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SAP Solution Manager offers rich capabilities to support the entire lifecycle of your business applications. This enables significant benefits. Typically, SAP customers do not utilize all options but concentrate on those that are most valuable for them. To do so, you need to understand not only the value but also the related efforts for setting up the individual capabilities. This paper describes the SAP Solution Manager 7.2 adoption framework. It helps to identify the best steps on your path to success. This analysis is relevant not only for SAP Solution Manager savvy customers but also for newbies who haven’t experienced SAP Solution Manager yet.

1 SAP SOLUTION MANAGER – MISSION STATEMENT

The tasks of IT organizations are challenging. On one side, the business expects from IT that all systems run stable without disruptions such that they can best support and automate business processes. On the other side, required changes and innovations shall be implemented as fast as possible. And all of this with minimal cost. SAP provides SAP Solution Manager to support IT organizations in mastering these challenges. It is available for you as part of your SAP support and maintenance agreement. You do not need to pay license fees to SAP for using SAP Solution Manager.

Before we start discussing the approach to individual SAP Solution Manager functions, let us first gain a better understanding of the SAP Solution Manager mission.

Business Processes Drive IT

In a complex business world, most organizations can use a helping hand. At SAP, we believe that support should be much more than a help desk clearing tickets on a 24×7 basis. Support should enable you to meet your company goals. This also applies to SAP Solution Manager, as part of your support engagement with SAP.

Key goal of SAP Solution Manager is to ensure that your company can run your business efficiently without disruptions. The focus on business processes is crucial for this. With SAP Solution Manager, you can operate the involved business applications and handle incidents immediately whenever they occur. And you have the possibility to avoid incidents pro-actively before they happen.

Just operating business processes is not sufficient. Proper planning, implementation, and change control is as important for success. You can use SAP Solution Manager also for building what the business needs, whenever they need it. SAP Solution Manager drives both continuous improvements and business innovations.

Integration and Openness

Most of the individual functions of SAP Solution Manager can be offered by third-party tools as well. But SAP Solution Manager has one significant advantage: integration. All information of the individual functions is available in SAP Solution Manager (single source of truth). This ensures that the dependencies between different functions can be taken into account easily. Just to name a few examples: SAP Solution Manager ensures that changes in the system are also maintained in the documentation such that there is no deviation between documentation and reality. Requestors of a change might want to know about the status of the implementation. You want to know which business processes will be impacted by a change. Management reporting is easier and faster with one central dashboard than via handling and consolidating multiple spreadsheets. All this information is available centrally in SAP Solution Manager.

On the other side, you might have licensed other tools already for some functionality. Open interfaces of SAP Solution Manager allow you to continue using these tools and integrating them with SAP Solution Manager. This integration ensures that you still keep a holistic view across your entire solution.

For SAP and Non-SAP

An end-to-end business process is not restricted to run on a single system. Therefore, it is important for SAP Solution Manager to support multiple systems in parallel. This might even involve cloud services and non-SAP business applications, depending on how your end-to-end process is set up. New technologies are also supported, like SAP S/4HANA and the SAP HANA Cloud Platform.
SAP Solution Manager delivers four key value chains to help you achieve your goals. They cover the entire lifecycle of your IT solution (figure 1):

- **Portfolio to Project** takes care of the management of implementation and change projects from the decision to start a project until the project end. The scenario provides a unified viewpoint across PMO, enterprise architecture, and service portfolio. It improves data quality for decision making and provides KPIs and roadmaps to improve business communication.

- **Requirement to Deploy** builds what the business needs, when it needs it, with measured business outcome. The scenario provides a framework for creating, modifying, or sourcing services. It spans from gathering demands of the lines of business, designing and developing the solution, testing it, up to the final deployment of the changes in the productive solution.

- **Detect to Correct** controls the solution to anticipate and resolve production problems. It enables end-to-end visibility using a shared configuration model and brings together IT service operations to enhance results and efficiency. This is used to identify issues before they affect users and to reduce the mean time to repair.

- **Request to Fulfill** empowers you to catalog, request and fulfill IT services. With this your IT organization can transition to a service broker model. Items from multiple supplier catalogs are presented in a single catalog. You can manage and measure fulfillments across multiple suppliers. This leads to efficient control of subscriptions and total cost of service.

![Figure 1: Key value chains of SAP Solution Manager](image)

These four value chains are not independent. They interact with each other. The impact of implementing a requirement in **Requirement to Deploy** will be detected in **Detect to Correct**. This might lead to a new project request in **Portfolio to Project**. The project might utilize IT services in **Request to Fulfill**. And typically, there are multiple projects, incidents and service requests in parallel. Here again the integration of SAP Solution Manager provides enormous value. SAP Solution Manager serves as single source of truth. It knows about all the entities involved in your IT management and helps to manage the dependencies.

These value chains utilize the different functional areas of SAP Solution Manager:

- Project Management
- Process Management
- Custom Code Management
- Test Suite
- Change Control Management
- IT Service Management
- Data Volume Management
- Landscape Management
- Application Operations
- Business Process Operations
The different value chains consume multiple functional areas (fig. 2). Most functional areas support multiple value chains. However, you are not forced to utilize each functional area in full scope but can do so selectively.

Figure 2: Functional areas of SAP Solution Manager

Adopting SAP Solution Manager implies that you first have to identify which functions of SAP Solution Manager are beneficial for you. The SAP Solution Manager adoption framework, described in this paper, supports your decision by providing high-level information regarding the value and efforts of the different functions of SAP Solution Manager. With this you can identify your first or next step in adopting SAP Solution Manager.

This next step on your roadmap to SAP Solution Manager depends on your current situation. Which value do you want to achieve? And which goals are strategically important for your organization? Is your focus to ensure continuity of the business? Do you have to ensure low cost of ownership? Does the business expect from IT to realize new or changed requirements very fast?

And what will be the effort to implement the corresponding functions? Some can be set up within hour(s) after the initial basic configuration of SAP Solution Manager. For other functions it might take days or even weeks. This does not only include the technical configuration. You have to also think about the roll-out of the new functionality to the users. The more people are impacted by a change, the higher the roll-out effort will be. Another part of the overall effort can be the required alignment with other groups, sometimes even outside your IT organization, like colleagues from the lines of business. In some cases, the alignment might even be the largest portion of all the efforts.

The SAP Solution Manager adoption framework groups the functions within the different functional areas into three adoption steps. The first step covers those functions that you can utilize without major additional investments. This is the fast-track to the area where you can easily harvest the low-hanging fruits. The second adoption step contains functions that require some more efforts but provide additional benefits. Finally, the third adoption step comprises functions that involve higher set-up efforts. These functions typically provide the highest value as well—otherwise no one would use them at all.

The different adoption steps go along with the maturity level of customers using them. Newbies start typically with the first step. SAP Solution Manager savvy customers might consider further investments in areas that are crucial for their IT organization.

It is the goal of the SAP Solution Manager adoption framework, explained in the next chapter of this whitepaper, to provide a better understanding of the value and effort of the different functions. The chapter describes how to approach the functional areas by adoption steps, starting with the low-effort steps first. This information will support your selection of your next step towards benefitting from the value of SAP Solution Manager.

The times for executing individual activities are given under the assumption that they are executed by experienced administrators or consultants. SAP Solution Manager newbies might require more time.
The efforts for the setup of the individual capabilities stated below are estimated under the assumption that you have completed the basic configuration of SAP Solution Manager 7.2 (mandatory configuration and the managed system configuration in the corresponding guided procedure) already. SAP provides some Expert Guided Implementation (EGI) services and a training course that support you in doing this basic configuration:

- EGI: Technical Upgrade (5 days)
- EGI: Basic Configuration (5 days)
- EGI: SAP Solution Manager 7.2 in the SAP CAL for Content Activation (3 days)
- Training: SM100: SAP Solution Manager Configuration for Operations
2 SAP SOLUTION MANAGER 7.2 – FUNCTIONAL AREAS

SAP Solution Manager supports you managing your SAP solution throughout the entire lifecycle: From the first planning via building up the solution, running the solution, up to applying changes continuously.

SAP Solution Manager provides different functions to support this lifecycle. They can be grouped into functional areas. This chapter investigates these functional areas from the adoption point of view. What are the benefits that can be achieved by each functional area? And which effort is required to realize them?

2.1 Project Management

Your IT landscape changes constantly. There might be technical updates of individual components. New requirements need an adoption of the application configuration. You might want to deploy additional software. All these changes are managed as projects.

Project Management in SAP Solution Manager provides functions to handle these projects throughout the entire project life cycle. This spans from project initiation via planning, project execution, controlling, up to the closure of the project.

The right project methodology is important for success. This is the foundation for your project plan. Different deliverables, that group related project tasks, are assigned to the phases of the project. You can either create your own project plan or utilize best practices process plan templates. Project plan templates are available in the roadmap viewer, a cloud service of SAP Solution Manager. For example, you can download a project plan for the transition to SAP S/4HANA, import it into Project Management of your SAP Solution, adapt it to your requirements, and use it for managing your project.

Related Services

- Value Map: Run SAP Solution Manager
- Training: SAP Solution Manager 7.2 for SAP S/4HANA Implementations

<table>
<thead>
<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
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</table>
| 1    | Build Project Management | - Out-of-the box  
- Integration with other SAP Solution Manager Functions  
- No Additional License Required | Project Management Setup  
Upload Roadmap & Role definition  
Define Project Standards (optional)  
Integration with other functions | 2 hours  
2 hours  
1 hour  
1 day + onboarding |
2.1.1 **Build Project Management**

The first adoption step to Project Management in SAP Solution Manager is to use it for single build projects. This implies managing the project plan, doing the scheduling, assigning resources, uploading project-related documents (for example, meeting minutes), and maintaining status information. With this, stakeholders of your project can always access the up-to-date information regarding the project.

Similar functionality is provided by other project management tools as well. However, Project Management in SAP Solution Manager has two major advantages: The first is the tight integration with other functions in SAP Solution Manager. Requirement Management collects and prioritizes the requirements to be realized in the project. Process Management documents how the processes shall be implemented. The Test Suite controls that the changed processes run as designed. IT Service Management handles defects. Change Control takes care of transferring the changes into the production environment. The seamless integration in SAP Solution Manager ensures that information of these functional areas is easily available for your project team out-of-the-box.

Another advantage of Project Management in SAP Solution Manager is that it is included in your support engagement with SAP. This means that you can use SAP Solution Manager without paying additional license fees for project team members that have already another SAP license.

Setting up build project management after the basic configuration of SAP Solution Manager requires some general Project Management setup. This takes about two hours for an experienced administrator. Afterwards, you would upload a best practice project plan template from the Roadmap Viewer, together with corresponding role definitions required for resource assignment. You can estimate another two hours for this. If you want to define some general standards for your projects (optional), this might take another hour.

The effort for activating the integration with other SAP Solution Manager functions depends on which other functions you use. In general, this should be done within one day. However, onboarding of team members might be required in case they do not have experience.

Finally, you need to do a first scheduling of the project at the project start. Of course, the effort for this depends on the size and complexity of your project. Experienced SAP Solution Manager users have estimated that this can be done within one day in most cases.

2.1.2 **Financial Project Management**

The next adoption step on your path to full-blown Project Management is introducing Financial Project Management. This is done by integrating the Project Management functions in SAP Solution Manager with your corporate finance system running in the SAP Business Suite or on SAP S/4HANA. With this you can book the cost of project activities directly to the right cost centers or orders.

Besides handling the cost bookings, this also supports cost planning, risk management, and cost controlling. You will gain smooth financials and controlling processes with full cost control.

To set up Financial Project Management, you have to integrate your ERP system with SAP Solution Manager first. The functional integration can be achieved in about ten days. But some onboarding activities are required for all your colleagues impacted by this. For example, the colleagues working on SAP Solution Manager need to know when they have to do which cost assignment to which financial object.
In addition, you have to make sure that the users in SAP Solution Manager and in the ERP systems get the right authorizations. And the resources to staff projects have to be transferred from HR to SAP Solution Manager. Both activities require roughly five days each for experienced users.

Finally, the handling of work confirmations is another option. It combines project status reporting and time recording. Setting this up in SAP Solution Manager and ERP can be done in five days. Please take into account that some onboarding activities will be required for impacted users here as well.

2.1.3 Cross Project Management

The third adoption step of Project Management is Cross Project Management. Projects often depend on other projects that have different persons in charge of them. Larger projects are often realized in several different projects that belong together and may run in parallel. Projects can contain sub projects. Tasks or phases of a project may be influenced by another task in a different project. Project Management in SAP Solution Manager provides special features to manage the parallel projects and their dependencies.

Project versioning copies all project data into snapshot to track the status of the project at different times. Or you can use the copy to forecast, for example, the effects certain changes will have on an operational project. The estimated effort for setting up project versioning and forecasts is one week.

Cross reporting is used to call and compare multiple projects, tasks, or checklist items at the same time. You can branch to the project elements from the multi-project monitor to see details. The setup of cross reporting takes about two weeks. But you have to consider onboarding activities as well to educate the impacted user how to use the cross report. Organizational changes might happen as well since the additional information available via cross reporting might enable you to optimize your decision-making process.

Experience shows that it takes some time for most customers to find out which cross-project management evaluations and reports are best suited for their situation. Please consider that this might take additional three to four days.

2.2 Process Management

Process Management in SAP Solution Manager documents your current productive landscape and also describes the next generation of processes which you want to implement. For this, SAP Solution Manager offers a staging area for “to-be” processes which can be used for early process design as well as for implementation projects. Once a business process is entered in SAP Solution Manager, customers can manage this process together with all assigned documentation all the way seamlessly into production (“as-is”). Customer experience shows that you can achieve 60 to 80% savings of efforts if you use an integrated tool for documenting your business processes instead of using just spread-sheets and file shares for this.

![Figure 4: Business process model in SAP Solution Manager 7.2](attachment:image.png)
Process Management describes both business and IT perspective on processes, applications and system landscapes. The processes described in the solution documentation can be used by other functions like test management, business process monitoring, or project management. The lifecycle of process content can be controlled and managed by change and request management. All aspects of a process lifecycle are tied together in the customer solution documented in SAP Solution Manager.

Related Services
- Meet-the-Expert Recording: New Process Management in SAP Solution Manager 7.2
- Training: E2E040: Manage digital transformation with SAP Solution Manager

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<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
</tr>
</thead>
</table>
| 1    | IT-Driven Process Management              | • Centralized Documentation of Technical Object  
• Foundation for Test-Mgmt.                        | Process Management Setup  
IT Documentation Foundation  
Documentation Assignment | 1 hour  
30 minutes per Logical Component Group  
30 documents / hour |
| 2    | Business-oriented Process Management      | Documentation of Business Activities to Business                                                   | Generate / Align Process Step Library  
Document Selected Processes  
Business / IT Alignment | 1 day per business area  
2 – 3 hours per process  
???
| 3    | Design-Driven Process Management          | Manage requirements and software developments in large, agile projects                             | Use Focused Build for SAP Solution Manager  
Deploy Focused Build for SAP Solution Manager | € 250,- per user per year  
1 week |

### 2.2.1 IT-Driven Process Management

The first adoption step for process management takes care of the IT perspective on processes only. It identifies the technical objects that are involved in the fulfillment of business functionalities. These objects are contained in libraries. The executable library contains the development objects which can be called by users to execute the business functions, like transactions, or SAP Fiori applications. Other libraries list, for example, all interfaces or all custom development objects. You do not need to enter the technical objects into the library manually. The library content can be generated automatically. For SAP components, the entries will be grouped by the corresponding application component hierarchy.

After creating the inventory of the technical objects, you can assign documents to them. These may be user guides, training materials, test cases, specifications, information regarding the configuration, and many other types of documentation.

The advantage of this approach is that you have a central place for all documentation. Users find the right documents easily instead of searching for them in various spreadsheets and file shares. Process Management takes also care that different versions of the documentation can exist in parallel. During a development project, the description of a process might differ for the development system and the corresponding production system. At the go live of the development, however, the corresponding documentation needs to be available for production as well. This is also handled by Process Management. With Process Management, you have a single source of truth for your solution documentation.

With the IT-driven process management, you have established also the foundation for Test Management. If you assign test cases to the technical objects, the Test Suite in SAP Solution Manager will access these test cases and use them for test preparation and test automation. So you do not need to organize test management with the help of spreadsheets or pay licenses for third-party test management tools.
2.2.2 Business-Oriented Process Management

IT-driven process management knows the technical objects involved in fulfillment of business functionality just by technical name. However, technical names are not helpful to communicate with the lines of business executing the functionality. Therefore, the mapping of technical objects to business process steps ensures that business and IT can speak the same language. This is essential for a good alignment of both groups, increased consistency, and improved efficiency. The documentation of the business process steps is the focus of the second adoption step of Process Management.

In the process step library, you define process steps from a business perspective. You ensure that every business capability required to operate your business is represented by one process step. Corresponding technical objects can be linked to the process steps. Also manual steps or steps which at the end will be supported by non-SAP environments become process steps. The structure of the process step library follows the organizational structure.

The process steps can be joined into business processes. The process definition consists of a set of referenced process steps and interfaces. Depending on the use case, you can assign different documentation to the processes – for example, business process descriptions, integration test case descriptions, or end user training material. This documentation is enhanced by the documentation of the referenced process steps and technical objects.

The graphical modeling environment allows you to extend the reach of SAP Solution Manager in implementation projects from the technical realization phase to the earlier phase of process definition. Process experts who used standalone graphical tools in the past to describe the company’s core process flows can now use SAP Solution Manager. SAP Solution Manager 7.2 accordingly allows customers to provide a common toolset to all stakeholders; costly and tiresome integrations with third-party modeling tools are no longer needed.

SAP Best Practices processes are also available as business process models in SAP Solution Manager, like the best practices of SAP Activate for SAP S/4HANA. This enables you not only to investigate the best practice processes, but also to adapt them to your needs, if required.

2.2.3 Design-Driven Process Management

The third adoption step of Process Management is design-driven Process Management. It covers a seamless tool-based requirements-to-deploy process within SAP Solution Manager. This includes business demand and requirements management, integrated risk management, and clear-cut collaboration features that allow to orchestrate business and IT units as well as global development teams remotely.

This approach uses typically agile software-engineering methods. This means that progress is measured in terms of working functions or products. There is no traditional blueprinting, but rather, a prototype-based methodology, which breaks tasks into small increments and iterations that have short time frames (sprints). Multiple iterations may be required to release a product or new features, as changing requirements are welcome, and documentation is pragmatic and kept to a low level. This means that the project team does not need to understand each and every business requirement to the last level of detail. Instead, you focus on a part of the end-to-end solution, prototype it, get the buy-in from business owners, and extend the scope in iterations from there.

This agile process management approach is especially valuable for innovation projects where you don’t know the details of the final business process at the project start. Good examples for such projects are the transitions to SAP S/4HANA or digitization projects.

Agile development requires that you have well-defined workflows integrating all the different roles involved. And there might be parallel projects with different speed that have to be harmonized. A holistic status overview is important for management to gain visibility of the solution readiness and the ability to interfere whenever required. You can define corresponding workflows and dashboards in SAP Solution Manager.
Consider, though, if it will be faster and cheaper for you to use Focused Build for SAP Solution Manager. This is a highly preconfigured turnkey solution based on SAP Solution Manager, made for immediate consumption. Besides the automated workflows and the solution readiness dashboard, the focused solution also provides supporting materials and how-to documents that ease the roll out to your project team members.

In case you have a premium engagement with SAP Digital Business Services the license fee for Focused Build for SAP Solution Manager is already covered by this engagement. This also applies to the SAP Value Assurance packages. In addition, it will take a few days to deploy the add-on on your SAP Solution Manager 7.2. If you do not have a license for Focused Build for SAP Solution Manager as part of your SAP engagement, you can simply go to the SAP Store, select how many licenses you need, and simply purchase them. You only need to license users who actually work with the solution. This means that if you have a team of ten on your project you only have to license these ten users. The price when writing this whitepaper was set to € 250 per user per year.

Related Services:
- Best Practice: Focused Build for SAP Solution Manager 7.2

2.3 Custom Code Management

Custom developments, enhancements, and modifications to SAP software are commonplace at many companies. Implementing custom code enables you to extend the functionality of SAP standard software and adapt it to your company-specific needs. However, custom code does have several disadvantages. For example, custom code is costly to maintain over time and can cause performance bottlenecks. In addition, due to a lack of understanding of SAP software, companies often create custom code to fill functional gaps even though SAP already provides the desired function in the standard release. A lack of transparency also means that companies often maintain custom code long after it has become obsolete. Poor quality custom code can create countless problems in the productive environment, which drives up the cost of operations. All of these problems can be avoided by implementing sustainable and holistic custom code management processes within your organization. These custom code processes shall cover the whole lifecycle of custom code objects from requirement to retirement.

- **Remove**
  - Remove unused custom code interviewing business departments
  - Remove unused custom code measured as unused

- **Avoid**
  - Setup governance model with goal to avoid new custom code
  - Validate/audit business cases of existing custom code

- **Replace**
  - Review modifications
  - Replace custom code with high change frequency

- **Leverage / Utilize**
  - Improve and optimize quality, performance and security of custom code
  - Leverage usage of new projects

Figure 5: Custom code reduction options

With Custom Code Management in SAP Solution Manager, you can address these challenges.

Related Services:
- **Meet-the-Expert Recording:** Custom Code Lifecycle Management in SAP Solution Manager 7.2
- **Value Map:** Custom Code Management
- **EGI:** Run CCLM: Make Your Custom Code Efficient (5 days)
<table>
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<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Custom Code Transparency</td>
<td>• Central Up-to-date Library of Custom Code Objects</td>
<td>Custom Code Management setup</td>
<td>3 days onboarding + 2 days per landscape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Decision Enablement</td>
<td>Usage &amp; Procedure Logging Activation</td>
<td>1 day per landscape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Focus on used objects</td>
<td>ABAP Test Cockpit (ATC) Extraction</td>
<td>1 day per landscape</td>
</tr>
<tr>
<td>2</td>
<td>Custom Code Optimization</td>
<td>• Quality Improvements</td>
<td>CCLM Decommissioning Cockpit</td>
<td>3 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retirement of obsolete Custom Code</td>
<td>Optimization Enablement (Decommissioning)</td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Change Impact Analysis</td>
<td>CCLM Quality Cockpit + ATC</td>
<td>6 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Optimization Enablement (Quality)</td>
<td>2 weeks</td>
</tr>
<tr>
<td>3</td>
<td>Custom Code Lifecycle Management</td>
<td>• End-to-End CCLM from Requirement to Retirement</td>
<td>Definition of Efficient Custom Code Lifecycle Management Approach</td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Preparation for Cloud and Digitization</td>
<td>Setup of Future-oriented Reporting Structures</td>
<td>2 weeks</td>
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### 2.3.1 Custom Code Transparency

The first step on the way to successful Custom Code Management is transparency. How many custom objects of the different custom object types exist in the systems? Is the existing custom code still in use? Reducing the number of obsolete objects can lower the total cost of ownership (TCO) significantly. What is the quality of the custom code (functionality, reliability, usability, efficiency, maintainability, and portability)? Poor quality code often causes unforeseen failures in applications and core business processes. To which extent are your technical systems and business processes affected by custom code?

The main tool to answer these questions in the ABAP environment is Custom Code Lifecycle Management (CCLM) in SAP Solution Manager. It provides a central up-to-date library of custom code objects. With the content of this library, you are enabled to do better decisions. And you can reduce custom code related activities by focusing on used objects.

You can use the usage and procedure logging (UPL) or the SAP call monitor (SCMON) to log all called and executed ABAP units (procedures), such as programs, function modules down to classes, methods, and subroutines. This enhanced SAP NetWeaver capability provides the usage data for the library without having a measurable performance impact on your system. The ABAP Test Cockpit (ATC) is used to check the code quality.

The basic set up of SAP Solution Manager for Custom Code Management takes two days per landscape (development, quality assurance, and production system). One additional day is required to activate UPL or SCMON and ATC each. Besides the technical setup, a deeper understanding of Custom Code Management is required to enable you to review your existing Custom Code processes and strategy and to evaluate the impact of potential changes.

**Related services:**
- Custom Code Tools Enablement
2.3.2 Custom Code Optimization

The second adoption step for Custom Code Management is to optimize existing custom code. This has two dimensions: decommissioning of unused custom code and improving the quality of used custom code.

Unused custom code has a big impact on your system, includes high risks and adds significantly to your bill, for example by increasing the complexity and building roadblocks on the way to a more simplified landscape or a new technology landscape, such as SAP S/4HANA.

The goal of decommissioning is to identify the custom code objects, which you could eliminate from the system. These are objects that have not been used during a defined time period, objects similar or even identical to an existing SAP object, in-active objects in production systems that have been created a long time ago, and objects that are obsolete because of existing standard functionality. Experience shows that SAP customers can reduce about 40% of their custom code objects on average and save the related maintenance efforts.

The decommissioning cockpit is an integrated part of the CCLM work center in SAP Solution Manager. It allows you to analyze your custom code objects based on specific information, such as usage or similarity, in order to identify the right objects for decommissioning. The effort for setting up the decommissioning cockpit takes about three days.

The majority of the custom code analysis reports a high number of errors and deviations from quality standards. Experience shows that more than 60% of custom code objects contain code quality issues, on average. The reasons for this are either that quality guidelines or reviews have not been implemented, that developers are inexperienced, or simply the fact that there was not enough time. This leads to high maintenance costs, which in turn cause high operating costs. In addition, custom code of poor quality can also increase business risk and system downtime and can act as an impediment to future innovations.

To improve the quality of software code, a well-defined quality strategy has to be in place. To define a quality strategy, it is necessary to achieve transparency about the existing custom code objects, especially on the quality of each object in your system landscape based on an efficient custom code management. The quality cockpit in CCLM, in combination with ATC, focuses exactly on these aspects. It can be set up in six days.

In addition, you need to enable your team to execute the optimization of identified objects. This might take additional two weeks for both the decommissioning and the quality improvements (depending on the existing skill set).

Related services:
- Custom Code Retirement
- Custom Code Quality Improvement
- Custom Code Impact

2.3.3 Custom Code Lifecycle Management

The custom code optimization of adoption step 2 is typically done in close relation with a project. The ultimate goal of Custom Code Management is to ensure a continuous control of custom code quality and usage throughout the entire life cycle: “From Requirement to Retirement”.

You have to establish an efficient custom code lifecycle management approach within your organization. This includes the definition of development standards for custom code and the setup of corresponding support processes. You should execute clearing analysis of your custom code regularly. There should define an approval process for modifications, which needs to be reviewed. You should ensure that all custom code changes are documented, and similar rules …

The definition of your custom code lifecycle management can be derived from best practices like the SAP Standard for Custom Code Management. However, the required investigation, definition and roll out to your developer community will take two weeks at minimum.

You can check the success of your custom code lifecycle management activities by installing a set of appropriate KPIs for reporting. You can set related objectives and measure your progress toward these goals using fully customizable scorecards and KPIs in SAP Solution Manager, like percentage of critical objects,
number of low quality objects, or number of not used objects. You should take action whenever a threshold is exceeded. This will not only ensure that disruptions are avoided and cost of custom code is reduced maintenance and change projects. You will also be better prepared for switching to new technologies like Cloud and Digitization because you are closer to the standard.

Related services:
- Custom Code Architecture

2.4 Test Suite
You need to deploy software changes for your SAP-centric solution on a regular basis. Maintenance tasks as well as innovations and business process extensions lead to a significant number of software changes and involved persons. It is of high importance to manage this change process well and to avoid disruptions of business operations.

Testing plays a vital part in this change process. Beside the standard tests for new functionality including unit, integration, scenario, and user-acceptance tests, SAP customers need to ensure that all other areas that are potentially affected operate as expected after the changes are deployed in the production landscape. This is especially true for mission-critical business processes.

Test Suite in SAP Solution Manager 7.2 is the recommended solution for all customers for both manual and automated testing. It offers preconfigured functionality with a seamless integration to other capabilities of Solution Manager such as Solution Documentation. It serves as a single source of truth, as there is no replication required to third party repositories. The content update in Solution Documentation such as a new Business Process or a revised process is immediately visible in Test Suite, preventing errors and redundancy.

Figure 6: Test management process flow
Testing is typically a major cost factor associated with changes. Many resources need to be involved in test planning and execution. There is the general assumption that testing causes about 25% of the overall project costs. However, any defect not discovered during testing might have a serious impact on the productive business with potential cost of unplanned downtime. Therefore, setting up efficient test management will have a significant return on investment. The implementation of changes will be accelerated as well due to shorter test phases.

Related Services:
Training: E2E220: Test Management Overview

<table>
<thead>
<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
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<tr>
<td>1</td>
<td>Manual Testing</td>
<td>• Replace ad-hoc test planning with structured approach</td>
<td>Manual testing for regression tests (RT) for fix, enhance, and maintenance projects</td>
<td>1 day + 2 hours per RT test case + onboarding of testers and test manager</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Better guidance for testers</td>
<td>Manual testing for innovation and transformation projects (SFT, UAT, FIT, RT)</td>
<td>2 hours per test (SFT, UAT) 1 day per test (FIT) + onboarding of testers and test manager</td>
</tr>
</tbody>
</table>
2.4.1 Manual Testing

Most SAP customers have two distinct change processes in place. On one hand side SAP provides software updates which are managed by the customers through a maintenance stream. Depending on the need to get important corrections applied, the deployment frequency might vary from every six weeks to only once or twice per year. Regression tests play a major role in the maintenance stream. They check if existing business processes still work after deploying the change.

On the other hand, SAP customers extend their business processes in order to stay competitive. This is organized through change or implementation projects of a second Innovation Stream. The transport frequency strongly depends on the planned go-live dates of these projects. Regression tests are embedded in the innovation stream as well. But other test types are involved here as well, like single functional tests, user acceptance tests, or functional scenario and integration tests.

Managing manual tests starts with the collection of the test cases to be included in the test plan. The test cases contain descriptions for the testers on how to execute the individual tests. Test cases are assigned to the solution documentation in Process Management. This ensures that you gain transparency over which processes or process steps are covered by the tests. IT-driven process management (section 2.2.1) is sufficient for this.

Your test coordinator groups the test cases into test packages, which are assigned to testers. They will execute the manual tests. The results of the tests and the status of handling detected defects is visible in corresponding reports. All of this is supported by the Test Suite in SAP Solution Manager 7.2.

The key value out of manual testing with SAP Solution Manager is the avoidance of disruptions in your lines of business and the reduced effort for handling corresponding incidents. In addition, the structured approach helps to improve the quality of test planning. This ensures that all test cases are covered and assigned to testers. Further, your test manager will need to spend less time for status reporting. Experience shows that the satisfaction of testers increases as well.

The effort for achieving these benefits is roughly one day for setting up the Test Suite in SAP Solution Manager plus two hours per test case in regression tests, user acceptance tests or single functional tests. Setting up a functional integration test takes about one additional day, and you will need to onboard your test managers and testers.

Related Services:

- EGI: Test Management I: SAP Test Suite (3 days)

2.4.2 Test Scope Optimization

Test Management also needs to identify the potential impact of changes as they impact the test scope. There could be a new service pack or feature pack, or day-to-day operational changes in the form of
transports. Before you implement the changes to your quality or production landscape, you may want to know the potential impact.

Such analysis is often time-consuming and error-prone. Many customers rely on the judgment of experts to define critical and non-critical business process impacts. This analysis and decision making can be improved radically by using Business Process Change Analyzer (BPCA) in SAP Solution Manager.

With BPCA, you can analyze the effects of a technical change to determine which business processes in your solution landscape are affected. BPCA compares an entity called the technical bill of material (TBOM) against the changed technical objects in the ABAP stack to give you recommendations for scope of testing. This supports multiple use cases, such as ABAP code or customizing changes or application of a new support pack or a feature pack. You gain the option to focus your testing activities only on those business processes or process steps that are impacted by a change.

The impact of a change might not only be relevant while executing the change but already while planning it. The Scope and Effort Analyzer (SEA) predicts major cost and effort drivers of maintenance projects without the need to physically deploy software packages. You can use SEA in planning software changes in the initial stages of a project and use BPCA in later stages, during project implementation or when the project enters steady-state operations.

The test scope optimization allows you to reduce testing efforts to only the relevant test cases. The time saved can be either used for higher coverage of the regression testing scope by including additional test cases. This will result in higher quality and less incidents in your production environment. Or you can reduce time and effort while maintaining the same level of quality. This results in faster deployments of changes, both for weekly or monthly maintenance and for implementing support packages and enhancement packages. Best-practice values from customers show that testing efforts can be reduced by about 25% through change impact analysis.

Setting up test scope optimization requires about two hours to plan and execute a job for creating semi-dynamic TBOMs and half a day for custom code setup (including the activation of usage and procedure logging (UPL) or the SAP call monitor (SCMON), if not done so in Custom Code Management already (see 2.3). In addition, you can calculate to need one-third of a day per prio-1 process step. And your change managers will need to be on-boarded as well.

Related Services:
- EGI: Test Management II: Business Process Change Analyzer (2 days)
- EGI: SAP Solution Manager Scope & Effort Analyzer (3 days)

2.4.3 Test Automation

Tight timelines of the test phase after a significant software change usually do not allow testing all core business processes via manual testing. From a test scope perspective, SAP recommends to identify the core and mission-critical business processes and to develop automated tests for these business scenarios. SAP Solution Manager provides functionality that you need to setup regression tests via test automation.

To create functional automatic test cases, you can use Component-Based Test Automation (CBTA) that supports most of the SAP UI technologies. It helps you quickly create modular automated tests, which are easy to repair when damaged due to software changes. An advantage of using CBTA is that a normal business user without any special technical skills can start a recording of an application by launching the CBTA wizard and executing the business transaction. CBTA creates the script in the background with reusable components that are easy to repair and maintain.

If you make heavy use of non-SAP systems, you can extend the capabilities of the test suite by using the partner tools integrated with SAP Solution Manager via the Test Automation Framework. It provides you with an easy way to integrate certified test automation tools from partners and third-party providers with SAP Solution Manager. This enables you to easily test non-SAP applications and some SAP UI interfaces that are not supported by CBTA yet. The Test Automation Framework therefore extends the automation capabilities of the Test Suite.

Automating testing activities leads to huge cost savings. You get rid of the cost for manual testers involved in recurring regression tests. This effect will be multiplied by the number of repeats of the tests. And you avoid higher costs to fix errors in your production landscape as well as delays in projects due to errors detected
late in the development process. In addition, automating tests enables you to enhance the regression test scope, which increases the testing accuracy and hence the quality. And every time you repeat an automated test you, will save the cost for the people that would

Preparing your SAP Solution Manager for using CBTA and the Test Automation Framework will take about one day. And you have to on-board the test engineers. In addition, you should calculate with one to two days for each test case to be automated.

Related Services:
- EGI: Test Management III: Component Based Test Automation (4 days)

2.5  Change Control Management

Change is constant both in business and IT. Change Control Management enables you to control all software and configuration changes to your IT landscape. You need to plan and execute the changes in a consistent manner. It is essential that you can trace all changes in your system landscape and check at any time for possible risks to stability and security caused by changes. And you have to ensure that audit requirements are met.

Figure 7: Central change control

Standardized processes, methods, and tools support transparency and continuous quality improvement of your change processes during the entire application life cycle. The change management process coordinates all changes in your software landscape.

SAP Solution Manager supports the whole spectrum of deployment variants, from ad hoc deployments to a full-blown release management. It covers all development platforms and technologies in one central change management tool. With this you can improve the quality of changes and reduce efforts through automation and notification.

Related Services
- Meet-the-Expert Recording: Change Control Management in SAP Solution Manager 7.2
- Value Map: Change Control Management

<table>
<thead>
<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
</tr>
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<tr>
<td>1</td>
<td>Transport Control</td>
<td>Zero Import Errors</td>
<td>Enhanced Change &amp; Transport system (CTS+)</td>
<td>12 hours per landscape</td>
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<td></td>
<td></td>
<td></td>
<td>Transport Execution Analysis</td>
<td>4 hours</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Change Diagnostics</td>
<td>4 hours</td>
</tr>
<tr>
<td>2</td>
<td>Deployment Control</td>
<td>Zero Downgrades</td>
<td>Quality Gate Management</td>
<td>3 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Retrofit</td>
<td>3 days</td>
</tr>
</tbody>
</table>


2.5.1 Transport Control

Bringing changes into your productive systems is always related with risks. Any change may disrupt your productive business. Therefore, it is crucial to identify risks and mitigate them. It is often difficult to identify existing risks due to a lack of transparency. How many transport requests caused errors in the production environment? How many emergency changes have been executed? What are the transport backlogs in the development and production system? How consistent is my transport landscape?

Establishing transport control is the first adoption step to Change Control Management. With this you can avoid import errors while transporting changes from the development systems to quality assurance and finally to the production system. This reduces the efforts for handling exceptions significantly, and you can safeguard against business disruptions caused by transport errors. This is especially important in industries with high downtime cost. According to information technology research and advisory firm Gartner, the cost of downtime is more than $5000 per minute on average.

SAP Solution Manager serves as communication system for the enhanced Change and Transport System (CTS+) that automatically collects all changes (both ABAP and non-ABAP) and records them in transport requests. You can integrate several development environments such that you use one transport tool for multiple content types. Standardizing the change management process eases the execution and help to avoid mistakes. Setting up CTS+ takes about 12 hours per system landscape (combination of development, quality assurance, and production system).

The Transport Execution Analysis in SAP Solution Manager is a guided self-service that you can use to analyze your current transport process. This will identify possibilities to improve quality, reliability, and throughput of transports. As a result, you will gain an action plan that can contain organizational-, process- or plant-specific aspects. Adjusting the Transport Execution Analysis to your transport environment takes about four hours for an experienced administrator.

Change Diagnostics determines and tracks technical changes in a managed system. The changes are traced independently of the change management process or additional tools you use with the advanced adoption steps. The configuration and change database enables you to trace all the changes that were made. You can monitor changes end to end in the entire software application lifecycle. You can query, for example, actual and historical values of configuration parameters, transport requests, or software maintenance activities of monitored systems. As a result, all software changes remain transparent and traceable.

Finally, configuration validation checks whether the systems of your system landscape are configured consistently and according to the requirements you define. By doing so, configuration validation analyzes the homogeneity of your system configuration. Setting up Change Diagnostics and configuration validation takes about four hours typically.

Related Services:
- EGI: Change Control Management I: CTS+ (3 days)
- EGI: Configuration Validation (3 days)

2.5.2 Deployment Control

In addition to Transport Control, Deployment Control provides a quality assurance process for changes. It takes special care of dependencies between transports. The goal is to ensure that your quality measures are met and that you can avoid the cumbersome handling of downgrades.

The central Change and Transport System infrastructure in SAP Solution Manager allows you to take control of all transport activities from SAP Solution Manager, like central transport creation, releasing, or importing. And it provides special features for handling dependent transports. You can prevent conflicts between central transport control and local transport administration. Transport of Copies helps reducing the overall number of transports that are imported into your productive system. It is possible to reassign changes to...
other CTS projects if required. And Cross-System Object Lock and Downgrade Protection ensure consistency when multiple changes to the same objects in various releases or projects were made. Quality Gates are special mile stones in projects. At the gate you or your project team confirm that all required approvals are available. Before this, the change cannot be transported to the quality assurance or production system. You as well as your auditors will be able to trace later who confirmed this. The additional quality assurance helps to minimize business disruptions in the production systems later on. This improves business continuity. In addition, the improved governance will make it easier for you to satisfy your auditors with an appropriate integration of the approval and the execution of changes. After setting up the basic transport control, it takes about three days to deploy the central Change and Transport System and Quality Gate Management on SAP Solution Manager.

In system landscapes where work takes place in several projects side by side, changes are often made in numerous development systems at the same time. A dual system landscape is required to avoid technical issues. As a result, you can simultaneously develop new features in the project development system and correct errors for the production system landscape in a maintenance system without locking other developers. However, it is very important to synchronize the development systems regularly to avoid inconsistencies.

The synchronization effort can be significant. To avoid this, a controlled import into the target system can be done. This synchronization of dual system landscapes in SAP Solution Manager is called Retrofit. It minimizes the risk through integration with the maintenance and change project, and it reduces the manual effort for double maintenance. SAP Solution Manager can fully automate more than 90% of synchronization tasks between tracks with Retrofit. Configuring Retrofit in your SAP Solution Manager requires about three days of work.

Related Services:

- EGI: Change Control Management II: Quality Gate Management (4 days)

### 2.5.3 Change Process Control

The third adoption step for Change Control Management is to control the entire change process. This starts with creating a request for change, approving the request, handing it over to execution, designing and developing a solution, testing it, deploying it in the production environment, and finally closing the request for change.

The ability to trace changes is one of the most important factors for guaranteeing quality and transparency in a software solution while ensuring that IT standards are met. This applies in particular to changes to actual software components and changes to the configuration. You can see at any time where an actual change originated, who approved it, who implemented it, and who imported it into the production system. One of the main benefits of this transparency is that all this information is available at a central point, SAP Solution Manager, where you can access it at any time. In addition, standardized change processes might offer significant saving potentials as well.

Change Request Management in SAP Solution Manager offers functions for managing, executing, and documenting change requests and changes. It does not only provide status tracing, but also improves integration between user departments and IT in this process. The application supports changes from the initial request until final deployment in the system. It features an approval workflow, which you can either use as pre-configured or tailor it to meet your special requirements. Change Request Management documents any activities performed while a change is being implemented, from the initial request through to its technical realization. Experience shows that time and efforts for changes can be reduced by 80 to 90 percent by using the workflows and automation compared to just manual handling.

The technical configuration of the pre-configured workflows of Change Request Management requires approximately a week for an experienced administrator. However, you will have to align with stakeholders from the lines of business on how the workflows will run. Maybe you might even need to adapt the pre-configured workflows. This takes typically significant more time.

Release Management allows to bundle multiple changes and projects into one release. All components of the release will have the same release date. With this you gain the big advantage of cost saving due to synergies. Just to name a few examples: You do not need to coordinate parallel testing and end-user training. You will have less overtaker issues and other dependency problems. There will be only one hyper-care phase for all included changes.
Release Management provides flexibility. In case a development is not finished in time, you can transfer it from the release to the successor release. And it is possible to plan multiple releases in parallel. For example, you can define a major release for larger innovation projects and minor releases for continuous improvements that need to be released more frequently. Besides the technical setup, which takes about one week, Release Management will imply changes to your general change process. Therefore, alignment and organizational changes have to be considered as well.

Related Services:
- EGI: Change Control Management III: Change Request Management (4 days)
- EGI: Change Control Management IV: Change Request Management Advanced Functions (4 days)

2.6 IT Service Management

According to the IT Infrastructure Library (ITIL), IT Service Management (ITSM) covers all activities that are performed by an organization to plan, design, deliver, operate and control IT services. The SAP Solution Manager ITSM tool is compliant with, and certified by, ITIL. It is designed to support business processes and enables you to run every aspect of your service desk operations. ITSM enables you to manage service requests, incidents, and problems as defined in your SLAs. This means you can implement infrastructure changes and reduce, or even eliminate, the impact on your business and end users.

Figure 8: SAP Solution Manager as the central ITIL platform

SAP Solution Manager offers a set of standard, preconfigured IT Service Management processes that can be set up with the help of a guided configuration procedure. Based on this ready-to-use configuration, you can adjust the tool to match your individual business requirements using, for example, custom workflow settings, organizational models, user roles, automatic email notifications, UI adoptions, and reporting capabilities.

In addition, SAP Solution Manager offers many standard functions, such as authorization management, multiple inbound and outbound channels, a post-processing framework, and an easy enhancement workbench to make individual field adjustments without the need for additional coding.

Besides the pre-configured best-practice processes, SAP Solution Manager offers additional values: If you use it for IT Service Management, you do not need to license any other third-party help desk tool. With SAP Enterprise Support or any premium support contract, you are entitled to use it for entire business application and the underlying infrastructure. So SAP Solution Manager is your single point of contact for IT Service Management of the entire IT. A tight integration with other functions of SAP Solution Manager ensures seamless flow of your IT processes. For example, incidents can be automatically created by monitoring alerts or by defects detected in test management. This accelerates processes and reduces cost of operation.
## Related Services

- **Training:** SM250: IT Service Management Configuration

<table>
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<tr>
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<th>Name</th>
<th>Value</th>
<th>Capability</th>
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<td></td>
<td>Problem Management</td>
<td>4 hours + onboarding</td>
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<td></td>
<td></td>
<td>Knowledge Management</td>
<td>4 hours</td>
</tr>
<tr>
<td>2</td>
<td>Service Request &amp; Fulfillment</td>
<td>Standardize IT support processes</td>
<td>Service Request Management</td>
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<td></td>
<td></td>
<td>Guided Procedures / Check Lists</td>
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<td></td>
<td>Service Catalog Management</td>
<td>4 days + onboarding</td>
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<tr>
<td>3</td>
<td>Corporate ITSM</td>
<td>Reduce third-party Licensing</td>
<td>Service Level Management</td>
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<td>Service Asset &amp; Configuration Management</td>
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<td>Financial Management</td>
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<td>Third-party Service Desk Integration</td>
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<td></td>
<td></td>
<td>IT Service Desk (call center)</td>
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### 2.6.1 Incident and Problem Management for SAP

Customers typically start IT Service Management in SAP Solution Manager with setting up incident and problem management. Key value is the accelerated reaction and fast resolution in case of disturbances. This reduces the duration of business disruptions and in turn increases the system availability. The big advantage of SAP Solution Manager is not only that you can use the functionality without paying additional license fees, since SAP Solution Manager is included in your existing support contract with SAP. It is also the tight integration of SAP Solution Manager with your SAP business applications (such as for doing detailed root cause analysis) and with the support backbone of SAP (for example, for accessing additional expert knowledge when required). Best-practice experience indicates that the effort for handling incidents can be reduced by 90% on average if you use SAP Solution Manager instead of just e-mail and spreadsheets.

An incident is an event that is not part of the standard operation of a service and that interrupts or reduces the quality of a service. Whenever end users, key users, or a monitoring service detect an incident, they report it to your IT support team. You use Incident Management in SAP Solution Manager to resolve these incidents. According to ITIL, the objective of Incident Management is to restore normal operations as quickly as possible with the least possible impact on either the enterprise or user, at the lowest possible cost.

If the first or second-level IT support is not able to provide a solution, a dedicated problem record can be created for the Problem Management team. Problem Management processes include investigating disruptions to provide solutions and, therefore, prevent disruptive events reoccurring and providing fixes, such as documented workarounds. With Problem Management, you aim to prevent incidents from happening and minimize the impact of incidents that cannot be prevented. You identify problems as being the root cause of one or more incidents.

It is necessary to document previously unknown problems and their solutions so that a simple search comes up with a solution in a knowledge article the next time the disruption occurs. Building up such a knowledge database is done by the Knowledge Management function in SAP Solution Manager.

Setting up the pre-configured incident management process and adapting it to organizational structure and roles within your IT support organization will take about eight hours for an experienced administrator on average. The setup of problem management and knowledge management will take about four additional hours each. And you will have to onboard the colleagues especially that will execute root cause analysis.
Related Services:
- EGI: Incident and Problem Management (ITSM) (5 days)

### 2.6.2 Service Request and Fulfillment

The next adoption step of IT Service Management in SAP Solution Manager is to manage service requests and service fulfillment. On the one hand, this enables you to standardize the delivered IT services and hence improve their quality. On the other hand, both requesting and delivering the services will become easier, such that you can reduce cost and increase service levels.

You can define and build new IT service products that you want to offer to all the businesses you support with IT services. These services can be ordered on a self-service UI. Depending on the IT service type, you might create a service order that runs through an approval process or directly into a direct service request. The service requests are processed with the support of a pre-defined task list (check list or guided procedure) and help you standardize the IT service fulfillment process.

Setting up service request and fulfillment in SAP Solution Manager starts with the configuration of service request management. This will take about two days. In addition, you have to calculate with two days for the creation of guided procedures and check list to standardize and partially automate the service delivery. Finally, configuration of the service catalog management takes roughly four days. In addition, you have to onboard the impacted colleagues.

### 2.6.3 Corporate ITSM

Adoption step three of IT Service Management is to optimize the processes of adoption step one and two by utilizing additional capabilities of SAP Solution Manager. This helps to introduce a central IT Service Management for your entire company. SAP Solution Manager can be the one and only IT Service Management tool. Consequently, you will get rid of any licenses to be paid for third-party IT Service Management tool.

In SAP Solution Manager, you can develop service level management processes by monitoring various types of records. For example: Incidents, problems, service requests, or requests for change, according to agreed parameters within SLAs, operational level agreement (OLAs), and underpinning contracts (UCs). Typically, you will monitor the initial reaction time (IRT) and maximum processing time (MPT) for each SLA, OLA, and UC. If you have agreed on the service levels to be used, the setup of service level management will take about three days.

The IT Service Desk in the SAP Solution Manager provides call center agents with a high-performance processing interface with integrated communication tools. This area of the IT Service Management provides tools that help you cooperate and communicate with your customers across various channels, ensuring efficient and consistent service. It supports telephone agents and managers working in the call center. Setting up IT Service Desk in SAP Solution Manager will take about one week.

If you want to realize a seamless integration of IT Service Management with the financial management of your company, you can integrate SAP Solution Manager with the SAP Business Suite. This allows you to establish financial management processes for IT services to fulfill your budgeting, accounting, and charging requirements. The corresponding technical integration can be done in about two weeks. However, financial processes and organizational structures might need to be adapted as well.

SAP Solution Manager provides an open Web service interface that can be used by customers and by other manufacturers to exchange incident or problem messages between the SAP Solution Manager and one or more ticket systems. The typical use case is that you are already using an ITSM or help desk tool and do not want to replace it. However, you still want to benefit from the advantages of ITSM in SAP Solution Manager, particularly due to the many integration opportunities. Here, you can make use of the bi-directional interface to transfer messages from SAP Solution Manager to the third-party help desk and vice versa. The time required for establishing this connection depends highly on which help desk to integrate. You should plan at least two weeks for doing so.
2.7 Data Volume Management

Too much data being created and retained on the live database often causes rising IT costs, complex system management and decelerated system performance.

You want to run your database as slim as possible by getting rid of waste and keeping the relevant data for your business processes.

Data creation is growing at volumes previously unknown. This trend is likely to maintain an upward curve. Be it structured or unstructured (such as SAP Documents, records and logs or email, video, social media data etc.). It can become a battle to stay in control of this data and know what data is really important. To manage this upsurge in data we need an established Process based on Tools. Tools that will provide Transparency on the data in the whole Landscape, not just in single systems or applications. Tools that will provide Guidance on the options for managing the data and that impart knowledge. We need a well-defined process to ensure that based on this knowledge a strategy is formulated and implemented that defines how the life-cycle (cradle to grave) of data is managed.

Figure 9: Data Volume Management Life-cycle

SAP Data Volume Management describes a process and provides tools and services to ensure that all aspects in the life-cycle for managing and controlling data are covered, as shown in figure 9. The tried-and-trusted methodology of Data Volume Management (DVM) from SAP demonstrates how customers can efficiently and effectively manage the data volume throughout their landscapes. Throughout the whole life-cycle of the data, DVM provides transparency on the existence of data, it automates trend analysis, provides strategies and blueprints for reducing and controlling the data, presents opportunities for optimizing your strategy combined with reporting to support the value of the DVM efforts to the business. It supports agility by assisting you to run your landscape as slim as possible, making solution transition events more easily adopted such as Migrations, Upgrades, Conversions and system splits.

Major benefits of Data Volume Management are:

Figure 10: Benefits of Data Volume Management

Related Services:
- Value Map: Data Volume Management
2.7.1 Basic Setup

The main effort for data volume management is not the technical execution but the required alignment with the data owners. Therefore, it is a good approach to start first with data that is not business relevant.

DVM Work Center in SAP Solution Manager provides a detailed insight into the source of data volume movements in single and multi-system landscape environments. This tool provides a holistic landscape-based overview of system data. You get transparency of system landscape data consumption at different levels. With this, you can reveal potentials for creating or optimizing the data volume management strategy. You can monitor technical KPIs across your system landscape and simulate different data volume scenarios (for example, moderate versus aggressive archiving). The basic setup for Data Volume Management and the DVM Work Center takes about one day.

Another useful source of information for Data Volume Management is the SAP EarlyWatch Alert. It monitors the essential administrative areas of SAP components and keeps you up to date on their performance and stability. SAP EarlyWatch Alert runs once per week automatically to keep you informed, so you can react to issues proactively, before they become critical. For using SAP EarlyWatch Alert for Data Volume Management, you just have to activate the DVM chapter in the SAP EarlyWatch Alert. This takes about four hours.

With the DVM basic setup and the SAP EarlyWatch Alert, you can identify data objects to be reduced. Please consider that it takes three to five days per archiving object type to execute the data reduction measure on the managed system on average, depending on the object type.

Related Services:
- Guided Self Service: Data Value Management (DVM)
- DVM Engineering Service: components Work Center Setup, Scoping
- Wiki: Data Volume Management Wiki

2.7.2 In-Depth Analysis

The next adoption step for Data Volume Management is doing an in-depth analysis. This is focusing on business data. Here an alignment is required with the lines of business as owner of the data. You will typically start with data objects without data retention requirements. These objects have a shorter lifespan after which they are usually not needed anymore and can be archived or deleted.
The time required for aligning business owners and IT varies from company to company. Therefore, it is difficult to make any general estimation for this. However, detailed analysis beforehand can accelerate the alignment.

The Data Volume Management guided self-service in SAP Solution Manager generates a best-practice document that describes how to handle the largest data objects using the methodologies of data avoidance, summarization, archiving, and deletion and combines this guidance with a detailed analysis of your system data.

You can use a guided procedure for the setup of the self-service. This takes about one day. The result of a self-service is a comprehensive report with customer-specific recommendations focusing on various DVM measures. These recommendations are valuable input for the alignment with the business.

Another tool for Data Volume Management is the Decision Maker. It analyzes your system based on leading application areas and weighted key figures, for example, archiving activities, data growth, size, and complexity. Only tables of specified application areas will be considered. This helps you to determine the following key points: Which tables to process first? Which objects fit best to your defined Data Volume Management strategy? Which objects show high saving potential? Which objects are not yet part of your archiving strategy? The objects identified through these questions are good candidates to be discussed in the alignment meetings.

The preparation of the decision maker in SAP Solution Manager takes about 1 day.

Related Services:
- DVM Engineering Service: component DVM Implementation focused on quick wins
- Decision Maker Guide
- Data Management Guide

2.7.3 Comprehensive Project Tracking

To assess the quality of the data volume management process, you must have clearly-defined parameters and measurable objectives. This requires the definition of Key Performance Indicators (KPIs) such as average monthly or weekly growth rate, average number of archiving runs per month, which you can then monitor and analyze. You need to collate and evaluate the key parameters in regular reports. SAP Solution Manager allows you to set up such reporting, which highlights the reduction of system size and makes trends visible over time. This might be the starting point for additional DVM improvement projects. Please estimate two days for the setup of regular in-depth analysis and the definition of corresponding KPIs.

There are specific retention requirements for some objects. For example, financial auditing may require you to retain historical data for a certain number of years. Although archiving this data might be an effective way of reducing your data volume, archived data can differ from the original data and can only be accessed by a limited set of transactions. Therefore, you have to determine whether archived data will still meet the requirements for auditing. Any process of destroying data must be legally compliant.

And financial audits and tax requirements are country-specific and so each country poses its own challenges. It is extremely important to take this into account as these requirements can heavily influence a DVM strategy. Doing Data Volume Management activities for these objects requires alignment not only with the data owner from the lines of business but also with the auditors.

Related Services:
- DVM Engineering Service: component DVM Implementation focused on business objects
- Documentation: DVM Improvement Projects

2.8 Landscape Management

Landscape Management comprises installing new systems and changing existing systems. Multiple groups are involved: Basis administrators handle the existing landscape. They provide information on the current landscape and implement updates, upgrades and new installations. The lines of business plan changes on a functional level. They evolve current business processes with new functions and capabilities finding new functions and communicate them to IT architects or basis administrators. Those plan the changes on a
technical level. They need to define how to implement requested functions and check test effort and compatibility of changes.

**Figure 11: Landscape Management**

<table>
<thead>
<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Landscape Description</td>
<td>Gain Transparency on all systems in the landscape</td>
<td>SLD + LMDB</td>
<td>1 day + 1 hour per system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System Recommendations + Side-effect Reporting</td>
<td>Maintenance Certificate</td>
<td>Out-of-the-box</td>
</tr>
<tr>
<td>2</td>
<td>Landscape Planning</td>
<td>Consistent Update of the Systems in the Landscape with Predictable Effort</td>
<td>Maintenance Planner</td>
<td>Out-of-the-box</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Update Dependency Analyzer</td>
<td>Out-of-the-box</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope &amp; Effort Analyzer</td>
<td>3 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operations automation</td>
<td>Out-of-the-box</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dashboards + landscape visualization</td>
<td>Out-of-the-box</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management of SAP Hana landscapes</td>
<td>1 day</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>SAP System Provisioning Automation</td>
<td>Automation of Landscape Management Activities</td>
<td>Post-copy Automation (PCA)</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End-to-End System Provisioning</td>
<td>5 days + 2 days per system</td>
<td></td>
</tr>
</tbody>
</table>

**2.8.1 Landscape Description**

To be able to plan based on up-to-date landscape data, managed systems must register in a System Landscape Directory (SLD) that is connected to the SAP Solution Manager landscape management database (LMDB). The information that is sent from the systems to the SLD is then synchronized with the LMDB. You enrich the technical information in the LMDB with, for example, information on the system role or system owners. Also, agent data from the system is added. Most importantly, perhaps, the data is uploaded to the SAP Support Portal to be used in Landscape Planning.

Based on the technical data in the LMDB, SAP Solution Manager provides additional information supporting your landscape management processes: System recommendations give you the option to quickly and easily get a list of recommended SAP Notes for a technical system, which should be implemented in the system. This recommendation is calculated automatically and takes the current patch level of the selected system into account. You then get a recommendation for important SAP Notes to be implemented that is tailored to your systems.
Side-effect reporting provides an overview of currently known side-effects of SAP Notes contained in a single Support Package or complete Support Package Stacks with all solving notes. These notes should be implemented in addition to the Support Package Stack installation. Solving notes which are already contained in the analyzed packages are automatically excluded. This helps to protect your SAP solution. Using the Side Effects Report reduces internal support costs and increases the reliability of your SAP Solution.

Maintenance certificates enable software logistics tools to identify your system and the exact scope of your corresponding SAP maintenance agreement. The certificate has a limited validity as has to be renewed regularly. SAP Solution Manager offers the functionality for automatic distribution of all necessary maintenance certificates to all systems based on SAP NetWeaver. This reduces landscape management activities significantly in larger landscapes.

In addition, the benefit of a central landscape description itself is transparency on all systems in your landscape. This avoids inconsistencies and related costs for fixing errors caused by them.

Landscape description is already addressed in the basic configuration of SAP Solution Manager 7.2. Your systems need to be registered in the SLD. And this SLD needs to be synchronized with the LMDB of SAP Solution Manager. You can estimate the effort with one-day general setup plus one hour per individual system.

Related Services:
- SCN Blog: Topology of SLD, LMDB, and Customer Profile – How to Get Reliable Landscape Data in SAP Support Portal as a Basis for Planning
- Meet-the-Expert Replay: System Recommendation in SAP Solution Manager 7.2

2.8.2 Landscape Planning

The next adoption step of Landscape Management is to simplify the process to update, upgrade, or conversion and install add-ons and new systems with much greater ease and efficiency.

To meet the challenge of managing modern system landscapes requiring constant updates in the landscape management tools, SAP Solution Manager provides a service in the SAP Support Portal called Maintenance Planner. Based on data from SAP Solution Manager, the Maintenance Planner offers a comprehensive set of functions to plan landscape changes. You can consolidate the definition of maintenance dependencies and streamline new system installations by eliminating superfluous activities. In addition, the Maintenance Planner prevents inconsistencies across systems in multiple-tier landscape. In January 2017, the Maintenance Planners has replaced the Maintenance Optimizer, which had its sunset.

You should also check for the compatibility of changes with other systems running the same business process using the Upgrade Dependency Analyzer (UDA).

Finally, you can use the results of the Maintenance Planner to discuss changes in your company with involved parties. The Scope and Effort Analyzer (already discussed in section 2.4.2 Test Scope Optimization) estimates the effort for testing and adopting custom code. In SAP Solution Manager 7.1, this is still supported by the Maintenance Optimizer; in SAP Solution Manager 7.2 it is based on data from the Maintenance Planner.

Another aspect of adapting Landscape Management is the utilization of SAP Landscape Management (SAP LaMa). It is an automation and orchestration solution to simplify, automate, and centralize the management of your SAP landscapes. The standard edition free for customers with SAP NetWeaver license. You can use it for automating centralized landscape operations with built-in support for system dependencies. And it provides dashboards and landscape visualization to gain better transparency of your landscape. SAP Landscape Management integration with SAP Solution Manager helps you to check/resolve existing work modes while executing operations and jump straight into the IT calendar. Setting up SAP LaMa for automation of operations takes about three days for an experienced administrator or consultant.

If you have SAP systems and landscapes powered by SAP HANA, you can use additional features of SAP LaMa for managing, providing, and orchestrating them. This includes also automated system copy/refresh, takeover/failback, and near-zero downtime maintenance for SAP HANA. Besides one additional day of setup, a license for SAP LaMa Enterprise Edition would be required for this. As a result, you would save
operations cost of your SAP HANA systems and even higher availability of the systems due to significantly reduced planned downtime.

Related services:
- SCN Blog: Details regarding Maintenance Planner
- EGI: SAP Solution Manager Scope & Effort Analyzer (3 days)

2.8.3 SAP System Provisioning Automation

The final adoption step of Landscape Management is the automation of the provisioning of SAP systems. You can tailor SAP Landscape Management to your specific needs, integrate your own procedures, and orchestrate your own processes.

The additional investment in SAP Landscape Management Enterprise Edition will be especially valuable for customers with bigger needs to standardize and automate their SAP operations across whole SAP landscapes, like customers running SAP like a factory or SAP system providers. They can radically simplify management of their SAP landscapes by automating and scheduling tasks and gaining a single, unified view of what’s happening with applications and architecture. In addition, they will reduce operational costs for SAP software systems, because SAP LaMa automates manual tasks. This saves time and makes the execution of tasks more reliable, predictable, and less prone to errors.

First of all, you can automate post copy and refresh processing tasks for SAP ABAP and Java systems using pre-defined task lists. The task lists have built-in application logic and dependencies, and they can be tailored to your specific needs. Using SAP LaMa for post-copy automation requires about five days to set-up on top of the configuration for landscape planning (see section 2.8.2).

There are even possibilities to enhance the system provisioning end-to-end. This means that you can detect, manage and integrate additional applications. It is possible to extend the functionality of the pre-defined activities, to integrate your own (replication) technology, or to define your own validations to pro-actively scan for problems. Custom tabs, links, and notifications will help you launch external applications from SAP Landscape Management and implicitly invoke a procedure if a notification event occurs. Setting up all of this requires five additional days plus two days per system on average.

2.9 Application Operations

Business users expect to always have a stable and well-performing business environment. The systems in these environments can combine multiple technology stacks: the SAP Fiori user interface layer, the ABAP application layer, and the database as platform layer. SAP Solution Manager 7.2 provides a holistic view across all of these layers. It is fully equipped with all operations tools required and therefore provides the single point of truth for all SAP technologies, not only on premise but also in the cloud.

![Figure 12: Scope of end-to-end application operations](image)

The monitoring and alerting framework of SAP Solution Manager 7.2 controls the status of all involved components. All alerts are available in the SAP Solution Manager 7.2 unified inbox, which thus becomes the central working environment for system administrators. Issue resolution tools are fully integrated into the inbox, so your administrators are not only informed about existing or potential issues, they can also launch the appropriate resolution tools.

This empowers you to deal even with increased complexity and heterogeneity of your systems over time. You can detect issues proactively and resolve them before business continuity or end users are affected. Un-
planned downtimes can be reduced by about 30% on average. And standardization and automation of operations processes makes application operations much more efficient.

**Related Services:**
- **Value Map:** Technical Monitoring & Alerting
- **Training:** E2E120: Technical Monitoring in SAP Solution Manager

<table>
<thead>
<tr>
<th>Step</th>
<th>Name</th>
<th>Value</th>
<th>Capability</th>
<th>Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>System Management</td>
<td>Transparency over SAP system status Automated Alerting</td>
<td>Root Cause Analysis</td>
<td>1 hour / system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>System Monitoring</td>
<td>1 hour / system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Technical Administration (notification management, work mode management, IT calendar, service availability management, SAP standard guided procedures)</td>
<td>Evaluation + 4 hours / system</td>
</tr>
<tr>
<td>2</td>
<td>Application Monitoring &amp; Guided Procedures</td>
<td>Transparency over application status</td>
<td>Job monitoring</td>
<td>1 day / job monitoring scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>BI + HANA monitoring</td>
<td>1 day / BI scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Integration monitoring (PI + message flow, interface &amp; connection)</td>
<td>1 day / integration scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>User experience monitoring</td>
<td>1 day / script</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Guided procedure framework + IT task management</td>
<td>1 day / customer-defined guided procedure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advanced monitoring</td>
<td>1 day for all advanced monitoring use cases</td>
</tr>
<tr>
<td>3</td>
<td>Advanced Application Operations</td>
<td>Transparency over complete system landscape</td>
<td>Advanced system management with focus on service providers</td>
<td>1 day basic setup + ½ hour / managed system</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advanced user monitoring covering on premise and cloud</td>
<td>1 day / user scenario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Advanced integration monitoring covering on premise and cloud</td>
<td>1 day / integration scenario</td>
</tr>
</tbody>
</table>

### 2.9.1 System Management

The most important goal of application operations is to ensure lines of business can work without technical disruptions and with enough performance to ensure a good user experience. To achieve this, you need transparency over the current status of technical systems with the associated instances, databases, and hosts, as described in Landscape Management (see chapter 2.8.1).

Whenever a disruption is detected that cannot be fixed immediately, you use root cause analysis to identify the reason of a problem and resolve it. The end-to-end trace analysis localizes the root cause in complex landscapes with multiple components involved. Workload analysis as well as system, host, and database analysis investigate performance problems. Exception analysis takes care of alerts identified by the systems or applications, and change analysis explores if a disruption might be caused by configuration changes. All of this helps to accelerate the time to resolution and reduces the business disruption.

With system monitoring, you do not need to wait until a disruption happens. Pro-active monitoring tries to detect upcoming problems before they become critical for the business. An alert is raised whenever a critical threshold is exceeded. This allows you to react even before the business identifies an impact. The corresponding business disruption can be eliminated entirely in such cases.

Another advantage of system monitoring with SAP Solution Manager is that there is a single source of truth that collects alerts from all the systems in your landscapes in one central inbox. You do not need to log on to the different systems individually to check the status. Whenever a critical alert is raised, you will be notified automatically to take action. This approach makes system monitoring much more efficient.
Technical administration is necessary for your entire solution landscape. SAP Solution Manager provides appropriate tools to support these administration activities efficiently. This includes multiple activities, like service availability management, notification management, work mode management, and planning of technical events via an IT calendar. And SAP-defined guided procedures support your IT operator during the execution of the daily operational activities through step-by-step execution. This is complimented both with detailed activity description and the logging of every activity. With this you can free your operator for other value-adding activities.

The effort required for setting up system management depends on the number systems to be covered. Both root cause analysis and system monitoring will take about one hour per system (if you utilize the templates provided by SAP Solution Manager). For technical administration, you have to evaluate first how you plan to manage this. The realization of this plan takes about four hours per system, on average.

**Related Services:**
- EGI: System Monitoring and Reporting (4 days)
- EGI: E2E Root Cause Analysis (3 days)

### 2.9.2 Application Monitoring and Guided Procedures

The next adoption step for Application Operations on SAP Solution Manager would be to set up application-specific use cases that are not covered by system management yet.

Job monitoring allows you to track the status of all metrics of job monitoring objects. From the job monitor, you can manually create incidents and notifications if the monitored object state needs to be notified to different levels of support or the line of business. You can also check the trend chart of the alert history of the monitored object to help you to analyze the job and take business-critical decisions.

SAP HANA and BI monitoring checks the status of SAP HANA and BI based scenarios. This covers not only the status of the systems but also the status of related process like extract, transform and load (ETL) and corresponding services.

Integration monitoring takes special care of the integration layers. This includes the interfaces and connections between systems, the utilized middleware (such as SAP PI), as well as the status of business-critical message-based transactions.

User experience monitoring simulates the activities of a user by executing scripts on a regular basis. This allows you to control not only the status of the system, but the possibility to access it via the network and Internet as well.

The different scenarios in system management and application monitoring are based on a template approach. However, this does not work efficiently for all use cases, such as for Oracle tablespace monitoring, ABAP transaction monitoring, or file system monitoring. Therefore, SAP Solution Manager provides advanced monitoring for such cases. You can create and monitor several different metric definitions.

You would need these monitoring options only in case you use the corresponding scenarios, of course. The effort for setting up such a scenario can be estimated by one day per job monitoring scenario, per BI scenario, per integration scenario, per script, or per advanced monitoring use case, on average.

One additional option is advanced usage of the guided procedure framework and IT task management. With this, you can define and schedule your own guided procedures. This will take about one day per guided procedure.

**Related Services:**
- EGI: Guided Procedures (2 days)
- EGI: User Experience Monitoring Reporting Analytics (4 days)
- EGI: Integration Monitoring & Troubleshooting (4 days)
- EGI: BI Monitoring & Troubleshooting (3 days)
- EGI: HANA Monitoring & Troubleshooting (3 days)
2.9.3  **Advanced Application Operations**

Application Operations is a solution that fits well to most customers of SAP. Some customers have advanced requirements, however, due to very large or complex landscapes and high volumes of data. In terms of performance, scalability, security, and automation, the current SAP Solution Manager 7.x architecture has some limitations. With SAP HANA, SAP has now the technology platform available to satisfy these extreme requirements.

Focused Run is a focused solution for SAP Solution Manager that addresses service providers and selected customers with advanced needs. It is an isolated installation which can run side-by-side with your existing SAP Solution Manager installation. Focused Run focuses on Application Operations and is optimized for SAP HANA. It reduces the technical footprint and associated total cost of ownership (TCO). Scalability, performance, and data throughput are dramatically improved.

Advanced system management allows effective and efficient management of huge amounts of systems, databases and hosts with minimal operations costs. It addresses advanced needs in terms of scalability, security, performance and automation. Target group are mainly system providers but also other customers who need to operate hundreds to thousands of systems, databases, and hosts efficiently.

Advanced user monitoring allows monitoring of real user requests as well as synthetic user requests cross-system and cross-technology. You can trace and dynamically correlate data measured at the front-end and the server-side to complete end-to-end user scenarios. This provides transparency regarding end-user behavior from a performance and utilization point of view based on high volumes of usage data.

Advanced integration monitoring will support you to manage complex interface landscapes handling millions of interface calls or message flows.

The effort for setting up advanced system management takes about one-day for basic setup plus half an hour per managed system. Setting up advanced user monitoring or advanced integration monitoring requires one day per user scenario or integration scenario. An annual volume-based rental license applies for using Focused Run for SAP Solution Manager.

**Related Services:**
- Focused Run for SAP Solution Manager

2.10  **Business Process Operations**

While your core business processes are running, problems can occur that impact the smooth and reliable operations. The goal of Business Process Operations is to ensure that these problems are recognized and resolved in a timely manner in order to avoid disrupting business process execution.

The management of business processes running on system landscapes requires control and governance in order to provide an efficient error response as well as an effective improvement for an identified problem or opportunity. Early and automatic detection of exceptional situations, which affect business processes and information flows, needs to lead to immediate and well-defined reaction and resolution that follow established processes with dedicated roles and responsibilities. Continuous and efficient identification of improvement potential needs to be followed up by implementation of relevant organizational and technical changes. This can increase throughput of, reduce backlog of, and improve users’ experience with business processes or particular steps.
Figure 13: Content of Business Process Operations

Business Process Operations provides methodologies and tools that help you utilize the full value of SAP applications by identifying improvement potentials, gaining a comprehensive business process overview and ensuring fast reaction on exceptional situations.

Related Services
- Meet-the-Expert Replay: Business Process Operations in SAP Solution Manager 7.2

| Step | Name                          | Value                                         | Capability                                                      | Effort                        |
|------|-------------------------------|-----------------------------------------------|                                                                |                               |
| 1    | Business Process Stabilization| No Undetected Business Critical Exceptions     | Job Scheduling Health Check                                     | 4 hours                       |
|      |                               |                                               | Business Process Monitoring for SAP Systems                     | 8 hours per process           |
| 2    | Business Process Improvement  | Efficient and Effective Business Process Execution in SAP Products | Business Process Improvement with Business Process Analytics | 4 hours per business goal area + 3 – 4 hours analysis per KPI + business alignment per KPI |
| 3    | End-to-end Process Operations | Efficient and Effective Business Process Execution for Complete Landscape | Cross-database Comparison                                      | 3 – 5 days per customer requirement + business alignment |
|      |                               |                                               | Job-request Management                                          | 2 weeks                       |
|      |                               |                                               | Job Documentation                                              | 4 hours                       |
|      |                               |                                               | Business Process Monitoring for Complete Landscape and Customer-specific Requirements | 3 – 5 days per customer requirement |
|      |                               |                                               | Business Process Improvement with Dashboards, KPI trees, and Process Management Board | 3 days per business goal area |

2.10.1 Business Process Stabilization

The first thing to ensure is that the implemented business processes are running stable from a technical perspective. For example, interfaces or background jobs should be processed without errors or, if errors occur, the problem should be resolved as fast as possible. This will avoid undetected business-critical exceptions and hence reduce cost of downtime and business disruptions.
Business Process Monitoring is the central, automatic and proactive monitoring and alerting for your company’s core business processes. It helps ensuring early detection and fast resolution of potentially business-critical situations. This will result in increased business process availability, stability, throughput and performance. You will experience increased end user satisfaction as well as reduced business disruptions. The initial setup of Business Process Monitoring takes about eight hours.

Many business processes can be automated to run more efficiently. Therefore, job scheduling management is an important aspect of business process operations to ensure that mass processing of business objects runs smoothly. The job scheduling health check of SAP Solution Manager provides transparency and supports job schedule cleansing activities. It reports various KPIs on the workload and stability of background processing as well as workload distribution and throughput. The central monitoring of all business critical jobs will automatically alert you when monitored jobs run into issues, such that you are enabled to handle the issue immediately. In addition, the continuous monitoring and reporting allows you to identify areas of weakness and continuously improve your system. The initial setup of the job scheduling health check can be done within four hours.

Related Services:
- EGI: Business Process Monitoring and Stabilization (5 days)

### 2.10.2 Business Process Improvement

Once your business processes are running stable from a technical stand-point you can now focus on the optimization of your business processes based on true facts out of the running processes. Business Process Improvement is more than just another KPI tool. It comprises goals to achieve, a standardized improvement methodology, supporting SAP Solution Manager tools for process experts and Management from business and IT and an out-of-the-box content of nearly 1,000 problem oriented key figures. The main intent is to maximize the value of your current SAP BusinessSuite or SAP S/4 HANA implementation.

Business Process Improvement comes actually in different flavors and can support many different topics and goal areas:

1. Your business wants to improve different business goals like Days Sales Outstanding, Days Payables Outstanding, Days in Inventory, Time & effort to close the books, Procurement costs per $ spent et.al.
2. You would like to transition your existing solution to SAP S/4 HANA or Ariba and you want to migrate as little unnecessary open business documents as possible, so that the cutover is as fast as possible and so that the new system can really start afresh without “legacy waste”.
3. You would like to reduce business process costs (and hence TCO) and you would like to increase (successful) process automation as much as possible
4. You would like to reduce process complexity and get rid of old and obsolete configuration (e.g. document types) and master data (e.g. materials, customers, vendors)
5. Internal/external process audits
6. GoLive support so that you know that the GoLive was not only successful from a technical perspective but also from an application point of view
7. Archiving activities are not as successful as expected due to many old and open business documents

Business Process Improvement consists of the following building blocks:

1. It typically starts with a remote Business Process Analysis in order to learn (fact based) about the current status quo and to have a baseline measurement from where to start the improvement activities.
2. Selected out-of-the-box key figures, which support the respective anticipated target, are activated in your SAP Solution Manager in Business Process Analytics which is used for central root cause analysis.
3. Business Process Analytics is used to analyze the corresponding problem-oriented key figures for root cause patterns. It provides root cause analysis capabilities like internal benchmarking across organizational units, document types, top materials, customers, vendors, etc., age analysis, detail analysis to identify systematic issues like user-handling, configuration, master data, process design issues.
4. Management UIs (Dependency Diagrams, Progress Management Board, Business Process Operations Dashboards) are configured in SAP Solution Manager based on Business Process Analytics data in order to track the progress made.
SAP DBS also provides Business Process Improvement as an umbrella service for an outcome-based delivery that shall provide added value to the business and/or IT department of the customer that comprises the above described building blocks.

The initial setup for Business Process Improvements requires 4 hours per business goal area plus 3 to 4 hours per KPI. However, the required alignment with the business will typically take longer.

**Related services:**
- Value Map: Business Decision Maker
- For customers with premium support engagement: SAP ESRV Business Process Improvement

### 2.10.3 End-to-end Process Operations

Besides using the alerts and KPIs available in the standard, for enhanced Business Process Operations you have the possibility to gain even better control of your business processes.

In today’s distributed system landscapes, data consistency is no longer guaranteed. Leading systems for different business processes require data to be synchronized across applications. Individual databases (both on disk and in memory) are usually consistent, but this consistency is difficult to maintain across multiple systems and subsystems. The target of Data Consistency Management is to avoid data inconsistencies and the disruptions caused by them.

Data Consistency Management includes a generic consistency check tool—Cross-Database Comparison—that allows you to create custom specific consistency checks and to include custom data into your consistency checks without the need to create specific check programs.

In some cases, it is not enough to have transparency over the status of the running background jobs, which is provided by the job scheduling health check (see Business Process Stabilization). For future decisions you might also need to know why and how a specific job is running. This information can be provided by the documentation of the jobs themselves and of the corresponding approval process. The job documentation itself contains technical information required to schedule the job, as well as business-related information like error handling procedures, points of contact, escalation procedures, scheduling restrictions, or validity dates.

Besides easing correct scheduling of the jobs, this information accelerates the resolution of issues.

Enabling your SAP Solution Manager for job documentation takes about four hours. About two weeks are needed if you want to run the entire job request management process in SAP Solution Manager (Create job request; approve/reject request; job documentation; testing, scheduling, running; and monitoring).

Dedicated monitoring objects can be defined using customer exits. They are integrated into business process monitoring to configure the functions meeting your specific needs. And you can use application monitoring on remote databases in order to monitor non-ABAP or non-SAP systems. Realizing this takes about three to five days per monitoring object.

Another option is to display further information regarding the monitored processes. The Business Process Operations dashboards allow progress tracking based on historical trends with defined threshold values in one view. These dashboards get their data from Business Process Monitoring, Business Process Analytics or via query from a connected SAP BW system. KPI trees allow a visualization of key figure dependencies. The available KPIs are neither equally important nor equally granular. Instead they can be connected on different “hierarchy levels”.

The progress management board makes progress tracking even more convenient and more transparent, especially for senior management sponsoring the corresponding improvement activity. On one hand, it shows the current value in comparison with, baseline measurements, past values, or defined targets. On the other hand, it tracks the organizational progress per KPI. For instance, it answers questions like: Which phases have been already achieved by the business involved? Are action items defined? Did the clean-up start?

The setup of business process improvement with dashboards, KPI trees, and process management board takes about three days per business goal area.

**Related Services:**
- EGI: Job Management (5 days)
3 SELECTING YOUR PATH TO VALUE

In the previous sections of this paper, you have read about many offerings that SAP Solution Manager provides for managing the life cycle of your SAP-centric solution. They come to you as part of your maintenance agreement. Most customers of SAP do not use all of the offerings, but rather a selection. So you may wonder: Which of the capabilities of SAP Solution Manager are relevant for me and my company? In which sequence should I adopt them?

Unfortunately, the best answer to these questions is: “It depends!” This fits to every customer of SAP because every customer is different. Customers work in different industries. They have different sizes. Priorities vary, as well as the number of employees and their experience within the IT teams. An individual analysis of your situation is required to identify what fits best for you. This chapter will discuss relevant questions to be asked in the analysis. Also, it will indicate how to use the corresponding answers for selecting your path to gain the best out of SAP Solution Manager 7.2 and your support contract with SAP.

First of all, you should take a look at the strategy of your company, especially the IT strategy. Is it key goal of your IT organization, to ensure business continuity and to avoid business disruptions? In this case, functional areas that help to detect disruptions pro-actively and to accelerate their resolution might have highest priority. For example, Application Operations as well as IT Service Management.

For other customers, cost cutting is a key focus. This is often true for customers in commodity businesses. For these customers it might be important to concentrate on functional areas that are key cost drivers first, like test management in many cases. Different capabilities of other functional areas might be relevant here as well to automate IT processes and hence to reduce cost of ownership.

Maybe the key role of your IT organization is seen as an enabler for the lines of business. In this case, the lines of business expect from IT to help detecting improvement potentials. The business process improvement capabilities of Business Process Operations can support here. If it is key strategy of your company to master the digital transformation for staying relevant in changing markets, then Project Management and Process Management with supporting functionality for innovation projects like the transition to SAP S/4HANA might be much more relevant.

Another thing to consider are the current plans of your IT organization. If you have to do larger implementations or upgrades scheduled for the next months or years, then you will probably put more focus on improving project management and the requirement to deploy value chain. If you do not plan such projects, then the functional areas involved in value chains detect to correct and request to fulfill might be more important for you (see figure 1).

Besides defining a strategical or tactical direction, you will also have to consider your starting point for selecting your path to value. You execute the different functional areas discussed before already today. Does any potential for improvement exist?

What are your major sources of frustration? It might make sense to target these first. For example, if you experience many transport errors and need to spend much efforts in handling over-takers, then investing in Change Control Management is interesting for you. If the transport execution does not cause much problems for you, however, then this topic is much less important. Similarly, you have to discuss all the functional areas: Do you have an urgent need to improve? Or is an improvement possible but just a nice to have?

Coming back to the example of Change Control Management: If you do not require sophisticated change request management and release management, you do not need to spend weeks for activating these capabilities, including the required alignment with the lines of business.

If you have invested in other life-cycle management tools in the past or if you are using just spread sheets for executing the functionality, you may continue to leverage these investments. However, you should be aware of the disadvantages of this approach:

- A key strength of SAP Solution Manager is the tight integration of the different functional areas. For example, if you want to change a business process, this change is not only recorded in Change Control Management. The adaptation of the corresponding process documentation is triggered in Process Management. You can use the Test Suite to identify relevant test cases. Tickets can be created automatically in IT Service Management, and the changes of business process will be visible accessible in Business Process Operations immediately after go live. In case you are using spread sheets or third-party tools, this integration needs to be done manually in most cases. This requires additional efforts and is error prone.
• Third-party tools or spread sheets might offer less functionality than SAP Solution Manager. Can your test management tool estimate the impact of changes and identify required test cases? You should consider additional efforts for installing the work arounds required to achieve exactly the functionality you need.

• You might need to pay licenses for some of the third-party tools. Remember that SAP Solution Manager is available for you as part of your maintenance contract with SAP. Therefore, replacing third-party tools with SAP Solution Manager can give you the opportunity to get rid of some third-party license cost.

The SAP Enterprise Support Academy offers a one-day expert guided implementation service SAP EGI. An SAP expert explores the capabilities of SAP Solution Manager in processes along the lifecycle of your applications. An analysis of the processes for managing business applications within your IT organization is done. Finally, you receive recommendations for how to enhance the usage of SAP Solution Manager in a detailed service report.

Knowing your starting point and the direction you want to move, you have to decide finally how far to go on your path to value. How many adoption steps do you want to take? Finding the right answer here requires a comparison of the achievable benefits and the related efforts. General information about these benefits and efforts are available for all functional areas in the different tables in chapter 2 of this paper. They have to be concrete to your situation. And they have to be monetarized to make them comparable.

The required efforts often depend on variables to be determined by your situation, like number of systems, number of processes, or number of impacted users. The assumption in this paper is that the given numbers refer to experienced administrators or consultants executing the individual tasks. These times may be a bit higher if you have less experienced colleagues in your team that execute the required tasks for the first time. You can also utilize the corresponding services mentioned in this paper. Monetarizing the required efforts is done by multiplying the times with a corresponding cost factor. So there will be a difference depending on if you can staff the tasks with internal resources or with external consultants.

Evaluating the achievable benefits is not always as straightforward. Let us take the reduction of unplanned business downtime as an example. There are estimations that one minute of downtime cost more than $5000 on average. This number varies significantly in different industries. How do you calculate the cost of downtime for your business? If specific functions of SAP Solution Manager reduce the time to resolution, the question remains open how big the reduction is. You have to make some assumptions here that fit to your organization.

With this you can identify important steps on your path to value out of SAP Solution Manager and your SAP support engagement. You should create a kind of business case and present it to your management for approval. Then you will increase the adoption of your SAP Solution Manager 7.2!

The SAP Solution Manager Value Report builds the foundation of a business case for implementing your SAP Solution Manager. You provide selected information on your current situation. This will be compared with best-practice experience from other SAP customers and SAP partners. You will gain your personalized value report within five business days. Typical questions are addressed:

• What are the one-time implementation efforts?
• What are the later yearly maintenance costs?
• What are the later operations cost?
• What are the expected benefits?
• What are possible quick wins?

This makes it easier to convince not only you but also your management of the benefits of SAP Solution Manager.
4 ADDITIONAL SAP SOLUTION MANAGER LEARNING RESOURCES

In this chapter you find links to various Learning Resources that help building up your knowledge and skills. (A valid user might be required for accessing parts of the resources).

**YouTube:** Watch public videos and playlists at
- https://www.youtube.com/playlist?list=PLFrwZZeBUtfiJgBrepFIrH7PFXayd6Lh

**SAP Press:** Read the latest book on SAP Solution Manager for SAP S/4HANA

**SAP Solution Manager Homepage:** Access overview, processes, product, and release information
- https://support.sap.com/solutionmanager

**SAP Solution Manager Media Center:** See product videos, system demos and tutorials
- https://support.sap.com/solutionmanager > Upgrade to SAP Solution Manager 7.2 > Media Center

**Product Documentation:** Learn about SAP Solution Manager in SAP Help portal
- https://help.sap.com/viewer/p/SAP_Solution_Manager

**Technical Information:** Get details regarding supported languages, browsers, and data bases
- https://apps.support.sap.com/sap/support/pam

**SAP Solution Manager Community:** Discuss about SAP Solution Manager (Blogs and Questions)

**Expert WIKIs:** Browse functional areas expert content
- https://scn.sap.com/docs/DOC-47361

**SAP Solution Manager Value Report:** Build a business case for your SAP Solution Manager
- https://www.sap.com/solman-value

**Digital Business Services:** Application Lifecycle Management (ALM) Consulting Services

**SAP Enterprise Support Academy:** Find Expert Guided Implementations, recorded Meet-the-Expert sessions, Value Maps, and more e-learnings
- https://support.sap.com/esacademy

**SAP Training:** Search for SAP Solution Manager courses and curricula
- https://training.sap.com