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**NeGP**  
**AGRICULTURE**  
EMPOWERING FARMERS

## Providing Information on Irrigation Infrastructure

Software Requirement Specifications (Draft Copy)



Agricultural Informatics Division  
National Informatics Centre  
Department of Electronics & Information Technology  
Ministry of Communications & Information Technology  
Government of India

Version 1.0



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## 2 Introduction



The Department of Agriculture and Cooperation (DAC) of the Central Government has decided to implement National e-Governance Programme (NeGP) in the Agricultural Sector as a Mission Mode Project (A-MMP), covering the Agriculture Sector, Livestock Sector and Fisheries Sector. The A-MMP aims to address the needs of the farming community and its other related stakeholders, through provision of

relevant information and services through the various delivery channels available in their vicinity for assisting them in making rational decision. The expected (envisaged) outcome are “raising farm productivity” and “raising farm income”.



In first Phase project will be implemented in 7 pilot states. These are Assam, Himachal Pradesh, Maharashtra, Madhya Pradesh, Jharkhand, Kerala and Karnataka. The project will be rolled out in other states after successful implementation in first phase.

The project aim is to

- Improve access of farmers to timely and relevant information and services throughout Crop-cycle
- Bringing farmer centricity and service orientation to the programs by providing location-specific and up-to-date crop management related information in terms of Good Agricultural Practices (GAP), Package of Practices (PoP) etc. and also personalized advisory services
- Increasing effectiveness of government service delivery in certification and licensing etc.
- Grievance registration and beneficiary tracking
- More effective management of agricultural sector schemes of through Process redesign
- Enable private sector participation to benefit farmers by providing an integrated platform to promote value added services in extension, marketing (input and output), and Post-harvest and Storage

Under this project 12 Cluster of Services are to be provided, through ICT intervention, to the Farming community. These are:-

- Service 1: Information on Pesticides, Fertilizers and Seeds
- Service 2: Providing information on soil health
- Service 3: Information on crops, farm machinery, training and Good Agricultural Practices (GAPs)
- Service 4: Information on forecasted weather and agro-met advisory

- Service 5: Information on prices, arrivals, procurement points, and providing interaction platform
- Service 6: Electronic certification for exports & imports
- Service 7: Information on marketing infrastructure
- Service 8: Monitoring implementation / Evaluation of schemes & programs
- Service 9: Information on fisheries
- Service 10: Information on irrigation infrastructure
- Service 11: Drought Relief and Management
- Service 12: Livestock Management

## 2.1 Purpose

The purpose of this document is to identify a set of requirements for service 10: Providing Information on Irrigation Infrastructure, of National e-Governance Plan for Agriculture (NeGP-A). The solution aims at providing the irrigation related information/services to the Farmers of the country. The service envisages to

- 1) Provide a mechanism for the dissemination of information on water release schedule.
- 2) Build centralized repositories for information on Water Reservoirs, Canal Systems, ground water resources, Land degradation , water logging, water bodies etc. which can be consumed by other services and applications
- 3) Build a linking between the existing information systems on watersheds of NWDPR, RVP&FPR etc. and the GIS maps / digital watershed atlas available with SLUSI
- 4) Provide searchable content on the farmer centric information such as best practices on irrigation and information on irrigation equipment.
- 5) Build a mechanism to provide expert advisories to the Farmers on the irrigation related issues.
- 6) Provide a mechanism to monitor the progress of projects related the Command Area Development

The requirements provided in this document would serve as the basis of the development of the proposed solution.

## 2.2 Scope

The scope of this document is to identify the software requirement specifications relating to digitization and centralization of irrigation related information and enabling their delivery through various service delivery channels.

The following are the components of the service 10 as envisaged under NeGP-A to be delivered by the proposed solution.

- Provide a repository of the Water Reservoirs in the country and a mechanism to provide the daily water level information of the reservoirs
- Provide the details of network of canals linked to the various water reservoirs in the country.
- Provide for a mechanism to calculate the water requirement of the standing crop within a Command Area at any point of time within the crop season
- Assist in preparation and delivery of the canal water release information to the farmers.
- Provide for a mechanism to link the watershed information in the repositories like RFS and NRM with the GIS information on the watersheds available with SLUSI.
- Create a repository of information related to the Ground Water resource in the country.
- Create a repository of information related to Land degradation and water logging details and a mechanism to link the same to the GIS based database available with SLUSI.
- Create a repository for the best practices on irrigation.
- Create a repository of the information on Irrigation equipment
- Set up a mechanism for identification of the beneficiaries for irrigation related projects under the MNREGA based on the various social and financial parameters like dependents, land holding patterns etc.
- Set up a mechanism for dissemination of Expert advice on the various irrigation related issues to the farmers
- Set up a mechanism for monitoring of the projects related to the development of the Command areas. It should provide details of the area created planned and actually serviced at the end of each crop season under different projects including the government tube wells, lift irrigation and canal irrigation (including information on distribution network in a command area)
- Set up a mechanism for grievance submission and redress monitoring.
- Provide a Web based System for Receipt and Processing of Applications for the issue of NOC to Abstract Ground Water by CGWA

## 2.3 Definitions, acronyms, and abbreviations

### 2.3.1 Definitions

The following are the details of some of the terminology used in the document:

#### 2.3.1.1 Waterlogging:

An irrigated area is said to be waterlogged when the surplus water stagnates due to poor drainage or when the shallow water table rises to an extent that soil pores in the root zone of a crop become saturated, resulting in restriction of the normal circulation of the air, decline in the level of oxygen and increase in the level of carbon dioxide. Water logging is one of the major problems of land degradation in India. Unscientific management of soil, water and crops in irrigated lands and obstruction of natural drainage systems by various developmental activities are the main factors responsible for disrupting the balance of inflow and outflow of water, leading to water logging. While irrigation has increased by leaps and bounds, its attendant problem of water logging is now plaguing substantial area of agricultural lands. The National Commission on Agriculture assessed in 1976 that, an area of about 6.0 million hectare was waterlogged in the country. Out of this, an area of 3.4 million hectare was estimated to be suffering from surface water stagnation and 2.6 million hectare through rise in water table. The Ministry of Agriculture estimated in 1984-85 that an area of 8.53 million hectare was suffering from the problem of waterlogging including both irrigated and un-irrigated areas. The Working Group constituted by the Ministry of Water Resources estimated in 1991 that an area of 2.46 million hectare was suffering from the problem of waterlogging under irrigation commands. The state wise area affected by the water logging is given below:

State	Area Affected by waterlogging (both irrigated and unirrigated) (National Commission on Agriculture – 1976)	Waterlogged Areas (both irrigated and unirrigated areas) (Ministry of Agriculture - 1984-85)	Area Estimated by the Working Group of MoWR 1991 (under irrigated commands)
Andhra Pradesh	3.39	3.39	2.66
Assam	N. R.	4.50	N.R.
Bihar	1.17	7.07	6.20
Gujarat	4.84	4.84	1.72
Haryana	6.20	6.20	2.49
Jammu & Kashmir	0.10	0.10	0.01
Karnataka	0.10	0.10	0.24
Kerala	0.61	0.61	0.12
Madhya Pradesh	0.57	0.57	0.73
Maharashtra	1.11	1.11	0.15
Orissa	0.60	0.60	1.96
Punjab	10.90	10.90	2.00
Rajasthan	3.48	3.48	1.80
Tamil Nadu	0.18	0.18	0.16
Uttar Pradesh	8.10	19.80	4.30
West Bengal	18.50	21.80	N.R.
Delhi	0.01	0.01	N.R.
Total (Lakh ha)	59.86	85.26	24.56
Total (Million Ha)	6.0	8.53	2.46

Source: <http://wrmin.nic.in/writereaddata/linkimages/component%20of%20reclamation7872571015.pdf>

### 2.3.1.2 Land Degradation

Land degradation is defined as a human induced or natural process that negatively affects the land to function effectively.

S. No.	Organisation/ Department	Area (m ha)
1	National Commission on Agriculture, Govt. of India (1976)	175
2	Society for Promotion of Waste Land Development (1984)	93.7
3	National Remote Sensing Agency, Hyderabad (1985)	53.3
4	Soil and Water Conservation Division	173.6
5	National Bureau of Soil Survey and Land Use Planning (1994)	187.7
6	Department of Land Resources (2000)	63.8
7	Department of Land Resources (2005)	55.27

Statistics on Degraded Lands in India (source: <http://slusi.dacnet.nic.in/ldm.htm>)

Most of the statistics published by different organizations on degraded lands are only estimates lacking scientific base for data acquisition and does not have spatial extent. Department of Land Resources (DOLR), Ministry of Rural Development carried out wasteland mapping using remote sensing technique during 1985 and 2000. The mapping carried out during 1985 using 1:1 million-scale satellite imagery accounted for 53.3 m ha area as wasteland. Subsequently, an estimate of 63.85 m ha (2000) and 55.27 m ha (2005) of wasteland in the country has been reported based on 1:50000 scale mapping. The wasteland map of DOLR cannot be considered as such a base data for degraded lands. Some of the categories of the wastelands, such as, the steep sloping lands, scrub and without scrub lands, snow covered lands etc. have been recognized, as wastelands, which are not necessarily, the degraded lands.

### 2.3.1.3 Ground Water

Groundwater is water located beneath the earth's surface in soil pore spaces and in the fractures of rock formations. A unit of rock or an unconsolidated deposit is called an aquifer when it can yield a usable quantity of water. The depth at which soil pore spaces or fractures and voids in rock become completely saturated with water is called the water table. Groundwater is recharged from, and eventually flows to, the surface naturally; natural discharge often occurs at springs and seeps, and can form oases or wetlands.

Central Ground Water Board (CGWB), a subordinate office of the Ministry of Water Resources, Government of India, is the National Apex Agency entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation and regulation of ground water resources of the country. Central Ground Water Board was established in 1970 by renaming the

Exploratory Tube wells Organization under the Ministry of Agriculture, Government of India. It was merged with the Ground Water Wing of the Geological Survey of India during 1972.

#### **2.3.1.4 Soil and Land Use Survey of India (SLUSI) Watershed Atlas**

Soil and Land Use Survey of India, Department of Agriculture and Cooperation, Ministry of Agriculture, Govt. of India is an apex institution in the country for conducting Soil Survey since 1958. It operates from its Head Quarter at New Delhi through seven Centres located at Noida, Kolkata, Bangalore, Nagpur, Hyderabad, Ranchi and Ahmedabad. The mandate of the organization is to provide detailed scientific database on soil and land characteristics to various State user Departments for planning and implementation of soil and water conservation in the watershed based programme for Natural Resources Management.

##### **2.3.1.4.1 Watershed**

Watershed is a natural hydrologic entity governed by the terrain topography from where runoff is drained to a point. The term watershed is a general phenomenon thus its size and area depends on the scale of the base map used for delineation and codification. Recognizing the importance of management of soil and water resources in the country following the natural system, the department of Agriculture and Cooperation developed the delineation and codification system and "**Watershed Atlas of India**" has been published (Anon, 1990). The atlas has been devised based on the drainage map on 1:1 million scale following stream hierarchy where the whole country has been divided into six River Resource Region, 35 Basin, 112 Catchments, 550 Sub catchments and 3257 Watersheds. The codification has been made in a simplistic manner following alphanumeric system.

A watershed can be symbolized as 1A2B3 where "1" stands for River Resource Region, "A" designates the Basin in that river resource region, "2" indicates the Catchment within the basin, "B" indicates Sub catchment and "3" stands for the watershed number in the sequence of stream hierarchy.

##### **2.3.1.4.2 Methodology: Delineation and Codification**

India is drained by many rivers and their tributaries where flood and droughts are frequent visitors. To combat these situations and to sustain agricultural production, the country's land mass needs to be divided into smaller hydrological units that led to conceptualization of "**Delineation and Codification of Watersheds in India**". The state of art of the delineation and codification system is that it is an open system and the process can be extended to micro level using the drainage map of larger scale .The Watershed Atlas meets up the requirement of planning at National and State level. One of the unique

characters of the atlas is that it provides the basic framework of watersheds of the country and all the land based developmental programme of the country can be recognized with national code of watershed.

The delineation has done in seven stages starting with **Water Resource Regions** and their subsequent division and subdivisions into **Basins, Catchments, Sub-catchments, Watershed, Sub-watershed and Micro-watersheds** in decreasing size of the delineated hydrologic unit.

Each of the sub-catchment then divided into watersheds following the lower order streams, a group of tributaries or the left and right bank of higher order stream moving downstream upwards using the same base.

When the left and right banks of a higher order stream are being delineated as separate watershed it would be advisable to cut across the stream at the upper end at a suitable confluence point to avoid the ambiguity in locating the ridge. **The number of watersheds in a sub-catchment is restricted up to 9.** The size of individual sub-watersheds is generally restricted around 5,000 to 9,000 hectares, which is considered a viable working area for implemental programs. The division of watershed is restricted to 22 alphabets (avoiding a, e, i, l and o). The code of sub-watershed will be 2A1C1b.

**1. Water Resource Regions (WPR):** The six WRRs suggested by Dr. A. N. Khosla in 1949 have been adopted as such with slight modifications in their numbering which has been done in a clockwise manner, starting with Indus drainage as numbers like 1, 2, 3 etc.

- Indus drainage – 1
- Ganges drainage – 2
- Brahmaputra drainage – 3
- All drainage flowing into the Bay of Bengal except those at 2 & 3 – 4
- All drainage flowing into the Arabian Sea except Indus drainage – 5
- Western Rajasthan mostly ephemeral drainage – 6

**2. Basins:** Each WRR has been divided into basins which constitute individual big rivers like Krishna, Narmada, Chambal etc. or a combination of smaller ones which are contiguous to each other, such as basin between Cauvery and Krishna have been divided into lower and upper basins or left bank and right bank basins as in the case of Brahmaputra. Basins are assigned letters as A, B, C.....Z.

**3. Catchments:** Each basin has been divided into a number of catchments, which pertain to main tributaries or a group of contiguous tributaries or individual streams. Catchments are represented by numerals suffixed to basin code as 1, 2, 3.....9.

**4. Sub-catchments:** The catchments are further divided into a number of sub-catchments, which are mainly smaller tributaries and streams. Sub-catchments are indicated by suffixing alphabets to catchment code as A, B, C.....Z.

**5. Watersheds:** Each sub-catchments has been divided into a number of watershed which are the smallest sized hydrologic units in the macro level category on the base of 1:1 million scale in the Watershed Atlas of India, published by SLUSI. Watersheds are designated by suffixing Arabic numbers to a code of sub-catchment. For example a watershed code would be like 4G4D3, 2B2A3 etc. The watersheds codes are restricts to numerical 1 to 9 only.

**6. Sub-watersheds:** Each watershed is further divided into sub-watersheds on 1:50000 scale (SOI topographical map) in which main tributaries and streams are taken up for delineation of sub-watersheds.

Sub-watersheds designated by small English alphabets as a, b, c.....z which is suffixed to watershed code. The complete code of a sub-watershed is appeared as 2A2E8a, b, c, etc. The small alphabet 'e' 'i' 'l' and 'o' are discarded in view of the cartographic consideration and to avoid its ambiguity with the sequence of code. Hence, the total numbers of codes for sub-watersheds is restricted to 22.

**7. Micro Level Delineation:** Planning to phase out the watershed management at catchment level and to formulate action programme needs, micro level delineation. The delineation of watershed boundary at micro level could easily be attained by superimposing the watershed boundary from Watershed Atlas on to a drainage map of 1:50000 scale.

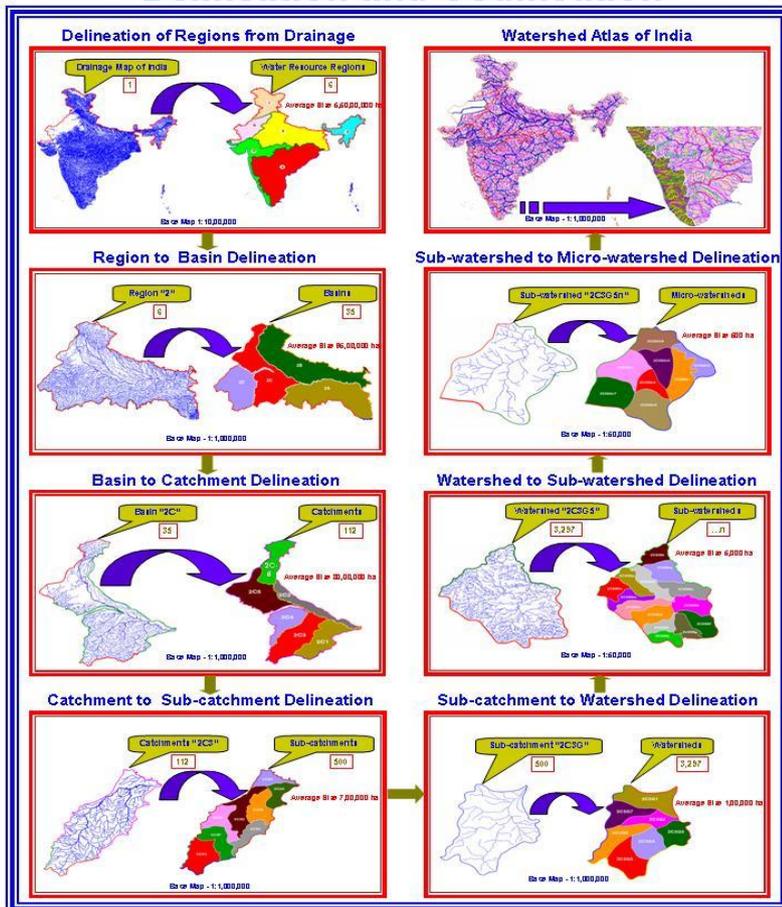
The delineation and codification would follow the similar system based on stream hierarchy and codification from downstream upward that allows to get a micro-watershed of 500 to 1,500 ha size viable enough for implementation of soil and water conservation programs. The beauty of such delineation and codification is that it could be recognized with a national code with seven digits and symbolized as 1A2B3a1 where "a" stands for sub-watershed and "1" denotes the micro-watershed. Thus 1A2B3a1 stands for a national code of a micro-watershed belongs to Water Resource Region "1", Basin "1A", Catchment "1A2", Sub-catchment "1A2B", Watershed "1A2B3", Sub-watershed "1A2B3a" and Micro-watershed "1A2B3a1".

**Table:** Average size and size ranges for each Hydrological Units

S. No.	Category of Hydrologic Units	Example of Code	Size Range (ha)	Average Size (ha)
1	Water Resource Region	2	270,00,000-1130,00,000	5,50,00,000
2	Basins	A	30,00,000-300,00,000	95,00,000
3	Catchments	1	10,00,000-50,00,000	30,00,000
4	Subcatchments	A	200,000-10,00,000	7,00,000
5	Watersheds	2	20,000-300,000	1,00,000
6	Subwatersheds	A	5,000-9,000	7,000
7	Microwatersheds	2	500-1,500	1,000

Various steps involved in delineation of watersheds at micro level are illustrated and is given below:-

### Digital Micro-watershed Atlas of India Delineation and Codification



#### 2.3.1.4.3 **Digital Watershed Atlas of India**

The Watershed Atlas of India published by Soil and Land Use Survey of India has now been brought under digital environment using GIS and RDBMS by the organization as step towards development of Spatial Database not only to serve the country in a sustained manner but to disseminate the information on line to the users through information technology

The digital watershed atlas is customized in such a way that it can be given to the users both River Resource Region and Basin wise or State and Catchment basis. The beauty of the atlas is that the name of the river will blink on the monitor when the cursor is placed on any part of the atlas. Subsequently, detailed description of the watershed highlighting the area and the district and State it falls and its linkages with main drainage system will follow. The digital atlas is going to be the backbone of many future information systems and applications.

#### 2.3.1.5 **Command Area Development Program**

During the post-independence period high priority was accorded to increase agricultural production and productivity for providing food security to the people and as such a number of irrigation projects were constructed. The surface irrigation potential, which stood at 22.6 m ha till 1950-51 had increased to 33.6 m ha by mid-sixties. In the later years, it was realized that the irrigation potential created was not being fully utilized and substantial gap existed due to which the purpose of irrigation projects was not fully met. The gap between irrigation potential created and irrigation potential utilized prompted the Irrigation Commission in 1972 to make specific recommendations for systematic and integrated development of commands of irrigation projects. Following this, a Committee of Ministers in 1973 suggested creation of a broad-based Area Development Authority for every major irrigation project to undertake the work of comprehensive area development and management.

On the basis of the recommendations of the Committee of Ministers, Government of India launched a Centrally Sponsored Scheme of Command Area Development Programme in 1974-75. The primary objective of the CAD Programme has been to bridge the gap between the irrigation potential created and that utilized through increase in irrigated areas and thereon to increase efficient utilization of irrigation water and improve the agricultural productivity in the irrigation commands. The programme envisaged an integrated and coordinated approach to the development and management of command areas by constituting a multi-disciplinary team under the overall control of the Command Area Development Authorities.

##### 2.3.1.5.1 **COMPONENTS OF THE PROGRAMME**

1. On-Farm Development (OFD) works i.e.
  - a. Development of field channels and field drains within the command of each Outlet; Land leveling on an outlet command basis
  - b. Reclamation of waterlogged areas (Since April 1996)
  - c. Enforcement of a proper system of "Warabandi" and fair distribution of water to individual fields
  - d. Realignment of field boundaries, wherever necessary (where possible, consolidation of holding should also to be combined)
  - e. Supply of all inputs and services including credit; Strengthening of extension services
  - f. Encouraging farmers for Participatory Irrigation Management (PIM).
2. Selection and introduction of suitable cropping pattern.
3. Development of ground water to supplement surface irrigation (conjunctive use under Minor Irrigation sector).
4. Development and maintenance of the main and intermediate drainage system (irrigation sector).
5. Modernization, maintenance and efficient operation of the irrigation system up to the outlet of one-cusec capacity (irrigation sector).

#### 2.3.1.5.2 PROGRAMME COVERAGE

Beginning with 60 Major and Medium Irrigation Projects in 1974-75, the Programme now covers 227 projects with a cultivable command area of 22.16 million hectares spread over 23 States and 2 Union Territories.

#### 2.3.1.5.3 PROGRAMME IMPLEMENTATION

The Command Area Development Wing of the Ministry of Water Resources coordinates and monitors the implementation of the Command Area Development Programme at the national level. Proposals received from the States for inclusion of new Projects under the Programme are examined and, if found techno-economically feasible, are included under the Programme. The progress is measured through physical and financial progress reports of the programme as received from the States ; and, the quality of works is ensured through technical guidelines and suggestions provided to the State functionaries from time to time and through various meetings, workshops, seminars etc.

The programme is being implemented by the State Governments through Command Area Development Authorities (CADAs) set up by them. However, in some States, namely, Arunachal Pradesh, Himachal

Pradesh, Meghalaya, Nagaland, Tamil Nadu and Tripura, CAD Authorities have not been constituted and the Programme is being administered through the line Departments concerned.

#### 2.3.1.5.4 FINANCING PATTERN

The financing of the activities carried out under the Programme comes from the following three sources

1. State outlays
2. Central assistance on matching basis for certain identified activities
3. Institutional finance.

The financing pattern for providing the Central Assistance to the States keeps on changing from Plan to Plan as per the past experience. The financing pattern in force from April 1996 is, however, as follows:

1. Grants will be admissible on matching basis to the State Governments for the 'establishment', topographical and soil surveys, planning and design of OFD works, supervision of OFD works, construction of field channels and field drains, enforcement of Warabandi, adaptive trials, demonstration and training, crop compensation, subsidy to small and marginal farmers on identified items, evaluation studies sponsored by the States, reclamation of waterlogged areas and one-time functional grant to the Water Users' Associations.
2. Cent per cent grant from the Central Government is given for orientation training for senior level officers which is sponsored by the Central Government and also for evaluation studies, if they are sponsored by the Central Government.
3. Subsidy will be admissible for land leveling and shaping, Ground Water development and sprinkler and drip irrigation to small and marginal farmers for these items of work, on the pattern followed under the Integrated Rural Development Programme (IRDP).
4. Loan for the purchase of equipment and machinery will be provided to the States on a matching basis.

#### 2.3.1.5.5 PARTICIPATORY IRRIGATION MANAGEMENT (PIM)

The National Water Policy 1987 advocated involvement of farmers in the management of irrigation. The irrigation potential increased nearly four times since the beginning of the planned era but brought in several problems of management of irrigation in its wake. These included unreliable and inequitable supply of water, especially at tail-end; improper O&M of the systems, poor recovery of water rates, indiscipline in the distribution of water and the problem of waterlogging due to seepage from canal network on the one hand and over irrigation on the other. To address these problems it has been recognized that participation of beneficiaries would help greatly for the optimum upkeep of irrigation system and utilization of irrigation water. Keeping this aspect in view, PIM is a thrust area under the Programme during the Ninth Five Year Plan period.

The participation of farmers in the management of irrigation would give responsibility for operation and maintenance and collection of water rates from the areas under the jurisdiction of the Water Users' Associations of concerned hydraulic level. Under the CAD Programme, presently a provision is existing for a one-time functional grant to farmers' Associations @ Rs.500 per hectare - of which, Rs. 225 per hectare would be provided by the Central Government and, the State Governments each and Rs. 50/- per hectare to be contributed by the Farmers' Association.

#### 2.3.1.5.6 RECLAMATION OF WATER LOGGED AREAS

Water logging, soil salinity and alkalinity are mainly caused by unscientific management of soil, water and crops in the irrigation projects. Obstructions of natural drainage, improper upkeep of irrigation network, sluggish drainage are some of the other causes. To tackle this problem, a new component "Reclamation of Waterlogged Areas in Irrigation Commands" has been included under the CAD Programme since 01.04.1996 under which, 50 per cent Central assistance in the form of grant is available to the States as per norms. Eighty proposals with an estimated cost of Rs. 31.55 crore, covering an area of 29,492 hectares for reclamation of water logged areas in the irrigation commands in six States namely, Bihar, Jammu & Kashmir, Karnataka, Kerala, Orissa and Uttar Pradesh have been approved recently and are currently under various stages of implementation by the State Governments.

#### 2.3.1.5.7 PROGRAMME MONITORING AND EVALUATION

Steps are taken to effectively monitor the programme implementation closely through CAD Wing of the Ministry, Central Water Commission and independent Consultants. Main indicators of impact of the programme are increase in the irrigated area by bridging gap between the irrigation potential created and utilized, equitable supply of water and increase in agricultural productivity and production. The activities

which are directly taken up under the Programme are below the outlet, which help in better distribution of water from the outlet to each holding and improving efficiency in the use of water. Studies made in the past have indicated that the Programme has made a positive impact albeit in varying degrees in different projects.

#### **2.3.1.6 Central Water Commission**

Central Water Commission is a premier Technical Organization of India in the field of Water Resources and is presently functioning as an attached office of the Ministry of Water Resources, Government of India. The Commission is entrusted with the general responsibilities of initiating, coordinating and furthering in consultation of the State Governments concerned, schemes for control, conservation and utilization of water resources throughout the country, for purpose of Flood Control, Irrigation, Navigation, Drinking Water Supply and Water Power Development. It also undertakes the investigations, construction and execution of any such schemes as required.

CWC also Monitors selected major and medium irrigation projects, to ensure the achievement of physical and financial targets. Monitoring of projects under Accelerated Irrigation Benefit Programme (AIBP), and Command Development (CAD) programme has also been included in its field of activities. The AIBP was conceived in the year 1996 by the Government of India in order to provide financial assistance to States to complete various ongoing projects in the country so that envisaged irrigation potential of the project could be created and thereby extend irrigation to more areas. Presently, major, medium and Extension, Renovation and Modernization (ERM) projects are eligible for Central Assistance under AIBP. The surface water minor irrigation schemes of Special Category States as well as such schemes satisfying specified criteria in Non-Special Category States are also eligible for Central Assistance under AIBP

### 2.3.2 Abbreviations

- DAC - Department of Agriculture and Cooperation
- NIC - National Informatics Centre
- SRS – Software Requirement Specifications
- CSC - Common Service Centre
- NeGP – National E-Governance Plan
- AMMP - Agriculture Mission Mode Project
- ICT – Information & Communication Technology
- EAA - Expert Advisory Application
- WUA – Water User Association
- DRDA – District Rural Development Agency
- SAP - State Agriculture Portal
- CAP - Central Agriculture Portal
- KMA - Knowledge Management Application
- KCC - Kisan Call Center
- SCC – Service Call Center

### 2.4 References

1. GIS Maps of Watershed, Water Logging & Land Degradation Details from SLUSI.
2. Ground Water Details from CGWB.
3. Reservoir, Flood Forecasting, Network of Canal Details from CWC.
4. Guidelines of MI Schemes referred by Sh. Ashwani Bhardwaj Divisional Engineer (Directorate of Agriculture Shimla)
5. Details of Water Release Schedule information shared by Sh. Palanetra (Irrigation – Secretary) from Bangalore Secretariat.
6. Guidelines on Command Area Development & Water Management Programme, June 2010 published by Ministry of Water Resources

## 2.5 Overview

### 2.5.1 Service Component – Classification & Categorization

These components identified for the Service 10 are classified into content and transaction based components and further categorized into Government to Farmer (G2F) and Government to Government (G2G) services.

The components can be classified as

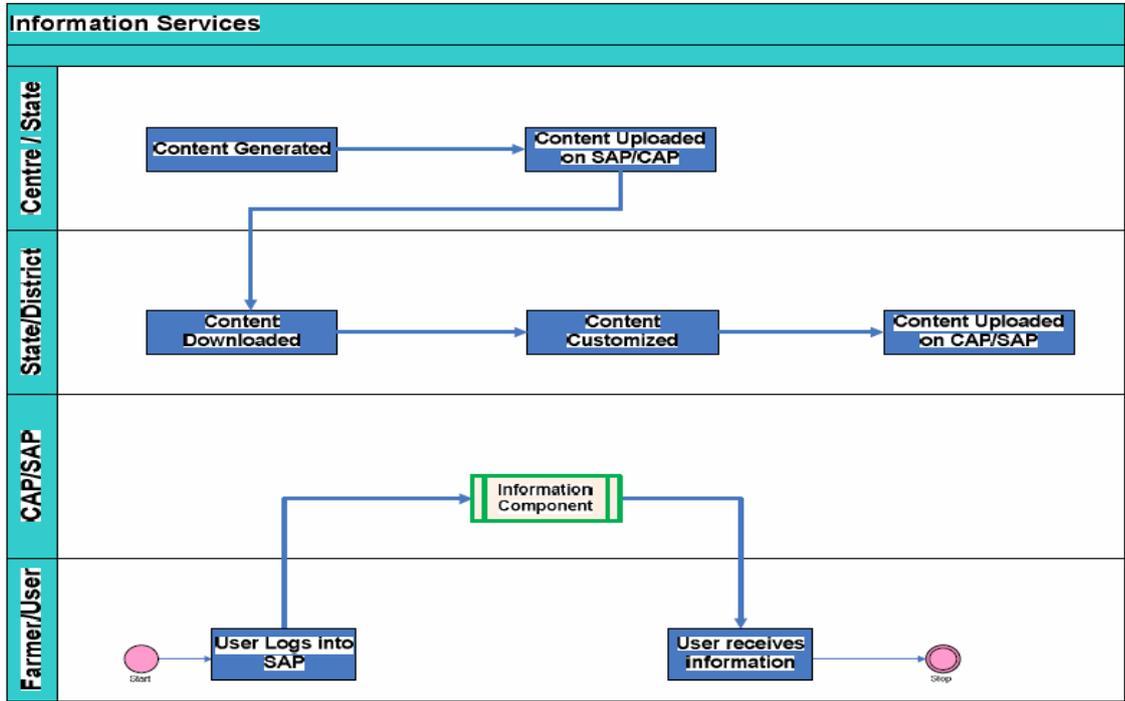
- **Content based components:** Components for which data needs to be collected, stored and managed for appropriate dissemination.
- **MIS Based Components:** the components for which the parameters are updated at regular intervals and the information is used to monitor the components
- **Transaction based components:** components for which input data is captured, processed and an output is generated for the use of the end beneficiary. This component would apply where one to one interactions are conducted.
- **Workflow based components:** Components where an initial input is captured and processed, based further inputs at each stage of process, and an output is generated

The following table gives the classification and categorization details of the

S No	Component	Classification	Categorization
1	Water Release Schedule	Workflow Based	G2F
2	Water Reservoir information	MIS Based	G2G
3	Canal System information	MIS Based	G2G
4	Information on Best Irrigational Practices	Content Based	G2F
5	Watershed Information	MIS Based	G2G/G2F
6	Ground Water Information	MIS Based	G2G
7	Information related to Land degradation and water Logging	Content Based	G2G
8	Information related to Irrigation Equipment	Content Based	G2F
9	Expert Advice	Transaction based	G2F
10	Grievance Monitoring	Transaction/Workflow Based	G2F
11	Command Area Development Project Monitoring	MIS Based	G2G
12	Applications for the issue of NOC to extract Ground Water	Workflow Based	G2C

### 2.5.2 Information Dissemination

The overall goal of this project is to enhance the farmer’s productivity by using the Information Technology tools in their day-to-day life. Here information only needs to be disseminated as a part of the service delivery.



### 2.5.3 Implementation Strategy

The implementation of Project is envisaged to host the application at Service Server and provide a SOA (Service Oriented Architecture) interface to states, farmers, private sectors, NGOs etc. through a Web Service.

The Irrigation Infrastructure services will be implemented at the Central/State level. It will provide information on Irrigation Infrastructure service to all the stakeholders. The service aims at empowering the farmers /citizens with a wide spectrum of knowledge on Irrigation Infrastructure, Watershed Development programme in their area, Irrigation Equipment availability/ Quality, Water release/ Scheduling details.

#### 2.5.4 Key Stakeholders

For the purpose of this SRS, the following can be identified as the primary stakeholders of the project.

1. Farmers
  - a. Individual farmers
  - b. Farmer groups
  - c. Water user's Association (WUAs)
2. Central Government
  - a. Department of Agriculture & Cooperation
  - b. Attached Offices & Directorates
  - c. Ministry of Water Resources & its department
  - d. Ministry of Rural Development
3. State Government
  - a. Department of Agriculture & Cooperation
  - b. Attached Offices & Directorates
  - c. Irrigation Department
  - d. DRDA/Zilla Parishad/ Panchayat officials
4. Private Sector
  - a. Manufacturers / Wholesalers / Dealers of inputs
  - b. Importers and exporters of irrigation equipment
  - c. Traders, Buyers and Commodity Exchanges
  - d. Call Centres
  - e. Agri Business Clinics & Centres

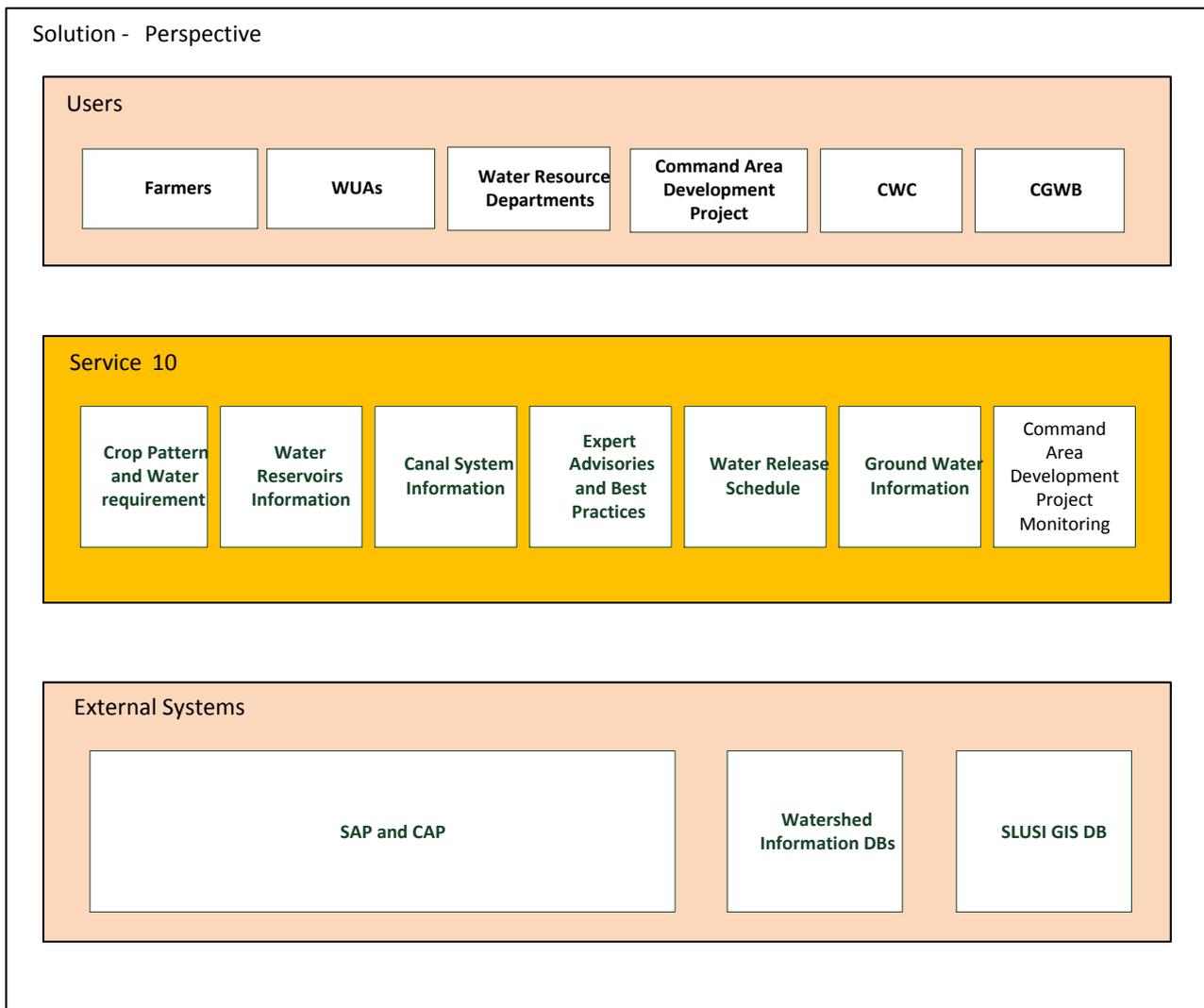
#### 2.5.5 Service Delivery Channels:

- Common Service Centres (CSCs)
- Agri Clinics/Business Centres
- Water user's Association (WUAs)
- DRDA/Zilla Parishad/ Panchayat officials
- PWD/ Irrigation department
- Departmental Offices
- IVRS
- KCC/SCC
- Mobile Phone
- Online (Web based service)

### 3 Overall Description

#### 3.1 Product Perspective

The Solution aims to facilitate the reporting and delivery of services to stakeholders through ICT intervention. It focuses on enabling electronic delivery of services, and does not include internal automation of Agricultural Departments/Agencies. The identified services for “Providing information on Irrigation Infrastructure” are majorly classified under content based and transaction based components. The contents under content based component of the service will be provided in the relevant electronic format and uploaded through the system by the users concerned. The information related to transaction based will be captured through the system during traction of services at different level of interactions. The following block diagram depicts the perspective of the proposed solution with reference to the other entities:



### **3.1.1 System Interfaces**

The following software interfaces are required to achieve the desired scope:

1. APIs to provide watershed information from RFS, NRM and other watershed databases, based on watershed code. This is required to show the watershed details whenever a user selects any particular watershed on the SLUSI GIS map.
2. APIs to provide watershed maps, according to the watershed code, to show the GIS map of any watershed when accessed from the applications like RFS, NRM etc.

### **3.1.2 User Interfaces**

### **3.1.3 Hardware Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

### **3.1.4 Software Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

### **3.1.5 Communications Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

### **3.1.6 Memory Constraints**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements

### **3.1.7 Operations**

The following are the normal data processing operations which will be performed by the users:

1. Update of Water level information of reservoirs on fortnightly basis
2. Update of information on Water requirement and Crop patterns at start of crop season
3. Processing of Water Release schedule at start of crop season
4. Command Area Development Project information update on Weekly basis
5. Ground Water information update on fortnightly basis
6. Information related to best practices on irrigation, as per requirement
7. Information related to Irrigation equipment, as per requirement
8. Information on Expert Advisories related to Irrigation, as per requirement
9. Grievance submission by Farmers, as per requirement
10. Processing of applications for the issue of NOC to Abstract Ground Water
11. Apart from the above the functions the user will perform data retrieval operations for View function as per the requirements.

The system should have suitable backup and recovery operation in place to shield against the loss of data due to unforeseeable circumstances.

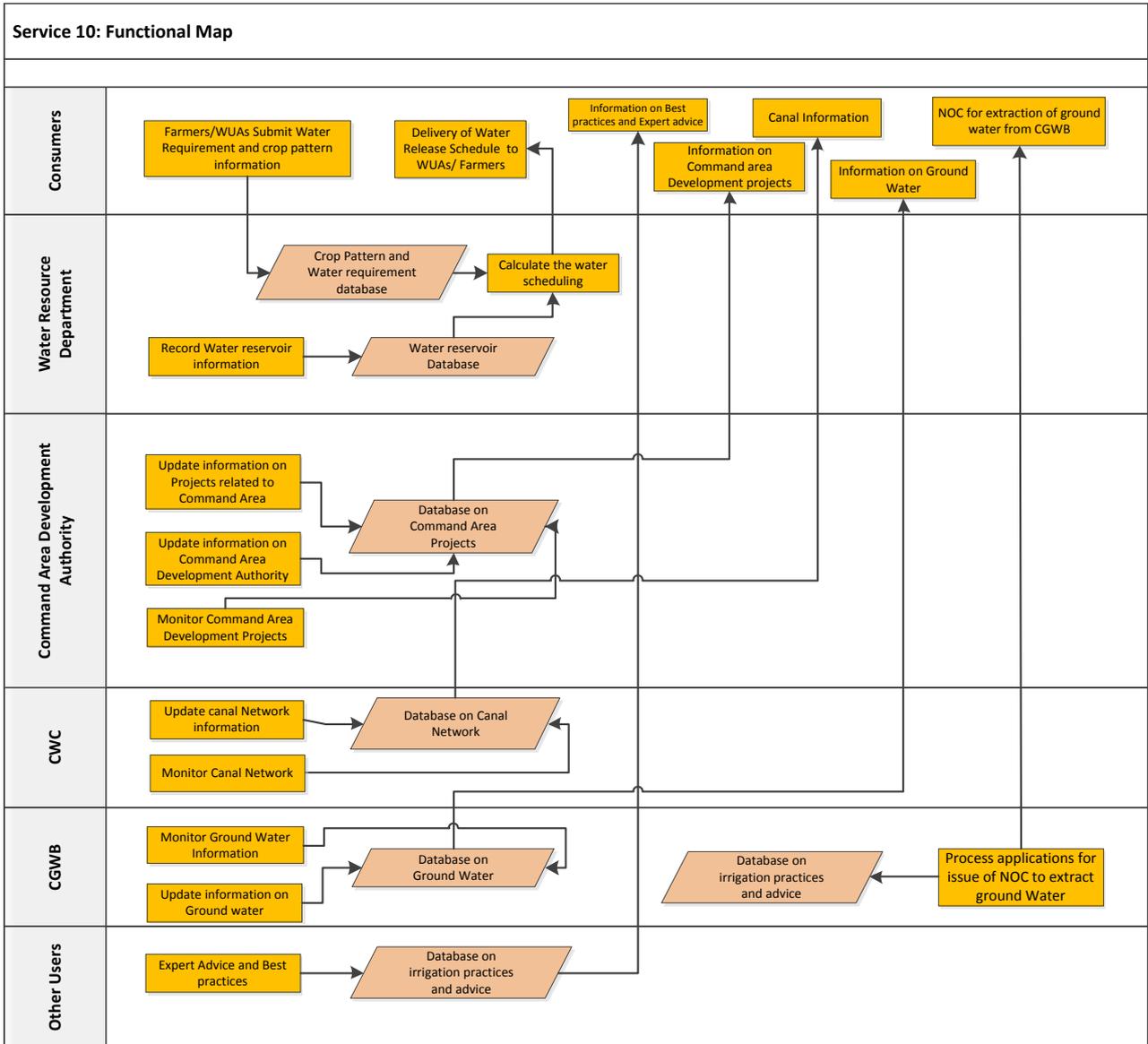
### **3.1.8 Site Adaptation Requirements**

The following are the modifications to be implemented in the existing systems:

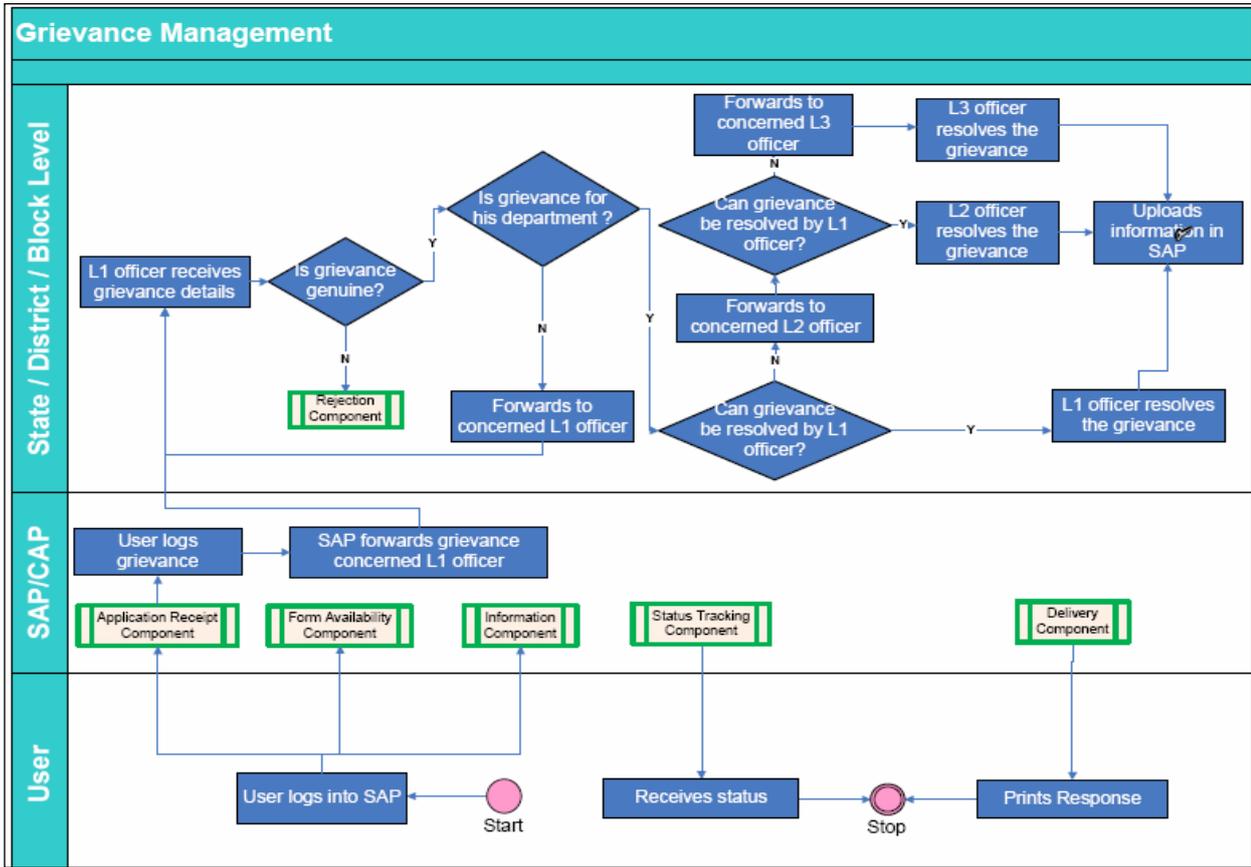
1. The Existing watershed information databases (RFS, NRM etc.) should be updated to have a watershed code as per SLUSI format. The codes should correspond to the watershed GIS Database (SLUSI). This is required for linking the information in the Watershed information databases with the watershed GIS database.

### 3.2 Product Functions

The following figure shows a functional map of the requirements to be implemented by the proposed solution:



The following figure shows the Grievance Management Process to be implemented by the solution:



### 3.3 Constraints

The proposed solution includes the users from various government departments under various ministries; hence the foreseeable constraint is related to setting up a mechanism of cooperation between the users for sharing of the data and setting up the required policies as assumed in the next section.

Since the solution would in-turn create various central repositories related to irrigation and would serve a single source of information. Since the service is to become the part of SAP and CAP it should be made sure that the master information is not duplicated at the various service levels.

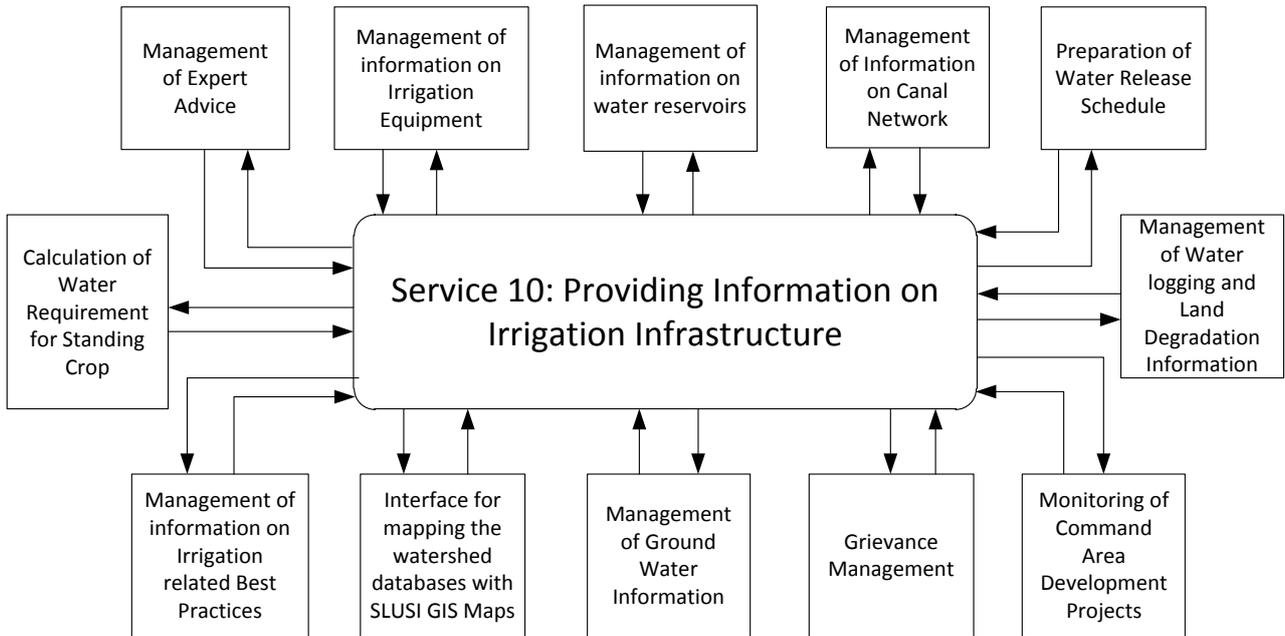
### 3.4 Assumptions and Dependencies

The following are the assumptions on which the requirement specifications of the proposed system are based. Any change in the following may require modification in the requirements:

1. The Water Users Associations (WUAs, Association of Farmers in a particular area dealing with irrigation related matters) would be present in all states. WUAs are envisaged as the main entity in gathering the crop pattern and water requirement information from the ground level submit the details to the Irrigation department.
2. The Water Resource Departments (WRDs) or the Irrigation Departments of states would be the users of the proposed system to process all the requests and prepare the Water Release schedule.
3. In absence on any centralized repository of the information related to the water reservoirs and the canal system, all such information would be maintained in proposed solution. The state WRDs/Dam Project teams would be the users of the system and would be responsible for update of the information in the database contained within the proposed solution.
4. The agencies involved in the farmer centric information related to the best practices, Expert advisories and the equipment information related Irrigation would be part of the proposed system.
5. The information on the Ground Water would be maintained in the proposed solution and the departmental users of CGWB would be responsible for maintaining the related database in the proposed solution.
6. Since the proposed solution will be delivered as part of SAP and CAP the basic master information related to agricultural data (Crop master etc.), geographical data (State, District etc.) are assumed to be in place and any operation/interface related to only the master data will not be covered in this document.

## 4 Specific Requirements

### 4.1 Context



## 4.2 Detailed Specifications

The following sections provide detailed specifications for the requirements to be satisfied by the solution.

### 4.2.1 Water Release Schedule Management

The System should provide an Application with suitable interfaces for management of the Water release Schedule. The application should have the following features:

#### 4.2.1.1 *Enrolment of Water User Association*

The application should have the functionality to enroll the water user associations (WUA) within the system. Each WUA should be associated with a Command Area Project.

#### 4.2.1.2 *Enrolment of Farmers by the Water User Associations*

The application should provide suitable interfaces for the water user associations to enroll the member farmers in to the system. The enrolment form should capture the following details

1. Name of the Farmer
2. Village
3. Total area of farm land under ownership
4. Details of land holding (for all the pieces of land)
  - a. Location of farm land
  - b. Area of farm land
  - c. Khasra number as per land records
5. Canal Servicing the Land
6. Mobile number

#### 4.2.1.3 *Submission of Request for Water Release by Water User Associations*

The water user associations are responsible to identify the crop pattern under their jurisdiction and submit a request for water to the Irrigation department. The application should provide suitable interfaces for the water user associations to submit the request for water requirement. The request for should capture the following details

1. Name of the Farmer (Selection from the list of farmers already enrolled by WUA)
2. Crop type

3. Cultivated Area
4. Period wise Water Requirement

#### **4.2.1.4 Crop Pattern Information for Irrigation Department**

The Irrigation department compiles the request for water requirement and identifies total periodic water requirement. The total periodic water requirement is analyzed against the corresponding water availability from the dam project to decide on a water release schedule for the season.

Hence, after the submission of request from all the WUAs the system should generate a crop pattern report for the irrigation department to calculate the water release schedule according to the availability.

#### **4.2.1.5 Uploading of Water Release Schedule**

The application should provide suitable interfaces for the Irrigation department to upload the water release schedule in the system. The water release schedule should have the following components

1. Date of release
2. Release start time at source
3. Release end time at source
4. Quantity of water to be released
5. Estimated approach time at destination for the release
6. Villages to be serviced by the release

#### **4.2.1.6 SMS Notifications of Water Release Schedule**

The farmers have to plan for the irrigation requirement for their crop well in time for ensuring a healthy crop. The water release schedule is a major dependence for the farmers to plan for the source of the irrigation water for their crop.

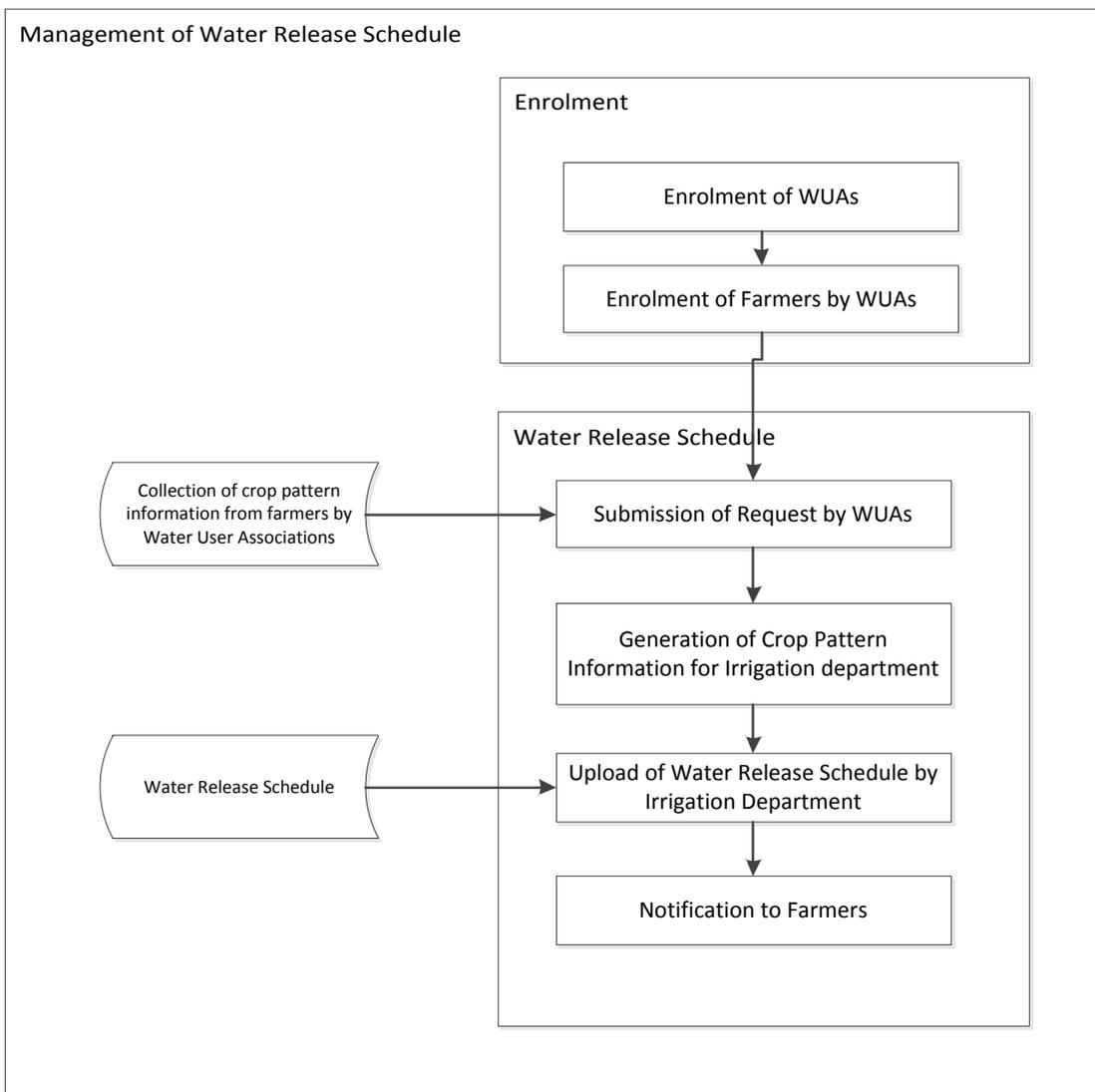
When the water release schedule is uploaded by the irrigation department, the application should send a SMS notifying all the farmers in the villages planned to be serviced by the release. This will help the farmers in getting the information about the availability of the water.

**4.2.1.7 Additional Requirements**

The following are the additional set of requirements which should be satisfied by the system:

1. The irrigation department users should be able to see the availability of water at the Dam project.
2. The irrigation department users should get the calculation of the Water requirement for the standing crop from the application
3. The application should provide the functionality to create the users, assign location (State, District, and Tehsil/Block) and assign appropriate role to the users. This functionality should be accessible only to the admin users
4. The Application should allow the login for only authorized users
5. The application should maintain a complete audit trail of all the interaction with the system

**4.2.1.8 Application Flow**



#### **4.2.2 Monitoring of Command Area Development Projects**

Command Area Development Projects are implemented with the aim of improvement in water use efficiency along with increase in agricultural productivity and production and to bring sustainability in the irrigated agriculture in a participatory environment. Command Area Development program are implemented according to the “Guidelines on Command Area Development and Water Management Programme” published by Ministry of Water Resources, Government of India. The business logic implemented by the system should follow these guidelines.

The Application is intended to provide a mechanism for physical and financial monitoring of the projects undertaken for the command area development works. The application should allow the implementing agencies to update the proposed project plan into the system along with the periodic target parameters and update the parameters related to the physical and financial progress of the project in the system at regular intervals.

The application should enable the monitoring agencies to track the physical and financial progress of the projects and compare with the target parameters. The application should support the monitoring agencies in highlighting the deviations of the project progress from the plan and identifying such deviations for taking appropriate corrective measures.

##### **4.2.2.1 Physical and Financial Target Plan Creation**

The application should provide suitable interfaces for creation of Physical and Financial Target plan for the command area development projects to be undertaken. The form should capture the following details:

1. Project Components: the application should give the interfaces to capture the components which will be the part of the command area development projects. A few of the project components are as given below.
  - 1) Establishment
  - 2) Survey, Planning ,Design
  - 3) Field Channel
  - 4) Field, Intermediate and link Drains
  - 5) Warabandi
  - 6) Correction of System Deficiency
  - 7) Adaptive Trials
  - 8) Training
  - 9) Demonstration

10) Reclamation of Water Logged areas

11) Evaluation Study

12) Farmers Participation

The application should provide the functionality of removing any of these or adding new components. The application should also allow for creation of subcomponents for capturing the granular data

2. Year Wise Quantum of work: It is the total quantum of work planned, related to each of the project components or sub-components, to be executed as part of the concerned project.
3. Year Wise total cost: It is the total cost that is estimated to be incurred against the work to be executed, for the project components or sub-components, as part of the concerned project.
4. Status Reporting Frequency: It is the frequency of the status update required against each component/subcomponent of the project. It can be Daily/Weekly/Fortnightly/Monthly/Quarterly as per the nature of the component/ subcomponents.

#### **4.2.2.2 Update of Project Progress Status**

The application should provide suitable interfaces for the users to provide the progress update for the different components of the system. The application should provide a list of all the components and subcomponents of the system along with the target values to be achieved for each of them. The users should be able to update the parameter values according to the status of the project.

#### **4.2.2.3 Alerts and Notifications**

The application should provide alerts and notifications via email and in the following in the following scenarios

1. When the project update is due
2. When due date for a status date expires and the status is not updated by the user
3. When the values updated by the users do not meet the targets

and in other similar scenarios requiring immediate attention of the users.

#### **4.2.2.4 Monitoring**

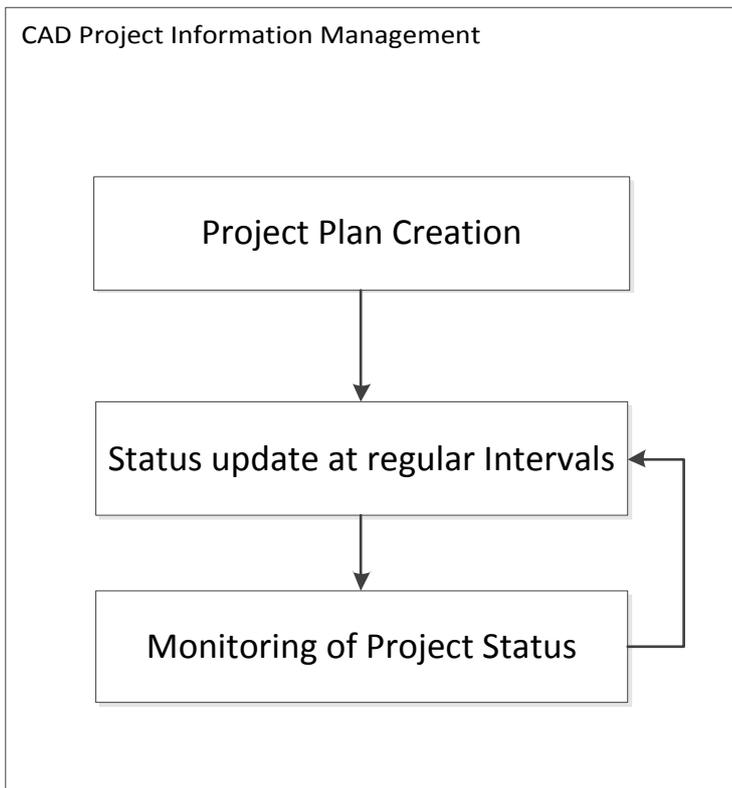
The application should provide the user with dashboards and reports which enable them to have a complete view of the project progress.

#### 4.2.2.5 Additional Requirements

The following are the additional set of requirements which should be satisfied by the system:

1. The application should provide the functionality to create the users, assign location (State, District, and Tehsil/Block) and assign appropriate role to the users. This functionality should be accessible only to the admin users
2. The Application should allow the login for only authorized users
3. The application should maintain a complete audit trail of all the interaction with the system

#### 4.2.2.6 Application Flow



### **4.2.3 Management of Information on Irrigation Equipment**

The System should provide an application for management of the information on Irrigation Equipment. The following features should be provided by the application

#### **4.2.3.1 Categorization of Information**

The application should provide the feature for categorization and sub categorization of the Irrigation equipment. The admin user should be able to create the categories and sub categories and the information on irrigation equipment should be linked to these categories. The following is an example of the categories and sub categories related to the irrigation equipment

- Category – Localized Irrigation
- Sub Categories-
  1. Drip
  2. Sprinkler
  3. Center Pivot

#### **4.2.3.2 Data Entry Module for Equipment Information**

The application should provide suitable interfaces for the data entry related to the irrigation equipment in to the system. The parameter should be captured for the different types of Irrigation equipment

1. Equipment Category
2. Equipment Subcategory
3. Equipment Type
4. Equipment Name
5. Equipment Id
6. Equipment Specifications
7. Service Area (in Hectares)
8. Equipment Description
9. Recommended Applications
10. Approximate Equipment Cost
11. List of Approved Vendors
12. Is Subsidy Available
13. Subsidy Amount
14. File attachments

Along with the other required parameters for the irrigation equipment.

#### **4.2.3.3 Vendor Information**

The application should provide the information of the vendors supplying the irrigation equipment to the farmers. The application should provide a list of all the vendors supplying particular equipment. For this purpose there should be a vendor master in the system and all the vendors should be a part of the master information. The following parameters should be captured for the vendor information:

1. Vendor Id
2. Vendor name
3. Full Address
4. Contact Number
5. Email
6. State
7. District
8. Tehsil/Block

#### **4.2.3.4 Search**

The information on the irrigation equipment is intended for the direct use of the farmers who should be able to get the required information from the system using a user friendly search mechanism. The application should provide an exhaustive search capability for the users to locate the required information.

The following customized searches should be available for the users

1. Equipment Information according to Category/subcategory
2. Search based on Equipment Name
3. Search based on Keywords
4. Search based on application of equipment
5. Vendor Search for Equipment

#### **4.2.4 Management of Information on Irrigation related Best Practices**

The System should provide suitable interfaces for Management of Information on Irrigation related best Practices. The Farmer/Citizen should be able to ask for advice on matters related to irrigation and the authorized users should be able to provide the Irrigation related best Practices.

##### **4.2.4.1 Categorization of Information**

The application should provide the features for categorization of the Irrigation related best practices. The application should provide features to associate more than one value of the categories with the information. The following categorization should be provided by the application for the information related to the best practices:

1. Geographical Region
2. Soil Type
3. Climate type
4. Water Quality
5. Water Availability
6. Irrigation Sources
7. Crop Type
8. Time of Year
9. Crop Season

##### **4.2.4.2 Data Entry Module for Irrigation related Best Practices**

The application should provide suitable interfaces for the entry of the information related to the best practices in to the system. The following parameters should be captured by the application for the Best Practices Information related to irrigation:

##### **Categories**

1. Relevant Geographical Regions
2. Relevant Soil Type
3. Relevant Climate type
4. Relevant Water Quality
5. Relevant Water Availability
6. Relevant Irrigation Sources
7. Relevant Crop Type

8. Relevant Time of Year
9. Relevant Crop Season

#### **Details of Practice**

1. Title
2. Description
3. Application Scenario
4. Do's
5. Don'ts
6. Things to Remember
7. File Attachments

#### **4.2.4.3 Search**

The information on the best practices related to irrigation is intended for the direct use of the farmers who should be able to get the required information from the system using a user friendly search mechanism. The application should provide an exhaustive search capability for the users to locate the required information.

The following customized searches should be available for the users

1. Categorized Search
2. Free Text Search
3. Search based on Keywords

#### **4.2.5 Calculation of Water Requirement for Standing Crop**

The water requirement for the standing crop in the command area is an important factor in planning for the irrigation needs. It forms an important input to the creation of the water release schedule as defined in the previous section. The System should provide an application for calculation of water requirement for standing crop. The following features should be implemented by the application for calculation of water requirements for the standing crop.

##### **4.2.5.1 Master Database for the Standard Parameter Values**

These are parameters which are required for the calculation of the water requirement of the standing crop. The values depend on the factors like location, climatic conditions and geographical parameters etc. and vary over the different regions of the country but usually are constant for a particular command area for a given crop. Hence for accurate calculations a database of all the following parameters should be maintained for all the command areas

1. Crop Coefficient – A value which is different for every crop type and captured for fifteen days periods.
2. Evapotranspiration – A value related to soil type and climate and captured for the fifteen day periods.
3. Pre-plantation requirement – requirement of water for irrigation before the plantation begins

##### **4.2.5.2 Rainfall Measurement**

Apart from the above parameters another important variable factor affecting the water requirement from the reservoirs directly is the rainfall in the area. A good rainfall means less dependence on canal water for irrigation and vice versa. The value of the rainfall for the calculation of the water requirement can be taken as the long term average rainfall value for the location in the period concerned.

##### **4.2.5.3 Integration with Water Release Schedule Management Application for Crop Pattern**

The core factor for the calculation of the water requirement is the crop pattern. Crop pattern is information of the land covered by each type of crop in the command area. Since each type of crop has different water requirements hence the total water requirement can be calculated as the total of the water requirement of each crop.

In the application for management of Water Release schedule, the WUAs provide the crop pattern information along with the request for the water release. The application should integrate with the application to get the required input values.

#### 4.2.5.4 Business Logic for Water Requirement Calculation

The business logic used for the calculation of the fortnightly water requirement for a particular crop, along with sample values, is as given below. The following table gives the calculation for the month of June, similarly the calculation for a crop season is done by calculating for all the months in the season. The total water requirement can be calculated as the sum of the water requirement for each crop type.

	Crop Type	Wheat	Crop pattern as provided by the WUAs
	Area (Ha)	76.5	

S No	Description \ Month	June		Description
		First Half	Second Half	
1	Crop Coefficient (Kc)	0.313	0.588	Constant value
2	Evapotranspiration (ETO)	92.48	92.19	Constant Value
3	Et. Crop = Kc X ETO ( $m^3$ per Ha)	28.946	54.208	Product of 1 And 2 as water requirement of crop
4	Rainfall ( $m^3$ per Ha)	44.670	25.418	Long term average rainfall
5	Effective Rainfall (0.75 of pt. 4)	33.503	19.064	75% of point 4
6	Pre-plantation Requirement or Cutoff ( $m^3$ per Ha)	0.000	0.000	Constant Value
7	Net Irrigation Requirement (NIR) ( $m^3$ per Ha)	0.000	35.144	3-5 +6 (water requirement – rainfall + pre-plantation req.)
8	Farm Irrigation Requirement (FIR = NIR *1.25) ( $m^3$ per Ha)	0.000	43.930	Incorporating Loss at the Farm level
9	Requirement @Canal Head (= FIR *1.33) ( $m^3$ per Ha)	0.000	58.426	Incorporating Losses in the delivery network
10	Total Requirement for total Area (Area* pt. 9) ( $m^3$ )	0.000	4469.589	Net water requirement
11	Total Monthly Requirement in ( $Mm^3$ )		0.00446	

#### 4.2.5.5 Reports

A report on the water requirement for the command area for a given period or crop season should be provided by the system.

#### 4.2.6 Processing of application and issue of NOC for extraction of ground water from CGWA

Ground water plays a key role in meeting the water needs of various user-sectors in India. With growing awareness, the dependability on ground water as a sustainable resource in nation building reasserts the need for an organization like Central Ground Water Board which is vested with the responsibilities of assessing and managing the ground water resources of the country through ground water management studies, exploration, evaluation and monitoring of ground water regime. Under CGWB, CGWA has been given the responsibility to regulate and control the development and management of ground water resources in the country in order to regulate groundwater withdrawal in already stressed areas. As per the existing procedure, in the notified areas 'No Objection Certificate (NOC)' is issued to users for withdrawal of ground water for various purposes by CGWA on case to case basis.

The proposed Web based System for Receipt and Processing of Applications for the issue of NOC to Abstract Ground Water would facilitate Issue of No Objection Certificate (NOC) for extraction of ground water for various purposes like Domestic, Industrial and Infrastructure uses by CGWA in a transparent and efficient manner and hence reduce the time lag eliminating the existing manual process.

##### 4.2.6.1 System Functions

The proposed system aims to meet the following goals:

1. Online submission of application (domestic, Infrastructure and Industrial) and tracking of its status.
2. Tracking of Application status through SMS also.
3. Generation of Application Number to end user for future reference. The application number will be generated as per CGWB mentioned format (ten digit numeric number to be used).
4. Generation of output (NOC) in PDF format and digitally signed by the Approving Authority (Officer) issuing NOC.
5. Coordination between district offices, eighteen regional offices of **CGWB** and **CGWA** office located at New Delhi will be easier, time effective and cost effective.
6. Effective monitoring of processes and pending cases.
7. Dissemination of information at different levels based on the role.
8. Automatic alerts to officers on assigning of some work to them.
9. Automatic escalations
10. Email/ SMS/Application Inbox notifications based on different rules.
11. Integration of application with Email, SMS, BPM.NET, .NET and SQL.
12. Alerts though Email/SMS/Application Inbox.

#### **4.2.6.2 Reports**

Following reports will be generated from the system: (Formats to be provided by CGWB).

##### **4.2.6.2.1 General Public**

1. Status of Application: Selection by application Number or Location & Applicant's name, etc.
2. NOC or rejection letter (via email)
3. Status (List) of NOC issued in safe category, OE/C/SC areas for given period. Selection on State/District/Sub-District, etc.
4. List of Category wise Pending cases. Selection on State/District/ Sub-District, etc
5. List of rejected cases for a given period. Selection on State/District/ Sub-District, etc
6. List of industries for given period to which Renewal has been issued.

##### **4.2.6.2.2 District Office / District Committee**

1. List of Applications Received during a given period
2. Evaluation of Applications and submission to Regional Office
3. Status of applications
4. Approval, NOC / Rejection Letter issue ( Domestic purpose only )
5. List of pending cases
6. List of cases for a given period where NOC has been issued
7. List of cases for a given period where applications has been rejected
8. List of NOC issued category wise i.e safe/ OE/ C/ SC wise for a given period
9. List of cases where Renewal has been issued

##### **4.2.6.2.3 Regional offices of CGWB**

1. List of Applications received during given period
2. Evaluation of applications and submission to CGWA
3. Status of Applications
4. List of Pending cases
5. List of cases for a given period where NOC has been issued
6. List of cases for a given period where applications have been rejected
7. List of category wise (Safe/ OE/ C/ SC) NOC issued.
8. List of category wise ( Safe/ OE/ C/ SC ) Application Rejected
9. List of category wise ( Safe/ OE/ C/ SC ) Pending cases
10. List of industry/ project wise and/ or category wise (Safe/ OE/ C/ SC) NOC issued.
11. List of industry/ project wise and/ or category wise ( Safe/ OE/ C/ SC ) Application Rejected
12. List of industry/ project wise and/ or category wise ( Safe/ OE/ C/ SC ) Pending cases

##### **4.2.6.2.4 CGWA office**

1. List of all/ Industry/ project wise and/ or category wise Applications received during given period for All states or State wise or Region wise
2. Evaluation and approval/ rejection of received from Regional Offices
3. Status of Applications ( State / Region Wise)
4. List of Pending cases ( State/ Region wise)
5. List of cases for a given period where NOC has been issued ( All/ State/ Region Wise)
6. List of cases for a given period where applications have been rejected ( All/ State / Region wise)
7. List of category wise (Safe/ OE/ C/ SC) NOC issued (All/ State/ Region Wise).
8. List of category wise ( Safe/ OE/ C/ SC ) Application Rejected ( All/ State/ Region Wise)

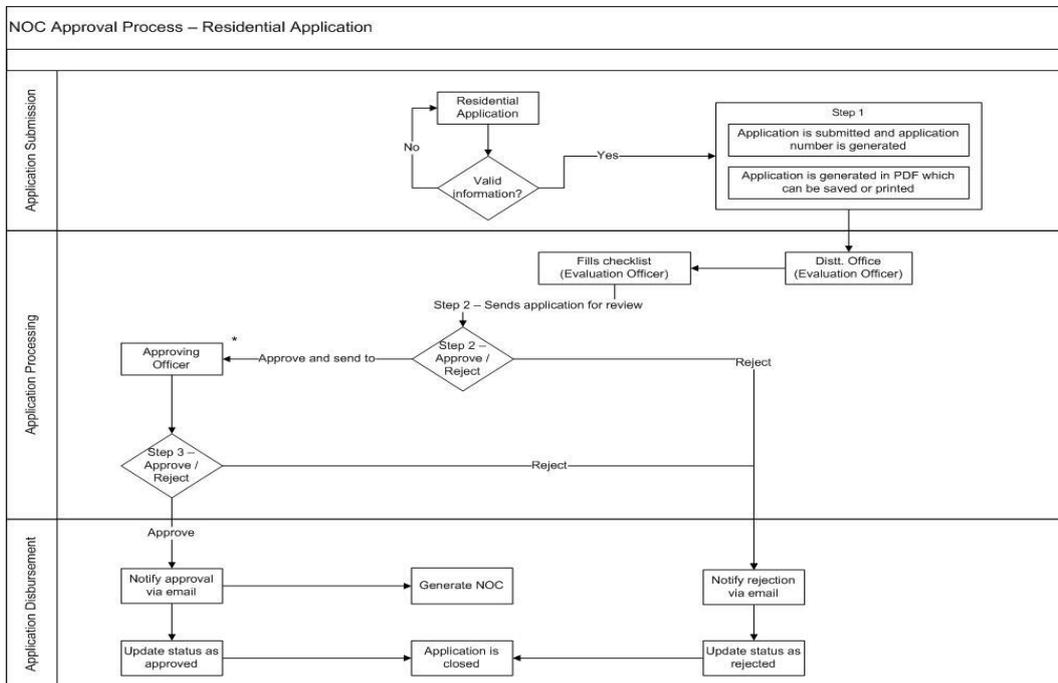
9. List of category wise ( Safe/ OE/ C/ SC ) Pending cases ( All/ State/ Region wise)
10. List of industry/ project wise and/ or category wise (Safe/ OE/ C/ SC) NOC issued (All/ State/ Region).
11. List of industry/ project wise and/ or category wise ( Safe/ OE/ C/ SC ) Application Rejected ( All/ State/ Region)
12. List of industry/ project wise and/ or category wise ( Safe/ OE/ C/ SC ) Pending cases ( All/ State/ Region)
13. List of industry/ project wise and/ or category wise ( Safe/ OE/ C/ SC ) where Renewal has been issued ( All/ State/ Region)
14. Summary ( All/ State/ Region wise ) :
15. Application Received ( All/ Industry wise/ project wise) and/ or category wise ( all/safe/ OE/C/CS)
16. Pending cases ( All/ Industry wise/ project wise) and/ or category wise ( all/safe/ OE/C/CS)
17. NOC issued ( All/ Industry wise/ project wise) and/ or category wise ( all/safe/ OE/C/CS)
18. Applications rejected ( All/ Industry wise/ project wise) and/ or category wise ( all/safe/ OE/C/CS)
19. Renewal ( All/ Industry wise/ project wise) and/ or category wise ( all/safe/ OE/C/CS)
20. Adhoc reports

4.2.6.3 **Application Flow**

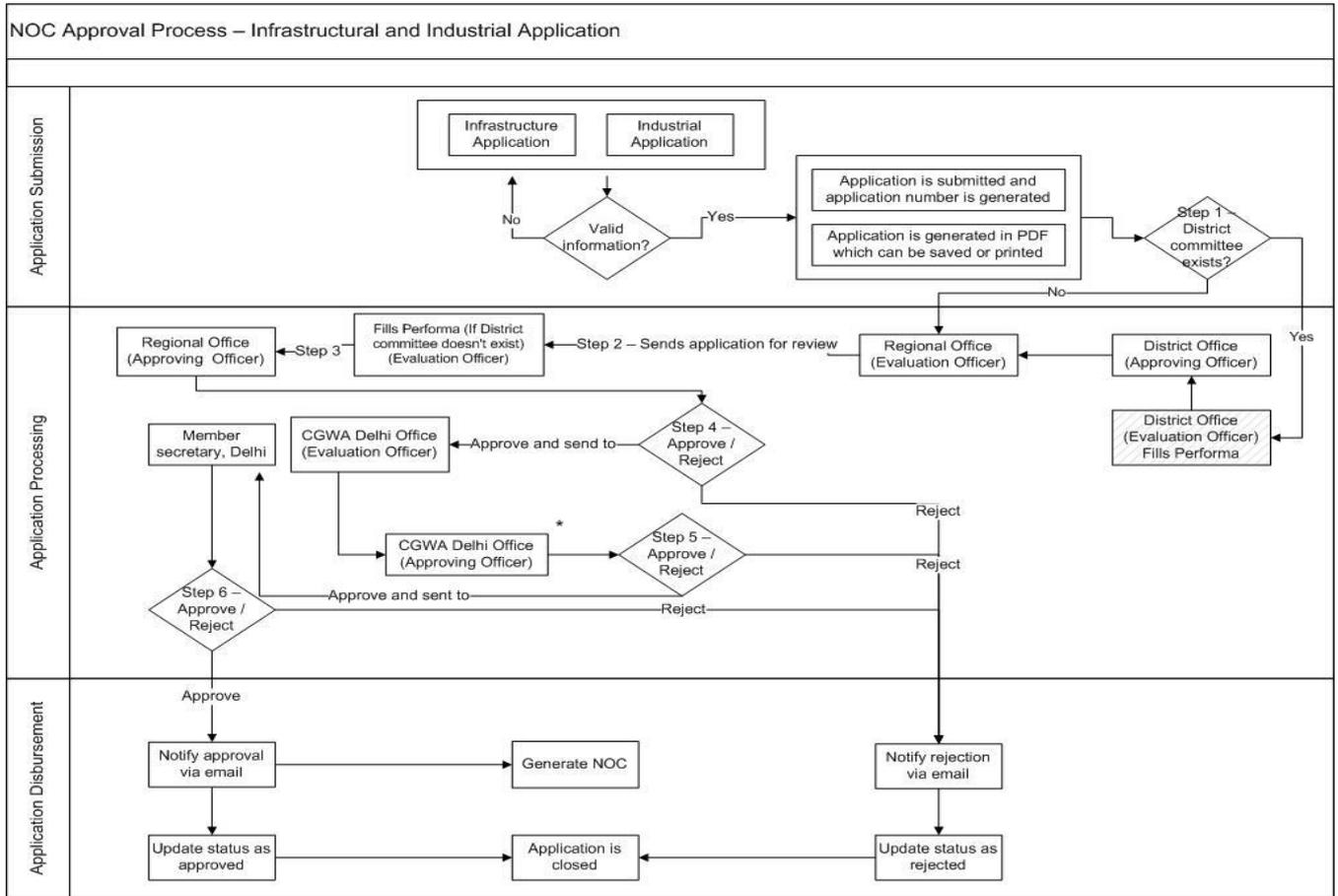
NOC approval process consists of following major steps (refer process flow). The flow is divided into two categories:

- Domestic Application
- Industrial and Infrastructure Application

4.2.6.3.1 **Domestic Applications**



4.2.6.3.2 Industrial and Infrastructural Applications



#### **4.2.7 Prioritization of MNREGA beneficiaries according to land holding pattern**

The beneficiaries of MNREGA for the irrigation related projects should be prioritized based on the land holding pattern. For this purpose the MNREGA beneficiaries enlisting for the irrigation related projects should also provide the information of the agricultural land holding. Those with the minimum land holding should be the priority for getting the employment on the irrigation related projects. The list of MNREGA beneficiaries is with MoRD and the Land records are with State Revenue Departments. To create such a linkage access to the information available with the MoRD and State Revenue Departments would be required by the DAC. Upon access to the data the information provided by the MNREGA beneficiaries would be validated against the Land records data and a prioritized list will be made available.

#### **4.2.8 Management of Information on Water Reservoir and Water bodies**

The System should provide suitable interfaces for management of the information on Water Reservoir and water bodies.

The following parameters should be captured w.r.t the water reservoir details

1. Reservoir Code
2. Reservoir Name
3. Location (State/District)
4. Latitude/Longitude
5. Full Reservoir Depth (ft)
6. Capacity at Full Reservoir Level (FRL) (M.Cft)
7. Feeder River Name
8. Command Area in Hectares

And following parameter are captured every fortnight for the reservoirs

9. Current Depth (ft)
10. Current Live Storage Capacity (M.Cft)
11. Inflow (Cusecs)
12. Rainfall (mm)

#### **4.2.9 Management of Information of Canal Network**

The System should provide suitable interfaces for management of the information on the Canal Network. The departmental users should be able to submit the information for the canals linked to the water reservoirs. The following parameter should be captured for the network of canals

1. Canal Code
2. Name of Canal
3. Source reservoir
4. Type of Canal (Distributary, Major, Minor, etc.)
5. Canal Length
6. Location Details (State(s), District(s))
7. Starting point coordinates (Latitude, Longitude)
8. End point coordinates (Latitude, Longitude)
9. Water carrying capacity
10. List of villages served by canal in the command area

#### **4.2.10 Management of Water Logging and land Degradation Information**

The System should provide the information of water logging and land Degradation Information. The Information of Water Logging and Land Degradation should be managed in the system and the same should be linked to the GIS maps.

#### **4.2.11 Grievance Management**

The System should provide suitable interfaces for Grievance Management related to irrigation. The Farmer/Citizen should be able to register their grievances on matters related to irrigation and the authorized users should be able to provide the solution on the matters.

#### **4.2.12 Management of Expert Advice**

The System should provide suitable interfaces for Management of Expert Advice related to irrigation. The Farmer/Citizen should be able to ask for advice on matters related to irrigation and the authorized users should be able to provide the required advice on the matters. The Farmer/Citizen should also be able to search for categorized information related to expert advice

#### **4.2.13 Management of Ground Water Information**

The System should provide suitable interfaces for management of the information of Ground Water. Management of Ground Water Information includes the ground water level, ground water quality.

#### **4.2.14 Interface for mapping the watershed database with SLUSI GIS Map**

The System should provide the interface for mapping the watershed information with SLUSI GIS map. Users should be able to view the Information of watershed along with the GIS map.

The following software API are required to achieve the desired scope:

1. APIs to provide watershed information from RFS, NRM and other watershed databases, based on watershed code. This is required to show the watershed details whenever a user selects any particular watershed on the SLUSI GIS map.
2. APIs to provide watershed maps, according to the watershed code, to show the GIS map of any watershed when accessed from the applications like RFS, NRM etc.

### **4.3 External Interface Requirements**

#### **4.3.1 User Interfaces**

#### **4.3.2 Hardware Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

#### **4.3.3 Software Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

#### **4.3.4 Communications Interfaces**

As the solution would be delivered as part of the proposed SAP and CAP these requirements would be driven by the SAP and CAP requirements.

## 4.4 Software Product Features

### 4.4.1 Functional Requirement

FEAT ID	Feature Description
FEAT_SWA_01	Submit Water Allocation Request.
FEAT_EWAR_01	Edit Water Allocation Request
FEAT_AWAR_01	Approve Water Allocation Request
FEAT_CWRS_01	Create Water Release Schedule
FEAT_DWRS_01	Deliver Water Release Schedule
FEAT_WRSR_01	View Water Release Schedule Report
FEAT_MCI_01	Manage Canal Information
FEAT_RCN_08	Reports of Canal System
FEAT_MRI_01	Manage Reservoir Information
FEAT_VRI_01	View Reservoir Information
FEAT_UWLI_01	Update water level information
FEAT_VCRL_01	View current water level of reservoir

FEAT_IWR_01	View irrigation water requirement information
FEAT_ILWWRSC_01	View Location wise water requirement information
FEAT_15	View GIS maps from watershed information
FEAT_16	View watershed information from GIS maps
FEAT_17	View water logging information and GIS maps
FEAT_18	View Land Degradation Information and GIS maps
FEAT_19	View Information on Irrigation Equipment's
FEAT_20	Ask for Expert Advices
FEAT_21	View Expert Advices
FEAT_22	Report Grievance
FEAT_23	Monitor Grievance
FEAT_24	Check Grievance Status
FEAT_25	Resolve Grievance
FEAT_26	Manage crop pattern data

FEAT_27	Enter Best Practices on Irrigation
FEAT_28	View Best Practices on Irrigation
FEAT_29	View Completed Command Area Development Project

### 4.4.2 Use Case Diagram



#### 4.4.3 Use Case Description

##### 4.4.3.1 *Submit Water Allocation Request*

**Overview:** The Water user association/farmers collect the water requirement details along with crop details from farmers. This activity enables the actor to submit water allocation request to irrigation department.

**Scope:** The Water user association/farmers will access water allocation application page and fill the water requirement details with crop details and submit it to their irrigation dept.

Use Case ID:	UC-1
Use Case Name:	Submit Water Allocation Request
Feature ID	FEAT_SWA_01

Actors:	Water User Association Members, Farmer
Stake Holder:	Irrigation Consultative committees, State Gov. agencies, Irrigation Department
Description:	This use case would allow the actor to specify details of water requirements with crop pattern.
Trigger:	The actor selects "Submit Water Allocation Request" Option.
Pre conditions:	The user must be registered as WUA\Farmer\Administrator. He must be logged in.

<p>Post conditions:</p>	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then             <ol style="list-style-type: none"> <li>a. The system would responds with message ,“Water requirements details submitted successfully”</li> <li>b. All information related to the water requirement of the WUA\farmers would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>	
<p>Input:</p>	<ul style="list-style-type: none"> <li>▪ Crop Type</li> <li>▪ Area</li> <li>▪ Required Water</li> </ul>	
<p>Output:</p>	<ul style="list-style-type: none"> <li>▪ This information will be showing to irrigation department in the option of “Approved water allocation requests”.</li> </ul>	
<p>Normal Flow:</p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Submit Water Allocation Request</b></li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details:             <ul style="list-style-type: none"> <li>• <b>Crop Type</b> –The actor would Select the Crop type from combo box.</li> <li>• <b>Area</b> - The actor would specify the area in hectares.</li> <li>• <b>Required water</b>-The actor would specify the required water in cusec</li> </ul> </li> <li>▪ The actor could add/remove multiple details.</li> </ul>

	<ol style="list-style-type: none"> <li>1. The actor may click the <b>Submit</b> button to submit the water requirement details.</li> <li>2. At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or click the <b>Close</b> button to close form.</li> </ol>	
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		
UI:  required/not required	Required	
Priority:  Low/medium/high		
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium	
Business Rules:	<ol style="list-style-type: none"> <li>1. Crop Type, Area and Required Water fields are mandatory.</li> <li>2. Multiple details could be added/remove.</li> <li>3. The permissible characters for the Area, Required Water Includes (0-9) and special characters i.e.,</li> </ol>	

Exceptions:	<p><b><u>The actor attempts to submit the water requirement details without specifying Crop Type</u></b> The System would respond with the message, “Please select Crop Type”.</p> <p><b><u>The actor attempts to submit the water requirement details without specifying Required Water</u></b> The System would respond with the message, “Please enter required water”.</p> <p><b><u>The actor attempts to submit the water requirement details without specifying area</u></b> The System would respond with the message, “Please enter area”.</p>
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered as WUA\farmer and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

#### 4.4.3.2 Edit Water Allocation Request

**Overview:** This activity enables the actor to edit water allocation request. And actor can edit those requests only which are not reviewed by irrigation department.

**Scope:** The Water user association/farmers will access water allocation request from submitted water allocation requests grid and edit the water allocation detail and submit it to their irrigation dept. again.

Use Case ID:	UC-2
Use Case Name:	Edit Water Allocation Request
Feature ID	FEAT_ EWAR_01

Actors:	Water User Association Members, Farmer
Stake Holder:	Irrigation Consultative committees, State Gov. agencies, Irrigation Department
Description:	This use case would allow the actor to edit details of water allocation.
Trigger:	The actor selects "Edit Water Allocation Request" Option.
Pre conditions:	The user must be registered as WUA\Farmer\Administrator. He must be logged in.
Post conditions:	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then <ol style="list-style-type: none"> <li>a. The system would responds with message ,"Water requirements details modified successfully"</li> <li>b. All Updated information related to the water requirement of the WUA\farmers would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, "All details entered in the form would be lost. Do you wish to clear the form?" If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, "All the entered details in the form would be lost. Do you wish to close the form?" If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>
Input:	<ul style="list-style-type: none"> <li>▪ Crop Type</li> <li>▪ Area</li> <li>▪ Required Water</li> </ul>

Output:	<ul style="list-style-type: none"> <li>▪ This information will be showing to irrigation department in the option of “Approve water allocation requests”.</li> </ul>	
Normal Flow:	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Edit Water Allocation Request</b></li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details:                             <ul style="list-style-type: none"> <li>• <b>Crop Type</b> –The actor would Select the Crop type from combo box.</li> <li>• <b>Area</b> - The actor would specify the area in hectares.</li> <li>• <b>Required water</b>-The actor would specify the required water in cusec</li> </ul> </li> <li>▪ The actor could add/remove multiple details.</li> </ul>
	<ol style="list-style-type: none"> <li>3. The actor may click the submit button to modify and submit the water requirement details.</li> <li>4. At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or click the <b>Close</b> button to close form.</li> </ol>	
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		

<p>UI: required/not required</p>	<p>Required</p>
<p>Priority: Low/medium/high</p>	
<p>Frequency of Use: Continuous/ frequent/ medium/ less/ rare</p>	<p>Medium</p>
<p>Business Rules:</p>	<ol style="list-style-type: none"> <li>1. Crop Type, Area and Required Water fields are mandatory.</li> <li>2. Multiple details could be added/remove.</li> <li>3. The permissible characters for the Area, Required Water Includes (0-9) and special characters i.e ,.</li> <li>4. Actor can edit those requests which are not reviewed by irrigation department.</li> </ol>
<p>Exceptions:</p>	<p><b><u>The actor attempts to submit the water requirement details without specifying Crop Type</u></b> The System would respond with the message, "Please select Crop Type".</p> <p><b><u>The actor attempts to submit the water requirement details without specifying Required Water</u></b> The System would respond with the message, "Please enter required water".</p> <p><b><u>The actor attempts to submit the water requirement details without specifying area</u></b> The System would respond with the message, "Please enter area".</p>
<p>Special Requirements:</p>	<p>none</p>
<p>Assumptions:</p>	<ol style="list-style-type: none"> <li>1. The actor must be registered as WUA\farmer and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>

Dependency:	
Notes and Issues:	

#### **4.4.3.3 Approve Water Allocation Request**

**Overview:** The Irrigation Department verifies the water allocation requests, and approves the request.

**Scope:** The actor will access water allocation request and approves the request.

Use Case ID:	UC-3
Use Case Name:	Approve Water Allocation Request
Feature ID	FEAT_AWAR_01

Actors:	Irrigation Department
Stake Holder:	Irrigation Consultative committees, State Gov. agencies, Irrigation Department
Description:	This use case would allow the actor to approve water allocation request.
Trigger:	The actor selects "Approve Water Allocation Request" Option.
Pre conditions:	The user must be registered as Irrigation department's member. He must be logged in.

<p>Post conditions:</p>	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>approve</b> button then             <ol style="list-style-type: none"> <li>a. The system would responds with message ,”Water allocation request has been approved successfully”</li> <li>b. All information related to the approval of water allocation would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Close</b> button, then the System would respond with the message, “Do you wish to close the form?” If the actor responds in affirmative, close the form, the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>	
<p>Input:</p>		
<p>Output:</p>		
<p>Normal Flow:</p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Approve Water Allocation Requests</b></li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show all water allocation requests in grid with following fields:             <ul style="list-style-type: none"> <li>• <b>Village</b></li> <li>• <b>Water User Association Name.</b></li> <li>• <b>Water User Association Registration No.</b></li> <li>• <b>Required Water (in cusec)</b></li> <li>• <b>Crop type</b></li> <li>• <b>Area is to be irrigated(in hectares)</b></li> <li>• <b>Request Date</b></li> <li>• <b>Approve button</b></li> </ul> </li> </ul>

	<ol style="list-style-type: none"> <li>1. The actor may click the approve button to approve the water allocation request.</li> <li>2. At any point of time, <b>Close</b> button to close form.</li> </ol>	
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		
UI:  required/not required	Required	
Priority:  Low/medium/high		
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium	
Business Rules:		
Exceptions:		

Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered as irrigation department's member and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.4 Create Water Release Schedule**

**Overview:** This activity enables the actor to create the water release schedule against the approved water allocation request.

**Scope:** The actors will create water release schedule.

Use Case ID:	UC-4
Use Case Name:	Create Water Release Schedule
Feature ID	FEAT_CWRS_01

Actors:	Irrigation Department
Stake Holder:	Irrigation Consultative committees, State Gov., Irrigation Department

Description:	This use case would allow the actor to create water release schedule.
Trigger:	The actor selects "Create water release schedule" Option.
Pre conditions:	The user must be registered as irrigation department's member, admin, Gov. agency. He must be logged in.
Post conditions:	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then <ol style="list-style-type: none"> <li>a. The system would responds with message ,"Water release schedule created successfully"</li> <li>b. All information related to the water release schedule would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, "All details entered in the form would be lost. Do you wish to clear the form?" If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, "All the entered details in the form would be lost. Do you wish to close the form?" If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>
Input:	
Output:	

<p>Normal Flow:</p>	<p>Actor Actions</p> <p>The actor clicks on the option <b>Create water release schedule</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details:             <ul style="list-style-type: none"> <li>• <b>Dam Project Code</b></li> <li>• <b>Start Date</b></li> <li>• <b>End Date</b></li> <li>• <b>How many Times Water would be releasing in a day</b></li> <li>• <b>Start Time &amp; End Time Details.</b></li> <li>• <b>Canal name</b></li> </ul> </li> </ul>
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	
<p>Includes:</p> <p>other use case id</p>		
<p>UI:</p> <p>required/not required</p>	<p>Required</p>	
<p>Priority:</p> <p>Low/medium/high</p>		

<p>Frequency of Use:  Continuous/ frequent/ medium/ less/ rare</p>	<p>Medium</p>
<p>Business Rules:</p>	
<p>Exceptions:</p>	<p><b><u>The actor attempts to submit the water release schedule details without specifying start Date</u></b> The System would respond with the message, “Please Enter Start Date”.</p> <p><b><u>The actor attempts to submit the water release schedule details without specifying End Date</u></b> The System would respond with the message, “Please enter End Date”.</p> <p><b><u>The actor attempts to submit the water release schedule details without specifying (How many times water would be releasing in a day )</u></b> The System would respond with the message, “Please enter field of (How many times water would be releasing in a day)”.</p> <p><b><u>The actor attempts to submit the water release schedule details without specifying (Start &amp; End Time Details )</u></b> The System would respond with the message, “Please enter start &amp; end time details”.</p> <p><b><u>The actor attempts to submit the water release schedule details without selecting canal name</u></b> The System would respond with the message ,”Please select canal name”</p>
<p>Special Requirements:</p>	<p>none</p>
<p>Assumptions:</p>	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
<p>Dependency:</p>	
<p>Notes and Issues:</p>	

**4.4.3.5 Deliver Water Release Schedule**

**Overview:** The irrigation department sends the water release schedule to WUA\Farmers against approved Water Allocation Request.

**Scope:** The actors will send the water release details to WUA\Farmers.

Use Case ID:	UC-5
Use Case Name:	Deliver Water Release Schedule
Feature ID	FEAT_ DWRS_01

Actors:	Irrigation Department
Stake Holder:	Irrigation Consultative committees, State Gov., Irrigation Department
Description:	This use case would allow the actor to see details of water release schedule.
Trigger:	The actor selects "Deliver water release schedule" Option.
Pre conditions:	The user must be registered as irrigation department's member, admin, Gov. agency. He must be logged in.

<p>Post conditions:</p>	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>send</b> button, &amp; if all the mandatory fields have been entered, then             <ol style="list-style-type: none"> <li>a. The system would responds with message ,”Water Release schedule delivered successfully”</li> <li>b. All information related to the Delivered water release schedule would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>	
<p>Input:</p>	<ul style="list-style-type: none"> <li>• WUA\Farmer Code</li> <li>• Description of water release schedule</li> </ul>	
<p>Output:</p>	<p>WUA\Farmers see the details of water release schedule against his approved request. By clicking on request id. Whenever WUA\Farmers will be log in.</p>	
<p>Normal Flow:</p>	<p>Actor Actions</p> <p>The actor clicks on the option <b>Deliver Water Release schedule</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details:             <ul style="list-style-type: none"> <li>• <b>WUA Code\Farmer:</b> Select Code of WUA\Farmer</li> <li>• <b>Description of water release schedule</b></li> </ul> </li> </ul>
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	

Includes:  other use case id	
UI:  required/not required	Required
Priority:  Low/medium/high	
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	<p><b><u>The actor attempts to send the water release schedule details without select WUA\Farmer code</u></b> The System would respond with the message, "Please Select WUA \Farmer code".</p> <p><b><u>The actor attempts to send the water release schedule details without Description</u></b> The System would respond with the message, "Please enter release description".</p>
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	

Notes and Issues:	
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**4.4.3.6 View Water Release Schedule Report**

**Overview:** This activity enables the actor to view the water Release Schedule Reports.

**Scope:** The actors will access water release schedule report if avail to him.

Use Case ID:	UC-6
Use Case Name:	View Water Release Schedule Report
Feature ID	FEAT_ WRSR_01

Actors:	Irrigation Department, farmers
Stake Holder:	Irrigation Consultative committees, State Gov., Irrigation Department
Description:	This use case would allow the actor to see report of water release schedule.
Trigger:	The actor selects “View Water release schedule” Option.

Pre conditions:	The user must be registered as farmer, irrigation department’s member, admin, Gov. agency. He must be logged in.	
Post conditions:		
Input:		
Output:		
Normal Flow:	<p>Actor Actions</p> <p>The actor clicks on the option <b>View Water Release schedule</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show the report of Water release schedule. the following details: <ul style="list-style-type: none"> <li>• <b>Dam Project Code</b></li> <li>• <b>Dam name</b></li> <li>• <b>Start date &amp; time</b></li> <li>• <b>End date &amp; time.</b></li> <li>• <b>Location (farmer field/ outlets)/ Minor Canals.</b></li> </ul> </li> </ul>
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		

UI: required/not required	Required
Priority: Low/medium/high	
Frequency of Use: Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

#### 4.4.3.7 *Manage Canal Information*

**Overview:** This activity allows adding the canal information. Like Main Canal, distributary canal, sub distributary and field canal.

**Scope:** The actor will access add canal information page and building the below structure

1. Canal->Distributary Canals (n)
2. Distributary Canal->Sub Distributary Canal(n)
3. Sub Distributary Canal-> Field Canal(n)

Use Case ID:	UC-7
Use Case Name:	Manage Canal Information
Feature ID	FEAT_ MCI_01

Actors:	ICC
Stake Holder:	Irrigation Consultative committees, State Command Area Development Authority, Center Command Area Development Authority
Description:	This use case would allow the actor to specify the association the canals.
Trigger:	The actor selects "Add Canals Information" Option.
Pre conditions:	The user must be registered as ICC. He must be logged in.

<p>Post conditions:</p>	<ol style="list-style-type: none"> <li>1. If the actor clicked the Save Information button, &amp; if all the mandatory fields have been entered, then             <ol style="list-style-type: none"> <li>a. The system would responds with message ,”Canals Information has been saved successfully”</li> <li>b. All information related to the canals would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>
<p>Input:</p>	<ul style="list-style-type: none"> <li>▪ Dam Project Name</li> <li>▪ Canal Name</li> <li>▪ Canal Type (Main Canal, Distributary Canal, Sub Distributary Canal, Field Canal)</li> <li>▪ Length</li> <li>▪ Water Carrying Capacity</li> <li>▪ Parent Canal</li> </ul>
<p>Output:</p>	<ul style="list-style-type: none"> <li>▪ This information will be showing to ICC in the option of “Show Network of Canals”.</li> </ul>

<p>Normal Flow:</p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Manage network of canal</b></li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details: <ul style="list-style-type: none"> <li>• <b>Dam Project Name</b> – Select Dam Name from combo box.</li> <li>• <b>Canal Name</b> –The actor would Enter the canal Name.</li> <li>• <b>Canal Type(Combo box)</b> - The actor would select the Canal Type i.e. Main Canal, Distributary Canal, Sub Distributary Canal, Field Canal</li> <li>• <b>Length</b> -The actor would specify the Length of canal.</li> <li>• <b>Water Carrying Capacity</b> – Enter the Carrying capacity.</li> <li>• <b>Parent Canal (Combo box)</b>– Select the Parent Canal</li> </ul> </li> <li>▪ The actor could add/remove multiple details for Main Canal, Distributary Canal, sub distributary canal.</li> </ul>
	<p>At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or click the <b>Close</b> button to close form.</p>	
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	
<p>Includes:  other use case id</p>		

<p>UI: required/not required</p>	<p>Required</p>
<p>Priority: Low/medium/high</p>	
<p>Frequency of Use: Continuous/ frequent/ medium/ less/ rare</p>	<p>Medium</p>
<p>Business Rules:</p>	<ol style="list-style-type: none"> <li>1. If main canal not found then add multiple button will not be showing.</li> <li>2. Main canal type cannot be Select from the combo box if main canal is already there.</li> <li>3. Distributary canal type cannot be select from combo box if main canal is not there.</li> <li>4. Sub Distributary canal type cannot be select from combo box if distributary canal is not there.</li> <li>5. Field canal type cannot be select from combo box if sub distributary canal is not there.</li> <li>6. If adding main canal then do not show the parent canal combo box.</li> <li>7. The permissible characters for the Canal Name Includes (A-Z)(0-9) and special characters i.e -,&amp;.</li> </ol>

<p>Exceptions:</p>	<p><b><u>The actor attempts to submit the canal information without specifying Canal name</u></b>  <u>The System would respond with the message, “Please Enter the Canal Name”.</u></p> <p><b><u>The actor attempts to select main canal type and main canal is already there</u></b>  The System would respond with the message, “Main Canal is already added So you cannot add main canal again”.</p> <p><b><u>The actor attempts to select distributary canal type and main canal is not there</u></b>  The System would respond with the message, “Please specify the main canal first”.</p> <p><b><u>The actor attempts to select sub distributary canal type and distributary canal is not there</u></b>  The System would respond with the message, “Please specify the distributary canal first”.</p> <p><b><u>The actor attempts to select field canal type and sub distributary canal is not there</u></b>  The System would respond with the message, “Please specify the sub distributary canal first”.</p>
<p>Special Requirements:</p>	<p>none</p>
<p>Assumptions:</p>	<ol style="list-style-type: none"> <li>1. The actor must be registered as WUA\farmer and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
<p>Dependency:</p>	
<p>Notes and Issues:</p>	

**4.4.3.8 Reports of canals system**

**Overview:** This activity enables the actor to view the report of canal system.

**Scope:** The actors will access report of canal system if avail to him.

Use Case ID:	UC-8
Use Case Name:	Reports of Canal System
Feature ID	FEAT_ RCN_08

Actors:	Irrigation Department, ICC
Stake Holder:	Irrigation Consultative committees, State Gov. Agency, Irrigation Department
Description:	This use case would allow the actor to see report of canal system.
Trigger:	The actor selects “Reports of Canal System” Option.
Pre conditions:	The user must be registered as irrigation department’s member, ICC, administrator, Gov. agency. He must be logged in.
Post conditions:	
Input:	
Output:	

<p>Normal Flow:</p>	<p>Actor Actions</p> <p>The actor clicks on the option <b>Reports of Canal System</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show the report of canal system. the following details:             <ul style="list-style-type: none"> <li>• <b>Dam Project Code</b></li> <li>• <b>Dam name</b></li> <li>• <b>Canal Name</b></li> <li>• <b>Distributary Canals.</b></li> <li>• <b>Sub distributary canal.</b></li> <li>• <b>Field Canals</b></li> </ul> </li> </ul>
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	
<p>Includes:</p> <p>other use case id</p>		
<p>UI:</p> <p>required/not required</p>	<p>Required</p>	
<p>Priority:</p> <p>Low/medium/high</p>		
<p>Frequency of Use:</p> <p>Continuous/ frequent/ medium/ less/ rare</p>	<p>Medium</p>	

Business Rules:	
Exceptions:	
Special Requirements:	<p><i>“Drill down” for transparency ,</i></p> <ul style="list-style-type: none"> <li>• <i>Showing distributaries under main canal</i></li> <li>• <i>Showing sub distributaries under distributary</i></li> <li>• <i>Showing field canals under sub distributary.</i></li> </ul>
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.9 Manage Reservoir Information**

**Overview:** This activity enables the actor to add information of reservoir.

**Scope:** The actor will access the manage reservoir information.

Use Case ID:	UC-9
Use Case Name:	Manage Reservoir Information
Feature ID	FEAT_ MRI_01

Actors:	State Gov. agencies
Stake Holder:	State Gov. agencies
Description:	This use case would allow the actor to specify details of reservoir.
Trigger:	The actor selects "Manage Reservoir Information" Option.
Pre conditions:	The user must be registered as State Gov. agencies. He must be logged in.
Post conditions:	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then <ol style="list-style-type: none"> <li>a. The system would responds with message ,"Reservoir Information submitted successfully"</li> <li>b. All information related to the Reservoir would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, "All details entered would be lost. Do you wish to clear the form?" If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, "All the entered details in the form would be lost. Do you wish to close the form?" If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>
Input:	<ul style="list-style-type: none"> <li>▪ Reservoir Name</li> <li>▪ Full Reservoir Depth</li> <li>▪ Capacity at (F.R.L)</li> <li>▪ No Of Canal</li> </ul>
Output:	

<p>Normal Flow:</p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Manage Reservoir Information</b>.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details: <ul style="list-style-type: none"> <li>• <b>Reservoir Name</b> –The actor would select Reservoir Name from combo box.</li> <li>• <b>Full Reservoir Depth</b> - The actor would specify the Full Depth of reservoir in (Meter).</li> <li>• <b>Capacity at (F.R.L)</b>-The actor would specify the Capacity of Full reservoir level in cusec.</li> <li>• <b>No Of Canal</b>-Enter the associate number of canal.</li> </ul> </li> </ul>
	<ol style="list-style-type: none"> <li>5. The actor may click the <b>Submit</b> button to submit the Reservoir information.</li> <li>6. At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or click the <b>Close</b> button to close form.</li> </ol>	
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	
<p>Includes:  other use case id</p>		

<p>UI: required/not required</p>	<p>Required</p>
<p>Priority: Low/medium/high</p>	
<p>Frequency of Use: Continuous/ frequent/ medium/ less/ rare</p>	<p>Medium</p>
<p>Business Rules:</p>	
<p>Exceptions:</p>	<p><b><u>The actor attempts to submit the reservoir information details without selecting Reserve name</u></b> The System would respond with the message, "Please select reservoir name".</p> <p><b><u>The actor attempts to submit the reservoir information without specifying full reservoir depth</u></b> The System would respond with the message, "Please enter full reservoir depth".</p> <p><b><u>The actor attempts to submit the water requirement details without specifying capacity at(F.R.L)</u></b> The System would respond with the message, "Please enter capacity".</p> <p><b><u>The actor attempts to submit the water requirement details without specifying No of Canal</u></b> The System would respond with the message, "Please enter no of canal".</p>
<p>Special Requirements:</p>	<p>none</p>
<p>Assumptions:</p>	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>

Dependency:	
Notes and Issues:	

**4.4.3.10 View Reservoir Information**

**Overview:** This activity enables the actor to view the reservoir information.

**Scope:** The actors will access reservoir information if avail to him.

Use Case ID:	UC-10
Use Case Name:	View Reservoir Information
Feature ID	FEAT_ VRI_01

Actors:	State Gov. agencies
Stake Holder:	State Gov. agencies
Description:	This use case would allow the actor to see information of reservoir.
Trigger:	The actor selects “View Reservoir Information” Option.
Pre conditions:	The user must be registered as Gov. agency. He must be logged in.

Post conditions:		
Input:		
Output:		
Normal Flow:	<p>Actor Actions</p> <p>The actor clicks on the option <b>View Reservoirs Information</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show the information of Reservoir. the following details: <ul style="list-style-type: none"> <li>• <b>Dam Project Code</b></li> <li>• <b>Dam name</b></li> <li>• <b>Full Reservoir Depth</b></li> <li>• <b>Capacity at (F.R.L).</b></li> <li>• <b>No of Canal.</b></li> </ul> </li> </ul>
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		
UI:  required/not required	Required	

Priority:  Low/medium/high	
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.11 Update Water Level Information**

**Overview:** This activity enables the actor to update the water level information of reservoir.

**Scope:** The actor can update water availability information selecting by reservoir.

Use Case ID:	UC-11
Use Case Name:	Update water level information
Feature ID	FEAT_ UWLI_01

Actors:	State Gov. agencies
Stake Holder:	State Gov. agencies
Description:	This use case would allow the actor to specify details of water level information of reservoir.
Trigger:	The actor selects "Update Water Level Information" Option.
Pre conditions:	The user must be registered as State Gov. agencies. He must be logged in.

<p>Post conditions:</p>	<ol style="list-style-type: none"> <li>1. If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then             <ol style="list-style-type: none"> <li>c. The system would responds with message ,”Water Level Information submitted successfully”</li> <li>d. All information related to the water Level would be stored in the database.</li> </ol> </li> <li>2. If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details; otherwise, the actor would be brought back to where he\she was before clicking the <b>Clear</b> button.</li> <li>3. If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre Condition</b>; otherwise, the actor would be brought back to where he\she was before clicking the <b>Close</b> button.</li> </ol>	
<p>Input:</p>	<ul style="list-style-type: none"> <li>▪ Reservoir name</li> <li>▪ Depth</li> <li>▪ Capacity</li> </ul>	
<p>Output:</p>		
<p>Normal Flow:</p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option <b>Update Water Level Information.</b></li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would prompt the actor to enter the following details:             <ul style="list-style-type: none"> <li>• <b>Reservoir Name</b> –The actor would select Reservoir Name from combo box.</li> <li>• <b>Depth</b> - The actor would specify the Depth of reservoir in (Meter).</li> <li>• <b>Capacity</b> -The actor would specify the Capacity of Full reservoir level in cusec.</li> </ul> </li> </ul>

	<ol style="list-style-type: none"> <li>1. The actor may click the <b>Submit</b> button to submit the water level information.</li> <li>2. At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or click the <b>Close</b> button to close form.</li> </ol>	
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		
UI:  required/not required	Required	
Priority:  Low/medium/high		
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium	
Business Rules:		

Exceptions:	<p><b><u>The actor attempts to submit the water level information details without selecting Reserve name</u></b></p> <p>The System would respond with the message, "Please select reservoir name".</p> <p><b><u>The actor attempts to submit the water level information without specifying depth</u></b></p> <p>The System would respond with the message, "Please enter depth".</p> <p><b><u>The actor attempts to submit the water level information without specifying capacity</u></b></p> <p>The System would respond with the message, "Please enter capacity".</p>
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.12 View Current Reservoir Level**

**Overview:** This activity enables the actor to view the current reservoir level information.

**Scope:** The actors will view the current water level information.

Use Case ID:	UC-12
Use Case Name:	View current water level of reservoir
Feature ID	FEAT_ VCRL_01

Actors:	State Gov. agencies	
Stake Holder:	State Gov. agencies	
Description:	This use case would allow the actor to see current water level information of reservoir.	
Trigger:	The actor selects “View Current Reservoir Level” Option.	
Pre conditions:	The user must be registered as Gov. agency. He must be logged in.	
Post conditions:		
Input:		
Output:		
Normal Flow:	<p>Actor Actions</p> <p>The actor clicks on the option <b>View Current Reservoirs Information</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show the current water level information of Reservoir. the following details: <ul style="list-style-type: none"> <li>• <b>Reservoir Name</b></li> <li>• <b>Full Reservoir depth in (Meters\Feet)</b></li> <li>• <b>Capacity at (F.R.L).</b></li> <li>• <b>Current depth(Meters\Feet)</b></li> <li>• <b>Current Capacity(in cusec)</b></li> </ul> </li> </ul>

Alternative Flow:	None
Exceptional Flow:	None
Includes:  other use case id	
UI:  required/not required	Required
Priority:  Low/medium/high	
Frequency of Use:  Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>

Dependency:	
Notes and Issues:	

**4.4.3.13 View irrigation water requirement**

**Overview:** This activity enables the actor to view the irrigation water requirement.

**Scope:** The actors will view the irrigation water requirement.

Use Case ID:	UC-13
Use Case Name:	View irrigation water requirement information
Feature ID	FEAT_ IWR_01

Actors:	State Gov. agencies
Stake Holder:	State Gov. agencies
Description:	This use case would allow the actor to view the irrigation water requirement.
Trigger:	The actor selects “irrigation water requirement” Option.

Pre conditions:	The user must be registered as Gov. agency. He must be logged in.	
Post conditions:		
Input:		
Output:		
Normal Flow:	<p>Actor Actions</p> <p>The actor clicks on the option <b>View irrigation water requirement</b></p>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The System would show the irrigation water requirement information. the following details: <ul style="list-style-type: none"> <li>• <b>Block</b></li> <li>• <b>Village</b></li> <li>• <b>Crop Type</b></li> <li>• <b>Soil Type</b></li> <li>• <b>Area Type</b> (Sown, culturable).</li> <li>• <b>Area</b> (in hectare)</li> <li>• <b>Season</b></li> <li>• <b>Required Field Canal water level (MM)</b></li> <li>• <b>Canal name</b></li> </ul> </li> </ul>
Alternative Flow:	None	
Exceptional Flow:	None	
Includes:  other use case id		

UI: required/not required	Required
Priority: Low/medium/high	
Frequency of Use: Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	
Special Requirements:	none
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.14 View Location wise water requirement for standing crop**

**Overview:** This activity enables the actor to view the water requirement for standing crop.

**Scope:** The actors will view the water requirement for standing crop. Actor will see the water requirement

at canal location.

Use Case ID:	UC-14
Use Case Name:	View Location wise water requirement information
Feature ID	FEAT_ILWWRSC_01

Actors:	State Gov. agencies
Stake Holder:	State Gov. agencies
Description:	This use case would allow the actor to view the Location wise water requirement.
Trigger:	The actor selects "Location wise water requirement" Option.
Pre conditions:	The user must be registered as Gov. agency. He must be logged in.
Post conditions:	
Input:	
Output:	

<p>Normal Flow:</p>	<p>Actor Actions</p> <ol style="list-style-type: none"> <li>The actor clicks on the option <b>View Location wise water requirement</b></li> </ol>	<p>System Responses</p> <ol style="list-style-type: none"> <li>System would show the distributary canal, sub distributary canal, field canals combo box. <ul style="list-style-type: none"> <li>Initially Showing the following details : <ul style="list-style-type: none"> <li><b>Crop Type</b></li> <li><b>Soil Type</b></li> <li><b>Area (in hectare)</b></li> <li><b>Season</b></li> <li><b>Required water on canal (MM,M)</b></li> </ul> </li> </ul> </li> </ol> <p><b>Note: Required Water field will be calculating based on water requirement of child canals.</b></p> <p><b>For ex: Main Canal having distributaries as child canals</b></p>
<p>Alternative Flow:</p>	<p>None</p>	
<p>Exceptional Flow:</p>	<p>None</p>	
<p>Includes:</p> <p>other use case id</p>		

UI: required/not required	Required
Priority: Low/medium/high	
Frequency of Use: Continuous/ frequent/ medium/ less/ rare	Medium
Business Rules:	
Exceptions:	
Special Requirements:	There must be option to Show the report crop type, soil type, season wise.
Assumptions:	<ol style="list-style-type: none"> <li>1. The actor must be registered and access the application through single sign on.</li> <li>2. Hardware like computer/laptop system and network connection is available to the actor.</li> </ol>
Dependency:	
Notes and Issues:	

**4.4.3.15 View GIS maps from watershed information**

**Overview:** The River Valley Project & Flood Prone Rivers applications having the details of watershed one more column along with the details of watershed “show map” on the site for showing watershed map. As soon as user clicks on this “show map” System get the watershed map from “slusi” application through “slusi” web service.

**Scope:** Mapping of NWDPRA and River valley Project & Flood Prone Rivers (RVP & FPR) watershed codes with GIS maps available with SLUSI.

<b>Use Case ID:</b>	UCI-15
<b>Use Case Name:</b>	View GIS maps from watershed information
<b>Feature ID</b>	FEAT_15

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize Users</p>
<b>Stake Holder:</b>	Central Government
<b>Description:</b>	This use case would allow the actor view the watershed details along with the watershed map. The River Valley Project & Flood Prone Rivers application has details of watershed details on their site and the maps of watershed maps on the SLUSI site.
<b>Trigger:</b>	The actor view GIS maps from watershed information.

<p><b>Pre conditions:</b></p>	<ul style="list-style-type: none"> <li>The user must be registered on the watershed Information Database. He must be logged in, and should have permissions to access watershed details.</li> </ul>	
<p><b>Post conditions:</b></p>	<ul style="list-style-type: none"> <li>If the actor clicked the <b>map</b> , then             <ol style="list-style-type: none"> <li>The System would respond and the map of watershed is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ol> </li> </ul>	
<p><b>Input:</b></p>	<p>Click show map</p>	
<p><b>Output:</b></p>	<p>Show the watershed map.</p>	
<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the “<b>Show map</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The actor views the Watershed map on the behalf of watershed code through “slusi” web service.</li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>Clicks show map link but the Service Provider’s URL is unavailable</li> <li>Click show map link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>Standard internet message for URL not found</li> <li>Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p><b>other use case id</b></p>		

<b>UI:</b> <b>required/not required</b>	Required
<b>Priority:</b> <b>Low/medium/high</b>	High
<b>Frequency of Use:</b> <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• Watershed codes are mandatory to show map.</li> <li>• Web service of “slusi” link with NWDPRRA, RVP &amp; FPR.</li> </ul>
<b>Exceptions:</b>	
<b>Relationships</b>	Link both site using web services
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• The actor is registered either on NWDPRRA, RVP &amp; FPR and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

**4.4.3.16 View watershed information from GIS maps**

**Overview:** The watershed codes are required for getting watershed map through “slusi”. “slusi” application having “show information” button on watershed map of the site for showing information of “rfs” and “nrmmonitor “ on the behalf of watershed code through rfs\nrmmonitor web service.

**Scope** Mapping of GIS maps with NWDPRA and River valley Project & Flood Prone Rivers (RVP & FPR) watershed codes with GIS maps available with SLUSI.

<b>Use Case ID:</b>	UCI-16
<b>Use Case Name:</b>	View watershed information from GIS maps
<b>Feature ID</b>	FEAT_16

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize Users
<b>Stake Holder:</b>	Central Government
<b>Description:</b>	This use case would allow the actor view the watershed details along with the watershed map. The River Valley Project & Flood Prone Rivers application has details of watershed details on their site and the maps of watershed maps on the SLUSI site.
<b>Trigger:</b>	The actor views the watershed maps along with watershed details.
<b>Pre conditions:</b>	<ul style="list-style-type: none"> <li>The user must be registered on the watershed Information Database. He must be logged in, and should have permissions to access watershed details.</li> </ul>

<p><b>Post conditions:</b></p>	<ul style="list-style-type: none"> <li>• If the actor clicked the <b>close</b> button , then             <ul style="list-style-type: none"> <li>b. The System would respond and the details of watershed are close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul> </li> </ul>	
<p><b>Input:</b></p>	<p>Select watershed code</p> <p>Click show Details</p>	
<p><b>Output:</b></p>	<p>Show the watershed details.</p>	
<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>• The actor clicks on the “<b>Show Details</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The actor views the Watershed details on the behalf of watershed code through “rfs” and “nrmmonitor” web service.             <ol style="list-style-type: none"> <li>1) Location</li> <li>2) Cover Area</li> <li>3) Water Capacity</li> <li>4) Create on</li> <li>5) Watershed code</li> <li>6) Watershed name</li> </ol> </li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Clicks show watershed Details link but the Service Provider’s URL is unavailable</li> <li>▪ Click show watershed Details link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for URL not found</li> <li>▪ Standard internet message for connection not found</li> </ul>

<p><b>Includes:</b></p> <p><b>other use case id</b></p>	
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>High</p>
<p><b>Frequency of Use:</b></p> <p><b>Continuous/ frequent/ medium/ less/ rare</b></p>	<p>Frequent</p>
<p><b>Business Rules:</b></p>	<ul style="list-style-type: none"> <li>• Watershed codes are mandatory to show Details of Watershed.</li> <li>• Web service of “rfs” and “nrmmonitor” link with SULSI.</li> </ul>
<p><b>Exceptions:</b></p>	
<p><b>Relationships</b></p>	<p>Link both side using web services</p>
<p><b>Special Requirements:</b></p>	<p>None</p>
<p><b>Assumptions:</b></p>	<ul style="list-style-type: none"> <li>• The actor is registered either on NWDPR, RVP &amp; FPR and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<p><b>Dependency:</b></p>	<p>None</p>

<b>Notes and Issues:</b>	None
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#### 4.4.3.17 View water logging information and GIS maps

**Overview:** The water logging details to be linked to GIS maps. Details of water logging report show on “slusi” application add one more column in report “show map” when we click on “show map” its show the water logging map on the basis of latitudes & longitudes.

**Scope:** Mapping of water logging details with GIS maps.

<b>Use Case ID:</b>	UCI-17
<b>Use Case Name:</b>	View water logging information and GIS maps
<b>Feature ID</b>	FEAT_17

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize Users  Visitor
<b>Stake Holder:</b>	Central Government

<b>Description:</b>	This use case would allow the actor view the water logging information along with the water logging map on the basis of latitudes and longitudes.	
<b>Trigger:</b>	The actor views the water logging information and GIS maps.	
<b>Pre conditions:</b>		
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicked the <b>map</b> , then The System would respond and the map of water logging is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul>	
<b>Input:</b>	Click show map	
<b>Output:</b>	Show the land degradation map.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the “<b>Show map</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The actor views the water logging map on the behalf of latitudes and longitudes.</li> </ul>
<b>Alternative Flow:</b>		
<b>Exceptional Flow:</b>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>Clicks show map link but the Service Provider’s URL is unavailable</li> <li>Click show map link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>Standard internet message for URL not found</li> <li>Standard internet message for connection not found</li> </ul>

<p><b>Includes:</b></p> <p><b>other use case id</b></p>	
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>High</p>
<p><b>Frequency of Use:</b></p> <p><b>Continuous/ frequent/ medium/ less/ rare</b></p>	<p>Frequent</p>
<p><b>Business Rules:</b></p>	<ul style="list-style-type: none"> <li>• Latitudes and longitudes of water logging are mandatory to show map.</li> </ul>
<p><b>Exceptions:</b></p>	
<p><b>Relationships</b></p>	
<p><b>Special Requirements:</b></p>	<p>None</p>
<p><b>Assumptions:</b></p>	<ul style="list-style-type: none"> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<p><b>Dependency:</b></p>	<p>None</p>
<p><b>Notes and Issues:</b></p>	<p>None</p>

**4.4.3.18 View Land Degradation Information and GIS maps**

**Overview:** The Land Degradation Information to be linked to GIS maps. Information of land degradation report show on “slusi” application add one more column in report “show map” when we click on “show map” its show the land degradation map on the basis of latitudes & longitudes.

**Scope:** Mapping of land degradation Information with GIS maps.

<b>Use Case ID:</b>	UCI-18
<b>Use Case Name:</b>	View Land Degradation Information and GIS maps
<b>Feature ID</b>	FEAT_18

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize Users  Visitor
<b>Stake Holder:</b>	Central Government
<b>Description:</b>	This use case would allow the actor view the land degradation details along with the land degradation map on the basis of latitudes and longitudes.

<b>Trigger:</b>	The actor views the land degradation details along with land degradation map.	
<b>Pre conditions:</b>		
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicked the <b>map</b> , then The System would respond and the map of land degradation is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul>	
<b>Input:</b>	Click show map	
<b>Output:</b>	Show the land degradation map.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the “<b>Show map</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The actor views the land degradation map on the behalf of latitudes and longitudes.</li> </ul>
<b>Alternative Flow:</b>		
<b>Exceptional Flow:</b>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>Clicks show map link but the Service Provider’s URL is unavailable</li> <li>Click show map link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>Standard internet message for URL not found</li> <li>Standard internet message for connection not found</li> </ul>
<b>Includes:</b>		
<b>other use case id</b>		

<b>UI:</b> <b>required/not required</b>	Required
<b>Priority:</b> <b>Low/medium/high</b>	High
<b>Frequency of Use:</b> <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>• Latitudes and longitudes of land degradation are mandatory to show map.</li> </ul>
<b>Exceptions:</b>	
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

**4.4.3.19 View Information on Irrigation Equipment's**

**Overview:** View the Information on Irrigation Equipment's.

**Scope:** Information on Irrigation Equipment's.

<b>Use Case ID:</b>	UCI-19
<b>Use Case Name:</b>	View Information on Irrigation Equipment's
<b>Feature ID</b>	FEAT_19

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize Users  Visitor
<b>Stake Holder:</b>	Central Government
<b>Description:</b>	This use case would allow the actor view the Information on Irrigation Equipment.
<b>Trigger:</b>	The actor views the Irrigation Equipment's details.
<b>Pre conditions:</b>	

<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicked the <b>Close</b> , then The System would respond and the Information on Irrigation Equipment's is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul>	
<b>Input:</b>	Click View Irrigation Equipment's	
<b>Output:</b>	Show the Information on Irrigation Equipment's.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the "<b>Show Irrigation Equipment's</b>".</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The actor views the Information of Irrigation Equipment's. <ol style="list-style-type: none"> <li>Equipment Name</li> <li>Equipment Type</li> <li>Equipment Specification</li> <li>Equipment Price</li> </ol> </li> </ul>
<b>Alternative Flow:</b>		
<b>Exceptional Flow:</b>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>Clicks show Information of Irrigation Equipment link but the Service Provider's URL is unavailable</li> <li>Click show Information of Irrigation Equipment link but the actor's internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>Standard internet message for URL not found</li> <li>Standard internet message for connection not found</li> </ul>
<b>Includes:</b>  <b>other use case id</b>		

<b>UI:</b> <b>required/not required</b>	Required
<b>Priority:</b> <b>Low/medium/high</b>	High
<b>Frequency of Use:</b> <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	
<b>Exceptions:</b>	
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

**4.4.3.20 Ask for Expert Advices**

**Overview:** Farmers/WUA asked question to experts so that farmers/WUA get maximum benefit from the existing resource.

**Scope:** Ask for Expert Advices.

<b>Use Case ID:</b>	UCI-20
<b>Use Case Name:</b>	Ask for Expert Advices
<b>Feature ID</b>	FEAT_20

<b>Actors:</b>	<b>Primary Actor</b>  Authorize Users
<b>Stake Holder:</b>	State Government  Farmers
<b>Description:</b>	This use case would allow the actor ask for expert advice. <ul style="list-style-type: none"> <li>• Question</li> <li>• Date</li> <li>• Question Type</li> </ul>
<b>Trigger:</b>	The actor clicks on asks for expert advice.
<b>Pre conditions:</b>	The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the application page in it.

<p><b>Post conditions:</b></p>	<ul style="list-style-type: none"> <li>• If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then             <ol style="list-style-type: none"> <li>a. The System would respond with the message, “Expert Advice saved successfully” and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> <li>b. All information related to the Expert Advice would be stored in the database with status set to <i>save</i>.</li> </ol> </li> <li>• If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details and the actor would be presented with a blank Expert Advice form; otherwise, the actor would be brought back to where he was before clicking the <b>Clear</b> button.             <ul style="list-style-type: none"> <li>• If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to Pre-Condition; otherwise, the actor would be brought back to where she was before clicking the Close button.</li> </ul> </li> </ul>
<p><b>Input:</b></p>	<p>Ask Question</p>
<p><b>Output:</b></p>	<p>Question will be Shown to user who submits the question and Expert Adviser on the basis of Question Type.</p>

<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the “Ask for Expert Advice”.</li> <li>▪ The actor choose the add in ask for expert advice</li> <li>▪ The actor clicks on the Submit button.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The actor views the page for asking the question from expert.</li> <li>▪ The system would prompt the actor to specify the following details:  Question:- the actor would specify the ask for expert advice</li> <li>▪ Show message “your question has been send”.</li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Clicks ask for expert advice link but the Service Provider’s URL is unavailable</li> <li>▪ Clicks ask for expert advice link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for URL not found</li> <li>▪ Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p><b>other use case id</b></p>		
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>	

<b>Priority:</b>  <b>Low/medium/high</b>	High
<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	Question is a mandatory field.
<b>Exceptions:</b>	<u>The actor attempts to Submit the Ask for Expert Advice without specifying Question.</u>  The System would respond with the message, "Question cannot blank".
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### 4.4.3.21 View Expert Advices

**Overview:** Individual Farmers/Group of Farmers/WUA views the expert advices.

**Scope:** View Expert Advices.

<b>Use Case ID:</b>	UCI-21
<b>Use Case Name:</b>	View Expert Advices
<b>Feature ID</b>	FEAT_21

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Authorize Users</p> <p>Visitor</p>
<b>Stake Holder:</b>	Farmers
<b>Description:</b>	This use case would allow the actor view the expert advice.
<b>Trigger:</b>	The actor view expert advice.
<b>Pre conditions:</b>	
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicked the <b>Close</b> , then The System would respond and the page for view expert advice is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul>
<b>Input:</b>	Clicks View Report of Expert Advice
<b>Output:</b>	View Expert Advice.

<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>• The actor clicks on the “<b>View Expert Advice</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The actor View the page of Expert Advice.             <ol style="list-style-type: none"> <li>1) Question</li> <li>2) Advice</li> <li>3) Question Type</li> </ol> </li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Clicks view expert advice link but the Service Provider’s URL is unavailable</li> <li>▪ Clicks view for expert advice link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for URL not found</li> <li>▪ Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p><b>other use case id</b></p>		
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>	
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>High</p>	

<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	
<b>Exceptions:</b>	
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"><li>• Hardware like computer/laptop system and network connection is available to the actor.</li></ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### **4.4.3.22 Report Grievance**

**Overview:** Individual Farmers/Group of Farmers/WUA can Report Grievance related to Irrigation.

**Scope:** Report Grievance related to Irrigation.

<b>Use Case ID:</b>	UCI-22
<b>Use Case Name:</b>	Report Grievance
<b>Feature ID</b>	FEAT_22

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize User
<b>Stake Holder:</b>	Farmers
<b>Description:</b>	This use case would allow the actor to Report Grievances. <ul style="list-style-type: none"><li>• Issue</li><li>• Problem Type</li><li>• Location/Area</li><li>• Email id</li><li>• Mobile no.</li></ul>
<b>Trigger:</b>	The actor click on <b>Report grievance</b> .
<b>Pre conditions:</b>	<ul style="list-style-type: none"><li>• The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the report grievance page in application.</li></ul>

<p><b>Post conditions:</b></p>	<ul style="list-style-type: none"> <li>• If the actor clicked the <b>Submit</b> button, &amp; if all the mandatory fields have been entered, then             <ul style="list-style-type: none"> <li>c. The System would respond with the message, “Grievance Save successfully” and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> <li>d. All information related to the Report Grievance would be stored in the database with status set to <i>save</i>.</li> </ul> </li> <li>• If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details and the actor would be presented with a blank Report Grievance form; otherwise, the actor would be brought back to where he was before clicking the <b>Clear</b> button.</li> <li>• If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li> </ul>
<p><b>Input:</b></p>	<ul style="list-style-type: none"> <li>• Issue</li> <li>• Problem Type</li> </ul>
<p><b>Output:</b></p>	<p>Report Grievance created will be available for specifying details in the page.</p>

<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option “<b>Submit Grievance</b>”.</li> <li>▪ The actor chooses to add a Report Grievance.</li> </ul> <ul style="list-style-type: none"> <li>• The actor may click the <b>Submit</b> button to save the Report Grievance.</li> <li>• At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or clicks the <b>Close</b> button to close the <b>Report Grievance</b> form.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The system would provide a feature to create the report of grievance.</li> <li>▪ The system would prompt the actor to specify the following details: <ul style="list-style-type: none"> <li><b>Issue:</b> - the actor would specify Problem which is put in your Grievance.</li> <li><b>Problem Type:</b> - the actor would specify the type of problem.</li> </ul> </li> <li>• Grievance number is generated for further process.</li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click Submit Grievance button but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>

<b>Includes:</b>  <b>other use case id</b>	
<b>UI:</b>  <b>required/not required</b>	Required
<b>Priority:</b>  <b>Low/medium/high</b>	high
<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	<ol style="list-style-type: none"> <li>1. Issue, Problem Type have mandatory field in the form.</li> <li>2. Email id and Mobile no is Mandatory Field in the Form.</li> </ol>
<b>Exceptions:</b>	<p><b><u>The actor attempts to the report grievance without specifying issue.</u></b> The System would respond with the message, "Please Enter Issue".</p> <p><b><u>The actor attempts to the report grievance without specifying Problem Type.</u></b> The System would respond with the message, "Please Select the Problem Type".</p>
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>

<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### 4.4.3.23 Monitor Grievance

**Overview:** Authorize user Monitor Grievance and maintain the grievance record.

**Scope:** Monitor Grievance

<b>Use Case ID:</b>	UCI-23
<b>Use Case Name:</b>	Monitor Grievance
<b>Feature ID</b>	FEAT_23

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize User
<b>Stake Holder:</b>	Central Government  State Government
<b>Description:</b>	This use case would allow the actor to Monitor Grievances on the basis of date and problem type and Grievance number.

<b>Trigger:</b>	The actor selects the option available <b>Monitor Grievance</b> .	
<b>Pre conditions:</b>	<ul style="list-style-type: none"> <li>The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the monitor grievance page in application.</li> </ul>	
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicks the <b>Close</b> button, then the System would respond with the message, " Do you want close this page?" If the actor responds in affirmative, then the System would close the page and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li> </ul>	
<b>Input:</b>	<ul style="list-style-type: none"> <li>Problem Type</li> <li>Date</li> </ul>	
<b>Output:</b>	Monitor Grievance will be available for specifying details in the page.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the option "<b>Monitor Grievance</b>".</li> </ul> <ul style="list-style-type: none"> <li>At any point of time, the actor clicks the <b>Close</b> button to close the <b>Monitor Grievance</b> form.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The system would provide a feature page of <b>Monitor Grievance</b>.</li> </ul> <p><b>Problem Type:</b> the actor would specify the Type of problem.</p> <p><b>Grievance Number :-</b> the actor would specify the grievance number</p>

<b>Alternative Flow:</b>		
<b>Exceptional Flow:</b>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click Monitor button but the actor's internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>
<b>Includes:</b>  <b>other use case id</b>		
<b>UI:</b>  <b>required/not required</b>	Required	
<b>Priority:</b>  <b>Low/medium/high</b>	high	
<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent	
<b>Business Rules:</b>		
<b>Exceptions:</b>		
<b>Relationships</b>		

<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

**4.4.3.24 Check Grievance Status**

**Overview:** Authorize user Check Grievance Status. Check grievance status which check the current status for example process, solved etc.

**Scope:** Check Grievance Status

<b>Use Case ID:</b>	UCI-24
<b>Use Case Name:</b>	Check Grievance Status
<b>Feature ID</b>	FEAT_24

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize User</p>
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<b>Stake Holder:</b>	Farmers	
<b>Description:</b>	This use case would allow the actor to Check Grievances Status.	
<b>Trigger:</b>	The actor selects the option available <b>Check Grievance Status</b> .	
<b>Pre conditions:</b>	<ul style="list-style-type: none"> <li>The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the status grievance page in application.</li> </ul>	
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicks the <b>Close</b> button, then the System would respond with the message," Do you want close this page?" If the actor responds in affirmative, then the System would close the page and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li> </ul>	
<b>Input:</b>	<ul style="list-style-type: none"> <li>Enter Grievance number</li> </ul>	
<b>Output:</b>	Check Grievance Status will be available for specifying details in the page.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the option "<b>Check Grievance Status</b>".</li> <li>At any point of time, the actor clicks the <b>Close</b> button to close the <b>Check Grievance Status</b> page.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The system would provide a feature page of <b>Check Grievance Status</b>. <ol style="list-style-type: none"> <li>Grievance Number</li> <li>Grievance Status</li> <li>Question Type</li> </ol> </li> </ul>
<b>Alternative Flow:</b>		

<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click Check Grievance Status button but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p><b>other use case id</b></p>		
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>	
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>high</p>	
<p><b>Frequency of Use:</b></p> <p><b>Continuous/ frequent/ medium/ less/ rare</b></p>	<p>Frequent</p>	
<p><b>Business Rules:</b></p>		
<p><b>Exceptions:</b></p>		
<p><b>Relationships</b></p>		
<p><b>Special Requirements:</b></p>	<p>None</p>	

<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### 4.4.3.25 Resolve Grievance

**Overview:** Authorize person resolve the problem of farmer/group of farmers/WUA that is report for grievance and update the farmer/group of farmers/WUA via Email/SMS etc.

**Scope:** Resolve Grievance

<b>Use Case ID:</b>	UCI-25
<b>Use Case Name:</b>	Resolve Grievance
<b>Feature ID</b>	FEAT_25

<b>Actors:</b>	<b>Primary Actor</b>  Administrator  Authorize User
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<b>Stake Holder:</b>	State Government	
<b>Description:</b>	This use case would allow the actor to Resolve Grievances.	
<b>Trigger:</b>	The actor selects the option <b>Resolve Grievance</b> .	
<b>Pre conditions:</b>	<ul style="list-style-type: none"> <li>The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the resolve grievance page in application.</li> </ul>	
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>If the actor clicks the <b>Close</b> button, then the System would respond with the message, " Do you want close this page?" If the actor responds in affirmative, then the System would close the page and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li> </ul>	
<b>Input:</b>	Solution of Grievance.	
<b>Output:</b>	Solution of Grievance will be available for specifying details in the page.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the option "<b>Resolve Grievance</b>".</li> <li>At any point of time, the actor clicks the <b>Close</b> button to close the <b>Resolve Grievance</b> page.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The system would provide a feature page of <b>Resolve Grievance</b>.</li> </ul>
<b>Alternative Flow:</b>		

<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click Resolve Grievance button but the actor's internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p><b>other use case id</b></p>		
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>	
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>high</p>	
<p><b>Frequency of Use:</b></p> <p><b>Continuous/ frequent/ medium/ less/ rare</b></p>	<p>Frequent</p>	
<p><b>Business Rules:</b></p>		
<p><b>Exceptions:</b></p>		
<p><b>Relationships</b></p>		
<p><b>Special Requirements:</b></p>	<p>None</p>	

<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

**4.4.3.26 Manage crop pattern data**

**Overview:** Manage crop pattern data in which manage the season, crop type etc.

**Scope:** Manage crop pattern data.

<b>Use Case ID:</b>	UCI-26
<b>Use Case Name:</b>	Manage crop pattern data
<b>Feature ID</b>	FEAT_26

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize User</p>
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<b>Stake Holder:</b>	Central Government  State Government
<b>Description:</b>	This use case would allow the actor to Manage the crop pattern data. <ul style="list-style-type: none"><li>• State</li><li>• District</li><li>• Block</li><li>• Season</li><li>• Crop Type</li></ul>
<b>Trigger:</b>	The actor clicks on Manage the crop pattern data.
<b>Pre conditions:</b>	<ul style="list-style-type: none"><li>• The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the manage the crop pattern data page in application.</li></ul>
<b>Post conditions:</b>	<ul style="list-style-type: none"><li>• If the actor clicks the <b>Close</b> button, then the System would respond with the message, " Do you want close this page?" If the actor responds in affirmative, then the System would close the page and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li></ul>
<b>Input:</b>	Click on link manage the crop pattern data.
<b>Output:</b>	Manage the crop data will be available for specifying details in the page.

<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option “<b>manage crop pattern data</b>”.</li>   <li>▪ Submit/Modify the crop pattern data.</li> <li>▪ At any point of time, the actor clicks the <b>Close</b> button to close the <b>manage crop pattern data</b> page.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The system would provide a feature page of <b>manage crop pattern data</b>.  <b>Season:</b> The actor would specify the season.  <b>Crop Type:</b> The actor would specify the Crop Type.</li>   <li>▪ The system would show messages, “Submit/Modify the crop pattern”.</li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click manage crop pattern data button but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>

<b>Includes:</b>  <b>other use case id</b>	
<b>UI:</b>  <b>required/not required</b>	Required
<b>Priority:</b>  <b>Low/medium/high</b>	high
<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	
<b>Exceptions:</b>	
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None

<b>Notes and Issues:</b>	None
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**4.4.3.27 Enter Best Practices on Irrigation**

**Overview:** Irrigation Practice is the way to notify the best practice by training farmers regarding optimum utilization of water and cultivating suitable crops.

**Scope:** Enter Best Practices on Irrigation.

<b>Use Case ID:</b>	UCI-27
<b>Use Case Name:</b>	Enter Best Practices on Irrigation
<b>Feature ID</b>	FEAT_27

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize User</p>
<b>Stake Holder:</b>	State Government

<p><b>Description:</b></p>	<p>This use case would allow the actor to Enter the Best practices on Irrigation.</p> <ul style="list-style-type: none"> <li>• State</li> <li>• District</li> <li>• Block</li> <li>• Crop Type</li> <li>• Season</li> <li>• Description</li> </ul>
<p><b>Trigger:</b></p>	<p>The actor clicks on the Enter the Best Practices on Irrigation.</p>
<p><b>Pre conditions:</b></p>	<ul style="list-style-type: none"> <li>• The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the Enter Best practices on Irrigation.</li> </ul>
<p><b>Post conditions:</b></p>	<ul style="list-style-type: none"> <li>• If the actor clicked the <b>Save</b> button, &amp; if all the mandatory fields have been entered, then <ul style="list-style-type: none"> <li>e. The System would respond with the message, “Best Practices on Irrigation saved successfully” and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> <li>f. All information related to the Best Practices on Irrigation would be stored in the database with status set to <i>save</i>.</li> </ul> </li> <li>• If the actor clicks the <b>Clear</b> button, then the System would respond with the message, “All details entered in the form would be lost. Do you wish to clear the form?” If the actor responds in affirmative, then the System would clear the form details and the actor would be presented with a blank Enter Best Practices on Irrigation form; otherwise, the actor would be brought back to where he was before clicking the <b>Clear</b> button.</li> <li>• If the actor clicks the <b>Close</b> button, then the System would respond with the message, “All the entered details in the form would be lost. Do you wish to close the form?” If the actor responds in affirmative, then the System would discard the entered details and close the form and the actor would be brought back to <b>Pre-Condition</b>; otherwise, the actor would be brought back to where he was before clicking the <b>Close</b> button.</li> </ul>

<p><b>Input:</b></p>	<ul style="list-style-type: none"> <li>• Crop Type</li> <li>• Season</li> <li>• Area/location</li> <li>• Description</li> </ul>	
<p><b>Output:</b></p>	<p>The Information of best practices on irrigation created.</p>	
<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>▪ The actor clicks on the option “<b>Enter Best Practices on Irrigation</b>”.</li> <li>• The actor may click the <b>Save</b> button to save the Best Practices on irrigation.</li> <li>• At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or clicks the <b>Close</b> button to close the <b>Best Practices on Irrigation</b> form.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The system would provide a feature to add the best practices on irrigation through <b>Enter Best Practices on Irrigation</b>.                     <ul style="list-style-type: none"> <li><b>Crop Type:</b> The actor would specify the Crop Type.</li> <li><b>Season:</b> The actor would specify the Season.</li> <li><b>Description:</b> The actor specify the Description.</li> </ul> </li> </ul>

<p><b>Alternative Flow:</b></p>	<ul style="list-style-type: none"> <li>▪ The actor may click the <b>Save</b> button to save the Best Practices on Irrigation.</li> <li>▪ At any point of time, the actor clicks the <b>Clear</b> button to discard the details entered till then or clicks the <b>Close</b> button to close the <b>Best Practices on Irrigation</b> form.</li> </ul>	
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Click Save button but the actor's internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for connection not found</li> </ul>
<p><b>Includes:</b></p> <p>other use case id</p>		
<p><b>UI:</b></p> <p>required/not required</p>	<p>Required</p>	
<p><b>Priority:</b></p> <p>Low/medium/high</p>	<p>high</p>	
<p><b>Frequency of Use:</b></p> <p>Continuous/ frequent/ medium/ less/ rare</p>	<p>Frequent</p>	

<b>Business Rules:</b>	<ul style="list-style-type: none"> <li>Season, Crop type etc. has some mandatory field in the form.</li> </ul>
<b>Exceptions:</b>	<p><b><u>The actor attempts to save the Best practices on Irrigation without specifying season.</u></b> The System would respond with the message, "Please Select Season".</p> <p><b><u>The actor attempts to save the Best Practices on Irrigation without specifying crop type.</u></b> The System would respond with the message, "Crop type cannot be blank".</p> <p><b><u>The actor attempts to save the Best Practices on Irrigation without specifying Area/Location.</u></b> The System would respond with the message, "Area/Location cannot be blank".</p> <p><b><u>The actor attempts to save the Best Practices on Irrigation without specifying Description.</u></b> The System would respond with the message, "Description cannot be blank".</p>
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### 4.4.3.28 View Best Practices on Irrigation

**Overview:** Irrigation Practice is the way to notify the best practice by training farmers regarding optimum utilization of water and cultivating suitable crops. View the report of best practices on irrigation.

**Scope:** View Best Practices on Irrigation.

<b>Use Case ID:</b>	UCI-28
<b>Use Case Name:</b>	View Best Practices on Irrigation
<b>Feature ID</b>	FEAT_28

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize Users</p> <p>Visitor</p>
<b>Stake Holder:</b>	<p>Central Government</p> <p>State Government</p>
<b>Description:</b>	This use case would allow the actor view the Best Practices on Irrigation.
<b>Trigger:</b>	The actor views the best practices on irrigation.
<b>Pre conditions:</b>	
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>• If the actor clicked the close , then             <ul style="list-style-type: none"> <li>a. The System would respond and the Best Practices on Irrigation is close and the actor would be brought back to <b>Step 1</b> of the <b>Normal Flow</b>.</li> </ul> </li> </ul>

<b>Input:</b>	Click Report of Best Practices on Irrigation	
<b>Output:</b>	Show the Report of Best Practices on irrigation.	
<b>Normal Flow:</b>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>The actor clicks on the “<b>View Best Practices on Irrigation</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>The actor views the Report of Best Practices on Irrigation.</li> </ul> <p>The following details show in report</p> <ol style="list-style-type: none"> <li>State</li> <li>District</li> <li>Block</li> <li>Crop Type</li> <li>Season</li> <li>Description</li> </ol>
<b>Alternative Flow:</b>		
<b>Exceptional Flow:</b>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>Clicks View Best Practices on Irrigation link but the Service Provider’s URL is unavailable</li> <li>Click View Best Practices on Irrigation link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>Standard internet message for URL not found</li> <li>Standard internet message for connection not found</li> </ul>
<b>Includes:</b>		
<b>other use case id</b>		
<b>UI:</b>	Required	
<b>required/not required</b>		

<b>Priority:</b>  <b>Low/medium/high</b>	High
<b>Frequency of Use:</b>  <b>Continuous/ frequent/ medium/ less/ rare</b>	Frequent
<b>Business Rules:</b>	
<b>Exceptions:</b>	
<b>Relationships</b>	
<b>Special Requirements:</b>	None
<b>Assumptions:</b>	<ul style="list-style-type: none"> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<b>Dependency:</b>	None
<b>Notes and Issues:</b>	None

#### **4.4.3.29 View Completed Command Area Development Project**

**Overview:** This activity maintains the details of command area development project which are completed as per the planning of the command area development project.

**Scope:** View Completed Command Area development Project.

<b>Use Case ID:</b>	UCI-29
<b>Use Case Name:</b>	View Completed Command Area Development Project
<b>Feature ID</b>	FEAT_29

<b>Actors:</b>	<p><b>Primary Actor</b></p> <p>Administrator</p> <p>Authorize Users</p>
<b>Stake Holder:</b>	<p>Central Government</p> <p>State Government</p>
<b>Description:</b>	This use case would allow the actor view Completed Command Area Development Project.
<b>Trigger:</b>	The actor views the Completed Command Area Development Project.
<b>Pre conditions:</b>	The user must be registered either on the CAP or SAP. He must be logged in, and should have permissions to access the Completed Command Area Development Project page in application.
<b>Post conditions:</b>	<ul style="list-style-type: none"> <li>• If the actor clicked the close , then             <ol style="list-style-type: none"> <li>a. The System would respond and the Completed Command Area Development Project is close and the actor would be brought back to <b>Step 1 of the Normal Flow.</b></li> </ol> </li> </ul>

<p><b>Input:</b></p>	<p>Click Report of Complete Command Area Development Project</p>	
<p><b>Output:</b></p>	<p>Show the Report of Completed Command Area Development Project.</p>	
<p><b>Normal Flow:</b></p>	<p>Actor Actions</p> <ul style="list-style-type: none"> <li>• The actor clicks on the “<b>View Completed Command Area Development Project</b>”.</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ The actor views the Report Completed Command Area Development Project with the following details:-                             <ul style="list-style-type: none"> <li>• District</li> <li>• Block</li> <li>• Village</li> <li>• Target Field Channel</li> <li>• Archive Field Channel</li> <li>• Target warabandi</li> <li>• Archive warabandi</li> <li>• Target Land leveling and shaping</li> <li>• Archive land leveling and shaping</li> <li>• Target Field drains</li> <li>• Archive Field drains</li> </ul> </li> </ul>
<p><b>Alternative Flow:</b></p>		
<p><b>Exceptional Flow:</b></p>	<p>Actor Action</p> <ul style="list-style-type: none"> <li>▪ Clicks View Completed Command Area Development Project link but the Service Provider’s URL is unavailable</li> <li>▪ Click View Completed Command Area Development Project link but the actor’s internet access has been temporarily disabled</li> </ul>	<p>System Responses</p> <ul style="list-style-type: none"> <li>▪ Standard internet message for URL not found</li> <li>▪ Standard internet message for connection not found</li> </ul>

<p><b>Includes:</b></p> <p><b>other use case id</b></p>	
<p><b>UI:</b></p> <p><b>required/not required</b></p>	<p>Required</p>
<p><b>Priority:</b></p> <p><b>Low/medium/high</b></p>	<p>High</p>
<p><b>Frequency of Use:</b></p> <p><b>Continuous/ frequent/ medium/ less/ rare</b></p>	<p>Frequent</p>
<p><b>Business Rules:</b></p>	
<p><b>Exceptions:</b></p>	
<p><b>Relationships</b></p>	
<p><b>Special Requirements:</b></p>	<p>None</p>
<p><b>Assumptions:</b></p>	<ul style="list-style-type: none"> <li>• The Actor is registered either on CAP or SAP and access the application/service through single sign on.</li> <li>• Hardware like computer/laptop system and network connection is available to the actor.</li> </ul>
<p><b>Dependency:</b></p>	<p>None</p>

<b>Notes and Issues:</b>	None
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## 4.5 Performance Requirements

The following performance requirements are to be satisfied by the proposed solution

- **Response Time:** For 90% for user interactions the application response times should be <2 seconds. For any transaction having a response time greater than 0.5 sec a suitable progress indicator should be shown to the user. Any user interaction response time should not exceed 10 seconds. In cases of unforeseen delays in responses due to network latency etc. a timeout message should be shown after 15 seconds.
- **Throughput:** The solution should be capable of handling a load of 30,000 queries per minute.
- **Concurrency:** the solution should be capable of serving 1000 concurrent users for 70% of the time and upto 3000 concurrent users during the peak times.

## 4.6 Design Constraints

The proposed solution should follow the following design constraints:

- The application should implement a three tier architecture clearly demarcating the Presentation layer, the service layer and the data layer.
- The communication between the presentation layer and the service layer should be in XML.
- The client interfaces must be compatible with W3C XHTML 1.0

## 4.7 Software System Attributes

### 4.7.1 Reliability

The system's reliability is dependent on various factors like ensuring proper validations for each field and form in the system, ensuring a seamless transition in between different forms, displaying proper alerts for errors, ensuring no http or system based errors are displayed and ensuring that proper markings are done for the mandatory and non-mandatory fields in the system so as to ensure consistent response while saving or updating the data.

### 4.7.2 Availability

The proposed application is to be hosted at the NIC data center servers to ensure that the application is available 24x7 to the users. A maintenance window of 1 hour at midnight might be kept wherein backend processing jobs may be scheduled. During the maintenance window the non-essential services should be

available to the users and a proper message about the curtailed services should be available to the users during the period. The application should be deployed in a high availability mode to ensure 99.9% uptime.

#### **4.7.3 Security**

The proposed system will be deployed at the NIC datacenter and will use NIC's Internet Security setup. The application will have two types of content Anonymous and Authenticated. The anonymous content would be available to all the users and would not require a login in the system where as the authenticated content would require the users to authenticate using a userid and password. The application should implement role based access so that each authenticated user should have access to the content for which he/she is authorized. All the passwords should be stored in the encrypted form in the database.

#### **4.7.4 Maintainability**

The application will have a 1 hour maintenance window preferably at midnight during which the scheduled maintenance tasks such as database backups, batch processing etc. will be executed.

#### **4.7.5 Portability**

The server component of application should support portability for up scaling or out scaling in the same environment or to a new environment.