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Design for Digital

White Paper on Approach to Progressive modernization

February 4

2019

The paper presents four possible approaches to progressive modernization. The approaches have been elaborated and case studies and examples have been used to explain the methodology. The paper also tries to arrive at pros and cons of each of the approach to enable the bank to decide on possible approach.

Executive summary

Banks have been working on spaghetti code and an archaic architecture that prevents the bank to modernize and future proof themselves with Digital technologies. The paper below explains the progressive modernization approaches for of core banking transformation which Intellect has adopted in the past. The approaches take various requirements of the bank into consideration including their systems, the priorities of the banks. The focus of each of the approaches has been to consider the risk appetite of the bank, availability of skills, time available and also their business priorities.

There are four approaches for progressive modernization. Each of the approaches have been defined, explained with an example on how it was taken up and how each of the methods work.

- Process led approach
- System led approach
- Channel led approach
- Data led approach

Process lead approach ensures key processes to be prioritized for transformation and transform in a way that the impact is minimal on the existing code. An example on how a multinational bank implemented a pricing designer across the bank. The pricing designer was implemented by configuring all the bank's fee and charges. The charges are levied post the legacy systems compute the fee and charges and the new engine over rides the charges posted earlier before the End of day.

System led approach elucidates how each of the systems of the bank can be taken up for progressive transformation

Channel led approach elucidates the possibilities of using how customer experience can be the focus and thus ensure how existing product processors can support the channels using APIs. This will enable the bank to provide digital experience with minimal disruption to the end customer.

Data led approach where we give examples of reference data to be migrated and how that will lead to progressive modernization.

The paper also provides the advantages and disadvantages of each of the approaches and discusses the next steps.

We have also included some case studies on our implementation using progressive modernization techniques.

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Progressive Modernisation : Why is it needed?

While the benefits of a change of complete retail banking system delivering a improved banking experience for customers could be real enough - the overwhelming counter-argument has always been around how resources availability, leveraging on existing SW assets, and how well the risks of such a transformation are perceived.

Therefore numerous banks consider starting transformation by induction of middle-layer only or middle-layer led progressive transformation.

Progressive modernization: 3 Principles

1. **Minimize disruption**
    1. Minimal changes to the legacy code.
    2. Re-use existing services from legacy system
    3. Effective use of Intellect's digital bridge for any additional service configuration in legacy and external integration
2. **Bank IT team will be fully trained on IDMP framework.**
3. **Data Integrity & consistency**
    1. Data integrity checks at every step (Data integrity & data synch will be managed by Oracle Automatic Queuing utility or KAFKA)
    2. Recon to be facilitated between the new & the old systems at end of day .
    3. Utilise the expertise of Erste IT team to enable phase-wise gradual changes in the legacy codes.

Progressive Modernization Intellect's Approach

Progressive Modernization (ProMo) is gradual planned transition to the new environment

- ProMo approach is derived from the Bank's priorities, roadmap and current IT landscape
- Progressive Modernisation is in **three phases**- (Phase 3 being **optional** for channel transformation)
- Each phase is sub-divided into transforming specific process or data
- APIs are developed to connect each of the layers in order to capture critical data and fuel the overall digitization of the bank's systems

Intellect has experience in executing multiple core banking transformations across the world with our flagship Intellect Digital Model Bank Platform.

Intellect **progressive modernization gives unique possibility to start with**

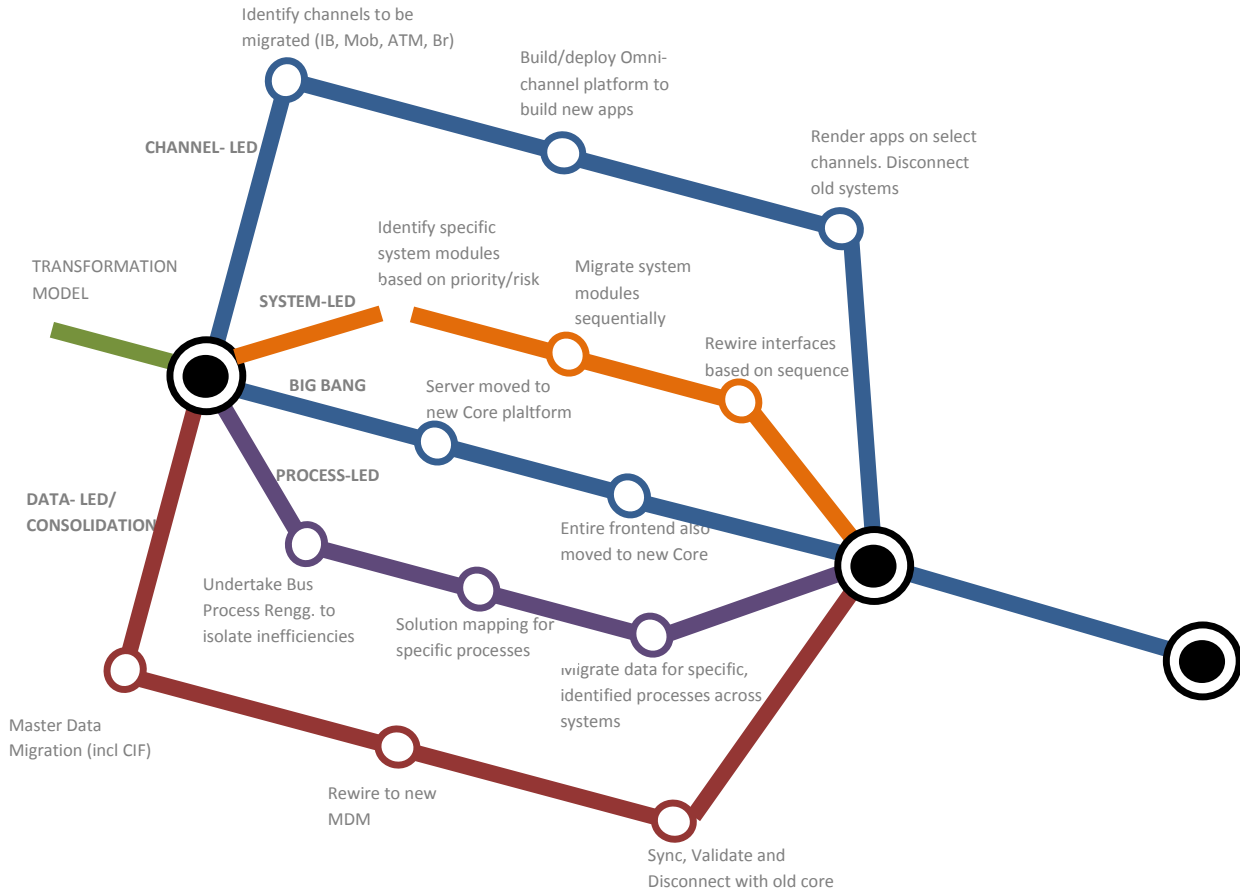
a) Middle-layer and yet have the option

b) Seamlessly onboard on progressive modernization

Our experience spans across various regions and across banks of varying sizes such as: Reserve Bank Of India, Shinsei Bank Japan, National Bank of Abu Dhabi, Saigon Hanoi Bank Vietnam, Cater Allen a Santander subsidiary in UK, Deutsche Leasing in Germany to name a few.

Based on our past experience, we believe that core transformation initiatives can never follow a one size fits all approach.

We work closely with the bank to understand the bank's business priorities, roadmap and current IT landscape to be able to suggest a modernization path and our offerings towards the same. The following connect-map illustrates the **CBT (Core Banking Transformation)** Decision Path that large banks follow to arrive at the right solution and the right vendor:



Transformation Approach: An Assessment

Intellect has identified four basic approaches to undertaking a Core Banking Transformation for legacy systems, all of which follow a modular component based replacement path with differences in the sequence in the approach

Process led Approach - We have followed this process lead approach in some of the banks which believe that there are specific inefficiencies that can be identified and resolved in certain processes at the bank. In this approach, Intellect's domain consultants help bank replace specific processes across of the bank.

This allows the Bank to

- Study the current process in terms of customer value creation.
- Measure the time taken , arrive at value added and non- value added activities in the process
- Re-engineer the processes based on lean principles

- Arrive at the requirements to be made on the system
- Implement lean processes that enable efficiency and emphasis on customer at the center.

This will allow the bank to adopt a system that will enable customer centric processes that are assisted by a re- architected IT-Backend engine.

Intellect has these lean processes called User- journeys already embedded in these processors like Customer on-boarding , product designer, pricing engine, and payments engine.

These processors are nothing but micro services that Intellect Digital Model platform has to offer.

The value add that comes to the bank is

Case study

We have experts at Intellect who have led such process lead transformations at large multinational banks. In a large multinational bank with branches across multiple regions and geographies, Product and pricing designers were implemented using this process lead approach.

The Bank had identified a need for consolidating their product designer and also implements a pricing engine that would enable the Bank

- To launch products with quicker GTM(go to Market)
- To launch pricing policy that would enable relationship based pricing
- To enable bundling of products
- To do a what-if analysis and sensitivity analysis on pricing policy changes

Pricing Designer: The Pricing designer was implemented at the same bank to support Product bundling and enable relationship pricing. The Pricing engine enabled the bank to consolidate all the pricing parameters including charge frequency, charge basis, charge computation, charge levy methods to a single designer.

This enabled product managers come up with profitable combinations of product bundles and also enabled the bank to introduce relationship based pricing and pricing parameters that would enable efficient levy of charges for various services that bank was hitherto unable to charge.

How was it done?

A Techno – domain team was formed to compile the compendium of fee and charges that were being levied at the bank for various products and services. The team also compiled the list of various discounts, waivers that were offered as campaigns at different points in time.

During the discovery phase, the team also found that there were discounts and waivers that were given to the customers but were no longer valid. This was leading to revenue leakage.

The Bank and the Technical experts from the Pricing Designer team set up the pricing structures and configured the New Pricing designer.

How would it work?

As the bank implemented this new pricing designer, the charges were first levied based on the old pricing configurations in the legacy code. After the end of the business hours, the transaction data was passed to the new pricing designer. This pricing designer would then re-compute the charges to arrive at the actual fee or charge to be levied.

As an approach the bank had decided not to make any massive changes to their existing logic thus ruling out any real time integration to the pricing engine. The approach was to reduce the changes to the existing system and follow a batch based re- computation. This posting of re-computed charges is done prior to the GL posting and thus minimizing the impact to the GL.

For instance, if a customer's ATM cash withdrawal fee was 0.75 Euro at the time of withdrawal according to the old system, the same would be levied at the time of transaction.

Post the business hours, the transaction data was passed to the pricing designer that helped the charges to be re-computed to say 0.5 Euros for ATM cash withdrawal. This new fee or levy would be passed to the core banking system and this transaction would over-ride the prior transaction of 0.75 euros.

The statement and the accounting entries would now show the correct levy of 0.5 Euros.

This way the bank was able to minimize the changes to their legacy code and implement the Pricing designer and take up progressive modernization.

Product Designer: The product designer was introduced at this bank as a common enterprise wide service. All the product designing and new product creation process was undertaken at the product designer.

How was it done?

For example, to create a new product, all the parameters required for the new product like charges, product behavior (eg. NPA bucket movement) were to be created at the *centralized product designer* while the legacy code would be modified only to the extent of enabling this new product code to be accepted to work.

This was undertaken with the help of Bank's IT to make minor changes to identify the changes needed and also undertake the changes in the legacy code.

This enabled the bank to introduce the product designer with minimal changes to the legacy code. This could be done using APIs to enable transfer of information and easy integration.

Over a period of time, as the Bank gained confidence in the product designer, they progressively moved all product creation and maintenance activity to the new product designer by gradually making changes to their legacy code.

System led Approach – This approach is chosen when there is a need to transform systems in a sequence with certain set of systems before others, due to considerations such as system inefficiencies, process inefficiencies, lack of support, cost etc. This is ideally suited after an application portfolio analysis once the mission critical & strategic systems for present & future have been identified.

This is one of the most frequent approaches followed for progressive modernization. This approach helps banks transform each line of business progressively.

The bank gets to contain the change management efforts based on the priority and also the availability of resources. Bank can prioritize based on the sensitivity of the customers and receptivity of the users for the new system.

Case study

IDMP is based on modular architecture where each of the components can be switched on or off based on the requirement. In a large bank in the middle-east, we have been able adopt this approach and have transformed their lending business where we implemented our Digital lending modules. This implementation of Digital lending module helped the bank to turn around and achieve profitability. The bank is now for modernizing other modules including General Ledger, deposits and running accounts.

How was it done?

The Bank with focus on retail operations had distinct lines of business, retail assets and retail liabilities businesses were lying on a legacy code. The bank had identified retail lending as a priority where there was a build –up of NPAs and low profitability.

We had identified the need to carve out the lending modules from their existing core banking system and worked with the Bank's IT team to arrive at all the parameters and procedures in the legacy system.

The new lending system was configured based on the products that the bank offered to their customers, the processes that were followed helped us configure the workflows required in the new system. The existing features were identified; the destination model was designed and tested in the new system.

The bank undertook a cautious approach of progressing of opening only new to bank loan customers into the new system while the existing customers remained in the old system. Over a period of next three months, the data of the existing customers were migrated to the new system.

How would it work?

Once the new Digital lending module was in place, post data migration, they were able to modify the code and shut down the old system thus the old system was handling everything other than the lending modules.

APIs were used to fetch customer data from the old system where required into the new lending system. The read APIS were used to build interfaces to fetch data from the new lending system to show a consolidated view of the customer in the legacy system

We have had similar implementations where banks chose to go with CASA, Deposits and GL to Intellect digital core while the lending modules remained in their old system. We have a large public sector bank in India that chose to migrate Trade finance module to the new system while they chose to use the existing system for all other modules.

Data led Approach - Fundamental to the core, is the "customer data". Deciding what data to reorganize provides banks the building blocks of life for the future and most importantly, focus towards "Customer Centricity". This approach provides the foundation for a customer relationship driven architecture.

In this approach Intellect proposes to migrate portions of data to the new system and use APIs to build the bridges between the old and the new systems.

Case study

IDMP is based on modular architecture where each of the components can be switched on or off based on the requirement. In a large bank in Asia pac region, we have been able adopt this approach and have transformed the core banking business progressively. This implementation of corebanking system helped the bank to handle data in a manner that the impact on the customer was very minimal.

How was it done?

The Bank with focus on retail operations was an old bank and the data was migrated from ledgers to mainframe based systems in the past. The data was not accurate to go through a template based approach and a large scale cleaning was deemed necessary. As the bank was very old, some of the records from the past were not available. The bank also had a legacy core banking system where certain data elements were missing and were not available for the new system. The bank was also used to EUCs, programs at the user level that added to the complexity of the exercise.

Intellect experts had identified the need to carve out the data required for their basic operations and port to the new system one step at a time. Our Migration experts prioritized the requirements of the Master data management layer to focus on

- CIF(Customer information file) data,
- Accounts data,
- Pricing data and product parameters.
- Past transaction data was taken up as last priority.

How would it work?

The system was built grounds up to facilitate this data migration in phases. The first phase of data migration was CIF . This enabled the creation of all customer data and new to bank customer creation in

the new system. Once this was done, the old system was re-wired using APIs to seek any customer related information from the new system. Next step was to transfer data pertaining to Products and other parameters required for account management. In the next steps, we managed to convert data pertaining to accounts and then shut off the old core engine..

Channels led Approach - With customer experience layer being the focus, Intellect suggest this approach when the bank's approach is to impact various customer touch points. The Channel led transition provides a better distribution framework and relies on the sound-fundamentals of the IT-Backbone of the bank

In this approach we propose the following. The customer experience layer can be transformed using Intellect Digital Face

Intellect Digital Face: A rich Customer facing layer tried and tested across various banks across geographies in the world. Digital face comes with The **Experience Management Layer** which is a comprehensive strategy across channels, for contextual and intuitive experience. This layer acts as the basic access point that supports self-service, shared-service and assisted-service access points, through federated and channel-specific security access controls. This layer enables **contextual and intuitive** customer experience. This layer is fully micro-services ready and complies with the cloud-native design paradigm including the contemporary security standards such as **OAUTH2 / OPENID**.

Case study

Intellect Digital face has been implemented in a large bank in Asia pacific region where the bank wanted to improve the customer experience touch points. The added complexity of the bank was to move away from their current trade finance and payments systems along with revamp of their channels.

How was it done?

The Bank with focus on both retail and SME businesses operations was in need to modernize their digital presence. The Channels led integration began with mapping the current services provided on Internet and Mobile banking for both the corporate and retail customers. The legacy system still connected to the branches and ATMs. APIs were connected from channels by our channel integration layer to the existing core system. All write transactions were going to the old core and for all Digital channel enquiry, the channels were connected to a data base that was in synch with the existing core. The data between the new core enquiry data base and the existing core was being synchronized using a event based synch.

How would it work?

The system was built grounds up to facilitate this data migration in phases. The first phase of data migration was to have a new data base created for enquiry on Internet and Mobile banking channels. All the transactions were flowing into the existing core (payment transactions through the payment engine). The data for the existing core was kept synchronized using an event based synch to ensure data integrity.

Which process to adopt?

The pros and cons for each of the approaches are highlighted in the following table.

Approach	Considerations (to select an approach)	Pros	Cons
Channels	✓ Inconsistent User-Experience - Internet, Mobile ✓ Best to execute when the bank's core systems can sustain longer without modernization ✓ Better choice when bank has lesser risk appetite and less resources to commit ✓ High cost of legacy channels due to multiple Channel Solutions	✓ Less riskier and quicker turnaround ✓ Tangible changes in shorter time frame ✓ Consistent customer experience & branding ✓ Ease of product marketing and distribution as well as better customers ✓ Lesser cost of implementation as the integration architecture is built on the peripherals	✓ Inability of *back-end* engines to expose services required by channels could be a limiting factor and could add to costs of implementation ✓ Would not bring about significant reduction in time to market to launch new or innovative products ✓ Unlikely to bring about process efficiencies in banking operations ✓ Unlikely to reduce the TCO of banks as core systems would remain untouched and fragmented
Process / Domain	✓ IT-Landscape contains a well-defined set of systems / processes ✓ Ideally suited when Process Re-engineering is warranted	✓ Aligns easily with the broad Business roadmap strategy ✓ Warrants a clear definition of the re-engineered process ✓ Allows Gaps to be clearly defined and managed ✓ Easy to map solutions globally	✓ Invariably leads to a Data consolidation ✓ Longer time to execute than channel driven strategy ✓ Requires frequent wiring / re-wiring of systems during the various phases. ✓ Requires a *heavy interfacing model* till all new systems are operational
Data / Consolidation	✓ Limited ability to offer innovative product offerings (Bundles) ✓ Huge redundancy in data (*As every system have their own copies*) ✓ Huge efforts and costs of Reporting & Analytics	✓ Brings in a Customer-Centric focus ✓ Allows building of customer level view and resultant impact of cross-sales. ✓ Best way to re-architect legacy ✓ Strengthens the reporting layer ✓ Enhances the regulatory reporting capability	✓ Requires a solid understanding of all systems ✓ Requires considerable design effort to arrive at a reference architecture before beginning the transformation

Approach	Considerations (to select an approach)	Pros	Cons
	✓ Ideally suited when bank has the vision to migrate to a well-defined reference architecture		✓ Needs sustained effort and commitment of multiple teams over the entire transformation journey
System / Application	✓ Need to transform in a sequence with certain set of systems / applications before others, due to considerations such as system inefficiencies, process inefficiencies, lack of support, cost etc. ✓ Ideally suited after an application portfolio analysis once the mission critical & strategic systems for present & future have been identified	✓ Potentially strategic systems that need to be transformed first can been identified and prioritized ✓ Easier to control scope and costs as only few systems are modified at a time ✓ Easier to control scope and costs as only few systems are modified at a time ✓ Ideally suited for transformations where decision is based upon TCO	✓ Business Processes that span across systems would undergo constant changes as each application is transformed ✓ Effort & cost of Interfaces developed during the course of the transformation could become redundant once the transformation is complete ✓ Since application led transformation is largely driven by IT teams, it might be difficult to get the buy in from business & operations

Next steps

We propose to have a consultancy workshop with the bank's team, a one week dialogue session to arrive at the best possible approach that can give Intellect team an insight into the existing interfaces, subsystems and also the level of customization required.

It will also enable the bank to prioritize and choose one of the methods mentioned above or choose a Hybrid approach which is a combination of one or more approaches mentioned above.

During this exercise, a team of domain consultants will be working with the bank to arrive at the processes, priorities and also the go-to model for the bank. This workshop can be held either the Bank's premises or at our design center.

Design Center

Our design center , the world's first fintech design center has enabled banks and financial institutions across the world to conduct workshops and arrive at lean business processes with design center principles. These workshops are conducted in an environment conducive for ideation and simplification. Solution Design workshops at Omega(Collaborative design center)are expert guided 1-through-5 day

sessions that work through design processes, sensitive to the five forces of growth, as well as the five frictional forces.

Facilitated design sessions, leverage of multiple thought-trigger devices, deployment of a rich body of design frameworks, and ready access to live technology, makes the Omega a living high performance design engine.