UIDAI HACKATHON 2021

Target Audience: Students of Engineering Colleges

Theme 1: Address Update

Introduction

1.1 In the last 10 years, UIDAI has enabled 130+ cr residents of India, spread from Turtuk in the north to Indira Point in the south, Ghuar Mota in the west to Kibithu in the east with digital identity. It has supported inclusiveness by enabling residents to interface with various Digital India initiatives. Residents can prove their identity with demographics, biometrics, OTP or a combination of them.

1.2 To facilitate enrolment to the aadhaar platform and for the subsequent update of aadhaar during life events, UIDAI has established a large number of enrolment centers across the country. Also, it has established a self-service online platform to interface and undertake update of demographics data. Even with the abundance of touchpoints, UIDAI believes that there is a scope to improve the experience around the online address update process through the adaptation of technology.

1.3 UIDAI is calling for innovative ideas and solutions, backed up by demonstrable code from young minds to enhance the address update experience of a resident. Show your problem-solving skills and understanding on open-source technologies to build an online address update process covering the following use cases.

Problem Statements

2. **Address Update Challenge in Urban Areas**. Imagine you have been selected through Campus recruitment by the UIDAI to join its Technology Centre at Bangalore to work on cutting-edge opensource technologies. Having moved to Bangalore, you landed up in a situation, wherein you need to provide your updated Aadhaar to apply for a Broadband connection. You do not have any supporting documentation to prove your current address. As per the current policy, Aadhaar requires a supporting Proof of Address (PoA) document or an Introducer who can lend his address to update the aadhaar.

2.1 You are required to provide an innovative solution using technology that will help in overcoming your challenge to update the aadhaar. For the solution, you will interface with your landlord in an online manner using a smartphone or online portal to request

his address (known as Introducer and performing the role of the donor). The entire address update process must meet the following requirements defined by the UIDAI:-

2.1.1 There should not be any exchange of aadhaar letters between you and your landlord. All communication related to address update must be in electronic form between you and your landlord.

2.1.2 You will place the request for the landlord's address by using his mobile number or aadhaar number. Please make sure that the privacy of the person is maintained.

2.1.3 The landlord can see the request for his address and would give the consent in an electronic manner to use his address by you. You will not get to see the address of the landlord till the time he gives his consent.

2.1.4 After obtaining the address from the borrower, you may undertake minor edit to the address such include your Door number or Flat number etc. Such addition should be minor in nature and should not allow change of the location. Also, post addition, the address must be validated using the GPS of the smartphone or tab.

2.1.5 Any major changes to the borrowed address should make the address invalid and terminate the process.

2.1.5 The landlord may get to see the final address, but his consent at this stage need not be factored in the solution.

2.1.6 The entire process must give a near real-time experience to you and the landlord, who is the donor of the address. The notification at various steps between you and the landlord to perform the required action must be through the app, developed for the purpose.

2.1.3 The process must be free from any fraudulent usage. Due focus must be given to possible fraudulent usage of the redesigned process and the proposed solution must be safeguarded from it.

2.1.4 The system must be auditable i.e. should produce audit logs for verification at a later date.

2.1.5 The solution must be designed to work on narrow bandwidth networks like 3G and 4G.

2.1.6 UIDAI would provide access to its API to use the landlord's resident data. All other APIs and server-side components required to implement the solution should be developed by the participating team.

3. **Address Update Using Supporting Document**. As part of our new initiative, we have roped in mobile operators to undertake update of demographics data. These operators move from doorstep-to-doorstep to assist the residents to undertake update of their demographics data at a nominal cost.

3.1 In this scenario, imagine that you have moved into the Bangalore city and signed a rent agreement with the landlord for accommodation at "*RMZ Galleria Residences*". The rent agreement captures most of the address details except the fact that it is located in "*Ambedkar Nagar*" area. You would like to submit the rent agreement as an address proof (as it is the only document available with you for the address proof) and add the missing locality name to the aadhaar address to make it complete and usable.

3.2 Design an innovative process, backed up by working code to make the address update process an engaging experience for the resident. The process should meet the following objectives, as required by the existing regulations and policies issued by the UIDAI:-

3.2.1 The process to use the assistance of the mobile aadhaar operator (hereafter called as *operator*) to help you in the address update process.

3.2.2 The operator using his mobile device (smartphone or tab) would scan/image the document, extract the address, and validate its accuracy by using the GPS. For this step, onboard GPS and assistance of any geocode/GIS service can be undertaken.

3.2.3 Redesigned process should allow you to edit the address and add the left-out locality name (*i.e. Ambedkar Nagar*) to the address. This addition of street name or any other field should be validated so that it doesn't refer to an altogether new address.

3.2.4 Validation of the new address must be performed electronically and the outcome must be stored in a data structure, so that it can be uploaded to the UIDAI servers for further analysis.

3.3 To complete this challenge, you need to develop the mobile app which will be used by the operator and must have the following features:-

3.3.1 Capture the supporting Proof of Address (PoA) document.

3.3.2 Extract the address from the Supporting document using the OCR technology. Participating team may use the UIDAI provided OCR APIs or any open source OCR technology to extract the address fields from the document.

3.3.3 Validate the address using the onboard GPS of the Smartphone or the tab and geocode APIs available in the open-source domain.

3.3.4 Form to display the extracted address and its accuracy. The form should also allow editing of the address or addition of missing address fields such as locality, street name, or flat number to the core address.

3.3.5 The app must validate the accuracy of the updated address vis-a-vis the supporting document and should ensure that the updated address does not refer to an altogether new location on the map or geographical area.

3.3.6 The outcome of the address validation must be stored in a data structure for later upload to the UIDAI.

3.3.7 The process must be free from any fraudulent usage. The team must think through all possible fraud scenarios and design must safeguard against them.

3.3.8 The solution must be completely auditable. Adequate logs must be generated in the process for traceability and reconstruction of the whole process.

4. **Address Formatting Issue.** Imagine you belong to the capital city of India and you reside within IIT Delhi campus. You have just enrolled yourself to the aadhaar identity platform and after successful enrolment, you have received your letter containing the aadhaar number, demographics data such as name and address. Alas, in the address field you see the repetition of ‘Delhi’ multiple times, making the address a little convoluted. Like you, many of the residents especially those who are residing in the urban areas see the repetition of the same content in the final address.

4.1 You have to devise an innovative solution to identify repetitive content (like Delhi in the instant use case) and merge it in a manner that the overall address remains intact and usable. The solution must comply with the following:-

4.1.1 Essential fields like District and State can be merged into a single entity.

4.1.2 If the repetitive text is a subpart of a field, then merger should be avoided. For example, '*Purani Delhi*' as locality and '*Delhi*' as State can't be merged.

4.1.3 An API is to be developed which will take the address in its raw form as input and optimized/formatted response should be the output. No user interface would be required.

4.1.4 Bonus credit would be given to the team who can also consider the address in the local language and optimize the same.

4.1.5 You can use any open-source technologies to demonstrate the solution.