White Paper

Micro Branch - The Digital Studio for Banking

Balancing Digital Banking Strategy with Banking Branch

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Introduction

With ever increasing competition to win more and more customers, digital transformation is the change organizations are going for, giving them the competitive edge. Further on, the pandemic has accelerated the need to adopt contactless technologies.

E-Banking is no longer a "nice to have" option, it's a "need to have" imperative. Therefore, the need has fast tracked the transformation of traditional ways to do business. Top banking institutions consider user friendly digital platforms, along with online or internet banking, as the perfect match to meet customer expectations and attract more business.

Micro Branch is a robust banking model with a digital platform as its base. Micro-Branches are a type of physical bank branch that requires a much smaller footprint than the typical branch by merging the Digital and Physical banking experiences. Microbranch seamlessly interacts with the AI Engine and has Conversational avatars making the banking experience a highly immersive providing smart customer experience.

The concept of anytime banking with real-time experience is the way forward to enrich customer experience. The micro branch banking model connects the bank with remote areas, local market, corporate offices thus maximizing the number of customers.

In this document, we look at how a micro branch works - concepts, components, benefits, and the Intel® technology inside the Digital Banking solutions.

Micro Branch -The NextGen Banking Space

Today, customers demand round-the-clock services to access their accounts from anywhere in the world. They also expect personalized 1:1 customer service experience.

Components of Micro Branch

A micro branch consists of automated banking machines designed with Intel® powered hardware and software solutions. Following are the devices, customized which help banks in doing business with ease.

 VTM/ITM

Virtual Teller Machine or Interactive Teller Machine is an interactive kiosk for customers to perform complex banking transactions while interacting with tellers via video conferencing.

 Intelligent Deposit and ATM Machine

These machines offer a wide range of deposits, dispensing, and recycling options to meet the self-service banking needs of individual and small business customers.

 Self Service Kiosk

Self-service banking kiosks allow bank to offer a wide variety of services anytime (24*7) without the need for additional staff.

 Digital Signage

Digital Display boards with service offerings are a new mode of advertisement aimed to convert potential leads into deals.

 SD WAN Technology

SD-WAN is a technology based on software-defined network approach, which manages the volume of application traffic in offices outside of the enterprise or remote offices. The technology reduces costly rack space and provides improved application performance and increasing agility, with greater security. It also provides better network redundancy across multiple data services by automatically rerouting network traffic.

 Network Infra

Security is the priority for all banking and financial institutions, 5G is expected to provide enhanced security features. The future of customer interactions is virtual. Boosted network infra of 5G increases internal efficacies of the banks. The high-speed bandwidth of 5G transforms the ATMs from being a cash handling utility to a Kiosk.

Comparison Typical Branch vs Micro Branch

Customer Experience

With the increase in customer base, the physical bank branch is overcrowded with customers giving satisfactory experience for the services. Whereas digital banking in a small branch with lesser footprint and faster banking solutions provide amazing and hassle-free experience. The below images give an illustration of how micro branch is future of Banking services.

Investment and Operational Cost

Bank Branch Construction and Operational Cost: The cost of building bank branch is approximately $2 to 4 million. It is the costliest means of consumer service of $3.00 per transaction and with minimum three staff members for dual control and load balancing purposes. This results in $59,000

per month operating expenses.

Micro Branch Design, Construction, and Operational Cost: Micro-branches are designed to fit comfortably into a variety of real estate configurations, with flexibility playing a key role, a micro-branch can be developed for around $450K. The operational cost also goes down with Do yourself approach where Low investment Digital banking Solutions are installed for all types of banking services.

One of the main advantages of building micro branches is their flexibility and ability of easily fitting into a variety of real estate configurations.

Comparison Traditional Bank Branch vs Micro Branch

The following case study depicts a customer's hassle-free banking experience when he walks into a micro branch.

Figure 3 Customer Journey in a Micro Branch - Scenario

Gary, a 50-year-old Professor, walks into a micro branch of the bank located in the University campus. He is pleased with the greetings at the door with a standard automated welcome message that is displayed on a digital signage. He uses the Cash Deposit Teller Machine and delighted that doesn't require to fill any deposit slip to deposit cash into his wife's account. He follows the instructions/steps displayed on the Cash Deposit Teller Machine The transaction is completed in less than a minute. He is content with the facilities in the micro branch.

Next, he walks to the Self-Service Kiosk. The Kiosk greets Gary with a recorded welcome message. Gary raises a new debit card request by selecting the New Debit Card request option and enters the account details. The Kiosk authenticates him by asking One-Time-Password (OTP) sent to his registered mobile number. He completes the authentication by entering the OTP. The Kiosk processes the debit card request and confirms the transaction is complete. He receives the confirmation message with timeline of delivery on his mobile. Gary is happy with the overall service and hassle-free experience.

Gary looks around at the digital signage that displays various investment schemes and offers. He is interested in one of the investments offers and wants to know more about the investment scheme. He walks to the Digital Avatar Kiosk with voice recognition features, where the kiosk accepted his queries via natural speech. The Avatar responded to his query by displaying the list of investment schemes and benefits that the bank has to offer.

Gary is impressed with the interaction but still skeptical so is directed to Video Chat support by the Digital Avatar Kiosk. He asked more questions to the assistant through Video Chat support. At the same time, the camera at the Kiosk captures and analyzes Gary's mood and non-ID information. After Gary has decided his investment option, the Digital Avatar Kiosk helps him with instantaneous identity verification. Gary is happy with the hassle-free experience and completes the transaction. He also takes up the automated quick survey, and shares information about his banking experience!

Real-time banking with contactless technology featuring touchless interaction, facial authentication, OTP technology has given Gary an amazing digital banking experience, and more business to the bank.

A Win - Win Banking Concept for Financial Institutions and Customers

Considering the benefits that the micro branch brings to the bank and its customers, it is indeed the future platform for the banking industry.

Benefits to Financial Institutions

- **Easy Deployment of Branch:** Banks can develop a micro branch anywhere in the local markets, corporate offices, and rural areas; as per the budget. Minimum deployment can be of two or three machines which feature all the banking services. Easy Deployment not only relates to place, but also relate to services deployed. Micro branch can be easily configured according to customer needs and according to deployed region.
- **Cost effective and Better Reach:** Microbranches offer 50% more savings on building cost. Also, the maintenance cost and operating expenses is reduced by 60%. The staff required is lesser, as Self-Service technologies are available.
- **Lower transaction cost:** Average cost per transaction at branch location is typically several times greater than through digital channel. A purposefully redesigned bank branch uses digital banking tools and technology to handle mundane transactions (For example: deposit,

withdrawal, bill payment, cheque deposit, service inquiries, and so on). It helps branch staff members to focus on handling more complex or sensitive tasks.

- **Grow network at premium places of High Foot Traffic:** With lesser space required, a micro branch can be set up at prime places like malls, business centers, and offices. This opens more business opportunities, when placed inside other businesses. For example: shopping malls, corporate offices.

Benefits to Customers

- **Digital in-branch experience:** Cater to the needs of the customers, be it baby boomers or millennials, who value convenience, speed, while trusting technology and multisensory experience.
- **Anytime Banking:** Customers can walk in anytime as per their convenience. The Automated Digital Machines are deployed for 24*7 services.
- **Seamless Banking Experience:** With omni-channel and multichannel banking processes across digital and physical touchpoints (For example: Kiosk, ATM), customers can get connected across the channels. It reduces the frustrations of using multiple channels to complete a transaction.

systems still in operation today were created in the 1970s with older technology. This inhibits the ability to interoperate and integrate with new technology. The new microbranch architecture pays off this technical debt, to allow creation, change, and setup of digital services in a more agile, interoperable, and future-proof manner.

Figure 4 Architectural View-is an architectural presentation of a micro branch and exhibits the backend technology solutions.

Components Powered by Intel®

Micro Branches are largely equipped with the digital technology elements that are powering standard bank branches today.

Intel® is collaborating with partners in the Banking, Financial Services Insurance (BFSI) ecosystem to deliver unique capabilities that drive success of micro branch in the below technologies.
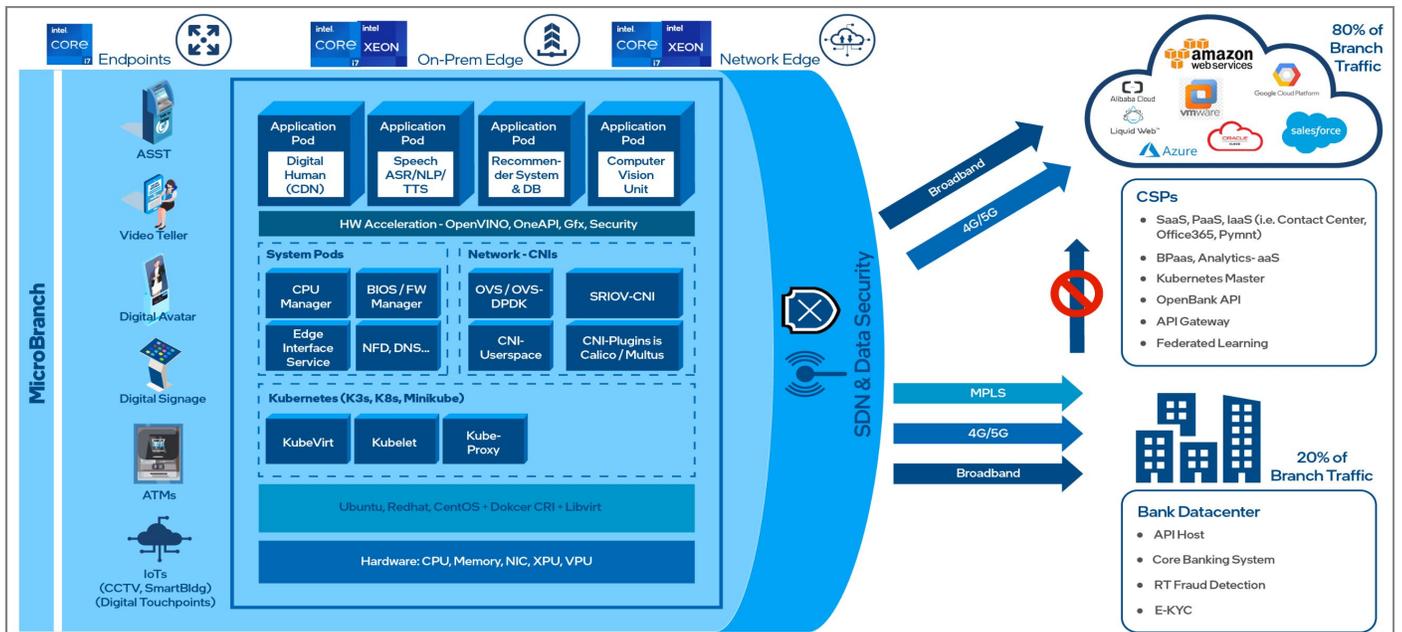

Figure 4 Architectural View

Micro Branch Architecture

The micro branch architecture requires extreme agility. With constant development in the technology space, rapid development of artificial intelligence, machine learning, data analytics, open APIs, and cloud technology into mainstream business processes. However, many of the core banking

Highly Secure Accurate Facial Authentication

Intel® RealSense™ stereo camera is an RGB-D camera with high depth resolution. It also includes active infrared (IR) stereo with standard or wide field of view that can be used to

build accurate and user-aware facial authentication system. Intel® RealSense™ stereo camera, along with facial recognition and deep neural network accelerated by Intel® distribution of OpenVINO™, can work with many smart devices, which includes point-of-sale (POS), Automatic Teller Machines (ATMs), and kiosks. When combined with deep neural network designed to deliver a secure facial authentication, Intel® RealSense™ can provide antispoofing capabilities to protect against false entry attempts using photographs, videos, or masks.

Contactless Technology

Touchless interaction is set to become the new normal to bridge human-to-machine interactions in every industry. Intel® enables ecosystem partners to deliver touchless solutions such as self-service kiosks, ATM. These solutions are based on conversational AI (text- and voice-based), proximity sensors, virtual mouse, and computer vision-based technology. For more details, refer to [Touchless Technologies for Kiosks and Vending Machines](#).

Content Effectiveness Measurement

Digital screens are dynamic. To extract the most value out of it, they must activate the right message or information to the right target audience at the right time. With Intel®'s vision analytic capabilities, digital screens can now provide more data about audience demographics and customer engagement scores. In a nutshell, it evolves the digital screen from playing one-to-many media to one-to-select media.

Transform Data into Actionable Insights with Edge Computing

While there are many possible implementations of a micro branch to support a banks desired customer journey. It is important for banks to build a future proof micro branch implementation. The adoption of digital technology will play a key role to ensure that branch banking remains -
- ✓ Relevant
- ✓ Resilient against cyberthreats
- ✓ Competitive, and profitable

More self-service, IoT sensors, AI are deployed in the micro branch to uncover new growth opportunities, for example, Real-time Loan processing and approvals.

Putting many technologies to use in real-time requires processing large volume of data. It is potentially a harrowing journey with legacy channels that are too costly to modernize (i.e., ATM).

Edge compute platform provides a mean for siloed, legacy applications to be extended with modern capabilities such that the data it generates can create actionable insights for the banks. This is where the edge compute approach shines.

Future-proof Hardware and Software

Architecture with Backward Compatibility
Intel® offers a myriad of edge computing platforms along with a breadth of architectures that span scalar (CPU), vector (GPU), matrix (AI), and spatial (FPGA) with hardware-based security built-in.

Specifically, these platforms provide secure foundation for various workloads to process data closer to its source. For example, general computation, speech and vision AI workloads, 3D avatar rendering, and media playback.

Complementing it are the software–where Intel® is committed to provide best-in-class developer tools, software frameworks, and inference toolkit to improve the Developer Journey. Developers can develop effective and secure modern software stack with agility using a Cloud-native approach. It simplifies the deployment of workload to the edge from private Datacenter, hybrid/public Cloud. At the same time, Intel® CPU's backward compatible instruction sets promote software reuse in the interest of preserving software development investment.

Key Intel® Technologies in a Micro Branch

Intel® works with a broad set of ecosystem partners to provide hardware and software solutions. The solutions provide consistent capabilities and programmable interfaces that can be used across a broad range of target systems (IoT, PC, Mobile client, and Server).

Intel® processor-based platforms are widely adopted in the bank branches, to run a host of solution such as ATMs, VTM s, Smart Building Management, Digital Security & Surveillance etc. To promote interoperability, Intel® has collaborated with the ecosystem on several platform specifications, including:

Table 1: Key components powered by Intel® Technologies

Area	Technical Consideration	Applicable Intel® Technology	Examples of Usage in Micro Branch
Computing Platform	Intel® MEC Architecture (MECA) is an edge computing platform that evolves the concept of traditional edge products. It enables customers to scale up their edge compute on-premises. It creates flexibility, velocity for edge deployments and extends the ability for multiple form factors to become an edge server–rack and beyond. The specification drives interoperability via standards; and provides businesses with a range of hardware tailored to meet their business needs. Intel® SDM delivers the same level of intelligence and interoperability as the Open Pluggable Specification, but in our smallest form factor yet that eliminates the housing and advances the thinnest integrated displays.	▪ Intel® MEC Architecture (MECA) ▪ Intel® Smart Edge ▪ Intel® NUC ▪ Intel® based Industrial PC ▪ Intel® SDM based Digital Signage	▪ ATM ▪ ITM/VTM ▪ Self-Service Kiosk ▪ Digital Signage ▪ Digital security & Surveillance ▪ SD-WAN ▪ Multiaccess Edge Compute
Operational Functioning	Intel® Active Management Technology is included as part of the Intel® vPro® platform. This spans Intel® Core™ vPro® processors and Intel® Xeon® processors which Helping reduce overall PC maintenance and administrative costs. With features designed to discover remotely, repair, and help protect networked computing assets, Intel® Active Management Technology allows IT Ops to support a mobile workforce. Data Plane Development Kit (DPDK) provides a set of data plane libraries and network interface. The polling mode driver to improve packet processing performance, and throughput, which enables network protocol inline offload, crypto and processing for security protocol.	▪ Intel® AMT ▪ Intel® DPDK	▪ ATM ▪ ITM/VTM ▪ SD-WAN
Device/Data Security	Intel® platform provides hardened full-stack security solution to protect sensitive data/keys at all states of data: at-rest, in-transit, and in-use. Additionally, Intel® security capabilities provide security protections (confidentiality, integrity, and availability) at all levels of boot phases.	▪ Intel® Integrated Graphics ▪ Intel® Security Essentials Root of Trust Hardware Security ▪ Intel® Software Guard Extensions (SGX) ▪ Intel® Secure Key ▪ Intel® Control-Flow Enforcement Technology (CET) ▪ Intel® Threat Detection Technology (TDT) ▪ Intel® AES-NI ▪ Intel® SHA-NI	All devices handling sensitive customer data
Biometrics Authentication	Intel® RealSense™ combines purpose-built hardware/software with a dedicated neural network designed to deliver a secure facial authentication	▪ Intel® RealSense™ ID	▪ Digital Signage ▪ ATM/ITM/VTM ▪ e-KYC

Area	Technical Consideration	Applicable Intel® Technology	Examples of Usage in Micro Branch
	platform which users can trust.		
Touchless Technology	Touchless solutions are essential for a world adapting to new normal.	▪ Intel® RealSense™ ▪ Intel® OpenVINO™	▪ ATM ▪ VTM

in a particular area. Micro Branches not only help serve with front end services. It also reduces backend work with the automation process designed with banking equipment, thus reducing the quantum of human error significantly.

Micro Branches can undoubtedly deliver an all-round performance in the bank's journey of digital transformation.

By harnessing the capability of -

- ✓ Cloud
- ✓ Edge computing platform,
- ✓ Internet of Things

ensures amazing experiences possible for business and society, and for every person on earth. Also, the latest advances in memory and programmable solutions, rich portfolio of AI technologies, and the promise of always-on connectivity.

Summary

Going forward, business for banking institutions is about having a compact space, equipped with emerging technologies, and provide a unified banking experience to the customers. The model is not only cost effective, but it also provides the flexibility of modifying as per the customer base

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