# TABLE OF CONTENTS

| Acknowledgement | ii |
| List of Abbreviations | iii |
| Certificate of Bonafide | viii |
| Certificate | ix |
| Research Summary | x |
| Table of Contents | xii |
| Table of Annexure | i |

1. The IT Scenario  
   1.1 About Information Technology  
      1.1.1 The Message: Manage IT as a Strategic Asset  
      1.1.2 Partnering For Success  
      1.1.3 The Importance of Relationships  
      1.1.4 Investing in Values  
   1.2 History of IT  
      1.2.1 International Scenario  
      1.2.2 Indian Scenario  
      1.2.3 Connectivity / Bandwidth Available in Gujarat  
      1.2.4 Comparison of India vis-à-vis Other Developed Countries  
   1.3 IT Industry in Gujarat: A Snapshot (March 2004)  
      1.3.1 Gujarat BPO Scenario  
      1.3.2 BPO Players of Gujarat  
      1.3.3 Infocity  
   1.4 Gujarat Scenario  
      1.4.1 Type of IT Units / Services in Gujarat  
      1.4.2 Foreign IT Companies Operating in Gujarat  
      1.4.3 Gujarat's Contribution to Exports  
      1.4.4 Software Exports from Gujarat  
      1.4.5 STPs / Infrastructure Available and Planned  
      1.4.6 Education Linkages / Manpower Availability  
      1.4.7 Fund Allocation / New Investment in IT Sector in Gujarat  
      1.4.8 State Government Initiatives (e-Governance)  
      1.4.9 Potential Growth Areas for Gujarat  
      1.4.10 Advantage Gujarat  
   1.5 Outlook for Gujarat  
      1.5.1 Manpower  
      1.5.2 Infrastructure  
      1.5.3 Skill Development  
      1.5.4 Rapidly Changing Technology

- xii -
1.5.5 Proactive Approach

1.6 Comparison of Gujarat vis-à-vis Other States

1.6.1 Export Initiative
Software Exports from Various States
HRD Initiative
Infrastructure Initiatives

1.6.2 IT’s Potential

1.6.3 IT Architecture Content

2. National IT Policy vis-à-vis Gujarat IT Policy

2.1 Objectives of IT Policy of Gujarat

2.2 Policy Instruments of National IT Policy related to States:

2.2.1 E-governance
2.2.2 Human Resource and Development (HRD)
2.2.3 Infrastructure

2.3 IT Policy

2.3.1 Gujarat (IT Policy 1999-2004)

2.4 Incentives

2.4.1 Capital Subsidy
2.4.2 Power Service
2.4.3 Tax
2.4.4 Other Incentives
2.4.5 Infrastructure Initiative

2.5 Government of Gujarat: IT Initiatives

2.5.1 GR Book Online
2.5.2 Form Book Online
2.5.3 GyanGanga
Main objectives of Info Kiosks:
Benefits of Info Kiosks:
2.5.4 e-Data Bank
2.5.5 Citizen Card
2.5.6 Sachivalaya Integrated Communication Network (SICN)
Telephones
Digital phones:
Mobile phones:
Video Conferencing facility:
CTV Facility
Disaster communication facility
LAN/WAN back bone:
Status:
Daily traffic report says that:
Benefits realized so far from this project:

2.6 Sachivalaya Campus Area Network (SCAN)

2.6.1 Benefits of the SCAN:

2.6.2 Other aspects:

2.7 Gujarat State Wide Area Network (GSWAN)
2.7.1 State Wide Area Network - An overview
2.7.2 Sachivalaya Campus Area Network (SCAN) & GSWAN
Fig: A GSWAN district node.
Fig: GSWAN Taluka node
2.7.3 Current applications usages:
2.7.4 Cost economics
2.8 eCity
2.9 TeleFariyad
2.10 Swagat
2.11 Citizen Charter Implementation
2.12 eGram

3. The IT Initiatives
3.1 Canada : IT Initiatives
3.1.1 Government of Canada Portal
3.2 Australia : IT Road Map
3.3 United Kingdom : IT Initiatives
3.3.1 Vision
Nodal agencies involved in realising the vision
3.4 United States Of America
3.4.1 California Tax online
3.4.2 Texas Online
3.4.3 Brazil: Let's go e-Postal
3.4.4 Mexico: Internet Revolution
3.5 Indian State Governments
3.5.1 Government of Kerala : IT Initiatives
3.5.2 Government of Karnataka
3.5.3 Government of Andhra Pradesh
3.5.4 APSWAN – Andhra Pradesh State Wide Area Network for Voice Data & Video Conferencing
3.5.5 CARD - Digital Registration and Storage of Records
3.5.6 APDMS - GIS for AP State
3.5.7 FAST - Automated Issue of Driving License
3.5.8 TWINS - Twin Cities Network Services for Government. Services Through a Single Window
3.5.9 MPHSP - Multipurpose Household Survey Project
3.5.10 SKIMS - Secretariat Knowledge and Information Management System
Goals of SKIMS
Scope of SKIMS
Training of staff
3.6 Government of Rajasthan
3.7 Human Resource and Development (HRD)
3.7.1 Andhra Pradesh
3.7.2 Karnataka 60
3.7.3 Kerala 61
3.7.4 Maharashtra 61
3.7.5 Rajasthan 61
3.7.6 Tamilnadu 61
3.7.7 Gujarat 61

3.8 Infrastructure 63
3.8.1 Andhra Pradesh 63
3.8.2 Karnataka 63
3.8.3 Kerala 64
3.8.4 Maharashtra 64
3.8.5 Rajasthan 65
3.8.6 Tamil Nadu 65
3.8.7 Gujarat 65

3.9 IT Policies of Seven States: 65
3.9.1 Andhra Pradesh (IT Policy 2002-2005) 65
3.9.2 Karnataka (IT Policy 2003) 66
3.9.3 Kerala (IT Policy 2003) 67
3.9.4 Maharashtra (IT Policy 2003) 67
3.9.5 Rajasthan (IT Policy 2003) 67
3.9.6 Tamil Nadu (IT Policy 2002) 68
3.9.7 Gujarat (IT Policy 1999-2004) 68

3.10 Incentives 69
3.10.1 Andhra Pradesh 69
3.10.2 Karnataka 70
3.10.3 Kerala 71
3.10.4 Maharashtra 71
3.10.5 Rajasthan 72
3.10.6 Tamil Nadu 72
3.10.7 Gujarat 73
Capital Subsidy 73
Power Service 73
Other Incentives 73

3.11 Capital Subsidy 74
3.12 Power Service 75
3.13 Tax 76
3.14 Other Incentives 77

3.15 Infrastructure Initiatives 78

4. The Model 79
4.1 What are Models? 79
4.1.1 Approach I: Models defined by Classes 80
4.1.2 Class - I: Function 80
4.1.3 Class - II: Structure 81
5. Management Best Practices for IT

5.1 Application Architecture

5.1.1 Best Practice

5.2 Managing Applications

5.2.1 Best Practice

5.3 Information Architecture

5.3.1 Data Warehouse
Best Practice

5.3.2 Repository
Best Practice

5.3.3 Data Hygiene Tools
Best Practice

5.3.4 Data Extraction and Transformation Tools
Best Practice

5.3.5 Data Replication Tools
Best Practice

5.3.6 Business Intelligence Tools
Best Practice

5.4 Groupware Architecture

5.4.1 Infrastructure – Content Exchange
Best Practice

5.4.2 Communication – Electronic Mail (e-Mail)
Best Practice

5.4.3 Collaboration – Calendaring and Scheduling
Best Practice

5.4.4 Collaboration – Document Management
Best Practice

5.5 Component ware Architecture

5.5.1 Component Reuse
Best Practice

5.5.2 Component Services
Best Practice
5.5.3 Object-oriented Components
Best Practice

5.6 Data Architecture
5.6.1 Centralized Metadata
Best Practice
5.6.2 Data Modeling
Best Practice
5.6.3 Data Access Middleware
Best Practice
5.6.4 Data Access Implementation
Best Practice
5.6.5 Data Security
Best Practice

5.7 Application Communication Middleware Architecture
5.7.1 Application Communication Middleware Types
Best Practice
5.7.2 Application Communication Middleware Brokers
Best Practice

5.8 Integration Architecture
5.8.1 Application Integration
Best Practice
5.8.2 Data Access Integration
Best Practice
5.8.3 XML
Best Practice

5.9 Network Architecture
5.9.1 Local Area Network (LAN) Architecture
Best Practice
5.9.2 Wide Area Network (WAN) Architecture
Best Practice
5.9.3 Network-Centric Applications
Best Practice

5.10 Platform Architecture
5.10.1 Server Platform Architecture
Best Practice
5.10.2 Client Platform Architecture
Best Practice

5.11 Storage
5.11.1 Security and Directory Service Architecture
Identification
Best Practice
5.11.2 Authentication
Best Practice
5.11.3 Authorization and Access Control
Best Practice
5.11.4 Administration
Best Practice
5.11.5 Directory Services
Best Practice
5.12 System Management Architecture
5.12.1 Help Desk
Best Practice
5.12.2 Operations Management
Best Practice
5.12.3 Storage Management
Best Practice
5.13 Formalize Best Practices
5.14 Bring Internet Technology to People
5.15 Best Practices in Information Technology context

6. Objectives & Research Methodology

6.1 Objectives
6.2 Research Methodology
6.3 Offices Selection Process
6.4 Profile of Selected Offices
6.4.1 Offices under the Industries and Mines Department
6.4.2 A profile of the Sample offices
6.4.3 Branches under the Industries and Mines Department
   D Branch (Local Establishment)
   CH Branch: (Small Scale Industries)
   KH and KH-I Branch (Cottage Industries)
   P Branch: Industrial Projects
   CHH Branch: Policies Mines and Minerals
   CHH-I Branch
   D2 Branch
   D1 Branch
   S Branch: Tourism
   I Branch: New Industrial Policies
   A Branch : 5 Year & Annual Development Plan
   T Branch: Textile Industries
   G Branch: Medium and Large Scale Industries
   J Branch: Co-ordination Activity
   B Branch: Budget and Grants
   Cash Branch
   Registry Branch
   Typist Branch

6.5 Research Process
6.5.1 Exploratory Research
6.5.2 Descriptive Research: Aspects
6.5.3 Focus Groups
6.5.4 Focus Group Process
6.6 Analysis of Selected Cases: Process
6.7 Demographic Profile of Survey
  6.7.1 Hardware Status
    Network Status
    Office Automation Level
    Office Information
    Operating Systems & Software Packages
    Software
    TSP Status
6.8 The Model:
  6.8.1 Generality Model (IIMS) is the most suitable model for IMD
       and its associated offices.
6.9 Key Challenges
7. Present Status of Computerisation
  7.1 Function to Department Mapping
  7.2 Information Element to Function Mapping
  7.3 Department: Gujarat Mineral Development Corporation
     (www.gmdcl.com), (www.gmdcltd.com)
  7.4 Department: Gujarat Industrial Development Corporation (GIDC)
     (www.gidc.gov.in)
  7.5 Department Name: Gujarat Infrastructure Development Board
     (GIDB) (www.gidb.org)
  7.6 Department Name: Cottage Industry
     Department Objectives:
  7.7 Function to Department Mapping
  7.8 Department Name: Gujarat State Finance Corporation (GSFC)
     (www.gsfcindia.com)
     Department Objectives:
  7.9 Department Name: Tourism (www.gujarattourism.com)
     Department Objectives:
  7.10 Information Element to Function Mapping:
  7.11 Department Name: iNDEXT-C
     Department Objectives:
  7.12 Department Name: Geology & Mines
     Department Objectives:
8. Required Status of Content Development
  8.1 Branches; Linkages & Issues:
    8.1.1 Industries & Mines Department
    8.1.2 MIS Reports of IMD branches
       KH and KH-I Branch (Cottage Industries)
       P Branch: Industrial Projects
       CHH and CHH-1 Branch: Policies Mines and Minerals
       D1 and D2 Branch
I Branch: New Industrial Policies
A Branch: 5 Year and Annual Development Plan
T Branch: Textile Industries
G Branch: Medium and Large Scale Industries
B Branch: Budget and Grants

Issues:

8.1.3 Commissioner of Cottage & Rural Industries
Branches under Commissioner of Cottage Industries (CCI)
Handloom Branch
Bankable Branch
Package Branch
Training Branch
Legal Branch
Handicraft Branch
General Branch
Plan Branch
Accounts Branch
Linkages:
MIS Reports:
Package:
Handloom
Plan
Handicraft
Annual Report to RBI

Issues:

8.1.4 Gujarat State Handloom Development Corporation
Branches under GSHDC
Linkages:
Issues:

8.1.5 Gujarat State Handicraft Development Corporation
Linkages:
Issues:

8.1.6 Gujarat Rural Industries Marketing Corporation
Branches under GRIMCO
Leather
Wood and steel Furniture
Admin Branch
Species and bee keeping branch
Accounts Branch
Marketing tool kit and project branch
Linkages:
Issues:

8.1.7 Indext-C
Objectives of Indext-C
Activities Undertaken by Indext-C
Linkages
Issues

8.1.8 Rural Technology Institute
Activities of RTI

- xx -
Research & Development 198
Skill Upgradation & Formation 199
Pilot Project for creating Demonstrative Effect 199
Introduction of New Activities 199
Documentation & Dissemination of Information 200
Extension Work 200
Exhibition in Village Fair 200
Exhibition & Training through Mobile Van 200
Consultancy & Counselling 201
Computerised Data Bank 201
Invention Encouragement 202
Linkages: 202
Issues 202

8.1.9 Commissioner of Geology & Mining 203
Functioning of branches under CGM 205
Planning branch 205
Technical branch 205
Report cell 205
Publication branch 205
Lease 205
Statistics 206
Account branch 206
Administration 206
Petrography 206
Remote sensing 206
Chemical 206
Linkages 206
Issues 207

8.1.10 Director - Government Printing & Stationery 207
Branches under DGPS 209
Admin 209
Registry 210
Stationary 210
Account 210
Audit 210
Printing 210
Scrutiny 210
Purchase 210
Planning 210
Linkages 211
Issues 211

8.1.11 Khadi Gramodyog Board 212
Branches under KVIB 212
Member Secretary 213
Executive Officer 213
Chief Account Officer 213
Director (Khadi) 214
Director (Gramodyog) 214
Public Relation Officer (PRO) 214
Law Officer 214

- xxi -
9. Linkages:

8.2 Inter-linkages among the IMD offices

8.3 Key Features

8.4 Industries Commissioner’s office

8.4.1 Activities of DIC

Small Scale Industries Branch
Marketing branch
Administration and Establishment branch
Accounting branch
Registry branch
Subsidy branch
Statistics branch

Incentive Schemes at DIC

i. Prime Minister Rojgar Yojana (PMRY) Scheme
ii. Bankable Scheme
iii. Manav Kalyan Yojna

8.5 Content Development

9. Strategic Dimensions of Proposed Multi Tier Architecture

9.1 Two-tier Architecture

9.1.1 Mainframe architecture
9.1.2 File sharing architecture
9.1.3 Client/Server architecture

9.2 Three-tier Architecture

9.2.1 Transaction Processing (TP) monitor technology
9.2.2 Message Server
9.2.3 Application Server

9.3 N-tier Architecture

9.4 Application Architecture

9.4.1 Isolate Customizations to Purchased Software
9.4.2 Managing Applications

9.5 Information Architecture

9.6 Groupware Architecture

9.6.1 Infrastructure - Content Exchange
9.6.2 Communication – Electronic Mail (e-Mail)
9.6.3 Collaboration – Document Management

9.7 Component ware Architecture

9.7.1 Component Reuse
9.7.2 Component Services
9.7.3 Object Oriented Components

9.8 Data Architecture

9.8.1 Centralized Metadata
9.8.2 Data Access Middleware
9.8.3 Data Access Implementation
10.2.2 Planning & legal framework:
   - Amendment in Central Laws
   - Amendments in State laws
   - Identification of Government Certification Authorities

10.3 Technological Issues:
   - 10.3.1 Hardware Issues:
   - 10.3.2 Software Issues:
   - 10.3.3 Internet
   - 10.3.4 Standardization

10.4 Issues related to employee

10.5 Acceptance of E-Governance

10.6 Analysis of Implementation Issues with E-Governance Models.
   - 10.6.1 Implementing the IIMS
   - 10.6.2 Some challenges for development

11. Conclusions and Suggestions

11.1 General

11.2 Aspects of building IT model
   - 11.2.1 Defining a vision and priority areas:
   - 11.2.2 IT - a shared vision
   - 11.2.3 Citizen-Centric vision
   - 11.2.4 Communicating the Vision

11.3 Department's preparedness
   - 11.3.1 Readiness

11.4 Political will
   - 11.4.1 Emerging e-leaders
   - 11.4.2 Opposition and setbacks
   - 11.4.3 Sustain leadership

11.5 Building IT model
   - 11.5.1 Diagnosis:
   - 11.5.2 Shop around:
   - 11.5.3 Matching the model to the vision:
   - 11.5.4 IT model from the user's perspective
   - 11.5.5 Picking winners
   - 11.5.6 Ambitious thinking and discrete implementation
   - 11.5.7 Clarification of existing procedures.

11.6 Performance Measurement
   - 11.6.1 Setting overall performance criteria
     - Standards measuring adoption of the project:
     - Standards measuring impact of IT applications:
   - 11.6.2 Benchmarks to measure progress
     - Specific dates;

11.7 Formal policies
11.7.1 Policy Implications 283
11.8 Suggestions 283
11.9 Final Summary 288