



IT Carve-Out Guide

A manual for the separation of IT during corporate re-organizations

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Abstract

A carve-out can be understood as the separation of one organization into two independent entities. Thereby, this separation is always cross-functional, hence happens, among others, on an organizational, financial, legal, and technical level. In particular the latter aspect, i.e., the permanent splitting of Information Technology (IT), often poses difficulties for the involved participants. One reason is the dual role IT has to assume in such an exceptional and oftentimes intricate situation. On the one hand IT continues to cater to new business requirements while on the other hand it is itself subject to a division. In any case, the targeted and efficient separation of IT elements, like for instance services, processes, data, systems, projects, or infrastructure, is essential given the increasing role those elements play for the success of today's organizations.

As a matter of fact, the body of publicly available knowledge focusing on IT separation during carve-outs is scarce. Opposed to Mergers & Acquisitions (M&A) sources explaining in detail how the IT can eventually be consolidated, present carve-out literature refrains from providing concrete guidance. In particular, existing sources lack a thorough approach facilitating the effective separation of the different IT elements.

Based on a case study we accompanied and a comprehensive literature survey we conducted, this document firstly lays a foundation on the role of IT in the context of carve-outs. Secondly, it provides a framework consisting of nine workstreams which enable a step-by-step separation of the most crucial IT elements. In doing so, this guide assumes a scenario where the subsidiary and its former owner share the majority of IT elements, that is, no transition to an independent IT takes place.

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1.1 Motivation

Undoubtedly, *Information Technology* (IT) represents one crucial pillar of a present-day organization. In 2012, the majority of companies and public institutions rely on a stable technical backbone making their business both, more efficient and effective. Even though typical investments for IT only account for around 3.4% of the annual revenue as of 2008 [Sm08], a malfunctioning or even complete failure of IT would entail significant damage for the business.

In the event of a carve-out, i.e., when de-merging organizational assets into a new subsidiary, the dimension of IT is equally affected [Le08, TM11]. Although carve-out situations are not the norm for many organizations, hence occur rather rarely ¹, knowing which IT elements have to be separated in which way at what point in time helps reducing risks while cutting overall project costs. However, as remarked by Böhm et al. recently, “the extant literature on both IT integration in acquisitions and IT carve-out processes is limited” [Bo11]. More precisely, the current body of knowledge lacks concrete guidance steering the management of an IT organization through the intricate process of carving-out elements of their IT.

1.2 Contribution

The present guide focuses on the dimension of IT within carve-outs. At first, a general overview on this type of business transaction is given, covering, among others, definitions, causes for carve-outs, as well as affected IT elements. Second, the document provides tangible pointers on the separation of the different IT elements as well as means to prepare their subsequent integration into a buying organization. This means, that objectives, constraints, indications, and concrete activities are pointed out which are useful for the sustained split-off of IT organizations, processes, and systems. Thereby, the knowledge base this guide builds on originates either from the limited number of sources in the domain or an extensive case study we as a research chair have accompanied between December 2011 and March 2012 at a German car manufacturer.

¹A Deloitte Corporate Finance study from 2010 suggests a total number of 12.000 carve-out transactions with an overall volume of 600 billion US-dollar in 2009 [De10].

Remark:

As made clear in the abstract, this guide focuses on an IT carve-out scenario in which the subsidiary remains on the shared IT of the selling organization. Thereby, the seller and a potential buyer are multi-business organizations, thus entities which encompass more than one subsidiary.

1.3 Target group

The targeted readers of this document are twofold: First, IT management initiating a carve-out program may use this guide as it contains practical help allowing to foresee and ease potential stumbling blocks and pitfalls. Second, academics striving for a comprehensive overview on the topic should have a closer look on this document as it includes a comprehensive collection of current literature in the realm of IT de-mergers. In identifying blind spots, the document finally derives questions for future research projects addressing researchers from the research domain of business informatics, software engineering, and business mathematics.

1.4 Guide sources and compilation approach

In essence, this guide originates from two main sources: a thorough literature review as well as a multi-faceted case study. While the discovered scientific knowledge forms a solid foundation, most of the practical pieces of advice presented in this document have been observed during the case study.

When embarking on IT carve-outs the first step of our research approach was to analyze current literature on the respective topic. In total, 20 substantial sources examining IT carve-outs have been studied from October to December 2011. We identified the literature by applying backward and forward search in the scientific databases IEEE xplora, google scholar, and citeseer. As keywords we applied the terms ‘information technology’, ‘IT’, ‘carve-out’, ‘de-merger’, and ‘separation’ in various combinations. The main results of this survey are presented in Chapter 2.

Furthermore, we conducted a case study between December 2011 till March 2012. Thereby, we observed and attended an actual IT carve-out project program undertaken by a German car manufacturing company. During the research project, twelve expert interviews each lasting for more than 120 minutes each have been conducted in order to externalize the experts’ knowledge and lessons-learned about the experienced carve-out. The interviewees came from different departments including legal, IT, infrastructure, and project management. In addition to these interviews, the entire project documentation has been perused in order to extract and generalize the knowledge contained therein. This included, among

others, slides and final reports from the selling organization, the subsidiary, and the buying organization. The overall amount of time invested in this case study by the authors was approx. 200 hours. The anonymized results form the core basis for the nine workstreams outlined in Chapter 3.

The following sections set the stage for our guide. Besides basic terms and concepts, literature sources are provided representing starting points to dive further into the realm of (IT) carve-outs.

2.1 Definitions

According to Broyd and Storch [BS06], a carve-out ¹ can be defined as follows:

“Generally speaking, carve outs involve the separation of a set of related assets, which are not strategic for the company but currently integrated in its operations, into a new subsidiary. Third-party capital is then introduced into the new entity or it is sold entirely to a strategic buyer.”

Final outcome of a carve-out is a newly traded firm as pointed out by Michaely and Shaw [MS95]. Further, the two authors differentiate between an equity carve-out and a spin-off. In the former case, the subsidiary is sold by issuing parts of the stocks (usually 20% or less). This helps the selling organization to acquire new capital while retaining control of its sold parts through the holdback of the majority of shares [Do12]. In the latter case, which is also called spin out, all subsidiary shares are distributed among the former stakeholders who can sell these shares to further investors [MS95]. In line with Boehm et al. [Bo10], we denote the process of separating IT from its former company as IT carve-out.

2.2 Participants

A carve-out involves at least two different organizations. More precisely, the participants are:

1. **Selling organization** (abbr. seller), i.e., the selling entity which disposes distinct parts of its assets.

¹Comprehensive information about carve-out synonyms and related terms like divestment, divesture, demerger, and disintegration are provided in [Bo10].

2. **Carve-out object** (abbr. subsidiary), i.e., the separated assets of the selling organization.
3. **Buying organization** (abbr. buyer), i.e., the purchasing entity in which the separated carve-out object will be integrated. It is possible to distinguish between buyers with a strategic and a financial focus [MS95].

Even with no buyer intending to purchase the demerged entity, carve-outs are oftentimes intricate transformation endeavors. The complexity increases tremendously if a third organization acquires the carve-out object given that additional inter-organizational communication channels, processes, and project structures have to be put in place. The fact that the seller, the subsidiary, and the buyer are forced to continue their business operations aggravates the already unfamiliar situation. Besides the daily business, the participants now have to cope with carve-out as well as integration activities. However, these additional work streams are not isolated but exert a significant influence on the usual operations of the organizations.

2.3 Drivers

There are multiple business reasons resulting in a carve-out. Below a list of drivers causing the permanent separation of a subsidiary. Additional information can be found in [Ca03, Le08]:

- Refocusing of the seller on its core business
- Weak economical results of the carve-out object
- Need for capital to pay off the seller's debts
- Investing in alternative focus areas

Certainly, instead of carving out parts of the enterprise, the respective business unit could undergo profound restructuring measures.

2.4 Course of action

In line with Fähling et. al. [Fa09], an ideal-typical carve-out consists of four sequential phases as illustrated in Figure 2.1. A dedicated milestone separates a phase from its predecessor and successor respectively. The carve-out of IT takes place in parallel to the PreClosing, Transition, and PostCutting phase.

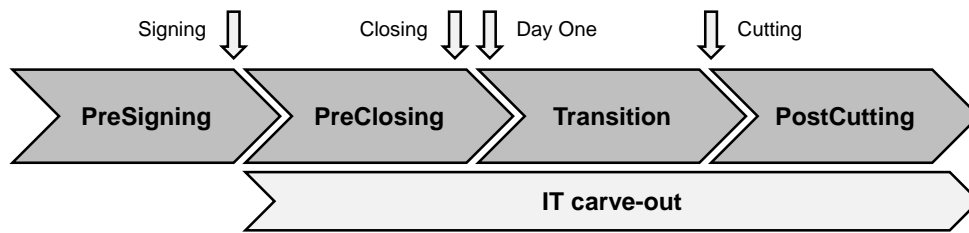


Figure 2.1: Phases of IT carve-outs [Bo10]

During the PreSigning phase seller and buyer negotiate the contract details and conjointly agree on the dates for the different milestones. Further, Mergers & Acquisitions (M&A) consultants help in assessing possible synergies and determining an exact pricing. All collected pieces of information about the carve-out object are stored in a data room which can be of virtual or physical nature and is hosted and maintained by the seller. Under normal circumstances, the repository has to be provided to all potential buyers enabling them to weigh short and long-term benefits of the purchase. Given the increasing importance of technology, IT relevant information has to be also stored in the data room [Bo10]. In doing so, financial and technological decision can be made on a more elaborated and sophisticated decision basis. The signing of the contract finishes the phase, which is usually characterized by a high activity level of the organizations' legal departments.

The Project Management Office (PMO) and related project structures are set up in the course of the PreClosing phase. Now it's also the time when a dedicated formed IT carve-out team starts to mark those IT elements which have to be logically or physically separated. The phase ends with the closing milestone. From the next day onwards (also called "Day 1"), the carve-out object is transferred to the buyer. The change of possession is accompanied by the legal (but not necessary technological) independence of the object from the seller.

During subsequent Transition phase, the three organizations perform the lion's share of the separation and integration work. Throughout a very long and tedious period, the IT carve-out team splits all previously marked IT elements and makes them available to the buyer. A cutting milestone marks the phase's end. From now on, seller and carve-out object have an autonomous IT. This also holds true for any temporary IT service agreements which are (with a few exceptions) terminated by mutual consent. If the businesses are already able to operate independently from each other, one speaks of a "standup" situation [AA10].

Possible clean up and rework is done in the PostCutting phase. Especially the IT departments are often still in charge of rectifying temporary workarounds [Fa11]. Mostly, these intermediate makeshift solutions have been adopted to either generate quick wins for business or comply with legal requirements. In any case: it is indispensable that IT considers the requirements raised by legal as well as the participating organizations.

2.5 Typification

Table 2.1 depicts three types of carve-outs as found in literature [Le08]. The distinguishing factor is the treatment of the carve-out object once it has been separated from the seller. In case the carve-out object is not directly acquired by the buying organization with the dawn of “Day 1”, it becomes a legal and economical independent entity first. Sources speak of a stand-alone carve-out [Le08] highlighting the autonomous trait of this form.

Stand-alone carve-out	Merger carve-out	Joint venture carve-out
Carve-out object as a stand-alone organization without integration into the buyer	Third party organization as buyer of the carve-out object	Fusion of two equipollent organizations to a new organization

Table 2.1: Types of carve-outs (inspired by [Le08])

Both, merger and joint venture carve-out necessitate explicit integration efforts after the subsidiary has been detached ² from its former company. Separating as well as integrating parts of a company can be complex and intricate, especially when being performed in very close succession. As shown in Figure 2.2, the two activities take place on a business, legal, and technical level. On top of that, the participants all pursue their individual and optimistically set carve-out and merger/joint-venture goals while being obliged to maintain a fully functional IT. Different or even conflicting interests oftentimes affect the relationship between the actors leading to an ambivalent atmosphere sometimes referred to as co-optition by literature [Bo11]. For instance, whereas the seller might prefer to leave the software licensing model of its separated business untouched, the buyer rather intends to harmonize the licenses across all of its business divisions due to economies of scale.

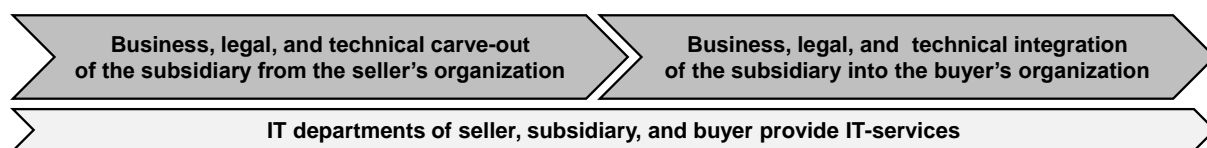


Figure 2.2: Core activities of a merger and joint-venture carve-out

2.6 Separation agreements

Even if the seller and carve-out object do no longer belong to the same organization, there is still a high chance of interdependencies caused by, among other things, continuing

²Authors like Cascorbi use the term desintegration when speaking of the activities inverse to an integration [Ca03]

business relations. Most probably, the seller still offers (IT) products and services to the separated entity until the latter is able to stand on its own feet. However, given that both organizations may be in competition with each other, any type of relationship has to be at usual market conditions while being made transparent to the legal authorities, thus will stand up to legal scrutiny. Put differently, an arm’s length principle has to be applied ensuring the “condition or the fact that the parties to a transaction are independent and on an equal footing” [Wi12].

In general, an (IT) separation agreement between the two entities is valuable for establishing agreement on key issues [DW08]. Literature distinguishes between two different types of legal documents applied in carve-out situations. As a legally binding document, the *Asset Transfer Agreement* (ATA) defines which assets are going to be transferred to the carve-out object [AA10]. Similarly, the *Transition Services Agreement* (TSA) states which services the seller continues to provide to the new company during a limited period of time [TM11]. Equally binding for the organizations, the well-defined and closely managed document also comprises the associated costs as well as terms and conditions [AA10]. Generally, TSAs delay the actual separation at the expense of additional costs and reduced flexibility [BESC07]. If they are applied, the participating entities should have reached consensus even on nitty-gritty details. Further, the concept of a so-called black-list helps to mark and memorize the subset of services, which should not be provisioned or requested by the organizations [Bo11].

2.7 Role of IT

As discussed above, a carve-out is mostly business driven. However, structuring and managing IT in a carve-out transaction can turn out to be a very complex undertaking [TM11]. Consequently, concerned IT departments should be involved early on and with a high degree of intensity [Le08]. Most perfectly, this involvement happens when the deal is struck [TM11], i.e., before the carve-out’s transition phase. In particular the crucial role IT has gained over the last decades within organizations (“IT as enabler instead of a pure supporter of business needs [BESC07]”) underlines the urgent need for including a technology perspective right from the start of the carve-out activities.

However, despite the proliferating number of interdependencies between business and IT, other dimensions should not be neglected. Among others, organizational, process, financial, strategic, and communicational aspects have to be taken care of as well (cf. Figure 2.3). Certainly, the separation and subsequent consolidation of one distinct dimension is not performed in a vacuum. Instead, there exist cross-dimensional interactions with other dimensions which have to be accounted for when advancing the desintegration and integration work.

The phrase of Melvin Conway can be taken as a famous example for the reciprocal interaction between dimensions. Coined in 1968, the adage says that “any organization that

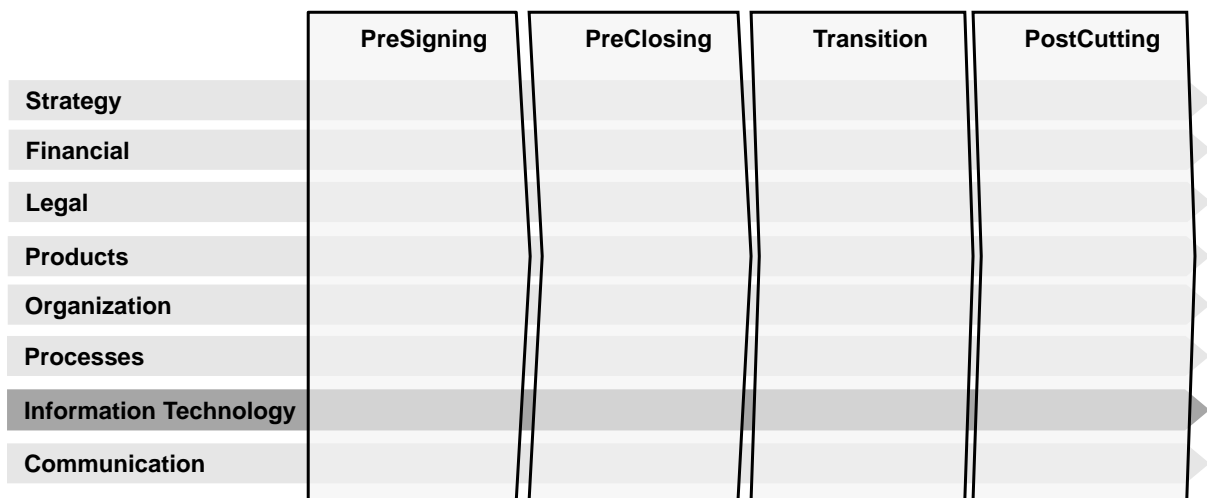


Figure 2.3: IT as one dimension of a carve-out

designs a system (defined broadly) will produce a design whose structure is a copy of the organization’s communication structure” [Co68]. What would later just be called Conway’s law describes the phenomenon that the communication dimension of an organization has a bearing on its IT. Hence, a business model which imposes a decentralized organization structure almost inherently entails a decentralized application landscape.

2.8 IT carve-out strategies

Given the legal separation of selling organization and subsidiary being acquired by another entity, three different strategies for the IT can be distinguished:

1. **Retention:** IT remains at the parent company.
2. **Transition:** IT of the acquiring company is used.
3. **New-build:** IT is built from scratch.

Due to different reasons such as costs, estimated time, and potential risks the new-build strategy can be neglected. As a consequence, the selection of an IT strategy is restrained to two alternatives: use the seller’s IT or use the buyer’s IT (cf. Figure 2.4). In addition, the IT strategy has to define whether the required IT will be cloned by physical separation or if a shared use model will be pursued. Shared IT with the seller often leads a logical separation due to legal reasons. All three strategies can also be combined which is called *best-of-breed* or *cherry-picking* [Sc11]. Thereby, one part of the required IT can be implemented from scratch while other parts are shared or duplicated.

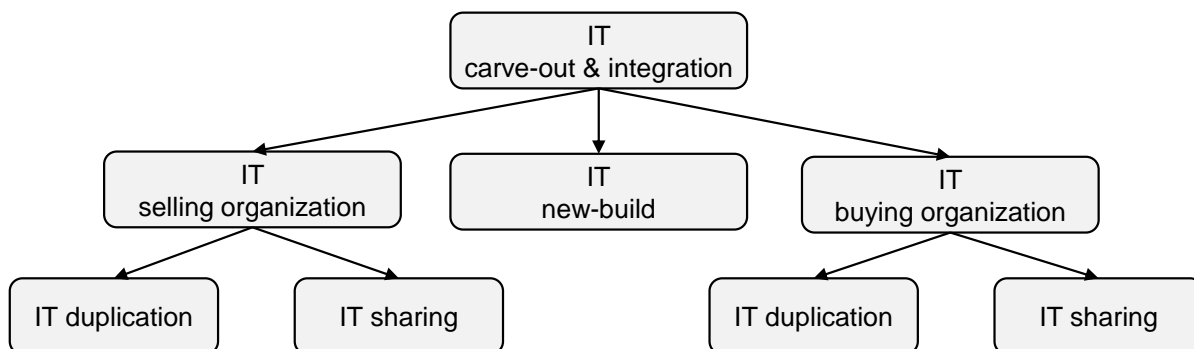


Figure 2.4: IT strategies for carve-out and subsequent integration

For a stand-alone carve-out without an acquiring organization and therefore no IT integration, of course the choice of IT strategy is limited to retention and new-build.

The selection of an IT strategy results in several technical and organizational consequences for seller, carve-out, and acquiring organization. These consequences are not limited to the respective IT departments but affect also business units. Table 2.2 list some common consequences for the previously described IT strategies. Thereby, there is no distinction between shared IT and cloned IT and also a combination of strategies is not addressed.

Strategy	Selling organization	Subsidiary	Buying organization
Transition	Data extraction	<ul style="list-style-type: none"> • Business & IT staff training • Business process adjustments 	<ul style="list-style-type: none"> • IT adjustments • Data import
New-build	Data extraction	<ul style="list-style-type: none"> • Business & IT staff training • Business process adjustments • Data import 	<ul style="list-style-type: none"> • Interface development
Retention	Data access separation	<ul style="list-style-type: none"> • Interface development 	<ul style="list-style-type: none"> • Interface development

Table 2.2: Types of carve-outs (inspired by [Le08])

The implications of a selected IT strategy can affect the involved entities to a different extent. Therefore, target conflicts can emerge which should be considered by the participants in advance before the divergence in demands will be negotiated.

2.9 IT cooperation model

Cross-organizational projects are the main driver of any carve-out. Thereby, each single initiative is carried out by the members of the business, legal, and IT departments. Given that the separation of IT is not an end in itself but rather a consequence of an informed business decision, it is the business which has the obligation to take the lead in advancing the carve-out project program. Of course, this also includes the support of IT in the best possible way in particular if legal requirements impose severe technical constraints.

Figure 2.5 sums up the ideal model of cooperation. Obviously, business plays a pivotal role. Not only it is in charge of providing sufficient staff who is committed to formulate its demands to IT and legal. In addition, business also needs to liaise with the legal departments to translate their requirements into a business language better understandable for IT. Each legal demand is captured by business which then passes on an adapted (i.e., for engineers understandable) version to the IT departments. Vice versa, IT communicate their technical constraints to business. After having acknowledged them, business forwards them in a comprehensible form to the members of the legal departments.

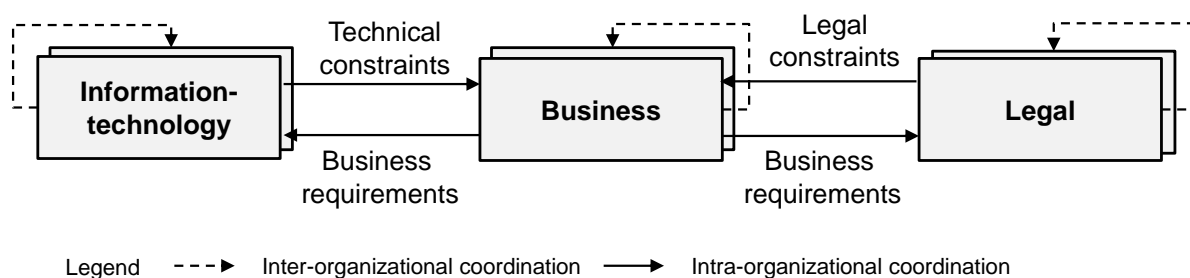


Figure 2.5: Ideal model of cooperation between business, legal, and IT

Next to the intra-organizational cooperation between the three entities, a carve-out always necessitates an inter-organizational coordination. This fact is accounted for by the overlapping rectangles and the directed loop, both depicted in Figure 2.5. However, before interacting with its respective counterpart, the three departments business, legal, and IT should be internally aligned, thus speak with one voice to the respective other organization. Against this background, the situation where one IT organization acts as a mediator between the two business departments should be avoided. Instead, the business departments have to come to an agreement before handing down their coordinated requirements to their respective IT units.

2.10 IT carve-out readiness

In order to smooth a prospective IT carve-out, proactive actions can be carried out even before the PreSigning phase begins. For example, during the development of new software

or changes to existing software, multi-tenancy capabilities can be emphasized. In addition, the documentation of the as-is IT architecture can always be kept up-to-date. As a result, during the transition phase the to-be architecture and the transition to it can be focused. With an IT carve-out readiness companies achieve their associated targets more quickly and more efficiently.

However, the IT carve-out readiness has its price which has to be paid by the company in advance. Thereby, a balance between anticipatory work and reactive action has to be found. Additional benefits can be realized if synergies to currently running IT projects concerned with similar questions can be identified. The business strategy and its derived IT strategy should always provide a frame for the IT organization and define guidelines.

2.11 IT elements

Within this guideline we use a common separation for IT which is visualized in Figure 2.6. Thereby we distinguish between IT assets, IT organization, and IT processes as well as IT projects. The IT assets are further divided into technical parts such as IT infrastructure and networks, IT components, and local as well as global IT systems. Thereby, IT infrastructure comprises all physically existing hardware, e.g. network, hard discs and switches, whereas IT components, e.g. operating systems, database management systems and application servers, form reusable building blocks for IT systems.

All kinds of IT assets can be acquired physically or by license. They are operated by IT staff and IT processes and they are changed by IT projects. The quality of services provided by IT assets is determined in respective *Service Level Agreements* (SLAs) which are negotiated between service provider and service consumer. Service consumers are business units as well as the IT department itself.

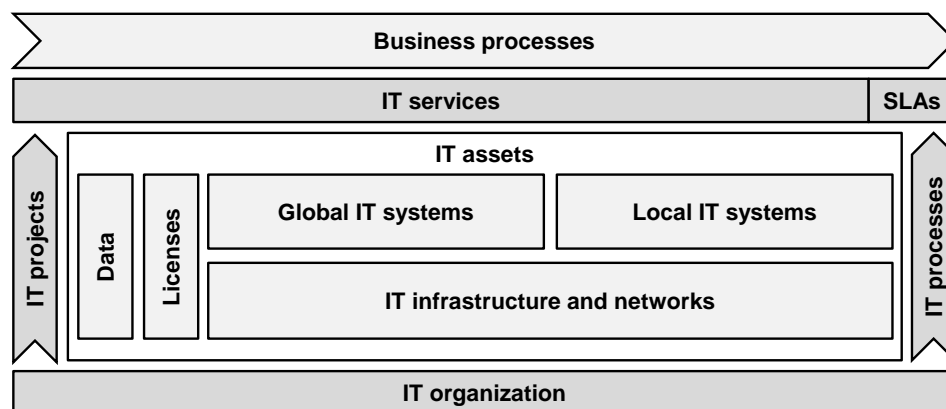


Figure 2.6: IT elements affected by a carve-out

When a carve-out takes place, it is accomplished in the technical, procedural, and organizational sense. Therefore, logical separation, physical separation, duplication or reconstruct-

tion has to be established for all interrelated IT assets introduced before. Furthermore, already started IT projects and licenses have to be reevaluated. Thus, the more detailed information about the existing IT assets of the parent company is available, the better the decisions about the carve-out company's IT. In other words, a good documentation of the as-is IT architecture eases the design of both to-be IT landscapes. By contrast, if information about the actual IT is rarely available the time-consuming and resource-intensive homework of documenting has to be done before carve-out decisions can be made.

2.12 IT data

As pointed out in Figure 2.6, within an organization data plays a cross-functional role. While it is kept physically by the IT infrastructure (e.g., hard disc, magnetic tape), IT systems run calculations on it or display the respective results on the screen. In turn, IT services allow users to make changes, hence inserting, deleting, or updating.

In a carve-out, all those data becomes critical which is exclusively attributed to either the selling or the buying organization. Hence, during and after the carve-out's execution, the access to critical data has to be granted to seller or buyer respectively. Table 2.3 proposes a exemplary set of qualitative criteria determining the criticality of a certain data class. In combination, the two columns "data class" and "criticality criterion" constitute a data classification scheme. In each carve-out, the schema has to be conjointly worked out by the business and legal departments of the participating entities accounting for legal particularities and specific business constraints.

If at least one carve-out participant classifies certain data as being critical, all IT systems which store this particular data must be considered as being critical, too. Once an IT system is marked critical, logical or even physical separation becomes mandatory. The separation of the data, which inevitably comprises the separation of IT systems, has to be performed in a bi-directional manner. Consequently, it has to be ensured that

1. the seller cannot access the data of the carve-out object any longer, as well as
2. the carve-out object has no longer the possibility to retrieve the data from its former parent organization.

Generally, it's the task of the IT departments to decide how the separation is actually realized. Whereas a physical separation (i.e., technical split of hardware) always implies a logical one (adjustment of software), the other way around is not the case. Of course there are exceptional cases making the separation of IT systems obsolete. For instance, in many occasions user specific contact data (e.g., Outlook address lists) can remain in the same non-separated IT system as long as all users of this system sign a dedicated non disclosure agreement.

Data class	Criticality criterion
Personal data	<ul style="list-style-type: none"> • Critical according to the organizations' guidelines and/or data protection regulations of the governments • Critical if data is kept in a personal data IT system (person's name in conjunction with birth date, salary, biography, etc.) • Not critical if data reveals general communication details (e.g., e-mail addresses, company phone number, user identification)
Organizational data	<ul style="list-style-type: none"> • Critical if classified as being critical by at least one of the participants due to business interests • Critical if data is considered confidential or secret • Critical if data is internal but business departments decide it has to be accessed exclusively • Not critical if data is publicly available
Anti-trust data	<ul style="list-style-type: none"> • Critical if data allows conclusions about non-public information of an organization's competitive behavior, business areas, internal details (e.g., purchase price, order quantity, delivery conditions, investments, research)
Third-party data	<ul style="list-style-type: none"> • Critical if data has to be treated confidentially in regards of a third party (e.g., supplier product design data, testing results, delivery reliability) • Critical if data reveals information about the quality of third parties' products and services (e.g., quality reports)

Table 2.3: Example for a data classification scheme

IT carve-out workstreams

The workload of an IT carve-out where the subsidiary remains on the seller's IT can be separated into nine distinct workstreams. As visualized in Figure 3.1 the topic-centric streams start in different phases of the carve-out project. This guide subdivides each workstream into the four sections objective, constraints, pieces of advice, and course of action.

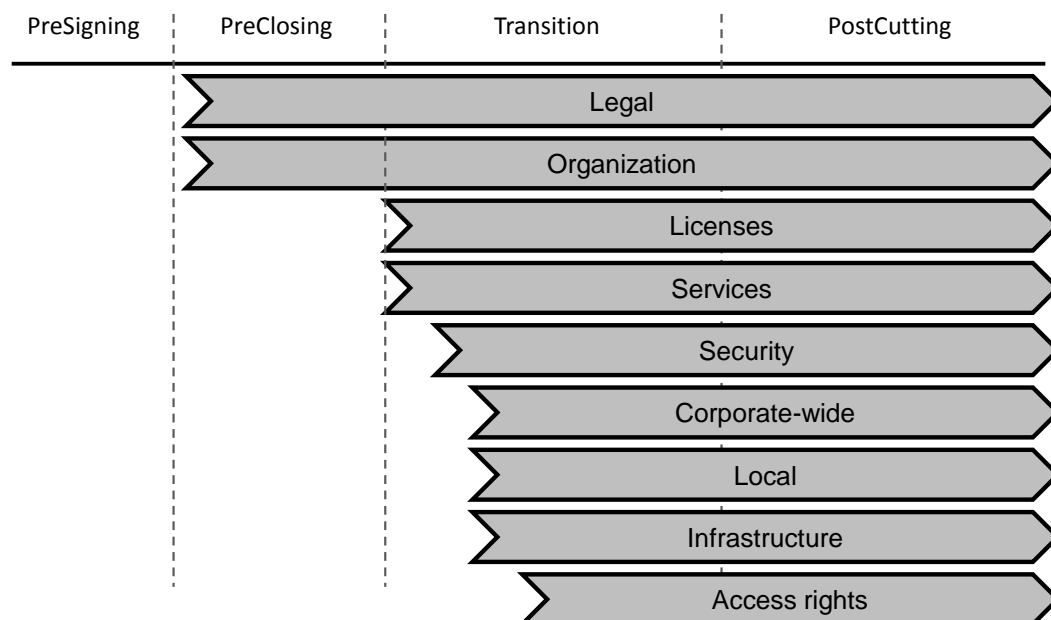


Figure 3.1: Ideal carve-out workstreams timeline

Within each workstream depicted in Figure 3.1 the respective tasks are accomplished by different actors. For example, the tasks within the legal workstream have to be performed by the legal department. A holistic overview of the main actors involved during the nine workstreams is presented in Table 3.1 wherein each actor or group of actors is briefly described and linked to each workstream in which they play a major role.

The next part of this guideline successively describes the nine workstreams and their enclosed activities. Their content mainly stems from the generalized and abstracted findings we gained when examining the case study. Despite our efforts to mirror this practice-proven knowledge to the extant literature, we could only find few sources which strengthened our observations.

Actor/department	Description	Workstreams
Auditor	An individual qualified to conduct IT audits, thus assess IT solutions regarding their conformance with legal or organization specific regulations. Auditors can be of organization internal or external nature.	<ul style="list-style-type: none"> • Infrastructure and networks
Business department	Organizational part of a company or public institution responsible for all business affairs. In taking the lead of the carve-out project, a business department regularly liases with the IT and legal department.	<ul style="list-style-type: none"> • Legal • Organization and carve-out team • Corporate-wide systems
External IT service provider	A third-party organization that provides some kind of IT services (e.g., storage communication, processing service).	<ul style="list-style-type: none"> • Service contracts and projects • Local systems • Infrastructure and networks
IT carve-out team	A group of experienced professionals coordinating the step-wise separation of IT elements. With not more than 20 members, this team consists of employees from all involved IT departments while directly reporting to their (IT) management.	<ul style="list-style-type: none"> • Organization and carve-out team • Software licenses • Service contracts and projects • Corporate wide systems • Local systems • Infrastructure and networks • System access rights
IT department	Organizational part of a company or public institution responsible for all IT related affairs. In carve-outs, IT is separated through the smooth interplay between the IT departments of seller and subsidiary.	<ul style="list-style-type: none"> • Legal • Security • Corporate-wide systems • Local IT systems • Infrastructure and networks
IT employee	Member of the IT department of either the seller or subsidiary organization. He/she is in charge of implementing the IT separation.	<ul style="list-style-type: none"> • Corporate-wide systems • Local IT systems • Infrastructure and networks
IT system administrator	A person who manages a set of IT systems in an organization. He/she is involved with operation system and hardware installations / configurations besides system installations and upgrades.	<ul style="list-style-type: none"> • Corporate-wide systems • Local IT systems
IT system owner	An individual who acts as the main contact point for information about an IT system. For instance, he/she provides details about the system's interfaces, users, lifecycle, and maintenance costs.	<ul style="list-style-type: none"> • Service contracts and projects • Corporate-wide systems • Local IT systems • System access rights
Legal department	Organizational part of a company or public institution responsible for all juridical affairs. In carve-outs this unit has to be particularly versed in anti-trust laws.	<ul style="list-style-type: none"> • Legal • Service contracts and projects

Table 3.1: Main carve-out actors and their fields of activity

3.1 Legal

3.1.1 Objectives

The core objective of this workstream is to develop an obligatory legal framework expressed by concrete principles and guidelines. This framework is binding, thus have to be taken into account by all other workstreams. Furthermore, mechanisms for legal reviews are elaborated. They are used to assess the IT solutions being developed in course of the carve-out in respect to their conformity to the framework.

3.1.2 Constraints

- Continuous and pro-active collaboration of the legal departments during and after the carve-out.

3.1.3 Pieces of advice

- Early involvement of IT and business departments already during the PreSigning phase of the carve-out.
- Business units liaise with legal as well as IT departments, thus act as a mediating element.
- If intermediate steps are planned to realize the final IT scenario (e.g., transition to the IT of the buyer), the legal departments have to define distinct legal frameworks for each of these steps. In particular, deadlines, disclosures, and permissions have to be part thereof.

3.1.4 Course of action

1. The legal departments of selling, buying, and carved-out organization collectively set up a legal framework for each single workstream. The framework comprises relevant legal guidelines and principles (cf. Table 3.2) while incorporating the national legislation of the participating organizations.
2. The legal departments of all involved organizations conjointly define different mechanisms which determine how the developed IT solutions elaborated in the workstreams are validated according to the established framework.
3. The business departments of involved organizations derive IT requirements from the legal framework (e.g., required separation of data).

Workstream	Tasks
Legal	• None
Organization and carve-out team	• None
Software licences	• Assist the procurement departments with the juridical validation of software licence transfers
Service contracts and projects	• Design and structure IT service contracts (in particular if subsidiary relies on the sellers' IT systems after the transition phase has ended)
Security	• None
Corporate-wide systems	• Develop a data classification scheme allowing to determine if a physical or logical separation of an individual IT system has to take place from a juridical point of view
Local systems	• cf. corporate-wide IT systems
Infrastructure and network	• Devise, negotiate, and agree upon temporary network and infrastructure solutions employed during the transition phase
System access rights	• Validate user access rights for each IT system - data object combination

Table 3.2: Tasks of the legal departments

4. The IT departments (in the role of a business unit) derive requirements regarding the set of IT systems they are using to provide IT solutions and services (e.g., user account management platform, development environment system).
5. The legal departments accompany the IT carve-out from a juridical stance on an ongoing basis. They frequently validate IT solutions with regards to the established legal framework and act as a primary contact for legal questions.

3.2 Organization and carve-out team

3.2.1 Objectives

The main objective of this workstream is to set up a new IT organization affiliated to the subsidiary. Additionally, an IT carve-out team has to be formed by recruiting capable employees from all involved organizations. The goal of such a dedicated task force consists in identifying all separation/integration tasks, prioritizing and ordering them, allocating necessary resources, and orchestrating their execution. Last, the workstream addresses organizational bottlenecks. The increased workload, caused by the inevitable integration and separation activities, can be eased by employing external professionals.

3.2.2 Constraints

3.2.3 Pieces of advice

- Establishing a clear organizational IT structure very early in the carve-out is vital for the success of the transformation [DW08]. If needed, new hardware technicians and/or IT system specialists are transferred to the subsidiary or are newly hired.
- In the long run, the newly created IT department of the separated organization should be able to independently run and change their IT [BESC07]. Even if the seller's IT is still used, sufficient IT skills and knowledge have to be available on the subsidiary's side, e.g., for IT support and modification of local IT systems.
- Given that a carve-out is always an unstable and insecure period for its participants, it is crucial to prevent an organizational "brain drain", i.e., the increased quitting of key staff uncertain of its future position. Good change management practices [Fa11] coupled with continual communication [BESC07] helps reducing the risk of losing high potentials.
- The IT carve-out team should avail of its own budget highlighting its autonomy and degree of assertiveness.
- The IT carve-out team should work closely with the business departments. Preferably, business also establishes a carve-out unit acting as a counterpart.
- External professionals can prevent resource bottlenecks and compensate for knowledge deficiencies. However, these specialists do not have a quorum and need to be accompanied and monitored by in-house staff.
- Regarding their educational background, external professionals do not necessarily need an IT graduation. Experts from the business and legal department who draw on substantial IT knowledge and experience are equally suitable.

3.2.4 Course of action

1. All participating organizations appoint internal experienced professionals to be part of the newly created IT carve-out team whose size should not exceed 20 persons. It is advisable, that the subsidiary takes the lead, thus is in charge of pushing the separation process [DW08].
2. The IT carve-out team sets up a subsidiary IT organization preferably already during the PreSigning phase. Due to the high occurrence of legal and organizational specific questions it is advisable to make knowledgeable representatives of IT security as well as lawyers part of the team.
3. The IT carve-out team regularly reports on the status of the carve-out. In this vein, IT management remains updated about possible hold-ups and budget killers.
4. The carve-out team organizes trainings and hands-on sessions to impart the (mostly tacit) knowledge and skills of the seller's IT department (e.g., IT system key users, infrastructure administrators) to employees of the subsidiary.

3.3 Software licenses

3.3.1 Objectives

The main objective of this workstream is the reorganization of the seller's software licenses. Basically, the software is required to render the IT services to the business departments. A reorganization includes

- a reallocation of software licenses for the selling company as well as
- a potential new allocation for the subsidiary.

In terms of this guide, a software license can be defined as the permission a licensor grants to a licensee, allowing the latter to run the licensor's software on desktop PCs, notebooks, mobile devices, or in data centers.

3.3.2 Constraints

- Within this workstream, licenses for embedded software are disregarded (e.g., machine control software).

3.3.3 Pieces of advice

- Although software licenses, especially at the beginning of a carve-out, seem to have a limited monetary impact on the overall carve-out project budget, their disregarding and violation might incur enormous costs in the long run. Among others, possible negative implications are contractual penalties as well as injunctions of software vendors.
- For the continuous collection of information about currently operating IT systems and their related licenses commercial configuration and inventory tools can be of valuable service (e.g., Symantec Altiris).
- The contracts between licensor and licensee should contain dedicated change-of-control clauses. Such clauses govern eventual changes in the ownership or usage relationships of the software license occurring especially in M&A and carve-out scenarios.

3.3.4 Course of action

1. The IT carve-out team gathers information about the as-is state of the selling organization's software licenses and stores this data in a license repository. The repository

keeps the number of actual users while leaving aside the actual software's place of installation.

2. The IT carve-out team determines the to-be state of software licenses for the selling organization. If requested, the team additionally describes the to-be state for the subsidiary.
3. The IT carve-out team delivers the as-is state as well as the to-be state(s) to the respective procurement department(s). The latter is then responsible for taking appropriate measures in order to comply with legal requirements. For example, this includes contacting the licensor for renegotiating the software licenses.

3.4 Service contracts and projects

3.4.1 Objectives

The main objective of this workstream is the negotiation and conclusion of IT service contracts for the subsidiary. An IT service is made up from a combination of people, processes, and technology [OG07] offered by the IT department to the business. To define its provisioning quality distinct SLAs, which are part of the contract, are used. After the carve-out, an individual IT service can be rendered by either the seller or an external provider. Besides the services and their contracts, underlying IT support structures (e.g., help desk, 1st-level support) as well as ongoing and planned IT projects are reorganized within this workstream.

3.4.2 Constraints

- The negotiation of IT service contracts between selling organization and subsidiary have to comply with the arm's length principle [Wi12].
- The involved IT departments of seller and subsidiary are able to measure their service levels for both provided and received IT services (IT service monitoring).

3.4.3 Pieces of advice

- In case the IT systems of seller and subsidiary remain identical after the carve-out, the IT services delivered by those systems are homogeneous as well (IT strategy retention, cf. Chapter 2). Nevertheless, the associated SLAs may vary.
- To foster a final and definitive separation of selling organization and subsidiary, the subsidiary should have the possibility to negotiate and sign its IT service contracts by itself.
- Since the relationship between seller and subsidiary changes with Day 1 of the carve-out, the IT service contract negotiation process has to be altered accordingly (e.g., dedicated contract template for IT services).
- The negotiation and contractual arrangement of international or intra-organizational cost allocation for IT services requires expertise in various fields, among others, taxes, legal, and compliance. A mere IT service definition from an IT perspective is thereby not enough. All negotiated services have to be based on a clear cost model [DW08].
- The IT support structure may or may not be physically identical for selling organization and subsidiary.

- The grouping of IT system development and maintenance contracts avoids additional administrative effort for both, seller and subsidiary. The bundled contracts, implying the launch and execution of different IT projects, are negotiated and signed centrally between two single representatives of the organizations.

3.4.4 Course of action

1. The IT carve-out team analyzes and determines all IT services which are required by the subsidiary's business units. Thereby, the team distinguishes between services which will be provisioned by
 - (a) the selling organization and
 - (b) external service providers.

For both types, the carve-out team documents the to-be state with the help of an IT service catalog.

2. The legal departments acting in agreement with taxation and controlling draw up contracts between seller and subsidiary for all to-be IT services and IT projects provisioned by the seller's IT department. Subsequently, the seller's IT and the subsidiary's procurement department sign these time-limited contracts. Instead of signing multiple individual contracts, it is also possible to agree upon a framework contract consisting of several individual agreements.
3. The subsidiary's procurement department independently negotiates and signs further IT service contracts with external service providers.
4. The IT system owners of the selling organization adjust their system maintenance and development plan in order to reflect the actual distribution of costs. As long as using the IT services of the former mother, the subsidiary is also charged for any modifications done to the respective IT systems.
5. The IT carve-out team instructs an IT services and projects contact person, for either the seller and the subsidiary. After the transition phase, these two contacts are in charge of adjusting and renegotiating the IT services and projects contracts against the background of new internal and external conditions.

3.5 Security

3.5.1 Objectives

The main objective of this workstream is to develop a compulsory IT security framework which, in the form of concrete policies and guidelines, will be respected within the other workstreams. In addition, the cross-functional workstream provides mechanisms employed to monitor the degree of adherence to the IT security framework. The principal focus is put on the security compliance of group-wide/local IT systems, networks, infrastructure, and data.

3.5.2 Constraints

- Exchange and mutual acceptance of the IT security framework of seller and buyer.
- The IT security departments liaise with the legal, internal audit, and data protection department. Legal requirements need to be translated into IT requirements.
- Any IT solution has to be at least in its concept/design phase if it undergoes an IT security check.

3.5.3 Pieces of advice

- An IT security employee should be member of IT carve-out team. His/her level of involvement varies throughout the carve-out transition phase.
- In principle, a temporary violation of the IT security framework is possible. However, this intermediate period requires a special permit of the IT security departments of all involved organizations.
- A carve-out leads to changes of an IT which has been previously in line with the IT security framework. Against the backdrop of external attacks treating the organizations' businesses, any intermediate IT state has to be cross-checked by employees of the IT security departments regarding open leaks and vulnerabilities.

3.5.4 Course of action

1. The IT security departments of the affected carve-out organizations jointly review and assess their IT security policies focusing on gaps and potential conflicts.
2. The IT security departments monitor the IT solutions being under development regarding their degree of conformance to the IT security framework. Possible means to perform this task are audits, repeated inspections, and CERT based scans.

3. The IT security departments constantly advises and support the IT departments on all questions dealing with the adherence to the security framework. Main target group of these consulting and assistance activities are all the number IT architects who require help in interpreting and applying the IT guidelines and policies.

3.6 Corporate-wide systems

3.6.1 Objectives

The objective of this work stream is to plan the technical separation of corporate-wide used IT systems. In particular, the main focus is put on systems operating on data shared together by selling company and subsidiary. The final outcome is, that selling organization and subsidiary have exclusive read and write access permissions to their own data even if the underlying IT systems are still commonly used.

3.6.2 Constraints

- The subsidiary follows the IT system migration roadmap of the selling organization, i.e., there are no different IT system versions for subsidiary and seller in parallel.
- The cost for any IT system customization must be fully funded by the requesting organization. An exception are all adjustments which are imposed by legal constraints.

3.6.3 Pieces of advice

- The type of data separation depends on the specific data stored in an IT system. Generally, logical and/or physical separation are possible.
- Country-specific legislation and company specific guidelines determine whether the data of an IT system has to be considered critical, thus needs to be separated.
- Starting on the level of IT systems (not business/IT capabilities, services, or infrastructure) is suitable for identifying the need for a data separation.
- To pro-actively ease a potential data separation already in the IT system development phase, technical access and interface mechanisms should be put in place.
- Prior to the separation of an IT system, it is recommendable to check whether confidentiality agreements, functional process adjustments, or process outsourcing could replace the costly split-up.

3.6.4 Course of action

Identification

1. The IT carve-out team identifies those IT systems that will be used by selling organization and subsidiary after the carve-out transition phase is completed [La09]. All

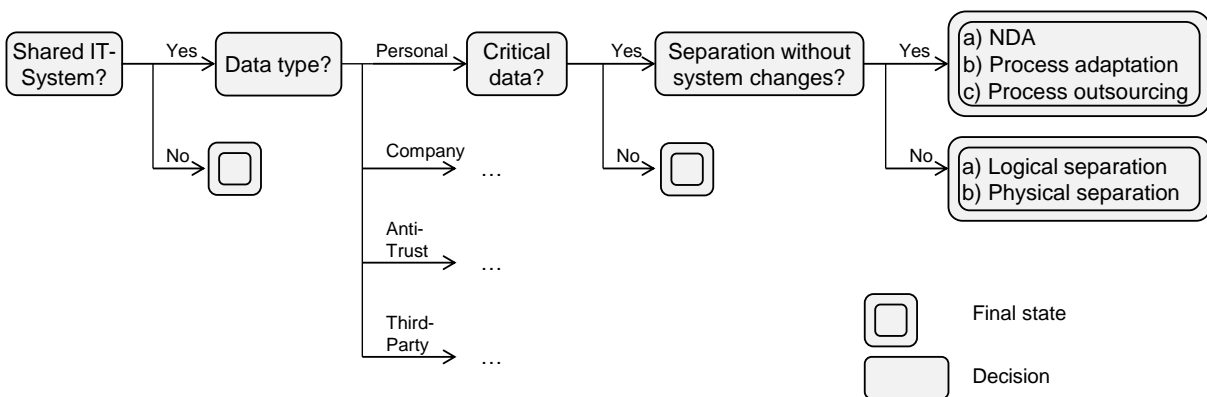


Figure 3.2: Decision tree for IT system separation

candidates need to be retained in a separate repository. In a nutshell, the following three identification methods can be applied:

- Top-down questioning of participating business departments (starting point for discussions are business processes and their supporting IT systems).
 - Bottom-up questioning of IT system owners as well as local IT departments which embed the system in a technical context (e.g., network and firewall).
 - Analysis of secondary sources, for instance, EA management tools. Depending on the EA data quality, the gathered information possibly needs to be double-checked with respective experts from IT and business departments.
2. The IT carve-out team prepares carve-out system forms for the business departments of selling organization and subsidiary (see example in Appendix 5). If possible, the form also includes the total number of users and administrators as well as the different user types (external, internal). The form focuses on a single-system view. Hence, interfaces and interconnected systems are not considered.

Classification and analysis

1. The business departments of seller and subsidiary decide on the data classification and its criticality for all shared IT systems with their signature on the respective carve-out system form. If the data (and therefore the system) is considered critical, they both explore the option of separating the data without changes to the IT system (see Figure 3.2). The type of separation is decided based on the following sources: corresponding carve-out system forms, business departments' knowledge about data, type and number of system users, and data usage. The carve-out system forms of all non-critical IT systems are archived.

Note: Instead of marking data and related IT systems generally as critical, it is advantageous for the subsequent implementation to define the criticality on a more

fine-granular level (for example on an attribute level). In consequence, a costly “all-or-nothing” separation will be prevented.

2. The IT carve-out team centrally signs an analysis and development contract with the owners of the critical IT systems. An analysis includes a thorough system analysis (data access perspective: seller - subsidiary and subsidiary - seller) and results in a functional specification.
3. The functional specification is accepted or rejected by the legal departments.
4. The IT system owners draw up a time, cost, and resource estimation and assign the task of implementing the functional specification to IT employees.

Note: The type of an IT system separation is, among others, contingent on the number and types of users (internal, external) as well as usage patterns (see Figure 3.2). In some cases, it is possible to make use of quick and inexpensive auxiliary solutions, for example by:

- (a) Signing confidentiality agreements by the users
- (b) Adapting business processes and as a consequence the user groups
- (c) Outsourcing the IT system supported business process(es)

The technical and/or legal feasibility of each individual solution should be assessed in that order. IT system administrators play a special role, since they are granted access to all data even after the separation. An additional solution must be prepared for them, for example by signing confidentiality agreements.

Implementation

1. The IT system owner and the assigned IT employees implement the system changes by means of IT projects. Thereby, the protection of organization-specific data has to be bidirectional:
 - (a) Protection of the selling organization’s data against unauthorized access from the separated subsidiary
 - (b) Protection of the subsidiary’s data against unauthorized access from the selling organization

Note: In particular, the protection of the subsidiary’s data against the seller can possibly be time and cost consuming, since this type of separation applies usually only in carve-out situations. In contrast, the protection of the seller’s data against external entities happens more often (e.g., when cooperating with third-party service providers).

The following aspects have to be taken into account in case of a logical IT system separation:

- (a) Logical separation of data through the introduction of a subsidiary-specific discriminator in the IT system, if technically feasibly.
- (b) Separation of common user groups.
- (c) Allocation of new user-identifications (user IDs) with data read and write access permissions for the employees of the seller and subsidiary.

Note: Rather than to create new user identifications, it is possible to adapt read and write access permissions of existing users to reflect the new organizational situation.

2. Both business and legal departments inspect and approve the modified IT systems.

3.7 Local systems

3.7.1 Objectives

The main objective of this workstream is the separation of the local IT systems, i.e., on-site applications which will still be used by seller and subsidiary after the carve-out. In line with their corporate-wide counterparts, the aspired target state is that selling organization and subsidiary have exclusive access to their organization-specific data. The following sections discuss subtleties decisive when separating local IT systems.

3.7.2 Constraints

- In the process of separating local IT systems and in particular data classification, local legislation has to be closely taken into consideration. For example, the treatment of personal data is restrictively regulated in Germany.

3.7.3 Pieces of advice

- If external service providers are involved in the IT system separation process (concept development, realization) additional examination of the progress and outcome quality has to be ensured (i.a., by the carve-out team). The main reason behind this measure is the danger of a know-how monopoly these external providers may obtain regarding the local systems.
- In particular for local IT systems, often used exclusively on-site by a limited amount of users, it is recommended to use *Non-Disclosure Agreements* (NDAs) to circumvent technical modifications in these systems.
- NDAs are not a panacea as they do not resolve organizational inter-dependencies. Their drafting requires the participation of both legal departments akin to the approach in corporate-wide IT systems.

3.7.4 Course of action

- The approach is equal to the activities undertaken when separating corporate-wide IT systems.

3.8 Infrastructure and networks

3.8.1 Objectives

The objective of this work stream is the logical separation of the subsidiary's infrastructure from the selling organization. While the term infrastructure refers to the physical hardware (server, switches, clients, communications technology), the term network denotes the different types of computer networks (e.g., WAN, LAN, WLAN).

3.8.2 Constraints

- A logical separation requires defined authentication and authorization mechanisms to the infrastructure of the involved organizations. To ensure information security, a “need-to-know” principle should be applied using, for instance, a *Public Key Infrastructure* (PKI).

3.8.3 Pieces of advice

- A modular infrastructure of the selling organization facilitates the separation.
- A centralized, uniformed, and up-to-date documentation of IT systems (e.g., through technical *Unified Modeling Language* (UML) deployment-diagrams), the corresponding infrastructure elements, interfaces, physical access gates, as well as their business usage speed-up the separation of infrastructure and networks.
- To ensure the subsidiary's access to IT systems of the selling organization (cf. Section 2.8: retention as well as shared usage), the number of dedicated network connection points should be minimized and secured, for example through firewalls.
- Logical network separation requires dedicated knowledge about the extraction of IP-addresses used for the implementation of firewall rules. However, the more fine-grained the set of rules, the more accurate the access control. In contrast, fine-grained rules always require a more complex change process for the firewalls. This process is even more intricate, if a buying organization is involved.
- In the long run, the implementation and continuous execution of a cross-organizational change process mostly likely turns out to be difficult. This is particularly the case when there are third-party stakeholders involved (e.g., external IT service providers, auditors).

3.8.4 Course of action

Note: The activities 1-4 are only apply, if the corresponding information about infrastructure and networks is not yet available or in poor quality.

1. The IT carve-out team identifies and documents for all IT systems used by the subsidiary the associated infrastructure elements as well as existing networks (*Open Systems Interconnection* (OSI)-model Layer 2 and 3).
2. The IT carve-out team carries out an IP-address analysis for each shared IT system taking on an IT system-centric view.
3. The IT carve-out team carries out a communication analysis in the selling organization's network to identify additional IP-addresses (infrastructure-centric view).
4. The IT carve-out team examines security weaknesses in the seller's networks and assuming an administrator as well as an end-user role (security-centric view).
5. The IT carve-out team develops a network solution (e.g., through firewalls) based on the identified IP-addresses and IT system user data. The solution should enable an unidirectional access for the subsidiary to the selling organizations' network. When realizing this type of logical separation, it has to be guaranteed, that:
 - (a) Only the subsidiary has the possibility to access the networks of selling and buying organization. Moreover, the access has to be restricted only to the needed IT systems (need-to-know principle).
 - (b) The legal constraints and corporate policies of all three organizations are obeyed.
6. The IT carve-out team commissions the IT departments of the involved organizations to design and roll out a change process to keep the network solution always up-to-date (e.g., adaptation of firewall rules). In case of an IT system change (e.g., adaptation of business logic), adjustment of infrastructure elements (e.g., relocation of servers), or specific requirements of the involved organizations (e.g., introduction of new user roles) this process will be carried out. The design of that process is mutually agreed between all participating IT departments as well as potential IT providers.
7. The IT carve-out team consults the subsidiary in the migration of infrastructure elements and its network.

3.9 System access rights

3.9.1 Objectives

The core objective of this workstream is to adapt the user access rights of corporate-wide and local IT systems.

3.9.2 Constraints

- The requirements of the existing legal framework (principles and guidelines) have to be met. For instance, according to German law all IT system user-dumps must be encrypted and approved by the works council since the extracts contain personal data.

3.9.3 Pieces of advice

- The identification process and results of existing IT system users have to be made transparent (for instance by protocols) allowing to re-validate the gathered information later on in the carve-out. This is especially important if an external company is commissioned to determine the systems users.
- Similarly, the assignment of a user to either the subsidiary or selling organization must be made transparent.
- An IT system user clean-up, hence the purging of users and their data access rights, necessitates in-depth knowledge about the respective authentication and authorization processes. Oftentimes, the processes of the systems differ considerably from each other, given that they depend, among others, on the age, technology, and IT service structure of the historically developed IT systems. To speed-up future carve-out challenges, it is recommended to document the processes in advance while keeping this information up-to-date.
- The time for cleaning up IT system users varies. This explains the strong difference in costs and expenses per system.

3.9.4 Course of action

1. The IT carve-out team determines existing user identifications (user-IDs) for each corporate-wide and local IT system.
2. The IT carve-out team determines the affiliation of each user identification to the selling organization or subsidiary respectively.

3. The IT system owner determines for each combination of IT system and data object, whether the subsidiary or seller should not have access to it (excluding approach), thus determines the to-be access rights. Thereby, the team members base their work on the criticality of the data classes.
4. The IT system owners carry out a user clean-up by
 - creating/requesting new user identifications and granting the adjusted to-be access rights or
 - creating/requesting new user identifications, adopting the access rights from the old identifications, and adjusting them according to the to-be access rights.

Both cases require the deactivation or deletion of the old user identifications.

According to a recent KPMG study, the average transaction costs of a carve-out amounts to 5% of the sales revenue an organization receives when carving-out parts of it and selling them to a buyer [Do12]. One possibility to bring down these costs is to enhance the organizational capability which is concerned with the separation of IT elements. Unfortunately, existing literature coping with a structured and systematic approach to de-merge IT is rather scarce. To improve this situation, this guide provides clear guidance on what and how IT elements can be separated and prepared for a subsequent integration.

After having set the stage with a short motivation to the topic, the document outlines a consolidated body of knowledge, which defines, among others, drivers, types, IT strategies, and IT elements of carve-outs. In a second step, the guide details on the separation of specific IT elements on the basis of eight dedicated workstreams. Thereby, each workstream is structured similarly while being topic-centric and modular. In this sense, workstreams are perfectly suited to address the needs of different IT carve-out actors. Their practice-proven content extracted from a case study guarantees feasibility and concreteness at the same time.

Main parts of this guide originate from findings we gained when observing one IT carve-out in the German automotive industry. Future research in this field should validate our work by means of additional case studies, preferably from non-automotive sectors and countries other than Germany. Besides a broader empirical basis, the two remaining IT carve-out strategies (retention and transition to the buyer's IT) have to be paid attention to as well. Certainly, this can be only achieved if further carve-out cases are analyzed given the limited number of published results. Future research should also attempt to contextualize the dimension of IT, i.e., embed the presented workstreams in a broader carve-out setting. As an example, we refer to Penzel and Pietig who added a one page "Merger Navigator" to their book clustering different work packages of a specific merger dimension at a certain point in time [PP00]. As briefly touched in Section 2.10 of this guide, additional studies could substantiate the topic of carve-out readiness, i.e., pro-active measures preparing an organization to separate elements of its business and IT. Furthermore, the aspect of IT carve-out governance seems promising for us. Perused literature as well as our case study did not unveil any role schemes, meeting frequencies, and board structures meaningful for an IT separation project program. Lastly, presented workstream descriptions should be extended with additional artifacts easing their implementation in the course of a time-critical and demanding transformation period.

We want to express our gratitude to all interview partners for the time spent and the

open discussion about their personal experiences they made during the carve-out. In addition, we thank Pawel Kwiecien for his support when compiling this document. With this guide, we want to encourage academics and practitioners to provide us with feedback regarding additional literature, case studies, ongoing research projects, as well as personal experiences.

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Arm's-length-principle *Arm's-Length-Principle* (ALP) is a condition or a fact, which stipulates particular transaction prices for product delivery, rental- and leasehold rate or financial transactions in the context of service exchange within corporations, affiliated companies, or business groups. ALP transactions aim to stand up to legal scrutiny, even though the involved parties may have shared interests or are too closely related to be seen as completely independent.

Carve-out IT system form The carve-out IT system form is a structured description of an IT system allowing to decide for or against the separation the system's data. In addition to a detailed description of the system, its capabilities, as well as its data, the form contains the system name, using business departments, and the respective system owner.

Data room The physical or virtual data room contains a collection of (digital) documents which the seller makes available to all those organizations which intent to purchase its subsidiary. Essential purpose is to support the prospective buyer's decision making process. Besides the actual documents, the selling organization has to take charge of the establishment and maintenance of this content repository.

Decision-tree template A decision-tree template is checklist-style guideline which is allows to classify an IT system as critical or non-critical. An IT system is considered critical if it will be commonly used by the seller and subsidiary while containing critical data.

IT carve-out readiness The state of "IT carve-out readiness" can be achieved by a set of preliminary and continuous measures aiming to effectively and efficiently separate elements in case of a carve-out situation.

IT component An IT component consist of software or tightly limited software systems running separately on a dedicated hardware device. IT-components do not directly support a business process. Instead they are part of IT system or a platform.

IT service An IT-service is rendered by a service provider to one or more customers. The service is based on IT and supports the customer business processes. An IT-service consists of a combination of people, processes, and technologies, and should be described by means of an IT service contract also containing information about the service quality.

IT service contract An IT service contract describes a legal and binding contract between provider and customer for recurring services. The goal is to make the control capabilities transparent for the customer by which guaranteed performance characteristics such as scope, reaction time, and processing speed are described in detail. An important element is the quality of a service measurably describing the agreed performance quality. All quality information is kept by so-called *Service Level Agreements* (SLAs).

IT system An IT system is a well-defined collection of business functions, which enable effective and efficient implementation of business processes. It consists of IT components and own program logic and addresses different business use cases.

Logical separation Logical separation is defined as the software-technical separation of an IT system, IT component, infrastructure and networks, as well as data associated with them. Among others, this is achieved by a copy of the software, introduction of a multi-tenancy capability, virtual machines, or by setting up a firewall and/or *Virtual Private Networks* (VPN) tunnel. Whenever implementing this (partially very time-consuming) virtual encapsulation, the underlying hardware remains identical.

Need-to-know-principle The need-to-know-principle describes a security objective applicable for legally and/or business critical information. It defines that only this set of data has to be made accessible to an actor, which is immediately required for the fulfillment of his/her process steps.

OSI model The *Open Systems Interconnection* (OSI) reference model is a layered model from the *International Organization for Standardization* (ISO) which was developed as a design basis of communication protocols in computer networks. The tasks of the communication are divided into seven consecutive layers in which for each layer a description defines its specific purpose.

Physical separation Physical separation is defined as the hardware-technical separation of an IT system, IT component, infrastructure and networks, as well as data associated with them. Additional physical-existing technology such as network wires, switches, and storage devices have to be employed when realizing this type of separation.

UML The *Unified Modeling Language* (UML) is an standardized object modeling and specification language to specify, design, and document software components and other systems. Initially created by the *Object Management Group* (OMG) in 1997, its current version 2.1.2 is managed by OMG along with the ISO.

User clean-up A user clean-up is defined as a system-centric adaption of user identifications regarding their data access rights.

Carve-out IT system form

Required measures - Separation of shared IT systems and their data

IT system name: _____

IT system owner: _____

Business dept. ([Selling company]): _____

Business dept. ([Subsidiary]): _____

Planned system separation date: _____

Separated by IT system: _____

Description of the system and its functionality
...

Specific description of the data				
Type of data	Personal data <input type="checkbox"/>	Corporate data <input type="checkbox"/>	Anti-trust data <input type="checkbox"/>	Third-party data <input type="checkbox"/>
	Selling company		Subsidiary	
Data criticality	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Remarks				

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