

**Cayetano Gea-Carrasco**  
*Managing Director –  
 Advisory Services*

Cayetano Gea-Carrasco works with financial institutions to address their technology and enterprise risk management needs. Previously, he held leadership positions at various institutions and global banks. He is a regular speaker at international conferences and has published several articles in the areas of risk management, financial technology, and derivatives pricing. Cayetano holds a BSc. and MSc. in Telecommunication Engineering, a master's in Economics and Finance, and an MSc. in Financial Mathematics, with distinction, from King's College London.



**Nihil Patel**  
*Senior Director – Product  
 Management*

Nihil Patel is a Senior Director within the Enterprise Risk Services division at Moody's Analytics. He serves as the business lead driving our product strategy related to credit portfolio analytics. Nihil has broad experience in research, modeling, service delivery, and customer engagement. Prior to his current role, Nihil spent nine years in the Research organization leading the Portfolio Modeling Services team as well as the Correlation Research team. Nihil holds a MSE in Operations Research and Financial Engineering from Princeton University and a BS in Industrial Engineering and Operations Research from UC Berkeley.

View all articles of this edition at  
[MoodyAnalytics.com/RiskPerspectives](http://MoodyAnalytics.com/RiskPerspectives)

## Implementing an IFRS 9 Solution: Challenges Faced by Financial Institutions

BY CAYETANO GEA-CARRASCO AND NIHIL PATEL

IFRS 9 is a new international standard set forth to address the weaknesses of IAS 39. This article provides an overview of the new standard and analyzes the major challenges financial institutions will face in ensuring compliance. While there is still uncertainty in terms of implementation approaches, we believe IFRS 9 adoption will lead to a more efficient and lower-risk financial system.

As part of the response to the last financial crisis, the International Accounting Standards Board (IASB) recently issued IFRS 9 to resolve the weakness of IAS 39. Under IAS 39, incurred loss resulted in credit loss recognition that was "too little, too late." Improvements under IFRS 9 include a logical model for the classification and measurement of financial instruments, a forward-looking expected credit loss impairment model, and a substantially reformed approach to hedge accounting.

The new standard has a wide reach; it is required in more than 100 countries across Europe, the Middle East, Asia, Africa, the Americas, and Oceania. While all financial entities must adopt IFRS 9 by January 1, 2018, many organizations are targeting parallel runs and impact analyses of the end-to-end process (including staging and classification, impairment calculation, and reporting) by mid-2017. Quantitative Impact Studies (QIS), such as European Banking Authority's QIS in Europe, are also accelerating timelines of infrastructure and tactical short-term solutions for an early assessment of the impacts on provision levels.

IFRS 9 covers three areas with profound implications for financial institutions:

- » **Classification and Measurement:** IFRS 9 introduces a logical approach for the classification of financial assets driven by cash flow characteristics and the organization's business model in which an asset is held. This principle-based approach replaces existing rule-based requirements which are complex and often difficult to apply.
- » **Impairment:** Under IFRS 9, the expected credit loss (ECL) model will require more timely recognition of credit losses compared with the incurred loss model of IAS 39. The new standard requires entities to account for expected credit losses using forward-looking information and lowers the threshold for recognition of full lifetime expected losses.
- » **Hedge Accounting:** IFRS 9 represents a substantial overhaul of hedge accounting that aligns the accounting treatment with risk management activities, enabling entities to better reflect these activities in their financial statements.

IFRS 9 will drive profit and loss, which will affect earnings.

In addition, the standard will materially influence financial institutions' financial statements, with impairment calculations most affected. IFRS 9 will lead to changes including the following:

- » It will no longer be necessary for a credit event to occur before credit losses are recognized.
- » The measurement of allowance of credit loss will depend on the instrument's impairment stages.
- » An entity will be required to base its assessment and measurement of expected credit losses on historical, current, and forecast information that is available without undue cost or effort.
- » Measurement of financial assets will be aligned with a bank's business model, contractual cash flow of instruments, and future economic scenarios.
- » The forward-looking provision framework will make financial institutions evaluate how economic and credit changes alter their capital and provision levels at each subsequent reporting date.

IFRS 9 solution requires multiple layers, including: risk and finance data aggregation layer, model risk management and workflow layer, ECL calculation engine, general ledger (GL) reconciliation layer, and reporting and variance analysis layer.

For financial institutions transitioning to IFRS 9, the main architecture design questions involve the business, systems, and processes. Main challenges include the following:

- » **Systems, processes, and automation:** Systems will need to change significantly in order to calculate and record changes required by IFRS 9 in a cost-effective, scalable way.
- » **ECL calculation engine:** The calculation engine will need to be robust and flexible. It will need to incorporate facility level and be adjusted by credit events. The ECL engine will need to support granular calculations and expected modeling challenges. It must have built-in data quality checks and reports, and must be able to define or choose ad hoc economic forecast and scenarios. It must be capable of modeling or importing PD, LGD, and EAD term structures and behavioral metrics affecting cash flows. It must be able to allocate, optimize, and value collateral and credit risk mitigants.

---

IFRS 9 provision calculation will require integration of multiple processes across different areas, including risk, finance, and accounting.

---

An expected credit loss impairment model will also bring significant challenges for auditors given the move from a factual credit event as a driver of provision and toward quantitative credit forecasting approaches and staging classification. In turn, this will create significant risks due to the effect on profitability, capital ratios, fair value measures, and tax rates. Primarily for these reasons, auditors are actively monitoring the development of ECL models and the implementation of IFRS 9 solutions at financial institutions.

From a solution design perspective, ability to track data and manage overrides (for example, due to effect on earnings) will be critical. In addition, multiple processes including those in risk, finance, and accounting groups will need to be integrated for the IFRS 9 provision calculation. In terms of architecture design, an

- » **Risk, finance, and accounting integration:** Previously separate processes will need to integrate, especially from a data and process perspective.
- » **General ledgers reconciliation:** Ledgers will need to reflect IFRS 9 calculations and new impairment metrics. Financial institutions usually have several general ledgers within a single legal entity.
- » **Computational and performance requirements:** The IFRS 9 forward-looking impairment calculation will require higher volumes of data than the current IAS incurred loss model, Basel guidelines, or stress testing. Institutions will want to do facility-level analyses, and calculations leveraging scalable architecture, such as grid computing processes, will be imperative.

- » **Tax treatment:** IFRS 9 may affect effective tax rates, as some institutions may leverage IFRS 9 as a tax optimization tool.
- » **Underwriting, risk-adjusted pricing, and limits systems:** Financial institutions will have to estimate and book an upfront, forward-looking expected loss (either 12-month or lifetime) and monitor for ongoing deterioration of credit quality.
- » **Risk-adjusted pricing metrics:** Pricing and performance metrics will need to be redesigned and/or expanded (e.g., IFRS 9 based risk-return metrics) in order to be aligned to IFRS 9 dimensions and capital impacts.
- » **Impairment calculation:** Institutions must have the ability to calculate a probability-weighted impairment that incorporates past events, current conditions, and forecasts of future economic conditions. In addition, valuation analysis needs to consider scenario-specific cash flows.
- » **Collateral allocation and valuation:** Institutions will need to determine how to incorporate collateral effects on the valuation and computation of cash flows for impairment calculation purposes.
- » **Hedge accounting:** IFRS 9 will affect existing documentation, hedging models, and software systems.
- » **Reporting and financial statements:** It will be necessary to reconcile with other regulatory rules, including Basel 3, the Dodd-Frank Act, and the Foreign Accounting Tax Compliance Act (FATCA). Institutions will need to reconcile risk and finance data where risk data will be used down to the legal reporting entity level. Additionally, impairment values and variance changes over reporting horizons will need to be included in FINREP reporting by European institutions.
- » **Operational risk:** This type of risk will increase as a result of changes in systems, models, processes, and data.

Financial institutions will also face additional data requirements to meet IFRS 9-related calculations and ongoing monitoring. These requirements will lead to related challenges, including:

- » **Retrieval of old portfolio data:** It will be necessary to save old data, which will be especially difficult for transactions originated many years ago.

- » **Classification of transactions at origination:** There is the need to map products if they can be categorized prior to the calculation. An additional effort would be required to identify products that can be considered out of scope, such as short-term cash facilities and/or covenant-like facilities.
- » **Flexibility of implementation:** Exact implementation procedures must be able to change depending on data according to the asset classes and model availability. For example, if a granular approach should be applied to a certain part of the portfolio (e.g., corporate) or if it should be aggregated (e.g., retail).
- » **Gather and store data:** Very granular data must be gathered and stored for any new transactions.

Given the IFRS 9 requirements in terms of classification, measurement, impairment calculation, and reporting, financial institutions should expect a need for significant changes to the way they do business, allocate capital, and manage the quality of loans and provisions at origination.

Financial Institutions will face modeling, data, reporting, and infrastructure challenges in terms of reassessing the granularity (e.g., facility level provisioning analysis) and/or credit loss impairment modeling approach, and maintaining consistency in the definition of risk metrics between Basel and IFRS 9 models. Institutions will also face challenges in enhancing their coordination across finance, risk, and business units. Furthermore, considerable uncertainty remains regarding the interpretation of the IFRS 9 standard and modeling approaches. These will likely be fine-tuned after QiS and parallel runs are performed by institutions and regulatory bodies.

Effectively addressing these challenges will enable boards and senior management to make better-informed decisions, proactively manage provisions and effects on capital plans, make forward-looking strategic decisions for risk mitigation in the event of actual stressed conditions, and help in understanding the evolving nature of risk. In the end, a thoughtful, repeatable, and consistent capital planning and impairment analysis should lead to a more sound, lower-risk financial system with more efficient institutions and better allocation of capital, thus enhancing returns for shareholders.

© 2016 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND CREDIT RATINGS AND RESEARCH PUBLICATIONS PUBLISHED BY MOODY'S ("MOODY'S PUBLICATIONS") MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at [www.moody.com](http://www.moody.com) under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."



# RISK PERSPECTIVES

Find additional integrated risk management articles, interviews, and multimedia content at [MoodyAnalytics.com/RiskPerspectives](http://MoodyAnalytics.com/RiskPerspectives)

## CONTACT US

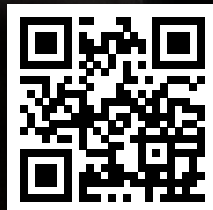
Visit us at [moodyanalytics.com](http://moodyanalytics.com) or contact us at a location below:

AMERICAS  
+1.212.553.1653  
[clientservices@moody.com](mailto:clientservices@moody.com)

EMEA  
+44.20.7772.5454  
[clientservices.emea@moody.com](mailto:clientservices.emea@moody.com)

Asia (excluding Japan)  
+852.3551.3077  
[clientservices.asia@moody.com](mailto:clientservices.asia@moody.com)

JAPAN  
+813.5408.4100  
[clientservices.japan@moody.com](mailto:clientservices.japan@moody.com)



© 2016 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

**Moody's**  
ANALYTICS