	Asennusosat	
SÄ12	Sähkötarvikkeet 12-24V	
SÄ23	Sähkötarvikkeet 230V	
META	Metallit	
LASI	Lasit	
VANE	Vanerit	
LIIM	Liimat	
VERH	Verhoilukankaat	
LUJI	Lujitemuoviosat	
ERIS	Eristeet ja pehmusteet	
PUHD	Puhdistusaineet, paperit	
MAAL	Automaalit	
LVI	LVI-tarvikkeet	
KUMI	Kumit	
HAPP	Happivarustus	
KAAP	Kaapelit	
LIIT	Sähköliittimet	
LISÄ	Lisävalot (kauko-, sumu-, ääriävalot)	
HELA	Helat	
PAIK	Palkannusjärjestelmät	Leikatut ja särmätyt ohutlevyleikkeet
OHUT	Ohutlevyleikkeet	Leikatut ja särmätyt laserleikkeet
LASE	Laserleikkeet	
ISTU	Istuimet, jalat, lattiat	
KAAT	Kaapistot	
RENK	Renkaat ja vanteet	
JOHT	Johtosarjat	
KATT	Kattoluukut	
VÄLI	Valiseinälasi	
KIIN	Kiinnitystarvikkeet	
TIIV	Tiivisteet ja reunaistat	
AJOP	Ajoneuvo-PC:t	
MODU	Moduulit ja osakokoonpanot	
KAME	Kamerat, näytöt, kaapelit	

FIGURE 2. Purchase group list (Osto Ryhmat)

ILMA	Ilmastointi	AIRC	Air condition
SISÄ	Sisävalot	INLI	Inside lights
TEIP	Kalvotäpät, tarrat ja tarvikkeet	TAPE	Foil strip(?), stickers and supplies
SAMM	Sammutuskalusto ja raivausvälineet	FIRE	Firefighting equipment and clearing equipment
KONE	Koneistettavat ja sorvattavat osat	MACH	Machining and turning parts
HIIL	Hiilikuituosat	CARB	Carbon fiber parts
ABS	ABS-osat	ABS	ABS parts
POLT	Polttoainelämmittimet	FUEL	Fuel heaters
LÄMP	230 V lämmitysjärjestelmä	HE23	230 V Heating system
LUKI	Lukitus	LOCK	Locking
TURV	Turvavyöt	BELT	Seat belts
MATT	Matot	CARP	Carpets
SÄHK	Sähköjärjestelmä	ELEC	Electric System
INVE	Invertterit, varaajat	INVE	Inverters, chargers
HÄLY	Hälytysvalot, hälyttimet, kaiuttimet	ALAR	Alarm lights, alarms, speakers
PAAR	Paarivarustus	STRE	Stretcher equipment
HOIT	Hoitovälineet	MEDI	Medical Equipment
MUOL	Muovilevyt	PLAS	Plastic sheets
LÄMM	Lämmitys	HEAT	Heating
METK	Metallikokoonpanot	MEAS	Metal assemblies
SUOJ	Suojaimet	PROC	Protective equipment
MUOV	Muoviosat	PLAP	Plastic parts
RADI	Radio- ja viestintätarvikkeet	RADI	Radio and communication equipment
TYÖV	Työvalot	WORL	Working lights
VALO	Valotelineet ja helmaputket	LIGH	Lighting bases and skirt pipes
KAAS	Kaasujsouset	GASS	Gas springs
PUH	Puhelimet ja tarvikkeet	PHON	Phones and accessories
ASOS	Asennusosat	INST	Installation components
SÄ12	Sähkötarvikkeet 12-24 V	EA12	Electric accessories 12-24 V
SÄ23	Sähkötarvikkeet 230 V	EA23	Electric accessories 230 V
META	Metallit	META	Metals
LASI	Lasit	GLAS	Glasses
VANE	Vanerit	PLYW	Plywood
LIIM	Liimat	GLUE	Glues
VERH	Verhoilukankaat	FABR	Clothing fabrics
LUJI	Lujitemuoviosat	COPL	Composite Plastic
ERIS	Eristeet ja pehmusteet	INSU	Insulation and padding
PUHD	Puhdistusaineet, paperit	CLEA	Cleaning preparation, papers
MAAL	Automaalit	CAPA	Car paints
LVI	LVI-tarvikkeet	LVI	LVI supplies
KUMI	Kumit	TIRE	Tires
HAPP	Happivarustus	OXYG	Oxygen equipment
KAAP	Kaapelit	CABL	Cable harnesses
LIIT	Sähköliittimet	ELCO	Electric connectors
LISÄ	Lisävalot (kauko-, sumu-, säärivalot)	COMP	Complimentary/extra lights
HELA	Helat	MOUN	Mounting, bushing, fitting
PAIK	Paikannusjärjestelmät	LOCA	Locating system
OHUT	Ohutlevyleikkeet	SHEE	Sheet metal
LASE	Laserleikkeet	LASE	Laser cutting
ISTU	Istuimet, jalat, lattiat	SEAT	Seats, legs, floors

KAAT	Kaapistot	CABI	Cabinets
RENK	Renkaat ja vanteet	WHEE	Wheels and rims
JOHT	Johtosarjat	WIRI	Wiring and harnesses
KATT	Kattoluukut	ROOF	Sunroofs
VÄLI	Väliseinälasit	DIVI	Dividing wall glasses
KIIN	Kiinnitystarvikkeet	FAST	fastening supply

FIGURE 3. Purchase group list (After Translation)

### 1.3 Company Introduction

Profile Vehicles is a design house and manufacturer of special vehicles for rescue, which includes such as ambulances, patient transport vehicles. They also manufacture several types of protection vehicles for police, border control, customs, military and cash transport companies. It is a family owned international company with manufacturing facilities in three different countries, Finland, Estonia and Hungary. Profile delivers special vehicles internationally in the markets of Europe, Asia, Africa and Middle East. Annually Profile delivers over 550 vehicles and their turnover is over 30 million euro per year (*Profile Vehicles*, 2018).

## 2 THEORETICAL BACKGROUND

In this chapter, a few tools descriptions currently used by the company as well as short definitions of ERP, PDM, PIM, PLM and establish a connection between all these systems will be presented.

### 2.1 Enterprise Resource Planning (ERP)

In order to optimize and integrate the business's processes, functions and transactions of a corporation by an enterprise information system called ERP or enterprise resource planning. It is accepted already globally by the large organisations and "increasingly small and medium sized enterprises (SMEs) too are finding it cost effective and competitive necessity to follow suit"(Klaus et al., 2000). In the opinion of Law & Ngai (2007), Enterprise resources planning (ERP) systems allow seamless integration of information flows and business processes across functional areas within a company. They support information sharing along a company value chain and help to achieve operating efficiency. ERP packages offer a workflow engine to generate automated workflows according to business rules and approval matrices so that information and documents can be routed to operational users for transaction handling, and to managers and directors for review and approval. Nowadays almost all the industries as a solution to gain harmonize enterprise information system. An ERP system is discussed as follows.

#### 2.1.1 Visma.net

It is a cloud-based enterprise resource planning system (ERP) that includes modules such as financial management and logistics. Solutions for SMEs and industry specific needs. Business productivity and competitiveness can always be improved by Visma ERP system. Over thirty thousand Finnish companies are using Visma enterprise resource planning system (ERP). In this ERP system, a company get so many features which are explained in the following (*Visma.net*, *Visma*, 2018).

Release working time: It is an automated software system that could do daily basis operation without any special attention.

Reduce costs: By using cloud software system that can eliminate own servers, software and license. Only monthly payment could make the IT cost more predictable.

**Work flexibility:** As it is a cloud-based system so anyone can work from anywhere and can use own browser anytime. Mobile app is also a useful tool to process invoices, such as travel and other expense invoices, approve purchase invoices and it can view salary breakdowns in real time.

**Scalable entity:** The number of users can be increased and decreased according to the business situation. Not needed to change the software if the business situation has changed. The payment of the software is paying only as a package that a company is using.

**Security and privacy:** The security and privacy of a business-critical information is protected by very highly standard security system. The privacy practices and guidelines are based on EU 95/46/EC and applicable privacy laws.

**Integration:** The financial management and logistics process of a business can be integrated with third party software that could extend the functionality of the software.

### 2.1.2 Visma ERP solutions for SME's and Industry-specific needs

There are several types of Visma ERP solutions, for both SMEs and industry-specific needs. The most popular enterprise resource planning for SMEs are Visma.net, Visma nova, Visma Netvisor etc. And industry-specific solutions are Visma L7, Visma Fivaldi, Visma severa and so on. From the above ERP solutions Visma L7 is used by the Profile Vehicles Oy that is describes in the following (*ERP - Visma*, 2018).

#### **Visma L7**

This enterprise resource planning (ERP) system is used in the industries for its various utility. It is included management for energy, contracting and industrial enterprise as well as project and warehouse management, production management, financial and human resources management, sales and purchases management. These all are included in Visma L7. Automated processes decreasing time and system robots do daily basis work. It is consistently evolving with the business growth. In the beginning of the following paragraph the features of Visma 7 are discussed (*Visma L7 / Visma*, 2018).

**Identify the nodes:** All the paper works, overlaps and unnecessary workflows can be eliminated by automotive routine tasks by the Visma L7 ERP software.

**Follow and develop:** By gaining the information from the system can helps to detecting lucrative opportunities and resource-consuming developments. It can make easy to monitor and analyse the operations.



Prominent results quickly: By using productised deployment project from Visma L7 is able to monitor the transition and expenses that kept the business alive and work reflected in the business result quickly.

The service is a competitive advantage: Customer services are better for smooth work and a good flow of information.

Readiness for growth: The variety of apps gives options to choose best for the business that fit well and always can be upgrade as the business grows.

Routine for robots: Visma L7 comes with software robots that automate routine work that freed up the experts for other tasks.

## 2.2 Product Data Management (PDM)

Small, moderate or large companies need to manage a lot amount of product data and process related information in a single and central system. For that reason, they started to use a software called product data management or PDM. This system includes computer aided design (CAD) data, models, product item information, manufacturing instructions and descriptions, requirements, manufacturing dates and so on (Plm.Automation.Siemens, 2016). PDM management system is used mainly internally that only employees within the company and client company can access to some certain amount of information with the permission of company's administration. The Profile Vehicles Oy is currently using the PDM system. All the item information such as item names, codes, commodities, sub commodities, item description, even item's CAD image can be found inside the Aton PDM system. If anyone wants to add a new item, they need to get permission from R&D department of the company who are responsible to managing the data information of the company.

### 2.2.1 Aton for PDM/PLM

The product data management system is used both in small domestic and globally operating companies. The Aton PDM contains all the necessary tools such as item structure, manage item, documents and components, installed base and change management. It provides and shares important data information within the company's many information systems. They are for example MCAD (SolidWorks, Inventor, AutoCAD, Catia etc), ECAD (ePlan, E3, PADS), ERP (IFS, Lean, SAP etc). in the following paragraph Aton's basic functions are given (*Roima Intelligence*, 2016).

- Mass customization: Improve product management and speed up the product development.
- Change management: There are several phases of the change management inside the Aton PDM where orders will be stored and handled by a fixed and controlled process for the implementation of the product changes.

- Life cycle services: The amount of after sales services is so efficient that Aton can be use as new life cycle services.
- Product parts harmonization: By the product specific and language variations product parts catalogue can be made directly from the product structure. Aton helps to harmonize product item from both produce or customize product.
- Information sharing: By using the information sharing tool from Aton it can be customized with who and when anyone would like to share information.
- Product life cycle management: Product life cycle management functions are product structure, management, versions and related product information. It collects and controls the product data and servers it to the other system rotationally.

### 2.3 Product Information Management (PIM)

Product information management is a type of PDM system which reclaim/regain various types of data which are product related and as well can distribute the product data and process information outside the company, for example customers. It is an automated, smooth and error-free product management software for e-commerce marketing teams which can collect, manage and enrich product information in a single platform ( *Akeneo.com -PIM*, 2018). It has not only product information of an enhanced product but also has visual components such as images and videos attachments, as well as product specification. In addition, PIM also may include other elements of the product and its design, manufacture, utility and disposal. It also can create product catalogue and distribute those to sales and eCommerce channels ( *Www.E21.Fi*, 2015).

### 2.4 Product Life-Cycle Management (PLM)

PLM is another product information management system. It can integrate all the enriched product data information and processes. PLM including with the business functions of PDM or PIM that responsible for the management and publication of product data. This system provides entire product life cycle from design, manufacture, sale, use, recycling and disposal. All the digital product files from PDM and PIM are move through the PLM process. However, PLM system may only cover internal house product related information and upstream operation as well. For example, Apparel, eye-wear, furniture, interior, jewellery and so on ( *Www.E21.Fi*, 2015).

## 3 CASE: PROFILE VEHICLES OY

This section outlines the project flowchart, progress of the project as well as how the work has done throughout the project and the time management during the project have explained.

### 3.1 Project (Item Coding)

The project was to harmonize the item coding for new ERP system in English, which will be used in all the three manufacturing facilities. As above mentioned, currently 'Visma L7' software is using for ERP in the Iisalmi production. And other two factories in Hungary and Estonia have their own systems where they can order or purchases their parts locally. Also, the item codes conflicting between these three facilities with same parts but in different codes, making duplicates, as well as same codes for parts but with different descriptions. Moreover, Estonia and Hungarian item lists in their own languages and Iisalmi factory's item and protection vehicle's item list already translated in English except few of them. The main targets were making commodities and sub commodities for all the product items and give an instruction guideline to forming new codes for the incoming updated product parts. The following flowchart (Figure 4) shows how the work has been done from beginning till the end.

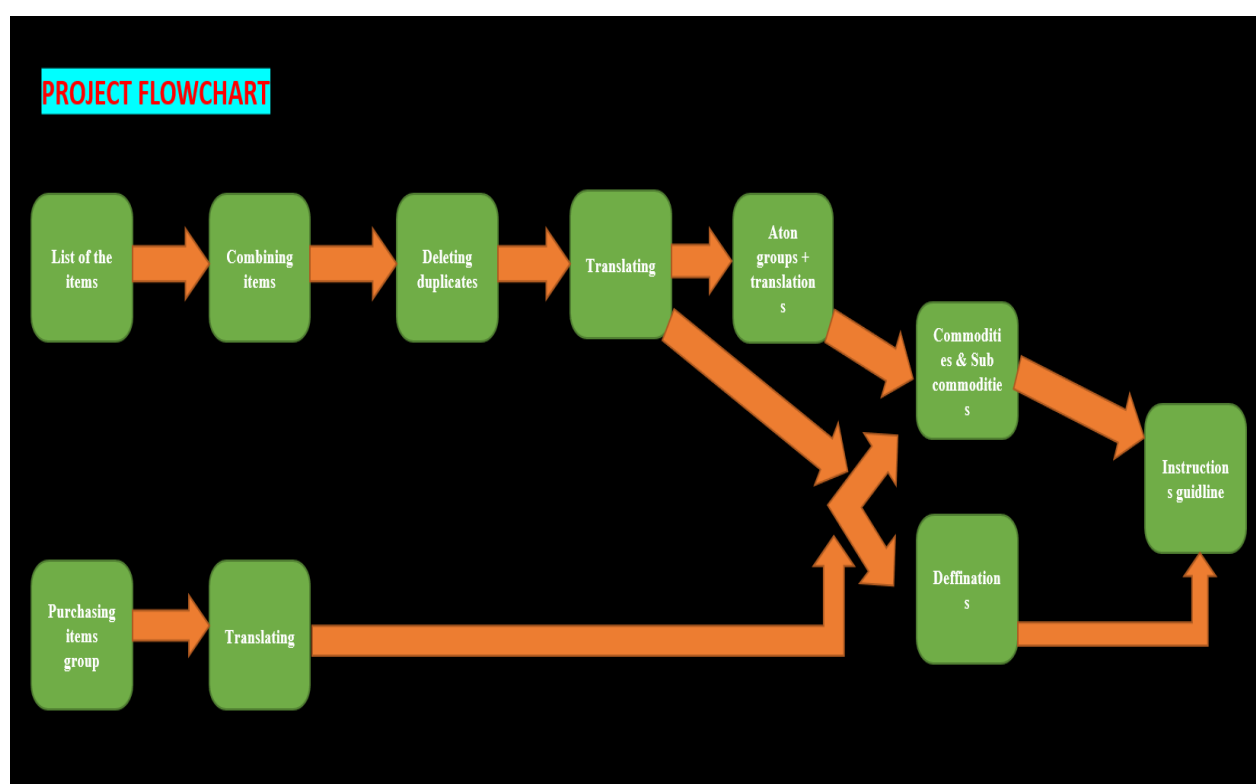


FIGURE 4. The project flowchart

### 3.2 Project Progress

The project began by getting the item list excel sheet from Iisalmi and a printed version of the purchasing groups. While the author was waiting for the item lists from Estonia and Hungary, the purchasing groups list was translated which could be used as a base for the new item code system's groups. After receiving the lists from Estonia and Hungary, those items were merged and removing of duplicates was started. There were 11392 items combinedly in the Iisalmi and Estonia, more 1850 items in protection vehicles item list and 8353 in Hungarian. So, in total around 27000 items when merged. After merging the items were combined with same codes but definitions in different languages, into single items, also removing duplicates at the same time. When the combining items had finished and done with the removing duplicates, there were approximately 23650 items left.

Next step was to be translating the remaining Finnish items into English (Figure 5). This mean that the items that only had Hungarian or Estonian translation, could not be translated. After finishing translating the items as much as possible by the student, there were around 7000 items left to work with. The blue color one's are the translation that had done (Figure 4). Following step was to think what the commodities would be and sub commodities. When checking the uncertain items from Aton, the author noticed that they had some groups inside the Aton (PDM) system. On that moment the author decided to translate those groups into English (Figure 6) and use those together with purchasing groups list to form new main commodities and sub commodities (Figure 7). Although, it was mandatory to make some minor adjustments to the groups after adding some of the new item code beginnings. Another important issue to be noticed that some groups would contain only few items, so it would be better to combine some sub commodities. In the end, after presenting the outcomes with the new groups and subgroups to the Profile and after getting positive feedback from them then the time when to make the instructions guideline for item coding and forming new commodities, if needed.

E	F	
NAME (FINNISH)	NAME (ENGLISH)	SIZE
Kuori ulko valkea yläluukku	Shell external LW overhead locker	
Kotelo lovettu paarialusta F50	500 LED blue bright glass, frame	
Kotelo	Barrel	
Kotelo Mini kotelo Hager V304S 4-M	Barrel Hager V304S 4-MO	
Kotelo 12v 2.os pinta-asennus	Box 12V surface installation	
Kotelo väli neo lämmityslaite	Box for heater neo partition wall	
Kotelo 12v 3.os pinta-asennus	Case 12V 3.pc surface mounted	
kotelo Viro 116	case Estonia 116	
Kotelo genios vasen ruuhkavilkku ko	Case for genios left peak flasher	
Kotelo genios oikea ruuhkavilkku ko	Case for genios right peak flasher	
Kotelo genios for bag with 2016 rig	Case genios for bag with 2016 rig	
Kotelo genios valiseinä	Case genios light wall	
Kotelo neo ruuhkavilkku tuulilasi	Case neo emergency blinker windshie	
kotelo pr00820	case pr00820	
Kotelo PR00820 turvaseinä keko-	Case PR00820 safety wall dog vehicl	
kotelo PR01008	case PR01008	
kotelo Piikkimattokotelo PR01008	case PR01008 barbed case	
Kotelo takavasen tuulihaka - wind h	Case rear left wind chuck - wind h	
Kotelo takaoikea tuulihaka - wind h	Case right wind chuck - wind h	
Kotelo suoja lasikotelo Honeywell	Case safety glass case uvex 9954	
Kotelo pistorasias PR00820	Case socket PR00820	
kotelo T6 tuulilasi vasen	case T6 windshield left	
Kotelo volkswagen poistoilma	Case volkswagen exhaust air	
Kotelo genios eber	Casing for eber genios	
kotelo etuylä PR01008	casing front top PR01008	
kotelo T6 tuulilasi keski	casing T6 windshield middle	
Kotelo vito poistopuhallin - exhaus	Casing vito exhaust fan	
suoja PR01008	Cover PR01008	
suoja PR01008	Cover PR01008	
suoja PR01008	Cover PR01008	
suoja PR01008	Cover PR01008	
Suojus	Cover	
Suoja genios digitaalikello rankala	Cover digital clock spine board cab	
Suoja ack-540u näppäimistölle	Cover for ack-540u keyboard	
Suoja defiteline	Cover for defi bracket	
Kotelo neo poistopuhallinkotelo	Cover for exhaust blower neo	Neo
Suoja genios sähkökeskus	Cover for genios electric box	

FIGURE 5. Merged file after translation

1	Aton		
2	AJONEUVORYHMÄ	VEHICLEGROUP	
3	AMBULANSSIT		AMBULANCES
4	ARVONKULJETUSAUTOT		VALUE TRANSPORTING VEHICLES
5	ERIKOISAJONEUVOT		SPECIAL VEHICLES
6	JOHTOAUTOT		C-GROUP
7	LINJA-AUTOT		BUSES
8	POLISIAUTOT		POLICE CARS
9	JÄRJESTELMÄT	SYSTEMS	
10	KAASU		GAS
11	LÄMMITYS		HEATING
12	LVI		HVAC
13	MEKAANISET		MECHANICALS
14	SÄHKÖ		ELECTRIC
15	DESIFIOINTI		DISINFECTION
16	MATERIAALIT	MATERIALS	
17	ERISTEET		INSULATORS
18	KEMIKAALIT		CHEMICALS
19	KIERRETANGOT		THREADED RODS
20	LATTATANGOT		FLAT BARS
21	LETKUT		HOSES
22	LEVYT		PLATES
23	MUOVIT		PLASTICS
24	PROFIILIT		PROFILES
25	PUTKET		PIPES
26	PYÖRÖTANGOT		ROUND BARS (ROUND SECTION)
27	SÄHKÖJOHDOT		ELECTRIC WIRES AND CABLES
28	TEIPIT		TAPES
29	VERHOILU		UPHOLSTERY
30	MODUULIT	MODULES	
31	KAAPISTO		CABINET
32	KATTO		ROOF
33	LATTIA		FLOOR
34	LUUKUT		HATCHES
35	OVET		DOORS
36	SEINÄ		WALL
37	OSAVALMISTEET	SUBASSEMBLIES	
38	STANDARDIKOMPONENTIT	STANDARD COMPONENTS	
39	ASKELMAT		STEPS
40	ERIKOISVARUSTEET		SPECIAL EQUIPMENT
41	ERISTEKOMPONENTIT		INSULATION COMPONENTS
42	HELAT		MOUNTING, BUSHING, FITTINGS
43	HOITOVARUSTEET		CARE/TREADMENT EQUIPMENT
44	ISTUIMET JA ISTUINJALAT		SEATS AND SEAT FEET
45	JOHTEET		CONDUCTORS
46	JOUSET		SPRINGS
47	KIINNITYSTARVIKKEET		MOUNTING HARDWARE
48	KOTELOT JA KUVUT		CASES AND COVERS
49	LAAKERIT		BEARINGS
50	LASIT		GLASSES
51	LUUKUT, RITILÄT JA PEITELEVYT		HATCHES, GRIDS, COVER PLATES
52	LVI-KOMPONENTIT		HVAC COMPONENTS
53	MOOTTORIT		MOTORS
54	OHJEKIRJAT		MANUALS/GUIDEBOOKS
55	PUMPUT		PUMPS
56	RAMPIT JA HISSIT		RAMPS AND ELEVATORS
57	SÄHKÖKOMPONENTIT		ELECTRICAL COMPONENTS
58	TIIVISTEET		GASKETS
59	TUKIRAKENTEET		SUPPORT STRUCTURES
60	TYÖKALUT		TOOLS
61	VERUSTEET		EQUIPMENT
62	XEIRYHMAA	XNOGROUP	

FIGURE 6. Aton groups translation

1	CH	Chemicals					
2		CL	cleaning and preparation				
3		DI	disinfection				
4		PT	Paints				
5		MI	Miscellaneous		36	MO	Materials and parts, other
6	EM	Electromechanical parts			37	GL	Glass
7		AC	Air conditioning		38	IN	Insulation, sound proofing
8		AL	Alarms (sirens?), speakers		39	UH	Upholstery
9		DV	Devices, cameras, screens, Vehicle PC's and Video players		40	WD	Wood
10		EA	Electric accessories		41	CM	Carpets, mattresses
11		HE	Heating		42	MS	Modules and subassemblies
12		IC	Inverters and Chargers/AC-adapters, power supplies		43	CB	Cabinet
13		MO	Motors		44	DO	Doors
14		WH	Wiring, Wire- and Cable harnesses		45	FL	Floor
15	LI	Lighting			46	HA	Hatches
16		AL	Additional/complimentary lights		47	RF	Roof
17		IA	Indicators (turn signal), Alarm lights		48	WA	Wall
18		IL	Inside lights		49	SP	Small parts
19		WL	Working lights		50	GA	gaskets, rubber seals
20		AC	Accessories		51	CA	Connectors, adapters
21	MC	Materials and parts, Plastics and composites			52	FM	Fastening, bushing, fittings, mounting hardware, brackets
22		CC	Cases, covers, cover plates		53	LO	Locking, handles, knobs
23		HA	Hatches		54	SP	Springs, Bearings
24		PL	Plates, sheets, flat bars		55	TA	Tapes, stickers, badges, foil strips(?)
25		RB	Round bars, pipes (round section)		56	VE	Vehicles
26	MM	Materials and parts, Metal			57	AM	Ambulances
27		CC	Cases, covers		58	BU	Buses
28		CN	Conductors, castror pallets, glides/slides		59	CG	C-Group
29		GR	Metal grids, ramps (loading flaps)		60	PC	Police cars
30		PL	Plates, sheets, flat bars		61	SV	Special vehicles
31		PR	Profiles		62	VT	Value transporting vehicles
32		RB	Round bars, pipes (round section), tubes, Threaded rods				
33		SS	Support structures, stands, bracket				
34		SL	Seats, legs (seat feet), steps				
35		SP	Springs				

63	WE	Working equipment		
64	EQ	Equipment		
65	FF	Firefighting equipment and Clearing equipment		
66	MD	Medical Equipment		
67	OZ	Oxygen equipment		
68	PE	Protective equipment		
69	RC	Radio and communication equipment		
70	ST	Stretcher equipment		
71	TO	Tools		
72	MI	Miscellaneous		
73	HP	Hand paper, cleaning, microfiber, etc		
74	SA	Sandpapers, brushes		
75	WO	Work (Tasks/Labour)		
76	MC	Machine		
77	MN	Manual		

FIGURE 7. New main commodities and sub commodities

### 3.3 Work Breakdown Structure (WBS)

This work breakdown structure (WBS) gives brief idea about how the project was done step by step from the beginning.

- Step 1. Getting information about Current ERP system (Visma L7), PDM system (Aton) And SolidWorks and production.
- Step 2. Applied theories:
  - Item coding
  - Commodities and sub commodities forming.
- Step 3 and Milestone 1. Getting all the items lists from Iisalmi factory as well as from Hungary and also the protection vehicles item data. In the same time acquire recently purchasing item groups in Finnish.
- Step 4. Translating the purchasing item groups and combining item lists (Finland and Hungary) in an excel sheet.
- Step 5. Project plan development in alliance with the project group

- Step 6 and Milestone 2. Acceptance of the project plan by Profile project supervisor and Savonia authorities.
- Step 7. Removing duplicates from the merged file of the product items. (Iisalmi and Hungary)
- Step 8. Collecting and merged item list (Estonia) with the excel file.
- Step 9. Collecting and merged item list (Protection vehicles).
- Step 10. Removing all the duplicates from the merged file.
- Step 11. Translating all the missing or mistranslated Iisalmi item data.
- Step 12 and Milestone 3. Defining commodities and sub commodities for the list of the items. And started to add beginnings of the new item codes.
- Step 13. Defining improvement possibilities to named item codes and comparing the pros and cons of those.
- Step 14. Making instructions how to code items for the new system.
- Step 15 and Milestone 4. Presenting the output and results to Profile and getting approval by project supervisor.
- Step 16 and Milestone 5. Project conclusions - lessons learned and close-up of project

### 3.4 Scheduling/Time Management

		Task Mode ▾	Task Name ▾	Duration ▾	Start ▾	Finish ▾	Predecessors ▾
1	✓		<b>One Profile Item Coding Project</b>	57 days	Mon 1/13/20	Tue 3/31/20	
2	✓		Familiar with current ERP & PDM system	7 days	Mon 1/13/20	Tue 1/21/20	
3	✓		Collect item list (Iisalmi, Hungary)	3 days	Tue 1/14/20	Thu 1/16/20	
4	✓		Work on project plan	7 days	Wed 1/15/20	Thu 1/23/20	
5	✓		Marging & Removing Duplicates (Iisalmi, Hungary)	7 days	Fri 1/17/20	Mon 1/27/20	
6	✓		Observing product assembly line	4 days	Wed 1/22/20	Mon 1/27/20	2
7	✓		Project plan submitted for feedback from the company	1 day	Fri 1/24/20	Fri 1/24/20	
8	✓		Project plan submitted to the Savonia	1 day	Mon 1/27/20	Mon 1/27/20	7
9	✓		Collect, Merged & Remove Item List (Estonia)	11 days	Tue 1/28/20	Tue 2/11/20	8
10	✓		Collect & Merged item List (Protection vehicles)	1 day	Wed 2/12/20	Wed 2/12/20	9
11	✓		Removing Duplicates Final Time	1 day	Mon 1/13/20	Mon 1/13/20	10
12	✓		Translating missing	2 days	Fri 2/14/20	Mon 2/17/20	11
13	✓		Defining commodities & sub commodities	10 days	Tue 2/18/20	Mon 3/2/20	12
14	✓		Add benginning of the new item codes	15 days	Tue 3/3/20	Mon 3/23/20	13
15	✓		Making Instruction	5 days	Tue 3/24/20	Mon 3/30/20	14
16	✓		Result submission for Feedbacks	1 day	Tue 3/31/20	Tue 3/31/20	15
17	✓		Project Conclusion & Getting Feedbacks	1 day	Tue 4/7/20	Tue 4/7/20	16

FIGURE 8. Execution phase in MS file

### 3.4.1 Milestones

The project had been started in 13th January 2020 and ending of the project in 31st of March 2020. Another important phase of the project making instructions guideline started on 24th of March and finished it by 30<sup>th</sup> March. Finally, the project concluded meeting had been held in the 7<sup>th</sup> of April. Project plan was submitted on 24th January 2020. Between 24<sup>th</sup> January and 24<sup>th</sup> March all the data collection, merging, removing duplicates and defining commodities and sub commodities was happened as it can be observed in (Figure 8)



Schedule for the execution phase has been made with MS project program. The main goal was to divide tasks and research information individually and then have a nice balanced workload in the end of the project.

#### 4 RESULT AND CONCLUSION

The profile vehicles seem to be satisfied with the project work. And as it is a part of a big project that is the new ERP system implementation for the company, this result going to be used for transferring all the new item codes to the new system as well as help to make new codes for the incoming and updated items in the future. Although, not all the items were formed to the new item code due the shortage of the project time, but the outcomes of the project (Figure 9) along with the instructions guideline (Note: Can be found in the end of the report) will help to order and purchasing items more easily and will simpler to detect any item by observing new item codes from the ERP or PDM system.

PRODUCT CODE	ITEM CODE (NEW) (WPI)	NAME (ESTONIAN)	NAME (HUNGARIAN)	NAME (FINNISH)	NAME (ENGLISH)
0003276	-CC	Genios/NEO vasaku ülakapiluuigi kaan	Bal felső szekrény burkolat	Kuori ulko valkea yläluukku	Shell external LW overhead locker
0000885	-CC	VW kandraamialuskast F50, rant pole lõpuni !		Kotelo lovettu paarialusta F50	500 LED blue bright glass, frame
N7VW3579727520	-CC			Kotelo	Barrel
N2082303425904	-CC	Hager V304S 4-MO		Kotelo Mini kotelo Hager V304S 4-M	Barrel Hager V304S 4-MO
0016490	-CC			Kotelo 12v 2.os pinta-asennus	Box 12V surface installation
0000168	-CC	NEO vaheseinplastik kennokate		Kotelo vali neo lämmityslaite	Box for heater neo partition wall
0015972	-CC			Kotelo 12v 3.os pinta-asennus	Case 12V 3.pc surface mounted
0010859	-CC			kotelo Viro 116	case Estonia 116
0015919	-CC	Genios kapotivilkurialus 2018 vasak VALGE		Kotelo genios vasen ruuhkavilkku ko	Case for genios left peak flasher
0015920	-CC	Genios kapotivilkurialus 2018 parem VALGE		Kotelo genios oikea ruuhkavilkku ko	Case for genios right peak flasher
0009762	-CC			Kotelo genios for bag with 2016 rig	Case genios for bag with 2016 rig
0000829	-CC	Genios ilmastointikotelo 360x253x200 VANA N Légtöndi ház (fehér)		Kotelo genios valseinä	Case genios light wall
0004885	-CC	PR00820 esiklaasivilkurikorpus ABS		Kotelo neo ruuhkavilkku tuulilasi	Case neo emergency blinker windshield
0011068	-CC			kotelo pr00820	case pr00820
0011402	-CC			Kotelo PR00820 turvasinäke koira-	Case PR00820 safety wall dog vehicl
0016918	-CC			kotelo PR01008	case PR01008
0017144	-CC			kotelo Piikkimattokotelo PR01008	case PR01008 barbed case
0010177	-CC			Kotelo takavasen tuulihaka - wind h	Case rear left wind chuck - wind h
0010176	-CC			Kotelo takaoikea tuulihaka - wind h	Case right wind chuck - wind h
0010831	-CC			Kotelo suoja lasikotelo Honeywell	Case safety glass case uvex 9954
0010534	-CC	PR00820 Pistikupesade hoidiku korpus		Kotelo pistorasia PR00820	Case socket PR00820
0016454	-CC	PR01008 esiklaasivilkuri kopsik vasak		kotelo T6 tuulilasi vasen	case T6 windshield left
0010849	-CC	PR00820 Katuseventilaatori välisavakate		Kotelo volkswagen poistoilma	Case volkswagen exhaust air
0002908	-CC	Eber Webasto kate Genios taga vasakul	Eberspracher fedő lemez, padló	Kotelo genios eber	Casing for eber genios
0016873	-CC			kotelo etuylil PR01008	casing front top PR01008
0016444	-CC	PR01008 esiklaasivilkuri kopsik keskmine		kotelo T6 tuulilasi keski	casing T6 windshield middle
0009898	-CC	VITO ventilaatorikorpus vasaksein		Kotelo vito poistopuhallin - exhaus	Casing vito exhaust fan
0017443	-CC			suoja PR01008	cover PR01008
0017444	-CC			suoja PR01008	cover PR01008
0017445	-CC			suoja PR01008	cover PR01008
0017446	-CC			suoja PR01008	cover PR01008
N7M89016801607	-CC			Suojus	Cover
0007568	-CC	KELLA TAGUNE AL		Suoja genios digitaalkello rankala	Cover digital clock spine board cab
0003328	-CC			Suoja ack-540u näppaimistölle	Cover for ack-540u keyboard
0007862	-CC		bitzotó, defitartó	Suoja defitellne	Cover for defi bracket
0000140	-CC	NEO KOPSIK TAGAVENTIKALE		Kotelo neo poistopuhallinkotelo	Cover for exhaust blower neo
0008195	-CC	Genios elektrikeskuse kaitse PC 3mm kirgas		Suoja genios sähkökeskus	Cover for genios electric box
0001498	CHCL			Pesutinneri 424SR-10	Clening thinner 424SR-10
N1705200001000	CHCL			Dinitrol 520 cleaner 1L	Dinitrol 520 cleaner
N1705200000250	CHCL			Dinitrol 520 cleaner 250 ml	Dinitrol 520 cleaner
N1703300001000	CHCL			Dinitrol 530 primer 1L	Dinitrol 530 primer
N1703300000250	CHCL			Dinitrol 530 primer 250 ml	Dinitrol 530 primer
N1705500000250	CHCL			Dinitrol 550 multiprimer 250 ml	Dinitrol 550 multiprimer
N1705PC0004000	CHCL			Cleaner Dinitrol special cleaner 1	Dinitrol special cleaner
N11ALF00004056	CHCL			EKO-SOL 25 L	EKO-SOL cleaning material
N170V300020010	CHCL		Simson Cleaner 2,5l	Simson Cleaner	Simson Cleaner 1.5L
0003665	CHCL			Tinneri premium hi-pesutinneri	Thinner premium for cleaning
N11SEA000000003	CHCL			Tork premium nestesaippu kelt 400501	Tork Mevon 55 fluid soap
N11ALF00004300	CHCL			Fruit-Puhto 3x5L	Universal-Puhto cleaning material
N11VPS000000001	CHCL			VP-Puhdistusliuotin 30 ltr.	VP-cleaning solution
N11VPS000000002	CHCL			VP-Sitrus puhdistusaine	VP-Sitrus cleaning agent
N11RRS00VH0010	CHDI			RAE-SESAM viemärin desinf/aukaisuai	RAE-SESAM disinfection/opening stuf
N170421M000310	CHMI			Dinitrol 421 musta 310 ml jäykkä	Dinitrol 421 black
N170421H000310	CHMI			Dinitrol 421 harmaa 310 ml jäykkä	Dinitrol 421 grey
N170421V000310	CHMI			Dinitrol 421 valkoinen 310 ml jäykkä	Dinitrol 421 white
N1706250001000	CHMI			Dinitrol 625 yleispohjuste 1L	Dinitrol 625 general primer
N170CAR00001000	CHMI			Dinitrol Car kierrepurkki 1L	Dinitrol Car spiral can 1L
N170F5000000310	CHMI			Dinitrol F500 310ml	Dinitrol F500
N170F5000000600	CHMI			Dinitrol F500 600 ml	Dinitrol F500
DUPONT00915R-1	CHMI			901R/907R kovettaja	901R/907R hardener
0003715	CHMI			Hioma-aine kent performance abradi	Abrasive kent performance
0003714	CHMI			Hioma-aine kent performance compou	Abrasive kent performance compound
0003713	CHMI			Hioma-aine kent performance glaze	Abrasive kent performance glaze
0006457	CHMI			Liima kiiltoflex f musta	Adhesive kiiltoflex f black
0003631	CHMI			Liima kiiltoflex r valkoinen	Adhesive kiiltoflex r white
N1V00000000010	CHMI			Polttoneste Sinol 1L	Carburant Sinol
0003624	CHMI			Liima mattoliima ardex	Carpet adhesive ardex
N1740K188E0015	CHMI			Mattoliima Thomsit K188E 15L	Carpet glue Thomsit K188E
N1740010200015	CHMI			Mattoliima Liimanni 15L	Carpetglue Liimanni
N1VW0711039001	CHMI			Jäähdytysneste G12	Coolant G12
N1AAL00255359R	CHMI			Jäähdytysneste Zero / Polaric perin	Coolant Zero 100% A-F
N170410MD50031	CHMI			Dinitrol 410/D500 musta 310 ml	Dinitrol 410/D500 black
N170410MD50060	CHMI			Dinitrol 410/D500 musta 600 ml	Dinitrol 410/D500 black
N170410HD50031	CHMI			Dinitrol 410/D500 harmaa 310 ml	Dinitrol 410/D500 grey
N170410HD50060	CHMI			Dinitrol 410/D500 harmaa 600 ml	Dinitrol 410/D500 grey

FIGURE 9. Final look with the new item codes beginnings.

3	ITEM CODE (NEW) [WIP]	NAME (FINNISH)	NAME (ENGLISH)	PRODUCT CODE
4	--CB			
5		Kuori ulko valkea yläluukku	Shell external LW overhead locker	
6				
7	--CB (ITEM CODE (NEW) [WIP])			0003276
8	Row: --CB	Tanko genios tyhjöpätjakaappi	Rod, genios vacuum mattress locker	
9				
10				0002876
11	--CC			
12		Johtokouru etuoikea alarmlights 201	Wire groove front right alarmlights	
13				0012798
14		Johtokouru etuoikea hälytysvalo 201	Wire gutter front right emergency l	
15				0009872
16		Johtokouru etuvasen alarmlights 201	Wire groove front left alarmlights	
17				0012797
18		Johtokouru etuvasen hälytysvalo 201	Wire gutter front left emergency li	
19				0009873
20		Johtokouru takaoikea alarmlights 20	Wire groove rear right alarmlights	
21				0012795
22		Johtokouru takaoikea renault	Wire groove rear right renault	
23				0004759
24		Johtokouru takavasen alarmlights 20	Wire groove rear left alarmlights	
25				0012796
26		Johtokouru takavasen hälytysvalo 20	Wire gutter rear left emergency lig	
27				0009874
28		Johtokouru takavasen renault	Wire groove rear left renault	
29				0004761
30				
31				
32				
33				
34				
35				
36				
37				
38				
464	CHCL			
465		Asetoni 0,75L Kiilto	Acetone Kiilto	
466				N11PUI00000001
467		Care-Puhto 3x5L	Care-Puhto	
468				N11ALF00004365
469		Cleaner Dinitrol special cleaner 1	Dinitrol special cleaner	
470				N170SPC0004000
471		Dinitrol 520 cleaner 1L	Dinitrol 520 cleaner	
472				N170S200001000
473		Dinitrol 520 cleaner 250 ml	Dinitrol 520 cleaner	
474				N170S200000250
475		Dinitrol 530 primer 1L	Dinitrol 530 primer	
476				N170S300001000
477		Dinitrol 530 primer 250 ml	Dinitrol 530 primer	
478				N170S300000250
479		Dinitrol 550 multiprimer 250 ml	Dinitrol 550 multiprimer	
480				N170S500000250
481		EKO-SOL 25 L	EKO-SOL cleaning material	
482				N11ALF00004056
483		Fruit-Puhto 3x5L	Universal-Puhto cleaning material	
484				N11ALF00004300
485		Pesutinneri 4245R-10	Clening thinner 4245R-10	
486				0001498
487		Puhdistusluotin K-10 III 25L	Cleaning solution K-10 III	
488				N11VOI00900070
489				
490				
491				
492				
493				
494				
495				
496				
497				
498				
499				
500				
516	CHDI			
517		RAE-SESAM viemärin desinf/aukaisuai	RAE-SESAM disinfection/opening stuf	
518				N11RRS00VH0010
519				
520	CHMI			
521		901R/907R kovettaja	901R/907R hardener	
522				DUPONT00915R-1
523		Dinitrol 410/D500 harmaa 310 ml	Dinitrol 410/D500 grey	
524				N170410HD50031
525		Dinitrol 410/D500 harmaa 600 ml	Dinitrol 410/D500 grey	
526				N170410HD50060
527		Dinitrol 410/D500 musta 310 ml	Dinitrol 410/D500 black	
528				N170410MD50031
529		Dinitrol 410/D500 musta 600 ml	Dinitrol 410/D500 black	
530				N170410MD50060
531		Dinitrol 410/D500 valkoinen 310 ml	Dinitrol 410/D500 white	
532				N170410VD50031
533		Dinitrol 410/D500 valkoinen 600 ml	Dinitrol 410/D500 white	
534				N170410VD50060
535		Dinitrol 441 valkoinen spray 500 ml	Dinitrol 441 white spray	
536				N1704410000500
537		Dinitrol 460 lasintivistys 310 ml	Dinitrol 460	
538				N170460M000310
539		Duramix 4045 kirkas muoviliima	Duramix 4045 bright plastic glue	
540				N1709404500000
541				
542				
543				
544				
545				
546				
547				
548				
549				
550				
551		Duramix 4176 metalliliima		

FIGURE 10. Final look of the new item codes beginnings with pivot table

#### 4.1 Obstacles During Project

From the beginning till the end of the project there were so many obstacles. At first, there were difficulties using 'visma L7' ERP system and Aton PDM system due to the access denied into the software, also lacking experience in both systems is another issue that needed to sort out. Secondly, all the items from different production facilities were not provided in the same time. For example, the Iisalmi item list were given in the 2nd day of the project. After two days Hungarian item list provided. Eventually, Estonian items and protection vehicles item list were attained by the student. The time difference to get all the items was respectively 11 days and 17 days with the Hungarian items. Between that time period merging the lists and deleting all the duplicates from Iisalmi and Hungarian list was the main focus. Later on, combined all the list into one excel file and continued removing the duplicates. Another major issue was that the student was provided with all the current and outdated items, which were not necessary. For that reason, same items appeared twice or three times in the list. Which was taking time more unproductive way. Moreover, all the items were not translated into English. That is why student was able to work with only Iisalmi items and protection vehicles item data which were already translated, though few translations were missing. Those translations had done by the student following dictionary and comparing them with similar items and how their Finnish definitions were translated. All an all, the work had completed successfully as much as possible within the time period that had given from the Profile. For instance, when the whole items done with the new item coding and implement them in a new ERP system, the problem they are facing now that should be fixed and have their own one profile item codes for all the productions.

#### 4.2 Company Feedbacks

The project was finished by 31<sup>st</sup> of March as planned. The result was handed to the project supervisor of the company on the same day. In the first glance the project supervisor Erkki Jämbäck responded positively and forwarded the result to other sectors such as R&D department of the company, protection vehicles sales manager, production director, ERP project manager and so on in order to get feedbacks on it. The one profile item coding project closing meeting was fixed on the 7<sup>th</sup> of March via a Skype, arranged by the project supervisor joined by Ville Repo (Production Director), R&D department head Seppo Hatunen, Santtu Keto (Sales Director), Juha Tiainen (ERP Project Manager) and Eino Laukkanen (Protection Sales Manager). At first, the meeting started with greetings. Then the student was asked to give brief presentation about the project result. Then Project supervisor asked other respective persons to give their opinions on the project results. The feedbacks are in the following,

- Excellent work, you did as well as I had hoped
- The result is looks fine, they are simple and understandable,
- Well done, good starting point for next steps, good paperwork for the future
- Need to discuss internally that is it the right solution for the company

Overall, the company seemed to be pleased with the outcomes. The professional knowledge has grown immensely from the author point of view and now able to try a more creative way of development work.

#### 4.3 Suggestion for The Future Project

Profile Vehicles Oy is on a very good path for continuing improvement of their production. They have a clear vision to implement a new ERP system with all the active items in English so that other productions facilities can use it centrally when they do orders and purchases. From the beginning till the end of the project all the data, information and all the technical support from the company had been provided as soon as needed. Continuing and expanding the project "One Profile Item Coding" allows more conformity between production and other departments such as R&D department, Sales department, Protection department and so on. These new item codes will also make it less time consuming and by following the new templates in the instruction guideline will make it easier to find and simpler to place and purchase orders for all kind of product parts.

## 5 INSTRUCTION GUIDELINE TEMPLATE

In this section there is the final instruction guideline for those who want to add new product items in the ERP system. Anyone from the company, who is authorized to add new item codes can follow the following instructions guideline template with the Finnish instructions texts as well.

### **Instructions Guideline**

Tämä asiakirja on tarkoitettu vain niille, joille käyttöoikeus on myönnetty. Asiakirja sisältää tietoa tuotekoodista ja sitä voidaan käyttää apuna uuden tuoteryhmän muodostamiseksi. Luetellut ryhmät eivät välttämättä ole lopullisia, ja niitä voidaan mukauttaa tarpeen mukaan. Ohjeen avulla käyttäjä voi ymmärtää tuotekoodin rakenteen, esityksen ja millaiset tuotteet kuuluvat mihinkin ryhmään.

Tuotekoodit alkavat pääryhmällä [MG], jonka jälkeen tulee aliryhmä [SG] ja yksilöivä numero. Kukin pääryhmä on lihavoitu ja siihen liittyvät aliryhmät ovat sen alla. Viereinen teksti kertoo, millaisia tuotteita kuhunkin ryhmään kuuluu.

Esimerkki: CHMI54321  
CH: Kemikaalit [MG]  
PT: Maalit [SG]  
54321: yksilöivä numero.

This document is meant only for those, who have permission to use it. This document gives details of the item groups and information how a new item group can be formed. Listed groups may not be final and can be modified as necessary. The instructions are provided to help the user to understand the item code structure, presentation and what type of items belong to each group.

Item codes start by main group [MG], followed by subgroup [SG] and number.  
Main groups are bold and subgroups belonging to it can be seen column beside it. Text next to each group tells what type of items part of the particular group are.

Example: CHMI54321  
CH: Chemicals [MG]  
PT: Paints [SG]  
54321: individual number.

MG	SG	Finnish	English
CH		<b>Kemikaalit</b>	<b>Chemicals</b>
	CL	Puhdistusaineet, asetoni, pesutinnerit	Cleaning agents, acetone, cleaning thinners
	DI	Desifiointi	Disinfection
	MI	Liimat, kovettajat, voiteluaineet, ruosteenesto, tiivistemassat, hioma-aineet, yms	Glues, hardeners, lubrication, rust protection, sealants, abrasive compounds, etc
	PT	Maalit	Paints
EM		<b>Elektromekaaniset osat</b>	<b>Electromechanical parts</b>
	AC	Ilmastointi	Air conditioning
	AL	Sireenit, kaiuttimet	Sirens (alarms), speakers
	DV	Laitteet, kamerat, näytöt, ajoneuvo pc:t	Devices, cameras, screens, vehicle pc's
	EA	Tarvikkeet, antennit, pistokkeet..	Accessories, antennas, electric plugs and connectors..
	HE	Lämmittimet	Heaters
	IC	Inventterit, varaajat, laturit, virtalähteet, jännitemuuntimet	Inventers, Chargers/AC-adapters, power supplies
	MO	Ovimoottorit, vesipumput	Door motors, water pumps
	WH	Johdot, kaapelit, johtosarjat	Wires, cables, wire harnesses
LI		<b>Valaistus</b>	<b>Lighting</b>
	AL	Lisävalot	Additional light
	IA	Vilkut, hälytysvalot	Turn signals, alarm lights
	IL	Sisävalot	Inside lights
	WL	Työvalot, käsivalaisimet	Working lights, flashlights
	AC	Polttimot	Bulbs
MC		<b>Materiaalit ja osat, muovit ja komposiitit</b>	<b>Materials and parts, Plastics and composites</b>
	CC	Kotelot, suojat	Cases, covers, cover plates
	HA	Luukut	Hatches
	PL	Levyt, listat	Plates, strips
	RB	Pyörötangot, putket	Pipes, round bars
MM		<b>Materiaalit ja osat, metalli</b>	<b>Materials and parts, Metal</b>
	CC	Kotelot, suojat	Cases, covers
	CN	Liukukiskot, ohjurit	Slides
	GR	Ritilät, rampit	Metal grids, ramps
	PL	Levyt, pellit, lattatangot	Plates, sheets, flat bars
	PR	Kulmat, profiilit	Angles, profiles
	RB	Putket, pyörötangot, kierretangot	Pipes, round bars, tubes, threaded rods
	SS	Tukirakenteet, tuet, telineet	Support structures, stands
	SL	Istuimet, jalat, askelmat	Seats, legs, steps
	SP	Jouset	springs
MO		<b>Materiaalit ja osat, muut</b>	<b>Materials and parts, other</b>
	GL	Lasi	Glass
	IN	Eristeet, äänieristys	Insulation, sound proofing

<b>MS</b>	<b>Moduulit ja osakokoonpanot</b>	<b>Modules and subassemblies</b>
CB	Kaapit ja kaapistot,	Cabinets
DO	Ovet	Doors
FL	Lattia	Floor
HA	Luukut	Hatches
RF	Katto	Roof
WA	Seinät	Walls
<b>SP</b>	<b>Pienet osat</b>	<b>Small parts</b>
GA	Tiivisteet, tulpat,	Gaskets, plugs, rubber seals
CA	Liittimet, adapterit	Connectors, adapters
FM	Helat,	Fastening, bushing, fittings
LO	Lukitus, vetimet, kahvat	Locking, knobs, handles
SP	Jouset, laakerit	Springs, bearings
TA	Teipit, tarrat, symbolit, nauhat	Tapes, stickers, badges
<b>VE</b>	<b>Ajoneuvot</b>	<b>Vehicles</b>
AM	Ambulanssit	Ambulances
BU	Linja-autot	Buses
CG	Johtoautot	C-Group
PC	Poliisiautot	Police cars
SV	Erikoisajoneuvot	Special vehicles
VT	Arvonkuljetusautot	Value transporting vehicles
<b>WE</b>	<b>Työvälineet</b>	<b>Working equipment</b>
EQ	Varusteet	Equipment
FF	Sammutus- ja raivausvälineet	Firefighting and clearing equipment
MD	Lääkintä- ja hoitovaruusteet	Medical equipment
O2	Happikalusto	Oxygen equipment
PE	Suojavarusteet	Protection equipment
RC	Radio- ja kommunikointi välineistö	Radio and communication
ST	Paarit	Stretcher equipment
TO	Työkalut	Tools
<b>MI</b>	<b>Sekalainen</b>	<b>Miscellaneous</b>
HP	Käsipaperit, mikrokuituliinat yms pyyhkeet	Hand paper, cleaning, microfiber, etc
SA	Hiomapaperit, harjat,, sudit, pensselit	Sandpapers, brushes
<b>WO</b>	<b>Työt</b>	<b>Work</b>
MC	Konetyö	Machine work
MN	Käsityö	Manual work



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