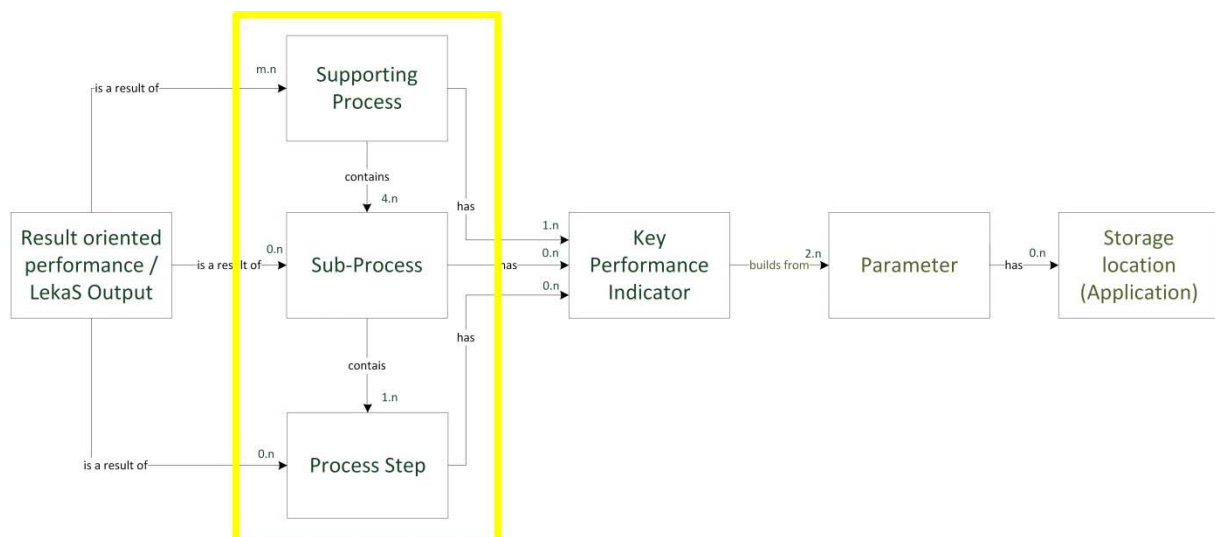# PromoS - Process Model for Non-medical Support Services in Hospitals

based on LekaS

Version 1.0 – based on German original

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Acknowledgements

Abstract

Since the introduction of the Diagnosis-Related Group/SwissDRG at the latest, interest in process considerations has risen in Swiss hospitals. The desired outcome is twofold; to achieve greater effectiveness and efficiency and to provide more accurate cost allocations for the generation of uniform benchmarking indicators. The goal was therefore to develop a process metamodel which can be used for all areas of non-medical support processes [FM in HC] while still leaving enough scope for individual adaptations for the various health institutions and organizations. In addition, it had to be ensured that the (partial) process definitions allow the precise implementation of the KPIs defined in the Key Performance Catalogue and that the KPIs can be assigned to (partial) processes. On the basis of existing process literature and documentation from the four project hospital partners, the process modeling of all FM in HC support processes was carried out using the consortial research approach in several iterative expert rounds together with the project business partners. The result is a process metamodel and concrete process models for all FM in HC support processes. The principle is based on the Plan-Do-Study-Act principle of the Deming Cycle and shows the three levels of support processes, sub-processes and process steps. Please also refer to the services listed in the performance catalogue for non-medical support services [LekaS]. The process model PromoS, together with the code catalogue KenkaS and the application catalog ApplikaS, is part of the reference model for non-medical support services in hospitals RemoS and basis for the guidelines on the use of SAP for Facility Management in Healthcare LesapS and the Assessment, Simulation and Benchmarking tool for Facility Management in Health Care. All topics mentioned are documented separately in detail and can be called up and downloaded with reference to the other documents at https://www.zhaw.ch/en/lsfm/institutes-centres/ifm/about-us/hospitality-management/fm-in-healthcare/remos/.

Table of contents

List of figures

List of abbreviations

ApplikaS   Application Catalogue for Non-medical Support Services in Hospitals

[German: Applikationskatalog für nicht-medizinische Supportleistungen in Spitälern]

DRG   Diagnosis- Related Group

FM in HC   Facility Management in Healthcare

GoM   Generally acceptable modelling principles

[German: Grundsätze ordnungsmässiger Modellierung]

IFM   Institute of Facility Management

KenkaS   Key Performance Catalogue for Non-medical Support Services in Hospitals

[German: Kennzahlenkatalog für nicht-medizinische Supportleistungen in Spitälern]

LekaS   Service Catalogue for Non-medical Support Services in Hospitals

[German: Leistungskatalog für nicht-medizinische Supportleitungen in Spitälern]

LemoS   Service Allocation Model for Non-medical Support Services in Hospitals

[German: Leistungszuordnungsmodell für nicht-medizinische Supportleitungen in Spitälern]

LesapS   Guidelines for applying SAP for the Facility Management in Healthcare

[German: Leitfaden zum Einsatz von SAP für das Facility Management in Healthcare]

PDSA   Plan – Do – Study – Act (Deming Cycle)

PromoS   Process Model for Non-medical Support Services in Hospitals

[German: Prozessmodell für nicht-medizinische Supportleistungen in Spitälern]

RemoS   Reference Model for non-medical support services in Hospitals

[German: Referenzmodell für nicht-medizinische Supportleistungen in Spitälern]

ZHAW   Zurich University of Applied Sciences

[German: Zürcher Hochschule für Angewandte Wissenschaften]

1. Introduction

To start with, the project will be introduced: what was the starting position, the objective and the value proposition of the project, what was the methodology, which topics were not covered and how is the document connected to other subprojects.

1.1. Starting Position

Since the introduction of the Diagnosis-Related Group/SwissDRG at the latest, the need for more transparency in the non-medical support services in hospitals [FM in HC] has arisen. This has two aspects; to achieve greater effectiveness and efficiency without compromising quality and the necessity to make more accurate cost allocations. The latter is the prerequisite for being able to collect uniform benchmarking figures.

There have been various efforts in Facility Management [FM], as well as in the hospitals, to define processes (Bornewasser, 2013; Fleischmann, 2007; GEFMA 230:2008; IFMA Schweiz – ProLeMo, 2007; Jehle, et al., 2014; Krämer et al., 2013; Lennerts, 2011; Lünendonk, 2015; SN EN 15221-5:2011). It should be noted that a comprehensive process definition for FM in hospitals is lacking. FM processes are defined in general quite general terms, only medical processes are looked at, or they are based on the isolated perspective of individual FM departments. In order to realize overlapping synergies and to establish a uniform understanding of processes, an overarching, comprehensive definition of FM in HC processes is essential.

1.2. Objective

The goal was to find a process meta model which can be used for all FM in HC departments according to the performance allocation model for non-medical support services in hospitals [LekaS] (Gerber & Läuppi, 2015), while still leaving enough scope for individual adjustments. In addition, it had to be ensured that the (partial) process definitions allow the precise definition of the KPIs defined in the KPI catalogue for non-medical support [KenkaS] (Gerber et al., 2016c) and that the KPIs can be assigned to the (partial) processes. In a later step, it should also be possible to generate process-specific SLAs based on the process definitions. The development of the process model is a component which serves as a basis for the comprehensive project "Development of an IT-based assessment tool and a corresponding introduction manual for relevant facility management process applications in the hospital based on an adaptive reference model". The aim of the entire project was to make the connections between non-medical (partial) processes, key figures (parameters) and their storage applications visible and to define them in the sense of a uniform standard for the Swiss health care system. Furthermore, a customer- and user-friendly solution in the form of an IT-based assessment tool, together with the introduction manual, should be developed on this basis so that FM in HC can be subjected to a systematic analysis and that systematic options for the removal of possible weaknesses can be identified and discussed.

1.3. Benefit / Application

With the insights gained regarding processes in the non-medical support area, it is now possible for all managers of FM in HC to measure specifically defined processes for the hospital context. By taking a comprehensive view, the basic data are now available for connections between the various specialist areas to be made, effectively delivered services are made transparent, and optimization and synergy potentials can be identified. An IT-based assessment tool is available for reviewing process-based KPIs used in-house (see Assessment-, Simulations- und Benchmarking-Tool für Facility Management im Gesundheitswesen, Möller et al., 2017). Strategic discussions and decisions can be based on objective data and argued accordingly. The clear definition also makes it possible to compare with other hospitals and thus to carry out benchmarking.

1.4. Methodology

As a conceptual basis in the context of FM in HC, all areas of the Catalogue for Non-medical Support Systems in Hospitals [LekaS] (Gerber & Läuppi, 2015) were applied. The context is depicted in Figure 1. For the modelling, the principles of generally accepted modelling principles according to Becker et al. (2012) and Schütte (1998) were followed.

Strategic Management Services

Sustainability	Quality Management	Risk Management	Ressources & Sourcing Strategy	IT Management
Life Cycle Planning	Standards & Guidelines	Risk Policy Definition		IT-Strategy Definition
Environmental	Process Management		Asset & Portfolio Management	
Management System		Identity	Management of Investments, Portfolio & Multiprojects	
Energy Strategy Definition		Innovation Facilitation	Financing Management	

Business Support / Management Support

| Finance & Controlling | HRM | Legal Services | Marketing & Communication | Administration | IT Services |

Non-medical Support Services

Infrastructure

Logistics

Procurement
Tactical & Operational Procurement
Incoming Goods Control

Inventory Management

Transport & Distribution
Internal / External Transportation of People & Goods
Mail / Courier Services
Relocation
Fleet Management

Disposal & Recycling

Maintenance
Maintenance of Spaces
Parking Lot Maintenance
Building Maintenance & Technical Building Management
Operational Technology / Tenants Specification / Medical Technology
Fittings & Furnishings Maintenance

Space Management
Internal Rental & Space Management
Property Administration

Energy

Tactical Resource Management

Facility Services

Safety
Occupational Safety
Health Protection

Security
Personal Security
Fire Protection
Protection of Property
Technical Protection of Information
Environmental Protection

Cleaning
Cleaning of all Areas
Special Cleaning
Pest Control

Sterilisation

Hotel Services

Catering
Patient / Resident / Staff & Guest Catering
Vending Services
External & Event Catering

Textiles
Patient Textiles and Workwear

Accomodation Administration & Operation of Properties
Staff & Guest Accomodations
Patient & Guest Hotel
On-Call Accomodation

Hotel Various
Owner-operated Kiosks & Shops
Event Management
Reception & Contact Center
Childcare
Media Library / Archive
Non-medical Patient Care

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Version 3.0

Figure 1: LemoS 3.0 (Gerber, 2016)

The empirical research was conducted with and for practice in the context of the applied sciences on the basis of consortial research according to Österle und Otto (2009 & 2010) (cf. Figure 2). A total of four Swiss hospitals, three business partners and two ZHAW institutes were intensively involved during the entire duration of almost three years.
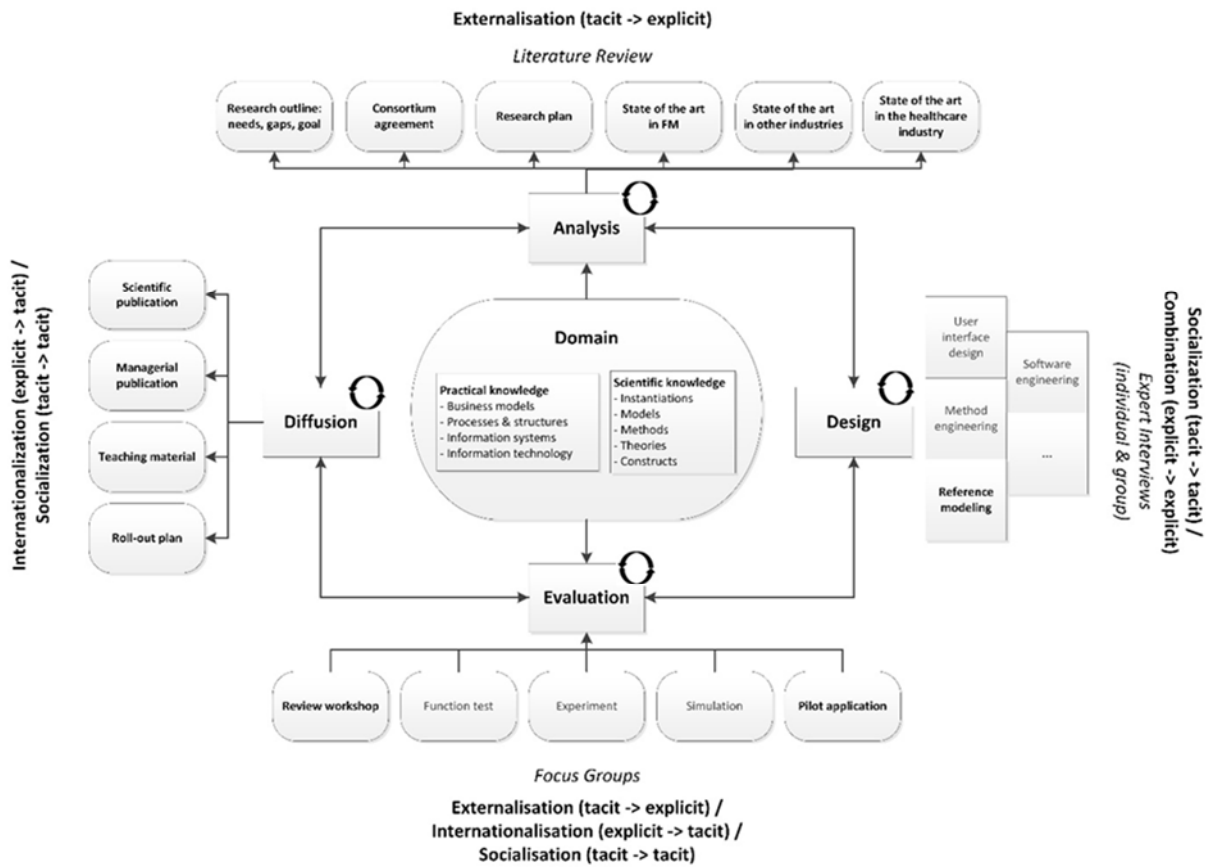
Figure 2: Consortial research approach (based on Österle & Otto, 2009)

The scientific principles of Design Science Research according to Hevner et al. (2004), Peffers et al. (2007), Vaishnavi and Kuechler (2008), Hevner amd Chatterjee (2010) and Dresch et al. (2015) were applied, as depicted in Figure 3.
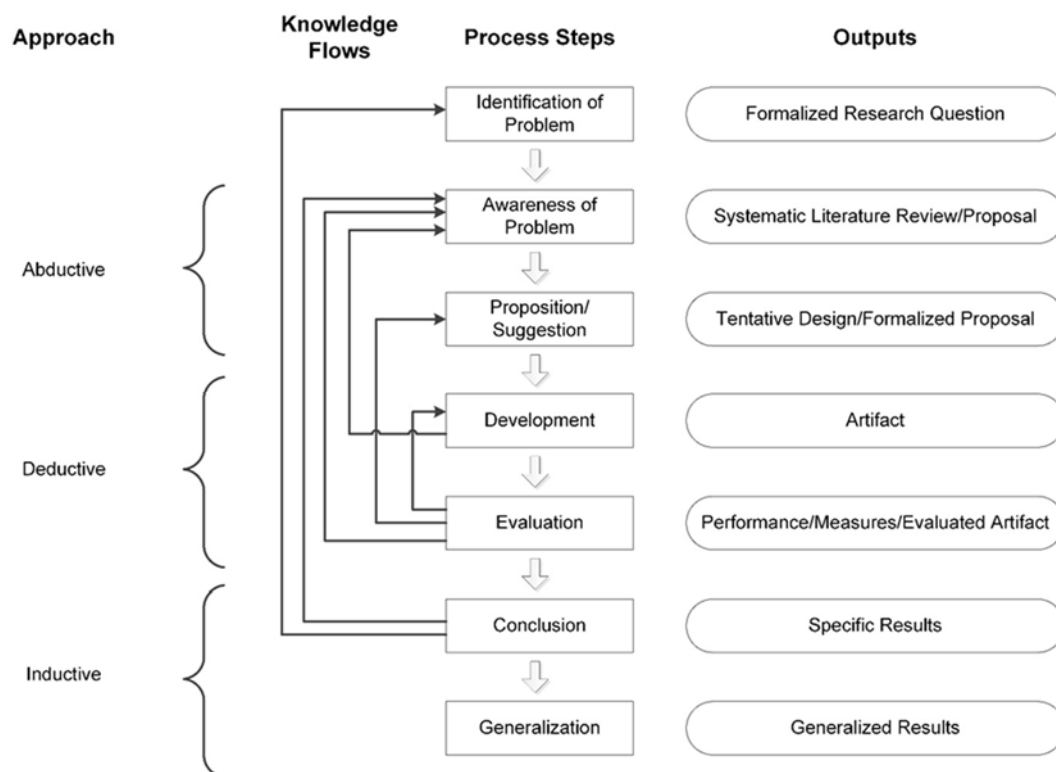
Figure 3: Generalized method of Design Science Research (based on Vaishnavi & Kuechler, 2008 und Dresch et al., 2015)

The development and the evaluation were done by expert interviews according to Meuser and Nagel (2009), Liebold and Trinczek (2009) and Gläser and Laudel (2009).

1.5. Delimitation

In this context, only non-medical processes were examined.

The process model deliberately does not give any information as to in which organizational units or functions the processes mentioned are to be executed. This must and should be decided within the context of one's own organizational structure.

The present model is defined as broadly as possible in practice and does not include any detailed workflows. Thus, on this basis, no process optimizations can be realized - this will be addressed in a later step.

Moreover, due to the lack of sufficient financial data, aspects of the process cost calculation are currently excluded.

A full validation of the model will only be possible once it is widely applied in practice.

1.6. Links / Connections with other topics

The present process model PromoS is connected to **KenkaS – Key Performance Catalogue for Non-medical Support Services in Hospitals** (Gerber et al., 2016c).

The same applies to the results-oriented performance descriptions - these are published in **LekaS, Service Catalogue for Non-medical Support Services in Hospitals** (Gerber & Läuppi, 2015).

The current state of the studies with regard to FM in HC applications can be found under **ApplikaS – Application Catalogue for Non-medical Support Services in Hospitals** (Gerber et al., 2016a).

The explanations concerning the contexts of the abovementioned subareas are given in **RemoS – Reference Model for non-medical support services in Hospitals** (Gerber & Hofer, 2016) and are depicted in Figure 4.

The possibilities to take up the actual application situation and a possible target state with the corresponding implementation possibilities is presented in the **Assessment-, Simulations- und Benchmarking-Tool für Facility Management im Gesundheitswesen** (Möller et al., 2017).

The specific coverage of the applications is shown in relation to the **LesapS - Guideline for applying SAP for the Facility Management in Healthcare** (Weigele et al., 2017).

All publications can be downloaded for application at https://www.zhaw.ch/en/lsfm/institutes-centres/ifm/about-us/hospitality-management/fm-in-healthcare/remos/.
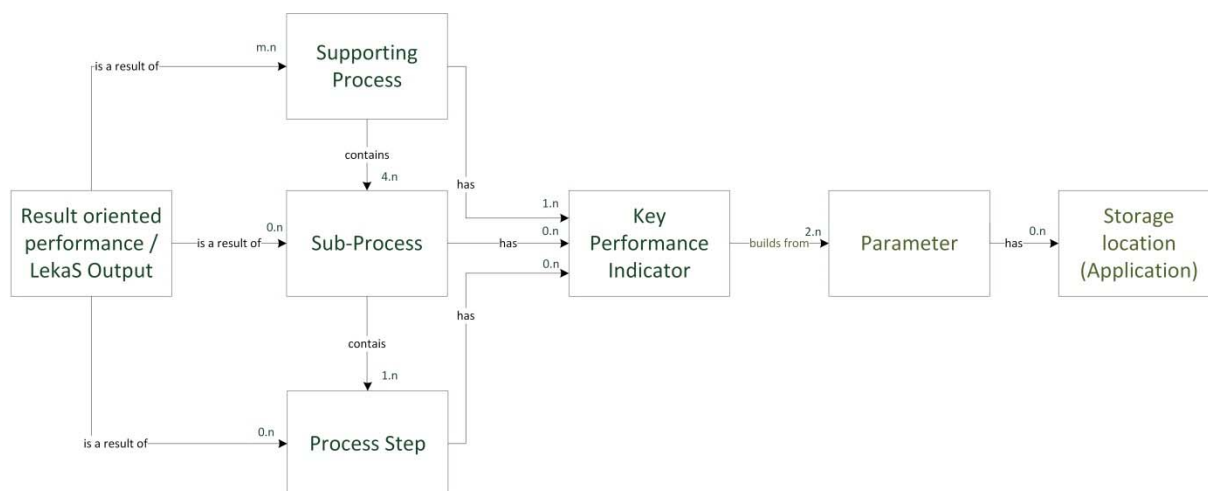
Figure 4: Reference Model for non-medical support services in Hospitals [RemoS] (Gerber & Hofer, 2016)

1.7. Outlook

The process model is used as a basis to define key figures for future benchmarking initiatives and service agreements, and to support process optimization and organizational projects.

2. Theory in relation to Processes and Process Modelling

In order to understand the terminologies associated with the development of the process model, this chapter briefly presents the topics of processes and models based on the literature.

2.1 Definition of Processes

(Business) processes are not uniformly defined in the literature. As the smallest common denominator, and thus as the basis for the development of the present process model, the temporal, spatial and factual sequence of activities with defined inputs and outputs for the purpose of processing business activities was defined (DIN-Fachbericht 80:2000; Schmelzer & Sesselmann, 2010; Vahs, 2002).

2.1.1 Core Processes vs. Support Processes

For Facility Management and thus also for FM in HC, it is essential to differentiate between core and support processes. According to Osterloh & Frost (2006), core and support processes can basically be divided as follows:

Core processes
- have a perceptible customer benefit
- are company-specific
- cannot be imitated or substituted

Support processes
- have only internal customers
- do not contribute to a strategic competitive advantage
- can be benchmarked
- can theoretically be designed as own profit centers

For the hospital context, this generic process consideration is not easily transferable. Gerber (2016) therefore has a hospital specific division in
- Medical core services• Medical support services
- Strategic management services
- Strategic support services
- Non-medical support services (see Figure 5).

This subdivision of core and support services has been taken over for the development of the present process model in terms of the process consideration, with the fifteen non-medical support services (yellow area in Figure 5) being focused for the time being.
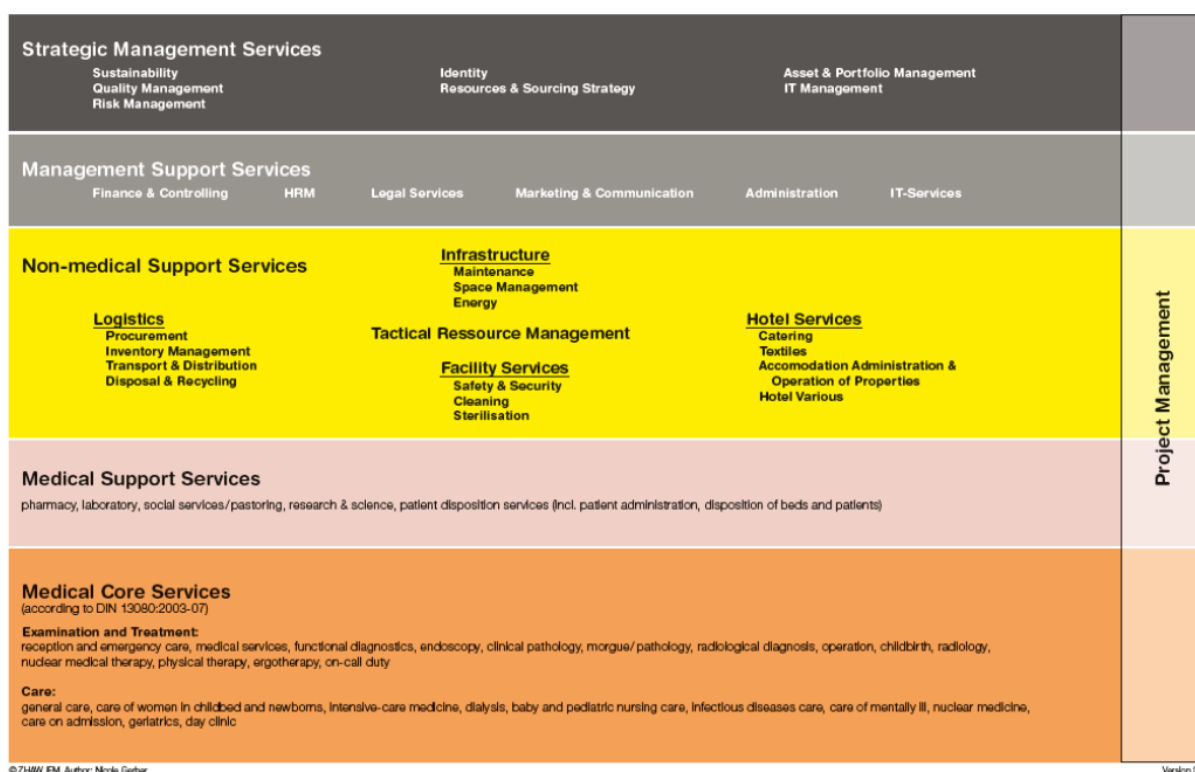
Figure 5: Overview service levels in hospitals version 3.0 (Gerber, 2016)

2.1.2 Basis of Process Structuring

As an approach to process structuring, it is recommended to subdivide a (business) process into subprocesses and then to process steps (Fritsche & Herrmann, 2009; Schmelzer & Sesselmann, 2010).

May (2013) also recommends a systematic allocation of processes using the Deming Cycle. The Deming Cycle has the following four stages, which are repeated (The W. Edwards Deming Institute, 2016):
Plan: Goal identification, theory formulation, definition of success measurement criteria and action plan.
Do: Implementation of the plan
Study: Monitoring of results for the purpose of success control or problem treatment and need for improvement respectively.
Act: Integration of what has been learned for the purpose of goal adjustment, method change or theory re-formulation.

For the present work, these principles and procedures were followed and systematically implemented (see Metamodel, Figure 6).

2.2   (Process)Models and Metamodels

In order to understand the terminologies associated with the development of the process model, the concepts of models, meta-models, process models, modeling languages and the principles of duly modeling are presented briefly in this chapter on the basis of the literature.

2.2.1 Models

The word model is derived from the Italian 'modello' (pattern, example). A model
- is a simplified, abstracted representation of the reality or a section of it
- is intended to reduce complexity by restricting key variables

- is supposed to serve a specific question or scope of tasks adequately
- is designed for a specific purpose (model of whom, for whom, when and why), depending on the modeling goal and application context

(Becker et al., 2012; Delfmann, 2006; DIN-Fachbericht 80:2000; Goeken, 2003; Haux et al., 1998; Kruse, 1996; Scheer, 2002; Stachowiak, 1983; vom Brocke, 2003; cf. chapter Models in RemoS (Gerber & Hofer, 2016) and in KenkaS (Gerber et al., 2016c).

2.2.2 Meta models

Meta models are abstract systems that describe / define the structures, the syntax and relation rules of models and thus creates the (theoretical) fundamentals for modeling. This requires that the (base) models must correspond to the meta model (DIN-Fachbericht 50:1996; Kruse, 1996; Hars, 1994).

For the development of the process models of the 15 departments, it was necessary to define a uniform process meta model. It is described in chapter 3.3 and is described in chapters 3.6 and. 3.7.

2.2.3 Process Models

A process model
- is a general model in terms of processes
- can consist of several sub-models
- contains different perspectives on processes with regard to content and target group
- can be used for organizational design (process-oriented reorganization, continuous process management, benchmarking, knowledge management) and application system design (selection of ERP software, workflow management, simulation)

(Becker et al., 2012; DIN-Fachbericht 80:2000; Prilla, 2010; Rosemann,1996)

The individual process models of the 15 departments are shown and explained in chapters 3.8 – 3.22.

2.2.4 Modelling Languages

A modeling language
- is an artificial language
- can be textual or graphical
- can be informal, semi-formal or formal
- allows a description of a situation within a department in a diagrammatic form
- should be intuitive for different stakeholders
- is intended to support the clarity of the complexity

(Delfmann, 2006; Schlieter, o. D.; Becker et al. 2012; Herrler, 2007; Bartsch, 2010; also cf. chapter Modeling Languages in RemoS, Gerber & Hofer, 2016 und KenkaS, Gerber et al., 2016c)

In the present case, an informal-graphical modeling language was chosen.

2.2.5 Generally accepted modelling principles

In order to increase the quality of the developed models, the established "Generally accepted modelling principles" by Becker et al. (2000), Schütte (1998) and Rosemann (1996) were applied.

They are:

- **Principle of correctness:**
  A model is syntactically correct when it is complete, correct and consistent according to the underlying meta-model.
- **Principle of relevance:**
  All necessary aspects of the real world are usefully represented in the model and all aspect from the model also appear in the real world.
- **Principle of economic efficiency:**
  It should be assured that the model has no irrelevant aspects and that the duration of creation of the model is in relation to its use.
- **Principle of clarity:**
  The model should be understandable, clear and descriptive.
- **Principle of comparability:**
  Connected models should be harmonic and free of discrepancy and should be transferrable into one another if needed
- **Principle of systematic structure:**
  Different model views have to be designed integrably

(cf. chapter Generally accepted modelling principles in RemoS, Gerber & Hofer, 2016 and KenkaS, Gerber et al., 2016c)

Since models are constructed from specific perspectives, the extent to which they are appropriate (cf. chapter 3.5) must be decided in individual cases.

3. PromoS – Process Model for Non-medical Support Services in Hospitals

This chapter explains the steps and principles chosen for model creation and the contents of the model. A provisional validation is also carried out.

3.1. Scope of Business Processes

In the present case, the modeling context is the business processes in the departments of non-medical support services in hospitals based on LemoS 3.0 (Gerber, 2016) in Figure 1:

- Procurement
- Storage management
- Transport services & provision
- Disposal & recycling
- Maintenance
- Space management
- Energy supply
- Safety
- Security
- Cleaning
- Sterilization
- Catering
- Laundry supply
- Accommodation management & operation of properties
- Hotel services

3.2. Modeling Approach

In the development of the process model, a combined top-down / bottom-up approach was chosen: on the one hand, the existing process definitions in the above-described specialist areas and in the FM context (e.g. IFMA Switzerland - ProLeMo, 2007 or SN EN 15221-5: 2011) were collected. On the other hand, existing process definitions were collected among the partner companies and economic partners. All details were recorded in an excel sheet. It became clear that a system for sorting the data had to be developed. In various expert rounds it was decided to build on the proven Deming Cycle with the flexibly designed sub-project phases Plan, Do, Study and Act (cf. chapter 2.1.2). This was used as a basis for the meta model, valid for all departments and to allocate the process steps for each department. An informal-graphical modeling language was chosen for implementation.

3.3. Explanation of the Metamodel

The **support process** is the highest level. Each support process corresponds to the specific field within the non-medical support services in hospitals. Overall, 15 support processes are depicted according to the metamodel in Figure 6. Each support process has at least 4 sub--processes.

Sub-processes allow the division into different phases; the model follows the Deming Cycle Plan-Do-Study-Act for all support processes:

- In the plan sub process, the (tactical) planning of the support process is always described; always occurs exactly once and has at least two process steps.

- In the Do section, the execution sub-processes are listed; depending on the department occurs 1 - n times and has 1 - n process steps.

- The study sub-process is always the post processing / documentation of the support process; always occurs exactly 1 time and has at least 2 process steps.

- In the act sub-process the measure activities are described; always occurs exactly 1 time and has at least 1 process step.

The phases are differentiated in color with shades of yellow.

The **process steps** describe activities. 1 - n process steps are possible per sub-process.

The measuring points are used to define key figures. Measurement points are possible at all the points shown, but not mandatory.

[-> ...] indicates the interface to another support process.

The meta model is shown and explained in Figure 6.

In order to meet the objectives of the integration of LekaS (Gerber & Läuppi, 2015), a corresponding level was inserted, as shown in Figure 7.

LekaS Output refers to result-oriented performance in the performance catalogue for non-medical support services in hospitals (LekaS). The data can either refer to the entire support process or individual sub-processes.

3.4.   Comments on the Separate Model Visualizations

In the top process arrow the respective support process (= department in KenkaS, Gerber et al., 2016c) is presented.

The different phases Plan - Do - Study - Act are distinguished by the metamodel with different yellow tones. According to the metamodel definition, at least one process step is assigned to each sub-process.

It is important that the listed process steps are **not a compulsory sequence**! The model defines only the process steps that belong to the individual sub-processes for the purpose of delineation for the key figure collection; it is explicitly not to be understood as a workflow presentation with predetermined sequences!

3.5.   Evaluation of the Process Model

As outlined in Chapter 1.5, a preliminary validation of the model can be carried out at present for the time being on the basis of the principles of duly modeling: Working together with practice increases the likelihood that the principle of relevance and the principle of syntactic correctness are given. The project team is of the opinion that the principles of clarity, systematic construction, semantic correctness and comparability are given (see the connections in KenkaS, Gerber et al., 2016c and ApplikaS, Gerber et al., 2016a) but must be rechecked after introduction into practice. Whether the principle of profitability is given depends on the extent to which the model is used in practice; this assessment can only be answered later.

3.6. Meta model

Process Meta Model with KPI Measuring Points

Illustration

Support Process XY

Explanation

Corresponds to respective field of non-medical support services in hospitals – there are 15 support processes in total.
Each support process has at least 4 sub-processes.

Plan	Do	Study	Act

Sub-process Sub-process Sub-process Sub-process

Sub-processes allow the division into different phases; all support processes follow the Deming Cycle Plan-Do-Study-Act.
- The sub-process Plan always describes the tactical planning of a support process, it occurs exactly 1 time each and includes at least 2 process-steps.
- The sub-process Do lists executional sub-processes; depending on the support process it occurs 1 – n times and includes 1 – n process-steps.
- The sub-process Study is always about post-processing / documentation of a support process; it occurs exactly one time each and includes at least 2 process-steps.
- The sub-process Act describes action activities; it occurs exactly 1 time each and includes at least 1 process-step.

Process step

Process step

Process step
[-> ...]

Process-steps describe tasks / activities; one sub-process accounts for 1 – n process-steps.

Measuring points (⬤) define key performance indicators; measuring points are possible where indicated but not compulsory.

With [->…] an interface to another support process is indicated.

Figure 6: Meta model PromoS
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-process-meta-model.jpg

3.7. Metamodel with Link to LekaS

Process Meta Model with KPI Measuring Points with Connection to LekaS Output

Support Process XY

Sub-process → Sub-process → Sub-process → Sub-process

Process-step

Process-step

Process step
[->…]

LekaS Output

LekaS Output | LekaS Output | LekaS Output | LekaS Output

LekaS Output refers to results-oriented performance in the performance catalog for non-medical support services in hospitals (LekaS).
The data can either refer to the entire support process or individual sub-processes.

Figure 7: Meta model with link to LekaS
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-process-meta-model-lekas.jpg

3.8. Process model support process procurement
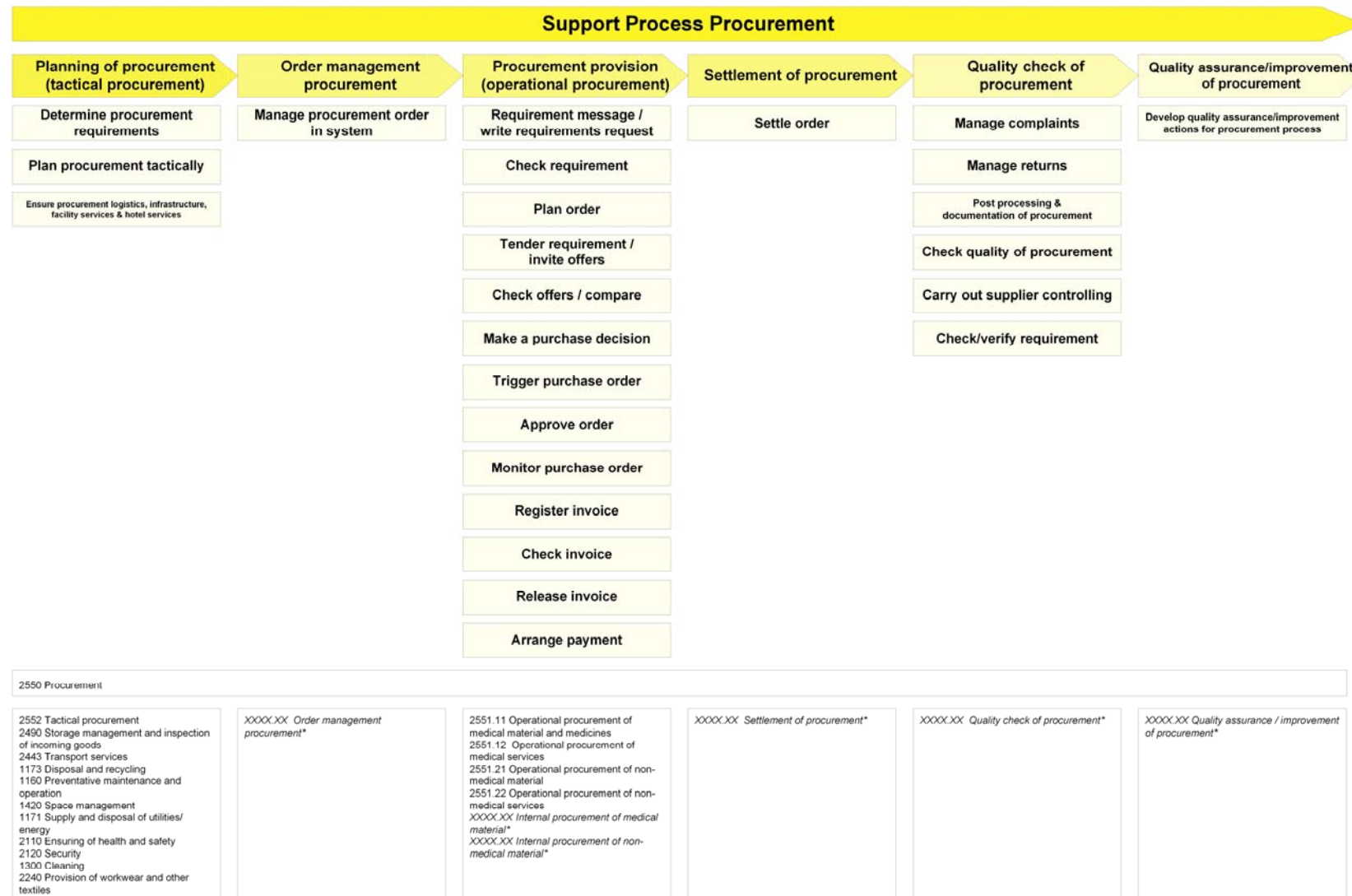
Figure 8: Support process procurement with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-procurement.jpg

The support process procurement belongs to the logistics domain (see Figure 1) and corresponds to the procurement department in KenkaS (Gerber et al., 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process procurement is divided into the following **sub-processes**
- **Planning of procurement (tactical procurement) (Plan)**
- **Order management procurement (Do)**
- **Procurement provision (operational procurement) (Do)**
- **Settlement of procurement (Do)**
- **Quality check of procurement (Study)**
- **Quality assurance/improvement of procurement (Act)**

(see Figure 8)

The corresponding **LekaS service** is:
2500 – Procurement

3.8.1. Sub-process planning of procurement (tactical procurement) (Plan)

The sub-process procurement planning (tactical procurement) includes the **process steps**
- **Determine procurement requirements**
- **Plan procurement tactically**
- **Ensure procurement logistics, infrastructure, facility services & hotel services**

(see Figure 8)

The corresponding **LekaS services** are:
2552 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 8)

3.8.2. Sub-process order management procurement (Do)

The sub-process order management procurement includes the **process step**
- **Manage procurement order in system**

(see Figure 8)

The corresponding **LekaS service** is:
XXXX.XX – Order management procurement (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 8)

3.8.3. Sub-process procurement provision (operational procurement) (Do)

The sub-process procurement provision (operational procurement) includes **process steps**
- **Requirement message/write requirement request**
- **Check requirement**
- **Plan order**
- **Tender requirement/invite offers**
- **Check offers/compare**
- **Make a purchase decision**
- **Trigger purchase order**
- **Approve order**
- **Monitor purchase order**
- **Register invoice**
- **Check invoice**
- **Release invoice**
- **Arrange payment**

(see Figure 8)

The corresponding **LekaS services** are:
2551.11 – Operational procurement of medical material and medicines
2551.12 – Operational procurement of medical services
2551.21 – Operational procurement of non-medical material
2551.22 – Operational procurement of non-medical services
XXXX.XX Internal procurement of medical material*
XXXX.XX Internal procurement of non-medical material*
(see Figure 8)

3.8.4. Sub-process settlement of procurement (Do)

The sub-process settlement of procurement includes the **process step**
- **Settle order**

(see Figure 8)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of procurement (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 8)

3.8.5. Sub-process quality check of procurement (Study)

The sub-process quality check of procurement includes the **process steps**
- **Manage complaints**
- **Manage returns**
- **Post processing & documentation of procurement**
- **Check quality of procurement**
- **Carry out supplier controlling**
- **Check/verify requirement**

(see Figure 8)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of procurement (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 8)

3.8.6. Sub-process quality assurance/improvement of procurement (Act)

The sub-process quality assurance/improvement of procurement includes the **process step**
- **Develop quality assurance/improvement actions for procurement process**

(see Figure 8)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance / improvement of procurement (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 8)

3.9. Process model support process storage management
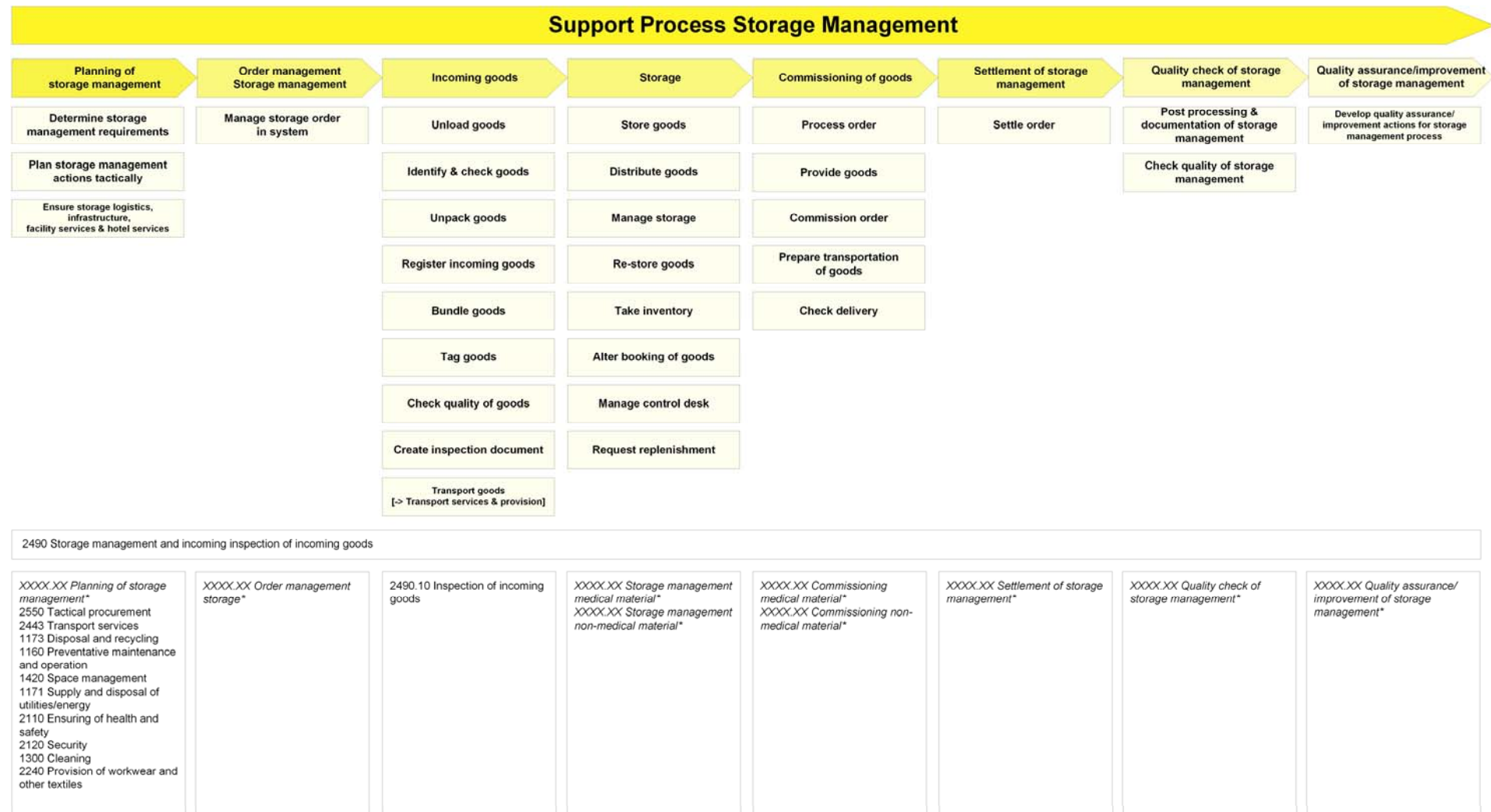
Figure 9: Support process storage management with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-inventory-management.jpg

The support process storage management belongs to the logistics domain (see Figure 1) and corresponds to the storage management department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process storage management is divided into the following **sub-processes**
- **Planning of storage management (Plan)**
- **Order management storage (Do)**
- **Incoming goods (Do)**
- **Storage (Do)**
- **Commissioning of goods (Do)**
- **Settlement of storage management (Do)**
- **Quality check of storage management (Study)**
- **Quality assurance/improvement of storage management (Act)**

(see Figure 9)

3.9.1. Sub-process planning of storage management (Plan)

The sub-process planning of storage management includes the **process steps**
- **Determine storage management requirements**
- **Plan storage management actions tactically**
- **Ensure storage logistics, infrastructure, facility services & hotel services**

(see Figure 9)

The corresponding **LekaS services** are:
XXXX.XX – Planning of storage management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 9)

3.9.2. Sub-process order management storage management (Do)

The sub-process order management storage includes the **process step**
- **Manage storage order in system**

(see Figure 9)

The corresponding **LekaS service** is:
XXXX.XX – Order management storage (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 9)

3.9.3. Sub-process incoming goods (Do)

The sub-process incoming goods includes the **process steps**
- **Unload goods**
- **Identify & check goods**
- **Unpack goods**
- **Register incoming goods**
- **Bundle goods**
- **Tag goods**
- **Check quality of goods**
- **Create inspection document**
- **Transport goods** (interface to the support process transport services & provision)

(see Figure 9)

The corresponding **LekaS service** is:
2490.10 – Inspection of incoming goods
(see Figure 9)

3.9.4. Sub-process storage (Do)

The sub-process storage includes the **process steps**
- **Store goods**
- **Distribute goods**
- **Manage storage**
- **Re-store goods**
- **Take iventory**
- **Alter booking of goods**

- **Manage control desk**
- **Request replenishment**

(see Figure 9)

The corresponding **LekaS services** are:
XXXX.XX – Storage management medical material *(*This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Storage management non-medical material (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 9)

3.9.5. Sub-process commissioning of goods

The sub-process commissioning of goods includes the **process steps**
- **Process order**
- **Provide goods**
- **Commission order**
- **Prepare transportation of goods**
- **Check delivery**

(see Figure 9)

The corresponding **LekaS services** are:
XXXX.XX – Commissioning medical material (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Commissioning non-medical material (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 9)

3.9.6. Sub-process settlement of storage management

The sub-process settlement of storage management includes the **process step**
- **Settle order**

(se. Figure 9)

The corresponding **LekaS service** is:
XXXX.XX Settlement of storage management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 9)

3.9.7. Sub-process quality check of storage management

The sub-process quality check of storage management includes the **process steps**
- **Post processing & documentation of storage management**
- **Check quality of storage management**

(see Figure 9)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of storage management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.9.8. Sub-process quality assurance/improvement of storage management

The sub-process quality assurance/improvement of storage management includes the **process step**
- **Develop quality assurance/improvement actions for storage management process**

(see Figure 9)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of storage management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.10. Process model support process transport services & provision

Support Process Transport Services and Provision

Planning of transport services & provision	Order management transport services & provision	Fleet management	Transportation	Settlement of transport services & provision	Quality check of transport services & provision	Quality assurance / improvement of transport services & provision
Determine transport services & provision requirements	Manage transport services & provision order in system	Manage fleet	Plan / carry out transport	Settle order	Post processing & documentation of transport services and provision	Develop quality assurance/improvement actions for transport services & provision process
Plan transport services & provision actions tactically			Pick up / receive transport goods		Check quality of transport services & provision	
Ensure transport logistics, infrastructure, facility services & hotel services			Confirm reception		Post processing & documentation of fleet management	
			Co-ordinate / control transport		Check quality of fleet management	
			Transport goods			
			Deliver goods			
			Confirm delivery			

2440 Mobility without 2442 Travel services

XXXX.XX Planning of transport services & provision*	*XXXX.XX Order management transport services & provision**	2441 Fleet management	2443.11 External people transport services	*XXXX.XX Settlement of transport services & provision**	*XXXX.XX Quality check of transport services & provision**	*XXXX.XX Quality assurance/ improvement of transport services & provision**
2550 Tactical procurement			2443.12 Internal people transport services			
2490 Storage management and inspection of incoming goods			2443.21 External transport and distribution of non-dangerous goods			
1173 Disposal and recycling			2443.22 External transports and distribution of dangerous goods			
1160 Preventative maintenance and operation			2443.23 External transport and distribution of anesthetics (controlled substances)			
1420 Space management			2443.24 Internal transport and distribution of non-dangerous goods			
1171 Supply and disposal of utilities/ energy			2443.25 Internal transport and distribution of dangerous goods			
2110 Ensuring of health and safety			2443.26 Internal transport and distribution of anesthetics (controlled substances)			
2120 Security			2422 Post room and internal distribution			
1300 Cleaning			2430 Relocations			
2240 Provision of workwear and other textiles						

*Will be specified in LekaS 2.0

Figure 10: Support process transport services & provision with appropriate sub-processes, process steps and LekaS services
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The support process transport services & provision belongs to the logistics domain (see Figure 1) and corresponds to the transport services & provision department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process transport services & provision is divided into the following **sub-processes**
- **Planning of transport services & provision (Plan)**
- **Order management transport services & provision (Do)**
- **Fleet management (Do)**
- **Transportation (Do)**
- **Settlement of transport services & provision (Do)**
- **Quality check of transport services & provision (Study)**
- **Quality assurance / improvement of transport services & provsion (Act)**

(see Figure 10)

3.10.1. Sub-process planning of transport services & provision

The sub-process planning of transport services & provision includes the **process steps**
- **Determine transport services & provision requirements**
- **Plan transport services & provision actions tactically**
- **Ensure transport logistics, infrastructure, facility services & hotel services**

(see Figure 10)

The corresponding **LekaS services** are:

XXXX.XX – Planning of transport services & provision (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

3.10.2. Sub-process order management transport services & provision

The sub-process order management transport services & provision includes the **process step**
- **Manage transport services & provision order in system**

(see Figure 10)

The corresponding **LekaS service** is:
XXXX.XX – Order management transport services & provision (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 10)

3.10.3. Sub-process fleet management

The sub-process fleet management includes the **process step**
- **Manage fleet**

(see Figure 10)

The corresponding **LekaS service** is:
2441 – Fleet management
(see Figure 10)

3.10.4. Sub-process transportation

The sub-process transportation includes the **process steps**
- **Plan / carry out transport**
- **Pick up / receive transport goods**
- **Confirm reception**
- **Coordinate / control transport**
- **Transport goods**
- **Deliver goods**
- **Confirm delivery**

(see Figure 10)

The corresponding **LekaS services** are:
2443.11 – External people transport services
2443.12 – Internal people transport services
2443.21 – External transport and distribution of non-dangerous goods
2443.22 – External transport and distribution of dangerous goods
2443.23 – External transport and distribution of anesthetics (controlled substances)

2443.24 – Internal transport and distribution of non-dangerous goods
2443.25 – Internal transport and distribution of dangerous goods
2443.26 – Internal transport and distribution of anesthetics (controlled substances)
2422 – Post room and internal distribution
2430 – Relocations
(see Figure 10)

3.10.5. Sub-process settlement of transport services & provision

The sub-process settlement of transport services & provision includes the **process step**
- **Settle order**

(see Figure 10)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of transport services & provision (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.10.6. Sub-process quality check of transport services & provision

The sub-process quality c of transport services & provision includes the **process steps**
- **Post processing & documentation of transport services and provision**
- **Check quality of transport services & provision**
- **Post processing & documentation of fleet management**
- **Check quality of fleet management**

(see Figure 10)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of transport services & provision (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.10.7. Sub-process quality assurance / improvement of transport services & provision

The sub-process quality assurance / improvement of transport services & provision includes the **process step**
- **Develop quality assurance/improvement actions for transport services & provision process**

(see Figure 10)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of transport services & provision (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.11. Process model support process disposal & recycling
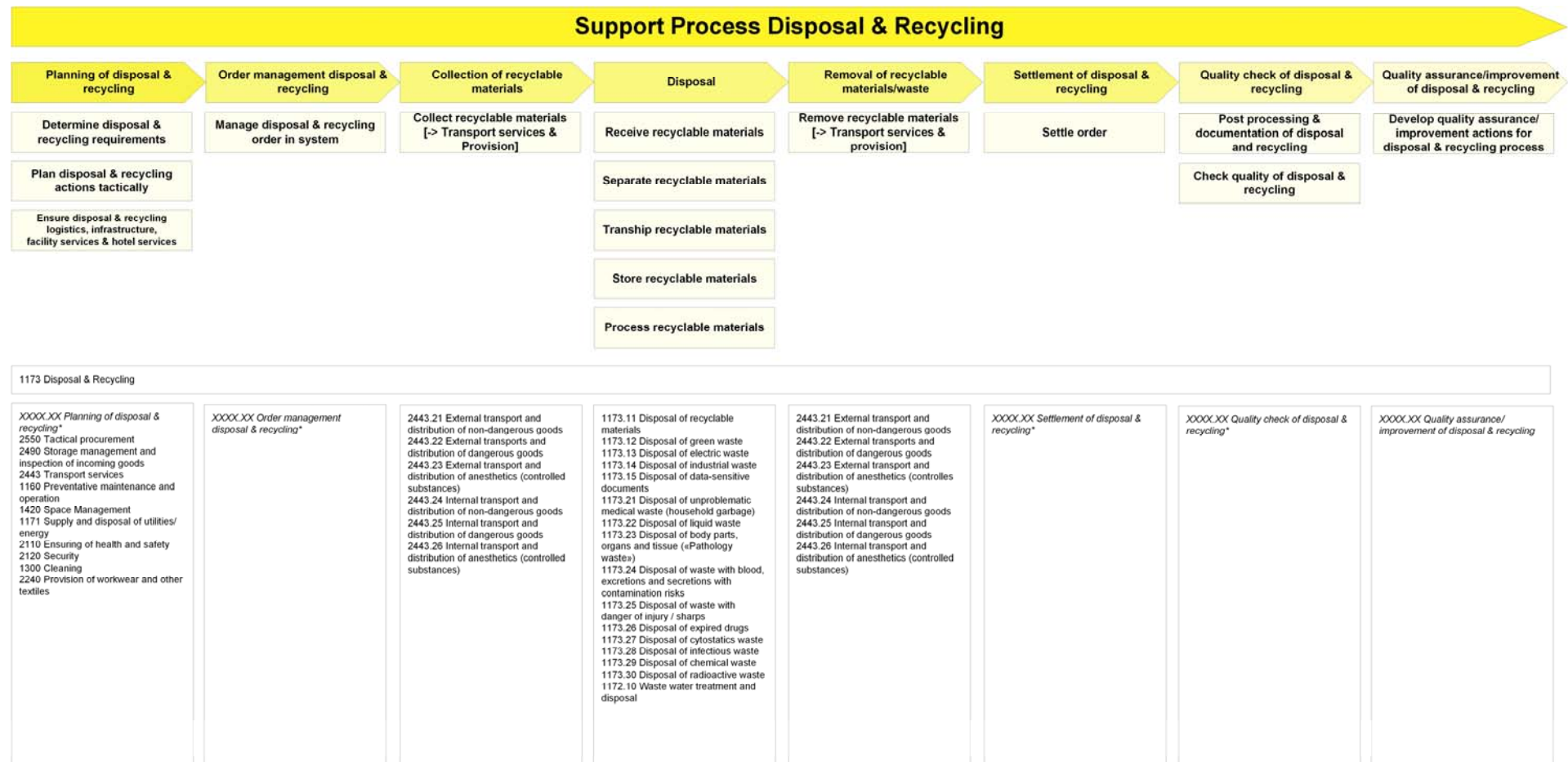
Figure 11: Support process disposal & recycling with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-disposal-recyling.jpg

The support process disposal & recycling belongs to the logistics domain (see Figure 1) and corresponds to the disposal & recycling department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process disposal & recycling is divided into the following **sub-processes**
- **Planning of disposal & recycling demand (Plan)**
- **Order management disposal & recycling (Do)**
- **Collection of recyclable materials (Do)**
- **Disposal (Do)**
- **Removal of recyclable materials/waste (Do)**
- **Settlement of disposal & recycling (Do)**
- **Quality check of disposal & recycling (Study)**
- **Quality assurance/improvement of disposal & recycling (Act)**

(see Figure 11)

3.11.1.   Sub-process planning of disposal & recycling

The sub-process planning of disposal & recycling includes the **process steps**
- **Determine disposal & recycling requirements**
- **Plan disposal & recycling actions tactically**
- **Ensure disposal & recycling logistics, infrastructure, facility services & hotel services**

(see Figure 11)

The corresponding LekaS services are:
XXXX.XX – Planning of disposal & recycling (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 11)

3.11.2. Sub-process order management disposal & recycling

The sub-process order management disposal & recycling includes the process step
- **Manage disposal & recycling order in system**

(see Figure 11)

The corresponding **LekaS service** is:
XXXX.XX – Order management disposal & recycling (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 11)

3.11.3. Sub-process collection of recyclable materials

The sub-process collection of recyclable materials includes the **process step**
- **Collect recyclable materials** (interface to support process transport services & provision)

(see Figure 11)

The corresponding **LekaS services** are:
2443.21 – External transport and distribution of non-dangerous goods
2443.22 – External transports and distribution of dangerous goods
2443.23 – External transport and distribution of anesthetics
2443.24 – Internal transport and distribution of non-dangerous goods
2443.25 – Internal transport and distribution of dangerous goods
2443.26 – Internal transport and distribution of anesthetics (controlled substances)
(see Figure 11)

3.11.4. Sub-process disposal

The sub-process disposal includes the **process steps**
- **Receive recyclable materials**
- **Separate recyclable materials**
- **Tranship recyclable materials**
- **Store recyclable materials**
- **Process recyclable materials**

(see Figure 11)

The corresponding **LekaS services** are:
1173.11 – Disposal of recyclable materials
1173.12 – Disposal of green waste

1173.13 – Disposal of electric waste
1173.14 – Disposal of industrial waste
1173.15 – Disposal of data-sensitive documents
1173.21 – Disposal of unproblematic medical waste (household garbage)
1173.22 – Disposal of liquid waste
1173.23 – Disposal of body parts, organs and tissue («Pathology waste»)
1173.24 – Disposal of waste with blood, excretions and secretions with contamination risks
1173.25 – Disposal of waste with danger of injury / sharps
1173.26 – Disposal of expired drugs
1173.27 – Disposal of cytostatics waste
1173.28 – Disposal of infectious waste
1173.29 – Disposal of chemical waste
1173.30 – Disposal of radioactive waste
1172.10 – Waste water treatment and disposal
(see Figure 11)

3.11.5. Sub-process removal of recyclable materials/waste

The sub-process removal of recyclable materials/waste includes the **process step**
- **Remove recyclable materials** (interface to support process transport services & provision)

(see Figure 11)

The corresponding **LekaS services** are:
2443.21 – External transport and distribution of non-dangerous goods
2443.22 – External transports and distribution of dangerous goods
2443.23 – External transport and distribution of anesthetics
2443.24 – Internal transport and distribution of non-dangerous goods
2443.25 – Internal transport and distribution of dangerous goods
2443.26 – Internal transport and distribution of anesthetics (controlled substances)
(see Figure 11)

3.11.6. Sub-process settlement of disposal & recycling

The sub-process settlement of disposal & recycling includes the **process step**
- **Settle order**

(see Figure 11)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of disposal & recycling (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.11.7. Sub-process quality check of disposal & recycling

The sub-process quality check of disposal & recycling includes the **process steps**
- **Post processing & documentation of disposal and recycling**
- **Check quality of disposal & recycling**

(see Figure 11)

The corresponding LekaS service is:
XXXX.XX – Quality check of disposal & recycling (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.11.8. Sub-process quality assurance/improvement of disposal & recycling

The sub-process quality assurance/improvement of disposal & recycling includes the **process step**
- **Develop quality assurance/improvement actions for disposal & recycling process**

(see Figure 11)

The corresponding LekaS service is:
XXXX.XX – Quality assurance/improvement of disposal & recycling (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.12. Process model support process maintenance

Support Process Maintenance

Planning of maintenance	Order management maintenance	Maintenance	Settlement of maintenance	Quality check of maintenance	Quality assurance/improvement of maintenance
Determine maintenance requirements	Manage maintenance order in system	Carry out inspection	Settle order	Post processing & documentation of maintenance	Develop quality assurance/improvement actions for maintenance process
Plan maintenance actions tactically		Carry out servicing		Check quality of maintenance	
Ensure maintenance logistics, infrastructure, facility services & hotel services		Carry out repair			

1160 Preventative Maintenance and Operation
1200 Outdoors
1400 Provision of workplaces (without 1420 Space Management)
1990.10 Oooperation and preventative maintenance of medical movables

*XXXX.XX Planning of maintenance** 2550 Tactical procurement 2490 Storage management and inspection of incoming goods 2443 Transport services 1173 Disposal and recycling 1420 Space management 1171 Supply and disposal of utilities/ energy 2110 Ensuring of health and safety 2120 Security 1300 Cleaning 2240 Provision of workwear and other textiles	*XXXX.XX Order management maintenance**	1210 Operating and preventative maintenance of land, site and lot 1220 Operating and preventative maintenance of additional space on site 1230 Operating and preventative maintenance of parking facilities 1141 CAFM provision and operation 1162 Structure operation 1163 Preventative structure maintenance 1164 Technical building equipment operation 1165 Technical building equipment preventative maintenance 1161 Help desk incl. janitor services 1410 Occupier fit out and adaptations 1990.10 Operation and preventative maintenance of medical movables *XXXX.XX Maintenance of medical-technical operating facilities* *XXXX.XX Operation & maintenance of non-medical mobile technical assets* 1400 Provision of workplaces 1430 Furniture upkeep 1431 Plants and flowers upkeep 1440 Art works upkeep 1449.10 Signage upkeep 1449.20 Decorations upkeep	*XXXX.XX Settlement of maintenance**	*XXXX.XX Quality check of maintenance**	*XXXX.XX Quality assurance/improvement of maintenance**

*Will be specified in LekaS 2.0

Figure 12: Support process maintenance with appropriate sub-processes, process steps and LekaS services
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The support process maintenance belongs to the infrastructure domain (see Figure 1) and corresponds to the maintenance department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process maintenance is divided into the following **sub-processes**
- **Planning of maintenance (Plan)**
- **Order management maintenance (Do)**
- **Maintenance (Do)**
- **Settlement of maintenance (Do)**
- **Quality check of maintenance (Study)**
- **Quality assurance/improvement of maintenance (Act)**

(see Figure 12)

3.12.1. Sub-process planning of maintenance

The sub-process planning of maintenance includes the **process steps**
- **Determine maintenance requirements**
- **Plan maintenance actions tactically**
- **Ensure maintenance logistics, infrastructure, facility services & hotel services**

(see Figure 12)

The corresponding **LekaS services** are:
XXXX.XX – Planning of maintenance (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 12)

3.12.2. Sub-process order management maintenance

The sub-process order management maintenance includes the process step
- **Manage maintenance order in system**

(see Figure 12)

The corresponding LekaS service is:

XXXX.XX – Order management maintenance (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 12)

3.12.3. Sub-process maintenance

The sub-process maintenance includes the **process steps**
- **Carry out inspection**
- **Carry out servicing**
- **Carry out repair**

(see Figure 12)

The corresponding LekaS services are:
1210 – Operating and preventative maintenance of land, site and lot
1220 – Operating and preventative maintenance of additional space on site
1230 – Operating and preventative maintenance of parking facilities
1141 – CAFM provision and operation
1162 – Structure operation
1163 – Preventative structure maintenance
1164 – Technical building equipment operation
1165 – Technical building equipment preventative maintenance
1161 – Help desk incl. janitor services
1410 – Occupier fit out and adaptations
1990.10 – Operation and preventative maintenance of medical movables
XXXX.XX – Maintenance of medical-technical operating facilities (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Operation & maintenance of non-medical mobile technical assets (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
1400 – Provision of workplaces
1430 – Furniture upkeep
1431 – Plants and flowers upkeep
1440 – Art works upkeep

1449.10 – Signage upkeep
1449.20 – Decorations upkeep
(see Figure 12)

### 3.12.4.	Sub-process settlement of maintenance

The sub-process settlement of maintenance includes the **process step**
- **Settle order**

(see Figure 12)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of maintenance (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 12)

### 3.12.5.	Sub-process quality check of maintenance

The sub-process quality check of maintenance includes the **process steps**
- **Post processing & documentation of maintenance**
- **Check quality of maintenance**

(see Figure 12)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of maintenance (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 12)

### 3.12.6.	Sub-process quality assurance/improvement of maintenance

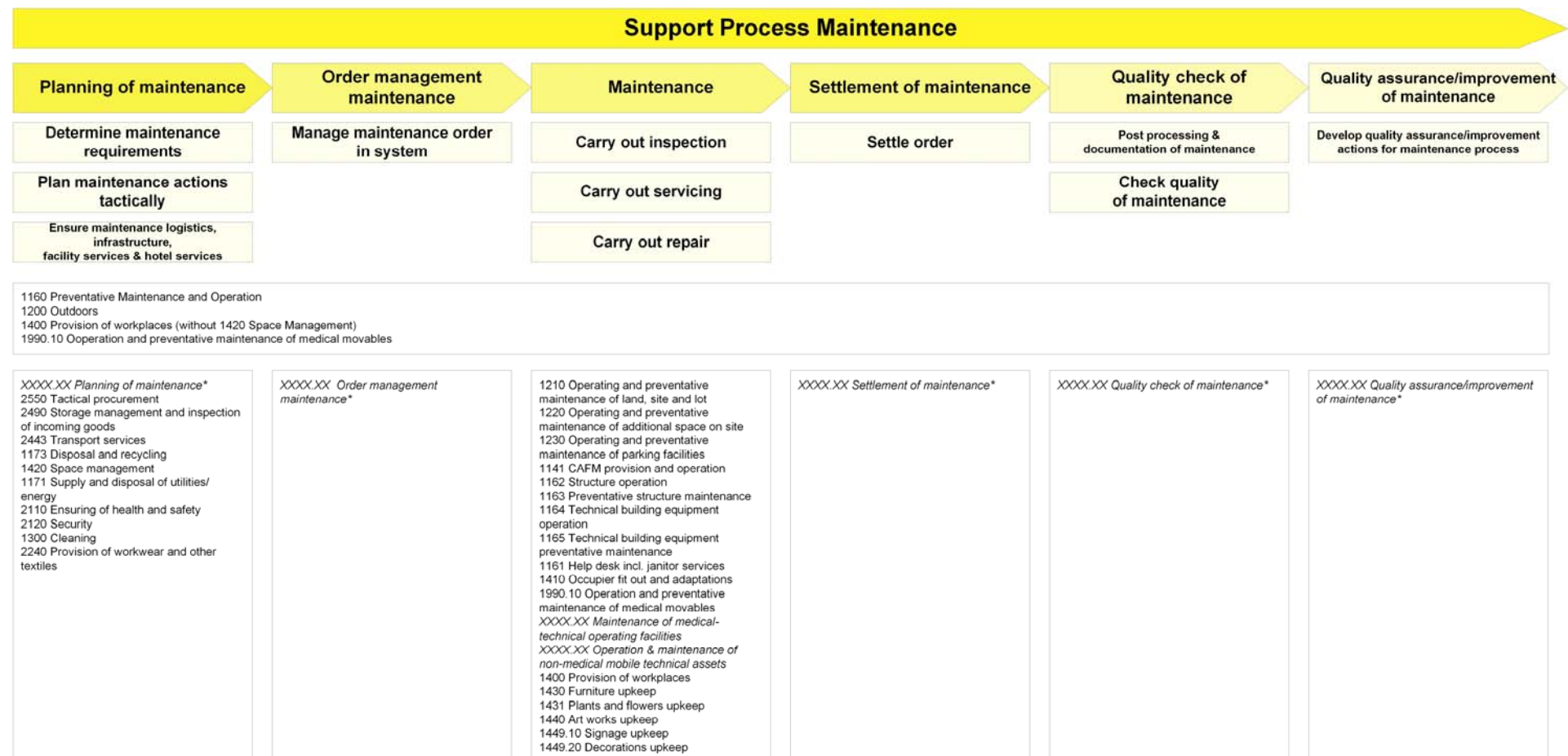The sub-process quality assurance/improvement of maintenance includes **the process step**
- **Develop quality assurance/improvement actions for maintenance process**

(see Figure 12)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of maintenance (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 12)

3.13. Process model support process space management

Figure 13: Support process space management with appropriate sub-processes, process steps and LekaS services
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The support process space management belongs to the infrastructure domain (see Figure 1) and corresponds to the space management department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process space management is divided into the following **sub-processes**

- **Planning of space management (Plan)**
- **Order management of space management (Do)**
- **Portfolio maintenance of spaces (Do)**
- **Internal leasing management (Do)**
- **Property administration (Do)**
- **Settlement of space management (Do)**
- **Quality check of space management (Study)**
- **Quality assurance/improvement of space management (Act)**

(see Figure 13)

3.13.1. Sub-process planning of space management

The sub-process planning of space management includes the **process steps**

- **Determine space management requirements**
- **Plan space management actions tactically**
- **Ensure space management logistics, infrastructure, facility services & hotel services**

(see Figure 13)

The corresponding **LekaS services** are:
XXXX.XX – Planning of space management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles
(see Figure 13)

3.13.2. Sub-process order management of space management

The sub-process order management of space management includes the **process step**
- **Manage space management order in system**

(see Figure 13)

The corresponding **LekaS service** is:
XXXX.XX – Order management of space management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 13)

3.13.3. Sub-process portfolio maintenance of spaces

The sub-process portfolio maintenance of spaces includes the **process step**
- **Maintain portfolio of spaces**

(see Figure 13)

The corresponding **LekaS service** is:
XXXX.XX – Portfolio maintenance of spaces (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 13)

3.13.4. Sub-process internal leasing management

The sub-process internal leasing management includes the **process steps**
- **Manage/optimize operational area**
- **Manage allocation plan**

(see Figure 13)

The corresponding LekaS services are:
1140.30 – Internal leasing management
1420 – Space management / -provision
(see Figure 13)

3.13.5. Sub-process property administration

The sub-process property administration includes the **process steps**
- **Letting internally/externally**
- **Adjust contracts for internal/external letting**

- **Terminate internal/external letting**
- **Manage rent collection**
- **Rent properties from third parties**
- **Adjust contracts for renting**
- **Terminate rentals**
- **Manage property bookkeeping (internal/external costs & revenues)**
- **Manage heating & ancillary costs**
- **Manage property documentation**

(see Figure 13)

The corresponding LekaS services are:
1140.10 – Property letting to third parties
1140.20 – Property renting from third parties
1140.40 – Property bookkeeping
(see Figure 13)

3.13.6.   Sub-process settlement of space management

The sub-process settlement of space management includes the process step
- **Settle order**

(see Figure 13)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of space management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 13)

3.13.7.   Sub-process quality check of space management

The sub-process quality check of space management includes the **process steps**
- **Post processing & documentation of space management**
- **Check quality of space management**

(see Figure 13)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of space management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 13)

3.13.8. Sub-process quality assurance/improvement of space management

The sub-process quality assurance/improvement of space management includes the **process step**
- **Develop quality assurance/improvement actions for space management process**
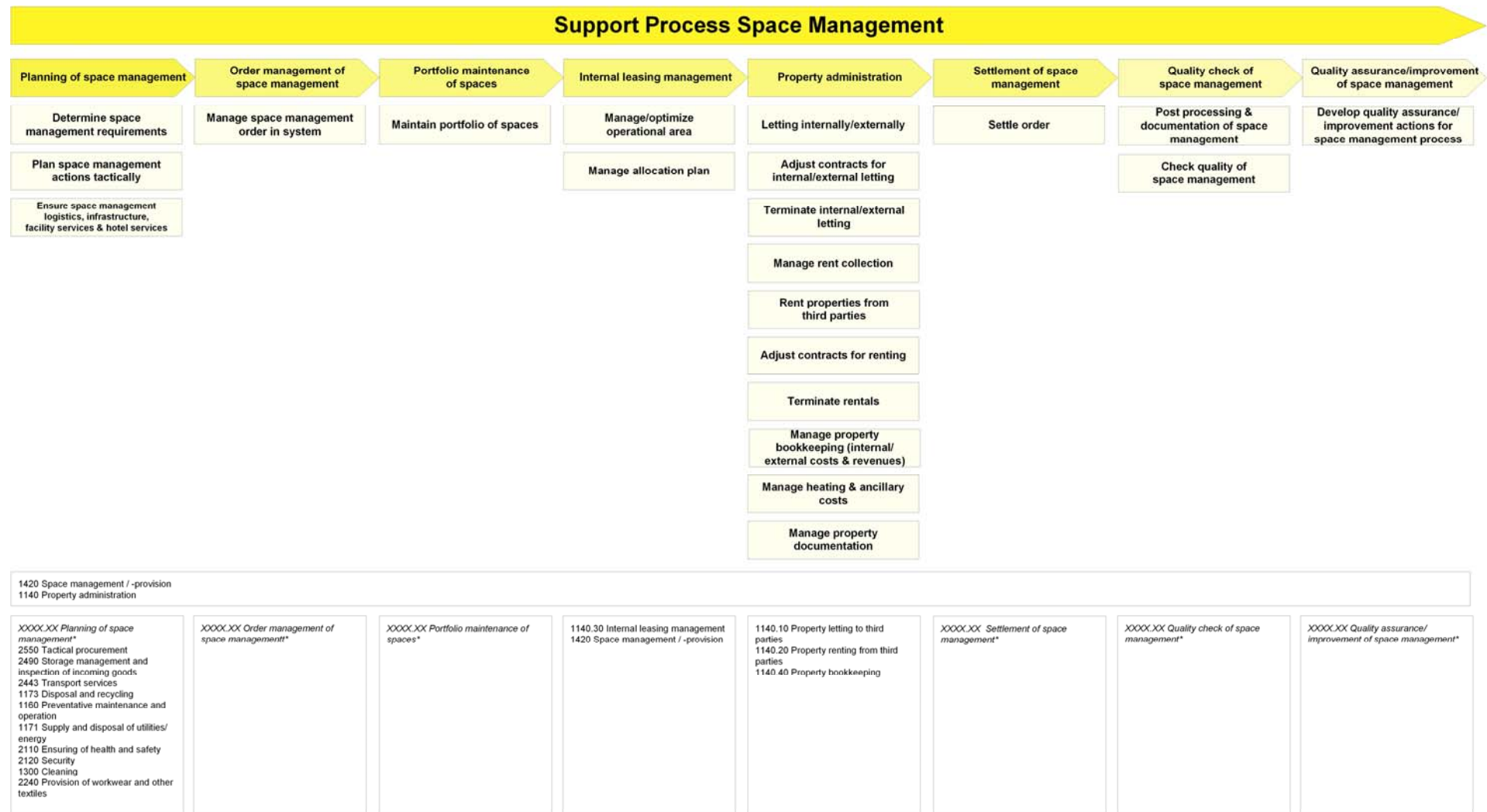
(see Figure 13)

The corresponding **LekaS service** is:

XXXX.XX – Quality assurance/improvement of space management (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

(see Figure 13)

3.14. Process model support process energy supply
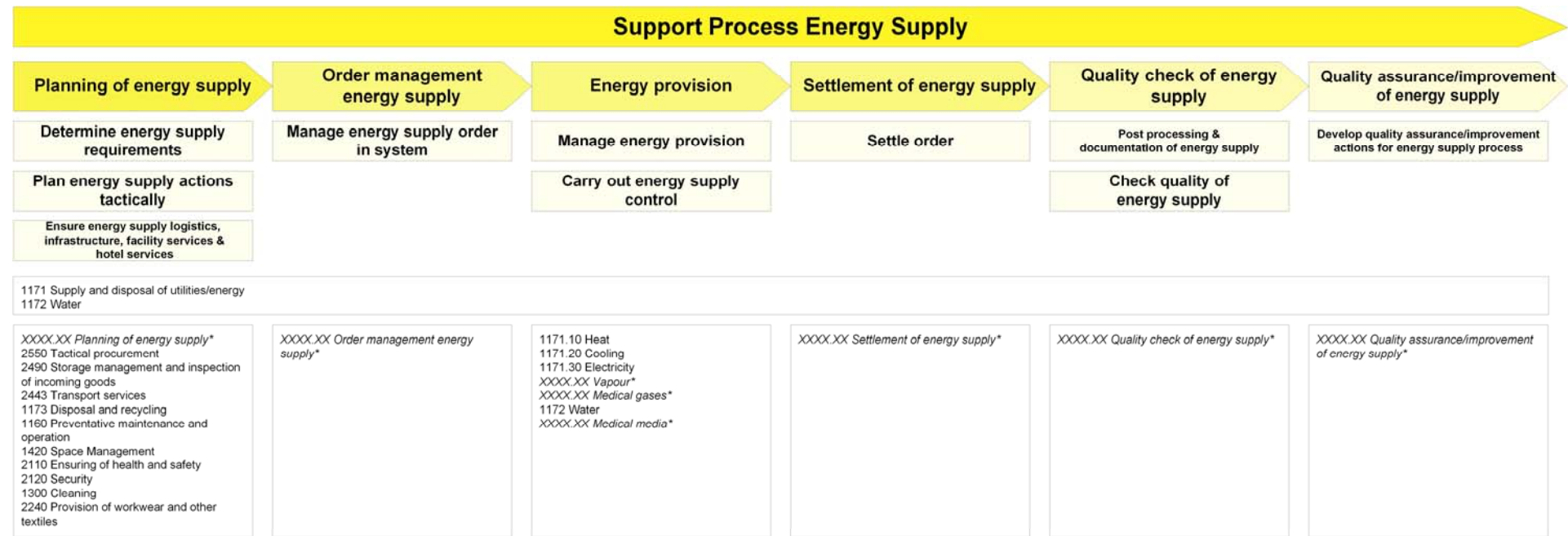
Figure 14: Support process energy supply with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-energy.jpg

The support process energy supply belongs to the infrastructure domain (see Figure 1) and corresponds to the energy supply department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process energy supply is divided into the following **sub-processes**
- **Planning of energy supply (Plan)**
- **Order management energy supply (Do)**
- **Energy provision (Do)**
- **Settlement of energy supply (Do)**
- **Quality check of energy supply (Study)**
- **Quality assurance/improvement of energy supply (Act)**

(see Figure 14)

3.14.1. Sub-process planning of energy supply

The sub-process planning of energy supply includes the **process steps**
- **Determine energy supply requirements**
- **Plan energy supply actions tactically**
- **Ensure energy supply logistics, infrastructure, facility services & hotel services**

(see Figure 14)

The corresponding **LekaS services** are:
XXXX.XX – Planning of energy supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space Management
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles
(see Figure 14)

3.14.2. Sub-process order management energy supply

The sub-process order management energy supply includes the **process step**
- **Manage energy supply order in system**

(see Figure 14)

The corresponding **LekaS service** is:

XXXX.XX – Order management energy supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 14)

3.14.3. Sub-process energy provision

The sub-process energy provision includes the **process steps**
- **Manage energy provision**
- **Carry out energy supply control**

(see Figure 14)

The corresponding **LekaS services** are:

1171.10 – Heat
1171.20 – Cooling
1171.30 – Electricity
XXXX.XX Vapour (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX Medical gases (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
1172 – Water
XXXX.XX – Medical media (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 14)

3.14.4. Sub-process settlement of energy supply

The sub-process settlement of energy supply includes the **process step**
- **Settle order**

(see Figure 14)

The corresponding **LekaS service** is:

XXXX.XX – Settlement of energy supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 14)

3.14.5. Sub-process quality check of energy supply

The sub-process quality check of energy supply includes the **process steps**
- **Post processing & documentation of energy supply**
- **Check quality of energy supply**

(see Figure 14)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of energy supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 14)

3.14.6. Sub-process quality assurance/improvement of energy supply

The sub-process quality assurance/improvement of energy supply includes the **process step**
- **Develop quality assurance/improvement actions for energy supply process**

(see Figure 14)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of energy supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 14)

3.15. Process model support process safety
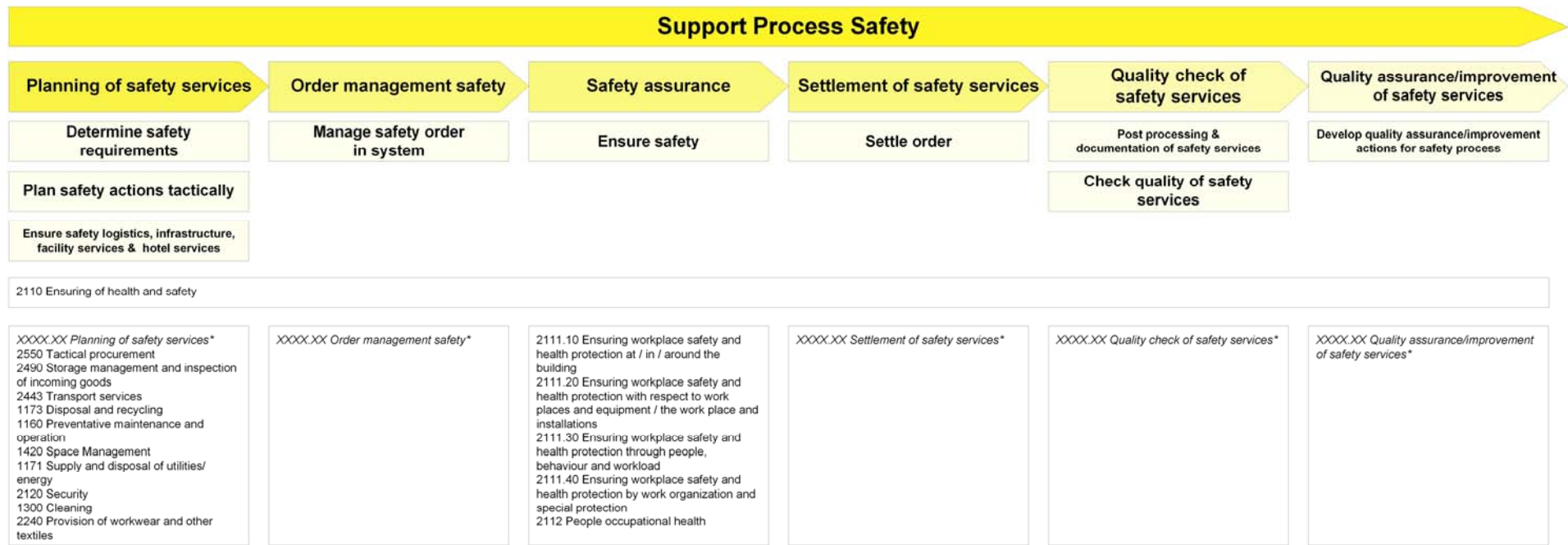
Figure 15: Support process safety with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-safety.jpg

The support process safety belongs to the facility services domain (see Figure 1) and corresponds to the safety department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process safety is divided into the following **sub-processes**
- **Planning of safety services (Plan)**
- **Order management safety (Do)**
- **Safety assurance (Do)**
- **Settlement of safety services (Do)**
- **Quality check of safety services (Study)**
- **Quality assurance/improvement of safety services (Act)**

(see Figure 15)

3.15.1. Sub-process planning of safety services

The sub-process planning of safety services includes the **process steps**
- **Determine safety requirements**
- **Plan safety actions tactically**
- **Ensure safety logistics, infrastructure, facility services & hotel services**

(see Figure 15)

The corresponding **LekaS services** are:
XXXX.XX – Planning of safety services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space Management
1171 – Supply and disposal of utilities/energy
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 15)

3.15.2. Sub-process order management safety

The sub-process order management safety includes the **process step**
- **Manage safety order in system**

(see Figure 15)

The corresponding **LekaS service** is:
XXXX.XX – Order management safety (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.15.3. Sub-process safety assurance

The sub-process safety assurance includes the **process step**
- **Ensure safety**

(see Figure 15)

The corresponding **LekaS services** are:
2111.10 – Ensuring workplace safety and health protection at / in / around the building
2111.20 – Ensuring workplace safety and health protection with respect to workplaces, equipment and installations
2111.30 – Ensuring workplace safety and health protection through people, behaviour and workload
2111.40 – Ensuring workplace safety and health protection by work organization and special protection
2112 – People occupational health
(see Figure 15)

3.15.4. Sub-process settlement of safety services

The sub-process settlement of safety services includes the **process step**
- **Settle order**

(see Figure 15)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of safety services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 15)

3.15.5.   Sub-process quality check of safety services

The sub-process quality check of safety services includes the **process steps**
- **Post processing & documentation of safety services**
- **Check quality of safety services**

(see Figure 15)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of safety services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 15)

3.15.6.   Sub-process quality assurance/improvement of safety services

The sub-process quality assurance/improvement includes the **process step**
- **Develop quality assurance/improvement actions for safety process**

(see Figure 15)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of safety services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 15)

3.16. Process model support process security
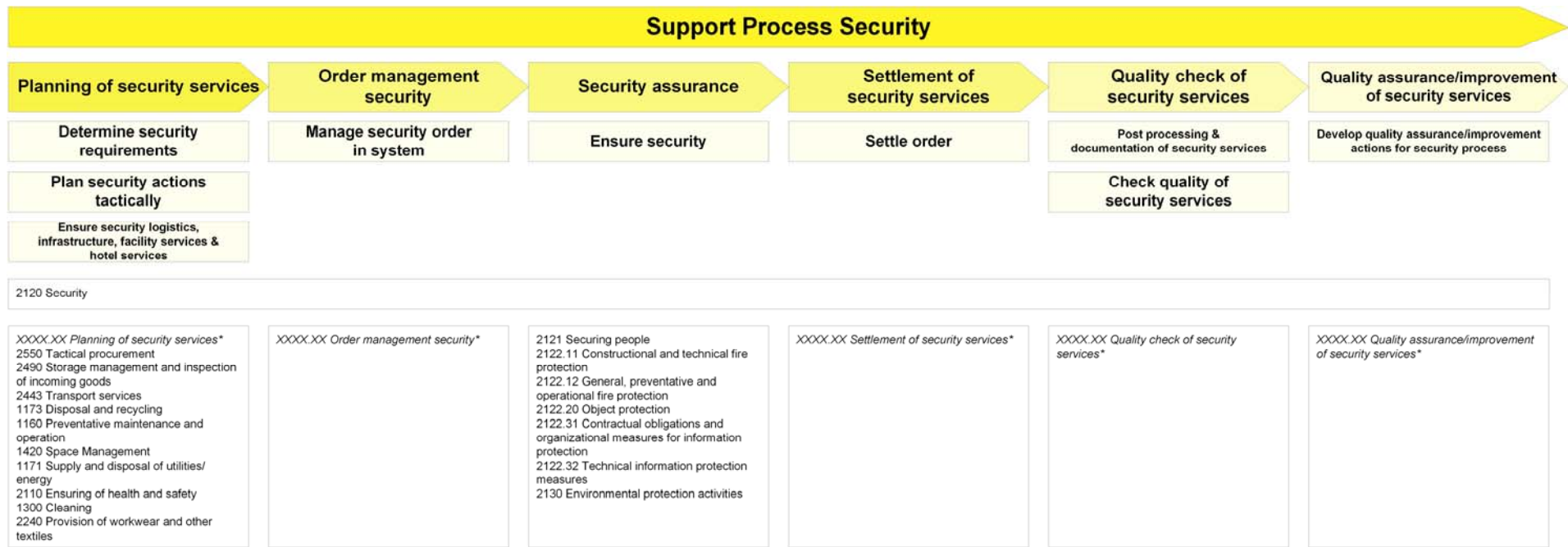
Figure 16: Support process security with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-security.jpg

The support process security belongs to the facility services domain (see Figure 1) and corresponds to the security department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process security is divided into the following **sub-processes**
- **Planning of security services (Plan)**
- **Order management security (Do)**
- **Security assurance (Do)**
- **Settlement of security services (Do)**
- **Quality check of security services (Study)**
- **Quality assurance/improvement of security services (Act)**

(see Figure 16)

3.16.1. Sub-process planning of security services

The sub-process planning of security services includes the **process steps**
- **Determine security requirements**
- **Plan security actions tactically**
- **Ensure security logistics, infrastructure, facility services & hotel services**

(see Figure 16)

The corresponding **LekaS services** are:
XXXX.XX – Planning of security services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space Management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 16)

3.16.2. Sub-process order management security

The sub-process order management security includes the **process step**
- **Manage security order in system**

(see Figure 16)

The corresponding **LekaS service** is:
XXXX.XX – Order management security (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 16)

3.16.3. Sub-process security assurance

The sub-process security assurance includes the **process step**
- **Ensure security**

(see Figure 16)

The corresponding **LekaS services** are:
2121 – Securing people
2122.11 – Constructional and technical fire protection
2122.12 – General, preventative and operational fire protection
2122.20 – Object protection
2122.31 – Contractual obligations and organizational measures for information protection
2122.32 – Technical information protection measures
2130 – Environmental protection activities
(see Figure 16)

3.16.4. Sub-process settlement of security services

The sub-process settlement of security services includes the **process step**
- **Settle order**

(see Figure 16)

The corresponding LekaS service is:
XXXX.XX – Settlement of security services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 16)

3.16.5. Sub-process quality check of security services

The sub-process quality check of security services includes the **process steps**
- **Post processing & documentation of security services**
- **Check quality of security services**

(see Figure 16)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of security services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 16)

3.16.6. Sub-process quality assurance/improvement of security services

The sub-process quality assurance/improvement of security services includes the **process step**
- **Develop quality assurance/improvement actions for security process**

(see Figure 16)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of security services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 16)

3.17. Process model support process cleaning
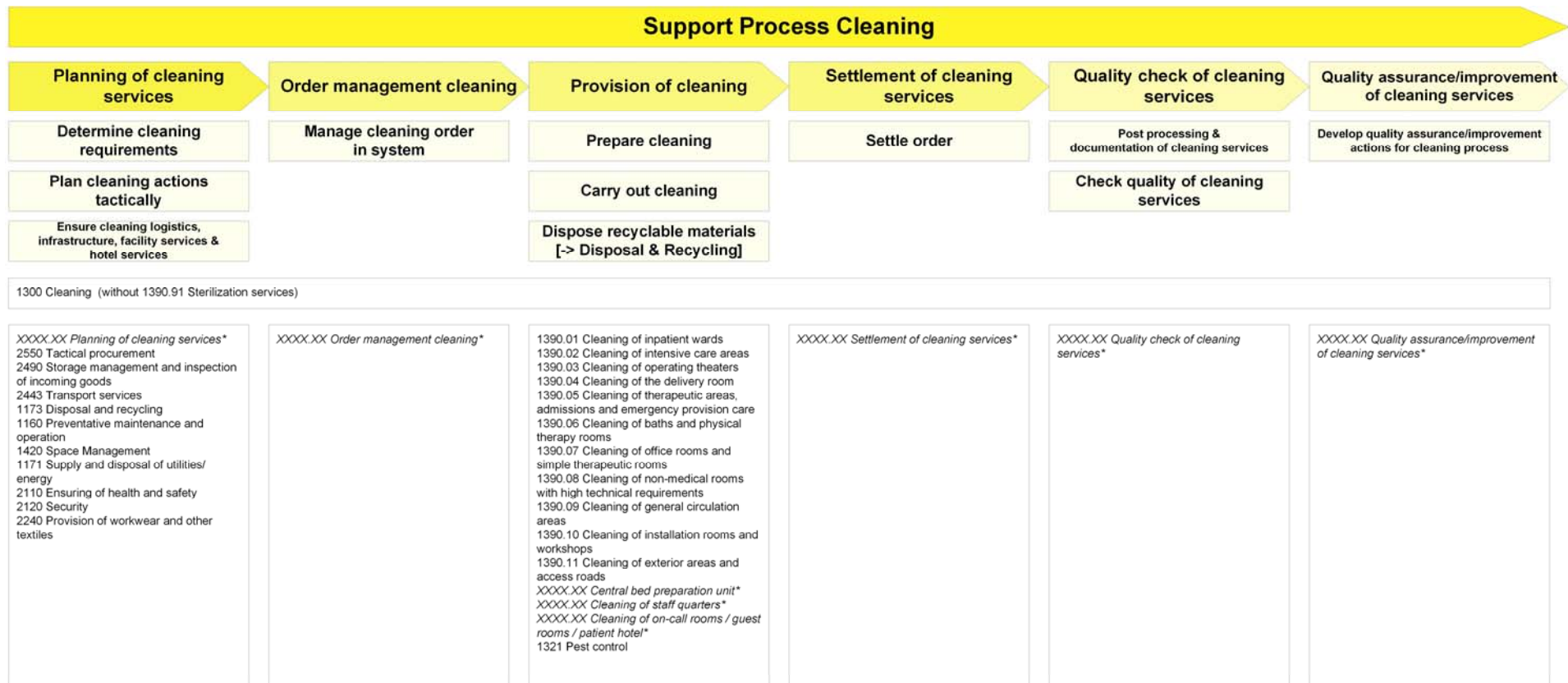
Figure 17: Support process cleaning with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-cleaning.jpg

The support process cleaning belongs to the facility services domain (see Figure 1) and corresponds to the cleaning department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process cleaning is divided into the following **sub-processes**
- **Planning of cleaning services (Plan**
- **Order management cleaning (Do)**
- **Provision of cleaning (Do)**
- **Settlement of cleaning services (Do)**
- **Quality check of cleaning services (Study)**
- **Quality assurance/improvement of cleaning services (Act)**

(see Figure 17)

3.17.1. Sub-process planning of cleaning services

The sub-process planning of cleaning services includes the **process steps**
- **Determine cleaning requirements**
- **Plan cleaning actions tactically**
- **Ensure cleaning logistics, infrastructure, facility services & hotel services**

(see Figure 17)

The corresponding **LekaS services** are:
XXXX.XX – Planning of cleaning services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space Management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
2240 – Provision of workwear and other textiles
(see Figure 17)

3.17.2. Sub-process order management cleaning

The sub-process order management cleaning includes the **process step**
- **Manage cleaning order in system**

(see Figure 17)

The corresponding LekaS service is:

XXXX.XX – Order management cleaning (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 17)

3.17.3. Sub-process provision of cleaning

The sub-process provision of cleaning includes the process steps
- **Prepare cleaning**
- **Carry out cleaning**
- **Dispose recyclable materials** (interface to support process disposal & recycling)

(see Figure 17)

The corresponding **LekaS services** are:
1390.01 – Cleaning of inpatient wards
1390.02 – Cleaning of intensive care areas
1390.03 – Cleaning of operating theatres
1390.04 – Cleaning of the delivery room
1390.05 – Cleaning of therapeutic areas, admissions and emergency provision care
1390.06 – Cleaning of baths and physical therapy rooms
1390.07 – Cleaning of office rooms and simple therapeutic rooms
1390.08 – Cleaning of non-medical rooms with high technical requirements
1390.09 – Cleaning of general circulation areas
1390.10 – Cleaning of installation rooms and workshops
1390.11 – Cleaning of exterior areas and access roads
XXXX.XX – Central bed preparation unit (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Cleaning of staff quarters (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Cleaning of on-call rooms / guest rooms / patient hotel (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
1321 – Pest control
(see Figure 17)

3.17.4. Sub-process settlement of cleaning services

The sub-process settlement of cleaning services includes the **process step**
- **Settle order**

(see Figure 17)

The corresponding LekaS service is:
XXXX.XX – Settlement of cleaning services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 17)

3.17.5. Sub-process quality check of cleaning services

The sub-process quality check of cleaning services includes the **process steps**
- **Post processing & documentation of cleaning services**
- **Check quality of cleaning services**

(see Figure 17)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of cleaning services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 17)

3.17.6. Sub-process quality assurance/improvement of cleaning services

The sub-process quality assurance/improvement of cleaning services includes the **process step**
- **Develop quality assurance/improvement actions for cleaning services**

(see Figure 17)

The corresponding LekaS service is:
XXXX.XX – Quality assurance/improvement of cleaning services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

3.18. Process model support process sterilization
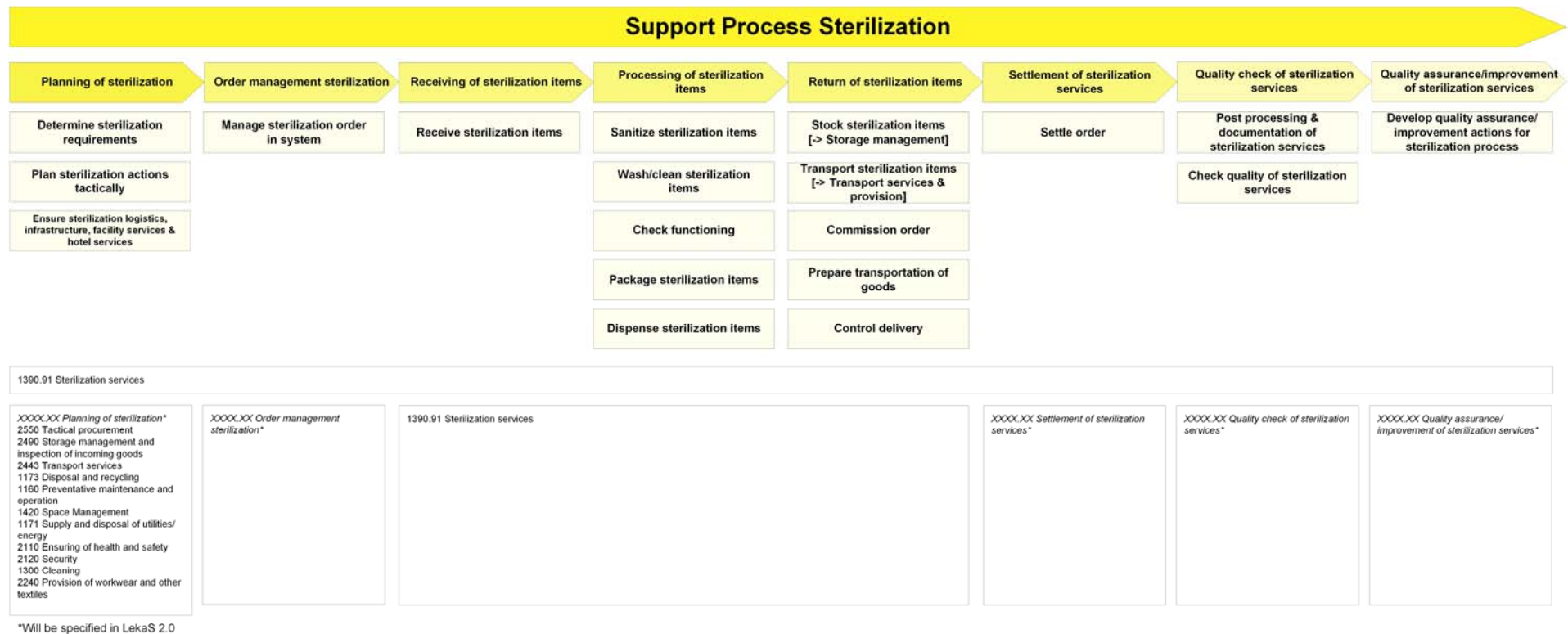
Figure 18: Support process sterilization with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-sterilization.jpg

The support process sterilization belongs to the facility services domain (see Figure 1) and corresponds to the sterilization department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process sterilization is divided into the following **sub-processes**
- **Planning of sterilization (Plan)**
- **Order management sterilization (Do**
- **Receiving of sterilization items (Do)**
- **Processing of sterilization items (Do)**
- **Returns of sterilization items (Do)**
- **Settlement of sterilization services (Do)**
- **Quality check of sterilization services (Study)**
- **Quality assurance/improvement of sterilization services (Act)**

(see Figure 18)

3.18.1. Sub-process planning of sterilization

The sub-process planning of sterilization includes the **process steps**
- **Determine sterilization requirements**
- **Plan sterilization actions tactically**
- **Ensure sterilization logistics, infrastructure, facility services & hotel services**

(see Figure 18)

The corresponding **LekaS services** are:
XXXX.XX – Planning of sterilization (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space Management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 18)

3.18.2. Sub-process order management sterilization

The sub-process order management sterilization includes the **process step**
- **Manage sterilization order in system**

(see Figure 18)

The corresponding **LekaS service** is:
XXXX.XX – Order management sterilization (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 18)

3.18.3. Sub-process receiving of sterilization items

The sub-process receiving of sterilization items includes the **process step**
- **Receive sterilization items**

(see Figure 18)

The corresponding LekaS service is:
1390.91 – Sterilization services
(see Figure 18)

3.18.4. Sub-process processing of sterilization items

The sub-process processing of sterilization items includes the **process steps**
- **Sanitize sterilization items**
- **Wash/clean sterilization items**
- **Check functioning**
- **Package sterilization items**
- **Dispense sterilization items**

(see Figure 18)

The corresponding LekaS service is:
1390.91 – Sterilization services
(see Figure 18)

3.18.5. Sub-process return of sterilization items

The sub-process return of sterilization items includes the **process steps**
- **Stock sterilization items** (interface to support process storage management)
- **Transport sterilization items** (interface to support process transport services & provision)

(see Figure 18)

The corresponding LekaS service is:
1390.91 – Sterilization services
(see Figure 18)

3.18.6. Settlement of sterilization services

The sub-process settlement of sterilization services includes the **process step**
- **Settle order**

(see Figure 18)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of sterilization services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 18)

3.18.7. Sub-process quality check of sterilization services

The sub-process quality check of sterilization services includes the **process steps**
- **Post processing & documentation of sterilization services**
- **Check quality of sterilization services**

(see Figure 18)

The corresponding LekaS service is:
XXXX.XX – Quality check of sterilization services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 18)

3.18.8. Sub-process quality assurance/improvement of sterilization services

The sub-process quality assurance/improvement of sterilization services includes the **process step**
- **Develop quality assurance/improvement actions for sterilization process**

(see Figure 18)

The corresponding **LekaS service** is:

XXXX.XX – Quality assurance/improvement actions for sterilization process (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 18)

3.19. Process model support process catering

Support Process Catering 1/2

Planning of catering (tactical)	Order management catering	Preparation of catering (operational)	Production of catering	Transportation of catering	Delivery in restaurant	Room (service) catering	Return of catering
Determine catering demand	Manage catering order in system	Plan catering operationally	Produce catering	Transport catering [-> Transport services & provision]	Deliver catering in restaurant	Perform room service	Return catering [-> Transport services & provision]
Plan catering tactically							
Ensure catering logistics, infrastructure, facility services & hotel services							

2220 Catering and vending

XXXX.XX Planning of catering* XXXX.XX Food hygiene / HACCP* 2550 Tactical procurement 2490 Storage management and inspection of incoming goods 2443 Transport services 1173 Disposal and recycling 1160 Preventative maintenance and operation 1420 Space Management 1171 Supply and disposal of utilities/ energy 2110 Ensuring of health and safety 2120 Security 1300 Cleaning 2240 Provision of workwear and other textiles	XXXX.XX Order management catering*	XXXX.XX Planning of patient & resident catering* XXXX.XX Planning of personnel catering* XXXX.XX Planning of guests catering*	XXXX.XX Production of patient & resident catering* XXXX.XX Production of personnel catering* XXXX.XX Production of guests catering* 2220.50 External and event catering	2443.24 Internal transport and distribution of non-dangerous goods 2443.21 External transport and distribution of non-dangerous goods	XXXX.XX Delivery in restaurant*	XXXX.XX Roomservice of patient and resident catering* XXXX.XX Service of personnel catering* XXXX.XX Service of guests catering*	2443.24 Internal transport and distribution of non-dangerous goods 2443.21 External transport and distribution of non-dangerous goods

Support Process Catering 2/2

Dishwashing	Storage of prepared meals	Disposal of leftovers	Vending services	Settlement of catering	Quality check of catering	Quality assurance/improvement of catering
Wash dishes	Store meal components	Dispose leftovers [-> Disposal & Recycling]	Administer vending machines	Settle order	Post processing & documentation of catering services	Develop quality assurance/ improvement actions for catering process
					Check quality of catering services	

2220 Catering and vending

|						
XXXX.XX Dishwashing*	XXXX.XX Storage of prepared meals*	1173.11 Disposal of recyclable materials 1173.12 Disposal of green waste 1173.21 Disposal of unproblematic medical waste (household garbage) 1173.22 Disposal of liquid waste	2220.40 Vending services	XXXX.XX Settlement of catering*	XXXX.XX Quality check of catering*	XXXX.XX Quality assurance/ improvement of catering*

*Will be specified in LekaS 2.0

Figure 19: Support process catering with appropriate sub-processes, process steps and LekaS services
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The support process catering belongs to the hotel services domain (see Figure 1) and corresponds to the catering department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process catering is divided into the following **sub-processes**
- **Planning of catering (tactical) (Plan)**
- **Order management catering (Do)**
- **Preparation of catering (operational) (Do)**
- **Production of catering (Do)**
- **Transportation of catering (Do)**
- **Delivery in restaurant (Do)**
- **Room (service) catering (Do)**
- **Return of catering (Do)**
- **Dishwashing (Do)**
- **Storage of prepared meals (Do)**
- **Disposal of leftovers (Do)**
- **Vending services (Do)**
- **Settlement of catering (Do)**
- **Quality check of catering (Study)**
- **Quality assurance/improvement of catering (Act)**

(see Figure 19)

3.19.1. Sub-process planning of catering (tactical)

The sub-process planning of catering (tactical) includes the **process steps**
- **Determine catering demand**
- **Plan catering tactically**
- **Ensure catering logistics, infrastructure, facility services & hotel services**

(see Figure 19)

The corresponding **LekaS services** are:
XXXX.XX – Planning of catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Food hygiene / HACCP (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling

1160 – Preventative maintenance and operation
1420 – Space Management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles
(see Figure 19)

3.19.2.   Sub-process order management catering

The sub-process order management catering includes the **process step**
- **Manage catering order in system**

(se. Figure 19)

The corresponding **LekaS service** is:
XXXX.XX – Order management catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)
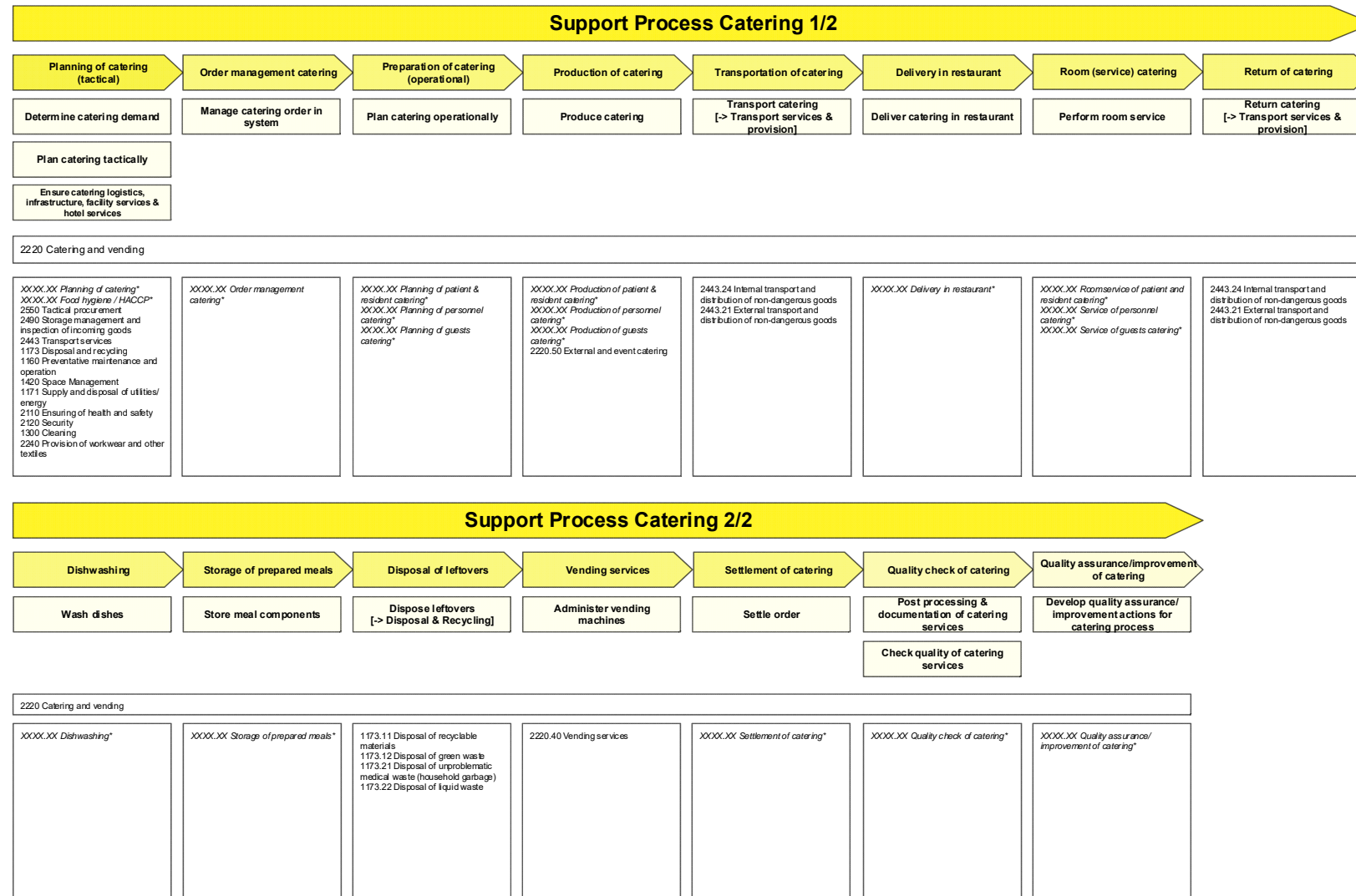
3.19.3.   Sub-process preparation of catering (operational)

The sub-process preparation of catering (operational) includes the **process step**
- **Plan catering operationally**

(see Figure 19)

The corresponding LekaS services are:
XXXX.XX – Planning of patient & resident catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Planning of personnel catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Planning of guests catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.4. Sub-process production of catering

The sub-process production of catering includes the **process step**
- **Produce catering**

(see Figure 19)

The corresponding **LekaS services** are:
XXXX.XX – Production of patient & resident catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Production of personnel catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Production of guests catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2220.50 – External and event catering
(see Figure 19)

3.19.5. Sub-process transportation of catering

The sub-process transportation of catering includes the **process step**
- **Transport catering** (interface to support process transport services & provision)

(see Figure 19)

The corresponding **LekaS services** are:
2443.24 – Internal transport and distribution of non-dangerous goods
2443.21 – External transport and distribution of non-dangerous goods
(see Figure 19)

3.19.6. Sub-process delivery in restaurant

The sub-process delivery in restaurant includes the **process step**
- **Deliver catering in restaurant**

(see Figure 19)

The corresponding **LekaS service** is:
XXXX.XX – Delivery in restaurant (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.7. Sub-process room (service) catering

The sub-process room (service) catering includes the **process step**
- **Perform room service**

(see Figure 19)

The corresponding **LekaS services** are:
XXXX.XX – Room service of patient and resident catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Service of personnel catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
XXXX.XX – Service of guests catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.8. Sub-process return of catering

The sub-process return of catering includes the **process step**
- **Return catering** (interface to support process transport services & provision)

(see Figure 19)

The corresponding **LekaS services** are:
2443.24 – Internal transport and distribution of non-dangerous goods
2443.21 – External transport and distribution of non-dangerous goods
(see Figure 19)

3.19.9. Sub-process dishwashing

The sub-process dishwashing includes the **process step**
- **Wash dishes**

(see Figure 19)

The corresponding **Lekas service** is:
XXXX.XX – Dishwashing (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.10. Sub-process storage of prepared meals

The sub-process storage of dishes includes the **process step**
- **Store meal components**

(see Figure 19)

The corresponding **LekaS services** are:
XXXX.XX – Storage of prepared meals (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.11. Sub-process disposal of leftovers

The sub-process disposal of leftovers includes the **process step**
- **Dispose leftovers** (interface to support process disposal & recycling)

(see Figure 19)

The corresponding **LekaS services** are:
1173.11 – Disposal of recyclable materials
1173.12 – Disposal of green waste
1173.21 – Disposal of unproblematic medical waste (household garbage)
1173.22 – Disposal of liquid waste
(see Figure 19)

3.19.12. Sub-process vending services

The sub-process vending services includes the **process step**
- **Administer vending machines**

(see Figure 19)

The corresponding **LekaS service** is:
2220.40 – Vending services
(see Figure 19)

3.19.13. Sub-process settlement of catering

The sub-process settlement of catering includes the **process step**
- **Settle order**

(see Figure 19)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.14. Sub-process quality check of catering

The sub-process quality check of catering includes the **process steps**
- **Post processing & documentation of catering services**
- **Check quality of catering services**

(see Figure 19)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.19.15. Sub-process quality assurance/improvement of catering

The sub-process quality assurance/improvement of catering includes the **process step**
- **Develop quality assurance/improvement actions for catering process**
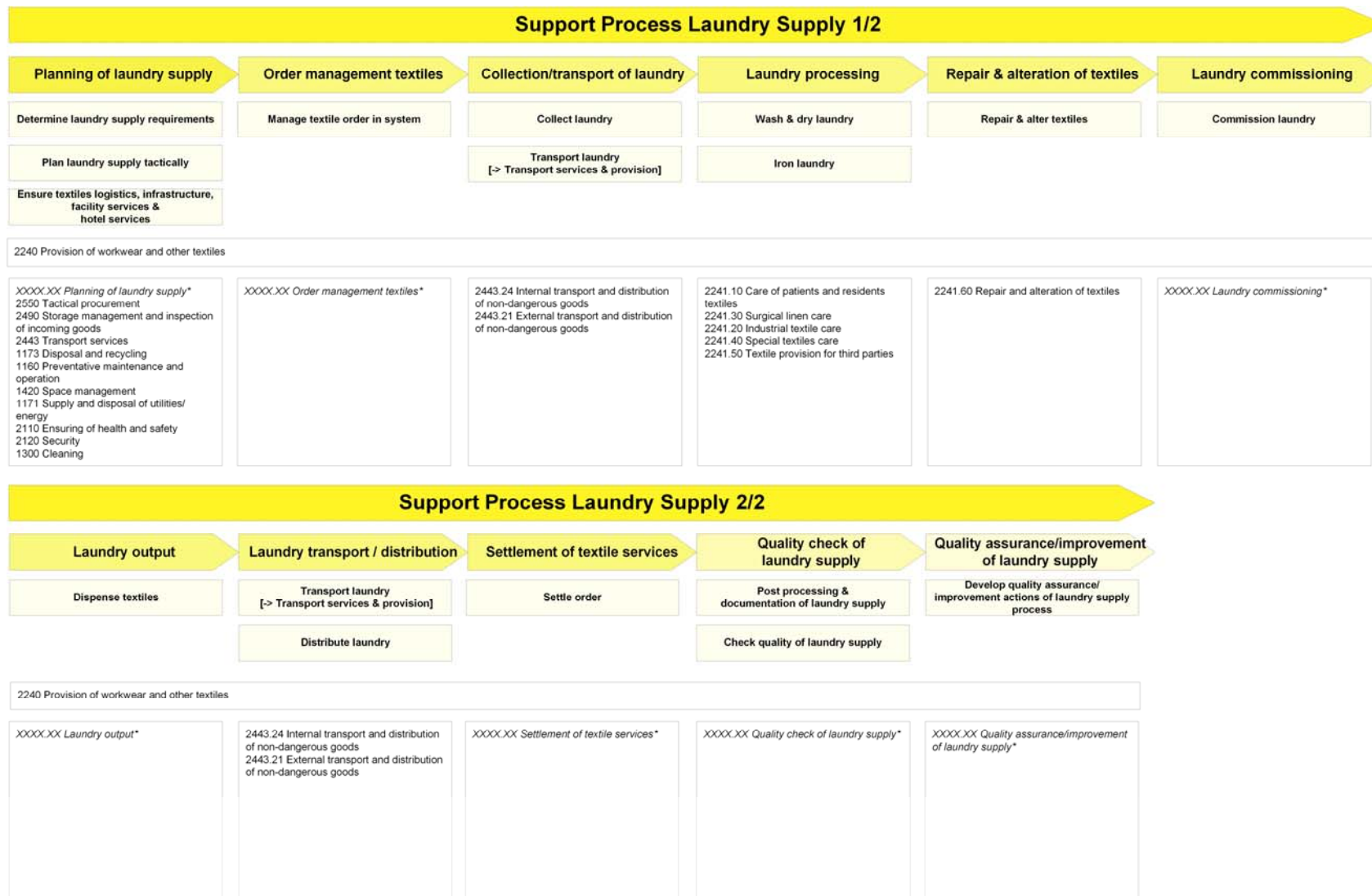
(see Figure 19)

The corresponding LekaS service is:
XXXX.XX – Quality assurance/improvement of catering (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 19)

3.20. Process model support process laundry supply

Support Process Laundry Supply 1/2

Planning of laundry supply	Order management textiles	Collection/transport of laundry	Laundry processing	Repair & alteration of textiles	Laundry commissioning
Determine laundry supply requirements	Manage textile order in system	Collect laundry	Wash & dry laundry	Repair & alter textiles	Commission laundry
Plan laundry supply tactically		Transport laundry [-> Transport services & provision]	Iron laundry		
Ensure textiles logistics, infrastructure, facility services & hotel services					

2240 Provision of workwear and other textiles

XXXX.XX Planning of laundry supply* 2550 Tactical procurement 2490 Storage management and inspection of incoming goods 2443 Transport services 1173 Disposal and recycling 1160 Preventative maintenance and operation 1420 Space management 1171 Supply and disposal of utilities/ energy 2110 Ensuring of health and safety 2120 Security 1300 Cleaning	XXXX.XX Order management textiles*	2443.24 Internal transport and distribution of non-dangerous goods 2443.21 External transport and distribution of non-dangerous goods	2241.10 Care of patients and residents textiles 2241.30 Surgical linen care 2241.20 Industrial textile care 2241.40 Special textiles care 2241.50 Textile provision for third parties	2241.60 Repair and alteration of textiles	XXXX.XX Laundry commissioning*

Support Process Laundry Supply 2/2

Laundry output	Laundry transport / distribution	Settlement of textile services	Quality check of laundry supply	Quality assurance/improvement of laundry supply
Dispense textiles	Transport laundry [-> Transport services & provision]	Settle order	Post processing & documentation of laundry supply	Develop quality assurance/ improvement actions of laundry supply process
	Distribute laundry		Check quality of laundry supply	

2240 Provision of workwear and other textiles

XXXX.XX Laundry output*	2443.24 Internal transport and distribution of non-dangerous goods 2443.21 External transport and distribution of non-dangerous goods	XXXX.XX Settlement of textile services*	XXXX.XX Quality check of laundry supply*	XXXX.XX Quality assurance/improvement of laundry supply*

*Will be specified in LekaS 2.0

Figure 20: Support process laundry supply with appropriate sub-processes, process steps and LekaS services
Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-laundry-supply.jpg

The support process laundry supply belongs to the hotel services domain (see Figure 1) and corresponds to the laundry supply department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process laundry supply is divided into the following **sub-processes**
- **Planning of laundry supply (Plan)**
- **Order management textiles (Do)**
- **Collection/transport of laundry (Do)**
- **Laundry processing (Do)**
- **Repair & alteration of textiles (Do)**
- **Laundry commissioning (Do)**
- **Laundry output (Do)**
- **Laundry transport / distribution (Do)**
- **Settlement of textile services (Do)**
- **Quality check of laundry supply (Study)**
- **Quality assurance/improvement of laundry supply (Act)**

(see Figure 20)

3.20.1.   Sub-process planning of laundry supply

The sub-process planning of laundry supply includes the **process steps**
- **Determine laundry supply requirements**
- **Plan laundry supply tactically**
- **Ensure textiles logistics, infrastructure, facility services & hotel services**

(see Figure 20)

The corresponding **LekaS services** are:

XXXX.XX – Planning of laundry supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)

2550 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security

1300 – Cleaning
(see Figure 20)

3.20.2.   Sub-process order management textiles

The sub-process order management textiles includes the **process step**
- **Manage textile order in system**

(see Figure 20)

The corresponding **LekaS service** is:
XXXX.XX – Order management textiles (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.20.3.   Sub-process collection/transport of laundry

The sub-process collection/transport of laundry includes the **process steps**
- **Collect laundry**
- **Transport laundry** (interface to support process transport services & provision)

(see Figure 20)

The corresponding **Lekas service** is:
2443.24 Internal transport and distribution of non-dangerous goods
2443.21 External transport and distribution of non-dangerous goods
(see Figure 20)

3.20.4.   Sub-process laundry processing

The sub-process laundry processing includes the **process steps**
- **Wash & dry laundry**
- **Iron laundry**

(see Figure 20)

The corresponding **LekaS services** are:
2241.10 – Care of patients' and residents' textiles
2241.30 – Surgical linen care
2241.20 – Industrial textile care
2241.40 – Special textiles care
2241.50 – Textile provision for third parties

(see Figure 20)

3.20.5. Sub-process repair & alteration of textiles

The sub-process repair & alteration of textiles includes the **process step**
- **Repair & alter textiles**

(see Figure 20)

The corresponding **LekaS service** is:
2241.60 – Repair and alteration of textiles
(see Figure 20)

3.20.6. Sub-process laundry commissioning

The sub-process laundry commissioning includes the **process step**
- **Commission laundry**

(see Figure 20)

The corresponding **LekaS service** is:
XXXX.XX – Laundry commissioning (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.20.7. Sub-process laundry output

The sub-process laundry output includes the **process step**
- **Dispense textiles**

(see Figure 20)

The corresponding LekaS service is:
XXXX.XX – Laundry output (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.20.8. Sub-process laundry transport/distribution

The sub-process laundry transport/distribution includes the **process steps**
- **Transport laundry** (interface to support process transport services & provision)
- **Distribute laundry**

(see Figure 20)

The corresponding **LekaS services** are:
2443.24 – Internal transport and distribution of non-dangerous goods
2443.21 – External transport and distribution of non-dangerous goods
(see Figure 20)

3.20.9. Sub-process settlement of textile services

The sub-process settlement of textile services includes the **process step**
- **Settle order**

(see Figure 20)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of textile services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.20.10. Sub-process quality check of laundry supply

The sub-process quality check of laundry supply includes the **process steps**
- **Post processing & documentation of laundry supply**
- **Check quality of laundry supply**

(see Figure 20)

The corresponding LekaS service is:
XXXX.XX – Quality check of laundry supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.20.11. Sub-process quality assurance/improvement of laundry supply

The sub-process quality assurance/improvement of laundry supply includes the **process step**
- **Develop quality assurance/impeovement actions for laundry supply process**

(see Figure 20)

The corresponding **LekaS service** is:

XXXX.XX – Quality assurance/improvement of laundry supply (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 20)

3.21. Process model accommodation management & operation of properties
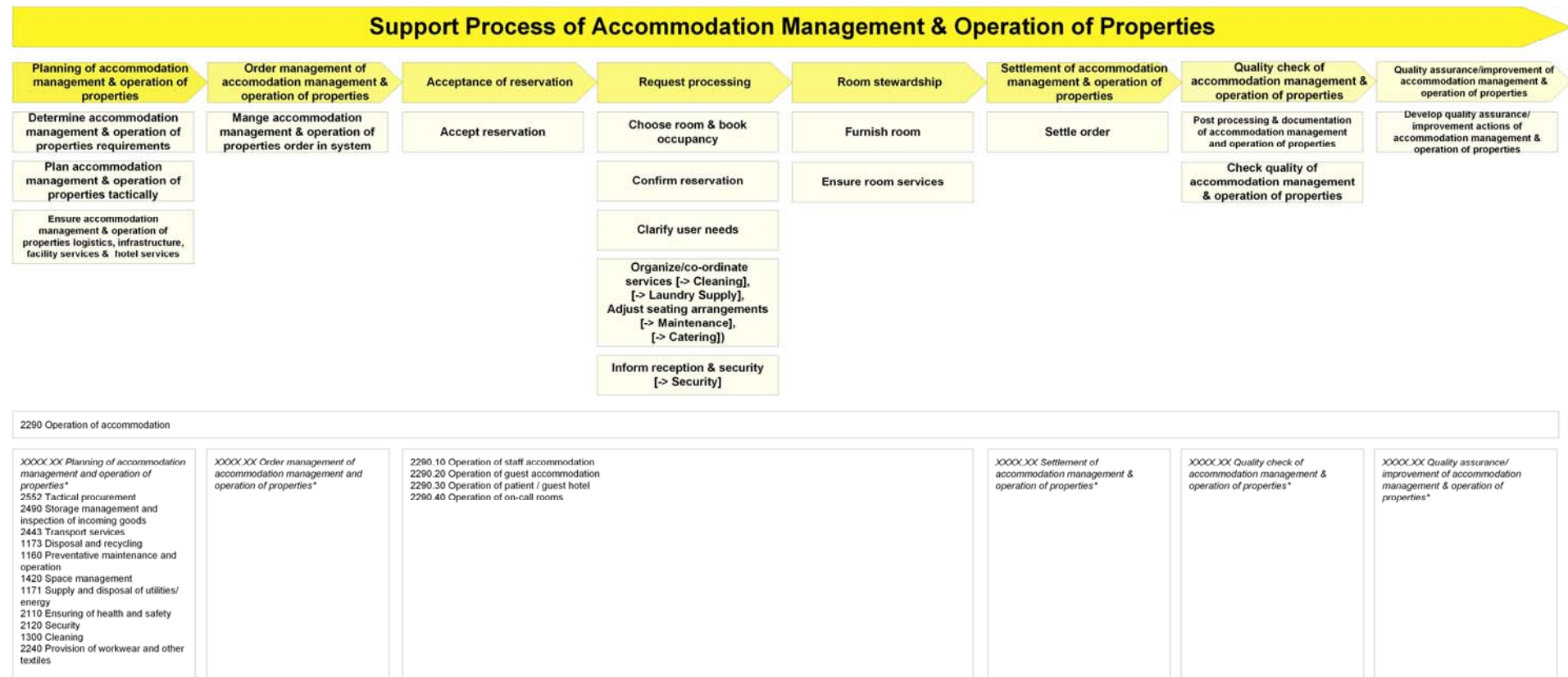
Figure 21: Support process accommodation management & operation of properties with appropriate sub-processes, process steps and LekaS services

Download optimized for printing in A3: https://www.zhaw.ch/storage/lsfm/institute-zentren/ifm/healthcare/_bilder/promos-support-process-accomodation-and-properties.jpg

The support process accommodation management & operation of properties belongs to the hotel services domain (see Figure 1) and corresponds to the accommodation management & operation of properties department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process accommodation management & operation of properties is divided into the following **sub-processes**
- **Planning of accommodation management & operation of properties (Plan)**
- **Order management of accommodation management & operation of properties (Do)**
- **Acceptance of reservation (Do)**
- **Request processing (Do)**
- **Room stewardship (Do)**
- **Settlement of accommodation management & operation of properties (Do)**
- **Quality check of accommodation management & operation of properties (Study)**
- **Quality assurance/improvement of accommodation management & operation of properties (Act)**

(see Figure 21)

3.21.1. Sub-process planning of accommodation management & operation of properties

The sub-process planning of accommodation management & operation of properties include the **process steps**
- **Determine accommodation management & operation of properties requirements**
- **Plan accommodation management & operation of properties tactically**
- **Ensure accommodation management & operation of properties logistics, infrastructure, facaility services & hotel services**

(see Figure 21)

The corresponding **LekaS services** are:
XXXX.XX – Planning of accommodation management and operation of properties (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2552 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 21)

3.21.2. Sub-process order management of accommodation management & operation of properties

The sub-process order management of accommodation management & operation of properties include the **process step**
- **Manage accommodation management & operation of properties in order system**

(see Figure 21)

The corresponding **LekaS service** is:
XXXX.XX – Order management of accommodation management and operation of properties (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 21)

3.21.3. Sub-process acceptance of reservation

The sub-process acceptance of reservation includes the **process step**
- **Accept reservation**

(see Figure 21)

The corresponding **LekaS services** are:
2290.10 – Operation of staff accommodation
2290.20 – Operation of guest accommodation
2290.30 – Operation of patient / guest hotel
2290.40 – Operation of on-call rooms
(see Figure 21)

3.21.4. Sub-process request processing

The sub-process request processing includes the **process steps**
- **Choose room & book occupancy**
- **Confirm reservation**
- **Clarify user needs**
- **Organize co-ordinate services** (interface to support process cleaning, laundry supply), **adjust seating arrangements** (interface to support process maintenance, catering)
- **Inform reception & security** (interface to support process security)

(see Figure 21)

The corresponding **LekaS services** are:
2290.10 – Operation of staff accommodation
2290.20 – Operation of guest accommodation
2290.30 – Operation of patient / guest hotel
2290.40 – Operation of on-call rooms
(see Figure 21)

3.21.5. Sub-process room stewardship

The sub-process room stewardship includes the **process steps**
- **Furnish room**
- **Ensure room services**

(see Figure 21)

The corresponding **LekaS services** are:
2290.10 – Operation of staff accommodation
2290.20 – Operation of guest accommodation
2290.30 – Operation of patient / guest hotel
2290.40 – Operation of on-call rooms
(see Figure 21)

3.21.6. Sub-process settlement of accommodation management & operation of properties

The sub-process settlement of accommodation management & operation of properties includes the **process step**
- **Settle order**

(see Figure 21)

The corresponding LekaS service is:
XXXX.XX – Settlement of accommodation management & operation of properties (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 21)

3.21.7. Sub-process quality check of accommodation management & operation of properties

The sub-process quality check of accommodation management & operation of properties includes the **process steps**
- **Post processing & documentation of accommodation management and operation of properties**
- **Check quality of accommodation management & operation of properties**

(see Figure 21)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of accommodation management & operation of properties (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 21)

3.21.8. Sub-process quality assurance/improvement of accommodation management & operation of properties

The sub-process quality assurance/improvement of accommodation management & operation of properties includes the **process step**
- **Develop quality assurance/improvement actions of accommodation management & operation of properties**
(see Figure 21)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of accommodation management & operation of properties (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 21)

3.22. Process model support process hotel services
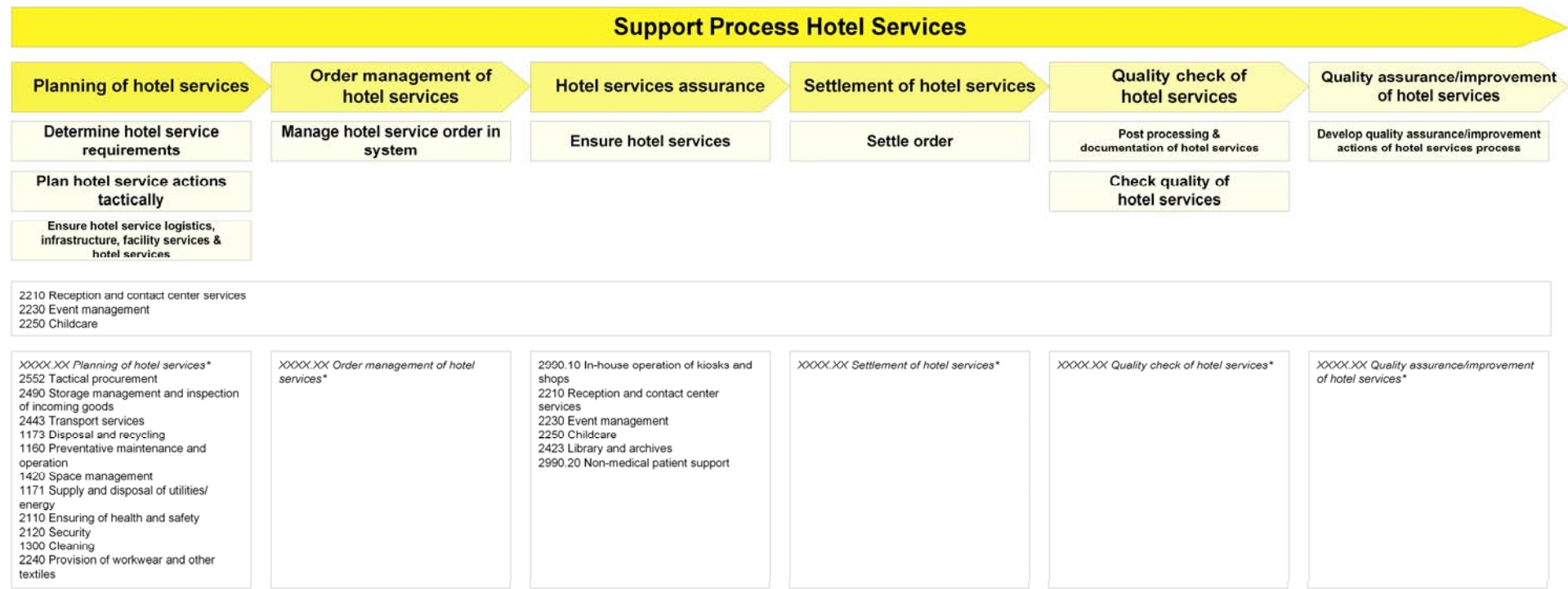
Figure 22: Support process hotel services with appropriate sub-processes, process steps and LekaS services
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The support process hotel services belongs to the hotel services domain (see Figure 1) and corresponds to the hotel services department in KenkaS (Gerber et al, 2016).

Each support process is subdivided into sub-processes according to the Deming Cycle and to the respective process steps with the reference to the corresponding LekaS services. The support process hotel services is divided into the following **sub-processes**
- **Planning of hotel services (Plan)**
- **Order management of hotel services (Do)**
- **Hotel services assurance (Do)**
- **Settlement of hotel services (Do)**
- **Quality check of hotel services (Study)**
- **Quality assurance/improvement of hotel services (Act)**

(see Figure 22)

3.22.1.　　Sub-process planning of hotel services

The sub-process planning of hotel services includes the **process steps**
- **Determine hotel service requirements**
- **Plan hotel service actions tactically**
- **Ensure hotel service logistics, infrastructure, facility services & hotel services**

(see Figure 22)

The corresponding LekaS services are:
XXXX.XX – Planning of hotel services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
2552 – Tactical procurement
2490 – Storage management and inspection of incoming goods
2443 – Transport services
1173 – Disposal and recycling
1160 – Preventative maintenance and operation
1420 – Space management
1171 – Supply and disposal of utilities/energy
2110 – Ensuring of health and safety
2120 – Security
1300 – Cleaning
2240 – Provision of workwear and other textiles

(see Figure 22)

3.22.2. Sub-process order management of hotel services

The sub-process order management of hotel services includes the **process step**
- **Manage hotel service order in system**

(see Figure 22)

The corresponding **LekaS service** is:
XXXX.XX – Order management of hotel services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 22)

3.22.3. Sub-process hotel services assurance

The sub-process hotel services assurance includes the **process step**
- **Ensure hotel services**

(see Figure 22)

The corresponding LekaS services are:
2990.10 – In-house operation of kiosks and shops
2210 – Reception and contact center services
2230 – Event management
2250 – Childcare
2423 – Library and archives
2990.20 – Non-medical patient support
(see Figure 22)

3.22.4. Sub-process settlement of hotel services

The sub-process settlement of hotel services includes the **process step**
- **Settle order**

(see Figure 22)

The corresponding **LekaS service** is:
XXXX.XX – Settlement of hotel services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 22)

3.22.5. Sub-process quality check of hotel services

The sub-process quality check of hotel services includes the **process steps**
- **Post processing & documentation of hotel services**
- **Check quality of hotel services**

(see Figure 22)

The corresponding **LekaS service** is:
XXXX.XX – Quality check of hotel services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 22)

3.22.6. Sub-process quality assurance/improvement of hotel services

The sub-process quality assurance/improvement of hotel services includes the **process step**
- **Develop quality assurance/improvement actions of hotel services process**

(see Figure 22)

The corresponding **LekaS service** is:
XXXX.XX – Quality assurance/improvement of hotel services (This service has been redefined; In LekaS 2.0 it will receive the new numbering and will be described in detail.)
(see Figure 22)

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