SAPUI5 Advanced Development

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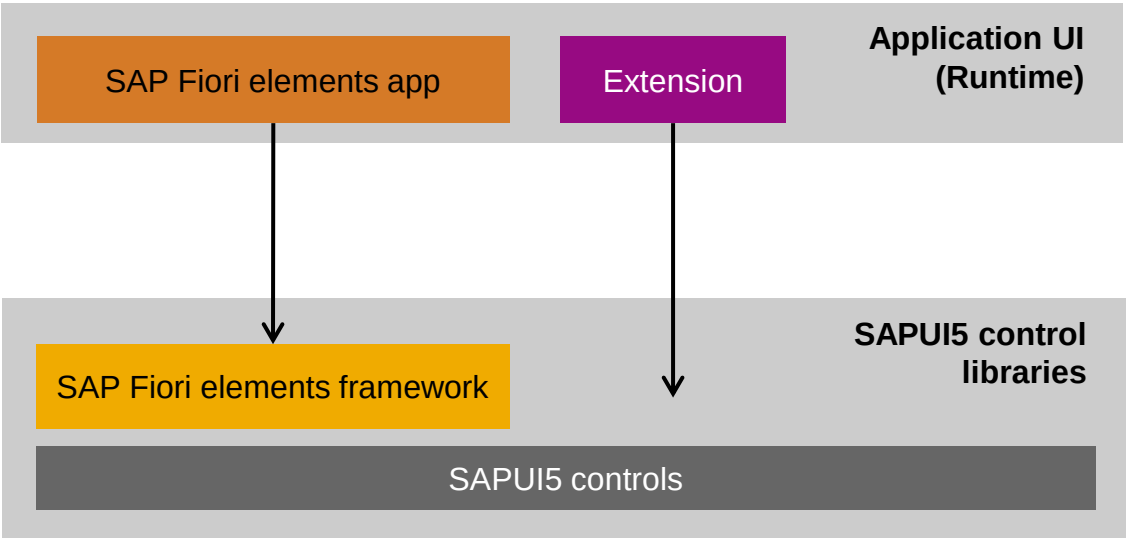
INTERNAL – SAP and Customers Only

Fiori Elements

What is SAP Fiori elements?

SAP Fiori elements apps are **responsive** so they **run on any device**

The UI is **generated at runtime** from metadata. This results in **low-code** development for standard apps



The UI can be **extended** by introducing additional controls and behaviors via custom coding

SAP Fiori elements is a **UI development library** based on SAPUI5

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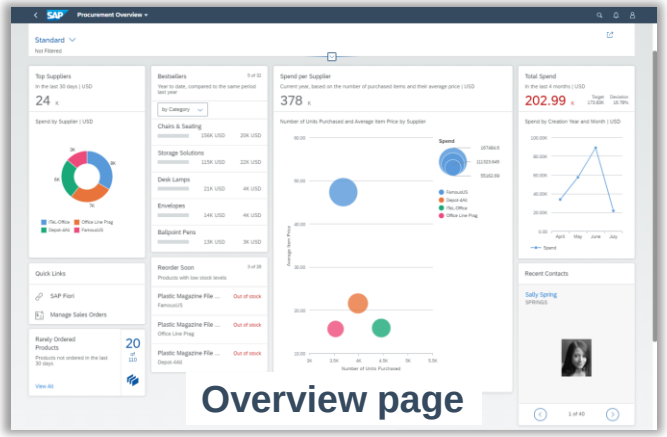
Standard page types increase developer productivity

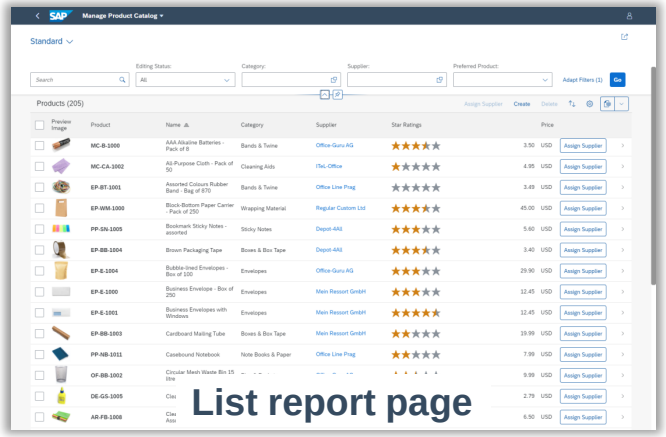
Most use cases in the enterprise space involve providing an **overview**, **lists** of business objects and management of these business **objects**.

Provide **overview** on business relevant data



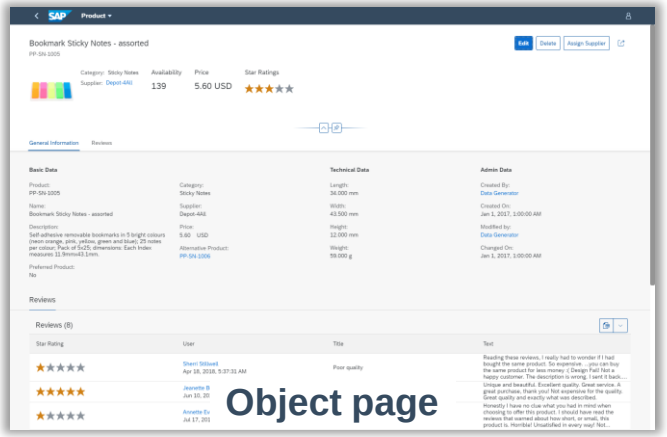
Overview page

Work on a **list** of business objects

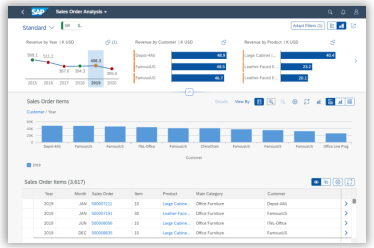


List report page

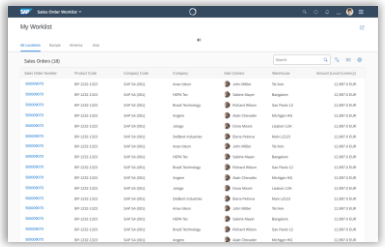
Manage individual business **objects**



Object page



Analytical list page



Worklist page

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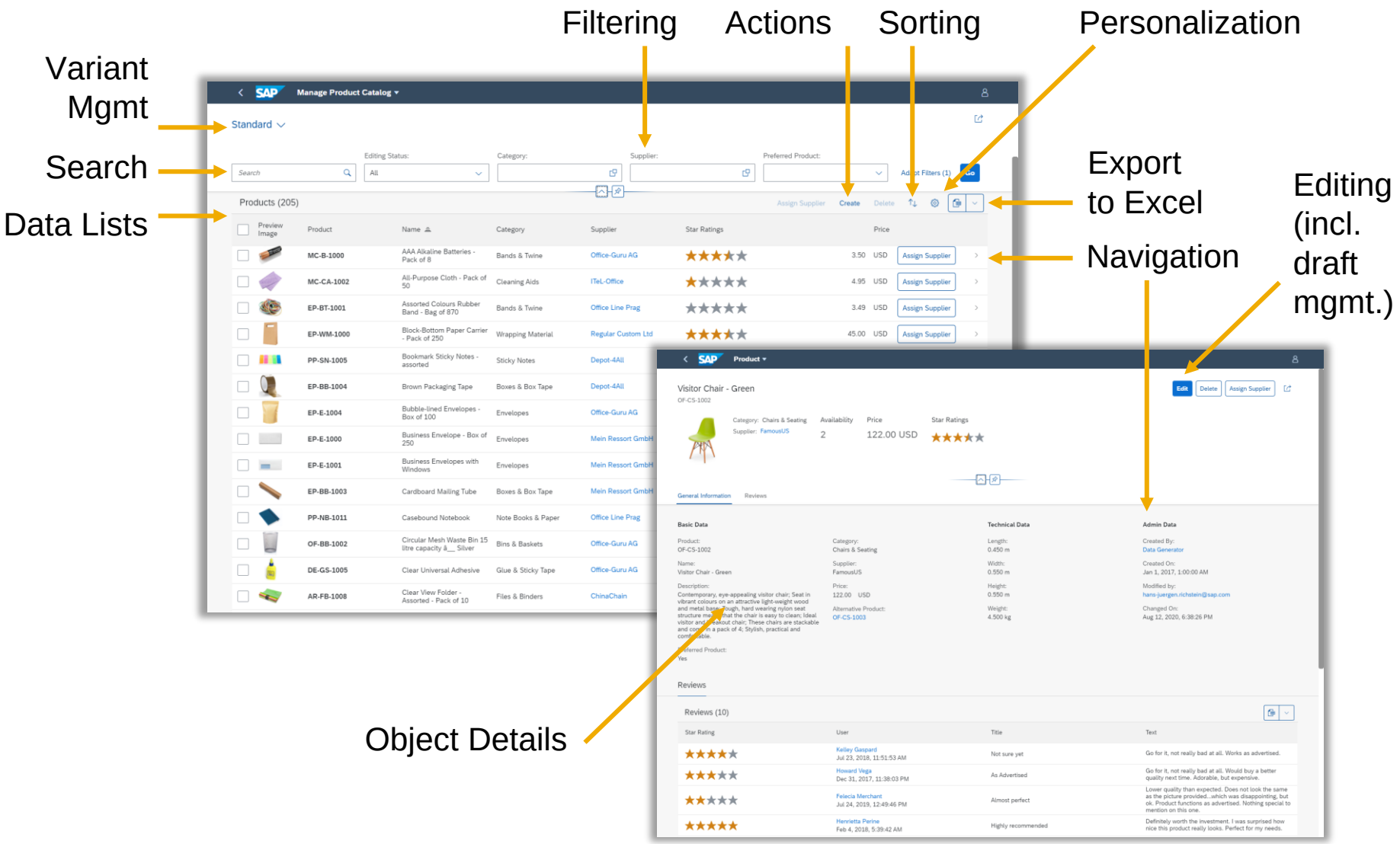
SAP Fiori elements provides enterprise-ready apps out of the box



Additional enterprise readiness features included are:

- Accessibility
- Internationalization
- Mobile compatibility
- Responsiveness
- Performance optimizations
- Integration
- Security checks
- Lifecycle stability
- Test automation support
- …and more

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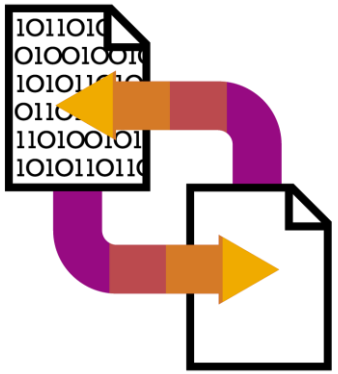
OData connects your application to the back-end

OData: a standardized method (Open Data Protocol) based on HTTP for interacting with data on a server, ensuring interoperability between sources



SAP Fiori elements connects with OData services out-of-the-box

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OData annotations fine-tune how the app looks and behaves

Behavior

"This entity can be edited"

Consumption hints

Which fields allow a human to identify the entity?

Which fields are clickable?

Semantics

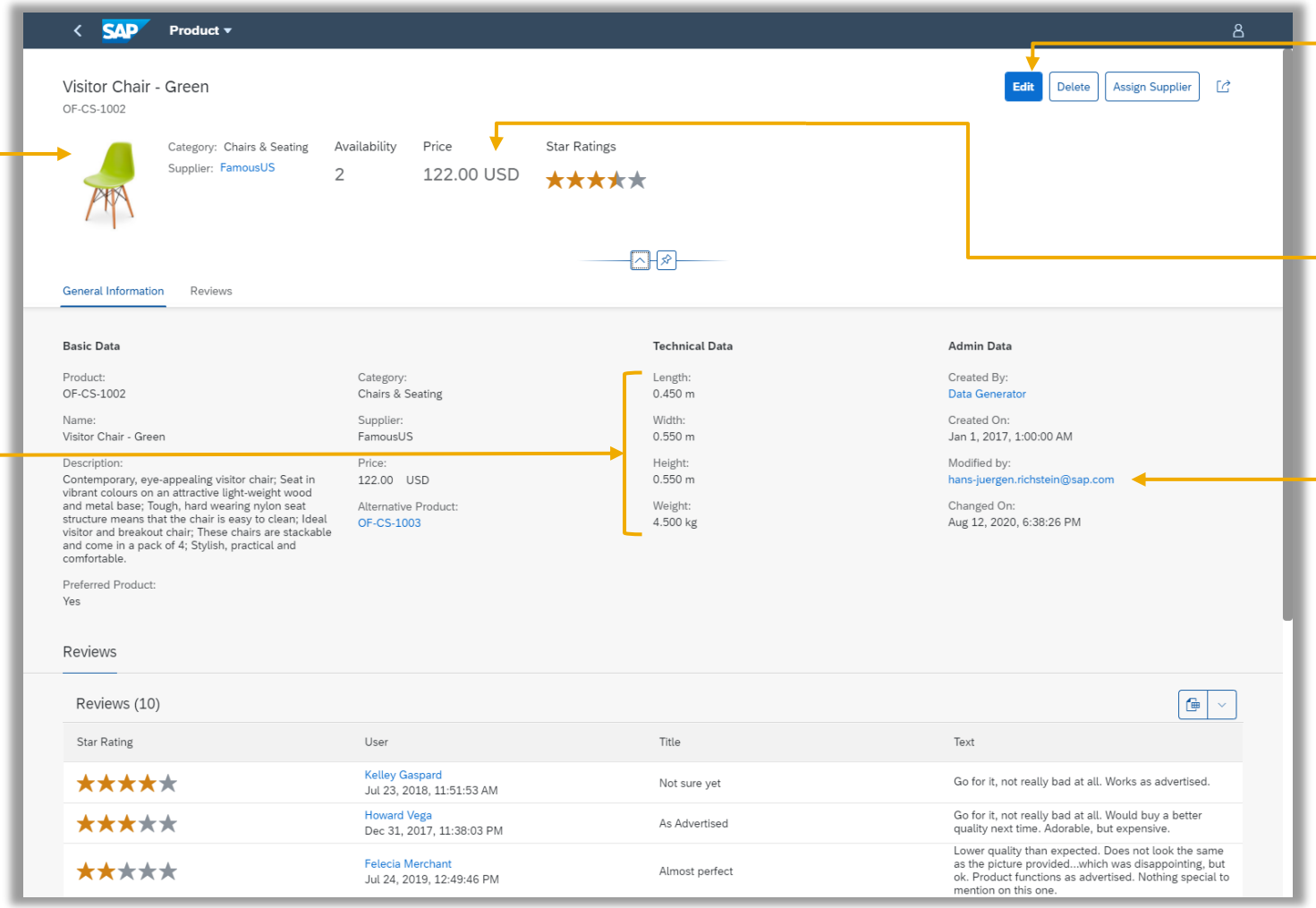
"This is the currency for the amount"

Semantics

"These fields shall be displayed together in a form"

Semantics

"This is an email address"



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SAP Fiori elements generates the app from OData services & annotations

What is displayed?

OData service

- Expose data & relations

OData annotation

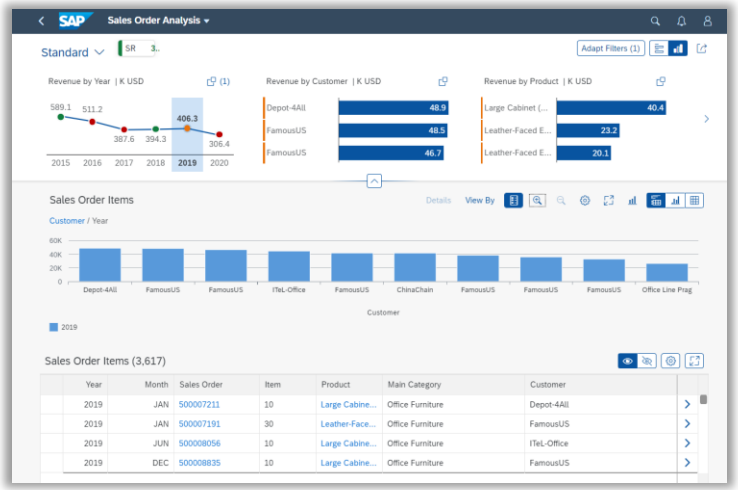
- Semantic metadata
- Behavior
- Consumption hints

How is it displayed?

SAP Fiori elements page types

- Using SAPUI5 Controls
- Applying generic controller logic
- E.g. Analytical list page

Provided by:
Application Developers



Provided by:
SAP Fiori elements framework

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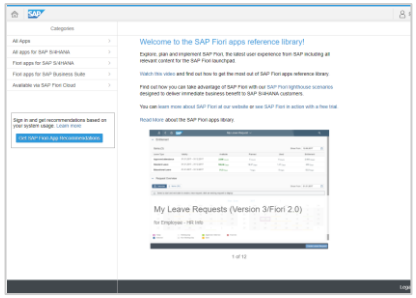
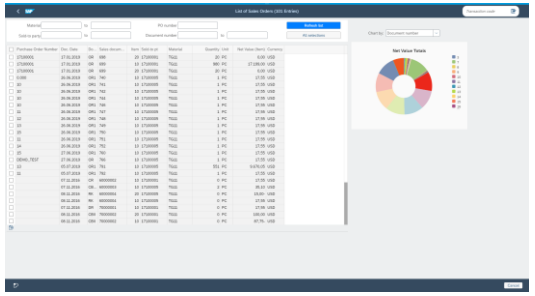
Adapt & Extend SAP Fiori elements apps

There are several paths to the SAP Fiori user experience (UX)

Use or adapt SAP-delivered apps for existing scenarios





SAP Fiori apps

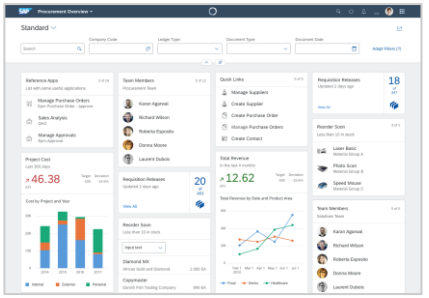
Out-of-the-box solutions developed by SAP

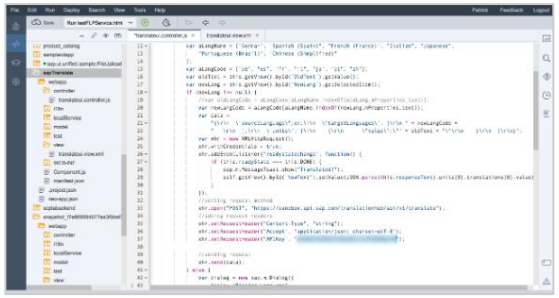
SAPUI5 Flexibility enables adaptation

SAP Screen Personas

Simplified SAP GUI screens

Develop your own apps for new business scenarios





SAP Fiori elements

Templates for faster development with SAPUI5

+

SAP Fiori tools

Productivity tools to make developers more efficient

Freestyle apps

SAPUI5 or native mobile custom apps developed by you or an SAP partner

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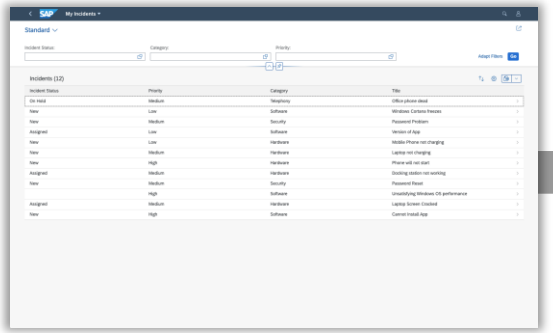
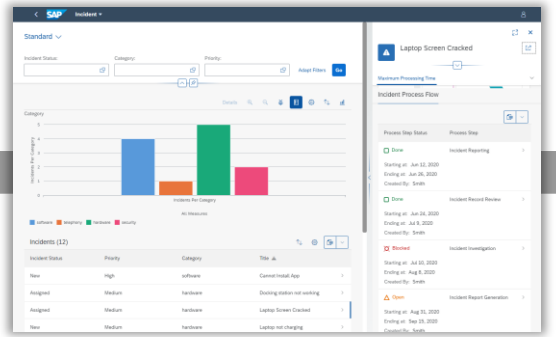
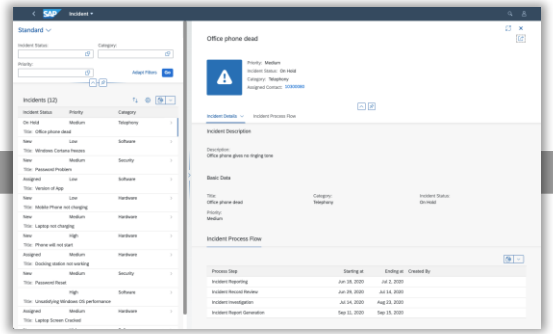
SAP Fiori elements provides rapid, scalable development



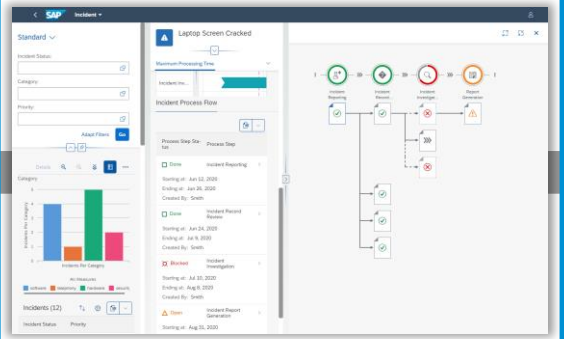
Generate the app based on a standard page type, OData metadata and basic annotations



Enhance the app with additional information based on annotations, as needed



Configure the app, e.g. apply the split screen mode (flexible column layout)



Add capabilities e.g. custom sections or pages to the app with UI5 coding

Low-code development facilitated by SAP Fiori tools

Custom UI5 artifacts

SAP builds over 80% of new apps for SAP S/4HANA using Fiori elements

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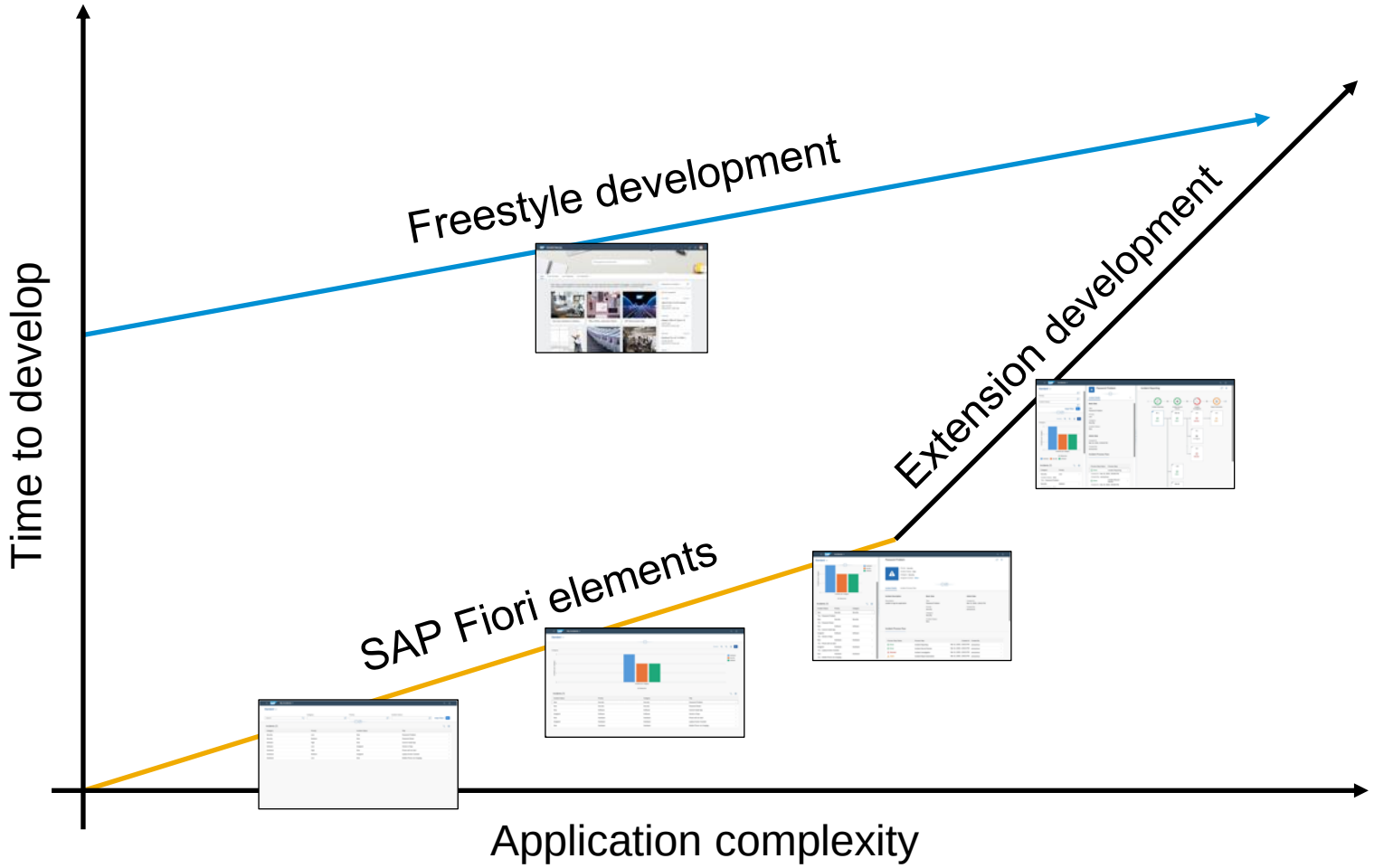
SAP Fiori elements: Scaling with a metadata-based approach

Metadata-driven development is faster and easier if you can follow the standard page types



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SAP Fiori elements prioritizes efficiency over flexibility

Freestyle SAPUI5		SAP Fiori elements
Flexibility	**Overall approach**	Efficiency
Freestyle designs	Design requirements	SAP templates
Web Development	Development knowledge	Annotations
Own coding, own UI logic	App ownership / maintenance	Own annotations, SAP's UI logic
Higher	**Total cost of development and maintenance**	Lower

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Low Code/No Code Tools

SAP Build

Simplify your application development

DIGITAL EXPERIENCE

Connect people, data, and process with engaging experiences

DIGITAL PROCESS AUTOMATION

Automate, enhance, and adapt business processes beyond standard solutions

DEVELOPMENT EFFICIENCY

Empower everyone to rapidly build and enhance apps, process and experiences with clicks or code

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Digital Experience

Connect people, data, and processes with engaging experiences

DIGITAL EXPERIENCE

Connect people, data, and processes with engaging experiences

- Provide **consistent, contextual, and personalized** access to the information you need, when you need it, wherever you need it
- Empower business users with a **simplified digital workplace experience** to foster increased engagement, and a better overall experience for your people, customers and partners.
- Jumpstart experience development with **prebuilt templates, conversational bots, and connected services** for SAP solutions

Improve people engagement, resource efficiency, and employee productivity

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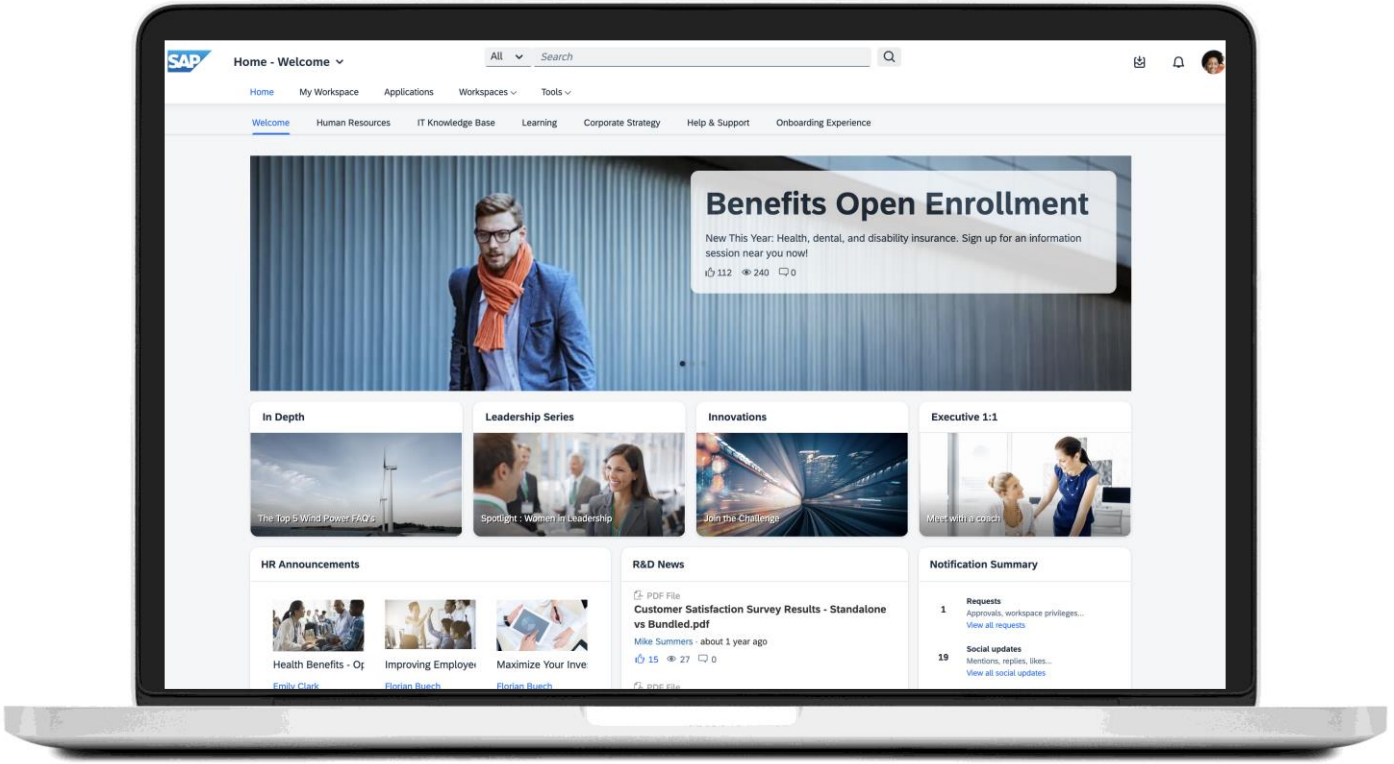
SAP Build Work Zone

SAP Build Work Zone delivers ONE user experience across the enterprise

Business users can build role specific digital workplace solutions & purpose-built business sites

Benefits

- **Unified, personalized & guided** experience across SAP, 3rd party & custom applications
- **Fast access to** experts and information
- **Increased** employee engagement & productivity
- **Improved** business agility to roll out & modify business processes



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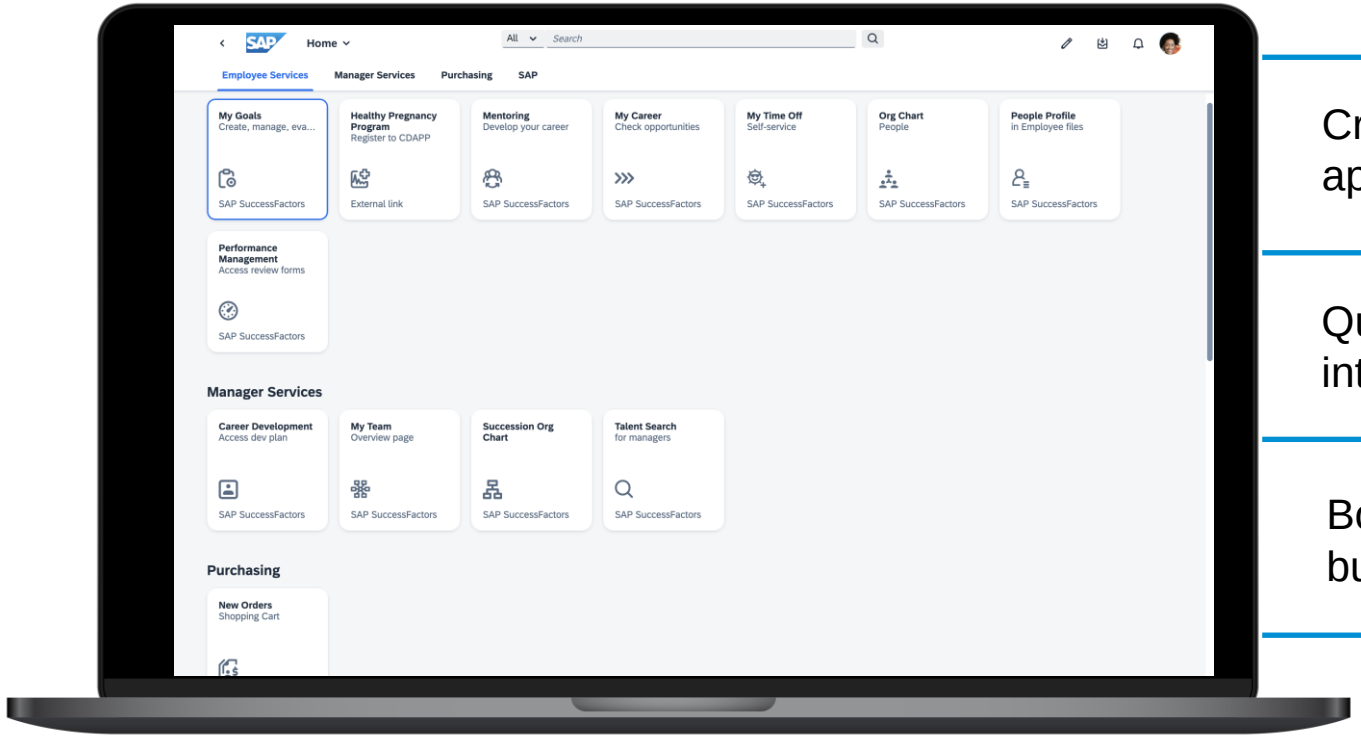
Integrate seamlessly

Easily connect to SAP and non-SAP solutions with pre-built connectors and integrations



Simple and secure access to application data

Create a single access point to applications, processes, and tasks

Quickly visualize business data with UI integration cards templates

Boost time-to-value with pre-built line of business content packages

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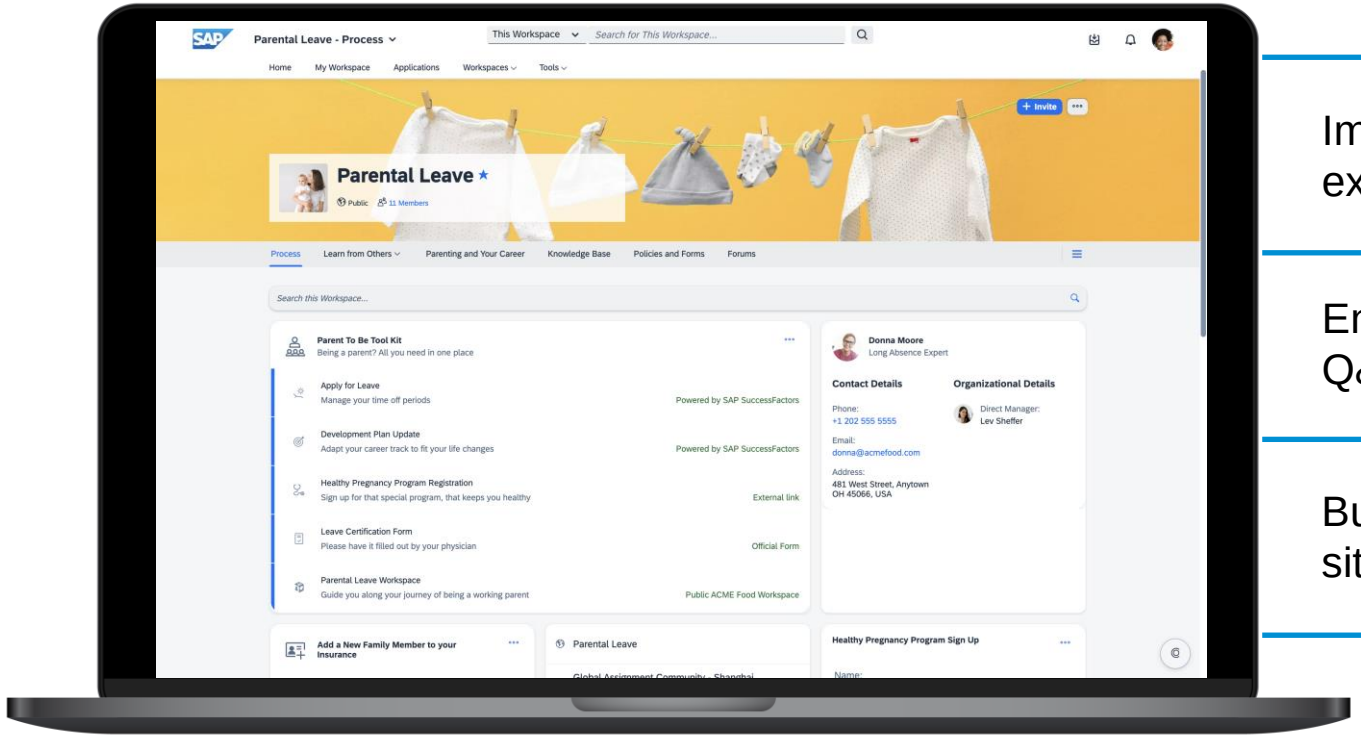
Work together smarter

Maximize team productivity with workspaces and guided experiences



Workspace for Guided Experience

- Improve effectiveness with guided experiences and knowledge sharing
- Engage teams with surveys, polls and Q&A to get continuous feedback
- Build customer, partner & supplier facing sites that make it easier to do business

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The building blocks of a great user experience

EMPLOYEE-FOCUSED

Personalized and easy to use with role-based data

APP LAUNCHER

A central place for your SAP business applications, data and processes

COMMUNICATE AND ENGAGE

Self-sufficient, freeform layout and drag-and-drop design to engage employees

WORKSPACES

Self-service personal, project, topical, departmental and community workspaces

MOBILE READY

Anytime, anywhere access with responsive web and a dedicated mobile app

GUIDED EXPERIENCES

Run guiding user experiences on top of workflows

TASK INBOX

Quickly process incoming tasks and workflow items that matter to you

SEARCH

Discover and find information with powerful content and document indexing

CONDUCT SURVEYS AND POLLS

Engage, monitor and measure with embedded Qualtrics surveys

KNOWLEDGE BASE

Create, retain and share knowledge across the entire organization

SAP BUSINESS APPS

Quick access to SAP S/4HANA and other frequently used business apps

UI INTEGRATION CARDS

Embed and display SAP and third-party business data from across your organization

EXTEND AND DEVELOP

Extend with full IDE based on SAP Business Application Studio

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Become a SAP Builder and build your business sites

Resources & Community

Learn

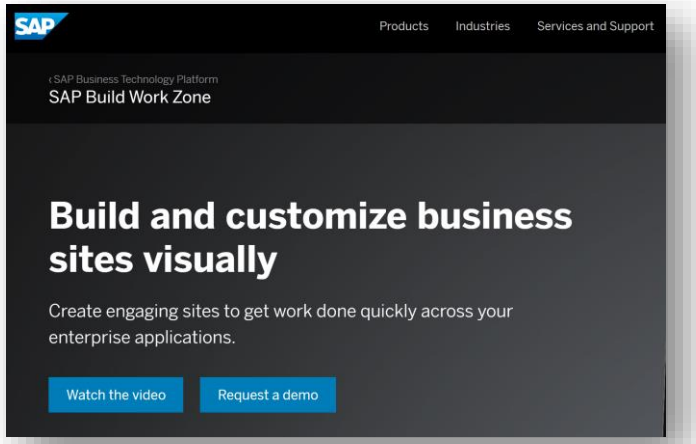
- Click-through product tour
- Learning Journey for business experts
- Tutorials for developers
- Product page
- SAP Discovery Center | Mission

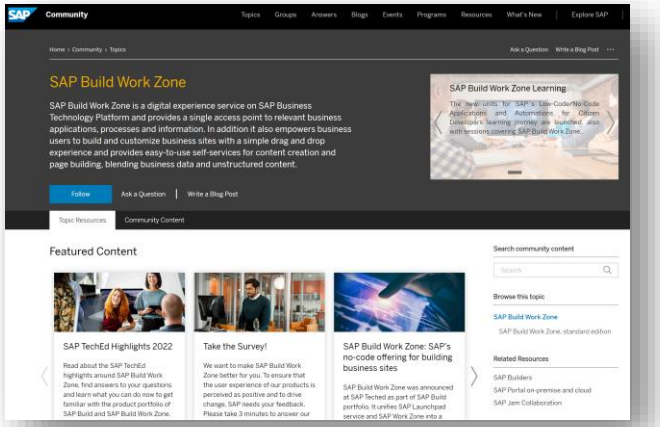
Build

- In-person and virtual events, building sessions & contests
- How-to videos on YouTube
- Questions & answers
- What's new
- Roadmap

Engage & Celebrate

- Forum on SAP Community
- Blogs on SAP Community
- Follow on Twitter
- Follow on LinkedIn
- Sign up for the monthly SAP Builder newsletter





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SAP Mobile Start

Native Entry Point

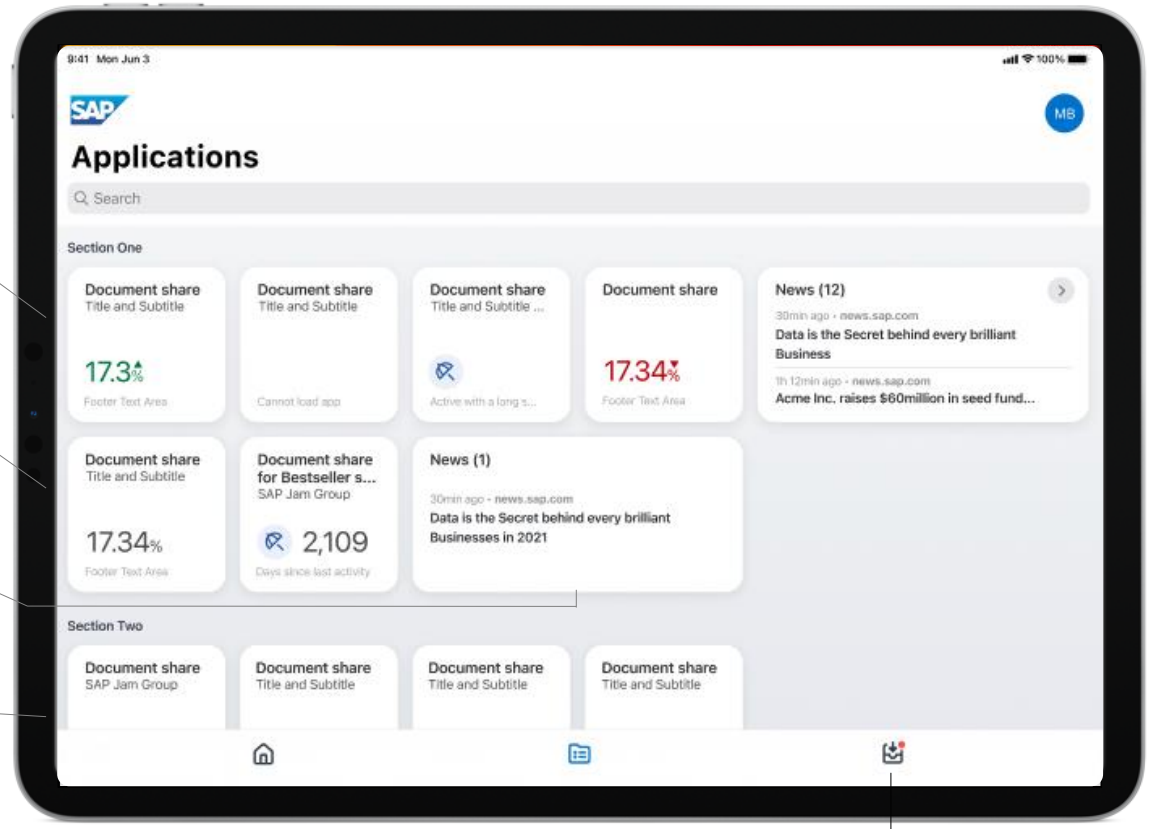
to the Intelligent Enterprise Suite

Native apps

Web apps

News feeds

Web links



SAP apps

- SAP S/4HANA
- SAP SuccessFactors
- SAP Concur
- SAP Analytics Cloud
- …

Non-SAP apps

- SAP S/4HANA situations
- Notifications

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Deep UX integration

With your mobile devices

Native Launchpad

Discover and access all your business apps

Spotlight Search

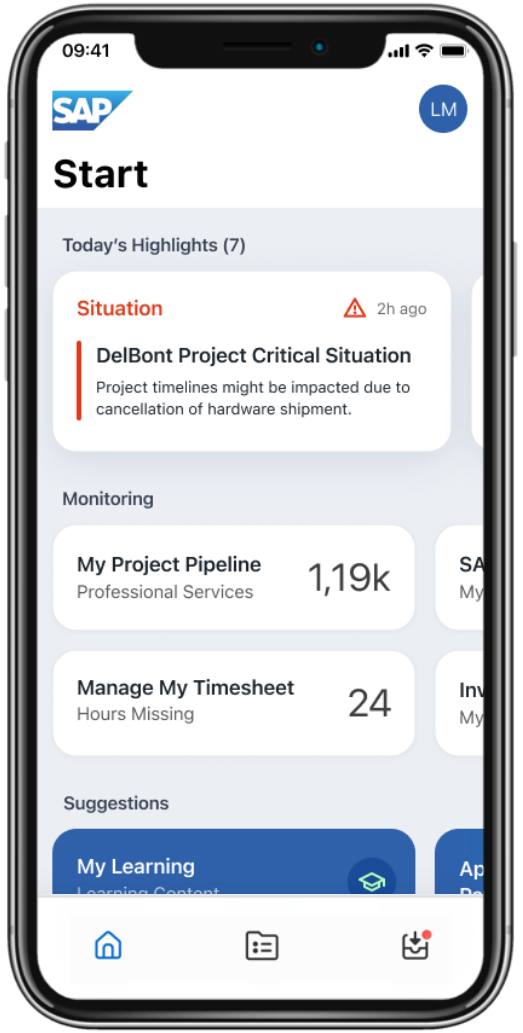
Instantly access occasionally used apps

Widgets

Access your critical apps like a shortcut
Monitor your business from your home screen

Native notifications

Never miss a critical notification
Manage SAP notification the way you prefer



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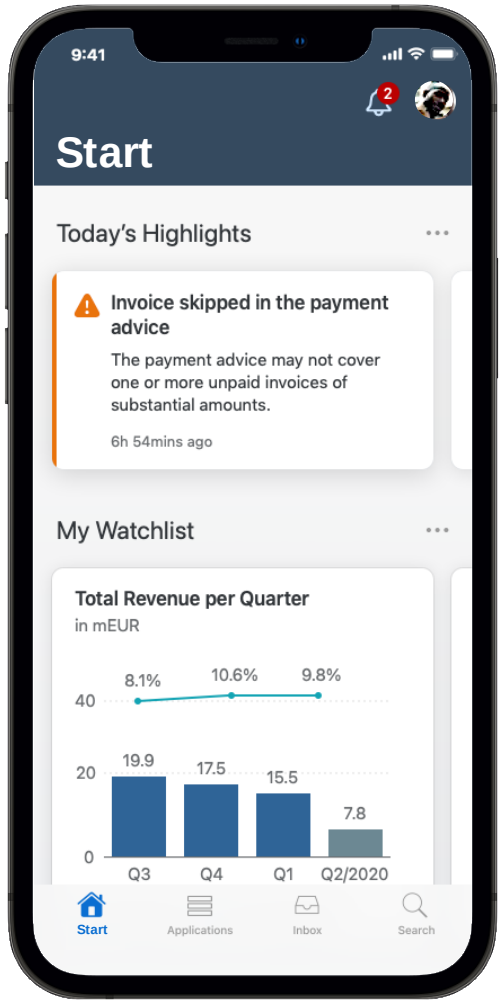
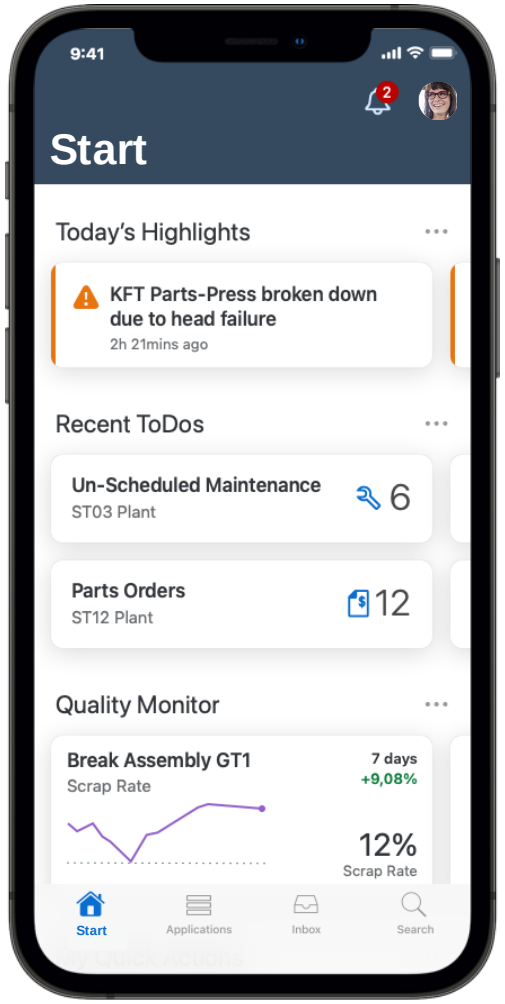
A tailored content

For SAP mobile users

Alex

Finance Manager





Amy

Production Supervisor

Persona-centric content & structure is set-up by IT admin

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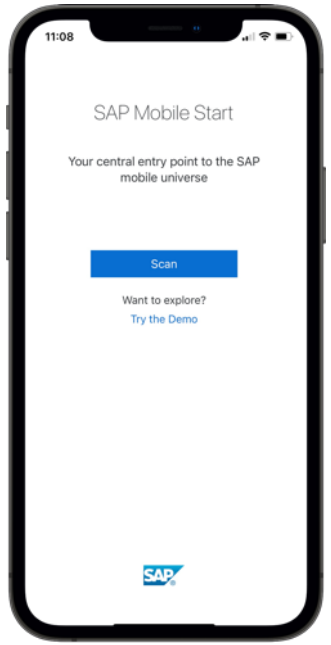
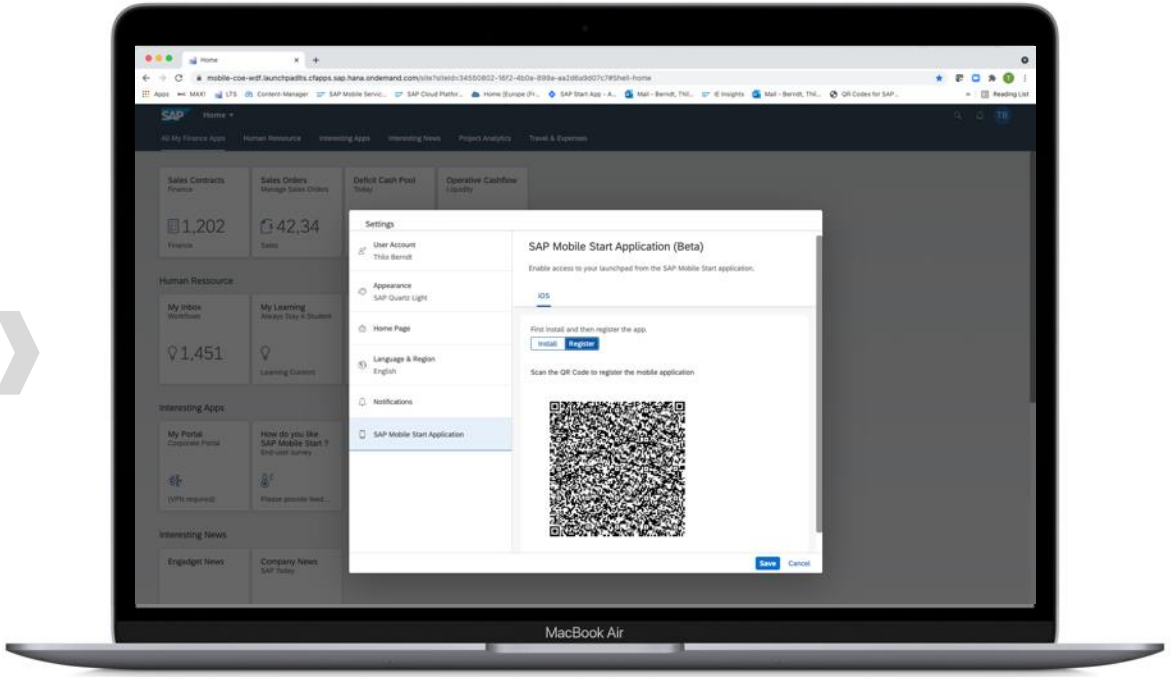
Easily Onboard Users

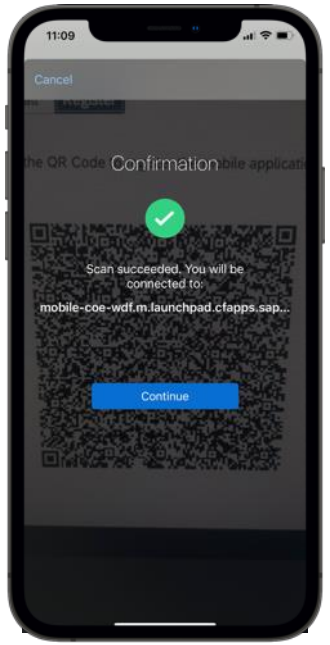
Leveraging the content prepared by IT

1. **Install** the SAP Mobile Start **application** on your device
   a. From **Apple Appstore**
   b. From your corporate **MDM** (Mobile Device Management)

2. **Scan the QR code**, using the SAP Mobile Start onboarding wizard
   The QR code is available in SAP Launchpad settings







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Digital Process Automation

Automate, enhance, and adapt business processes beyond standard solutions

DIGITAL EXPERIENCE

Deliver consistent and collaborative experiences across all channels

DIGITAL PROCESS AUTOMATION

Automate, enhance, and adapt business processes beyond standard solutions

DEVELOPMENT EFFICIENCY

Develop and manage applications that securely extend your on-premise and cloud landscape

- **Tailor digital workflows** to your business needs and leverage AI-enabled bots to **automate repetitive and manual tasks**
- Use predefined, live process content packages for greater **flexibility and customization of your business processes** supported by SAP software
- Proactively manage process performance and exceptions with **real-time dashboards**, and identify improvements with **process mining**

Increase process **efficiency**, **flexibility**, and **quality**

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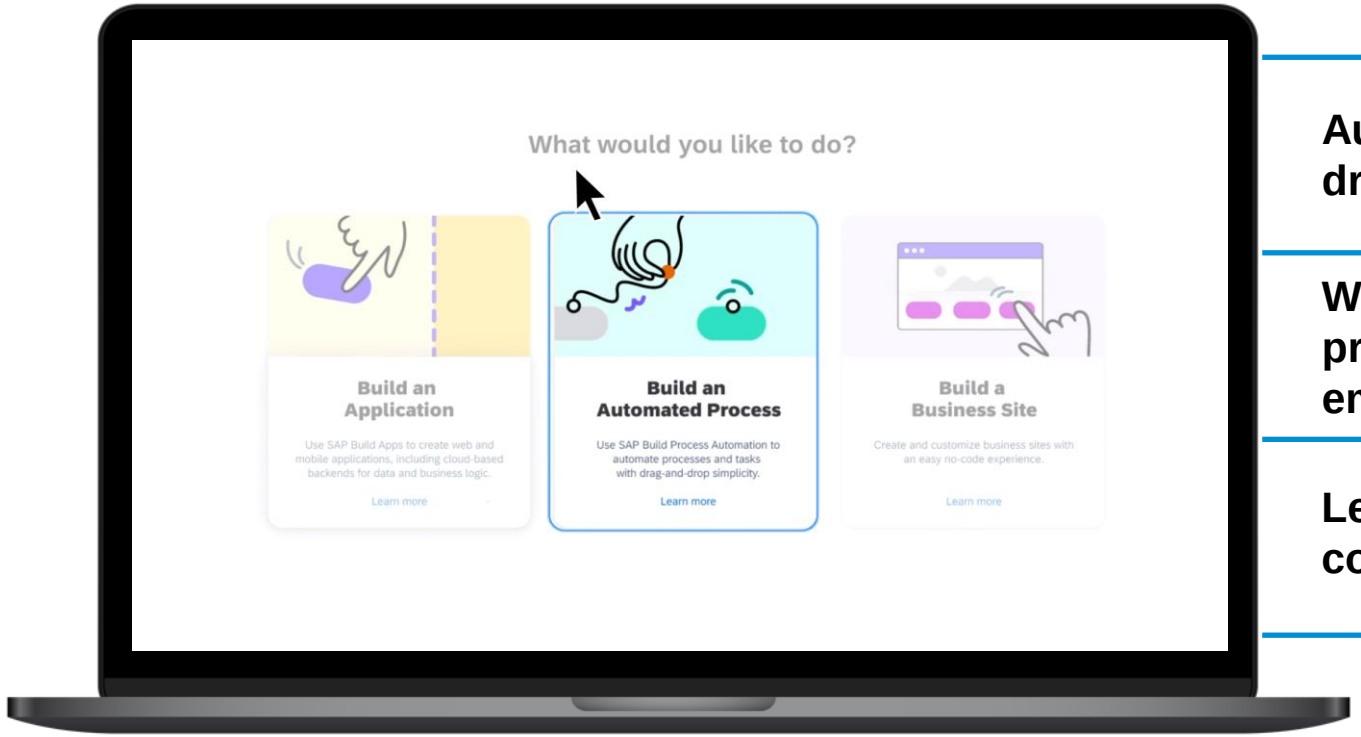
SAP Build Process Automation

Automate visually

Simplify process and task automation



SAP Build Process Automation

Automate processes and tasks with drag-and-drop simplicity

Workflow management, robotic process automation (RPA), and embedded AI in a single solution

Leverage process expertise without coding

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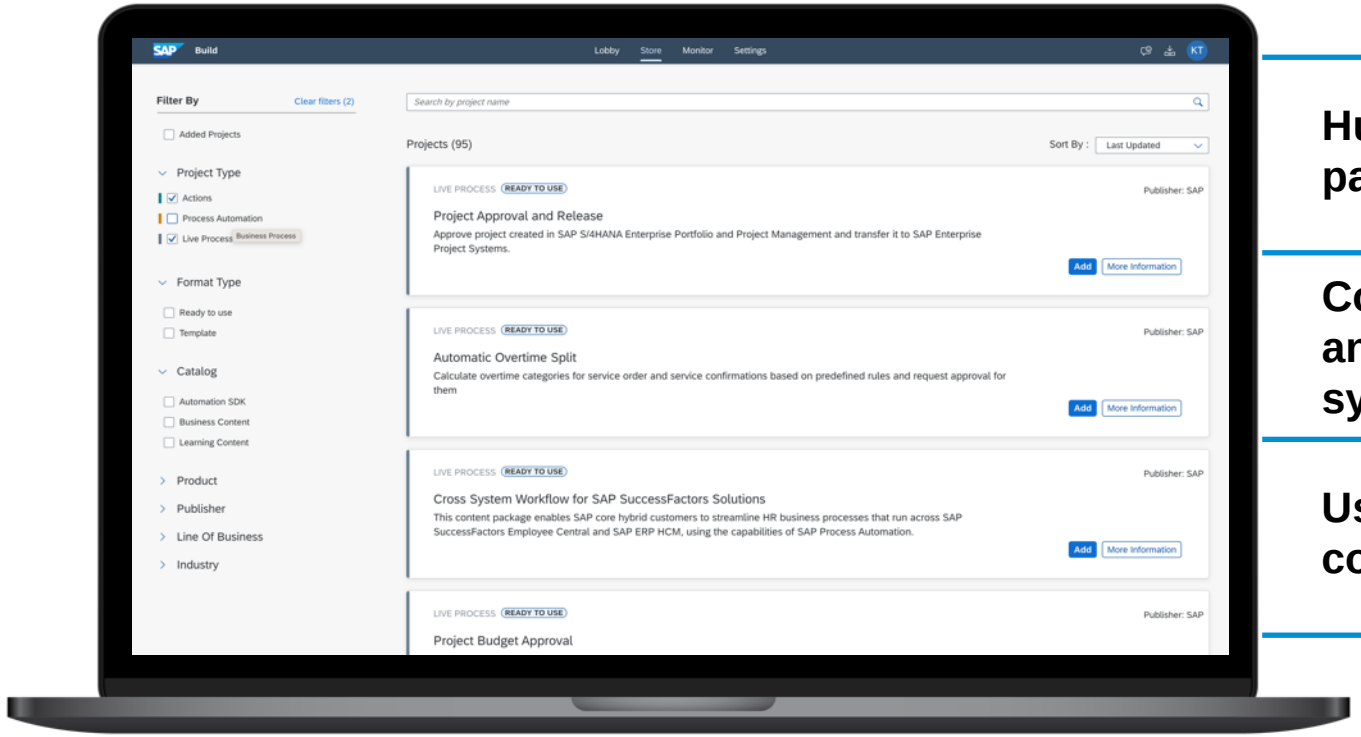
Integrate seamlessly

Develop faster using pre-built workflows, bots and connectors for SAP and non-SAP systems



Content store

Hundreds of process content packages, RPA bots and connectors

Connect with applications, processes and data across SAP and non-SAP systems

Use business data without loosing context and meaning

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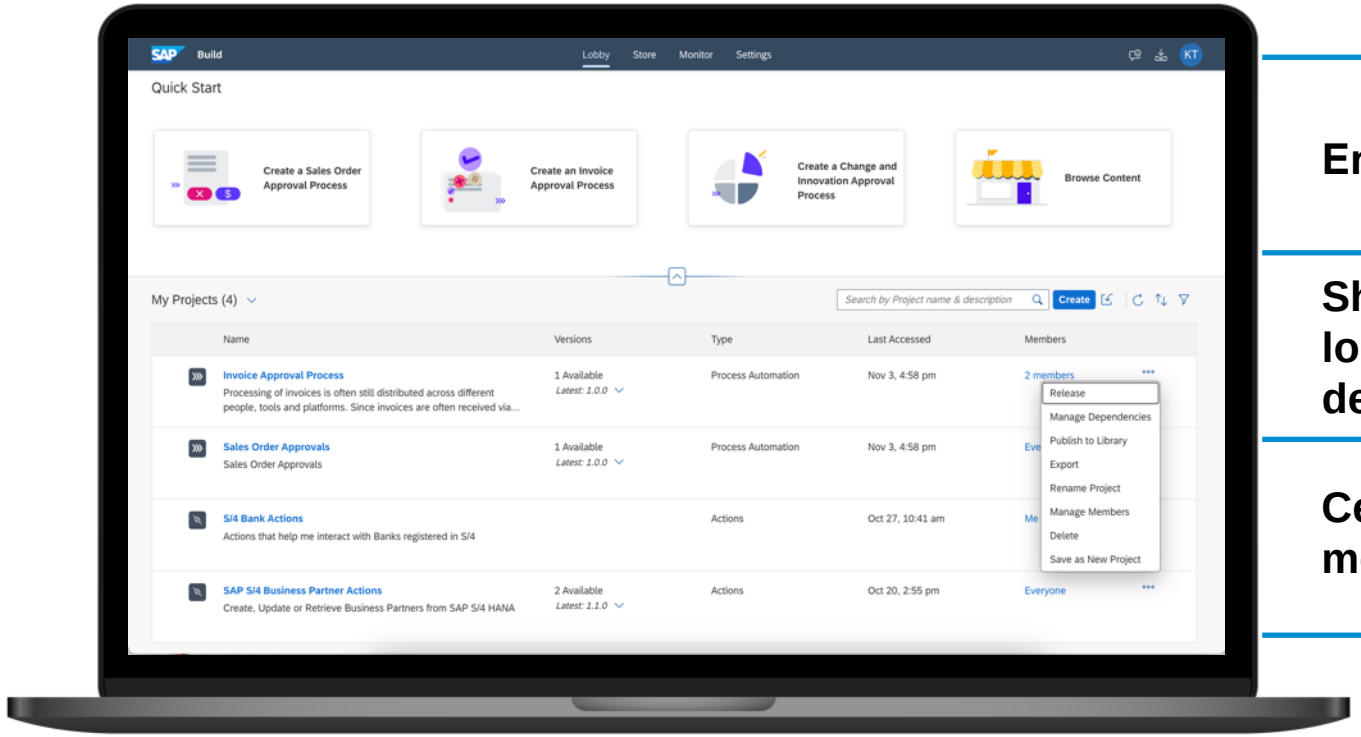
Collaborate securely

Foster collaboration and operate with confidence



Unified lobby

Enable fusion team development

Share artifacts and leverage complex logic contributed by professional developers

Centralized lifecycle management, monitoring, and governance

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Who will directly benefit from SAP Build Process Automation?

Citizen Developer / Business Process Experts

- knows the business and processes (business process experts)
- empowered to adapt and extend business processes on their own

IT Administrator

- manages lifecycle of apps and processes
- governance of process design and execution

You!

End User

- works along the process
- benefits from fast and easy access to improved digitalized business processes with increased level of automation

Professional Developer

- develops apps and extensions and integrate business systems
- supports citizen developer where needed, part of developer continuum

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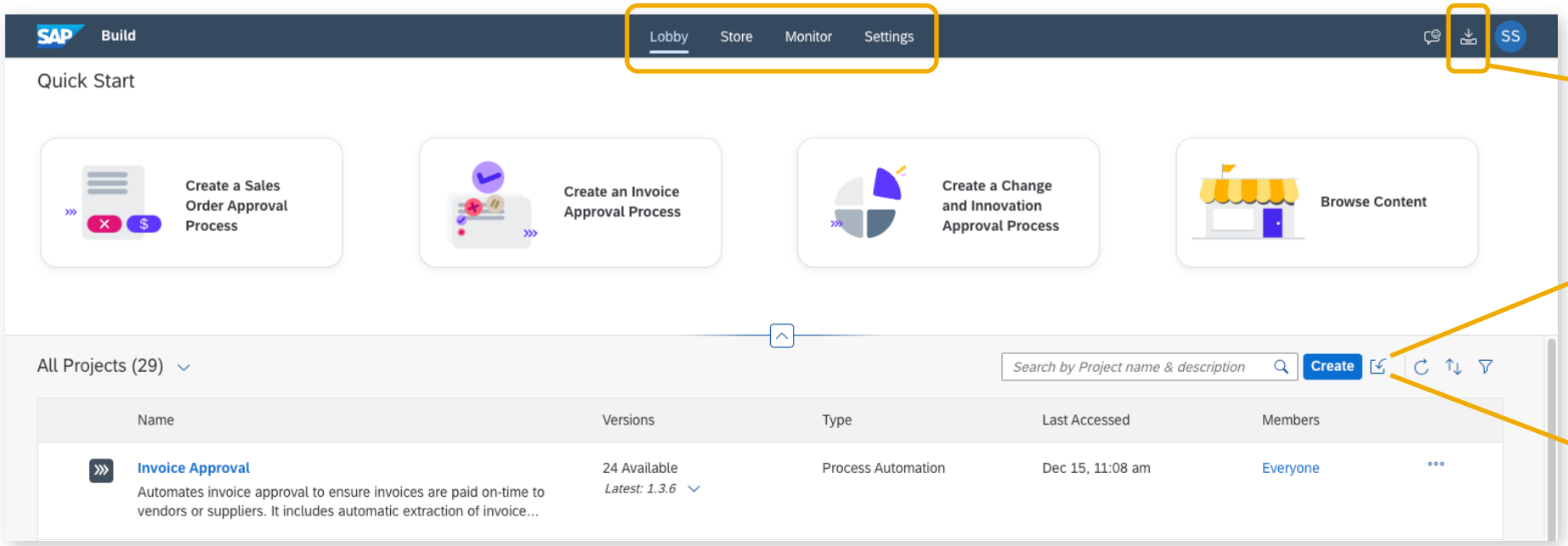
Key capabilities in detail

Welcome to the Lobby



Access My Inbox application

Create new projects

Import projects

Lobby – central design and control center for creating, accessing, and managing your projects in SAP Build Process Automation

- **Store:** offers prebuilt content created and curated by SAP which can be used free of charge
- **Monitor:** collects and displays events coming from the deployed workflows and automation jobs
- **Settings:** includes various details, statuses, and error messages
- **My Inbox:** process the tasks on your mobile or desktop device

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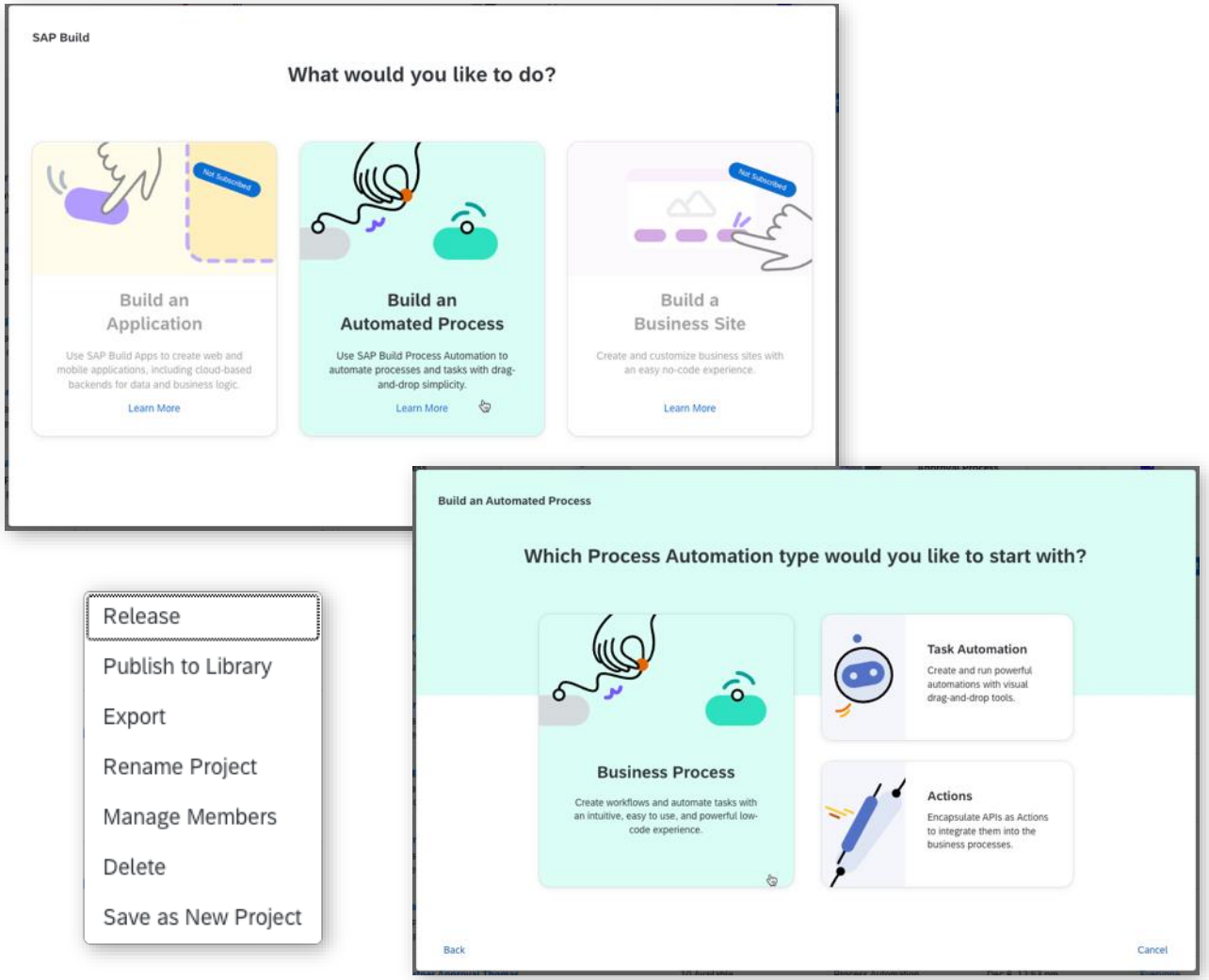
The basics – creating a project

Create and manage

- **Business Process Project** – create, deploy and run processes
- **Actions Project** – to communicate with external systems
- **Task Automation** – to create and run bots

Use projects as the **container to group related artifacts**, like process, form, automation, decision and so on

- **Release** the project to be ready for deployment
- **Publish to Library** for download and reuse by others
- **Export** to your local system
- **Rename project** or change their description
- **Manage members** to define who could access and work on the project
- **Delete** them
- **Save as New Project** with a different name



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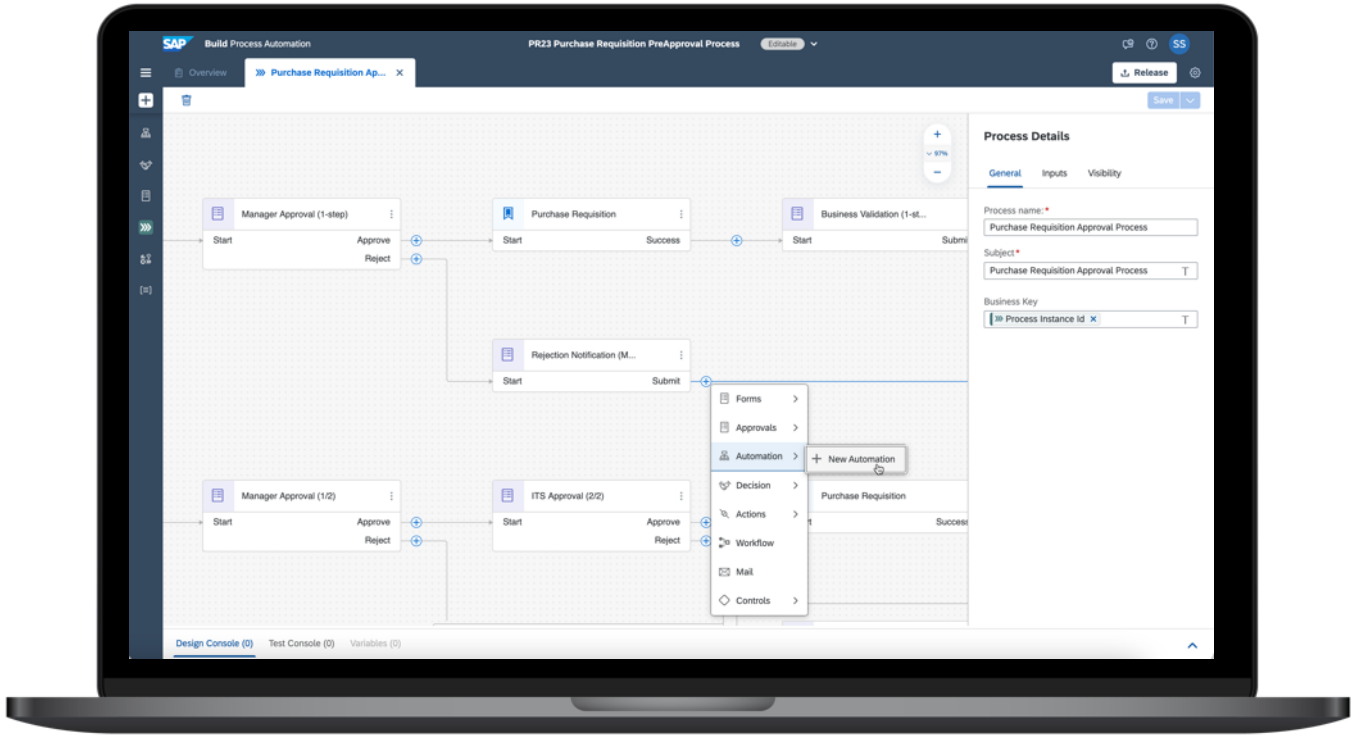
Processes and workflows

Build, adapt, and organize process flows

- Visual no-code process builder
- Define start triggers, flows, process controls and more
- Directly add forms, decision logic and RPA bots into process flows



Process builder

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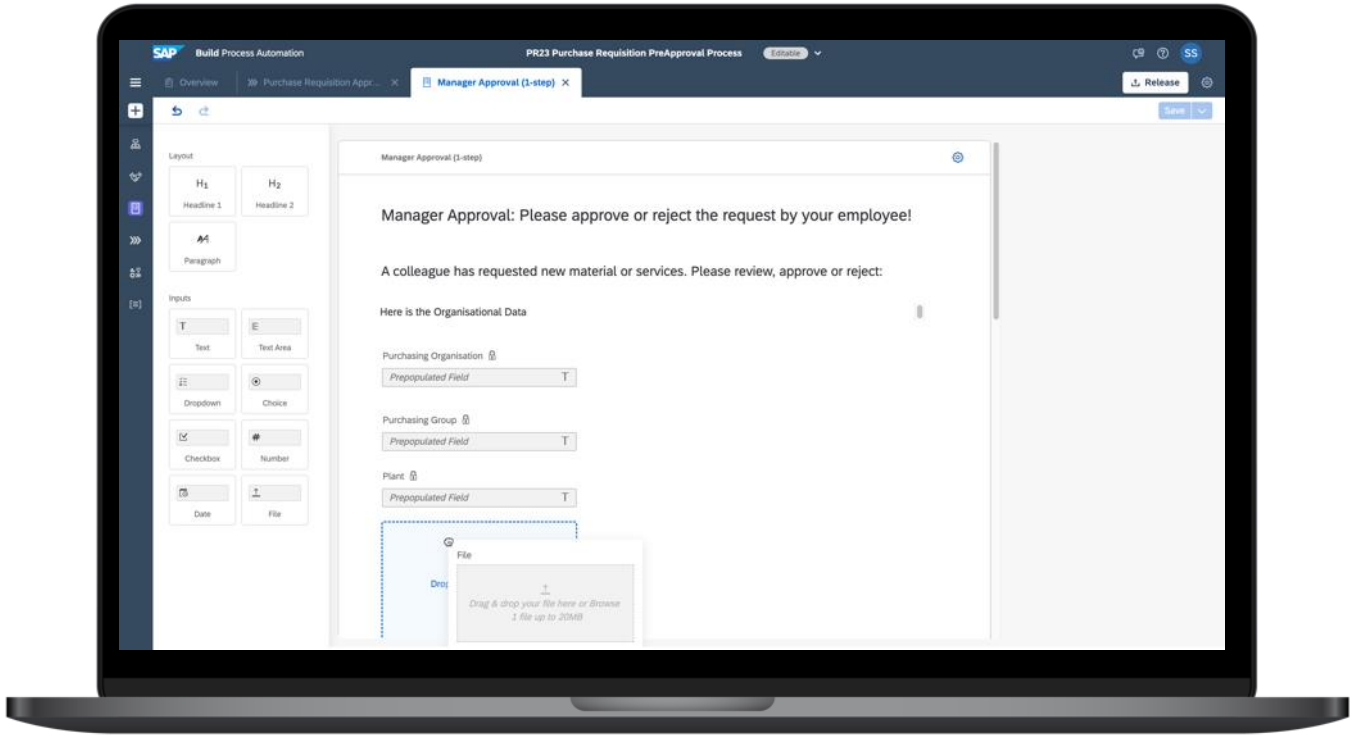
Forms and multistep approvals

Design forms for requests and approvals

- Drag-and-drop forms builder
- Define clean and easy-to-consume layouts
- Incorporate text, number and date fields, drop-down menus, and check boxes



Forms builder

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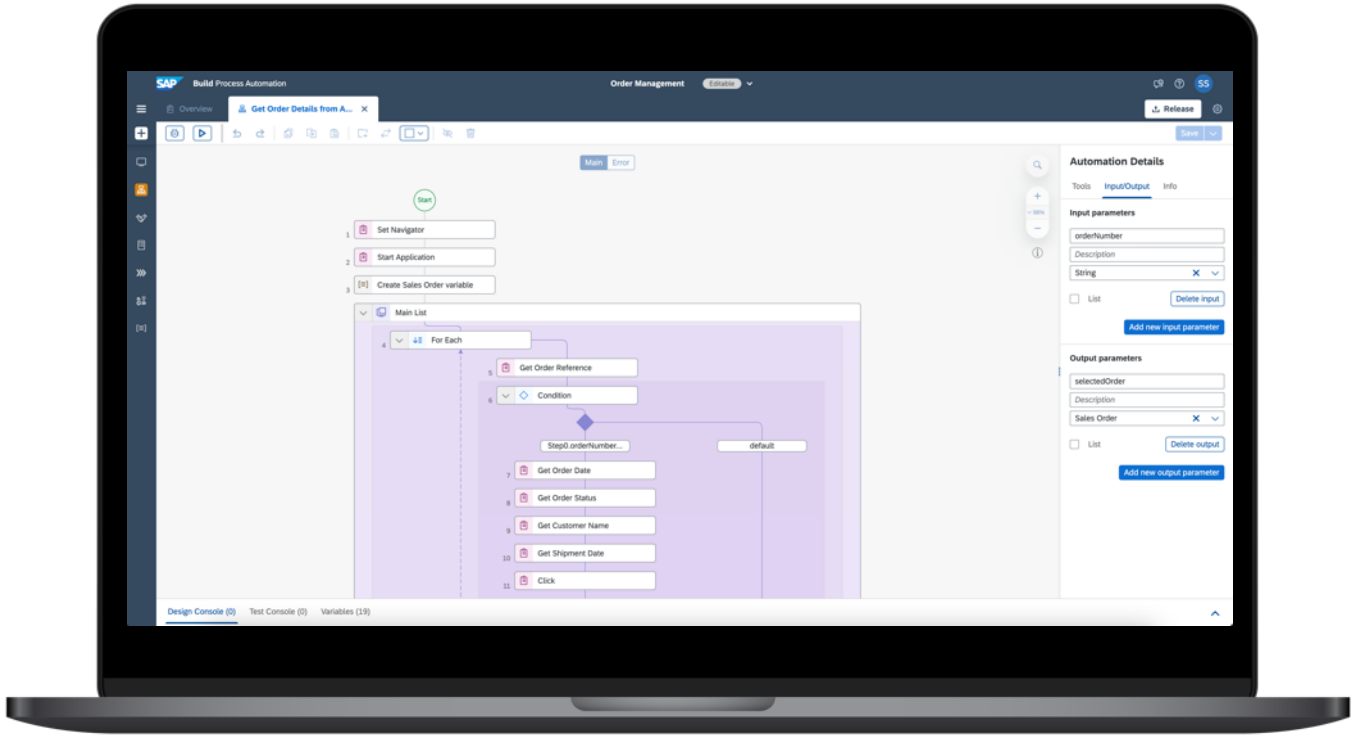
Task automation

Automate routine tasks with robotic process automation (RPA) capabilities

- Automate repetitive manual tasks, high-volume tasks and multiple-system tasks
- No-code or low-code (JavaScript) experience depending on complexity
- Automation recorder for UI-based automations



Automation editor

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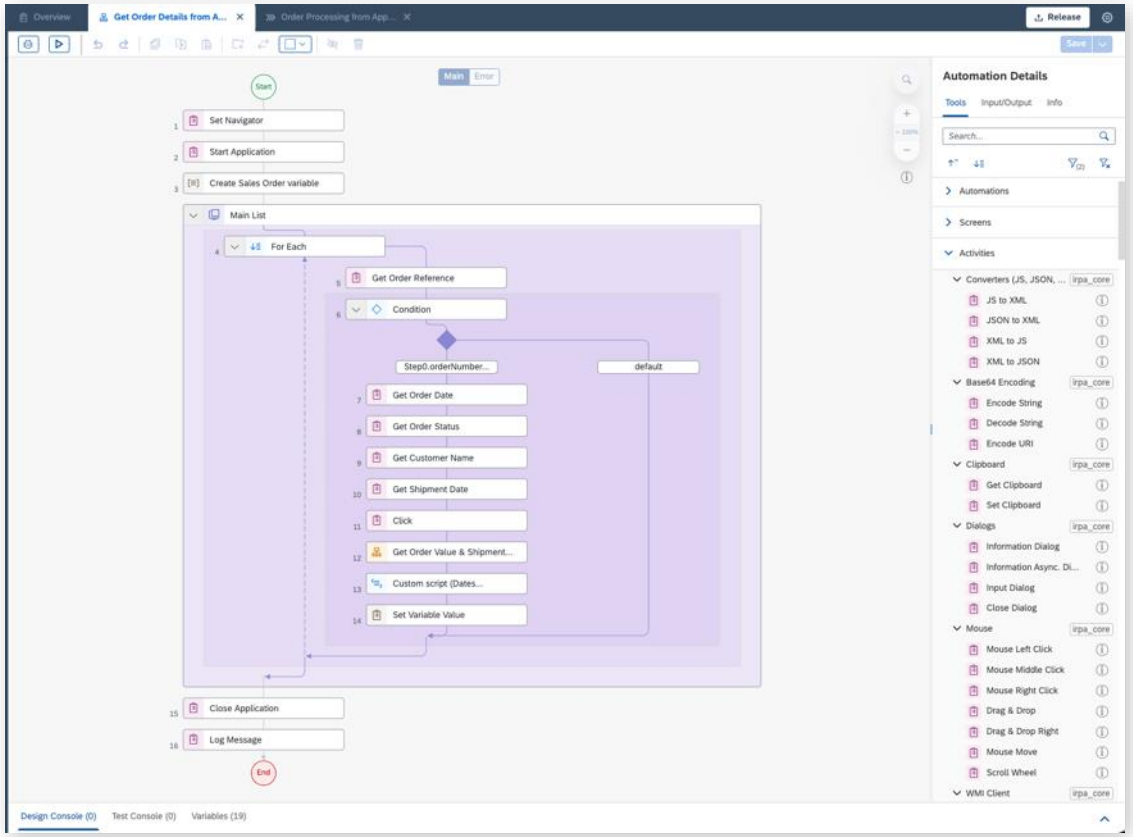
Automate with a bot: Task Automations

Automation is where you configure software to

- perform routine, repetitive tasks for you, thus reducing the human effort involved.
- orchestrate multiple activities on different applications and screens.
- This saves time, reduces error, and allows you and your colleagues to focus on work that really adds value.



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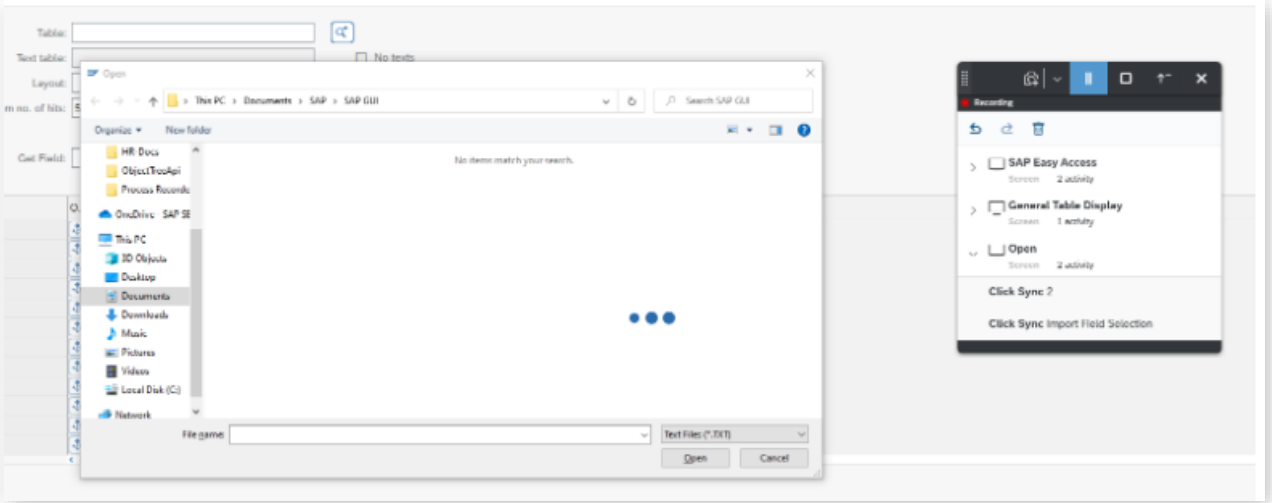
Recorder capabilities

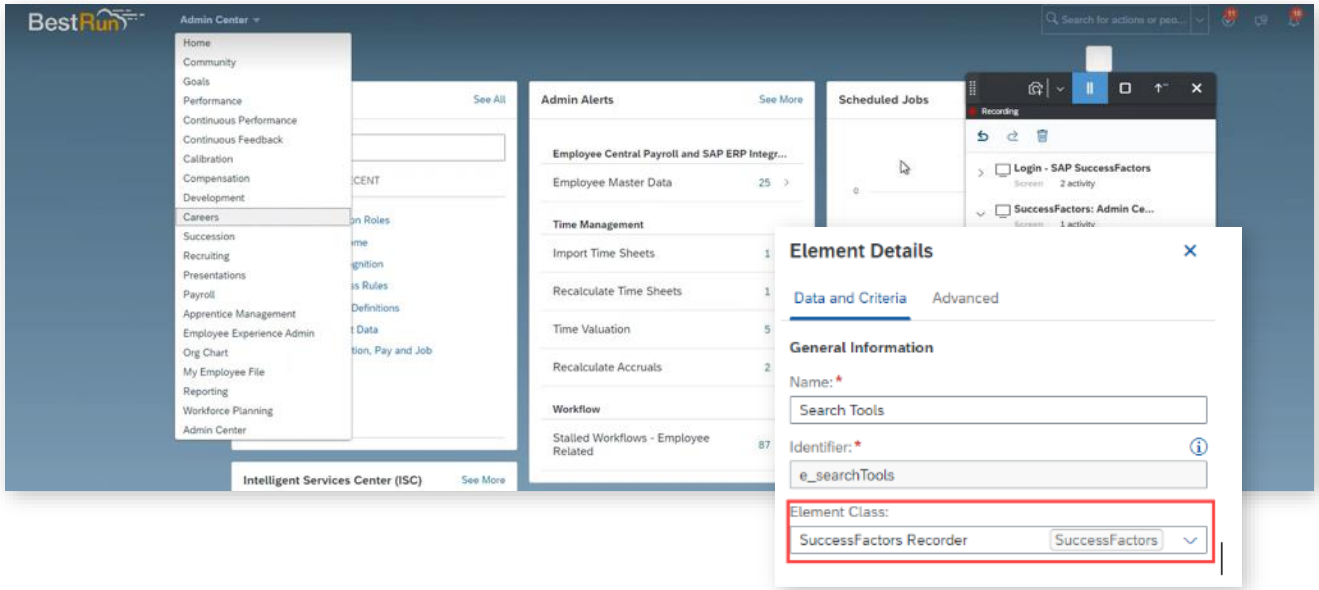
Cross-technology recording of the process

Automate complex scenarios more easily using the recorder

Automatically capture applications and design automations at the same time, leveraging these powerful features:

- Enhanced recording experience: record applications with a combination of screens on SAP GUI for Windows and UI Automation technologies
- Combination of Windows and Web (including UI5) recording in one smooth session, such as a Windows pop-up window in the browser
- Automation of SAP SuccessFactors and SAP Ariba solutions alongside other technologies using the Web recorder
  - Application framework will be shown as Web
  - Screen and elements framework will be SAP SuccessFactors and SAP Ariba solutions





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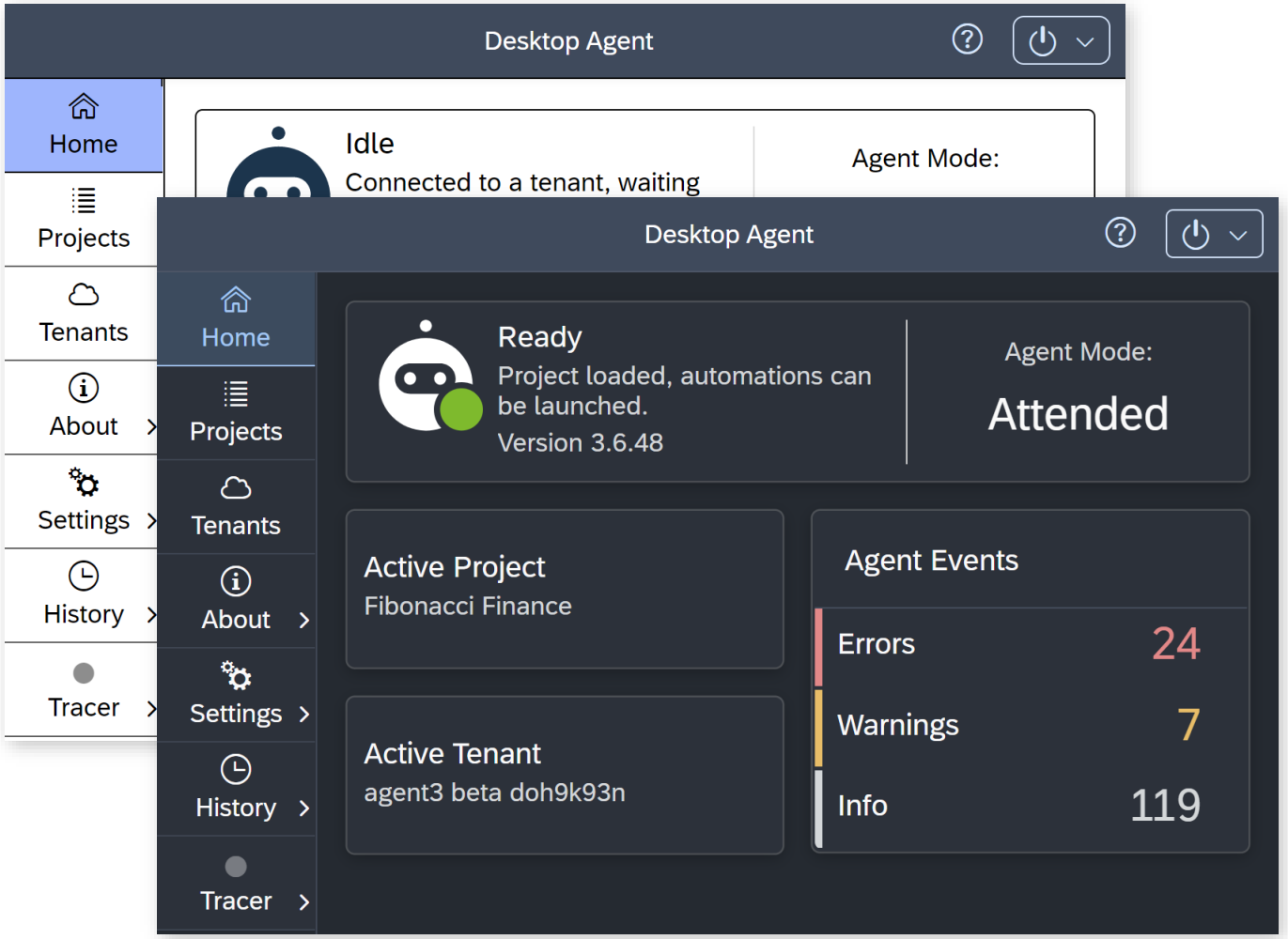
Desktop agent to run attended or unattended bots

Introducing Agent 3.x

Major update of the execution engine based on the Electron framework

- Smart update
- Simplified first download
- Faster project switching
- Modern technology and architecture
- Intuitive UI for version management

Significantly improved performance and productivity



Attended mode: automation is triggered by an user

Unattended mode: automaton is triggered via an API

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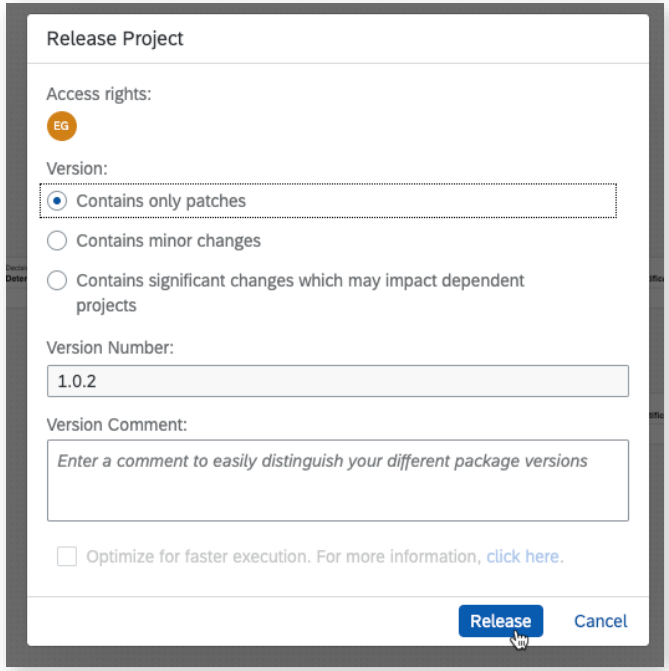
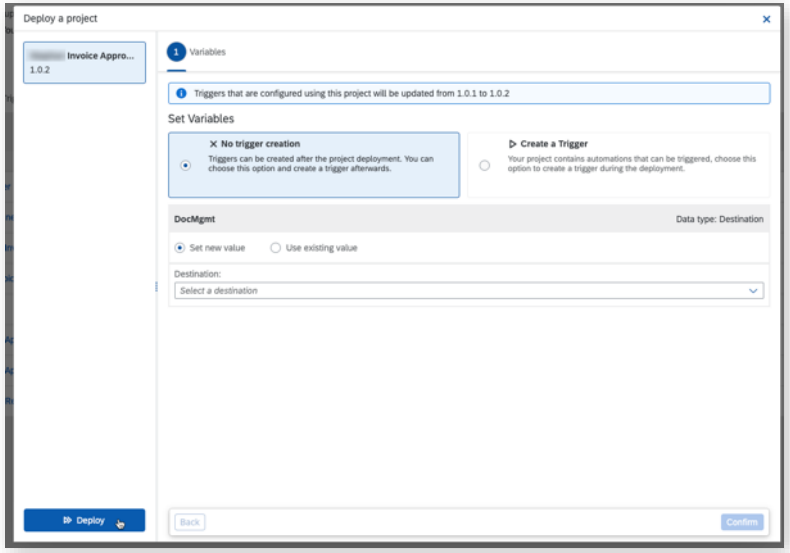
Release, deploy and run the process

After the creation of a process project, there are 3 steps to follow



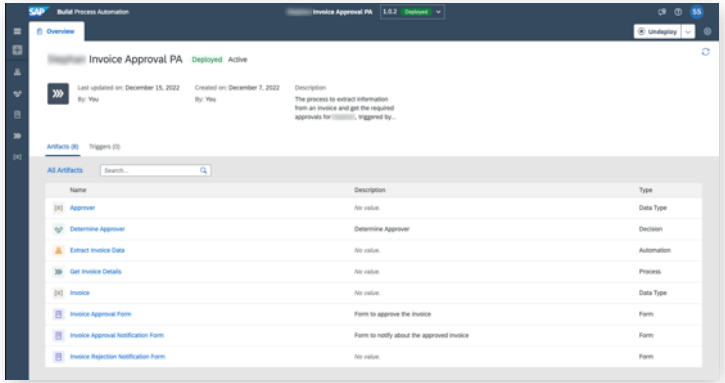
1 Release

maintain the current version and provide some description



2 Deploy

then the project is ready for execution



3 Run

execute your active and deployed process, e.g., triggered via a form accessed via Launchpad or an API trigger

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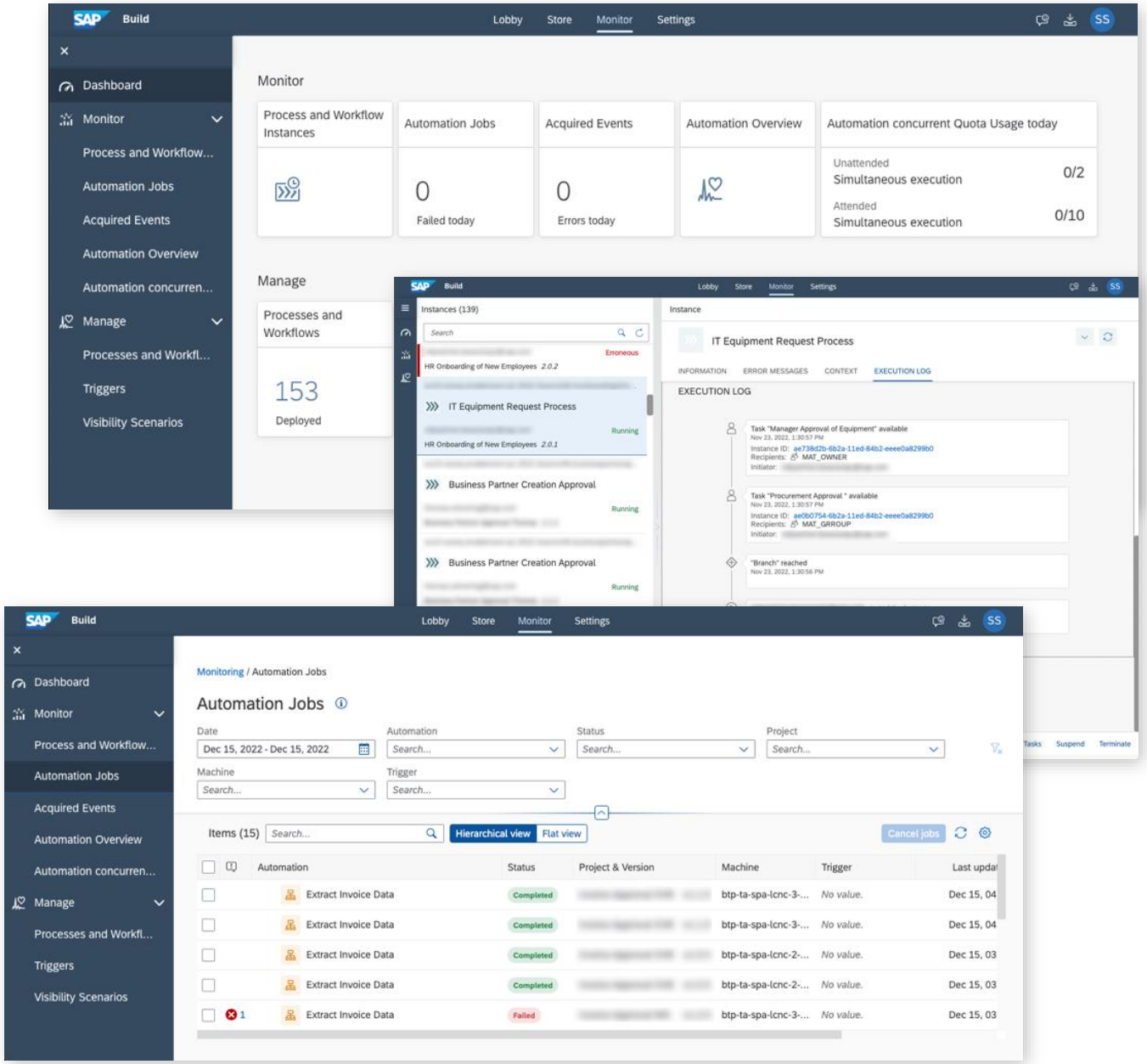
Monitor and administrate

Combined monitoring of deployed workflows and automation jobs, offering several **interlinked views** for Process and Workflow Instances, Automation Jobs, and Acquired Events

- **Monitoring Process and Workflow Instances**: see a list of all workflow instances and act on those instances
- **Monitoring Automation Jobs**: view all your automation errors, warnings, variables, and other information on the console
- **Monitoring Acquired Events**: view the events that have been acquired by the process visibility capability
- **Managing Visibility Scenarios**: manage your visibility scenarios by scheduling the job for processing the data and clearing the processed data. You can also view the processing log information and the details of a scenario definition in this view.



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Development Efficiency

Rapidly build and enhance enterprise applications, processes, and innovations using clicks or code

- Out-of-the-box tooling for **simplified development** that works with your choice of approach and runtime
- Ready-to-use services and preconfigured templates for **faster development and time to value**
- **Easily manage your application lifecycle** by decoupling application extensions from the core

DEVELOPMENT EFFICIENCY

Rapidly build and enhance enterprise applications, processes, and innovations using clicks or code

Improve **productivity**, accelerate **time-to-value**, and streamline **development**

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How Can You Meet the Growing Application Need?

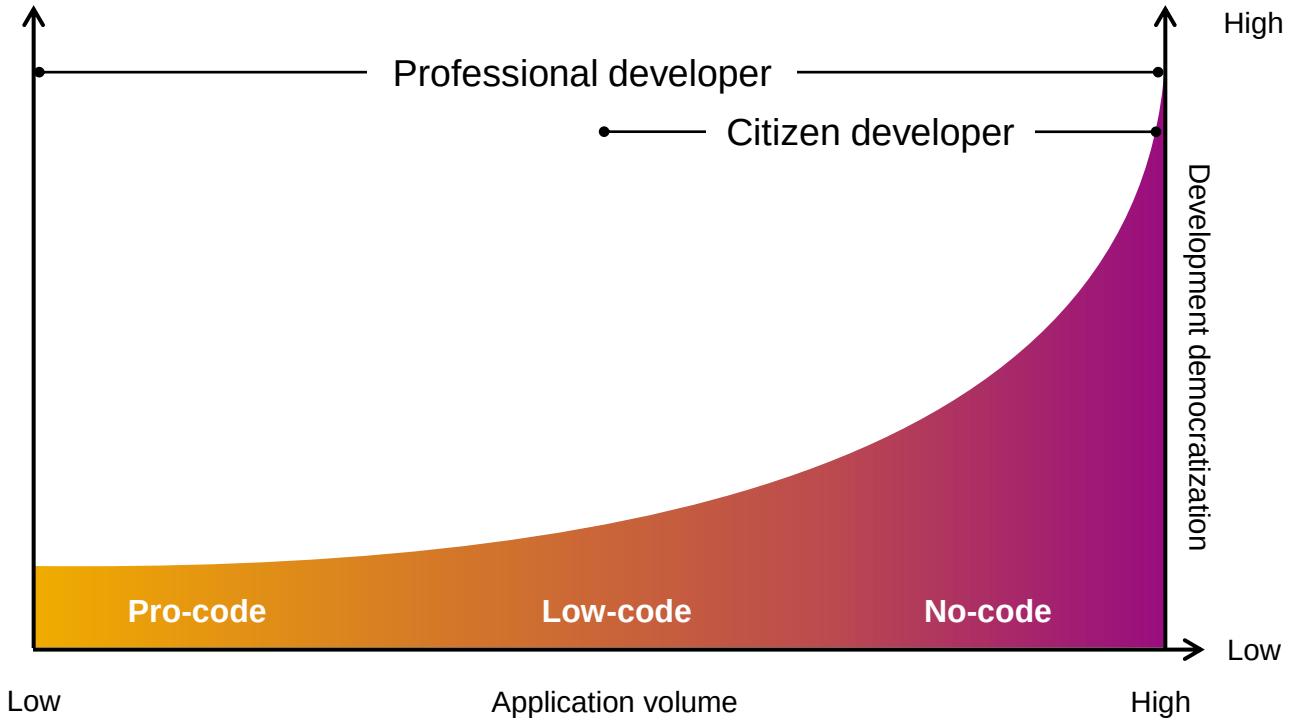
Scale Development by Empowering More Employees to Build Software

Professional developer

- Uses tools of choice to create cloud native applications and reusable services
- Designs, develops, deploys, tests, and hands over to production
- Understands the concept of a development lifecycle, testing, and versioning
- Ensures governance and security

Citizen developer

- Creates and publishes low-code/no-code apps and customizations with close links to business contexts
- Is unaware of testing, go-live, versioning, and termination but learns through citizen development education
- Ensures governance and security through IT-sanctioned tools and platform-supported processes



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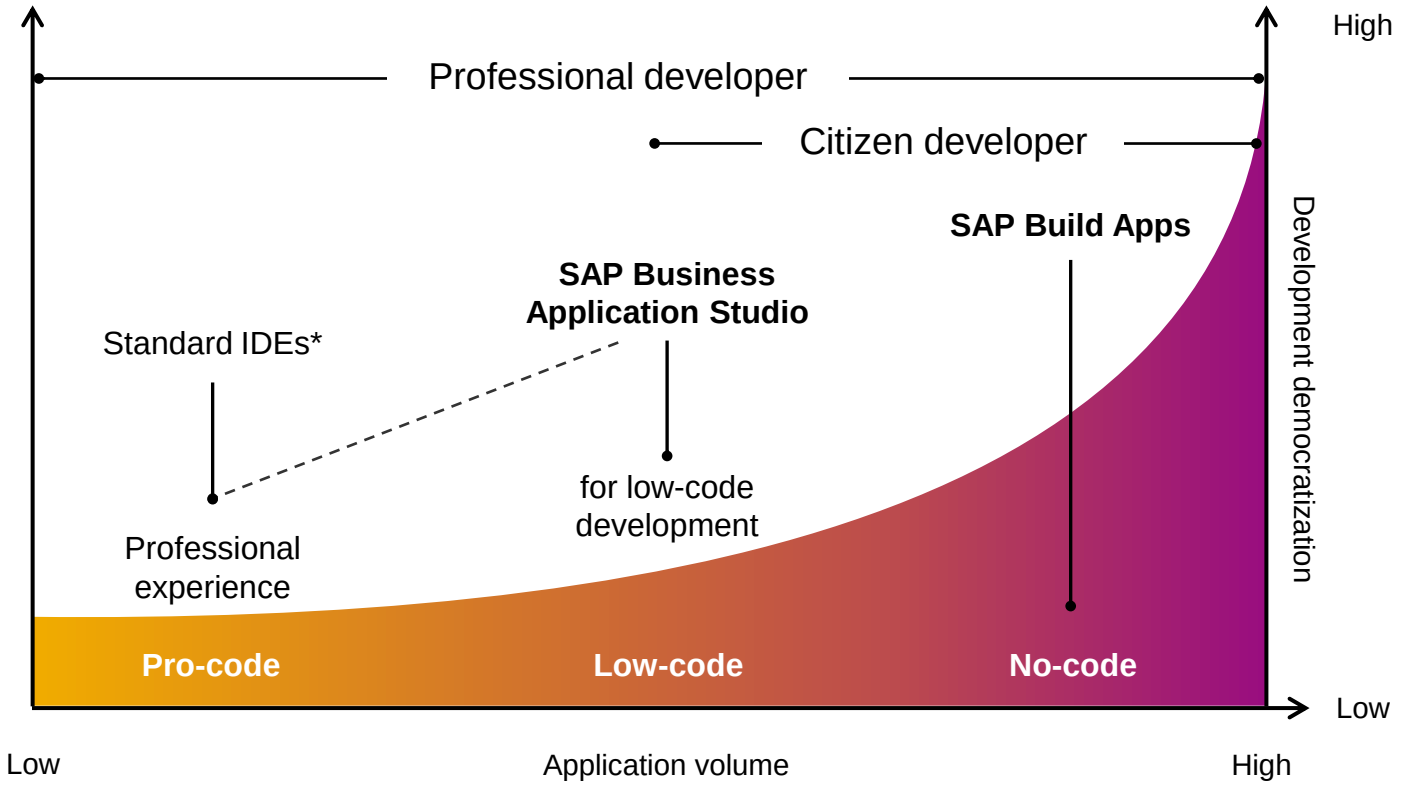
Create a **unified developer experience** that allows every developer to build apps fast, no matter the skill level

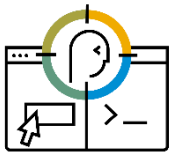


*i.e. VS Code + extensions

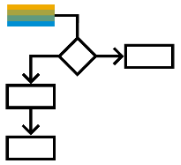
SAP Build Apps

SAP Build Apps

Build Full-Stack Enterprise-Apps in Minutes - Absolutely Zero Coding Required



Drag-and-drop the user interface
Access a pallet of user interface controls, drag them into place, and preview the final result in real time.



Create any logic without code
Drag-and-drop any logic function – sensors, file operations, data functions, animations, and more – onto a canvas.

Easily integrate data
Easily add your own data integrations or get started with some of ours.

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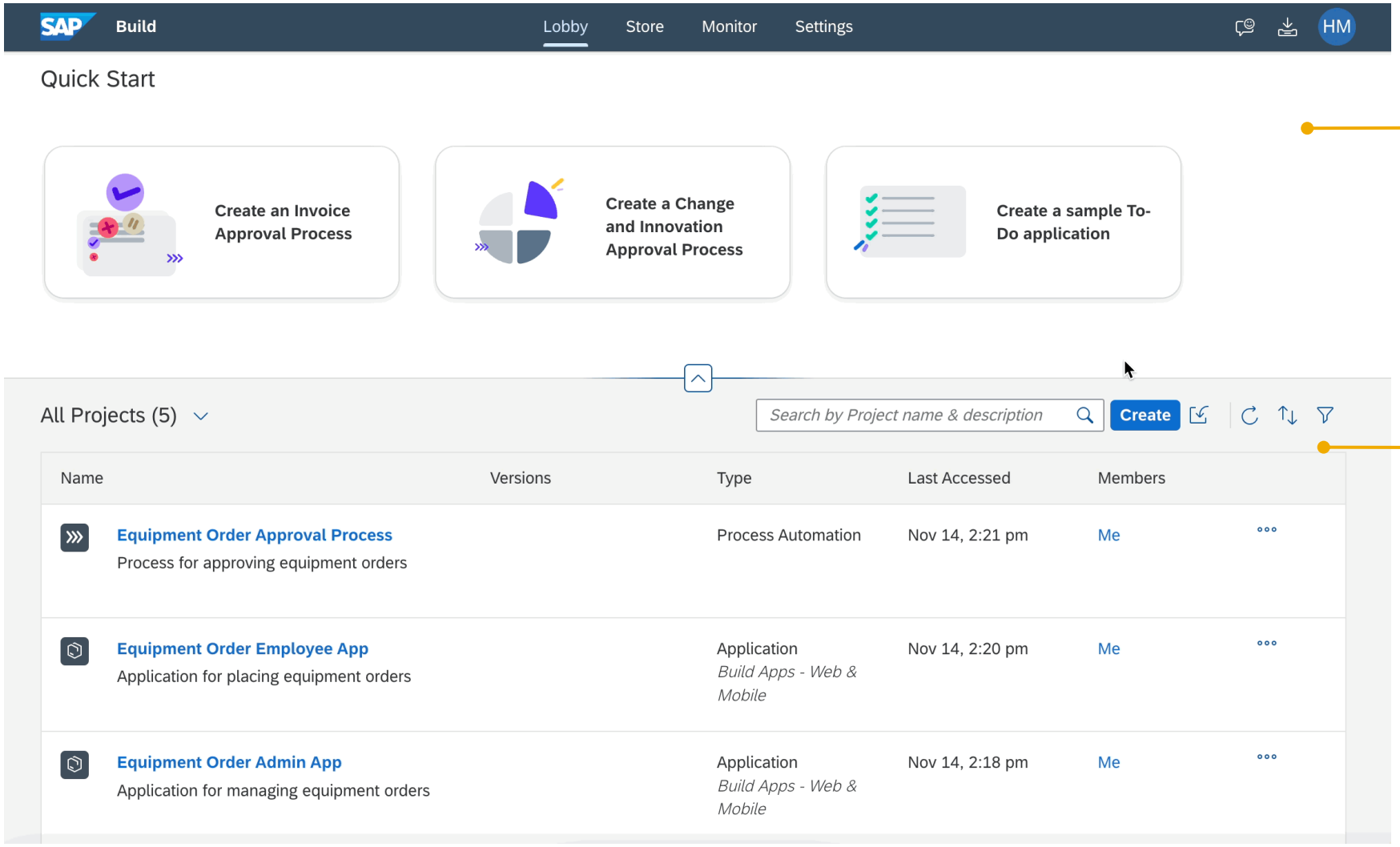
Key Capabilities

Powerful Features for Full-Stack No-Code Development

Visual User Experience from the Start



Easy access to all SAP Build projects

Create and collaborate on projects

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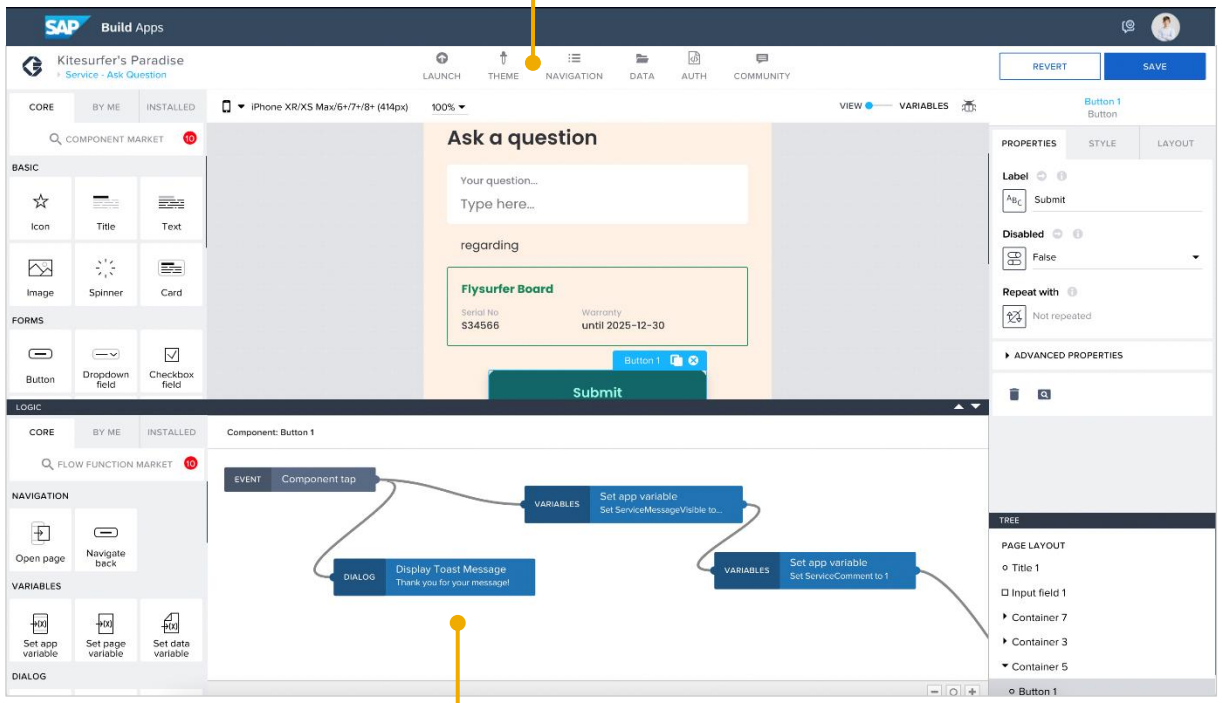
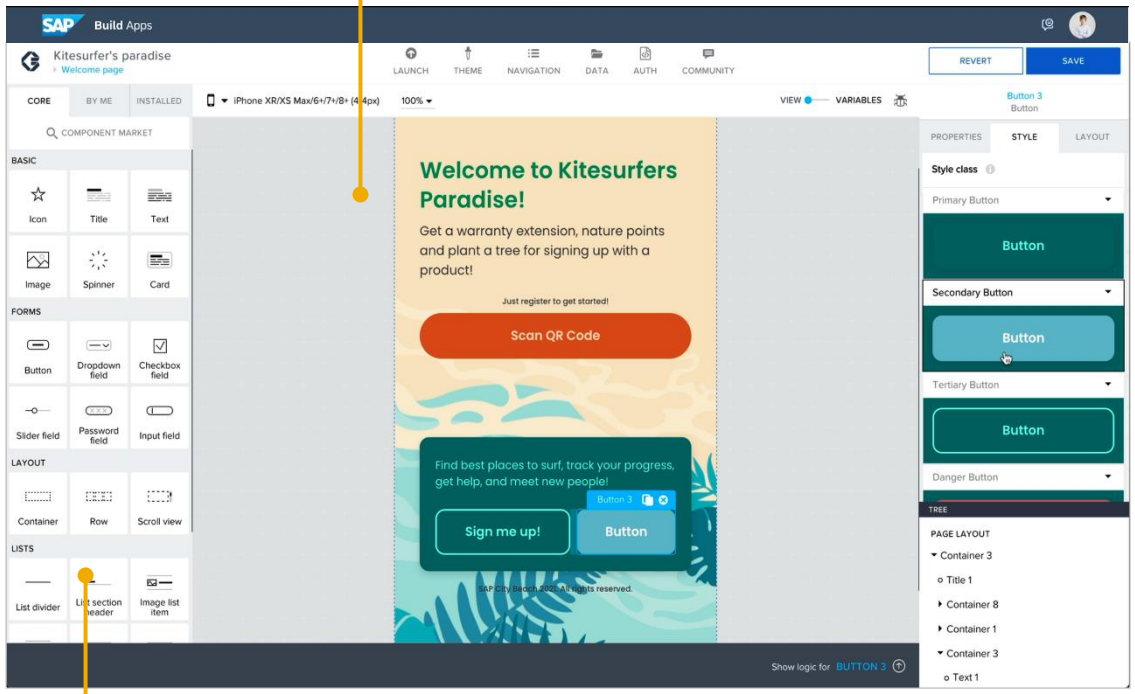
Powerful Features for Full-Stack No-Code Development

Key Frontend Capabilities

Customizable design themes and navigation

Simplified UI creation with drag-and-drop functionality





Visual application logic with flow functions

Rich library of components and 400+ built-in formula functions

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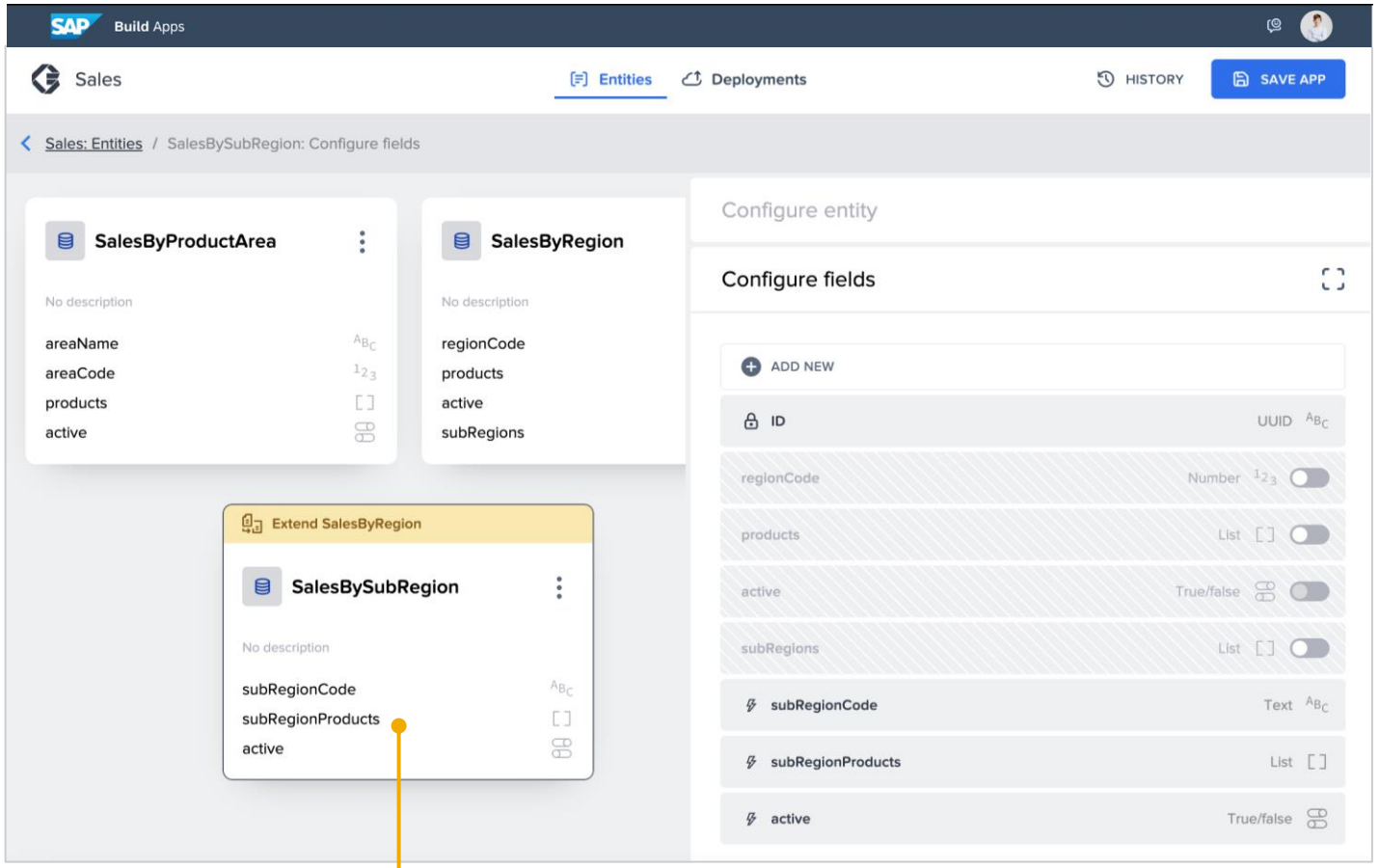
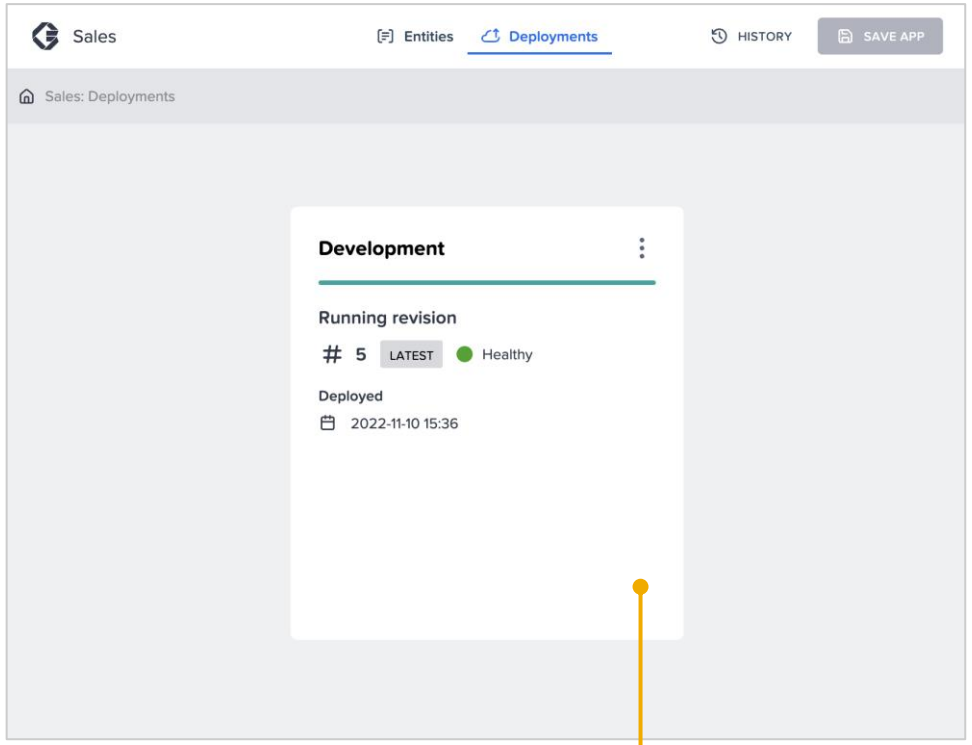
Powerful Features for Full-Stack No-Code Development

Key Backend Capabilities





Cloud deployments, informative migrations & project history

Visual data modeling for custom data persistency

Data transformations with extended entities

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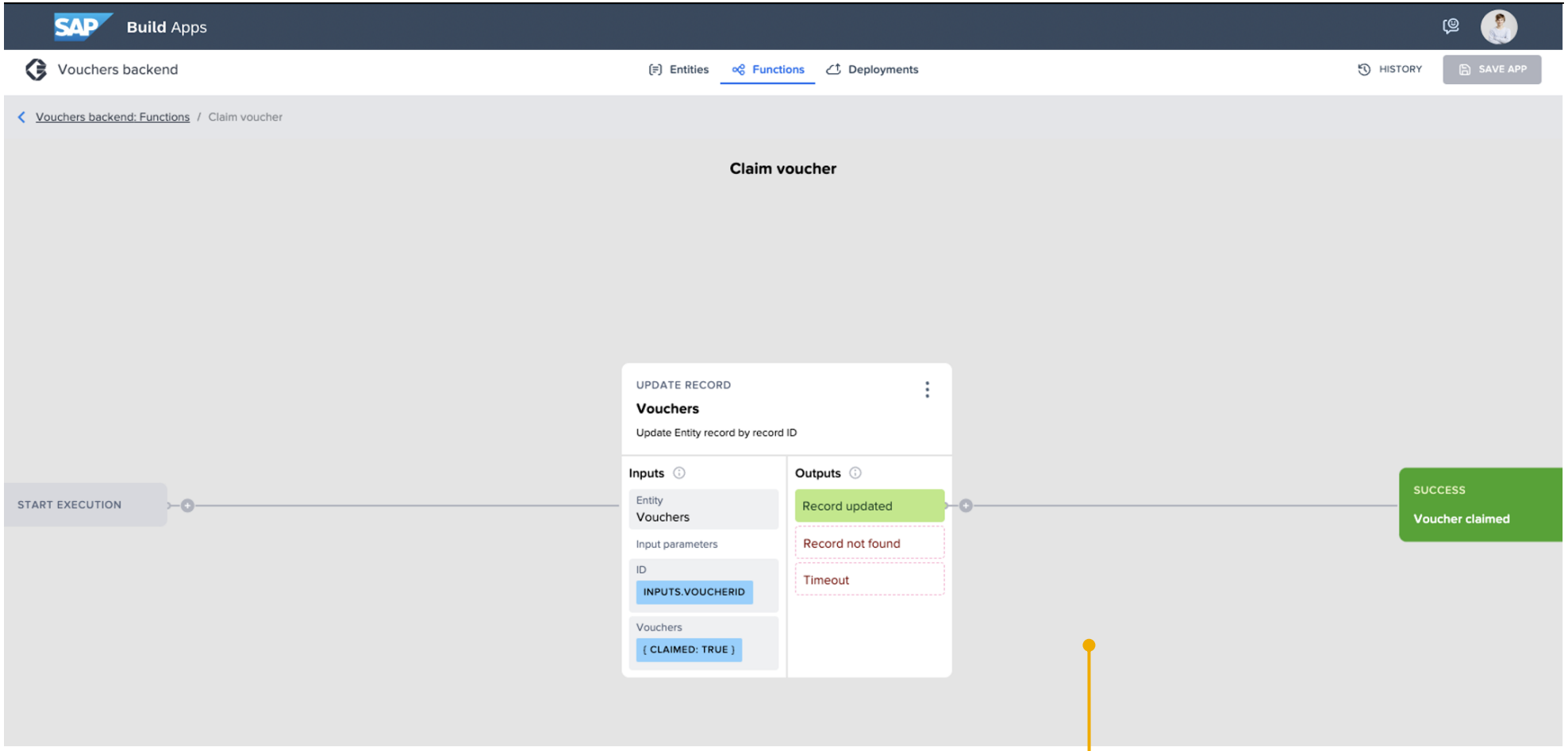
Powerful Features for Full-Stack No-Code Development

Key Backend Capabilities



Business logic

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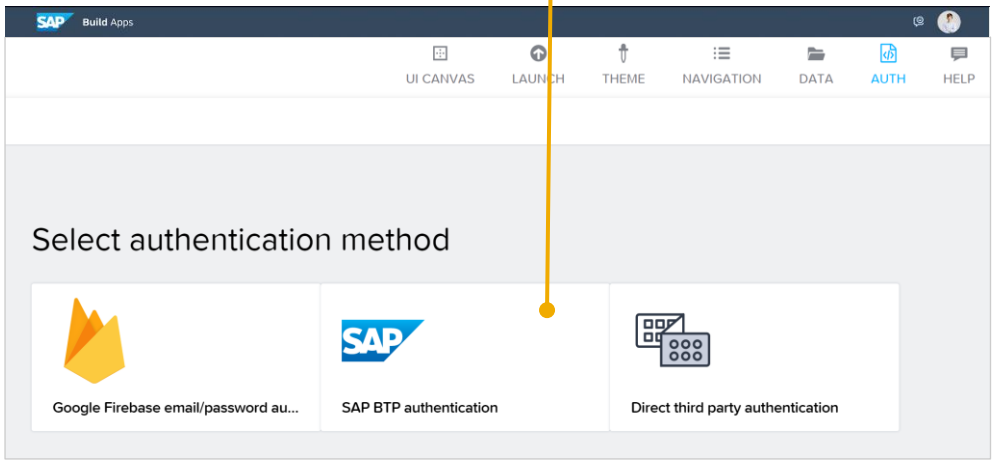
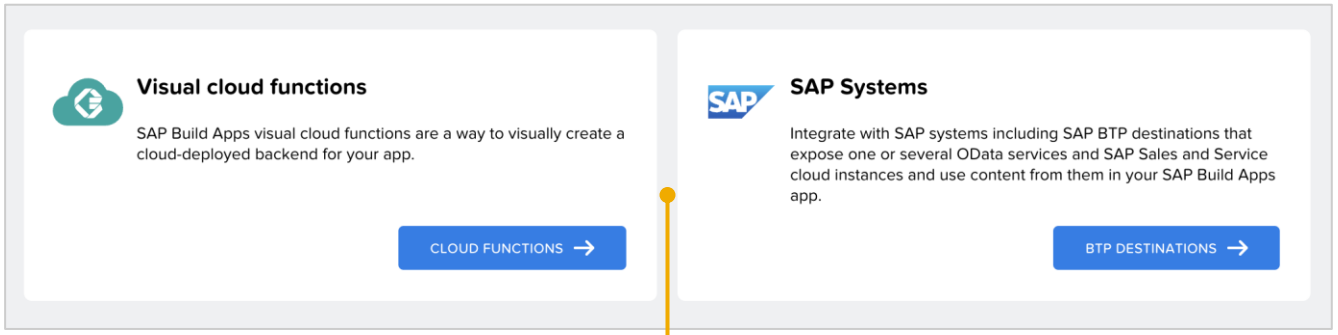
Powerful Features for Full-Stack No-Code Development

Key Integration Capabilities

SAP BTP Authentication



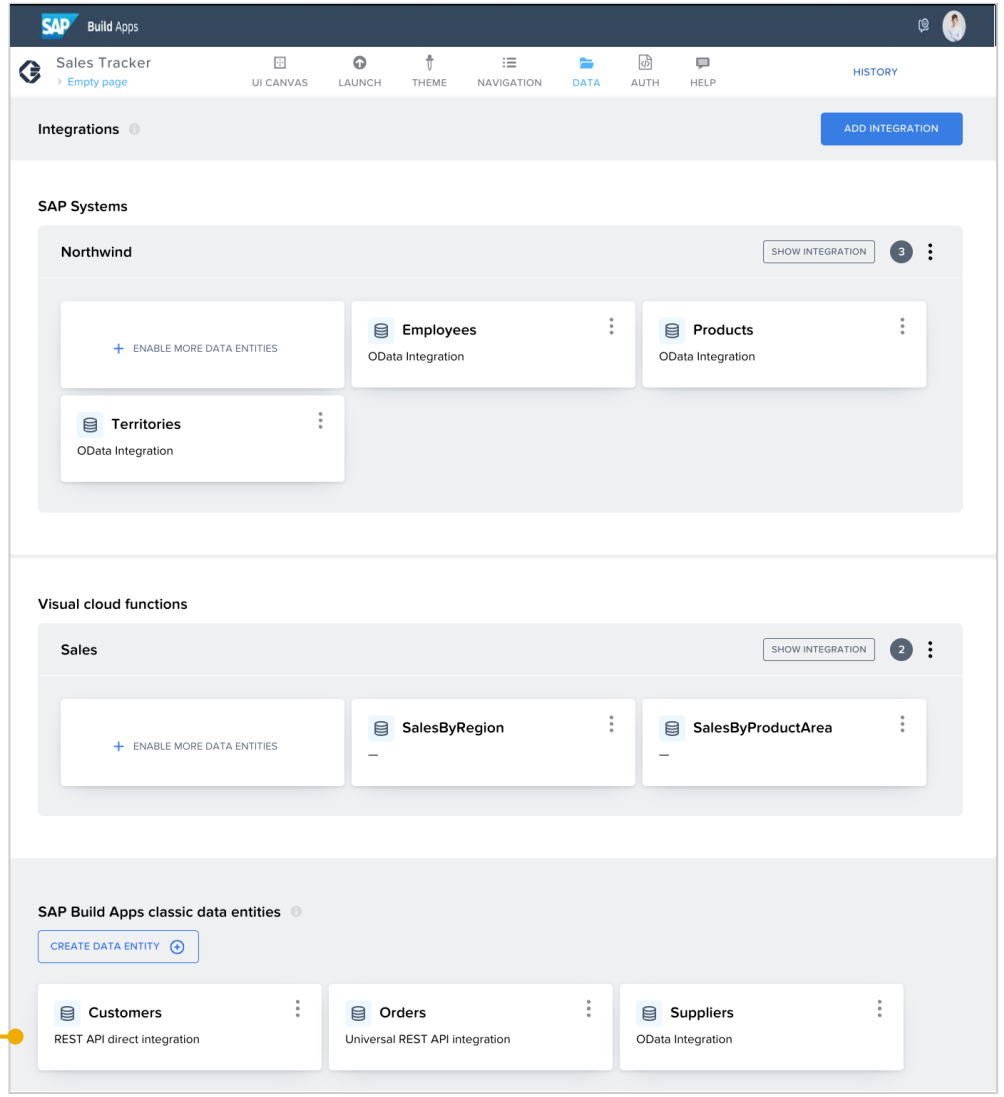


Visual cloud functions

SAP BTP Destinations

OData & REST API

integrations



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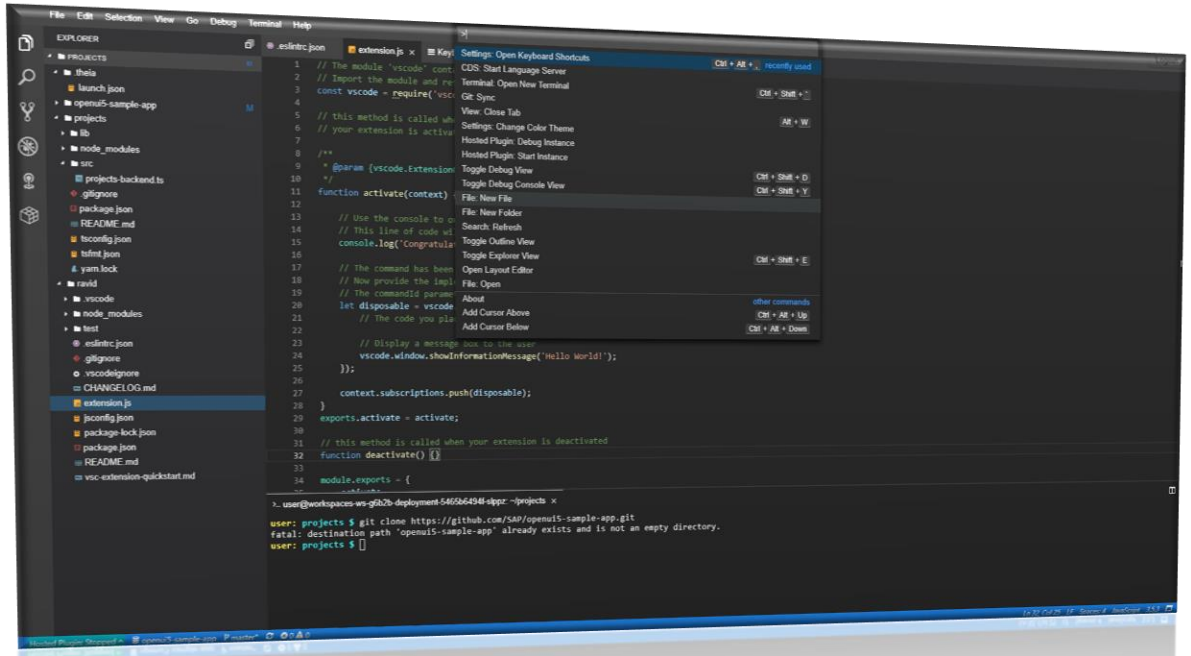
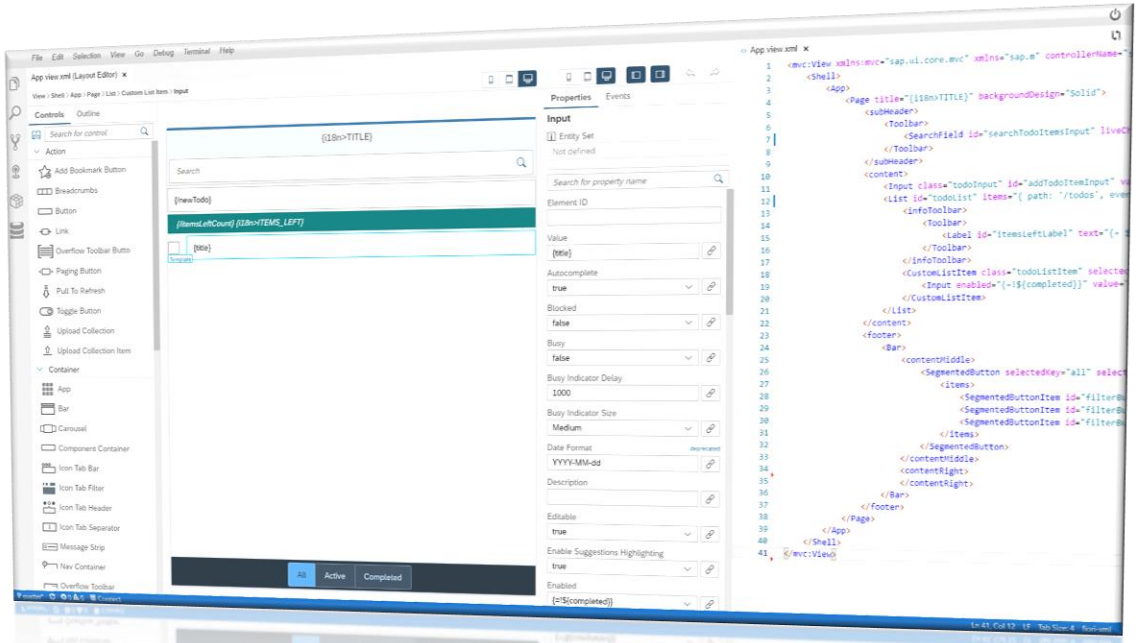
SAP Business Application Studio

SAP Business Application Studio on BTP* Multi-Cloud

General Availability on Azure, AWS, and Ali-Cloud

A **modern** development environment, **tailored** for efficient development of business applications for the **Intelligent Enterprise scenarios**





* SAP BTP: SAP Business Technology Platform

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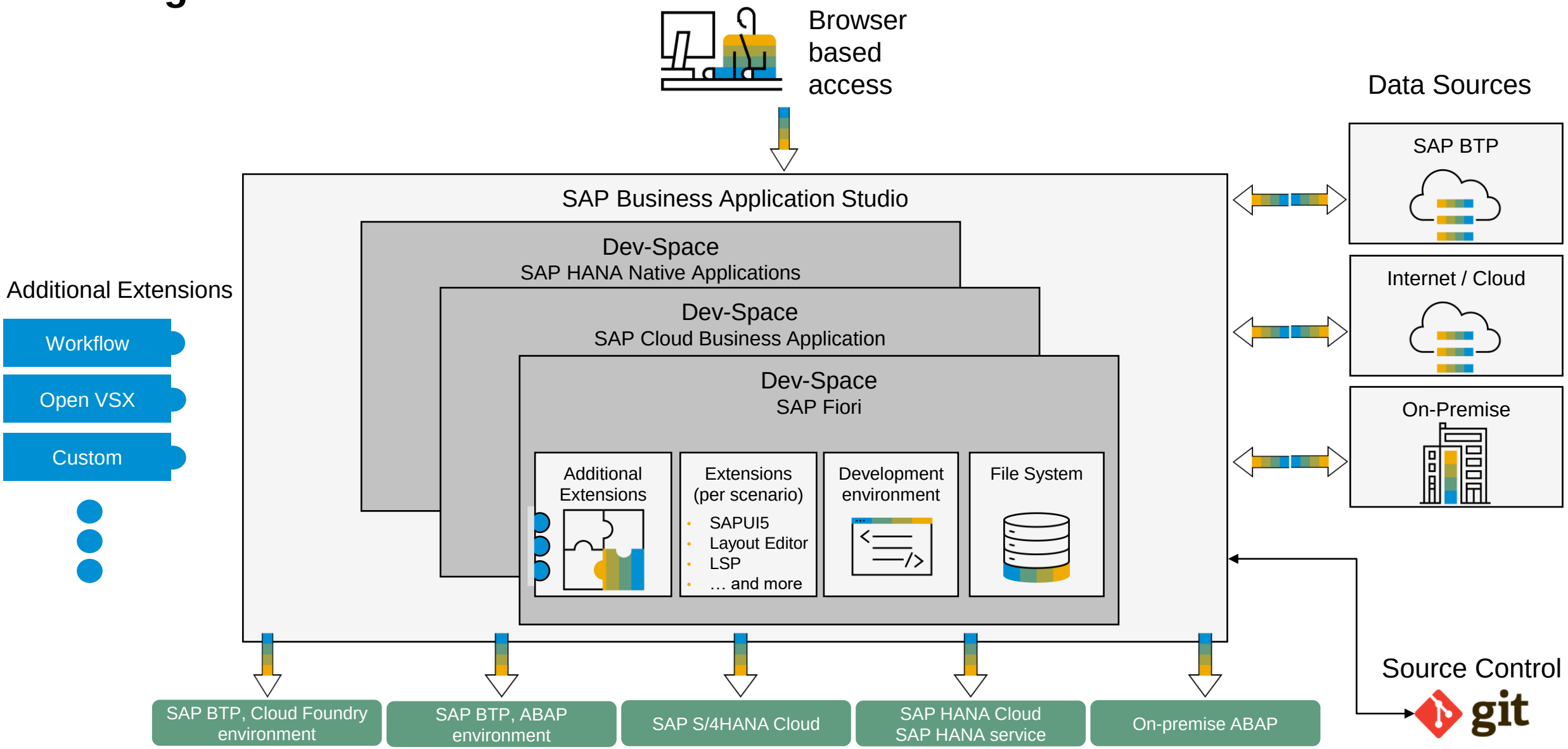
The Big Picture



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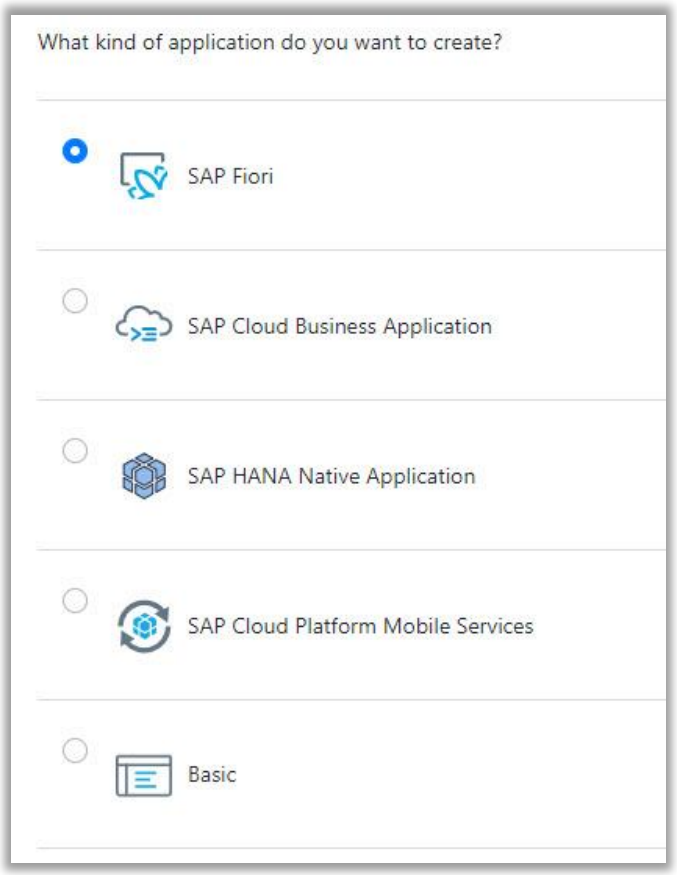
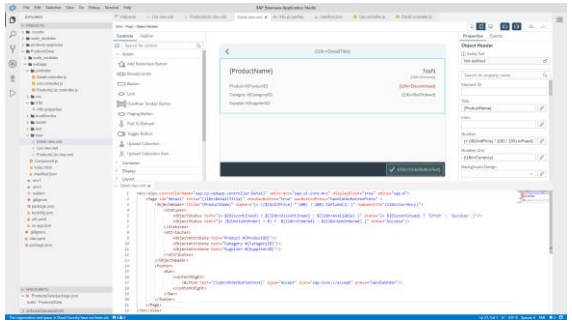
Modular, Tailored Dev Spaces



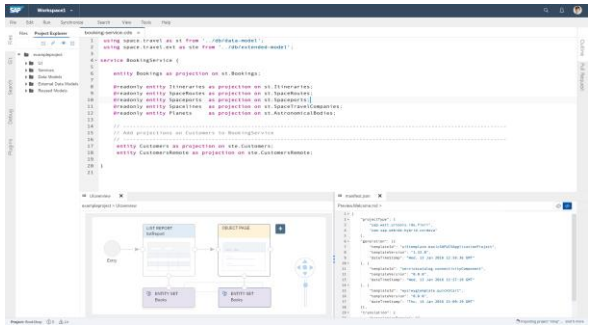
SAP Fiori Dev Space

- IDE with language services for SAPUI5, JS, XML
- Layout editor and SAP Fiori tools
- Rich set of templates: SAP Fiori elements & freestyle
- Local test: multiple SAPUI5 versions, unit and integration tests, mock
- Env: CLI tools, SAPUI5 build, deploy to ABAP Repository, CF, …
- Service catalog



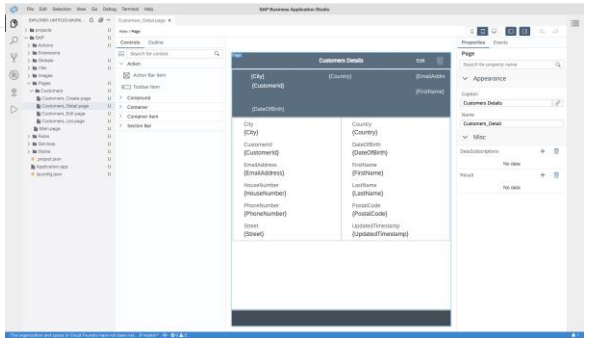
SAP Cloud Business Application Dev Space

- IDE with language services for Java, NodeJS, XML
- Layout editor and SAP Fiori tools *
- Rich set of templates: CAP, SAP Fiori elements* & freestyle
- Tools: CDS tools, MTA tools, Spring-Boot tools, SQL tools, REST client and SAP HANA tools*
- Local test: Run service, in-memory db, local SQLite db, REST client, mock, …
- Env: CLI tools, builders,….
- Service and Events* catalog



Mobile Dev Space

- Basic IDE with auto-completion, validation, and more
- Templates for: Mobile Dev Kit, Mobile Cards, Mobile Backend Tool
- Local test: Mobile runtime
- Env: CLI tools, deploy to Mobile Services
- Service catalog



+ Create custom Dev Space templates for developers*

* Future Innovation

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This is the current state of planning and may be changed by SAP at any time.

SAP Fiori tools makes it easier to build SAP Fiori elements apps

Uses a **wizard-style** approach

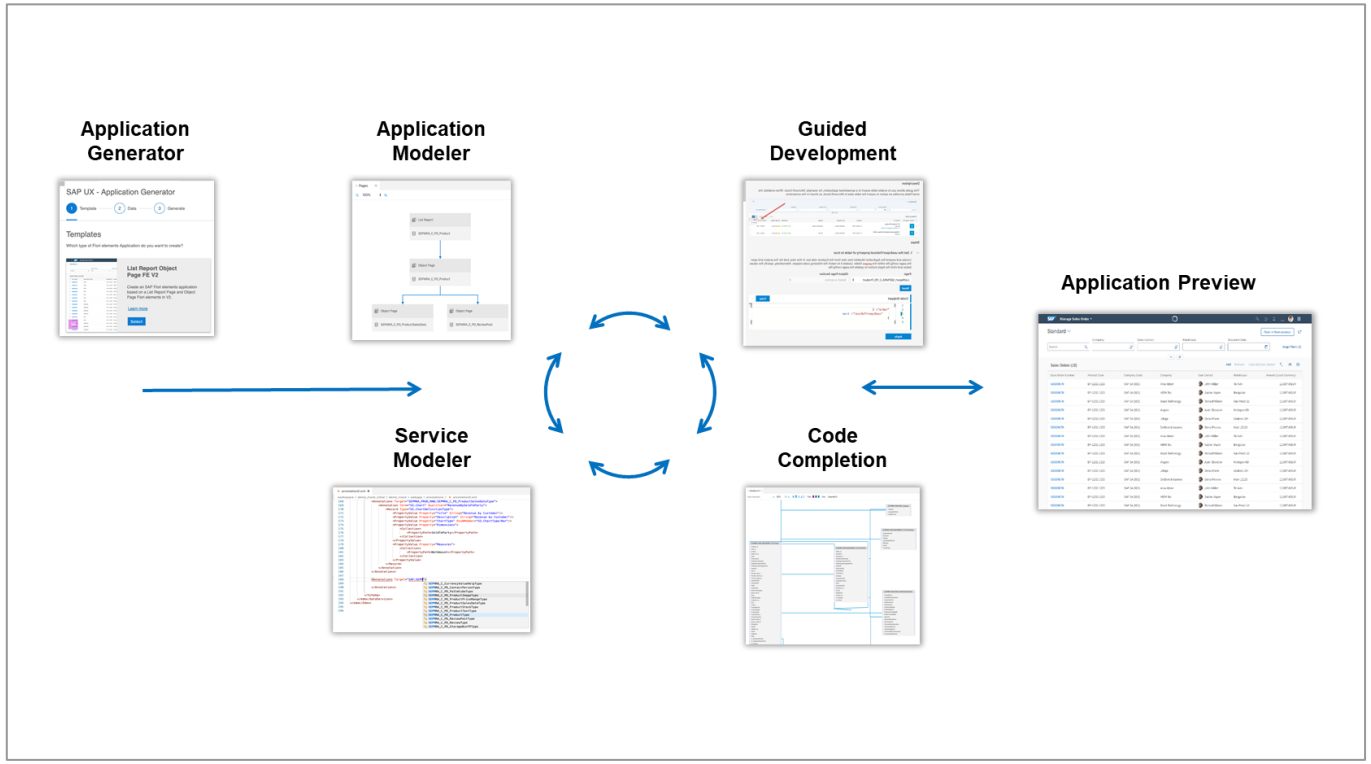
Ensures **consistent** app structure

Provides **step-by-step** development instructions

Reduces effort and skill level required for creating annotations

Improves **code consistency**

Simplifies app maintenance



Develop using:

- SAP Business Application Studio (Hosted, centrally administered)
- Microsoft Visual Studio Code (Offline, user-controlled)

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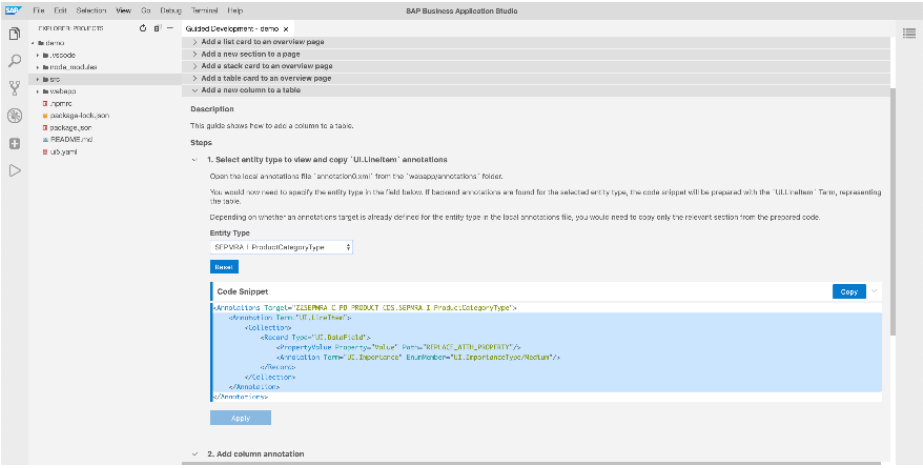
Developers can run SAP Fiori tools either in the cloud or on-premise

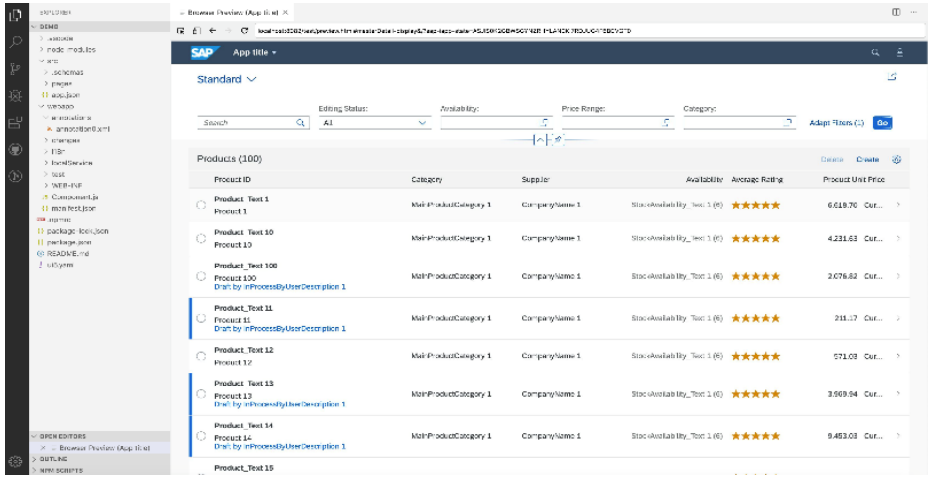
SAP Business Application Studio (recommended)

- Provides a modern, maintenance-free, preconfigured, **hosted environment***, optimized for SAP developers
- Can be **centrally administrated** with tools repositories, systems access and company policies
- Integrates with existing SAP solutions, systems & services
- Easy access to Visual Studio Code-compatible extensions from open source Theia marketplace **



Visual Studio Code

- Provides development flexibility with **offline** capabilities
- Features a **user-controlled**, highly configurable development environment
- Allows access to thousands of extensions from the Visual Studio Code marketplace
- Is part of a fast growing open source community



* Offline development option is planned
** Theia marketplace is planned

Boost Development Agility and Unleash Innovation

A Unified Developer Experience from No-Code to Pro-Code

SAP Business Application Studio for Low-Code Development		SAP Build Apps
Template-based Fiori apps, applications extensions, and backend services for SAP opinionated technology (e.g., CAP, UI5)	**What type of applications can I create?**	Front-end apps with custom functionality & design for stand-alone apps & LoB side-by-side extensions
SAP Integrations using APIs/events, cloud application programming (CAP), Fiori elements, mobile services	**How to integrate to other SAP solutions?**	Integrate with REST APIs and OData
Low-code capabilities that can be expanded with pro-code tools	**How to create apps and extensions?**	Everything done with no-code tools
Multiplatform deployment	**Where can I deploy to?**	Multiplatform deployment, app stores, and web
Professional and advanced citizen developer with low-code, easily dive into pro-code	**Who can create apps?**	Citizen and professional developer with no-code

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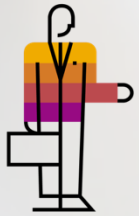
Meet your organization's requirements as fast as your business needs.

SAP's low-code/no-code application development enables developers to build applications and extend SAP systems faster than ever before. To learn more, click the links below.



Development Efficiency @ sap.com
Development Efficiency Services @ Discovery Center

For no-code developers

SAP Build Apps:
SAP Build Apps Page

For low-code developers:

SAP Business Application Studio:
Free Tier

Thank you.

Contact information:

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Bring out your best.

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