**Business Requirements Document**

Intake/VIA# - Service Qualification Engine (SQE)

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**Document Details**

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# Overview

This is to develop and deploy a Service Qualification Engine (SQE) Database Application and UI that will retrieve Address and Service details to enable sales of products available at the address, will reduce fallout and NPD.

## High Level Summary

Create a single source Database Application and UI for Service Qualification

## Key Business Objectives

Reduce Address Qualification fallout and reduce NPD Dispatches

## Related Projects or Dependencies

CR-8666 (UR50793) O2 Address Cache Project has been implemented. SmartNID enhancements have been implemented.

# Scope

## Project Scope Definition

Create SQE Application Database and UI, invoked upon an address selected via the buy flow process, or by User input of address directly into SQE UI.

## Included in Scope

New Database/Application/UI

PX changes

Tech2Go changes

SQE to NDS requests

## Excluded from Scope

Downstream Order Processing

Dispatch

## Assumptions/ Constraints/ Factors/ Risks

|  |  |
| --- | --- |
| **ID** | **Assumptions** |
| **1** | PX is eligible to use SQE replacing existing Qualification channels |
| **2** | Tech2Go is able to use SQE to query existing address |
| **3** | Once deployed Polygons will no longer be used for initial Qualification except for PinDrop |
| **ID** | **Constraints** |
| **1** | Polygon tightly coupled to Buy Flow |
|  |  |
| **ID** | **Factors** |
| **1** | Once service at an address is established SQE would be single source for Qualification and SmartNid availability |
|  |  |
| **ID** | **Risks** |
|  |  |
|  |  |

## Impacted Business Units

|  |  |  |
| --- | --- | --- |
| Address & Facility |  | **x** |
| Billing & Payment |  |
| Buy Flow | **x** |
| Field Ops Dispatch | **x** |
| Field Ops Process & Mobility | **x** |
| Service Assurance & Repair | **x** |
| Service Delivery & Care | **x** |
| SOM | **x** |
| VOM | **x** |

# Definitions

|  |  |
| --- | --- |
| **Acronym / Term** | **Definition** |
| SQE | Service Qualification Engine |
| MAID | Master Address ID |

# Common Requirements

## Business Requirements

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Create Database, Application and UI for SQE** | **Database will Cache Attributes for the request, and overwrite after presented for the next request. Do not overwrite until response is presented/passed to application requesting or user. This would be a short term table** |
| **1.1** | **Ability to search for an Address** | **Present address options** |
| **1.2** | **Once Address is selected UI will display address and service details** | **Need to pull Facility check API (API=** AddressQualification, **and Address UDIF check API from O2 (Optius/Odin). Consumer Service Fabric will call AddressQualification and UDIF check** |
| **1.3** | **Once Speed is selected via Buy Flow process SQE will provide address and service attributes back to SFC** | **Need to pull Facility check API and address check API from O2 (Optius/Odin)**  **API=** ShowUdif for additional address attributes |
| **1.4** | **Ability to search another address without exiting the Application** |  |
| **1.5** | **Must be able to run multiple requests at same time** | **Ensure response time is appropriate (<5 sec?)** |
| **2.0** | **Address and service details passed to Tech2Go on demand by technician** |  |
| **2.1** | **Address and service details passed to Buy Flow when requested** | **See 1.3** |
| **2.2** | **Ability to test in a non-production environment** |  |
| **2.3** | **SQE database must have current data** | **Changes to Inventory must be reflected**  **Changes to SmartNid must be reflected**  **Changes to WIFI must be reflected**  **SQE database in real time** |
| **2.4** | **Covers both internal and external partners** | **Portals and channels** |
| **3.0** | **Vision slide**  **Cached Attributes would be the SQE database**  **Ensure the ability to *grow* SQE to support ctl.com, and other Legacy ordering systems.** |  |

## 

## Technical Requirement

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Create a SQE database** | **Application will use SQE database as source** |
| **1.1** | **Database should be table driven and configurable** | **Allow users with authority to add additional attribute fields or remove fields** |
| **1.2** | **Database is refreshed/validated for changes** | **Need to keep the data current** |
| **1.3** | **Database is accessible via UI or Buy Flow** | **UI allows users to retrieve the information; Buy Flow to pull Address, UDIF by Address and Facility validation via O2 Consumer Service Fabric (CSF)** |
| **1.4** | **Create a Service Qualification Application** | **Application should be accessible by CUID/Workstation PW entry** |
| **1.5** | **SQE to have an input schema** | * **A space between house# and Pre-Directional** * **A space between Pre-Directional and street name** * **A space between Street name and street suffix** * **A space between street suffix and post-directional**   + **If pre directional is not applicable, a space would be between house # and street**   + **If post directional is not applicable, a space would be between street suffix and Location (UNT, APT etc)** * **Location should have a space between the UNT, APT and alpha or numeric after the UNT, APT etc**   + **Ex: UNT 1 APT B** * **A comma between location and Community (City)** * **The first Character in the Community entry is Capitalized, and the remaining characters would be lower case.**   + **If the community contains a space, the next character after the space is Capitalized and the remaining characters would be lower case** * **A comma between Community and State**   + **States will be abbreviated to 2 characters with both being capitalized** * **A space between State and Zip Code**   + **Zip code to be 5 numerics** |
| **1.6** | **Create a UI Service Qualification Engine (SQE)** | **Ability to populate an address in a Search Bar**    **Search should allow partial entries**   * **House #** * **Street Name including pre/post directionals** * **Street Suffix** |
| **1.7** | **UI to display closest match addresses and associated MAID (equals the O2 Alias ID).**  **If address is not in O2, then query other Address sources such as RGNETS (example for addresses that are out of territory but have Lumen WIFI)** | **Display multiple choices based on address typed in Search Bar**  **Populate Location options (apt, unit/bldg/floor etc) Community, State, Zip, not provided in Search Bar**    **If NO near matches found – return message to user – ADDRESS NOT FOUND**  **If more than X results – return message to user – Refine search – too many results to display** |
| **1.8** | **Display details when address is selected**  **Note: Fields in Green should be in the display, but the characteristic may not be available at this time. Need to build the field for future use.** | **Create expanded detail displays (boxes) with information sorted by Box**   |  |  |  |  | | --- | --- | --- | --- | | **Address** | | | | | Master Address ID | 202110061083110002 | | | | House # | 7204 | | | | Pre-Directional |  | | | | Street | Main Street | | | | Post Directional |  | | | | Location | Unit 2 | | | | City | Anywhere | | | | State | CO | | | | Zip | 80001 | | | | Latitude | 39.297489 | | | | Longitude | -81.45817 | | | | Connect Home Prop ID | ABCXYZ | | | | Prop Svc Parameters | Customer Success | | | | Fac Build Structure | Static | | | | Address Source | O2 Address Cache | | | | **Inside Wiring** | | | | | IW type to Unit/Prem | Fiber | | | | IW type to Jacks | Cat5 | | | | **Drop Loop** | | | | | Drop Installed | Yes | | | | Drop Type | Buried | | | | Drop Length | 150' | | | | **WIFI** | | | | | WIFI Prod Type | 360 WiFi | | | | Prior WIFI Status | Yes | | | | WIFI Activation Type | Property-Wide | | | | WIFI Access Point Model | Model # | | | | WIFI Access Technology | WiFi5 | | | | WIFI Access Point Types | Free | | | | WIFI Left In Status | Yes | | | | WIFI Square Footage | 2499 | | | | WIFI Pod Qty left-in | 2 | | | | Access Point Incremental LeftIn | 1 | | | | WIFI Access Point Type | Free | | | | **SmartNID** | | | | GPON 940M/940M Capable | | Yes | | XGS PON Capable | | Yes | | Maximum Technology Available | | XGSPON | | Max Speed Tier | | 8G/8G | | Current Last Service | | 1G | | OTT Voice Capable | | Yes | | Self Install Capable | | Yes | | SmartNID Installed | | Yes | | SmartNID Mount | | Bracket | | SmartNID Bracket version | | 1 | | SmartNID Location | | Unit | | SmartNID Status | | Deactivated | | Disconnect Date | | 4/21/2022 | | **ONT Information** | | | | ONT Model | | 844G | | ONT Vendor | | Calix | | ONT Serial # | | CXNK215896 | | ONT Status | | Installed | | ONT Type | | SFU | | Installed ONT | | Yes | | Current Provisioned Technology | | 100Mx100M | | ONT Pre-terminated | | Yes | | ONT Pre-terminated Reason Code | | TBD | | Power Adapter Indicator | | Compatible | | ONT location | | Unit | | Integrated ONT | | Yes | | RONTA | | 7001010101 | | ONT number | | 1 | | **ONT Port Information** | | | | ONT Port Count | | 1 RG/4GE/2Pots | | Port Type | | VOICE | | Port Status | | No | | Port Type | | VOICE | | Port Status | | Unassigned | | Port Type | | DATA | | Port Status | | Assigned | | **ONT Speed Attributes** | | | | ONT Wiring | | Ethernet | | Without Dispatch | | 100Mx100M | | Port Type | | DATA | | Port Status | | Reserved | | **DPU Information** | | | | DPU Model | | G.FAST | | DPU Vendor | | CASA | | DPU Serial # | | CASA215896 | | DPU Status | | Installed | | DPU Type | | SFU | | Installed DPU | | Yes | | **Modem** | | | | Modem/RG Model | | C3000Z | | Modem/RG Vendor | | ZyXEL | | Serial Number | | C3000ZS190Z17001630 | | Modem Left-in | | No | | Max Tech Available | | GPON | | WIFI Enabled | | Yes | | Mount | | Non-Media Panel | | Location | | Unit |   **Fields are on the left side of box**  **Characteristics are on right side of box** |
| **2.0** | **Using the customer selected address retrieve the associated Address attributes from O2. The Alias ID will become the singular addressing value (MAID in SQE)**  **If address is not sourced from O2, capture fields available from the source.**  **Connect Home Prop ID is a value referenced to determine what terms are for this property that drives technician installation, equipment types in CPE, service terms, etc, this suggests a configurable table attached to property ID's**  **Prop Svc Parameters would be Pre-Build, Customer Success or None Specified. This will Categorize the service constraints for properties.**  **Facilities Build Structure would be Static or Dynamic**  **If no additional information can be obtained populate Unknown in the fields** | **Alias ID**  **House number**  **Street**  **Location**  **City (Community)**  **State**  **Zip**  **Latitude**  **Longitude**  **Connect Home Prop ID**  **Prop Svc Parameters**  **Fac Build Structure**  **Address Source** |
| **2.1** | **Using the Address retrieve the associated SmartNID attributes from O2.**  **If O2 does not contain SmartNid attributes, using the alias Address ID from O2 retrieve attributes from SmartNid Cache.**  **If Address Alias ID is not associated in SmartNID, use the address to find the information.**  **Using ODiN retrieve ONT Model; ONT Vendor, and Serial #, if not in SmartNID cache**   * **Physical Device – Optical Node Terminal > Entity Attributes**   **SmartNID Mount would be Bracket or Media Panel**  **SmartNID Bracket version is numeric 1=Bracket for SmartNID 5500/6500 w/fiber jack**  **SmartNID location would show where it is located; Unit, media panel, outside, garage, IDF etc.**  **If no information can be retrieved populate: Unknown** | **GPON 940M/940M Capable**  **XGS PON Capable**  **Maximum Technology Available**  **Max Speed Tier**  **Current/Last Service**  **OTT Voice Capable**  **Self-Install Capable**  **SmartNID Installed**  **SmartNID Mount**  **SMARTNID Bracket version**  **SmartNID Location**  **SmartNID Status**  **ONT Model**  **ONT Vendor**  **ONT Serial #**  **Disconnect date** |
| **2.2** | **Find where this information is stored and create API if needed to retrieve the information for Inside Wiring**  **If no information can be retried populate: Unknown** | **IW type to Unit/Prem**  **IW type to Jacks** |
| **2.3** | **API call to Optius/NDS to retrieve Drop information. API=** ShowUdif is available by address in Optius.  If not available in Optius, retrieve from NDS  **If no information is available, populate: Unknown** | **Drop Installed**  **Drop Type**  **Drop Length** |
| **2.4** | **If WIFI information is not stored in O2 or SmartNID, find where this information is stored and create API if needed to retrieve the information.**  **WIFI Product Type would include Integrated RG, 360 WIFI, Instant WiFi. Allow for additional new types.**  **WIFI Activation Type captures the Activation at the location and includes: Always Broadcast, Active on Command, Property-Wide, Wall/Ceiling wPOE, Wall/Ceiling, Plug-in Fixed, Plug-in**  **WIFI Access Point Types would capture the solutions enabled at address, and is computable by model number**  **WIFI Access Technology can be determined from the model of WiFi or RG; WiFi5, WiFi6, WiFi7. Ensure as new technology is deployed it can be shown (future WiFi)**  **WIFI Pot Qty Left-in shows pods attached to the address as permanently assigned.**  **Access Point Incremental Leftin would show if a customer leased an incremental pod for the unit which is not permanent to the address, but associated to the customer**  **If no information can be found populate Unknown** | **WIFI Prod Type**  **Prior WIFI Status**  **WIFI Activation Type**  **WIFI Access Point Model**  **WIFI Access Technology**  **WIFI Access Point Types**  **WIFI Left In Status**  **WIFI Square Footage**  **WIFI Pod Qty left-in**  **Access Point Incremental LeftIn**  **WIFI Access Point Type** |
| **2.5** | **Square Footage to follow standardized format for Pod quantity.**  **If no information can be found populate Unknown** | **up to 2499 sq feet = 2 pods**  **2500 to 3999 sq feet = 3 pods**  **4000 sq feet or greater = 4 pods** |
| **2.6** | **Find where this information is stored and create API if needed to retrieve the information for ONT Information; ONT Port Information; and ONT Speed Attributes boxes**  **ONT Port Count would show number of RG ports/GE ports and Voice ports the ONT has and is not reflective of which ports are in use.**  **If RG ports are not in inventory show number of Ethernet (GE ports) and number of voice ports**  **Using ODiN retrieve Ethernet port count; Voice port count, Ronta, ONT number; if not in SmartNID cache**  **If no information can be found populate Unknown** | |  | | --- | | **ONT Status** | | **ONT Type** | | **Installed Ont**  **RONTA**  **ONT Number**  **Current Provisioned Tech** | | **Video LIF Ont** | | **ONT Pre-Terminated** | | **ONT Pre-Terminated Reason Code** | | **Power Adapter Indicator**  **ONT Location**  **Integrated ONT**  **ONT Port Count** | | |  | | --- | | **Port Type** | | **Port Status** | | **Disconnect on Hold** | | **Port Type** | | **Port Status** | | **Port Type** | | **Port Status** | | **Disconnect on Hold**   |  | | --- | | **ONT Wiring** | | **Without Dispatch** | | **Port Type** | | **Port Status** | | **DPU Model** | | **DPU Vendor** | | **DPU Serial #** | | **DPU Status** | | **DPU Type**  **Installed DPU** | | | |
| **2.7** | **Find where this information is stored and create API if needed to retrieve the information for Inside Wiring Information;**  **If no information can be found populate Unknown** | **IW Type to Unit/Prem**  **IW type to Jacks** |
| **2.8** | **Find where this information is stored and create API if needed to retrieve the information for Inside Wiring Information;**  **Modem/RG Model is alphanumeric**  **Serial Number is alphanumeric**  **Modem Left-in would be Yes or No**  **Mount would be Media Panel or non-Media Panel**  **If no information can be found populate Unknown** | **Modem/RG Model**  **Modem/RG Vendor**  **Serial Number**  **Modem Left-in**  **Max Tech Available**  **WIFI Enabled**  **Mount**  **Location** |
| **3.0** | **Create/Enhance API that provides Service Details to Tech2Go** | **When tech clicks Circuit view provide ONT and SmartNid details.**  **Ensure other fields retrieving non SQE available information are not impacted (MST Terminal Name; MST Terminal Port, Location; Is it Monitored)** |
| **4.0** | **Ability for all other systems (applications) that require address / service information to access SQE to obtain the information on existing addresses** | **New addresses to follow existing BAU processes** |

## Testing Requirements

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **SQE UI is accessible** | **In a test environment (TBD)** |
| **1.1** | **Ability to enter a partial or full address** | **Ensure valid address is used with working service** |
| **1.2** | **Address results are returned** | **Choose address** |
| **1.3** | **Fields are populated accurately** | **Validate with O2 inventory and SmartNID cache** |
| **2.0** | **If address does not exist** | **Address not found is returned in the search** |
| **2.1** | **Address and Service information is passed to Tech2Go when viewing** | **Will need Field Ops support for testing** |
| **2.2** | **Address and service information is passed to Buy Flow** | **Will need SalesForce Support/Order writing** |
| **2.3** | **Update test address with different service information and validate the change in SQE** | **Change a field in O2 (Zip, lat/long, Gpon 940/940 Capable, etc)**  **Wait refresh period (TBD) to validate change in SQE**  **Once validated update to original entries** |
| **2.4** | **Search for an address that is not in O2** | **SQE should return address not found** |

## Acceptance Criteria

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Test cases are passed** |  |
| **1.1** | **Response time is acceptable** | **<5 sec Target (TBD)** |
| **1.2** | **Passing the data to Tech2Go does not impact Tech2Go performance** |  |
|  |  |  |
| **2.0** | **Passing the data to the Buy Flow does not negatively impact SalesForce or other dependent systems (APIs)** |  |

## Data/ Metrics/ Reporting Requirements

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Create reporting metrics** |  |
| **2.0** | **Capture how many times SQE UI is accessed** |  |
| **2.1** | **Capture how many times SQE returned search results** | **Show close Address matches found quantity**  **No Matches found quantity**  **Exact Match found quantity** |
| **2.2** | **Capture how many times SQE did not return search results** | **No response from application** |
| **2.3** | **Capture calling application or if directly accessed by user** | **Show calling application (q.com, PX, etc)**  **Show quantity of direct user requests** |
| **2.4** | **Capture Response times** | **When Close Address match is found**  **No Match found**  **Exact Match found**  **Break out by Day/hours to allow tracking of heavy/light usage times** |

## Training Requirements

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **UI training** | **Field Ops**  **Sales Force**  **Engineering**  **Repair**  **Service Assurance**  **TSC**  **FCST**  **QF Ops Support** |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |

# Business Unit Specific Requirements

## Address & Facility

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Utilize SQE as the first source for Address Qualification** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Billing & Payment

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **N/A** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Buy Flow

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Utilize SQE as the first source for Address Qualification** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Field Ops Dispatch

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **NPD is reduced** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Field Ops Process & Mobility

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **NPD is reduced** |  |
| **1.1** | **Utilize SQE as the first source for Address Qualification** |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Service Assurance & Repair

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **NPD is reduced** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## Service Delivery & Care

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **Address fallout is reduced** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## SOM

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **TBD** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

## VOM

|  |  |  |
| --- | --- | --- |
| **ID** | **Description** | **Comments** |
| **1.0** | **TBD** |  |
| **1.1** |  |  |
| **1.2** |  |  |
|  |  |  |
| **2.0** |  |  |
| **2.1** |  |  |
| **2.2** |  |  |

# Benefits

## Hard Benefits (Opex)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Organization** | **KPI** | **Formula** | **In-year Value** | **Annualized Value** |
| **Operations** | **Address Fallout** | **>6% flowthrough improvement for Address Qualification and Provisioning** |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

## Soft Benefits

|  |  |  |
| --- | --- | --- |
| **Organization** | **KPI** | **Formula / Reasoning** |
| **Sales** | **Revenue increase** | **Expand marketable footprint** |
|  |  |  |
|  |  |  |
|  |  |  |

## Unquantified Benefits

|  |  |  |
| --- | --- | --- |
| **Organization** | **Benefit** | **Formula / Reasoning** |
| **Operations** | **Reduction in calls for technician support** |  |
|  |  |  |
|  |  |  |
|  |  |  |