

COMPOSABLE ENTERPRISES: AN INTRODUCTION



AN ECT
E-BOOK

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QUICK PREVIEW

- ➔ Monolithic apps and services inhibit the continuous agility required by most enterprises and their customers, making it difficult for them to react to and interact with rapidly changing market conditions.
- ➔ Many analysts recommend that enterprises in general adopt a composable software architecture and composition principles.
- ➔ Fusion teams consisting of IT, business and actual end users use building blocks for different capabilities to compose and recompose applications perfectly individualized for the specific use cases of the target audience.
- ➔ Low code is essential to this application composition in order to enable business and citizen developers to actively participate in the continuous evolution and individuation of apps.
- ➔ Providers of Platforms as a Service (PaaS), Communications Platforms as a Service (CPaaS) and Low-Code Application Platforms (LCAPs) are positioning their products as application composition platforms.
- ➔ By 2023, 60% of mainstream organizations will list composable enterprise as a strategic objective.
- ➔ This market represents a new and important opportunity for communications service providers (CSPs).

ESTIMATED READING TIME: 15 MINUTES



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THE EMERGENCE OF THE COMPOSABLE ENTERPRISE

RISE OF COMPOSABLE ENTERPRISES

The demand for digital services is growing faster than ever and will continue to do so. The sudden disruption caused by the COVID-19 pandemic has woken up enterprise leadership to the critical importance of business resilience and agility. However, many organizations are struggling to keep up the pace due to their monolithic or siloed processes, systems, applications and solutions.

Monolithic enterprise applications are the primary challenge for CIOs amid constantly shifting business landscapes and user demands. There are several reasons why enterprises struggle to meet today's needs:

- ⇒ The applications are often black boxes, i.e. hard to open up and modularize – this slows down and can even prohibit scaling, adapting and enhancing business operations.
- ⇒ Organizations lack the skills required to design software modularity aligned with business capabilities.
- ⇒ Technology teams seldom collaborate with business experts and thus develop technology-centric applications which may not be suited for real business use cases.

Organizations have become burdened by monolithic applications such as ERP and CRM. Their size, complexity, inflexible user experience, and internal entanglement lead to high costs, difficult-to-maintain customizations and slow innovation, all of which are serious barriers to business agility. It thus becomes harder to satisfy innovative enterprises and their customers – **they want continuous business agility.**

This has led to the rise of the **composable enterprise**. Forerunner enterprises and early adopters are now implementing software strategies that support agile business models: they break up monolithic structures into smaller



According to Gartner, “By 2023, organizations that have adopted an intelligent composable approach will outpace competition by 80% in the speed of new feature implementation.”¹

reusable modules with APIs which allow them to be combined like building blocks.

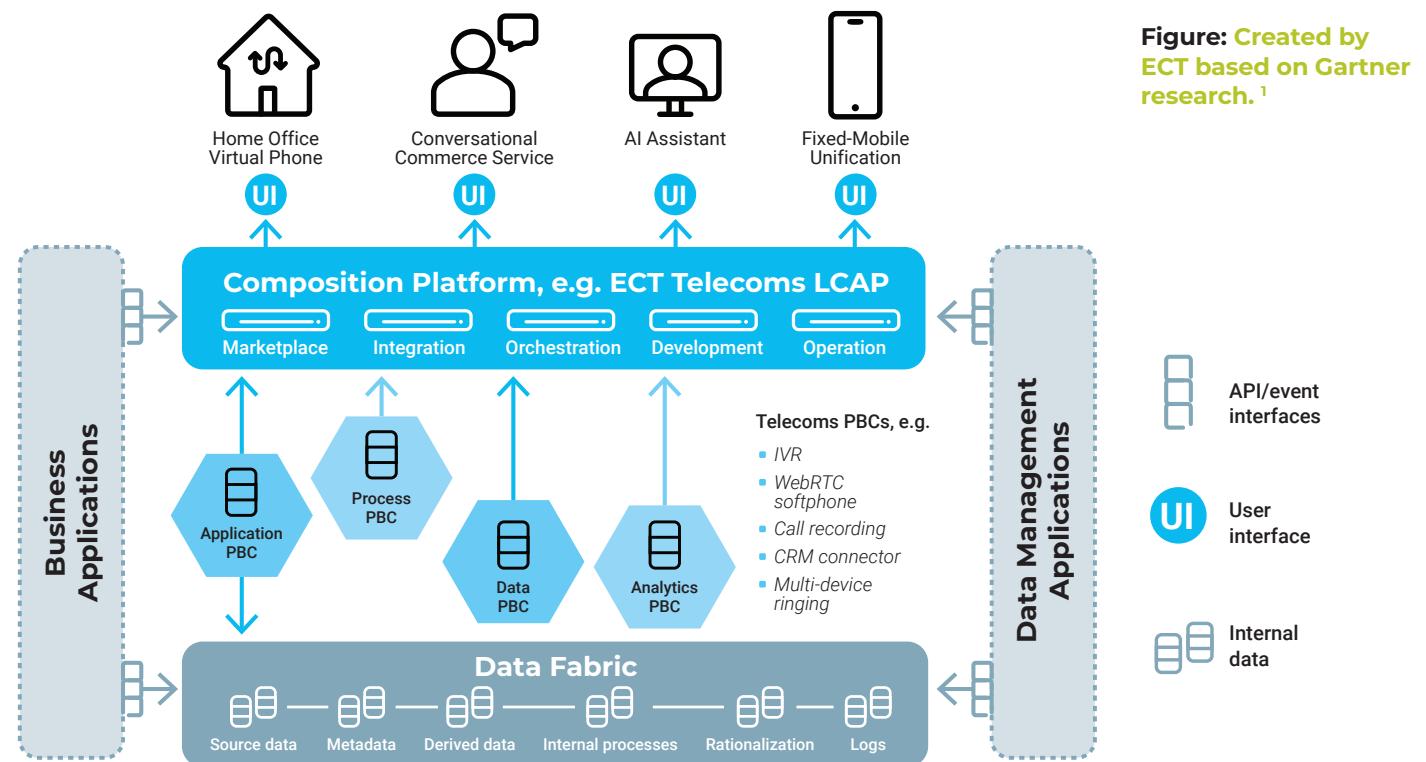
COMPOSABLE ENTERPRISES

Analysts often recommend that enterprises in general adopt composable software architecture and composition principles; this enables a modular and resilient software strategy for dealing with continuous change in response to future challenges and disruptions.

¹ Source: Gartner, *Top Strategic Technology Trends for 2021: Intelligent Composable Business*, Andrew White, Gene Alvarez, Dennis Gaughan, Yefim Natis, 12 February 2021

THE COMPOSABLE ENTERPRISE PARADIGM

Based on the Gartner Reference Model for the composable enterprise, we at ECT summarize the key components of application composition as illustrated below:



➲ **Packaged Business Capabilities (PBCs)** are the main application building blocks. There are several types of PBCs, which are described in page 7. The PBCs are generic and provide a capability in one standard or vanilla form.

➲ **Composed Application Experiences** are complete services assembled of multiple business capabilities customized and individualized for the very specific use cases of the target audience. They are not one-size-fits all services, but rather individualized apps streamlined for specific use cases. They are also not one-off solutions, implemented once for a longer usage period; instead both the use cases served and the application experience are continuously being re-composed, i.e. changed and adapted, along a never-ending optimization journey.

➲ **An Application Composition Platform** is a development environment, in which PBCs are created and composed into application experiences. The platform is generally expected to combine professional coding with low-code and no-code tools. The latter should allow business technologists, IT professionals, and business users to collaborate on the design, composition and re-composition of application experiences. ECT's Telecoms LCAP comprises a catalog of PBCs as the basis of the composition environment.

➲ **The Data Fabric** provides consolidated access to fragmented and incompatible data models of various business applications. The key is layering overarching metadata over data copied from applications or PBCs, captured from communication streams, or virtually connected data. The metadata used by the composition platform to compose is the same metadata of the catalog of PBCs.

¹ Source: Gartner, *Top Strategic Technology Trends for 2021: Intelligent Composable Business*, Andrew White, Gene Alvarez, Dennis Gaughan, Yefim Natis, 12 February 2021

PACKAGED BUSINESS CAPABILITIES (PBCs)

PBCs are autonomous, ready-to-use software components that encapsulate defined generic business capabilities. PBCs deliver complete operational functionalities throughout the full life-cycle of an entity. For example, a PBC for a WebRTC softphone owns all data responsible for the call setup and breakdown, blending for conferencing, etc. This PBC has north-bound and south-bound APIs including an API that can be used with low code to generate a user interface.

Another example of a PBC might, for instance, provide multiple device ringing, controlling the signaling (e.g. simultaneous, sequential, hunting) of incoming calls towards multiple devices, like mobile and broadband phones, smart watches, softphones, etc. It also has north- and south-bound APIs, e.g. for configuration of ringing.

Both of these PBCs would typically be part of a composed application experience for apps within an individualized product for a VPBX, contact center, e-commerce, customer support, etc.

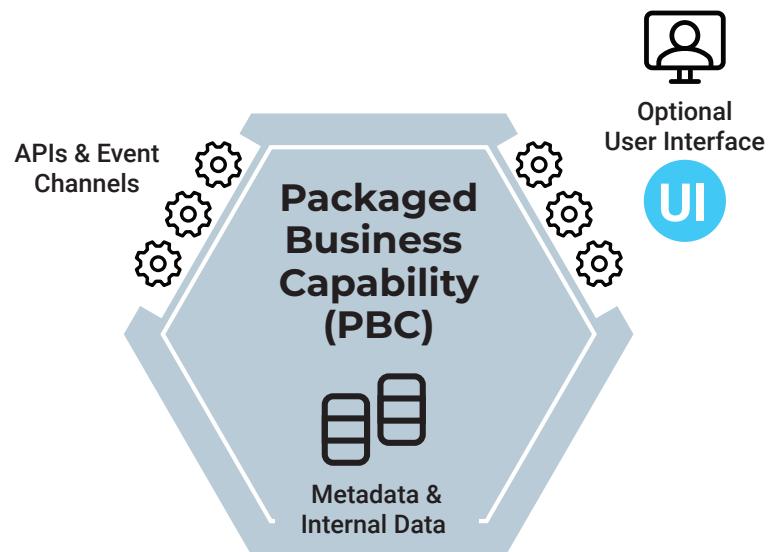


Figure: A Packaged Business Capability (PBC) can function autonomously. It contains modular service components, data and metadata, event channels, APIs and optionally a user interface.





PBCs are partitioned into a cohesive set of modular components with minimal external dependencies to ensure flexibility when composing services. The black-box design means that PBC's internal elements, including data schemas, and services, are not necessarily accessible directly. Interaction with other PBCs takes place only through published APIs and event channels. PBCs can optionally include a user interface (UI) or an API that allows low-coding of a user interface.

PBCs are orchestrated and assembled through APIs, event interfaces, and other technical means to deliver process flows and complex transactions. This is often done using a graphic, low-code tool to compose the logic flow.

The granularity of PBCs, as with all modular systems, is a common design challenge. Large modular components are easier to manage, but they are harder to change or re-use in new

compositions. On the other hand, if components are too small, they can be easier to assemble but harder to isolate, identify, find, or change.

What's Low Code?

Low code is a software development approach that requires little to no coding to build applications and services. An LCAP provides visual development tools with simple logic and drag-and-drop features instead of extensive coding languages. These intuitive tools allow users with no formal knowledge of software development to create applications for various purposes. The LCAP platforms have become increasingly popular as a fast and easy alternative to traditional software development. Professional developers and citizen developers (non-professional developers) can use a low-code platform to create apps with varying complexity.



TYPES OF PBCs

The PBCs vary based on the specific design context and maturity of the design team. The table below highlights four main types of PBCs.

- 1 A fully expressed (autonomous) PBC** encapsulates all the features and functions required for its designated purpose, such as managing a bank account. It is thus autonomous. Fully expressed PBCs behave as small applications.

For example, you could have a telecoms-specific PBC for changed number announcements triggered automatically and containing all the information about a number that has been changed as well as the prompt announcement capability. Another example would be a voice mail service that encapsulates all the information for recording, listening, storing, deleting, etc. of voice messages.

- 2 Orchestration PBCs** encapsulate a process and invoke other PBCs. When applicable, the data they manage is the state of the process. Like all PBCs, the orchestration PBCs are building blocks for composing applications. For example, *account overdraft approval PBC* may require the invocation of multiple PBCs – e.g., customer credit rating look-up, customer history analytics, compliance analytics, policy look-up – and a summarization logic.

A busy line PBC is a good example of a telecoms-specific orchestration PBC. Such a PBC may have to invoke other PBCs for a mailbox, call forwarding, call waiting, etc.

- 3 Basic business function PBCs** are software-encapsulated business capabilities without a complete, autonomous function. A *bank deposit PBC* would only deal with deposits in contrast to the fully-expressed bank account PBC.

Similarly, in a telecoms context, a predictive dialer service would be such a business function PBC in contrast to a fully-expressed PBC for outbound calling campaigns.

Basic business function PBCs are easier to design because they do not require comprehensive data modelling. Application APIs resemble basic business functions and can be used to modernize older applications to fit into a composable enterprise application architecture.

- 4 Pseudo PBCs** are for instance APIs used as proxies in front of monolithic applications to allow them to participate in composition design.

COMPOSED APPLICATION EXPERIENCES

Composed application experiences are services assembled from several PBCs and wrapped in a user experience (UX) reflecting the user's responsibilities and role. Unlike traditional applications, the composed application experience can be re-composed if the responsibilities, role or use case changes. The same set of capabilities can produce individualized user experiences by creating user interfaces easily customizable to the role of the actual user.

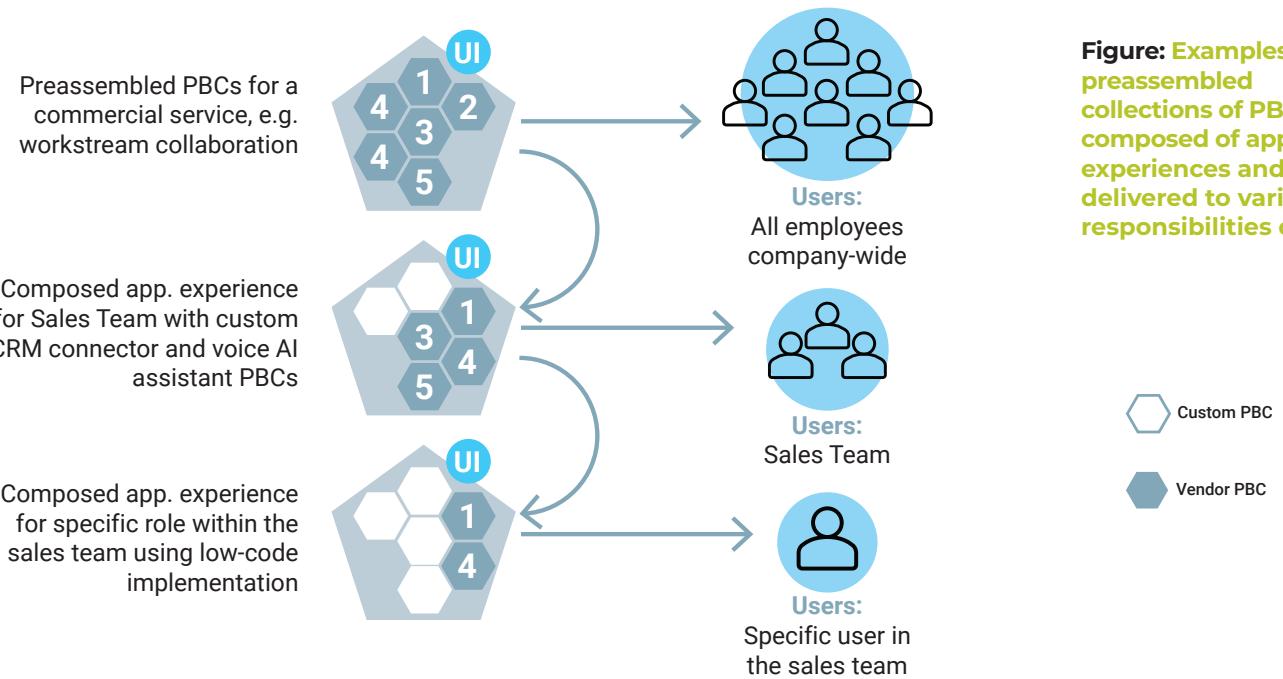
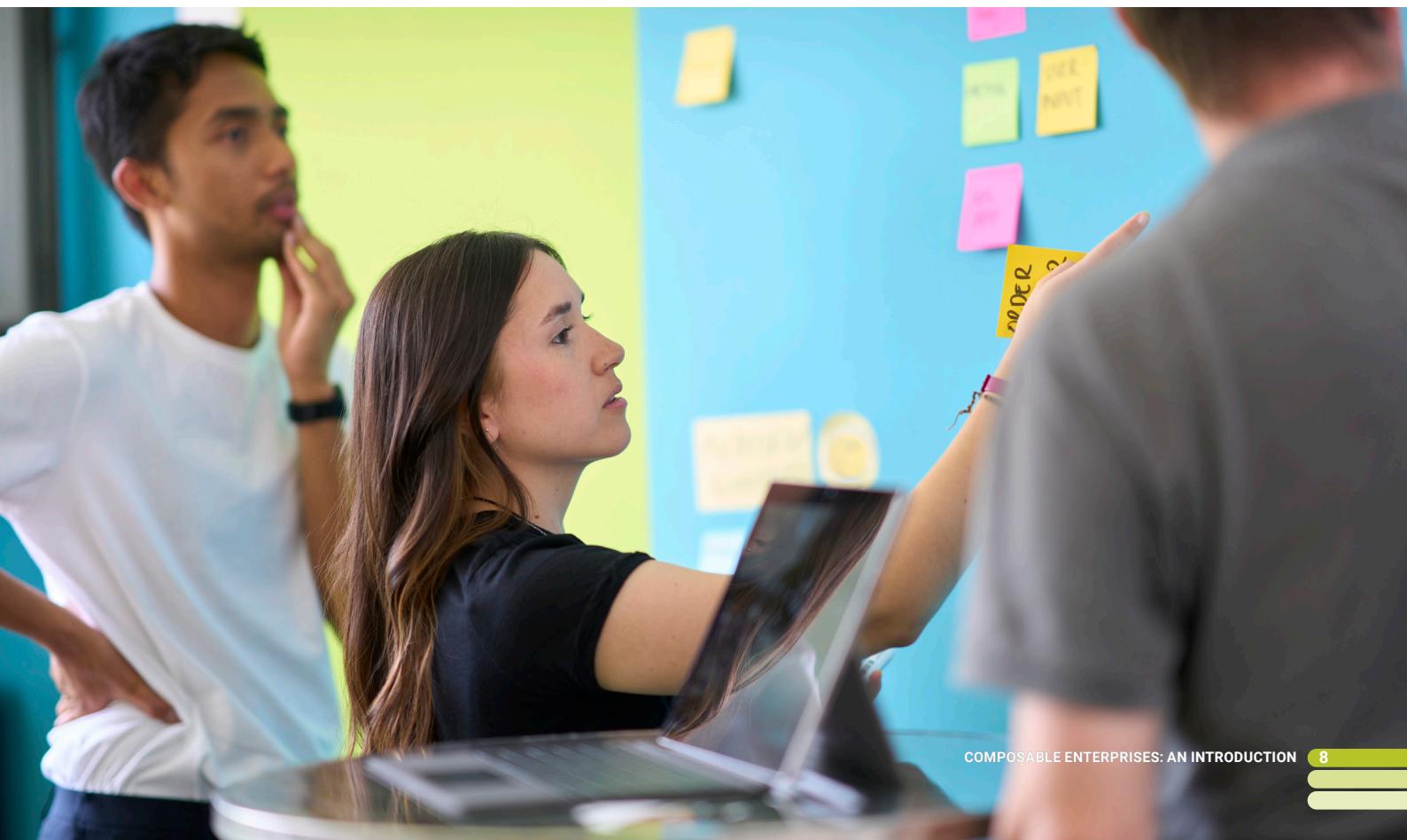


Figure: Examples of preassembled collections of PBCs composed of application experiences and delivered to various responsibilities or roles.



APPLICATION COMPOSITION PLATFORM

This is the collection of development and runtime tools enabling developers, IT professionals and other business users to design, compose and re-compose application experiences agilely and in collaboration.

The interfaces of PBCs and traditional applications are based on APIs and event streams; hence the composition can always be done with professional programming tools. However, a key differentiator of composable enterprise applications is that the composition is the responsibility of joint teams of business and IT professionals as well as real users called **fusion teams**.

What's a Fusion Team?

A fusion team is a joint digital business team consisting of tech specialists, IT professionals, and business owners as well as users. The fusion team is a key component of the composable enterprise concept because the responsibility of composing applications is assigned to these multidisciplinary teams, and not in the hands of isolated tech- or IT-driven teams. This should foster collaboration across the organizational silos, focusing on the organization's strategic business and technology objectives while delivering on tactical business requirements and technology decisions.

Application composition is an emerging industry driven by organizations' need for strategic agility and continuous responsiveness. There are several different kinds of platforms vying for this space. To maximize their upselling and cross-selling opportunities, over-the-top (OTT) providers of Platforms as a Service (PaaS), Communications Platforms as a Service (CPaaS) and Low-Code Application Platforms (LCAPs) are positioning their OTT services also as application composition platforms. Low code is what most application composition platforms have in common.

Here's why.

Technology professionals, e.g. professional software engineers in a team, need to cooperate and collaborate in agile sprints with both **business professionals**, who choreograph how PBCs should be composed to fulfil business needs, as well as **actual users** of the composed application. These parties all work together in multidiscipline fusion teams with pre-defined objectives. Low-code and no-code tools included in the application composition platform make it possible for business professionals and actual users to be so-called citizen developers. They are able to individualize key aspects of the user experience although they do not have engineering skills.

THE ROLE OF THE APPLICATION COMPOSITION TECHNOLOGIES

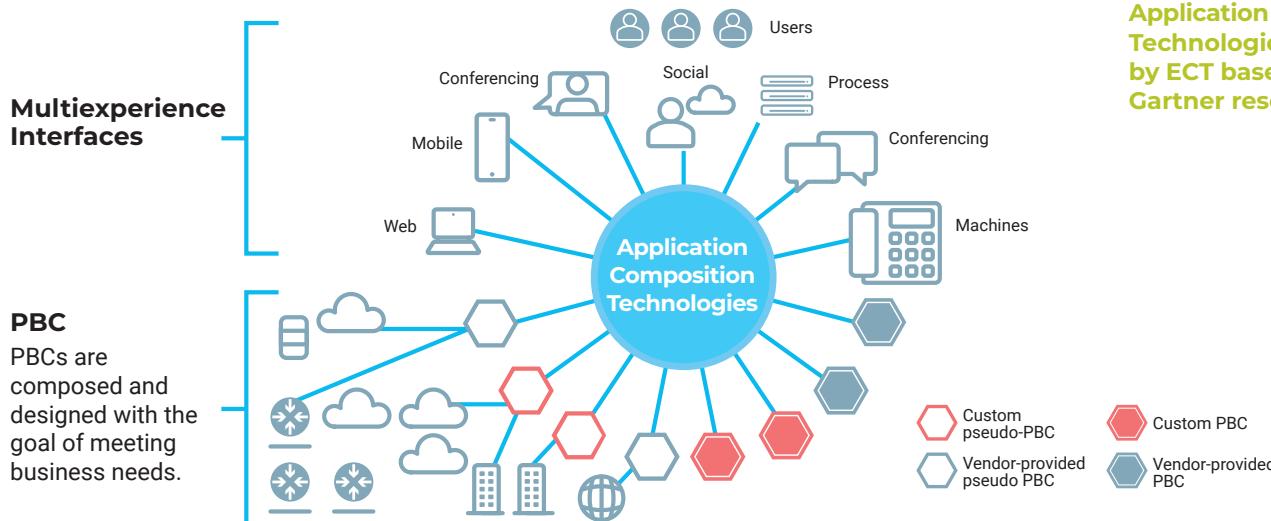


Figure: The Role of the Application Composition Technologies. Created by ECT based on Gartner research.¹

¹ Source: Gartner, *How to Deliver Application Composition Technologies and Why!*, Massimo Pezzini , 2021

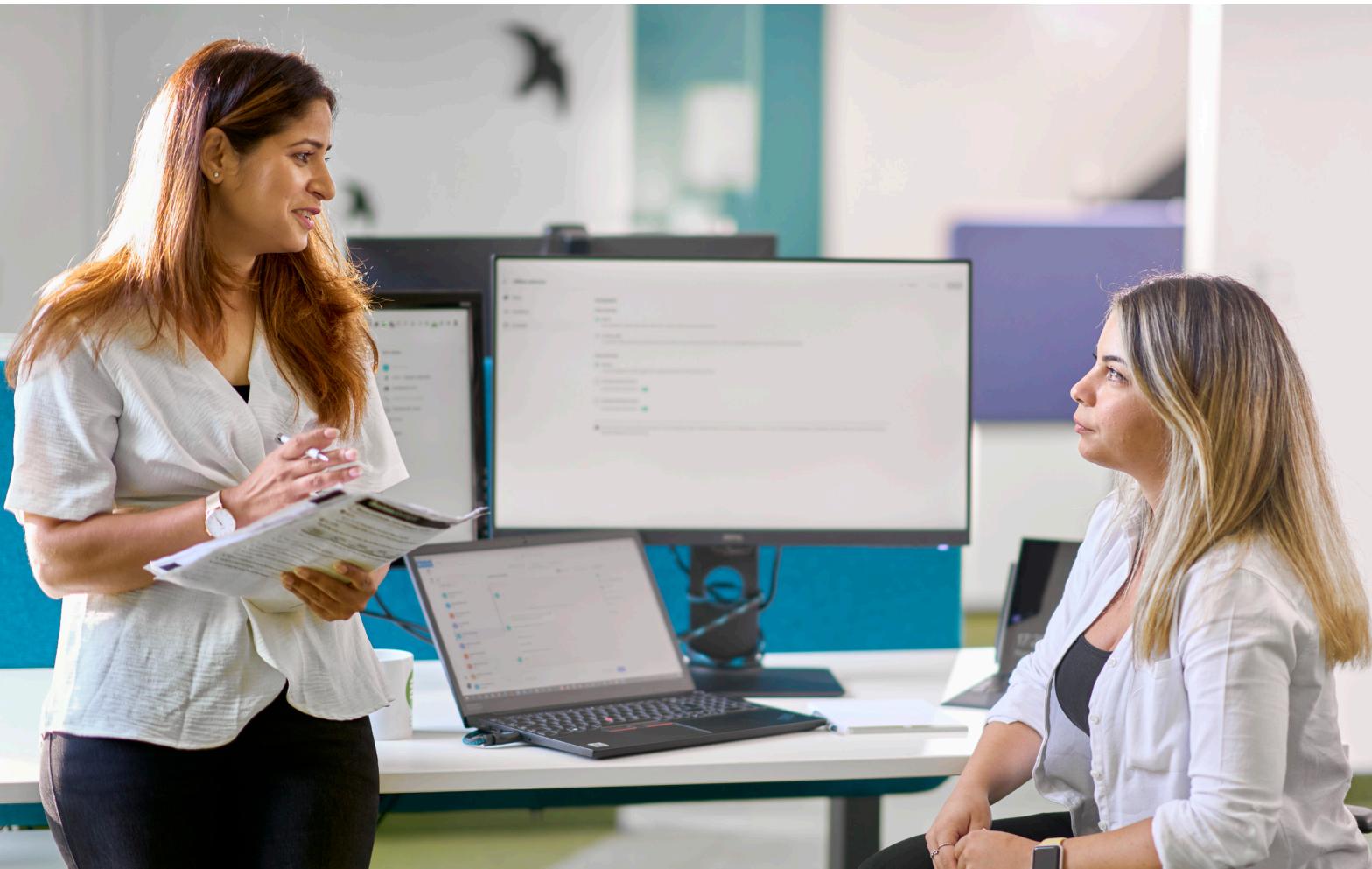


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BENEFITS OF APPLICATION COMPOSITION FOR THE ENTERPRISE

Organizations that adopt the composable enterprise model in their business, technology, and culture increase their level of resiliency and innovation capability. Instead of rigid and inefficient hierarchical operations, they work with agile and composable experiences and are able to react agilely to the challenging business environment.

According to Gartner “By 2023, 60% of mainstream organizations will list composable enterprise as a strategic objective and will use an increasing number of PBCs.”¹



What's a Citizen Developer?

A citizen developer is a user who creates applications for departments, or entire enterprises using low-code or no-code tools, e.g. via visual, drag-and-drop configuration. They do not need or use programming capabilities. A typical task for a citizen developer is the tweaking of a user interface to remove friction based on trying out multiple alternatives in A/B testing.

¹ Gartner, Top Strategic Technology Trends for 2021: Intelligent Composable Business, February 2021

CONCLUSIONS



WHY SHOULD CSPs CARE ABOUT APPLICATION COMPOSITION?

By 2023, 60% of enterprises will prefer to invest in composable enterprise applications instead of monolithic solutions.

When over-the-top (OTT) global companies provide these services, they are generally delivered via the CSP network. Furthermore, services do not function independently of communication services; voice, video and messaging are integral parts of the services enterprises are composing and will compose in the future. If as a CSP you only provide low-level communication connectivity, e.g. via APIs, you will earn little off the composable enterprise market. Your enormous investments in network infrastructure might again just enable others to earn huge profits on your back.

It doesn't have to be that way.

CSPs are uniquely positioned to provide the reliability, security, privacy, resilience, scalability and compliance, all of which enterprises are requiring and have difficulty realizing on their own or via OTTs.

If you want to exploit this new demand for application composition, now is the time to develop your strategy.

Should we have awakened your interest, please see the next e-book in this series:

[**Composable Enterprises: How CSPs can Tap into This Emerging Market.**](#)



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BETTER BUSINESS OUTCOMES FOR CSPs AND THEIR CUSTOMERS

As a CSP, you cultivate close relationships with businesses and consumers. You build and maintain a valuable, well recognized local brand. Above all, you provide a regulated and therefore trusted communications network.

Are your investments in these assets adequately reflected in your market valuation?

Trillions of euros are being invested in 5G technology, but how will such an investment generate wealth for your company and your shareholders?

What emerging technologies and new markets are progressive CSPs and leading analysts pursuing? How can you explore such innovations and product ideas agilely and risk-free? Right now, we're thinking about these and many other related issues.

At ECT, we pride ourselves in our ability to combine a practical approach with technological and business curiosity.

ECT develops telecoms low code and packaged business capabilities to achieve better business outcomes for CSPs and their customers. We like to grow and individualize products together with our clients, responding agilely to new and changing use cases, commercial opportunities and new markets. That's why we collaborate and co-develop with our clients, long-term and continuously.

We're not happy until every CSP product is exactly fit for purpose.

At the same time, our research and development are the engine behind our organization and a top priority. We consult closely with leading analysts, implement emerging technologies and products early and test their viability together with CSPs worldwide.

We want to share and exchange our know-how and experiences with you for the benefit of your company and your customers.

ECT. Better business outcomes for CSPs and their customers.