Summary

Catalyst

As is well recognized today, the payments market is going through an unprecedented period of change, driven by new technologies, new services, and changing customer expectations. These changes are being felt throughout the payments value chain, and this is having a profound impact on the infrastructure underpinning the payments space. This includes the card-issuing, processing, and payment-acquiring space. Many issuers, however, rely on outdated infrastructure that has, in many instances, been in use for decades. As such, they face an increasingly difficult struggle of trying to keep up with the rate of development in the payments market, and must consider modernizing their legacy infrastructure.

Legacy card management system (CMS) infrastructure is increasingly incapable of meeting today’s payment needs, and with the pace of change being as fast as it is, the need for future-proofing flexibility is paramount. Issuers are faced with a variety of new entrants to the payments market, both in the cards space and in emerging channels such as mobile and online, and a growing need for product agility and innovation. While many banks have historically developed their own platforms in-house, this approach is no longer tenable given the growing complexity and rate of change in payments and the huge level of resources needed to maintain a competitive platform.

The CMS space remains a competitive market with a large number of solutions available, many of which are offered as a hosted, managed service. This report provides a reference guide for payment providers by profiling the leading vendors and platforms in the CMS space.

Ovum view

Historically a core component of any issuer’s retail payments infrastructure, card management systems have not received the same level of attention and hype that mobile and online channels have received in recent years. In essence a bread and butter technology that drives well-established card portfolios, CMSs are easy to ignore as an afterthought as attention turns to developing new products and services on the latest channels. As a result, CMSs have for many years been less of a primary concern for issuers.

However, as the market increasingly moves towards updating legacy payments infrastructure, it is increasingly clear that CMS platforms have a critical role to play in broader modernization activities. Central to this is the fact that many CMS platforms are key planks of broader payment-hub platforms, with a growing focus on modular implementation and flexible SOA (service-oriented architecture). As a result, issuers no longer need to pursue wholesale replacement of their legacy platforms, a process that can be highly disruptive to customers and expensive to undertake. Instead, through the use of modular, wraparound functionality, issuers can enhance their payments capabilities and more rapidly develop new payment products and services on a tactical basis through modern CMS infrastructure.

As customer expectations in both the retail and corporate payments space continue to evolve, demand is growing for more personalized and targeted services and product offerings. CMSs will prove increasingly critical to enabling these new capabilities for both plastic cards and indeed to all forms of payment accounts. Modern CMSs enable issuers to manage a broad range of account types alongside cards, combined with a growing range of functionality and greater level of issuer control.
CMS platforms are not as sexy as some forms of payments innovation and technology development, but they are crucial to other forms of innovation and should be a high priority for issuers.

Key findings

- Unlike the payment switch market, the CMS space is highly competitive with no single dominant player. Even smaller-scale players are capable of having a major impact on the global market.
- Core CMS functionality is very strong across all vendor platforms on the market, further increasing already high levels of competition. Key differentiators are focused on integration and configuration capabilities, and proven track records of deployments.
- The level of competition is unlikely to subside in the near term as vendors focus on enhancing their platforms. All vendors need to focus on continual development or else they risk losing their positioning to the competition.
- The use of hosted, or as-a-service, delivery models is increasing in many markets. There is likely to be growing demand for more hybrid and flexible delivery models over time.
- Investment in CMS platforms is being driven by growing competition in the payments space, and the need for product innovation and development.
- Appetite for CMS investment is also driven by the growing use of payment service hub models. This in turn is driving the use of modular and wraparound functionality, with platforms being used for very specific functions that can be tactically deployed.

Defining a payment card management system solution

Card management systems enable the card product lifecycle

Card management systems have long been a critical plank underpinning issuers' payment card products and services, by providing one centralized platform to coordinate a broad range of specific card-related activities and services. The range of this functionality continues to expand as new channels and payment tools become available, and encompasses the full span of the card lifecycle. For the purpose of this Decision Matrix, Ovum defines a CMS platform as a software or hosted service that allows for the management of payment cards throughout their lifecycle. Most CMS functionality revolves around three primary areas: issuing, commodity processing, and acquiring, which are detailed below.

- **Issuing** – Card origination, dispute resolutions, limit management, credit scoring, account management, etc.
- **Commodity processing** – Switching, routing, authorization, clearing, and settlement. Processing and, in particular, switching are often separate from other CMS functions and are not integral to the platform. Despite this, most CMS platforms offer some form of commodity processing.
- **Acquiring** – Merchant servicing, security management, data management, access functions, etc.
CMS platforms are easily among the most critical components of any issuer’s technology stack, and any failures or problems here will create major service outages and considerable customer fallout. This has helped to drive a need for modularity in platform design, and this need is strengthened by the fact that many issuers continue to rely on legacy in-house systems. Replacing these outright can be challenging as service disruption must be avoided.

Card management systems were first developed to help banks manage and automate their card portfolios as the market for electronic payments first expanded beyond issuers’ top-tier clients. Over time, the range of functionality possible on a CMS platform has also expanded to include an ever-greater range of functions and services. A growing number of vendors have even gone so far as to expand their platforms beyond initial plastic card–based products to encompass the management of a broad range of accounts and services, including loans and loyalty programs. This is now expanding further to include mobile services and virtual accounts.

Similar CMS platforms are also used for broader smart card–based systems, such as are often used for transport, access control, and some loyalty systems, including a focus on card origination and account management functionality. Many of these systems, however, are not used for the financial services space, and as such are not relevant for issuers.

The CMS space is changing due to the rise of the payment hub

As with other components of back-office payments infrastructure, the CMS market has been profoundly impacted by the growing prevalence of payment hubs and hub-like platforms. These broad-ranging platforms are designed to consolidate nearly all aspects of payment functionality into one centralized architecture. This is intended to reduce maintenance costs, increase functionality, and speed the development of new products and services, regardless of payment channel or tool. Understandably, CMS functionality is a key component of these newer hub platforms and strategies.

The growth of the payment hub as a design principle has been strongly impacted by the overall growth in electronic consumer payments, and the pace of payments diversification. Interestingly, many vendors have redesigned or added stronger integration functionality, including through separate integration layers, to older payment and CMS platforms. This makes it possible to enable a suite of what were once separate payment platforms into one broader hub service.

The CMS space remains closely aligned with the payment switch market, particularly due to the fact that many vendor platforms offer both CMS and switching functionality via the same central payments platform. As with the payment switch market, the CMS market has expanded in recent years as issuers and third-party processors upgrade their payments infrastructure away from legacy, heavily siloed architecture in favor of flexible, all-encompassing, hub-like platforms for payments. These retail payment hub platforms represent a significant change in design approach for most vendors today, with a majority of CMS platforms forming part of a broader payment platform play.

Arguably, the growth of the payment hub, buoyed by the use of hosting and software-as-a-service deployment scenarios, means that the day of the truly standalone CMS platform may soon be over in favor of the broader payments hub model. Modular design, flexibility, and standalone deployment functionality means that, despite this shift, vendors will still be able to compete on their individual CMS capabilities, and in many ways this will act as an inroads to broader platform deployment. In essence, beginning with improvements to the CMS opens a window for full replacement of the payment platform.
Figure 1: Payment hub platforms are consolidating CMS and other functionalities

Source: Ovum

Appetite for CMS investment is high as issuers seek greater functionality

Levels of investment in CMS platforms are high globally, driven by a combination of the need to update legacy payments infrastructure, and issuers seeking to enhance the functionality of their existing systems. As the volume of both payment transactions and payment channels continues to grow, existing infrastructure is placed under greater pressure; this is exacerbated by growing demand for other services such as loyalty and rewards, and noncard-based, small-value loans.

As shown in a recent Ovum survey of payment decision-makers from global financial institutions, levels of current and planned investment in CMS systems remain very high, with well over two-thirds of organizations reporting they are or soon will be investing in their infrastructure. Interestingly, levels of investment were generally higher among larger institutions, which may reflect a greater use of platforms deployed on-site, compared to smaller organizations where hosting may be more common. Alongside this, larger organizations may have more complex needs due to multi-regional activity, M&A activity, and the use of domestic payment schemes. With this added complexity, their need for a modern CMS is high.
Although the level of investment in CMS is high, in most instances this does not include a full-scale replacement of existing CMSs, but rather focuses on platform enhancement and development. This is aided by most CMS vendors' focus on continual development for their platforms and the growing prevalence of wraparound and standalone deployment capabilities on many systems. This is aided by the highly prevalent use of SOA design principles in most platforms in the CMS space, and a significant focus on integration, configuration, and flexibility among the leading platforms.

The challenge with CMS technology that all issuers must contend with is the fact that the pace of payments growth and diversification means that CMSs require continual development and maintenance. This shows no sign of slowing in the near term. In turn, this is further impacting the development and design of CMS platforms towards a greater focus on configuration and flexibility capabilities.

The CMS market is crowded and largely commoditized

For issuers, the CMS market offers a bewildering variety of choice between platforms and vendors, including a large number of third-party processors who offer hosted and managed CMS services. The core functionality of CMSs is very well established and has been in use for many decades. As a result, most systems are more than capable of meeting most issuers' needs. This high level of competition means that for CMS vendors they have no choice but to continue to invest heavily in their platform to help develop broader functionality and increase flexibility, to help gain an edge in what is a largely commoditized market.
Tellingly, unlike the payment switch space in which ACI Base24 dominates, no single vendor dominates the CMS space. Numerous very large financial service technology providers remain active in the CMS space, including the likes of TSYS, Worldline, CSC, FIS, and ACI, who hold an extremely strong level of influence across the financial services space due to their size and range of activities. Despite this, the market is also characterized by numerous small-scale and growing players who hold considerable market positioning, including the likes of OpenWay, BPC, and Compass Plus.

This high level of competition is further impacted by the growing role of hosted and payments-as-a-service delivery models employed not only by some CMS vendors but also by major third-party payment processors. Hosting and managed services has long had a role to play in the CMS space, particularly in the US due to its large number of small, regional financial institutions, which lack the scale to make an in-house CMS capability economically viable. However, overall usage of hosting services is now increasing. Hosted and managed CMS services can in many instances simplify issuers' back-office infrastructure, while providing a simpler way to ensure an up-to-date technological capability, and this is now becoming an attractive proposition even for large-scale issuers.

**Vendor solution selection**

**Inclusion criteria**

This report provides a quantitative and qualitative representation of Ovum's view of the competitive market environment within the CMS sector.

While the list of vendors is not intended to be exhaustive, Ovum believes it is representative of the market and offers an in-depth analysis of the leading vendors of CMS platforms for use in the global payments sector.

The nine vendors and their thirteen solutions considered in this report are listed in Table 1.

<table>
<thead>
<tr>
<th>Vendor</th>
<th>CMS platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACI</td>
<td>Card and Merchant Management (CMM) Suite</td>
</tr>
<tr>
<td>BPC</td>
<td>SmartVista</td>
</tr>
<tr>
<td>Compass Plus</td>
<td>TranzAxis and TranzWare</td>
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<tr>
<td>CSC</td>
<td>Celeriti</td>
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<tr>
<td>FIS</td>
<td>Base2000 and Cortex</td>
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<tr>
<td>OpenWay</td>
<td>Way4</td>
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<tr>
<td>Sopra</td>
<td>Banking Cards</td>
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<tr>
<td>TSYS</td>
<td>Prime</td>
</tr>
<tr>
<td>Worldline</td>
<td>Ascend, Cardlink II, and Pay</td>
</tr>
</tbody>
</table>

Source: Ovum

Although there are a number of smaller regional and other mid-to-large-size players, the vendors shown here include some of the largest platforms by the scale of their market presence, alongside
high-growth players with regional coverage and a particularly strong platform offering. The decision to include a vendor and its solution for evaluation in this report was based on the following criteria:

- The solution must be judged, in an initial assessment by Ovum analysts, as having mid- to long-term potential.
- The solution must be a platform developed by that vendor. Hosted CMS services operated by third parties, other than the platform developer, are not included in this Ovum Decision Matrix.
- The solution must be applicable to financial service players and/or existing payment providers.
- The solution must be capable of providing CMS capabilities for more than one payment tool or channel.
- The solution must be available in multiple geographies, or hold a significant positioning in the vendor's home geography, with potential for future expansion.
- The vendor must provide Ovum with sufficient information to allow an accurate assessment, including a complete response to Ovum's request for information (RFI) document, and an in-depth briefing.

**Overall assessment**

In this Decision Matrix, Ovum provides a summary of each vendor's CMS platform capabilities based on a quantitative assessment of its influence on the CMS market and the quality and breadth of the functionality provided by its platform and underlying technology. Alongside this, Ovum provides an assessment of each vendor's execution capabilities in providing support and resources to aid in implementation.

Ovum notes the comparisons and relative positioning of each of the platforms discussed here are in relation to the capabilities of that individual platform itself, and is not an overall rating of that particular vendor. Many vendors hold multiple platforms that operate within the same or a very similar space, and these are each rated on their own individual merit.

Enterprises seeking a CMS platform are advised to consider their own strategic goals as the top priority in selecting a vendor. The vendors profiled here represent among the best, but not all, of the players on the market today.

Achieving full value from a CMS platform is critically dependent upon the solution's ability to execute a payment provider's overall strategy. A decision to purchase a particular platform should therefore be based on a broad array of factors, including the degree of alignment between the solution's functionality and underlying technology on the one hand, and an institution's own particular business and payment functionality requirements, project scope, organization size, and regional location on the other. As a result, Ovum's assessment should only be considered within the context of payment providers' specific requirements.

**Methodology**

The assessment is based on the following methodology:
Based on Ovum's initial assessment of the CMS market globally, a number of vendors were invited to respond to a detailed RFI that required them to provide data and supporting documentation around three primary criteria: technology, execution, and market impact.

In addition to the RFI response, Ovum invited vendors to provide solution briefings. Analysis for the three primary criteria was based on a scoring assessment exercise undertaken for a number of subcriteria. For each response within the RFI that aligned to the respective subcriteria, Ovum rated vendors on a scale of 1–10 based on a consistent set of best-practice criteria or benchmarks defined by Ovum. We then aggregated the subcriteria scores to provide a score for each primary criterion.

Weightings are used in the analysis to calculate scores for both subcriteria and primary criteria. The weightings are based on analysis of the typical importance of each criterion in the selection process for CMS platforms.

Ovum ratings

In this Decision Matrix, Ovum provides a summary of each vendor platform's CMS capabilities based on a quantitative assessment of its influence on the global CMS market and the quality and breadth of the functionality provided by the platform and its underlying technology. Ovum also provides guidance for institutions looking to deploy CMS platforms, and advises whether they should shortlist, consider, or explore solutions from the vendors assessed in this report. Ovum defines each of these recommendations based on the vendors' positions in the market:

- **Market leader**: This category represents the leading solutions that we believe are worthy of a place on most technology-selection shortlists. The vendor has established a commanding market position with a product that is widely accepted as best-of-breed.
- **Market challenger**: The solutions in this category have a good market positioning and are sold and marketed well. The products offer competitive functionality and a good price-performance proposition, and should be considered as part of the technology selection.
- **Market follower**: Solutions in this category are typically aimed at meeting the requirements of a particular kind of customer. As a tier-one offering, they should be explored as part of the technology-selection process.

**ACI, BPC, OpenWay, TSYS, and Worldline are market leaders**

Indicative of the level of competition within the CMS space, several vendors stand out as market leaders for their individual platforms; these include platforms from ACI, BPC, OpenWay, TSYS, and Worldline. All of these players stand out as frontrunners due in large part to their strong technology capabilities, combined with proven capabilities in executing deployments into complex financial services environments.

Of particular note among these market leaders is the fact that these platforms hold very strong technology capabilities in terms of business user control and configuration with a strong focus on enabling modular functionality across the CMS platform. What were once clearly delineated payment platforms targeted at providing all functions are now giving way to mix-and-match technology where end users can tactically deploy functionality as and when required. In an age of such rapid payments diversification and the need for legacy modernization, this form of modular flexibility is not only critical to how these systems are developed now, but will continue to be in the future as well.
These market leaders all have a proven track record of deployments with large-scale vendors operating in complex market environments and all hold a strong global presence with continued potential to expand further. ACI in many ways represents the establishment, being an older yet still robust platform with high levels of continued development and functionality. OpenWay and BPC are both relatively newer providers on the market but have quickly carved out a global position for their platforms. TSYS and Worldline also remain vendors to watch as major technology vendors and payment providers now updating their capabilities to the latest technologies, and will likely have a profound impact on the market based on their historic positioning.

Ovum stresses, however, that the CMS space is in many ways a commoditized market and the level of competition remains extremely high. The line of separation between market followers and market leaders is a fine one, and given time could change rapidly. As such, all of the platforms discussed in this report are at the least worthy of exploration as part of any shortlisting exercise. For the current market leaders that means they will need to focus on continued development and innovation of their platforms.

**Figure 3: Expanded view of Ovum Decision Matrix: CMS platforms, 2015–16**

![Expanded view of Ovum Decision Matrix: CMS platforms, 2015–16](Image)

**Table 2: Ovum Decision Matrix: CMS platforms, 2015–16**

<table>
<thead>
<tr>
<th>Market leaders</th>
<th>Market challengers</th>
<th>Market followers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACI CMM</td>
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<tr>
<td>Worldline Pay</td>
<td>Worldline Ascend</td>
<td></td>
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<tr>
<td></td>
<td>Worldline Cardlink II</td>
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</tbody>
</table>

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Primary assessment criteria

Evaluation categories

As the competitive landscape may vary significantly across the evaluation categories in Ovum's Decision Matrix – technology assessment, execution assessment, and market impact – it is important to consider these categories separately in order to develop a more complete understanding of each vendor's particular strengths and challenges. The following section presents a vendor comparison in each category and discusses how they vary across the subcriteria within each assessment area.

Ovum notes the scores given here reflect a vendor's positioning against other vendors. Hence, where averages are discussed, this reflects an average of the vendors shown here and not of the overall market.

Market impact

- **CMS global market presence** – An assessment of the installed base of a vendor's CMS platform within the global payments sector. The total number of deployments by region is included in this measure with a greater weighting for deployments in mature markets.

- **Vendor's CMS focus** – An assessment of a vendor's history and activity in the CMS market, the relative importance of the CMS sector to the vendor's revenue stream, recent CMS-related acquisitions, and the organizational structure supporting the vendor's activities in the CMS sector.

- **Platform market growth** – An assessment of new CMS platform clients acquired by the vendor in the preceding 24 months. Consideration is also given to major client deployments that have achieved substantial growth.

- **Scale of CMS deployments** – An assessment of the scale of the CMS programs being deployed by the vendor, including the largest number of accounts managed on a single deployment, and a theoretical maximum for the platform.

- **Vendor scale** – An assessment of a vendor's direct presence, scale, and resources within various geographic regions, including the level of staff the vendor has dedicated to CMS products.
Surprisingly, the largest vendors in the CMS market do not necessarily hold the highest overall level of market impact. While size does of course matter, broader capabilities and, crucially, reputation can have a stronger impact on the market overall. Although a significantly smaller player than some of its multibillion-dollar competitors, OpenWay emerges with the highest level of overall market impact, aided by some of the largest CMS deployments in the market today with numerous high-profile organizations, and its core focus on its Way4 CMS platform.

The payments space ultimately remains a conservative market where issuers want the latest technology, but are wary of taking risks with unknown brands and technologies. As platforms expand and increase their rate of growth, this can become self-fueling and help drive emergent players like BPC to significant levels of market momentum. Given time, however, newer platforms from major brands such as CSC Celeriti and Worldline Pay are likely to expand very rapidly given the overall marketing positioning of these vendors in the payments and technology space.

Some platforms have an extremely high market presence in key geographic regions, but this was not always evenly distributed on a global basis. FIS Base2000 notably stands out for a major presence in the US card space, accounting for some 70% of the market, and while active in other regions, this was not to the same scale. Although the viability of some platforms will be stronger in select markets, Ovum notes that all of the market leaders, ACI, BPC, OpenWay, TSYS, and Worldline, hold a global presence, aiding their overall level of market impact.

**Technology assessment**

- **Platform architecture** – An assessment of a vendor's platform architecture through examination of the platform design approach, use of SOA principles, operating system/database dependencies, integration approach, and adoption of standards.

- **Platform roadmap** – An assessment of the range, innovation, and granularity of a vendor’s platform roadmap by assessing both the functional and technology developments planned for the next 24 months.

- **Core functionality** – An assessment of the breadth and depth of functionality to support CMS requirements, the ability to deploy functions on a standalone basis, and support for a range of payment tools and functions, including issuing, processing, and acquiring.
- **Multi-region support** – An assessment of the international capabilities of a vendor's CMS platform, including the number of languages currently supported in live deployments, support for non-Latin characters in the CMS interface, and how multi-language support is provided in the platform itself.

- **Platform configuration and integration** – An assessment of the flexibility, comprehensiveness, and ease with which products, process workflows, and system features can be defined within a platform and how easily the platform can be integrated with other services. This assessment is derived from examining configuration toolsets, product group capability, the degree to which configuration is performed by business users, modeling functionality, training needs, and typical product implementation options and timescales.

- **Security and fraud** – An assessment of a vendor's approach to security and fraud detection and protection, incorporating both the security of the platform itself and compliance with international standards, and any capabilities for fraud detection and prevention.

**Figure 5: Technology assessment by subcriteria**

From a technology perspective, all of the CMS platforms surveyed provide a solid level of functionality and many are focused on using service-oriented, modular, and future-proof architectures intended to allow for easy integration into third-party and back-office systems and high degrees of configuration through the use of dedicated interface integration layers and a heavy focus on process parametrization. The gap between many of these technology platforms remains minimal.

The key to selecting a CMS platform is careful consideration of key functionality and the continued evolution of these platforms. The payments space is not static and all CMSs are faced with a need for continual development, including for enabling new product types, channels, and services, such as loyalty. The most advanced systems such as ACI CMM, TSYS Prime, and OpenWay all have highly detailed roadmaps of development that are focused on enhancing both functionality as well as improving integration and configuration capabilities.

The difference in technology capabilities between platforms remains relatively minor, and in many instances key consideration must be placed on the issuer's own back-office infrastructure and payment needs. This further underlines the need for strong integration capabilities with third-party systems. Ovum expects this in particular to become a key competitive area of differentiation in the near term. The technology arena in particular remains viciously competitive in the CMS space, and there remains ample opportunity for market followers and challengers to quickly enhance their platforms and expand their market positioning.
Execution

- **Vendor support capability** – An assessment of a vendor’s capability to directly support clients by examining the number of support staff, level of support, and location.
- **Partner network** – An assessment of a vendor’s partner network used to implement and support payments clients. Assessment criteria include size and maturity of network, regional coverage, formal partner certification and training, and the vendor’s capabilities (including breadth of service offering, geographic coverage, and presence in the CMS sector).
- **Large-scale deployment** – An assessment of a platform’s proven scalability by examining the largest current deployments and the results of benchmark testing.
- **Multi-entity deployment** – An assessment of a vendor’s capability to support multi-entity and/or multi-regional operation within a single platform instance, by examining current deployments that operate in this way.
- **Deployment options** – An assessment of a vendor’s capability to support a range of deployment options, including on-site, hosted, and software-as-a-service methodologies. Rated by the variety of options on offer and in live deployments.
- **Training resources** – An assessment of a vendor’s capability to provide training to clients by examining the number of dedicated training staff, their location, the range of training media and formats used, and the range of courses offered.

The execution capabilities of the vendors surveyed broadly correlate to their overall size as a vendor. Large-scale vendors such as Worldline, ACI, and FIS hold the highest capabilities for execution, due largely to their extensive in-house resources, often via separate consulting and implementation arms, and established partner networks. However, again highlighting the small degree of separation between providers, even smaller-scale players such as OpenWay and BPC hold execution capabilities above those provided by larger organizations.

Critical to the CMS space, and what will ultimately likely prove a decisive consideration for many issuers, is the range of deployment options available from vendors with their particular platforms. Some platforms, such as FIS Base2000, are exclusively available on a hosted basis, and this will prove highly effective for some. However, many issuers may prefer an on-site deployment due to security reasons, or some sort of hybrid on-site/cloud deployment model. Worldline Pay currently

holds the most flexible range of deployment options. Ovum believes this hybrid, flexible approach is likely to become more common for institutions of all sizes as organizations seek to reduce the complexity of their payments infrastructure while maintaining high functionality. Ultimately, issuers will decide which deployment model works best for their organizations, but those vendors and platforms that can provide the greatest flexibility and capabilities here will likely benefit.

Vendor analysis

ACI Card and Merchant Management Suite

Background

ACI is a publicly traded technology provider active in the payments and banking space, with 4,500 employees globally and total revenue of $1.01bn in 2014, up from $864.9m the previous year. ACI is highly acquisitive as an organization and makes frequent, often high-value strategic acquisitions, including S1, owner of Postilion, in 2012.

First established in 1975 in Omaha, Nebraska, with the express intent of developing software for the Tandem NonStop platform (eventually acquired by HP), ACI launched its key product Base24 in 1982. Base24 was initially designed to handle ATM switching, before later expanding in functionality to other channels such as POS and branch systems. Base24 grew to become one of the largest payment switch platforms in use globally and grew to hold a dominant market position.

Since then, ACI has expanded its positioning in the payment card platform market through its core Base24, and now Base24-eps, platforms, as well as through its Postilion payment switch platforms. Alongside these, ACI provides a wide range of payment technologies and capabilities ranging from CMSs through to online and transaction banking, EMV lifecycle, loyalty services, etc. In 2014, ACI acquired major fraud technology provider ReD to expand its merchant fraud capabilities.

ACI’s CMS capabilities are in the form of its Card and Merchant Management (CMM) Suite, which is comprised of ACI Issuer, ACI Acquirer, and ACI Interchange. All three CMM products are built on the same technology, each of which remains a separately licensable product, with modules that can be switched off or on, and licensed, only if required. ACI has taken this approach in order to provide clients with flexibility and scalability.

ACI CMM is a component of ACI's Universal Payments (UP) platform. UP is a set of technologies and frameworks across ACI’s product portfolio that coordinate all aspects of payments, and is agnostic in the payment type, currency, network, and channels used, including across ACI products and when integrated into other third-party technologies.

Company structure

ACI CMM is developed and supported by the Retail Banking Product Management Group within ACI. The Retail Banking Product Management Group falls under the Global Product Management & Sales business unit of ACI Worldwide.

ACI places a heavy emphasis on research and development of its CMM product. Among the 400 staff members dedicated to the CMM Suite, 250 are dedicated to R&D (albeit with some notable overlap with other R&D areas within the organization). With a large presence in the US, including within its
headquarters in Naples, Florida, ACI has a significant global presence with 35 offices globally, and key payment switch R&D centers located in the UK, the US, Romania, India, and South Africa.

**Market impact assessment**

First launched in 2000, ACI's Card and Merchant Management Suite has grown to reach a significant market presence. Much of this overall growth has been helped by the ubiquity of ACI's broader payment switch activity, and the development of its UP Consumer Payments Solution. ACI's considerable payments market presence has helped the CMM solution to garner some major, large-scale clients internationally, including issuing capabilities for large-scale regional players, with 60+ million cards managed on ACI Issuer. ACI's CMM solution is primarily used by larger-scale, tier-one and -two players, but also holds a presence among tier-three clients.

Clients are primarily in the banking space, but also include several major third-party payment processors. Unlike many other CMS platforms on the market, ACI's CMM solution has a global presence, with a strong presence in Asia-Pacific, Europe, and North America, with several deployments in MEA and Latin America. Growth has been particularly high in European markets over the past 24 months.

ACI remains one of the largest payment technology vendors on the market today, giving it a high degree of influence in terms of its visibility among large-scale global enterprises. However, as a large-scale vendor, ACI is active in a number of areas, and its CMS technologies are only part of its broader focus and capabilities. Its resources outstrip those of many smaller vendors; however, its focus on the CMS space, as a portion of its total business, is inevitably lower than some other smaller specialists.

**Figure 7: ACI CMM – market impact**

![Market impact diagram](image)

**Technology assessment**

ACI's CMM product suite is built on the principle of service-oriented architecture, which supports open access by end users and other application systems. This includes a standard Web services interface to the ACI CMM server functionality. ACI's CMM solution is part of the company's broader shift to service-oriented solutions as part of its Universal Payments framework. This approach is intended to
facilitate asset reuse, improve quality, and refocus resources on enhancing ACI's core SDK. This focus on a message-based and layered architecture helps to enable strong integration capabilities through the exposure of Web services and batch interfaces, without impacting end users' front- and back-end systems.

Interestingly, the CMM solution is developed in COBOL with wraparound functionality for a GUI (graphical user interface) or integration following Web technology principles. This approach remains fairly unusual in that it allows for the functionality of COBOL, which is particularly well suited for financial transactions, but leverages more widely used development architectures, making development and integration substantially easier than with purely COBOL-based systems.

ACI's CMM Suite offers a high degree of functionality and supports a wide range of payment tools and accounts. This includes all card types, and noncard products such as fixed-term loans and loyalty programs, among other areas. CMM includes the full range of issuing, acquiring, and processing capabilities, in a highly modular fashion via SOA and the UP framework and through ACI's extensive product portfolio. Security and fraud capabilities are in line with the market, and the CMM suite is integrated into ACI's Payments Risk Management Solution. Despite being an established product on the market, the platform roadmap also remains strong with enhancements in the pipeline to enhance real-time capabilities, alongside tokenization capabilities, and added support for payment installments in various forms.

**Figure 8: ACI CMM – technology**

![ACI CMM – technology](source)

**Execution assessment**

ACI has significant support resources, and its CMS support is in line with this. Alongside its significant sales presence and regional offices, ACI operates three support centers staffed by 12 full-time employees dedicated to the CMM Suite. Although internationally active, these centers only provide end-user support in English. ACI has significant training resources and provides on-site and in-classroom training on product-parameter setting and customer-servicing functions.

ACI's CMM Suite has significant partners in place including Lean Industries, Experian, and Bell I.D., on top of the organization's broader partners such as IBM, HP, Oracle, and EMV Co. ACI also has a
proven track record of large-scale deployments, which have been active for many years, including its 10-year relationship with Moneris. Numerous deployments have included multi-entity, multi-tenant deployments.

Unlike offerings from other notable vendors, ACI CMM is currently only available for on-site installation, with future hosting capabilities in its functional roadmap for 2016/2017. ACI CMM is, however, deployed by several third-party payment processors and hence is being used in some instances as a hosted service, albeit not by ACI.

**Figure 9: ACI CMM – execution**

![Diagram showing execution metrics for ACI CMM and average across all vendors.](image)

**Recommendation: Market leader**

ACI's CMM Suite platform is not the company's most famous product offering but does serve as an extremely complementary technology to its other payment products. Its focus on modular SOA and flexible approaches to integration, however, means this CMS platform is not only compatible with ACI's broader product portfolio but provides a clear path to integrating with third-party platforms as well. This gives potential customers a clearer path to integration with their existing legacy payments infrastructure on a piece-by-piece, wraparound basis. This approach provides significant flexibility and scalability to clients.

Overall, CMM has a well-established and proven track record with large-scale, tier-one and -two clients globally, and continues to see positive growth in many markets. Smaller-scale, tier-three and tier-four players are less of a focus for ACI, with fewer live CMM deployments at this end of the market. ACI CMM also faces stiff competition from newer platforms that also focus heavily on modular flexibility and SOA design, and continued innovation will be necessary to maintain its positioning. Despite these challenges, with a high degree of market impact, alongside strong technology and strong execution capabilities, ACI CMM will likely remain a market-leading platform and is a strong candidate that should be shortlisted by large, tier-one payment providers.
BPC SmartVista

Background

Founded in 1995, privately owned BPC Banking Technologies is part of the broader BPC Group and has grown extensively since its initial launch, focusing on open system, end-to-end e-payment platforms. BPC's primary product is its SmartVista suite, which primarily targets financial services, but is also deployed in other sectors such as government, transportation, and telecommunications. BPC SmartVista is comprised of many individual modules, nearly all of which are deployable on a standalone basis, including for card issuing, personalization, switching, ATM monitoring, mobile and Internet banking, merchant management, fraud prevention, and loyalty programs, among other capabilities.

Company structure

BPC Banking Technology is independently operated and is focused almost exclusively on its SmartVista payment platform. BPC Banking Technologies is officially headquartered in Switzerland, with a direct local presence in 10 other countries globally including in the Americas, Europe, MEA, and Asia-Pacific regions.

Market impact assessment

BPC Banking Technologies' key product, SmartVista, was first developed in 1999 and has since allowed BPC to grow into a midsized player in the wider payments market, and continues to expand. In that time, it has garnered a sizeable client base with a historic focus on emerging markets, and that now includes several clients in more mature markets in North America, Latin America, and the Middle East. Although BPC originates in Russia, over 70% of its clients are now from outside the CIS region.

Although its impact on the broader payment switch space is growing, its impact on the CMS market remains somewhat smaller overall. The volume of customers using BPC SmartVista for CMS purposes, at 150 clients globally, remains very large compared to many other vendors; however, much, but not all, of this activity is with smaller tier-three and -four players, bringing down its overall level of market impact. Growth, however, remains very high, including into the tier-one space, and SmartVista's CMS functionality remains a very strong focus for BPC.
Technology assessment

SmartVista is built on a three-layer logical architecture, incorporating a presentation layer, business logic layer, and data access/persistence layer, and a three-tier physical architecture comprising a user interface Web server, application server, and database server.

SmartVista as a whole is modular in design and is comprised of a variety of modules, each with its own functionality and the ability to be deployed on a standalone basis, including card management, ATM driving, acquiring, loyalty, etc. SmartVista currently has 120 separate modules and interfaces available, all of which have been built around its initial core switching module platform and that are deployable as an online-processing or batch-processing variant. Critical to SmartVista's design is the fact that nonswitching modules can be deployed as part of the SmartVista platform on a wraparound basis on existing legacy platforms. In this way, end users can deploy SmartVista on a tactical basis to add functionality to their existing systems, including for CMS purposes.

SmartVista's CMS functionality spans the full gamut of issuing, commodity processing, and merchant management/acquiring capabilities, each of which is deployable as a standalone service. The platform supports all card types and can also be used for other forms of accounts, such as loyalty, microfinance, ID, transport, and fleet cards, and is configurable for use with alternative funding sources and recipients, such as mobile accounts and social network IDs.

Configuration is based on the parameterization of business functions and as a result most product configuration is done directly by business users. This is enabled through one-off changes to the products during the cornerstone configuration stage of deployment. With its heavily modular design, a strong range of functionalities can also be achieved and configured by users by adding new modules onto their platform. Integration capabilities also remain strong with a focus on Web services.

Institutions with separate accounts, customers, etc. can be fully isolated from each other and processes can be executed at different times, including initiating processes manually at a more convenient time. This support is demonstrated by some of SmartVista's clients who operate across
nine different time zones. SmartVista is fully capable of enabling multi-region and multi-institution support in line with the broader market.

**Figure 11: BPC SmartVista – technology**

<table>
<thead>
<tr>
<th>Technology</th>
<th>Platform architecture</th>
<th>Security &amp; fraud</th>
<th>Platform roadmap</th>
<th>Functionality</th>
<th>Multi-region support</th>
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Source: Ovum

**Execution assessment**

BPC SmartVista provides a good level of vendor support to clients. BPC currently operates eight support centers around the world, each of which offers a wide variety of language support for regional markets. With seven full-time employees dedicated to training, BPC offers a detailed training program including both introductory and more in-depth training sessions for managers and business users alike. BPC plans to roll out an online education capability in 2016.

BPC is capable of large-scale deployments, as proven by its tier-one clients; however, much of its activity to date has been with lower-tier payment providers. The company does have several tier-one players among its clients, alongside several national switches on the SmartVista platform. Multi-entity deployment capabilities remain high with multi-tenancy deployments a critical design feature of the platform. BPC offers a wide mix of deployment options, including full on-site installation, managed services, and hosting by BPC with numerous hosted clients in CIS countries. BPC does have a number of significant partner relationships, including with major technology vendors within its global network providing a range of technology services.
BPC SmartVista is a very strong technology platform and has grown rapidly to emerge as a market leader in recent years. The platform's modular wraparound architecture provides a high degree of flexibility and configurability to meet client needs, while also allowing for the flexibility of future payment system development. Although CMS is only one of many functions of the broader SmartVista platform, the overall capabilities of the technology, and its growing momentum in the market, makes it increasingly difficult to ignore.

BPC's overall level of vendor support remains relatively strong, and is rapidly growing beyond its European roots. Although its CMS activities remain historically focused on smaller players, this is changing and its broader capabilities suggest it still remains suitable for a broad range of payment providers. Given time, and with the success of SmartVista for payment switch purposes, BPC's level of market impact will likely continue to grow in the CMS space. With a variety of deployment options available, and growing market momentum, BPC is a very strong contender for shortlisting by companies across all tiers.

Compass Plus TranzAxis

Background

Established in 1989, Compass Plus is a privately owned, UK-headquartered provider of payment processing and retail banking solutions. Compass Plus is primarily focused on selling software licenses, application service provisioning, software-as-a-service, and third-party processing using its own platforms, which are developed in-house. Compass Plus operates out of eight offices globally, including offices in North America, Latin America, Western and Eastern Europe, the Middle East, and Asia-Pacific. Compass Plus employs over 400 staff, of which 130 are dedicated to software development, and offers third-party processing in both Russian and European markets.
Payment platforms are Compass Plus's primary focus through both its TranzAxis and TranzWare platforms, and the company has also recently launched a mobile payments service, MobiCash, alongside its open source project development platform RadixWare.

**Company structure**

Compass Plus has developed all of its products in-house and manages them directly. With no acquisitions to its name, the company has grown purely organically.

**Market impact assessment**

One of the newest platforms surveyed by Ovum in this report, TranzAxis was commercially launched in 2011, and as such has a relatively small client base. This is understandable given the relative small scale of Compass Plus and the long lead times of CMS replacement activity among issuers and payment processors. Although stemming from a small base, growth of the platform remains very high, with notable year-on-year growth, aided by Compass Plus's focus on the payments space.

Testament to the global presence of Compass Plus, and despite being a smaller vendor, the platform has live deployments internationally with a primary focus on Europe, as well as the Latin American and Middle East regions. Most of these to date are relatively small-scale deployments compared to some competing platforms, but will likely grow as the platform becomes more established.

**Figure 13: Compass Plus TranzAxis – market impact**

![Compass Plus TranzAxis - market impact](image)

Source: Ovum

**Technology assessment**

Compass Plus TranzAxis is positioned as an open development payment platform, designed to give financial institutions a very high degree of control and flexibility to either build their own solutions or utilize pre-built solutions and customize them. This includes the ability to set up and customize base applications, integrate base applications with external systems, extend application functionality, and enable users to develop derived or independent applications.

TranzAxis uses SOA principles and is built on RadixWare, Compass Plus's proprietary development platform. RadixWare is designed for the development of corporate-level application systems, and is...
available for license by third-party developers. Developed using Java, RadixWare provides three-tier architecture support, and application generation based on a single model, among other key features.

As a result of TranzAxis’s design approach, functionality remains high as the platform is essentially open ended for development by business users, while integration is achieved through the use of Web services and SOA design principles. TranzAxis has a solid platform roadmap in place but, with the company’s focus on user-driven development, the roadmap is perhaps less detailed than those of some competing platforms. Security and fraud capabilities include access partitioning and built-in fraud detection features.

Although the platform does have multi-region, multi-tenant support capabilities, the relatively low volume of clients to date means the platform scores lower in terms of existing multi-region deployments.

![Figure 14: Compass Plus TranzAxis – technology](source: Ovum)

**Execution assessment**

As a specialist firm, the level of resources and support provided by Compass Plus are good, but nonetheless remains substantially lower than that of some of the very large competing vendors in the market today. Despite this, Compass Plus has an impressive global presence, which is in turn aided by a solid network of regional partners. The platform is available for both on-site deployments and as a full software-as-a-service solution for customers, and this is supported by Compass Plus’s own processing data centers.

Training capabilities remain on par with those of most vendors on the market, with 10 staff members dedicated to training and courses available on-site or off-site in a classroom. This includes a minimum base of training required to become certified for product administration and maintenance.
**Figure 15: Compass Plus TranzAxis – execution**

[Diagram showing execution metrics]

**Recommendation: Market follower**

Compass Plus TranzAxis in many ways breaks the traditional model of most CMS platforms and instead presents a more modern and flexible approach that aims to give customers the tools to develop and build their own CMS and payment application capabilities. This approach is forward-thinking and is likely highly effective as a way to future-proof payments infrastructure, and is deployable as an on-site or SaaS solution, adding further flexibility for issuers.

This approach, however, remains a new one, and many issuers may still be unprepared to go down this route and instead prefer a more tried and tested method. Many will likely prefer to see TranzAxis undergo more deployments before committing to the platform. Given time and further deployments in the field, TranzAxis has real scope to emerge as a global market challenger or even leader. Although it is an offering from a smaller, less-well-known provider, Compass Plus TranzAxis should be explored as part of any vendor-selection exercise, particularly for any issuers that have a greater appetite for a more innovative approach.

**Compass Plus TranzWare**

**Background**

The TranzWare Integrated Retail Banking Platform, Compass Plus's flagship product, is a suite of integrated products designed to enable end-to-end retail banking and payments. TranzWare includes a wide variety of modules that cover a plethora of specific services such as card, account and merchant management, card personalization, payment processing, terminal driving, self-service channel management, mobile, and electronic commerce. TranzWare was first launched in 1994 and has since been deployed globally with a particularly strong presence in emerging markets.

**Company structure**

All products have been developed in-house by Compass Plus and are managed directly by the company. With no acquisitions to its name, the company has grown purely through organic means.
Market impact assessment

Despite being an offering from a relatively small vendor compared to other providers on the market, the TranzWare platform has gained a notable market presence with a large client base over the 20 years since it was first launched. This includes a notably strong positioning in emerging markets including a strong presence in Russia and Asia-Pacific, alongside deployments in Europe, MEA, and the Americas. In total, the company reports it has more than 130 direct customers and 250 indirect users via its processing clients.

The scale of many of these deployments remains quite large, with the largest single instance of the platform supporting 32 million cards. Although focused on emerging markets, many of TranzWare’s clients manage a large number of cards on the platform, comparable to issuers in more developed payments markets. TranzWare’s overall level of market impact has likely been aided by Compass Plus’s strong focus on the platform as its flagship product offering.

Figure 16: Compass Plus TranzWare – market impact

![Market impact diagram]

Source: Ovum

Technology assessment

TranzWare is based on an integrated modular architecture, and most component functions are deployable on a standalone basis. This includes a three-tier architecture that incorporates an application layer, communication layer, and terminal workplace layer. Back-office architecture is based on terminal-server technology and this is intended to ensure high remote access capabilities, high throughput when processing data in batch mode, minimum requirements for remote desktop software, and an ability to connect desktops over slow network lines. All of these capabilities are highly suited for markets with less-developed infrastructure in place. TranzWare is developed using a variety of development languages, depending on the module, and runs on Windows, Linux, AIX, and Unix systems. TranzWare has been tested for a theoretical maximum of 100 million cards.

Overall functionality remains strong if a confluence of modules are employed, and the system supports all standard payment tools, alongside other tools and services such as loans, national IDs, and mobile payments. TranzWare also provides a full range of issuing, acquiring, and commodity processing capabilities. Integration and configuration capabilities also remain strong and are achieved
through parameterization and user programming features, as well as built-in debugging and report design tools.

**Figure 17: Compass Plus TranzWare – technology**

![Diagram showing technology assessment metrics for Compass Plus TranzWare and average.]

Source: Ovum

**Execution assessment**

The execution capabilities of TranzWare and Compass Plus's other platform, TranzAxis, are similar. While overall execution capabilities are strong, Compass Plus nonetheless remains a smaller player compared to some of the technology giants active in the CMS space. Despite this, TranzWare benefits from a high degree of focus from Compass Plus, and this is further supported by the company’s in-house processing capabilities for managed service provision in the platform via its UK and Russian processing centers, giving clients a wide choice of deployment options. TranzWare also benefits from having a more established track record in its many markets compared to TranzAxis.

Training capabilities remain on par with those of most vendors on the market, with 10 staff members dedicated to training, with courses available on-site or off-site in a classroom. This includes a minimum base of training required to become certified for TranzWare product administration and maintenance.
**Figure 18: Compass Plus TranzWare – execution**

![Figure 18: Compass Plus TranzWare – execution](image)

Source: Ovum

**Recommendation: Market challenger**

Undoubtedly one of the older CMS platforms reviewed by Ovum, Compass Plus TranzWare has managed to carve out a considerable position in the global payments market through its focus on emerging and developing payment regions. This has been aided in large part by its direct presence in many regional markets, and the platform’s core support for modular scalability, and a focus on remote access resiliency. As such, the platform is tried and tested and more than capable of meeting most issuing and card management requirements. As such, TranzWare should be considered for shortlisting as part of any vendor-selection exercise, particularly in emerging and high-growth markets.

**CSC Celeriti**

**Background**

Computer Sciences Corporation (CSC) is a long-established provider of IT services and solutions. The company was first founded in 1959 in the US and is publicly listed, with reported revenue of nearly $12.2bn in 2014, and approximately 70,000 staff globally, with a direct presence in over 70 countries. CSC is active in a broad range of sectors, including the public sector, healthcare, manufacturing, utilities, and financial services, among others.

Within the financial services space, CSC is active in a number of areas such as retail banking, insurance, and capital markets, and is a global player in the core banking platform market with its Celeriti platform. CSC’s payments activity also includes its Payments Transaction System (PTS), a comprehensive payment-processing system for processing national, European, and global payments, including for cross-border, high-value, and bulk transactions. CSC is also active in the payment gateway space via its ePayment platform, which is delivered as a fully managed service in the CSC Cloud.

CSC's card management system Celeriti Cards was first launched as CAMS I in 1989, before being updated to CAMS II in 1999. Celeriti is in fact the replacement for the CAMS II platform and is due for
launch in 1Q16. Celeriti Cards is one component of CSC’s broader core banking strategy in which its older back-office system is being replaced with a full end-to-end Celeriti service suite. Other key components of the Celeriti suite include Celeriti Customer, Celeriti Deposits, Celeriti Loans, and Celeriti Merchant, all of which are built on the same underlying service-oriented architecture.

**Company structure**

The Celeriti platform is managed by the Banking and Capital Markets group within CSC, which is in turn part of the broader Financial Services group within the company’s Global Business Solutions unit. Approximately 600 full-time employees are dedicated to CMS products at CSC, with key research centers based in India and the US.

**Market impact assessment**

The Celeriti platform, or more accurately the CAMS II platform that Celeriti is replacing, holds an overall high level of market impact that has developed over the platform’s many years of service. Penetration has to date largely been driven by working with international tier-one banking players, and was aided by CSC's strong presence in the core banking space. As Celeriti Cards has not yet been launched on the market, it remains to be seen precisely what level of impact it will have. However, early indications suggest client interest is high, and the platform is being prepared for several large-scale deployments.

CSC is the largest organization of those surveyed in this report and as such brings considerable backing to the Celeriti platform. The Financial Services Group, while large, is not the largest fintech provider on the market, but nonetheless remains a major player. Understandably for a company of CSC’s size, while CMS products are a focus, this remains but one area of activity among many. Nonetheless, the level of resources available to Celeriti is high, and as a major new platform for CSC, it is receiving considerable focus from the company.

Figure 19: CSC Celeriti – market impact

<table>
<thead>
<tr>
<th>Market impact</th>
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<tbody>
<tr>
<td>CMS market presence</td>
</tr>
<tr>
<td>Vendor scale</td>
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<tr>
<td>CMS focus</td>
</tr>
<tr>
<td>Scale of CMS deployments</td>
</tr>
<tr>
<td>Platform market growth</td>
</tr>
</tbody>
</table>

Source: Ovum

**Technology assessment**

Celeriti is built on modular SOA design principles using a multi-layered architecture that separates the data, application, business transaction management, and Web services layers. The platform is based
on COBOL for core business functionality, and uses a wide range of development languages for other components. Celeriti Cards supports various platform deployment options including z/OS, Linux for System Z, Linux, Unix, and Windows, including on distributed platforms with IBM System P and X. The roadmap for Celeriti is highly detailed and developed, which is unsurprising given the system is still at an early phase of its development.

Issuing functionality on Celeriti is very high, with all card types and transactions supported, including lines of credit, healthcare, and loyalty functionality alongside nonpayment processing for a range of services such as online consumer account management. Commodity processing and acquiring functionality is also available; however, merchant acquiring capabilities are not typically deployable as a standalone solution.

Platform integration is achieved using a wide array of Web services, while the platform architecture provides a standard mechanism for external systems to make direct program-to-program API calls to any function within Celeriti Cards. Configuration is primarily achieved through Celeriti Product & Parameter Master. Crucially, parameter values can evolve over time, and be changed online in real time, with new values and delimiters, adding considerable flexibility to the platform.

**Figure 20: CSC Celeriti – technology**

![Technology Chart]

Source: Ovum

**Execution assessment**

In line with CSC’s size and industry reputation, overall execution capabilities for Celeriti remain high. The platform benefits from over 600 staff dedicated to the CMS platform across R&D, implementation, and support functions. This includes dedicated support centers located in the US and India. The company also provides training support to clients either in a classroom or at client locations, focusing on both technical and functional training, and a regularly scheduled calendar of classes. CSC has significant partner relationships, including with technology service provider HCL.

Celeriti can be deployed on-premise (at the client site) or hosted by a third party, but CSC itself does not offer any direct hosting. Despite this, the platform is designed for multi-tenant, -country, -currency, and -language capabilities and the platform is capable of supporting up to 65,353 unique legal entities or tenants in a single instance of the software.
CSC's Celeriti platform is a highly functional and flexible platform that is well suited to the card management needs of most issuers today. The platform has a strong focus on configuration and flexibility and provides a wide range of functionality based on modern architecture approaches. Celeriti's market impact at this stage, however, remains relatively low due to the fact it has not officially launched yet, but growth will likely be high based on CSC’s execution capabilities and the reputation of the CAMS II platform. Because it has not yet launched, Celeriti can only be classified as a market challenger, but given time it is likely to emerge as a market leader once the full scale of its market impact becomes more evident. CSC should be considered for shortlisting as part of any vendor-selection exercise in the CMS space.

FIS Base2000

Background

US-based, publicly listed FIS is one of the world's largest banking and payment technology providers, with revenue in excess of $6.4bn in 2014, up from $6bn the previous year, and is a Fortune 500 company. FIS currently employs 42,000 full-time staff and is active globally.

Founded in 1968 as banking technology provider Systematics, the company has changed dramatically over the years following a series of major mergers and acquisitions, including being acquired by Alltel Information Services. In 2003, insurance provider Fidelity National Financial acquired the financial services arm of Alltel and renamed it Fidelity Information Services, FIS.

FIS is highly active in the payments space and in the US operates the national real-time ATM/PIN-debit network NYCE. The company is also active in mobile financial services, online bill pay, government payments, card products, automated clearing house and check image processing, and healthcare payment solutions, among other things. FIS has made several high-profile payments-related acquisitions in recent years, including mobile financial services provider mFoundry in 2013, and Clear2Pay in 2014.
Base2000 is FIS's flagship card management system and is available to clients predominantly as a hosted managed service and was first launched in the late 1990s by FBS before being acquired by FIS. The platform is divided into two versions, Base2000 Global and Base2000 North America. There are differences between the two versions due to local market considerations that have expanded over time; however, the platform is built on the same technology and remains regionally exclusive. As such it is considered as one global solution in this report.

**Company structure**

The Base2000 platform is managed by the Global Financial Solutions division of FIS, and is supported by over 2,000 staff in North America alone. FIS operates CMS research and design centers globally with centers in the US, the UK, Singapore, Australia, and India, and a direct presence in over 30 countries globally. Because Base2000 is predominantly a hosted service, FIS operates several data and associated support centers for the platform, including in Australia and the US.

**Market impact assessment**

FIS Base2000 is one of the world's most widely deployed CMSs, with a particular dominance within the US where it accounts for nearly 70% of all issuers on the market. Outside of the US, however, this presence is notably smaller and is likely restricted due to the predominantly hosted, managed service delivery of the platform. As a whole, the scale of deployments is considerable; however, many individual client deployments remain relatively small compared to some platforms on the market, with the largest single client managing over five million cards on the platform. However, the sheer volume of clients managed on Base2000 should not be underplayed.

With FIS now the world's largest specialist financial services technology provider, the Base2000 platform benefits from the resources this brings, helping its overall level of market impact. However, because CMS is only one activity within the wider group, FIS's focus on CMS cannot be said to be as high as it might be with some smaller specialists, though the total resources available for Base2000 remain high. Growth in Base2000 is steady, with continued wins in North America in particular as more payment providers shift towards hosted managed card services. This growth, however, comes on the back of what is considerable market penetration in North America, while growth in other regions remains more subdued.
Technology assessment

Base2000 is a multi-module–based system that uses a segmented, tiered architecture approach, with separate business logic, database access, and presentation layers. The system operates across two platforms; on one side is the internal mainframe system operated by FIS and partner IBM, and on the other is the Web server environment which acts as most clients’ primary interaction point with the system. The mainframe is managed by IBM as an outsourcing partner and benefits from an annual technology refresh program. No proprietary software, other than Base2000, is used in the mainframe environment. The Service View Web front end to Base2000 runs in a Windows 2008 server environment.

Issuing functionality on Base2000 remains high and includes all standard issuing functionality, including account and card management, billing, dispute management, etc., and also includes integrated services to key third-party systems including Falcon, Triad, Arcot, etc. Some, but not all, functionality is available on a standalone basis in North America, but this is not the case for Base2000 Global. The platform also provides commodity processing and acquiring functionality, via associated modules and FIS services.

Platform configuration is achieved through parameterization, enabling "Product Builder" functionality which allows business users to quickly develop new payment tools and products. These parameter and business configuration settings are managed by FIS, with change requests sent to the FIS Service Delivery Manager who will then deliver the requested changes. The platform includes a library of more than 300 APIs to enable integration with third-party services.

Base2000 Global does support multi-region deployments, including some clients with operations in several countries managed simultaneously on the platform. Base2000 North America, however, remains restricted to the US, Canada, and Puerto Rico. Security and fraud capabilities are strong on Base2000, and this is achieved via built-in risk and fraud mitigation in Base2000 Global, and strategic relationships with FICO, which leverage the Falcon fraud-monitoring system in Base2000 North America.
Execution assessment

FIS execution and vendor support capabilities remain among the highest in the industry, and this is a key component of Base2000’s positioning in the market as a hosted managed service. However, Ovum notes that a hosted managed service is the only option available to potential customers, hence limiting the platform’s deployment options. As discussed above, the platform holds a significant portion of the US issuer market, but much of this is focused on smaller-scale players where a fully managed service may be more appropriate.

Because FIS has several hundred staff operating globally to support the platform out of dedicated hosting centers, other vendors simply cannot compete in terms of offering a fully managed service. FIS’s capabilities in this area are augmented by support centers in nine different international locations providing first- and second-level support in four different languages. This also includes a telecenter available 12 hours per day. FIS also has an extensive partner network that ranges from local resellers and subcontractors through to major service providers such as FICO, Experian, and IBM.
Recommendation: Market challenger

Base2000, in both its North American and global iterations, is a well-established platform capable of handling most card management and indeed other forms of account management to issuers and other providers. The platform is proven and tested, with a high level of resiliency and a strong track record of successful use.

Despite these strengths, the platform is only suitable for organizations that want to pursue a hosted, managed service solution to card management. Undoubtedly, appetite for this model of service delivery will be high for many end users who wish to simplify their internal business processes with an efficient system with a high level of capability. However, this model is not suitable for all players, and many within the conservative financial services space will prefer a solution that can be deployed on-site and managed internally. For those who are open to a hosted CMS solution, Base2000 should be considered, both in North America and in international markets.

FIS Cortex

Background

FIS Cortex is a card management solution designed to enable users to manage a variety of payment products on a single consolidated platform. Cortex is one of the core FIS Payment applications and has in the past been deployed with FIS major switch platforms IST and Connex to enable debit and prepaid functionality, but is also available as a standalone CMS platform for a full range of payment tools. CMS capabilities are largely undertaken by key modules including Cortex Core, Cortex Issuer, and Cortex Authorizer.

Cortex was originally designed by UK-based Nomad Payments in the mid-1990s. Nomad Payments was subsequently acquired by Metavante, which merged with FIS in 2009. Following the acquisition, Cortex became part of FIS's wider wraparound, payments-hub-system platform model. Both Base2000 and Cortex are available to clients either as an on-site deployment or as a hosted, managed service.
Company structure

Like the Base2000 platform, Cortex is managed by the Global Financial Solutions division of FIS, but in this instance support is concentrated outside of the US. FIS operates CMS research and design centers globally with centers in the US, the UK, Singapore, Australia, and India, and has a direct presence in over 30 countries globally. Because Cortex is predominantly a hosted service, FIS operates several data and associated support centers outside of the US, including in Australia and the UK.

Market impact assessment

FIS Cortex is a well-established CMS platform with a global presence outside of North America. Europe remains its largest market with 90 customers in the region, but the platform also has a presence in Latin America, the Middle East and Africa, and Asia-Pacific. Although a majority of clients are in the banking space, Cortex is also strongly positioned in categories such as national switches and government bodies, giving the platform an impact beyond its core client base.

As is the case with Base2000, Cortex benefits from the substantial resources that FIS is able to provide, and this has been beneficial to the platform’s growth, particularly in the European market. As one of FIS’s key payment applications, Cortex is a notable focus for the company. As described above, a relatively high number of clients use the Cortex platform, tilting slightly toward smaller-scale, tier-two players downwards, on par with many other platforms on the market.

Figure 25: FIS Cortex – market impact

Source: Ovum

Technology assessment

FIS Cortex is built using a three-tier, layered architecture approach that separates the Web interface, application, and database layers, in line with industry best practice. The Cortex back end uses service-oriented architecture based on Oracle Tuxedo middleware, and is in turn split into a hierarchy of dependent modules. Cortex Online, the user interface, and Web services are implemented in Java. The roadmap for Cortex is detailed and includes a range of areas for continued development, including for new functional support and hardware. Cortex supports four operating systems, including IBM AIX, HP-UX, Oracle Solaris, and Linux (available soon).
Functionality on Cortex remains strong; however, most issuing functionality is undertaken in conjunction with Cortex Card Processing Agreements. A broad range of functionality is enabled through the use of add-on modules that can be bolted on to the Cortex Core, including for security and fraud capabilities. Multi-region support is strong, with several live deployments that incorporate multiple regions on a single instance.

Platform integration is achieved through a variety of means, including the use of dedicated Web services, with 49 total Web services that can be called by external systems, alongside support for proprietary Cortex interfaces and file formats. In hosted deployments, configuration is typically undertaken by FIS's in-house implementation teams. For on-site deployments, FIS engineers will configure most initial rules. Through the use of a built-in "RuleEngine," Boolean expressions can be defined for controlling various aspects of Cortex functionality.

**Figure 26: FIS Cortex – technology**

![FIS Cortex Technology](image)

Source: Ovum

**Execution assessment**

FIS execution and vendor support capabilities remain among the highest in the industry and this is a key component of Cortex's positioning, much as it is for Base2000. This includes a strong internal level of resourcing, and significant training and installation capabilities, and a strong global partner network that includes numerous tier-one providers. Both Base2000 and Cortex are available as a managed solution but only Cortex is also available for on-site deployments, with a near-even mix of deployment types live in the market. This holds considerable benefits for customers who may prefer more flexibility in their choice of deployment models.
FIS Cortex is a well-established CMS and payment processing platform that is perhaps best deployed as a total payments engine solution. FIS provides a full range of payment services on a hosted or on-site basis in conjunction with FIS Cortex and this has been critical to its long-term growth in key regions, including Europe. As a whole, Cortex is more than capable of meeting issuing and card management alongside acquiring and commodity processing capabilities.

Compared to some of the newer platforms on the market, Cortex, however, does not provide the same degree of flexibility when it comes to configuration and integration standards, with a relatively high level of initial support needed from FIS engineers. But the platform is more than capable of meeting most issuer needs, particularly when deployed as a total payment solution, and in many ways serves as an industry benchmark. As such, Cortex should be considered for inclusion as part of any vendor-selection exercise in the CMS space.

OpenWay Way4

Background

OpenWay Group, based in Brussels, Belgium, is a privately owned payments software vendor that has grown organically since the company was first launched in 1995. Although a relatively small player compared to some of the fintech giants active in the CMS space, OpenWay nonetheless maintains a global reach with a direct presence in nine regional markets, including Belgium, Cyprus, Luxembourg, UAE, Russia, Ukraine, Malaysia, Indonesia, and Vietnam, and a sales reach that extends beyond these regions and clients in 34 countries in EMEA, Southeast Asia, North America, and Latin America.

OpenWay's Way4 product portfolio includes its flagship unified Card and Merchant Management and Switching platform. OpenWay is also active in other associated financial service areas, including personalized omni-channel banking, prepaid cards, e-commerce, mobile payments and digital wallets,
dynamic currency conversion, host card emulation (HCE) B2B cards, and other payment processing solutions.

**Company structure**

Way4 Card and Merchant Management is managed by a cross-functional team reporting directly to the product management board at OpenWay Group.

**Market impact assessment**

Despite being a midsized specialist technology vendor (its employee count, at 500, is dwarfed by some of its larger CMS competitors), OpenWay has strong market impact, driven in large part by the breadth and scale of its clients. This includes both major issuers and third-party processors and includes the largest deployment of any platform surveyed as part of this report, with 144 million cards for Sberbank, the largest retail bank in Eastern Europe. OpenWay’s strong presence in the payment processing space also means that it punches above its weight for a company of its size and allows it to exert influence across the broader payments market in Europe and Asia-Pacific.

Way4 remains the flagship product for OpenWay Group and as such remains a core focus for the company. Most other products and services the company provides are built off of Way4 and hence are not a distraction from its CMS platform. Growth overall remains positive with strong presence in the EMEA region, but there is still room for growth in some regional markets, most notably the Americas. Despite this, the company as a whole continues to maintain significant momentum and is seeing positive year-on-year growth, suggesting its overall market impact will increase.

**Figure 28: OpenWay Way4 – market impact**

![Market impact diagram](source)

Source: Ovum

**Technology assessment**

Way4 is a highly modular, open software solution based on SOA principles that is designed to provide unified front- and back-end architecture, which in turn can be used to provide full online omni-channel capabilities across payment tools and channels. The platform uses a layered architecture, both for logical and physical segregation, and includes a data layer, functional/model layer, interfacing layer, and a presentation layer. OpenWay positions its Way4 platform as a one-stop shop, with a wide variety of modules that can be licensed to cover all areas of card and merchant management.
Security and fraud capabilities are strong out-of-the-box, including support for advanced technologies such as tokens, risk-based authentication, and soon biometrics – including for use in digital banking, e-commerce, contactless (including HCE), and digital wallet services. The platform is also fully SEPA (Single Euro Payments Area) and Sharia compliant.

Functionality remains very high across the issuing, commodity processing, and acquiring spaces, and all standard payment tools are supported. Integration also remains highly flexible, with a number of integration models supported, including SOA, Web services, APIs, XML, etc., both into end users' systems and into third-party applications. Critically, Way4 enables users to configure their own products based on built-in business rules to enable any type of transaction or account. Way4 is based on a Java messaging platform that uses Groovy script, which allows customers to define their own messaging formats and set complex transaction flow rules.

Multi-region support is high, both architecturally and in practice, as demonstrated by its strong presence with multi-region payment processors. OpenWay claims that a single installation can run an unlimited number of financial institutions and countries with unlimited tools, currencies, and other segmented features, albeit if based on appropriately scaled hardware.

### Figure 29: OpenWay Way4 – technology

![Technology Diagram](image)

Source: Ovum

### Execution assessment

OpenWay Group’s execution capabilities remain strong, as proven by its client list of both large- and small-scale players. The company has 10 support centers globally, largely concentrated in Europe and Asia-Pacific, with a total of 175 multi-functional global and local support staff based across these locations, representing a significant proportion of total employee numbers. Support is offered in 12 different languages. OpenWay also maintains an extensive partner network, which includes company representatives in many markets, including in North America and Latin America. OpenWay has a dedicated team of eight trainers, and training is provided for all OpenWay products and modules, including "train the trainer," on-site, in classroom, and e-learning initiatives.

OpenWay does not offer any hosting services for its platforms, and all deployments are on client premises. The platform is, however, more than capable of being deployed in a hosted environment, as
evidenced by its major third-party payment processor clientele, including Nets and Equens. Many of these third-party payment processor deployments support multiple entities on single installations.

**Figure 30: OpenWay Way4 – execution**

<table>
<thead>
<tr>
<th>Execution</th>
<th>Vendor support capability</th>
<th>Training resources</th>
<th>Partner network</th>
<th>Large-scale deployment</th>
<th>Multi-entity deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>OpenWay Way4</td>
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</tr>
<tr>
<td>Average</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Ovum

**Recommendation: Market leader**

With its strong focus on open architecture, and flexible modular design, OpenWay Group has grown rapidly in its 20 years of operation to become a major player in the card management systems space. With an impressive client list, and a proven track record of large-scale deployments, the Way4 platform has proven itself capable of meeting the needs of most payment providers for issuing, acquiring, and commodity processing services.

OpenWay is less exposed to North American and Latin American markets, and the company will need to ensure it can maintain its execution capabilities in these regions through strong partnerships and expanding its local footprint in the region. Given the strength of the technology and its support for EMV, contactless payments, and digital wallets, among other areas, its position in these markets is likely to grow in the near term. In light of the above reasons, OpenWay Group’s Way4 platform should be shortlisted as part of any CMS vendor-selection exercise.

**Sopra Banking Cards**

**Background**

France-based Sopra Banking Software is a division of publicly listed IT services provider Sopra Steria. Sopra Steria was formed by the merger of Sopra and Steria, respectively, in 2014, and the company has a long history of activity in the banking and real-time services space that dates back to the late 1960s. Sopra Banking Software, as a business entity, was formed in 2012 following the acquiring and merging of Delta Informatique, Tieto UK, and Callatay & Wouters with existing proprietary banking products. Sopra Steria had revenue of €3.4bn in 2014. Although the company is active in over 20 countries, France and the UK make up nearly 75% of all activity.

Sopra Banking Software is primarily focused on the Sopra Banking Platform, which includes a number of different domain-focused products including distribution, lending, payments, cards, account
management, cash management, and compliance. Sopra Banking also offers a core banking platform, Sopra Banking Amplitude. Of the 2,500 employees at Sopra Banking Software, nearly 300 are dedicated to CMS products.

**Company structure**

Sopra Banking Cards is managed by the Sopra Banking Software Group of Sopra Steria.

**Market impact assessment**

Sopra Banking Cards has been on the market, in various forms, since it was first launched in 1993, and in that time has grown to a moderate-sized presence within its native European market, with a smaller level of activity in the MEA region. This includes deployments among a combination of issuers and regional processors, including most notably First Data Slovakia, which has deployed the solution on a multi-country basis. Many of its key customer relationships date back several decades, and include relatively large deployments such as with Transactis, which manages 20 million cards on the platform. Sopra Banking Cards has clients from all tiers in terms of size, with a larger presence among tier-one providers.

Use of the platform is growing, but has not been particularly high compared to many other competing vendor offerings, with all growth occurring within the European and MEA markets. This is understandable given Sopra's sizeable, but regionally focused, activity in these regions. Sopra's focus on its CMS platform is positive, but as a proportion of total activity remains a smaller product compared to its broader portfolio of services.

**Figure 31: Sopra Banking Cards – market impact**

Source: Ovum

**Technology assessment**

Sopra Banking Cards is designed with an SOA approach and uses an n-tier architecture, separating the data, data access, business, and upper layers. The upper layer is typically the user interface but the platform is capable of supporting multiple user interfaces simultaneously. The platform operates on Linux, Unix, and z/OS systems and supports both ISO 8583 and ISO 20022 messaging standards.
The platform provides a good level of functionality with support for most payment card types and includes native functionality for emerging technologies such as HCE, instant issuing, and combination cards. Loyalty functionality is also available via separate loyalty and reward modules. Sopra also offers its own Digital Wallet Management system. Many of the functions of the Sopra Banking Cards platform can be deployed as a set of dedicated components for more complex implementation, or as a full end-to-end solution encompassing issuing, acquiring, and commodity processing capabilities. Security and fraud capabilities also remain high and are supported by the use of dedicated tools and built-in behavior analysis components.

The platform has a strong focus on integration and configuration capabilities, with a goal of being able to bring new payment products to market rapidly. This is driven in large part by the separation of distribution and production activities, enabling the rapid creation of card factories. Integration is achieved through the use of APIs and exposure of Web services. The roadmap for the platform includes forward-looking developments, primarily around hardware capabilities and is in line with the market average.

**Figure 32: Sopra Banking Cards – technology**

![Technology diagram](image)

Source: Ovum

**Execution assessment**

Although Sopra is a large organization with a large number of employees, the actual level of focus on CMS products remains relatively low compared to many of the other vendors on the market today, and the company remains largely focused on the Europe and MEA regions. The level of vendor support therefore remains lower than that of many other vendors. The company does have a presence in India, and is due to deploy its CMS platform in Asia-Pacific in the near term.

Despite this regional focus, Sopra does have support capabilities, including a France-based support center with 15 full-time employees, and a dedicated training program, which can be undertaken on-site, in a classroom, or online. Sopra Banking Cards is available for deployment on-site or hosted by a third party, but does not offer any hosting capabilities directly itself. Most implementations are done directly by Sopra Banking and the company does not have any significant partner relationships in place, and subsequently has no need for partner training.
**Figure 33: Sopra Banking Cards – execution**

[Diagram showing execution metrics]

Source: Ovum

**Recommendation: Market follower**

In what is an extremely competitive market, Sopra Banking Cards is a solid platform with a strong level of functionality and a particularly critical focus on offering flexibility to business users in rapidly enabling new payment products for their customers. The platform also has a proven track record in complex deployments within the European region.

Sopra Banking Cards is a modern platform that is more than capable of meeting most issuer needs. However, due to its focus on European markets, and the relatively smaller level of resources available for the platform, Sopra Banking Cards may not be suitable for those organizations outside of Europe who may require a high level of vendor support. As such, the platform remains a market follower for the time being. Given time and the added focus on the platform following Sopra Steria’s IPO, Ovum is in no doubt that the platform will expand its market positioning and is on the cusp of being a market challenger, if not even a market leader in the near future. Sopra Banking Cards remains a candidate for shortlisting as part of any vendor-selection exercise, particularly for European players.

**TSYS Prime**

**Background**

TSYS is a publicly traded payment technology and services provider based in the US, in Columbus, Georgia, and is one of the world’s largest specialist payment companies. TSYS has more than 10,000 employees globally, with revenue of $2.4bn in 2014, up from $2.1bn the previous year. North America remains TSYS’s largest market, accounting for nearly 45% of total revenue, but TSYS is active globally with a presence in 80 countries, operating out of 27 locations.

TSYS’s history dates back to 1959 when it began as the bankcard processing division of Columbus Banks and Trust Co. (CB&T), one of the first banks in the US to offer a local charge card. After expanding into services for other banks, TSYS was spun out and became publicly listed in 1983. TSYS’s flagship products are its TS2 and TS1 credit card processing mainframe platforms.
Organizationally, TSYS is divided into four primary operating segments. This includes North America Services, which is focused on payment processing of consumer and commercial cards, alongside other processing services; Merchant Services, which provides acquiring solutions; International Services, which includes processing and licensing for all regions outside of North America; and NetSpend, which is focused on general-purpose, reloadable prepaid cards.

TSYS is highly acquisitive, having made several notable acquisitions over the years, including Card Tech Limited, the initial developers of the Prime CMS platform, in 2006; and NetSpend, its prepaid card arm, in 2013.

**Company structure**

The Prime platform falls under the remit of TSYS International Services. The TSYS product center in Cyprus provides product development for the Prime platform and clients around core platform components and technology, with further development centers in Russia, India, and Malaysia. TSYS also has extended support centers for Prime in Brazil, UAE, India, the UK, the Netherlands, and the US.

**Market impact assessment**

First developed in 1995, the Prime platform has gone through several major iterations and developments; the latest version is Prime 4. Over that time, Prime has expanded to achieve a strong global market presence with more than 100 global clients among both large- and small-scale players with a strong presence in Europe, MEA, and Asia-Pacific markets. Activity in North America and Latin America remains historically lower, due to TSYS's broader focus on processing services in those regions, but has recently increased in line with other regions. Prime is deployed across TSYS's own processing centers. Overall growth of the platform appears positive, but does not appear as high as some of the other platforms reviewed in this report.

The impact of Prime 4 on the payments market has been hugely aided by the scale and additional resources that TSYS brought to the table following its acquisition of Card Tech Limited in 2006, and has helped provide TSYS's International Services arm with issuing and acquiring capabilities. TSYS's CMS focus remains high overall with significant resources made available to the platform, but it remains a relatively niche product compared to TSYS's broader service and technology portfolio.
Prime, a modular system based on SOA design principles, can be split into three logical domains, incorporating front-office, back-office, and middleware, alongside an integration layer. Each layer is a standalone entity with encapsulated functionality that relates to specific business requirements, while the dedicated integration layer allows users and licensed developers to connect the system to third-party platforms.

All business functionality in Prime is modular and each licensee can decide which modules to use from initial implementation, while retaining the option to implement options at a later date, or as new functionality becomes available. This approach provides a high degree of flexibility to end users, who can deploy Prime on a tactical basis, while also enabling growth as new technologies emerge.

Security and fraud management capabilities also remain high, thanks to the Prime Fraudguard module.

Functionality remains very high for issuing, acquiring, and commodity processing. The Prime platform is capable of operating with all standard card payment types, and through the use of add-on modules the platform can support noncard transactions, including installment payments and reward programs. The platform has a sharp focus on parameterization, allowing business users to manage payment products on the fly without the need for third-party vendor support.

Multi-entity and multi-region support is a core feature of Prime, and TSYS reports the platform was designed for banks looking to expand across borders or to consolidate platforms. This enables the segregation of institutional parameters and processing on the same instance of the platform, allowing for various transaction rules and parameters to remain completely separate.

The roadmap for Prime is extensive and includes a growing focus on unbundling existing services to help increase the number of modular functionality options available to users, while also adding new features focused on risk-based services, customer channels, engagement services, and merchant services.
Execution assessment

The Prime platform undoubtedly benefits from the substantial resources that TSYS is able to provide, and this is proven by the platform's history of deployments in global markets, which are on par with the broader CMS market. Support services also remain strong, with eight regional support centers providing second-line support alongside TSYS's centralized 24/7 service desk. Support is provided in nine different languages. TSYS, in line with its global scale, has a strong partner network, which includes Oracle, FICO, and Experian, for various technologies and services.

For the most part, Prime is not provided as a hosted service; however, in some instances, Prime is hosted by a third party or hosted at client premises but is managed by a third party. The exception to this is Latin America, where Prime is offered as service from TSYS's operations in Brazil. This means there are several deployment options available, depending on the user's market.

TSYS also maintains the most extensive training program of any platform researched as part of this report. TSYS's Prime Academy certification program, which has six full-time trainers, includes numerous modules, each of which is subject to iterative peer review. Training is available at regional Prime facilities, with options for remote training and training at the client site.
Recommendation: Market leader

Although the Prime platform has gone through multiple iterations since its initial launch in the late 1990s, it remains a forward-thinking platform that is designed for a high degree of flexibility and future-proofing. Newer platforms are available on the market, but few have the extensive pedigree of on-the-ground deployments that Prime does; nor do many have such an extensively detailed roadmap, highlighting the continuous evolution of the platform.

Although not really relevant for the North American market, Prime is ideally suited for organizations that require a high level of stability and reassurance, combined with industry best-practice technology. As such, Prime should be shortlisted as part of any CMS vendor-selection exercise.

Worldline Asccend

Background

Paris-based Worldline is a publicly listed provider of electronic payment and transactional services. The company was formed as an offshoot of former parent company IT services giant Atos in 2013, in which all of the group's payments and online transaction technologies across its Atos Origins, Euronext, and Multimedia divisions were brought together under the Worldline banner before being publicly listed in 2014. Worldline had total revenue of €1.15bn in 2014 and a staff of 7,300. The company has a direct presence in 17 countries and its regional activities are primarily focused on Europe, Asia-Pacific, and Latin America.

Although a new entity, Worldline has been active in the payments space for 40 years in various guises, providing a range of payment processing services and technologies. In the 1980s and 90s, the organization expanded into online services, including for the France-only Minitel system, and SIPS online payment gateway. Atos, and subsequently Worldline, has a history of acquisitions, including Siemens IT Solutions and Services in 2011, Quality Equipment BV in 2012, Bull in 2014, and Xerox ITO in 2015.
Worldline is organized into three global business lines: Merchant Services and Terminals (MST), Mobility & e-Transactional Services (MTS), and Financial Processing & Software Licensing (FPL). Worldline provides a broad range of payment technologies and services, including online transaction processing, POS terminals, mobile wallets, loyalty, etc. Worldline currently offers three CMS platforms: Ascend, Cardlink II, and Worldline Pay.

Company structure

Worldline’s Financial Processing and Licensing business line is responsible for all CMS products. The company’s primary development centers are based in Europe and Asia-Pacific.

Market impact assessment

Worldline Ascend was first launched in 1993 as Semacard, and following later updates was revamped as Ascend in 2005, and in 2010 as Ascend V2. The Ascend platform has expanded to achieve market penetration across a range of customers, including some large-scale clients, with its largest single deployment supporting 30 million accounts. The Ascend platform, however, remains primarily Asia-Pacific focused, with deployments in China, Hong Kong, and Singapore, among others, with no deployments outside the region. As a result, its market impact in Asia-Pacific remains high, but on a global level remains weaker compared to some competing platforms that have a more global reach.

The level of CMS focus within the Ascend platform remains positive, with significant resources devoted to the platform. However, as a proportion of total activity for Worldline, this remains lower than that of some more-specialized, smaller-scale providers on the market. Despite this, Worldline remains a major vendor with added momentum since its public listing in 2014. As such, Ascend’s market impact has the potential to expand in the near term, as evidenced by its growth in recent years.

Figure 37: Worldline Ascend – market impact

![Market impact graph](source: Ovum)

Technology assessment

The Ascend platform is a modularized system built using a three-tier architecture with separate presentation, business logic, and file access layers. Developed using COBOL, the platform is built for
and implemented on IBM OS/400 hardware. The modular design of the platform means that any changes or configurations made to the system can be isolated to the relevant modules and helps ensure the broader stability and resilience of the platform. The roadmap for the platform includes a growing emphasis on cloud and software-as-a-service provisioning.

In line with its modular design, functionality on Asccend remains high with all standard payment tools supported, with additional modules available to enable loyalty, dispute management, collections, installments, and loans. The platform provides a full range of issuing, commodity processing, and acquiring capabilities, with standalone capabilities a technical given on each function. According to Worldline, the platform is particularly well suited for Asian markets, which have unique needs in terms of payment product design.

Integration with third-party applications and external systems is achieved via the integration "empower" module, which can support common standards like Web services. Configuration is primarily undertaken through heavy parameterization with minimal vendor involvement via fully integrated user interfaces. Multi-country support remains strong, with a high number of languages in live deployments, and several clients with multi-country deployments. This activity is cross-border, but remains confined to the Asia-Pacific region. Security and fraud capabilities also remain strong due to the use of security modules.

 Execution assessment

Across all of its platforms, Worldline has strong support capabilities, and in the case of Asccend this is helped by the long-established regional team it has in place supporting the platform. This includes a hosting center in Malaysia, and offices in China, Hong Kong, India, Indonesia, Malaysia, Singapore, and Taiwan. In some instances, local client relationships extend across Asian regions and go back several decades. As a result of its strong positioning in Asia-Pacific, Ascend has less need to rely on partner networks, outside of the broader capabilities that Worldline brings to the table.

Asccend, much like Worldline’s other platforms, benefits from the vendor’s highly flexible deployment model, which is the most extensive and flexible of any platform surveyed in this report. Worldline
offers software licensing, hosting, application management, and business processing outsourcing options to customers, with further options to deploy in hybrid combinations and change their deployment model over time. This provides an extremely high level of flexibility and scalability which has likely proven useful to clients in Asia-Pacific, following the growth in the region in recent years.

Training resources are made available to clients, via two full-time trainers, with training provided in a classroom, on-premise, or online. Train-the-trainer projects are typically included in wider product implementations.

**Figure 39: Worldline Ascend – execution**

<table>
<thead>
<tr>
<th>Execution</th>
<th>Vendor support capability</th>
<th>Training resources</th>
<th>Partner network</th>
<th>Deployment options</th>
<th>Large-scale deployment</th>
<th>Multi-entity deployment</th>
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</tbody>
</table>

Source: Ovum

**Recommendation: Market challenger**

Worldline Ascend is a robust, proven platform that follows industry best practice in terms of modular design, standalone functionality, and flexible deployment options that are well suited for high-growth markets. Due to its strong regional presence, the platform has grown strongly over the course of its history and is now a well-established tool in the Asian payments landscape.

Future growth of the platform, however, may face some challenges due to reliance on midrange IBM OS/400 systems which, while common, reduce the range of choices that some potential clients may be after. More critically, the platform remains highly focused on Asia-Pacific markets, which means that at a global scale or for international players who may want to unify their organizational infrastructure, the platform may be less suitable. Despite these issues, the Worldline Ascend platform is a proven market challenger and as such should be considered for shortlisting as part of any vendor-selection exercise, particularly for firms based in Asia-Pacific.

**Worldline Cardlink II**

**Background**

Cardlink II in many ways acts as a counterpart to Worldline’s own Ascend CMS platform as described above. The Cardlink II platform is primarily focused on the Asia-Pacific region, with a history that extends nearly thirty years with the debut of Cardpac in 1986. The platform was later rebranded...
as Cardlink in 1998, and was replaced by Cardlink II in 2006. The platform was then extended for Unix support in 2010. The Cardlink II platform is supported by the same regional centers as Ascend.

**Company structure**

The Financial Processing and Licensing division of Worldline is responsible for all CMS products. Primary development centers are based in Europe and Asia-Pacific.

**Market impact assessment**

As with Ascend, Cardlink II is strongly positioned in the Asia-Pacific market where it is a well-established platform. The platform is used by both mid- and large-scale clients, with its largest single deployment managing 95 million cards. This activity, however, remains largely, but not exclusively, focused on the Asia-Pacific region. Growth for Cardlink II remains positive, likely bolstered by its track record of large-scale deployments.

Much like Ascend, Cardlink II benefits from the significant scale and resources that Worldline is capable of providing, particularly in terms of its well-established regional presence. The level of overall resources committed to the platform remain strong; however, as a point of focus for Worldline, Cardlink II accounts for a smaller portion of the overall business, lowering its rating in terms of CMS focus. Regionally, however, Cardlink II remains a central platform for Worldline in Asia-Pacific.

**Figure 40: Worldline Cardlink II – market impact**

![Market Impact Chart]

**Technology assessment**

Cardlink II's primary differentiator from Ascend is its technology capabilities. In particular, Cardlink II is compatible with a broader range of systems, including both IBM mainframe and Unix platforms, providing greater choice to enterprises. Cardlink II has a track record of larger-scale deployments, such as the 95 million cards managed on one instance, as described above.

Cardlink II is a modular, heavily parameterized platform with a strong focus on particularly Asian functions, such as dual-currency cards, support for domestic payment networks, and installment and loan capabilities, which are critical for markets with complex payment tool financing needs. Overall
functionality remains high with a full spectrum of issuing, acquiring, and commodity processing functionality available. Functions are modular, with clients only paying for what they need.

Cardlink II is built using a three-layer architecture with the aim that common codes can be shared and that changes to the system can be as isolated or independent as possible. Cardlink II is built using COBOL which is highly suitable for financial transactions, but can be more challenging to develop for as COBOL skills become less common on the market.

Configuration and integration capabilities also remain strong, due to the use of the “empower” module, and support for a broad range of messaging types. A strong focus on parameterization means that Cardlink II, again, allows business users to define products using built-in interfaces. Multi-region support also remains strong on Cardlink II, with several instances of live deployments covering multiple regions, currencies, and products in a single instance, albeit all of which are in Asia-Pacific.

**Figure 41: Worldline Cardlink II – technology**

Execution assessment

Across all of its platforms, Worldline offers strong support capabilities, and much as in the case of Ascend, with Cardlink II this is helped by the long-established regional team it has in place supporting the platform. This includes a hosting center in China for Cardlink II, and offices in China, Hong Kong, India, Indonesia, Malaysia, Singapore, and Taiwan. In some instances, local client relationships extend across Asian regions and go back several decades. As a result of its strong positioning in Asia-Pacific, Cardlink II has less of a need to rely on partner networks, outside of the broader capabilities that Worldline brings to the table.

All of Worldline’s CMS platforms benefit from the vendor’s highly flexible deployment model, which is the most extensive and flexible of any platform surveyed in this report. Worldline offers software licensing, hosting, application management, and business processing outsourcing options to customers, with further options to deploy in hybrid combinations and change their deployment model over time. This provides an extremely high level of flexibility and scalability which has likely proven useful to clients in Asia-Pacific, following the growth in the region in recent years.
Training resources are made available to clients, with two full-time trainers, with training provided in a classroom, on-premise, or online. Train-the-trainer projects are typically included in wider product implementations.

**Figure 42: Worldline Cardlink II – execution**

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<tr>
<th>Execution</th>
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<tbody>
<tr>
<td>Vendor support capability</td>
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<tr>
<td>Training resources</td>
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<tr>
<td>Partner network</td>
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<tr>
<td>Deployment options</td>
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<tr>
<td>Large-scale deployment</td>
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<td>Multi-entity deployment</td>
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</table>

Source: Ovum

**Recommendation: Market challenger**

In many ways, Cardlink II is the younger, yet bigger, sibling of Asccend, with a similar level of market impact and execution capabilities. Crucially, Cardlink II has a more proven track record of major large-scale deployments, which remain among the biggest in the world, a feature that is critical for markets such as China. Cardlink II also has the added benefit of a broader range of hardware support, providing an added element of flexibility and choice for prospective enterprise clients.

Although it does have a small number of deployments in Europe, Cardlink II is held back by its historic regional focus on Asia-Pacific, meaning it does not rank as highly as other globally available platforms. If it was more widely available, it would likely contend as a global market leader. Further international deployments will continue to develop the platform's market presence. Cardlink II offers a high degree of functionality and a very well-established regional presence, meaning that Cardlink II is a market challenger and should be considered for shortlisting as part of any vendor-selection exercise, particularly for firms based in Asia-Pacific.

**Worldline Pay**

**Background**

Worldline Pay is Worldline's newest CMS platform and forms a key plank of the Worldline Integrated Payment Engine (WIPE) strategy. WIPE has been an ongoing project for Worldline since 2007 under Atos, and is intended to create a scalable payment "factory" incorporating clearing and settlement, back-office issuing and acquiring, front office, and Internet acceptance, alongside CRM and analytics and payment portal capabilities. This includes the interconnection of Worldline's hosted processing capabilities, which includes 15,000 servers and a capacity of 10 petabytes of data.
First launched in 2004 with a focus on acquiring, switching, and authorization, Worldline Pay has since been extended to include fraud detection and back-office capabilities. Although Ascend and Cardlink II remain important products in Worldline’s portfolio, the Pay platform is emerging as the company’s flagship CMS product.

Worldline Pay is comprised of numerous individual technologies within the platform suite, each of which is deployable on a standalone basis in an on-site or hosted environment. Key components within the full suite include: switching and authorizing, card management, fraud and dispute management, and fraud detection.

**Company structure**

The Financial Processing and Licensing division of Worldline is responsible for all CMS products. Primary development centers are based in Europe and Asia-Pacific.

**Market impact assessment**

Since its initial launch in 2004, Worldline Pay has expanded to reach a number of clients primarily focused in the European market, the largest deployment of which manages 9 million cards. Although its largest deployment is considerably smaller than Worldline’s Asia-Pacific offerings as described above, Worldline Pay is very evenly spread among both large- and small-scale players, ranging from tier-one to tier-four enterprises. This capacity to work with any size of issuing organization is buoyed by Worldline Pay’s strong hosting capabilities and variety of deployment options.

As with Ascend and Cardlink II, Worldline Pay benefits from the scale of Worldline, and being its flagship product in its home market means it has considerable resources on hand to help achieve broader market growth. Growth in the platform has been high, and will likely be aided by a renewed push by Worldline following the restructuring and IPO. Ovum expects the platform to expand beyond Europe in the near term.

**Figure 43: Worldline Pay – market impact**

![Diagram showing market impact with Worldline Pay and average compared]

Source: Ovum
Technology assessment

Worldline Pay is a modular platform designed around service-oriented architecture capabilities and is built on modern, three-tier architecture principles. The transaction processing core is written in C++ and uses the Oracle Tuxedo middleware system to help provide scalability and high availability. Front-office components, including the presentation layer and Web services, are built on Java technologies. For on-site installations, the platform can be deployed on Unix- and Linux-compatible systems.

Worldline Pay has a strong focus on parametrization and flexibility, with a focus on self-customization by business users. This is supported by the use of SDKs and workflow configuration capabilities. As a result, Worldline claims the platform is applicable to multiple industries including those outside of financial services such as retailers, telecoms, and transportation. Integration on the platform is done through the use of the underlying SOA and Web services, while also supporting JMS notification and XML.

Functionality on the platform is high and provides all standard issuing, acquiring, and commodity processing functionality, with all standard payment tools supported. Due to the platform's service-oriented architecture, all functions are deployable on a standalone basis and can be integrated into existing payment infrastructure setups. Worldline Pay also provides extensive support for emerging payment tools and technologies including e-wallets, mobile NFC with HCE, and tokenization. Worldline Pay also has specialized standalone fraud management capabilities through its Worldline Pay Online Watcher module. Further functionality, including for new payment technologies, is currently included in Worldline's platform roadmap.

Execution assessment

As with Worldline's other platforms, vendor support capabilities for Worldline Pay remain high, and are supported by numerous regional offices located in Austria, Belgium, France, Germany, Luxembourg, the Netherlands, Spain, and the UK, alongside four separate processing hubs all located within the
EU. Worldline Pay is critical to the organization's broader payment processing services and as such remains a key focus for the company.

As described above, all of Worldline's CMS platforms benefit from the vendor's highly flexible deployment model, which is the most extensive and flexible of any platform surveyed in this report. Worldline offers software licensing, hosting, application management, and business processing outsourcing options to customers, with further options to deploy in hybrid combinations and change their deployment model over time. This flexibility will be increasingly critical over time as payment providers and indeed other enterprises shake up their strategies due to the rapid shifts now occurring in the payments market.

Despite the flexibility and spread of its client base, Worldline Pay has yet to expand to any truly large, single deployments, with its largest currently standing at around 9 million cards. However, the platform's multi-region, multi-tenant capabilities remain strong, as evidenced by Worldline's use of the platform for its own hosted services, and also specific client deployments which include one deployment that covers 44 regions. Training resources are available, with dedicated delivery teams assigned to each client.

**Figure 45: Worldline Pay – execution**

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<tr>
<td>Training resources</td>
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Source: Ovum

**Recommendation: Market leader**

One of the newer platforms on the market, Worldline Pay benefits from a very modern architecture approach with a strong focus on flexibility, both in terms of platform functionality and deployment options. As the payments market continues to evolve, driven by a confluence of technology, competitive, and regulatory developments, the need for this sort of tactical flexibility will become increasingly critical.

To date, Worldline Pay remains largely constricted to the European market where it has developed a solid presence as both an on-site and hosted solution. Its impact on the market, however, will likely expand in the very near term as Worldline is able to direct greater strategic focus to the platform following its restructuring and public listing. As such, continued development and high levels of support are inevitable. As a platform, Worldline Pay has the capability to expand much more broadly.
as a global solution and as such stands out today as a market leader in the CMS space. For these reasons, Worldline Pay should be strongly considered for shortlisting as part of any CMS vendor-selection exercise.

Appendix

Further reading

*Tokenization in the Payments Value Chain*, IT0059-000027 (September 2015)

*The Changing Role of Payments in the Enterprise: An Industries Perspective*, IT0059-000020 (August 2015)

*Ovum Decision Matrix: Selecting a White-label Mobile Wallet Platform*, IT0003-000633 (December 2014)

*Ovum Decision Matrix: Selecting an Electronic Retail Payment Switch Platform*, IT003-000602 (January 2014)

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Ovum Consulting

We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Ovum’s consulting team may be able to help you. For more information about Ovum’s consulting capabilities, please contact us directly at consulting@ovum.com.

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