

Cross national IT

Opportunities and challenges

January 2021

“Our operation in country X, Y and Z are so alike that they can easily be supported by the same IT applications, yielding significant synergies.” From this starting point, a number of cross-national IT projects have been initiated. The statement is true, but the implementation is complex. The challenges are within IT as for any application replacements, but also governance and HR.

This note identifies potential benefits and challenges in such an implementation. The key argument is that centralizing IT applications is only viable if it follows a centralization of decision power in the business.

1 Motivation

This document has been underway for quite some time. It has been challenging to write, since each of the discussion items are quite basic, some almost trivial. The key motivation for completing it in spite of this is that failing to link the individual simple items is surprisingly common, even for seasoned, competent executives.

From seeing several attempts of implementing cross-national IT, a pattern has emerged. The motivation for this short document is to share those experiences and indicate actions that may reduce the risk of failure of endeavouring to consolidate IT across business units.

The issue addressed is that high level of cross-country synergies from shared IT systems requires deep and broad sharing of applications. Such sharing requires a corresponding sharing of requirements, e.g., ownership of product management and processes. This will for some businesses imply shift of authority that is demanding both for those who lose it and those who gain it. This needs to be addressed in order for the synergies to materialize.

If this logic and its consequences is absolutely clear to you, there is nothing new in this document and you can probably spend your time better than reading the rest.

Should you choose to continue, the document is structured as follows:

1. Overview of types of joint IT including the benefits and challenges.
2. Implications of sharing of IT applications across countries.
3. Challenges of implementing and maintaining shared IT applications.
4. Suggested approach.

Before progressing, a brief note of terminology. The document uses the term “cross-national IT” as this is a very prevalent situation. This, however, is

a special case of a “cross-autonomous-unit IT”, where the “autonomous unit” can be business units within a country, or groups of countries that are already integrated.

2 Introduction

Transforming IT is at the best of times a complicated and risky undertaking as the failure statistics clearly proclaim. Adding the complexity of cross-national implementation can, unless planned carefully, worsen the odds of success significantly.

When implementing and maintaining IT across different business units, the key question becomes who decides on the myriads of details and priorities that are inherent in both implementation and maintenance of IT applications.

Deciding in a committee comprised of a number of independent business units is very challenging since it puts the burden of aligning and prioritizing business requirements on the IT stack. Since such alignment at detailed technical level is unnatural, it could have said “impossible” instead of “challenging”, but sometimes people manage to make things work that really look impossible.

The alternative is to decide centrally. That works from an IT perspective since the alignment problem is now addressed elsewhere. However, such centralization has substantial business and HR impact and is not trivial either.

Implementing joint systems can, in addition to costs and savings, impact financial KPIs through conversion of CAPEX to OPEX. This should be understood also, but is not the errand of this document and therefore not discussed further.

3 Characteristics of joint systems

This section discusses the various ways of sharing systems. Section 1-3 discusses increasing levels of sharing as applied to any particular system. Section 4 discusses the value chain scope of sharing.

3.1 Shared operations

Operations of systems can be shared, either at the basic operating level (servers, operating systems etc.) or at the application level. The more similar systems are, the more effect this will have. At one extreme, running different applications on different databases and operating systems in one operations centre will have limited synergies. At the other extreme, the same application on same hardware, operating system etc. with similarities in configuration will have higher synergies.

The shared operation can also include sourcing and vendor management. Again, the higher the similarities, the higher value.

The benefits of such shared operation are limited, particularly since each business unit can do its own sourcing and obtain even better economy of scale through using external vendors. This goes in particular if the business units have differing setups (since an external vendor is more likely to have synergies on these also).

While implementation of such sharing is not trivial, the impact on business is virtually non-existent and the organisational impact is confined to a sub-part of the IT department.

3.2 Multi-tenancy

The typical response to the challenges of truly common systems, is to procure systems that permits multiple tenants within the same instance, i.e., having individual configurations supporting individual business units.

Configuration in this sense means that parameters set up in some sort of tables define the behaviour of the system. As long as this impact only the individual tenant, it works fine. Typical examples of this are language of screens and bills, prices and product variations with limited process impact.

Once development (coding) within a system becomes country-dependent, functional sharing becomes challenging. There is no hard line; one or two modules, several interfaces etc. per country are manageable. But if it becomes dozens of cases per year, more and more of the development and operations, understanding of impact, testing etc. will

become country specific, gradually degenerating the sharing model.

Historically, the distinction between configuration and coding was simple: configuration meant rules in a table, coding meant some sort of programming language. Depending on the actual system, this distinction can be challenging. Consider, for example, the configuration of workflows in BPEL; while this takes place in a GUI, the complexity makes the impact akin to coding for the purposes of managing a multi-tenancy system.

This also means that multi-tenancy is not a precise concept and each vendor defines it to suit his purpose (essentially to be able to check the box in the RFP). Before implementing a joint system based on multi-tenancy, care should be taken to be precise on what is expected from "multi-tenancy" and articulate that towards the vendors.

In a multi tenancy setting, each business unit is permitted a high degree of autonomy on processes, products, business rules etc. There can be benefits though procuring licenses and operation as well as executing parts of the initial implementation jointly. The final implementation, testing etc. will be individual per business unit. Essentially this enables the joint operations to be very effective. But further business synergies will not be achieved.

In summary, multi tenancy is a fine for avoiding some of the issues of full functional sharing. But it also means that the synergies achieved are more akin to a joint operation than a shared system.

3.3 Shared processes and products

The most extensive sharing is where processes and products are shared across business units. This model can provide extensive synergies as a lot of work related to IT systems, processes and products can be shared. For the same reasons, it requires extensive alignment across business units.

The benefits include shared management and support of IT, shared process and product ownership and opportunities for sharing certain operational units, e.g., spill over of calls on customer service.

Sharing processes means that the individual steps are materially the same. This does not mean that no variations in things like interfaces can exist, but the overall process definition should be identical.

Sharing products means that the structure of products, accounts etc. are identical. Prices, descriptions etc. obviously can differ and if one product only exist in one country, that is also fine.

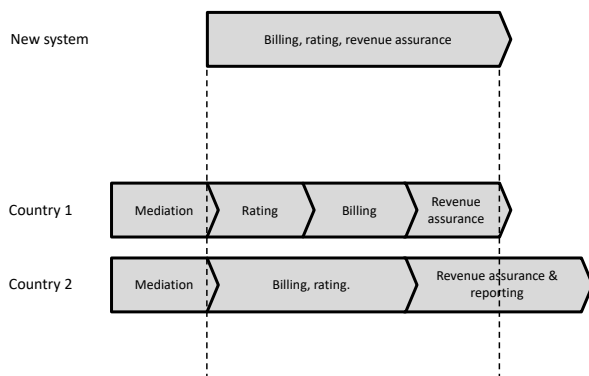
Before embarking on shared processes and products, care should be taken to assess its viability. This requires firstly understanding if there are objective facts that causes differences, e.g., in scope of business or legal environment. Secondly it requires understanding of whether there is willingness to adapting to so extensive standardisation as it requires a level of centralization that will meet resistance and has the potential, over and above what IT systems normally do, of disrupting business. This is considered further below in section 4 as it constitutes the main issue addressed in this document.

3.4 Value chain scope

In case all systems are shared, the full value chain is supported, and this section is irrelevant. In many cases, however, only parts of the value chain are supported with joint systems.

With a partial support of the value chain is implemented, it is important to observe the natural splits of the value chain. These are characterized by having relatively simple and stable technical interfaces.

To illustrate the potential impact of such interfaces, consider the following situation where the natural splits are not respected, and the interfaces therefore do not exist in similar places in the different countries.



The scenario is that two country 1 has a traditional split of systems whereas country 2 has an integrated revenue assurance and reporting tool. The new system introduced will require interfacing to two mediation system and a, presumably complex, carve out of the reporting for country 2 (or introduce a new additional system).

The general situation is that a cross-national system is introduced in the middle of a value chain already integrated within each country. Implementing a cross-national system in this manner will

require that existing systems are “broken up” in the middle, which will require a significant effort on existing systems and a large number of interfaces.

In order for interfaces to function, the systems at each end needs to agree on the definition of the data elements that are contained in the interface. This means that a data architecture comprising these elements must be agreed upon in quite some detail, e.g., length, meaning of codes etc. This may require some conversion and can have cascading impact if the conversion is not straightforward.

Interfaces also implies co-ordination of upgrades on both sides; for a cross-national system that means that non-trivial upgrades will need to be coordinated with all countries that have the system implemented. This impact is also lessened if the interfaces are few and simple.

Having a large functional scope, particularly one covering the most complex interfaces, reduces the complexity. If in addition interfaces follow natural breaks in the value chain, the complexity and volatility are likely to be smaller.

3.5 Summary

Sharing of systems can be seen in two dimensions: depth of technical sharing and breadth of value chain sharing.

Many sharing options exists that have low complexity. Joint technical operation or joint back-office systems are fairly straightforward.

Deep and broad sharing has a higher value but also a lot higher complexity. Embarking on the more ambitious process and product sharing has more extensive implications which are discussed further below.

All sharing models can degenerate to less clean models. This will in most cases reduce or even eliminate synergies. The pressures that challenge implementation of joint systems will also apply after implementation and drive degeneration. The higher value requires a corresponding higher level of change. The ambition should be matched with the will to follow it through.

The following illustration summarizes the situation:

	Joint operation	Multi tenancy	Functional sharing
IT cost savings			
Business cost savings			
Time to market			
Implementation complexity			
Maintenance complexity			

A full circle signifies high savings or complexity. An empty circle signifies low savings or complexity. So for instance, the full circle on “business cost savings” to the right means that the savings are as extensive as a change in IT can make them, not that they are zero or that there is nothing else that may be done.

4 Implications of joint systems

This section introduces a couple of apparently elementary topics on the implications of joint systems. Individually these topics are so simple that one may feel it slightly ridiculous that they are presented at all. Yet failure to recognize them in the context of implementing cross-national IT systems lie at the heart of the poor success rate of such endeavours.

The topics include:

1. What control of business means.
2. How control of IT impacts control of business.

This is then summarized into implications of joint IT.

4.1 Control of business

Control of business is here taken to mean the ability to manage the development of the profits of the business. This requires the ability to manage products, market focus, distribution, production etc. in terms of how well products address customer needs, how well they get positioned to be perceived as relevant and how efficiently they are produced.

Control of business, therefore, means controlling the ongoing evolution of business, i.e. it implies the control of change.

A manager of any business is faced with the choice of structuring this responsibility. Ultimately, of course, the top management will be responsible. However, in order to handle this responsibility, the

¹ Clearly and increasingly, there are businesses where computers are used for more than automation; in some cases, it is very close to being the product. Such businesses may have similar

top management will have to delegate the responsibility to make individuals responsible for specific areas of the overall profit and loss. These individuals will, in their turn, subdivide their responsibility to other individuals lower in the hierarchy.

In order for this cascading delegation to function well, a level of control must follow the delegation of responsibility. The delegation of control over profit and loss will never be complete since certain functions are required in order to manage the overall business, e.g. the headquarter functions or a business unit communication function. Also, at some point, the delegation normally involves distributing profit responsibility on some units and costs on others, e.g. sales/marketing vs. product development and production. However, at each sub-function, a level of control that has a reasonable match with the results, for which the sub-function is accountable, is required.

The point of this very basic discussion is that delegation of authority includes a delegation of the ability to control change.

4.2 IT impact on control of business

What IT does is largely automation.¹ Some basic like the processing of an individual call detail record, other is more advanced self-service interactions, sometimes employing techniques within machine learning. This is done through capturing of various inputs from the outside world, executing more or less complicated processes with or without human interaction, resulting in an impact on the real world. The impact may be reporting, bills and collection from customers, control of equipment resulting in change of physical behaviour etc.

In some areas, the automation of processes has developed over time to a level where the processes cannot in practice be executed manually; in other words, IT is a prerequisite for executing the processes at all. In other places, where IT is less fundamental, manual execution is still possible, if expensive.

Since IT in this way does the actual execution of business processes, many process changes require changes to IT systems. When this includes customer interaction, process efficiency, product definitions and pricing, the link between control of IT and control of business becomes very strong and visible.

issues, but the scope of discussion here is where IT is a – more or less advanced – automation of processes. Hence the “largely”.

4.3 Summary

This section argues that

1. Accountability of business results demands a level of control of change.
2. Control of business demands control of IT applications.

Therefore, functional sharing of IT applications can imply significant centralization of business control. The conclusion from this is that since deep and broad sharing of IT applications will imply centralization of control, it is likely to have significant impact on the accountability structure of a company.

5 The challenges of sharing

With this, the problem addressed in this document can finally be introduced.

If you are considering simple sharing as described in section 3.1 (joint operation) or 3.2 (multi tenancy) the problem is comparatively simple. Some co-ordination issues remain but as they do not shift authority, they do not normally cause significant trouble. The considerations in the rest of the document may still be relevant, but less so than more complex scenarios.

You may also be in a business where there is limited local operation apart from sales, which runs very standardized processes. Some manufacturing companies are like this. In case there is local production, it is not integrated with sales the way local infrastructure typically is. In effect they have already centralized their requirements, either because they were born that way or because they have gone through a process of centralization.

If you are considering sharing that does not respect the value chain, e.g., parts of billing, you should seriously consider whether your business case accurately reflect the added complexity of high coherence. Refer to section 3.4 for why this may be a challenging proposition.

The focus for the rest of this section is on deep and broad sharing, described as shared processes and products in section 3.3, and with extensive value chain scope, discussed in section 3.4.

The basic argument for deep and broad sharing normally runs to the tune of “our business in countries X, Y and Z are so alike that we can run it on the same system and achieve synergies in costs, time to market etc.”

The argument is often basically true. What is missing is the implications of implementing and running a joint system. The statement could more appropriately be voiced as a question: “Since our business is very similar in countries X, Y and Z are very alike, there are potential significant synergies in costs, time to market etc. from having a cross-national system. Are we willing to implement the required changes in the organisation and execute the required IT program?”

The core of the challenge is to which extent the control of business, e.g., product managers, process owners, business operations like customer service, should be centralized.

The challenge is illustrated through discussion of the following topics:

1. The complexity of an implementation of an individual system. This is a “baseline” complexity onto which the cross-national complexities are added.
2. The governance issues related to different implementation and maintenance approaches.
3. HR implications of different approaches.
4. The issues related to reuse of systems existing in one country (this is a variation of the general theme, but a quite usual one).

Note that apart from (1), all are business, not IT, topics.

5.1 “One-entity” IT transformation

In order to discuss the complexity of the cross-national IT transformation, some background of a single-country transformation is required.

An IT transformation typically attempts to replace all or major parts of the IT application portfolio. An existing IT application portfolio typically is the result of 20+ years of evolution, of introduction of new systems, products, change in organisation, strategy etc. Even documenting the functionality of an IT application landscape is a huge task, if at all possible.

The regular transformation is faced with a choice of how much of existing products and processes need to be part of the new system. The immediately obvious position would be that a new system needs to support existing business. However, this imposes the requirement of documenting existing business, in practice the existing systems. Furthermore, such a requirement tends to get the new system to inherit the current complexity and require extensive

customization. The end-result suffers from this, sometimes to a level where the post-transformation situation is not much better than it was before.

Another topic facing all IT transformations is the question of data migration, where two basic approaches exist: big bang or gradual migration. Big bang is a model where all data is migrated over a period where the systems are closed and switch-over happens in one go. Big bang is simpler in the sense that no interim interfaces are required, but carries a high business risk and a corresponding burden of quality assurance. Gradual migration, on the other hand runs two systems in parallel with some defined distribution of responsibility between the two. Gradual migration requires that the necessary interfaces are implemented to support co-existence of the systems and also typically involves more manual labour in the period of running two systems.

A further discussion of the individual transformation can be found in a white paper addressing that specific topic, on the same web page that hosts this document.

5.2 Governance

For the purposes of this section, governance means who decides over the functionality of the cross-national system, i.e., the organisation structure, mandates, processes, meeting places etc. that ultimately prioritizes how available resources for implementing the system are used.

In the scenario considered here (shared processes and product as described in section 3.3), agreement on the shared elements need to be made across business units. To illustrate the options, the extreme forms for achieving agreement are:

1. No central mandate in which case a central unit merely analyses and facilitates the discussion between individual countries.
2. Full mandate to decide priorities based on inputs from the countries.

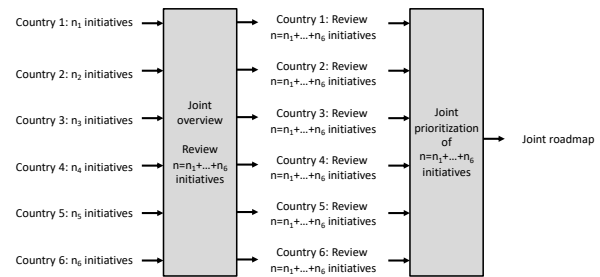
These are discussed more in detail below.

Clearly one can think of any number of hybrid models, but at some point it boils down to whether a central unit in case of lack of agreement can decide the direction without a process of escalation.

5.2.1 No central mandate

Where there is no central mandate, all changes need to be processed in committees where the

individual business units are represented. This could look something like the illustration below:



The individual countries submit requests (on the left), the central unit analyses the requests and facilitates discussion of priorities and submits them to a committee that take the final decision.

The challenge with the model, of course, is that in case of many participating countries, the committee will have the challenging task of reviewing and prioritizing a large number of requests. Requests will certainly conflict in resource and time prioritization and some also in content.

Since each individual request changes some common functionality, every participant will need to comprehend the requests from every other country. Assuming n requests per country per unit of time, and m countries, each participant will need to review $n*m$ requests per unit of time. In the illustration, each country has its own count, resulting in a total of $n_1 + n_2 + n_3 + n_4 + n_5 + n_6$ requests per unit of time.

Each participant in the committee will have the further challenge of being under pressure to ensure the changes requested by the country that member represents, since these changes are important to address changes in the market or production.

There are different ways of mitigating this challenge, e.g.:

1. Use of sub-committees, e.g. for special areas or different sizes of changes.
2. Use of business cases comparing different suggestions.
3. Installing a mandate with the co-ordinating function to be final arbiter of priorities.

Each of these models have their own challenges.

The use of sub-committees can alleviate some of the problem, but distributes it rather than resolving it.

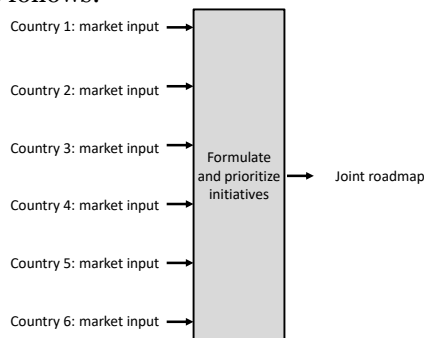
Business cases can and will be “doctored” and tends to favour the country with the largest

revenue. Consider, for example, an important legal requirement in country A vs. an important market opportunity in country B. The result of this comparison will depend on the assumptions put in the business case, which then can be the subject of further discussions.

A further challenge with a decentral mandate is a constant pressure to provide specific, local functionality. Either in the joint system or through individual add-on systems. Over time, this will cause the joint systems to degenerate into being halfway country specific.

5.2.2 Centralized decision

The other extreme is where decisions of priorities are centralized. This process could for instance look as follows:



Here individual countries submit requirements (or they may even be submitted by a central unit representing the individual markets), which are processed and prioritized centrally to form a joint roadmap.

This model solves a lot of the issues outlined in the decentralized model but is very demanding on the central function since it needs to understand the local context of each country. And it shifts authority to the central unit.

One obvious resolution is to centralize the entire process model supported by IT, leaving only freedom within defined processes and products that is purely configurable to local management. For IT-heavy industries like telecommunication this constitutes centralizing large parts of the operations. In other industries, the impact may be lessened, but centralizing the operating model will centralize the option space for using the production apparatus.

With such centralization, an important part of what defines the business results will be centralized. This leads to the further question of who will be accountable for the profit and loss. Clearly, moving control over IT priorities does not imply moving

profit and loss accountability. On the other hand, as an important tool for developing the business has been removed from the management responsible for profit and loss.

5.2.3 Conclusion

People are adaptable so they make all sorts of models work. The experience from several projects and businesses is that the resistance towards joint control is such that maintaining decentral control over one joint system is very challenging.

The conclusion here is, therefore, that centralizing IT through deep and broad sharing requires a similar centralization of the requirement organisation. Not necessarily to the extreme set out above, but something like it. This challenge, if successfully addressed, also comes with the highest potential reward.

5.3 HR implications

Companies that have evolved through starting or buying national businesses often have a high degree of local autonomy. This is particularly true when the industry is characterized by local production that cannot readily be moved out of the country. Telecommunications and facility management are examples of such industries.

In such cases, the national CEO will have a job with a seniority that is close to being the same as a national company that is not part of a corporate group.

In the situation where major parts of the core value chain are supported by cross-national systems, the governance will, as discussed above, need to be centralized. This means that many decisions regarding development of the core value chain will be centralized. Depending upon the level of dependence on IT, this can require shifting many decisions from the national organisation to a centralized organisation.

Moving such decisions out of the national organisation will reduce the complexity and therefore seniority of the role of the national CEO; in a full implementation, it will shift the seniority down to division manager, which compared with the CEO of an independent company is a level down. For the people involved it can be challenging and, once they realize it, cause resistance to the change. However, it does remain a transition problem that ultimately can be handled by replacing individuals.

Similarly, the centralized organisation will require to be upgraded significantly. This is more challenging, since these positions will require

understanding impact across several national value chains, the impact on cost structure, market offerings etc. They will also need to be able to re-prioritize in the face of a developing market situation in one country, including handling the implications of those countries that in consequence is given lower priority.

Care should be taken not to expect an individual with a good track record in one country to automatically being capable of handling multiple countries. Understanding and respecting local requirements, where differences may be subtle details in the many similarities as well as keeping an open communication are important skills not required for single-country focus.

Any large IT implementation requires organisational change management since it impacts processes and therefore the way people work. However, implementing a comprehensive cross-national IT system can include significant change in mandate and accountability as well as seniority of many positions. This needs to be thought through and executed carefully.

A final discussion on “centralization”. Centralization often is taken to be synonymous to “moving to headquarter”. The actual people and functions can be distributed, including the governance and handling of the IT systems. There may be good reasons for this, including availability of competence in a national organisation and location as well as market understanding from living in the country every day. However, the reporting structure should be centralized; giving the responsibility of cross-national IT systems to employees who are measured on the success of one country will almost invariably lead to tension.

5.4 Reuse of one-country solutions

Non-trivial cross-national IT systems never ever happen by accident. The case for re-use of systems implemented in one country normally goes something like “when Italy has a fantastic CRM system, why do we not use that everywhere”.

In considering this, the first question to ask is whether an appropriate scope can be found that reflects the deep and broad sharing desired for high value creation. In case the system does not respect the natural value chain boundaries it is likely to cause the issues described in section 3.4.

The next questions relate to the governance and HR as set out above, with the added complexity of having a system that fits the current business of one

country. As it is almost certainly different from the other countries, the question becomes whether all countries materially adapt to the processes of the initial country or a new, common set of processes are defined.

Adapting to the processes of one country may be perfectly viable and, in this case, the one-country solution can be a good starting point. It is likely to require quite tough execution as all other countries will find themselves force-fitted into an existing solution.

Defining a new set of joint processes is viable, but the value of an existing system is lessened as it will require substantial re-implementation.

Fundamentally, the issues of governance and HR are the same but potentially tougher to resolve.

5.5 Summary

The challenges associated with deep and broad sharing of cross-national IT systems in highly IT dependent organisations with local operations and autonomy are the ones of a one-country implementation augmented by governance and HR issues that are the result of shift of authority.

Therefore, when considering such implementation, these implications should be considered, the implementation and future governance be designed and appropriate HR and change management activities put in place.

6 Potential solutions

What has emerged out of the discussion above is the point of view that implementing non-trivial cross-national IT systems is a very challenging proposition. The discussion above has pointed to many elements of a solution, so this section summarizes the point of view of this document of what it takes to set a foundation for a successful cross-national IT solution in general.

6.1 Governance

As will be clear from the discussion above, the implications on the mandate and accountability can be quite comprehensive. It is, therefore, necessary to understand if such change toward centralization is desired. If the answer to this is affirmative, explicit planning for the corresponding organisational change management should be made. This

also is indicative for a larger scope of the cross-national systems.

If no centralization is desired, one may pursue multi-tenancy or limit the cross-national systems should be limited to areas where national differences and autonomy can be maintained, e.g. back-office systems.

6.2 Scope

Since cross-national projects often starts with a target scope, this may already be known at the outset. However, the scope should be checked against whether it fits to natural breaks in the value chain and potentially adjusted up or down. Also, the scope should be broad in order to justify the complexity. Also a combination of centralization and decentralization that will be the likely result of a small scope carries with it the worst of two options.

Moving further from the overall scope, the application architecture of the countries in scope should be mapped out and the implementation consequence of the cross-national system understood.

6.3 Implementation

For both multi-tenancy and shared processes and products, new systems are likely to be implemented. A partial exception could exist in case of reuse of one existing solution, but it is not a very probable scenario and for the other countries, an implementation would still be required.

For shared processes and products this should be starting with developing the new business model that is targeted to function across all countries. For the multi-tenancy, the process would be similar but per country. A further discussion on this topic can be found in the “IT Transformation” document on the web page that hosts this document.

7 Summary

In summary, consolidating IT across countries (or business units) should be approached with great care. The more production requires physical presence, the harder it becomes.

When implementing the consolidation, a first necessary step is to understand the impact on the organisation, the mandates and accountability. This, together with the natural interfaces in the value chain, should define the scope of cross-national IT systems.

Implementing cross-national IT systems requires, in addition to the normal complexity of implementing IT systems, that an overview of the current application architecture in all countries is developed. It must then be evaluated how the application architecture can be changed to accommodate the cross-national IT systems. Furthermore, a data architecture covering at least the interfaces between the national and cross-national systems must be developed.

And again: following these rules will not guarantee success, but ignoring them will almost certainly lead to failure.

8 Contact

This document has been written to share experiences and may be freely distributed as long as its source is referenced.

Obviously, there is a lot more to application transformation and cross-country implementation than what can be contained in this document. If you wish further perspectives, access to contract templates etc., please feel free to reach out to lars@ra-advisory.dk.