

# e-Dhara\*: Land Records Management System

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## ABSTRACT

Land records are maintained for various purposes including the levy and collection of various taxes and land revenue. Any changes brought on by sale, inheritance, hire, and distribution, etc, are brought into record by the manual updation done by the *talati* at the village. However, the manual system of record keeping has become cumbersome, opaque, susceptible to manipulations and hard to administer. Therefore, *e-Dhara* land records management system was conceptualised to manage land records by using information technology (IT) as a tool. The envisaged system was designed to provide prompt issuance of computerised RoR across the counter and online updation of land records.

## Background

Land records are maintained for various purposes including the levy and collection of various taxes and land revenue, which was the principal source of revenue for the states. Cadastral survey was completed in the year 1960 for the entire Gujarat state. This survey served as the basis of the land records. Transfer and changeover of lands take place because of sale, inheritance, hire, and distribution, etc. These changeovers, considered as mutations, are brought into record by the manual updation done by the *talati* at the village.

'The Bombay Land Revenue Code, 1879' is the governing law for land records in the state. Requisite changes and amendments have been effected in the code from time to time. This land revenue code is uniform all across Gujarat

The importance of instant availability of these land records has become significant in this era of development. Record of rights (RoR) is maintained, updated and needed for various purposes such as obtaining crop loans, hypothecation of land, getting electricity connection, subsidies, etc. Land records are updated with crop data every season and this information is used for various analysis purposes. Land records also form the basis to carry out mutations such as changes in ownership title due to inheritance, sale, acquisition, etc.

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Land records are extremely important as land is the primary source of sustenance for a majority of the population. However, the manual system of record keeping has become cumbersome, opaque, susceptible to manipulations and hard to administer. Traditionally, the *talati* maintains this data in a manual register known as Village Form 6. The *talati* is the custodian of this data and carries out all changes to it when authorised by competent revenue officer (circle officer, deputy *mamlatdar* – land, *mamlatdar*, etc.) who approves for changes in the land records.

Revenue department took the initiative of digitising 7/12 and 8A forms by computerisation of the land records. It took mammoth efforts of 8000 man-months to digitise 1.5 crore land records across the state. Data digitisation was not an end to the problems faced with manual records. Tasks, viz., online validation of data at the time of data entry, bulk printing of four types of verification prints of 1.5 crore records, verification of prints with manual original records by multi-level revenue officials, corrections in computerised data as suggested during verification, display of computerised record for public observation at village, etc., need to be charted out and completed in time, or else digitised data become obsolete even before putting it to use.

It was envisaged that, if digitised data is not put to use and the manual system was still continued, computerised data will in turn become only an archived repository of land record data and nothing more than that.

Therefore, it was envisaged to put in place immediately, a complete system consisting of (1) issuance of computerised RoR from dedicated counters in the *taluka office* and (2) receiving mutation application and processing it in online mode.

The key factor in introducing computerised RoR as the only legal record in force was to discontinue the manual record. A preparatory exercise of distributing free copies for public verification prior to discontinuing manually maintained land records at village level was taken up. The exercise included activities, viz., updating computerised data, firsthand on-screen verification, bulk printing of free copies in computerised format, verification of prints with original manual record by multi-level revenue officials, distribution of free copies, accepting objections thereof, conciliation of objection with manual record and *tehsildar's* order to carry out correction followed by the correction process. Ninety seven per cent of the landholders have been given a free copy of the computerised RoRs. Certificates from the revenue officials are obtained for distribution. This exercise brought awareness about the new system to the end-user citizen and affirmation of data quality from the end user.

A system of regular and additional updating of computerised record according to registered mutations were decided to be established. Receiving mutation application and processing it in the online mode through computers, which in turn update computerised RoR data, needed a complete computerised land record management system in place. Thereby, *e-Dhara* land records management system was conceptualised to manage land records

by using information technology (IT) as a tool. The envisaged system was designed to provide prompt issuance of computerised RoR across the counter and online updation of land records. It was decided to implement the project in a controlled fashion, initially at Junagadh district, on a pilot basis. Within the pilot district, Vanthali *taluka* was selected as the pilot *taluka*, based on which district-wide roll-out of *e-Dhara* was done.

The new system brought about a sea change in the way land records were maintained and administered in the Junagadh district. It not only simplified the process of record keeping but also provided many collateral benefits.

The state has initiated implementation of online mutation roll-out plan state-wide. Till now, though, the required minimum hardware, as per the revised guidelines of the Government of India (GOI), to implement online mutation management system, is not provided to the *talukas*. GOI fund for this purpose has been received only very recently. Every district has started online mutation operations at least in two *talukas* as pilot work. As on 1 April 1 2005, the state has implemented online mutation operations in all 225 *talukas*.

## Objectives of the e-Dhara System

The primary objective of the computerisation of land record project was to achieve complete computerisation of land records across the state. Elimination of manual records, computer-controlled mutation process and self-sustainability are the leading objectives of *e-Dhara*.

Other objectives of the system include:

1. Visible improvement in quality of services provided to citizens
  - Allowing farmers/citizens easy access to their records
  - Infuse transparency in providing the services to citizens
2. Ease of administration
  - Facilitating easy maintenance
  - Prompt updation of land records
  - Making land records tamper-proof
3. Reduction in service delivery time, i.e., to speed up delivery of RoR without delays, harassment or bribery.
4. Platform for providing more citizen-centric services
5. Ensuring self-sustainability of the system

## Transformation of Processes

Processes are the set activities to be performed in a pre-planned order by authorised entities. They provide checks and controls to ensure that the activities are performed in the specified time frame. Any well-designed proc-

ess will help improve the quality of services (QoS) and effective flow of information. Processes form the backbone of any system

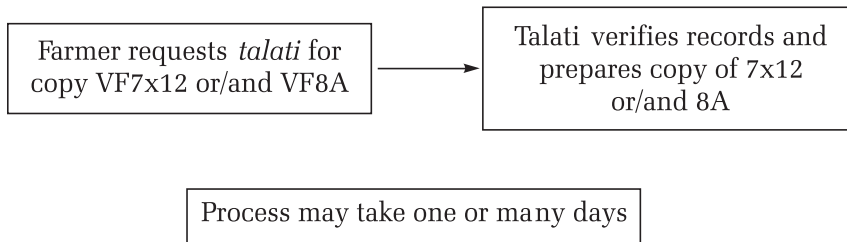
The *e-Dhara* Land Records Management System is designed on the basis of transformation of manual process for maintaining and updating land records across the state.

The manual process (followed in the pre-implementation stage) and the computerised process (followed post-*e-Dhara* implementation) are discussed in the following sections. It provides an insight into value-addition done to improve QoSs provided to citizens.

The land records system provides services to farmers through the issue of *Saat Barah* (VF7/12), account information (VF8A) and mutation entry—transfer of right over land under different categories. The following two major processes formed the backbone of the land record system.

- (A) RoR issuance process
- (B) Mutation process

### Manual Process of RoR Copy Issuance



RoR documents show the details of land ownership, survey number, type of land, irrigation methods, crop details, etc. This document is basically used by farmers for land transactions (mutations), obtaining crop loans, concessions linked to the size of the land holding, etc. The revenue administration owns and maintains the data required to produce an RoR.

#### *Request for RoR*

A farmer makes a oral request for 7/12, 8A or 6 to the *talati* by giving the survey number or *khata* number, of his land or other details such as block, entry number, *khata* number, village, area and name to identify his land details.

#### *Issuance of RoR*

After receiving the application, the *talati* verifies the details in his register and prepares the 7/12, 8A or 6, signs it, stamps it and gives it to the farmer.

## e-Dhara Process—RoR Issuance

The *khatedar* does not require to submit an application for getting a computerised print of the RoR.

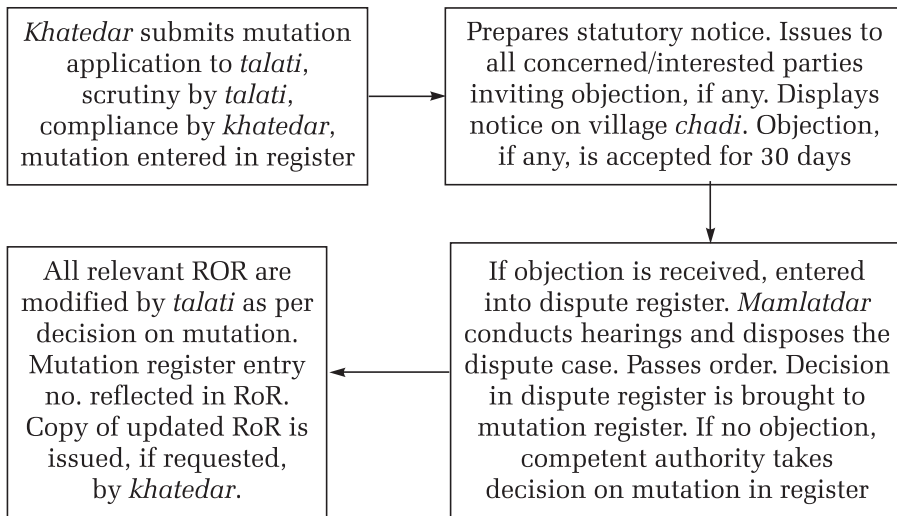
While requesting for an RoR printout, if the *khatedar* is not aware of his or her survey or *khata* numbers or farm names, the Bhulekh software allows data operators to search for the requested RoR based on survey or *khata* numbers or farm or *khatedar* names. Only after getting confirmation from the *khatedar* does the operator print the 7/12 or 8A form.

The e-Dhara deputy *mamlatdar* or any nominated personnel signs and stamps the requested computerised RoR, which is handed over to the applicant. User charges of Rs 15 is collected. The signature of the applicant is taken in the RoR issuance register as proof of receipt of the requested computerised RoR.

## Manual Process for Mutation

When a change of ownership or transaction takes place, the *khatedar* files a request for initiating the mandatory process known as mutation for effecting necessary changes in the RoR. The mutation process involves obtaining a consensus from all concerned parties of the transaction and inviting objections from those interested, if any. Once all the objections are cleared, mutation orders are passed effecting the change of ownership or record of transaction resulting in new RoR, which the owners can obtain.

The mutation process involves the following steps:



### *Types of Mutations*

There are 35 identified mutation types. Many of these differ from each other marginally. Court decree and order of a competent authority are the mutation types that do not require notice generation for hearing of objections.

### *Submission of the Mutation Application*

A written application with related documents is submitted to the *talati* for the mutation operation. The *talati* verifies the application and takes up the mutation process or else informs applicant for compliance accordingly. The *talati* chooses appropriate mutation type and makes an entry in the mutation register.

### *Issuance of Notice—135D*

The *talati* prepares the notice. This notice is served to concerned *khatedars*, relevant parties (buyers, sellers, direct beneficiaries, banks, etc., as per the case) and any other interested parties. A copy of the notice is displayed at the *gram chavadi* for public scrutiny. Objections to the mutation raised within 30 days of the notice received is accepted or else the mutation is processed further.

### *Proceedings if no Objections are Received*

If objection is not raised during the notice period, a competent authority approves the mutation. The *talati* makes the necessary changes to the 7/12 and 8A form.

### *Proceedings in Case an Objection is Raised*

If any objection is raised during the notice period, the *talati* makes an entry in the dispute register. The *mamlatdar*, after hearing the concerned parties, settles the dispute. The mutation is processed according to the dispute settlement. Aggrieved parties may approach the sub-divisional officer (SDO), as a provision of appeal. According to the resolution, necessary changes are made in 7/12 and 8A by the *talati*.

### *Passing Mutation Order*

If no objections are raised during the notice period, i.e., the concerned/interested parties have agreed to the mutation conditions, then the competent authority approves the mutation.

### *Updation of Land Records*

The *talati* makes all necessary changes to the 7/12 and 8A or makes a new RoR as the case may be, as per approved mutation. A new 8A *khata* is created,

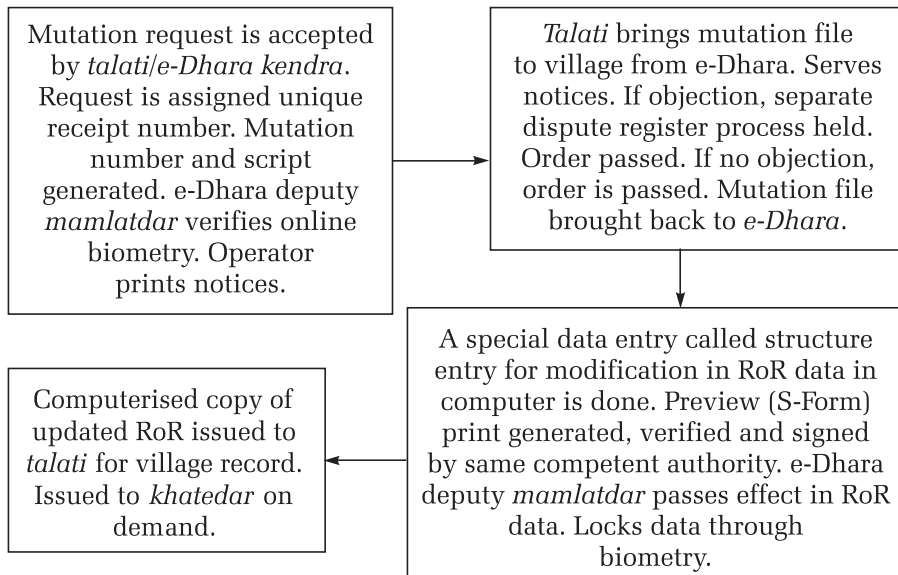
if required. The updated or newly created RoR now carries this mutation entry number from the VF6 register. There is no system of verification and counter-signing of updation in 7/12 with the same sense as the order passed on VF6. In some cases this leads to land-related disputes.

### Issue of RoR

The *talati* issues new 7/12, a copy of 8A, the *khata* and form 6 entry to the applicant on demand.

### e-Dhara process mutation

Figure 1 shows the mutation process in the *e-dhara* system.



**Fig.1** *e-Dhara* mutation process

Applications formats are prescribed as per mutation types. Mutation application forms are planned to be kept at points of public access like *mamlatdar* office, TDO office, banks and in villages at the *panchayat* and *sarpanch's* offices.

The applicant can submit application to the *talati* at the village or at an *e-Dhara* centre. In both cases, the mutation request is accepted and acknowledged through the Bhulekh software.

Separate application forms are required for separate mutation types. On receipt of application, postal addresses, telephone numbers of *khatedars*, the necessary attached supporting documents, consistency of application detail with computer data, etc., are scrutinised first.

The operator enters the basic details into the computer from the application and generates two copies of acknowledgement receipt from the computer. The applicant gets one copy of the receipt.

The *e-Dhara* deputy *mamlatdar* verifies application details, attachment of supporting documents and basic details entered by the operator and authenticates it biometrically. The system generates a unique mutation entry number and mutation note. The operator writes other relevant details. The *e-Dhara* deputy *mamlatdar* verifies and does biometric authentication. The operator generates notices from the system and keeps it with the mutation case file.

The *talati* collects mutation files from the *e-Dhara* centre. He follows up the mutation process, i.e., serving notices and taking acknowledgements from party and waiting for 30 days.

The mutation file after competent authority's approval is submitted to the *e-Dhara* centre for further processing.

The business rules for every mutation type are source-coded to effect land records in same logical sense of mutation order. A structured entry is made to direct the computer to log necessary changes in land records as per source-coded business rules. A printout showing preview of likely changes before actually effecting the land records is taken. The same competent authority approves this print (S-form). This is a unique feature of the *e-Dhara* system.

Scanning of the office copy of notices bearing signatures of all *khatedars*, mutation orders and S-forms are compulsory before biometric authentication for effecting land records for changes as per mutation.

One copy of the printouts for the village record of each updated land records 7/12, 8A and computerised mutation is provided to the *talati*. In the village, old land records are replaced with these updated ones. Old records are kept in a separate file.

When the process is completed, the mutation file becomes a permanent record residing in the *e-Dhara* record room.

### *Crop Updation*

A set of complete computerised record is given to the *talati* as a village record. As and when the RoR gets updated in the computer, an updated copy of RoR shall be provided to the concerned *talati*.

For crop updation, the following process is followed:

- a) Writing crop detail every season in village copy of RoR
- b) Data entry of crop detail in the computer

Crop module of BhulekhSoft allows carrying forward of previous details of the crop to the next year season, if asked. Due to this unique feature, the

operator enters crop details for only those cases that have undergone crop change.

The mutation types processed by the software are as follows:

<b>Sr. No.</b>	<b>Mutation type</b>	<b>Sr. No.</b>	<b>Mutation name</b>
01	Sale	02	Vasiyat
02	Gift	04	Vechani
03	Inheritance	06	Land allotment
04	Co-partner admission of right	08	Hakk Kami
05	Admission of tenant	10	Ganot Mukti
06	Admission of Boja	12	Boja Mukti
13	Giro dakhil	14	Giro Mukti
15	Identification of fragment	16	Tukdaa Kami
17	Non-agriculture	18	Sharat Badli (Tenure)
19	Survey Sudhar	20	Jodan
21	Ekatrikaran	22	Land acquisition
23	Orders	24	Notification under Sec. 4
25	Identified under LA Sec. 6	26	KJP
27	Survey Adal Badal	28	Kabjedar Namfer
29	Sagir Pukht	30	Hyati Ma Hakk Dakhil
31	Hyati Ma Vechani	32	Land Khalsa
33	Lease Patto	34	Bija Hakk dakhil
35	Bija Hakk Kami		

The computer acknowledges the following supporting documents with mutation request:

Sr. No.	Mutation type	Document
1	Varsai	OC of death certificate Computerised 7/12 and 8A
2	Hayati ma Hak Dakhal (Right entry during life)	If Bojha exists, then certificate of Bojha Mukti.
3	Vechan/Survey Adal Badal	Registered copy of the sale deed. Proof that buyer is a khatedar (for purchase of agricultural land). If sale by affidavit then certificate of Bojha Mukti. If land sale of minor then certificate from certifying authority. Computerised copy of 7/12 and 8A.
4	Will	Certified copy of Will. In case of agricultural land, then proof from person of being khatedar benefiting from the will. Copy of Probate if required.
5	Gift	Certified copy of registered document. In case of agricultural land, the beneficiary has to produce proof of being khatedar.
6	Co-partner right entry	Registered document copy to enter co-partner. Person entering as co-partner to produce proof of being a khatedar.
7	Bojha/Giro Dakhal	Copy of deed from bank/cooperative society.
8	Vechani (distribution)	Affidavit of all interested persons/parties. If Bojha exists, then Bojha Mukti certificate. Computerised copy of 7/12 and 8A.
9	Minor to major	Age proof (school leaving certificate or birth certificate)

## Comparison of Manual and Computerised System

Sr. No.	Process	Practice in manual system	Practice in e-Dhara	Key features
<b>RoR issuance</b>				
1	Application	Application mainly verbal since talati knew the khat-edars.	Application not required. khatedar has to specify his survey/khata no. for getting computerised RoR	Banks/sahakari mandalis/talati can get computerised RoR on behalf of khatedar. Khatedar can get computerised RoR through his representative or talati.
2	Issuance	Available with talati only within the village.	Available anytime at e-Dhara kendra. One set of RoR sale copy given to talati for availability in village	Consumption points like sub-registrar, banks, taluka cooperative society, etc., are tehsil HQ level
3	Cost	Officially 50 paise, but was to be retained by talati.	Available on payment of Rs 15 per survey number or khata.	The basic objective of self-sustenance of system is met by user charges collected. Cost is no bar. Well accepted. There is a collection of Rs 1.7 crore in 5 months.
4	Travel time	Mostly available within the village. khatedar may travel to sub-registrar, banks, etc., at taluka for using RoR.	Significant for villages far from taluka centre. Computerised sale copy RoR is available at village.	e-Dhara centre is an additional outlet, where availability of RoR is assured.
5	Authorised signatory	Talati himself, since all documents are in his possession.	e-Dhara deputy mamlatdar and mamlatdar	

<b>Mutation process</b>						
	Application for mutation	Written application	Compulsory application in standardised format.	Standardise application forms available with talati and e-Dhara kendra		
1	Key supporting documents	Brought by applicant as specified by talati.	Brought by applicant as mentioned in application form.	Standard list of documents according to mutation type		
2	Pending supporting documents	Brought by applicant as specified by talati.	Application is suggested to re-submit application. Endorsement given. Application is accepted, pendency specified in computerised receipt. Mutation not initiated till pendency cleared.	Standardised list of supporting documents		
3	Application verification	Talati himself verifies.	If submitted at village, talati verifies. If submitted at e-Dhara, deputy mamlatdar verifies.	Only application in the prescribed format with all necessary supporting documents is processed through computer		
4	Generating VF6 entry number	Entry registered with a unique mutation entry number. One entry may contain multiple mutation types.	System generates mutation entry number and does not allow back date mutation entry. System does not permit multiple mutation type in one entry.	Applicant can track application status by specifying mutation entry number at e-Dhara kendra.		
5	Mutation text	Descriptive: Mutation script by the talati and no uniformity.	Standardised mutation text generated by system.	Uniformity across the state.		
6	Entry verification	Not done	Done by e-Dhara deputy mamlatdar	Immediate rectification in case of errors.		

8	Notice generation and print	Contains all necessary details but no standard pattern was followed. Not verified by higher officer.	Standardised notice format generated by system. Verified by e-Dhara deputy mamlatdar.	
9	Preparing mutation file	All relevant papers were tagged together in a bunch, not in file.	At e-Dhara kendra, mutation file is created, consisting of mutation application, supporting documents, VF6 print, notices.	Brings uniformity in the system and leads to structured decision making during entry certification.
10	Serving of notice	Done by talati	Done by talati but monitored by e-Dhara system.	Notices not served result in increase of court cases. Notices are important documents and hence are being scanned as permanent evidence.
11	Notice period	There was no checks, except competent authority, for certification of immature entry.	Above and beyond the competent authority, the system does not permit any structure entry before the notice period.	
12	Objections, if any	Recorded in takrari Register. Hearing conducted and case resolved	Recorded in takrari Register. Hearing conducted and case resolved. Section of takrari Register and order scanned in computer is compulsory.	System checks scanned order for takrari entries before certification by competent authority . All relevant documents being scanned can be used for future reference.
13	Mutation decision	Taken by certifying authority	Taken by certifying authority. Copy of scanned decision builds up repository in the system.	VF6 being scanned can be used for future reference

14	Structure entry	There was no such system.	Structure entry provides human logic to system but under strict specified business rules as source-coded for making necessary changes in data as per decision on VF6 entry.	Human intervention for data tempering completely eliminated. A unique feature. Not applied except in Gujarat.
15	S Form	There was no such system.	It is a preview of likely changes happening in data. It is a check to ensure correct pattern of data updation visualised in mutation order. Competent authority signs it.	System-in-charge is assured of correct pattern of data Updation due to mutation order.
16	Structure entry locking	There was no such system.	System checks for scanning of signed S form before authentication of structure entry. Assured system-in-charge now allows changes in data.	Changes in data now updates front end document viz. 7/12 and 8A. Copy of scanned S form builds up repository in system.
17	F form	There was no such system.	It is a tool for post facto auditing of identical sense in VF6 decision, structure entry and updated RoR.	It is a post-view of sequential activities regarding particular mutation entry right from application receipt till RoR updation.
18	Updated RoR	Components viz. time, understanding, logic and quality of updation of RoR is human oriented.	Components viz. time, understanding, logic and quality of updation of RoR are system oriented.	Updation of RoR is timely, precise, logical and qualitative.

<b>Crop Updation</b>			
1	Field survey	Talati surveys agricultural lands and ascertain crop details on field	Talati surveys agricultural land and ascertain crop details on field
2	Form 12 updation	Talati manually updates crop details in manual 7/12	Talati manually updates crop schedule generated from system.
			Based on updated crop schedule, crop details are entered into system

## Roles and Responsibilities

The *e-Dhara* land records management system is the new replacing an age old and long-established manual system. The *e-Dhara* system is almost identical to the manual system, but *e-Dhara* is computer controlled and has the flavour of management change in its system. The *talati*, operator, *e-Dhara* deputy *mamlatdar* and *mamlatdar* are the key functionaries of *e-Dhara*. Of course, for some period of time, functionaries of *e-Dhara* would find in them new dimensions, challenges and adjustments. Each functionary has to responsibly play his or her role. Abridged roles and responsibilities of these functionaries may be listed as follows:

### Computer Operator

- Data entry related to RoR issuance and mutation application.
- Entry of mutation details in Bhulekh
- Printing acknowledgement receipt and handing over the same to the applicant
- Printing computerised Vf6 and 135D notices
- Putting relevant documents and handing mutation file to *e-Dhara* deputy *mamlatdar*
- Scanning mutation orders and office copy of notice in Bhulekh
- Carrying structured entry details in Bhulekh
- Generating S-form and getting it signed from relevant certifying authority
- Scanning signed S-form
- Generating F-form
- Printing final copy of RoR after approval by *e-Dhara* deputy *mamlatdar*
- Updating season-wise crop details in computer
- Generating MIS reports as required by higher ups
- Taking scheduled periodic and daily backups.
- Managing the asset to prevent breakdown and if any breakdown, then lodging a complaint to the respective vendor through *mamlatdar*, *prant* officer and DIO.

### e-Dhara Deputy *Mamlatdar*

- Signing computerised RoR
- Receiving request for RoR issuance and mutation
- Verifying mutation application for content, number of mutation in one application, supporting documents and actual details present in the computer
- Comparing mutation application with basic data entry by operator. Approve application receipt data entry to generate mutation entry number

- Locking *kachi* entry through biometric authentication, preparing mutation file
- Handing over mutation file to *talatis* for notice circulation and enter details in his register
- Receiving mutation file from *talatis* brought after village level process
- Getting S-form signed
- Locking structure entry through biometric authentication
- Handing over updated 7/12, 8A and VF6 print to *talati*
- Biometric authentication after every stage of scanning relevant documents
- Managing accounts of user charges
- Countersigning backups as per backup plan.
- Providing MIS and other reports as required
- Ensuring consumables for *e-Dhara kendra* and procure if necessary
- Ensuring relevant records are managed in the record room.
- Maintaining check on mutation pendency.
- Maintaining relevant registers
- Preparing MIS reports as required by higher ups

### Village *talati*

- Display application format and list of supporting documents in *gram chavdi* notice board of the concerned village.
- Issue *vardi* book receipt against mutation application received at village
- Verify application and supporting documents. If supporting documents are okay, single mutation is applied, etc., as per details in application
- Submit the application at *e-dhara kendra* and get receipt, mutation print and notice print
- Get additional notices printed from *e-Dhara* if required
- Receive mutation file from *e-Dhara* centre, with acknowledgement in the *e-Dhara* register
- Maintain village-level inward/outward register specifically for mutations
- Serve notices to concerned parties and take acknowledgement signature in notice O/C
- Mention postal details if notices sent through post
- Conduct *panchnama* and maintain all reference documents in mutation file
- Submit the mutation file to *e-Dhara kendra* after certification by competent authority
- Receive updated RoR from *e-Dhara*
- Replace old RoR with updated RoR received from *e-Dhara* centre.

- Provide details of crop updation to *e-Dhara* centre, in prescribed format.
- Distribute free copy of computerised RoR as a part of scheduled promulgation

### Certifying Authority

- Periodic visits to village and overall monitoring of *e-Dhara* at village level
- Ensure mutation entries get certified in computerised VF6
- Signing S-form as soon as it is generated

### *Mamlatdar*

- Ensure that the citizens receive prompt service and regularly take feedback on quality of services.
- Ensure availability of application forms and consumables as and when required
- Tap pendency in *e-Dhara* operations
- Ensuring that *e-Dhara kendra* is not subject to any down-time

### *Prant Officer (SDO)*

- Periodic reviews of *e-Dhara kendra*—application receipts, pendency, RoR issuance, complaints and feedback from citizens
- Smooth functioning of the *talukas* under his supervision
- Receiving MIS and ensuring low pendency

### District Nodal Officer

- Monitoring activities of *e-Dhara kendra* and ensuring that the services are up without any down-time
- Check MIS reports and take corrective actions
- Introduce new initiatives based on feedback from users
- Reviews progress of *e-Dhara kendras* with *prant officers* and *mamlatdars* during RO meeting

### District Collector

- Custodian of *e-Dhara kendras*
- Reviews progress and monitoring during RO meeting
- Issuing necessary orders for execution and streamlining of *e-Dhara* operations

## District Informatics Officer (DIO)

- Ensuring latest software updates available to the *talukas*
- Gathering errors/bugs from operators and sending it to NIC/SMC
- Coordinate to verify that hardware and software is working fine and operations are not hampered due to hardware/software problems
- Circulate necessary recommendations on various MIS to developing team at state.
- To ensure latest virus updates are available and installed
- Liaising with hardware vendors for faults/breakdown

## Training and Skill Enhancement

Upfront training is a major element in changing the mindset of all level functionaries and setting up of the new system.

It is planned that the data entry operators, all deputy *mamlatdars* and circle officers, *mamlatdars* and *talatis* be thoroughly trained on *e-Dhara* land records management system, before commencing operation in a *taluka*.

Sr. No.	Functionary	Topics—Content
1	Operator	Correction module—Bhulekh Mutation module—Bhulekh Front office module—Bhulekh MIS reports—Bhulekh Scan module—Bhulekh Crop updation module—Bhulekh Functional module e-Dhara process flow Roles and responsibilities System maintenance Hardware Backup
2	Village talati	Bhulekh overview Functional module e-Dhara process flow Roles and responsibilities
3	e-Dhara Deputy Mamlatdar	Correction module—Bhulekh Mutation module—Bhulekh Front office module—Bhulekh MIS reports—Bhulekh Scan module—Bhulekh Crop updation module—Bhulekh Administration module—Bhulekh Functional module

		e-Dhara process flow Roles and responsibilities System knowledge Password management Backup
4	Mamlatdar	Bhulekh overview MIS reports—Bhulekh Administration module—Bhulekh Functional module e-Dhara process flow Roles and responsibilities Password management Backup
5	Prant officer (Sub-divisional officer)	Bhulekh overview MIS reports—Bhulekh Administration module—Bhulekh Functional module e-Dhara process flow Roles and responsibilities
6	District nodal officer (e-Dhara)	Bhulekh overview MIS reports—Bhulekh Administration module—Bhulekh Functional module e-Dhara process flow Roles and responsibilities

### Specific Trainings for Skill Enhancement

1. All *e-Dhara* staff are provided with hands-on training on new process and procedures.
2. Extensive training for operators/*e-Dhara* deputy *mamlatdars* on backup new versions of software modules.
3. A set of selected personnel from district administration who are enthusiastic, willing to learn and shoulder responsibility is selected for trainers training.
4. All personnel at all levels are covered under basic training so as to take over in case of transfer and accidental vacancy.

Topics covered include:

#### *Functional Sessions*

- Conceptual introduction to land records
- Basics of mutations and the origination of mutations
- Need for RoR, 8A and VF6
- Conceptual introduction to *e-Dhara* system
- Terminologies and concepts in the *e-Dhara* land records management system

### Technical Sessions

- Briefing on various modules—report and query, scanning, mutation, administration, crop, *taluka* and correction
- Hands-on Bhulekh training on all mutation types
- Hands-on training in Gujarati typing
- Session on backup management, basics of hardware set at *e-Dhara*

### Orientation Sessions

- Process flow
- Roles and responsibilities
- Registers and book-keeping in the *e-Dhara* system
- Software overview—especially MIS and monitoring features

### Administrator Sessions

- Outline of Bhulekh
- Application structure
- Mutation process flow
- RoR issuance
- Utilities and reporting tools

Training batch configurations are as follows:

Training	Location	Batch participation	Days	Type
<i>e-Dhara</i> staff	District Data Centre	6	1–2	Hands-on
Village <i>talati</i>	<i>Taluka</i> HQ	All <i>Talatis</i> of <i>Taluka</i>	2	Workshop, PowerPoint
Orientation <i>e-Dhara</i> Deputy <i>Mamlatdars</i>	State level	40	2	Workshop, PowerPoint
Orientation <i>Taluka Mamlatdars</i>	State level	40	2	Workshop, PowerPoint
Orientation <i>Prant</i> officers (SDO)	State level	40	2	Workshop, PowerPoint

### Communication Plan

Government resolutions and circulars are channelled, extensively for communicating policies, procedures, guiding principles, roles and responsibilities, delegation of responsibility and authority, and issuance of resolution

procedures relating to *e-Dhara* implementation down the district and *taluka* administration.

To communicate the objectives and benefits of *e-dhara* and bring it to the attention of the citizen, a communication plan is designed from the state level, and is implemented in all district administrations across respective districts.

#### B Approaching Political Commitment

The objectives and benefits of e-Dhara were communicated at coordination committee meetings at the district level.

MLAs, MPs and ministers were involved in the inauguration of *e-Dhara kendras*, which elevated the stature of the project in the eyes of the district administration and citizens.

### *Khatedar's* Feedback

Citizens were satisfied with the quality of service provided at *e-Dhara kendra*, as it helps in spreading the benefit of services to all.

### Address Communication

Benefits of system and its services were communicated at public meetings, *gram sabhas* held at village level. Banks and *sahakari mandalis* were requested to spread benefits of *e-Dhara* at the village level.

### Mass Communication

Mass communication is done through the following means:

#### *Advertising in Television*

- In local cable channels

#### *Posters*

- At collectorate, SDO office, *mamlatdar* office, *gram panchayat* office, *taluka* and district *panchayat* office, *sahkari mandli* offices, post office, etc.

#### *Banners/hoardings*

- At collectorate, suitable junctions, etc.

#### *Cable TV footage Scrolling*

- In local cable channels

### *Meetings*

- With banks/*sahakari mandalis*/GEB managers

### *Training Workshops*

- Of *talatis*

### *Notice boards*

- At *e-Dhara kendra*

## Technical Aspects

### Software

Software for *e-Dhara* is known as 'BhulekhSoft'. It is developed by the NIC Gujarat unit. The software is based on a client-server architecture capable of running on Windows platform (98SE, 2000, ME and XP). Bhulekh installation on servers requires any Windows OS (98SE, 2000, 2003 or Win NT) with SQL Server (7.0 or 2000). The software has been designed in Visual Basic 6.0 as the front end, whereas the back end data base chosen is SQL 7.0 and 2000. For MIS Crystal Reports, Version 7 has been used while for the Gujarati language interface, GIST SDK from C-DAC has been used.

Minimum RAM required for the server is 128 MB, while for the client 64 MB RAM on Windows platform is required.

The software has five key modules, while an additional module has been designed for other forms, which spools data entered from Form 12 of 7/12.

#### *Front Office Module*

This module facilitates mutation application receipt, application verification, mutation entry number generation and acknowledgement receipt printing. Also, the module provides for VF6 mutation entry, printing, verification and locking for generating of notices.

#### *Mutation Module*

This module facilitates structure entry, S-form generation depicting changes to be effected, final form and effecting update to RoR.

#### *RoR and Query Module*

In this module no data entry can be made. It is meant only for viewing and verifying of records. An elaborate MIS is possible at the village level. The intended users are *talatis* and revenue officials. The module can be run over a dial-up line.

### *Crop Module*

The module facilitates checklist generation, crop data entry, carrying forward previous season crop data and data entry for changes.

### *Admin Module*

The module facilitates configuring user ID, password and biometric fingerprints for all categories of users.

### *Correction Module*

The module facilitates correcting 7/12 and 8A based upon *talati* or public verification. Strict timelines have been built into this module.

### *Other Forms*

Currently Village Form 13 relating to summary of crop, trees and irrigation sources and Village Form 16 depicting information on irrigation sources and equipment used have been included.

## Hardware

To operationalise *e-Dhara* at the *taluka* centre, the following hardware components are minimally required:

<b>Sr. No.</b>	<b>Item</b>	<b>Quantity</b>	<b>Configuration</b>
1.	Server	1	P4 — 2.4 Ghz with 512 GB RAM (pref 1 GB), 80 GB HDD, DAT Drive, 17". colour monitor, internal CD-writer
2.	Client	Based on work load (Minimum 3)	P4 — 2 GHz with 128 MB (256 pref), 40 GB HDD, CD Rom, 17" colour monitor
3.	Printer – DMP	1	180 col. printer
4.	Printer – Laser	Based on work load	HP 1150 or higher (at least 14 PPM)
5.	Biometric device	2	
6.	CD writer	1	

7.	UPS	1	2 KVA online with 30/60 mins. backup, SMF batteries and cabinet
8.	Generator	1	5 KVA
9.	Scanner	1	Legal size
10.	Switch	1	24 Port 10/100 I/O
11.	Rack	1	19" wall mounted rack
12.	Air conditioner	1	1.5–2 tons
13.	LCD projector	1 at District HQ	With ceiling mount kit, cables and projection screen

Note the following:

1. Hardware was provided for *talukas* as per GOI's guidelines of 1999. The states that started the programme earlier and have marched ahead face a serious problem of outdated existing hardware. Hardware requires urgent replacement.
2. As per original guidelines, a fund of Rs 3.8 lakh was released per *taluka*. Hardware installed is inadequate and not sufficient for supporting the full-functionality of *e-Dhara* which is operational now.

In case of Gujarat; as mentioned earlier regarding the software, BhulekhSoft of *e-Dhara* requires 128 MB on board memory for the server and 64 MB for the client. The hardware procured in year 2001 has gone outdated. It cannot take giant loads of issuance of RoR, crop updating, online mutation, etc., concurrently.

However, the self-sustainability factor has still not brought enough collection for this purpose. Moreover, day-to-day requirements like stationery, consumables, technical manpower, etc., have a higher priority, which need to be met from user charges collection.

GOI needs to look into this matter and allocate funds for replacement of the hardware for those *tehsils* that have been operationalised in all respect and whose hardware was brought before 2002.

## Backup

Backup is the most important aspect in the land record computerisation process. Different intervals at which backup is required to be taken on different devices is designed to ensure utmost safety of computerised land records. A detailed backup plan designed is as under:

## Backup Plan

Sr. No.	Frequency	Action by	Device to be used	Steps to follow	To be kept at
1	Daily	e-Dhara Deputy Mamlatdar	2 DAT cartridges to be used. Each will be used on alternate days	Each to be used on alternate days. In a day only one backup has to be taken.	e-Dhara kendra
2	Weekly	e-Dhara Deputy Mamlatdar	1 DAT cartridge and 1 rewritable CD	On the last working day of every week two backups to be taken. One on DAT cartridge and another on CD	e-Dhara kendra
3	Monthly	Mamlatdar	1 DAT cartridge and 1 rewritable CD	On the last working day of every month two backups to be taken. One on DAT-cartridge and another on CD	e-Dhara kendra
4	Monthly	Mamlatdar	1 single-write CD	On the last working day of every month a backup to be taken on a single-write CD and be sent to district collectorate for safekeeping and with a purpose of offsite backup maintenance	District collectorate
5	Monthly	Mamlatdar	1 single-write CD	On the last working day of every month a backup to be taken on a single-write CD and sent to the state for safekeeping and with the purpose of offsite backup maintenance	State Head Quarters
6	Yearly	District Collector	1 single-write CD	On the last working day of revenue year. 1 write CD to be kept at collectorate.	Collectorate

7	Yearly	District Collector	1 single-write CD	On the last working day of revenue year. 1 write CD to be kept at mamlatdar office.	Mamlatdar office
8	Yearly	District Collector	1 single-write CD	On the last working day of revenue year. 1 write CD to be kept at state	State Headquarters

### *Backup schedule*

Daily tape backup (Every Monday, Wednesday, Friday)	Daily tape backup (Every Tuesday, Thursday, Saturday)
To be changed every 6 months	To be changed every 6 months
Weekly tape backup (Every Friday)	Weekly CD backup (Every Friday)
To be changed every 12 months	To be changed every year

## Key Learnings and Critical Success Factors

The land records management system is a comprehensive project including not only maintenance of data on a computer but also of updation of that data whenever a change in RoR is required. Thus, computerisation is not a one-time job but requires continuous effort and updation. It needs to be strictly ensured that any change required to be carried out on RoR is done on the computer itself, instead of doing it manually first and then putting it on computer as a batch updation. Now, when manual RoR is complimented by a computerised system, it is essential that mutation be carried out using the Bhulekh software as a continuous process, thus avoiding any gaps in the data.

Significant insights are gained by analysing implementation stages, methodology adopted, list of processes re-aligned, activities that were modified to suit the business needs and the features that were successful. Insights help to learn lessons from success and mistakes and provide an opportunity to identify process improvements that can significantly help in planning and roll-out execution. The following are a few procedures, activities and briefs describing *e-Dhara* implementation.

### *Preparing Guidelines*

- For updation/of manual records
- Process of data entry
- Verification of data entered

### *Identify and appoint an in-charge of e-Dhara*

The in-charge of *e-Dhara* on or before *e-Dhara* operationalisation is very significant. A full-time in-charge was not available for 6–7 months.

### *Functional Training*

Functional training is essential and unavoidable to the following functionaries:

- a) Talatis
- b) Deputy *Mamlatdar*
- c) *e-Dhara* Deputy *Mamlatdar*
- d) Circle officer
- e) *Mamlatdar*
- f) *Prant* officer

A technical overview during functional training session is also helpful.

### *Technical Training*

Technical training is essential and unavoidable to data entry operators. A functional overview during functional training session is also helpful.

### *Data Backlog Completion*

Before operationalising *e-Dhara*, data backlog of *pramanit* and *kachi* entries should be completed by operators at *e-Dhara* centres. *Talatis* should be called to the *taluka* office and backlog activity should be completed in the stipulated time frame.

### *Public Verification Through Free Copy Distribution*

The key factor in introducing computerised RoR as the only legal record in force is the stopping of the manual record. A preparatory exercise of free copy distribution for public verification prior to stopping of manually maintained land records at village level should be taken up. The exercise includes activities viz. updating computerised data, first hand on-screen verification, bulk printing of free copy in computerised format, verification of prints with manual original record by multi-level revenue officials, distribution of free copies, accepting objections thereof, conciliation of objection with manual record, and *tehsildar's* order to carry out correction followed by correction process. This exercise brings awareness about new system in the end-user citizen and affirmation of data quality from end user.

Public verification through free copy distribution should largely be publicised with a clear message that the exercise is preparatory to discontinuing of manually maintained land records at village level. District administration should issue a public notice stating commencement and closure date of public verification activity, objectives of public verification and procedure of reporting corrections.

### *Hardware Installation and Networking*

All necessary hardware should be installed at *e-Dhara kendra*. Necessary software products should also be installed, if required. Hardware should be networked prior to implementation.

### *Software Deployment*

Appropriate relational data base management system software should be installed on the server prior to installing the application software. All modules of the application software shall be deployed on clients and server.

### *Closure of Village Manual Books for e-Dhara Operations*

Before operationalisation at *talukas*, references of last mutation number and last *khata* number should be taken from *talatis* and fed into relevant software module. Verification and remarks in village manual books is done.

### *Configuring Thumb Impression for Biometric Authentication*

Biometric authentication should be configured through registering thumb impression of the concerned users (Viz. *mamlatdar*, *e-Dhara* deputy *mamlatdar*, circle officer and operator) using proper application module.

### *Software Testing*

Every software module version should be thoroughly tested for bugs/errors, and should be reported in the prescribed format to NIC GSU and SMC. A printout of the reporting format, e-mail/written communication should be kept for future reference. *Talukas* should be made operable only after the testing of delivered and rectified version of the module.

### *Mock Run of Operations*

Mock runs of operations prior to *taluka* operationalisation should be conducted in the presence of the *prant* officer, *mamlatdar* and *e-Dhara* deputy *mamlatdar*. Mock runs give insight about administration's preparedness and build confidence to actually take-up operationalisation. Problems faced during a mock run may be closely viewed and solutions to problems may be drawn out.

### *Ensuring Availability of Standard Mutation Text and Application Forms*

Mutation application forms with a list of supporting documents for mutation type should be made available at the *e-Dhara kendra* prior to operationalisation. It should also be made available at the village *panchayat* office.

### *Preparing Registers in Prescribed Format*

All prescribed registers should be prepared before operationalisation.

### *Communication Plan*

Press notes should be released highlighting *e-Dhara* operationalisation. Publicity through radio and TV campaign shall reinforce this.

*e-Dhara* operationalisation should be inaugurated in the presence of *khatedars*, and possibly political executives should preside the event.

### *Implementing Backup Plan*

For data security and backup, circulars were issued and also ensured that these are complied with. A backup plan for all *talukas* was designed and implemented.

Figures 2 and 3 show photos of e-dhara centres in Gujarat.



Fig. 2



Fig. 3