eGovernance mechanism with BioMetrics Classification and Authentication for Digital VISA Issuance and Validation

Kokula Krishna Hari K[1], Vignesh R[2]
[1]Chief Scientist, Techno Forum Research and Development Center, Hong Kong
[2]Life Member, Association of Scientists, Developers and Faculties, India

Abstract: The incorporation of the Bio-metric authentication system with the identification of Fingerprint pattern is an upcoming eGovernance Mechanism for Visa is an information validation and Visa processing mechanism using an IT and Communication infrastructure. Issuance of VISA by the consular and embassy is among the top 100 risky jobs. This has a very serious impact on the relationship between countries and among the standard forum of United Nations. The complex process need adequate data input from various sources. The integration of those data is the core value of this paper which needs the global impact for successful implementation. The statistical analyses of UN reports say that there are huge quanta of people who overstay or attempt VISA Run. This could create adverse effects in a nation's economy and security policies. However, this crisis can be averted through digitization and eGov mechanism in Visa Issuance, this feat can be achieved through the means of Global data and information verification process associated with multilingual data validation system. EU has already adopted VIS a form cross continental information interchange process during their Schengen Visa issuance.

Key words used: VISA Issue, Biometrics, FingerPrint, VISA Verification, Travel History.

INTRODUCTION

Cross nation travel has been enabled to it's utmost ease and secure form, by means of a independent nation governed booklet, 'The Passport'. The progress of this mechanism is so rapid that the feasibility of next to nill preplanning is enormous. Still the process holds a large scale adverse effect subsequent only to its progress, the possibility of many immigrants to overstay their acknowledged duration using reasons both actual and faux.

Studies show illegal residents are more prone to be involved in criminal activities in their host nation. The task of reviewing and verifying the civil/crimnal offenses by embassy and consular (VISA) is tough and follows a extremely time consuming process. Other reasons like Tax evasion and customer duty leniency in host nation causes, huge financial impacts in the parent nation, this paper describes connecting the Passport Control and Legal System with Global VISA processing to avoid issuance of VISA for Criminal and Legal imposters.

RELATED WORKS

For decades the VISA Issuance Process was kept confidential and was a proved complication for many cross nation travelers especially tourists with inconsequential travel agenda. But the present environment has created a structure that travelling across the borders has certain acknowledged liberation. The United Nations Migration council in 1982 declared the Justice for the Alien and the adequacy of the consular establishment enabling the VISA System.

The United Nations Migration Council has declared the Restrictive Employment immigration policies which clearly quote the effectiveness and implications of sending people from ASEAN Countries. According to the statistics released by the United Nations in 2010, it quotes that 13% of the people who travel in Tourist VISA to other countries fail to return back to their nation post their validity of VISA. And 6% of the total people who travel in Tourist VISA with criminal backgrounds departing from their home country to evade the law. Data from which an estimation of the policies is made in this paper consists primarily of government or scholarly publications that appear occasionally, and newspaper reports compiled by various institutions. Three main sources have been used. The first one is a compilation of news items by the Center for Immigration Studies (CIS) in Washington, D.C. sent on a weekly basis to interested recipients. The second is a monthly newsletter published by the University of California at Davis. The third is a bi-monthly newsletter from the Scalabrini Migration Center in the Philippines on Asian Migration News (AMN).

Globally most nations have already digitized their civilian records, in an highly secured environment integration of these data is feasible countries with high population and a high global migration like India and China have their own respective digital civilian record keeping.

India's big biometric database

India houses the most ambitious biometrics database in the world, **Aadhaar**, which has so far gathered fingerprints, iris scans and photos of more than 500 million citizens – many of whom had no prior proof of their identity. Each gets a 12-digit number used for various services.

China to get facial payments technology

China will see the introduction of an app using facial recognition to authorize payments, meaning that people's features will become their PIN for purchases. Once installed and linked to a credit card or bank account, the app will authorize payments in as little as one second.

Obtaining a suitable environment and integrate these digital information can further take Visa Issuance to next level having minimal manual interaction to the system, thereby minimizing the possibility of human error

The most used biometric method for data is Finger print verification,

Fingerprints - A fingerprint looks at the patterns found on a fingertip. There are a variety of approaches to fingerprint verification, such as traditional police method, using pattern-matching devices, and things like moire fringe patterns and ultrasonic.

EXISTING SYSTEM

The European Union has the VIS Program which enables to share almost 97% of the data among the European Countries to avoid VISA Fraud and VISA Trading. The Visa Information System (VIS) started operating on 11 October 2011. It connects consulates in non-EU countries and all external border crossing points of Schengen States with a central database. VIS processes data related to applications for short-stay visas in the Schengen Area. Visa applicants will enjoy faster procedures thanks to the use of biometrics, which will also facilitate the identification of visa holders. Now, VIS is being used for all Schengen state visas.

Very similarly we have APC (Automated Passport Control) mechanism in the US Passport Control section. This is an initiative by the CBP Team which stands responsible for Customs and Border Protection. This APC has the ability to handle International Visitors and expedite the eligibility of Visa Free Entrance and Verification Checks. The usage of APC gives the visitors a faster processing, low congestion and shortest processing time. This APC not only speeds the processing, but also saves the environment by skipping the Customs Declaration forms and Arrival Card / Departure cards. Travelers may be prompted to scan their passport, smile for a photograph and scan the barcode of their flight boarding pass. Need to validate the information displayed in the screen before moving ahead. This simplifies the process around the manual grounds of checking information by the Passport Control Officer.

VIS WORKING PROCESS

The VIS allows the states of Schengen to share the information and particulars about an individual among the other states. The VIS uses a centralized IT and communication infrastructure to get connected with other states across the Schengen countries and consulates in

non-EU countries specifically the border crossing points across the Schengen. The system basically uses the Fingerprint identification system to identify and match the records. These facilities in easiest identification of the rightful holder of the VISA; and accurate validation of the information provided by the holder. This fights against the VISA Abuses and VISA Trading. And, this protects the travelers enhancing the security.

The competent authorities at the Border Control and other agencies may consult with the VIS for purpose of examining the applications and issuing the VISA or entry into the state. The authorities responsible for carrying out checks at external borders and within the national territories have access to search the VIS for the purpose of verifying the identity of the person, the authenticity of the visa or whether the person meets the requirements for entering, staying in or residing within the national territories.

Asylum authorities only have access to search the VIS for the purpose of determining the EU State responsible for the examination of an asylum application. In specific cases, national authorities and Europol may request access to data entered into the VIS for the purposes of preventing, detecting and investigating terrorist and criminal offences.

PROPOSED SYSTEM

When the EU is able to club the VIS enabling the quicker issuance of VISA validating all the synchronized information, why not the other countries is going to the right question of the hour. The system is all about creating the IT infrastructure and communication infrastructure capable of verifying the information globally amongst all the countries with the ability of multilingual information validation process. Considering global digitization, with an effectual system, the percentage illegal immigrants can be reduced, by tapping civilian's other data than those available through passport, this can be achieved through global biometrics data integration.

The applicant may be asked to input few mandate information like the option of choosing the country for his/her studies or employment or tourist visit. Basic inking about the country and his financial positions could be given with high weightage. For tourist VISA considering the weightage and risk factors the system needs to be designed such that it offers, 15 days valid VISA, 30 days valid VISA, 90 days valid VISA and Airline Ticket based VISA and more in the line flexible enough understanding the risk ability of the destination country.

At the macro level it is similar to the existing system it validates the validity and genuineness of the Passport and other supporting documents including Financial Reports, social ties, economic ties and other ties in line with the policy of the destination country.
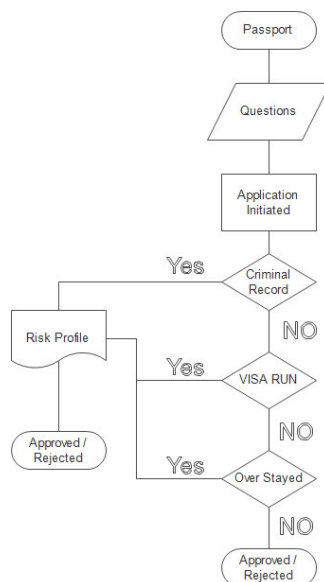
Flow Chart : 1 Process of Decision Making

IN DETAIL

The complex process by each and every embassy is that to check that applicant has been convicted or found guilty of any civil or criminal activities. The secondary question comes before issuing the VISA would be to check if the applicant has ever overstayed or violated / breached the decorum of any country over his travel period. And finally the last question would be his ability to cover the

expenses during his travel based on his or her financial positions. Further after receiving the satisfactory responses for all the above questions a VISA is either granted or rejected.

IMPLEMENTATION TRIAL

The implementation part is underway and the following pictorial moves gives the basic idea about what the system is all about. Figure 1 gives the information for the login process controlled by secure authentication system.

Figure 1- Login System

Post login the embassy or the consul or VISA Officer will key in the passport number and country of issuance. On the validation of information, the travel history of the applicant will be visible into the asylum's screen to make the decision quicker and better. The decision panel application will be HTML5 application which fetches the data records easily over mobile and tablets.

Bio metrics governed Visa consideration system

➢ Finger Print Verification:

The finger print when recognized, taps the integrated database and the file of the corresponding civilian provided by the particular country is loaded to the system, this file displays civilians, civil, judiciary, financial and criminal records. Based on the relevant information, a graph for civilian Visa consideration is determined along with a score(Visa Consideration Score), VSC, pertaining to the VSC system delivers the recommendations for the Visa, for a score below consideration point the system provides a consideration blocker and it's in-turn sent to Administrator for approval.

The administrator (Entry clearance officer) can verify the nature of the blocker, its severity and its potential impact to the particular nation, each nation has its own nature of Financial, Civil or Judicial upkeep inadequacy for VISA, whilst considering all factors the administrator clear's/endorses the block for further Visa issuance proposal.

This is then followed by Digital Visa Issuing process.

Figure 2 - Passport Verification Login

When the passport information is inputted, the details pertaining to the issuing country will be displayed. This uses the ISO code of country representation. The first two letter code represents the Country in which the passport was issued. The last character of the digital passport is the Check Sum value of the passport holder.

The decision panel displays the particulars of the passport which is connected with the Judicial System of the country which the passport is associated with. The below screenshot gives the decision panel of the VISA Issuance System which defines the probability of the best issuance with Frequency of the Travel and Criminal cases associated with him. The age defines the recently passed age as per the passport. Criminal Records are fetched from the Judicial System of the Government Database. The frequency is based on the stamp-in and stamp-out of applicant at the airports and border check-points. It calculates all the travel and defines a point based system to define the Over Stays, Criminal Activity in which applicant has involved in other countries and so on. These factors are internally managed and travel remarks are updated. The system then generates its decision over the application. Of-course, there is no mandate for the consul or VISA Officer to act according to the system, with the decision abilities of the self, he or she can have the decision. Some complex cases like way long back the criminal records might have existed, the RIGHT TO BE FORGOTTEN rule can also be implemented.

Embassy of Tunisia   New Delhi Processing Center

Decision Panel

Passport Number	IN865592799584837W	Name	Kokula Krishna Hari K
Age	24 (Twenty Four)	Criminal Records	NIL
Travel History	Frequent Traveller - 2/month	Travel Remarks	ON-TIME Returns
System Decision	ACCEPT & ISSUE	Citizenship	DUAL

Detailed Travel History

Sl. No.	Type	Country	VISA #	Valid From	Valid Until	Extension	Criminal / Over Stay
01	TOURIST	MALAYSIA	Q758856	02-JAN-2014	01-JAN-2015	NO	NO
02	BUSINESS	UNITED KINGDOM	A3774593	10-JUN-2014	09-DEC-2014	NO	NO
03	H1B	UNITED STATES	I27336444	10-FEB-2015	09-FEB-2021	NO	NO
04	TOURIST	THAILAND	T449993	28-MAR-2015	27-SEP-2015	NO	NO

Load More Previous Records

Figure 3 – Application Decision Panel with Travel History

The decision panel also has the ability to display the detailed travel history and detailed criminal activity of the applicant. The above image displays the last 4 travel VISA issued to the applicant. The VO can even expand this list. If the case, the applicant would have had some criminal records or passport revoking under the laws, the same will also be displayed here.

CHALLENGES

The implementation phase of this Integrated Mechanism would be a great challenge mainly because of synchronization of data among various governmental agencies and governments. Every Agency and Government is highly considering the value of data and privacy of each and every citizen of their fellow country. This is the major and only flaw in all the phases of this Integrated eGov mechanism for Remote VISA Issuance by the Embassy and Consular article.

FUTURE WORK

The process of integration doesn't have a limitation. The next process would be integrating the Polis Records including petty offenses and other civil disputes. The algorithm would be strengthened to explore the vitality of the petty offenses and civil disputes while making a final decision over the issuance of VISA. Additionally, the financial monitoring would also be incorporated through the service banks in each and every country which could be eradication of Lodgment of Money into the accounts at the last moment. As of now the final module which needs to be appended amongst the others quoted above is the tax payer system.

CONCLUSION

In the closing remarks, the implementation of this integrated egovernance mechanism will surely help in limiting the total number of expatriate illegally overstaying and attempting to perform the VISA RUN. Thus helping to maintain the country's deliverability and other opportunities for the legal citizens, globally in all the countries. This could also foster the relationship among the countries.

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