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adesso TECHNOLOGY RADAR 2021

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TECHNOLOGIES

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Bundling information, reducing complexity, spotting opportunities

Dear readers,

at one point in this edition of technology radar, you're going to come across the following sentence: 'Technologies, concepts and methods are emerging at breathtaking speed in the world of IT.' Anyone and everyone in our industry will agree. Progress is continuing at a rapid pace. This means it's up to managers at companies to keep an eye on the bigger picture, distinguish which developments are going to be around for the long term and which are just short-term fads, and focus on the right topics for their own IT departments first and foremost. This edition of radar will help you with this. It's an all-in-one guide containing the opinions and assessments of more than 50 adesso experts. They use their expertise and project experience to evaluate software development technologies, platforms, methods and tools. This means that radar was written based on practical experience and is also intended to be used in practice.

This is the third edition of radar, so just like in the first two issues, we take another look behind the scenes at what's going on with Java, JavaScript, Microsoft and Mobile. Enterprise PHP and SAP are making their radar debut. This reflects the importance that the two topics have for our customers – and thus for us. adesso has now developed a separate division around Enterprise PHP with three Competence Centres. Currently, over 300 colleagues work in units that deal with SAP technologies, so we thought it made sense to bring all of this expertise into radar.

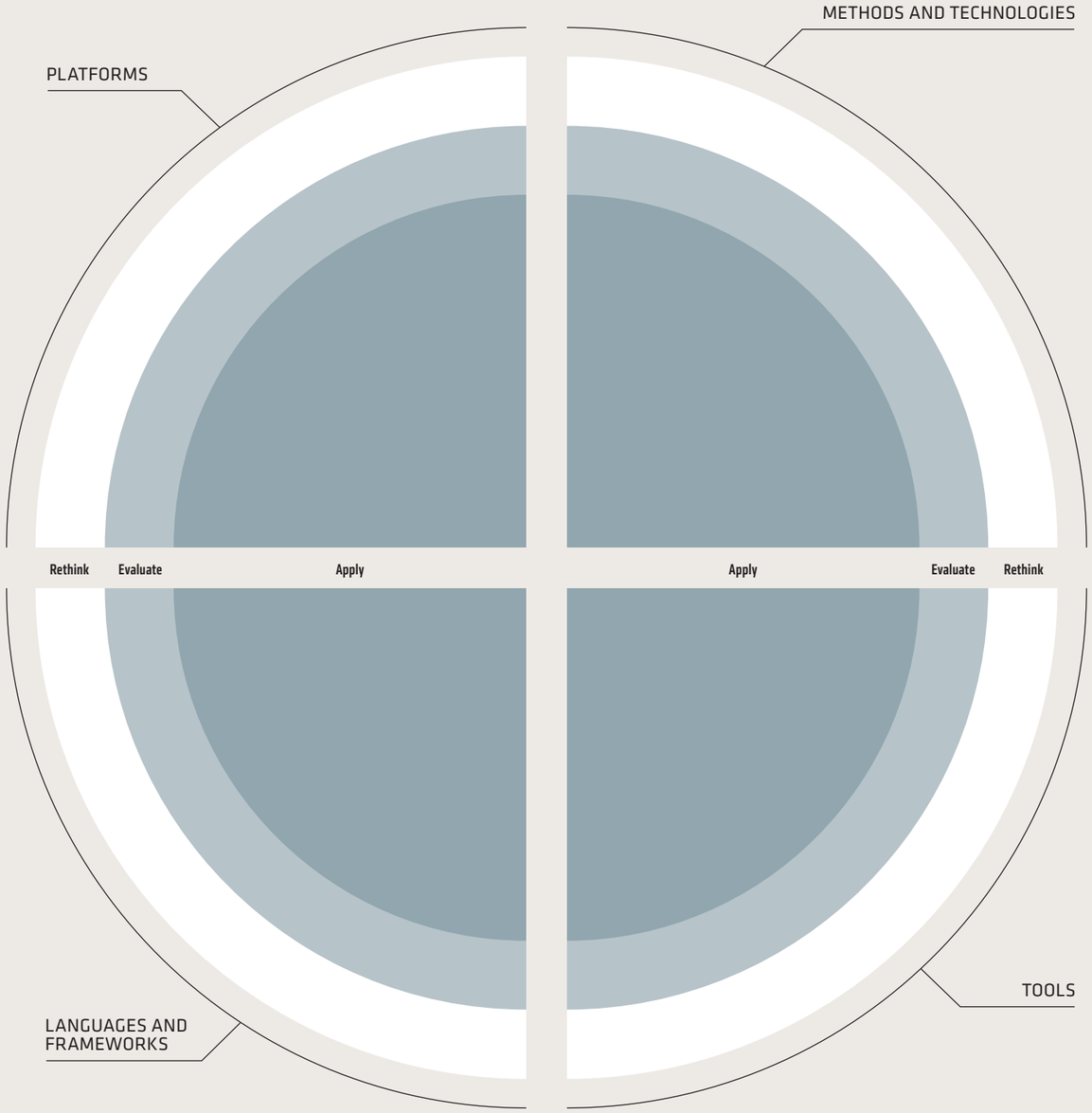
And that's not all that's new: we go beyond just evaluating technology by providing interviews and articles that give you an insight into the world of adesso. Where do our assessments come from? How do we keep up to date? What do our training activities look like? What motivates our experts? This information will help you to better understand our assessments.

I hope you enjoy reading the technology radar. If you can see at a glance which topics are of interest to you, we have achieved our goal.

Best regards,

Frank Dobelmann
CTO

How it works



THE QUADRANTS OF A RADAR

In order to structure the elements in a radar, each quadrant combines similar element types. The quadrants contain the categories described below:

METHODS AND TECHNOLOGIES

This quadrant contains approaches, best practices, procedures and processes that are evaluated independently of any technical support or implementation. For example, this is where you'll find continuous integration, regardless of the evaluation of potential platforms and tools that support a particular methodology such as Jenkins for continuous integration.

LANGUAGES AND FRAMEWORKS

The languages and frameworks section includes programming, mark-up and modelling languages, for example Java, XML and UML, as well as frameworks that support the solution for specific programming tasks such as the implementation of communication between distributed application components or the implementation of web-based user interfaces.

TOOLS

The tools section summarises the tools used to support tasks in software development projects, such as tools for programming, dependency management, application packaging, test execution and so on.

PLATFORMS

Platforms provide a uniform technical basis for a specific IT issue. For example, Microsoft Azure is a cloud platform for developing and operating a wide variety of services, while an Oracle database is used as a platform for data persistence.

RINGS: THE EVALUATION SCALE

The elements evaluated in a radar are depicted as points. The evaluation of each element is represented by its position on one of three rings. Each ring represents one evaluation. The same elements can be evaluated differently in different technology stacks.

APPLY

The inner ring contains recommended elements. The recommendation stems from positive project experiences and how the elements compare to alternatives.

EVALUATE

The middle ring is made up of elements for which there is currently insufficient or a lack of clear positive project experience to make a general recommendation for use. Despite this, elements with the 'evaluate' status are often productive components of projects that are simply not yet used widely.

RETHINK

The outer ring – the main purpose of this evaluation is to raise awareness of alternative elements in light of the rapid changes taking place in the world of IT. The 'rethink' ring often contains elements for which a recommendation for use has already been made. However, the evaluation indicates which elements are currently favoured.

THE PURPOSE OF THE RADAR AND HOW TO USE IT

The way the elements are classified in a radar is a snapshot of the evaluation and is mainly used as a springboard for discussion. This classification doesn't dictate any architectural decisions, but instead is designed to simply provide support in answering architectural questions. The radar evaluations don't contain any specific assumptions about the specific starting point of a project or assume total freedom of choice and a 'green field' situation. This means that an evaluation carried out today won't provide the same results as one carried out tomorrow. Many evaluations are actually the subject of a lot of controversy, and evaluations of radar elements sometimes contain completely contradictory assessments. The resulting discussion is part of a lively debate that ultimately leads to a better awareness of possible solutions and improved quality.

Java

Topics and trends: Java

Public clouds have arrived in the mainstream. More and more enterprise applications are being moved to the cloud. These are traditionally implemented in Java Enterprise Edition or Spring. Data protection and security-related applications follow. But companies are also developing more and more software directly and exclusively for the cloud – in other words, cloud-native software. Many small applications that were developed and launched quickly with a manageable budget during the Covid-19 pandemic would be inconceivable without cloud-native development. These changes are leading to new Java innovations.

Java and JVM reinterpreted

A growing share of cloud-native software is being realised as 'Function as a Service' (FAAS). FAAS are launched for exactly one call, complete their task and are cleared again. Java, with its large artefacts (footprints) and long start-up times (cold start-up), had little to no significance here. This is changing with GraalVM and frameworks such as Micronaut and Quarkus. Java is compiled into native programmes using an ahead-of-time compiler. Anything unused doesn't go into the executed artefact. This significantly reduces the cold start-up time as well as the disk and memory footprint. Cloud applications aren't the only ones to benefit; IoT and edge computing also benefit from the new possibilities.

Let's go back to cloud-native and how it's changing the Java world: Kotlin has been highly popular among Android developers for quite some time. The right backend for mobile apps can also be created for cloud-native FAAS efficiently thanks to Kotlin functions.

Reactive applications for an elastic cloud

Microservices and the cloud belong closely together. Distributed systems and asynchronous processes are implemented with frameworks such as RxJava and Vert.x. The most common examples of these are Apache Kafka, Apache Camel, but Spring Integration is also widely used. Tools from cloud providers are used to track a data flow despite all of the events and asynchrony. This implies that companies accept being locked into the cloud provider. If they'd rather stay away from vendor-specific solutions and maintain the containers and infrastructure themselves in the Platform-as-a-Service (PaaS) scenario, they have to rely on other tools. Spring Cloud Sleuth and the Elastic Stack are suitable for monitoring the operation here, for example.

To ensure stability in distributed and asynchronous scenarios, companies should look at the resilience4j circuit breaker. The circuit breaker integrates into Spring Cloud very easily. To make the best use of resources, the GitHub project concurrency-limits provides the data and the ability to dynamically determine resilience and scaling.

Implications for methods and techniques

FAAS and microservices reduce complexity on a small scale. On the other hand, complexity is growing at the integration and operational level. Strategies such as continuous integration and continuous delivery must respond to this. In addition to traditional static analyses, companies should rely on automated end-to-end tests and increase the amount of chaos engineering.

More mobile, more open source – a continuing trend

Mobile first is a trend that has been going on for some time, but is now becoming increasingly important. Few use cases can afford to have companies block out about half of German Internet usage. When it comes to implementing mobile solutions across different platforms, progressive web apps (PWA) are attracting more and more attention alongside the established solutions using Kotlin. Open source is an important factor in the cloud, as the licensing models of commercial alternatives are often difficult to reconcile with elastic scaling.

Java

METHODS AND TECHNOLOGIES

PLATFORMS

TOOLS

LANGUAGES AND FRAMEWORKS

Rethink
Evaluate
Apply
Apply
Evaluate
Rethink

Bamboo
DB2
MariaDB
Bazel
MySQL
GoCD
Nexus Sonatype
Solr
Docker
Elasticsearch
GitLab
MSSQL
MongoDB
PostgreSQL
Oracle DB
Artifactory
Elastic Stack as a log platform
Graylog 2
Jenkins
ESB
Polyglot persistence
Agile development processes
Continuous delivery
Require-ments engi-neering with IREB
Resilient software design
Resource-oriented web interface
Automated end-to-end tests
Continuous integration
Reactive programming
Responsive design
Version control for databases
Java desktop clients
Event sourcing
Domain-driven design (DDD)
Lightweight architectures
Test-driven development
Interaction Room
JEE application server
Microservices based on JEE
Testing with ISTQB
Distributed architectures
JEE portal server
Monorepo
SAFe
Web services (SOAP)
Apache CXF
EJB
Failsafe
Groovy
Jakarta EE
JavaFX
JSF
Lucene
RCP
Scala
Swing
Vaadin
Wicket
Axon Framework
GraalVM
Kotlin
Micronaut
Spring Integration
Apache Camel
CDI
Hibernate
OpenFeign
Spring MVC
Spring Boot
resilience4j
Spring Cloud
Spring Cloud Sleuth
Vert.x
Quarkus
Terraform
Ansible
ArchUnit
Balsamiq
Bitbucket
Eclipse
Gradle
IntelliJ IDEA / WebStorm
JaCoCo
Jira
JMeter
jQAssistant
Keycloak
Maven
Micrometer
OWASP dependency check
Postman
REST-assured
OpenAPI
Sonarqube
Structure101
VisualVM
Java Mission Control
YouTrack
Vagrant
UpSource
Puppet
Gatling
Chef
Jib
Java Melody

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Selected radar elements

Polyglot persistence → Evaluate

NoSQL databases have offered alternative solutions for persisting data for around ten years now. NoSQL doesn't aim to replace traditional relational database systems (RDBMS), but rather to offer better solutions for specific problems. This means that RDBMSs are still the right solution when it comes to transactional requirements. Due to their design, however, these systems have limitations or restrictions with regard to scalability and response time behaviour. For example, it's technically possible to implement traditional recommendation systems with an RDBMS, of course. On a technical level, however, they are not the favoured solution since graph databases, among others, are more suitable from a conceptual point of view in this instance. This makes selecting the right database technology based on a system's requirements the key to implementing systems in the right way. NoSQL databases shouldn't be seen as exclusive of RDBMS. Rather, polyglot persistence is the approach that should be chosen in this situation.

Domain-driven design → Apply

Domain-driven design (DDD) is an approach to modelling and conceptualising software systems. It focuses on the specialist side. The goals are to create a uniform understanding for domain and technology experts and to describe this in a ubiquitous language. For this purpose, the DDD offers a collection of principles and patterns to close the gap between the reality of business and code. The patterns are divided into the categories of tactical and strategic patterns. They provide approaches for modelling and structuring the system to be conceptualised. The term DDD itself was coined by Eric Evans as early as 2001 and is experiencing a true renaissance in the world of distributed systems.

Gatling → Apply

With Gatling, load and performance tests can be created using an imperative rather than a declarative approach ('test as code'). This makes Gatling a much better fit in the developers' tool chain, and it's easy to manage using a VCS. Gatling provides a Scala DSL including a proxy to record user requests. Stubs (analogue page objects) can be generated using the OpenAPI generator. Gatling is open source and is used in our projects to test REST APIs, among other things.

Quarkus → Apply

Quarkus is a Java application framework for microservices. It supports cloud-native development for Kubernetes and is optimised for both OpenJDK and GraalVM. The framework is based on proven Java libraries and standards. Memory consumption and start-up time are immediately improved several times over when using OpenJDK in comparison to traditional frameworks. Using GraalVM means start-up times can be reduced to milliseconds. This also makes the framework a good candidate in Function-as-a-Service scenarios. The Quarkus project page is a good place to start regarding the extensions available and their level of maturity.

Research at adesso

As an active part of the research landscape, we help shape the solutions of tomorrow. We see it as our responsibility to examine new technology and discover their potential. To do so, we rely on a wide range of cooperation in terms of technology, science and research. Two adesso research projects in the construction industry demonstrate what this looks like in practice.

Compared to others, the industry is lagging behind in the use of digital innovations. But a change in thinking has begun. The digital transformation is also picking up speed here. Policymakers are playing their part in this change by commissioning research projects on the digitalisation of the construction sector.

BIM – the innovation engine

An important goal of the transformation is the IT-supported reorganisation and redesign of construction planning and control processes. This means that the coordination and cooperation of those involved in a construction project should become more transparent and be based on uniform data. The approach to this is called 'Building Information Modelling' (BIM). The central focus of BIM is the visualised 3D model of the building design, which is then enhanced with additional information on the construction process in terms of time (4D) and the quantity and cost evaluation (5D). All of the parties involved in construction have access to this data and process it within the scope of their responsibility. This means that continuous and reliable digital data is available in the construction process that can be used to plan, carry out and manage construction projects in their finished state without media disruption for the first time. BIM will therefore make a significant contribution to preventing planning errors, coordination problems and the resulting costly construction defects.

The German Federal Ministry of Transport and Digital Infrastructure (Bundesministerium für Verkehr und digitale Infrastruktur, BMVI) is pushing this development and commissioned planen bauen 4.0 GmbH to establish the 'National BIM Competence Centre of the Federal Government' in 2019. adesso is developing the BIM portal set out in the founding mandate. In future, the BIM portal will be the official technical platform for public customers to submit tenders for BIM-compliant construction projects.

BIMSWARM and BIMcontracts

adesso is also working on the BIMSWARM and BIMcontracts research projects in cooperation with planen bauen 4.0.

BIMSWARM is to serve as an information portal and marketplace for BIM-compliant construction software and will also act as an integration platform that enables the interconnection of software solutions for construction-related subprocesses. Data is exchanged between the linked applications without interfering system boundaries or firewalls. BIMSWARM refers to interlinked software products as a toolchain, which are compiled with the help of the BIMSWARM Composer and made available to the partners involved. These products can be used directly on the platform without the need for an additional login (single sign-on). The solution developed in the research project will be launched on the market in the middle of the year.

In the BIMcontracts project, adesso is developing a system for the prompt digital billing of partial services in a construction project. From a technical perspective, this will be based on smart contracts, the transactions for which are securely managed in a blockchain. The smart contract sets out rules for the performance of contractual services, and these control the workflow up to payment for the service provided. The notification of completion of a billing unit, its inspection and acceptance by the client as well as its payment are carried out as a partially automated process. This increases the efficiency of the payment system and improves the liquidity of the contractors involved in a construction project, which benefits SMEs in particular.

The construction site goes digital

Something is happening on the construction site. The construction industry is catching up in terms of digitalisation and using digital innovations to increase its productivity. BIM is the methodological framework for optimising the planning and control of construction projects. Both BIMSWARM and BIMcontracts have already received positive feedback in terms of their market maturity.

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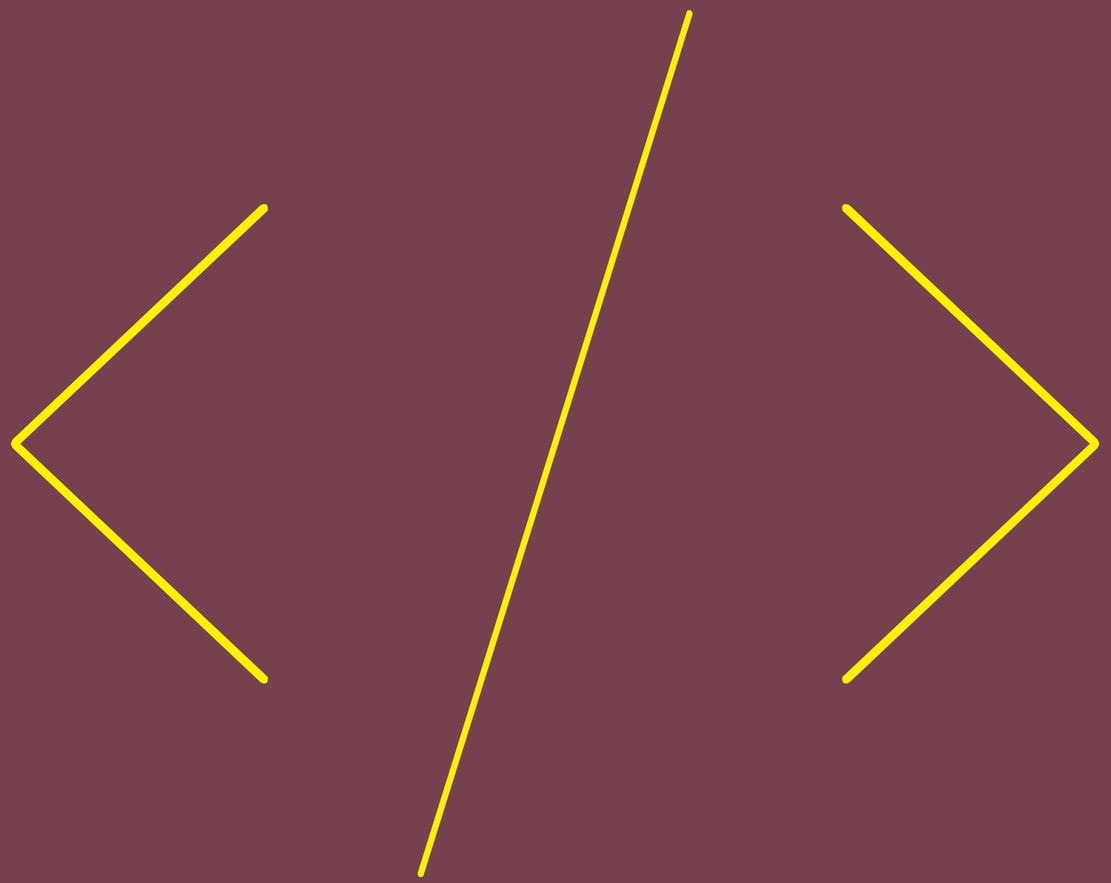
JavaScript (TypeScript)



Topics and trends: JavaScript (TypeScript)

TypeScript dominates the JavaScript world

Native applications that only run on individual operating systems are being used less and less for business applications. The web offers everything you need to build efficient, customised and visually appealing applications and to use them on every platform. The priority today is to flexibly deliver added value and innovations on different device classes. The applications are growing, as is their frontend share. More and more applications, some of which are business-critical, are being used through JavaScript interfaces. This proliferation is increasing the desire to be able to reuse elements as well as fast development cycles, and it raises quality expectations. The maturation of the JavaScript ecosystem can be seen not only in the convergence of methods and frameworks, but also in the far-reaching emergence of TypeScript as the unofficial first choice among JavaScript dialects.

Quality through typification

The increased complexities of web applications today demand more structure and effective tools to achieve consistent quality. Testing tools were just the beginning. It is good practice to keep a constant eye on the quality goals of an application using static code analysis. The analysis tools acquire important additional information from static type information.

Certain error classes are automatically eliminated because a safety net is erected around the code. This is the only way teams can handle large applications.

What does this mean for teams?

There is less friction from a communicative point of view as the code itself starts to 'speak'. In turn, this means that documentation that is maintained manually will remain closer to how things are in reality. If the code reveals more about the data structures and assurances about development time are reliable, less will go wrong. Modern IDEs reduce typing, make sensible suggestions to developers and enable fluent work.

Team members who come from typed languages feel much safer in the unfamiliar JavaScript world. In addition, cross-functional roles are easier to implement.

State-of-the-art JavaScript these days means TypeScript. If TypeScript is a part of the project, team members should be given an introduction concerning the challenges they face. The migration process isn't too much of a hurdle as TypeScript is an extension of the JavaScript standard, meaning it enters into a symbiotic relationship. Every evolution of JavaScript is picked up by TypeScript seeing as the language hasn't been reinvented, but simply enriched and compiled into JavaScript code that can be run anywhere.

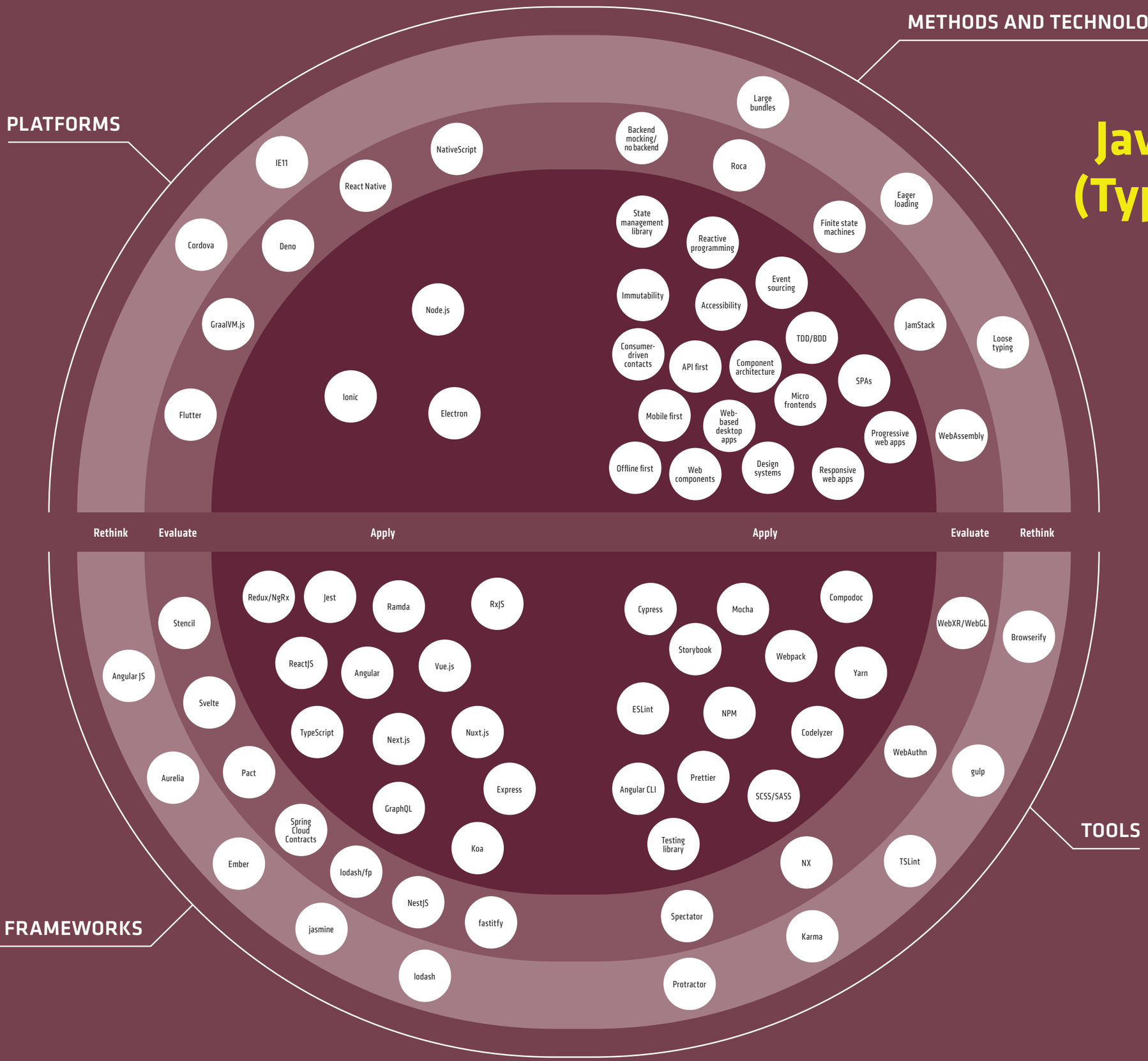
Stable software, scalable and future-proof architectures, better documentation: the ingredients for innovation-open solutions and high productivity.

Design systems as an afterburner

Design systems define reusable building blocks for designers and developers following component-based development. Tools such as Storybook create a common development and design platform. The common language increases quality and reusability and improves the efficiency of both disciplines. Fixed rules increase coherence.

Product owners also benefit from this inventory, because all those involved can view the components in isolation, try them out and develop them further at any time.

JavaScript (TypeScript)



adesso TECHNOLOGY RADAR 2021

Selected radar elements

Cypress → Apply

More and more project managers are turning to Cypress as an automated end-to-end testing tool. It features an API that makes it easy for experienced developers to write tests for complex web interfaces. A newly conceived execution model for tests leads to particularly stable test suites that would normally require much more effort to maintain.

Emulating a backend using mocks helps to make it versatile, for example to work as a frontend integration test. This also makes it possible to apply automated testing, at least to partial areas, in environments that are otherwise always expensive to test.

GraphQL → Apply

GraphQL is an open-source query language for APIs and a reference implementation for answering these data queries. The GraphQL specification defines a complete and understandable description of the structure of an API. It formalises an API through a stringent structure definition and offers API users access to data based on what they need. The type definitions mean the interface near enough documents itself. GraphQL offers a number of advantages in terms of latency and data volume for mobile clients in particular. This is because the client itself determines which of the database components are needed at any given point in time. GraphQL is a good sparring partner for conventional REST services as a middleware between client and potentially federated REST APIs. It facilitates the further development of APIs over the course of their lifetime with optional extensions for the structures and by systematically marking obsolete structural elements without affecting existing consumers.

Deno → Evaluate

Deno is a new JavaScript runtime for the backend and is positioned as a Node.js alternative. The new development has two goals: to improve the architecture compared to Node.js and to deliver a modern development platform with built-in tools. Deno promises features such as built-in security and TypeScript support, extensive compatibility with browser APIs or built-in tools such as Code Linter or Test Runner.

All of the necessary dependencies are imported directly with an absolute URL and stored in a shared folder for all Deno applications. This does away with the need for using node_modules. The CommonJS standard is not supported; instead, full use is made of ES Modules. There are already a number of frameworks and libraries for Deno. However, the ecosystem around Node.js is still much larger.

Storybook/design systems → Apply

Design systems provide a common platform in which development and design can organise their components. Storybook also allows you to simulate different states of the components. The purpose of the component can be documented in text form, and usage rules can be recorded. This increases consistency in the application.

Implementing a design system often shows an increase in the quality of component interfaces. In addition, there is a focus on components as the central building blocks of an application. As a result of this, using the design systems correctly increases the productivity of the entire team.

lodash → Rethink

lodash has functions that don't handle their arguments immutably and that have limited composability.

lodash/fp or Ramda can be used where native JS functions (like map, filter and so on) are not sufficient.

Don't want to wait for the technology radar to stay up to date?

Our experts keep an eye on all of the important goings on. Find out more at

www.adesso.de/blog

SAP

Topics and trends: SAP

Hybrid SAP landscapes

During the digital transformation and when transferring heterogeneous system landscapes to the cloud, ERP systems – and possibly others – are usually not transferred for various reasons, but are continued on-premises. However, these must be integrated into the new cloud landscapes. As far as the company is concerned, business processes are the main focus here, but they also can't ignore the administrative integration.

SAP is tackling this systematically with the dogma of the 'Integrated Intelligent Suite'. The goal is to provide a seamless user experience by using uniform interfaces that have secure connections and data exchange, as well as comprehensive tools to manage the hybrid SAP landscapes centrally. However, this is a demanding task even for the pure SAP application portfolio.

Converting and providing support for highly heterogeneous and customised customer landscapes, on the other hand, is a completely different challenge. Non-SAP products cause considerably more effort if they are to be integrated into IT management. Many of the support tools provided by SAP are not available for this integration, so other solutions have to be found and established.

Intelligent SAP processes

In addition to the current SAP trend topics S/4HANA and SAP Business Technology Platform, SAP Intelligent Technologies, formerly SAP Leonardo, are also designed to do this. Customers are increasingly focusing on these following the first successful S/4HANA conversions and cloud connections. The need to improve existing processes by utilising the existing treasure trove of data is growing, paying particular attention to providing better support in the decision-making process and reducing the amount of manual work involved. There is often already scope to intelligently improve both existing standards and processes adapted by the customer here by using existing tools such as SAP ISLM and by using the SAP HANA Application Function Library (AFL). For example, companies can use these types of machine learning technologies and SAP Situation Handling to automatically close open orders – a process that they can currently only realise by binding a lot of resources. Almost every similar scenario that requires human capacity in companies and is repetitive can be realised in S/4HANA.

adesso Active Transformation

adesso Active Transformation is a process model for transforming SAP systems and landscapes, based on SAP Activate. The aim is to standardise the transformation process from planning to implementation. The process model consists of various phases and building blocks, presented in the form of workshops, preliminary analysis phases and traditional consulting. The building block principle means that any transformation can be planned and launched quickly and effectively.

In general, adesso considers three streams in the transformation process: business, technology and project management and organisation. The goals of Active Transformation are to integrate the transformation into the customer's IT and business strategy, to determine the optimal transformation path for the system and business processes and to carry out the transformation itself. An early touchpoint with the new system in what's known as the user experience journey is an essential component of Active Transformation. The process model also includes the transformation of several systems within a system landscape.

SAP Fiori

Fiori defines a new, contemporary user experience for SAP products. The design language creates a unified and consistent user experience design for end users. SAP Fiori applications are governed by the paradigms of 'role-based', 'customisable', 'simple', 'coherent' and 'responsive'. Fiori apps are becoming the standard not only for S/4HANA, but across the board for all SAP products; the Fiori launchpad is the single point of entry. It is the central access point for users to corporate applications. SAP already provides a number of applications that can be used in regular business processes such as finance, procurement, sales and others, and the trend is increasing. Custom applications can also be developed based on the design language. From a technical perspective, Fiori is based on the SAPUI5 framework, an enterprise UI technology based on JavaScript, CSS and HTML5. Applications communicate with the backend system via the Open Data Protocol (OData), a standardised open protocol. This allows the use of query-capable and interoperable RESTful APIs. In addition to the web applications, the SAP Fiori design language also includes the mobile applications 'SAP Fiori for Android' and 'SAP Fiori for iOS', as well as a 'conversational UX'. SAP Fiori can be based on different architecture models. It can be used on-premises or cloud-native as well as in a hybrid architecture.

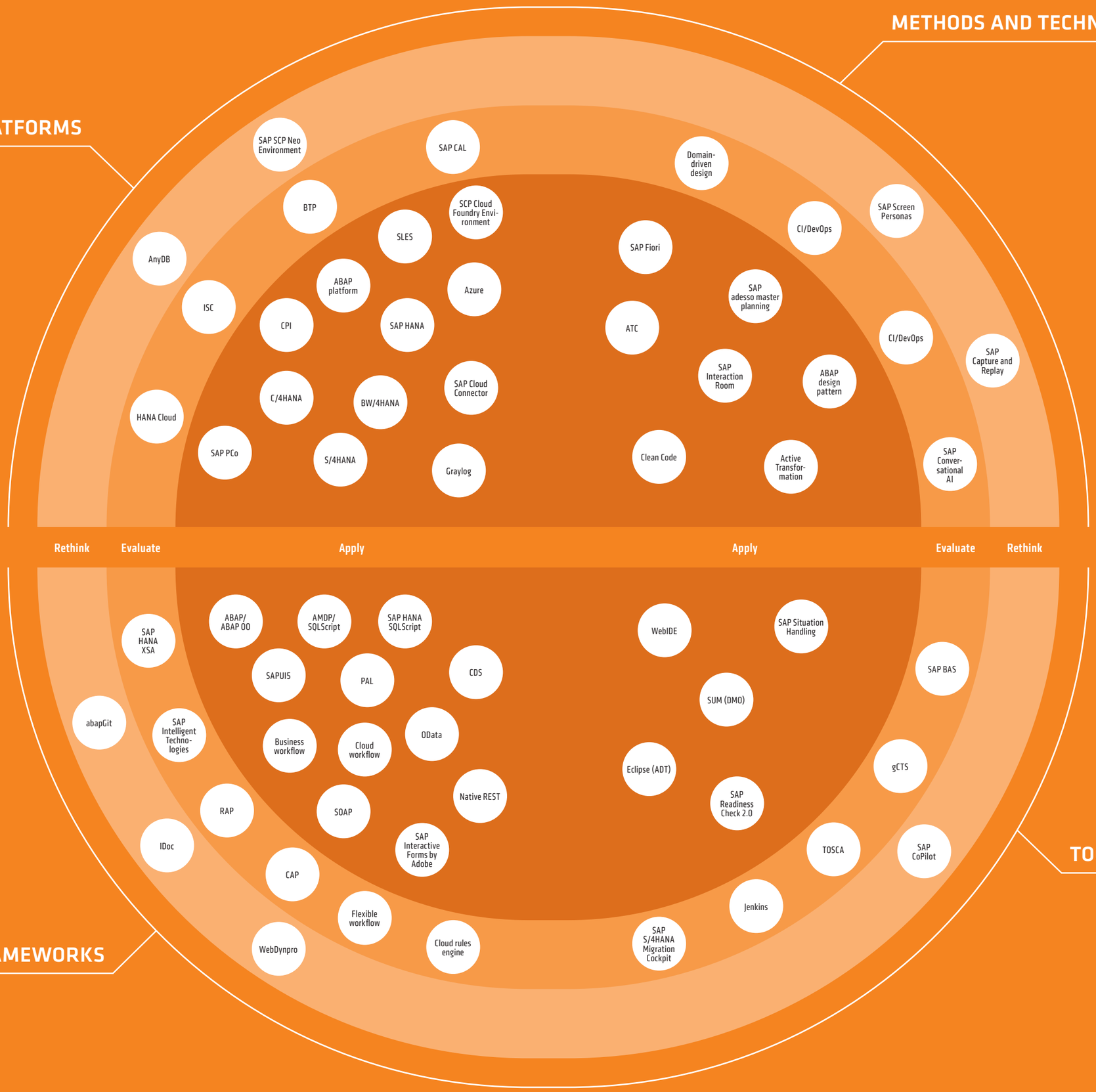
SAP

METHODS AND TECHNOLOGIES

PLATFORMS

TOOLS

LANGUAGES AND FRAMEWORKS



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Selected radar elements

SAP Intelligent Technologies → Evaluate

The new name of SAP Leonardo covers innovation topics such as machine learning, artificial intelligence, blockchain or IoT. Many of these technologies are already actively used in projects and expand current processes in a meaningful and profitable way. They are increasingly becoming an indispensable part of modern business process and IT architectures for our customers, too.

adesso SAP master planning → Apply

Master planning shows the path for the customer from the current state to the custom-defined future state. This not only introduces innovative technologies, but customer-specific framework aspects also have to be taken into account: for example, GRC specifications, ALM specifications from SAP software suppliers and participating non-SAP manufacturers, as well as overarching transformation and operational aspects. As a result, the necessary projects are displayed on a logical timeline in order to achieve the defined business goals. Master planning is an integral part of the IT/SAP transformation in terms of digitalisation, cloud and x/4HANA to identify overarching dependencies in the company.

Core Data Services (CDS) → Apply

CDS views offer new options for controlling access to the database. CDS annotations enrich the CDS entities with metadata. CDS DCL (Data Control Language) is used for access control and code pushdown to reduce runtime. As an interface embedded in a defined system architecture, CDS views thus offer a large number of options, not only for creating SAP Fiori applications more easily. Uniform and fast APIs can also be realised in the backend and across the board, especially for highly complex SQL queries. However, not every simple SQL query should be replaced by a CDS view. This increases the complexity of the coding and doesn't benefit performance in any way.

Eclipse (ABAP Development Tools) → Apply

SAP has been offering the ABAP Development Tools (ADT), which enable ADAP development in Eclipse, for almost a decade. The new development environment has not yet fully established itself, and change has been slow in recent years despite the extension to the functionalities and the fact CDS views can't be edited in the ABAP Workbench. The conversion to SAP S/4HANA will see a greater focus placed on using Eclipse. For that reason, expertise should be built up at an early stage, and parallel operation should be evaluated. Functions for refactoring or the SQL Console already offer added value, which justifies the small amount of time needed to become familiar with them.

ABAP RESTful Application Programming Model (RAP) → Evaluate

The ABAP RESTful Application Programming Model is one of the latest strategic long-term solutions touted by SAP for S/4HANA-optimised extensions, Fiori apps and web APIs. By providing a standardised framework with predefined artefacts, the software architecture remains stable. RAP is ready for use both in the on-premises environment (from S/4HANA 1909) and on SAP's Business Technology Platform. The development environment is Eclipse with the ABAP Development Tools. CDS, ABAP OO and SAPUI5 are the technologies used. A programming model with a predefined architecture is needed more than ever, especially for SAP extensibility (side-by-side extensions/in-app extensions) in the area of cloud solutions.

'The integrated use of SAP solutions means we can develop competitive advantages for the customer.'

Interview with Hinrich Mielke | Head of SAP Competence Center | adesso SE

What are the current challenges for SAP customers?

SAP's customers are facing a wide range of challenges: in addition to the switch to S/4HANA that has to be done by 2027/2030 – which is a good reason for business reengineering of core processes – SAP offers an interesting platform for extending and integrating the core product with the Business Technology Platform (BTP) and the solutions running on it, such as CPI.

This platform is preferably extended with Java. This is a field of expertise that is very unevenly distributed in the SAP ecosystem. Furthermore, an optimal user experience (UX) can be realised through developments in UI5 for Fiori. The expenses this incurs have a high ROI thanks to the productivity gains and user satisfaction that come about as a result.

And what is adesso's USP in these areas?

There are two factors that make us stand out: on the one hand, we have broad development expertise in ABAP, UI5, mobile devices and Java. On the other hand, we can work out the decisive advantages for the customer with our well-founded and proven methodological expertise. We can also provide large, well-established development teams with specialist knowledge, for example for testing, at short notice.

The integrated use of SAP solutions means we can develop competitive advantages for the customer that represent a USP among the increasingly fierce competition. For instance, embedded analytics can be used to develop the key information advantage as well as reduce media discontinuities, which is a well-known benefit. A lengthy ETL process is often no longer necessary – as long as the core system delivers the corresponding performance.

Similarly, by integrating modern frontend solutions – ideally native apps on smartphones – end customers can be provided with information directly from the backend to allow for close integration. This increases customer loyalty.

Since we are organised by industry at adesso, we can also implement and map industry-specific requirements in SAP solutions with a high degree of expertise. This is where adesso's decades of experience comes to the fore. We can provide fast and cost-optimised consulting both on the business process with its regulatory constraints and on the use of different technologies in the SAP environment.

Why is SAP technology expertise so important here?

To enable seamless end-to-end processes, the underlying technology must be designed, built and operated accordingly with a suitable architecture. Modern technologies such as IaaS, PaaS and SaaS enable an unexpected degree of flexibility, which, however, must also be mastered. Only then can a cost-effective solution be created that is also flexible for further changes down the line and guarantees a fast ROI. SAP's range of solutions can be somewhat overwhelming. It's important to keep track of the details here, which is not exactly made easier by SAP's agile marketing.

The interaction with SAP's partners, be they hyperscalers or, for example, solution providers for data archiving or selective data transformation on the path to S/4HANA, must be precisely planned and tested – this is the only way to map business processes in a cost-optimised manner. Traditional questions about high availability or disaster recovery are also always important and must be conceptualised and answered in line with business requirements.

HINRICH MIELKE
has been working with SAP since 1995, first as a technology consultant, then as a trusted advisor for customers to develop a long-term sustainable strategy. He has been working as a manager in consulting and has been responsible for the development and expansion of both consulting topics and consulting teams for 20 years. At adesso, Mielke is responsible for the SAP Technology division and the Walldorf office in close proximity to SAP and adesso's partners.

Strong together: adesso orange bundles SAP expertise

adesso orange is the new SAP consulting firm in Germany, where the expertise of the two SAP Gold Partners adesso and QUANTO comes together. Stephan Thies and Frank Beck provide an insight into the structure, benefits and goals of adesso orange.

adesso and the QUANTO Group are joining forces. How did the partnership come about?

Stephan Thies: adesso and QUANTO have been in constant contact at various levels in recent years, but there was never the opportunity for a major joint project. The partnership remained limited to mutual customers, such as energy suppliers. The first major project at Bausparkasse Schwäbisch Hall then came along in 2019, which we tackled together. Everyone involved with the project had nothing but praise for how the cooperation both on a professional and social level. This quickly got us thinking about making it happen more often. Our corporate culture and way of working fit together perfectly, and the portfolio rounds things off nicely.

A leading SAP consulting firm has been created in adesso orange. How exactly is everything organised?

Frank Beck: We are one of the leading consulting firms in the financial and utilities sectors. We're striving to become one of the largest German consulting firms in the SAP market with around 500 SAP colleagues in the adesso Group in the future. We also envisage our focus turning to manufacturing, healthcare, public administration, trade and chemicals in the future, too. Our broad portfolio is generally suitable for use in all industries and extends not only across the ERP, but also across the C/4and BW/4 portfolios in conjunction with the existing adesso units. On top of that, we also bring specific knowledge about project organisation and execution as well as expertise in requirements engineering and quality assurance to the table. This makes us a professional contact partner in many facets of the SAP universe.

What does the partnership mean for customers?

Stephan Thies: Our customers have more expertise at their disposal as well as the possibility to access larger teams. We can now access the portfolio supplemented by various aspects and offer our customers more security through size. This means that our customers have access to a partner who supports them in the S/4 transformation with a proven process model – adesso Active Transformation – and provides a wide range of experience. We're also integrating our portfolio and thus ourselves into the adesso Group's offerings and are a partner for cross-technology transformation projects and seamless integrations.

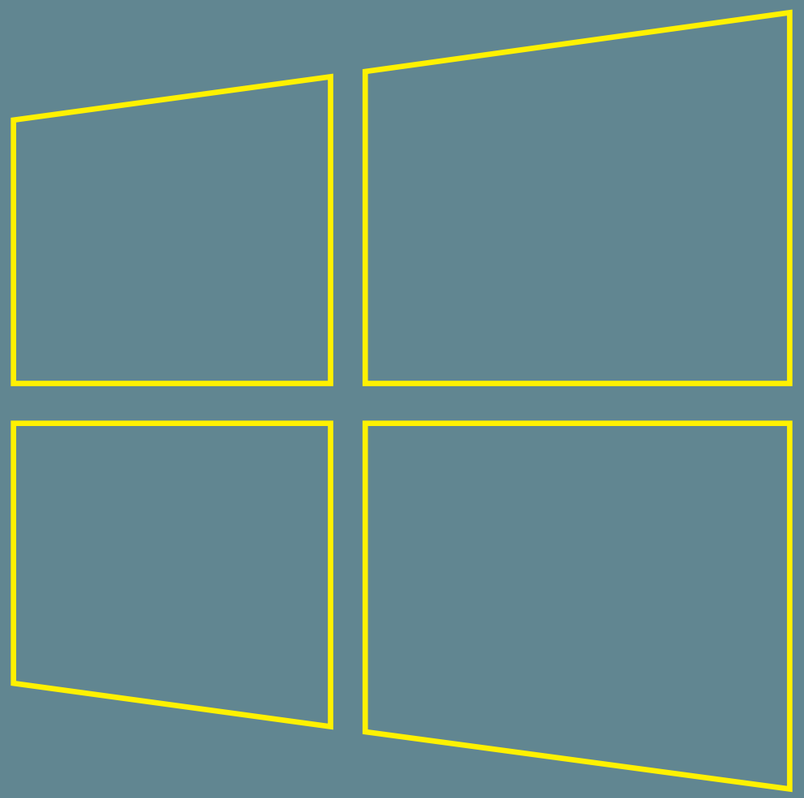
What are the goals of this newly formed unit?

Frank Beck: We want to be one of the leading players in the German SAP market, increase the number of adessi in the next few years and make them feel at home in the technology at the best employer in Germany. Looking further afield beyond our current sectors, we'd also like to move into providing specific solutions for other sectors and offer a greater number of comprehensive portfolio elements. We're now in a position to tackle very large volume projects more frequently, such as the ones we have already successfully delivered for E.ON, WienIT, thyssenkrupp and Schwäbisch Hall.

FRANK BECK is a member of the Executive Board at adesso orange and is responsible for the Cross Industries/Digital Business division.

STEPHAN THIES is Division Manager for SAP Consulting and Development at adesso orange

Microsoft



Topics and trends: Microsoft

We see that cloud platforms are playing an increasingly important role in Microsoft projects. Central to this, however, is their integration into our customers' existing on-premises environments. The Microsoft Cloud provides a basis for applications that are made up of decentralised services, regardless of whether they are provided on-premises or from the cloud. The Microsoft Cloud consists of Azure Infrastructure and Platform-as-a-Service services. Office 365 is the collaborative platform. In addition, Dynamics 365 provides an environment for business applications. Our customers are increasingly benefiting from the fact that Azure services such as machine learning or cognitive services can be used independent of the platform.

Business productivity

Collaboration is the foundation of a modern workplace. Microsoft provides a number of simple and effective solutions for this. Our customers are increasingly relying on Microsoft 365, where collaborative services such as SharePoint, Skype for Business or Teams are supplemented with security components such as conditional multi-factor access. Power Apps and Flow are now established tools for linking services within Microsoft 365. Increasingly, we are finding that Microsoft Cognitive Services are important elements in the workforce automation of the modern workplace.

Customer experience management (CEM)

The provision of relevant, processed information throughout the entire customer lifecycle is a key to success. The Dynamics 365 platform offers the Common Data Service and Power Apps, among others, for this purpose. In this way, we create an end-to-end connection of information, touchpoints and processes for our customers and can contribute to sustainable CEM.

Business intelligence, advanced analytics and artificial intelligence (AI)

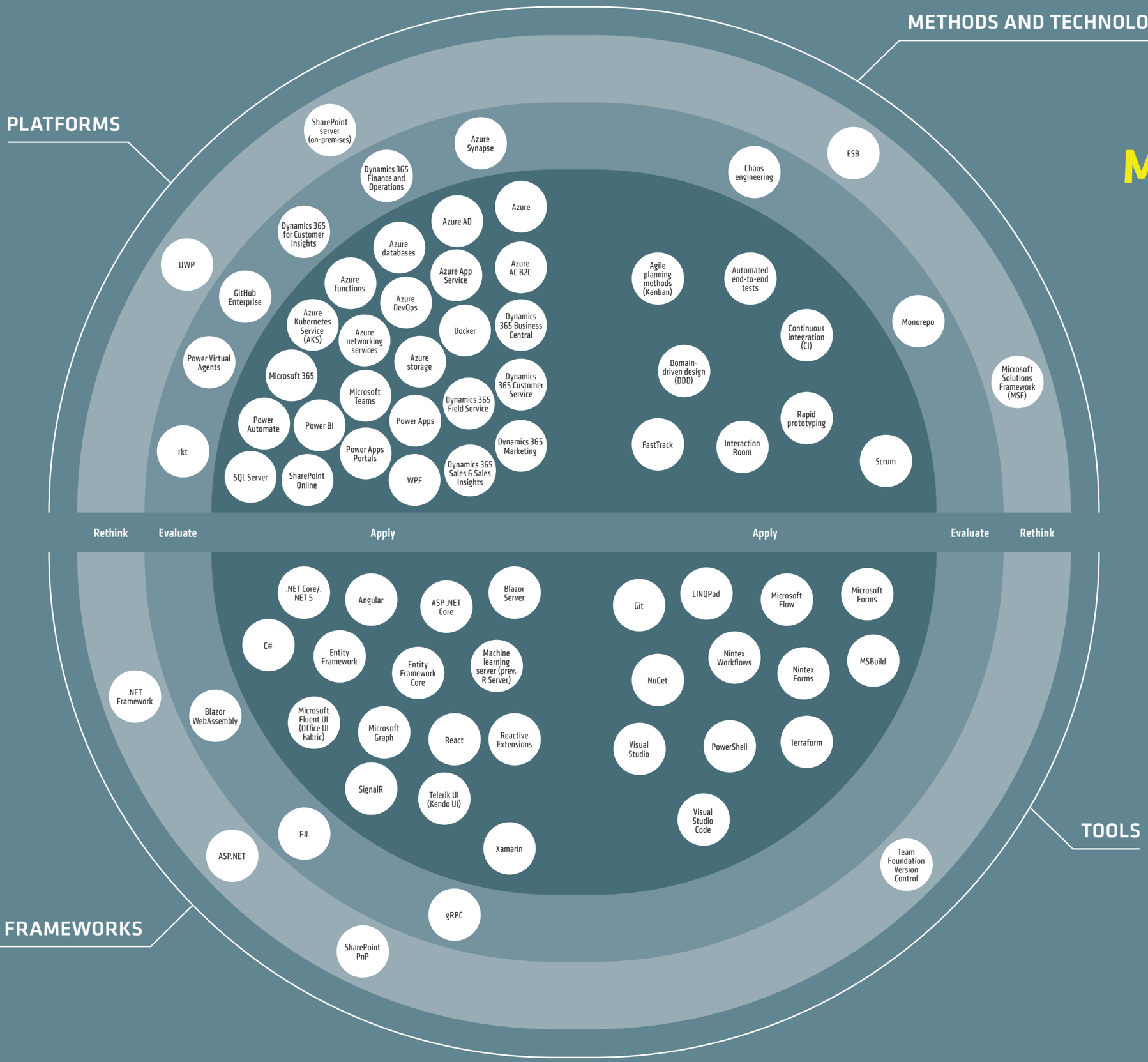
Analysing information and data plays an essential role for many of our customers. This applies in particular to digitalisation projects, customer management, traditional DWH topics and also the area of AI. The Azure components of the Microsoft Data Platform support big data and advanced analytics topics, basically offering a highly scalable infrastructure out of the box. This means that the effort required to set up and operate their own in-house big data platform is no longer a limiting factor for our customers.

Custom development

In addition to the many products that offer a platform in the Microsoft world, the development of custom software is a central part of our project business. Applications for web, desktop and mobile can be implemented with Microsoft technologies. The open source .NET Framework runs on Linux, Windows, iOS and Android devices. The complete life cycle of an application can be implemented using the Azure DevOps and Visual Studio family. The Azure platform complements the infrastructure required for this.

Custom development allows us to implement tailor-made software solutions for individual company processes. This enables our customers to stay one step ahead of current market events.

Microsoft



adesso TECHNOLOGY RADAR 2021

Selected radar elements

Power Platform → Apply

Modern low-code application platforms are in vogue as they increase digital productivity within a company without having to rely on complicated developments. The Microsoft Power Platform is the market leader and the ideal basis for greater flexibility and agility. It focuses on cost savings, efficiency gains and security for critical business processes. The Power Platform supports core business processes through application development, process automation, business analytics and the use of intelligent virtual agents.

.NET 5 → Apply

Microsoft is starting the redevelopment of its .NET Framework as platform-independent and open source. The ongoing further development of the framework is now called .NET 5. The switch from .NET Core to .NET 5 is proving to be very smooth in practice. The innovations contained in C# 9, such as record types, quickly became integral parts of developers' everyday lives in particular. Anyone who is still hesitant to switch from the 'old' .NET framework to the new development should do so now.

Microsoft Teams → Apply

Microsoft Teams is the central communication and overview platform for all users in a company. It really comes into its own in meetings and remote teamwork, with its strengths ranging from messaging to screen sharing to connecting normal telephone services (POTS). Plus, Teams is the central entry point for all employees. It would be no great surprise if Microsoft Teams increasingly replaced traditional browser-based intranets as the central entry point for corporate communication in the future.

Blazor → Apply

Blazor is Microsoft's attractive alternative for the large number of client-side frameworks, which builds on existing knowledge with C# and Razor. It also gets by without JavaScript for the most part. While we believe that Blazor WebAssembly still needs a while before it can hold its own against established frameworks such as Angular and React, we have already successfully completed our first Blazor Server projects. The technology, which is based on Razor and SignalR, delivers very fast results for internal applications in particular. It enables interactive applications to be developed without having to deal with the many issues posed by client-side applications such as API design and authentication.

Azure Synapse Analytics → Evaluate

Azure Synapse is an analytics service that combines data warehousing with big data analytics. It enables flexible data queries by using serverless on-demand resources or existing resources. Microsoft relies on established technologies and combines them under Azure Synapse Analytics for this. SQL is used for data warehousing, Spark for big data and pipelines for ETL processes, as well as integration with other Azure services such as Power BI. In addition, Microsoft offers Synapse Studio, a web-based integrated development environment (IDE). This provides easy and convenient access to all Azure Synapse Analytics functions. Azure DevOps also enables the versioning aspects of solutions and the automated deployment of Synapse Workspaces.

'Everyone benefits from it'

The adesso Academic Committee discusses current scientific and technological topics. The aim is to promote the transfer of knowledge between science and practical application. Professor Jens Teubner discusses the role of the Academic Committee, the type of cooperation between adesso and the universities and which current IT topic he considers exciting.

Prof. Teubner, you're a member of the adesso Academic Committee. How did you end up on the committee?

I've been a part of the Academic Committee since 2017. The fact we are so physically close together – adesso with its headquarters in Dortmund and me here at the university – meant we were in regular contact. Then, when the IT service provider was planning to set up the Academic Committee, Frank Dobelmann, CTO at adesso, approached me. He asked if I would like to make our cooperation a formal one – which I did.

What is the task of the adesso Academic Committee?

Our job in the Academic Committee is to ensure that information and ideas flow back and forth between the university and the experts at adesso. Everyone benefits from it. From an academic point of view, it's exciting to find out which topics managers in companies are currently dealing with, as well as what technologies play a role, what they rely on in project work. We have access to this practical side of computer science through the Academic Committee.

adesso, meanwhile, gains an insight into the topics that are currently at the top of the research agenda – and which will find their way into practical application in the future. This helps to identify trends at an early stage and to build up appropriate expertise in good time.

Can you tell the readers how the Academic Committee and adesso communicate?

We have regular meetings. These are normally in person, but because of the pandemic we're meeting online at the moment. At these meetings we listen to lectures, discuss issues and the participants bring in their different perspectives to proceedings. On top of these scheduled meetings, we are also in constant communication – students get involved in projects, I supervise theses by adesso employees and we get data sets for our research work.

What topics are the Academic Committee looking at right now?

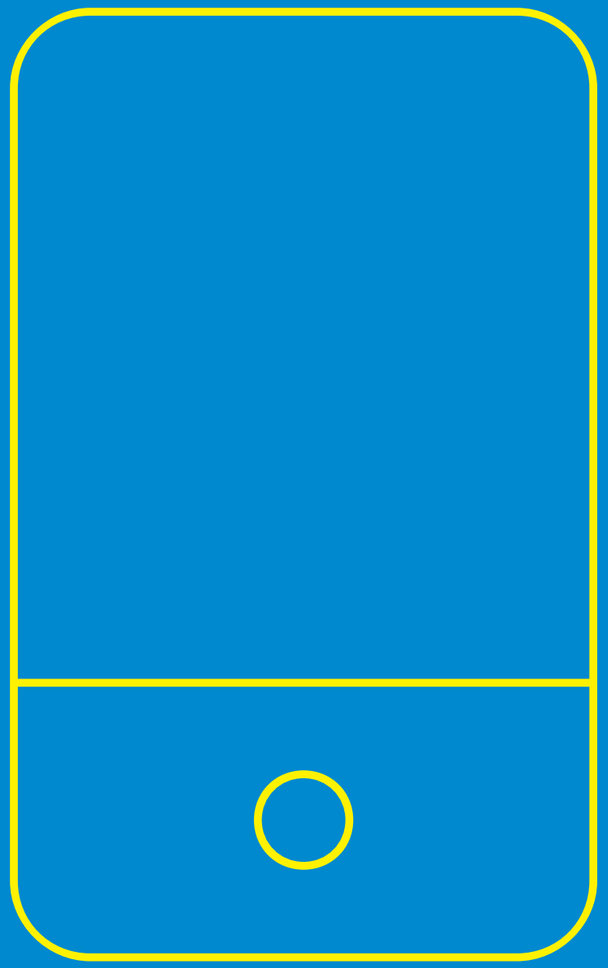
At the moment, a lot of our attention is focused on artificial intelligence. At our last meeting, we looked at how AI processes can play a role not only in companies, but also on the software development side. We analysed which AI-based tools could make life easier for developers in the future.

The adesso technology radar is used to analyse and evaluate programming languages, tools, platforms and development techniques. Which issue do you think professionals should have on their radar at the moment?

There's still room for improvement when it comes to decision-makers being able to process, evaluate and use data independently – and by that I mean without involving IT. Existing tools are not really intuitive to handle yet. There are exciting developments such as natural language queries. I think we will see a lot of development in this area in the future. Access to data will become easier and easier.

PROF. JENS TEUBNER heads the 'Databases and Information Systems' working group at TU Dortmund. His research focuses on the processing of large amounts of data in conjunction with modern hardware technologies, for example in the form of multi-core or in-memory systems or by exploiting special hardware such as graphics processors or programmable hardware (FPGAs). Before coming to Dortmund, he conducted research at the ETH Zurich, at the IBM T.J. Watson Research Lab and at the TU Munich, among others.

Mobile



Topics and trends: Mobile

Machine learning and artificial intelligence

There is no area that the topics of machine learning and artificial intelligence are penetrating as quickly as on mobile devices. These days, we consider automatic facial, voice and movement recognition to be 'normal' and expect these tools to be on our smartphone. Identifying and implementing completely individual, custom solutions shapes the discussions we have with customers about the solutions of the future. Increasingly powerful hardware and better and better machine learning models are pushing the boundary between vision and feasibility every day. This means mobile devices remain the innovation drivers for our customers' processes.

Augmented reality (AR)

The demand for augmented reality (AR) applications is steadily increasing and will continue to grow in the future. And for good reason. This is because the wide range of application possibilities offer many advantages for different areas. For example, training costs can be reduced, workflows simplified, maintenance carried out more efficiently and, ultimately, almost all of a company's operational processes can be made more efficient. For this reason, any decision-making process should consider how AR applications can help and optimally support employees in the respective context.

Low and no code – apps without code

Low or no-code platforms are starting to trend in the field of mobile development. They aim to allow you to develop apps without writing code – or with only a small amount of code – without incurring large costs or requiring large amounts of time. This is based on a visual development approach for rapid application development (RAD). To do this, developers select functional components from a UI library and place them in a visual screenflow using drag-and-drop. In practice, cloud solutions (aPaaS – Application Platform-as-a-Service) implement this approach in particular.

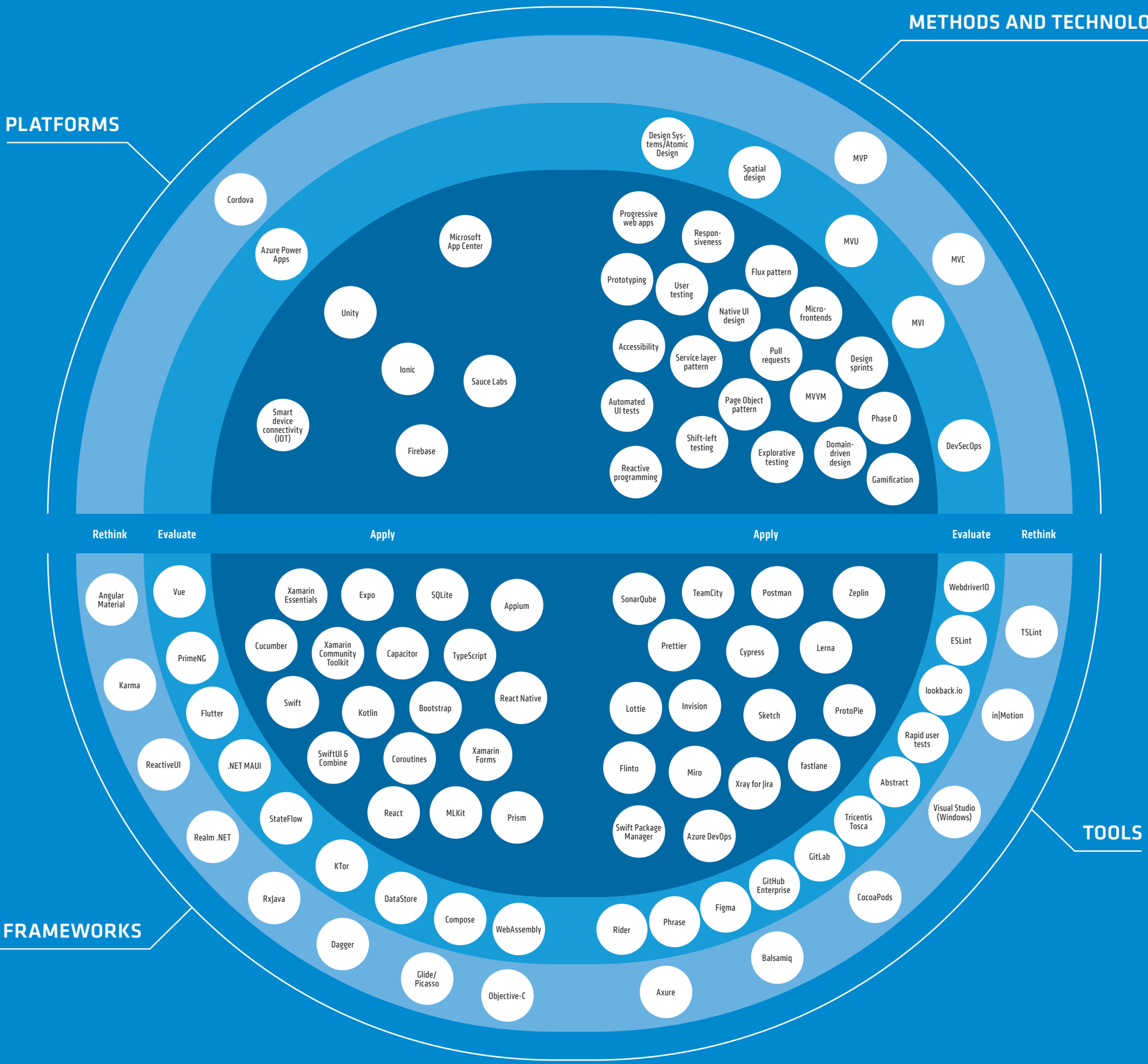
Smart connected products

Smart connected products are essential building blocks for maintaining and expanding the competitiveness of existing and new products. They enable the value creation for a physical product to be extended into the digital dimension. Future products should have a high level of connectivity and integration in order to exploit the great potential of providing additional digital services. In addition, future products should have customisation and personalisation options to meet the current and future customer requirements of 'digital natives'. Furthermore, the smart solutions must contribute to optimising the value creation processes within companies.

Gamification

Gamification is the transfer of elements and processes you would typically find in a game into 'serious', non-game contexts. This approach plays a key role in mobile applications in particular. Gamification provides a variety of tools in the context of user-centred software design to motivate and retain users in the long term. There is a clear distinction between gamification and phenomena such as game-based learning or serious gaming. While the playful characteristics of a gamified application are not immediately recognisable as such, serious games or game-based learning formats are clearly designed as (often very entertaining) games. However, the objective is the same: users should be able to experience interactive content and enter into a more lasting relationship with the content being delivered.

Mobile



adesso TECHNOLOGY RADAR 2021

Selected radar elements

Accessibility → Apply

Digital accessibility means that websites, apps and software in general can be operated by all users regardless of their limitations. The idea is to enable everyone to equally use digital media and applications that have become an indispensable part of our everyday lives. This is not just about simply obtaining information. In the course of the digital transformation, everyday services in particular, which are shifting from the analogue to the digital world, are becoming increasingly important. This includes, for example, requests to authorities, performing banking transactions or shopping online. Public institutions are legally obliged to make their digital services accessible to all, as set out in Germany's Information Technology Accessibility Regulation (Barrierefreie-Informationstechnik-Verordnung, BITV 2.0), which also specifies the test steps needed for certification. The basic requirements of 'perceptible, operable, understandable, robust' include criteria such as text alternatives, sufficient contrast ratios, logical structure, alternative access routes and operability via the keyboard. They are closely linked to the guidelines and DIN standards for good usability and are fundamentally orientated towards human needs.

Google Firebase → Apply

Firebase is a BaaS solution from Google that makes it easier and faster for developers to integrate standard functionalities into their mobile and web apps. These include authentication, analytics, crash reporting, data synchronisation and push notifications. Firebase is a suitable tool for implementing features and making them available to end users as quickly as possible for small projects or projects in the exploration phase in particular. However, the largely non-transparent pricing model and data protection issues must be taken into account.

React Native → Apply

React Native's native UI elements are causing it to gain more and more importance in web development as an alternative to Cordova in the field of (partially) hybrid cross-platform applications. The solution is starting to catch on as opposed to Cordova more and more. Demand for React Native has now grown to the point that it shouldn't be underestimated when it comes to choosing between Angular and React, which underpins its relevance.

SwiftUI & Combine → Apply

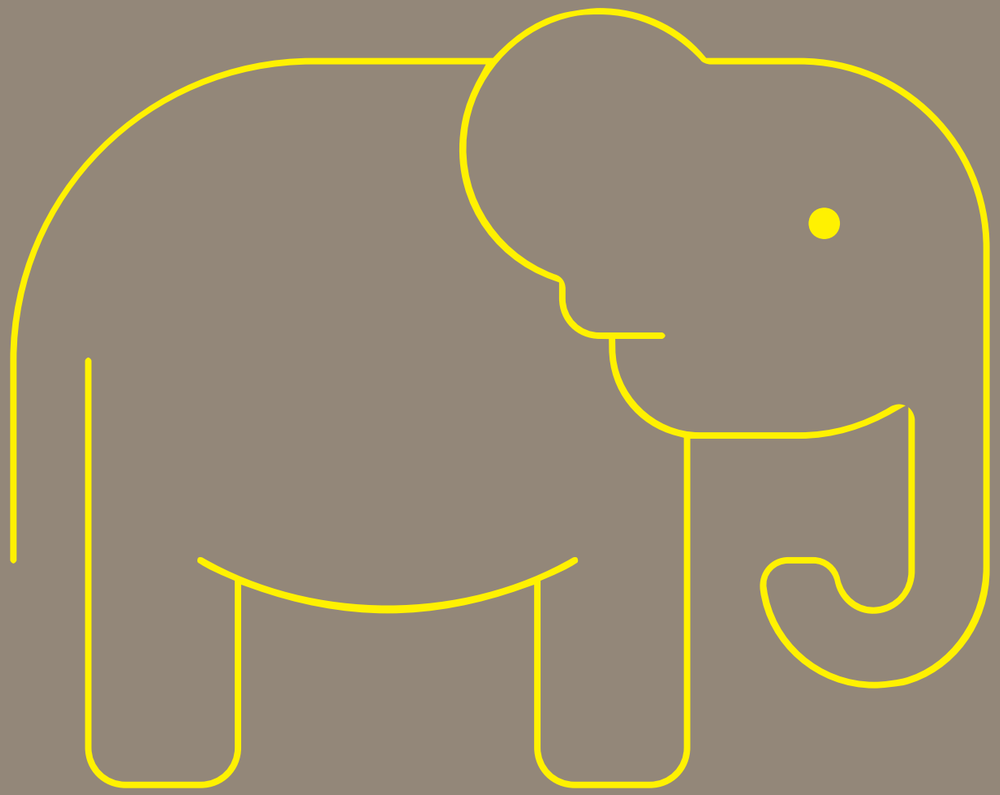
SwiftUI & Combine are the new standards from Apple for the reactive development of modern user interfaces. SwiftUI enables modern UI programming with reusable, easily combinable UI elements and layout configurations based on centralised view states and models. Combine forms the reactive backbone of SwiftUI with a focus on event-based data binding. Apple is pushing third-party developers to adapt these two technologies, meaning they will assume a dominant role in UI programming for iOS in a few years.

Making tomorrow's world more mobile

Would you like to learn about mobile solutions and how they can be used? The experts at adesso mobile Solutions GmbH will be happy to help you.

www.adesso-mobile.de

PHP



Topics and trends: PHP

Ibexa DXP

Ibexa Content is a multi-channel and headless content CMS designed for marketing, e-commerce and self-service apps. It is aimed at organisations that create content hubs and services to use as a core component of their digital platform and services and deliver content on every channel. Ibexa Experience is a modern, modular DXP for building outstanding customer experiences. It is designed for customer-focused businesses and organisations that want to go beyond managing content and creating websites. Ibexa Commerce is a commercially available B2B DXP, designed to digitalise businesses from the customer awareness phase to the decision to purchase and beyond. It was designed for businesses that need to change the way they sell and want to do business online. This includes digitalising and automating business transactions. Ibexa Cloud is an end-to-end cloud hosting platform for the Ibexa DXP software. It ensures more efficient processes from development to production. Optimised backend infrastructure and services enable development teams to work more efficiently and deliver faster in every phase.
Source: www.ibexa.co

Drupal – community-driven open-source CMS

Drupal is one of the most popular CMS worldwide. It is a reliable and secure system for millions of users, no matter whether they are in companies or public service organisations. The system follows an API-first approach, which makes it easy to implement modern requests such as multi-channel and headless approaches. The wide range of modules and a comprehensive range of ready-made distributions ensure easy integration and adaptation to a number of use cases in any language. This flexibility and modularity enables custom, dynamic and responsive (further) development, meaning Drupal impresses with high efficiency and scalability. Not only does this modular principle make Drupal virtually 'limitless', but the constant optimisation by its large community also means the CMS is always up to date. Plus, high security standards can be maintained and guaranteed thanks to the security patches that are provided promptly.

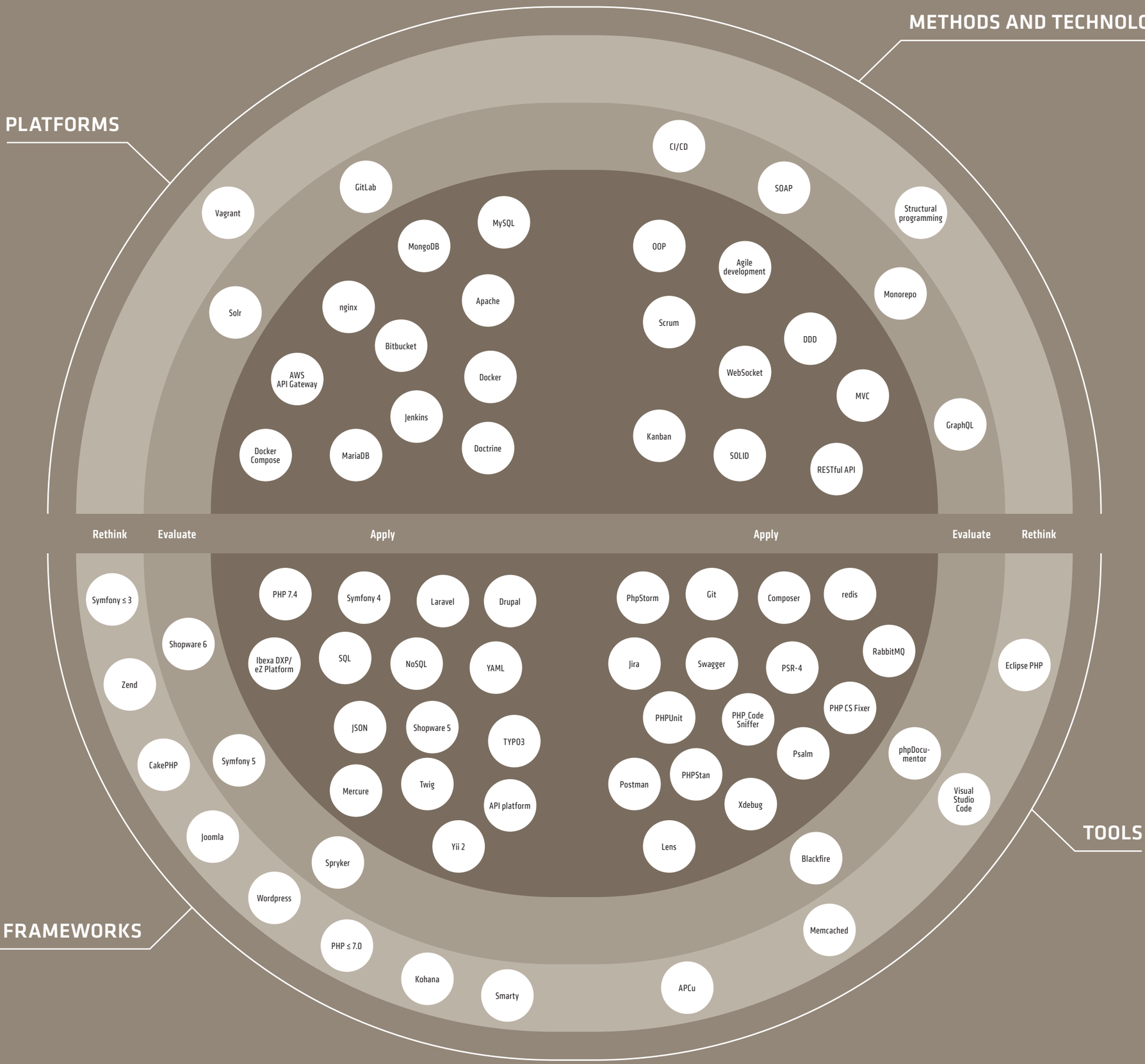
Spryker Commerce OS (SCOS)

The Spryker system is based on PHP and is a complete modular B2B and B2C e-commerce technology. The platform has 900 API-based modules and offers an agile and dynamic approach. The modular and modern SCOS architecture (separate frontend/backend) is highly scalable, suitable for large campaigns and adaptable to your own business processes.

Another advantage is the integrated middleware in the B2B segment. This makes exchanging or importing large amounts of data from ERP or PIM very easy and quick to perform. SCOS is divided into four layers, with long and resource-intensive processes limited to the business and persistence layers. This ensures high performance.

The presentation side is separated from the rest of the operating system to ensure that only lean processes are executed there. Glue is a separate layer implemented in SCOS. It is responsible for providing API endpoints and can integrate any kind of frontend such as IoT, mobile apps or online stores.

PHP



adesso TECHNOLOGY RADAR 2021

Selected radar elements

Symfony framework → Apply

Symfony is one of the best known and most powerful open source application frameworks in the modern PHP world. The object-oriented component-based framework serves a wide variety of purposes, whether as the main framework for an enterprise portal, the core layer of a well-known PHP product or tool – or as a component supplier for individual projects and even other well-known frameworks. The components are either integrated into non-Symfony projects as Composer libraries or loaded directly into the Symfony kernel as framework bundles when writing a purely Symfony-based application. adesso already used the framework in several large-scale projects, both natively and indirectly through a Symfony-based product solution. These include, for example, Ibexa DXP (formerly eZ Platform), Drupal or – most recently – the powerful e-commerce platform Spryker. Symfony is included in all of these either as a base framework or as individual components.

Laravel → Apply

Laravel is the most popular PHP web framework, leaving widespread followers like Symfony behind. It is highly popular thanks to its fast implementation as well as its extensive ecosystem. Laravel offers developers services for different use cases. These include Lumen as a micro-framework for API services or Passport for a complete OAuth2server implementation. It is rounded off by outstanding documentation, supplemented with VODs provided via the in-house format Laracast.

Yii → Apply

Yii2 enables simple and complex web/REST applications to be created easily and without much overhead. Among other things, it has a code generator for the creation of simple CRUD operations in the MVC pattern, for instance. These can then be delivered via the freely configurable template engine. The database connection is made via ActiveRecord models and also offers many existing validators at the model level. The Yii2 advanced package is recommended for more complex applications with multiple subdomains.

Shopware → Apply

Shopware 6 is a modular online shop system with CMS functionality and B2B and B2C e-commerce technology. It is available as open source software and as a commercial edition. Thanks to its API-first approach and the fact that it uses established frameworks, Shopware 6 offers almost unlimited possibilities for meeting the future requirements of e-commerce. One example is the direct sale of products on social media platforms. This means the system offers less complexity, modular adaptability, good maintainability and reduces costs thanks to reduced training times.

Codeception → Apply

Since quality assurance should also be a high priority in PHP development, there is no way around choosing an appropriate tool. We recommend the Codeception test framework for this. This framework is a comprehensive tool that allows unit, functional, API, BDD and acceptance test suites to be easily configured and integrated into existing PHP projects. You can avoid incurring overhead costs during installation by selecting modules via the Composer JSON.

Enterprise PHP at adesso

Kai Kroker, Head of PHP Experience & Commerce at adesso, and Matthias Mörstedt, Competence Center Manager PHP Experience & Commerce at adesso, both have more than 15 years of experience in PHP projects. In an interview, they answer questions about the development language PHP in general, how it's used at adesso and also cast an eye into their crystal balls.

Why does PHP now have its own section in technology radar?

Kai Kroker: adesso customers have been using PHP-based software solutions for years. Some of these applications are more than ten years old and are complex processes. Plus, best practices in software development have found their way into PHP over the last ten years. Mature frameworks and the work of the PHP Framework Interop Group as well as the huge developer community in particular demonstrate how mature the PHP ecosystem is. Both commercial systems and open source solutions can now be found in CMS/DXP, e-commerce, PIM, CRM, HRM and learning platforms.

Is PHP a completely new technology for adesso?

Matthias Mörstedt: In a word, no. In the last five years, adesso, as an independent provider, has bundled its existing expertise, hired additional employees and expanded the project business in the same way it has with other technologies. With more than 50 employees at six locations (Berlin, Bremen, Dortmund, Cologne, Frankfurt and Munich), there is plenty of PHP experience and, as is typical for adesso, this is expanded further through training courses and certification that run alongside our project business.

What PHP services does adesso offer?

Kroker: adesso is currently focusing its efforts on three core topics in this area. One of them is implementing projects in the CMS environment on the basis of PHP solutions. Among other things, the partnership with Ibexa plays a major role here. But we are also using open source solutions such as Drupal or TYPO3. Secondly, we're implementing e-commerce projects based on Spryker, the Ibexa DXP and Shopware. The third core topic is using the Symfony framework to implement custom requirements, as well as taking over and further developing our customers' legacy PHP projects.

When is PHP the best option for a customer project?

Matthias Mörstedt: As an independent provider of custom software development, we can't answer that question, it's as simple as that. If a customer has a preference because they're already working with the technology internally, it's important for us to support them in this. There is no longer the ONE AND ONLY system. Companies use a multitude of systems and services, and dealing and working with them is adesso's strength.

PHP is available on a large number of platforms, there is a large ecosystem of standard software for specific business cases and the number of PHP programmers across Germany, Austria and Switzerland and around the world offers customers a solid foundation for a robust IT strategy. It's important to us to ensure our programmers and consultants receive excellent training and deliver high quality in order to guarantee the long-term success of our customers.

How do you see the future for PHP?

Kroker: In our estimation, PHP is and remains one of the great implementation languages in our industry. PHP can easily be used as an enterprise solution and we continue to see PHP as a growth driver at adesso. As with all technologies, you have to pay attention to the security of the ecosystem used when it comes to PHP – customer applications should be upgraded to a current version of PHP for security reasons as a matter of urgency. 'Never change a running system' is no longer the guiding principle for modern corporate IT.

PHP.net and the PHP community have proven in the past that the major trends and further developments in IT could be taken up and adapted in a way that fits in with PHP. We therefore expect that innovative, high-performance, secure and successful projects with PHP will continue to be part of adesso's portfolio in the future.

KAI KROKER
Head of
PHP Experience &
Commerce | adesso SE

MATTHIAS MÖRSTEDT
Competence Center
Manager PHP Experience
& Commerce | adesso SE

Learning from and with each other – further education at adesso

Technologies, concepts and methods are emerging at breathtaking speed in the world of IT. They change, merge, split off – to be replaced by a new idea at some point. We stay up to date so that our customers get exactly the right solution in every project. Whether it's internal training courses and external seminars, group lessons or individual sessions – our training programme ranges from 'adesso Master of Software Architecture Java' to 'Certification preparation Scrum.org Master & Product Owner'.

Here are some facts and figures on adesso training activities in 2020

About **2,700** people took part in more than **300** face-to-face training courses

Over **1,600** adessi registered for self-study courses

THE TOP FIVE TRAINING COURSES

1. ISTQB Certified Tester – Foundation Level
2. Basics of Requirements Engineering According to the IREB Standard
3. Project Costing at adesso
4. Certified Professional for Requirements Engineering
5. JavaScript intensive: Language, Tools, Testing, Build Management

Our training catalogue is made up of more than **230** pages

Employees used **5,000** eCampus licences – adesso's group-wide learning portal.

THE TOP FIVE SUBJECTS
(according to the number of training coursed offered)

> **Communication and personal development**
> **Project management**
> **Methodology**
> **Java technology**
> **Agility**

Architects' Circle and architect training at adesso

Software architect training at adesso

Architect training is an integral part of employee training at adesso. Around 50 adessi completed the training in 2020, and that number will rise to 60 in 2021. Architect training started back in 2012. Initially, a few software architects devised a training programme to introduce the discipline of software architecture to the adessi who had signed up. This stroke of genius meant the participants could apply what they had learned to real projects and start to take on responsibility as architects.

As the number of participants increased over the years, so did the effort required to run the programme. However, adesso was certain that the architect training at the company needed to continue, so the decision was made to switch to the ISAQB certification. Certification awarded by the International Software Architecture Qualification Board is widely known and recognised in the industry.

However, certification is not the only thing that the adessi should take away from the training. Since switching to the ISAQB certification, the adesso architect training now also includes two workshops that are designed to help trainees internalise the adesso Style of Software Architecture. Having an insight into how everything works is crucial, as the software architect isn't just expected to deal with purely technical aspects – they also act as a link between the customers and the software developers. They develop the solution on which the product is built based on the technical concept. But every architect should also go beyond the basic framework and co-develop and 'get their hands dirty' themselves.

The circle of architects at adesso

adesso holds an Architects' Circle, which is designed to further promote the exchange of ideas between adesso software architects and encourage networking. To start off the one-day event, participants will be given the opportunity to get to know each other – or to reconnect – the evening before. The actual Circle starts the following day. The agenda always includes specific topics that are prepared through lectures, workshops and group work. New ideas should ensure that the project business – and thus the customers – can benefit from the discussions. The event will primarily focus on current technologies and their practical benefits. The utmost care is taken to ensure that not just new technologies are discussed. Comparing them to older alternatives is an important part of the process.

The adesso technology radar that you're reading right now is also the result of these discussions and perspectives. It is intended to be useful and act as a guide, as it draws on both positive and negative experiences from a wide range of projects. The bulk of the work that goes into creating the technology radar is often done during the Architects' Circle.

The previous Architects' Circle took place during the coronavirus crisis – remotely of course. That meant we had to forgo a few traditions. But just as the architectural designs in adesso projects are always adapted to the given framework conditions, we also adapted the Architects' Circle. The result, as every year, was a productive and fruitful event. Looking to the future, we are already looking forward to holding more Circles.

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