

A Clean Core: the 'why' and the 'how'

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Speaker introduction



- ✓ 28 years of SAP experience, as a user, citizen developer, program manager, leader, and ultimately project sponsor for customer implementation of S/4HANA
- ✓ Currently reside in the SAP S/4HANA Center of Excellence, North America
- ✓ Support customers transformation to efficient, user-friendly, connected, automated and secure solutions to support an intelligent enterprise

ERP challenges today

Why do we need a clean core?

Business change

In today's **fast-paced and ever-changing business environment**, disruptions across global supply chains, customer preferences, and the workforce have become a common occurrence. **Businesses must quickly adapt** to these changing requirements to remain relevant and thrive.

New technologies

To succeed in the digital age, organizations need to embrace **new capabilities**. This includes **accelerating innovation**, optimizing and automating processes, and fostering agility in order to **gain a competitive edge**.

Landscape complexity

Companies must have a **flexible infrastructure** that allows them to quickly **adapt their business models** as needed. This means being able to **rapidly adjust** key applications to meet changing market demands and customer needs.

A business's key challenge is staying competitive and relevant

Our customers need to embark on a **digital transformation** to be successful in the future.

Digital transformation

Business agility

Stay competitive and relevant

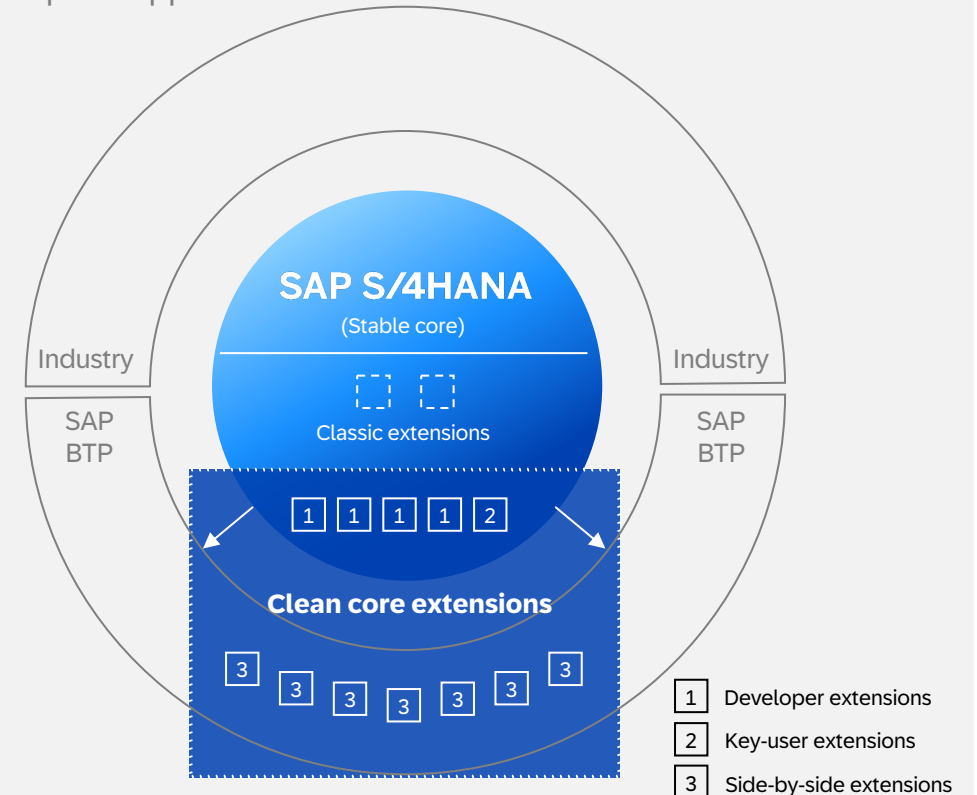
IT flexibility

- Fast consumption of innovation
- Faster upgrades
- End-to-end security

Modular innovation

Decoupled from the core and cloud-ready

Modular innovation is the way to achieve this in a future-proof approach.



Customers need a “stable core” for business-critical processes – with a flexible, agile, and innovative way to deliver new functionality in a clean core approach.

What is clean core?

The clean core concept is a **mindset and philosophy** supported with **governance and guidelines** that lay the foundation for a **flexible and future-ready ERP**.

It describes **modern approaches to design** business processes, extensions, integration scenarios, and data architectures in a **stable, upgrade-safe, and transparent** manner, along with a **separate platform to innovate** for additional differentiation.

A clean core enables **faster software deployment** as well as **easier adoption** of both SAP software innovations and the regulatory changes to software.

It provides new ways to **address business needs** while **avoiding excess technical debt**, thus preparing organizations to **maximize strategic benefits** and limit the cost of transformation.

Benefits of clean core

A clean core allows you to adapt the system to changing business requirements and adopt new capabilities while ensuring permanent traceability in all areas of the core. **It provides:**

Agility and flexibility

Clean environments decrease time to value. Additional process requirements can be implemented faster, and business models can adapt to short-term challenges more easily.

The ability to leverage the latest innovations (stay current)

Adaptation effort in the context of updates and upgrades is reduced. Cloud services can be integrated faster.

Efficient and more secure operations

There is no costly maintenance for unused artifacts.

Data to value

Consistent data allows reliable forecasts and precise predictions.

Overall, a clean core **reduces historically grown complexity** through targeted technical modernization aligned with a business transformation.

Precisely defining clean core in one slide

CLEAN

Clean means up-to-date, transparent, unmodified, consistent, efficient, and cloud compliant.



CORE

The core describes the main aspects of an ERP system landscape, namely extensibility, processes, data, integration, and operation. Capabilities of the core depend on the implemented software stack.

1. For a clean core, the **best-case scenario** describes an up-to-date system on the latest release, with cloud-compliant extensions as well as integration, optimal data quality, and process design. A new public cloud system is clean per the definition.
2. Greenfield: **The clean core strategy** summarizes all necessary activities to keep a system updated and to stay clean to achieve efficient standard processes, including modern extensibility and integration options as well as data governance.*
3. Brownfield: The clean core strategy summarizes all needed activities to “get clean” and “stay clean” to achieve **and** maintain a clean core. That includes the modernization of process designs, the transformation from traditional custom code to modern extensibility, integration capabilities, and data cleansing.*
4. A concrete **clean core road map** depends on the implementation type (greenfield or brownfield*) and the target architecture (private cloud, public cloud, or hybrid solutions).

*This also applies to selective data transition as a third migration option, which combines greenfield and brownfield approaches.

How to clean core

For clean core, the best-case scenario describes an up-to-date system on the latest release, with cloud-compliant extensions and integration as well as optimal master data quality and process design. Following a clean core strategy means:

Reducing data and process **inconsistencies**

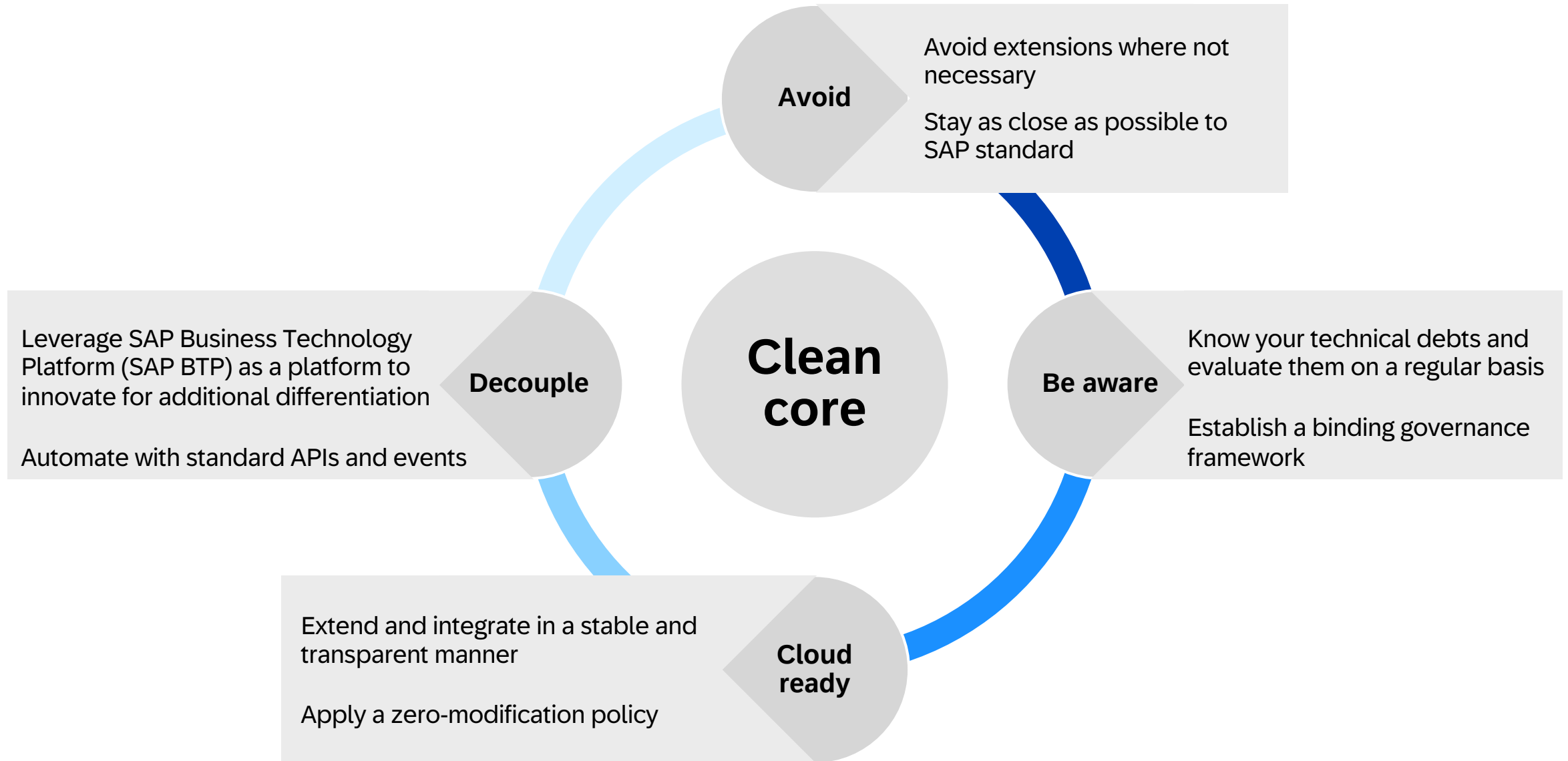
Establishing suitable **housekeeping processes** and **governance structures**

Maximizing the use of **standard functionality** and its ROI

Building **cloud-compliant** extensions that are integrated using **stable interfaces**

Minimizing customization **complexity**

Clean core – Top-level guiding principles



Addressing clean core and the individual dimensions

A **clean core** describes a system or a landscape of systems that is as close to standard as possible while running cloud-compliant extensions and integrations.

It allows you to **adapt your system and system landscape** to changing business requirements in order to **adopt new capabilities**.

Strong governance is required for each technical dimension of clean core.

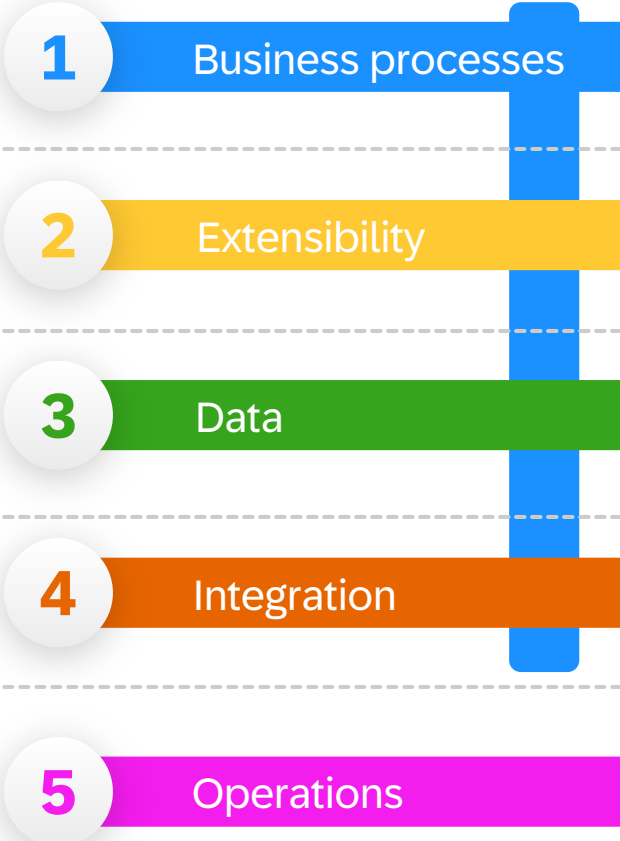
Keep **competitiveness** while **reducing complexity**.

Decouple extensions from standard.

Control data according to **latest standards**.

Keep the landscape **reliable and flexible**.

Keep the operations **effective and efficient**.



Keep competitiveness while reducing complexity

Main aspects

- ❖ State-of-the-art **process governance**, such as including transparent organizational structures and requirement management
- ❖ **Application architecture** that leverages SAP's standard solutions (SAP S/4HANA and beyond)
- ❖ Respective **SAP Best Practices packages** implemented where available and applicable
- ❖ Business **process design following defined principles** such as focusing on differentiating processes
- ❖ **Established process management**, documented processes and variants, and measurement of as-is-process execution and process performance

Keep **competitiveness** while **reducing complexity**.

1

Business processes

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Integration

Keep the operations **effective and efficient**.

5

Operations

What makes **business processes** clean core compliant?

What is a “clean” process?

Main aspects

- Establish **state-of-the-art business process governance**, including proper requirement management and transparent organizational structures
- Use recommended **SAP Reference Solution Architecture** to leverage **SAP solutions** such as SAP S/4HANA and others
- Implement respective **SAP Best Practices** where available and applicable
- **Tailor or enhance standard solutions from SAP** only where competitive advantages can be created
- Achieve **business process management excellence** by documenting processes and continuously monitoring process flow as well as process performance and efficiency

How to achieve

- Governance model and organizational structures:
 - Proper requirement management includes a [solution standardization board](#) or a similar deciding structure, a suitable methodology (for example, SAP Application Extension Methodology – see slide “Clean extensions”), and proper documentation and tooling support such as the [SAP Cloud ALM solution](#) or the [Focus Build solution](#) for [SAP Solution Manager](#).
 - A [business process management](#) structure is established and transparent across relevant organizations, including process owners and related contact persons.
- The solution architecture can be based on the [SAP Enterprise Architecture Framework](#) methodology. Supporting resources can be leveraged using the [SAP Transformation Navigator tool](#), [SAP Signavio Process Explorer solution](#), [SAP Signavio Process Manager solution](#), [SAP Signavio Process Collaboration Hub](#), and the [partner solution LeanIX](#).
- SAP Best Practices can, in general, be compared to SAP Signavio Process Explorer, the [SAP Signavio Process Navigator solution](#), SAP Signavio Process Manager, or SAP Signavio Process Collaboration Hub. Find more general guidance in the [Administration Guide to Implementation of SAP S/4HANA with SAP Best Practices](#).
- For individual implementation projects, the [SAP Activate](#) innovation adoption process and the related [road map viewer](#) can be leveraged. Further preconfiguration is provided through the [enterprise management layer for SAP S/4HANA](#). Industry-specific best practices can be requested through SAP standard content activation service.
- The solution design is focused on the following principles:
 - For nondifferentiating processes, SAP standard is strictly applied; for differentiating processes, SAP standard solutions are tailored to business needs and enhanced where needed.
 - A focus on mandatory and key process variants helps avoid unnecessary customizing and process complexity.
 - For required extensions the recommendations for “clean extensions” are followed.
- Business process management excellence covers the following three aspects:
 - Customer-specific process design is documented (SAP Signavio Process Manager and SAP Signavio Process Collaboration Hub).
 - As-is process execution can be measured ([SAP Signavio Process Insights](#), [SAP Signavio Process Intelligence](#), and using the [plug and gain approach](#)).
 - Business processes are efficiently executed based on measurable process performance indicators (SAP Signavio Process Insights and SAP Signavio Process Intelligence).

Decouple extensions from standard

Main aspects

- ❖ **Avoid** extensions when possible
- ❖ Set up a **strong governance** to create decoupled extensions in a way that they would work in the cloud (three-tier model)
- ❖ Separate extensions by leveraging released APIs – **custom extensions** do not break an upgrade and **upgrades** do not break an extension
- ❖ Leverage the full capabilities of extensibility **on the stack** as well as side by side **with SAP BTP**
- ❖ Create **technical debts** only as informed decision

Keep **competitiveness** while **reducing complexity**.

1 Business processes

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Control data according to **latest standards**.

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5 Operations

What makes extensions clean core compliant?

What is a “good” extension?

Main aspects

- **Avoid** extensions when possible
- Set up a **strong governance** to create decoupled extensions in a way that they would work in the cloud (three-tier model)
- Separate extensions by leveraging released APIs – **custom extensions** do not break an upgrade and **upgrades** do not break an extension*
- Leverage the full capabilities of extensibility **on the stack** as well as side by side **with SAP BTP**
- Create **technical debts** only as informed decision

*Ensuring upgrade stability can be a short-term workaround for transforming a whole application from traditionally developed code into cloud-compliant (Tier 1) extensions.

How to achieve

- Establish a governance model – a clearly defined process with high demands to approve any extension.
 - Prefer standard over custom development by leveraging fit-to-standard best practices.
 - Avoid custom code where possible. Don’t extend for rarely needed use cases.
 - Prefer “clean” extension options over “unclean” ones.
 - Use [SAP Application Extension Methodology](#) and [extensibility guidance](#) to identify the best path in your landscape.
- If you need to extend, a clear separation is key.
 - Only access standard objects through [released](#) and stable APIs (either remote or locally; access for reading and changing access possible).
 - Choose only “clean” tools or environments and extensibility options (in SAP S/4HANA: key user, developer, or side-by-side extensions).
- Choose extension domain based on requirements only.
 - SAP BTP automatically decouples extension but is not the only “clean” approach.
 - Do not extend in the core simply because “we always do so.”
- Enable awareness.
 - In on-premise installations, you can actively decide to develop some extensions not clean core, as long as they are documented and informed decisions (use cases: copy routines; API not available, and more).
 - Mitigate missing APIs in private cloud or on premise by using wrappers as described in [ABAP Cloud API Enablement Guidelines for SAP S/4HANA Cloud, private edition, and SAP S/4HANA](#).
 - Create requests for APIs using a customer influence tool (for [public](#) or [private](#) cloud editions).

Control data quality and data volume

Main aspects

- Modern (configuration, master, and transactional) **data quality** requirements are accuracy, completeness, consistency, timeliness, validity, and uniqueness.
- **Data volume** needs to be controlled in order to optimize memory and disk consumption. Data should not contain outdated, unused, or redundant information.
- Personal master data must only be **stored with justifiable purposes**.

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What makes data clean core compliant?

What is “clean” data?

Main aspects

- **Data quality**
(Configuration, master, and transactional data)*
 - Accuracy
 - Timeliness
 - Completeness
 - Validity
 - Consistency
 - Uniqueness
- **Data volume efficiency**
(Master and transactional data)
 - Optimized memory and disk consumption
 - No outdated, unused, or redundant information
 - Data lifecycle management (creation, updates, end of life)
- **Data privacy compliance**
 - Storing and processing personal master data only with justifiable purposes

***Configuration data:** General data that defines the organization's structure and is of static nature (such as company code, plants, purchase organisations, controlling area, or sales area); **Master data:** Consistent and uniform set of identifiers and extended attributes that describe the core entities of the enterprise, such as customers, vendors, products and general ledger accounts; **Transactional data:** Information directly derived as a result of transactions, this data always has a time dimension, a numerical value, and refers to one or more (master data) objects

How to achieve

For data quality:

- Analyze and define data quality measures for critical data objects. SAP provides data quality measures for several standard data objects.
 - If necessary, involve SAP or third-party vendors (such as CDQ) for getting further help and advice.
- Establish a “get clean” process.
 - Define a tool-based, reusable data cleansing process (such as through the [SAP Master Data Governance](#) application [consolidation], [SAP Information Steward](#) software, [SAP Data Intelligence](#) solution, [quality services for SAP BTP](#), or other third-party tools) for deduplication, generation of best records, and more.
- Establish a continuous “keep clean” process.
 - Define a validation rule framework, approval process, and automated distribution framework to connected receiver systems for newly created, changed, or deleted data records (such as using [SAP Master Data Governance](#) or [SAP Master Data Integration service](#)).
 - Define continuous data monitoring.
- Adhere to [SAP One Domain Model](#) (universal language across SAP systems) and [SAP Data and Analytics Advisory Methodology](#).

For data volume efficiency (from creation until end of life):

- Enable efficient continuous analysis and monitoring of the database by reducing outdated, unused, or redundant data.
- Define archiving or deletion of data-tiering processes to improve efficiency of the database (for example, using the SAP Information Lifecycle Management component).

For data privacy compliance:

- Analyze data usage to clarify business purposes of collecting and processing personal master data.
- Establish policies to govern personal master data lifecycle (using SAP Information Lifecycle Management).

Benefits

Reliable results when using data in processes and analytical applications (data to value)

Business process efficiency to improve stability and quality of business process steps

Reduced TCO due to efficient data volume management

Improved data exchangeability between different solutions

Lower risk of breaching data privacy protection regulations

Keep the landscape reliable and flexible

Main aspects

- ❖ **Integrations based on standard APIs** (OData and SOAP)
- ❖ Side-by-side extensions that leverage **API integration or SAP Cloud SDK** by utilizing the tight coupling with **SAP Integration Suite**
- ❖ Loosely coupled integrations could be realized in an **event-driven design** based on standard **events**
- ❖ Avoidance of **traditional APIs** (RFC and IDoc) and their related **classical extension options**
- ❖ Proper monitoring and error resolution capabilities realized utilizing the **SAP Application Interface Framework tool**

Keep **competitiveness** while **reducing complexity**.

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What makes integrations clean core compliant?

What is “clean” integration?

Main aspects

- **Base integrations on standard APIs** (OData and SOAP)
- **Aim for side-by-side extensibility with API integration or even SAP Cloud SDK** by utilizing the tight coupling with **SAP Integration Suite**
- Realize loosely coupled integrations in an **event-driven design** based on standard **events***
- Avoid **traditional APIs** (RFC and IDoc) and their related **classical extension options**
- Ensure proper monitoring and error resolution capabilities using **SAP Application Interface Framework**

How to achieve

- Establish a clearly defined integration strategy with [SAP Integration Solution Advisory Methodology](#):
 - The central access point to discover integration artifacts like standard APIs, events, and integration flows is [SAP Business Accelerator Hub](#).
 - If mediation is required, use SAP Integration Suite to benefit from the tight integration with other SAP BTP capabilities.
- Define a one-time “get-clean” process:
 - Create an integration repository (included in [SAP Solution Manager](#)) to identify existing integrations and the technology or protocol on which they are based.
 - Establish “get clean” service inside the company to evaluate how utilized traditional APIs (RFC and IDoc) as well as their classical extensions could be converted into standard interfaces (fit to standard).
- Establish a continuous “keep clean” process (governance model):
 - Define central governance functionality for evaluation of new interface requirements or any interface adjustment based on defined SAP Integration Solution Advisory Methodology characteristics. The [Integration Assessment capability](#) could be used as an accelerator.
 - Apply a “keep clean” process for the most important and critical integrations.

***Event**: A data record expressing a significant change in state (for example, change of a business partner) and consisting of data representing the occurrence and context metadata. It is sent to an event provider such as the **SAP Event Mesh** capability, where consumers can subscribe to it. The business object data needs to be pulled by each consumer individually by using standard APIs.

Keep operations effective and efficient

Main aspects

- ✦ The paradigm of keeping the core clean is integrated into the **end-to-end concept for operations**.
- ✦ **Release management** should make up the foundation for a clean core.
- ✦ **Housekeeping** activities that are in line with SAP Best Practices should be pursued, and the distribution of roles and responsibilities that are agreed with SAP should be followed.
- ✦ SAP should be able to perform maintenance for technology within the preapproved **contractual maintenance period (CMP)**.

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What makes operations clean core compliant?

What are “clean” operations?

Main aspects

- The paradigm of keeping the core clean is integrated into the **end-to-end concept for operations**.
- **Release management** is an established foundation for a clean core; the latest release should always be targeted.
- **Housekeeping** activities that are in line with SAP Best Practices are pursued, and the distribution of roles and responsibilities that are agreed with SAP are followed.
- It is agreed that SAP performs maintenance for technology within the preapproved **CMPs**.

How to achieve

- Establish keeping the core clean as an integral part of the end-to-end operations concept:
 - Consider “keep clean” as an IT service to add business value and establish IT as a service provider to own the end-to-end view and end-to-end processes.
 - Integrate monitoring and alerting of a “keep clean” process into the overall concept for operations to have an integrated view on KPIs for affected areas that define a clean core (integration, extensibility, processes, data).
 - Establish procedures for event management and escalations that are in line with the established governance models for integration, extensibility, processes, and data. Consider using SAP’s operations platforms to achieve this – [SAP Cloud ALM](#) or [SAP Solution Manager](#).
- Release management is based on two core principles:
 - CMPs create preapproved monthly maintenance windows that are agreed by all involved parties and adequately documented.
 - Only in exceptional rare cases, it is requested to skip maintenance windows (“opt out”).
- Regular housekeeping is established and supports keeping the core clean, for example:
 - Background job management (including approval, documentation, monitoring, and improvement) is implemented to contribute to an efficient utilization of infrastructure.
 - The usage of file interfaces for importing or exporting data from or into the system is avoided to strengthen security, maintainability, and consistency.
 - End-user authorizations are reviewed and adapted on a regular basis. Unneeded authorizations are unassigned from users and discontinued.

Business transformation and the relation to clean core

Clean core is the outcome of a transformation, not the starting point.

Option 1 Transformation: RISE with SAP

- **Combined focus**

Technical transformation and business transformation

Strategic overlap with greenfield implementations of SAP S/4HANA

Valid option when seeking to combine both topics with a project-based approach.

Option 2 Transformation: RISE with SAP

- Dedicated **focus on each phase**

Technical transformation

Strategic overlap with brownfield implementations of SAP S/4HANA

Business transformation journey as continuous follow-up to the project

Step 1: Lift and shift project

- Focus on key activities; only mandatory changes included in the project
- Leverage SAP BTP (cleansing, testing, and archiving) to support the project
- Clearly define an end date for project-based activities

Step 2: Continuous innovation through a clean-core focused approach

- Leverage SAP's tools and services to move forward on the digital journey
- Follow a continuous step-by-step approach to slowly approach a "cleaner core"
- Understand how clean core is the sum of the outcomes of each transformational step

SAP has two viable and valid routes for embarking on a holistic transformation journey, depending on an organization's strategy.

Key Takeaways

- Helping our customers attain or maintain a 'clean core' is a central & guiding principle of SAP
- A clean core enables customers to operate more efficiently, execute better, and be more innovative
- Clean core deals with multiple areas including extensions, data, integrations, processes, & operations → clean core doesn't just mean minimal or no customizations
- SAP provides paths and approaches to achieving a clean core

Questions?

For questions after this session, contact me at rob.seifert@sap.com

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