Solution Requirements Document

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**Consultancy Name:** RevolEdge Solutions

**Client Company:** The Bank of Nova Scotia (Scotiabank)

**Team:**

Bhavya Jain - Project Manager (Phase 2)

Jainam Shah - Team Leader (Phase 2)

Dinesh Kumar - Business Analyst

Reeny Susan Roy - Business Analyst

Amaan Shaikh - Business Analyst

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# Scope Definition

The Digital Banking Kiosk project endeavours to revolutionize banking experiences. It intends to bridge gaps in accessibility and efficiency by introducing an all-in-one banking solution. This kiosk is not just a traditional ATM. It includes advanced functionalities ranging from biometric access, web banking, bill payments, and more. This kiosk, set for deployment in urban hubs and remote Canadian locations, is positioned to mitigate the challenges of banking inaccessibility. Through seamless digital transformations, it aims to empower customers to conduct a myriad of banking activities 24/7 without the constraints of conventional banking.

# Functional Requirements

**Feature 1: User Authentication**

**Purpose:** To securely identify users and provide access to banking service

**Table 1**

*User Authentication*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| User Authentication | FR-01 | The users can authenticate via a combination of facial recognition and fingerprint scanning. | H | User Experience | Biometric integration |
| User Authentication | FR-02 | The system shall allow web banking credentials-based login. | H | User Security | Backup login method |
| User Authentication | FR-03 | The system shall allow users to withdraw money by inserting a debit card and providing the PIN. | M | User Experience | Debit card authentication |

*Note*. From Conestoga, n.d.

**Feature 2:** **Account Management**

**Purpose:** To facilitate users with managing their bank accounts and services.

**Table 2**

*Account Management*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Account Management | FR-04 | The users shall be able to view account balance and transaction history. | H | Core Banking Function | Basic banking function |
| Account Management | FR-05 | The system shall facilitate intra-bank and inter-bank fund transfers. | H | Core Banking Function | Transfer capability |
| Account Management | FR-06 | The users shall be able to set up and manage recurring payments. | H | Core Banking Function | Automatic Payment setup |
| Account Management | FR-07 | The system shall provide options for updating personal information. | M | Core Banking Function | Account information change |
| Account Management | FR-08 | The system shall provide the functionality to add or remove beneficiaries for transfers. | H | Core Banking Function | Beneficiary management |

*Note*. From Conestoga, n.d.

**Feature 3:** **Transaction Services**

**Purpose:** To enable users to conduct diverse banking transactions.

**Table 3**

*Transaction Services*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Transaction | FR-09 | The users shall be able to deposit cheques via an integrated scanner. | H | Core Banking Function | Cheque deposit capability |
| Transaction | FR-10 | The system shall allow cash deposits with immediate account reflection. | H | Core Banking Function | Cash deposit functionality |
| Transaction | FR-11 | The system shall allow cash withdrawal with immediate account reflection. | H | Core Banking Function | Cash withdrawal functionality |
| Transaction | FR-12 | The system shall offer bill payment services for various utilities and services. | H | Core Banking Function | Bill Payment functionality |
| Transaction | FR-13 | The system shall support e-transactions with proper authentication. | H | Core Banking Function | E-transaction capability |

*Note*. From Conestoga, n.d.

**Feature 4:** **Onboarding Services**

**Purpose:** To allow users to open a new bank account.

**Table 4**

*Onboarding Services*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Onboarding Services | FR-14 | The users can open new savings and current bank accounts via the kiosk. | M | Banking Service Expansion | Account opening feature |
| Onboarding Services | FR-15 | The users can scan and upload necessary documents for account opening. | M | Banking Service Expansion | Account documents gathering feature |
| Onboarding Services | FR-16 | The system shall facilitate real-time verification of uploaded documents. | M | Banking Service Expansion | Account documents verification feature |
| Onboarding Services | FR-17 | The system shall allow users to register their biometric details for the first time. | H | User Security | First-time user setup |
| Onboarding Services | FR-18 | Upon successful verification, the system shall dispense a new account kit. | H | Banking Service Expansion | The new account kit feature |
| Onboarding Services | FR-19 | The users shall be able to activate their debit card using an integrated card reader. | H | Banking Service Expansion | Debit card activation feature |

*Note*. From Conestoga, n.d.

**Feature 5: Customer Assistance**

**Purpose:** To offer users assistance and guidance.

**Table 5**

*Customer Assistance*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Customer Assistance | FR-20 | The system shall provide a live video call option with a Banker for user queries during operating hours. | L | Customer Support | Customer service option |
| Customer Assistance | FR-21 | The system shall allow users to request a callback from the bank's customer service. | M | Customer Support | Callback support |
| Customer Support | FR-22 | The users can lodge complaints or provide feedback directly through the kiosk system. | L | Customer Support | Feedback and complaints feature |

*Note*. From Conestoga, n.d.

**Feature 6: Web Banking**

**Purpose:** To enable users to access online banking features.

**Table 6**

*Web Banking*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Web Banking | FR-23 | The users can navigate and use web banking services. | H | Core Banking Function | Web banking integration |
| Web Banking | FR-24 | The users can view and manage credit card details. | H | Core Banking Function | Web banking functionality |
| Web Banking | FR-25 | The users can pay their credit card bills. | H | Core Banking Function | Credit card payment |
| Web Banking | FR-26 | The users can view their account transaction summary. | H | Core Banking Function | Account transparency |
| Web Banking | FR-27 | The users can initiate loan applications through the kiosk interface. | M | Banking Service Expansion | Loan application feature |
| Web Banking | FR-28 | The users can apply for credit cards through the kiosk interface. | M | Banking Service Expansion | Credit card application feature |

*Note*. From Conestoga, n.d.

**Feature 7: Security**

**Purpose:** To enable security during user sessions.

**Table 7**

*Security*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Security | FR-29 | The system shall have an inactivity timeout after 5 minutes of no action, requiring re-authentication. | H | User Security | Timeout for security |
| Security | FR-30 | The system shall allow users to set transaction limits, both daily and monthly, to ensure account security. | L | User Security | User-defined transaction limit feature |
| Security | FR-31 | The system shall generate and send OTPs for certain high-value or suspicious transactions. | H | User Security | OTP generation for security |
| Security | FR-32 | The system shall maintain a log of all transactions and user activities, which only authorized personnel can access. | H | Compliance and Security | Transaction log feature |

*Note*. From Conestoga, n.d.

**Feature 8: User Experience**

**Purpose:** To ensure an intuitive and seamless interaction with the kiosk, enhancing user satisfaction as well as trust in the digital banking solution.

**Table 8**

*User Experience*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| User Experience | FR-33 | The system shall provide tutorials and walkthroughs for first-time users. | M | Enhanced User Experience | Onboarding assistance |
| User Experience | FR-34 | The system shall provide product recommendations based on the user's transaction history. | L | Personalized User Experience | Personalization feature |
| User Experience | FR-35 | The system shall integrate AI virtual assistants for user inquiries. | H | Customer Support | AI support |
| User Experience | FR-36 | The system shall allow users to take printouts of information like transaction summary, transaction receipt, or any other information. | H | Enhanced User Experience | Printout option |

*Note*. From Conestoga, n.d.

**Feature 9:** **Administrative Features**

**Purpose:** For bank officials, technicians, and management executives to maintain, manage as well as monitor the kiosk.

**Table 9**

*Administrative Features*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Administrative Features | FR-37 | Authorized personnel can remotely access the kiosk's system 24/7 for diagnostics and maintenance. | H | Compliance, Maintenance | Secure remote access through advanced encryption. |
| Administrative Features | FR-38 | Technicians can calibrate hardware components like the fingerprint scanner and facial recognition camera. | H | Maintenance | Calibration ensures accuracy and reliability. |
| Administrative Features | FR-39 | Bank officials can update kiosk software and security protocols. | H | Maintenance, Security | Regular updates ensure system integrity and user security. |
| Administrative Features | FR-40 | The kiosk provides real-time notifications to bank officials for any hardware or software malfunction. | M | Maintenance, Notification | Prompt alerts help in the timely resolution of issues. |
| Administrative Features | FR-41 | Technicians can manually refill cash, new account kits, or other consumables. | M | Maintenance | Secure compartments should exist for each consumable type. |
| Administrative Features | FR-42 | A backup and recovery feature to restore data in case of failures. | L | Maintenance, Security | Data restoration ensures the continuity of banking operations. |
| Administrative Features | FR-43 | The kiosk performs self-diagnostics and alerts bank officials of potential maintenance needs. | L | Maintenance | Proactive measures can prevent major malfunctions. |
| Administrative Features | FR-44 | The administrative dashboard should be able to compute and display the yearly revenue generated by a customer using the kiosk. | M | Revenue Tracking | This requirement is based on the data that the yearly average revenue generated by a customer is $912. |
| Administrative Features | FR-45 | The kiosk system should record and analyze the percentage of customers using specific services like cash or cheque deposits. | H | Service Optimization | Currently, 80% of customers use kiosks with existing technology for services like cash or cheque deposits. |
| Administrative Features | FR-46 | The kiosk system should record and analyze the percentage of customers using the kiosk for ATMs. | H | Customer Information | As per the information, the cost of operating an ATM for Scotiabank is $10,000 to buy and $100/month for operating expenses. |
| Administrative Features | FR-47 | The administrative dashboard should allow bank officials to see the number of customers and requests each kiosk handles. | M | Staff Management | Two kiosks can handle the workload of 3 full-time and 15 part-time employees needed to run a branch effectively.  This feature also provides insight into the cost savings with kiosk-based banking compared to opening a traditional Scotiabank branch in remote locations or cities, which is $5m. |

*Note*. From Conestoga, n.d.

# Non-Functional Requirements

**Table 10**

*Non-Functional Requirements*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Section | Requirement Identifying Number | Requirement Description | Requirement prioritization (H, M, L) | Traceability | Requirement Notes |
| Uptime | NFR-01 | The system shall have an uptime of 99.9%. | H | System Reliability | High system availability |
| Speed | NFR-02 | The user authentication via biometrics shall not exceed 5 seconds. | H | User Experience | Quick user authentication |
| Security | NFR-03 | The kiosk shall maintain data confidentiality by encrypting user data. | H | Data Security | Ensure user data protection |
| Performance | NFR-04 | The system response time for any user action should not exceed 2 seconds. | H | User Experience | This requirement is to improve upon Scotiabank's existing complaints regarding waiting times. |
| Scalability | NFR-05 | The system should handle up to 10,000 concurrent users without performance degradation. | H | System Reliability | The exact customer flow number varies, thus requiring a scalable solution. |
| Usability | NFR-06 | The kiosk interface shall be designed considering accessibility norms, aiding visually impaired or differently abled users. | M | Inclusivity | Accessibility features |
| Reliability | NFR-07 | The system shall perform automatic data backups every 24 hours. | H | Data Security | Regular data backups |
| Reliability | NFR-08 | The system should provide consistent service, especially in financial transactions, to maintain or improve the yearly average revenue per customer. | H | Transactional Integrity | With a yearly average revenue of $912 per customer, the transactions must be processed reliably. |
| Maintainability | NFR-09 | Software updates should be possible remotely without needing physical access to the kiosk. | M | System Upgradation | Easy updates and patches |
| Interoperability | NFR-09 | The kiosk system shall be interoperable with major banking platforms and databases, adhering to standard protocols. | H | Integration | Seamless integration with other platforms |
| Compliance | NFR-10 | The system shall comply with all relevant banking and data protection regulations in Canada. | H | Regulatory Adherence | Ensure legal compliance |

*Note*. From Conestoga, n.d.

# Assumptions and Constraints

## Assumptions

1. **User Base Knowledge:** It is assumed that users in remote Canadian locations have basic digital literacy to operate the kiosk with the help of training sessions or tutorials.
2. **Network Connectivity:** For the kiosk to operate seamlessly, consistent and reliable internet connectivity is assumed in these remote locations.
3. **Maintenance Availability:** It is assumed that bank officials will be readily available for virtual support through video calls during business hours.
4. **Kiosk Security:** The physical locations of the kiosks will be secure from theft, vandalism, and other potential security risks.
5. **Power Supply:** A consistent power supply through direct connection or backup solutions will ensure the kiosk is operational 24/7.
6. **Integration with Existing Systems:** The digital banking kiosk is assumed to be seamlessly integrated with Scotiabank's IT infrastructure without major overhauls.
7. **User Acceptance:** The remote community will be receptive to introducing digital kiosks and prefer them over traditional banking methods.
8. **Regulatory Compliance:** All features and functionalities of the kiosk will comply with Canada's banking and financial regulations.
9. **Supplier Consistency:** Vendors or suppliers for kiosk hardware and software components will provide consistent quality and timely delivery.

## Constraints

1. **Budget:** The overall cost of implementing and maintaining the kiosk should not exceed the allocated budget.
2. **Geographic Limitations:** Some very remote locations might have limitations regarding timely maintenance visits, internet connectivity, or power supply.
3. **Language and Accessibility:** The kiosk interface and functionalities must be available in both English as well as French. It must also be accessible to users with disabilities.
4. **Technological:** The kiosk hardware and software must be compatible with the current technological infrastructure of Scotiabank.
5. **Time:** The kiosks need to be deployed within the stipulated timeframe of 12 months across all intended locations
6. **Training:** Due to the remoteness of some locations, there might be constraints on providing regular in-person training sessions for users.
7. **Environmental Factors:** The kiosk's hardware should be robust enough to withstand the diverse climatic conditions of Canada, especially in remote areas.
8. **Customer Transition:** There might be resistance from some customers who are used to traditional banking methods, and this transition period must be considered in the rollout plan.

# Conclusion

This Solution Requirements Document provides a comprehensive blueprint for a pioneering banking initiative in Canada. The pilot program, set to be launched in 100 strategic locations - 80 in remote areas and 20 within the bustling city centres- intends to seamlessly integrate advanced digital banking kiosks into the fabric of Scotiabank's service offerings. Each of these chosen locations will be equipped with two state-of-the-art kiosks. This initiative signifies our commitment to revolutionizing the banking experience for Canadians, irrespective of their geographic location. The success of this pilot, with its clearly defined requirements, will pave the way for an expansive and progressive rollout in the subsequent years.

# Call to action

1. **Feedback Mechanisms:** A robust feedback mechanism will be established as we roll out the pilot. Insights and recommendations from both urban and remote users will be instrumental in refining the program.
2. **Resource Allocation:** Affiliated departments are requested to prioritize resource allocation for the designated 100 locations to ensure the pilot's success.
3. **Engagement Drives:** We will conduct interactive sessions in the chosen locations before the pilot launch. These will orient the users and gather preliminary feedback, ensuring a smoother launch.
4. **Post-Pilot Review:** A comprehensive review will be conducted upon completion of the pilot year. This will evaluate the project's impact, user adoption rates, and any areas of improvement. The findings will be instrumental in shaping the broader rollout in the following years.

With this pilot, we are not just testing the waters but making a definitive stride towards a future where banking is more accessible, efficient, and user-centric. The success of this program will not only reaffirm Scotiabank's position as an industry leader but will also serve as a testament to our unwavering commitment to our customers. Let us join hands and bring this vision to fruition.

# References

Conestoga College. (n.d.). *Solution Requirements*. <https://conestoga.desire2learn.com/d2l/le/content/693200/viewContent/15095175/View>

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