

# Vendor Analysis: Moody's Analytics

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## CECL Technology Solutions 2018



# About Chartis

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- Cyber risk management
- Insurance risk
- Regulatory requirements including Basel 2 and 3, Dodd-Frank, MiFID II and Solvency II

Chartis is solely focused on risk and compliance technology, which gives it a significant advantage over generic market analysts.

The firm has brought together a leading team of analysts and advisors from the risk management and financial services industries. This team has hands-on experience of implementing and developing risk management systems and programs for Fortune 500 companies and leading consulting houses.

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# 1. Report context

*This Vendor Analysis is based on the Chartis quadrant report CECL Technology Solutions 2018 (published in May 2018). This section summarizes the key theses in that report; subsequent sections take a detailed look at the quadrant positioning and scoring for Moody's Analytics, and Chartis' underlying opinion and analysis.*

## Key thesis

Much like other regulations and standards<sup>1</sup>, CECL<sup>2</sup> is a catalyst for revolutionary change in the methodologies, business processes and IT/data infrastructure FIs employ to handle market and credit risk. For FIs the main impacts and requirements of CECL will be more data, the development and implementation of new models, and a complex interplay of related regulations and stress tests. Dealing with these will require a strong database structure, the right modeling methodology, and an approach that – where appropriate – incorporates elements of the systems FIs will have to use for other industry regulations and requirements.

But while CECL shares many similarities with other regulations, it has some important differences too. Systems in place to handle International Financial Reporting Standard 9 (IFRS 9), for example, won't automatically suit CECL. Nevertheless, the similarities between these two standards in particular make a 'compare and contrast' approach a useful way to assess the relative strengths and drawbacks of available technology offerings.

## Market structure makes CECL a vendor issue

While FIs' progress toward CECL implementation has been patchy, in some important respects CECL is a vendor issue. Because it comes into force in the US, its impacts are weighted by the characteristics of that market. In contrast to Europe and Asia, where most FIs build on-premise solutions using components from specific vendors, FIs in the US *outsource* almost all of their systems. From a compliance perspective their message is clear: they won't be ready to comply until vendors are ready with solutions that match their technology and process requirements and keep their various stakeholders happy.

The vendor landscape is dominated by Software as a Service (SaaS) players, third-party modelers and data vendors. How far providers differentiate themselves in future will depend to a large extent on how closely they match the 'ideal' CECL offering: a flexible solution that combines support for core business operations with process improvements in the key areas of hedge accounting, classification and measurement and impairment. Meanwhile, vendors without a SaaS or data focus will struggle. This is a shifting market landscape, however, with a great many challenges, and it will be vital to monitor how it develops in the coming years.

## Demand-side takeaways

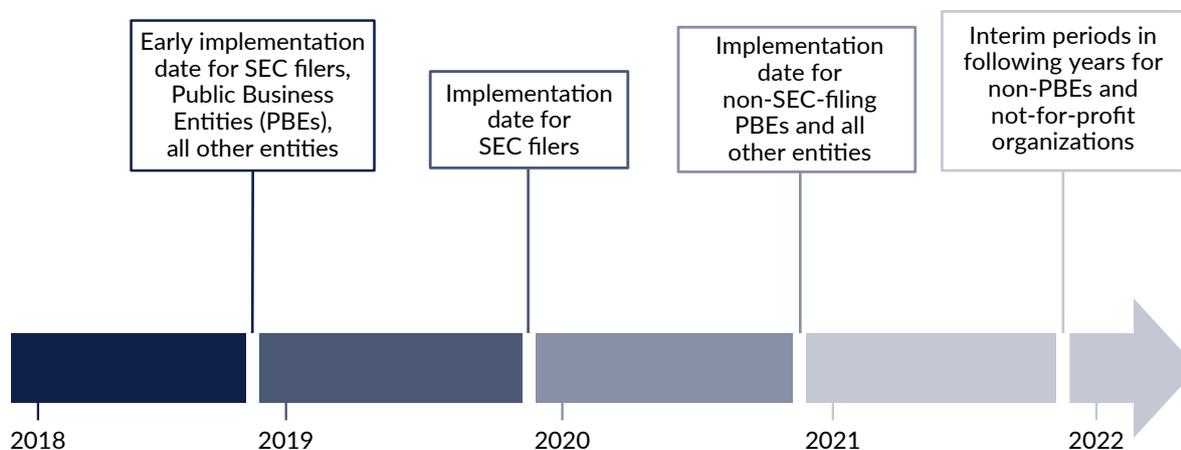
CECL was introduced by the Financial Accounting Standards Board (FASB) to address weaknesses in FIs' reporting systems to mitigate loan-related risk. The first milestone in its implementation is due at the end of this year (see Figure 1). Under the new standard, which will affect mainly US banks and some trading firms, FIs will have to predict their future losses on loans, and mitigate the risk accordingly.

<sup>1</sup> Notably IFRS 9, the Basel 1-4 initiatives (including Fundamental Review of the Trading Book [FRTB]), responses from the US such as Comprehensive Capital Analysis and Review [CCAR] and Dodd-Frank Act Stress Test [DFAST], and Solvency II in the insurance sector.

<sup>2</sup> Note that when we refer to CECL we mean the US Generally Accepted Accounting Principles (GAAP) Current Expected Credit Loss (CECL) accounting standard.

This should allow FIs to prepare in advance for any potential shocks, rather than acting too late. FIs ignore CECL at their peril: if they fail to accurately present their credit risk they could suffer serious consequences, not least the potential damage to their reputation.

**Figure 1: Implementation timeline for CECL**



Source: Chartis Research

## Impacts and actions for FIs

CECL will have three main impacts on FIs' operations:

- It will force a stronger focus on **data**: its volume, its quality and its lineage.
- It will demand that FIs test and devise new **models**.
- It forms part of a wider **interrelated set of inbound regulatory demands**.

FIs can make some immediate changes to meet these challenges:

- Ensure their **data systems** are sophisticated enough to cope.
- **Create models** to predict future expected losses.
- **Utilize existing systems** from CCAR, DFAST, European Banking Authority (EBA) and IFRS 9 implementations.
- **Start early** to gather enough data.

## The state of implementation

But implementing CECL programs is a complex and time-consuming task. CECL's initial implementations – like those in other areas of the financial sector – are happening later than originally anticipated. Because FIs have been making more tactical changes to their systems than they intended, their implementation deadlines have been extended.

Larger financial services organizations generally have more 'mature' CECL systems than smaller FIs, for two main reasons. First, their response to previous, similar business and regulatory challenges has been more comprehensive; secondly, they have greater capacity for reuse and more available resources. Elsewhere, a small minority of organizations that are more sophisticated, agile and/or simply determined are further ahead of the pack because they are less complex and deal with smaller amounts of data.

In any case, most organizations started their impact analyses for CECL later than the date proposed in the original timetables – although those timetables may have underestimated the scale of the changes to organizational, technology, data and credit risk methodologies involved.

As a result, most FIs' CECL implementations have gaps in some critical areas, including:

- Identifying the optimal granularity of credit portfolios.
- Knowing how and when to apply the 'best' methodology.
- Pattern-matching the appropriate data.
- Calculating the implications for IT architecture and data management.

Further complicating the situation is the uncertain relationship between FIs and other dynamics in the environment that intersect with CECL, such as developing regulations, Profit & Loss (P&L) measurement and capital calculations.

### The vendor issue

Ultimately, however, Chartis believes that the real difference *for FIs* between CECL and other standards, especially IFRS 9, is not in *technology*, but in *process*. The real technical issues are on the supply side. The reason there is a difference between CECL and IFRS 9 technology is because, outside the biggest 20 banks most, if not all, FIs *outsource* their technology.

In Europe, FIs of all sizes will tend to buy on-premise software. In the US, by contrast, only the biggest 20 or so FIs build on-premise – everyone else goes to third parties for help. This is a key market structure dynamic: because FIs outsource everything, they are leaving it all to the vendors to do – when the vendors have their solution ready, the FIs will be ready too.

While FIs face operational issues around collecting data, for example, and demonstrating they have the right loans in place, their CECL project planning relies to a large extent on the availability of the appropriate solutions. These must not only address the technical issues around CECL, but the process ones too.

For FIs and vendors, this is about *systems and strategy*.

## Supply-side takeaways

### Meeting a need: creating an 'ideal' CECL solution

FIs need a solution with considerable operational flexibility to address the entire operational value chain in an FI, as well as the various stakeholders involved. We believe that the 'ideal' CECL solution should be able to:

- Support CECL in its various renditions.
- Demonstrate that it is compatible with CCAR under appropriate assumptions and data sets.
- Support 'business as usual' activities.
- Support the risk and finance departments, the front office and the full product lifecycle.
- Support the audit trail.
- Provide explanatory capabilities in drilldown.
- Support requirements for internal controls.
- Support regulatory needs for transparency.

To make the most of their implementations, FIs must embrace CECL in a way that improves their processes and ultimately their performance. Of course, the extent to which they achieve this depends on what vendors supply them with.

### The state of supply: the CECL vendor landscape

As a result of the tensions created by the strong demand for SaaS solutions, the vendor landscape is complex and heterogeneous. The varied success of CECL solution vendors will be marked: SaaS-focused vendors will dominate, but other players will do well, especially in the areas of third-party modeling and data.

Model validation is another essential business process for CECL. Even the largest FIs are overwhelmed by model validation demands across many of their businesses and departments. Given the position of smaller FIs we expect a lot more growth in this area in the next few years. So far, model validation processes are largely manual, but we are seeing new digitally automated methods evolving. This is important, because without a more effective automated approach, the obligations of model validation will reduce the opportunities for appropriately diverse models to be applied to different business portfolios, ultimately restricting the commercial growth of modeling opportunities. However, we expect mutual economic opportunity and necessity to improve model validation technology eventually.

The US market contains a huge ecosystem of third-party modelers, mainly because of the vast numbers of banks in the US that are too small to undertake their own model validation projects. The importance of data in CECL reporting means that data vendors are likely to do well, especially in the US. Vendors of credit analytics and historical data have already enjoyed large increases in revenue and expanded markets because of IFRS 9 and CECL. Large traditional suppliers have maintained their pricing models,

accessing smaller data vendors and analytics and modeling consultancies to leverage their data businesses. This business is likely to remain vibrant: all across the modeling market firms are looking for suitably qualified people and relevant data to aggregate.

## 2. Quadrant context

### Introducing the Chartis FinTech™ Quadrant

This section of the report contains:

- The Chartis FinTech Quadrant™ for CECL Technology Solutions 2018.
- An examination of the positioning and scores for Moody's Analytics as part of Chartis' analysis.
- A consideration of how the quadrant reflects the broader vendor landscape.

### Summary information

#### *What does the Chartis quadrant show?*

The FinTech Quadrant™ uses a comprehensive methodology that involves in-depth independent research and a clear scoring system to explain which technology solutions meet an organization's needs. The FinTech Quadrant™ does not simply describe one technology option as the best CECL solution; rather it has a sophisticated ranking methodology to explain which solutions are best for specific buyers, depending on their implementation strategies.

The FinTech Quadrant™ is a proprietary methodology developed specifically for the financial technology marketplace. It takes into account vendors' product, technology and organizational capabilities. Section 4 of this report sets out the generic methodology and criteria used for the FinTech Quadrant™.

#### *How are quadrants used by technology buyers?*

Chartis' RiskTech and FinTech quadrants provide a view of the vendor landscape in a specific area of risk, financial and/or regulatory technology. We monitor the market to identify the strengths and weaknesses of different solutions, and track the post-sales performance of companies selling and implementing these systems. Users and buyers can consult the quadrants as part of their wider research when considering the most appropriate solution for their needs.

Note, however, that Chartis Research does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Chartis Research's publications consist of the opinions of its research analysts and should not be construed as statements of fact.

#### *How are quadrants used by technology vendors?*

Technology vendors can use Chartis' quadrants to achieve several goals:

- Gain an independent analysis and view of the provider landscape in a specific area of risk, financial and/or regulatory technology.
- Assess their capabilities and market positioning against their competitors and other players in the space.

- Enhance their positioning with actual and potential clients, and develop their go-to-market strategies.

In addition, Chartis' Vendor Analysis reports, like this one, offer detailed insight into specific vendors and their capabilities, with further analysis of their quadrant positioning and scoring.

### Chartis Research FinTech Quadrant™ for CECL Technology Solutions 2018

Figure 2 illustrates Chartis' view of the CECL solutions vendor landscape, highlighting Moody's Analytics.

Figure 2: FinTech Quadrant™ for CECL Technology Solutions 2018



Source: Chartis Research

## Quadrant dynamics

### General quadrant takeaways

The generally broad spread of vendors on the quadrant, coupled with a tighter grouping among category leaders, reflects how the CECL solution and vendor landscapes have evolved in recent years.

- Category leaders scored well for both market potential and completeness of offering, and in their CECL solutions generally featured strong classification of financial instruments and embedded knowledge. Those suppliers with a history in credit risk and BSM systems had the highest scores. Also key to the scores of the highest ranked vendors was their organizational breadth and reach, giving them a wealth of experience in implementing diverse accounting models.
- Vendors with strong enterprise solutions had high scores in most of the key required features of a comprehensive CECL offering. Those that scored highly overall tended to have sophisticated technology that integrates well with FIs' existing systems.
- Best-of-breed vendors generally rated highly in the following areas: financials, strategy, delivery and client satisfaction. Optimum business delivery (including the ability to rapidly integrate systems) is important for CECL solutions, which can often be overlaid with several other processes and models. However, these vendors did less well when considered against the key aspects of a comprehensive solution, such as data provision or general ledger and accounting.

### Vendor positioning in context – completeness of offering

Moody's Analytics scored highly on the completeness of offering axis of the Chartis quadrant largely due to its sophisticated and customizable approach to using data and model development to service FI's CECL requirements.

Fundamental to FIs' CECL compliance is access to adequate modeling data. The strong background in data that Moody's Analytics has is evident in the extent of its data provision and its relatively sophisticated data management capabilities. Moody's Analytics provides data sets for corporate and structured products at a variety of frequencies, enabling it to address all the asset classes covered by CECL. Moreover, its comprehensive cloud-based data management system includes modeling, validation and benchmarking.

The solution also scored highly because of the customizability and flexibility of its models and the validation services it provides. Custom model design can be adapted down to regional variables or a specific concentration of risk in certain assets; the models' customizability also has the scope to include qualitative data input.

Table 1 shows Chartis' rankings for the vendor's coverage against each of the completeness of offering criteria.

**Table 1: Completeness of offering – Moody’s Analytics (CECL Technology Solutions 2018)**

Completeness of offering criterion	Coverage
General ledger and accounting	Medium
Classification of financial instruments	High
ECL calculation	Medium
Balance sheet management and optimization	Medium
Data management	High
Stress testing and variable analysis	High
Model validation	Medium
Technology	High
Reporting	Medium
Embedded knowledge	High
Integration of finance and risk	Medium
Provision of data	High

Source: Chartis Research

### Vendor positioning in context – market potential

For Moody’s Analytics, its market potential score was essential to its position as a category leader. The company has a loyal customer base, and its experience in supporting existing clients for IFRS 9 and data analytics systems gives it a good baseline structure for implementing its CECL solution.

Its experience in credit and risk modeling in finance helps it service general CECL implementation requirements; it also publishes several CECL methodologies. Its partnerships with US banks enable it to validate the performance of its models, further enhancing its relative authority in this space.

Table 2 shows Chartis’ rankings for the vendor’s coverage against each of the market potential criteria.

**Table 2: Market potential – Moody’s Analytics (CECL Technology Solutions 2018)**

Market potential criterion	Coverage
Customer satisfaction	High
Market penetration	High
Growth strategy	High
Financials	High
Business delivery model	High

Source: Chartis Research

### 3. Vendor context

#### Overview of relevant vendor solutions/capabilities

Table 3 gives an overview of Moody’s Analytics and its CECL solution<sup>3</sup>.

**Table 3: Moody’s Analytics – company information**

Company	Moody’s Analytics
Headquarters	New York, NY, US
Other offices	San Francisco, Toronto, Brussels, Paris, London, Singapore, Hong Kong, Tokyo
Description	Moody’s Analytics provides financial intelligence and analytical tools to organizations worldwide. Its solutions comprise research, data, software and professional services.
Solution	<p>Moody’s Analytics ImpairmentStudio solution features an integrated, scalable credit allowance process for step-by-step CECL analysis. The interactive solution includes:</p> <ul style="list-style-type: none"> <li>A <b>data center</b> to centralize and reconcile data from multiple sources.</li> <li>A <b>scenario library</b> that provides access to off-the-shelf Moody’s Analytics macroeconomic scenarios and custom forecasts.</li> <li>A <b>model inventory</b> that provides access to credit risk and allowance models from Moody’s Analytics; it can also house FIs’ internally developed models.</li> <li>A <b>CECL calculation engine</b> that can support a variety of methodologies, as well as built-in analysis tools.</li> </ul>

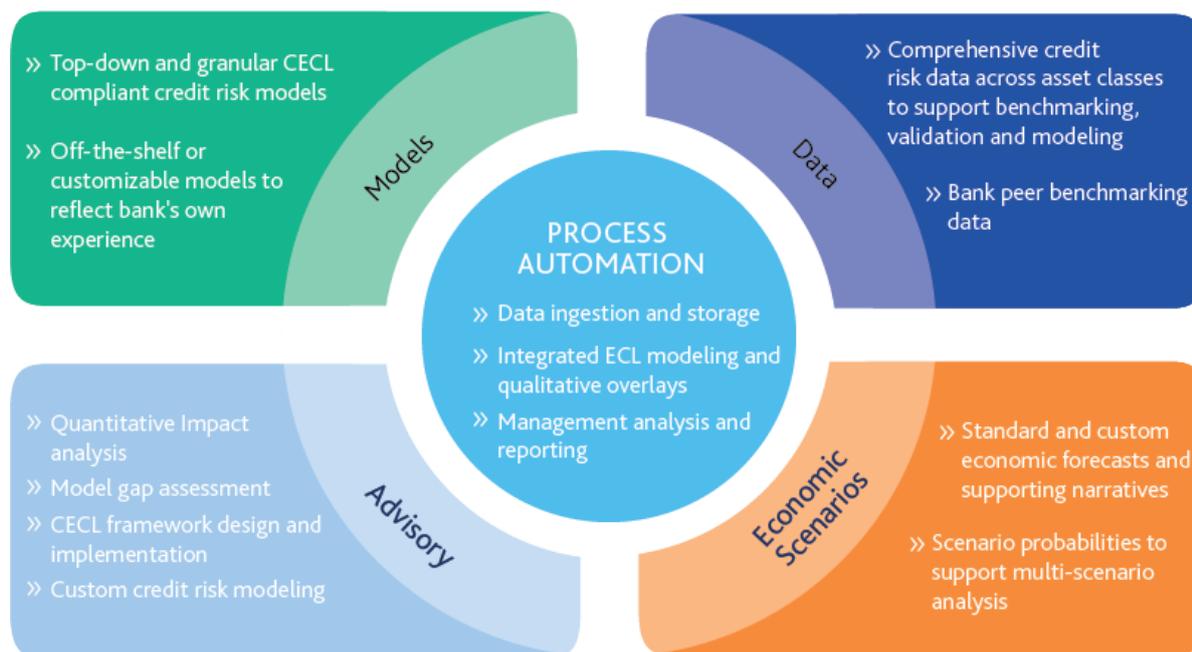
Source: Moody’s Analytics

The ImpairmentStudio solution is the cornerstone of the vendor’s Credit Loss and Impairment Analysis Suite. Its data integrity, analytics and regulatory reporting solutions contribute to a modular impairment offering. The ImpairmentStudio solution features an auditable platform for data consolidation, model warehousing, expected credit loss calculation, and results analysis.

Figure 3 summarizes the capabilities of the ImpairmentStudio solution.

<sup>3</sup> The ImpairmentStudio and CAP solutions are trademarked by Moody’s Analytics.

**Figure 3: The Credit Loss and Impairment Analysis Suite**



Source: Moody's Analytics

## Key capabilities

Key capabilities of the ImpairmentStudio solution include:

Centralizing granular portfolio and macroeconomic data. The solution can:

- Centralize and clean data from different source systems, to enhance accuracy and completeness when measuring and recognizing credit losses.
- Perform allowance calculations for different reporting entities, including subsidiaries and holding companies.
- Organize allowance calculations at various levels of granularity, from loan-level to pool-level analysis.

Supporting a range of expected credit loss and allowance forecasting models. The solution can:

- Centrally manage and monitor model information in an auditable model inventory.
- Access economic forecasts from Moody's Analytics directly through the application, to reflect forward-looking information in the allowance calculations quantitatively or via management overlays.
- Access credit risk industry data from Moody's Analytics for a variety of asset classes, as well as a natively integrated scenario-conditioning model.
- Apply custom business-specific scenarios, including market data, interest rate data, and cash-flow forecasting across multiple scenarios.

Analyzing results and producing a range of disclosures and management reports. The solution can:

- Leverage a reporting layer to produce required disclosure reports and configurable management reports.
- Access attribution analysis, trend analysis and scenario analysis reports to compare results across various reporting periods and/or under different assumptions.
- Perform auditable management adjustments; users can also compare initial and adjusted values, and upload supporting documentation.

Automating CECL workflows with visual end-to-end process management capabilities. The solution can:

- Produce granular and aggregated calculations by leveraging a scalable cloud-based distributed computing infrastructure.
- Apply qualitative adjustments to selected segments, using a variety of standard and/or customized qualitative factors.
- Gather necessary approvals from assigned users and groups.
- Publish final disclosures and management reports, and archive all inputs, outputs, assumptions and user actions into an audit trail.

## Vendor leading practices

The Moody's Analytics ImpairmentStudio platform is a cloud-based solution, and supports a range of institutions in terms of both size and complexity. The following sections summarize key aspects of the solution.

**Technology.** There are several advantages to a cloud-based solution:

- **Faster implementation.** The onboarding process can be quicker because there is no software installation project involved.
- **Scalability.** The solution scales up or down based on an institution's portfolio size, and uses distributed computing to run faster calculations.
- **Maintenance.** Users can deploy new features and model updates relatively easily, which helps to ensure that institutions can follow CECL evolutions and industry practices.
- **Reduced cost.** Cloud-based technology is useful in reducing the total cost of ownership.

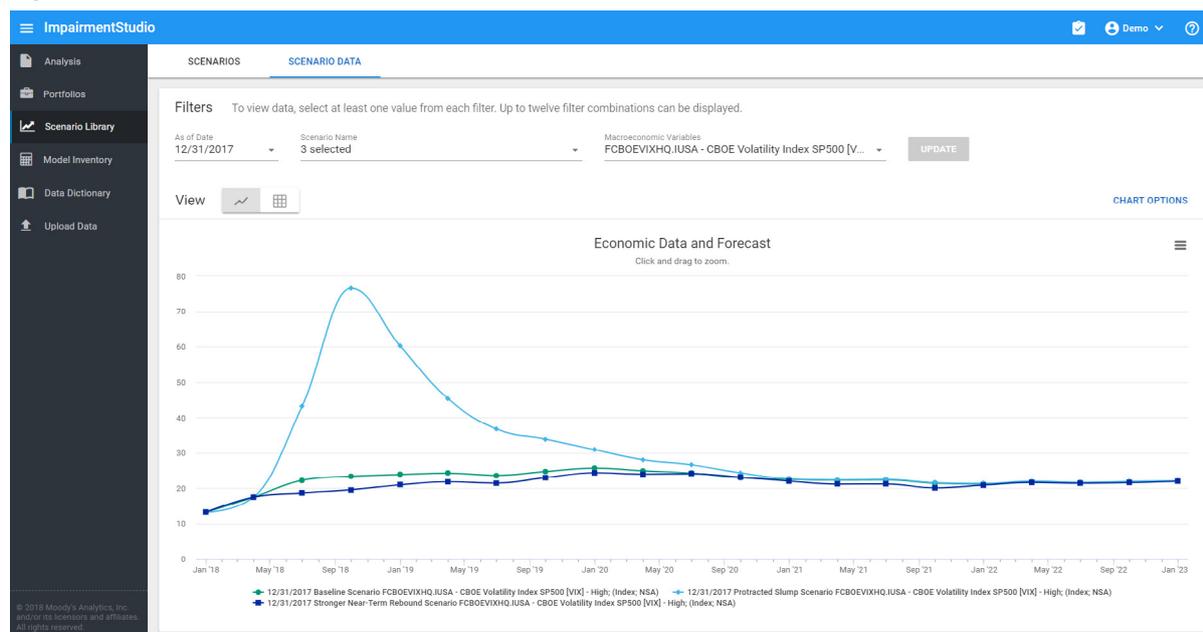
**Data warehousing.** The ImpairmentStudio platform can help FIs to manage and store relevant CECL data, while supporting requirements for internal controls over financial reporting. Data requirements vary based on methodologies used and reporting needs; FIs can make methodology choices for each segment based on their portfolio characteristics, materiality and data availability.

The ImpairmentStudio solution integrates data from institutions' core systems and consolidates data across business silos. Users can populate and upload data using the data dictionary and templates provided, or connect their data storage system directly using the ImpairmentStudio Application Programming Interfaces (APIs).

**Economic forecast scenarios** (see Figure 4). The ImpairmentStudio platform maintains nine out-of-the-box standard scenarios developed by Moody's Analytics. These include baseline, consensus, upside and stress scenarios, as well as regulatory scenarios based on projections provided by governing authorities. Scenarios from Moody's Analytics include national-, state- and local-level factors, to match FI's specific footprints and exposures.

Each scenario is fully documented, providing a narrative of what might cause a change in the outlook, relative to the baseline. Scenarios are updated monthly to reflect the latest economic data and expectations. Scenarios in the ImpairmentStudio solution can be used quantitatively, using a large spectrum of CECL-compliant models, or to support qualitative adjustments to historical and/or calculated results. In addition, forecasts for FI-specific scenarios are centralized in a scenario library to help ensure that forecasts are applied consistently across portfolios and by various users. The platform also allows users to upload custom scenarios from any source.

**Figure 4: A snapshot of an economic forecast scenario within the ImpairmentStudio solution**



Source: Moody's Analytics

**Loss estimation methodologies** The solution supports a range of methodologies, including discounted cash flow, Probability of Default (PD)/Loss Given Default (LGD), and loss rate approaches. For each relevant segment, FIs can choose any of the following standard methodologies supported in the solution:

- **Discounted Cash Flow (DCF): Expected Cash Flow.** Expected loss calculated as the difference of the amortized cost and the discounted expected cash flow to be received (after prepayment and recovery).
- **DCF: Loss Cash Flow.** Expected loss calculated as the sum of the discounted lifetime loss projection.

- **Loss Rate.** This method uses aggregated loan-level data and applies macroeconomic scenarios to estimate losses. It takes the loss rate and the amortized cost into account. The loss rate models can also be calibrated to reflect the client's historical experience.
- **PD/LGD.** Cumulative PD and LGD rates applied to amortized cost.

**Industry data, off-the-shelf models, and custom model integration** (see Figure 5). The ImpairmentStudio solution embeds a range of industry data and off-the-shelf models to support the allowance calculation process.

- PD, LGD and historical loss rates covering the main Commercial and Industrial (C&I), Commercial Real Estate (CRE) and consumer portfolios (mortgage, auto, credit cards and other asset classes), built using a variety of proprietary datasets including the Credit Research Database (CRD) from Moody's Analytics.
- Off-the-shelf CECL-compliant PD, LGD, loss rate and cash-flow models covering all asset classes including structured and non-structured securities.
- Scenario conditioning models that can leverage several inputs, including pool or instrument characteristics, internal and agency ratings, PD/LGD and forward-looking scenarios, to produce CECL-compliant expected credit losses.
- Custom model integration using the Moody's Analytics CAP™ solution.
- An allowance calculation engine that can leverage any combination of the above. The methodology and model selection is performed at the segment level, using a segmentation that can be configured to reflect each FI's specific characteristics.

**Figure 5: Snapshot of the ImpairmentStudio platform's model inventory feature**

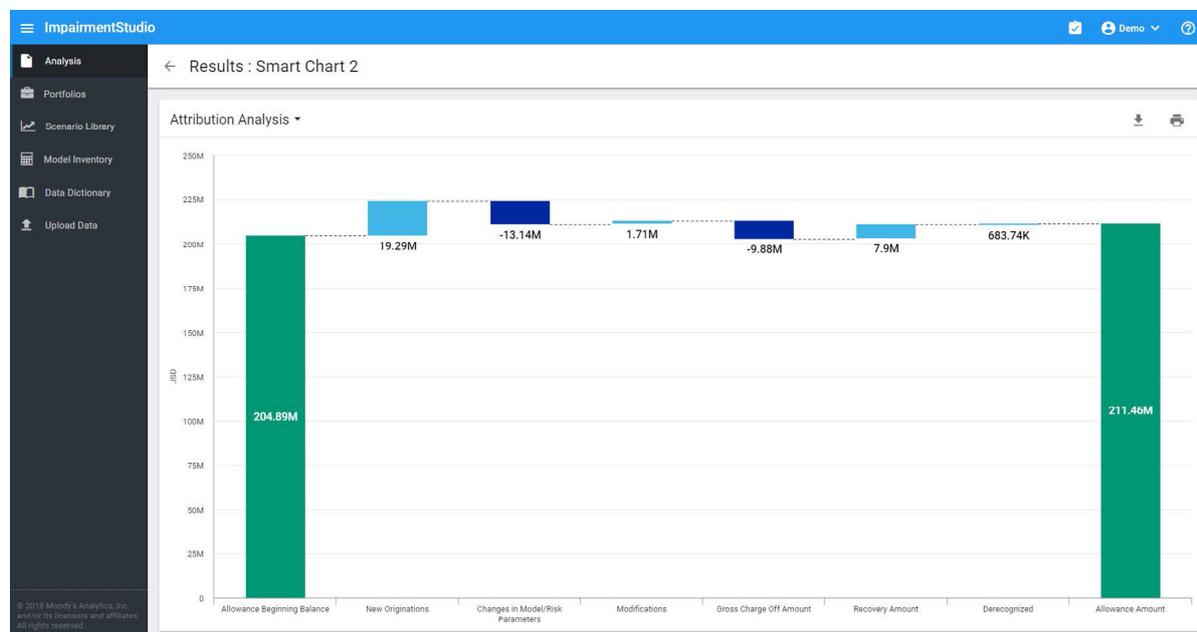
Source	Model Name	Output	Validation Status	Type	Owner
MA	Structured MA Prepayment Model	Prepayment	Validated	API	Greg
MA	SAV	Loss Rate	Validated	API	Olivier Brucker
MA	CMM 3.0	PD	Validated	API	Olivier Brucker
MA	CMM 3.0	LGD	Validated	API	Olivier Brucker
MA	RiskCalc	LGD	Validated	Imported	Olivier Brucker
MA	RiskCalc	PD	Validated	Imported	Olivier Brucker
MA	MA TTC to PIT Converter	PD Converter	Validated	API	Olivier Brucker
MA	ECCL	Loss Rate	Validated	Imported	Olivier Brucker
MA	GCORR 2016	Scenario Conditioning	Validated	API	Olivier Brucker
Internal	Custom	PD	Validated	Imported	Mladen Panic
Internal	LGD Model	LGD	Validated	Imported	Greg
Internal	Loss Rate Model v1	Loss Rate	Validated	Imported	Greg
Internal	C&I R Script Model	PD	Validated	Script	Olivier Brucker
Internal	Custom	LGD	Validated	Imported	Olivier Brucker

Source: Moody's Analytics

**Industry disclosures and management reports.** The ImpairmentStudio platform includes a reporting framework to analyze results and produce a range of disclosures and management reports. This includes:

- Standard disclosure reports that reflect the latest industry standards, and which are regularly updated to reflect evolving market practices. These disclosure reports are automatically populated once results are generated.
- Analysis reports and charts that include attribution analysis, scenario analysis and trend analysis (see Figure 6).
- Contract details, which enable users to visualize, for each instrument: granular calculation results, instrument characteristics, the model data used, and, when relevant, the cash flows that are generated.
- Custom management reports and charts that can be configured and saved relatively easily. The product employs a pivot table component that supports drill-down analysis by enabling users to choose relevant dimensions, columns, filters and values. Users can modify standard reports or build custom reports from scratch. For any standard or custom report, users can also drill down to the instrument level to access contract details.
- Reports and charts that can be exported and assembled into documents, to streamline and support presentations to key stakeholders that include committees, senior managers, shareholders, auditors and regulators.

**Figure 6: Snapshot of the ImpairmentStudio platform’s capabilities for attribution analysis**



Source: Moody's Analytics

**Qualitative adjustments.** Once calculation results are generated, users can incorporate qualitative adjustments (see Figure 7). Adjustments can be defined using an array of standard qualitative factors, but institution-specific factors can also be added. Adjustments are applied to aggregated segments

or at the instrument level. All adjustments are documented and recorded in a central repository for future audit.

**Figure 7: Snapshot of the ImpairmentStudio solution's capabilities for qualitative adjustments**

The screenshot displays the 'Adjustment' form in the ImpairmentStudio application. The interface includes a sidebar with navigation options like 'Analysis', 'Portfolios', and 'Scenario Library'. The main content area shows the 'Adjustment' details with tabs for 'DETAILS' and 'ATTACHMENTS (0)'. The form contains several input fields and dropdown menus for configuring the adjustment.

Adjustment Scope *		
Portfolio Name *	Commercial	
Accounting Classification	US GAAP - Hold for Investment (HFI)	

Metric *	Adjustment Formula *	Category *
Allowance	+10000	Economic/Business Conditions
Allocation Method	Weighted Average Metric *	Reason *
Weighted Average	Amortized Cost	External Factors
Created By	Created	Comment *
Demo User	2018-06-14 16:44:11	Adjusting due to economic reasons
Last Updated By	Last Updated	
Demo User	2018-06-14 16:44:11	

33 / 10,000

Source: Moody's Analytics

## 4. Methodology

### Overview

Chartis is a research and advisory firm that provides technology and business advice to the global financial services industry. Chartis provides independent market intelligence regarding market dynamics, regulatory trends, technology trends, best practices, competitive landscapes, market sizes, expenditure priorities, and mergers and acquisitions. Chartis' RiskTech and FinTech Quadrant reports are written by experienced analysts with hands-on experience of selecting, developing and implementing financial technology solutions for a variety of international companies in a range of industries including banking, insurance and capital markets. The findings and analyses in our quadrant reports reflect our analysts' considered opinions, along with research into market trends, participants, expenditure patterns, and best practices.

Chartis seeks to include RiskTech and FinTech vendors that have a significant presence in a given target market. The significance may be due to market penetration (e.g., a large client base) or innovative solutions. Chartis uses detailed 'vendor evaluation forms' and briefing sessions to collect information about each vendor. If a vendor chooses not to respond to a Chartis request for information, Chartis may still include the vendor in the report. Should this happen, Chartis will base its opinion on direct data collated from technology buyers and users, and from publicly available sources.

Chartis' research clients include leading financial services firms and Fortune 500 companies, leading consulting firms and financial technology vendors. The vendors evaluated in our quadrant reports can be Chartis clients or firms with whom Chartis has no relationship.

Chartis evaluates all vendors using consistent and objective criteria, regardless of whether or not they are Chartis clients. Chartis does not give preference to its own clients and does not request compensation for inclusion in a quadrant report, nor can vendors influence Chartis' opinion.

### Selection criteria

The vendor landscape for CECL is complex and heterogeneous. For FIs, the ideal CECL solution combines key process elements with factors such as support for 'business as usual' activities and audit trails. The extent to which vendors achieve this will determine how differentiated they are in the market, and how we assessed them for our FinTech Quadrant™.

Because we scored vendors based on how well they have embraced the concept of an 'ideal' CECL solution, we considered a broad range of providers. These covered an array of capabilities and specialisms, including more traditional players and – given the tensions and dynamics created by the strong demand for outsourcing – newer SaaS-focused vendors, as well as vendors of data and analytics and third-party modelers.

### Briefing process

We conducted face-to-face and/or web-based briefings with each vendor<sup>4</sup>. During these sessions, Chartis experts asked in-depth, challenging questions to establish the real strengths and weaknesses of each vendor. Vendors provided Chartis with:

<sup>4</sup> Note that vendors do not always respond to requests for briefings; they may also choose not to participate in the briefings for a particular report.

- A business update – an overview of solution sales and client satisfaction.
- A product update – an overview of relevant solutions and R&D roadmaps.
- A product demonstration – key differentiators of their solutions relative to those of their competitors.

In addition to briefings, Chartis used other third-party sources of data, such as conferences, academic and regulatory studies, and publicly available information.

## Evaluation criteria

The generic evaluation criteria for each dimension are set out below. In addition to these generic criteria, Chartis utilizes domain-specific criteria relevant to each individual risk. This ensures total transparency in our methodology and allows readers to fully appreciate the rationale for our analysis. The specific criteria used for CECL technology solutions are shown in Table 4.

**Table 4: Evaluation criteria for Chartis' CECL technology solutions report**

Completeness of offering	Market potential
<ul style="list-style-type: none"> <li>• General ledger and accounting</li> <li>• Classification of financial instruments</li> <li>• ECL calculation</li> <li>• Balance sheet management and optimization</li> <li>• Data management</li> <li>• Stress testing and variable analysis</li> <li>• Model validation</li> <li>• Technology</li> <li>• Reporting</li> <li>• Embedded knowledge</li> <li>• Integration of finance and risk</li> <li>• Provision of data</li> </ul>	<ul style="list-style-type: none"> <li>• Customer satisfaction</li> <li>• Market penetration</li> <li>• Growth strategy</li> <li>• Financials</li> <li>• Business model</li> </ul>

Source: Chartis Research

## Completeness of offering

- **Depth of functionality.** The level of sophistication and amount of detailed features in the software product (e.g., advanced risk models, detailed and flexible workflow, domain-specific content). Aspects assessed include: innovative functionality, practical relevance of features, user-friendliness, flexibility, and embedded intellectual property. High scores are given to those firms that achieve an appropriate balance between sophistication and user-friendliness. In addition, functionality linking risk to performance is given a positive score.

- **Breadth of functionality.** The spectrum of requirements covered as part of an enterprise risk management system. This will vary for each subject area, but special attention will be given to functionality covering regulatory requirements, multiple risk classes, multiple asset classes, multiple business lines, and multiple user types (e.g. risk analyst, business manager, CRO, CFO, Compliance Officer). Functionality within risk management systems and integration between front-office (customer-facing) and middle/back office (compliance, supervisory and governance) risk management systems are also considered.
- **Data management and technology infrastructure.** The ability of risk management systems to interact with other systems and handle large volumes of data is considered to be very important. Data quality is often cited as a critical success factor and ease of data access, data integration, data storage, and data movement capabilities are all important factors. Particular attention is given to the use of modern data management technologies, architectures and delivery methods relevant to risk management (e.g., in-memory databases, complex event processing, component-based architectures, cloud technology, and Software as a Service). Performance, scalability, security and data governance are also important factors.
- **Risk analytics.** The computational power of the core system, the ability to analyze large amounts of complex data in a timely manner (where relevant in real time), and the ability to improve analytical performance are all important factors. Particular attention is given to the difference between 'risk' analytics and standard 'business' analytics. Risk analysis requires such capabilities as non-linear calculations, predictive modeling, simulations, scenario analysis, etc.
- **Reporting and presentation layer.** The ability to present information in a timely manner, the quality and flexibility of reporting tools, and ease of use, are important for all risk management systems. Particular attention is given to the ability to do ad-hoc 'on-the-fly' queries (e.g., 'what-if' analysis), as well as the range of 'out of the box' risk reports and dashboards.

## Market potential

- **Market penetration.** Both volume (i.e., number of customers) and value (i.e., average deal size) are considered important. Also, rates of growth relative to sector growth rates are evaluated.
- **Brand.** Brand awareness, reputation, and the ability to leverage current market position to expand horizontally (with new offerings) or vertically (into new sectors) are evaluated.
- **Momentum.** Performance over the previous 12 months is evaluated, including financial performance, new product releases, quantity and quality of contract wins, and market expansion moves.
- **Innovation.** New ideas, functionality and technologies to solve specific risk management problems are evaluated. Developing new products is only the first step in generating success. Speed to market, positioning and translation into incremental revenues are critical success factors for exploiting the new product. Chartis also evaluates business model or organizational innovation (i.e., not just product innovation).
- **Customer satisfaction.** Feedback from customers regarding after-sales support and service (e.g., training and ease of implementation), value for money (e.g., price to functionality ratio)

and product updates (e.g., speed and process for keeping up to date with regulatory changes) is evaluated.

- **Sales execution.** The size and quality of the vendor's sales force, and its sales distribution channels, global presence, focus on risk management, messaging and positioning are all important factors.
- **Implementation and support.** Important factors include size and quality of implementation team, approach to software implementation, and post-sales support and training. Particular attention is given to 'rapid' implementation methodologies and 'packaged' services offerings.
- **Thought-leadership.** Business insight and understanding, new thinking, formulation and execution of best practices, and intellectual rigor are considered important by end users.
- **Financial strength and stability.** Revenue growth, profitability, sustainability and financial backing (e.g., the ratio of license to consulting revenues) are considered key to the scalability of the business model for risk technology vendors.

## Quadrant construction process

Chartis constructs its quadrants after assigning scores to vendors for each component of the Completeness of Offering and Market Potential criteria. By aggregating these values, we produce total scores for each vendor on both axes, which are used to place the vendor on the quadrant.

## Definition of quadrant boxes

Chartis' quadrant reports do not simply describe one technology option as the best solution in a particular area. Our ranking methodology is designed to highlight which solutions are best for specific buyers, depending on the technology they need and the implementation strategy they plan to adopt. Vendors that appear in each quadrant have characteristics and strengths that make them especially suited to that particular category, and by extension to particular users' needs.

### *Point solutions*

- Point solutions providers focus on a small number of component technology capabilities, meeting a critical need in the risk technology market by solving specific risk management problems with domain-specific software applications and technologies.
- They are often strong engines for innovation, as their deep focus on a relatively narrow area generates thought leadership and intellectual capital.
- By growing their enterprise functionality and utilizing integrated data management, analytics and Business Intelligence (BI) capabilities, vendors in the point solutions category can expand their completeness of offering, market potential and market share.

### *Best-of-breed*

- Best-of-breed providers have best-in-class point solutions and the ability to capture significant market share in their chosen markets.

- They are often distinguished by a growing client base, superior sales and marketing execution, and a clear strategy for sustainable, profitable growth. High performers also have a demonstrable track record of R&D investment, together with specific product or 'go-to-market' capabilities needed to deliver a competitive advantage.
- Because of their focused functionality, best-of-breed solutions will often be packaged together as part of a comprehensive enterprise risk technology architecture, co-existing with other solutions.

### ***Enterprise solutions***

- Enterprise solution providers typically offer risk management technology platforms, combining functionally rich risk applications with comprehensive data management, analytics and BI.
- A key differentiator in this category is the openness and flexibility of the technology architecture and a 'toolkit' approach to risk analytics and reporting, which attracts larger clients.
- Enterprise solutions are typically supported with comprehensive infrastructure and service capabilities, and best-in-class technology delivery. They also combine risk management content, data and software to provide an integrated 'one stop shop' for buyers.

### ***Category leaders***

- Category leaders combine depth and breadth of functionality, technology and content with the required organizational characteristics to capture significant share in their market.
- They demonstrate a clear strategy for sustainable, profitable growth, matched with best-in-class solutions and the range and diversity of offerings, sector coverage and financial strength to absorb demand volatility in specific industry sectors or geographic regions.
- They will typically benefit from strong brand awareness, a global reach, and strong alliance strategies with leading consulting firms and systems integrators.

## 5. Further reading

- *Spotlight on the CECL Reporting Standard*
- *IFRS 9 Technology Solutions: Market Update 2017*
- *Data Integrity and Control in Financial Services: Market Update 2018*
- *Balance Sheet Management Technology 2018*
- *RiskTech100® 2018*

For all these reports see [www.chartis-research.com](http://www.chartis-research.com).