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Industrial Registry Software Development

Sri Lanka IP Industrial Statistics Subcomponent

Department of Census and Statistics

Final Report

By

Centre for Enterprise Management Information Services

Department of Industrial Management

University of Kelaniya

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1.   Background

To strengthen industrial statistics operations in Sri Lanka, UNIDO commenced working with the Ministry of Industrial Development (MOID), Department of Census and Statistics (DCS), Board of Investment (BOI) and the Central Bank of Sri Lanka (CBSL), all of which have substantial industrial statistics operations. UNIDO was assisting these four organizations to pool their efforts in a way that will result in dramatic improvements in their overall results. An important component of this assistance is a pilot exercise to update the industrial registry. DCS will have the lead role in this registry updating exercise.

A team from the Center for Enterprise Management Information Services (CEMIS), Department of Industrial Management, University of Kelaniya, Sri Lanka, was requested to submit a proposal for the design and development of this registry. Based on the proposal, CEMIS was tasked with the project in February 2002.

2. Introduction

The industrial sector has been driving the growth of the Sri Lankan economy over the past two decades. Globalisation, which has led to the breaking down of tariff and non-tariff barriers, has meant that government policy has to keep up with the rapidly evolving changes in the market. Hence, statistical information on performance of industries has become vital if policy makers are to make timely informed decisions to facilitate the development of the local industries. One of the obstacles to realize this objective in Sri Lanka is the lack of both an up-to-date registry of factories and of a standard procedure for annual updating.

Industrial statistical data is collected in Sri Lanka by four sources: namely Central Bank, Board of Investment, Ministry of Industrial Development and the Department of Census and Statistics (DCS). They conduct separate surveys to collect this data. However, the success rate of these surveys has varied and in most cases the information found to be divergent. UNIDO assist these four organizations to pool their efforts in a way that would result in dramatic improvements in their overall results. An important component of this assistance is a pilot exercise to update the industrial registry in the Western Province of Sri Lanka. DCS played the lead role in this registry updating exercise and the software for DCS Registry System is developed by the Center for Enterprise Management Information Service (CEMIS) in Sri Lanka

3. DCS Registry System

The initial plan was to develop the registry system based on a model developed for the Central Bureau of Statistics in Indonesia in early 1991, since their was no procedure for monitoring existing enterprises in Sri Lanka. However after the system requirement analysis and subsequent discussion with the UNIDO consultant and senior staff at DCS, it was clear the system developed in Indonesia was inadequate and lacked features that could automate some tedious data manipulation operations.

Hence, though this would involve a radical change to the original system that was planned for at the time of agreement, entailing a substantial increase in design and development time, CEMIS agreed to incorporate them.

The developed system consists of two major components:

a) Registry support software to provide management information

b) A list processing module to assist in the use of information on industrial establishments obtained from various sources

Key Modules

a) Import Module[1]

The import module was developed to obtain initial data for the new system from five sources: the DCS old registry, BOI, MOID, EPF, and CEB. The structures of the five data sources were different and therefore, five separate modules were developed to import data to a Microsoft Access database. As the data files were prepared, some source data file specifications were modified from the original specifications.

b) Parsing Module

Five modules for each source were developed to arrange data into common format to facilitate matching. Parsed data of each source were stored in a separate table that had some common fields for all the sources. Initially the program was developed in such a way to have DSD codes for all the records before the record could be saved but however this policy was changed during implementation as it was found that the data at the different sources were incomplete.

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[1] See Appendix I for list of all modules developed

c) Editing Module

A separate editing module was developed to correct the data errors found at the parsing stage. Three digit editing code was used by editors to identify the different types of errors. The module supports the review of result of parsing and editing by browsing the data.

d) Manual Entry of Matches Module

Manual matching module was developed to enter manually matched records to the matched table in the system. This module is used to evaluate the computerized matching and for reviewing doubtful cases.

e) Matching module

List processing will be done in the system by matching two strings. One generated from the Registry Support System and the other one from the external database sources, namely BOI, CEB, MOID, and CBSL. The generated string will be converted to upper case and will trim and remove blank spaces in between to 'clean' the data. This generated sting will be used for establishment matching. This process will improve the performance of the matching process compared to field-by-field matching in tables.

The initial prototype was developed to give users a facility to select matching of records by word or matching of records through characters. The module facilitated the selection of source to be matched with target tables and the results were displayed on the screen with all targets combined.

However, it was found the prototype matching module developed using the word and character matching technique flagged only the perfect match. Therefore, the system needed to be improved to catch partial matching, and the matching module was modified using the use of bigrams. This new module facilitated the selection of different matching criteria as well as the number of matching records to be displayed with a given minimum level of rating. Matching process would generate a point scale rating between 100 (everything matched) and 0 (nothing matched) to illustrate the closeness of the match.

The module was designed to carry out the matching in the following order. The DCS registry is first matched with MOID, BOI, EPF, and CEB databases. Subsequently, MOID

is matched with BOI, EPF and CEB databases. Then BOI is matched with EPF and CEB databases and finally EPF is matched with the CEB database.

All the matches between records are displayed on the screen and the operator needs to visually check for the correctness and then matching can be recorded in the match table. The match table is capable of recognising all the matching records of different sources. The zooming facility was given in the module to show all the common fields for a selected record if the operator wants more information to decide the match. To facilitate reference of problematic cases to a supervisor, a printing module was also developed to enable the operator to print the common field for a selected record from selected sources.

4. DCS Registry System Development

The DCS Registry System development project commenced in February 2002 with the starting of the systems design phase. As specified previously, it was intimated that the UNIDO developed system for the Central Bureau of Statistics in Indonesia in early 1991, would be used as the reference frame for the DCS Registry System development. It must be reiterated once again that, that except for a few system features that were incorporated, the design and development of DCS Registry System has been unique and the new features that have been included makes the system very easy and efficient to use.

From the very beginning of the project it was obvious that there were going to be serious deviations from the original design and hence a continuous dialogue with the end users and the UNIDO consultant was kept up. A number of different prototypes / systems were demonstrated and discussed at these meetings. The DCS Registry System's functions and features were presented and explained, and input obtained from DCS staff. Due to the innovative nature that the system was taking, there were changes being made to the database design on a regular basis, making the development work rather tedious and led to some overruns of the schedule. However, it was agreed by the end users that the extra time put into the improvements, made the system a much better product.

The system can be installed on a PC based Local area network running Windows NT/2000 and developed with multi-user capabilities. MS-Access is used as the back end of the database.

Visual Basic 6.0 is used as the GUI interface and Crystal reports 8.0 with SQL facility is used to generate management reports.

Taking into account the computer literacy of the probable end users an user friendly graphical user interface was developed. Users with minimum training would be able to use the system. The system comes with an in-built backup facility and systems maintenance features. The system also has a multi-level user names and password protection so that some of the important functions / features could be restricted to privileged users. Because the data contained in the registry, may be used by other software applications, the standard field and table naming conventions scheme was used. The variable naming / file naming scheme was developed after consultation with DCS and UNIDO[2].

The system was initially installed at the national office of the Department of Census and Statistics for both registry maintenance and list processing. The developed system was successfully used to process the data of the pilot registry development project of the Western Province of Sri Lanka.

5. Conclusion

The first version of the DCS Registry System was developed and demonstrated to the Ministry of Enterprise Development, Industrial Policy and Investment Promotion on the 2nd of March 2003. The final version was installed and commissioned in May 2003. The system was put to official use by the DCS when completing the registry update census of the Western Province in Sri Lanka..

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[2] See Appendix II for database designs

Appendix I

Outline of Sub-modules for DCS Registry System

Module		Functions
Import-parsing		
	Import	Access source data
	Parsing	Five submodules for each source: Old DCS, MoID, BoI, CEB, EPF.
	Editing	Browsing function, with sorting by DS and alphabetical name.
Matching		
	Manual entry of matches	Enables DCS to enter matches manually identified, organized by DS.
	List processing for sources	Batched by DS. Uses bigrams for establishment name.
	Printing of suspect matches	Enable DCS to get hard copy of suspect matching
	Browse matches	Would show five-way matches, keyed to the source selected by operator, sequenced by DS & name. Would allow operator to zoom on match details and undo a match.
	Reports	MIS symmetrical results (5 reports) MIS nonsymmetrical results (30 Reports)
RMES		
	Core registry	Creation of the core registry
	RMES Selection	Selecting the results of Matching with External Sources
	RMES editing	Editing the results of Matching with External Sources
	RMES labels	Printing identification labels to be pasted on each DI-2 questionnaire. .
	Reports	1. Total number of establishments available for selection in each category, without duplication 2. Total number of selected establishments in each category
DI-2		
	Data entry	For entering data from DI-2 questionnaire for RMES sample.
	Browsing	Browsing for qualifying and non-qualifying candidates, sorted by DS & name. Allows operator to enter a record for data correction and editing, including to correct finding of whether candidate qualifies for registry.
DI-2		
	Finalize addition to directory	Assign EIN's to successful candidates.
	Reports	A table showing success rate and reasons for failure for each of the 15 subgroups in the RMES sample.
Registry Management		
	Browse & edit registry	Browse by DS, name, & activity status. Allows operator to edit registry data, add establishments.

Appendix II

Database Structures

a) New Registry

Field Name	Type	Length	Description	Acquisition	Source RMES	Legacy
EIN	Numeric	8	Establishment Identification No (See Page2)	Computed	Computed	Computed
NAME_ESTAB	Text	60	Name of the Establishment (ex suffix)	DI-2 or conversion	RMES	Old DCS
NAME_ESTAB_SUF	Text	10	Name of the Establishment (suffix)	DI-2 or conversion	RMES	Old DCS
NAME_OWNER	Text	60	Name of the owner	DI-2 or conversion	RMES	Old DCS
NAME_CONTACT	Text	60	Name of the contact person	DI-2 or AS02	RMES	Old DCS
NAME_POSITION	Text	30	Position of the Contact person	DI-2 or AS02	RMES	Old DCS
TEL_EST_PREF	Numeric	3	Prefix to tel No. (for the Establishment)	DI-2 or conversion	RMES	Old DCS
TEL_EST	Numeric	6	Telephone . No (for the Establishment)	DI-2 or conversion	RMES	Old DCS
TEL_EST2_PREF	Numeric	3	Prefix to tel No. (for the Establishment)	DI-2 or conversion	RMES	Old DCS
TEL_EST2	Numeric	6	Telephone . No (for the Establishment)	DI-2 or conversion	RMES	Old DCS
TEL_CONTACT_PREF	Numeric	3	Prefix to Tel No (for the Contact Person)	DI-2 or AS02	RMES	Old DCS
TEL_CONTACT	Numeric	6	Telephone . No (for the Contact Person)	DI-2 or AS02	RMES	Old DCS
TEL_HO_PREF	Numeric	3	Prefix to tel No. (for the head office)	DI-2	RMES	AS02
TEL_HO	Numeric	6	Telephone . No (for the head office)	DI-2	RMES	AS02
TEL_HO2_PREF	Numeric	3	Prefix to tel No. (for the head office)	DI-2	RMES	AS02
TEL_HO2	Numeric	6	Telephone . No (for the head office)	DI-2	RMES	AS02
FAX_EST_PREF	Numeric	3	Prefix to Fax No. (for the Establishment)	DI-2 or conversion	RMES	AS02
FAX_EST	Numeric	6	Fax No. (for the Establishment)	DI-2 or conversion	RMES	AS02
FAX_CONTACT_PREF	Numeric	3	Prefix to fax No. (for the Contact Person)	DI-2 or AS02	RMES	Old DCS
FAX_CONTACT	Numeric	6	Fax No. (for the Contact Person)	DI-2 or AS02	RMES	Old DCS
FAX_HO_PREF	Numeric	3	Prefix to fax (for the head office)	DI-2	RMES	AS02
FAX_HO	Numeric	6	Fax No (for the head office)	DI-2	RMES	AS02
EMAIL_EST	Text	10	E-mail Address (for the Establishment)	DI-2	RMES	AS02
EMAIL_CONTACT	Text	10	E-mail Address (for the Contact Person)	ASI	RMES	AS02
ADD_LO_FLOOR	Text	2	Location Address : Floor No.	DI-2 or manual parsing	RMES	Old DCS

ADD_LO_ASSESMENT	Text	8	Location Address : Assessment No.	DI-2 or manual parsing	RMES	Old DCS
ADD_LO_OTHER	Text	20	Location Address : Other	DI-2 or conversion	RMES	Old DCS
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	DI-2 or conversion	RMES	Old DCS
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	DI-2 or manual parsing	RMES	Old DCS
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	DI-2 or manual parsing	RMES	Old DCS
ADD_LO_CITY	Text	30	Location Address : City/Town name	DI-2 or manual parsing	RMES	Old DCS
ADD_LO_POSTCODE	Text	5	Location Address : Postal Code	DI-2 or manual parsing	RMES	Old DCS
NAME_HO	text	55	Edited name of estab without suffix	DI-2 or manual parsing	RMES	AS02
NAME_HO_SUF	text	15	Edited name of estab: suffix	DI-2 or manual parsing	RMES	AS02
ADD_HO_FLOOR	Text	2	Head Office Address : Floor No.	DI-2 or AS02	RMES	AS02
ADD_HO_ASSESMENT	Text	8	Head Office Address : Assessment No.	DI-2 or AS02	RMES	AS02
ADD_HO_OTHER	Text	20	Head Office Address : Other	DI-2 or AS02	RMES	AS02
ADD_HO_STREET_NAME	Text	60	Head Office Address : Street Name	DI-2 or AS02	RMES	AS02
ADD_HO_BUILD_NAME	Text	20	Head Office Address : Building Name	DI-2 or AS02	RMES	AS02
ADD_HO_VILLAGE_WARD	Text	30	Head Office Address : Village/Ward Name	DI-2 or AS02	RMES	AS02
ADD_HO_CITY	Text	30	Head Office Address : City/Town name	DI-2 or AS02	RMES	AS02
ADD_HO_POSTCODE	Text	5	Head Office Address : Postal Code	DI-2 or AS02	RMES	AS02
DISTRICT	Numeric	2	District Code location	DI-2 or conversion	RMES	Old DCS
DSD	Numeric	2	Divisional secretariat Code location	DI-2 or conversion	RMES	Old DCS
MC/UC	Numeric	2	Muncipal council code	DI-2 or conversion	RMES	Old DCS
GND	Numeric	4	G.N.Division location	DI-2 or AS02	RMES	AS02
INDUSTRIAL ESTATE	Numeric	2	Code for location in an indiustrial estate	DI-2 or AS02	RMES	AS02
OWNERSHIP	Numeric	1	Form of the Ownership	AS02	AS02	AS02
REGISTRATION	Text	9	Places of Registration(Multiple)	DI-2	RMES	?
EMPLOYEES	Numeric	4	No of Employees	DI-2 or AS02	RMES	Old DCS
DATE_DIS	Date	8	Date of Discovery	DI-2	RMES	Legacy
YEAR_OPERATION	Numeric	4	Year of started commercial production	DI-2 or AS02	RMES	Old DCS
MON_OPERATION	Numeric	2	Month of started commercial production	DI-2 or AS02	RMES	
CURRENT_STATUS	Numeric	1	Code of Current Status	DI-2 or manual	RMES	Active
EST_TYPE	Numeric	1	Establishment Type	AS02	AS02	Old DCS
CURRENT_ISIC	Numeric	4	Description of activity (may differ from orig. ISIC)	AS02	AS02	Old DCS
ENTRY_PATH	Numeric	1	Code	Computed	RMES	Old DCS
REMARKS	Text	60	Special Notes if any	Manual	RMES	None

b) Old DCS Registry

Field Name	Type	Length	Description	Acquisition
DISTRICT	Numeric	2	District Code (1 - 25)	Original source file
PROVINCE	Numeric	1	Province Code (1 - 9)	Original source file
DSD_ASI	Numeric	2	DSD code	Copy from AS00 data
MC_UC_ASI	Numeric	2	MC/UC code	Copy from AS00 data
YEAR_OPERATION	Numeric	4	Year establishment began operation	Copy from AS00 data
IDNUMBER	Numeric	9	ID number; reference No of the Establishment	Original source file
PERSON	text	30	Name of the Contact Person	Original source file
NAME	text	60	Name of the Establishment	Original source file
ADDRESS1	text	35	Address1 of the Location	Original source file
ADDRESS2	text	40	Address2 of the Location	Original source file
ADDRESS3	text	40	Address3 of the Location	Original source file
SIZE	text	1	Size class of the Establishment (A,.....F)	Original source file
ISIC	Numeric	4	Industrial Classification of the Production (In 4 Digits)	Original source file
ISIC2	Numeric	3	Industrial Classification of the Production (In 3 Digits)	Original source file
ASRESP01	text	1	Availability of response from 2001 AS	Copy from AS data
ASRESP00	text	1	Availability of response from 2000 AS	Copy from AS data
ASRESP99	text	1	Availability of response from 1999 AS	Copy from AS data
ASRESP98	text	1	Availability of response from 1998 AS	Copy from AS data
ASRESP97	text	1	Availability of response from 1997 AS	Copy from AS data
ASRESP96	text	1	Availability of response from 1996 AS	Copy from AS data
ASRESP95	text	1	Availability of response from 1995 AS	Copy from AS data
ASRESP94	text	1	Availability of response from 1994 AS	Copy from AS data
ASRESP93	text	1	Availability of response from 1993 AS	Copy from AS data
ASRESP92	text	1	Availability of response from 1992 AS	Copy from AS data
ASRESP91	text	1	Availability of response from 1991 AS	Copy from AS data
ASRESP90	text	1	Availability of response from 1990 AS	Copy from AS data
ASRESP89	text	1	Availability of response from 1989 AS	Copy from AS data

Field	Type	Length	Description	Source
LATESTRSP	Numeric	4	Year of latest response, if any	Computed at conv.
ASEMP01	Numeric	4	Employment in the 01 AS	Copy from AS data
ASEMP00	Numeric	4	Employment in the 00 AS	Copy from AS data
ASEMP99	Numeric	4	Employment in the 99 AS	Copy from AS data
ASEMP98	Numeric	4	Employment in the 98 AS	Copy from AS data
ASEMP97	Numeric	4	Employment in the 97 AS	Copy from AS data
ASEMP96	Numeric	4	Employment in the 96 AS	Copy from AS data
ASEMP95	Numeric	4	Employment in the 95 AS	Copy from AS data
ASEMP94	Numeric	4	Employment in the 94 AS	Copy from AS data
ASEMP93	Numeric	4	Employment in the 93 AS	Copy from AS data
ASEMP92	Numeric	4	Employment in the 92 AS	Copy from AS data
ASEMP91	Numeric	4	Employment in the 91 AS	Copy from AS data
ASEMP90	Numeric	4	Employment in the 90 AS	Copy from AS data
ASEMP89	Numeric	4	Employment in the 89 AS	Copy from AS data
ASEMP	Numeric	4	Most recent employment in the AS, if any	Computed at conv.
ASTYPE	text	1	Code for type of enterprise (branch, etc), Q4 in 00? AS	Copy from AS data
DSD	text	2	Edited DS code (imputed if no ASI data)	Manual parsing
MC_UC		2	Edited MC/UC code ((imputed if no ASI data)	Manual parsing
ADD_LO_FLOOR	Numeric	2	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	5	Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix	Manual parsing
TEL_EST_PREF	Numeric	3	Prefix to tel No. (for the Establishment)	Entry from AS quest

contd.,

Manual parsing	TEL_EST	Numeric	6	Telephone . No (for the Establishment)	Entry from AS quest
	TEL_EST2_PREF	Numeric	3	Prefix to tel No. (for the Establishment)	Entry from AS quest
	TEL_EST2	Numeric	6	Telephone . No (for the Establishment)	Entry from AS quest
	NAME_CONTACT	Text	60	Name of the Contact Person in most recent AS	Entry from AS quest
	NAME_POSITION	Text	30	Position of the Contact Person in most recent AS	Entry from AS quest
	TEL_CONTACT_PREF	Numeric	3	Prefix to Tel No (for the Contact Person)	Entry from AS quest
	TEL_CONTACT	Numeric	6	Telephone . No (for the Contact Person)	Entry from AS quest
	FAX_CONTACT_PREF	Numeric	3	Prefix to fax No. (for the Contact Person)	Entry from AS quest
	FAX_CONTACT	Numeric	6	Fax No. (for the Contact Person)	Entry from AS quest
	YR_CONTACT	Numeric	4	Year of AS with most recent contact	Entry from AS quest
	YR_REPORTED_CLOSED	Numeric	4	Year establishment reported closed	Manual Entry

c) RMES

Field Name	Type	Length	Description
RMES Seq. No.	Text	7	Yr(2)-district(2)-source(1)-Seq No (3)
Source code	Text	1	Source of candidate
DISTRICT	Numeric	2	District Code location
DSD	Numeric	2	Divisional secretariat Code location
MC/UC	Numeric	2	MC/UC code
GND	Numeric	4	G.N.Division location
INDUSTRIAL ESTATE	Numeric	2	Code for location in an indiustrial estate
NAME_ESTAB	text	55	Edited name of estab without suffix
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix
ADD_LO_FLOOR	text	2	Location Address : Floor No.
ADD_LO_ASSESMENT	text	8	Location Address : Assessment No.
ADD_LO_OTHER	text	20	Location Address : Other
ADD_LO_STREET_NAME	text	60	Location Address : Street Name
ADD_LO_BUILD_NAME	text	20	Location Address : Building Name
ADD_LO_VILLAGE_WARD	text	30	Location Address : Village/Ward Name
ADD_LO_CITY	text	30	Location Address : City/Town name
ADD_LO_POSTCODE	text	5	Location Address : Postal Code
NAME_HO	text	55	Edited name of estab without suffix
NAME_HO_SUF	text	15	Edited name of estab: suffix
ADD_HO_FLOOR	text	2	Head Office Address : Floor No.
ADD_HO_ASSESMENT	text	8	Head Office Address : Assessment No.
ADD_HO_OTHER	text	20	Head Office Address : Other

ADD_HO_STREET_NAME	text	60	Head Office Address : Street Name
ADD_HO_BUILD_NAME	text	20	Head Office Address : Building Name
ADD_HO_VILLAGE_WARD	text	30	
ADD_HO_CITY	text	30	Head Office Address : City/Town name
ADD_HO_POSTCODE	text	5	Head Office Address : Postal Code
TEL_EST_PREF	Numeric	3	Prefix to tel No. (for the Establishment)
TEL_EST	Numeric	6	Telephone . No (for the Establishment)
TEL_EST2_PREF	Numeric	3	Prefix to tel No. (for the Establishment)
TEL_EST2	Numeric	6	Telephone . No (for the Establishment)
TEL_HO_PREF	Numeric	3	Prefix to tel No. (for the head office)
TEL_HO	Numeric	6	Telephone . No (for the head office)
TEL_HO2_PREF	Numeric	3	Prefix to tel No. (for the head office)
TEL_HO2	Numeric	6	Telephone . No (for the head office)
FAX_EST_PREF	Numeric	3	Prefix to Fax No. (for the Establishment)
FAX_EST	Numeric	6	Fax No. (for the Establishment)
FAX_HO_PREF	Numeric	3	Prefix to fax (for the head office)
FAX_HO	Numeric	6	Fax No (for the head office)
EMAIL_EST	Text	10	E-mail Address (for the Establishment)
NAME_CONTACT	Text	60	Name of the contact person
NAME_POSITION	Text	30	Position of the Contact person
TEL_CONTACT_PREF	Numeric	3	Prefix to Tel No (for the Contact Person)
TEL_CONTACT	Numeric	6	Telephone . No (for the Contact Person)
FAX_CONTACT_PREF	Numeric	3	
FAX_CONTACT	Numeric	6	Fax No. (for the Contact Person)
EMAIL_CONTACT	Text	10	E-mail Address (for the Contact Person)
REGISTRATION	Text	9	Places of Registration(Multiple)

EMPLOYEES	Numeric	4	No of Employees
SITUATION/STATUS	Text	2	Situation code (from questionnaire)
DATE_FIELDCHECK	Date	8	Date of check/Discovery
YEAR_OPERATION	Numeric	4	Year of started commercial production
MON_OPERATION	Numeric	2	Month of started commercial production
ISIC	Numeric	4	Description of activity
ABLE_TO_ENTER	Text	1	Code
FIT_FOR_REGISTRY	Text	1	Code
REMARKS	Text	60	As needed to record address or other info
ENUMERATOR	Text	3	Code
SUPERVISOR	Text	2	Code

d) MoID

Field Name	Type	Length	Description	Acquisition
ID_NUMBER	text	7	ID number of the establishment; 'Industry Code'	Original source file
NAME	text	40	Establishment Name	Original source file
ADD_HO	text	40	Head Office Address	Original source file
CPOF	text	20	Head Office Postal Name	Original source file
EMPLOYEES	Numeric	5	Persons Engaaged	Original source file
PMSERIAL	text	7	Production Serial No	Original source file
PRODUCT	text	35	Production Description	Original source file
PMUNIT	text	10	Production Unit	Original source file
CCONTMRS	text	2	Contact Person's Status	Original source file
CCONTACT	text	40	Name of the Contact Person	Original source file
CTEL	text	8	Telephone No. Of the Contact Person	Original source file
CDATEREG	Date	8	Date of Registered	Original source file
CANCEL	Text	1	Whether cancelled	Copy from sep. file
DATECANCEL	Date	8	Date of cancellation	Copy from sep. file
YRCANCEL	Numeric	4	Year of cancellation	Computed at conv.
REPORT00	Text	1	Whether responded to '00 survey	Copy from sep. file
REPORT99	Text	1	Whether responded to '99 survey	Copy from sep. file
REPORT98	Text	1	Whether responded to '98 survey	Copy from sep. file
REPORT97	Text	1	Whether responded to '97 survey	Copy from sep. file
REPORT96	Text	1	Whether responded to '96 survey	Copy from sep. file
LATESTRSP	text	2	Year of latest response, if any	Computed at conv.
YRGET	Date	4	Year provided by MOID to DCS	Computed at conv.
DISTRICT	Num	2	Edited district code	Manual
DSD	Num	2	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	2	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing

ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	5	Location Address : Postal Code	Manual parsing
NAME_ESTAB	Text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	Text	15	Edited name of estab: suffix	Manual parsing
TEL_CONTACT_PREF	Numeric	3	Prefix to Tel No (for the Contact Person)	Manual parsing
TEL_CONTACT	Numeric	6	Telephone . No (for the Contact Person)	
ISIC	Numeric	3	Edited ISIC code based on prod. Descrip.	Manual

e) BOI

Field Name	Type	Length	Description	Acquisition
STATUSDES	text	21	Current status of the Establishment	Original source file
ENT_NAME	text	35	Name of the Establishment	Original source file
ADD_O1	text	30	Head Office Address1	Original source file
ADD_O2	text	30	Head Office Address2	Original source file
ADD_O3	text	30	Head Office Address3	Original source file
ADD_O4	text	30	Head Office Address4	Original source file
ADD_S1	text	30	Location Address1	Original source file
ADD_S2	text	30	Location Address2	Original source file
ADD_S3	text	30	Location Address3	Original source file
PRODUCT1	text	35	Description of the Production	Original source file
PRODUCT2	text	35	Description of the Production Group	Original source file
CONT_NAME	text	35	Name of the Contact Person	Original source file
CON_TEL	text	9	Telephone Number of the Contact Person	Original source file
EMP_CAP	Numeric	5	Employment Capacity	Original source file
T_EMP_F	Numeric	4	No. of Foreign Employees	Original source file
DISTRICT	text	15	Name of the District	Original source file
ID_NUMBER	Numeric	5	Identification number at BOI	Original source file
YEAR_DECLARED	Numeric	4	Year declaration was filed, if available	Original source file
GROUPCODE	text	1	Belongs to which BOI group (sec. 17. etc)	Original source file
STATUSCODE	Numeric	2	Codes for STATUSDES	Computed at conv.
YRGET	Numeric	4	Year provided by BoI to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by BoI	Computed at conv.
DISTRICT	Numeric	2	Edited district code for location	Computed at conv.
DS	Numeric	2	Edited DS code for location	Manual
ADD_LO_FLOOR	Numeric	2	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing

ADD_LO_OTHER	Text	20 Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60 Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20 Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30 Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30 Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	5 Location Address : Postal Code	Manual parsing
ADD_HO_FLOOR	Text	2 Head Office Address : Floor No.	Manual parsing
ADD_HO_ASSESMENT	Text	8 Head Office Address : Assessment No.	Manual parsing
ADD_HO_OTHER	Text	20 Head Office Address : Other	Manual parsing
ADD_HO_STREET_NAME	Text	60 Head Office Address : Street Name	Manual parsing
ADD_HO_BUILD_NAME	Text	20 Head Office Address : Building Name	Manual parsing
ADD_HO_VILLAGE_WARD	Text	30 Head Office Address : Village/Ward Name	Manual parsing
ADD_HO_CITY	Text	30 Head Office Address : City/Town name	Manual parsing
ADD_HO_POSTCODE	Text	5 Head Office Address : Postal Code	Manual parsing
NAME_ESTAB	text	55 Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15 Edited name of estab: suffix	Manual parsing
TEL_EST_PREF	Numeric	3 Prefix to tel No. (for the Establishment)	Manual parsing
TEL_EST	Numeric	6 Telephone . No (for the Establishment)	Manual parsing
ISIC	Numeric	3 Edited ISIC code based on prod. group	Manual

f) CEB

Field Name	Type	Length	Description	Acquisition
AREA_NAME	text	15	Name of the Area	Original source file
ID_NUMBER	text	10	ID number; account No.	Original source file
NAME	text	60	Name of the Establishment	Original source file
ADDRESS_L1	text	60	Location Address1	Original source file
ADDRESS_L2	text	60	Location Address2	Original source file
CITY	text	30	Location Postal City	Original source file
TARIFF	text	30	Zone	Original source file
PEAK_LOAD	Numeric		Peak load capacity in kVA	Original source file
YRGET	Numeric	4	Year provided by CEB to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by CEB	Computed at conv.
DISTRICT	Numeric	2	Edited district code	Manual
DS	Numeric	2	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	2	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing
ADD_LO_POSTCODE	Numeric	5	Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix	Manual parsing
ISIC	Numeric	3	Edited ISIC code if known from name	Manual
NUMBER_OF_LISTINGS	Numeric	2	Default is 1, add 1 every time a duplicate is found	Manual

g) EPF

Field Name	Type	Length	Description	Acquisition
ID_NUMBER	text	10	Employer_no	D-file
NAME	text	60	Employer_Name	D-file
Business_nature	text	60	Code of the Production	D-file
ADDRESS1	text	60	Location Address1	D-file
ADDRESS2	text	60	Location Address2	D-file
Coverd_male	Numeric	4	No. of Employee-male	D-file
Coverd_Female	Numeric	4	No. of Employee-female	D-file
YEAR_DECLARED	Numeric	4	Year declaration was filed, if available	D-file?
NAME_ACTIVE		60	Employer Name in active file	Active file
ADDRESS1_ACTIVE	text	60	Location Address1 in active file	Active file
ADDRESS2_ACTIVE	text	60	Location Address2 in active file	Active file
EMPLOYEES_CONTRIB	Numeric	4	Employment in 00-01 for which contributions paid	Active file
IN_ACTIVE_FILE	text	1	Computed based on prior comparison of D-file & active file	Computed by DCS
IN_DFILE	text	1	Computed based on prior comparison of D-file & active file	Computed by DCS
SECTOR_CODE	text	2	Sector code	Computed at conv.
EMPLOYEES_DEC	Numeric	4	Declared covered employment at time of original declaration (D-form)	Computed at conv.
EMPLOYEES	Numeric	4	Taken from employees_contrib if available; Otherwise from emp. declaration	Computed at conv.
YRGET	Numeric	4	Year provided by EPF to DCS	Computed at conv.
YRDROP	Numeric	4	Year dropped/closed by EPF	Computed at conv.
DISTRICT	Numeric	2	Edited district code	Manual
DS	Numeric	2	Edited DS code	Manual
ADD_LO_FLOOR	Numeric	2	Location Address : Floor No.	Manual parsing
ADD_LO_ASSESMENT	Numeric	8	Location Address : Assessment No.	Manual parsing
ADD_LO_OTHER	Text	20	Location Address : Other	Manual parsing
ADD_LO_STREET_NAME	Text	60	Location Address : Street Name	Manual parsing
ADD_LO_BUILD_NAME	Text	20	Location Address : Building Name	Manual parsing
ADD_LO_VILLAGE_WARD	Text	30	Location Address : Village/Ward Name	Manual parsing
ADD_LO_CITY	Text	30	Location Address : City/Town name	Manual parsing

contd,

ADD_LO_POSTCODE	Numeric	5	Location Address : Postal Code	Manual parsing
NAME_ESTAB	text	55	Edited name of estab without suffix	Manual parsing
NAME_ESTAB_SUF	text	15	Edited name of estab: suffix	Manual parsing
ISIC	Numeric	3	Edited ISIC code	Manual