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## Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B2C</td>
<td>Business to Citizen</td>
</tr>
<tr>
<td>DBT</td>
<td>Direct Benefit Transfer</td>
</tr>
<tr>
<td>DeitY</td>
<td>Department of Electronics and Information Technology</td>
</tr>
<tr>
<td>DCC</td>
<td>Dashboard Client Connector</td>
</tr>
<tr>
<td>DSC</td>
<td>Dashboard Server Connector</td>
</tr>
<tr>
<td>eTaal</td>
<td>e-Transaction Aggregation and Analysis Layer</td>
</tr>
<tr>
<td>HTML</td>
<td>HyperText Markup Language</td>
</tr>
<tr>
<td>IE</td>
<td>Internet Explorer</td>
</tr>
<tr>
<td>IIS</td>
<td>Internet Information Services</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>MMP</td>
<td>Mission Mode Project</td>
</tr>
<tr>
<td>NeGP</td>
<td>National eGovernance Plan</td>
</tr>
<tr>
<td>NIC</td>
<td>National Informatics Centre</td>
</tr>
<tr>
<td>NOFN</td>
<td>National Optical Fibre Network</td>
</tr>
<tr>
<td>OS</td>
<td>Operating System</td>
</tr>
<tr>
<td>PDS</td>
<td>Public Distribution System</td>
</tr>
<tr>
<td>PHP</td>
<td>Hypertext Preprocessor</td>
</tr>
<tr>
<td>PMC</td>
<td>Project Management Committee</td>
</tr>
<tr>
<td>PNR</td>
<td>Passenger Name Record</td>
</tr>
<tr>
<td>RoR</td>
<td>Record of Right</td>
</tr>
<tr>
<td>RTI</td>
<td>Right To Information</td>
</tr>
<tr>
<td>SPMC</td>
<td>State Project Management Committee</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
<tr>
<td>URL</td>
<td>Uniform Resource Locator</td>
</tr>
<tr>
<td>UT</td>
<td>Union Territory</td>
</tr>
<tr>
<td>VAT</td>
<td>Value Added Tax</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
</tr>
<tr>
<td>WCF</td>
<td>Windows Communication Foundation</td>
</tr>
</tbody>
</table>
1. Introduction

All Ministries and Departments of Central and State/UT Governments have been implementing e-Governance projects for providing e-Services to citizens. An idea about the impact of e-Services can be obtained from the number of e-Transactions taking place under these applications implemented by various Government Ministries/Departments.

With this in mind, National Informatics Centre (NIC), Department of Electronics and Information Technology (DeitY) has developed eTaal application. It provides a consolidated view of e-Transactions taking place under various e-Governance applications implemented in Government including Mission Mode Projects (MMPs) under National eGovernance Plan (NeGP) based on the transaction count shared by them in a automated manner through the use of Web Services technology.

eTaal facilitates quick analysis of transaction data shared by various applications in tabular as well as graphical from enabling the user to drill down to the lowest possible level. It will also enable the user Ministry/Department to view the consolidated picture of e-Transaction statistics of various e-Governance projects across the country and to visualize the status of utilization of various e-Governance applications running across the country.

1.1 Purpose of the Document

The purpose of the document is to enable the user to identify e-Transactions, categorize various services and effectively use the application. The user may further view the e-Transaction count for various Central and State projects and MMPs as well as perform various analyses.

The document also aims at providing the users all the necessary information for registration of their respective services and integration of the data from those services with eTaal.

1.2 What is an e-Transaction

A transaction in delivering a public service which uses Information Technology (IT) while also satisfying the following four conditions:

i. Service is requested through electronic means (self-access or assisted access) including mobile devices;
ii. Workflow/approval process is electronic;
iii. Database is electronic/digitized;
iv. Service delivery is electronic.

in order to improve access, enhance transparency and reduce response time is termed as an e-Transaction.

1.3 Across the Counter Services

In several instances, the relevant information is proactively collected, digitised, verified and stored in digital repository and when the citizen requires the service, he/she can avail it immediately across the counter. Since, such cases fulfil all the pre-requisites of an e-Transaction, these can be considered as Across the Counter services.
1.4 List of Standard Services

A large number of services are being offered by various Ministries/ Departments/ Organizations at Central and State Governments. However, the name of a particular service may vary across the states. For example, the Record of Right (RoR) is known as Pahani, Khatauni, Patta etc. in different states. For ease of classification, grouping and presentation in a uniform manner, the services have been defined by NIC and DeitY as follows:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Standard Service</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Certificates</td>
<td>All type of statutory certificates issued by Government i.e. Caste Certificate, Income Certificate, Birth Certificate etc. come under this category.</td>
</tr>
<tr>
<td>2</td>
<td>Licenses and Permits</td>
<td>Services related to licenses &amp; permits like arm licenses, inner line permits, etc. come under this category.</td>
</tr>
<tr>
<td>3</td>
<td>Land Records</td>
<td>Services related to land registration come under this category.</td>
</tr>
<tr>
<td>4</td>
<td>Integrated Finance Management Services</td>
<td>Integrated Finance Management Services includes services related to finance management like treasuries.</td>
</tr>
<tr>
<td>5</td>
<td>Commercial Tax</td>
<td>It includes services like Dealers Registration, VAT Returns, payments etc.</td>
</tr>
<tr>
<td>6</td>
<td>Utility Services and Bill Payment</td>
<td>Utility services like electricity, gas, water, telephone etc. and their bill payment come under this category.</td>
</tr>
<tr>
<td>7</td>
<td>Social Welfare and Pension</td>
<td>It includes services like Sr. citizen, old age/widow pension, freedom fighter pension etc.</td>
</tr>
<tr>
<td>8</td>
<td>Transport</td>
<td>It includes services like Driving License Issue, Registration of Vehicle, Transfer of Ownership etc.</td>
</tr>
<tr>
<td>9</td>
<td>Education</td>
<td>Services like backward class scholarship, post metric scholarship etc. are covered.</td>
</tr>
<tr>
<td>10</td>
<td>Public Distribution System</td>
<td>It include services like Issue of Ration Card, Modification of details in Ration Card, etc.</td>
</tr>
<tr>
<td>11</td>
<td>Agriculture &amp; Allied</td>
<td>The services under this category are: Agriculture Market Information, Agricultural Advisory Service, Animal Disease Alert, etc.</td>
</tr>
<tr>
<td>12</td>
<td>Court and Judiciary</td>
<td>It includes services like cause list, case proceedings, certified copy of judgment/daily order, etc.</td>
</tr>
<tr>
<td>13</td>
<td>Election</td>
<td>This service includes Electoral Roll Creation etc.</td>
</tr>
<tr>
<td>14</td>
<td>Police</td>
<td>This includes services like FIR Lodged, Missing/ Lost persons, etc.</td>
</tr>
<tr>
<td>15</td>
<td>Personnel and Admin</td>
<td>This includes services like Employee Training, posting/transfer, ACR status monitoring, etc.</td>
</tr>
<tr>
<td>16</td>
<td>Grievance</td>
<td>This includes services like Grievances Received &amp; Redressed.</td>
</tr>
<tr>
<td>17</td>
<td>RTI</td>
<td>This group includes any e-transaction related to RTI Act.</td>
</tr>
<tr>
<td>18</td>
<td>Information Service</td>
<td>It provides data/knowledge/information on various services offered through dial.gov service, forms download, Govt. Programs and schemes etc.</td>
</tr>
<tr>
<td>19</td>
<td>Property Registration</td>
<td>Services related to registration of property acquired or transferred come under this category.</td>
</tr>
<tr>
<td>Sl.No.</td>
<td>Standard Service</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>20</td>
<td>Health</td>
<td>Services like Child Registration, Pregnant Women Registration, Patient Registration, etc. come under this category.</td>
</tr>
<tr>
<td>21</td>
<td>Rural Development</td>
<td>Services like Job Card Issued, Job Demanded and Job Provided under MGNREGA are included here.</td>
</tr>
<tr>
<td>22</td>
<td>Employment</td>
<td>This includes services related to registration of potential candidates/ unemployed youth etc.</td>
</tr>
<tr>
<td>23</td>
<td>e-Procurement</td>
<td>It includes services like No. of Bidders Enrolled, No. of Tenders Created, No. of Bids Received, etc.</td>
</tr>
<tr>
<td>24</td>
<td>State Specific Services</td>
<td>There are certain services that are specific to a particular state. Those services are not found in other state. Such services come under this group.</td>
</tr>
<tr>
<td>25</td>
<td>Other Services</td>
<td>Services which are not included in any of the above mentioned standard services are covered under this group.</td>
</tr>
</tbody>
</table>

### 1.5 List of Category of Services

Services being offered by various Ministries/ Departments / Organizations at Central and State Governments have been classified into four categories, namely:

a. **Category A** comprises:
   i. All statutory services
   ii. Payment of taxes by citizens (Income Tax/VAT etc)
   iii. Payment of subsidies/ Scholarships/ Social benefit transfers (DBT etc.)
   iv. Non-statutory services
   v. Services delivered under PDS/Rural development schemes

b. **Category B** comprises Utility Bill payments (Water bill, telephone bill, electricity bill, etc.)

c. **Category C** comprises other B2C Transactions (e.g. banking transactions, addition of mobile numbers in Do Not Call registry by Telecom service providers etc.)

d. **Category D** comprises:
   i. Information access from various e-Governance Portals/Websites
   ii. Down loading of forms
   iii. Enquiry (such as Passport Status, dial.gov.in service, result of an examination etc.)
2. How to Access the Dashboard

The portal may be accessed using the following URL:

http://etaal.gov.in

Following Home Page will be displayed:
3. Functionalities

Major functionalities incorporated in eTaal web portal are as follows:

1. e-Transaction view of Central / State Govt. Projects aggregated at various levels.
2. Viewing e-Transaction count on the basis of standard service.
3. e-Transaction view for MMPs aggregated at various levels.
4. Viewing e-Transaction count on the basis of Across the Counter Service.
6. Viewing e-Transaction count on the basis of category of services.
7. Drill-down feature to get detailed view of e-Transaction count.
8. Time line analysis of e-Transaction count across time-periods.
10. Service enrolment feature.


4. eTaal Home Page

Home Page

Menu Bar

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Home</td>
</tr>
<tr>
<td>2.</td>
<td>eTransactions View</td>
</tr>
<tr>
<td>3.</td>
<td>Analysis</td>
</tr>
<tr>
<td>4.</td>
<td>Downloads</td>
</tr>
<tr>
<td>5.</td>
<td>Admin Login</td>
</tr>
</tbody>
</table>

1. Home

This is the landing page of eTaal.

2. eTransactions View

It shows the eTransactions of various eServices under Central Govt./State Govt. and Mission Mode Projects.

3. Analysis

It shows the different type of graphical analysis on e-Transaction data.

4. Downloads

This section is relevant for the developers. The user can download the technical documents enabling him/her to create the client connector along with sample code in .Net and Java. However, the user may create the client connector using any other platform as well.

a) Sample web service in .Net

b) Sample web service in Java

5. Admin Login

Registered users can login to eTaal from here.
5. e-Transactions Menu Tab

5.1 Tabs

<table>
<thead>
<tr>
<th>Tab</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Govt. Projects</td>
<td>This tab enables the user to view e-Transaction count of all Central Govt. Projects.</td>
</tr>
<tr>
<td>State Govt. Projects</td>
<td>This tab enables the user to view e-Transaction count of State Govt. Projects.</td>
</tr>
<tr>
<td>Standard Services</td>
<td>This tab enables the user to view Standard Service wise e-Transaction counts.</td>
</tr>
<tr>
<td>Mission Mode Projects</td>
<td>This tab enables the user to view e-Transaction count of various MMPs.</td>
</tr>
<tr>
<td>Across The Counter</td>
<td>This tab enables user to view e-Transaction count of services delivered Across the counter.</td>
</tr>
<tr>
<td>NOFN</td>
<td>This tab enables user to view e-Transaction count of services delivered on National Optical Fibre Network (NOFN).</td>
</tr>
<tr>
<td>Categories</td>
<td>This tab enables the user to view Category-wise e-Transaction count.</td>
</tr>
</tbody>
</table>

5.2 Date Wise View

1. Select required tab from home page.

2. Type From-Date &To-Date in text box or select dates from calendar (by clicking on calendar icon).

3. Click submit button.
5.3 **Central Govt. Projects**

This tab enables the user to view e-Transaction data related to nationwide e-Governance projects.

- Same data can be viewed in bar chart and pie chart, by selecting Display Type in the drop-down list provided below the chart.
- e-Transaction data between two particular dates is filtered out and displayed by selecting the ‘From Date’ and ‘To Date’.
- Each service can be clicked to further drill-down for details.
Bar Chart View of Central Govt. Projects

Pie Chart View of Central Govt. Projects
5.3.1. Drilled-down Central Govt. Projects

Central Govt. Projects can be further drilled-down by clicking on service name. Following is drilled-down view of Health service.
### Hospital wise view of eHospital project

#### 5.4 State Govt. Projects

The ‘State Govt. Projects’ tab enables the user to view the e-Transactions count of eServices in various states. The table can further be drilled down to view the distribution of e-Transactions of Governance projects implemented in respective states segregated on the basis of Standard Service types.
- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
- Each state can be clicked to further drill-down for details.
### 5.4.1 Drilled-down State Govt. Projects (Standard Service Wise)

Each state can be drilled down to get transaction count of standard services. Following screenshot shows e-Transactions for the state of Haryana, as an example:

- Same data can be viewed in bar chart as well as pie chart, by selecting Display Type in the drop-down list provided below the chart.
- Each standard service can be clicked to further drill-down for details.
5.4.2 Drilled-down Standard Services under State Govt. Projects

Each state can be drilled down to get transaction count of standard services. Following screenshot shows e-Transactions for the state of Haryana, as an example:

- Same data can be viewed in bar chart as well as pie chart, by selecting Display Type in the drop-down list provided below the chart.
- Each standard service can be clicked to further drill-down for details.
5.5 **Standard Services**

This menu option displays consolidated count of e-Transaction for the Standard services. It shows consolidated e-Transactions count pertaining to both Central and State projects. The user can further drill down to see “State-Wise details of the selected Standard Service”. Following screenshot shows Standard Services.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the dropdown list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.

### 5.5.1 Drilled-down Standard Services

Standard Services can be drilled down to get the State view. Following screenshot shows Drilled-down Service Classification of the service ‘Land Record’.
Drilled-down Standard Services to show List of Land Record

Drilled-down Standard Services to show Other Services for various States
5.6 Mission Mode Projects (MMPs)

This menu item enables the user to view the e-Transactions count for various National, State and Integrated MMPs across the nation. Following screenshot shows transaction of Mission Mode Projects in tabular form.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
- It can be clicked to further drill-down for details.

5.6.1 Drilled-down Mission Mode Projects

Mission Mode Projects can be drilled down to get the status of MMPs across various states. Following screenshot shows drilled-down view of e-District MMP.
• Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
• We can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
5.7 Across the Counter Services

It includes services meeting the e-Transaction criteria or are assisted services delivered across the counter. Following screenshot shows the states providing across the counter services.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
- It can be clicked to further drill-down for details.
5.7.1 Drilled-down Across the Counter Services

Across the counter services can be drilled down to view services under particular state. Following screenshot shows services of Chandigarh.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
5.8 National Optical Fibre Network (NOFN)

It includes Services under National Optical Fiber Network (NOFN). It provides State wise, District wise, Block wise and services wise transaction count of e-Services. Following screenshot shows State wise transaction count:

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
- It can be clicked to further drill-down for details.
5.8.1 Drilled-down view of NOFN

User can drill down states providing e-Services through NOFN to view Block wise transactions.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
- The user can change time period for displaying data by changing From Date and To Date and clicking on Submit button.
- It can be clicked to further drill-down for details.
5.9 Categories of Services

Services are classified into four categories i.e. A, B, C and D:

1. **A**-Statutory and Non Statutory Services
2. **B**-Utility Bill payments
3. **C**-Business to Citizen (B2C) Services
4. **D**-Information Services

Following screenshot shows transaction of categories in tabular form.
5.9.1 Drilled-down Categories of Services

Categories of services can be drilled down to view services under the particular category. Following screenshot shows Drilled-down view of the services under category ‘B’.

- Same data can be viewed in bar chart as well as pie chart, by selecting Display-type in the drop-down list provided below the chart.
5.10 Other Graphical Views

**Pie Chart:** Following screenshot showstransactions (Sate Govt. Projects) in Pie Chart form.

- Each 3D Pie piece depicts states identified by different color.
- Size of each Pie Piece shows total e-Transactions recorded in that State, as compared to the total number of e-Transactions recorded for all the states during the period specified by user.
- Each Pie Piece can be clicked to further drill-down for details.
Drilled-down Pie Chart of Services of Transport under Haryana

**Bar Chart:** Following screenshot illustrates the graphical representation of e-transaction count for State Govt. Projects in Bar Chart form.

- Each 3D column bar depicts states identified by different color.
- Height of each column bar shows total transactions occurred in that State, during the period specified by user.
- Each state can be clicked to further drill-down for details.
Drilled-down Bar chart of Standard Services of Haryana

Drilled-down Bar Chart of Transport Services under Haryana
## 6 Analytical Charts

### 6.1 Time-line Analysis

This option enables the user to view the e-Transactions count over a period of time. Following screenshot shows details of e-Transactions in tabular form.

- This table can be further viewed in detail by drilling down as:
  - Months of particular year.
  - Weeks of a particular month.
  - Services in selected week of a particular month of a particular year.

- Same data can be viewed in bar chart and pie chart, by selecting Display-type in the drop-down list provided below the chart.
Drilled-down Time-line Analysis to view Monthly Transactions

Drilled-down Time-line Analysis to view Weekly Transactions
Drilled-down Time-line Analysis to view Standard Service Wise Transactions

6.2 Comparative Analysis

This menu item enables the user to perform an analysis of the variation in e-Transaction count over a period of time e.g. number of e-Transactions in the current year as compared to the number of e-Transactions recorded in a selected year. Or comparison between number of e-transactions recorded in a particular month this year with respect to the number of e-Transactions recorded in the specified year for the same month.

The above graph shows the variation in e-Transactions recorded over months of the year 2013.

The user may perform an analysis of number of e-Transactions recorded between two different years (Month Wise) by selecting the years amongst which the comparison is to be made through the drop down lists.
6.3 Line Chart Analysis

User can perform Year Wise, State Wise and Service Wise analysis of no. of e-Transactions by selecting desired year from the drop down list. Following screenshot shows the State Wise analysis for the year 2013.
6.4 Analysis of Services

User can perform Service Wise analysis of no. of e-Transactions by selecting desired year from the drop down list. Following screenshot shows the Service Wise analysis for the year 2013 in the form of bubbles.
6.5 % Share of Services

User can perform Service Wise analysis of no. of e-Transactions in terms of percentage by selecting desired year from the drop down list. Following screenshot shows the Service Wise analysis for the year 2013 in the form of bubbles.
7. Service Enrolment

Service Enrolment is reserved for administrator for approving the Project entry, Service entry and Enrolment of web services by owner of the project. This option could be invoked only after login through Admin Login.

7.1 Project Entry

Entry of the project is done by the owner of the project. The owner needs to specify the Project name along with the person who has requested for the entry of it. Screenshot of the project entry page is shown below:

Once all the details of the person along with the Project name are entered, it can be saved by clicking on the Save Button. Complete list of the projects can be viewed by clicking on the 'Show List' Button. Clear Button is used to clear the details already entered in the current screen. The Approve Button is used to approve the list and save it permanently in the database.
7.2  Service Entry

Entry of service is done by the owner of the project. He/she needs to specify the Service name along with the person who has requested for the creation of it. Screenshot of the service creation page is shown below:

Service creation consists of two sub-sections:

1. ‘Service Reported By and Service Details’ Section: In this section, details of the person who is reporting the service is entered. The name, designation, contact no. and email id is captured.
   Also, details of services are entered in following format:
   a. Select Project, Category (A,B,C,D), Major Service (Standard Service), Minor Service (Sub Standard Service).
   b. Enter local name of service to be added and brief description of the service.
   c. Check whether the service is across counter or mission mode project.

2. ‘e-Transaction Benchmark’ Section: All the benchmark are required to be fulfilled by the e-Service to participate in eTaal which are as follows:
   a. Service is requested through electronic means including mobile devices.
   b. Workflow/approval process is electronic.
   c. Database is electronic/digitized.
   d. Service delivery is electronic.
7.3 Enrolment

Web service can be registered by owner of the project. He/she needs to register the Web Service along with the details. This module is smart enough to identify and verify the correctness of the input parameter and output parameter.

Data exchange in eTaal is based on web service. This page is used to add new web services/URLs in following steps:

1. Select type of web service: There are three types of web services:
   i. Web Reference: It includes only .asmx type web services.
   ii. Web URL: It includes .php and java type web services.
   iii. WCF Reference: It includes only .svc type web services.

   Select the desired type of web service. Also select whether it is state project or central project or others.

   Let us take an example of ‘web referenced based’ service of state ‘Mizoram’. Details of service are:
   URL: http://web4.kar.nic.in/mizoramnesd/Service1.asmx
   UserId: vatmizoram
   Password :abc%YZ$4442

   Select Add web reference and state as shown in above screenshot.
2. Select State and Project Name. Here the state is ‘Mizoram’ and project is ‘VATSoft-Mizoram’.

3. Enter ‘Web Service Name’. The web service name should be ‘Name of the class used in web service’.

4. Enter URL of application and select pulling frequency. Then click on ‘Invoke Service’ button.
5. System will automatically show all the available methods under selected web service. Here two methods are available i.e. getStatistics and getStatisticsDS.

6. Select the desired method name. System will automatically show all the input parameters available under that selected web method. At the same time, it shows ‘Return type’ of the method.
In this service the desired method is `getStatisticsDS`. It shows three parameters i.e. date, username and password. It also shows Return type which is DataSet in this example.

7. It provides Test Area which accepts the value of the input parameter.

8. After inserting value of parameters and clicking on Get Data button we get the output.

9. Click on ‘Register web service’ button to save the web service in eTaal application.

Once the entire process as stated above is complete, the service is ready for integration with eTaal. Before integration, the e-Service is subject to validation and approval by the National Level Project Management Committee (PMC). Similar Committees exist at the level of States and UTs.
# 8. Technical Specifications of eTaal

<table>
<thead>
<tr>
<th>Technical Specifications</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology</strong></td>
<td>Microsoft Technologies with WCF</td>
</tr>
<tr>
<td><strong>Browser Supported</strong></td>
<td>IE 7.0 or above, Mozilla Firefox 3.6 or above, Chrome 15.0 or above</td>
</tr>
<tr>
<td><strong>Reporting</strong></td>
<td>HTML Reporting</td>
</tr>
<tr>
<td><strong>Minimum System Specification for running eTaal</strong></td>
<td>Any OS having any browser with internet</td>
</tr>
<tr>
<td><strong>Unicode Compliant</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Concurrent Access</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>
9. Architecture

eTaal is broadly categorized into following three components:

1. **Dashboard Server Connector (DSC)**

   Dashboard Server Connector (DSC) runs as a service on Central Server and acts as watchdog to pull the e-Transaction count from various servers located at State and Centre.

2. **Dashboard Client Connector (DCC)**

   Dashboard Client Connector (DCC) runs as a service on the Servers which are providing the e-Transaction count details.

3. **eTaal Portal**

   eTaal Portal is a web portal to give view of dashboard.

**Architecture of eTaal**

In the architecture of eTaal drawn above, one DSC and multiple DCCs exists. One DCC is for each application.
10. Guidelines

This section provides guidelines for application administrator / developer to create Client Connector and deploy on their servers.

10.1 Prerequisites for participation in eTaal

1. Server on which the data that needs to be integrated with eTaal resides must be on Internet.
2. The application whose data needs to be integrated with eTaal may be on any operating environment (Windows/Linux; SQL Server/Oracle/MySQL/PostGreSQL; .Net /Java/PHP etc.)

10.2 Steps for creation of Client Connector

Client Connector may be Web Service, WCF service or URL based data sharing application. Client Connector may be written in any language(C#, VB.Net, Java, PHP etc.). Creation of Client Connector will consist of following steps:

1. Creation of Web Service or WCF service or URL based data sharing application
2. Creation of ‘Stored Procedure’ in the database which will give count of e-Transaction to web connector
3. Writing of the code to access stored procedure created to get the e-Transaction count.

10.3 Specifications of Client Connector

The specifications of Client Connector are given below:

Web Method Name: e-TransactionCount

Input Parameters: The web method created for the purpose will have following parameters:
S.No. | Parameter Name   | Format     | Example     
-----|-----------------|------------|-------------
1    | Transaction Date | DD/MM/YYYY | 23/11/2012  
2    | User Name       | String     | Deity       
3    | Password        | String     | xYz#$36F    

**Response Type:** The web method will return either XML or dataset.

**Format of XML:**

```xml
<?xml version="1.0" encoding="utf-8" ?>
<eTaal_State>
  <response ServiceCode="A001102200002" Count="23" LocationCode="08"/>
  <response ServiceCode="C00810480004" Count="56" LocationCode="09" />
  <response ServiceCode="B005104200005" Count="92" LocationCode="13" />
  <response ServiceCode="A016105900007" Count="31" LocationCode="31" />
</eTaal_State>
```

**Format of dataset:**

This will have following set of data: ServiceCode, ServiceCount, LocationCode

**Error Code Returned by Service**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Error Code</th>
<th>Error Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-1</td>
<td>Transaction Date parameter is missing</td>
</tr>
<tr>
<td>2</td>
<td>-2</td>
<td>Wrong credentials</td>
</tr>
<tr>
<td>3</td>
<td>-3</td>
<td>Data is not available on this date</td>
</tr>
</tbody>
</table>

**Format of XML having Error Code:**

```xml
<?xml version="1.0" encoding="utf-8" ?>
<eTaal>
  <response ServiceCode="-1" Count="-1" />
</eTaal>
```

**10.4 Development and hosting environment**

1. Client Connector can be created in any of the programming language i.e. Java, C#, VB.Net, PHP etc.
2. It can be hosted on any web server i.e. IIS, Apache Tomcat etc.
10.5 Post deployment steps

1. The port on which the service is running is required to be opened for eTaal Server Connector.
2. Share the URL of Web Service with UserName and Password to eTaal Administrator.

10.6 Data pulling mechanism and assumptions

Enrolment of web service by user

1. Web service is created by user and hosted on server where project (State/Central) related data resides.
2. Port opening request is made to provide communication between servers (i.e. from Project server to eTaal server).
3. Enrolment of web service is done from enrolment page (in Admin Corner) of eTaal.

eTaal Process of data pulling from a project

1. Port opening request is made to provide communication between servers (i.e. from eTaal server to the project server).
2. Approval of registration by Project Management Committee (PMC).
3. eTaal fetches data on daily basis by invoking web service with current date as parameter and following data is obtained:
   a. List of services provided by project on given date.
   b. Transaction count.
   c. Date of transaction.
   d. Location Code as per census (if any).
4. The Process of invoking web service is done as per schedule determined by the user during enrolment and data is updated (in case of zero transaction of service, no data is updated) in eTaal.
5. For projects having irregular data updating services, web service is invoked by eTaal, it will check for last update (date/time) and pull data from that date.
6. Reconciliation of data between eTaal and project server to be combined once a week.

Assumptions

1. The web service could be hosted on live server or on intermediate server, as defined during enrolment.
2. Data updated on the project server is accumulative during the day and is reset to zero at 00:00 hrs.
10.7 Sample Codes

Sample Code in .Net

**Interface**

```csharp
[ServiceContract]
public interface IEtalService
{
    [OperationContract]
    [FaultContract(typeof(InvalidCodeFault))]
    int eTransactionCount(DateTime TransactionDate, string UserName, string Password);
}
```

**Implementation of Interface**

```csharp
public class eTalService : IEtalService
{
    #region Call StoreProcedure and Fetch Transaction
    public DataSet eTransactionCount(DateTime TransactionDate, string UserName, string Password)
    {
        try
        {
            var parms = new SqlParameter[3];
            parms[0] = new SqlParameter("@TransactionDate ", TransactionDate);
            parms[1] = new SqlParameter("@UserName", UserName);
            parms[2] = new SqlParameter("@Password", Password);
            return SqlHelper.ExecuteDataset(ConnectionString, CommandType.StoredProcedure, "SP_eTransactionCount", parms);
        }
        catch (Exception ex)
        {
        }
    }
    #endregion
}
```
Sample Code in Java

```java
package in.nic.exchange.action;
import in.nic.exchange.db.DBCONNECTION;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.text.SimpleDateFormat;
import java.util.ArrayList;
import java.util.Date;
import java.util.HashMap;

public class ExchangeWebService {

public ArrayList< HashMap<String, Float>> countRegistrationsActivityWise(Date date) {
    Connection con = null;
    PreparedStatement pstmt = null;
    ResultSet rs = null;
    System.out.println("date = " + date);
    String query = "select name, sum(transactions) as total_trns from refactivity ra left join";
    SimpleDateFormat formatter = new SimpleDateFormat("yyyy-MM-dd");
    String d = formatter.format(date);
    ArrayList< HashMap<String, Float>> result = new ArrayList< HashMap<String, Float>>() ;
    HashMap<String, Float> map = null;
    try {
        con = DBCONNECTION.getConnection();
        pstmt = con.prepareStatement(query,
                        ResultSet.TYPE_SCROLL_INSENSITIVE, ResultSet.CONCUR_UPDATABLE);
        pstmt.setString(1, d);
        rs = pstmt.executeQuery(query);
        System.out.println("query = " + query);
        while(rs.next()) {
            map = new HashMap<String, Float>();
            map.put(rs.getString("name"), rs.getFloat("total_trns"));
            result.add(map);
        }
    } catch(SQLException sql) {
        sql.printStackTrace();
    } catch(Exception e) {
        e.printStackTrace();
    } finally {
        try {
            rs.close();
            pstmt.close();
            con.close();
        } catch (SQLException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
    }
}
```
```java
private void processTransactionMap() {
    map = new HashMap<String, Float>();
    map.put(rs.getString("name"), rs.getFloat("total_trns"));
    result.add(map);
} catch (SQLException sqle) {
    sqle.printStackTrace();
} catch (Exception e) {
    e.printStackTrace();
} finally {
    try {
        rs.close();
        pstmt.close();
        con.close();
    } catch (SQLException e) {
        // TODO Auto-generated catch block
e.printStackTrace();
    }
}

return null;
}

public float countRegistrations(Date date) {
    Connection con = null;
    Statement stmt = null;
    ResultSet rs = null;
    System.out.println("date = " + date);
    String query = "select sum(transactions) as trns from dashboard where trndate='" + date + "';";
    SimpleDateFormat formatter = new SimpleDateFormat("yyyy-MM-dd");
    String d = formatter.format(date);
    System.out.println("date = " + d);
    try {
        con = DBConnection.getConnection("", ");
        stmt = con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE, ResultSet.CONCUR_UPDATABLE);
        query += d + "'");
        rs = stmt.executeQuery(query);
        System.out.println("query = " + query);
        if (rs.next()) {
            return rs.getFloat("trns");
        } else {
            return 0;
        }
    } catch (SQLException sqle) {
        sqle.printStackTrace();
    } catch (Exception e) {
        e.printStackTrace();
    } finally {
        try {
            rs.close();
            stmt.close();
            con.close();
        } catch (SQLException e) {
            // TODO Auto-generated catch block
            e.printStackTrace();
        }
    }
    return 0;
}
```
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