Digital Stamps for Cost Effective E-Governance   Solutions

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Abstract: This paper discusses an innovative approach to finding cost effective IT Solutions to E-Governance needs, referred to as "Digital Stamp".

"Digital Stamp" is a Brick and Click solution that utilizes a physical instrument whose parameters are stored in a secured server and made accessible over Internet and Telephone. The physical instrument is typically a pre-printed "Digital Stamp" which can be affixed on any other physical document and whose parameters including value and ownership can be altered by an authorized person rendering it a flexible form of receipting any value receipt. It can also be in the form of a "Plastic Card" which is a low cost ID card and can replace smart cards in many applications.

The solution has several applications in the E-Governance projects both under implementation and under consideration in various States and has the potential to reduce the costs several folds. In particular, "Digital Stamp" applies to IT solutions for collection of Stamp Duty on Documents, Issue of Driving Licenses, Issue of Health/Tax Cards to Citizens Health Programme as well as the Citizen ID or Voter's ID cards. The solution is based on a global patent pending Number under PCT/IN02/00171 [1] in the name of the author

The "Digital Stamp Concept"

The essential feature of the "Digital Stamp" Concept is that it is a combination built out of the physical concept of a "Stamp" and a Virtual concept of "Information". Stamp is typically a physical instrument which is often affixed on another instrument in recognition of some operation. For example on a Contractual Document on which a Stamp Duty is payable to the Government, the fact of such payment is indicated on the document by affixing of a "Stamp" issued against pre-payment of a designated amount.

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[1] WIPO PCT Gazette Sl No WO 03/019322

Every "Stamp" is therefore associated with "Information" and in the physical stamp concept, the Stamp instrument itself contains the information printed on it such as the value of payment made against it. The "Digital Stamp" concept works with the principle that if "Information" is to be attached to a "Stamp" it need not be printed on the Stamp itself but can be stored on a remote server accessible on demand.

This segregation of "Information" from the instrument becomes extremely useful in the following two cases.

a) when the information to be attached to the instrument is too large to be printed on the Stamp itself and

b) When the information attached to the instrument is dynamic and needs to be changed even by those who do not have physical access to the stamp.

Further, the segregation of information from the Stamp itself enables the information itself to be classified and released on a "Need To Know Basis" with some form of "Information Access Control".

Additionally the segregation of information from the instrument makes the instrument more secure than when the information is printed thereon making it more fraud and tamper resistant.

Yet another advantage of the segregation of information from individual Stamps is the possible aggregation of information across different stamps leading to a high level of "Risk Analysis and Management" of the system usage making it several times more secure than the corresponding physical system.

As the example of the Digital Stamps for Stamp Duty payment quoted below demonstrates, all the above advantages of a secure information management of a digital stamp come at a cost which is significantly lower than the existing physical system. In some of the applications, the suggested system provides a highly cost efficient alternative to the Smart Card systems. Also the system is capable of being absorbed by the Indian population in a smooth transition from the existing systems avoiding the widening of the Digital Divide.

It is envisaged that the use of the "Digital Stamp" system for the "Citizen ID Cards" instead of Smart cards can result in a saving [2]of hundreds of crores of rupees by way of investment to the system.

Digital Stamps for "Stamp Duty Payment on Documents"

Frauds involving Fake Stamp Papers have been in the news in recent months from all over India and in particular from the States of Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Punjab and Haryana.[3] Investigations have found that, the extent of frauds so far detected is over RS 10,000 crores. Fake Stamp papers have been found to be in use by many Corporates and found in non judicial stamp papers as well as other forms of stamps such as Adhesive stamps, Revenue stamps, Court fee stamps and Postal stamps. Frauds have also been found in Franking of stamps and also in Treasury receipts. Public today have no means to verify the genuineness of a stamp paper and there are many stamped documents that do not require registration and therefore float in the market without any experts taking a look at the stamps to identify if they are fake.

Karnataka Government has recently introduced an alternative system to replace stamp papers requiring payment of stamp duty at designated Bank branches to counter the fraud. This is however not convenient enough to the public.
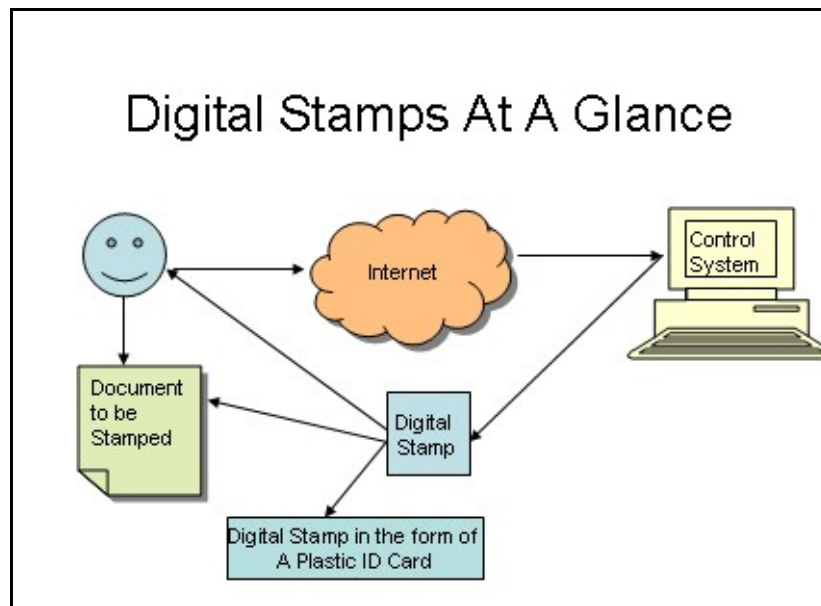
The Information Technology Act 2000 has kept documents for Contract for Sale or Conveyance of an Immovable property from the purview of the Act itself to avoid the loss of stamp duty revenue. Similar approach has been taken in UK and Hong Kong also.

There is therefore an immediate need in the market place for a system to replace the existing stamp papers which meets the security concerns and also the consumer expectations. "Digital Stamps" provide the ideal solution for the purpose as the following system description demonstrates.

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[2] "Smart Cards and Their Limitations", by Naavi http://www.naavi.org/cl_editorial_03/edit_16_sept_03_01.htm
[3] The Tribune http://www.tribuneindia.com/2003/20030723/main4.htm
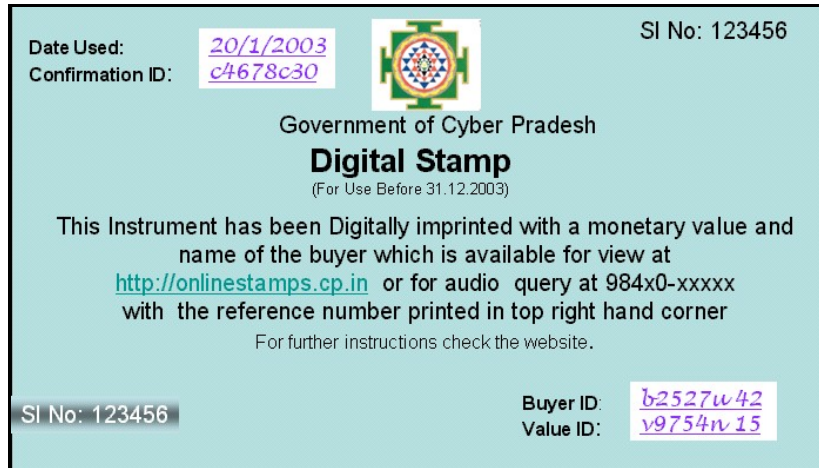
Digital Stamp System Components

The Digital Stamps System operates on a web interface which an authorized person can access. The Digital Stamp is the pre printed Digital Value Imprintable Instrument which is issued to the public or the potential users as a special stationery item with no value attached. The user interacts with the system and imprints his ownership as well as value to the Stamp before using it on a document. The value is transferred through any of the online payment mechanisms such as Credit Cards or Bank transfers.

The Digital Stamp will be issued at stationery cost on a non security paper by the Government or the service provider and will be identified by a serial number (or a bar code) and will not contain any value specifications. The user will enter authorization codes that will indicate the operations carried out on the instrument such as the registration of the buyer, loading of value, reporting of usage (Cancellation of stamp) etc. A typical Stamp with these authorization codes entered manually is indicated below.

Bulk users such as Companies will keep stock of blank stamps and load the value as and when required.

The particulars of the stamp are available to the public on a query over the internet or through a designated telephone with a Voice Response System based on the printed serial number of the instrument. Hence at any point of time any member of the public can know over a phone call the value of the Stamp and the name of the purchaser and thereby verify the genuinity of the instrument.

The information to be loaded on the server and its accessibility to different persons such as the purchaser of the instrument, the stamp vendor, the Registrar and the Government can be controlled as required. As a part of the system of usage it will be mandatory for the users to report usage within 48 hours of usage of any stamp. This is equivalent to the "Cancellation" of a stamp at the time of usage.

A detailed review of the security aspects of the Digital Stamps is out of scope of this paper. However it may be mentioned that "Faking" the "Digital Stamp" requires the dual expertise of printing of the stamp and also hacking into the secured server which contains the details of the stamp.

Also the system of "Reporting of the Usage" as a means of cancellation ensures that no valid digital stamp will be in circulation beyond the reporting period. Any attempt to re-use a stamp will be immediately recognized by the system and the request will be suitably disallowed. This also ensures prevention of any "back-dating" of documents.

The system also provides for return of the stamp value upon the user's decision to destroy the stamp before usage and also for replacement in case of accidental destruction.

Since every operation of the stamp from the time the blank stationery leaves the Government can be traced electronically, a "Risk Management" system can be built to enhance the security of the system and also undertake administrative tasks such as payment of stamp vending commission to vendors automatically.

As regards the cost of the system, since the stationery used is not security stationery, the cost of printing, storing and transporting of the stationery is very low compared to the existing system. The Consumer will bear the cost of blank stationery and transferring the funds to the system.

Further, the system can be implemented on a Build and Operate basis by an outsourced service provider so that the Government can pay for the system as and when collections are made and transferred directly to the Government department. The cost of implementation is therefore negligible and the Government can deploy enough funds in educating the public in using the system through public Kiosks, Authorized Cyber Cafes and e-Governance Service centers.

Application Extensions for other E-Governance Uses

The Digital Stamp System is a Universal system of collection of payments against pre-printed receipts and can be used in many other applications such as

- a) Collection of Road tax where the tokens are issued in the firm of Digital Stamps
- b) Driver's License where the Licenses are issued in the form of low cost plastic cards
- c) Vehicle registration records in the form of low cost plastic cards.
- d) Citizen ID cards in the form of low cost plastic cards
- e) Health Cards and Income Tax Cards with dynamic updation.
- f) Collection of Electricity and Water Charges etc.

The system also has wide application in the Banking and E-Commerce payment area which is partially out of the E-Governance system and overlaps with the E-Business segment.

Summary:

The Digital Stamp System is an innovative, universal system having many useful applications in E-Governance areas. It is available for implementation at a low gestation period and at a low investment cost with an indigenous Patent backing. An immediate adoption of the system in the interest of cost conservation in E-Governance projects is therefore called for.