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DesignationLast　　　　en booklet

Data classmka ionConfidential　　　First issue

Change state 20, 2.2021

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1   Principles

1:1P r aamble

...Always onu is the motto for many people today: at home on the notebook. on the road with the smartphone - worldwide mobile data access is now considered to be a "must".
beina f1e self-evident.

Digitization a nd[1] electromobility are currently the top innovation trends of the Aut omobile Indust ry. CARIAD is an automotive software subsidiary of the Volkswagen Group. The Konzem bu11d e s its soft ware developm ent in CARIAD, including 'work on a uniform software plat form for all brands of the Volkswage ri Group. 11Part o f t he soft ware developm ent consists o f t he developm ent and operatio n o f t he Modular Backend Building Box (MBB); which is realized in the two solution spaces as described in chapter el Techniscile Spezif katio11.

In order to meet the increasingly demanding requirements, Ji rci is working with This is why CARIAD is looking for a partner with the expertise, innovation, responsibility and motivation to help CARIAD further develop and deliver the best possible customer experience.

The idea of continuous improvement is part of everyday practice and forms the basis for constantly optimizing the customer experience.

In order to realize faster time-to-market cycles, it is necessary[1], for example, to optimize SW re leases from major releases to independent SW updates of individual SW components.

11.2   General[1]

The present load statement for development, testing and operational services as well as general IT services describes the technical requirements.

This document describes the affected interfaces, processes and the requested service as a basis for the delivery.

The provider must take this burden fully into account in the design of its offer. shall be taken into account. In his offer, he shall take into account all services required for the fulfillment of the claims arising from the load book. The offer must necessarily refer to this ILast enil eft together with its applicable documents and must include the

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The supplier shall plausibly evaluate the performance described therein. Any deviations from the specifications must be clearly indicated as such in the offer with reference to the relevant section.

As the contractor, the bidder ensures that the service described in the specifications is provided to CARIAD SE (a Volkswagen Group CompEmy) as specified.[

CARIAD SE reserves the right to carry out a cost plausibility check before and after the nomination11 and to amend [7][t accordingly11. The prices and dates offered shall not be exceeded11.

The contents of the manual are subject to secrecy and may only be disclosed to third parties with the written consent of CARIAD SE.

The services shall be provided in accordance with the technical and organizational requirements of the Client under the supervision and sole authority of the local employees appointed by the Contractor as an independent service of the Contractor.

l3   Structurized Angebo

On the basis of the request, the Contractor shall prepare an appropriately structured fishing offer free of charge. In thisoffer, all details concerning the derivation of the offer value must be included.
to r fl ausilbilization be enthalteri.

If CARIAD SE requires further details of the offer, the Contractor undertakes to make them available immediately and free of charge.

All requirements for the tender are described in the attached tender document.

I.ilRequirements

The Contractor shall adhere to the following principles and overriding ar chives and goals eiri:

- High scalability for continuous growth
- Very high service quality for **the** customer and adherence to SLAs for increasingly demanding functions.
- faster time to market, by reducing roll-out and update cycles

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- high cost ef ficiencies an d c ostent ran save rm project t
- Compliance with the AG's data protection and security requirements
- Holistic documentetio11
- Application of standard soft ware prod ucts
- AG-sp ecific eiwers111 in case of need (Individual devel opment)
- regrel m a ige com m ercial and tec hnic cont rol of contract progress by builder and .AG.
- clear principles according to which the project will be carried out, and a clear project vision as a representation of the project goal.
- Partnership between the project teams:
- The WG is actively involved in the definition of the requirements, which are specified in a way that is close to practice by means of user st ories (epics). and initiates the definition.
- So o,rt i ge comm unrk atron in case of probllemen, even if dfe cooperation is jeopardized by it.
- Maxim ale Flle xibillt at in t he realizat ion of projec t s:
- If necessary - e.g., in the event of insurmountable problems Cooperation between the Contractor and the Client or with third parties - harmless. The software project can be terminated or transferred to third parties without major financial outlay.

l5Auft rn ggeb er

The client (hereinafter also referred to as the "AG") of this load booklet is CARIAD SE.

1.6 Aurftragneilmer

This document states ... ContractorM (hereinafter also referred to as "ANM')

The company is a representative for bidders before the award of contract and for contractors after the award of contract for the tendered services.

1.7 Z]el

desastenheftThe

document shall

- The cooperation between the employer and the employee must be described,
- Define the necessary regulations and concretization of services and remunerations for both parties to the contract.
- that limit the eli orable11 conditions for the agreement of IT services.

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- the basis for the conclusion and control/monitoring voil specific service agreements for the IT service hefem,
- The IT services and the ITSM processes to be provided by the Contractor and to be expected by the Customer shall be described with the highest possible degree of accuracy in order to avoid the risk of misunderstandings.
- Establish a formal system of performance target setting and service level monitoring to ensure *that* future reviews are based on mutually acceptable data111,
- Establish a common understanding of the definition of service requirements111 and the principles of measuring service levels.
- and the contracting parties of the specifications an easy to reference document for the previously mentioned goals ranem.

The intended model aims at a close and long-term partnership between the employer and the employee. Both partners must be aware that not every detail of the business relationship can be formulated in a contract. Therefore, it is necessary to build up a mutual understanding and a basic basis of trust on both sides.

The AG assumes that possible defnit1 io ns which occur111 during the contract period will be discussed in a part nership approach, belioben 1.md in the Re gelbetrieb Obemommen.

1.8 Attachment :to theD ocument

It is to be noted that this performance specification has its own111 annex1 documents. When the service is ordered, this service description including all referenced documents shall become part of the contract.

1.9 Lot wise allocation

This invitation to tender is designed in such a way that lots can be formed from the services summarized in Annex K. The tendering procedure shall be carried out in accordance with the provisions of this Annex.

T he AG leaves t he option often t o be called .W eiter e Di en st e" an d .E nab ler service e'- The Contractor is obliged to award the services listed either together with the lot - **1**Cor e or the lot - 2.C.ar2X. The Contractor shall be obligated, irrespective of the Lothe offers, to use the l eficiency spec trum . W h e r e Services " and .En abler services'-- list et en mitanziet en und beprisen.

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This results in the following lots;

- L.os "1 - C ore
- Lot - .2C a X2

The Contractor may offer individual lots, but also all lots. If both lots are tendered, the Contractor shall indicate whether one lot, and if7 so which one, is to be tendered. If so, which lot is preferred. Partial performance from   The lot7 is 111not a valid offer.   s a valid offer.

Whether or not the Employer makes an award by lot is entirely at his discretion. If no award is made by lot, the following range of leases, broken down by lot, shall apply.

How to price the   lots and which pricing options to use in which lot, is explained in' the chapter on allocation.

If the Contract Documents refer to the Contractor {AN), the specifications, requirements and definitions shall apply to each Lot and shall be observed by each Lot during the performance of the Work.

2   Specific task contents

2."1T echnical specif icat ion

CARIAD SE operates the Modular Bac kend Baukast en (MBB), which serves as an er7t erprise backend syst em for mobile online services (connected car ser vices). is available. In the MBB, all digital services and backend fundons related to the vehicle are managed.

The MBB is a collection of several large J EE applications, which mainly use several servlets as a runtime environment, as well as common and additional JEE implementations, such as: DB, LDAP, etc. The MBB is also a collection of several J EE applications, which mainly use several servlets as a runtime environment. e.g. DB, LDAP usvv. b enotigt. The MBB has a modular standard, but the modules cannot be used in any combination.

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Ab bll dun g1   structure MBB

The MBB is a backend over which the comm1Jn ic at io11 of the Connected Car Service s of all konzem brands and markete is provided. For m odule versctlieden, there is a brand separation, which is operated on two different plat formers. The
Con111ect edCar Services are divided into different modules, further ere applications and analysis systems a1Jfg e. which belong to CAR IT. The modules of the MBB have been logically divided into categories

- Core;
- Admi n;
- Sha red;
- Business Serv icesand
- More sni put

Business services are divided into in fo t ainment services and vehicle-related services (Car2 X), which are displayed in the vehicle or in a front end.

The am:a til of the connected car services to be serviced. which are made available to the customer for use, as well as the annual growth. slnd the capital to be remunerated.

With the MBB, Obe r m etirere releases the uni t y comm unicati on andl
Data is provided in a flat form. The MBB provides both the bsckend it y lnfra struc ture for all telem ati"-- and lnfo t ainmentsvs temes as well as the communical tion prot ooll and the

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Vehicle sctlnitt stelle bernit. This is not about the management and operation of telematics and infotainment services, but about their sale.

In order to ensure a smooth transition into live operation, there are different st aging environm ents (e.g. test - and Integrst io⁷¹, App roval, PreLive and Live).

A high degree of flexibility in dealing wh changing requirements and A high degree of flexibility in dealing with changing requirements and frequency of change, as well as outstanding coordination skills, are prerequisites for achieving the required performance. Also the
Part nership and a c ommunicat ion ,.on ey highu withSt   aketmers from t echnical' devel opment, t he S errvice responsib le and operat ing departm ent s is an indispensable trait .

In addition to the challenges of day-to-day business, the SOP Woclls, which take place 3once a year with the participation of all Group companies, should be emphasized. M sJor releases for the Modular Backend Toolkit are distributed to the Frod uctive envir onment. in order to keep pace with the "S t art of Producton Heuer vehicle m odels such
Innovations in digital services to the customer.

The following list gives a rough overview of the technologies sat the time and does not claim to be exhaustive.

- Access Management - Tivoli Access Management Webseal
- AWS Services (RDS, EC2. Cloud wat ch a. a.)
- CA AP M
- Csssand rs
- Concourse
- Cont ent Management - Adob e Co mmu nique (Dav)
- Direct ory Proxy Server SUN
- DNS - BIND
- Dynat race
- F5 Firewall
- Gradle
- Grafana
- Jenkins
  Kafka
- Kibana
- Kubemet es / Docker
- Linux (R'ed h at u. a.)

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Maven
Microsoft Domain Controller
Microsoft Federated Identity Mgmt.
Microsoft Key Management Server
Microsoft SQL Server
MongoDB
MQTT (Message Broker)
NDM WebSphere
NFS
Open API
Oracle
Portal Liferay
Portale - WebSphere Portal Server
Redis
Rsync
RVS
Splunk
Tivoli Access Manager Policy Server
Tomcat Application Server
Translation - WebSphere Translation Server
WAF
Web Scraping Software - Kapow
Web Server – Apache
Web Server - IBM HTTPD
Web Server - Microsoft IIS
WebSphere Application Server
WebSphere Message Broker

Der AN muss die aufgelisteten Technologien beherrschen und dies im Angebot nachweisen.

Der MBB und die dazugehörigen Anwendungen werden aktuell in zwei unterschiedlichen Lösungsräumen (Plattformen) betrieben. Fahrzeuge sind eindeutig einem Lösungsraum zugeordnet. Anhand der VIN kann im Störungsfall die Fehlersuche eingeschränkt werden.

Neben dem MBB 1.5 werden die Dienste auch in der ODP 1.0 -"One Digital Platform" (ODP) betrieben.
Kommende Fahrzeuganläufe werden auf der ODP Plattform integriert. Die IT-Dienste, die sich im MBB 1.5 befinden erhalten nur noch sicherheits- oder gesetzesrelevante Updates. Es ist nicht geplant, neue Fahrzeuge im MBB 1.5 aufzunehmen.

CARIAD SE Volkswagen Group Company

tvlBB l5	OnPremise operation sumge bung of the MBB for1.5 the european/ global market (e xk l. C h in a)
ODP1.0	ODP's Cloud Operat ing Environm ent f1.0 or t he Eu ropean/ Worldwide Market (exk l. China}

Table of 1   operat ing plat form s

2.1.1   ODP - 1.0Pub lic Clo ud

Volksvvagen AG's ODP (One Digit al Platt form) is a demarcated
Inf rast ruk turbereic h in a public cloud environment; based on the clou d services of the AWS PlatUorm. For the ODP, corresponding guidelines and processes are used, which must be observed and complied with.

2..1.2   **MBB** l fi - WebCenter

The WebCent er is an on-premise2 operat ory t o a segm ent ed t im e.
Infr ast ruk ture area w it h an .arch itect on ish zonemo del. For the WebCenter of AUDI AG, there are corresponding guidelines and processes that must be observed and followed. are to be complied with.

2.. 1.3   Specifications

When providing its services, the Contractor must take into account and implement all of the Client's specifications, e.g. IT security and architectural specifications.

If the Contractor plans to use further (open source) components, these must be explicitly approved and released by the Client (architect) via a dedicated process. The approval must be obtained by the Contractor in a form specified by the Client.

The Client expects the Contractor's support in managing the process.
For the conception and realization of its services, the currently valid specifications and met hods (e.g. M et rik atlog, K-GAS; A-SPICE etc.) must necessarily be used.

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The exact specifications and guidelines as well as the corresponding relief processes are discussed in detail between the contractor and the client during the fade-in phase.   d ocument

i erated.

21.4.1 Attributes

The services are divided into **three** categories from simple to complex and defined by the following attributes

Attribute	l:..int r:h	Medium	Hod1
Source Code Com plex'itat (determined w ith S onar Cube)	A- t:l	C	lLJ-.
Number of service dependent Services/ Systems	<:- 3	-1- 8	.:--9
Number of Lines of Codes	<= 10,000	10.007 - o9.99 J	:,.;::: 60 .0 0 0
Number of libraries in use'	<:- 8	J 1b	.... b

Tabellle 2   Services categories

An overview of the current services can be found in Annex K. The services described therein are not to be understood as fixed. The services described **therein** are not to be understood as fixed. The scope of the services may change in the course of the contract period due to the addition or removal of services.

21.4.2 Core

The core modules are the central components used by all other modules that communicate with the vehicle. Core components are the modules that enable and manage11 the connection between the vehicle and MBB. Cor e services-are agnostic' for business service pay loads. Nail ere details of the Core Services are described in Appendix K.

Core funct ionalit y s include securit y, regist ration of vehicles at t he Bsckend as such at t he MNO (Mobile Network Operator), routing or t he provision of ex t em ent web APIs for t he use of non-vehicle client s such **as** smart option s and customer port ale s of al l m arkets.
Sle are essen cial for the use of business services in front of end customers.

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21.4.3 Car2X

After **Info** t ainment services and **the** modular backend system w e r e launched in the past few years, further online services were created as part of Audi/VW Connect, including vehicle-related services (Car2X services).

The relevant Car2X services are detailed in A.n lage K we it er.

21.4.4 Other services

In this context, the term "additional services" refers to the basic services of
(Int elligent loading funct ions Backend (ILF) and Plug& Ch arge Backend (PnC)} and
Content Management System (CMS).

The Plug&Ch arge function is a com fortable m easurem ent for autho rizing and autho rizing
charging infrastructures. It replaces conventional ext eme
Aut hent isation m edia such as RFID Ksrte , App, SMS, o. A.

The Cont ent Management System on t he MBB and ODPt0 plst forms is used t o manage
different cont ent t yp e s for infot ainment services in t he vehicle

Further details of the services listed above can be found in Appendix K.

21.4.5 Enabler Dfenste

Enabler services are services that are used multiple times andtherefore cannot be clearly
assigned to a service group.

This includes enabler services such as the CI/CD pipeline or the test ing fram ework, whose
basic structure is the same for all applications and which must be provided with service-specific
content for each application. The devel opment , provision and operatio n
This basic func t iona Irrat wire is provided as part of the enabler ser vices; e.g., for
the CI/ CD gener ic qua lity gates are integrated into the pipelin e inf unct ionalit y and basic
funct ionalit y, such as t esting t he reg ist ration component s, is provided across all serv ices.

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2.. 1.5 Staging en vimnment

Software and software functionality1 must be available to different user groups (developers,
testers, customers) at different stages of a software development process.
L ebe n cycle beireitgestellt werden.

The different phases are realized with the help of different stages or environments 1.md are shown
in the following figure.
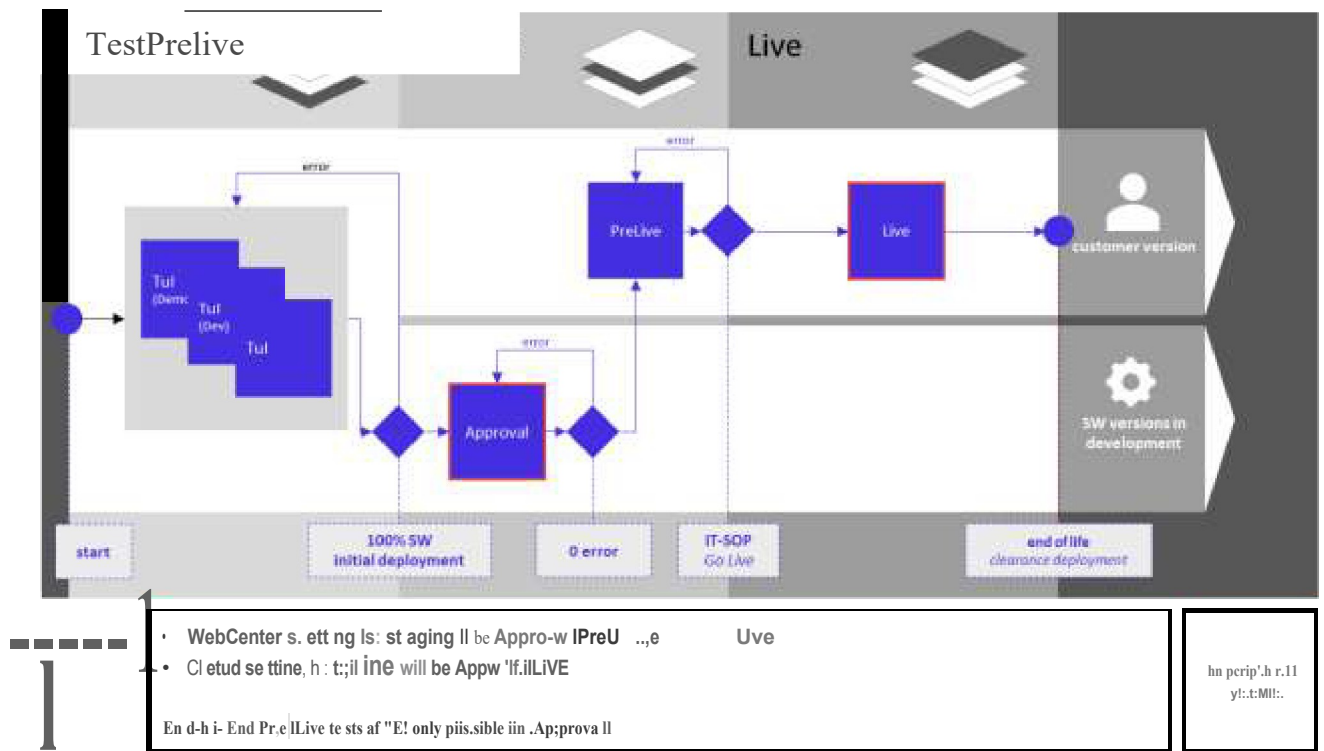
Ab bd1í ung St aging 2Environm ent

2.1.5,1   Tul: Int egrat ion and Ent wfckfun g

After the programming of a new softw re funct ionality, it is integ rated in a target environm ent (M BB). The developers (both vehicle and software developers) test the basic functionality of the new software in this environment.

The operation of the "..Development Environment s" is the responsibility of the Contractor. The flst tf orm is provided by t he AG. These start lnst allat ors of MBB applicat ions and are responsible for t he availabilit y of t he syst em independently. A m onit oring of MBB applicat ions is partly et ab lierit y and is used by t he developm ent team.

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2.1.5,2   Approval

The app roval environment is architecturally similar to the pre ive and live environm ent ,

This environment is primarily used to perform integration tests and obtain releases. Furthermore, this environment is used for demonst rat ion on the
The environment has interfaces with various environments. This environment has interfaces to various environments.

Eifl M onirto ring of MBB applications is largely established and used by the DevOps team.

21.5.3 *PreLive*

The PreLive environment is identical to the live environment. This environment is used, among other things, for final111 testing of the services before they go live and for validating errors that occur in the product as part of a test run.
Causes analysis.

un1e1anoeimwm1!na len€slence11 environment   environment is not available for the ODP.

21.5.4 *Live*

The live environment contains all services that are currently,. available to the customer. This means all services that are necessary for the customer experience.
This environment has interfaces to all relevant umsvs t emen andl content providers.

21.6   Backup and Recovery

The Contractor is responsible for ensuring that a check-up of all relevant data is planned, set up and regularly carried out in order to be able to initiate complete recove ry processes at any time. The Contractor must use the service provided in the respective solution rooms.

The Contractor's backup and recovery and IT service continuity plans must be coordinated with the Client's continuity procedures so that an end-to-end backup and recovery/bus continuity plan is supported in the best possible way in the event of a disaster (see chapter IT Service Continuity Management).

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To ensure that the customer experience is fully restored as quickly as possible in the event of disruptions, the Contractor assumes end-to-end responsibility.

This means that the Contractor will accept any disruptions to the Conn cted Car S rvices. which affect the customer experience and are within s inresponsibilit y or the angr nce of the   system andinterface. coordinate them and bring about the resolution.

In the fade-in phase, the Contractor must develop a concept for measuring end-to-end responsibility and tracking messages

gen

eratedevent of failures so that end-to-end responsibility is sustained and end-to-end availability can be restored as quickly as possible.

The concept must also describe how the Contractor can coordinate and manage disruptions that are outside of its responsibility, but that affect the customer experience.

The nd-to- nd concept must be implemented by the end of the ade- IN phase

2.2 Description of the project environment

The Contractor is responsible for the complete software ife cycle from its development to its implementation and operation as described in the following chapters.

The realization is to be carried out according to the SCRUM methodology and the Scale agile Framework (SAFe).

The Contractor shall comply with the regulations specified by the Client. The Client reserves the right to deviate from the standardized procedures if necessary. All relevant measures and tests shall be carried out for each realized software increment.

In the AN, all processes in the VOA scope must be designed to be ASP ICv3

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pliant.1 and generate all required process outcomes and output work products.

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2.3 Objective and eistu r1gsb1f escheatio n

The "DevOps" philosophy established and practiced.. at the AG unites the otherwise separate areas of software development and IT operations:

..You build it - you run it."

The goal and result of this process improvement approach is an acceleration of development performance and a high quality product. Product", which requires a stable IT operation.

- Shorter release cycles
- faster response to changing requirements
- Early recognition of disturbances or problems and direct solution in the team
- more efficient coop eration

2.. 3. iDevelopment

The Contractor shall, within the scope of its performance, submi mize the neu-and further developm ent of functions (aucll ..."Microservices" and "Software Increments"). The delivery of the
Development services to the AG are largely provided via a Continuous Integration Platform (CIP).

The requirements for the respective development11 are broken down into user stories as part of the planning or in the story breakdown. These are to be implemented by the CO within voil Sprints (development iterations).

D e11scription3 Overview of the basic procedure

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The communication structure must be set up in such a way that the necessary communication between the pro du ct owner of the AG and the DevOps team is ensured.

Technical requirements of the AG are passed on to the Proxy Produc t Otmer (AN) by the Product Owner (AG). The Pm xy Product Owner (AN) feeds the business requirements into the DevOps team {AN):

Ab bildung LI commuicat111 ion st rncture

23 . t 1   *Requirements management*

New requirements (CRs) are submitted to the 1Contractor via the most111 relevant committees (CCBs, CABs, etc.). The respective valid process is supplied by the AG.

The Contractor must orient itself on the SAFe framework for agile software development used by the Client and maintain a transparent backlog for the Client.1

The C creates corresponding tickets (JIRA) for the changes in the project-specific tool (currently At lassian JIRA) and maintains the corresponding status in these tickets.

tion

ally.

The AG evaluates whether the 111Chang'e is relevant for a service and the first ..Complexity assessment", which is carried out by the Contractor. is in order for the respective service.

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When creating the new requirement (new CR), the technical assistance for the correct formulation is provided independently by the Contractor. The Contractor shall ensure the implementation of the scope of work for ad hoc scopes of work as well as for new requirements. This shall include all necessary clarifications up to code implementation, testing, deployment preparation and technical documentation in the systems provided for this purpose, while adhering to the schedule.

23 . *1.2* *Aufvandsschatzung*

As part of the requirements process, an initial rough estimate of the costs of a change request (Epic) is made by the Contractor. The estimate includes all service up to Go Live.

On the basis of this rough cost estimate, internal processes are initiated at the AG and the AG decides whether the CR should be implemented.

The Client shall expect a high degree of accuracy from the Contractor in the course of the estimation of expenses. If the Client detects increasing or persistent deviations or corrections with regard to the expenditure estimate, the Contractor shall submit measures to the Client which will improve the accuracy of the estimate in the future. The CL leaves itself open to define corresponding Se rvi ce Leve l for the estimation of expenses in case of need.

2.3.1.3   *Pi-Pfanning* (planning workshop)

At regular intervals, pl-planning takes place at the AG.

In the workshop, several teams of the Agile Release Train (ART), other trainers/stakeholders meet as needed (depending on the topic), as well as the entire project team, in order to find common visions, identify d e p e n d e n c i e s among each other, and jointly create a roadmap.

lnh alte des PI-Plannig sind u. a.:
- Technical analysis of the requirements
- Planning of features and evaluation of short-term requirements (architecture, vision and product development).
- Preparation of planning for the following months (conception. Design)
- Listing of User Stories **and** Use Cases {Story Breakdown)
- Sprri nt planning
- Presentation of the planning results in the plenum, incl. presentation of the risks.
- Obtaining management commitment

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The Contractor shall Je P l-Planning the following tasks:
- Preparation of the Workslhop/ Processing of the 111 Project Contents
- Participation of the entire project team in the workshop (on-site prase nce)
- Follow up of the workshop
- Participation in and conduct of meetings during the preparation and sewing phase

The PI-Planriing are called in by the AG. The exact procedure is defined between the customer and the contractor during the fade-out phase. Here, the customer expects the contractor's expertise in the planning of the leases.

---

23 . 1.4 User Stories

User Stor1es describe the desired behavior of a software from an actor's point of view in the language of the requester (i.e., nontechnical).

The AG discusses on an ongoing basis with the Ki.mden and his Stakeho lder the Full ct ionality11 which represent t he proposal for t he scope of t he next sprint s and prioritizes this list in t he form of user stories in t he Product Backlog accordingly.

Within a sprint, only user stories that meet the Definition of Ready (DoR) are included and implemented. The DoR is described in the chapter Quality Requirements.

23 . 1.5 Specification

In the story breakdown, the DevOps team estimates and agrees the functionality of the user stories with the PLC and splits them into individually smaller parts. The customer is available for questions. The contractor prepares a binding cost calculation.

The Contractor shall include in its expense report all expenses incurred, including, but not hteb

- Necessary consultations, meetings and workshops involving   other involved trades/development teams/stakeholders
- Consulting services/ Process consulting
- Requirements engineering
- conceptual work
- Durchfuhnml   g of the Aufi vandsscha t zung
- Aufv!/ande de r Ent w1c klungsleistungen
- Implementation of the quality assurance system
- Creation and updating of document ations

Preparation of reports Test
scope (Testing) Acceptance
Deployment s
Rel ease
Configurat ion
Post -Spr int-Ana lvse

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Support in the area of business analysis and support in customer testing are provided by the development team and are also **included** in the costs,

23.1.6   *Develo pment sit first lo*

Within a sprint (development it eration), the Contractor develops and tests the User Stor iesscheduled for developm ent. The plat form of t he developm ent environm ent is provided by t he AG.   Within the development environment, quality standards shall be established (SonarQ); these shall be fulled by the **Contractor**.

The Contractor selects the user stories from the backlog according to prioritization and, if necessary, defines them with the Client in a backlog refinement or sprint planning for a sprint; the functional fulfillment cycle of a user story is defined (Definition of Done/Leve-I of **Done**); see chapter Quality Requirements.

The AG distinguishes betw een Devel opment and IP Sprint s (Innovat ion and Planning **Itera tion).**

As a result, the development sprint delivers a release-ready, tested, documented and reliable product for integration with the surrounding systems. The AG drives the development of new innovations within the framework of IP sprints. The purpose of an IP sprint is to create a period of time to addressissues that are not addressed in the regular development sprint due to resource utilization.
  O nes.

PI-planning takes place within an IP-spritlll as described in chapter PI-planning (Piam.mg swork store).

The Contractor shall comply with the following conditions for all sprints:

Time c ritical or ad -hoc and special issues are to be implemented separately, e.g., for high prioritized incid ents.

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- Sprint s follow one another immediately
- A sp rint usually includes a week's worth of work.
- A sprint w'uldn't be lengthened (duration)
- Expenditures in the context of the quality assurance (defect removal) as well as **for** operating and support services by the Contractor are not part of the Sprints.

If, during the discussion, one of the parties makes changes to the content of the

If a change in the requirements is reported, this change is only valid with the written consent of the **customer**. In case of serious changes, **the** effort will be re-evaluated.

The CO actively coordinates with relevant interfaces as needed; e.g., coordinates with control unit teams, front end teams, other teams from the Train
(Ab han gigkeit en Enabler etc.) und setzt gg f. daraus resultant Mar3.nehmen u m.

For the separate implementation of time cr itical ad hoc and special topics, the CO has sufficient person al ready t len.

231.7 DepfoymentpJanung

The goal is the independent planning and control of all necessary adjustments for the st aging process. This includes the following tasks:

- Documentatfon samllc her through Cihr ter De!=Jloyments in da ur vmg.esehen tools u_ a_ **package** - and version number.
- dfe t ermiri ly contro1ng the deployment s/operatio n chang es on all test environmen ts as well as on all operatio n environmen ts.
- The registration of deployments / operating cna nges for the Operational environments in the deployment planning tools provided for this purpose.
- Participat ion in t he Rege lmeet ing .Deplo yment planug111 Au di connect" (or a comparablenn Nacll fo lget ermins) to ank iJn digsn the deployment s/operatio n chang es for the bsigning departm ent in termi n.
- dfe participation in meet fng s. to plan the uvegangs, to Deployments/ Btrieb s-Ch anges for the AG to represent
- Coordination and release of deploym ents and tests on the test and operating environments
- Cont inuity of the deployment plan for the AG. The AG requires a current tool-based overview of the upcoming111 Deploy merit s from the AG. As Deployment tickets in the **tool** specified by the client (currently JIRA) should serve as a **basis**. It should also be possible to see from this when a st aging of a O-e11 it is plant·lst.

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- Creation of release notes for the AG
- In the case of urgent special deployments ("Emergency Changes"), the communication with the Client and the preparation of the required documentation and tickets will also be carried out by the Contractor.

Currently, deployment cycles can be expected to be long, depending on the number of changes in the services:

t	Tul {project):	as required (normal,iveise weekly) as required
2.	Tul (Developer):	As needed
3.	Tul	as needed (normally weekly)
	(Customer): LJ.	according to Bedart (normally.e once per Quarta I)
	Approval:	
5. FreLive/ Live:		

In the future, the release procedure is to be changed, as described in the project. The number of major releases is to be reduced by minimizing the technical dependencies within the packages.

2.3.1 BHyperCare

The Contractor shall ensure that the required service level in terms of availability and functionality is met after the deployment of a component.

For this purpose, depending on the complexity of the components and/or the release, a HyperCa re team is to be established by the Contractor; which can react as quickly as possible to deviations or disruptions ll ..,

The duration of the HyperCare phase must be chosen by the Contractor in such a way that:s all agreed en
The service level must be
maintained.

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2.3.1.9   Quafitatsanforderungen

The customer has defined various quality gates. Only when these predefined quality criteria are met by the Contractor,the downstream sections are released.
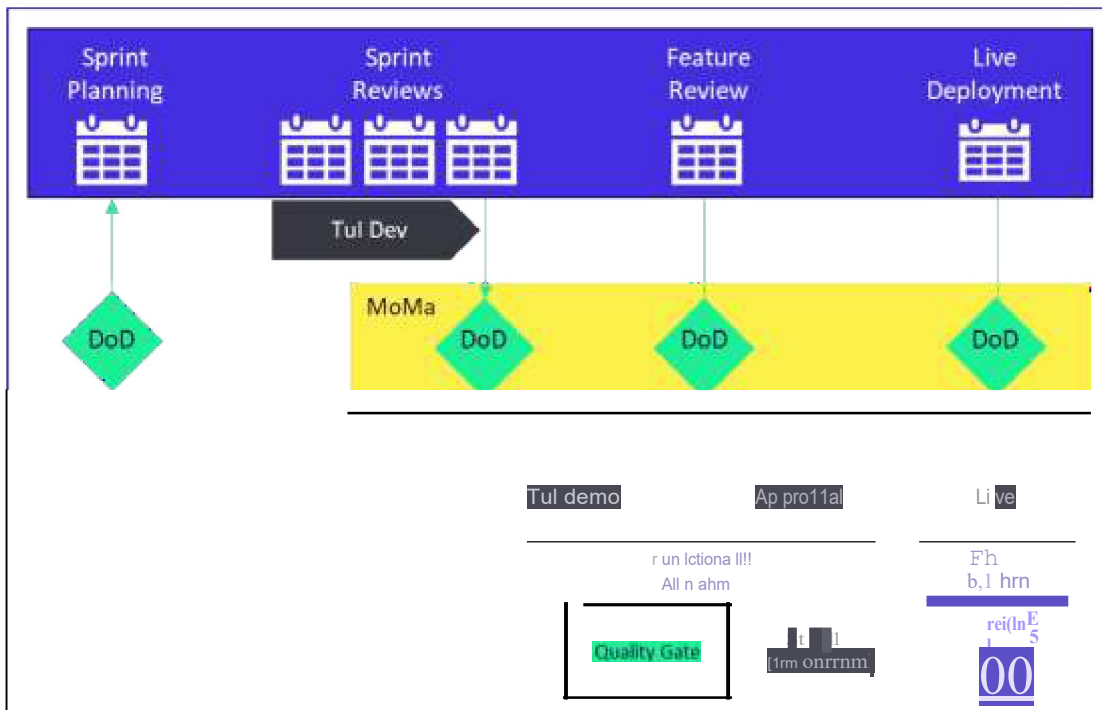
Fig. 5 Overview of quality requirements

A functional acceptance takes place in the context of a feature review from the tul demo and is the prerequisite for a deployment on the live environment. Qualit y gates to be met are e. 8:

- Achieved test coverage gemai\s service level
- Achieved e Quality Gat es gemaf3. SoriarQube
- Reach cSRI ge mar3. M o dular M asterlist e (MoMa)
- Holistic documentation

The quality gates listed are currently being measured, and the surcharge does not claim to be complete. In conjunction wiTh Contiriual Service Improvement MaB.nahmeri korn1e11, A11d erung,s at the Quality Gates result.

For a final acceptance, the functionality of features is verified by the customer according to the agreed quality gates on the live environment. Defects found are classified and prioritized as follows and are to be remedied by the Contractor according to the defined service level:

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Code	Meaning		
A Blocker	**One:at** :ver h in de m d The system is not runnable. Not suitable for productive use Error must be corrected as quickly as possible.		

B Major	ing 'in de m d The system is executable with acceptable workarounds. Fu r Product iv use suitable. Error must be corrected as soon as possible.
C Minor	Simple mangle The deficiencies do not reduce the sufficiency of the system. For Product ive startup igned. The error must be corrected in time.

r abelle 3   Error classificatio n

Fij r a firi ale acceptance mijssen elle Qualit y Gates of the M odular Masterlist e (M oM a). {The process is documented in the Service Tran sition chapter.

A precise definition of the criteria1111fora successful and final fade-in11 takes place within the fade-in phase by the customer.
The delivery of the development service to d€m .AG takes the form of a Continuous Int egration Plat form (GIP).

2.3 .t 9.1:1Definition of Ready (DoR)

The De in f tlon **of** Ready soil srchersts   llend that only sufficiently ausgsarbe e User St ories are taken over in Sprints. Zfel **rst** it, developm ent elem ents riicM unnot ily due to unclear requirem ents to un errupt.

,,DoR " is a set of criteria that define when a Prod uct Backlog It em (User St ory) has been sufficiently specif ied and can be released for implementation in a Sprint, among other things.

- Preliminary analysis has been carried out by the contractor, analysis results are available in the
  respective user story documented
- Subt ask are created after t he refinem ent
- User St ory was presented t o t he respective Archirtekte111
- User Story corresponds to the INVES T Ptri111zip   [l]

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[l] maG. William W.ake

- It is clearly described' which deliveries from other teams are graded and which agreements **with** other teams are necessary to implement this story.
- Rough concept for the test procedure is available
- The user story is linked to a team epic
- The relevanti stakeholders are documented in the user story

The complete criteria will be communicatedi to the Contractor within the Fade-IN phase. The preparation and development of user stories is carried out by the contractor in cooperation with the customer.

This has t he advantage of incorporat ing wictit ive indicat ions and perspect ives from developm ent and achieving a higher DoR rate of t he story point s zu.1

2.3.1.9.1.2 Definition of Done (DoD)

Definit ion of Done describes t he fuctᵢₗₗ ional11 degree of completion of a user story, e.g., unit t est ed. aut omat ically t est ed. Documen tat ion, non funct ional requiremi ent s and is accepted by t he AG.

The following definitions are to be agreed between the parties in the initialization phase and adapted as necessary in the course of the project:

Definition of .Done" for a User Story
Definition of .,Done for a Sprint Definition of
. Done" for a Feature Definition of ..Done"
for a 11Release

In particular - the following aspects are to be included in this definition:

- Int egrationst ests
- Integrat ion into t he existing IT I andsclhaft (depending on t he interfaces involved)
- Obe rgabe in die Support-Struktᵢurender Vorgaben des AGs

2.3.1.10 *S oftw arevva rt ung (LCM)*

The objective of software maintenance is to ensure compatibility between the application and the underlying infrastructure and middleware components. It includes the implementation of adaptations to ensure the secure and stable operation of existing applications without compromising their functionality,

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Software maintenance comprises, among other things, reactive, preventive and adaptive maintenance, e.g.

a ariwendurigscode andern, test and put product iv,
Customization based on updated inf rastru cture compo nents (e.g. operating svstems, network usvv..)
Adjustments based on updated m idd leware omponerit es {e. e.g., file bankers, web servers, etc.).

Software maintenance is performed in accordance with the relevant definitions and standards as described in the chapter "Development". The circumference of the soft ware vare wan. ung
we -den, as described in chapter Vergutung, vergili et.

2.3.1.11 Bugtixing

Bugs⎮ which are caused and criticized by the Contractor during the development iteration shall not be included and caclulated in subsequent sprints as an occurrence, but shall be remedied by the Contractor at its own expense and in parallel with the regular business within a period defined by the Client. In this case, the bugf ixing may not affect the
Impact on the performance of the development team, which is located in the sprints.

If it can be proven that the detected bugs are not the fault of the Contractor, then user stories for subsequent sprints will be created and verified with story poirits.

2.3.1.12 Warranty (removal of defects)

Storungeri (errors) caused by the Contractor, which occur outside the live environment and can be reproduced, shall be compensated by the Contractor within the scope of its
The customer is responsible for analyzing and correcting⎮ thewarranty at his own expense.

The removal of defects must not be calculated as an expense' in subsequent sprints, but must be remedied by the Contractor at his own expense and parallel to the regular business in a period defined by the Client. The typification and prioritization of defects shall be determined jointly in the fade-IN flhase.

The rea,varid to remedy deficiencies shall not affect t he perform ance of t he erit w ork team, w hich is in spririt s

Expenditure for rectification (removal of defects) by the Contractor1;\⎮shall not be remunerated by the Customer.

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2.3.2   Test ing

Testing is understood by the AG as an integral part of the iterative procedure and is a component of each sprint.

Testing in the context of these specifications includes all functional and non-functional tests.

The Contractor shall test all proprietary developments on the basis of the quality criteria defined by the Client. All testing tasks shall be carried out in accordance with the test procedure implemented by the Client and the specified tools.

Each newly bIVV. further developed software increment ilates before its introduction into the produc tive environment to pass through various test cases and scenarios according to the specifications of the Client. These are communicated to the Contractor by the AG during the Fade-IN phase.

The following basic principles of the AG apply to testing:

High aut omat ic grad

In order to support rapid response to changing requirements and permanent refactoring of program codes, a large number of systematic test cases must be designed and automated. This includes both structure-based tests (unit tests) as well as f.achically oriented system and

Acceptance test s. The performance of manual tests must be requested by the AN to the CL and approved by the CL.

Test responsibilit y

Responsibility for all test activities is distributed across the entire DevOps team. In addition to the tests performed by the contractor, the client or third parties commissioned by the dent can also test the contractor's development services.

Continuous Integrati on

Continuous lInt e-grston describes the process of continuously adding components to an application. The goal of continuous integration is to increase the quality of the software. Typically, not only is the entire system rebuilt, but automated tests are performed and software metrics are created. The whole process is automatically controlled by plugging in the software.

Versionsverwa lt ung des A.Gs ausgelost.

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If the customer already has existing tests, they are to be taken over and used by the contractor.

The AN's duties include, among others:

- Prepara ng/creating func tional and non f nctional tests
- Information at test data management of the AG! t obtain
- Execution of tests and related communication
- Analysis and document ation of test procedures - and results
- In errorf all ticket erotf nun g and assignmg to third party if necessary.
- Liberarbeit1Jng existing test case
- Report ing nd protocols be rit e d
- Preparation for IT security tests of the AG
- Advising the AG and introducing innovations for testing;

which will be nailer elnge in the following chapters.

232.2 Preparation/ initial evaluation of functional and non-functional tests

The preparation and creation of functional and non-functional tests must be based on user stories.

The Contractor shall perform the following tasks, among others:

- Creation of test concepts based on the test strategy specifications of the AGbu11nd the user st ories
- Implementation of the test concept; to ensure an automated execution of the tests in the CI/CD pipeline.
- For each change to the code/configuration, the Contractor checks whether the existing tests are sufficient, need to be repeated or adjusted, and carries out the following tests
  these through.

232.3 Test Data Management

Test data management ensures the consistency and uniform quality of the test data distributed across all test activities by controlling the creation, execution and maintenance of test data.

Test data includes, for example, VINs, token certificates .

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The test data management is provided by the client. The Contractor shall be responsible for requesting any data required from the Client.

23.2.4 Execution of tests and related communication

For each deployment, the Contractor carries out fully automated system and system Com ponent it ests incl l. Reg ress ion t est s, w hich determine the eli ul lu ng beforei new soWlie existing11 Requ irement s (User Story). The fully aaurtom at ised test s are, if possible, to be elicit d via t he pipelirie by check in iri t he version m anagem ent of t he AG.

When planning his tests, the Contractor must, for example, take into account the Client's planned events/freezes and also communicate them within his organization.

The Contractor shall use the tools provided for this purpose. e. lrornsi via tick t.

23.2.5   *Load i);tand performance tests*

The AG differentiates between load - and peli ormancet est componen tsand over ripen enderi l ast - and performancet ests.

2.3.2.5.1   Las t - and Peli ormancet est Componerites

The ANI shall provide the touch probe and perf ormancet ests (LuP). U te r a11d erem sirid th ereby, the ANIshalperform the following tasks:

- Regular preparation, planning of load and performance tests (e fns chlie fWch stress tests), in good time before live deployment of the ,corresponding R-ele;;ise candidates
  - o Development of a test concept for each service, which must be provided to the AG.
  - o Development of test scripts to be provided to the AG11'
  - o Coordination with relevant stakeholders and peripheral1 systems in the context of the Change Managements
- Performing load and psrformancstest s with the aid of a standardized ools to ensure reproducibility of the product.
  - o Scaling of all relevant components
  - o Document ation and monitoring of the test run
  - o Cleanup and rollback of the ska ling .to the so ll state
- Follow-up of LuP test s

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- ○ Ana lysis of the results of the LuP te sts
  Distribut ion , Derivation of Findings and Addressing of Findings
- ○ (functional, non funct ion al) relevant st akeholders
- ○ Troubleshooting of the services in case of detected problems

The previous surcharge shall not be accepted as binding, but shall serve" as a calculation aid for the Contractor.

The actual test runlasts between two and four days and is announced by the customer approximately one week in advance. The load -It ra li performancet est s usually take place between 8 a.m. and 4 a.m. from Monday to Thursday. The AG reserves the right to adjust the frequency.

2.3.2.5.2 Ubeirgreirfende ast and Perfo rmancetest s

Over the past six weeks, the AG has undergone comprehensive load and performance tests.

The AG conducts these itself at the currenttime. To support t he
and perf ormancetests- and perf ormancet ests, the CO shall . a. perform the following duties:

- Regular preparation. Planning of LuP test s (ernschlieB. lich St resst ests)
  in good time before live deployment of the corresponding Rel€as€ candidate
    oDevelopment of   a test con2:ept per service to be provided to the AG
            (based on the number of vehicles to beexpected / to be
      expected load. e. g. in Requ ests / second)
  - ○ Development of the test scripts, which must be provided to the AG (fal ls
    for the respective test.case not yet available).
  - ○ Abstfmm un g mrt relevant st akeh older and conversion systems as part of the
    Change Managements
- 11Ten ahme nt in the conductin g of LuP tests
  oContinuous adaptation of test concepts
- Follow-up of Lu P test s
  oAnalysis of   the results of the LuP test s
  - ○ AuSiSion, rejec11on of findings and address11on of findings
    (func11onal, non-func1onal) to releva11t e Sta eholders
  - ○ Troubleshooting of the services in the event of anomalies found

The current test effort amounts skh to a dm cil average l duration of three is four
The schedule is announced by the AG *with a* lead time of approx. 14 days. The overlapping L P-te sts usually take place between 8 a.m. and 18 a.m. on weekdays. The AG reserves the right to adjust the frequency to 11 days.

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Obe rgreifende Last- und Peli ormancet est we -den; as described in chapter Vergutung; vergutet.

2.3.2.6 Analysis and documentation of test procedures(iitand resultsnfs sen

All test activities are documented and reported in detail in the system specified by the client, e .g 8.. by means of a final test report, meeting minutes, etc. The test results must always be available to the client. A traceability of the deployment, the corresponding test and the release based on it must always be documented.

The test results must be checked with regard to the test procedure and the expected result (test analysis). If deviations are found during the test analysis
The Contractor must submit appropriate countermeasures as soon as possible and initiate them after approval by the AG\11.1

The final release of a deployment is based on the respective release guidelines of the customer
and must be automated. An automated release must be documented.
At least the following infor mation must be documented in the comment in the release ticket11:

-"Release by automated user is based on release11policyXr' ."

After release, the Contractor independently registers the package for the next system instance with the Client's deployment coordinator (Deployment Planning Meet ing).

In addition, the Contractor shall ensure that both the requester and all those involved in the implementation of the change/CR remain in the input flow. Communication only takes place in the tool specified by the Client.

The Contractor shall provide test coverage of all relevant use cases of the service through the tests.

On the basis of its test quality and the test performance, the Contractor must be able to make the decision to release a service to the subsequent operating environment ("test") The Contractor shall be responsible for determining the quality and quantity of the tests in such a way that a reliable conclusion can be drawn about the software.
Innerhslb of anIP

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The Contractor is responsible for the actuality of the tests. The CO is responsible for ensuring the perm arierite testing capability and the act uality of the test f ills.

For each service, the Contractor shall prepare a test certificate nad1 **IEEE** - 8292008 from which, for example, it is specifically evident which test methods and objectives are being pursued.

2.3.2.7 7 *Ooerarbeitung existing testfa/Je*

The existing tests shall be revised by the Contractor on alien stages within the scope of the Life Cycle Management, if this requires a Change Req uest (CR) of the software or the Sc hriitt st elle eli ordert .

2.3.2.8 *Provide reportfng and protocols*

Rep orting has to be done automatically in Xray. The reporting has to follow the Xrav concept. It sirid if necessary dashboairds in Xrav for document at ion derntw   icklurig and tests in Jira to generate. The tests must be linked to the Jira tickets.

2.3.2.9 *Allowance for '1iïid3e curit yr,'iifrest s of the AG*

The Contractor also tests other areas of the Client', such as IT security.
If the AGb1mo t's assistance is needed, the AGb1mo t will support the AGb1mo t by providing information, advice, trainings, support or consulting,

2.3.2.10 *Consultation of the AG and introduction of innovatrons for testing*

The Contractor shall advise the Client with regard to the further development and optimization of test procedures, tools, etc. The WG is actively informed about new developments and innovations by the WG, who can contribute its experience and best practices,

In the context of technological improvement, concrete proposals shall be made at least one **(1)** time per year to improve, accelerate or make more cost-effective the services rendered. IFor this purpose, existing pain points of the ANb1:1bd er general new strorns in testing can be addressed.

2.3.3 Operation s and supp ort

2 .33. 1   *AvaitabiHty Management*

The objective of the Availabilit y Management is to ensure that the availability level of all services under the responsibility of the AIN is in line with the

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current and future meet the agreed availability targets, manage the business process, and ensure that the ⟨tee⟩ 1Jnd to meet or exceed them in a cost-effective manner.

The focus should be on those aspects that affect the   The focus will be on those aspects that relate to the availability of services and resources and on ensuring that availability' targets are measured and achieved in all areas.

In order to achieve this, proactive and reactive activities are carried out by the CO within the scope of the Availabi lity Management, e.g:

- Obtain, define and summarize requirements for the availability of (new) services.
- Ensure availability targets and implement requests as well as subsequent troubleshooting and analysis {2. e.g., after a fault or an error}.
  Ausfa ll)
- Planning and monitoring of the veirfiOgb arility
  - o Planning and monitoring of the current availability of the services and the IT infrastructure used as well as planning and initiation of measures to secure the availability targets.
  - o Securing the crecti⟨ll⟩ve fuction and implementation and inform ation if necessary
    Adjustment of availability measurements of the services using only the Availability M anagement Messwerk zeug s of the AG. For this get5rt⟨ll⟩ the Integration into development processes, e.g., by proactively evaluating new requirements (backlo g items) and their technical implementation and testing concepts with regard to their impact on the product.
    Process.ark eltsmonit orfng and the   proc ess arkelts:targets
- Testing of the availability-securing procedures and technologists   1
  - o Appropriate effectiveness testing by conducting and documenting regular tests of the procedures and automation used in the services to ensure availability,
    The following table shows the most important data for a given system.
    Output
- Available its report ing u111d - forecast
  - o Monitoring and reporting of the availability of applications 1m So ll/ 1st
    -Comparison with the servfce level cubes, including1 the long-term Trends
  - o Short-term ⟨preparation and provision ⟨of information relating to unplanned non-availability of the a11wendlu11gen and t he IT infr astructu r o Evaluatio n and commentatio⟨lll⟩ n o f available re levant in cident s
    oPeration of   regu lar availability forecasts over the next few years 12
    Month e ʰ ⟨ᴵⁿs. 1cʰ ᵗ¹⁴ᶜʰᵒᶠ⟩the expected ⟨te⟩lerr. elch, underF1n⟨te⟩ zehung11.md

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- Evaluation of all relevant planned changes and the planned
  Functional and non-functional changes in application development Availability of proactive and realistic frameworks
  o Derivation of proactive MayGnallmen from the forecast as well as from the analysis of the vertugbarkeite it sre levant en Inciden ts11. m d Problems
  o Placement of necessary measures to ensure availability in the **product backlog**
  o Regular analysis of weak points and the adoption of appropriate measures.
- Countermeasures
  o Organization and processing of preventive measures (maintenance)
  If changes in architecture or in technical design are desired, they are implemented in change management.

2. 33.2 Capacity management

The **aim of capacity management** is to ensure that the capady of the services and **the IT** infrastructure is always sufficient to meet the agreed capacity and performance targets as economically as possible, taking into account future requirements from the business processes.

Capacity management takes into account all resources **required** to provide the IT service and plans or forecasts short-, **medium-** and long-term requirements and capacities. In addition, it soils workload-related
Proactively avoid application unavailability, performance degradation and incidents.
The Contractor shall be **responsible** for the capacity management of its services and shall cooperate with the **Client's** responsible offices and third parties.

To achieve this, **proactive** and r eactive act ivit ies are **carried** out by AN within **Capacit y M anagement**, including:

Monitoring of the capacities
o Determine business process-related **key** figures that reflect the intensity of use of the applications and their infrastructure, and their
  Performance eri asseri
o Designing and recommending measurement procedures for regular determination of these indicators for continuous monitoring of the capacity needs of users and their infrastructure.

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- o Reconciliation of Inlfast rLJkt u r-related key figures to the Capacity utilization of the Infr astr uk turk omp on,ent of the applications mft the Irches responsible for operating the Infr astructure components.
- oF critical threshold values for all kem1 numbers. so that capacity seg11p asse rncht zeiti g erka nt11 as well as the hurry11 vlll countermeasures.
- oRegular   Im.aging of these key figures for deviations from the expected trend. The derivation of the risks resulting from this and the management of these risks are carried out using suitable measures in order to avoid the risks.
- o Ident if icat ion and analy sis of capa cit y bottlenecks fn t he applicat ions and t heir Infr astruct ur component s. Dre ab le ition   of the resulting risks as wel asthe initiation of suitable measures to avoid the risks.
- o Continuous updating and recording of system limits and the approach to system limits with subsequent risk analysis
- o E1n s t ellation of required measures in the product backlog Prognosis of capacit y needs and capacit y s1ch s rn d e measures
- o Degree of au slast of syst ems by au t omatized1 capture c,, quiet er< ening of trend deviations
- c, Proposals, trackers, and series of measures required to ensure the performance and capacity of the applications, and111d their infrastr uc tures
- o OveRvieW of the a11ford eration11 defi nition and develoPMent o f applicatioN le ases in terms o f consideration o f van requirements on the part o f capacity manaGement, a.o. M en gengerus t e, scal1erbark:en. Performance, measurement 1t ofcapacity key figures and tests
- o E1nst ruct ion of ma{n aihmenn   1 t   heProduct   Backlog t o monit or t he required applicat ional ogeries capa citat ies.
- c, p roal< t I ve Ob erpr(ifen of applicatio n releases in 11view of   a changed capacit y behavior
- o- Performn(ihrtmg of regelnna f3.igende t aillized evaluations of the perfo rm ance of all components.
- o Forecasts of capacity development based on business requirements and capacity utilization in the last few months
- o Formulate requirements for adaptations (Inh.alte, R1.si ke n, C h ancen, costs).

In the context of the in dustrialization, the primary task for new services is to build up or adapt the infrastructure. Middleware (also data111 banks), Configurat ion set t ings and ariderem ent .

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The AN ub ernnimmt hier 1J n t er anderem folgende Aufgaben :

- Ini i a l project:setu p in the rshmen of a kick-off date
- With regard to the wr an application lben6t igt e 111components consultative Ge environment)
- Conception and plan ng of the necessary tasks
- Coordi at ion and tmmin planning with regard to the performance element s
- Execution of all planned tasks
- Init iat e Firewall Activat ion Ge m environment)
- Certificate:at-e apply for, document and instsllate 0e environment).
- If necessary, provide VMs u111d databases.
- Creating a Deployment Job in a Continuous Integ ration Platf orm
- Creation of an Application Serve r Inst anz
- Creation of a Web Server service

23,,33   Change Management

Change Management is the process of controlled change of alien
Changes to a service so that implementation1' of approved changes is associated with minimal disruption.

This process includes everything from the acceptance, the Q'IJalirtat ssic hemng to the deployment of the respective and erull gen,. everything necessary, damlt the changes without The RfC's must be 111implemented and made available to the customer. All changes

(RfCs) must go through this process.

Change management is used to successfully implement any changes to the system;
- to 'minimize the impact of change-related events on the quality of service.
- to documentl the efficient and immediate handling of all changes,
- to use standardized methods and procedures.
- to use a well thought-out procedure for assessing risk and business co ntinuitio n,
- to maintain the balance between the necessity and the effects of a change.
- The aim is to achieve high visibility and an open communication channel.
- as well as procedural requirements.

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The CO's primary responsibilities in Challge Management are as follows:

- Evaluation and identification of impact and availability risks in change planning.
- Coordination of changes with affected stakeholders
- Reporting of changes, taking into account the currently valid quality and release process, in tools specified by the AG.
- Representation of AbhangTgk eit en Change-P lan1.1ng, Ab srchen..ing and Ensure that no changes with conflict potential are carried out by other units.
- Perform(1hnm g of qu.ality assurance of the Inst allation p.ak et
- Providing the Installatio11sp aket s in the11 tools provided by the A.G vm (includes software increment and accompanying docum ent s).
- Transitn ng/ Impl ementation of the change in the timeframe and toollo sun g specified by the AG via the change management process.
- Oberprufo ng of version number dsr App lik atron after Changs conversion.
- Obe rprufo ng o f app 11ks t1on behavior   for errors or changes in ap p,likat ion after change implementatio n 1n the form o f automa1tic tests
- If problems are detected, appropriate measures must be taken, such as rollback or window analysis.
- Quali11ed feedback to the AG's Deployme11t Coordina11on after the implementa11on.

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The current change process is shown in the figure below. T his regulates t he prelaunch t im e,

qua litat e f ree and t im e windows. The process is based on the

2..15 . 1con cep t. The other11 s.sct ivit at ions for t he two111 l ossing rooms are1 not usually held

on t he same day.

Chan g,e p lanning in chronological order of   event s

Scope: Customer envrronments
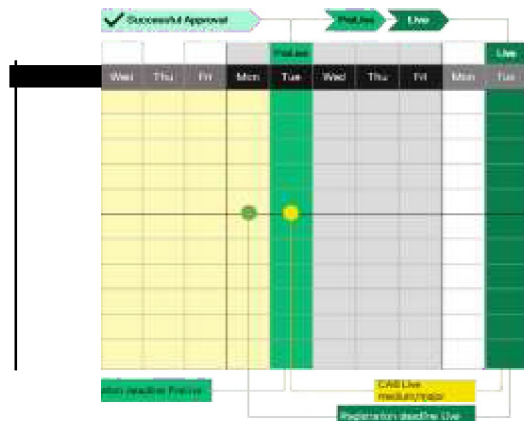
Dep 6loy ment expiration

The result is approved and successful changes to the systems.
The scope of services depends on the solution area of the service in question. In change

management 'i/lJernen are aktJell1 three Ai1en   of Chsnges are distinguished:

Standard c hange
Changes predefined in the ITSM tool, whichl are processed on the basis of a tool-based standard process and do not require approval. The processing of standard changes can take place as a service request within the framework of request fulfillment.

Normal Chan ge
This describes changes that are controlled and approved by the control process.

Emergen cy Change
A special case of a change with the aim of avoiding major damage or immediately correcting critical faults. The change is only released by the MIM of the client.

The implementation of Changes. must be possible for each Zeirt.

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2.3.3.3.1 Release Management

Any changes to the service are controlled via this process and passed on by the customer to the contractor. This process must be used to ensure that any changes are implemented on time and without disruption.

In the release management process, a distinction is made between:

- Major Release and
- Minor Release

Major Release

M ajor releases usually take place I three to five times a year and usually include all existing applications as well as new applications in the context of Inbetriebnahmen.

Major releases are to be implemented before the customer without downtime of the applications. If, in exceptional cases, a downtime cannot be avoided, it must be reduced to an absolute minimum and agreed with the customer.

In the case of a major release, the Contractor must coordinate, plan and agree on the implementation. The parties involved include the client's deployment planners, the brand representatives involved and other contacts of the client as well as third parties defined by the client.

For this purpose, weekly on-site meetings (jour fixe) are scheduled by the customer during the preparation period. In this context, the Contractor will also be responsible, in cooperation with the Client's deployment planning, for carrying out the deployments and other planned changes to the operating environments on the basis of changes to be set.

Deployments are carried out at a Group location in Germany (e.g... Ingolstadt), and all the departments involved are usually also on site in order to be able to intervene as quickly as possible in the event of problems or to obtain test results as quickly as possible. Major release implementations can extend over several daysand are carried out in shifts.

The operating environments are updated with the new release in a predefined sequence (see chapter Staging Environment). The dates for the major releases shall be communicated to the **Contractor** by the Customer in good time.

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I11fo rm atione11 to the first elltm g n o t wendi g plans such as time -and sequence plan (Story Book, Story Line etc.) to plan the drnchfu hru ng.

The Contractor shall perform the deployments at the planned time in accordance with the Client's schedule.

During the implementation period of the Major Release, the Contractor shall ensure that the final consolidated test results are made available to the Client promptly in an agreed form, in quality (chapter Service Transit ion) and in expressive power.
tion. The Contractor shall be responsible for the verification of the test results and shall issue a Test capability for sure.

111 In the follow-up phase, the Contractor shall support and organize independently, in coordination with the Client11, all measures to fully implement the release21   lielsen
.

The planning and implementation of ret ro ,::i erspektlven (e.g. lessons learned) are included. The AN aktlv is also available after regular deployment activities.
each glich type of follow up task.

Major Rel eases are closely dependent on the project ma11agement and are to be run through on the basis of it.

The actual deployment of the Major Releases takes place within the framework of Sprints and is compensated to the Contractor.

MIno r release
A "Minor Release" usually contains minor changes to apdations. DIese
Services or software packages e s1nd b ereft s present on the environment in question.

For minor releases, the Contractor does not have to provide any services within the scope of lease management. Operational implementation takes place in Change Management. The Contractor's services are limited there.

2.3. 3.4 Configuration Management

Configu ratron management has the goal of providing all 111ot wendlgen Information en to Confi guration It ems (in short: CI. dleutsch: Konf iguration selement e). to maintain the relationships betw een Cls and is responsib le for securit ying the
Act u ality, Consist ance, and Qualit y of Cls nfo rm ations. The m anagem ent of Cls is m ade continuously Cib e r the entire life cycle of Cls.

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A Configurat ion It em is defined as any component t hat needs t o be m ade available t o provide a service. Examples of Cis are applications and their components. In this case, the AG's responsible configuration manager retains overall responsibility for configuration management and defines specifications for the management and documentation of configuration it ems. The Contractor shall support the Configuration Managem ent and, in particular, the data m aintainance of the CIs in accordance w ith the CUSTOMER over the entire lifecycle in the defined accessibility area.

Disciplines such as Incid en t M anagement, Request Fulfillmen t. Problem management and change management access Information from Configurat ion M anagement. This includes. a. Conditions for the support of the CIs in the service, information on the criticality of the Cis or even service level requirements. Furthermore, current and corrrectly maintained CI relationships make it possible to perform impact analyses, e.g. in the context of incidents, problems or changes Prob lems or such changes. The Configurat ion Management process is thus closely related to other operational processes and is mutually dependent on them.

The Contractor is therefore responsible for recognizing and evaluating deviations from the objectives and requirements described in this chapter and for planning and, if necessary, implementing countermeasures with the involvement of the Client.

In particular, in the event of inconsistencies in the Configuration Management Database (CMDB) or the Configuration Management System (CMS) the Contractor shall take or draw lots for all further measures necessary to remedy such inconsistencies.

The AG can request the inclusion of new elements or information in the data management at any time.

The Contractor shall have the following Configurat ion Management responsibilities as a priority

- Ensuring that all configuration items are fully documented in the service. This documentation must always be kept up to date. Re-documentation should be avoided.
- Ensure and continuously improve the data consistency and data quality of the configu rat ion it ems, d ie fiClr the .application(s) and the delivery of the ops services relevant slnd
- Use and maintenance of at least the att r butes of the cis

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- Maintenance of the CI-In armations in accordance with the process specifications in the tools of the WG
- Unve rzug lrctie l=inle1tion and implementation of corr9ier1 ende11 M af3.n ahmen, fa lls eillle U nst imm igat ion should be found wen-den (e.g. Incon sist e11z of versioning).
- Ob erprili ung and ggrf. Ak t ualisieru11g d of CI-Infm mation aft er Vo llst and Korrektheit. jeweils vor der Umsetzung von Changes am Servi-oe
- Support for the definition and maintenance of service trees (service landscapes) and the maintenance of service s t r u c t u r e s
- Docum ent at ion in t he Confi gurat ion M anagem ent Database (CMDB) and in t he AG's Configu ration Management System {CMS)

Spe cifi c at lon of work step s in all relsvant process s, dfe as filling

Pro:rnsoo in the context of C I capture apply.

- Definition of the tool(s) to be used for the documentation, if there is a concrete specification on the part of the customer.
- Definit ion of t he work step s t hat need t o be performed for t he docum ent at ion. Descrip t ion of t he work step s in t he performance docum ent at ion.
- Instruction of the personnel in the work steps.
- la n d i n g quality sicti11g

- ○ ○

○ ○ ○

In addition, the Contractor must ensure that the data contained in the central data collection is correct. The same applies to all the service providers who grade these forms of information. For this purpose, filling and using processes are to be defined and corresponding instructions for the service-providing personnel are to be drawn up.

The term CMDB is used in the document at io11 of this deliverable as a comprehensive data collection of all configuration it ems. It is not assumed that this is a tool, but rather that a collection of tools (see Tools chapter) and documentation components is used in total as a CMDB. The Contractor must ensure that a complete CI document ation is made in the Customer's tools.

The Connected Car services, in particular, will require special
Configurat ions of t he services from t he relat ive change set t ings (such as CABs) are t ransf
erred t o t he CO. It is imperative that such configuration adjustments in the customer's
specified tools are also maintained by the contractor.

Configurations of the Connected Car services are hs1Jptsachlich made in the
respective admin tools. It should be noted that:

> To coordinate configurations on approved environments with the involved
> support staff and to document them in the tools provided for this purpose.
> The configuration is to be adopted according to requirements or necessity in all
> environments. It is also important to take into account the time-related or functional
> dependencies (e.g. on switsches).

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World ere details on this are explained again in the chapter Document ation.

233 .5 Continua/ Servfce Improvement

The aim of Continua I Service Improvement is to continuously improve the efficiency,
effectiveness and economy of services and all relevant procedures, processes, methods and
tools. To this end, methods of quality ttll¶1nri!lltr process management are used to learn s1Js
results from retro perspectives2u.

The AN's dell duties include:

- Establishment, document ation 11.m d the use of a structured approach in Continual Service Improvement for the ongoing improvement of the1effectiveness of IT processes and services1

- Ident ifi cate areas in which the metrics or process goals are not being achieved or are not being achieved in an optimal way.

- Definition of conc rete and measurable Initiat ives for the improvement of processes and services. The resulting initiatives are either internal improvements that the Contractor implements on1 its own responsibility or initiatives that require cooperation with the Client and/or other parties involved.

- Coordinate and synchronize initiatives and activities 1 within the framework of the continuous improvement process with the AG and other stakeholders.

- Continuous monitoring 1.m dument ation of CSI initiatives with regard to planned progress and, if necessary, initiation of corrective actions. Ma took

- Continuous review of whether the   whether the implemented CSI initiatives have the planned success/effect.

Continual Service Improvement is designed to save resources and time, reduce costs111 and optimize quality1.

All processes as well as documented knowledge or procedures are usually subject to a review and optimization cycle at least twice a year. The Contractor shall

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The Contractor shall be responsible for the monitoring and any resulting optimization measures. It is expressively desired that the Contractor introduces his own suggestions for optimization.

A standardized procedure for submitting suggestions for improvement is provided by the AG and must always be used.

Unauthorized adjustments to processes and procedures or changes at the suggestion of third parties are expressly excluded. All changes to processes and procedures shall be agreed with the customer and implemented via the defined continuous service improvement process.

2.3.3.6 Event Management

The goal of event management is to monitor the occurrence of all events in the area of responsibility of the Contractor (see the chapter on technical aspects).
Specificity), to sdi1 em normal a.blaufes and to auG. erordinary occurrences.
to identify, evaluate and, if necessary, initiate suitable measures and solutions in a structured manner.

Event management also involves automating processes to track and escalate unpredictable event circumstances.

The Implemerit ization of technical maG!flah meri takes place in Albstimmurig mit diem AG. Everit management is the[1] starting point for the implementation of numerous operational processes and activities, such as incident management and change management.

In addition to the monitoring, the event management also includes the development of the testing strategy (testing plan) 1Jnd the implementation of the monitoring tools. The Contractor shall use the tools specified by the Client for monitoring (see chapter Tools).

The Contractor shall have the following duties **as** part of the Event Ma2essʃʃ Pro2ess . a.:

- Procurement of relevant information on all interface processes, such as the 8.service transit ion process, which is required for holistic' monitoring.
  are necessary
- Definit ion and Imple mentat ion of m easurem ent point s wit h threshold values (Thresho lds) from t he coricep ts **for t he** applicatio n o f overvaluatio n
- Active identification of requirements and gaps (needs for adjustment) **for** Mon it oring tools at t he AG as well as proposals 21Jm Schliefsen

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- Integration des Produkts, deren zugehörigen Komponenten und Transaktionen in das Monitoring Tool des AGs, bei Dritten einsteuern oder selbst durchführen
- o Von Dritten durchgeführte Integrationen auf Richtigkeit prüfen und ggf. Mängel aufzeigen
  - Identifikation von Events sowie Eventtypen durch manuelles (Dashboards) und automatisiertes Monitoring
  - Bei Erzeugung eines Events, die Sicherstellung, dass alle erforderlichen Informationen zur Filterung, Klassifizierung (z. B. Information, Alarm, Ausnahme usw.) und Einleitung entsprechender Maßnahmen vorliegen (z. B. Fehlercodes, betroffene Komponenten, Schwere des Fehlers, mögliche Ursachen etc.)
  - Verknüpfung von Events zu den jeweiligen IT-Services, damit eine Prioritätenbewertung (d. h. Auswirkung und Dringlichkeit) erfolgen kann
  - Automatische Erzeugung von Incidents aus kritischen Schwellwertüberschreitungen, sofern dies die Event Management-Umgebung des AGs ermöglicht, andernfalls die manuelle Erstellung von Incidents
  - Erstellung und Pflege des Betriebshandbuches. Das Betriebshandbuch enthält eine exakte Beschreibung der Arbeitsabläufe, die bei Auftreten eines Events aus dem Monitoring durch die Betriebsüberwachung des AGs durchzuführen sind. Diese Arbeitsabläufe müssen in einem zumutbaren Verhältnis zu den typischen Arbeitsabläufen der Betriebsüberwachung des AGs stehen und bedürfen der Freigabe durch den AG
  - Events bearbeiten und gemäß Definition des AGs in Folgeprozesse (z. B. Incident, Problem, Change Management) einsteuern
- o Events erkennen
- o Events protokollieren
- o Events einstufen (mit Schwellwerten abgleichen)
- o Events gemäß Wertigkeiten an Schnittstellenprozesse weitermelden und Aktionen anstoßen
  - Prognoseerstellung aufgrund verfolgter Events (Alarm zu Fehler) und Ableiten von Maßnahmen sowie kontinuierliche Anpassung von Prozessparametern wie z. B. die Erweiterung der Schwellwerte (Tresholds) auf Basis neuer Erkenntnisse in Abstimmung mit dem AG (Life Cycle Management)
  - Erstellung von Prozessreports
- o Event Reporting an alle Eventtypen zur Schnittstelle Prozesse (u. a. Capacity Management, Configuration Management, Availability Management, Service Level Management)

Bereitstellen von offenen, dokumentierten und mit dem AG abgestimmten Schnittstellen, um Monitoring Lösungen in das Monitoring Tool des AGs zu integrieren
Sofern der AG ein neues ganzheitliches Monitoring Tool für seine Services einführt, die Unterstützung und Zusammenarbeit mit den Mitarbeitern des AGs und ggf. Dritten, um

to implement this gam:heitl I monitoring tool for the event monitoring of the services

Accurate measurement of performance against service levels. This may also include the measurement of the performance of other service providers or third parties if the Contractor's systems act as a key system to capture such data.

Provision of root cause analysis (RCA) and trend analysis in connection with events

Preparation of a first causal analysis in connection with events. which led2 to inc idents of the impact level and1 the following day and in coordination with the AG.

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The solution implementation for events that occur takes place in the respective interface process. sta tt

Value of events:

tlnfo rm at ion (INfO): The event does not require an immediate action and is not an exception. This type of event is used to check the status of a service, confirm the status of an activity, and generate statistics.

2. Alerting (WARN/A IERT): The event is generated when a service (application / utility) approaches an agreed threshold (KPI). The purpose of alerts is to notify the user in order to take the necessary measures to prevent the occurrence of an outage.

3 . Exception (ERROR}: The event is generated. that a service is currently operating 1.1nte rh!sb the normal thresholds (prede fined) This means that the

The service is affected and the service shows a failure, loss of performance or loss of functional-ty.

2.3.3.7 Iden tity and Access Management

The Id entit y and Acce.ss M anagemel71t (1AM) provides support for protecting the confidentiality Integ rity and availabilit y of asse t s by -ensuring that only authorized users can access or make changes to the respectivei assets.

The IAM process is responsible for the management and verification of user data in the connected car environment.

The Contractor follows the guidelines of the Ident it y and Aocess Managem ent of the A.G. and im plem ent s procedures and processes accordingly.

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Approval authority and responsibility **for** all data and system accesses remains with the AG. General approvals by the AG are excluded.

The Client shall inform the Contractor about the organizations and personnel that are to have access to the systems operated by the Contractor and about the degree/level of accessibility in terms of safety requirements.

If the Contractor has been instructed by the Client to perform services within the scope of access management, the 11 following activities shall be part of its duties:

- Implementation and management of measures to protect against unauthorized access, destruction, loss or alteration of the Client's data. The protection measures implemented by the Contractor shall be approved by the Client in advance and shall at least correspond to those established by the Client immediately prior to the start date.
- Implementation of a new or the use of an existing information sic herity approach at the AG according to a resource-ownership concept.

  (Resource Owners.hip Co11oept) for secure11 Ident ifi cation of occupiers and for p

  eriodic: erpruf0 un authorized train r1ff e
- Conduct research on system security issues, taking into account the1 data protection requirements. Grnndlagen, e. g. d urc h

  Evaluations rela g llch eri ol,gt er Zlllgrlffe on the Servfces
- Management and administration of access to the three systems operated by the Contractor.
  Systems, software and specifi1 ed oats of the AG. The release of

  Access by the Contractor is generally granted only after approval by the Client.
- Assignment of restricted administrative rights regarding the systems of the Services to the IT Security / IT Security department of the A:G, including a

  u n r e s t r i c t e d   access to audit trails and logs.
- Compliance with all instructions and procedures of the AG 1n connection with such trains in accordance with the provisions of the AG.
- Imp lem entation and the sust ainabilit y of reg plan security rules 11.md Access ights
- Compliance with all guidelines and regulations of the AG on data protection and security. security provisions for oats, incisive security oat en- and

  Record management. Electronic records and data archiving.
- Conformity to requirements from legal. bell ordinarily or
  Regulatory and supervisory guidelines and pronouncements, and

  to the S—tch erh. e1tsgrund ats of the AG

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- Monitoring the users of the systems and services for authorized access in compliance with data protection and internal security guidelines, as well as monitoring access violations and notifying the Client in an appropriate and timely manner.
  Access violations have occurred
- Preparation and submission of monthly reports showing to the Client such user accounts (accounts) which should be deleted from the Contractor's system.
- Provision of reports on train tests and train violations as well as the storage and handover of the test documentation to the AG in accordance with the specifications.
- Coordination with the IT security department of the AG, s. the Einrictit ung of procedures. Forms and approval levels for the ZL.1\1\i'eisung, RiJcksetzung
  and blocking or deleting user IDs and passwords used to access data or systems by authorized users, including:
  - oSupport   in the implementation of the entire associated administration of user IDs and passwords at the request of the client, e.g. by issuing of user IDs, accesses and authorizations that have been applied for and set up
  - o Assuming all responsibility of user IDs and passwords for the systems used by the Contractor and others.
  - o Support for the maintenance and upkeep of a secure online database for all access requirements, access rights and authorizations, at least by documenting all access requirements and setting up access authorizations in the online database.
- CoordinaUon of system p.asswor t- ande nm gen and (fn dependence on the The Customer's consent) the D1.1rchfuhrung de r Ande «urgen sowie das Te-st en der PasS\Norter
- Integration of the process of managing the logical security of the AN into other service management processes, especially incident management.
  Change Management. Security Management. Requ est Fulfillm ent and IT Se rvice Cont inu ity M anagement.

▦ ⹅⹈ In the IAM, *the* following operational tasks have priority, based on the service request
Tickets:

- Acceptance of user rsant rsgen uber die vom A.G vorgegebenen Tools.

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- Validation of the user requests according to the requirements of the client.
- Creation/authorization of new users
- Change of existing permissions/users
- l6sch1Jng of permissions/ usem
- Password reset

2.3.3.8 Incident Management

An incident is a disruption of the service, e.g. a technical error, a quality reduction' or an unplanned interruption. A failure or malfunction of a configuration item (CI) without previous effects on the IT service is also an incident, e.g., the failure of a server in a redundant setup.
Incident Management v-manages all incidents ul:Jer their entire life cycle lus gemsg the AG's specifications.

The primary goal of incident management is to restore the service to full functionality as quickly as possible and within the agreed time. Inci dent management refers to all tasks that enable the user to receive the agreed service again and to continue with his business process.

The Incident Management is used to

- to rectify the fault as quickly as possible,
- to ensure℩ the best possible use of resources for troubleshooting,
- to create and maintain meaningful documentation on the incidents that have occurred,
- Develop and implement a consistent approach to all reported incidents,
- Actively analvs.

The main tasks of the Incident Management for the Contractor are:

- Identify, localize and classify the disturbance (veri fi cation of the effect).
- Cooirdination and resolution of all Incident s related to the
  The Contractor's responsibility until the full functional scope of a service is restored, whereby the necessary coordination with other support units is carried out by the Contractor itself.
- In particular, the management of the critical (Frio and 12) inci dents in Zusammenar‖be it with all other service leister urid of the AG, in order to achieve a

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- to ensure thequickest possible resolution of these incidents, at
  1..1ng of   the AG's assessment criteria for the classification of
  Incidents as crltl incidents
- Independent handling of incidents assigned in the AG's system,including analysis
  and technical testing of all tic et contents, including the
  logfiles u11d configurations
- Receipt and processing of In cident ticket s Ober the AG's
  ITSM tools within the defined1 reaction and response t i m e s .
- l o s s i o n s
  Investigate in the given tool of the PLC whether sine solution or sin
- Workaround for the fault bernlt s present
  Municipal cat ron within the framework of therck   etbearbert ungmrt   de n competent
- Departml ent s and weir ter support offices
  Developing and providing workarounds and verifying the effectiveness of
  workarounds 1.md error corrections, if necessary.
- Optimizing the duration of the solution from the time of the opening of a Inci'dent to
  the final resolution in cooperation with all parties involved in the implementation.
  participating group111
- In case of Incfd ent s ofDr1U   en , w hich t1 anger the servfce,1 the COntractor is
  responsible for coordinating and assisting until the stop is reached.
- can be remedied
  Support of all interface partners in the analysis and processing of
- Incidents whose cause lies within the responsibility of the Contractor shall be conrite
  lnirtii ioned. K-oo rdinat ion as well as pre 1.md post re iitun g (documentat ion) of
- erfo rlicl1e11 M eetings an d Tasks Fmce appointments to ope rate the Storung
  Coordinat ion o f t he cor rect ions t hat need t o be made an d t he creation o f
  Change Re quest s
- Documentation and provision of knowledge records in the AG's ITSM tool and
  transferl of knowledge to upstream support units.
- perform sowfe input to knowledge management llef srn
  Durchfuhr1.1ng 1.1nd documentation of all necessary analyses to the ! In cid ents
- rm pre-yellowedToo l of the AG
  Erke11n en and dokurnenting of reappearing l11clde 11ts and
  Introduction to Problem Management (Problem Candidate)
  Cutting processes Ansto en such as d.as S ecurity Management Cyber
  Securit y Management et c.

The result is t he restoration of t he t ool function.

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In the event of serious faults (Prio 1 and Prio 2) or faults whose cause cannot be
determined properly,the Contractor's CIM must be involved.

If critical applications fail, a Major Incident can be declared centrally at the AG in order to set the priority or priority priority **with the** highest urgency and **1** priority in2 a maturing process, the M ajo r Incident Process.
Management1Jnt e rstut ion.

The incidents are prioritized according to the client's specifications. One of seven priorities (severities) is selected in an incident ticket. The following figure shows the current classification of the incidents

Abblldung Priorit7 y model

The Contractor shall, at the request of the Client, prepare reports on the activities carried out in the reporting period in this process.

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In the event of disruptions (even from third parties) affecting the Contractor's sphere of responsibility, the Contractor shall be responsible for promoting the dispute resolution and providing support until the disruptions have been remedied.

The Contractor shall play a driving role in this process and shall actively obtain information from other suppliers or third parties on the current status of the development.
As soon as a ticket has been en5ff netted and processed or routed by the CO
(An firnge11 and Stornngen); this must at any time aufachfragen to   the ticket status a competent Auskun tt gelben k611nen.

The following is o n e   of the steps to be taken:

Active traclking of all data recorded or processed by the Contractor
and transferred to ocaronpanis
Ticket s forwarded to support units

If the current work status is not documented in the ticket, the Contractor shall actively request information and documentation in the ticket from the respective support unit or third party in order to fulfill its responsibility to provide information to the Client.

If necessary, the Contractor will also contact the involved support staff or other defined contact persons by telephone and/or in person in order to obtain background information on faults.

2.3.3.8.1.2 Major Incident Management

Major incidents cause serious disruptions to business activities and must be resolved with the highest priority.
The overall coordination of a major incident is carried out by the AG's Major Incident Manager (MIM), who is supported by the AN's Crit ical Incident Manager (CIM). The MIM assembles special expert groups in the "Task Force Moaus". The CIM is responsible for invo lving the natural employees from the Contractor's DevOps teams.

The Contractor shall support the Client through the entire service portfolio in accordance with the Client's Major Incident Process as amended from time to time.

A Major Incident means the performance of Incident Management activities with the highest priority.

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The main tasks of the Major Incident Management for the CO are:

Nach Erkennen der Störung oder Einbindung in den Major Incident-Prozess, lokalisieren und klassifizieren (Verifizieren der Auswirkung)

- Identifikation von Diensten und Kunden, welche von der Massenstörung betroffen sind
- Ermittlung inwieweit die Massenstörung weiteren Schaden innerhalb der Services verursachen kann (z. B. Datenzerstörung, Verfügbarkeit von Netzwerk und Anwendungen) sowie das unverzügliche Einleiten von geeigneten Maßnahmen, um dies zu verhindern

Untersuchen, ob es bereits eine Lösung oder einen Workaround für die Störung gibt

- Unterstützung des Major Incident Managers durch den Critical Incident Manager über das gesamte Serviceportfolio und bis zur Lösung des Major Incidents entsprechend des Major Incident Prozesses des AGs

Untersuchungen und diagnostische Maßnahmen zur Identifizierung von Workarounds

Dokumentation der zur Lösung des Incidents unternommenen Schritte, um einen normalen operationalen Servicebetrieb gemäß Service Levels wiederherzustellen

- Lösungsfindung und Fehlerbehebung in Abstimmung mit allen Beteiligten, Ursachenanalyse, Identifizierung und Umsetzung von Präventivmaßnahmen

Ableitung eines Problem Tickets mit allen Einzelheiten des Incidents und Schritten zur Behebung für die spätere statistische Analyse und als Grundlage für den Problem Management Prozess

- Regelmäßige Kommunikation von Informationen an das Management sowie andere Supportinstanzen über den Stand der Fehlerbehebung

Kontinuierliche Erkennung und Verbesserung des Prozesses

AN implementiert und dokumentiert einen Prozess für die Eskalation von solchen Incidents an den AG und an das Management des ANs, die nicht innerhalb erforderlicher Fristen bezugnehmend auf Priority Levels oder anderer Prioritäten gelöst wurden

2.3.3.9 Irrtegratfansservice

The goal of the integration service is the eff ective delivery of end-to-end services through a smooth and eff icient cooperation with all other int emenal and extemenal parties involved in the support (e.g. operating, car IT servioe desk. Support funct ions of interface syst em s, technical platfo rm support, etc.).

The Contractor is aware of the importance of the otherservice providers and the Client and111 will cooperate with them profe ssionally in order to achieve a consistenly111 high end-to-end service quality.

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The Contractor shall integrate itself into the processes, tools and committees of the Client in all processes listed in the performance overview.

The CO's duties include:

Abstimmung von Schnittstellen der Zusammenarbeit mit den in der Supportkette beteiligten Parteien, soweit diese nicht bereits vorgegeben sind. Diese Schnittstellen sind zu dokumentieren und mit dem AG abzustimmen. Die Dokumentation kann z. B. im Betriebshandbuch (BHB), Servicehandbuch (SHB) und Supportkonzept der Anwendung erfolgen

Integration in die Prozessabläufe, Tools und Gremien des AGs für alle Prozesse dieser Leistungsbeschreibung. Die Abstimmung erfolgt mit dem Service Manager und ggf. weiteren Prozess Managern des AGs

Beratung und Hilfestellung für Beteiligte im End-to-End Supportprozess

Besetzung der für die IT Service Management (ITSM)-Prozesse notwendigen Funktionen, Rollen und Gremien in Abstimmung mit dem AG

Ausrichtung der IT Service Management-Prozesse auf den ITIL Standard auf der jeweils durch den AG freigegebenen Version. Zum Übergabestichtag ist dies die Version ITIL v3

In Bereichen, in denen der AG über ein Standardtool verfügt, wird der AN dieses nutzen (z. B. in den Bereichen Change, Incident, Problem, und Knowledge Management), um eine transparente und durchgängige End-to-End Serviceerbringung über alle Beteiligten zu fördern

Testen der für die Erbringung des Services zu nutzenden Tools des AGs, bevor neue Tool-Releases ausgerollt werden

Andere einzusetzende Tools müssen mit dem AG vor dem Einsatz abgestimmt und durch den AG freigegeben werden (s. Kapitel Tools)

Der AN wird mit den sonstigen Dienstleistern und dem AG die kontinuierliche Verbesserung der Services und die Zusammenarbeit zwischen allen Beteiligten vorantreiben

2.3.3.10 IT Service Continuity Management

IT Service Cont inuity Management (IT SCM) supports the business continuity process by ensuring that the required technical and performance-related IT operational elements can be restored within the required and agreed timeframes. The Contractor shall provide IT Service Continuity Management.

The Contractor shall prepare an IT Disaster Recovery Plan in accordance with Attachment O'51, showing the specific procedures that the Contractor shall follow in its area of responsibility.

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to enable the AG to provide IT services (e.g. loss of buildings from which the Contractor's employees provide services to the AG).

The necessary prerequisites are to be created to ensure that service can be restored within the required time in exceptional situations. Measures should be taken to avoid risks and minimize the effects of risks. Possible exceptional situations include, for example:

- Ensuring that the services rendered by the Contractor in the event of a Disasters at sites where services are required (e.g.8, building fire, pandemic, etc.) do not result in a significant limitation.
- Ensuring that services are restored at predefined times in the event of a disaster (e.g., a computer center fails).

This ensures that the Contractor can basically provide the minimum requirements agreed in the service levels. This is achieved by a
Ris koredll zation of traps with cat ast rophal .Aus mal\s to an acceptab le INlevel and through proper recovery planning for service.

In addition, the Contractor shall develop a Disast er Recovery Plan which shall include the specific procedures that the Contractor must ensure as part of the provision of the Services to enable the recovery and restoration of the AG IT Services (e.g. restoration of Services or restoration of the availability of applications). Such 'a disaster recovery plan shall comply with the structure and duration as specified in Appendix N.

The Contractor shall prepare and maintain a specific restart plan for the services for which it is responsible, which shall include, but not be limited to, the following aspects

- Dependencies between the Se rvice s urid other Servi,oes (Fig ild urig der Syst emket te - > Applik:ation-Dat enbsnk -Middleware-Inf rastruk tm). f(I for which the AN is nic ht responsib le, zzur Fes tl ef t h e series f o r t h e restart o f the Se rvices
- Service-specific aspects that must be taken into account in a restart situation
- Technic al ud organizatio nal sctmitt es to disast er reco ver v plrni u n of t he AG.

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The ITSCM is essentially intended to provide;

- The availability of IT services for time-sensitive business processes in emergency situations. Crisis sit uat ion
- The controlled IT -se it ure continuation of the gesclhaft stati
- The knowledge urid calculability of the risks
- The verm eid urig from scha den to tota l loss t
- Compliance w ith legal and regulat ory requirem ents on t he holistic risk m anagem ent system
- The operation and obe rvachurig eiries fort laurfendern I T SCM -Pro:zes

The AG has the Ve rarit wort urig for his Business Cont inu it y-Riane urid his Business Coritinuity Management. The Contractor's rian ds for the N and O systems shall be reviewed by the Contractor in each case and shall be refr eed prior to implementation.

To the aurfgab en of the AN gehorsn:

- 1111 Cooperation with the AG in the interest of ensuring a coordinated dovetailing of the disaster recovery plan with the IT service.
  Cont inll ity Plan as well as act ualization and m aintenance, m anagem ent, test ing and lmpl@m enti ering any part of t he Dis.a st er Re covery Plane and
  of related ac tivitie s, which are connected with the cont 1nui rit stella tion of t h e eral b ervices
- Ensurin g efne r corrs kt en interdependency and coupling of the IT Serv ice Cont inl. llt y Plan and the Disast er Reco very Plane d amrt, renew g anzhert lfche Vorgehenswe1se is gewahr t
- Business and service continuity management for the services provided. Services and Business Service s
  - oThe implementation of the necessary emergency precautions for all of the Contractor's sites by planning and implementing preventive, restart and damage minimization measures in the event of a catastrophe (e.g. for personnel, connections, buildings).
  - o Emergency preparedness must ensure that daiss:
    - The catalytic converter is not recognizable by the AG for a longer period of time than the hours24 on the services.
    - Min destens d fe Bearbert u ng and Adherence t o losun g timelines alier impa ct "1 and 2s t orings according t o agreed service level targets
  - o Emergency provision for all prod1.1 ct ivelnst ances of applicat ions. Here gehcirt u. a. :
    - At 8edarf. the introduction van backlog -llt ems for the cat ast rophens ich structure of the applicatio11

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- Coordinat ion and comple tion of Disast er Recovery Plans {DRP) for applicat ions
- Beruck:sic ht ig igun g of crit ical dependency s to other applicat ions.
- Consideration of necessary measures to ensure the restart of applications and' their processing procedures for service providers after a disaster.
- Whether or not it has full responsibility for the performance of all Disaster Recovery Services (DR) procedures within its organization.
  Responsibilit y, as soon as a disast er event has been ident ified and declared as a disast er case by the AG.
  The evaluation' of the effectiveness of emergency preparedness by organizing, conducting and documenting a semi-annual catastrophic event based on the prepared emergency preparedness.

The Contractor shall submit a preliminary plan for setting up the IT Service Cont inuit y Process as part of the bid.

The Contractor must present the planned implementation of the IT Service Cont inuit y Process to the Client within the fade : r. l.lil h ase sov!ꞏiethe inot\! vendendig11 KPIs for coordination. Nacll approval by the CL, the process is documented and et ablierl by the AN.

Within the first six months of the regular contract period, the Contractor, in cooperation with the Client, shall prepare disaster scenarios and recovery plans (Appendix N) for the systems in its area of responsibility. The
Reconstruc1Jn g plans are updat ed and check ed cont iriuously but spat ually zιJ each msjor relesse.

In principle, the framework conditions of the IIT emergency concept of the AG are to be taken into account and included.

20 Disast er Recovery plein

Alie Disaster Recovery Plaine and its modif icat ions mu st be sch rift ly released by t he AG.

The AN's gifts include:
- Efficient management and maintenance of the AG's IT disaster recovery plans ; as they exist on the initial date.
- Support for the implementation of a gap analysis as a component of the IT control strategy, which is to be implemented from the start date.
  existing Disaster Re oov-erv Plane of the AG , d abei sirid the gaps.

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- .to show, justify and make a recommendation to remedy them.

  to be submitted to the AG

  Maintenance and continual updating of the Client's disaster recovery plans, also in the context of the system used, throughout the entire period of the contract.

- new ressource units, pro2ce ses, business func tions, locations and Pr'iorit at es arise

  Provision of all necessary cooperatons and tools to the AG for the integration of the company.

  t he Disast er Recovery Plane of t he ANs Tri I T Service Cont inuit y Pl.§n e otherir

- Servfces of the AN. that thus the mapping of the entire system chain (Appli cat ion -Middlew are infr astructure) can be ensured doc:ument ation of the procedures and proce du rs of the CO. both to the

  Data backups as well as for the recovery of the data

- of IT Disast er Reoo very Servioes an d t o Unt r ust Ctrtzu nig t he Business Cont inuity

- Documentation of the pr ocesses established by the AG with regard to backups., Disastei Rec overy an d IT Service Con im.ilt y

- Cooperation w ith t he AG in integrating safety measures f o r the normal operat fonal 8etrieb in the I -disaster Reco very Plane

  For usin g1 in cat astroph y, create and present a list e and maintain it for definit ion of closing persone11 and

- Notification procedures, both for the client, the contractor and other service providers.

- Observance of the definition and proce dure n dss AGs for declaring a disaster.

- Provision of the Contractor s crfrt:erfs an d procedures to the Client, d le for the Dec laration of a cata st rophe in uences of the AN drove

  Providing a single point of contact (Sil "lg le Poinrt of Cont act - SPOC) and its representative, both for the D1saster Reco very Plane and related communica "ons and other activities that are the responsibility of the CO.

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- Determination of common test cells for the AG to ensure the functionality of the □rs. aster recovery plflne that the systems are under the responsibility of the CO and The dependent systems (operation of the system chain) of the AG are available again after a disaster within a defined time frame.
- Planning and execution of tests to be carried out at least annually. The total number of elements of the disaster recovery plan, in relation to the business-critical services and systems. If test sites of the AG have been defined in the disaster recovery plans, this shall be done in dependence on the availability of these test sites and in cooperation with the AG and its representatives, involving possible disaster recovery service providers or other service providers who provide services for the AG.
- The scheduling of test dates in consultation with the AG so that the AG and his representatives have the opportunity to observe and participate in the tests. participate. Support required for coordination and management of other
- The services provided by the AG during the test s in accordance with the Disaster recovery plans can be put in place Continuation of an operational business and the management of servlces
- during the periodic tests of the ors.aster Recovery Plane Provision of a report on the test results to the AG within the period of 30
- (dreif3.fg) T agen after each test. Act ua lizatio n o f Disaster Recovery Plane. sof ern Ver.a11dernngen in case of renewed
- Tests have been performed that have led to the defined results Support of the Third Party Vendors and the Application Support in the
- Planning and execution of the Disaster Reco very Test s of the applications eowie in the Dfsaster Reoov ery case itself

2.3.3.11 Knowledge Management

The primary goal of knowledge management is to make knowledge efficiently available and to keep it up-to-date. This avoids the need for costly reacquisition of knowledge once it has been acquired.

It enables6 the quality of decision-making to be improved by providing reliable and secure information.

The Know1edge Management process ensures the capture of knowledge data across the service management lifecycle and makes it available as needed.

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The Contractor makes this knowledge11 available in a common knowledge base of the Client. The technical format is defined by the customer in the fade-in phase. The AG is here often for suggestions of the ANs.

The Know ledge M anagement is responsible for.

To document knowledge 111(e.g. in the form of knowledge111 entries) To make knowledge available to everyone.

Checking knowledge for validity Always keeping knowledge up to date

Actively promote the transfer of knowledge, e.g. to8. upstream support units.

The essential tasks11 of knowledge management for the contractor are:

- In agreement and according to the requirements of the AG the formullenm g 1..md the use of efner Knowledge Managemerit -Strat egie, um rele vante Erkenntri isse bzi.rv. relevant Wissen sowie Daten und Informationen, die das Wrssen to support. to id entify.
- Establishment, documentation and use of a structured approach to knowledge management for the identification and documentation of relevant knowledge.
- Maintenance of docu ment ations (chap1t s l docume11t ations) over the entire l ebenszyklus der Anwendung, dfe den Anwen dung ssu pp ort Serv fc e forder , u.a.
  - o Service Manual (SHB}
  - o Operat ing Manual (8H8)
  - o Best Practices
  - o Methods for the L osolution of In ciden ts
  - o Known Errors
  - o Instructions for action for upstream support units, e.g., service desk
  - o Art icle for self help
  - o Frequently Asked Questions (FAQs)
  - o Descriptions for the implementation of regular spring-returns Activities wre e_ B_ Execution of Standard Changes, Service Requests, applicatio n m onrrtor in g
- Knowledge docum entation and speci cation in WG tools and repositories, z. E.g. ITSM tool, Conf11uence
- Identifying knowledge gaps and setting up   countermeasures, e.g. through the necessary transfer of knowledge between the employees and / or the company.

Wissensdokumentation

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- Eiflsatz ei11e .s structured , comprehensible knowledgest rsnsf ers when taking over new or changed applications or application components e.,:
  - Knowledge Akquis iti on (structured recording and acquisition of available11 documented know.ledge .as well as lriterv iews of the knowledge bearers).
  - Checking the applicat ionsand operat ing docum ent at ion for sufficient act uality Suitability and usability f or applicat ion support
  - Worksh adow i11g urid reverse workshadowing (working together with the previously i,gen knowledge carriers to close prei knowledge gaps).
- PrOfBn, maintain, act ua lize, and expand the knowledge in rsge in the AG's predefinedi tool and other relevant documentation.

The employer may use the knowledge without restriction and for an indefinite period of time. l aufzeit nin' aus. nutzen. After t he end of t he contract , t he document at ion goes iri t he possession of t he AG .
--ber.

The Contractor shall explain in the offer its concept for the construction and management of Wisseri.

2.3.3.12 Probl,em Management

The purpose and goal of problem m anagem ent is to sustainably eliminate faults and their consequences and to prevent faults and the occurrence of faults. To achieve this goal, problem management must identify the cause of the existing or potential problem and then initiate actions to improve the situation. This includes making applications more stable and increasing the quality of service by analyzing and elminirngold problems.
Error causes {..root cause analysis") for incidents.

The problem management process has a reactive and a proactive aspect. The reactive aspect concerns the resolution of problems resulting from one or more incidents (see the chapter on Incident and Event Management). A special focus will be placed on proactive problem management, which already deals with the identification and resolution of problems and known errors before an incident can occur for the first time.

The main goals of problem management si11d:
- Proactively detect and correct known errors so that disruptions are minimized.
- To eliminate the causes of problems in the long term

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- Ensure that problem-solving resources are deployed in a manner that meets the priorities based on business 11 requirements.
- Increase the productivity of support staff, e.g., by avoiding the need for of pot ential11 incidents or through proac tive problem m anagem ent.
- The provision fof necessary and useful Inform ations for the management of the

This results in the following tasks for the contractor in the context of problem management:

- Documentation of all detected problems in the ITSM tool of the customer and further processing in the problem management.
- Priorlization , t h e t erm fnub toring and coordination of the whole process. life cycle of the problems
- Analysis and elimination of causes of recurring incidents . mn de m Goal To avoid the recurrence of incidents with the same cause.
- Execution and documentation of main causal11analyses C,Ro ot Cause Analyses'? of the problem in the given tool of the WG
- Ident ification and quali1fi cation of so ftware detec tors, e.g. by testing the Functions and performance with regard to application specif icat ion and Customers expect u rig
- Implementation or conversion of Mars measures for the reporting of the Re occurrence of problem s. This includes the introduction of B sc Idog entries or Re q uests for Change (RFCs, CR), e.g. to correct errors or deficiencies in the IT infrastructure or in the application design.
- Escalation, if corrective measures11 are not or not correctly implied.
- Updating of the Service Knowledge Management System and e,11t s prehensive support docu mentation with all I11for mation Qber workarounds for known e problems to support incident management and upstream support levels.
- Coordinat ion and sust ainabilit y of change , if required for t he eliminat ion of soft wareande rings are required for the causes of error
- Take preventive measures, such as regular evaluation of incident s for disruption patterns and setting fof problem s for Causesa 11alysis and elimination
- Identify errors and trends and take appropriate action.

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- If necessary, Work:1a   d) implementi er to the
  Print the time period until a sustainable Lostmg is implemented and document it in the AG's Known Error Database.
- Eliminate causes: Documenting and evaluating errors, solving problems, and Processing abschlier3.en
- Problems from third parties
  - In the case of problems of third parties, which affect the service, the Contractor is responsible to act in a cooperative and supportive way until the problem is solved.
    Problem can be fixed
  - Support of all interface partners in the analysis and processing of problems whose causes lie in the area of responsibility of the Contractor.
    onnt e

In addition, the CO is responsible for managing, coordinating, and monitoring the resolution of existing problem tickets. The CO plans and conducts regular (weekly) meetings with involved parties to advance the resolution of issues.

If necessary, the Contractor will also contact the involved support staff or other defined contact partners by telephone and/or in person in order to obtain background information on cancellations.

2_3.3:12.1 Concem Problem Management

Kozem Problem Management (KPM) enables users to identify problems in a way that is specific to their business area and in accordance with defined rules, to record and process them, and to track the progress of problem solving (including analysis, implementation and effects). In this way, all the departments that use the system access the same data in a uniform system of consolidated processes and workflows.

The concem problern m anagem ent process comprises the key steps listed below:

- Problem description
- Problem analySIS
- Mar3.tookdefinnion
- Mar3.took insert
- Efficacy snproof
- Problem closure

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The KPM1. Group system supports the defined fault clearance process (FAP) in all areas of the Group.

The CO's111 duties include, but are not limited to, the following in the process:

- Carrying out the activities of problem management
- Erit gegennshme and processing of KPM tick ets
- Herbe ifuhren from solutions
- Document ation in ticket

2.3.3.13 Request Futtmment

Request fulfillment has the task of registerngall service requests and processing them according to their urgency. Service requests are all requests made by authorized users, including requests for information, advice, a standard change or an access request.

Note: The greatest synergy effects in the implementation of request fulfillment arise in connection!! with a service catalog. It allows recurring requests to be processed in a standardized manner and with as little effort as possible111. A key goal is to achieve a high level of user satisfaction when processing service requests.

The goal of Request Fulfillment is to process all requests from users related to the service in question. The process is responsible for the acceptance, the cat egorization and the handling of the request. The Fro2ess also provides an interface to Incident M anagement, Change Management and to all other
, ot encial processes.

The Req est Fulfillme11t b contains t he following msB,took:

- Acceptance of inquiries, B2.. by VW Konzemmarken
- Categorization of the requests, also on the basis of defined complexity
- Processing of requests anharid the given SLAs
- Documentation before inquiries and answers
- Implementing the requests riach the AG's support process

The main tasks of the Reques t Fulf illm ent mr de11 1 ind dabe'i:

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- Receipt and processing of the Service Req1.1ests Whether it meets the requirements set by the AG
  ITSM tools within the defined response and support processes.
  loosening tent en
- Implementation of the defined service requests in a   service catalog designed by the AG.
- Coordination with the AG for the implementation of unclear or undefined service requirements.
- Submission of proposals to the AG for useful extensions to the service catalog for previously undefined, but repeatedly received service requests.
- Monitoring and coordination of the implementation of service requirements.
- Opt imizing t he duration of a service request 1n cooperation wit h all g roup s involved in the implementation of the project
- Contribute suggestions to the Pmd11.Jct backlog for reporting frequent service requests, e.g. by developing missing application functionality, self-serve functions or automations.
- Empowerment of upstream support units such as the 8.CAR-IT service Desk. for the independent processing of defined service requests. This includes, for example, password resets or the handling of authorization requests.
- Documentation and provision of knowledge records in the client's ITSM tool and someti mes transfer of knowledge to outsourced support units.
  and input to Knowledge Management ran em

All tasks that cannot be handled by one of the other processes are handled in the request fulfillment process.

Service Request in the context of this service are tieispielsvveise:

- Exports database statement s
- Bernit st elle11 ofL   ogfiles
- IAM request11
- Provide Ad Hoc Repots

The process is based s1Jf e in em Service Re qu est cat.slog. This is presented and handed over to the Contractor during the fade-in phase. The Contractor shall further elaborate and continuously adapt the service request catalog.

2.3.3.14 Security management

The aim of security management is to ensure that all customers, l11to rm ations, oates and IT se rvioes of a. s company are protected at all times with regard to their reliability integration

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The protection goals are determined using the business criticality rating (BKE) or the "Quick C hec k". These protection goals are determined using the Business Crit icality Score(BKE) or the Quick C hec ks.

Security Management serves to:

- To avoid safety violations,
- to respond' to safety violations in a planned and timely1 manner.
- The following information is provided for the purpose of this report.
- To monitor the Group's sustainability reports and, if necessary, to initiate and implement measures to close security gaps.
- Create and implement a safety plan; and
- To create a painting frame list in order to provide the service as quickly as possible or to avoid discrepancies.

The Contractor is obliged to comply with all applicable safety requirements. This includes compliance with the safety regulations (Security Pol'ici es) of the Client and the Contractor as well as legal and regulatory' requirements.

The Contractor's duties shall include, in particular:

- Sl echerst ellun g of high IT security standards in the complete sn IT product life cycle.
- Determination and implementation of organizational l.lnd technical mar3.kets for the srctie r of the Contractor's IT organization (IT se vices, IT Infr astn.1kb ,; r, data) in terms of Verf ugoo rke it. Confidentiality and Int egrit at ion
- Regular 0verQfifi cation of the effi cacy of the IT security frameworks and facilities set up††† by the Contractor.
- Detection and defense against breaches of IT security in connection with the supported services
- Failure to inform the AG properly when security risks or violations are identified, with notification and escalation following gemafs.
  The guidelines and procedures of the AG for security and data protection.
- Sensibilit1si en..mg and sc lhu lung of the CO's emplo yees in terms of derb ale and procedures lm securit y management.
- Cent ral Coordinat ion and Implementat ion of IT Securit y Act ivit y in Accordance wit h UNECE
  Regulations
- Support for the development and use of an action plan and escalation procedure for any potential or actual threats.
  S-lC 11here1"tsverst ö Ge d bye. g. cons tru kfrve Vörs-c-h 1aQe u1dB1.els. p1 el e sowle d"l8

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Unterr Ic ht un,g of the AG uber alls pot s nzJ,ellen oder tatsachlichen
Security viola3on of the act Ion splan

- Support in   The support of security audits and the implementation of corrective measures to prevent and reduce the occurrence of security breaches. This also includes the support of incident investigations, which can provide information about correct security malfunctions. The support consists, for example, in the Participation in workshops, adaptation of operational procedures111 and participation in the analysis of servo systems.   fts related to the servtoos.
- Respond to all inquiries from security audits conducted by the AG and/or its management or regulatory bodies or the AG.
  On slc ht samt ern be put
- Elnhalt ung und Umsetzung aller Regelu119endes AGs sowre gesetzliche Anforderungen
- Proactively scan all deployed artifacts for vulnerabilities and implement appropriate 11countermeasures in response to threat scenarios.

"Cooperative work with the AG to plan changes for processes, procedures and systems in the area of security, so that technological or requirement-related developments can be incorporated.

- Support and adherence to the AG's security sfche   rh eits pro cess of the AG:

FigHdung 8 Security Cycle

For potential worldwide systems that are not covered by the Group IT Security Management, the Contractor must follow the manufacturer's instructions and, if necessary, take measures9 to ensure the security rights of the Contractor.   AGs1 enl ert en
The following table shows the different types of

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2.3.3.15 Service TI "ansition

The Serv ice T ransirtion process has the goal. new IT applicatio ns, releases or existing services quality-assured Ulld performant in dell operation and support (Ops Se rvices). Thereby eri olgt relative to t he fu c 17tio1 nalm1 and nic - -

The process ensures that all qualitative prerequisites for productive operation and support have been met. The process ensures that all qualitative prerequisites for productive operaon and support have been met.

The service trallsiUon is carried out using the procedure model of the IT product development process (IT-PIEP), which is to be applied to all11 projects involving an IT product. is to be applied.

T he task s Ulld goals of t he Service Transitio n silld t he:

- Defill ition Design and furtherll tw icklull g of A1applications with focus ukt on the Service Re adiness Index (SRI).
- Redaction of obsolete documents before, during and after service transition
- 0 The transition of an application from project to operation.

T h e essential aurfgab en of serviceransit lori fu deri AN are included:

- Slc produc t ion of t he whole t heft Ifchen   Execu tion of efner service tran slt ion under 8eru cess1.1ng   po t ence   facnIrche r and t echnical risKs
- Ensuring compliance with the AG's regulations and rules, in particular with regard to the AG service transition process, including the following
  Ill t eg rat ioll of the process in further AG Service Management Pro cesses
- Ellt w ell developm ent of a transitioll plan, t hat mr provides t he funct ion and act
  ivit y of a release
  into t he st agin g environm ent s as part11 of the
  The risk management system describes the risk management of the system and includes a risk management system.
  Perf ormancetest) benJcked
- IdenrUfizlerug11 and Bessltigu ng of deviations of the Service Transit fon Plan fn k l. unzOll comm unica tron to the AG
- Regular pl mm un g on planned releases with the AG
- Perform ance of act ivit y and m eet ing s within t he scope of Serv1oe
  Tra nsit ioll , which include fo lding:
  o Integrating the application into existing systems and doing things like monitoring (e.g., concept and implementation of E11d-to-End monitoring).

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- oInt egrat ion of t he new applicat ion into t he existing support str uct ures (e. g. B. Supportvert rage, SLAs)
- Ensuring support for new content and updating relevant action items in the AG's ITSM tool.
- oRecording nsuer services or functions fn the operating lfche Commiuni catron con cep t and alerting for planned and unplanned event s
- oTesting of the operational support and documentation of the success.
  - o Integration of the application in the service structures of the ITSM tools of the
- AGs. gg f. Expansion of service st ructu res
  - o Extending all operational re port s by new syst ems and/ or funct ionalit ions
  - oExpand .mg the operational syst em management to include new syst ems and/or funcUonalitie s
  - *oSupport* and provide input from training concepts and training materials **for** new systems and/or functions.
  - o Support and delivery of inpu t fur 09t enmigrat ion concept s of new syst ems 1.md/or funct ional itat es.
  - o Creation and quality assurance of application package documentation (installation guide, admin manual, error manual, user guide, lease notes).
  - o Creation and delivery of solution concepts and architecture documents for new systems and/or func tionalities
  - o Tsllnahme an Servlce Transft Ton Workshops und Sessions zum Know-how Transfer 1m Rahmen de Service Transition neuer Systeme und/oder Funkt1on al1t at en
  - o Create and deliver te:st concepts {Furnct ion:stest. Load and performance tests, penetration tests, non-functional tests) of new systems 1.md/or func:tionalities.

Coordination of adoption of the change to the instances answered by the Contractor as well as any necessary transfer of know-how.

Checking the documentation ziLi the components for actua lity and completeness
Implementation and planning of measures for communica.atlon ,.md
The Contractor, the other service providers appointed by the Client and third
and third
parties affected by the transit ion.
Documentation of the progress of the oiling process by means of the current version of the service reliability checklist (currently the modular master list).
Provide an estimate of whether and how the release of the component to be released will affect'1 the s@ ,a ..nde .1w d1

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- Requirement of l111fo rm ations.au exchange mlt and between the AG, de n further111 service providers, in order to improve an end -18 end consideration in the frame of111 the transition.
- Preparation of a final18 en d-reporting in a form agreed with the AG.
  The status of the implementation of new or changed applications (especially in terms of time, planning, costs, risks and impact on the AG's business processes) 11.md presents them regularly to the AG.

Commissioning is based on the modular master list (,,.MoM a"), which is the standard tool for commissioning in the CAR-IT area (based on IT-PEP). A completed service transaction must be reported to the customer in good time according to the defined service level.

After product iv set t ing of an applicat ion, operat ional support shall always be provided, even if, in t he context of a stabilizat ion phase, operat ional t ransact ions still need t o be carried out by t he Client, t he Contractor or other parties involved. In this case, the Contractor must inform the Client's upstream support units so that they can provide the best possible support on the basis of all available information.

The AG confirms the completion of the commissioning formail after completion of all defined service transition activities.

In the course of commissioning (nd-of-li ve), the Contractor is responsible for the phase out. Essentially, these are the following tasks;

- Preparation of a project plan with milestones for the dismantling/start-up of operations
- Shutdown and phasing out of the feeder system
- Initiat ion of t he dismantling of old Infrast ruct ure omponent s
- Preparing for the future development of 111the application (infrastructure, documents, support...)
- Act ualizat ion of docum ent s

These activities must be carried out in a timely manner. The Contractor must bear any economic consequences that are due to delays on the part of the Contractor.

During the fade-in phase, the service trasfffition process is discussed in detail between the customer and the contractor. The Contractor has the opportunity here to acknowledge optimization potential.

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This procedure and the associated services are continuously optimized as part of a CIP (see Continual Service Improvement process). The Contractor must always use the current version. Changes in the course of the CIP which have an impact on the
The Contractor shall bear all costs related to the scope of services.

At the start of each Service Transition, the Contractor shall submit a project management plan with milestones. The necessary resources of the Contractor must be made available at the start.

2.3.3.15.1 IT Service Management (Se icepfanung)

The aim of service planning is to ensure the required11 quality of service in order to guarantee the value of IT services during the operating phase. In order to achieve this, operational requirements are set up in good time by service planning and their fulfillment is monitored and supported during the service transition process. The service planning process ends with the successful11 completion of the The stabilization phase of a project, but also beyond that, constant tasks are necessary in11 this area of activity.

In order to achieve this, operational requirements are introduced at an early stage by service planning and their fulfillment is monitored and supported. At the end of each project phase, a Service Readiness Indicator (SRI) is available. The SRI is part of the status report. The Service Readiness Index control tool is used for the The service planning process is designed to provide a transparent presentation of the progress of an ongoing service planning process and to actively manage and develop the maturity of the service. Requirements are defined for service planning and assigned a maturity level per phase. The SRI (Service Readiness Index) is filled in by the service planner - at least at the end of the project phase, in the case of long phases also in between. 1 If the specified target SRI is not achieved by the go-live date, no go-live takes place. Exceptions are only possible after explicit approval by the customer,

Service planning has the only:

- Reduction of rework after go-live
- Increase of solution rates in 1st and2 nd level support
- Relieving the burden on project teams and DevOps teams
- Increase in service quality and availability
- Increasing the control competency of relevant service plans
- Create vo11 Ra um tor innovation

Within the scope of service planning, the Contractor has the following tasks:

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- Establishment of service planning
- Ensuring the completion of service transition activities and milestones
- Completion   and achievement of the Service Readiness Index as well as presentation of progress and achievement of operational readiness.
- Managing the transition of0 all new or changed applications from project to operations
- Document creation and scheduling
- Creation of workbooks, monitoring concepts, their revision (workshops with the support units to constantly improve its quality)
- Reporting: status cSRI / projects, communication of risks
- Ensure operational requirements which include but are not limited to:
  o Infrastructure and ics management (architecture concept/release, Licensing requirements)
  o Test management (test concept acceptance test phases, load and perf ormancet est s)
  o System management (system management concept, m onit oring)
  o Non-functional requirements (non-functional concepts, security clearance, business impact analysis, emergency concepts)
  o Documentation (operational documentation, project documentation, training documentation)
  o IT operation and organization (operation and support concept)
  o User qualification (training concept)
  o Know-how transfer (concept, operational capability through transfer sessions)
  o Data migration (migration concept, testing and prOfication)
  o Commissioning and go-live (planning, fallback planning)
  o Stabilization (concept, monitoring, securing resources, shutting down legacy system)
- Support in the management of certificates within the framework of the lifecycle management of the services for which you are responsible
- Monitoring of the operating environments in the course of the installation of releases (early warning detection of possible complications) and implementation and maintenance of the necessary metrics to ensure stability.

Service planning must be established in all phases of the IT product development process. All the documents and approvals required for this are summarized in the 10 les which1 is a mon or in process specified by the AG. Service planning must be carried out for every IT project and every release.

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2.3.3.16 Operations Control and Management

The **goal of** operations management is to ensure that recurring activities that occur111 during the ongoing operation of the service run smoothly. This is ensured by a strnktu rierrt e organizat ion, planning, Dur-ch f "hrung und documentstion. Important documents such as work instructions and work plans are created8. Work instructions and work plans, which provide the necessary information to keep the operation running smoothly. In addition, t he CO will **ensure** t hat t he monitoring and alerting funct ions of all involved units support t he delivery of services.

The Contractor shall encourage all operat ional entities involved, whether they are responsible by the Client, any other service provider or a third party supplier, to comply with their respective obligations. document and execute operative procedures.

Deviations from the operational processes are ide11tifi cated and c ommu 11i cated by the CO to enable the coordination of corrective actions.

It is assumed that the Contractor applies an operations management process **to** its service.

In this context, the Contractor shall actively pursue and request the exchange of information **with** the Client and the other service providers in order to enable an end-to-end18 consideration within the framework of the Availabilit y Management process.

The Contractor is, **for** example, responsible for the documentation and administration of licenses. The Contractor is responsible, for example, for documenting and administering licenses, certificates, technical users, etc.

The Contractor undertakes to present all relevant documentation, the process and the results, e.g. documentation of work instructions or work plans, etc., at the request of the Client. The documentation has to be done in a tool provided by the CL.

2.3.3.17 Vufnerabilitv Management

The aim is an independent analysis, planning, elimination and ultimately staglng of solutions to security-relevant vulnerabilities **on the** basis of a system specified by the AG. The integration of the vulnerability management carried out by the Contractor must be coordinated with the Client's vulnerability management and must be ensured11.

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Vulnerabilit y management consists of the following tasks: