

AWARDS SCHEME FOR EXEMPLARY IMPLEMENTATION OF
e-GOVERNANCE INITIATIVES

NAME OF CATEGORY- 'INNOVATIVE USE OF ICT BY CENTRAL GOVERNMENT PSUs'

1. Coverage – Geographical and Demographic :-

(i) Comprehensiveness of reach of delivery centres

Global

(ii) Number of delivery centres

38 Units/ Offices

(iii) Geographical: **CPSE**

(a) National level – Number of State covered

All

(b) State/UT level- Number of District covered

All

(c) District level- Number of Blocks covered

All

Please give specific details:-

Established in 1964, BHEL is India's largest engineering and manufacturing company of its kind engaged in the design, engineering, manufacture, construction, testing, commissioning and servicing of a wide range of products, systems and services for the core sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable Energy, Oil & Gas and Defence. It is now one among seven Maharatna PSEs. It has 17 manufacturing units thought the country, in addition to which has various sites/offices at various parts of the globe.

(iv) Demographic spread (percentage of population covered)

Approx. 42,000 nos. i.e. 100 % of retired employees of BHEL who are settled across India.

2. Situation before the Initiative (Bottlenecks, Challenges, constraints etc with specific details as to what triggered the Organization to conceptualize this project):

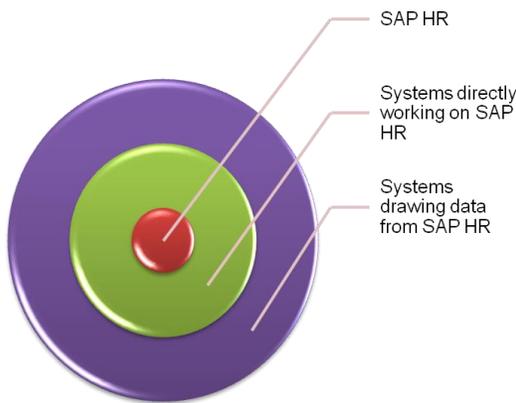
1. The company introduced pension scheme and scheme for providing financial assistance in case of certain emergency needs to retired employees. The schemes were introduced in terms of DPE guidelines on the subject which were issued during wage revision 2007. The guidelines were issued after 3 years and as such the schemes could only be introduced by the Company in the year 2012 & 2013 respectively.
2. Since no centralized data base of retd. employees was available, it was a challenge to approach all eligible employees and process claims within stipulated time and accuracy.
3. Accordingly, the Company created infrastructure facilities for data collection, compilation and maintenance of required Forms and setting up of contact points / locations for educating / clarifying and meeting the eligible ex-employees.
4. The forms were filled by each beneficiary in hard copy, which was translated to an excel format. The excel sheet along with hard copies were sent to Corporate Office, wherein each form was again cross checked with the data provided by the Unit for errors. The ex-employee details provided in the hard copy of the requisite Forms were also checked manually for each application. The eligible corpus/ financial assistance were then released for extending pension/relief.
5. The entire process was cumbersome, time consuming and prone to errors, while the beneficiaries were required to physically attend Camps for completing mandatory details, even though they may be living at far off places. Delay in

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processing of application would result in corresponding delay in release of pension/relief.

6. Duplication of work led to wastage of productive manpower & movement of forms from Units to Corporate HR resulting in delay in extending benefits to beneficiaries.
7. No system for beneficiary to know status update of submitted claim & was purely person driven.

3. **Scope of Services/ Activities Covered** (Relevance of choice of application for clients/ PSU, extent of e-enablement in terms of number of processes/services, extent to which step in each service/process have been ICT- enabled #)

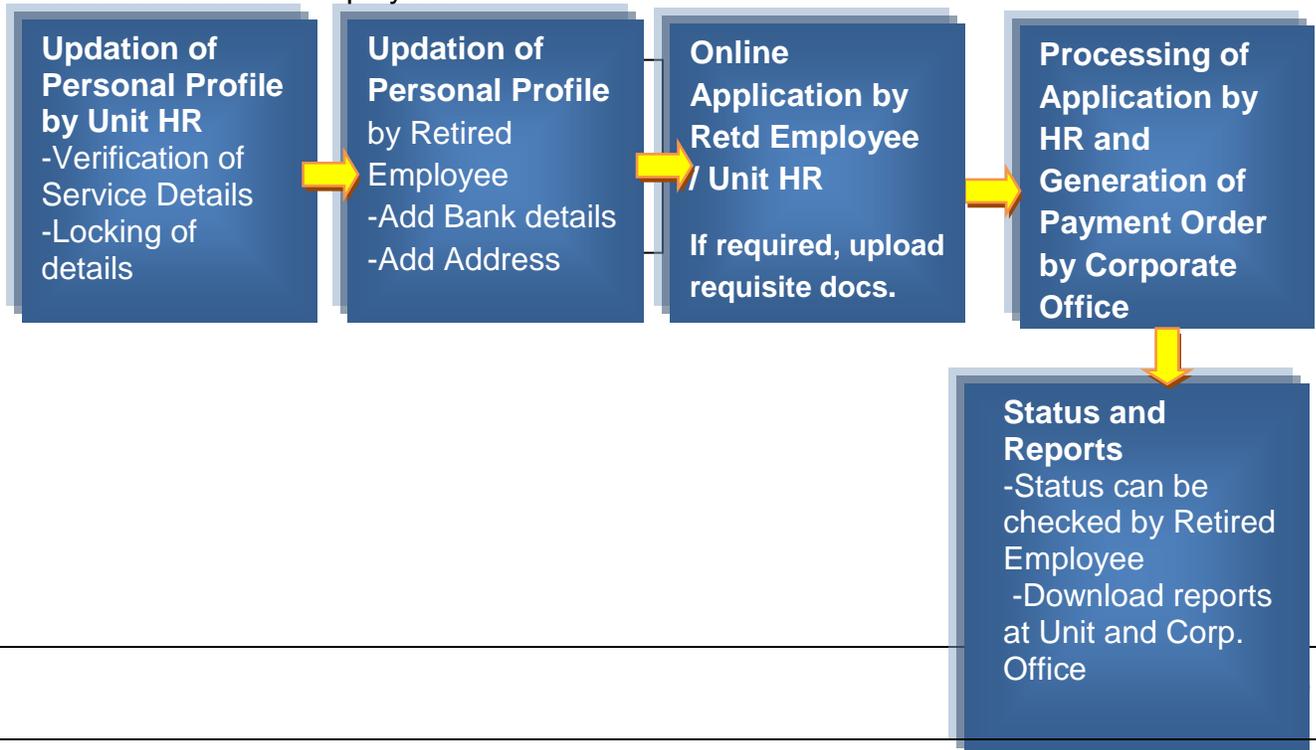


The Company has its HR master data in SAP HR. The master data is used for various system driven HR processes such as Performance Appraisals, Promotions, Career Development, Training and Development, Competency Masters etc. in respect of its serving employees which use SAP HR master data for these applications.

In addition to these applications, certain other systems also draw data from SAP HR module but are independent applications dealing with serving employees such as Claims Management Portal, Retired

Employees portal etc. These applications are however available in Company's intranet.

Since there was requirement to reach out to retired employees settled across the country, it was imperative to develop an internet based application for processing of their claims. Therefore a platform was created for Retired BHEL Employees named <http://ecare.bhel.in>. The portal draws employee data from SAP HR which is used to extend pension/ financial assistance to retired employees.



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4. **Strategy Adopted**

(i) The details of base line study done:

1. Estimation of no. of beneficiaries and their geographical spread.
2. Assessment of available IT infrastructure
3. The Process Flowchart for the existing process
4. Re-design of process for application development
5. Consultation within development team for feasibility of e-enablement of re-designed process
6. Development strategy – iterative model

(ii) Problems identified:

The legacy system was manual - prone to passing of duplicate claims, delay in disbursement of benefits, difficult for reconciliation of accounts, reconciliation prone to errors, process cycle for processing of claims was longer, physical movement of documents, people settled in far flung places not able to submit applications etc.

(iii) Roll out/implementation model:

1. The Process Flowchart was developed taking into account all the stakeholders
2. The flowchart was shared with development team
3. Various documents were developed to enable easy filling up of forms by the beneficiaries/retired employees
4. Policy/Scheme documents , FAQs were developed regarding the Scheme
5. Multiple forms converted into a single online homogenous form if required.
6. Application development – adopting the iterative development model.
7. Pilot testing with Unit
8. Extensive Video Conferences were held with Units at all locations to educate them on handling the system
9. Feedback on the system was taken and incorporated in the site.

(iv) Communication and dissemination strategy and approach used:

The communications and dissemination strategy was two pronged, namely one for Unit HR Functionaries and second for Retired employees.

- The Unit HR functionaries were trained on the system through multiple Video Conferences to save on time in implementation. They were also personally coached to handle the system.
- To help ret. employee apply for benefits, following documents have been hosted on site:
 - Scheme Document
 - FAQs on the Schemes
 - How to Apply Instructions Document with screen shots
 - List of HR Functionaries under “Whom to Contact” with email details
 - Use of Dash Board for steps completed and pending for submission of application/claims.
 - The site provides status report for application/ claims submitted.

5. **Technology Platform used-**

(i) Description,

JSP / HTML / CSS / JAVASCRIPT in front-end, Java Servlets for business logic and database

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connectivity, Oracle DB and Oracle 10g Application server

(ii) Interoperability

Application is J2EE framework Compliant as such it can be ported to any J2EE server. Java Database Connectivity (JDBC) is established between the application server and oracle Database server on different hosts. The back end is oracle RDBMS version 9g running on Red Hat Linux ES v6.1. This database can be ported to any other RDBMS through proper scripts. The application is accessible from front-end through any internet browser.

Baseline data is drawn from SAP to Oracle RDBMS and thus used by modules built for both SAP and our portal simultaneously and hassle-free.

(iii) Security concerns

BHEL has implemented information security management system (ISMS) and is ISO 27001:2005 Certified by STQC Ministry of IT, Govt. of India. BHEL has secure software development guidelines which are inherent part of business application development. The secure software guidelines are based on Open Web Application Security Project (OWASP). OWASP takes care of Top 10 Vulnerabilities year on year basis. As such these vulnerabilities are taken care of in ECARE Portal.

PAROS Software was used for security testing and checking of broken links etc.

BHEL has hired a Third party security agency for carrying out Penetration Testing (PT) from public network. Thus PT has also been done for this portal too.

(iv) Any issue with the technology used

No issues.

(v) Service level Agreements(SLAs) (Give details about presence of SLA, whether documented, whether referred etc. #)

Minimum required uptime for internet, MPLS, Hardware, UPS is 98% as per the SLA.

6. Enhancement of Productivity (Give details about impact on volume of transactions handled per employee, Productivity of machines/ resources#)

Enhancement of productivity has been through following means:-

- **Efficiency:** The time lag in processing of cases due to processing at various levels, transmission of data through hard copy/digital media has been drastically reduced. The process for computation of pension corpus has been automated, thus eliminating human error. Manpower deployed for the process reduced to 1/8th level.
- **Quality:** The system and the data is available 24X7, throughout the year which can be accessed from the ease of home, thus the quality of service provided and customer satisfaction is enhanced substantially.
- **Cycle Time Reduction:** The process cycle time has been reduced to **1/100th** of the pre-designed level.
- **Innovation:** BHEL is only CPSE to introduce web based portal for processing of pension for retired employees on or after 01.01.2007 & claims for financial assistance towards emergency needs faced by employees who retired prior to 01.01.2007.

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Verification of beneficiaries through uploaded certificates, which eliminated requirement of physical presence of person, saved paper generation.

- Ease in Data Maintenance and Accessibility: The data can be generated in different types of forms/reports which help in analysis and making projections for the year. Further, the data is accessible to Retired employees and HR functionaries who can check the status of their application from home etc.
- Correctness of Data – As calculations are done through system, the computational accuracy is very high.
- Cost Effectiveness – System was developed in-house. Thus cost effectiveness was ensured.
- Environmental Impact – Reduction in dependency on paper

It brings together retired employees, Unit HR functionaries and Corporate HR on the same platform. The information dissemination between all 3 parties is seamless and on time thus human efforts in communicating the information are saved.

7. Efficiency Enhancement (Give specific details about the following #)

(i) Volume of transactions processed

- Approximately 22000 claims every year under ENMS and 2500 pension claims
- 25000 claims every Financial year under ENMS and Pension combined.
- Approximately 20GB of document upload per financial year.
- Peak Load 250 claims in a day of 8hrs.

(ii) Coping with transaction volume growth

-Claims : Enough space in data files in auto-increment mode. Right now no requirement of archiving.

-To cater to peak load all the large transaction tables and views are indexed.

Accordingly SGA (System Global Area) of Oracle DB is configured for faster database response.

-Increasing maximum time-out, pooling of database connections,

-For balancing of load via load balancer ensures horizontal scalability and hosting of application and DB servers on different machines avoids the delay in context switching and providing faster response for user requests.

To be added by CIT- scalability, server sizing etc....

(iii) Time taken to process transactions,

Against 10 days required in legacy system it is completed automatically through system by click of a button.

(iv) Accuracy of output,

As calculations are done through system, the accuracy of the calculations is 100% due to various checks and balances built in the system.

(v) Number of delays in service delivery

Delay has been eliminated.

8. Service Delivery – Business/ Client Centricity (Give details about improvement in interaction with clients and outcome for clients, relevance of access points, Length and Breadth of services provided online etc. #)

Being internet based application, the application enables beneficiaries to apply for benefits online and they get updated on application status & also on claims status post submission.

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9. Citizen/ Client Centricity (Give specific details on the following#)

(i) Impact on effort, time and cost incurred by user,

Applicant is required to only fill in data which has variability. Most of service data is pre-populated.

(ii) Feedback/grievance redressal mechanism,

Site has provision to get feedback/ grievance redressal mechanism through emails.

(iii) Audit Trails,

Specific tables and columns available to record important transactions of insert/ update/ delete. Access logs maintained. Triggers made at database level to monitor and record any change in data from back-end or front-end.

(iv) Interactive platform for service delivery,

The application enables beneficiaries to apply for benefits online and they gets updated on application status & also on claims status post submission.

In ENMS module each webpage specifically gives instructions to the user for easy filling of forms and navigation to the next step in the process. In Addition to it graphical representation of complete process highlighting the current step of the user is being displayed for simple understanding of the user. Further content delivered to the user is simply based on the rights provided to him/her.

In Pension module the Top Menu bar is designed in the manner that it shows those links which are accessible to the user as per his/her rights and each tab of that has links in the order of the process needs to be, this makes the complete process self-explainable

If required, Map embedded for beneficiaries to get visual information of location of BHEL offices

(v) Stakeholder consultation

Select group of retired employees, policy making group and HR functionaries have been consulted for system design.

10. User convenience (Give specific details about the followings #)

(i) Service delivery channels (Web, email, SMS etc.)

Complete portal is Web enabled and accessible through internet with certain modules incorporating giving notifications through emails.

(ii) Completeness of information provided to the users,

Complete information and documents as listed down by functional user is made available to the user. The data at all the stages is available for users for viewing. However they may not be able to change as per the right provided to each category of user.

(iii) Accessibility (Time Window),

It is accessible on 24x7x 365 basis.

(iv) Distance required to travel to Access Points

Since the system is browser based and available on internet, the user needs to have an

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internet connection and browser. The mentioned access can be had through smart phones/laptop/tablets/computers.

(v) Facility for online/offline download and online submission of forms,

In case any of the mentioned access points in 10(iv) is not available to the user then the provision has been given to post the downloaded and filled in forms to the concerned BHEL Unit –HR. Further the sent form will be filled into the online portal by HR on the claimant's behalf.

(vi) status tracking

Use of Dash Board for steps completed and pending for submission of application/claims. The site provides status report for application/ claims submitted.

Current status of application can be viewed by both HR and Retired employees online anywhere anytime.

11. Innovation (Give details on how the usage of technology is exemplary, any use of new and emerging technology, impact on number of steps required, identification and removal of bottlenecks/ Irrelevant steps etc. #)

The complete manual process of needs claim/pension application has been re-engineered with the help of online system.

BHEL is only CPSE to introduce web based portal for processing of pension for retired employees on or after 01.01.2007 & claims for financial assistance towards emergency needs faced by employees who retired prior to 01.01.2007. Verification of beneficiaries through uploaded certificates, which eliminated requirement of physical presence of person, saved paper generation. BHEL offices pin-pointed on embedded Map on website for the ease of the user to find directions to their nearby unit office.

12. Defined and Achieved outcomes (Give details about extent of improvement in terms of organizational objectives, output targeted in the beginning of the project and output achieved, extent to which the project is able to reach/ fulfill the requirements of planned beneficiaries etc. #)

1. To enable retired employees' submit on-line claims under Pension and Emergency Needs Mitigation Scheme through internet
2. To enable centralized processing of claims by Unit HR deptt in respect of employees, who have retired from their Unit and also in respect of those of retired employees who retired from other units but are registered as RECHS beneficiaries with the Unit.
3. To generate reports for Unit wise claims for common & special emergency needs consolidated reports at Corporate level.
4. To create payment advice for release of payments to beneficiaries through NET banking
5. To provide authorization for download of relevant fields from the site by authorized Finance functionaries for remittances through NET banking.
6. On-line access to retired employees for submission of claims
7. Central application registration, processing and release of payments to beneficiaries.

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- 8. Capturing of correct / updated data in respect of beneficiaries at any given point of time.
- 9. Availability of realistic estimates of financial implications in case of any policy change

13. Sustainability (Give details about sustainability w.r.t. technology (technology used, user privacy, security of information shared- Digital Signature/ Encryption etc. #), Organization (hiring trained staff, training etc#), financial (Scope for revenue generation etc. #)

J2EE Platform used is an Open source platform which is sustainable and being a renowned Company providing established products Oracle application and database servers used don't tend to get obsolete in near future.

Each user is able to see the data meant for him/her as per the rights given to him/her.

The systems are password protected which are stored in encrypted form and no decryption done while logging on the contrary entered text encrypted and compared to stored encrypted password.

Organization gave the task to regular employees who are from IT background having development trainings time-to-time.

14. Adaptability Analysis

(i) Measures to ensure adaptability and scalability

Application Can be viewed in different computers using a web browser, with ease as presentation layer uses CSS along with HTML markup data and JAVASCRIPT for client side scripting. Oracle application server graphs gave the view of size and number of transactions along with concurrent users, response time and throughput. Database and

Application servers maintained separately which increases per application availability and prevent context switching. Load balancer ensures horizontal scaling at application server level. To cater to peak load all the large transaction tables and views are indexed.

Accordingly SGA (System Global Area) of Oracle DB is configured for faster database response. Configuring the server appropriately as per the load expected / received.

For balancing of load via load balancer ensures horizontal scalability and hosting of application and DB servers on different machines avoids the delay in context switching and providing faster response for user requests

(ii) Measures to ensure replicability

Load balancer used to provide the user with the same application hosted on two servers. Backup of DB and application server done on daily basis.

(iii) Restrictions, if any, in replication and or scalability

No

(iv) Risk Analysis

Analysis made based majorly on security threats which were mentioned and catered by our secure software guidelines.

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- 15. Comparative Analysis of earlier Vs new system with respect to the BPR, Change Management, Outcome/benefit, Change in legal system, rules and regulations**

1. Re-design of the process: ENMS

<u>Legacy process</u>	<u>Re-engineered process</u>
<ol style="list-style-type: none"> 1. Checking and sanitization of data by Unit HR regarding eligibility manually. The data here pertains to retired employees retired prior to 01.01.2007. This data is very old and the number of employees is large. 2. Manually checking the eligibility 3. Manual Record keeping 4. Filling of Applications – Sending application form in hard copy to Retired employees for filling, which in turn they would send back along with the Enclosures in paper form. 5. Checking and approving filled applications by hand by HR. 6. Record keeping for processed applications to ensure no duplicate forms are processed by the Unit 7. No fool proof checks to ensure that the individual does not claim from multiple units. 8. Sending the data to Corporate Office budgetary allocations 9. Compilation of this data of multiple units at Corporate Office for allocating budgetary provisions. 	<ol style="list-style-type: none"> 1. The data flows from SAP HR to the system directly. The data is checked as per the Scheme and the eligibility is shown by the system. Some of the details can be changed by Unit HR as per the intimation received from the employee. 2. The employees fill the application online and scan and upload the signed form along with the requisite enclosures and submit. 3. The Unit HR from its login checks the application and accepts or rejects the application. 4. The individual can check the status of his application online from his login. 5. The data is directly downloaded by Corporate Office for allocating budgetary provisions.

2. Re-design of the process: PENSION

<u>Legacy process</u>	<u>Re-engineered process</u>
<ol style="list-style-type: none"> 1. Checking and sanitization of data by Unit HR regarding eligibility and calculation of Pension corpus manually, which was liable to errors in calculations and interpretation of policy. 2. Manual Record keeping. 3. Filling of Applications – Sending application form in hard copy to Retired employees for filling, which in turn they would send back along with the Enclosures in paper form. 4. Checking and approving filled applications by hand by HR. 5. Record keeping for processed applications 	<ol style="list-style-type: none"> 1. The data flows from SAP HR to the system directly. The data is checked as per the Scheme and the eligibility is shown by the system. Some of the details can be changed by Unit HR as per the intimation received from the employee. 2. The employees fill the application online and submit. 3. The Unit HR from its login checks the application and accepts or rejects the application. 4. The individual can check the status of his application online from his login.

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<p>to ensure no duplicate forms are processed by the Unit</p> <p>6. No fool proof checks to ensure that the individual does not claim from multiple units.</p> <p>7. Sending the data to Corporate Office for remitting funds to Annuity Providers i.e. beneficiaries.</p> <p>8. Compilation of this data of multiple units at Corporate Office for allocating budgetary provisions.</p> <p>9. Checking / Communication of the status application by Unit HR and Applicants used to happen on personal basis. This step was cumbersome as the data had to come from Annuity providers and communicated to Units which in turn was intimated to Individuals. Any issue regarding start of pension took a lot of time and effort in coordinating with the Annuity Providers due to multiple points of processing at their end.</p>	<p>5. The data is directly downloaded by Corporate Office for transmission of funds to Annuity Providers.</p> <p>6. Status is updated in the system which can be accessed by Applicant/Unit HR at any point of time from any location.</p>
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16. Result Achieved/ Value Delivered to the beneficiary of the project-(share the results, matrices, key learning's, feedback and stakeholders statements that show a positive difference is being made etc):

(i) To organization

The organization has achieved the objective of being customer centric in extending the services without any delay and at desired accuracy level.

(ii) To citizen

Ease of submission of application & availability of updated status of claims has been provided.

(iii) Other stakeholders

Insurance companies are getting data in soft form leading to higher accuracy level, faster processing and saving of human efforts.

17. Extent to which the Objective of the Project is fulfilled-(benefit to the target audience i.e.G2G, G2C, G2B, G2E or any other, size and category of population/stakeholder benefited etc):

The CPSE has met the objective to provide its services to its retired employees and beneficiaries and application falls in G2E category

18. Other distinctive features/ accomplishments of the project:

1. One of its kinds in CPSEs.
2. Major SEO techniques used for website promotion.
3. Applicable clauses of GIGW are followed for Web Portal Development.