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Solution Brief

TCS DIGITAL MORTGAGE LENDING SOLUTION

A Next Generation Platform For Enterprise Lending

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WHY IT MATTERS

Retail loan origination requires the interplay of many internal and external systems to originate, underwrite, and close a loan. These processes are fairly simple for credit card and personal loan origination but become progressively more difficult for secured automobile, home equity, and mortgage loans. Today many lenders still use different loan origination systems (LOS) for each type of loan. Separate loan origination systems are expensive to maintain, but composable, cloud-based systems are being introduced into the market. TCS Digital Mortgage Lending Solution is such a system—an enterprise LOS that can process all loan types from the most complex mortgage loan to the simplest credit card loan—and addresses the business challenges described above.

Lending Industry Context

Pain Points. Older, single-product, legacy loan origination systems (LOS) from the twentieth century were once essential tools of bank lending across the globe. They are typically rich in functionality and features for specific lines of business but lack modern IT architecture, componentization, open integration, and workflow. For this reason they are also inefficient, expensive to maintain, slow to modify, and difficult to rip out and replace due to their old programming languages and tightly-coupled IT architecture design.

Legacy systems do not meet the needs of twentieth century digital banking. Lending is dynamic, real time, cyclical, and driven by interest rate levels, which requires lenders to add and reduce staff in response to market demand. The labor cost per loan originated oscillates up and down as interest rates and gross lending volume fluctuate. Technology costs also fluctuate, and legacy IT maintenance costs are higher than for modern IT. For these reasons, lenders want modern IT to improve staff operating efficiency during these cycles. They also want to reduce technical debt and consolidate technologies whenever possible.

Vision and Solution. Lenders' goals are to modernize all their LOS technology, consolidate systems (or consolidate common functionality *within* each system) where possible, and reduce IT operating costs. With the rise of fintech lending during the past decade, some lenders adopted cloud-based systems while decommissioning old systems. However, these digital transformations were typically for single-loan product types (especially, card, personal loan, and small business loans) versus replacing multiple LOS with a single, enterprise LOS.

Figure 1 illustrates a typical retail lender's technology stack that supports loan origination and servicing processes. This example indicates separate LOS for each loan type and the IT components that are common across systems. This IT architecture is generally common for all sized lenders, but it is especially true for Tier 1 and 2 banks due to their larger scale and/or duplicative systems from prior bank acquisitions. Some lenders do have a legacy enterprise system for consumer loans (i.e., auto, personal, and/or home equity loans). Lending IT architecture also varies by country. Mature industrialized economies are more likely to have older, specialized legacy systems, while industrializing economies have begun to implement enterprise lending systems.



Figure 1: Lenders Can Consolidate Multiple LOS and Their Duplicative Functionality

The digital automation opportunity for lenders is that each LOS has common product components (data management, credit scoring/analytics, rules-based loan decisioning, document management, and customer engagement) that could reside on a single platform—with the unique product components replaced with configuration on a modern, composable, cloud-based platform.

For example, financial institutions (FIs) have many digital and employee-assisted customer engagement channels with separate custom integrations from the LOS to each channel. Efficient API integrations exist in some cases, but integration multiplicity without real time, cross-channel integration makes it harder for FIs to enable customers to switch channels during loan origination and servicing processes. Moreover, these integrations are costly for IT teams to maintain. Some large FIs have built a separate channel integration layer to solve this problem, but it can be an expensive architectural solution versus using a configurable enterprise lending platform.

Customer engagement is highlighted in Figure 1 as a prime candidate for enterprise architecture because it was one of the first IT components to shift to the cloud, it occurs across many channels, and is the same across each loan product type and lending process. With multiple communications and systems so prevalent, FIs can improve operating efficiency and realize cost savings by integrating, consolidating, and eliminating redundant customer communications management systems.

If financial institutions can replace common LOS components embedded within separate systems into one enterprise system with configuration for loan product specific functionality, they will dramatically advance the digital transformation of their technology footprint and reduce technical debt.

TCS Context

It is with this context that TCS briefed Celent on its TCS Digital Mortgage Lending Solution enterprise loan origination platform built to help FIs realize the enterprise LOS vision. TCS Digital Mortgage Lending Solution is a modern loan origination platform that can originate multiple loan types for consumer, mortgage, and some areas of small business/commercial lending. The platform also provides a migration path for financial institutions to progressively configure and add different loan types to the platform according to each institution's migration preferences.

COMPANY AND SOLUTIONS OVERVIEW

Tata Consultancy Services is an IT services, consulting, and business solutions company that has been partnering with many of the world's largest businesses in their transformation journeys for over 50 years. A part of the Tata Group, India's largest multinational business group, the firm has over 606,000 consultants in 55 countries. TCS Banking Financial Services and Insurance (BFSI) unit, as a business group has multiple solutions. TCS BFSI strategic business units offer product-based financial services solutions such as the TCS BaNCS core banking platform and TCS Digital Mortgage Lending Solution.

Solution Brief Key Takeaways	 Lenders have excessive technical debt in multiple, legacy loan origination systems. Average loan processing time is slower and operating costs are higher using legacy systems compared to modernized, best-in-class lending platforms. Lenders need to migrate specialized legacy LOS onto modern, enterprise lending platforms that can share duplicative functionality among different loan types and that enable firms to progressively replace tightly-coupled systems with the new platform. An enterprise loan origination system can reuse common functionality (database management, customer engagement, rules-based decisioning, and integration for different loan product types) and integrate with legacy systems and progressively renovate them. Financial institutions that operate in multiple countries can also use an enterprise lending technology platform across borders and customize the base platform using parameterization for country-specific product, language, currency, legal, and regulatory
	 lending technology platform across borders and customize the base platform using parameterization for country-specific product, language, currency, legal, and regulatory compliance. TCS Digital Mortgage Lending Solution is an established platform for accomplishing
	enterprise lending objectives.

TCS BFSI has decades of experience building modern technology and modernizing legacy technologies in banking. Their main customers are large banks, although they also serve some small financial institutions. Their global reach has enabled them to develop technology for many types of FIs and lines of business.

Reimagining Retail Loan Origination

Cloud technology, microservices, micro-frontends, open integration, and enterprise platforms have enabled TCS to reimagine a loan origination system as a composable platform with functional and technological building blocks that enable lenders to create a custom system that is easier and faster to build, maintain, and innovate with. Figure 2 shows the TCS Digital Mortgage Lending Solution.

Figure 2: TCS Digital Mortgage Lending Solution: Functional Component Frameworks



TCS Digital Mortgage Lending Solution is built on six lending function frameworks that lenders can customize to their business, strategy, technology infrastructure, and country specific requirements to accomplish their objective:

- 1. **Digital Originator**. Digital self -service solution for customers to submit and track mortgage applications.
- 2. **Digital Processor**. Automatically process application data and help connecting to ecosystem, for all third-party services.
- 3. **Digital Underwriter**. Digitizing "Data, Document and Decision" through configurable rule engine.
- 4. **Digital Closing and Funding**. Contract creation, conveyancing, document signing and funding.
- 5. **Digital QC (quality control)**. Manages risk while maintaining processing speed and time to loan funding and onboarding.
- 6. **External ecosystem partner integration**. (not shown in Figure 2) Functional component framework for embedding partner technologies into processes.

The platform also manages administration of user roles, access controls, and privileges. Lenders can also add and use new data elements to the base platform.



TCS has a combination of strong domain knowledge, digital offerings, and advisory capabilities with established presence across the globe. It has strategically invested in developing their in-house suite of lending products which enables financial institutions to drive profitable, efficient operations and boost the speed to market.

Celent VendorMatch

Company Context

On November 6, 2023, TCS briefed Celent on its TCS Digital Mortgage Lending Solution and provided a product demonstration.

Celent spoke with:

- M A Venkata Satish Head, Mortgage Products and Delivery
- Khaja Nagoor, Senior Architect
- Arindam Chaudhary, Mortgage Practice Lead, Europe
- Hitesh Kharva, Head, Presales and Solutions, Mortgage Strategic Initiative

The briefing assessed TCS Digital Mortgage Lending Solution in the context of the need for financial institutions to modernize the legacy IT stacks in retail lending, reduce technical debt, and increase lending revenue across all product lines. Celent found that TCS continues to innovate and productize its IT services and software capabilities to deliver next generation solutions for long-term use.

Solution Overview

According to a summary of the company's profile on **Celent's VendorMatch**, **TCS** offers a wide variety of technology products and services across a wide variety of financial services industry segments, including banking, insurance, and capital markets.

Figure 3 summarizes TCS Digital Mortgage Lending Solution's enterprise lending platform design principles and design frameworks. This design can apply to one or more lending products.

Figure 3: TCS Digital Mortgage Lending Solution - Enterprise Platform Design Principles and Frameworks



Source: TCS

TCS Digital Mortgage Lending Solution was built with three main design principles for the five technology frameworks: 1) The platform is a catalogue of microservices for many loan origination functions, 2) Lenders can customize the microservices for their business strategy, markets, and loan products, and 3) API-based integration enables lenders to more easily integrate with other internal systems used in lending processes as well as external third-party services.

The five design frameworks map closely with the common LOS software component functionality shown in Figure 1. TCS Digital Mortgage Lending Solution's design frameworks are:

- **Experience management.** Customizable customer engagement with configuration, not coding. For example, the digital "Track-my-Loan" self-service portal supports customer-related tasks and provides real time status.
- **Component-based UI.** User interface for customers and employees that lenders can reuse for any loan product type and process.
- **TIMF integration.** TCS Integration Management Framework (TIMF) integrates data and presents information and insights to all users.

- **Rule management.** Configurable business rules for loan processing, decisioning, and compliance.
- Flow orchestration. Configurable workflow across front office and back office processes. It provides full digitization of the application process for the customer and employee.

Figure 4 presents in detail the TCS Digital Mortgage Lending Solution digital underwriter functional component framework shown in Figure 2. The framework utilizes the design frameworks shown in Figure 3 as well as digital document processing, alerts, and reporting capabilities.

Figure 4: TCS Digital Mortgage Lending Solution - Digital Underwriting Solution and Process



Source: TCS

The digital underwriting solution is built on a modern business rules engine used for credit policy, loan pricing, customer service, and compliance. The engine has over 1,900 business rules and provides complete functionality that would otherwise require separate loan origination, loan decision, document imaging, messaging/alert, and analytic reporting solutions. For lenders that wish to use other third-party subsystems, the componentized architecture and API integration makes this relatively easy to accomplish.

The calculation and rules engine component automates the underwriting ratio (i.e., debt to income) analysis currently done manually by loan underwriters. TCS Automated Classification and Extraction (ACE) tool functionality has been trained to recognize over 250 document types. The system can also be trained to read a lender's custom document types. The digital underwriting solution integrates with the internal LOS and external sources (i.e., credit reporting agencies) to receive data for analysis. Reporting capabilities enable employees and their managers to track loan status, actual versus planned task completion timelines, and other metrics.

Alerts and notification support multiple task types, such as to-do items, loan underwriting conditions (requirements) that must be met for final loan approval, and fraud checks.

KEY PRODUCT BRIEFING INSIGHTS

These TCS Digital Mortgage Lending Solution platform insights were derived from a product demonstration, a discussion with executive and product leaders, and a separate strategy discussion with TCS Digital Mortgage Lending Solution executives.

Product Demonstration

The demonstration and discussions revealed that TCS Digital Mortgage Lending Solution is a leading modern enterprise loan origination solution for digitally consolidating retail lending operations and customer engagement.

The virtual product demonstration highlighted five main areas of functionality.

- 1. **Customer: loan application.** The system recognizes if the loan applicant is new or has already started entering data into the system and presents custom workflows and screens for each situation. It can also present a short application (i.e., a "decision/agreement in principle" in the UK or "pre-approval" in the US). Loan applicants can upload documents (financial statements), download regulatory disclosures for review and digital signing, and check loan status via mobile, tablet, and laptop devices.
- 2. **Loan agent: customer engagement.** A loan advisor or other front office staff uses the system to engage with the loan applicant and act on the applicant's behalf (i.e., loan product and rate selection) to originate a new mortgage case. Loan agents can also generate and view documents and disclosures and share them with loan applicants. They can also initiate a credit bureau check with the loan applicant's permission.
- 3. Loan underwriter/processor. Although the system imports data into the LOS and digital underwriting solution, loan underwriters still verify decisions for reasonableness and accuracy. Underwriters also verify the digitally imported loan applicant income, financial statement, appraisal, title, and underwriting ratio calculations. The system also helps underwriters review and clear loan approval conditions to make final loan approval. Finally, the underwriter (or a closing agent) can generate a digital closing package ("offer pack") for the loan applicant.
- 4. **Loan closing agent.** The digital closing and funding framework module helps loan closing agents (also called conveyancers) see pre-closing

conditions, present digital closing documents, and facilitate document signing. The system then enables a funder (disbursement officer) to review monthly loan payment schedules, pending fees, mortgage insurance needs, etc. The funder then digitally initiates funds transfer and messaging to a core banking platform to transfer the money to a borrower or escrow agent bank account.

5. **System administrator.** The IT administrator is critical to the management of the platform. They assist in multiple functions, such as system configuration for decisioning rules, compliance, customer FAQs, forms, etc. The UI for employees managing and using the system was as intuitive as the UI for customers.

TCS Digital Mortgage Lending Solution Usage Outside Mortgage Lending

TCS Digital Mortgage Lending Solution is relatively new to market globally but has been implemented in India and its components are deployed in Canada, and the US. TCS Digital Mortgage Lending Solution was first deployed in residential mortgage lending, with plans to commercialize it for consumer and commercial lending.

Financial institutions can also utilize TCS Digital Mortgage Lending Solution in more than one country market. A major pain point for multinational financial institutions is that there are few if any LOS vendors whose systems can operate across different countries with ready modifications for language, currency, loan product type, legal system, and regulatory compliance. Managing multiple systems across borders makes it harder and more expensive to manage lines of business, evaluate performance, and enforce risk management policies.

TCS Digital Mortgage Lending Solution enables these FIs to reimagine their global lending businesses with a composable, cloud-based platform with the flexibility to be configured for loan product, compliance, and legal differences across country markets. The FI can share a common technology platform with common company products, policies, etc., and then customize the solution with configuration for different countries. TCS reports interest in the concept and system from some international banks.

TCS Digital Mortgage Lending Solution Customer Successes

The entire TCS Digital Mortgage Lending Solution is deployed at a multinational bank and financial services company in India, and lenders in the UK and US have deployed some of the functional component frameworks with plans for expanded use of the platform in the future. These deployments are discussed below.

Complete TCS Digital Mortgage Lending Solution Deployment at a Multinational Bank and Financial Services Company

The multinational bank and financial services company ("the bank") has technology requirements that span global markets as well as its home market in India, the most populous country in the world.

In its latest major digital transformation project, the multinational bank and financial services company created iLens, a single enterprise loan origination platform covering loan sourcing through processing, underwriting, and loan funds disbursement. iLens is powered by TCS Digital Mortgage Lending Solution and it is a single-platform application for all stakeholders, including customers, employees, vendors, and sourcing channels. Key features include fully digital sourcing, direct from source data extraction, scorecard/rule-engine based underwriting, digital disbursement, personalized dashboards for all players, and self-service portals for customer interactions.

The multinational bank and financial services company first implemented residential mortgage loans and nonresidential loans in 2022. The bank then began working to add consumer loans to the platform. In the future, The Bank may also use the platform across country borders, which was previously an insurmountable challenge.

TCS Digital Mortgage Lending Solution in the UK

TCS has a deep presence across the UK financial services industry. It reports that some FIs are interested in full-scale mortgage LOS replacement, while others prefer a progressive renovation of the current platform with phased implementation of new components, such as for digital underwriting.

FIs are making strategic investments in tailoring their Loan Origination Systems (LOS) to meet the evolving demands of a rapidly changing market, shifting business models, changing borrower expectations, and the ever-expanding realm of regulatory requirements.

The replacement of a full mortgage LOS is often requested by Tier 2 lenders, including Building Societies. The large UK High Street banks have a more complex IT environment also complicated by the use of multiple LOSs from prior bank acquisitions. In situations where FIs won't do a complete system replacement, FIs can select from TCS Digital Mortgage Lending Solution's design framework (component solutions) capabilities, e.g. Digital Underwriting to complement their core LOS capabilities.

For UK, TCS Digital Mortgage Lending Solution supports residential and commercial mortgages for first-time buyers and remortgages for existing homeowners across intermediary, direct to lender and online channels. It is pre-integrated with key third party applications and data services required to process an application across various stages of the mortgage sales and originations journey.

The TCS Digital Mortgage Lending Solution is a software as a service (SaaS) offering empowers lenders to seamlessly navigate the mortgage originations value chain, from managing agreement in principle, and full mortgage applications, underwriting, conveyancing, valuations (via third-party integrations), and through to completions and funds disbursements.

TCS Digital Mortgage Lending Solution in the US

TCS has extensive IT services, mortgage processing (onshore/offshore), and systems in production with US banks, mortgage banks, and mortgage investors using TCS Digital Mortgage Lending Solution components. For example, in mortgage origination TCS has written 1,700 business rules and 200 compliance rules that meet Fannie Mae/Freddie Mac investor requirements for lenders that sell them mortgages. Similar to other geographic regions, in the US TCS is positioning individual components of TCS Digital Mortgage Lending Solution to fast track financial institutions transformation journeys.

TCS Digital Mortgage Lending Solution also helps automate US mortgage underwriting. The system uses the standard Mortgage Industry Standards Maintenance Organization (MISMO) 3.4 format to import Uniform Residential Loan Application (URLA) data into the LOS to TCS Digital Mortgage Lending Solution. To ensure data accuracy, its rules-based system first compares loan data in the LOS with data on loan documents before the data is sent to the Fannie Mae (Desktop Underwriter) and Freddie Mac (Loan Prospector) automated underwriting systems. This data quality control process automation reduces errors and eliminates the human "stare and compare" quality control process that requires a human to use two computer screens to compare LOS and document management system content. TCS Digital Mortgage Lending Solution completes the process, receiving and transferring the automated underwriting results back to the LOS.

The main benefits from these deployments are lower costs for loan origination, compliance, and system maintenance. In addition, by eliminating errors, it also lowers quality control costs and loan buybacks required by investors when they find errors on loans they purchase.

IMPLICATIONS FOR FINANCIAL INSTITUTIONS

Financial institutions put a higher priority on technology investments that support enterprise technology leverageable across multiple lines of business and use cases. Horizontal technology capabilities in human resources, finance and accounting, IT support, and database management are commonplace because they were easier to implement at the enterprise level than vertical line of business technologies. This capability is now available in lending lines of business.

Vision and Strategy. For a decade or longer, financial institutions have had the vision of an enterprise LOS platform that is configurable for use across multiple loan types, especially withing retail lending. Cloud-based, microservices, componentized platform technology capabilities have finally caught up with the technology vision for line of business technologies. TCS Digital Mortgage Lending Solution is one of the first solution providers to create and deliver this unique capability to lending markets.

Enterprise lending is an important strategy when financial institution IT spending allocations fluctuate between discretionary and nondiscretionary investments, organic growth versus cost takeout investment, etc.—particularly during challenging economic conditions when CFOs are asking teams to do more with less. FIs can more easily justify the business case for improving lending processes and the customer experience where an enterprise platform reduces technical debt while driving efficiency and cost reduction.

Celent has found that financial institutions can gain business agility, improve digital customer interactions, and reduce costs if they:

- Shift from a line-of-business or single-channel focus to an enterprise lending platform approach for customer engagement, loan origination, and contracting/onboarding.
- Align IT and line of business department goals and incentives to deploy more IT spending toward system consolidation and enterprise shared services
- Identify cost savings and reduce technical debt by shifting from on-premises to SaaS-based solutions.

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