Customer

SAP Product Road Map

SAP Gateway

Road Map Revision: 2016.09.16

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Introduction to product road maps

Purpose

Product road maps are designed to support the product adoption planning activities of SAP customers. A product road map helps a customer match short term and long term goals with technology plans.

A product road map describes how the feature / function capabilities in an SAP product or technology are planned to progress over time, in general:

- Today = changes in the current release version
- Planned Innovations = changes planned in upcoming development releases (up to 12-18 months).
- Future Direction = proposed themes for a product or technology beyond the planned releases

Complementary resources

For a more general description of the business problems / processes being solved and supported by SAP, refer to Solution Road maps.

For more detailed technical information please refer to the Product Availability Matrix, Ramp-up Knowledge Transfer materials and product documentation.

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- Product description
- Key trends and customer needs
- Road map overview and major product updates

Product Road Map

- Today
- Planned
- Future

Appendix

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Product Overview

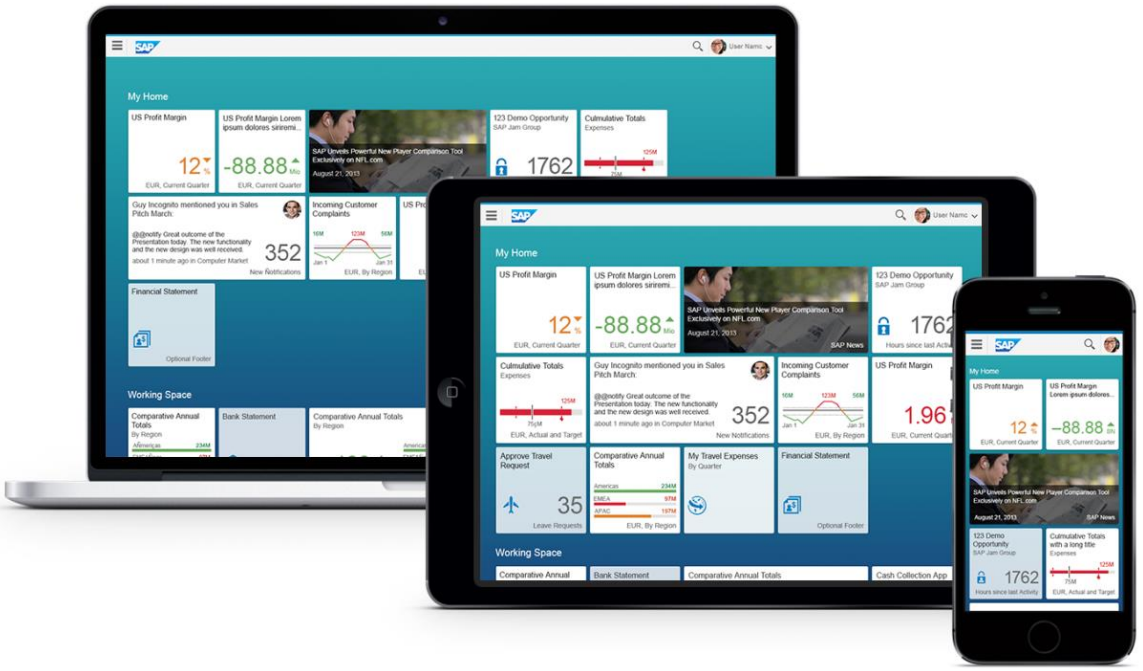
- Product description
- Key trends and customer needs
- Road map overview and major product updates

SAP Gateway

Product description

SAP Gateway, an integral part of SAP NetWeaver, enables you to connect devices, environments, and platforms to SAP systems efficiently and securely. It uses the globally renowned Open Data Protocol (OData) so you can use any programming language or model to connect to SAP and non-SAP applications.

Use SAP Gateway to development innovative, people-centric solutions with an engaging and consistent user experience for desktop, mobile, and tablet devices.



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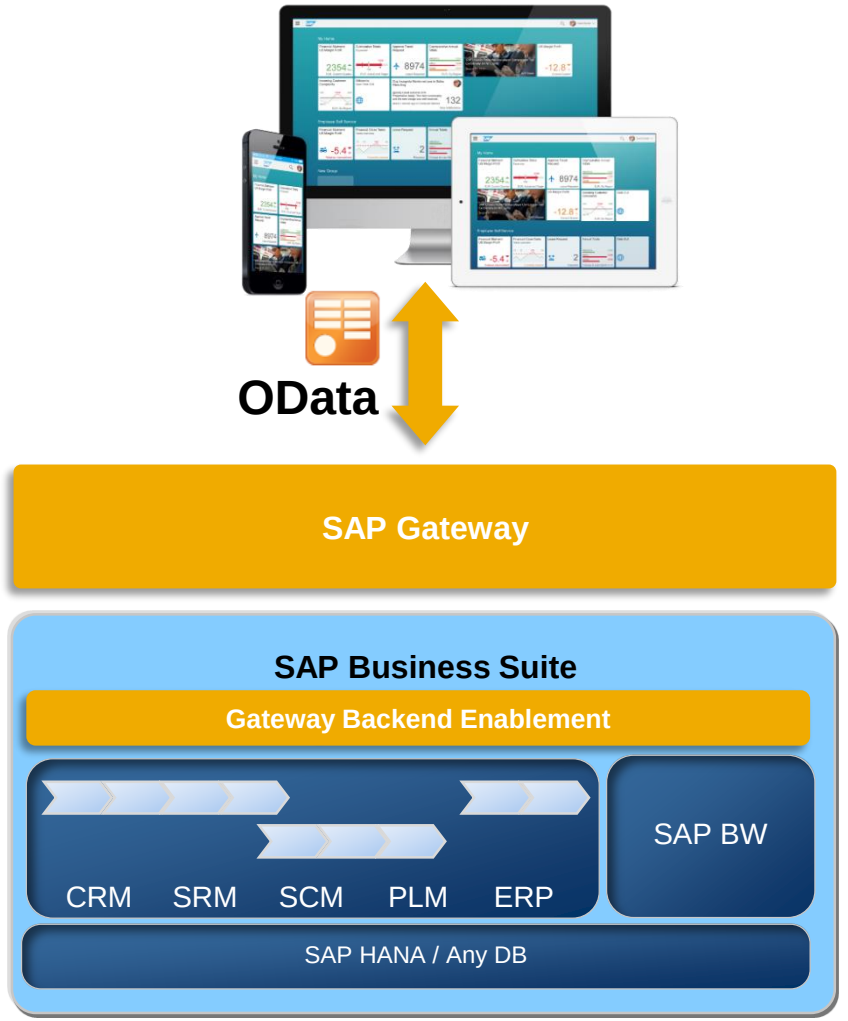
Expose data from SAP backend systems and consume on compelling apps on any device

SAP Gateway acts as a secure communication layer between the data stored in your SAP backend systems and the client devices that want to consume this data.

It uses open industry protocols so you can create people-centric (SAP Web IDE and SAPUI5) apps that are tailored to specific devices. No specific SAP knowledge is required, just standard web and application-development skills.

SAP Gateway ensures you can develop apps that are:

- Innovative
- Engaging
- Compelling



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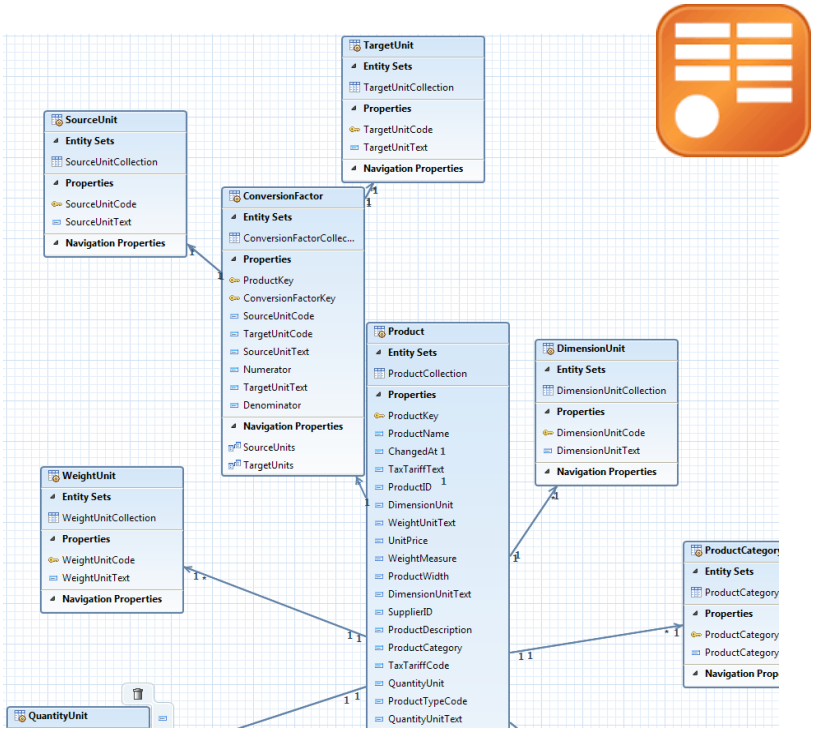
SAP Gateway

Uses the Open Data Protocol (OData)

SAP Gateway uses OData, an industry-standard protocol for creating and consuming APIs. OData enables easy access to information from different applications and provides a predictable interface for querying a variety of data sources.

OData services can be consumed by any channel that can process XML/JSON received over an HTTPS connection, which is the majority of current Internet and mobile technologies.

For more information, see www.odata.org



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Open Data Protocol (OData): OASIS industry standard

OData is based on industry standards

- HTTP, XML, Atom, JSON
- REST-based architecture
- Driven by SAP, Microsoft, and IBM
- OASIS standards (OData V.4 and OData JSON Format 4.0)

OData is extensible

- Allows addition of features required when building easy-to-use applications, both mobile and browser-based.

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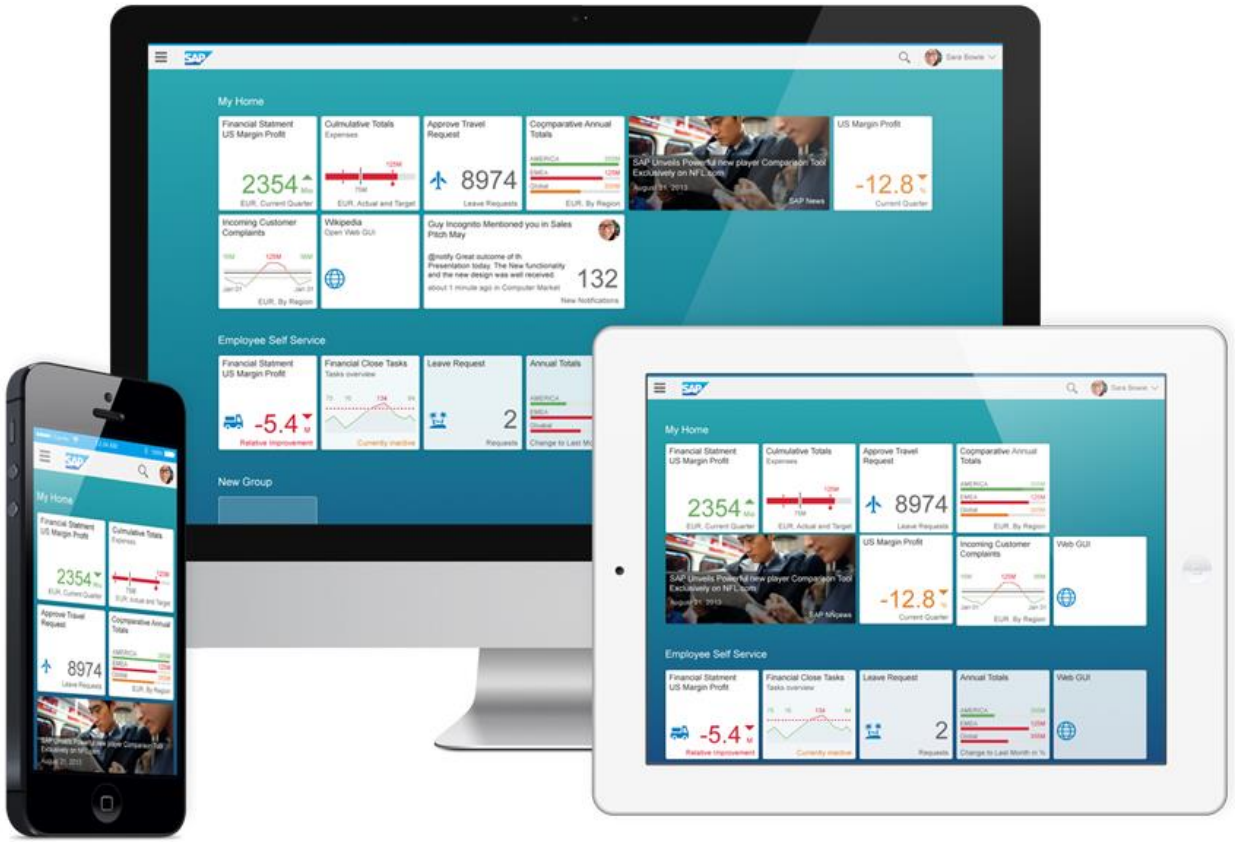
OData is everywhere… simplifying access to SAP data

SAP uses OData to bring data from backend systems to engaging user interfaces for smart phones, tablets, and desktop.

OData is used in:

- SAP Fiori
- SAPUI5
- SAP S/4HANA
- SAP Mobile Platform 3.0
- SAP Gateway
- …



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SAP Gateway

Product road map overview - key themes and capabilities

Today

OData v2 service development and service provisioning
- Odata service development
- Support of multiple backend systems

OData provisioning in other SAP products
- SAP Mobile Platform 3.0
- SAP Process Integration
- SAP Fiori Cloud ☁
- SAP HANA Cloud Platform ☁

OData v4.0
- Code-based service development
- Cross service navigation - Reuse of services
- Generic F4-Help provisioning

Performance improvements in OData v2

New notification channel
- Workflow integration

SAP NetWeaver 750 SP04

Planned

OData v4.0
- Aggregation - e.g. $apply with groupby
- Instance annotations
- Service catalogue
- Feature parity with OData v2 stack
  - Deep Insert
  - Multi-Origin
  - Soft-State
  - RAL

New notification channel
- Continuous improvements
- SAP Fiori launchpad support via WebSockets in SAP Fiori 2.0
- Notifications support for SAP HANA Cloud Platform mobile services ☁ and SAP Mobile Platform 3.0

Performance improvements in OData v2
- Optimizations for Co-Deployed scenarios and analytical scenarios
  - Batch at once
  - Serialization of $expand via ST

Future Direction

OData v4.0
- Asynchronous Requests & Callback on Completion
- Offline: Delta Links & Callback on Change
- Feature parity with OData v2 stack

New notification channel
- Push-notifications for business objects
- Feed update notifications

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Product Road Map

- Today
- Planned
- Future

SAP Gateway

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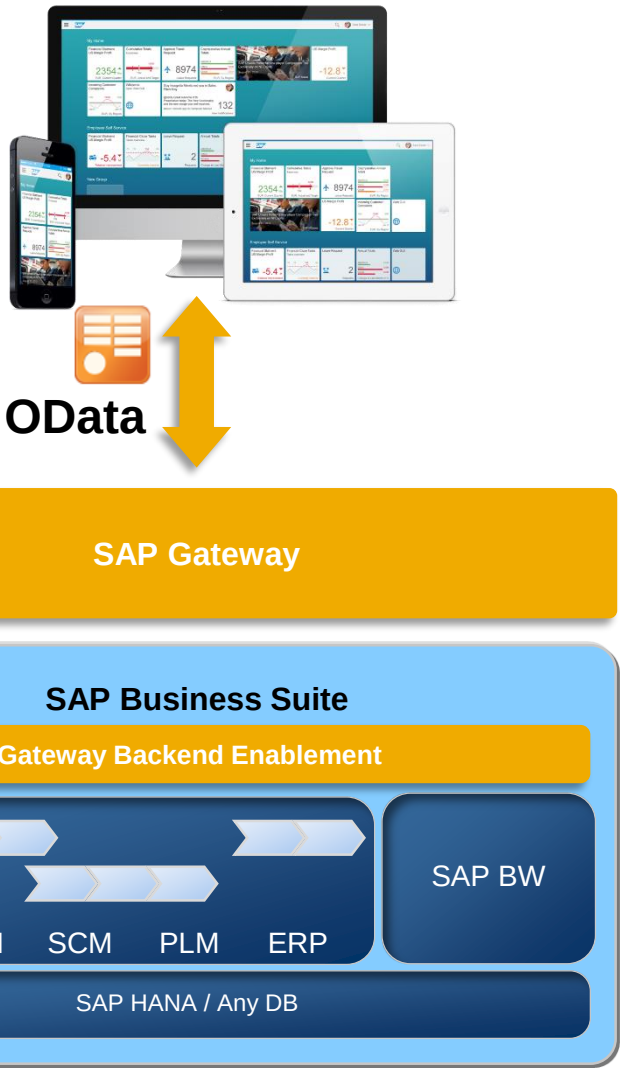
SAP Gateway
Architecture

Today



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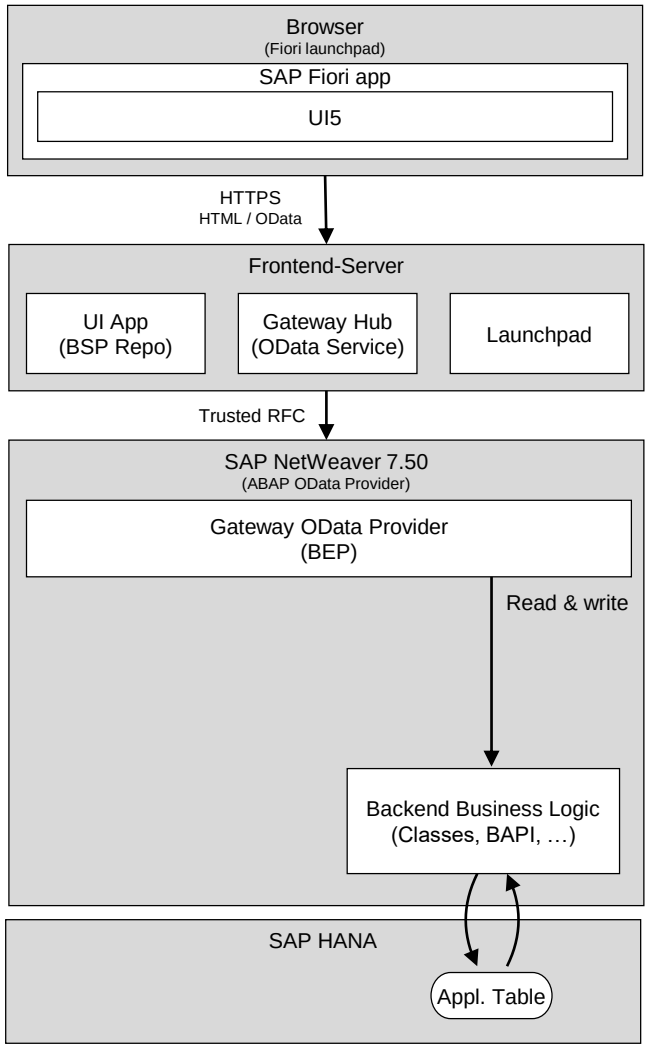
SAP Gateway - OData Service Development

The transformation to SAP S/4HANA

Today



SAP NetWeaver 7.0 or newer → Use SAP Gateway to build OData services which access arbitrary business data via existing frameworks (function modules, RFC, BAPI, SPI…)

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SAP Gateway

Code-free service generation

Today

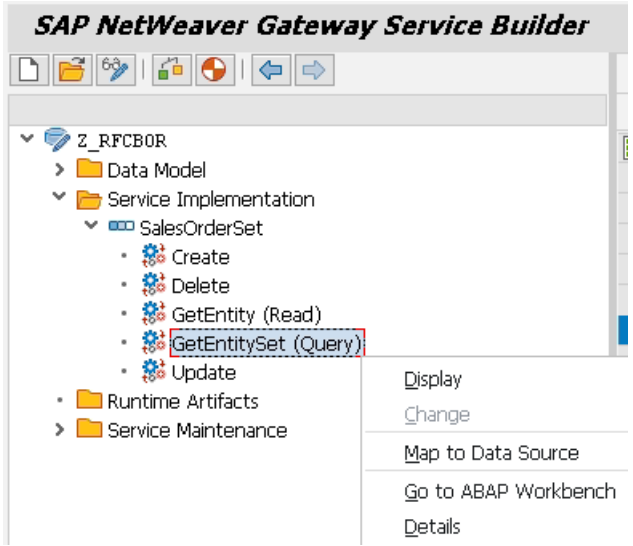
Existing business objects can be re-used as data sources to generate OData services without the need to write a single line of code

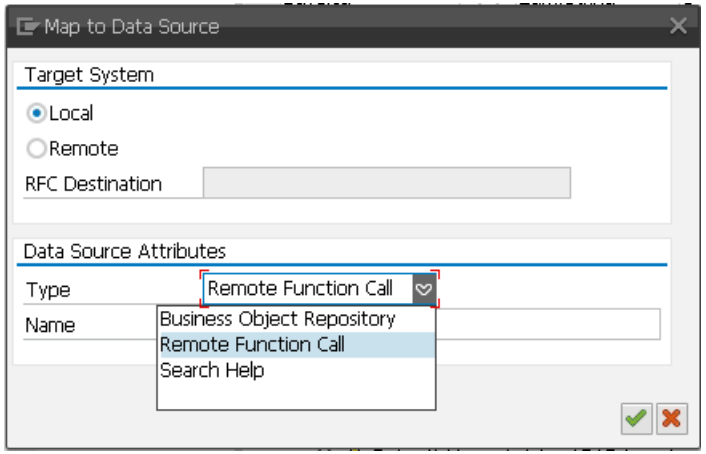
Mapping of data source attributes to CRUD methods:

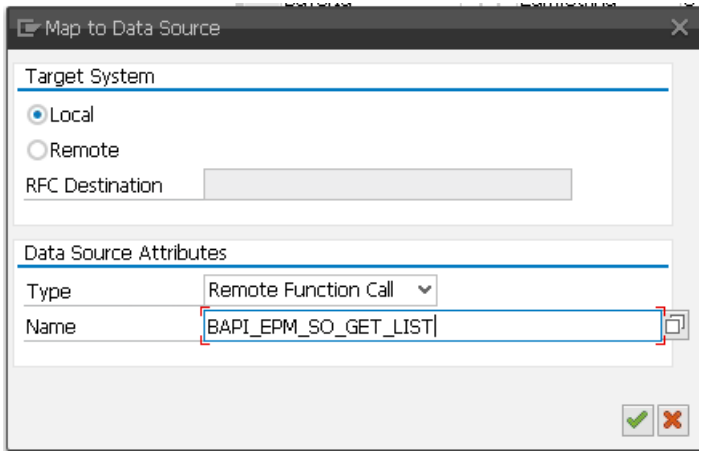
- Business Object Repository (BOR)
- Remote Function Call (RFC)
- Search Help

Generate Services from SAP BusinessObjects

- SAP BW Queries (MDX, Easy Query, OData Query)
- Service Provider Interface (PLM and EAM)
- Genil (CRM)
- SAP Gateway Services (Service extension)







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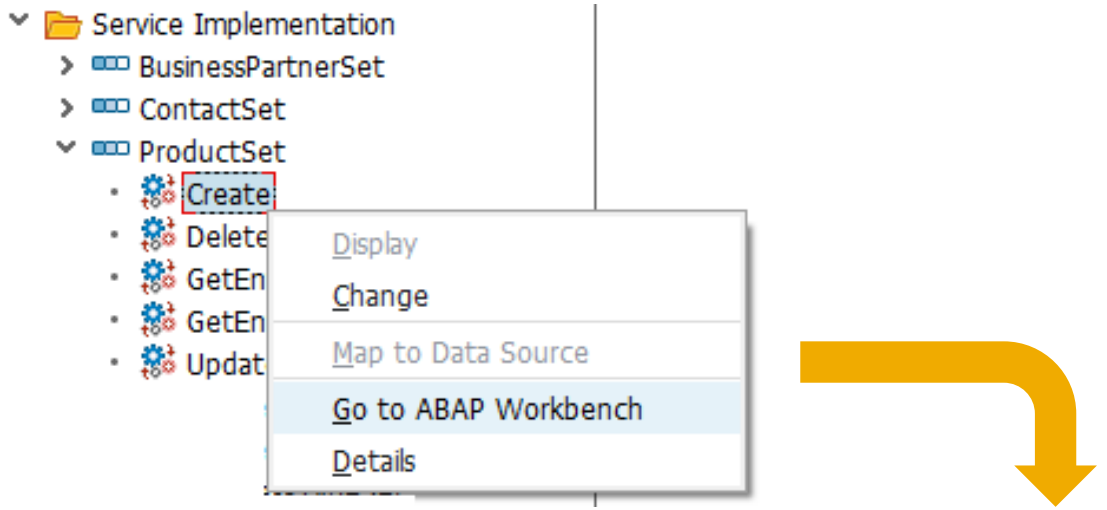
SAP Gateway

Code-based service development

Today

Existing business objects can be re-used to generate OData services without the need to write a single line of code



Code-based implementation of CRUD methods:

- Create → <Entity_Set>_CREATE_ENTITY
- Read → <Entity_Set>_GET_ENTITY
- Query→ <Entity_Set>_GET_ENTITYSET
- Update → <Entity_Set>_UPDATE_ENTITY
- Delete → <Entity_Set>_DELETE_ENTITY

Code based implementation of advanced OData features

- Offline scenarios ($deltatoken, $skiptoken)
- Complex transactional behavior (SoftState, DeepInsert, ChangeSets in $batch)

Method PRODUCTSET_CREATE_ENTITY Active

```
1  METHOD productset_create_entity.
2
3    DATA: lv_epm_operation  TYPE scx_attrname,
4          ls_entity         TYPE /iwbep/cl_gwsample_bas_mpc=>ts_product,
5          lr_epm_prod       TYPE REF TO if_epm_product_header,
6          lr_msg_buf        TYPE REF TO if_epm_message_buffer,
7          lt_data_prod      TYPE if_epm_product_header=>tt_node_data,
8          ls_data_prod      LIKE LINE OF lt_data_prod,
9          lv_success        TYPE abap_bool.
10
11   io_data_provider->read_entry_data( IMPORTING es_data = ls_entity ).
12
13   CLEAR: er_entity.
```

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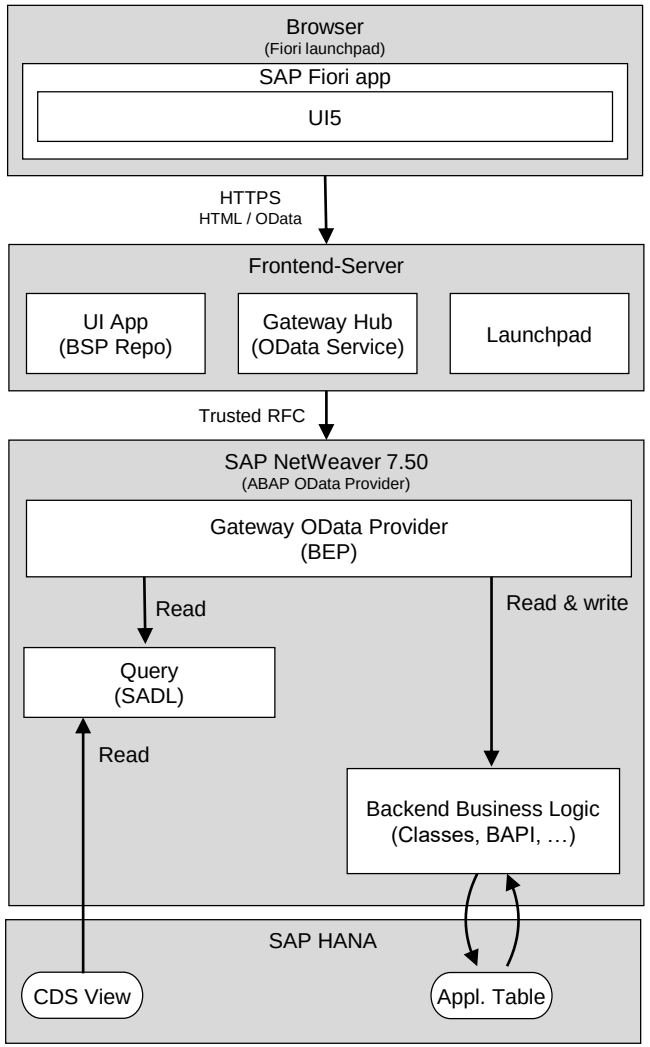
SAP Gateway - OData Service Development

The transformation to SAP S/4HANA

Today



SAP NetWeaver 7.0 or newer → Use SAP Gateway to build OData services which access arbitrary business data via existing frameworks (function modules, RFC, BAPI, SPI…)

SAP NetWeaver 7.40 or newer → Use SAP Gateway for building OData services which read access to CDS objects

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SAP NetWeaver 7.40 and newer

Mapping of CDS views to read and query methods

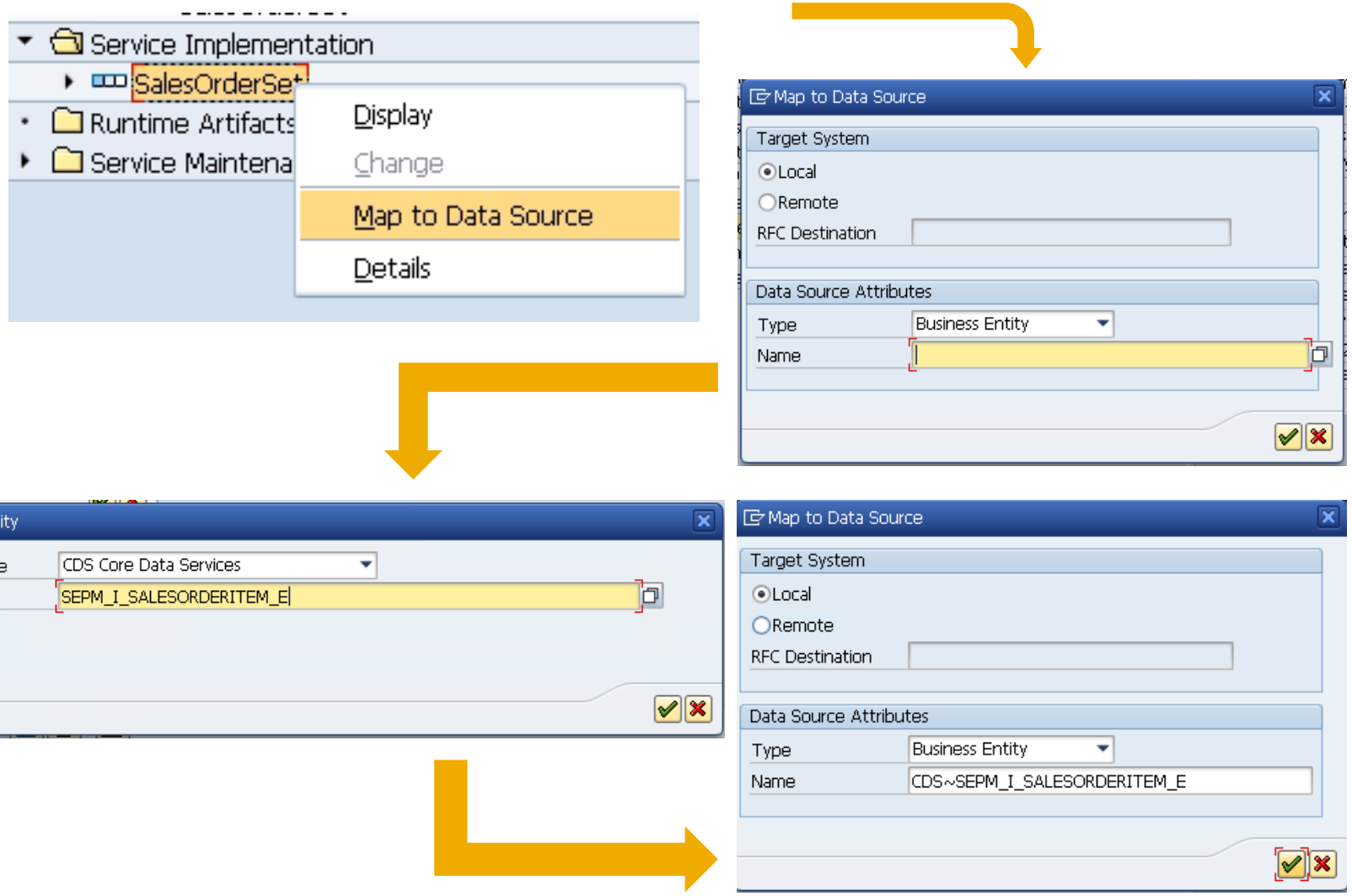
Today

Mapping of a CDS views to entity sets. Service generation of

- Read method and
- Query method

Code based implementation of CUD methods

Code based implementation of advanced OData features



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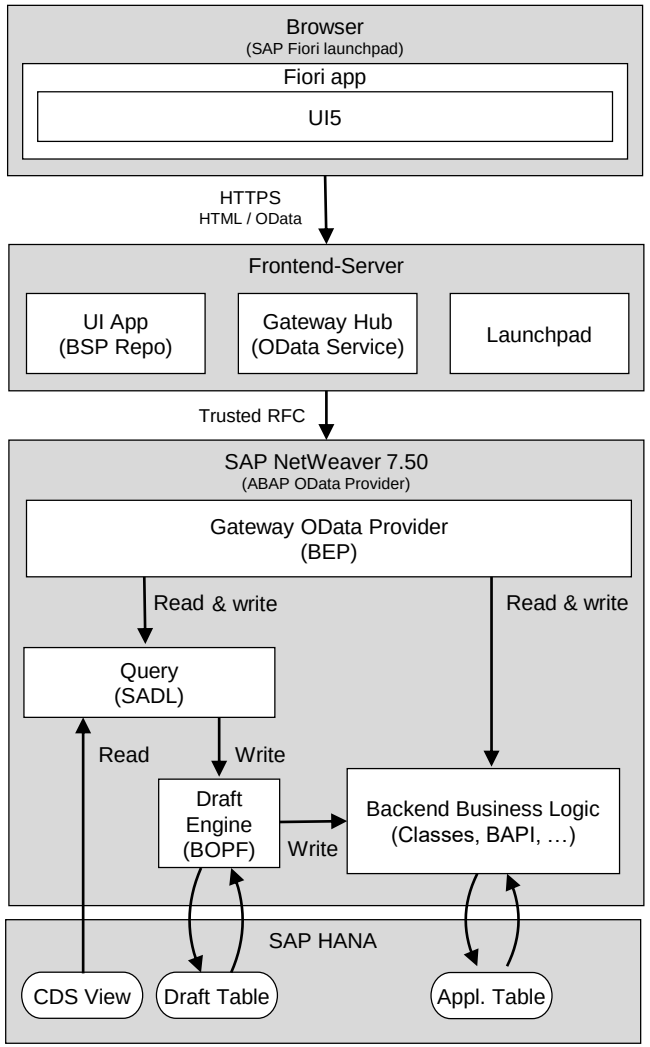
SAP Gateway - OData Service Development

The transformation to SAP S/4HANA

Today



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SAP NetWeaver 7.40 or newer → Use SAP Gateway for building OData services which read access to CDS objects

SAP NetWeaver 7.50 → Use SAP Gateway and Core Data Services for creating OData services accessing SAP S/4HANA applications on SAP HANA

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SAP Gateway in SAP NetWeaver 7.50

Referenced Data Sources

Today

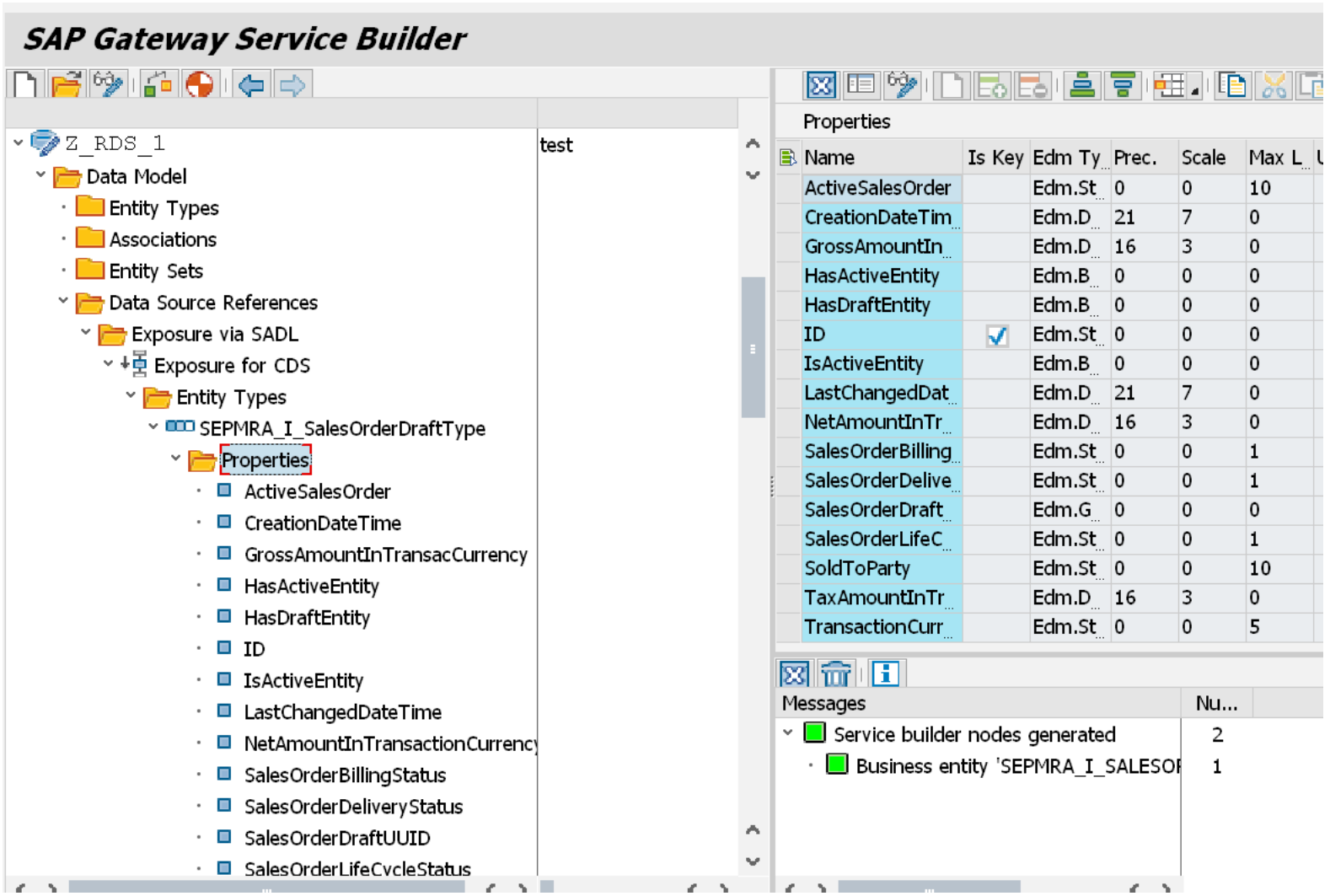
Referenced data source approach.

Service generation of

- Read method and
- Query method

Service generation of CUD methods for draft enabled CDS views*.

*appropriate BOPF objects have to be in place



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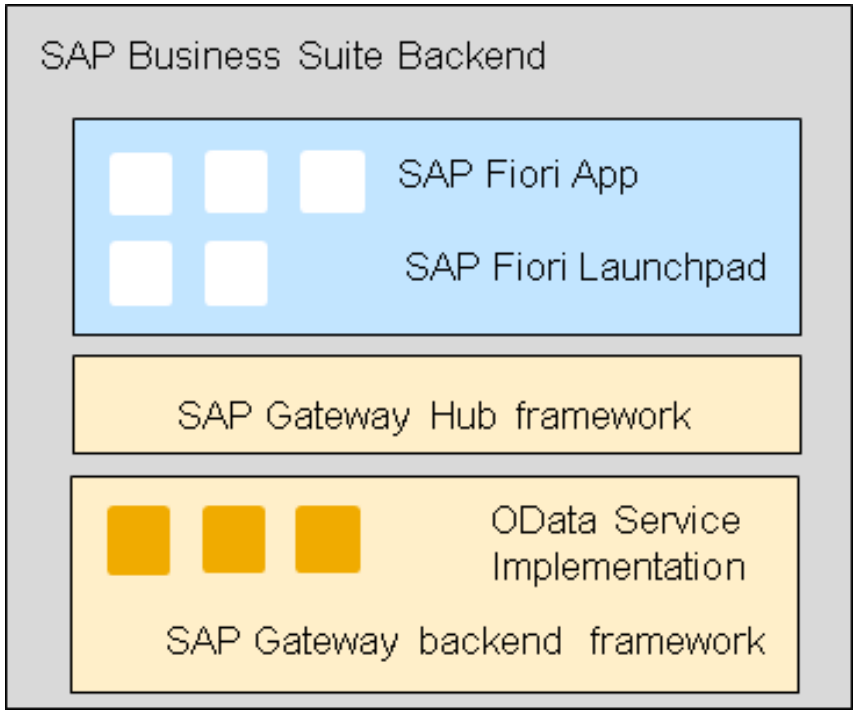
SAP Gateway - OData Provisioning – On-Premise

Embedded deployment

Today

+ **quick and easy way to expose SAP Gateway services from a single backend**
– **disadvantages when combining data from several backends**
– **downtime for SAP Business Suite systems when upgrading UI components**



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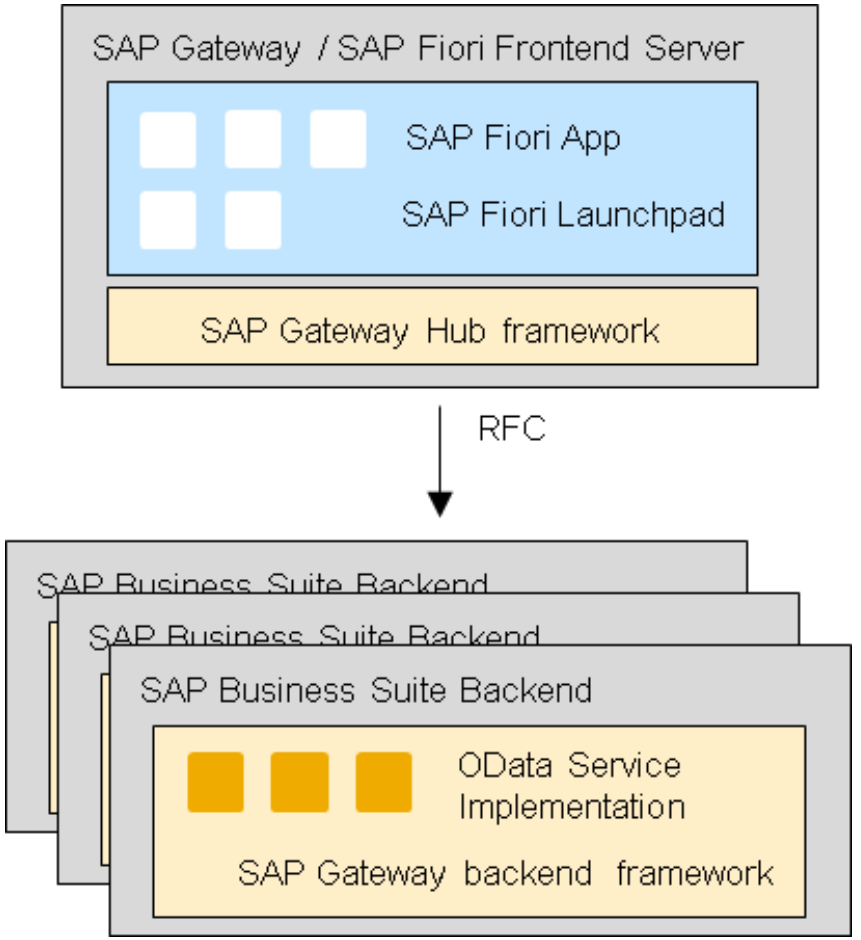
SAP Gateway - OData Provisioning – On-Premise

Hub deployment

Today

+ **administration advantages (component upgrades w/o shutting down backend systems, central frontend, …)**
+ **Hub Features (multiorigin composition, Routing)**
+ **enhanced security**
– **additional server required**



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SAP Gateway - Multiple backend systems

Retrieving data from multiple backend systems

Today

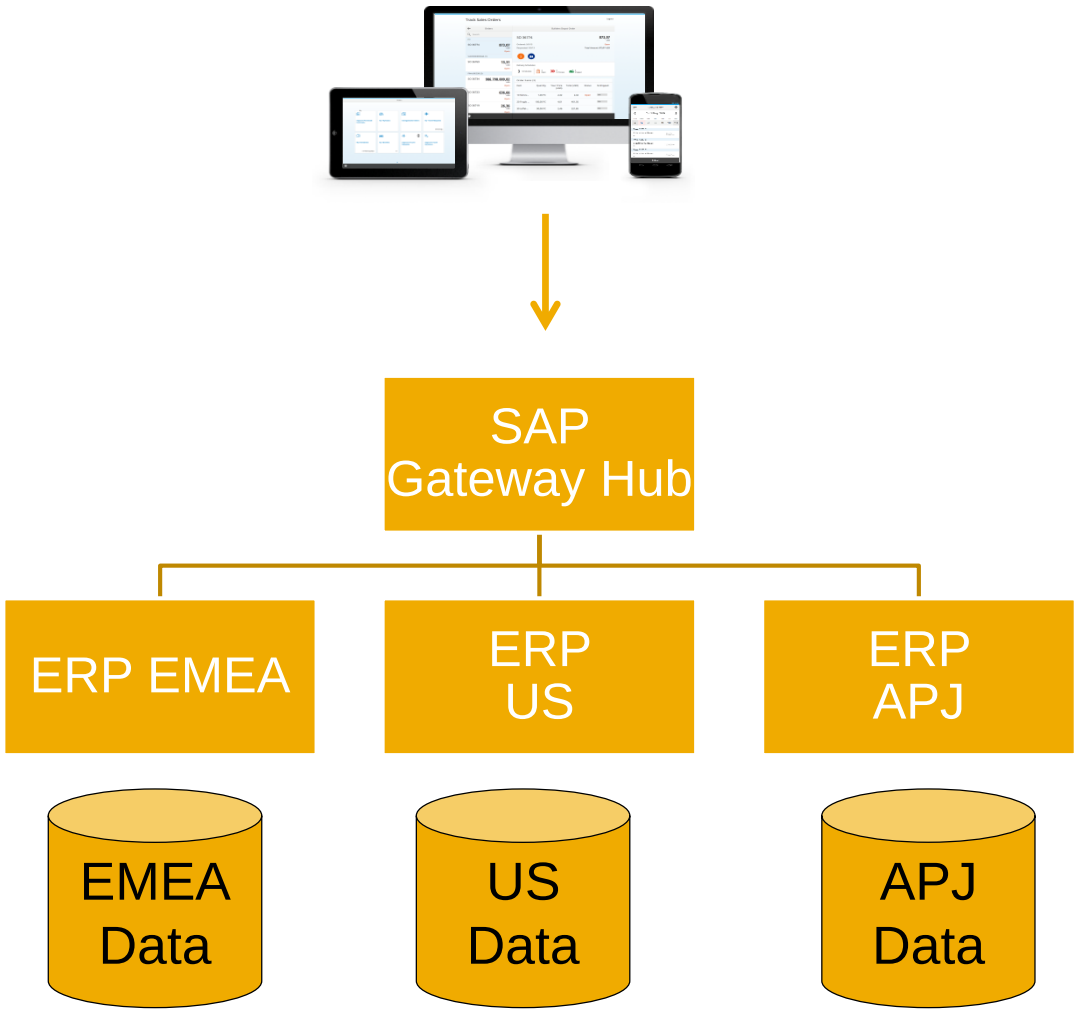
Use cases

- **Routing**

  Get data from a specific backend system

- **Multi Origin Composition**

- Get data from multiple backend systems



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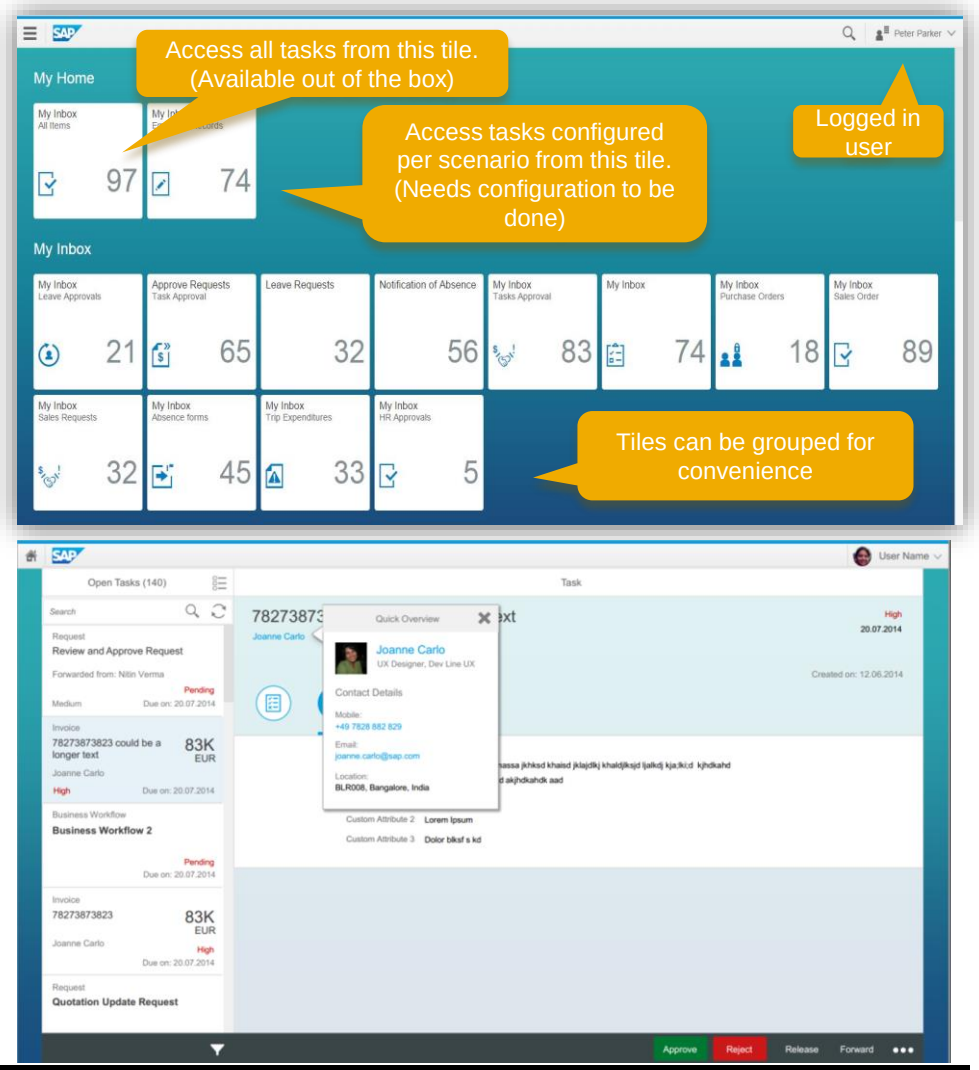
SAP Gateway – MyInbox in SAP Fiori

Example for retrieving data from multiple backend systems

Today

The new SAP Fiori app MyInbox allows to access both SAP delivered and custom-built workflows using SAP Gateway



Task harmonization across different systems

- SAP Business Workflow
- SAP BPM
- 3rd Party workflow solutions

Task harmonization across different devices

- Desktop
- Mobile

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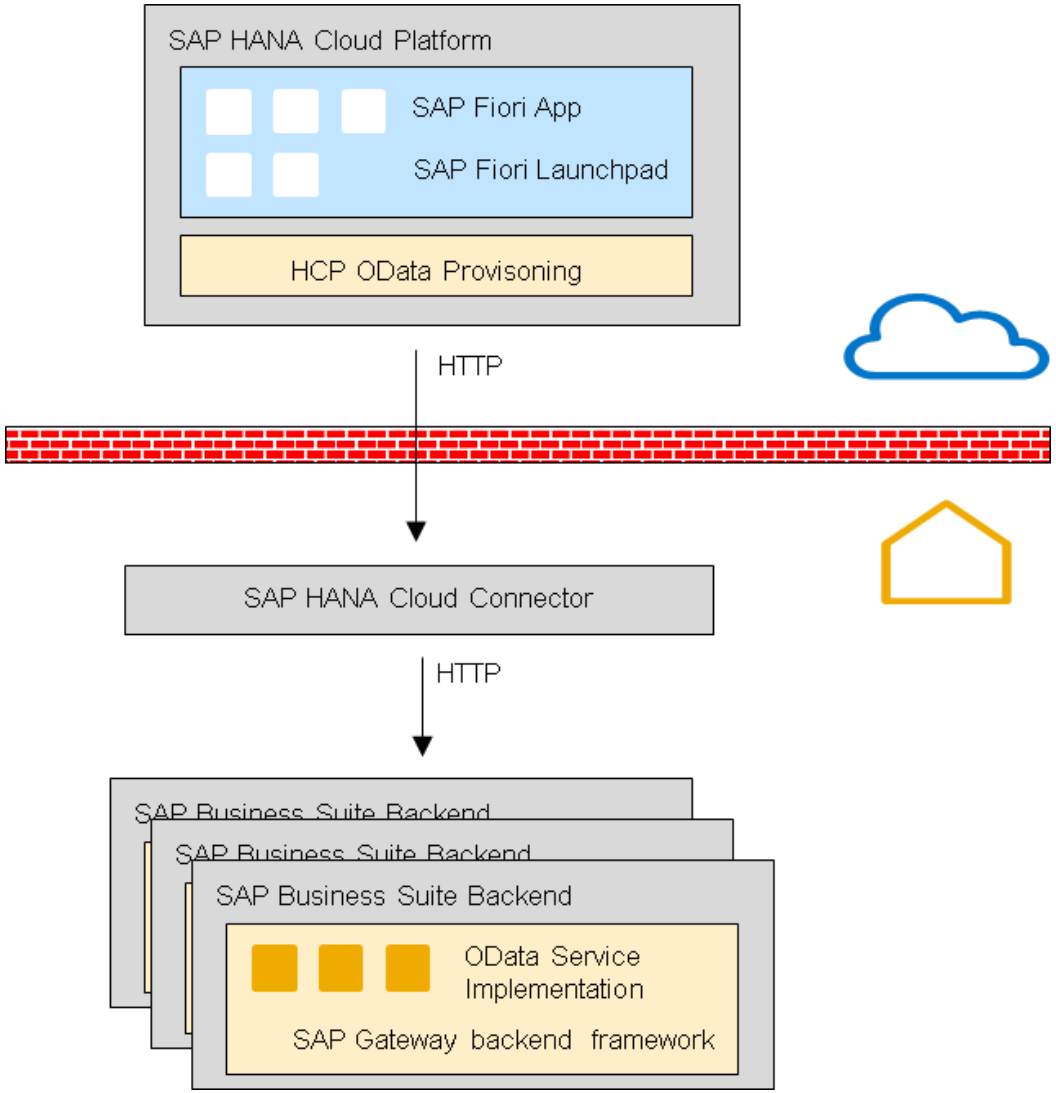
SAP Fiori Cloud

HCP OData provisioning

Today

+ „Gateway Hub in the cloud“
+ cloud benefits (SAP handles upgrades, scaling, security,…)
+ integrated with other HCP services
+ multiorigin composition
– does not support all features of the SAP Gateway Hub (routing, …)



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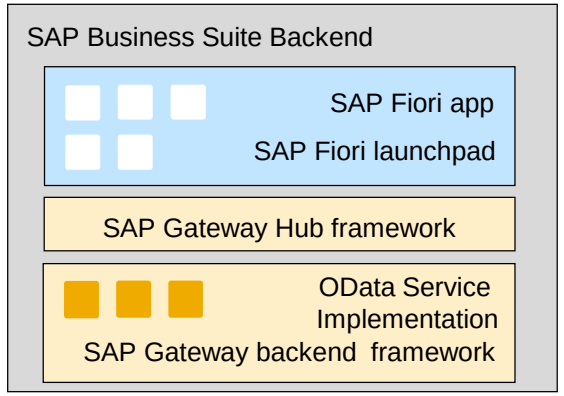
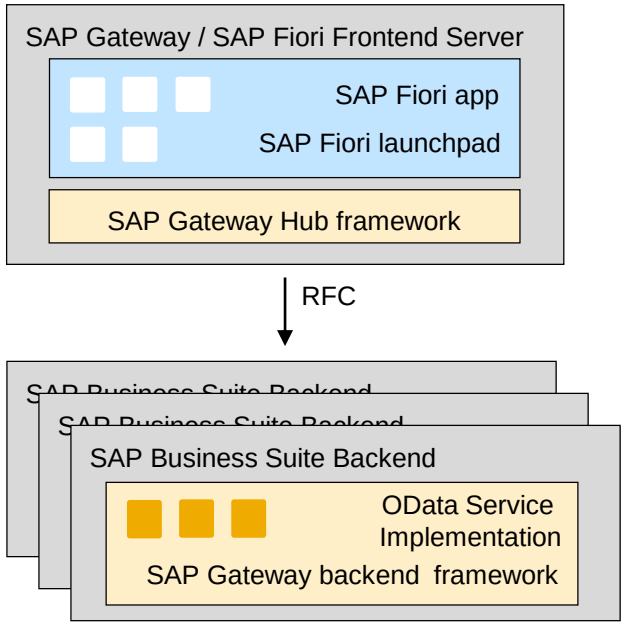
Deployment options

Today

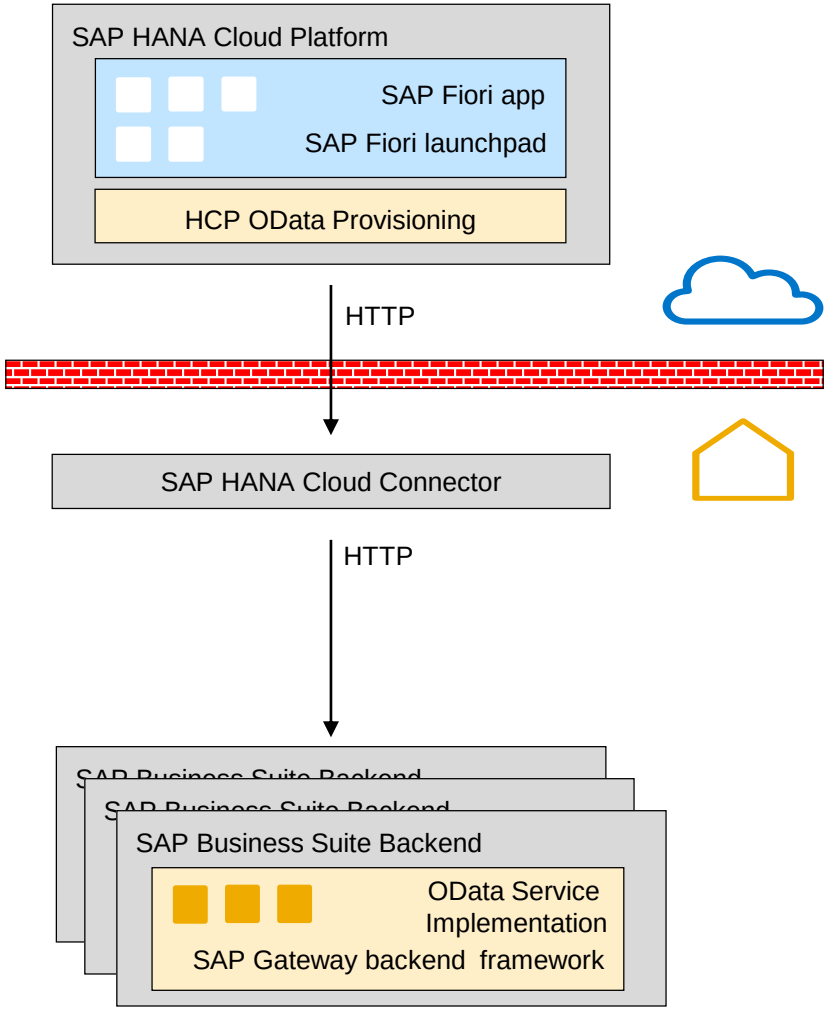
Embedded Deployment



Central Hub Deployment



SAP HANA Cloud Platform OData Provisioning



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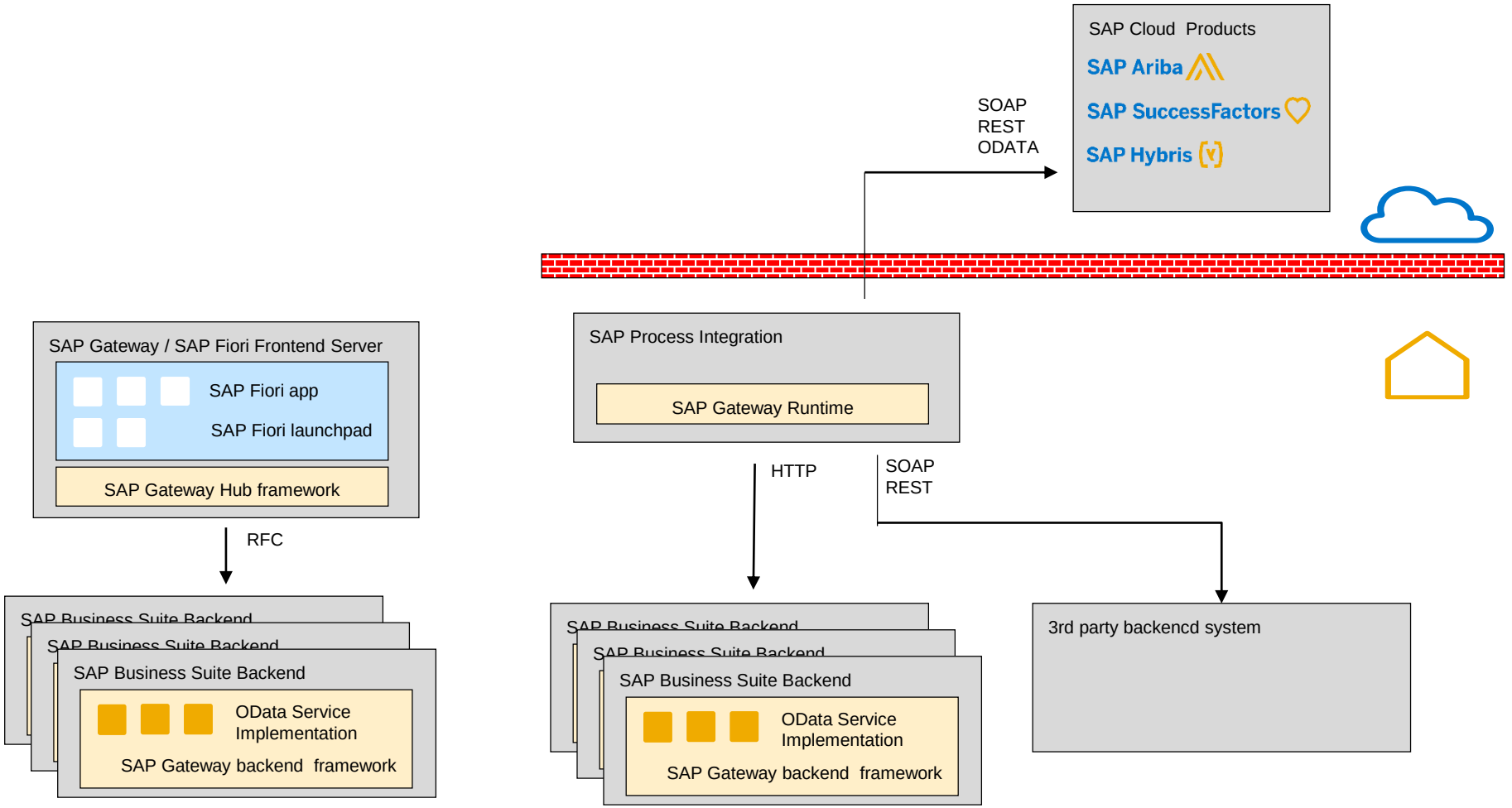
OData provisioning in other SAP products - On-Premise

SAP Process Orchestration

Today

+ integration with non-SAP Gateway data sources
+ multi-origin composition
+ additional Gateway Hub server may be replaced
+ easy integration with other UIs on the same server (e.g. SAP BPM)
– SAP Fiori components cannot be deployed



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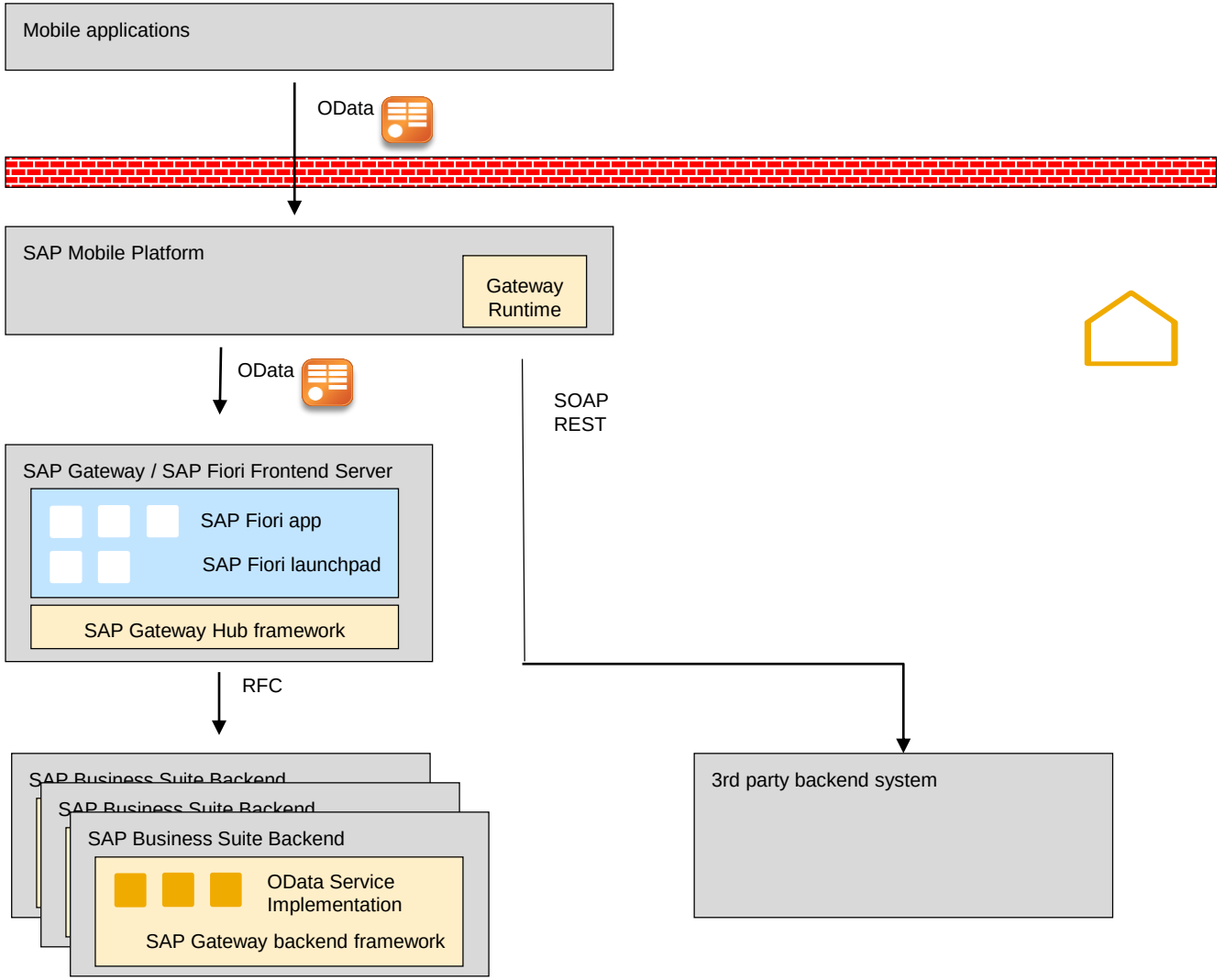
OData provisioning in other SAP products - On-Premise

SAP Mobile Platform

Today

+ integration with non-SAP Gateway data sources
+ mobile qualities (device registration, offline capabilities, support for native mobile operating systems)
+ multi-origin composition
– SAP Fiori components cannot be deployed



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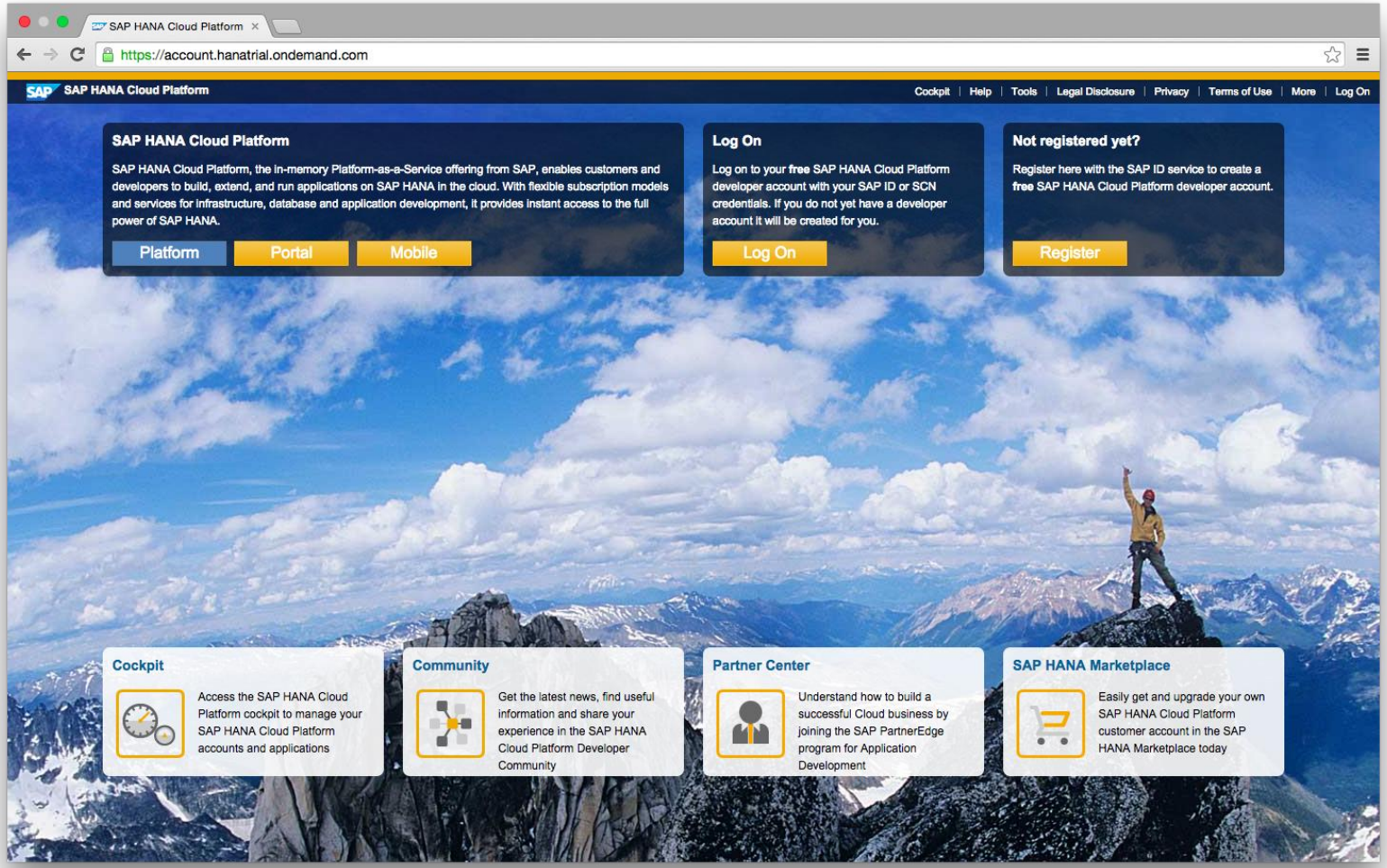
SAP Web IDE on SAP HANA Cloud Platform

SAP HANA Cloud Platform – Trial Version

Today

Own roadmap available

https://account.hanatrial.ondemand.com/



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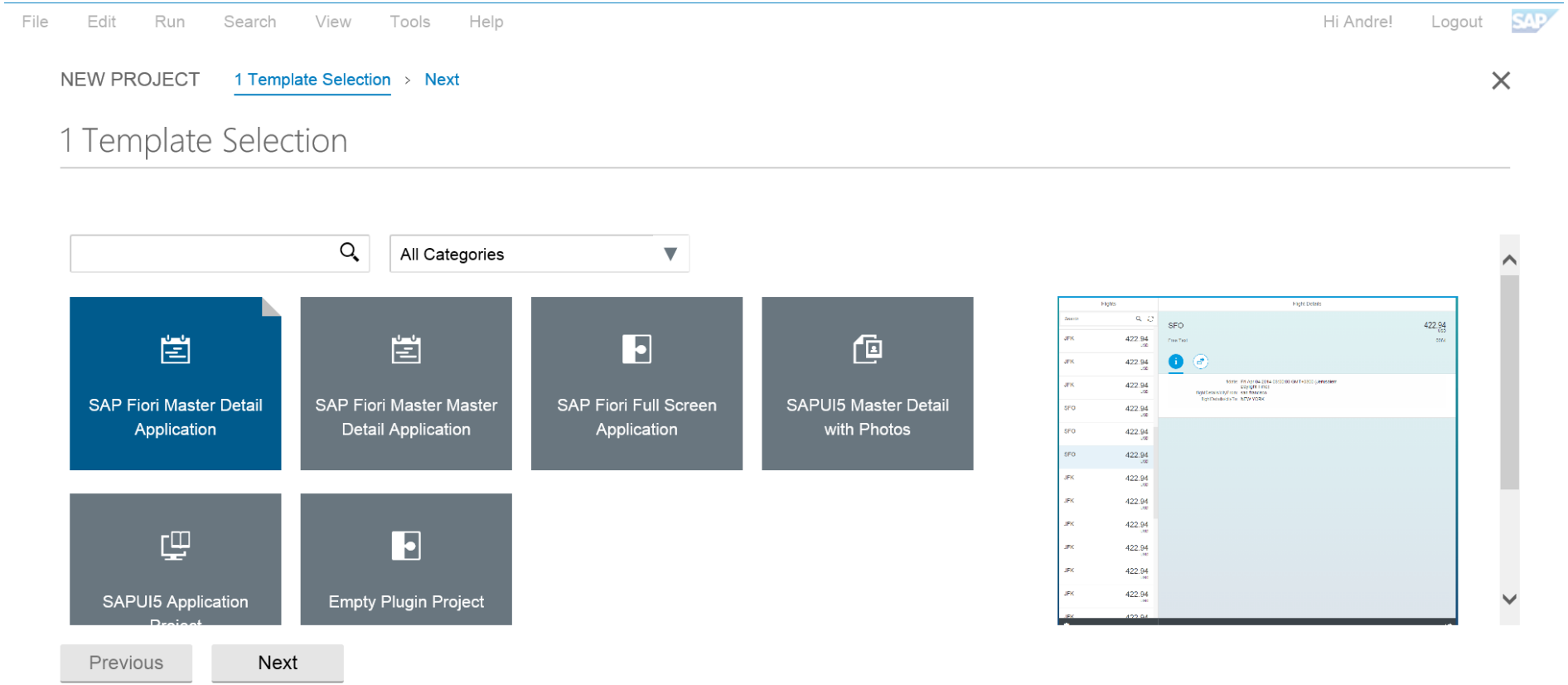
SAP Web IDE on SAP HANA Cloud Platform

Creating HTML5 Apps from templates

Today

Own roadmap available



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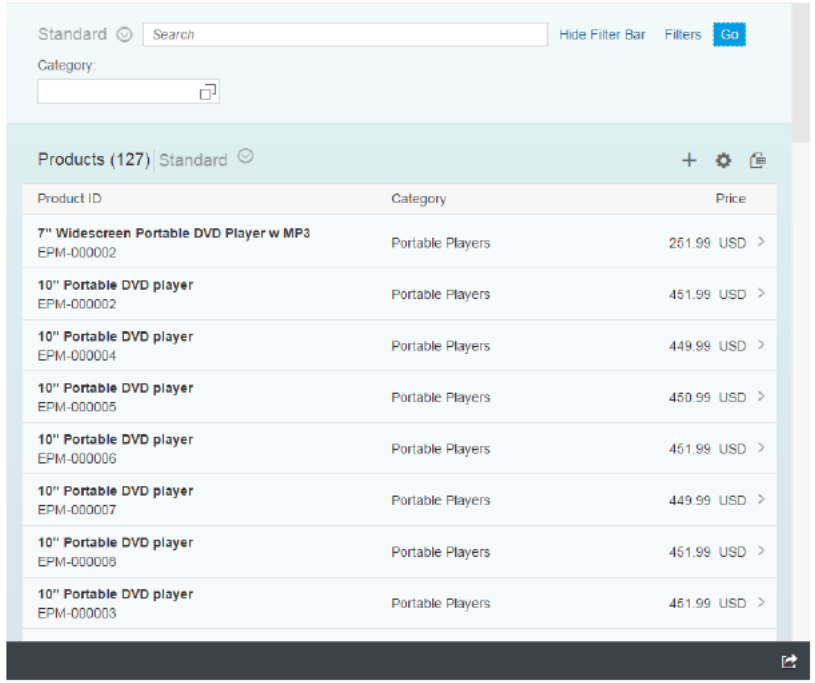
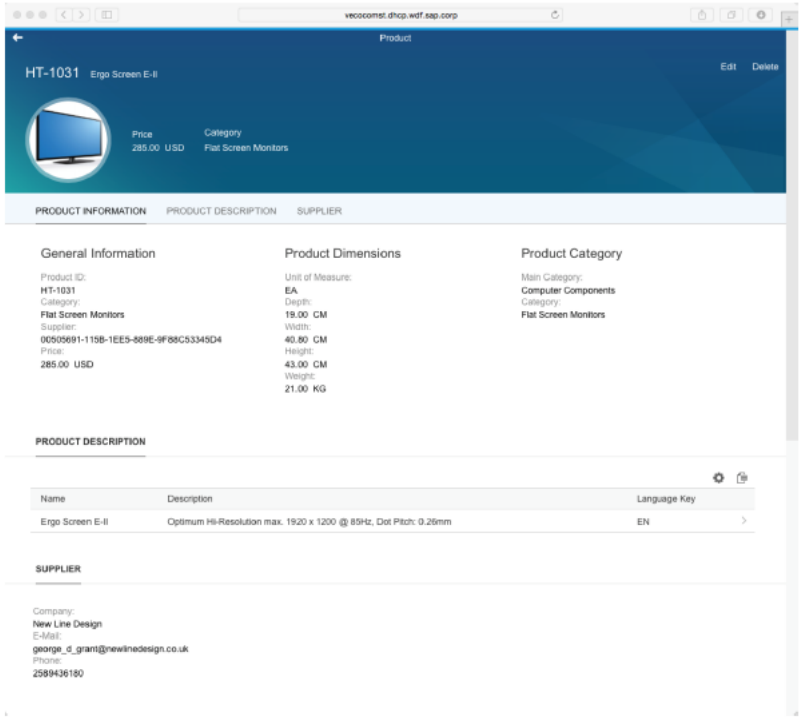
Today

Smart Template-based Application

Worklist



Object Page



Application is completely based on generic code and an OData service with annotations

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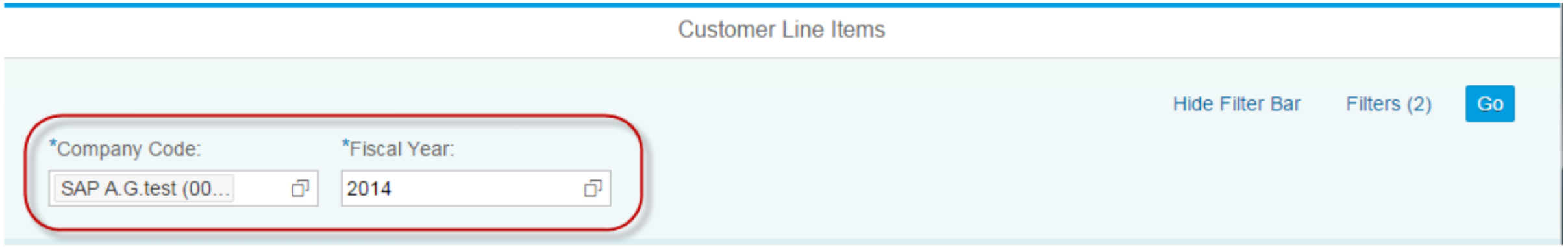
Today

Example: SmartFilterBar with Annotations



Annotations.xml

```
<EntityType Name="Item" sap:service-schema-version="1" sap:service-version="1"
sap:label="Item" sap:semantics="aggregate" sap:content-version="1">
      …
      <Property Name="CompanyCode" Type="Edm.String" MaxLength="4"
      sap:text="CompanyName" sap:label="Company Code" sap:creatable="false"
      sap:required-in-filter="true"/>
      <Property Name="FiscalYear" Type="Edm.String" MaxLength="4"
      sap:label="Fiscal Year" sap:creatable="false" sap:required-in-
      filter="true"/>
      …
</EntityType>
```

view.xml

```
<smartFilterBar:SmartFilterBar
      •id="smartFilterBar"
      •entityType="Item"
      •x-persistencyKey="
      SmartFilter_Persist"
/>
```

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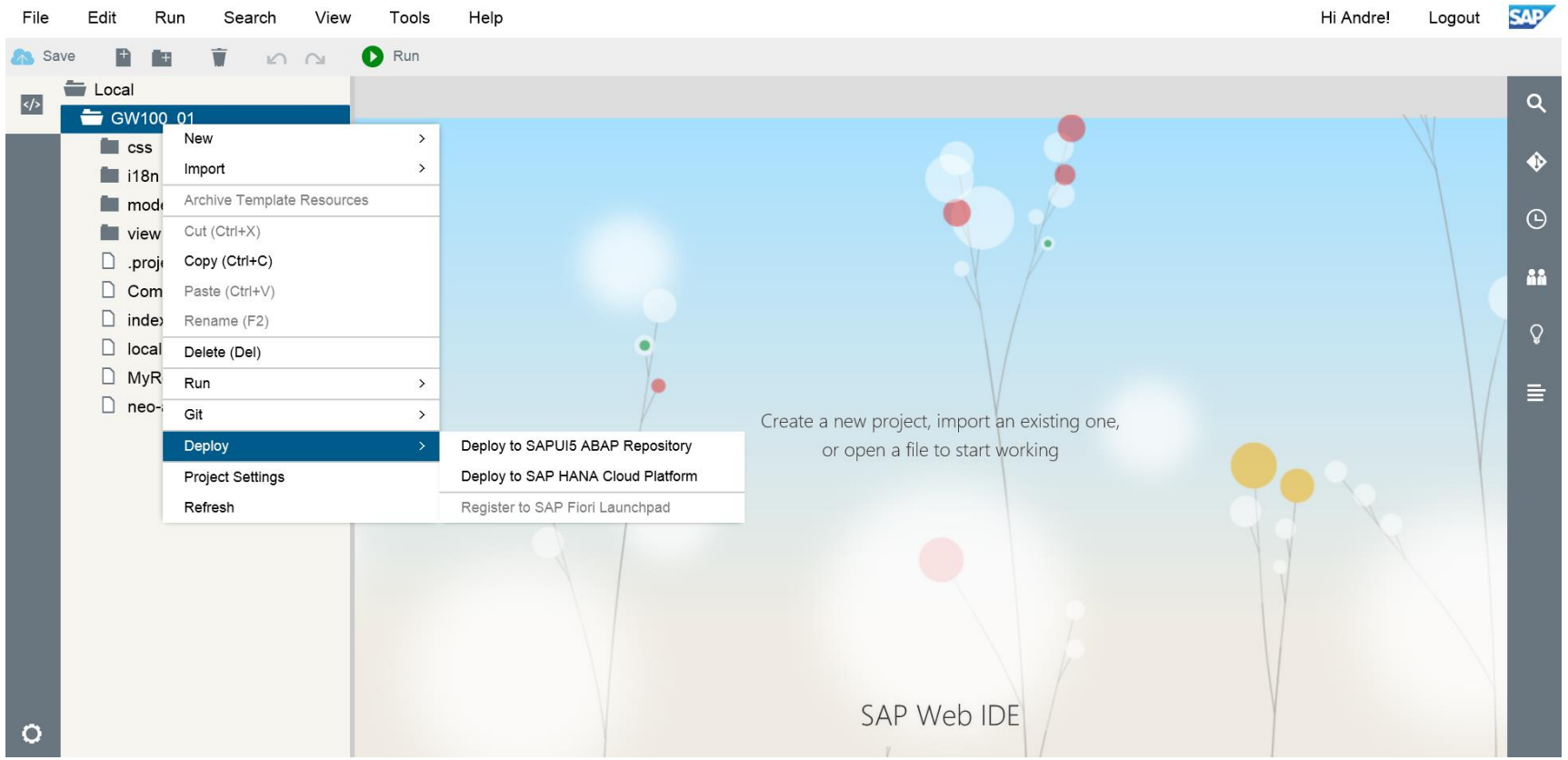
SAP Web IDE on SAP HANA Cloud Platform

Running HTML5 Apps on SAP Gateway

Today

Own roadmap available

- Deploy to Frontend Server
- Deploy to SAP HANA Cloud Platform



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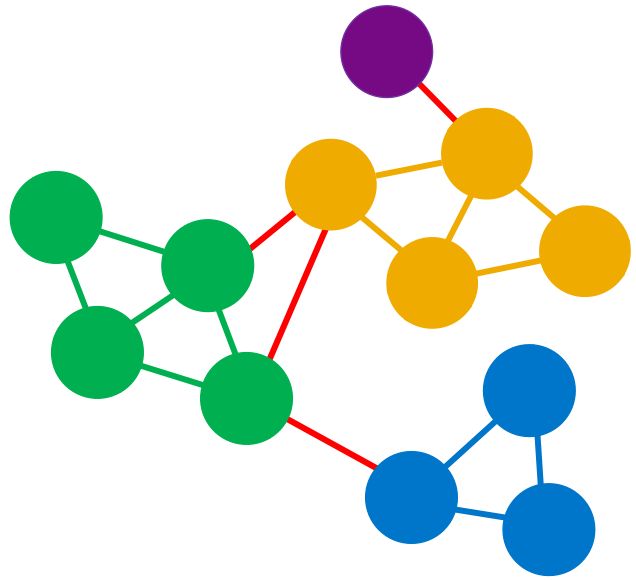
Today

OData v4 Support

The main paradigm in OData v4 is the reduction of data. The reduction is achieved through a more powerful query language and a new optimized JSON protocol. At the same time richer metadata can be leveraged.



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OData V4: New JSON Format - Sample Payload 2.0 vs. 4.0

V2 Payload Product Details


```
d: {
 - __metadata: {
     id: https://ldai1g1y.wdf.sap.corp:44356/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('HT-1000'),
     uri: https://ldai1g1y.wdf.sap.corp:44356/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('HT-1000'),
     type: "/IWBEP/GWSAMPLE_BASIC.Product",
     etag: "W/"datetime'2015-10-22T09%3A43%3A25.0000000'""
   },
   ProductID: "HT-1000",
   TypeCode: "PR",
   Category: "Notebooks",
   Name: "Notebook Basic 15",
   NameLanguage: "EN",
   Description: "Notebook Basic 15 with 2,80 GHz quad core, 15" LCD, 4 GB DDR3 RAM, 500 GB Hard Disc, Windows 8 Pro"
   DescriptionLanguage: "EN",
   SupplierID: "0100000000",
   SupplierName: "SAP",
   TaxTarifCode: 1,
   MeasureUnit: "EA",
   WeightMeasure: "4.200",
   WeightUnit: "KG",
   CurrencyCode: "EUR",
   Price: "956.00",
   Width: "30.000",
   Depth: "18.000",
   Height: "3.000",
   DimUnit: "CM",
   CreatedAt: "/Date(1445507005000)/",
   ChangedAt: "/Date(1445507005000)/",
 - ToSalesOrderLineItems: {
    - __deferred: {
        uri: https://ldai1g1y.wdf.sap.corp:44356/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('HT-1000')/ToSalesOrderLineItems
      }
   },
 - ToSupplier: {
    - __deferred: {
        uri: https://ldai1g1y.wdf.sap.corp:44356/sap/opu/odata/IWBEP/GWSAMPLE_BASIC/ProductSet('HT-1000')/ToSupplier
      }
   }
}
```



```
{
  @odata.context: "$metadata#ProductList/$entity",
  ProductID: "HT-1000",
  TypeCode: "PR",
  Category: "Notebooks",
  Name: "Notebook Basic 15",
  NameLanguage: "EN",
  Description: "Notebook Basic 15 with 2,80 GHz quad core, 15" LCD, 4 GB DDR3 RAM, 500 GB Hard Disc, Windows 8 Pro",
  DescriptionLanguage: "EN",
  SupplierID: "100000000",
  SupplierName: "SAP",
  TaxTarifCode: 1,
  MeasureUnit: "EA",
  WeightMeasure: 4.2,
  WeightUnit: "KG",
  CurrencyCode: "EUR",
  Price: 956,
  Width: 30,
  Depth: 18,
  Height: 3,
  DimUnit: "CM",
  CreatedAt: "2015-10-22T09:43:25Z",
  ChangedAt: "2015-10-22T09:43:25Z"
}
```


V4 Payload Product List

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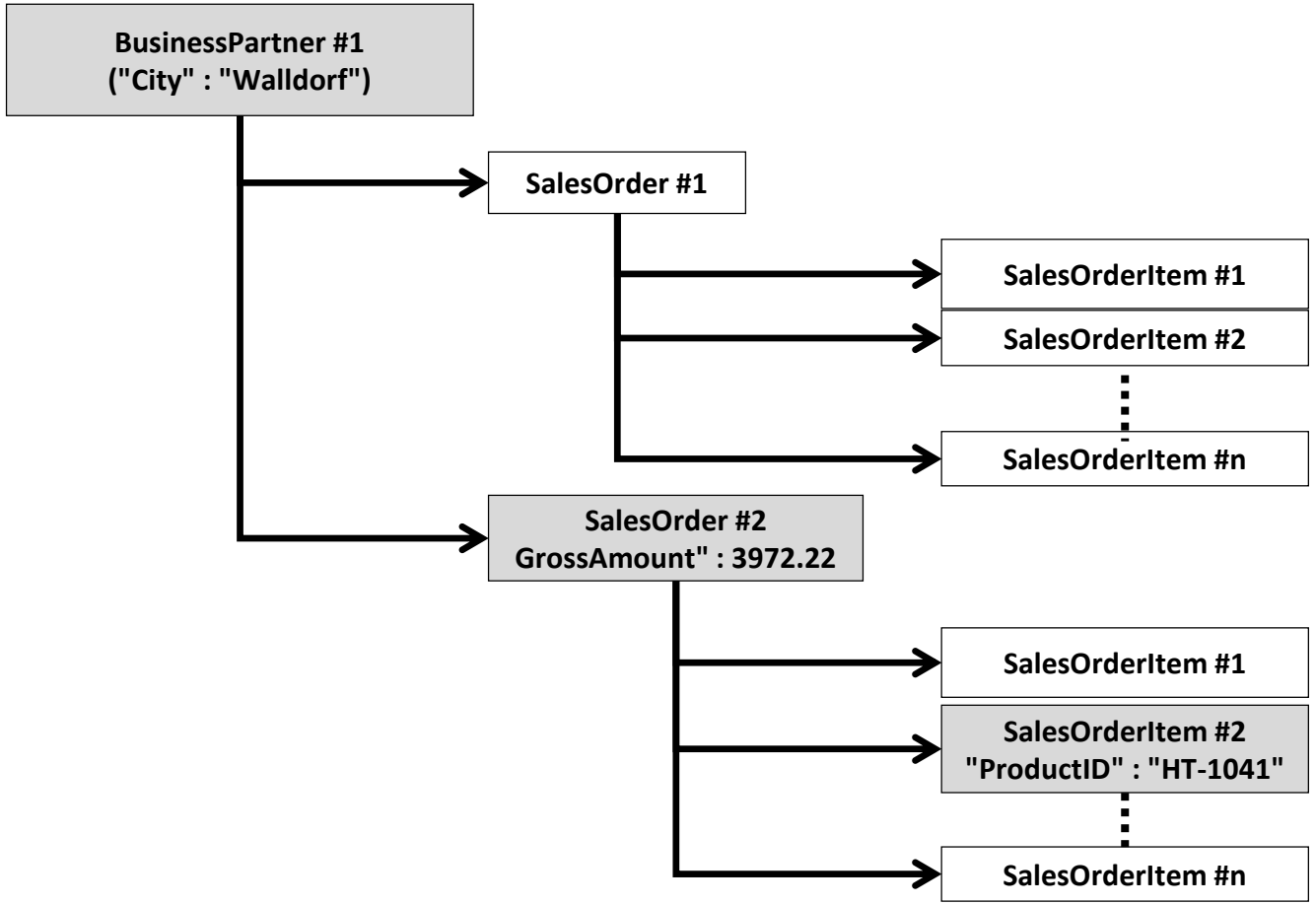
OData v4: Query options on expanded items

/BusinessPartnerList**?$filter=Address/City eq 'Walldorf'**&
$expand=BP_2_SO**($filter=GrossAmount ge 1100**;
$expand=SO_2_SOITEM(**$filter=Product/ProductID eq 'HT-1041'**))




```
{
 "@odata.context" : "$metadata#BusinessPartnerList",
 "value" : [
  {
   "@odata.etag" : "W/\"20150101000001.0000000\"",
   "BusinessPartnerID" : "0100000000",
   "CompanyName" : "SAP",
   "LegalForm" : "SE",
   "Address" : {
    "City" : "Walldorf",
    "PostalCode" : "69190",
    "Street" : "Dietmar-Hopp-Allee",
    "Building" : "16",
    "Country" : "DE",
   },
   "BP_2_SO" : [
    {
     "SalesOrderID" : "0500000009",
     "BuyerID" : "0100000000",
     "BuyerName" : "SAP",
     "CurrencyCode" : "EUR",
     "GrossAmount" : 3972.22,
     "SO_2_SOITEM" : [
      {
       "SalesOrderID" : "0500000009",
       "ItemPosition" : "20",
       "CurrencyCode" : "EUR",
       "GrossAmount" : 1166.20,
       "Product" : {
        "ProductID" : "HT-1041",
        "ProductName" : "Laser Basic"
       }
```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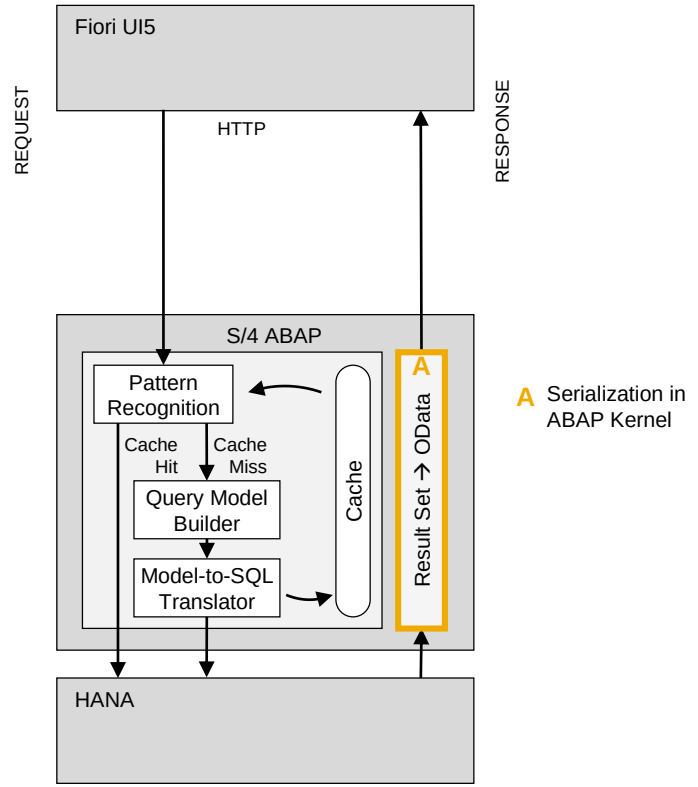
Today

Performance improvements in OData v2

Optimized stack for SAP S/4HANA

- **No separate Gateway Server** – for maximum performance connect directly to the backend
- **Request Cache** – Request processing uses cached SQL Statements (fast track for cache hit, bypassing full request translation)
- **Simple Transformation** – Use of Simple Transformation (running in ABAP Kernel) to generate OData response
- **General Improvements** – in the GW Framework (e.g. optimized usage of shared memory), improved interaction between GW and SADL



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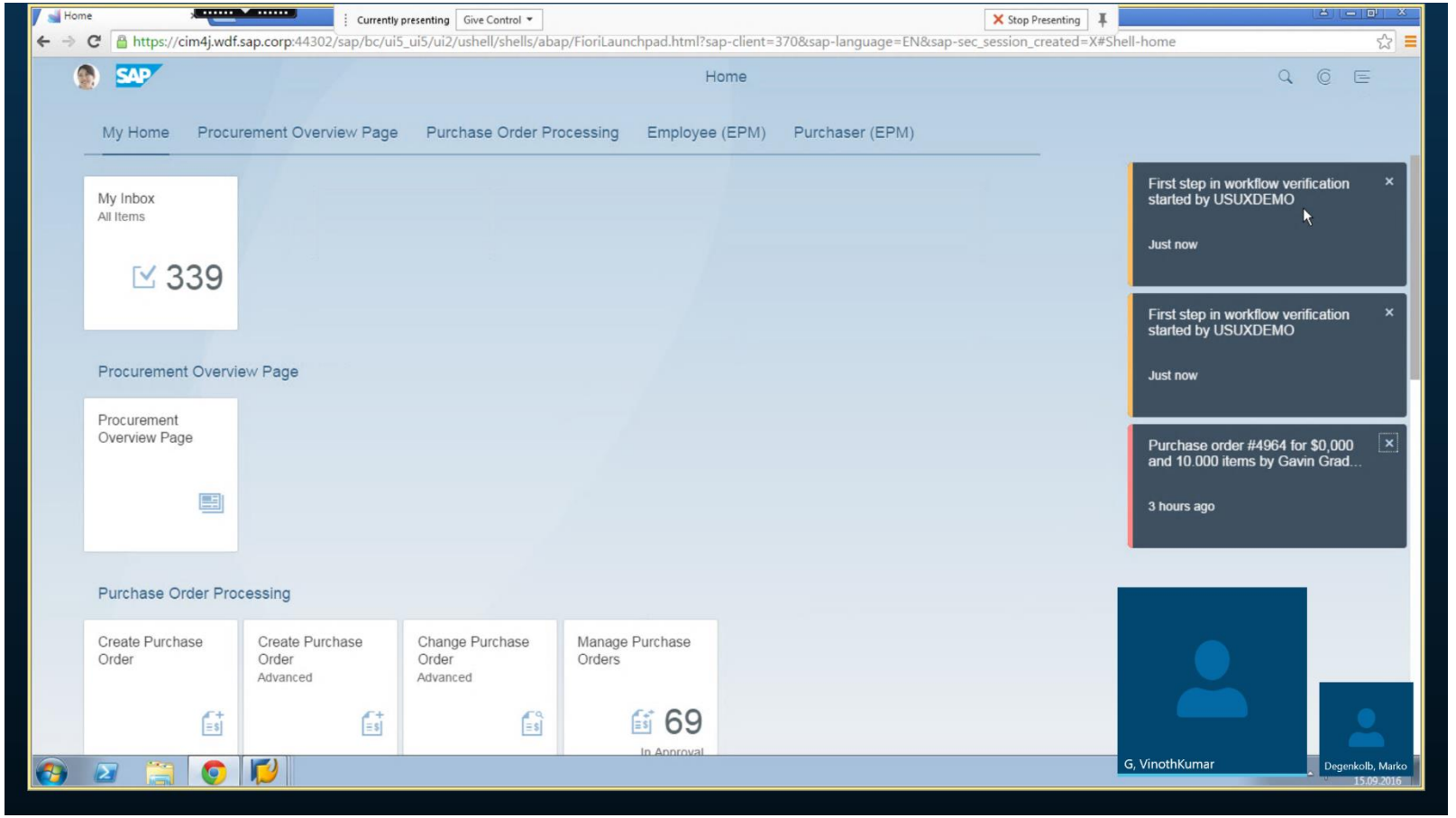
New notification channel

Workflow integration

Today

My Inbox

- **Send notifications** – for the performer of a task



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Today

New SAP Gateway release strategy as of 7.50

SAP Gateway is an integral part of the new NetWeaver platform

New functionality is being developed for SAP NetWeaver 7.5x onwards only in the newest SAP NetWeaver release

- **No downports to older releases (e.g. NW 7.40 or Gateway 2.0)**
- **Innovations from NetWeaver-Basis** are available with every new NetWeaver release for Gateway

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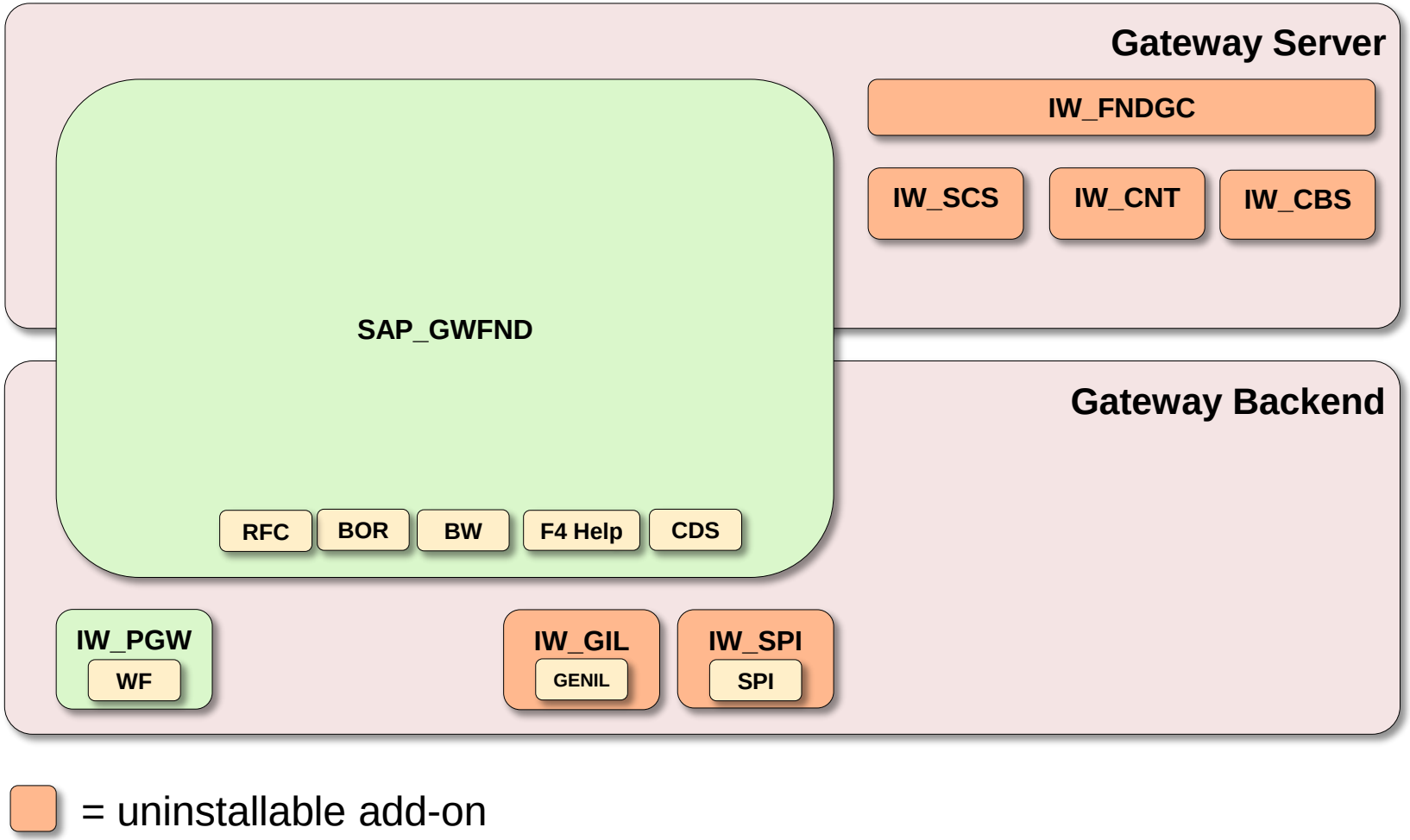
Today

Deprecated SAP Gateway components for SAP S/4HANA

Legacy Add-Ons in Gateway can be uninstalled before transformation to SAP S/4HANA

- IW_SCS 200
- IW_CNT 200
- IW_CBS 200
- IW_GIL 100
- IW_SPI 100
- IW_FNDGC 100

http://scn.sap.com/community/gateway/blog/2016/06/09/uninstallation-of-sap-gateway-add-ons-iwfndgc-iwgil-iwspi-iwscs-iwcnt-200-and-iwcbs-200



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SAP Gateway

Product road map overview - key themes and capabilities

Today

OData v2 service development and service provisioning
- Odata service development
- Support of multiple backend systems

OData provisioning in other SAP products
- SAP Mobile Platform 3.0
- SAP Process Integration
- SAP Fiori Cloud ☁
- SAP HANA Cloud Platform ☁

OData v4.0
- Code-based service development
- Cross service navigation - Reuse of services
- Generic F4-Help provisioning

Performance improvements in OData v2

New notification channel
- Workflow integration

SAP NetWeaver 750 SP04

Planned

OData v4.0
- Aggregation - e.g. $apply with groupby
- Instance annotations
- Service catalogue
- Feature parity with OData v2 stack
  - Deep Insert
  - Multi-Origin
  - Soft-State
  - RAL

New notification channel
- Continuous improvements
- SAP Fiori launchpad support via WebSockets in SAP Fiori 2.0
- Notifications support for SAP HANA Cloud Platform mobile services ☁ and SAP Mobile Platform 3.0

Performance improvements in OData v2
- Optimizations for Co-Deployed scenarios and analytical scenarios
  - Batch at once
  - Serialization of $expand via ST

Future Direction

OData v4.0
- Asynchronous Requests & Callback on Completion
- Offline: Delta Links & Callback on Change
- Feature parity with OData v2 stack

New notification channel
- Push-notifications for business objects
- Feed update notifications

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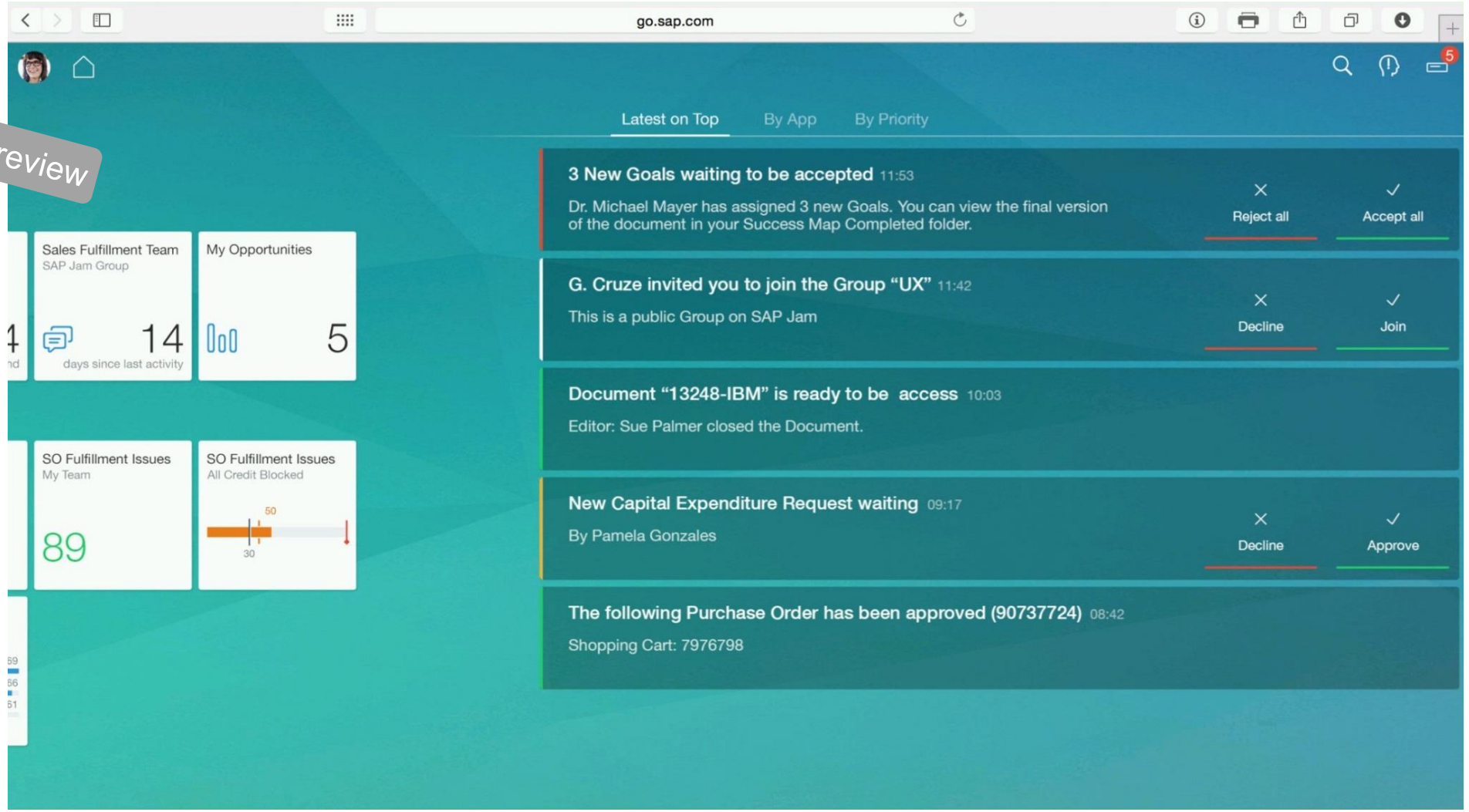
New notification channel

SAP Fiori launchpad Support via WebSockets in SAP Fiori 2.0

Planned Innovations



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New notification channel

Notifications support for SAP HANA Cloud Platform mobile services and SAP Mobile Platform 3.0

Planned Innovations

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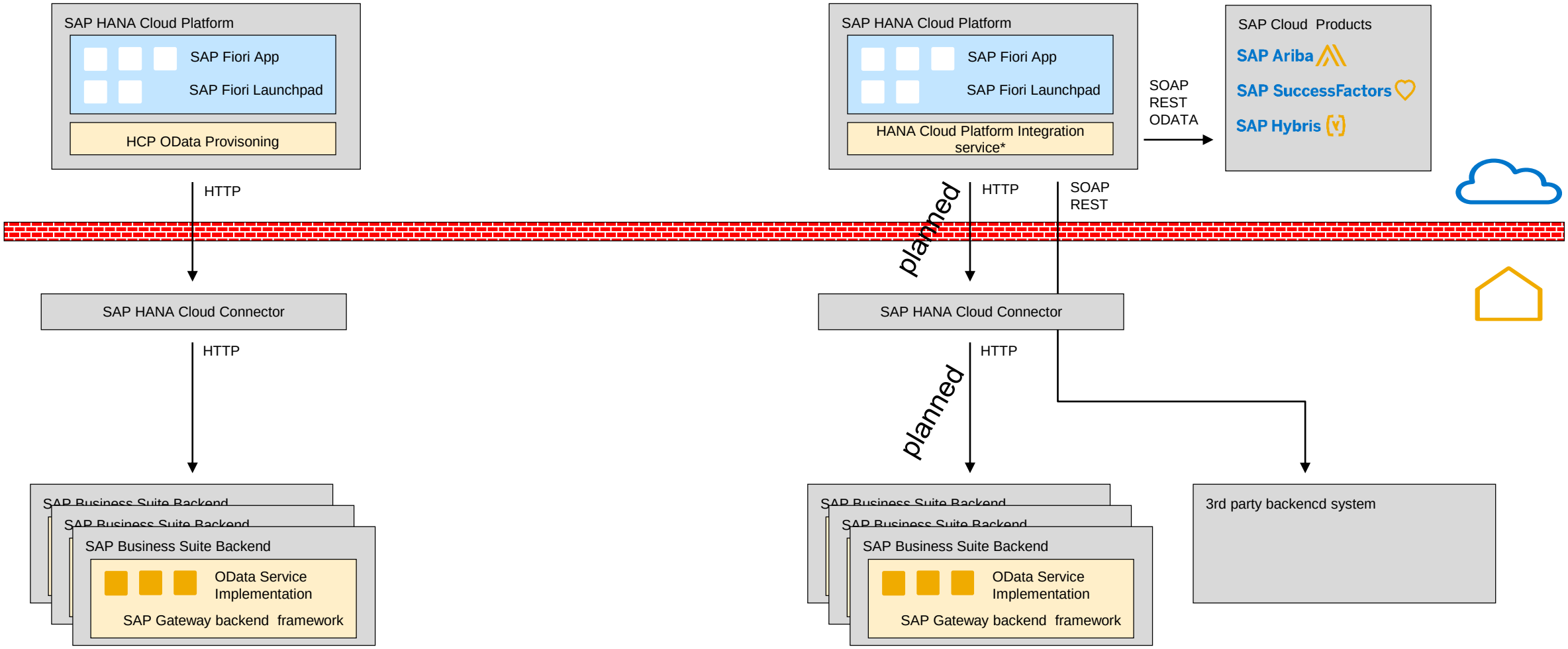
HCP OData Provisioning vs SAP HANA Cloud Platform Integration service*

Planned Innovations

SAP HANA Cloud Platform OData Provisioning

SAP HANA Cloud Platform Integration service*



* Previously called SAP HANA Cloud Integration

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Planned Innovations

OData v4: Aggregation: Simple Composable Query Language

SAP Labs preview

GET Sales

ID	Category	Product	Country	Customer	Amount
1	Non-Food	Paper	USA	Joe	1
2	Food	Sugar	USA	Joe	2
3	Food	Coffee	USA	Joe	4
4	Food	Coffee	USA	Sue	8
5	Non-Food	Paper	USA	Sue	4
6	Food	Sugar	Netherlands	Sue	2
7	Non-Food	Paper	Netherlands	Sue	1
8	Non-Food	Paper	Netherlands	Sue	2

GET Sales?$apply=groupby((Product),aggregate(Amount with sum as Total))

Product	Total
Coffee	12
Paper	8
Sugar	4

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OData v4: Instance annotations

SAP Labs preview

- Define additional information for the payload, for example
  - A property is read-only for a single instance
  - Conditional formatting on UI level
- Instance-level annotations override the annotation specified at the metadata level

Product1	Description read only	On Stock
Product2	Description editable	Shipped within 3 weeks
Product3	Description read only	On Stock
Product4	Description read only	Not available

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OData v4: Additional topics

Generic CDS view provisioning

- CDS views will be automatically published as OData v4 services
- No additional development efforts

New Service Catalogue

Feature parity with OData v2 stack

- Multi-Origin
- Soft-State
- Read Access Logging
- Deep Insert

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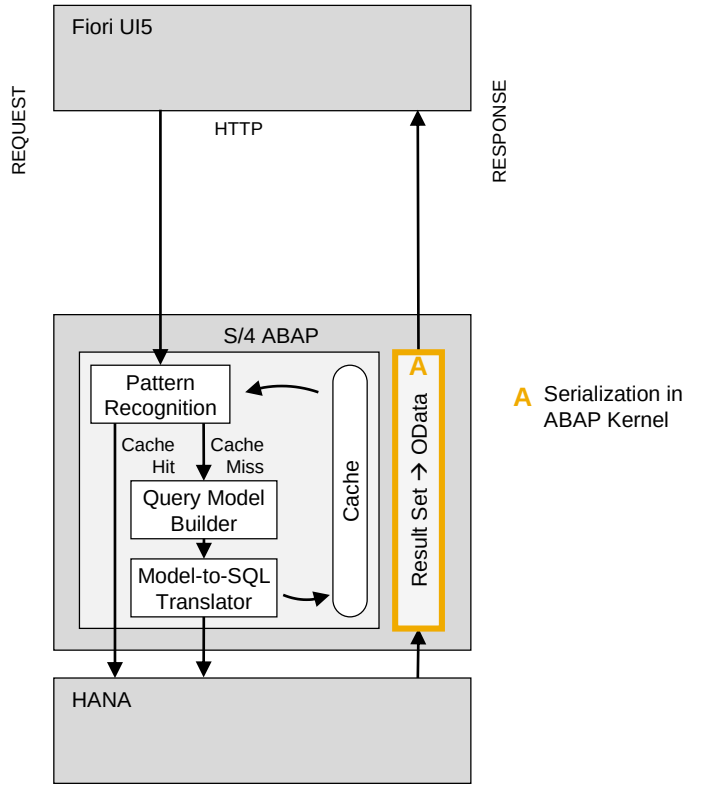
Performance improvements in OData v2

Optimized for Co-Deployed scenarios and analytical scenarios

- **Batch at once** – optimize data access in (analytical) read only scenarios
- **Simple Transformation** – Support of $expand



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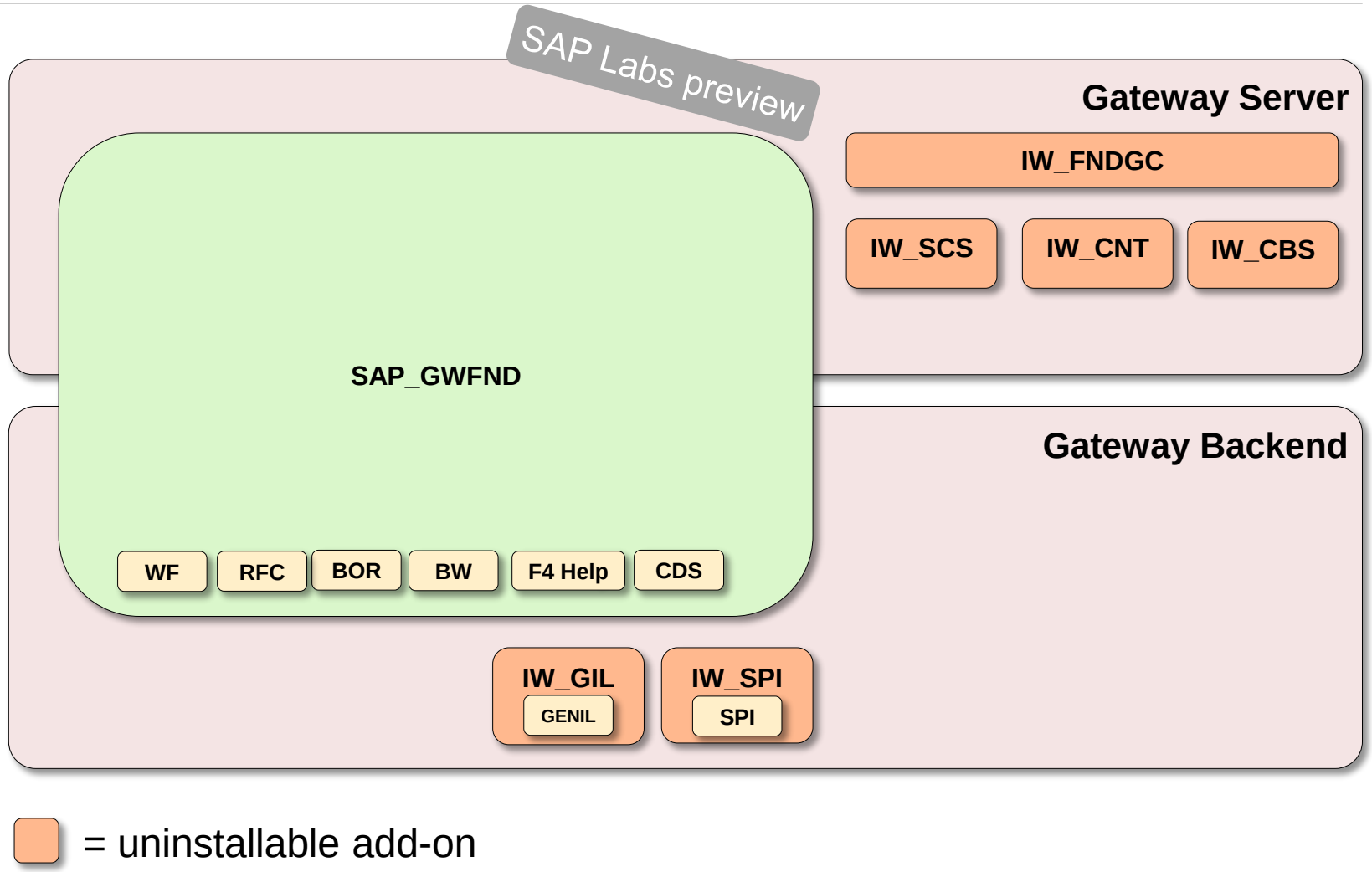
Planned Add-on structure

IW_PGW becomes part of software component SAP_GWFND

Only one software component

Uninstallable Add-ons (not supported for S/4HANA)

- IW_SCS 200
- IW_CNT 200
- IW_CBS 200
- IW_GIL 100
- IW_SPI 100
- IW_FNDGC 100



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Product Road Map

- Today
- Planned
- Future

SAP Gateway

Product road map overview - key themes and capabilities

Today

OData v2 service development and service provisioning
- Odata service development
- Support of multiple backend systems

OData provisioning in other SAP products
- SAP Mobile Platform 3.0
- SAP Process Integration
- SAP Fiori Cloud ☁
- SAP HANA Cloud Platform ☁

OData v4.0
- Code-based service development
- Cross service navigation - Reuse of services
- Generic F4-Help provisioning

Performance improvements in OData v2

New notification channel
- Workflow integration

SAP NetWeaver 750 SP04

Planned

OData v4.0
- Aggregation - e.g. $apply with groupby
- Instance annotations
- Service catalogue
- Feature parity with OData v2 stack
  - Deep Insert
  - Multi-Origin
  - Soft-State
  - RAL

New notification channel
- Continuous improvements
- SAP Fiori launchpad support via WebSockets in SAP Fiori 2.0
- Notifications support for SAP HANA Cloud Platform mobile services ☁ and SAP Mobile Platform 3.0

Performance improvements in OData v2
- Optimizations for Co-Deployed scenarios and analytical scenarios
  - Batch at once
  - Serialization of $expand via ST

Future Direction

OData v4.0
- Asynchronous Requests & Callback on Completion
- Offline: Delta Links & Callback on Change
- Feature parity with OData v2 stack

New notification channel
- Push-notifications for business objects
- Feed update notifications

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Future Direction

OData v4: Future topics

OData v4.0

- Asynchronous Requests & Callback on Completion
- Offline: Delta Links & Callback on Change
- Feature parity with OData v2 stack

New notification channel

- Push-notifications for business objects
- Feed update notifications

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Thank you

Road map contacts for customers and partners

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Key links for more information

For customers and partners

Key links

- SAP Road Maps http:/www.sap.com/roadmaps
- IT Planning Resources https://websmp206.sap-ag.de/~sapidb/011000358700001160122012E
- SAP Community Network http://scn.sap.com/community/netweaver-gateway
- SAP Partner Portal http://partner.sap.com/gateway
- SAP Gateway productivity accelerator https://tools.hana.ondemand.com/#gateway
- SAP Online Help http://help.sap.com/nwgateway
- SAP Developer Center http://scn.sap.com/community/developer-center/netweaver-gateway
- Gateway as a Service – trial https://account.hanatrial.ondemand.com/

Where to go to provide product feedback and ideas

- Influence programs http://service.sap.com/influence
- SAP User Groups http://www.sapusergroups.com/

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