

# PAC INNOVATION RADAR

ICT Supplier Assessment from PAC

## PAC RADAR C&SI for IoT Solutions in Europe 2017

### IoT Solutions for:

- Digital factory
- Connected vehicles
- Smart transport
- Digital health
- Smart energy & resources
- Smart retail & CPG

## PAC INNOVATION RADAR The concept

### What is the PAC RADAR?

The PAC RADAR by Pierre Audoin Consultants (PAC) is an effective tool for the holistic evaluation and visual positioning of ICT services providers on local markets.

Numerous ICT and business decision makers in user companies of all industries and company sizes rely on the PAC RADAR when selecting their partners and developing their sourcing strategies.

With the help of pre-defined criteria, PAC evaluates and compares providers' revenue scope, development and market position in addition to performance and competencies within specific market segments.

Each PAC RADAR focuses on a certain IT services segment. Up to 30 leading providers are evaluated per segment. Participation in the PAC RADAR is free of charge.

All providers are evaluated using PAC's proven methodology, which is based on personal face-to-face interviews and a detailed self-disclosure of each provider.

PAC reserves the right to also evaluate and position those providers in the PAC RADAR that do not participate in the self-disclosure process.

After the evaluation of the pre-defined criteria, each supplier's position is plotted in the PAC RADAR. All criteria are classified by clusters and can all be attributed to the "Competence" and "Market Strength" main clusters.

The provider evaluation, including a market description, is published as a report.

## PAC INNOVATION RADAR

### What is the PAC INNOVATION RADAR?

Concept and methodology of the PAC INNOVATION RADAR are similar to those of the traditional PAC RADAR.

While the traditional PAC RADAR focuses on mature services segments, the PAC INNOVATION RADAR, however, positions providers in rather new and innovative service segments.

Thus the focus of the evaluation is rather on the portfolio, vision, investment and capabilities than on existing references, projects and resources.

## PAC INNOVATION RADAR graph (exemplary presentation)



# PAC INNOVATION RADAR Segmentation of IoT solutions

## How does PAC segment the provider landscape for IoT solutions?

PAC splits the market into ten “digital contexts”. For this report, PAC is going to evaluate the providers of C&SI for IoT Solutions in Europe in six different PAC INNOVATION RADARs, which are dedicated to specific segments. These RADARs are:

- Digital factory
- Connected vehicles
- Smart transport
- Digital health
- Smart energy & resources
- Smart retail & CPG

A variety of use cases will be allocated to each of these six contexts, and the market of the PAC INNOVATION RADAR will be viewed from the perspective of these use cases. On the following pages, the different use cases are explained within their respective digital contexts.

## How will the providers be matched to the different types of IoT solutions?

The providers will be positioned in the PAC INNOVATION RADAR analyses depending on their market relevance and evaluated by: strategy, portfolio breath, go-to-market, portfolio quality, market positioning, client relationship as well as the focus and the number of references for each context.



**Digital factory**



**Connected vehicles**



**Smart transport**



**Digital health**



**Smart energy & resources**



**Smart retail & CPG**



#### **Digital factory**

A digital factory uses smart products and smart services to become a highly-efficient and integrated cyber-physical production system. This covers the improvement of internal production processes, intra-logistics and the supply chain. But also the delivery of smart products and services to help others in realizing a digital factory.

### **Use cases in the area of the digital factory**

#### **Connected worker (IoT)**

A connected worker uses digital worker support systems (via augmented reality or other visualization technologies) to improve working decisions, quality and efficiency. In addition, they can collect data via sensors (e.g. via wearables or cameras).

#### **Digital twin (IoT)**

A digital twin allows the virtual development, testing, production and maintenance of a physical product, by using digital technologies like virtual reality. The digital product can be interacted with in the same way as would be possible with the physical product. A physical product can also gather sensor data that can be used to update a "digital twin" copy of the product's state in real time.

#### **Traceability (IoT)**

Use of digital technology within the whole production process and supply chain to verify the history or the location of raw materials, components, tools, end products, etc.

#### **Mass customization (IoT)**

Intelligent production processes that allow the production of custom outputs/products on a (very) large scale, based on digital technologies.

#### **Predictive maintenance (IoT)**

Predictive maintenance allows upfront scheduling of maintenance services (based on analytics) to prevent unexpected equipment failures, thanks to automatic alerts gathering and triggering of incident tickets.

#### **Digital quality control (IoT)**

Automatic adjustment of the production process based on sample specifications and the analysis of data collected by sensors to lower the number of defective products.

#### **Smart intra-logistics (IoT)**

Sensor-controlled vehicles that act as autonomous delivery systems within a factory.

#### **Products as a Service (IoT)**

Usage-based pricing model for products, which guarantees a dedicated service-level.



#### Connected vehicles

Connected cars, trucks, buses, ships, trains and other vehicles can continuously and bi-directionally communicate with ecosystems (e.g. owners, drivers, OEMs, insurers, garages) and environments (traffic signals, other vehicles, smart home, etc.). IoT-related technologies enable smart services like traffic management, predictive maintenance, convenience services, after-sales solutions, etc.

### Use cases in the area of connected vehicles

#### Connected service chains (CX & IoT)

Digital technologies like mobility, sensor, artificial intelligence and innovative driver interfaces are paving the way for connectivity-related smart services such as remote diagnostics and maintenance, automated garage service, situation-based insurance, driver assistance or extended mobility services.

#### Contextual services (CX & IoT)

Services based on context-aware applications, providing personalized services to each individual user according to their particular needs and interests at any given point in time. A contextual service adapts to changing circumstances of users in real time (emergency, access, tracking)

#### Smart parking (CX & IoT)

Smart parking solutions support the reduction of (urban) traffic volumes by monitoring & managing available parking spaces on-street & off-street (e.g. car park facilities). Solutions include technologies (e.g. RFID/sensors), mobile apps for user (incl. space reservation, payment functionalities) & management platforms (incl. analytics capabilities). Also included are autonomous off-street parking concepts and infrastructure components (e.g. smart street lights) that monitor/scan street environments for available on-street parking spaces.

#### Infotainment (CX & IoT)

Infotainment refers to a combination of information and entertainment. It includes services as well as hardware/software products and systems, “built in” or to be added to vehicles in order to enhance driver and/or passenger experience. Infotainment services.

#### Driver assistance & autonomous vehicles (IoT)

Autonomous vehicles can detect surroundings using a variety of techniques (RADAR, LiDAR, GPS, odometry, computer vision) for the purpose of self-driving and navigation. Therefore, advanced control systems interpret sensory information to identify appropriate navigation paths as well as obstacles (other vehicles, pedestrians, road damages) and relevant signage. Autonomous vehicles are classified on six different levels, ranging from none to fully-automated systems.

#### Fleet management (IoT)

Fleet management includes commercial vehicles (cars, aircraft, ships, vans, trucks, rail cars) and integrates functions like vehicle financing, maintenance, telematics like tracking & tracing, fuel and consumption management as well as driver management for e.g. health and safety purposes.



#### Smart transport

Smart transport comprises applications that, without embodying intelligence as such, aim to provide innovative services relating to different modes of transport & traffic management and enable various users to be better informed as well as to make safer, more coordinated and “smarter” use of transport networks.

### Use cases in the area of smart transport

#### Smart infrastructure & intelligent transport systems (IoT)

Solutions based on connected assets such as video cameras, toll collection points, parking sensors, induction loops, displays, traffic signs as well as cloud-based platforms that integrate the collected data from these assets and provide actionable insights for optimization of the flows of traffic and people, indoor and outdoor.

#### Smart agents and ticketing machines (CX & IoT)

Speech recognition voice assistants, AI agents and devices capable of providing customer support and intelligent ticketing services to passengers at places such as airports and train stations.

#### Smart deliveries and freight transport (IoT)

Apart from providing data about the fleet of vehicles used, IoT-enabled solutions can be used for monitoring the condition of the transported assets/goods. Additionally, new ways of delivery can be introduced by means of drones or robots.

#### Fleet management (IoT)

Fleet management includes the provision of telematics data about commercial vehicles (cars, aircraft, ships, vans, trucks, rail cars) to enable better maintenance, tracking & tracing, fuel and consumption management, vehicle health management as well as driver health and behavior management.

#### Mobility/Transport as a Service (MaaS) (CX & IoT)

The use of digital and IoT solutions to enable innovative mobility services such as multi-modal ticketing solutions consists of multiple transport means such as public transport, bike, car and truck sharing concepts.

#### Connected operations (IoT)

Operations of transport companies can be improved by using IoT- and telematics-based solutions such as real-time monitoring and predictive maintenance, which can be applied not only to their fleets but also their premises such as stations, airports and garages.

# PAC INNOVATION RADAR

IoT contexts



## Digital health

Digital health is the convergence of the digital revolution with health, healthcare, living and society.

IoT-related technologies are used to improve access, reduce costs, increase quality and security, reduce inefficiencies in healthcare delivery and make medication more precise in combination with personalized genomics.

## Use cases in the area of digital health

### Wellness & prevention (personal care/health) (CX & IoT)

Solutions to monitor and analyze as much data as possible in order to detect or prevent an aggravation of the user's health.

### Telemedicine (incl. monitoring & home-assisted living) (CX & IoT)

Tools to aid in the development of, and compliance with, treatment plans to ensure all parties in the care process remain informed and engaged. Bedside or remote monitoring of the patient status.

### Diagnostics (CX & IoT)

Digital solutions that help analyze data and contribute to medical diagnostics.

### Treatment/medicine customization/personalization (CX)

Tools (data-based, analytics, AI) that contribute to the design and delivery of personalized treatments.

### Smart medical devices (CX & IoT)

Collection of biometric information to provide the best, safest and most dedicated usage possible.

### Fleet management and predictive maintenance of medical devices (IoT)

Gathering and analysis of captured data for fleet management (tracking) or forecasting of maintenance needs, with as few consequences as possible for user and patient.

### Traceability & fraud (IoT)

Solution to help monitor the traceability of "every thing" (devices, drugs, people) and avoid or detect as many fraud schemes as possible.



### Smart energy & resources

Usage of IoT technologies and analytics (incl. artificial intelligence, AI) to develop or optimize end-to-end energy management systems and energy exploration (oil & mining) as well as to enable new business models for energy consumption.

## Use cases in the area of smart energy & resources

### Smart metering & services (CX & IoT)

Deployment of intelligent measuring systems for energy consumption (and generation in case of renewable energies), allowing two-way communication and thus enabling real-time insight into power consumption (and generation) as well as new services such as differing tariffs, energy savings initiatives, smart home services, etc.

### Smart grids/intelligent network management (IoT)

Provision, management and operation of intelligent energy transmission networks able to dynamically manage decentralized energy usage over time and space according to supply and demand. Includes advanced diagnostic features to analyze in real time the state of the network, enabling higher efficiency of the overall grid operation. Digital technologies and platforms allow a consolidated view of the grid, combining and analyzing asset information, geographical location, financial data, weather info, etc. This enables complex analyzes that improve transmission and distribution network management, asset management (thus reducing asset risks) and allows for load balancing.

### Intelligent operation/automation & predictive maintenance (IoT)

The use of sensors and connectivity modules (RFID, WiFi, sensors, Bluetooth, etc.) as well as analytics to identify malfunctions and optimize maintenance by improving upfront scheduling of maintenance services and asset optimization.

### Digital mining & exploration (IoT)

Use of analytics, automation, IoT, cloud, mobile and collaboration in mining & exploration to improve operating efficiency, develop more accurate and agile exploration/transportation planning (from “pit to port”) and collaborate more effectively with business partners throughout the value chain.

### Virtual power plants (IoT)

Deployment of advanced software/platforms/systems to connect distributed energy generators and energy storage units to become VPPs. Digital technologies are needed for optimization, control and secure communication purposes to ensure effective plant management and thus reliable power supply.





**Smart retail & CPG**  
Smart retail and CPG mean the implementation of digital devices, connectivity modules, hardware and software into the products, stores and warehouses to improve customer experience, customer loyalty, customer retention, in-store operations and warehouse management.

## Use cases in the area of smart retail & CPG

### Omni-channel sales, marketing & commerce (CX & IoT)

Integration of retail channels (online, in-store, mobile) to enable diverse retail experiences. For example, a simple reorder button can be provided through a connectivity module in CPG products.

### Smart services (CPG) (CX & IoT)

Integration of connectivity modules in CPG products to enable data collection on product usage and customer behavior via platforms or mobile apps connected with the product. This can be a new channel for the customer and enable new business models.

### Customer self-service (CX & IoT)

In-store digital devices and apps help customers locate specific products, provide instant information on the items and offer self-service payment.

### Smart agents (CX & IoT)

Smart agents and devices used to automate shopping or customer support; examples include connected buttons (dashes) for home-based shopping, AI agents and chat bots for customer support, in-store robots for welcoming customers, and providing product information.

### AR/VR headsets (CX & IoT)

Headsets for virtual or augmented product/service experience can make it possible to look at various products in store or even at home.

### Smart tracking (IoT)

The use of environmental sensors and connectivity modules (RFID, WiFi, beacons, Bluetooth, etc.) to detect movement, temperature, noise or to create heat maps can be used for the analysis of store operations.

### Smart delivery (CX & IoT)

Use of connected vehicles and connectivity modules to improve and optimize delivery and customer experience. Deliveries can be tracked in real time and items can be delivered to various locations, including a customer's car trunk, or even by drones and robots.

### Smart store furniture and items (shelves, mirrors, baskets, etc.) (CX & IoT)

Use of connected furniture or items can improve in-store customer experience and retail operations. Smart shelves notice when an item is picked up and can show product details on a display. Electronic shelf labeling is enabled by QR codes or NFC, which can be linked to mobile apps. Smart baskets detect the items placed in it and enable a self-checkout concept without cashiers. Digital mirrors enable digital clothes fitting.

# PAC INNOVATION RADAR

## Provider selection & participation

### Which providers are positioned in the PAC INNOVATION RADAR?

Providers are selected and invited according to the following criteria:

- **Size of revenues** in the segment to be analyzed in the specified region
- **“Relevance”**: Even providers that do not belong to the top-selling providers in the segment to be analyzed are considered, if PAC classifies them as relevant for potential customers, for instance due to an innovative offering, strong growth, or a compelling vision.

There is no differentiation as to whether the providers are customers of PAC – neither in the selection of the providers to be positioned, nor in the actual evaluation.

### What do providers have to do in order to be considered in a PAC INNOVATION RADAR analysis?

The decision as to which providers are considered in the PAC INNOVATION RADAR analysis is entirely up to PAC. Providers do not have any direct influence on this decision.

However, in the run-up to a PAC INNOVATION RADAR analysis, providers can make sure in an indirect way that PAC can adequately evaluate their offerings and positioning – and thus their relevance – e.g. by means of regular analyst briefings etc.

### Why should providers accept the invitation to participate actively?

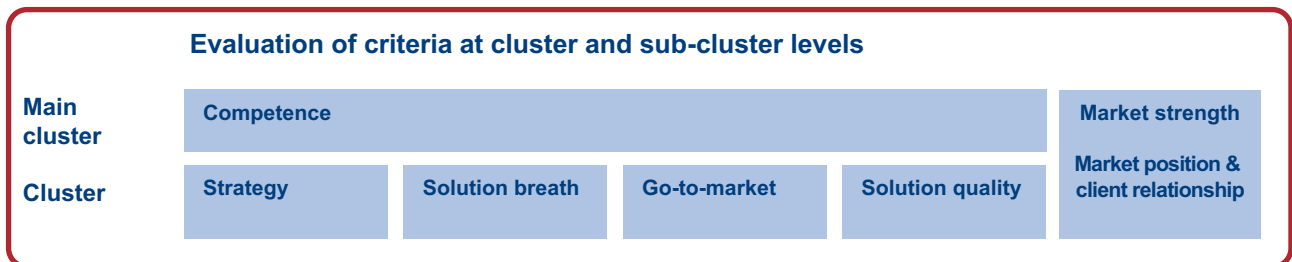
Whether or not a provider participates in the RADAR process does not actually affect its inclusion and positioning in the PAC INNOVATION RADAR, nor its assessment.

However, there are a whole host of benefits associated with active participation:

- Participation ensures that PAC has access to the largest possible range of specific and up-to-date data as a basis for the assessment.
- Participating providers can set out their specific competences, strengths and weaknesses as well as their strategies and visions.
- The review process guarantees the accuracy of the assessed factors.
- The provider gets a neutral, comprehensive, and detailed view of its strengths and weaknesses as compared to the direct competition – related to a specific service in a local market.
- A positioning in the PAC INNOVATION RADAR gives the provider prominence amongst a broad readership as one of the leading operators in the segment under consideration.

# PAC INNOVATION RADAR

## Evaluation method



# PAC INNOVATION RADAR

## The concept

### Evaluation method

PAC uses predefined criteria to assess and compare the providers within given service segments.

The assessment is based on the report-card score within the peer group of the positioned providers.

This is based on:

- The provider's detailed self-disclosure about resources, distribution, delivery, portfolio, contract drafting, pricing, customer structure, references, investments, partnerships, certifications, etc.;
- If applicable, a poll among customers by PAC;
- The analysis of existing PAC databases;
- Secondary research;
- Dedicated face-to-face interviews as relevant.

The provider data is verified by PAC and any omissions rectified based on estimates.

**If the provider does not participate**, the assessment is performed using the proven PAC methodology, in particular based on

- Information obtained from face-to-face interviews with the provider's representatives, analyst briefings, etc.;
- Assessment of company presentations, company reports, etc.;
- Assessment of PAC databases;
- Assessment of earlier PAC (INNOVATION) RADARs in which the provider participated;
- Poll among the provider's customers (as required) on their experiences and satisfaction.

### Reissue of published RADARs

The assessments in the PAC INNOVATION RADAR represent an assessment of the providers within the given peer group in the year in which the respective PAC INNOVATION RADAR was published.

The evaluations may not be directly comparable with those of the previous version due to subsequent content modifications. In particular, they do not depict a development of individual providers over time.

Methodological and/or organizational modifications may be made due to changing market conditions and trends and can include:

- Different peer group in the focus of the analysis;
- Modification of individual criteria within clusters and sub-clusters;
- Increased or altered expectations by user companies;
- Adjustment of the weighting of individual criteria.

# PAC INNOVATION RADAR

## Publication and usage

### Publication of the results by PAC

PAC publishes the results in the form of the PAC INNOVATION RADAR report, which, like all SITSI® publications, is provided to our customers for download via the portal [www.pac-online.com](http://www.pac-online.com).

The PAC INNOVATION RADAR is provided free of charge to the user companies that regularly work with PAC as well as to the participating referees on request; and also to all members of the PAC CxO Research Panel.

Extracts from the PAC INNOVATION RADAR results are also supplied to the industry and business press as well as the leading ICT user associations.

### Publication of the results by providers via reprint licenses

Participation in the PAC INNOVATION RADAR is free of charge. License fees are only payable for use of the results and for the exploitation rights.

### Usage options for PAC INNOVATION RADAR results by user companies

The PAC INNOVATION RADAR supports ICT and business decision-makers in classifying and selecting the right service provider.

Using the dynamic MS Excel tool that is provided exclusively to user companies, ICT decision-makers can weight all evaluated criteria in line with their specific preferences and requirements. This gives you an initial steer on which provider is right for you.

Additionally, the PAC INNOVATION RADAR results are used as the basis for individual consultancy projects for provider evaluation and pre-selection.

### Usage options for PAC INNOVATION RADAR results by providers

- **In strategic market and competition analysis:**  
The PAC INNOVATION RADAR is the ideal benchmarking tool. Providers get a neutral, comprehensive, and detailed view of their strengths and weaknesses as compared to the direct competition – related to a specific service in a local market.
- **In sales:**  
The PAC INNOVATION RADAR helps providers define a successful growth and positioning strategy. It further provides sales arguments based on an independent assessment of the specific strengths and weaknesses.
- **In sales, marketing, and communication via reprint rights:**  
Providers can exploit their positioning in the PAC INNOVATION RADAR for sales, marketing, and public relations via reprint rights to the assessment results.

# PAC INNOVATION RADAR

## Contents & scope of delivery

### PAC INNOVATION RADAR report

Company-wide license

#### Contents

- Introduction
- Description of the evaluation methodology
- The most important trends and insights from the analysis
- Presentation of the PAC INNOVATION RADAR and the positioning highlights
- Summary analysis of the providers positioned in the PAC INNOVATION RADAR

#### Exclusive for user companies

- MS Excel tool with evaluation of all individual criteria and options for individual weighting

#### Reprint rights for providers

##### Standard RADAR package:

- Unrestricted reprint and distribution rights to the full study of your choice (out of the 6 reports) and its respective graph

##### Premium RADAR package:

- Unrestricted reprint and distribution rights to the full study of your choice (out of the 6 reports) and its respective graph
- Awards the participant with its vendor position badge, highlighting the ranking it has achieved (Best in Class, Excellent Player, Strong Contender, Solid Competitor)

# PAC INNOVATION RADAR

## Your participation

PAC is currently preparing six PAC INNOVATION RADAR analyses

**“IoT Solutions”:**

- Digital factory
- Connected vehicles
- Smart transport
- Digital health
- Smart energy & resources
- Smart retail & CPG

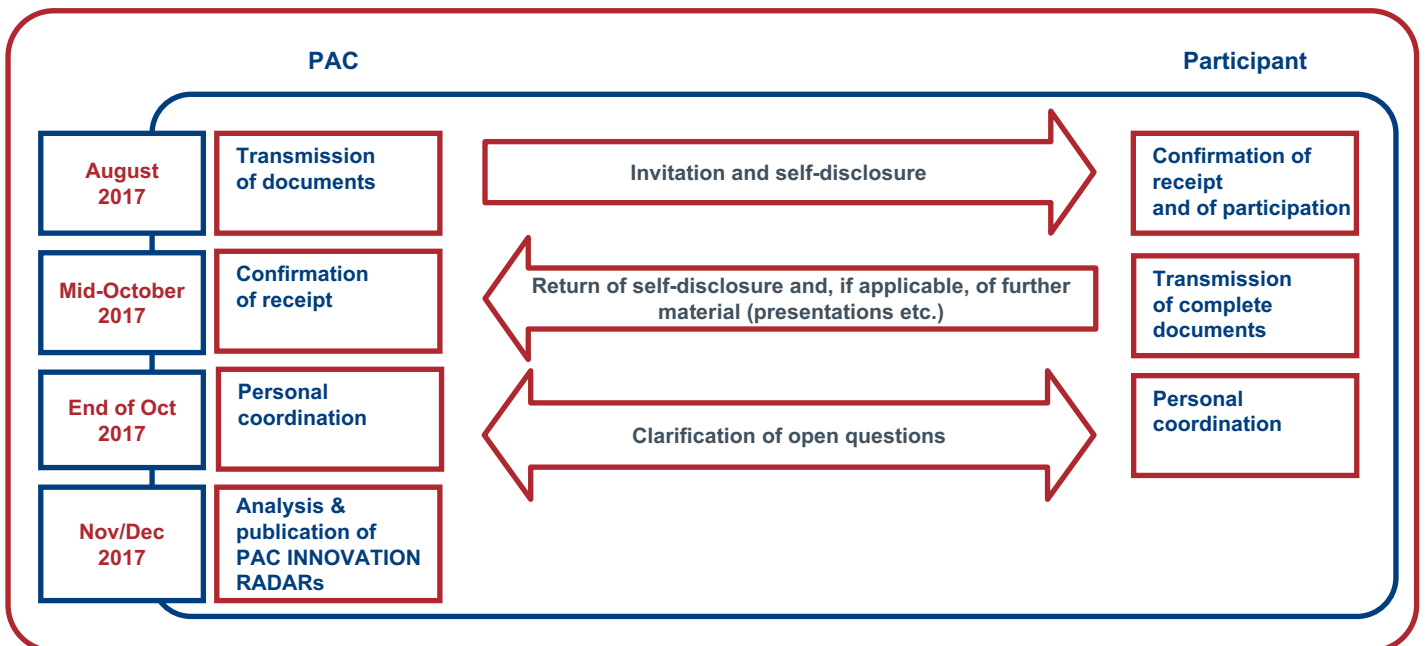
The PAC INNOVATION RADAR reports are going to be published at the end of November/beginning of December 2017 (subject to change).

In order for full consideration to be given to your company, we request your cooperation.

Enclosed is a **self-disclosure questionnaire**. Please answer this as fully as possible. Your responses will be checked for feasibility and adjusted as necessary to ensure comparability of data. Missing or incomplete responses will be completed by PAC using estimates.

To include the self-disclosure in the assessment, please return the self-disclosure by **no later than October 16, 2017**.

## Participation of provider in the creation of the PAC INNOVATION RADAR





Your contact at  
PAC for all questions  
on the current  
PAC INNOVATION  
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## About PAC – a CXP Group Company

Founded in 1976, Pierre Audoin Consultants (PAC) is part of CXP Group, the leading independent European research and consulting firm for the software, IT services and digital transformation industry.

CXP Group offers its customers comprehensive support services for the evaluation, selection and optimization of their software solutions and for the evaluation and selection of IT services providers, and accompanies them in optimizing their sourcing and investment strategies. As such, CXP Group supports ICT decision makers in their digital transformation journey.

Further, CXP Group assists software and IT services providers in optimizing their strategies and go-to-market approaches with quantitative and qualitative analyses as well as consulting services. Public organizations and institutions equally base the development of their IT policies on our reports.

Capitalizing on 40 years of experience, based in 8 countries (with 17 offices worldwide) and with 140 employees, the CXP Group provides its expertise every year to more than 1,500 ICT decision makers and the operational divisions of large enterprises as well as mid-market companies and their providers. CXP Group consists of three branches: Le CXP, BARC (Business Application Research Center) und Pierre Audoin Consultants (PAC).

For more information, please visit [www.pac-online.com](http://www.pac-online.com).

PAC's latest news: [www.pac-online.com/blog](http://www.pac-online.com/blog)