



THE IOT C&SI SURVEY 2020

A teknowlogy Group survey

STUDY REPORT

This document features an overview and analysis of the most important findings from The IoT C&SI Survey 2020.

teknowlogy^{GROUP}



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DOCUMENT INFORMATION

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Introduction

The IoT C&SI Survey 2020 is teknowlog^Y's benchmark study on the global landscape of IoT consulting and system integration (C&SI) providers, which was created based on a comprehensive survey among client companies of IoT-related services, conducted in the second half of 2019.

With a sample of almost 2,000 evaluations, The IoT C&SI Survey 2020 offers an unsurpassed level of user feedback on 32 leading IoT service providers. In addition to the top-tier vendors, the IoT C&SI Survey report also evaluates a large number of less well-known service providers – which in many cases were found to offer excellent value as well.

The survey's results provide an invaluable resource to companies in the process of identifying a suitable service provider fitting their strategy, organization, and business requirements, as well as to providers wishing to understand the needs of the market.

The Key Performance Indicators (KPIs)

The results of The IoT C&SI Survey 2020 are displayed in the form of KPI dashboards to provide the reader with precise information at a glance. The KPIs are all based on the following rules:

- We chose only those parameters found to be of the greatest importance to customers.
- KPIs may be based on one or more parameters from The IoT C&SI Survey 2020.
- Only providers evaluated by at least 20 respondents are included. This applies to each of the questions that feed into the KPIs.
- KPIs are converted to a scale of 1 to 10 (worst to best).
- A linear min-max transformation is applied, which preserves the order of, and the relative distance between, providers' scores.
- In case two or more providers have the same score, their ranks are determined based on the next decimal place.

The IoT C&SI providers

- | | | | |
|----------------------------|-----------------|----------------------------|-----------------|
| • Accenture | • Cognizant | • IBM | • Sopra Steria |
| • Actemium | • Computacenter | • Infosys | • T-Systems |
| • AKKA | • Deloitte | • KPMG | • TCS |
| • Alten | • DXC | • MHP | • Tech Mahindra |
| • Assystem | • EY | • NTT DATA | • Telefónica |
| • Atos | • Fujitsu | • Orange Business Services | • Tieto |
| • Capgemini (incl. Altran) | • HCL | • PwC | • Vodafone |
| • CGI | • HPE | • Reply | • Wipro |



KPI overview

Competitiveness

Reputation

“Reputation” refers to how frequently a provider is considered for IoT-related projects.

Partner of Choice

“Partner of Choice” is based on the number of wins in competitive evaluations.

Consulting Skills

Strategic IoT Advisory

“Strategic IoT Advisory” refers to the perceived capabilities in IoT strategy development and execution.

Industry Expertise

“Industry Expertise” reflects the industry-specific knowledge.

Business Process Know-how

“Business Process Know-how” refers to the perceived know-how about business process development and management.

Change Management

“Change Management” refers to the satisfaction with capabilities in change management strategies and advisory.

Implementation

Implementation Timeline

“Implementation Timeline” is based on how long the implementation process takes compared to expectations.

Implementation Skills

“Implementation Skills” reflects the perceived expertise in implementation activities.

Solution Building

Solution Development

“Solution Development” measures the development performance based on several IoT-specific use cases, such as remote monitoring and control, track and trace, predictive maintenance, and fleet management.

IoT Technology Expertise

“IoT Technology Expertise” refers to the perceived technological capabilities, distinguishing providers that have accumulated deep and broad expertise from those whose know-how is in some cases too narrow or superficial.

Collaboration

Working Culture

A provider can only be a true partner if collaboration is possible. “Working Culture” takes the soft factors around the partnership into account and measures how easy a provider is to work with.

Flexibility

“Flexibility” refers to the perceived flexibility of a provider; for instance, it evaluates the handling of change requests to allow adjustments to new challenges.

Proactivity

“Proactivity” indicates how proactive a provider is in driving a project forward successfully.

Customer Satisfaction

Price to Value

“Price to Value” measures clients’ satisfaction with the pricing model.

Recommendation

“Recommendation” indicates the share of users that say they would recommend a provider to others.

Business Value

Efficiency

“Efficiency” refers to the extent to which a provider manages to stay within or even under budget.

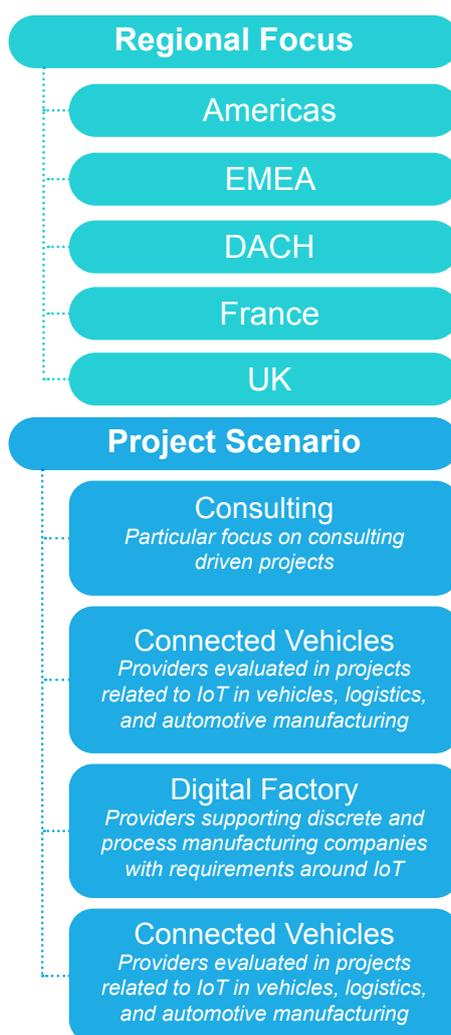
Effectiveness

“Effectiveness” is based on how well a provider supports customers in meeting their business objectives.

Peer group description

The IoT C&SI Survey 2020 features a range of different types of providers, which is why we use peer groups to help identify competing services. The groups are essential to allow a fair and useful comparison of providers likely to compete. The peer groups were defined by teknowlogy’s analysts drawing on their experience as well as customer responses, since a provider needs a minimum of **20 answers per peer group** in order to compete. The segmentation is based on two key factors:

- **Regional focus:** Companies in EMEA and the Americas were asked to share their opinions on their IoT C&SI partners, so if a provider competes in a regional peer group, only the responses from that region count towards their rank.
- **Project scenario:** Depending on the context of the projects as well as the industries the customers represent, providers can further compete in usage-related groups driven by the responses from the respective clients.

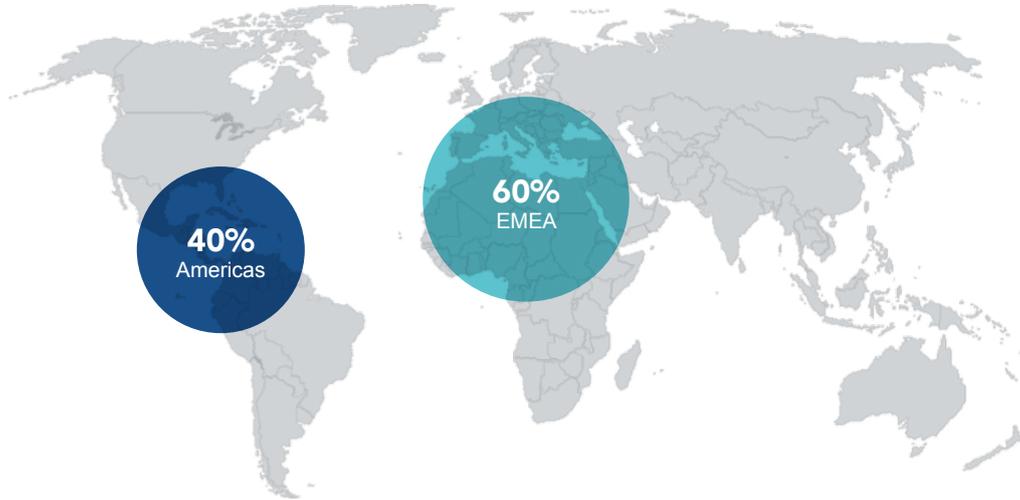




User demographics

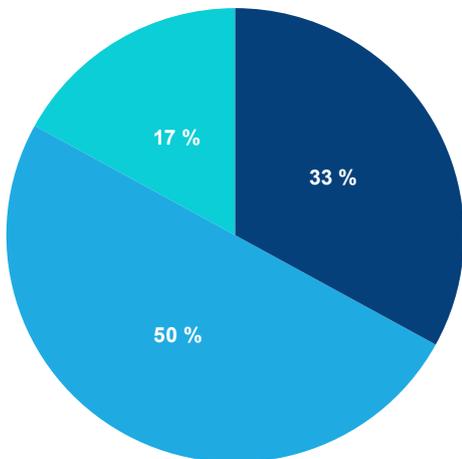
In The IoT C&SI Survey 2020, we had 1,976 evaluations from clients of IoT service providers with the following breakdown:

Geography

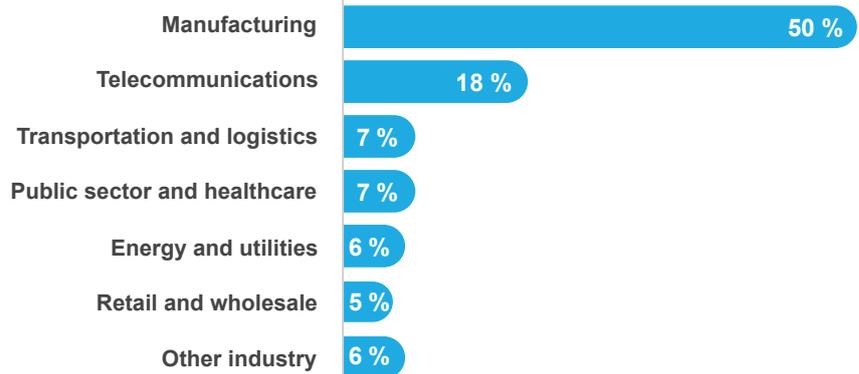


Company Size

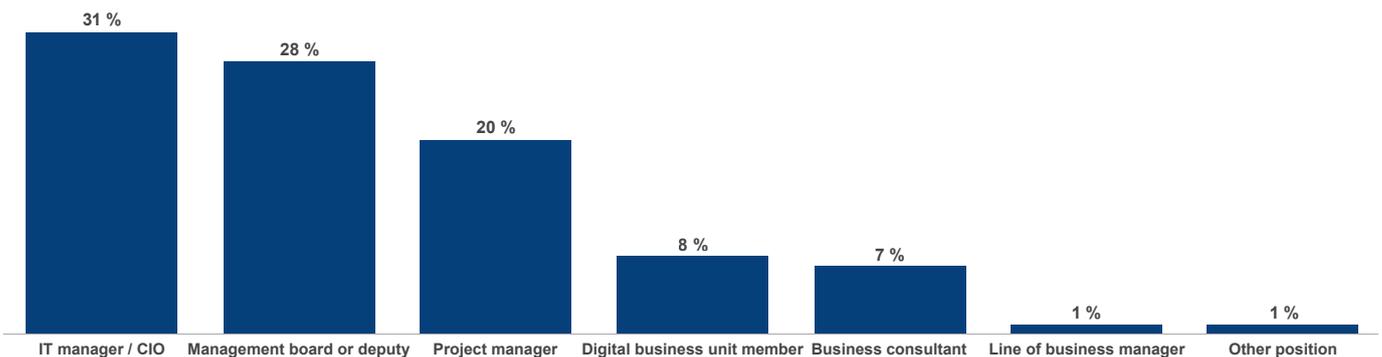
- 500 - 999 employees
- 1,000 - 4,999 employees
- More than 5,000 employees



Industry Sector



Job Title



Key Findings

Overall insights by peer groups

By reviewing different peer groups of C&SI providers that made it into the IoT survey, we can discern some specific characteristics of these groups and of individual providers.



The Indian vendors make customers happy in IoT

Overall, customers are very happy with the work that “Indian pure players” (IPP) are doing in the IoT space. One finding is a bit surprising though – despite the fact that their market position is much stronger in the Americas than in Europe, customer satisfaction with the IPPs is higher in EMEA than in the Americas. However, none of them reached the minimum number of responses needed to be included in DACH, France, and the UK.



The “Big Four” are not big in IoT

The big auditing firms, called the “Big Four”, are not able to convince their customers when it comes to IoT, except for a few KPIs. The only one that made it into the first half of the peer groups is Deloitte.



The telcos are a little disappointing

The results for the telcos and their subsidiaries indicate that their IoT capabilities are much more related to connectivity and operations management than to consulting and system integration. The only exceptions are Orange Business Services in the Americas and across nearly all peer groups when it comes to the Collaboration KPI, and T-Systems in Germany for some KPIs, such as Competitiveness, Working Culture, and Implementation.



French engineering companies are strong local players

All the engineering consulting companies – Alten, Altran (evaluated as Capgemini because of the merger), Assystem, and Akka – made it into the peer group for France. Apart from Akka, they were able to convince their customers in a broad spectrum of KPIs (especially Industry Expertise, Implementation, and Customer Satisfaction). Their strong engineering and embedded software capabilities are especially helpful for clients around all IoT use cases where local intelligence plays an important role.



Reply and MHP are hidden champions in IoT

In the German peer group, two smaller providers (compared to the global players), Reply (Italian-headquartered C&SI provider) and MHP (a Porsche subsidiary), made it into the top positioned companies. They were even able to win in several KPIs against the big players. In addition, these vendors also achieved strong results in their key vertical peer groups: MHP in Connected Vehicles and Reply in Digital Factory.



Fujitsu has many faces – in the UK they are a local hero in IoT

Overall, customers are very happy with the work that “Indian pure players” (IPP) are. In the UK, one special finding was the strong performance of Fujitsu. We observe that Fujitsu is a different company in the UK than in the rest of Europe. In the UK, Fujitsu has stronger consulting, vertical, and implementation skills compared to other countries in Europe, where Fujitsu is mainly a technology and infrastructure services provider. In the US, Fujitsu was also able to achieve better results in this survey.

Insights by KPIs

Analyzing the IoT C&SI providers by KPIs provides some interesting insights.



Competitiveness – the IoT market in Europe is special

The competitive situation around IoT in the French market is very special; even big vendors find it challenging to gain a strong IoT footprint. We see two big local heroes in France, Atos and Capgemini, with a very high score in Competitiveness. Also, Expleo (former Assystem) and Alten are strong local competitors in the French IoT market. We observe the same situation in DACH with Reply and MHP, and in the UK with Fujitsu, HPE, and CGI. The competitive situation for C&SI services across Europe differs from country to country, and IoT is no exception here.



Consulting Skills – Cognizant and Atos have a weak spot in DACH

While users from the UK and France evaluated the consulting capabilities of vendors in a quite similar way, we observe that users from the DACH region evaluated some vendors a bit differently. They gave more negative evaluations, especially to Cognizant and Atos, but also to Capgemini, than the users in the two other regions. Cognizant’s weaknesses are related to strategic IoT advisory and industry expertise, while Atos was ranked extremely low in Change Management and Business Process Know-how.



Implementation – Accenture and IBM are top, but not in all KPIs

Accenture and IBM are clearly the vendors of choice for IoT implementation projects in the Americas, but not necessarily in Europe. Their scores still look OK for EMEA, but other vendors are rated better or at least equal and can often provide their IoT implementation services at lower prices. It seems that HPE and Fujitsu are top specialists for IoT implementation projects in the UK, while Capgemini is in France and DACH.



Solution Building – vendors have achieved a high level of maturity

Across the top vendors in this space, IoT solution building is a global competence with limited variations. Many vendors have already achieved a high level of maturity in IoT solution building. The times of locally developed and highly individual IoT solutions are over. All vendors have developed IoT platforms, blueprints, and best practices on a global level to realize client-specific solutions for different IoT use cases in an efficient way. The challenge for providers is to strike the best possible balance between standardization and individualization in solution development.



Collaboration – the aim is a global culture of co-innovation

In general, many of the key vendors evaluated in this survey have a highly consistent company culture across the globe. The participants in the survey very often note similar positive patterns for the collaborative behavior of individuals and their respective organizations as a whole across the Americas and EMEA. However, the user feedback for Deloitte, Infosys, and HPE shows that these vendors are clearly struggling in the Americas.



Customer Satisfaction – surprising differences

CGI and Capgemini are two of the top vendors as regards customer satisfaction in this survey, but with a surprising footnote. CGI, as a Canadian vendor, got better customer satisfaction ratings in EMEA than in its Americas home region. For Capgemini, it is the other way around. The French vendor got better customer satisfaction ratings in the Americas than in its EMEA home region.



Business Value – there are clear differences by IoT topic

No vendor achieved top ratings across the three topics evaluated –digital factory, smart cities, and connected vehicles. Capgemini and Accenture got the best overall user feedback for delivering business value across these three topics. TCS got outstanding user feedback for delivering business value for the digital factory. Reply also achieved strong ratings in the same space.



Mastering the complexity of the IoT service provider landscape – a structured approach to extract key insights

The comparison between a large number of providers according to different KPIs and peer groups is a complex undertaking. In order to convey the findings and reduce complexity at the same time, the provider comparison graphs are presented below in the form of line charts, with a total of three comparison graphs per chapter. Each chapter comprises a specific, subject matter-based KPI category, such as “Consulting Skills”, combining the average values per sub-KPI, such as “Strategic IoT Advisory”.

The charts are based on the following peer group comparisons:

- Americas and EMEA
- DACH (Germany, Austria, Switzerland), France, and UK
- Connected Vehicles, Digital Factory, and Smart Cities

The providers shown in the graphs are among the top 50% of their respective peer group. For example, the top 50% of the Americas and the top 50% of EMEA are shown in the first chart of each chapter. Even though some companies are in both subsets, there are differences, which are taken into account. Each chapter is followed by a table giving an overview of all the providers that have reached one of the best rankings in the category (usually within the top 20%) or even the first place (indicated by a golden laurel icon). This table also includes the “Consulting” peer group, which is not included in the other comparison charts.

Competitiveness

The Competitiveness KPI takes two aspects into account. First, the level of awareness and reputation a vendor has in the market. This parameter indicates how often a vendor is considered as a potential partner for user companies. Second, how often a vendor is selected by a user company as a “vendor of choice” for a specific project.

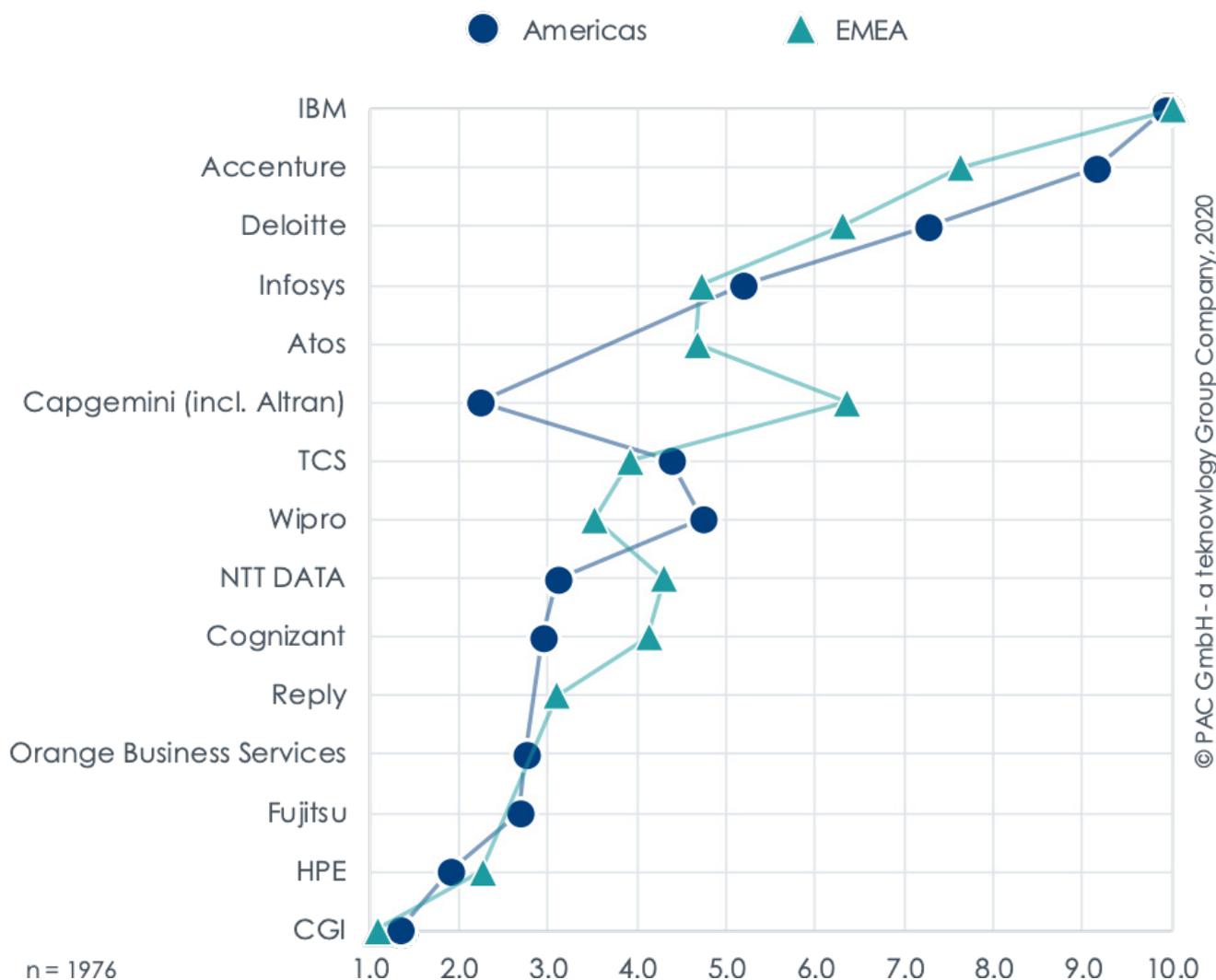


Figure 1: Competitiveness – Americas and EMEA

A comparison of the competitive strength of selected key vendors (for more details regarding the selection please see above) across the Americas and EMEA provides three findings. First, the competitive strength of most vendors seems to be very similar across the Americas and EMEA. This reflects the fact that most vendors actually are global companies today, with an equally strong presence in different regions such as Americas and EMEA. Second, this finding does not seem to be true for Capgemini. A major gap is evident in the competitive strength of Capgemini (incl. Altran) between the Americas and EMEA. Our survey reveals a weakness of Capgemini in the Americas not only in the Reputation sub-KPI (but also in the Partner of Choice sub-KPI). This indicates that Capgemini not only has a major awareness problem in the Americas but also very limited capabilities to win deals, even if it is considered as a potential vendor. Third, we would expect to see a similar gap (as for Capgemini) also for other vendors, such as Atos and Reply. This is not the case, however, because these two vendors were not evaluated in the Americas (this is why there are no blue bullets in their rows).

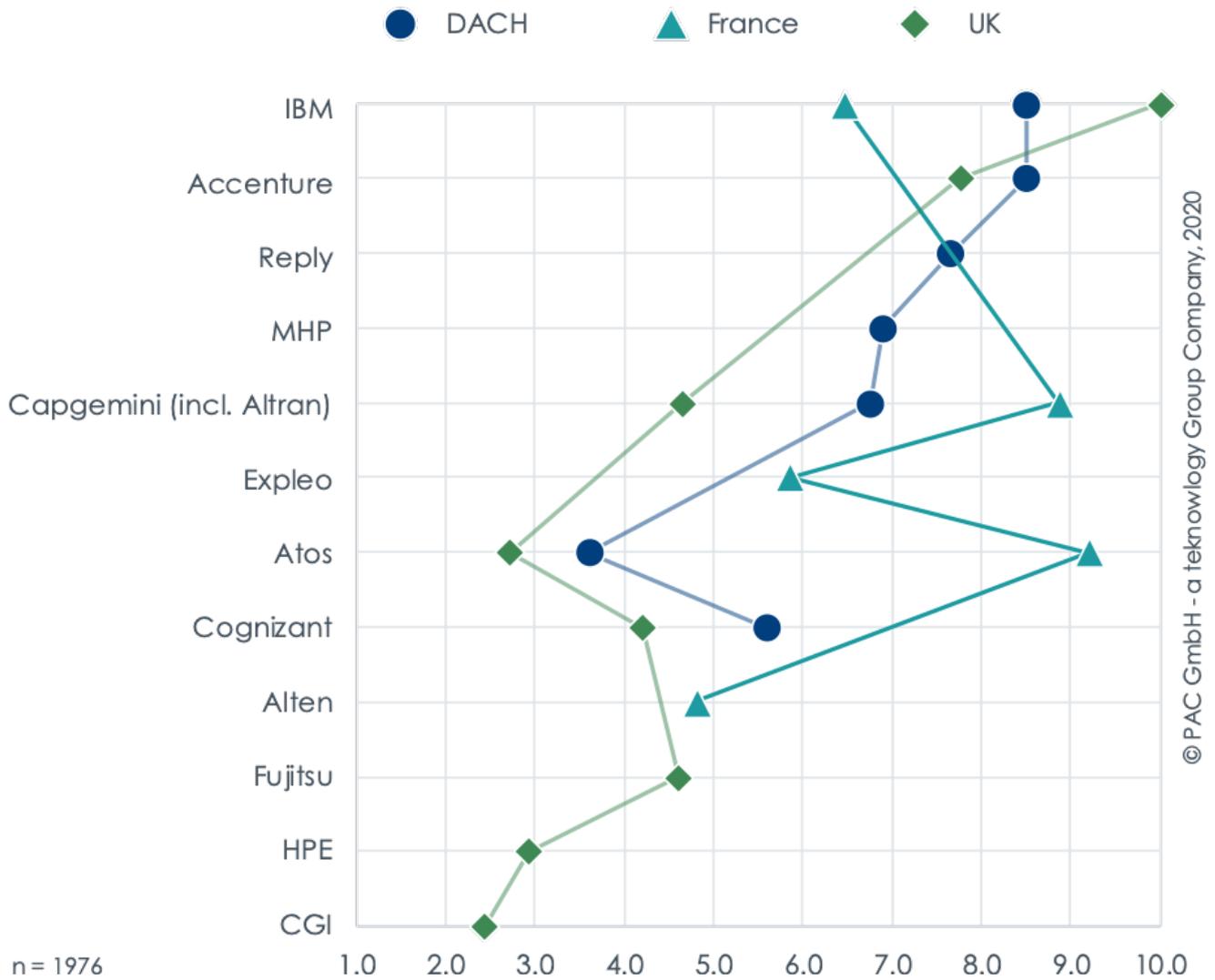


Figure 2: Competitiveness – DACH, France, and UK

A comparison of the competitive strength of selected key vendors across DACH, France, and the UK provides interesting insights. Only three of these vendors (IBM, Capgemini, and Atos) were able to get enough client feedback to be considered across all three regions. Even Accenture is only present in two regional peer group comparisons (DACH and UK) because of limited client feedback in France (below 20 responses). The same is true for Cognizant (not enough client feedback in France). The example of Accenture in particular illustrates that the competitive situation around IoT in the French market is very special, and even big vendors find it challenging to gain a strong IoT footprint. This finding is also supported by two more facts. First, we see two big local heroes in France, Atos and Capgemini, with a very high rating for competitiveness. These two players can compete in the French IoT market on a level playing field with global players such as IBM or Accenture. Second, another two local heroes (with explicit strengths in France), Expleo (former Assystem) and Alten, are also strong local competitors in the French IoT market. However, strong local heroes are not only present in the French IoT market. We observe the same situation in DACH, with Reply and MHP, and also in the UK, with Fujitsu, HPE, and CGI. Of course, this does not mean that vendors are only active in the countries mentioned here, but it definitely shows that there are country-specific differences in their local competitive strength in the IoT space. This once again underlines the fact that the provider landscape and the competitive situation across Europe is different from country to country; newly emerging topics such as IoT are no exception here. Another interesting finding is the fact that the big players such as IBM and Accenture are able to reach a high level of competitiveness across all the regional markets in which they were evaluated

(DACH, France, and UK). In contrast, Atos and Capgemini struggle to reach a similarly high level of competitive strength outside their home country, France. It seems that IBM and Accenture do a better job of “exporting” their competitive strength to other markets.

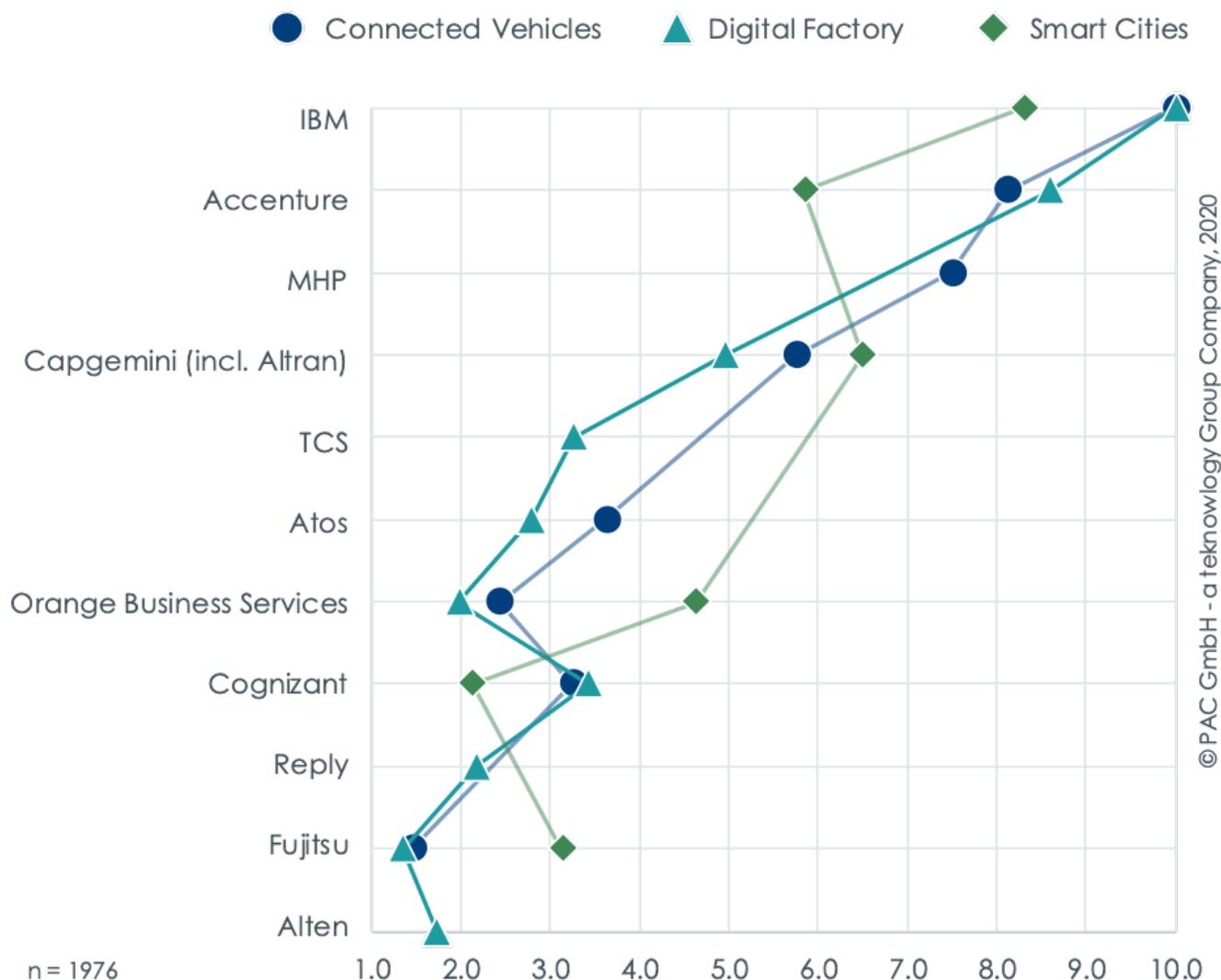


Figure 3: Competitiveness – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the competitive strength of key vendors across the IoT-related topics of digital factory, smart cities, and connected vehicles. Based on this graph, we can say that the vendors’ competitive strength across all three topics is correlated to some extent. We do not see any strong variations in the evaluation of any vendor between these three topics, which is an interesting finding. Of course, some differences do exist, for example when we look at Accenture or OBS. Moreover, not all vendors have been evaluated in all three topics (please note the bullets in the vendors’ rows). Still, an overall trend, a correlation between the topics, is evident. There’s a simple reason for this – the topics are connected. Connected vehicles play a major role within smart cities and also within the digital factory. It is nearly impossible to consider one topic completely separate from the others. We admit that we did not expect such a strong correlation between the topics, but it is the case for this KPI.



	Reputation	Partner of Choice	Competitiveness
Accenture	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities
Actemium	France	France	France
Atos	France	France	France
Capgemini (incl. Altran)	EMEA France	EMEA France Digital Factory Smart Cities	EMEA France Digital Factory Smart Cities
Deloitte	Americas UK Consulting Digital Factory	Americas UK Consulting Digital Factory	Americas UK Consulting Digital Factory
Fujitsu		UK	
HCL	Digital Factory		
IBM	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities
Infosys	Americas EMEA	Americas	Americas EMEA
MHP	Connected Vehicles	Connected Vehicles	Connected Vehicles
Orange Business Service	France Smart Cities		
PwC	UK		UK
Reply		DACH	
T-System	DACH		DACH
Vodafone	Smart Cities	EMEA	
Wipro	Americas		

Table 1: Competitiveness – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Consulting Skills

The Consulting Skills KPI takes four aspects into account: strategic IoT advisory skills, industry expertise, business process know-how, and change management capabilities. Two of these elements, Strategic IoT Advisory and Change Management, mostly evaluate the methods and concepts which address the wider needs at the top management level. The two other elements, Industry Expertise and Business Process Know-how, go a level deeper and also evaluate the dedicated consulting expertise around more use case-specific IoT projects.

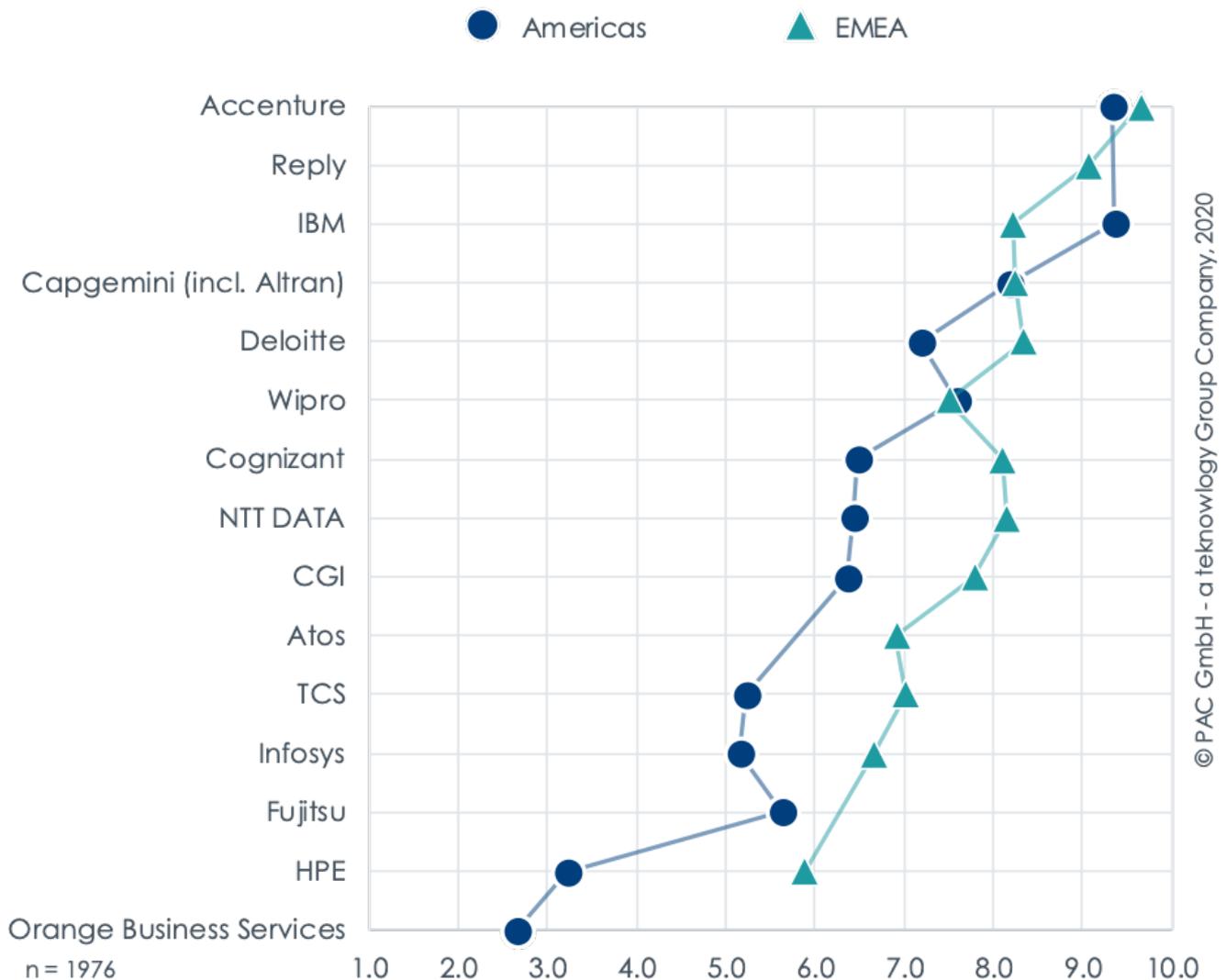


Figure 4: Consulting Skills – Americas and EMEA

The graph above shows a comparison of the consulting skills of selected key vendors, evaluated by user companies in the Americas and EMEA. On the surface, it looks like most vendors achieved quite similar ratings across these two geographies. We often observe that the vendors generally got slightly higher scores for their consulting skills in Europe than in the Americas, but there are no significant differences at this level. The most notable exception in this context is HPE, which achieved much better ratings in EMEA than in the Americas. However, when we look more closely, some interesting differences emerge in the evaluations of individual vendors across the Americas and EMEA. First, vendors' change management capabilities in the second half of the table often scored much higher in Europe than in the Americas. This includes Cognizant, CGI, NTT DATA, Infosys, and HPE. Second, TCS achieved a far better rating for its business process know-how and strategic IoT advisory capabilities in EMEA than in the Americas. Third, HPE got much better feedback for its industry expertise and strategic IoT advisory capabilities in EMEA than in the



Americas, which explains the above-mentioned overall difference in consulting skills. Fourth, Deloitte also got much higher scores in EMEA than in the Americas for its industry expertise. To sum it up, we can say that from a regional perspective, differences in consulting skills do exist, but they only become visible at a more detailed skill level, not necessarily in the overall picture.

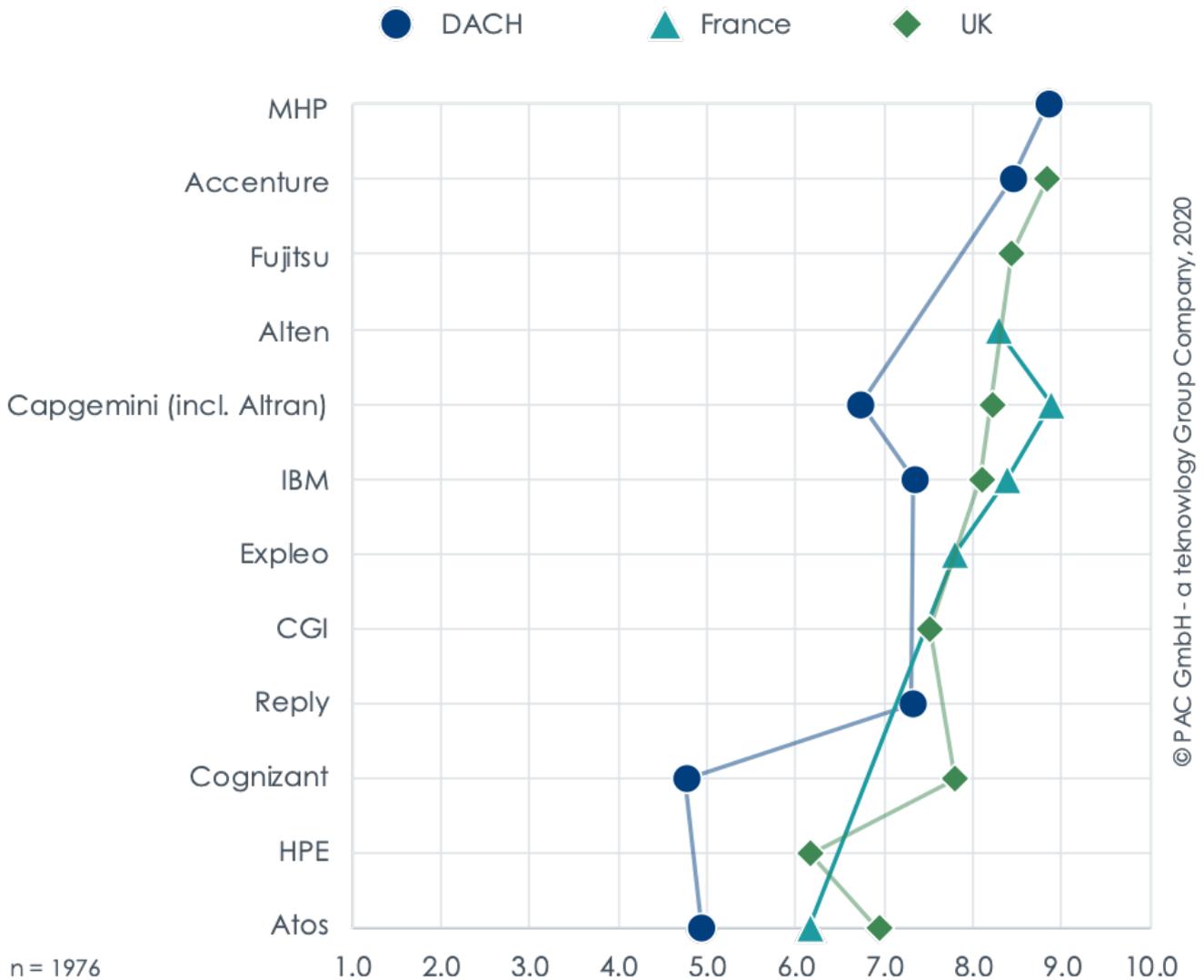


Figure 5: Consulting Skills – DACH, France, and UK

The graph above shows a comparison of the consulting skills of the selected key vendors across DACH, France, and the UK. While users from the UK and France evaluated the vendors' consulting capabilities quite similarly, we observe that users from the DACH region gave a little different ratings for some vendors. Capgemini, Cognizant, and Atos in particular scored lower in DACH than in the other two regions. A look at the sub-KPIs reveals that the weakness of Capgemini and Cognizant in DACH has the same root cause. Both vendors scored lower for their consulting-related capabilities around strategic IoT advisory and industry expertise. The detailed user feedback for Atos shows a different picture. It is remarkable that Atos scored extremely low in change management across all three regions in Europe; in Germany in particular, Atos got very bad user feedback for its business process know-how. This rating still seems to be related to the acquisition of SIS (Siemens IT Solutions and Services) by Atos in 2011.

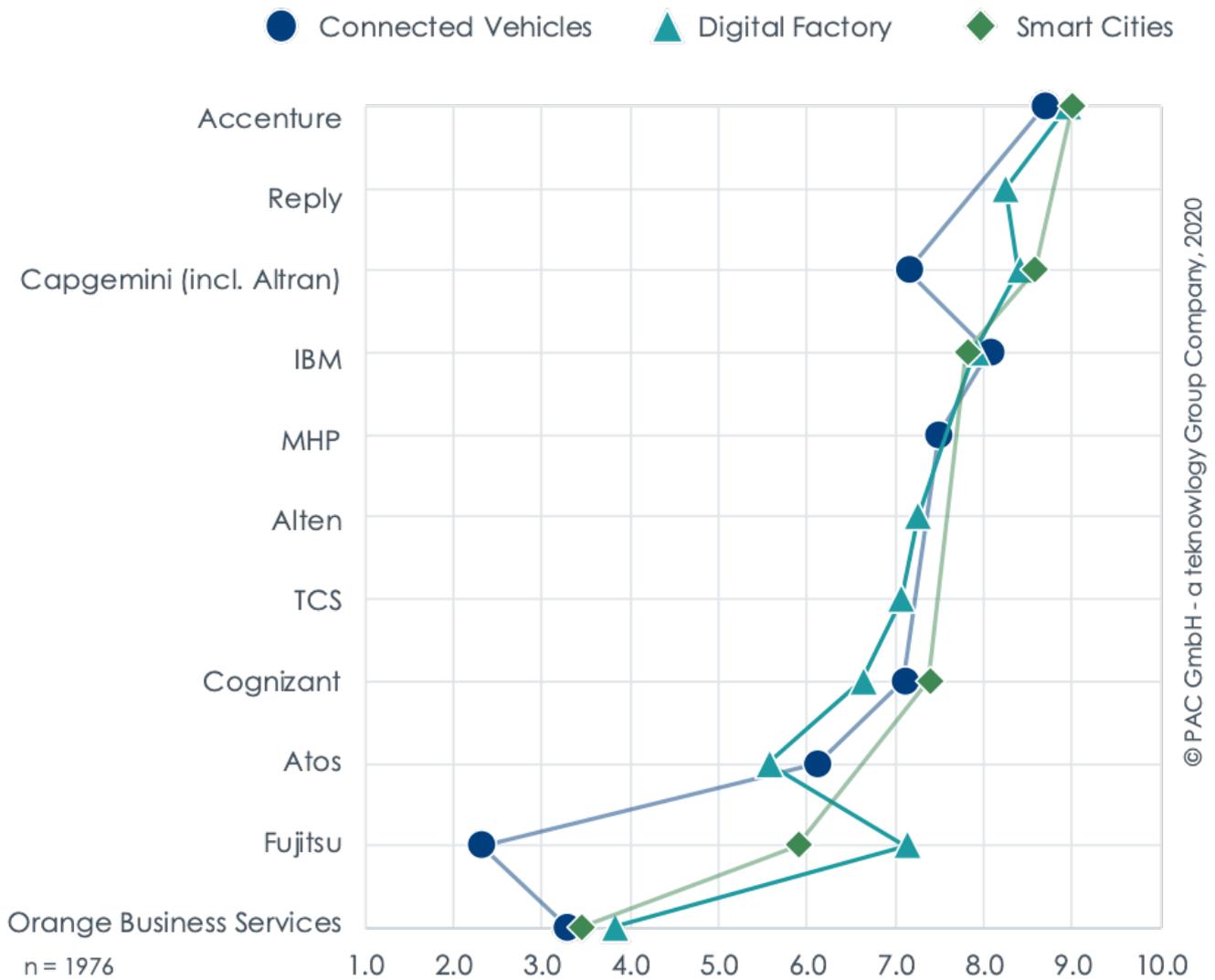


Figure 6: Consulting Skills – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the consulting skills of the selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. Again, we see a strong correlation of the evaluations across the three IoT topics. As mentioned before, this is due to the strong connections between the topics. The only major exception in this context is Fujitsu in connected vehicles. The negative evaluation of Fujitsu’s consulting capabilities around the connected vehicles topic is due to low ratings in all four sub-KPIs, but especially in strategic IoT advisory, business process know-how, and change management. In addition, a deep dive into the sub-KPI results also shows that Atos got very negative user feedback for its change management capabilities in digital factory. Change management is clearly no sweet spot of Atos in any dimension of this IoT user survey.



	Strategic IoT Advisory	Industry Expertise	Business Process Knowhow	Change Management	Consulting Skills
Accenture	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA UK Consulting Connected Vehicles Smart Cities	Americas EMEA UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities
Actemium		Digital Factory			
AKK		France			
Alten		France Digital Factory	Digital Factory	France	France
Atos	DACH Connected Vehicles Digital Factory		France		
Capgemini (incl. Altran)	Americas EMEA France Consulting Smart Cities	UK Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Digital Factory Smart Cities	Americas EMEA France Consulting Connectes Vehicles Digital Factory	Americas EMEA France Consulting Connectes Vehicles Digital Factory Smart Cities
CGI		UK			
Cognizant	UK	Americas	EMEA UK Digital Factory	Connectes Vehicles Digital Factory Smart Cities	
Deloitte	Smart Cities	EMEA UK Consulting	Americas	EMEA UK Digital Factory Smart Cities	EMEA Smart Cities
Expleo	France	France		France	
EY				UK	
Fujitsu	UK	UK	UK		UK
HPE	Digital Factory				
IBM	Americas EMEA DACH France UK Consulting Digital Factory	Americas EMEA France Consulting Connected Vehicles Smart Cities	Americas France Consulting Connected Vehicles Smart Cities	Americas	Americas EMEA DACH France UK Consulting Connected Vehicles Digital Factory
KPMG				UK	
MHP	Connected Vehicles	DACH Connectes Vehicles	DACH	DACH	DACH Connectes Vehicles
NTT Data	EMEA				
PwC				Americas EMEA UK Consulting	
Reply	EMEA	EMEA DACH Digital Factory	EMEA DACH Digital Factory	DACH	EMEA Digital Factory
TCS		Digital Factory			
Tech Mahindra		EMEA			
Tieto			EMEA		
Wipro	Americas	Americas		Americas	Americas

Table 2: Consulting Skills – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Implementation

The Implementation KPI takes two aspects into account. The first sub-KPI, Implementation Timeline, is based on a user evaluation of how long the implementation process took compared to their expectations. This parameter is a good indicator of how experienced a vendor is in project management and how flexible in resource allocation to meet agreed timelines. The second sub-KPI, Implementation Skills, reflects the perceived expertise in implementation activities.

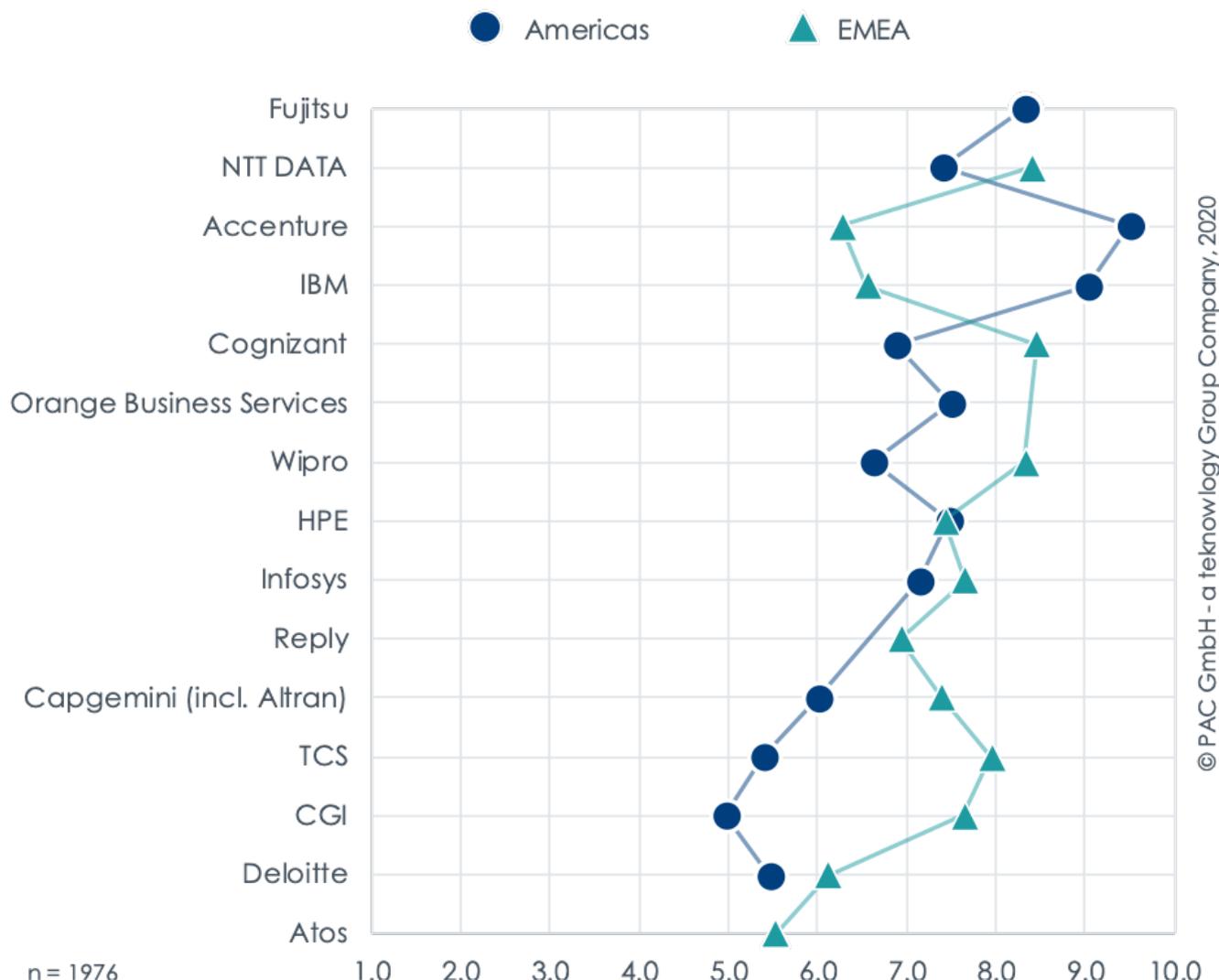


Figure 7: Implementation – Americas and EMEA

A comparison of the IoT implementation-related capabilities of selected key vendors across the Americas and EMEA produces three findings. First, while respondents saw no big differences in the consulting skills of big vendors such as Accenture and IBM across the Americas and EMEA, there is a slightly different picture regarding IoT implementation capabilities. Both Accenture and IBM received much better user feedback in the Americas than in EMEA. The difference is so big that most of the other vendors included in the graph achieved better results for IoT implementation in EMEA than Accenture and IBM. This means that Accenture and IBM are clearly the vendors of choice for IoT implementation in the Americas, but not necessarily in Europe. Their scores still look OK for EMEA, but other providers are ranked better or at least equally and can often provide their IoT implementation services at much lower prices. Second, several vendors show equal IoT implementation ratings across EMEA and the Americas. These include NTT DATA, Cognizant, Wipro, HPE, Infosys, Capgemini, and Deloitte. These vendors seem to be most



suitable for IoT implementation projects at a global level. Third, TCS and CGI have much stronger IoT implementation capabilities in EMEA than in the Americas. In both cases, this is due to rather negative ratings in implementation time. It seems that both vendors are struggling with limited local resources in the Americas, making it difficult for them to deliver IoT implementation projects in time.

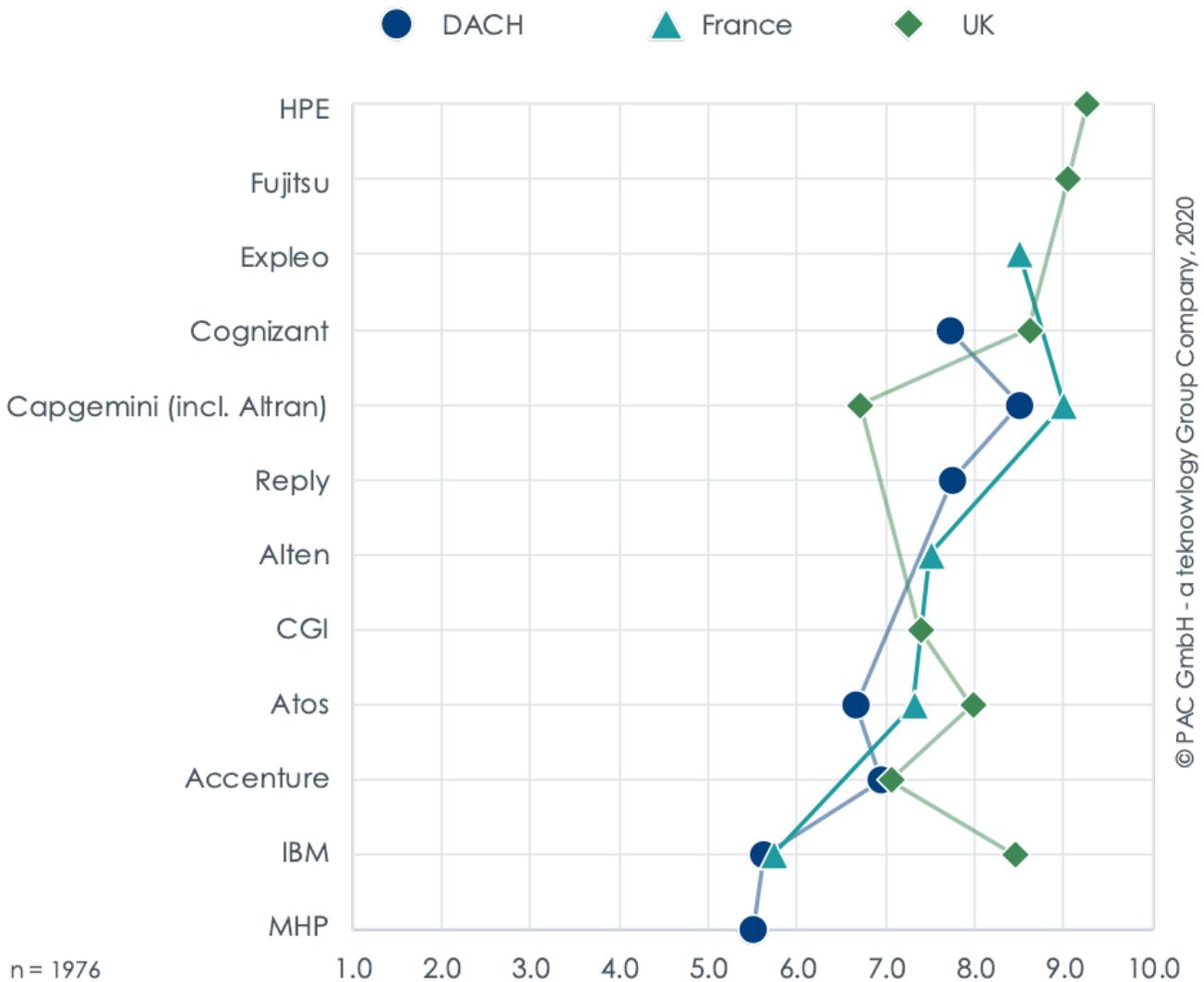


Figure 8: Implementation – DACH, France, and UK

The graph above shows a comparison of the IoT implementation-related capabilities of selected key vendors across DACH, France, and the UK. It seems that HPE, Fujitsu, and Cognizant are real specialists for IoT implementation projects in the UK. These vendors received excellent user feedback for their IoT implementation projects in the UK. The same is true for IBM in the UK; in contrast, they got very different feedback from user companies in the other two regions (DACH and France). This is mostly, but not exclusively, due to more negative user feedback on implementation timeline. Capgemini also shows a small gap in its IoT implementation-related capabilities. Unlike IBM, Capgemini is stronger in France and Germany than in the UK. The low rating of Capgemini in the UK is mostly, but not exclusively, due to more negative user feedback on implementation timeline. This shows the same picture as for IBM above.

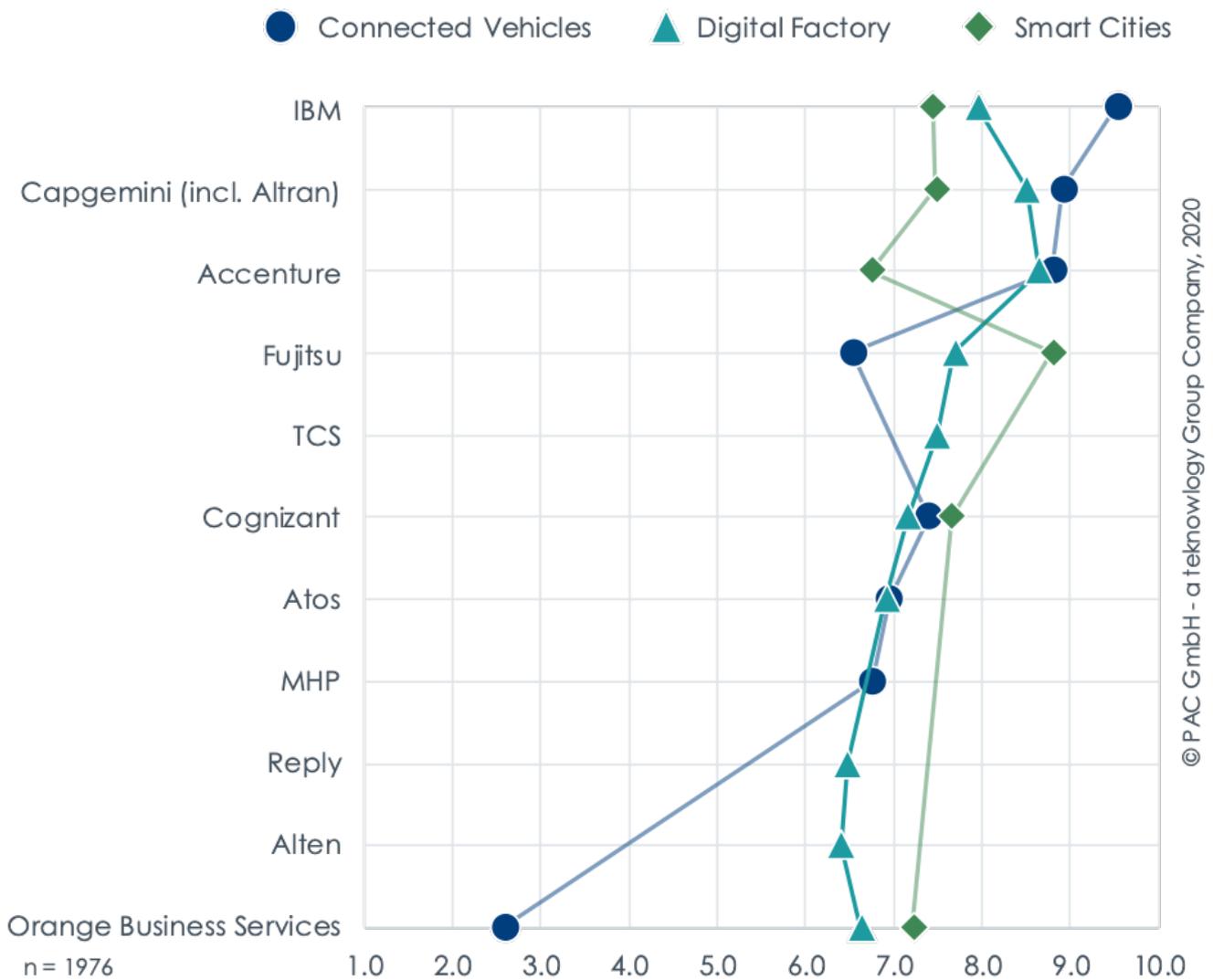


Figure 9: Implementation – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the IoT implementation-related capabilities of the selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. The graph does not allow to identify individual champions in IoT implementation around one specific topic. Again, this is due to the strong connection between these topics. Also, major differences within one vendor are very limited. According to the participants, the only exception is Orange Business Services because of its very limited implementation skills around the IoT topic of connected vehicles. The top vendors across all three IoT topics are IBM, Capgemini, Accenture, Fujitsu, and Cognizant. These vendors were evaluated across all three topics in this user survey (i.e. they reached the required minimum number of respondents per topic) and, in addition, also scored highly in all of these topics.



	Implementation Timeline	Implementation Skills	Implementation
Accenture	Americas Consulting Connected Vehicles Digital Factory	Americas 🏆 DACH Consulting Connected Vehicles Digital Factory	Americas 🏆 Consulting Connected Vehicles Digital Factory 🏆
Alten	France Digital Factory		France
Atos	DACH UK	France	
Capgemini (incl.Altran)	EMEA DACH 🏆 France 🏆 Consulting Connected Vehicles 🏆 Digital Factory 🏆 Smart Cities	DACH France Digital Factory	DACH 🏆 France 🏆 Connected Vehicles Digital Factory Smart Cities
CGI	EMEA		
Cognizant	EMEA 🏆 DACH UK 🏆 Consulting 🏆 Digital Factory Smart Cities	UK	EMEA 🏆 DACH UK Smart Cities
Deloitte		Connected Vehicles	
Expleo	France	France 🏆	France
Fujitsu	Americas 🏆 Smart Cities 🏆	UK 🏆 Smart Cities	Americas UK Digital Factory Smart Cities 🏆
HPE	UK	Americas EMEA UK Digital Factory	UK 🏆
IBM	Americas UK Connected Vehicles	Americas UK Consulting Connected Vehicles 🏆 Digital Factory Smart Cities 🏆	Americas UK Consulting Connected Vehicles 🏆 Digital Factory
Infosys		Americas EMEA Connected Vehicles	EMEA
NTT Data		EMEA 🏆 Consulting 🏆	EMEA Consulting 🏆
Orange Business Service	Americas		Americas
Reply		EMEA DACH 🏆 Digital Factory 🏆	
TCS	EMEA		EMEA
Wipro	EMEA	EMEA	EMEA

Table 3: Implementation – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Solution Building

The Solution Building KPI takes two aspects into account, IoT-related Solution Development capabilities and IoT Technology Expertise. Solution Development refers to the capability of a vendor to build customer-specific solutions for many different IoT use cases, such as remote monitoring, track and trace, predictive maintenance, and fleet management. IoT Technology Expertise refers to the perceived technological capabilities. This parameter should help to distinguishing providers which have accumulated deep and broad technical IoT know-how from those whose expertise is in some cases more generic or siloed (too narrow and/or superficial).

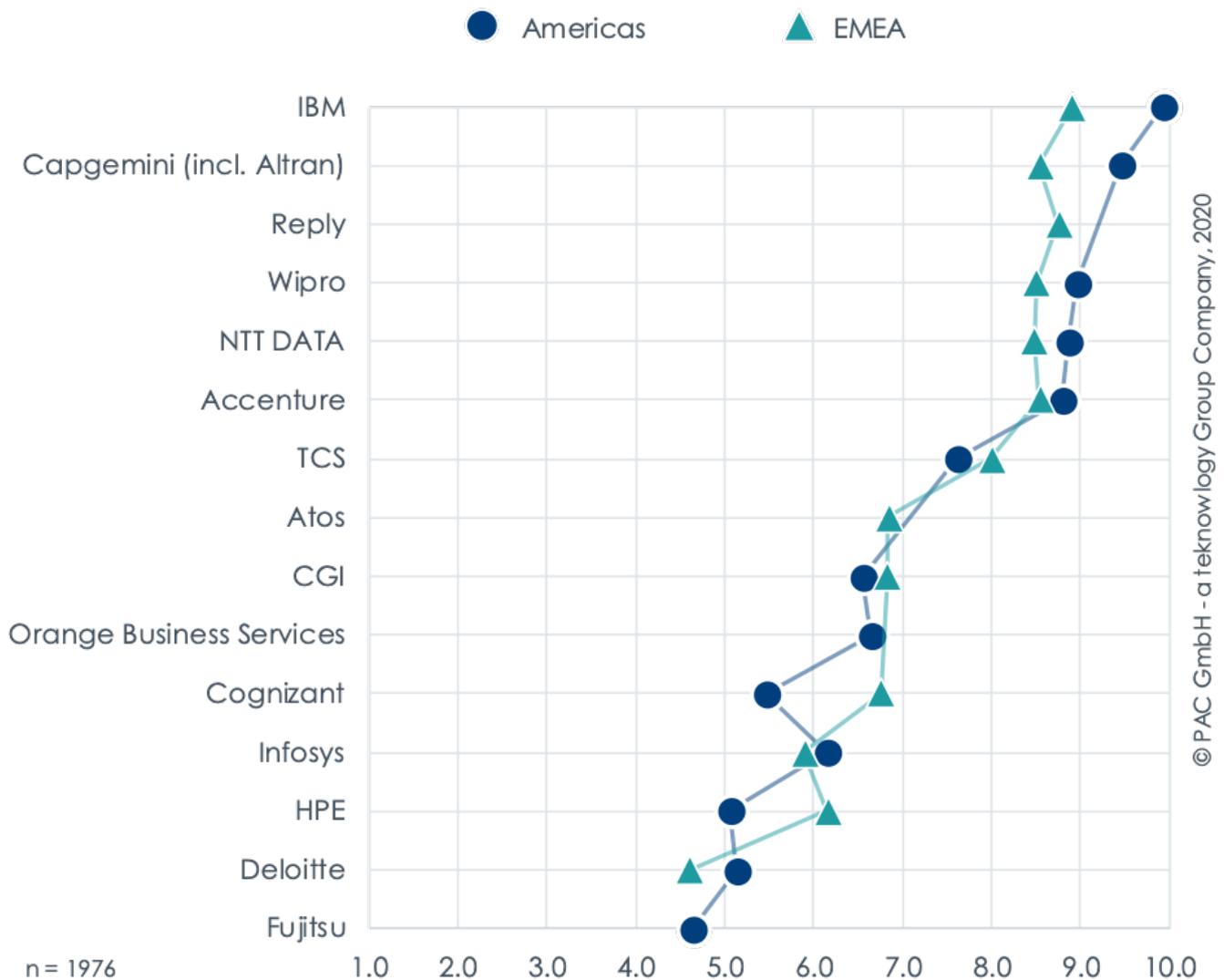


Figure 10: Solution Building – Americas and EMEA

A comparison of the solution building capabilities of selected key vendors across the Americas and EMEA produces an important finding. It seems that there are no major differences when we compare the IoT solution building capabilities of these vendors across different regions. In addition, we get exactly the same picture when we look into this more closely – again, there are no real differences in the sub-KPI evaluations for these vendors regarding their IoT-related solution development capabilities and IoT technology expertise. There is a clear key message behind this very unspectacular graph. IoT solution building – at least as regards the group of top vendors analyzed in this survey – is a global competence with no or only very limited local variations. This illustrates well that these vendors have already achieved a high maturity level in IoT solution building. The times of locally developed and highly individual IoT solutions are definitely over. All vendors not only use global resources for solution development, but they have



also developed their own IoT platforms, blueprints, and best practices at a global level to realize client-specific solutions for different IoT use cases in an efficient way. This means that for a vendor, achieving real differentiation in this space may not be impossible, but will be very difficult. The challenge for providers is mainly to strike the best possible balance between standardization and individualization in solution development, which is basically a kind of trade-off between cost efficiency (standardization) and flexibility (individualization).

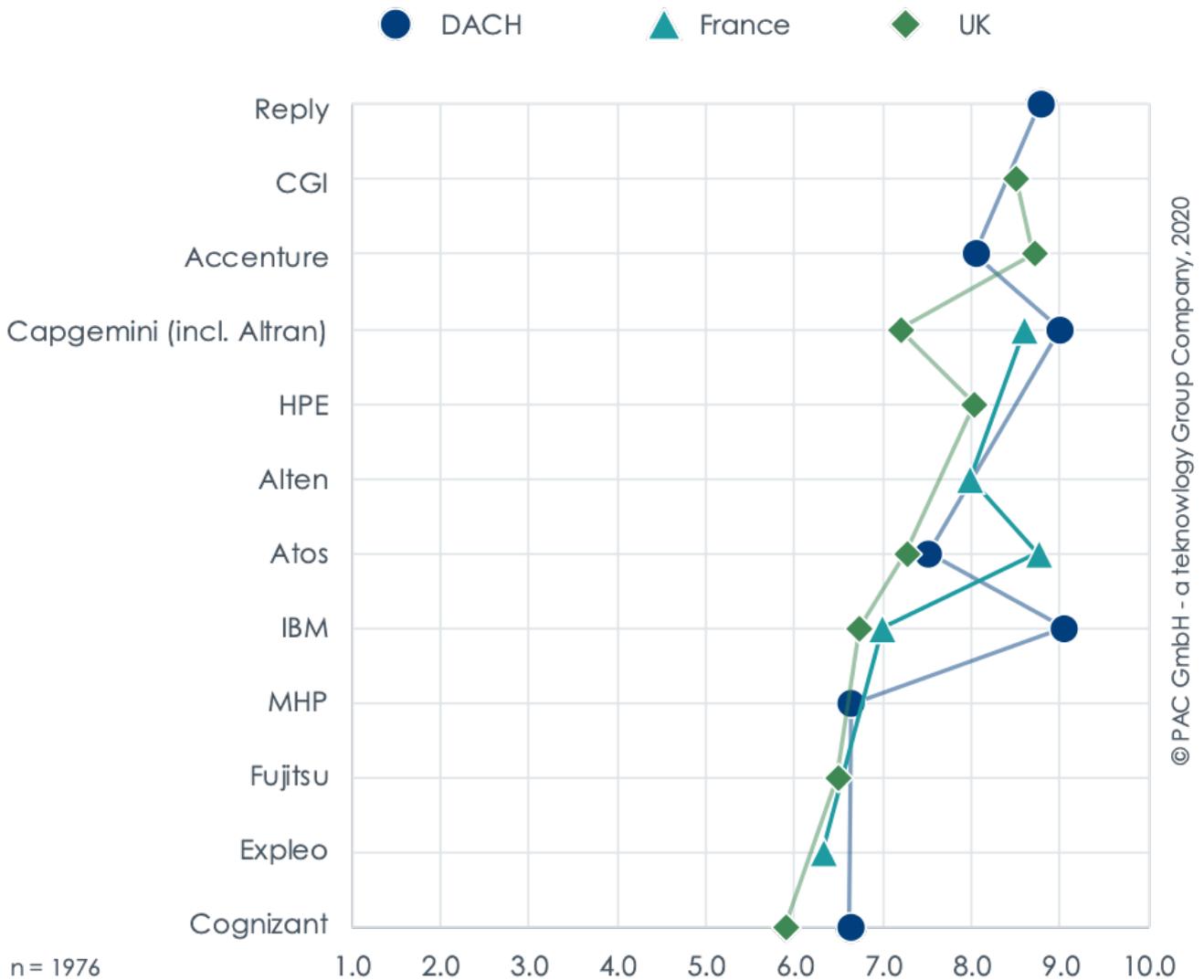


Figure 11: Solution Building – DACH, France, and UK

The graph above shows a comparison of the solution building capabilities of selected key vendors across DACH, France, and the UK. This graph supports the finding discussed above. Among the group of top vendors analyzed in this survey, IoT solution building is a global competence with no or only very limited local variations. Similar to the comparison above of different geographies (Americas vs. EMEA), we observe the same picture on a more regional level in Europe. Regarding regional differences in solution building capabilities, no major variations exist across the key vendors covered here. There are just minor gaps in the graph above, reflecting differences in regional solution building capabilities at Accenture, IBM, Capgemini, and Atos. However, several vendors in this category were only evaluated within one region (Reply, CGI, HPE, Alten, MHP, Fujitsu, Expleo, Cognizant), which does not allow for a real comparison of their local capabilities in different regions. Still, based on the findings above, we would not expect to see any major differences in their regional solution building capabilities.

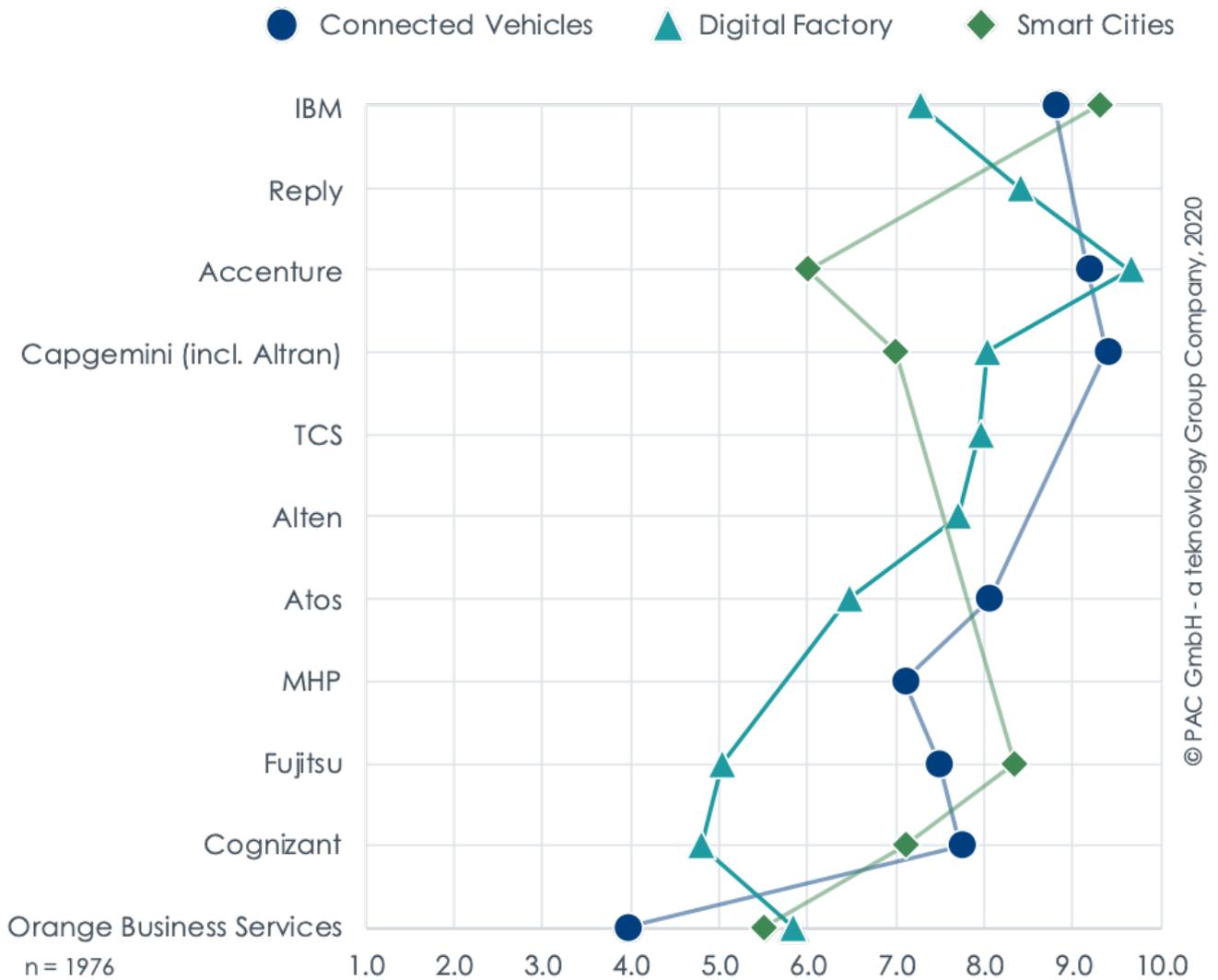


Figure 12: Solution Building – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the solution building capabilities of selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. This graph shows a picture that is slightly different from the other two graphs above, which compared different solution building capabilities from a geographical/regional perspective. It suggests that some differences do exist between the three IoT topics. According to the user feedback in this survey, we see a topic-related polarization of solution building capabilities for Accenture, Fujitsu, and Cognizant. While the results for Fujitsu and Cognizant show some limitations in building solutions for the digital factory, users see more limited solution building capabilities of Accenture in smart cities. This indicates that some vendors have topic-related IoT focus areas with more advanced solution development capabilities.



	Solution Development	IoT Technology Expertise	Solution Building
Accenture	Connected Vehicles Digital Factory	Americas EMEA DACH UK Digital Factory	EMEA UK Connected Vehicles Digital Factory
Actemium		France	
Alten	Digital Factory	France	France
Atos		DACH France UK Connected Vehicles Digital Factory	France UK
Capgemini (incl. Altran)	Americas EMEA DACH France UK Connected Vehicles Digital Factory	Americas Consulting Connected Vehicles Smart Cities	Americas EMEA DACH France Consulting Connected Vehicles Digital Factory
CGI	EMEA UK Consulting		UK
Cognizant	Smart Cities	Smart Cities	Smart Cities
Explero	France		
Fujitsu	UK Smart Cities	Smart Cities	Smart Cities
HCL		UK	UK
HPE	UK	Digital Factory	UK
IBM	Americas DACH France Connected Vehicles Smart Cities	Americas EMEA DACH UK Consulting Connected Vehicles Smart Cities	Americas EMEA DACH Connected Vehicles Smart Cities
NTT Data	Americas EMEA Consulting		Americas Consulting
Reply	EMEA DACH Digital Factory	Digital Factory	Digital Factory
TCS		EMEA Digital Factory	Digital Factory
Tech Mahindra		EMEA	
Wipro	Americas EMEA Consulting	Americas EMEA Consulting	Americas EMEA Consulting

Table 4: Solution Building – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Collaboration

The Collaboration KPI takes three aspects into account – Working Culture, Flexibility, and Proactivity. Working Culture refers to the soft factors around a partnership and determines the working style and the general collaboration-related attitude of a provider. Flexibility refers to the perceived flexibility of a provider in handling change requests in an appropriate way. Proactivity indicates how agile and proactive a provider is in driving a project forward successfully.

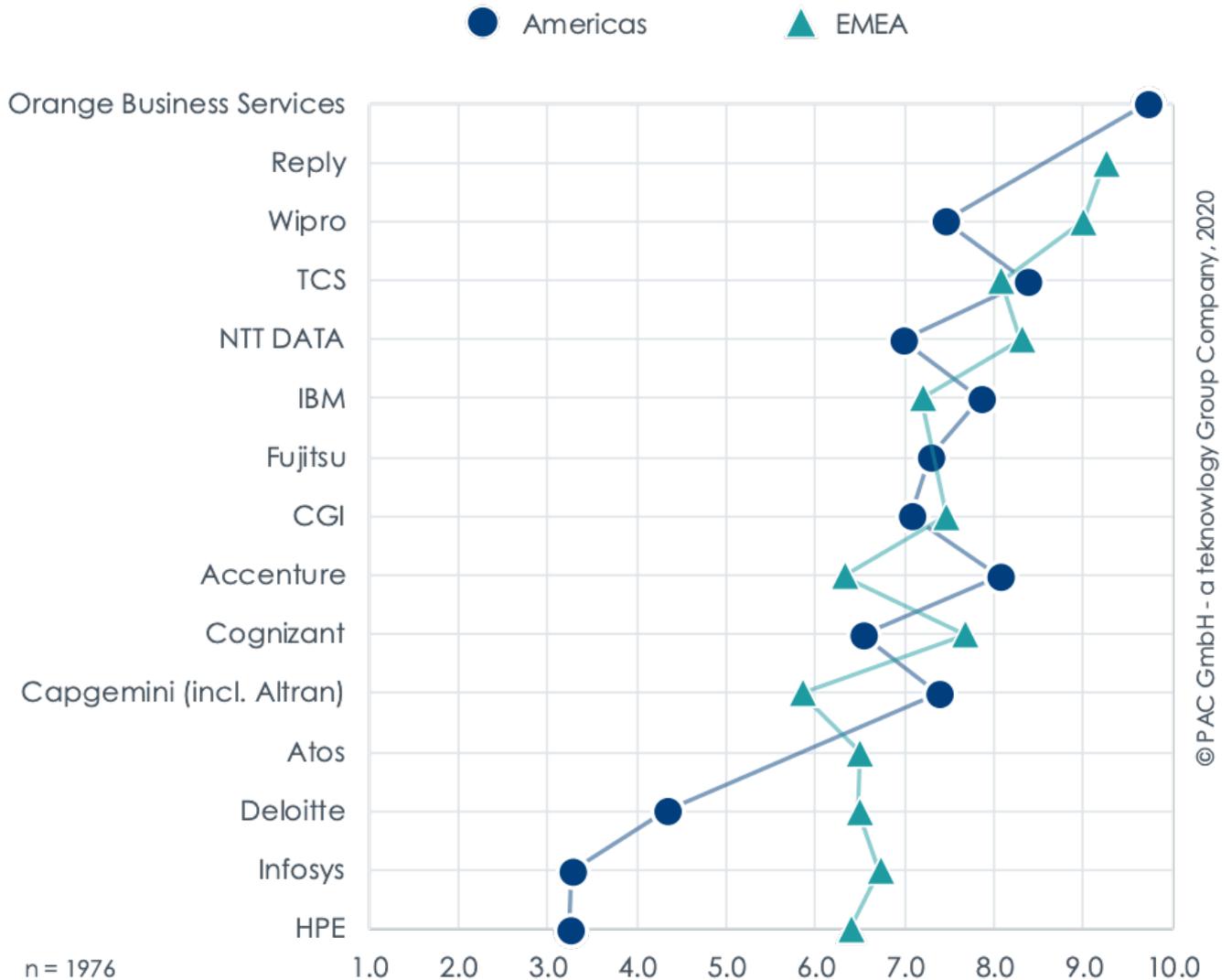


Figure 13: Collaboration – Americas and EMEA

A comparison of the collaborative behavior of selected key vendors across the Americas and EMEA produces three findings. First, we can say that in general, many of the selected key vendors have a highly consistent company culture across the globe. The participants in this survey very often note similar positive patterns in the collaborative behavior of individuals and their respective organizations as a whole across the Americas and EMEA. Of course, this is what we expected for most of the vendors. Second, user feedback for Deloitte, Infosys, and HPE shows that these vendors are clearly struggling in the Americas. Overall, Deloitte, Infosys, and HPE got negative user feedback in the Americas across all three sub-KPIs we evaluated in this survey (Working Culture, Flexibility, and Proactivity). While feedback for Deloitte in the Americas is less negative than for the other two vendors, this definitely is a surprise. This client feedback may not be purely IoT-related and may still go back to 2017, when Deloitte was the subject of an embarrassing security breach



which forced the company to invest up to USD 580 million into improving its own cyber security defense by 2021. However, the negative results for HPE and Infosys are clearly more significant, but also easier to explain. For HPE, the ongoing job cuts and the initiated company-wide culture shift over the past few years seem to have affected the motivation of employees in the Americas much more significantly than in EMEA. This situation certainly has had a direct impact, which is reflected even in our IoT-related survey. This is due to the fact that one of HPE's core topics, edge computing, is also a highly relevant topic in the context of IoT. Infosys has a large-scale and mature global delivery model and is currently expanding its onshore presence in the US very aggressively by opening new facilities and hiring more people. This follows an announcement from May 2017 to hire 10,000 employees in the US over the next two years. By mid-2019, this task was almost completed. We believe that Infosys realized as far back as 2017 that, besides pressure from the Trump Administration, they were also going to face pressure from clients to do more local co-innovation and collaboration. Infosys started to counter this pressure by launching the above-mentioned hiring initiative. It seems that the gap has been addressed but has certainly not been closed yet. Building a new, large-scale and local delivery organization in the US with a highly collaborative working style is not an easy task and therefore not doable overnight. Third, the highly positive user feedback for OBS in the Americas and Reply in EMEA is also remarkable.

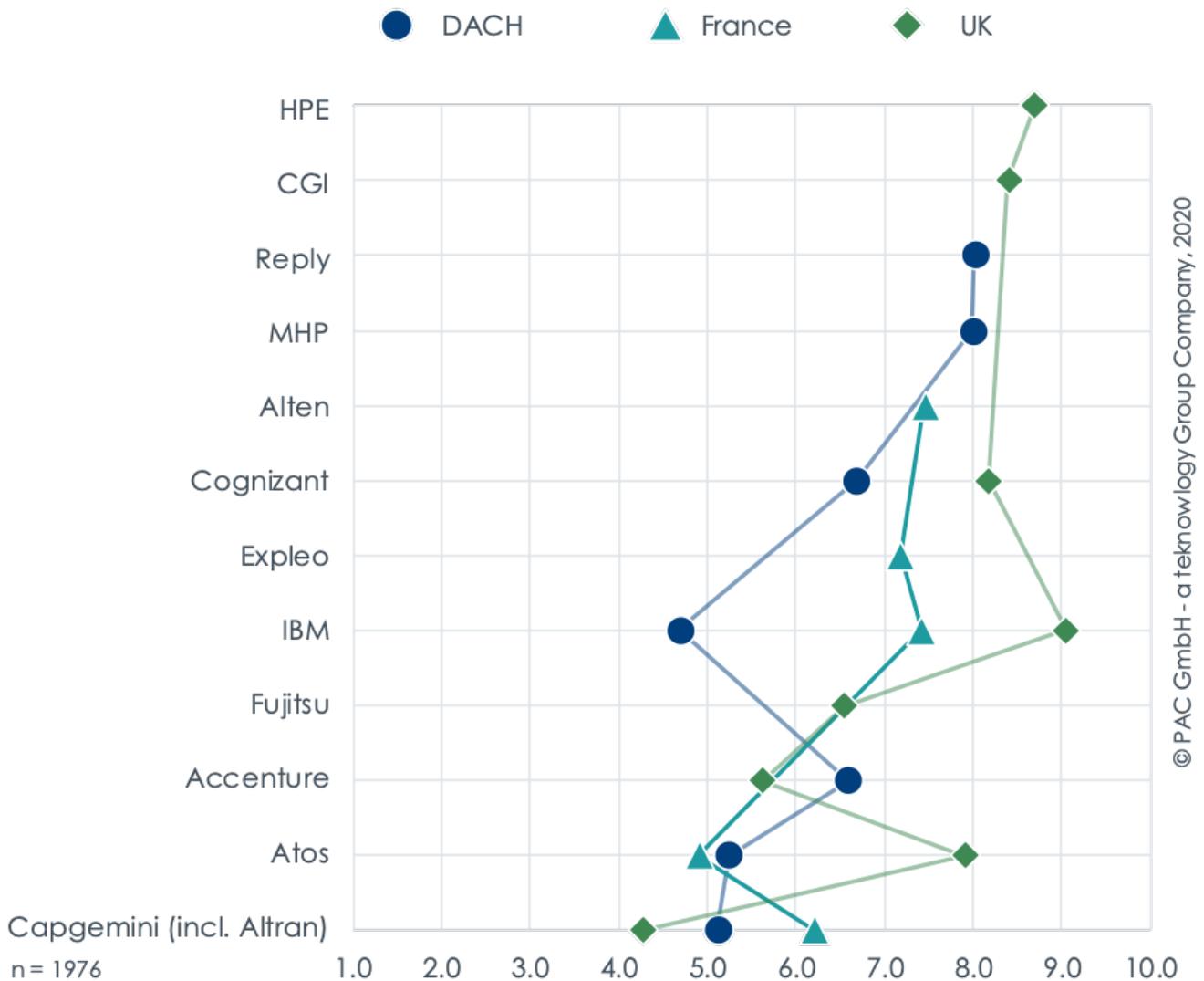


Figure 14: Collaboration – DACH, France, and UK

The graph above shows a comparison of the collaborative behavior of selected key vendors across DACH, France, and the UK. This graph shows two basic findings. First, we see a tendency for user feedback in the UK to be slightly better than in DACH, which suggests that it is somewhat impacted

by the cultural background of respondents. We often observe that people from the DACH region have a slightly more negative perspective on things. Second, the ongoing workforce reductions at IBM across Europe seem to have a more negative impact on motivation in the DACH region than in France and the UK. Maybe people in Germany are more affected than in other European countries.

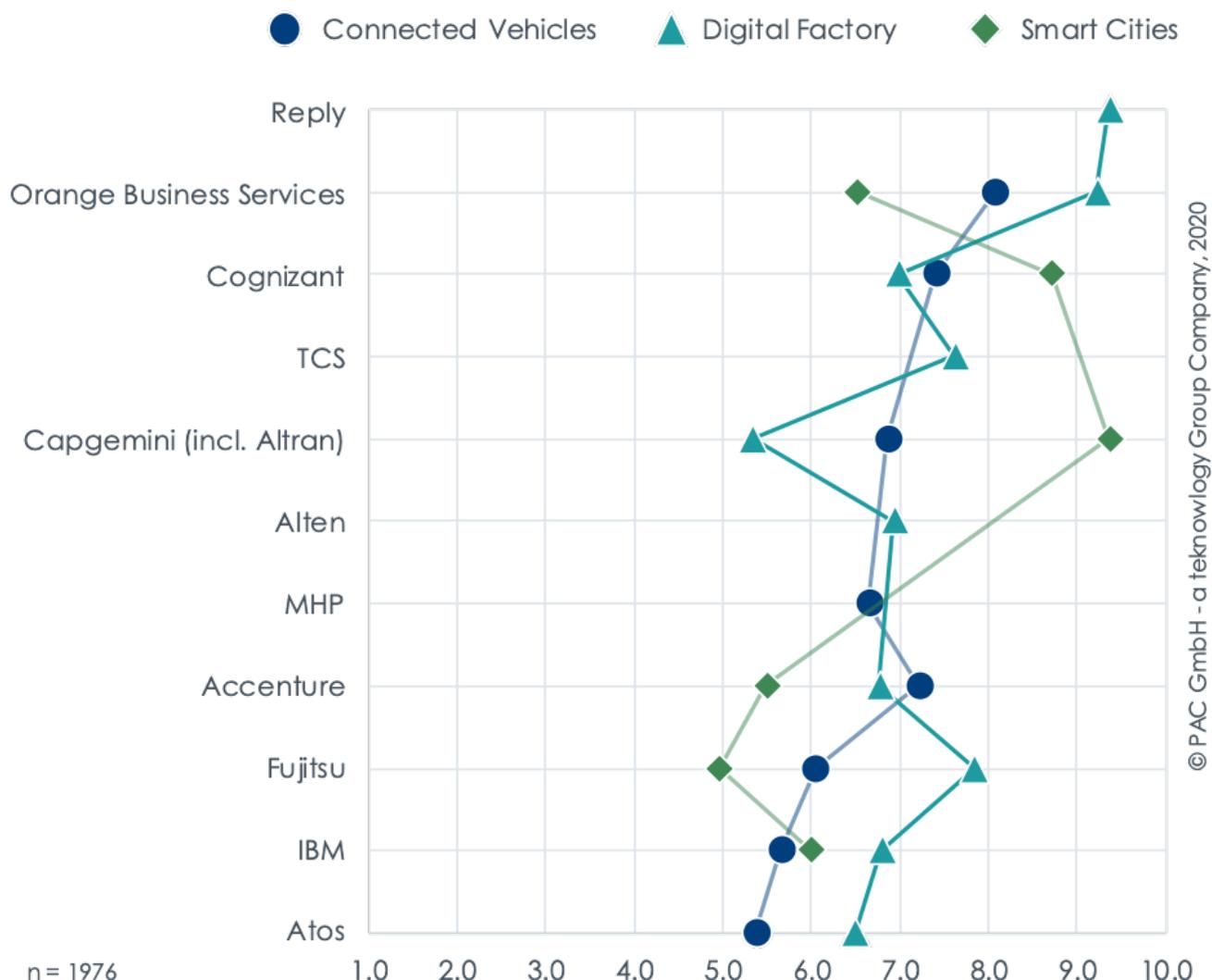


Figure 15: Collaboration – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the collaborative behavior of selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. This graph supports previous findings. The selected key vendors typically have a highly consistent company culture, not only across the globe, but also across different IoT topics. The only exception seems to be the rating for Capgemini, which unveils a broader gap between the collaborative behavior of Capgemini in digital factory (negative) and smart cities (positive). However, we do not think that Capgemini shows a strong underperformance in digital factory. From our perspective, it is more the other way around – Capgemini significantly overperforms in the smart cities space. We were not able to identify a particular reason for this. It seems to be the case that Capgemini’s i*Gov Lab is doing a good job. However, closer examination would be required to confirm this.



	Working Culture	Flexibility	Proactivity	Collaboration
Accenture			Americas DACH 🏆 Connected Vehicles	Americas Connected Vehicles
AKKA	France			
Alten		France 🏆		France 🏆
Atos			France UK Digital Factory	
Capgemini (incl. Altran)	Connected Vehicles Smart Cities 🏆	Americas Connected Vehicles Smart Cities 🏆	France Smart Cities	Smart Cities 🏆
CGI	Americas UK Consulting	EMEA	UK 🏆 Consulting 🏆	Consulting
Cognizant	EMEA DACH UK 🏆 Consulting Connected Vehicles Digital Factory Smart Cities	Smart Cities	Americas Smart Cities 🏆	EMEA UK Connected Vehicles Smart Cities
Deloitte	Smart Cities	UK Connected Vehicles Digital Factory Smart Cities	Smart Cities	Smart Cities
Expleo	France 🏆	France		France
EY			UK Connected Vehicles	
Fujitsu		Americas Digital Factory	UK Digital Factory	Digital Factory
HCL		UK	UK	
HPE	UK	UK 🏆		UK
IBM	France UK	France UK Consulting	Americas UK Consulting	Americas France UK 🏆 Consulting
Infosys		EMEA		
MHP		DACH 🏆	DACH Connected Vehicles 🏆	DACH
NTT Data		Americas EMEA 🏆 Consulting 🏆	EMEA	EMEA
Orange Business Services	Americas 🏆 Connected Vehicles 🏆 Digital Factory	Americas Connected Vehicles 🏆 Digital Factory 🏆	Americas 🏆 France 🏆 Digital Factory 🏆	Americas 🏆 Connected Vehicles 🏆 Digital Factory
Reply	EMEA 🏆 DACH 🏆 Digital Factory 🏆	EMEA DACH Digital Factory	EMEA Digital Factory	EMEA 🏆 DACH 🏆 Digital Factory 🏆
TCS	Americas EMEA Digital Factory	Americas 🏆	EMEA	Americas EMEA Digital Factory
Tech Mahindra	EMEA DACH	DACH	DACH	DACH
Tieto	EMEA			
Wipro	Americas Consulting 🏆	EMEA Consulting	EMEA Consulting	EMEA 🏆 Consulting 🏆

Table 5: Collaboration – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Customer Satisfaction

The Customer Satisfaction KPI takes two elements into account, Price to Value and Recommendation. Price to Value measures clients' satisfaction with the vendor's pricing model. The user feedback regarding Price to Value is therefore also a good indicator of a vendor's overall financial fairness. Recommendation indicates the share of users that say they would recommend a provider to others. This is a highly valid proof point for the qualitative aspect of customer satisfaction.

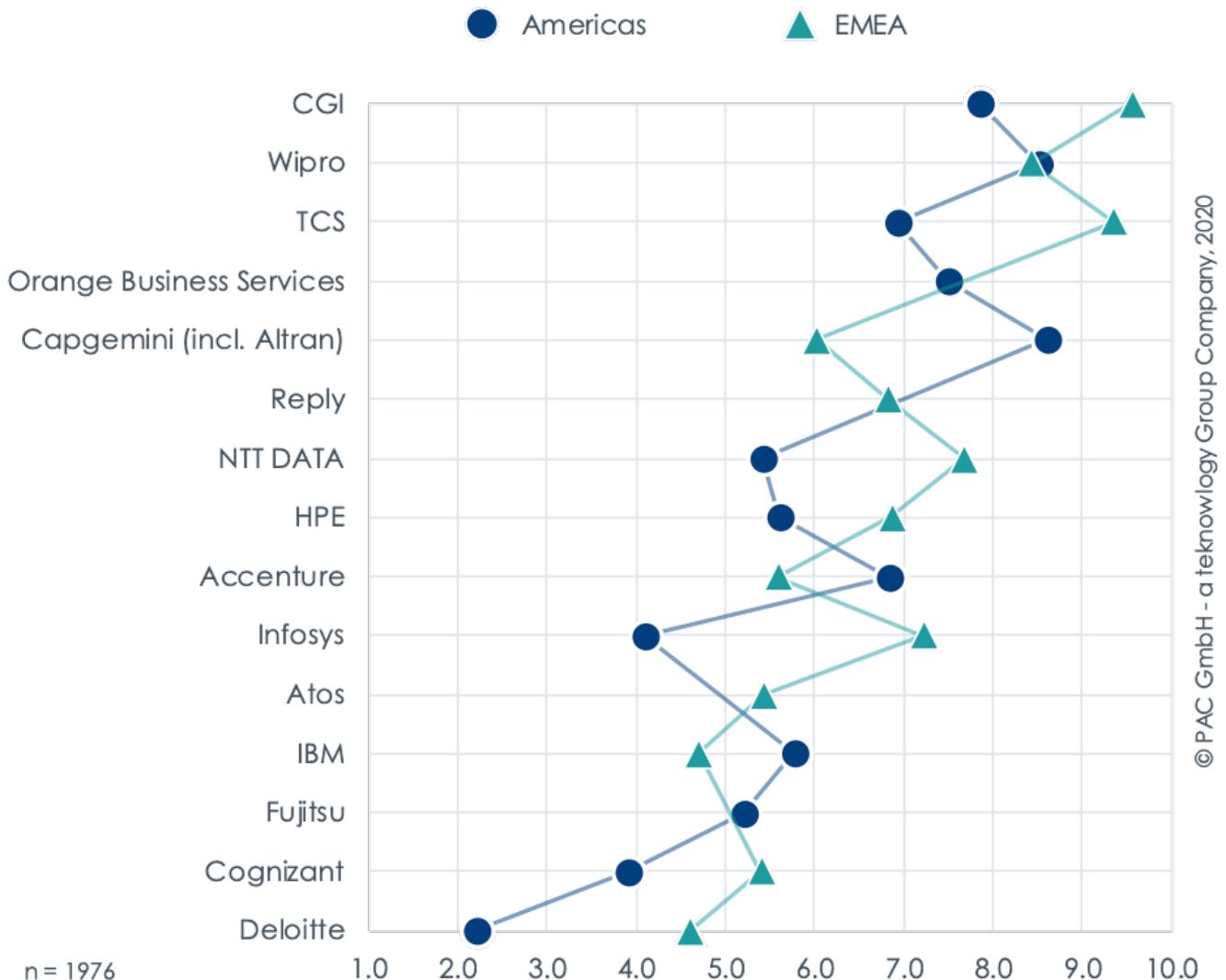


Figure 16: Customer Satisfaction – Americas and EMEA

A comparison of customer satisfaction with the selected key vendors across the Americas and EMEA produces interesting findings. Let's start with two of the leading vendors in this KPI. CGI and Capgemini are two of the top-rated vendors in customer satisfaction in this survey, but with a surprising footnote. CGI, as a Canadian vendor, got better customer satisfaction feedback in EMEA than in its Americas home region. For Capgemini, it is the other way around. The French vendor got better customer satisfaction feedback in the Americas than in its EMEA home region. This suggests that some vendors put even more effort into customer satisfaction when they address new markets outside their home region. From this perspective, it seems to us that TCS and NTT DATA (two vendors from Asia) also put more effort into customer satisfaction in the EMEA region than in the Americas. Both vendors certainly did not get bad ratings for customer satisfaction in the Americas, but they did much better in the EMEA region. We see a similar picture for Infosys



and Deloitte. Both vendors achieved much higher scores in EMEA than in the Americas. However, their ratings for customer satisfaction in the Americas are so limited that we have to conclude that they have a real weakness in the Americas, not a strength in EMEA. When looking at the sub-KPIs, we see that the negative ratings for Infosys and Deloitte are mainly due to very low scores in Recommendation, not so much in Price to Value. This means that, according to the user feedback in this survey, both vendors face quality issues rather than pricing issues in the Americas. In addition, as discussed in the previous chapter, both vendors also got negative user feedback in the Collaboration KPI. It seems that Deloitte and Infosys face the same change management challenges in the Americas.

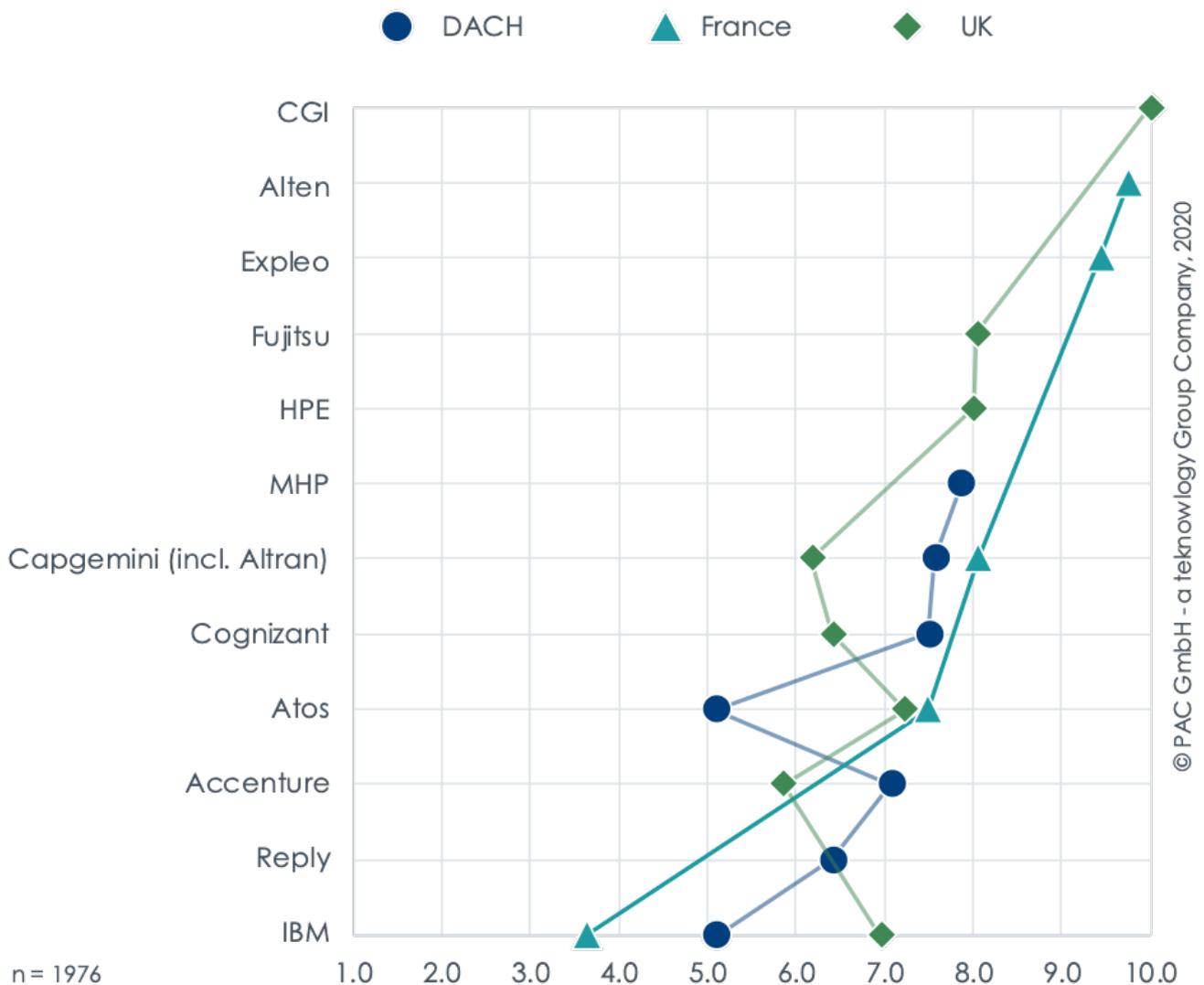


Figure 17: Customer Satisfaction – DACH, France, and UK

The graph above shows a comparison of customer satisfaction with selected key vendors across DACH, France, and the UK. It seems that the top vendors per country are real local heroes, with a limited presence in the other regions in Europe. CGI is a local hero in the UK but was not able to get enough user feedback to be included in the evaluation for the other two European regions. Alten and Expleo are local heroes in France, but they did not get enough user feedback in DACH and the UK. MHP is a local hero in DACH but also only evaluated in this region, not in the two others (not enough user feedback collected in France and the UK). As already mentioned, the scores from users in Germany are often lower than those from users in other regions. This is also the case for the leading vendor MHP in DACH in comparison to CGI in the UK, and Alten and Expleo in France. When we look into country-specific differences in the evaluations of individual vendors, we note that these differences are often very limited. The biggest exceptions in this respect are Atos

and IBM. Users' evaluation of Atos shows a gap for the DACH region, which is most likely again related to the acquisition of SIS in the past. Users' evaluation of IBM in DACH, and especially in France, also shows a gap. It seems that workforce reduction programs do more damage to employee motivation in DACH and France, and also have an impact on client satisfaction.

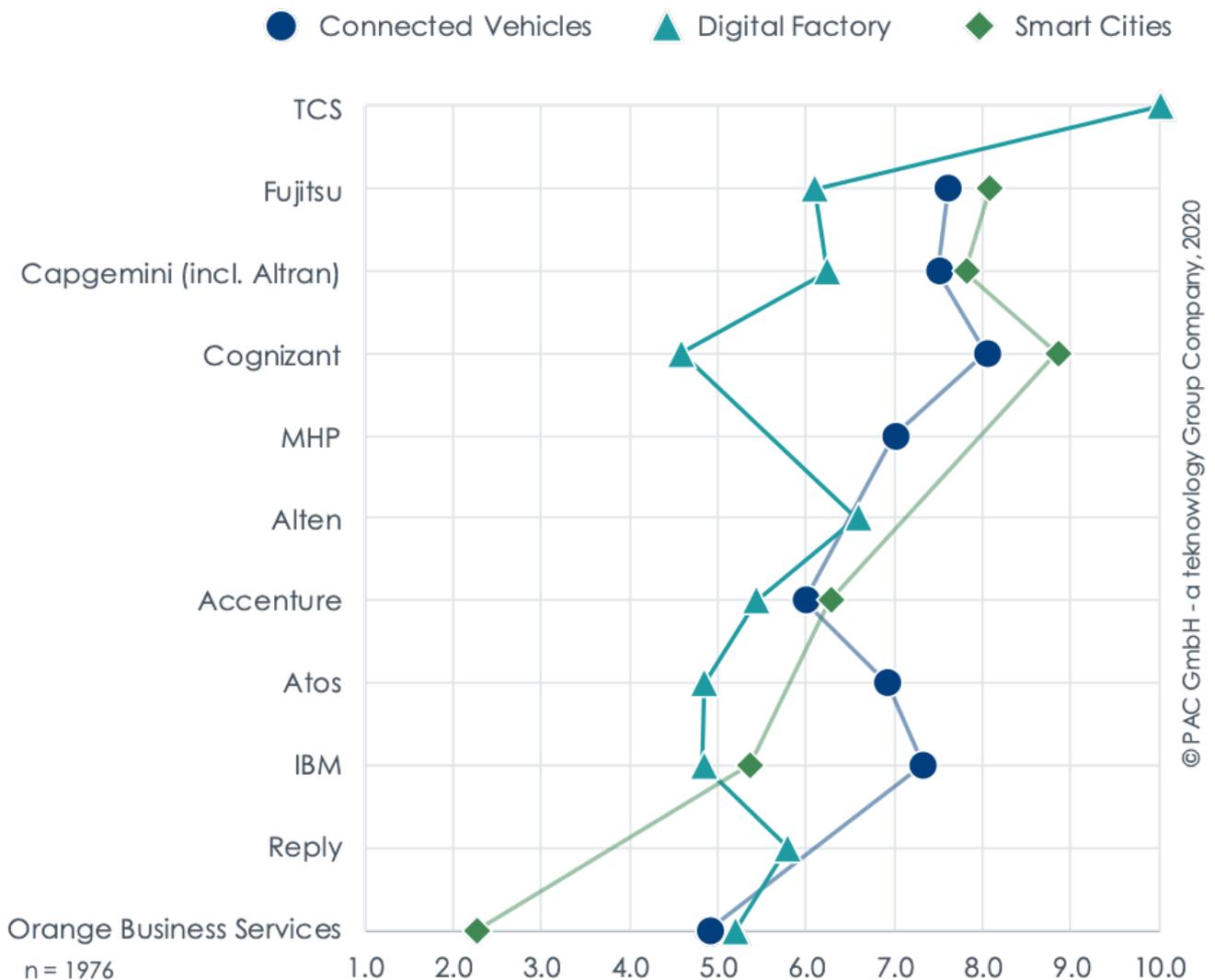


Figure 18: Customer Satisfaction – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares customer satisfaction with selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. While TCS achieved the best scores in the digital factory space, Capgemini and Fujitsu got the best combined customer feedback across all three topics. The evaluation of Accenture is also remarkable. No other vendor was able to narrow the corridor of different user feedback across the three IoT topics so much. It seems that Accenture has implemented a well-functioning quality control system for IoT solution development and implementation projects, which guarantees solid project outcomes – not necessarily the best outcomes, but most in line with client expectations.



	Price to Value	Recommendation	Customer Satisfaction
Accenture	Americas	Digital Factory	
Actemium	France Digital Factory	France	France
Alten	France Digital Factory	France Digital Factory	France Digital Factory
Atos		UK	UK
Capgemini (incl. Altran)	Americas DACH Consulting Digital Factory Smart Cities	Connected Vehicles Smart Cities	Americas DACH Connected Vehicles Digital Factory Smart Cities
CGI	EMEA UK Consulting	Americas EMEA UK Consulting	Americas EMEA UK Consulting
Cognizant	Connected Vehicles Smart Cities	DACH Connected Vehicles Smart Cities	DACH Connected Vehicles Smart Cities
Expleo	France	France	France
Fujitsu	UK Connected Vehicles	UK Digital Factory Smart Cities	DACH UK Connected Vehicles
HCL	Americas UK Connected Vehicles Smart Cities		
HPE	UK	EMEA UK	UK
Infosys	EMEA		
MHP		DACH Connected Vehicles	DACH
NTT Data		EMEA Consulting	EMEA Consulting
Orange Business Services		Americas	Americas
Reply		DACH	
TCS	Americas EMEA Digital Factory	EMEA Digital Factory	EMEA Digital Factory
Tech Mahindra	EMEA DACH		EMEA
Vodafone		Americas	
Wipro	EMEA Consulting	Americas EMEA Consulting	Americas EMEA Consulting

Table 6: Customer Satisfaction – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

Business Value

The Business Value KPI takes two aspects into account – Efficiency and Effectiveness. Efficiency refers to the extent to which a provider manages to stay within or even under budget. Effectiveness is based on how well a provider supports customers in meeting their business objectives.

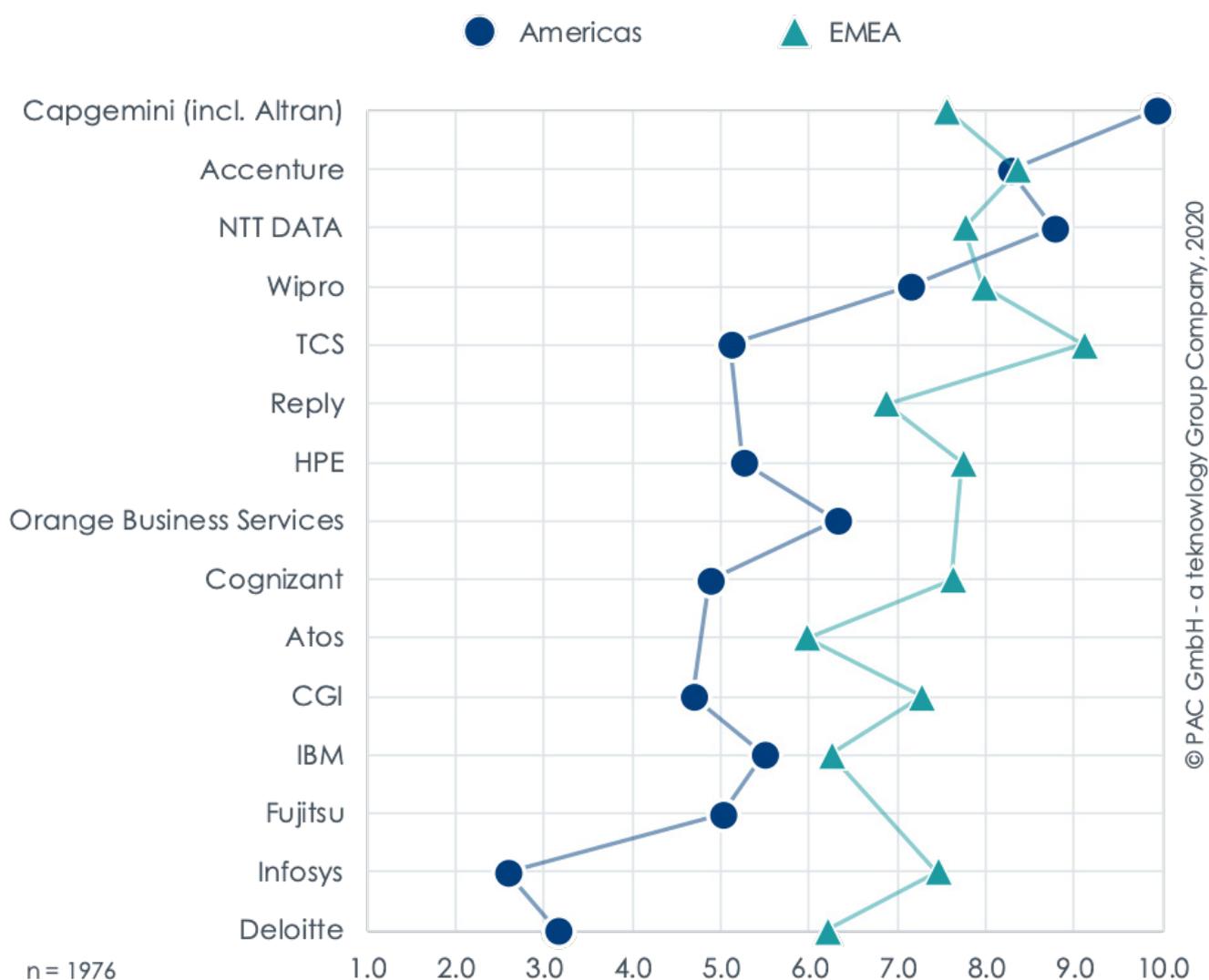


Figure 19: Business Value – Americas and EMEA

A comparison of business value ratings for the selected key vendors across the Americas and EMEA produces two interesting findings. The first finding is vendor-specific. While Capgemini is the top-ranked vendor in the Americas, Accenture again achieves consistently strong results across different areas. In this case, no other vendor is better than Accenture at balancing the perceived business value they deliver to their clients across EMEA and the Americas. Two other vendors, NTT DATA and Wipro, are comparatively good at this. On the other hand, two Indian vendors, TCS and Infosys, show by far the biggest gap in their business value performance from a user perspective. It is remarkable that both vendors scored much better in EMEA than in the Americas – especially given that both vendors do much more business in the Americas than in EMEA (around twice as much). The second finding is related to an emerging pattern. Besides the top three vendors in terms of business value – Capgemini, Accenture, and NTT DATA – we observe an interesting pattern emerging. For all the following ranks in this graph, the user feedback in this survey regarding business value is more positive in EMEA than in the Americas. What's more, when comparing the user feedback between EMEA and the Americas, this feedback seems



to be somehow correlated, and a corridor emerges between the two regional groups of survey participants. The reason for this is unclear. From our perspective, there is no obvious reason for this phenomenon; in fact, from a cultural perspective, we often observe a reverse tendency (user feedback is sometimes more positive in the Americas than in EMEA). Possibly, IoT projects in Europe have already reached a higher maturity level and therefore provide a higher business value in many cases.

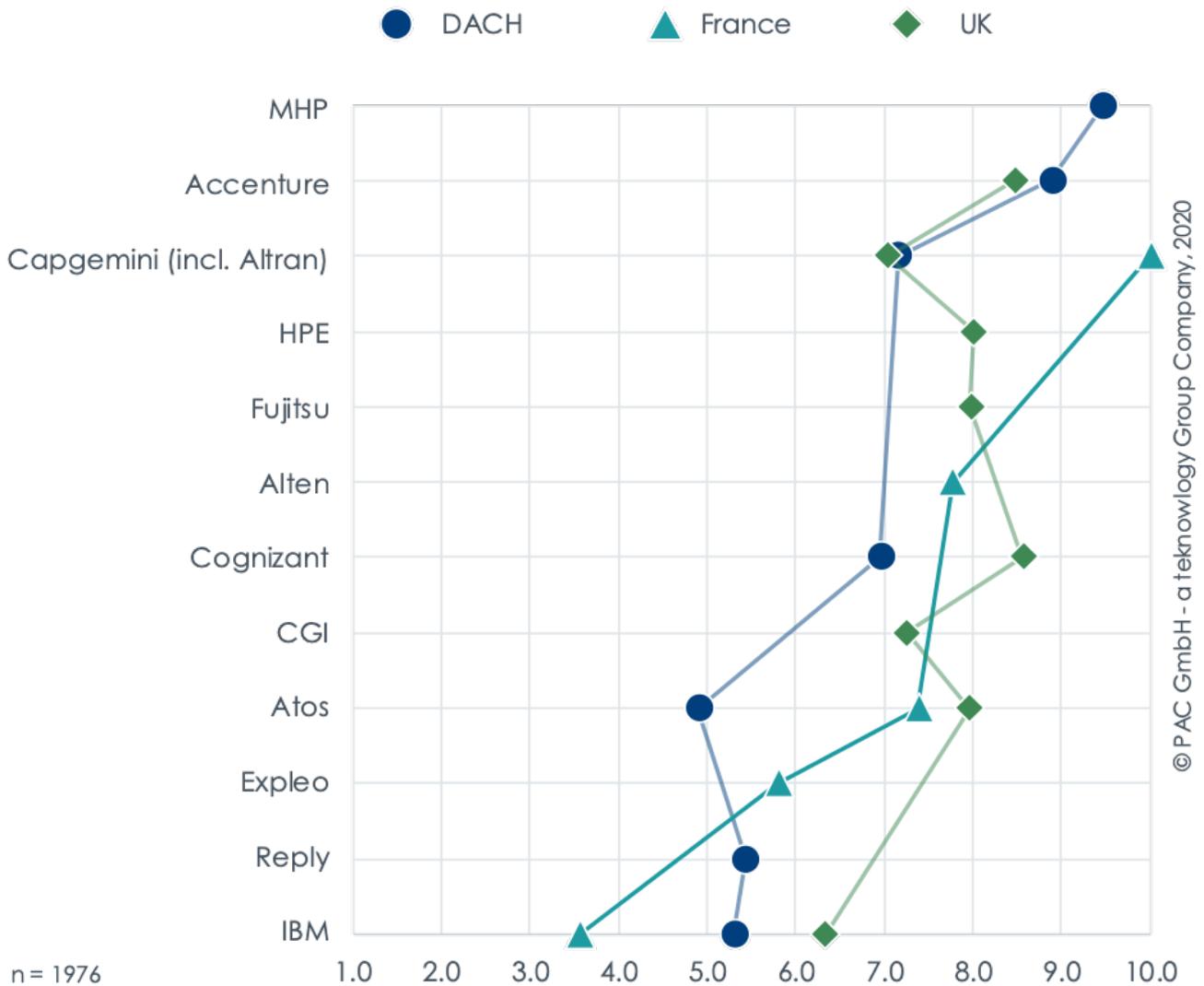


Figure 20: Business Value – DACH, France, and UK

The graph above shows a comparison of business value across selected key vendors for DACH, France, and the UK. Depending on the region you are looking at, MHP (in DACH), Accenture (in the UK), and Capgemini (in France) respectively are the top vendors at a local level. However, when we look at the scores for the top 9 vendors (i.e. the list of vendors between MHP and Atos in the graph above), we see that all of them achieved quite good ratings (above 7.0) across all the regions for which they were evaluated. The only exception is, once again, Atos in DACH, which is most likely again due to the acquisition of SIS. This illustrates that most users across Europe are quite happy with the business value they get from most vendors. Surprisingly, IBM is at the very bottom of this list of top providers, across all three regions.

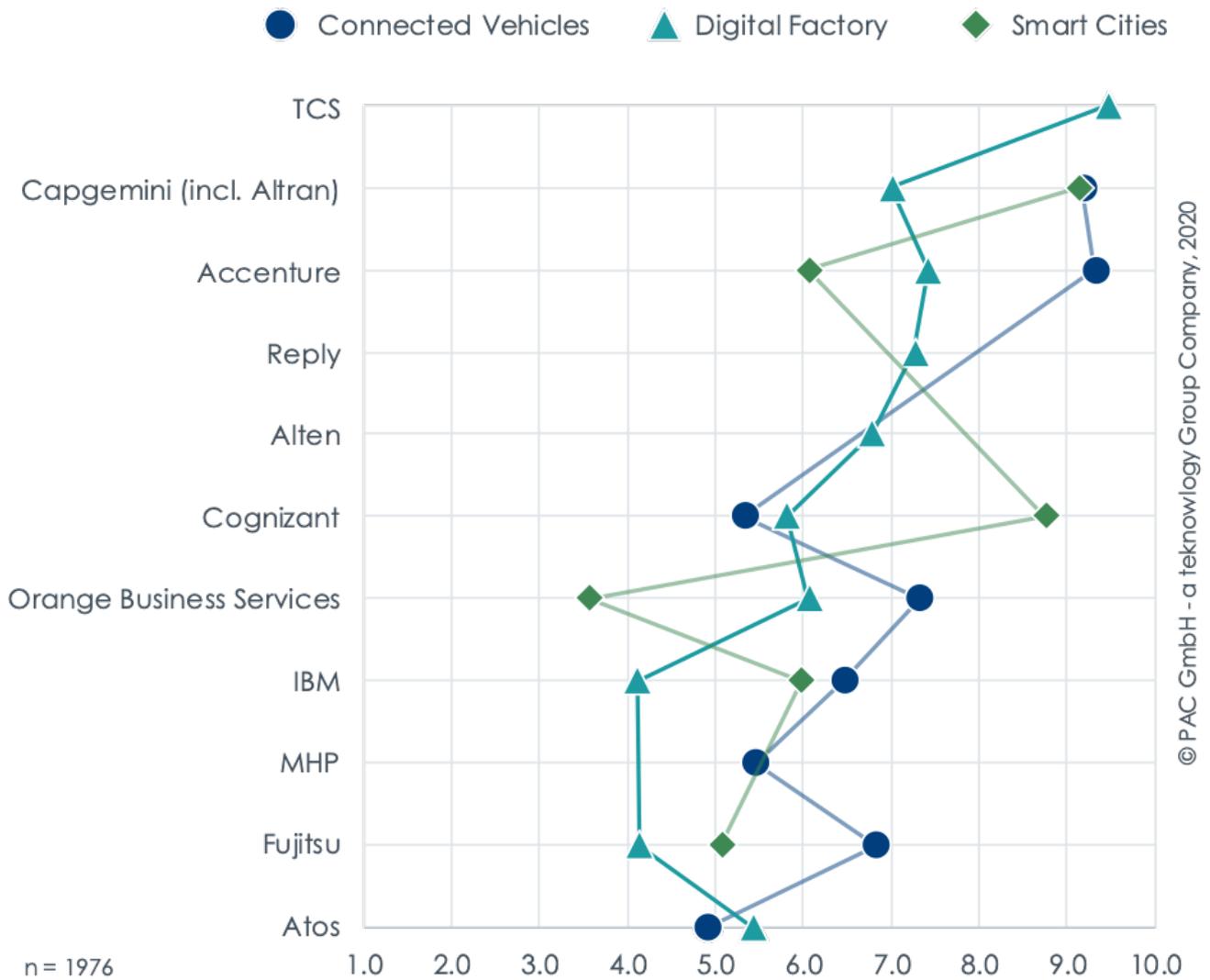


Figure 21: Business Value – Connected Vehicles, Digital Factory, and Smart Cities

The graph above compares the perceived business value for selected key vendors across the IoT topics of digital factory, smart cities, and connected vehicles. In short, no vendor ranks top across all three topics. Overall, Capgemini got the most positive user feedback for business value across the three topics. They achieved very high scores for connected vehicles and smart cities, and quite good ratings for digital factory. TCS got outstanding user feedback for delivering business value for the digital factory. Accenture got very good user feedback on the overall Business Value KPI, but rather negative feedback for the Effectiveness sub-KPI with regard to its smart city projects. The same is true for Reply in digital factory. Our survey shows very strong results for the Effectiveness sub-KPI, but below-average results for Efficiency.



	Efficiency	Effectiveness	Business Value
Accenture	Americas DACH Connected Vehicles	Americas EMEA DACH UK Connected Vehicles Digital Factory Smart Cities	Americas EMEA DACH UK Connected Vehicles Digital Factory
Actemium	Digital Factory		
Alten	France	France	France
Atos	France UK Digital Factory		France
Capgemini (incl. Altran)	Americas DACH France Consulting Smart Cities	Americas France Connected Vehicles Digital Factory Smart Cities	Americas France Consulting Connected Vehicles Digital Factory Smart Cities
CGI	UK Consulting		Consulting
Cognizant	EMEA DACH UK Smart Cities	Smart Cities	UK Smart Cities
Expleo		France	
Fujitsu		Americas UK	
HCL	EMEA Connected Vehicles Smart Cities		Smart Cities
HPE	EMEA Digital Factory	UK	UK
IBM		Americas UK Consulting Connected Vehicles	
MHP		DACH	DACH
NTT Data	Americas Consulting	EMEA Consulting	Americas EMEA Consulting
Orange Business Services	Connected Vehicles		Connected Vehicles
Reply		EMEA Digital Factory	Digital Factory
TCS	EMEA Digital Factory	EMEA Digital Factory	EMEA Digital Factory
Tech Mahindra	EMEA	DACH	EMEA DACH
Vodafone	Americas		
Wipro		EMEA Consulting	Americas EMEA

Table 7: Business Value – ranking among top ~20% of respective peer group; golden laurel icon indicates the top-ranked provider

About teknowlogy Group

teknowlogy Group is the leading independent European research and consulting firm in the fields of digital transformation, software, and IT services. It brings together the expertise of two research and advisory firms, each with a strong history and local presence in the fragmented markets of Europe: **CXP** and **PAC (Pierre Audoin Consultants)**.

We are a content-based company with strong consulting DNA. We are the preferred partner for European user companies to define IT strategy, govern teams and projects, and de-risk technology choices that drive successful business transformation.

We have a second-to-none understanding of market trends and IT users' expectations. We help software vendors and IT services companies better shape, execute and promote their own strategy in coherence with market needs and in anticipation of tomorrow's expectations.

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