

Knowledge Management: Emerging Perspectives

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Evolution

- **The society has been continuously looking for new knowledge and technology, primarily for survival (hunter-gatherer era)**
- **Knowledge was managed, distributed and used to meet the specific societal needs (pre-historic to modern era)**
- **Information & Knowledge resource as a major input (current era of Patents & IPR)**

Driving Forces

- **Heightened Competition (globalisation)**
- **Downsizing of Organisations**
- **Increasing Complexities**
- **Emerging New Opportunities**
- **Professional Approach**

Driving Forces ⁽²⁾

- **Transparency** (in system operations)
- **Wider Participation** (in decision-making)
- **Accountability** (to the society)
- **Right to information** (for all)
- **Self-Renewal** (for skills)

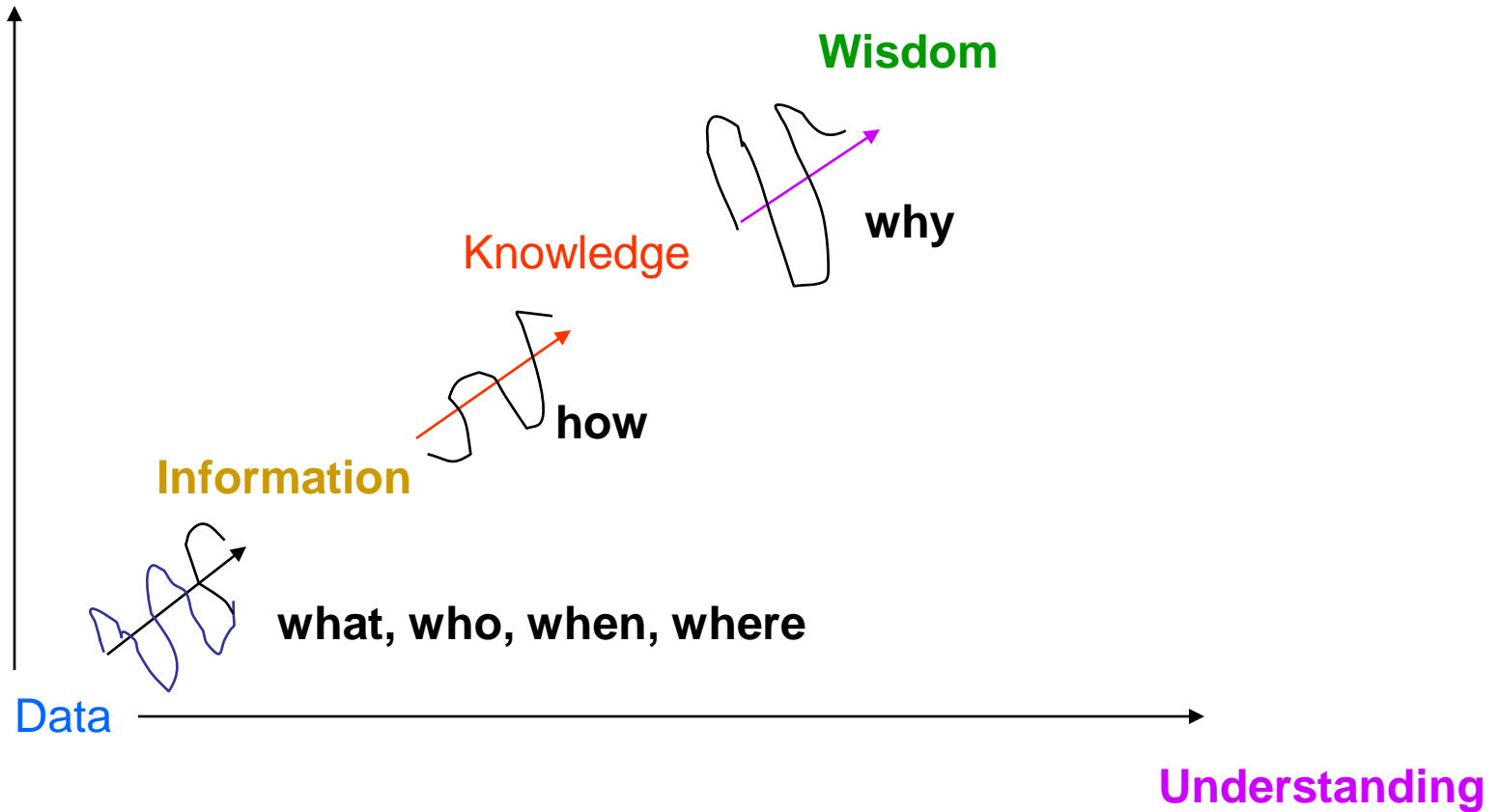
What is Knowledge ?

A Progressive Path:

- **Data : Numbers, Words, Pictures**
- **Information : Relations between Data**
- **Knowledge : Pattern of Relations**
- **Wisdom : Foundational Principles**

Process Flow

Context Independence



Context

Spatial:-

- Village
- Small town
- Large city

Sector:-

- Agricultural
- Industrial
- Commercial
- Services

Level:-

- Plant
- Community
- Society

Economy:-

- Developed
- Developing
- Undeveloped

Knowledge Types

Education
&
Training



Basic or Core Knowledge

Peripheral Knowledge

Operational Knowledge

Experience

Tacit or Folklore Knowledge

Everywhere

Pseudo Knowledge

What is Knowledge Management?

- Knowledge management is not a set of technologies and methodologies per se.
- It is a practice or discipline involving people, processes and technologies
- It is a collection of processes that govern the creation, dissemination, and leveraging of knowledge to fulfill given objectives

Knowledge Management Practice

- Relates to service and support to efficiently resolve the problem of the customer using,
 - Knowledge base
 - Knowledge sharing
 - Knowledge reuse
- Value of KM relates to the effectiveness with which the managed knowledge enables the employees to cope with emerging situations

Knowledge Management

Data Management:

- **Data collection**
format, unit, frequency
- **Data organisation**
coding, data entry, file structure
- **Data processing**
tabulation scheme, statistics, indices

Knowledge Management (2)

Information Management:

- **Need assessment**
operational, tactical, policy & planning
- **System design**
access, report format, retrieval scheme
- **Feedback processing**
modification in data collection & analysis

Knowledge Management (3)

Knowledge Configuration:

- Short term & long term use
modelling, envisioning
- Decision making
options evaluation & impact assessment
- Unconventional thinking
strategies to address new situations

Relevant Sources

Print Material:

- **Books, Periodicals, Acts, Rules & Regulations**
- **Conference proceedings**
- **Technical study reports**
- **Newspaper clippings**

Relevant Sources (2)

Non-Print Material:

- **Microfilms**
- **Audio & Video Films**
- **Floppy Disk, CD/DVDs, Tapes**
- **Photographs, X-Rays**
- **Satellite imageries**
- **Online databases, Web sites**

Information Management Tools

- **Library science tools for the conventional print material:**
 - **Classification**
 - **Cataloguing**
 - **Abstracting & Indexing**
 - **Keywords/Descriptors based search**

Information Management Tools (2)

- **Computer science tools for the non-conventional and digital material:**
 - **Tape/CD/DVD Processing**
 - **Audio & Video data Processing**
 - **Scanning the data for processing**

Information Management Tools ⁽³⁾

- **Geo-informatics tools for integrated analysis of spatial and associated text & other data:**
 - **Maps**
 - **Satellite Imageries**
 - **Aerial Photographs**

Information Management Tools (4)

- **Advanced computer software tools for in-depth analysis**
 - **Data Marts**
 - **Data Warehousing**
 - **Data Mining**
 - **Expert Systems**

Data Mining for Libraries

- Document Management
 - volume & variety
- Services Organization
 - range & quality
- Housekeeping
 - efficiency & effectiveness

Data Mining for Libraries (contd.)

<i>Database</i>	<i>Application</i>
Document collection	Gaps in the collection
Collection usage	Relation between reader, document type & time of the year
Inter-library loan	Demand pattern
Circulation data	Document return probability
Expenditure data	Financial planning

Data Mining for Academic Institutions

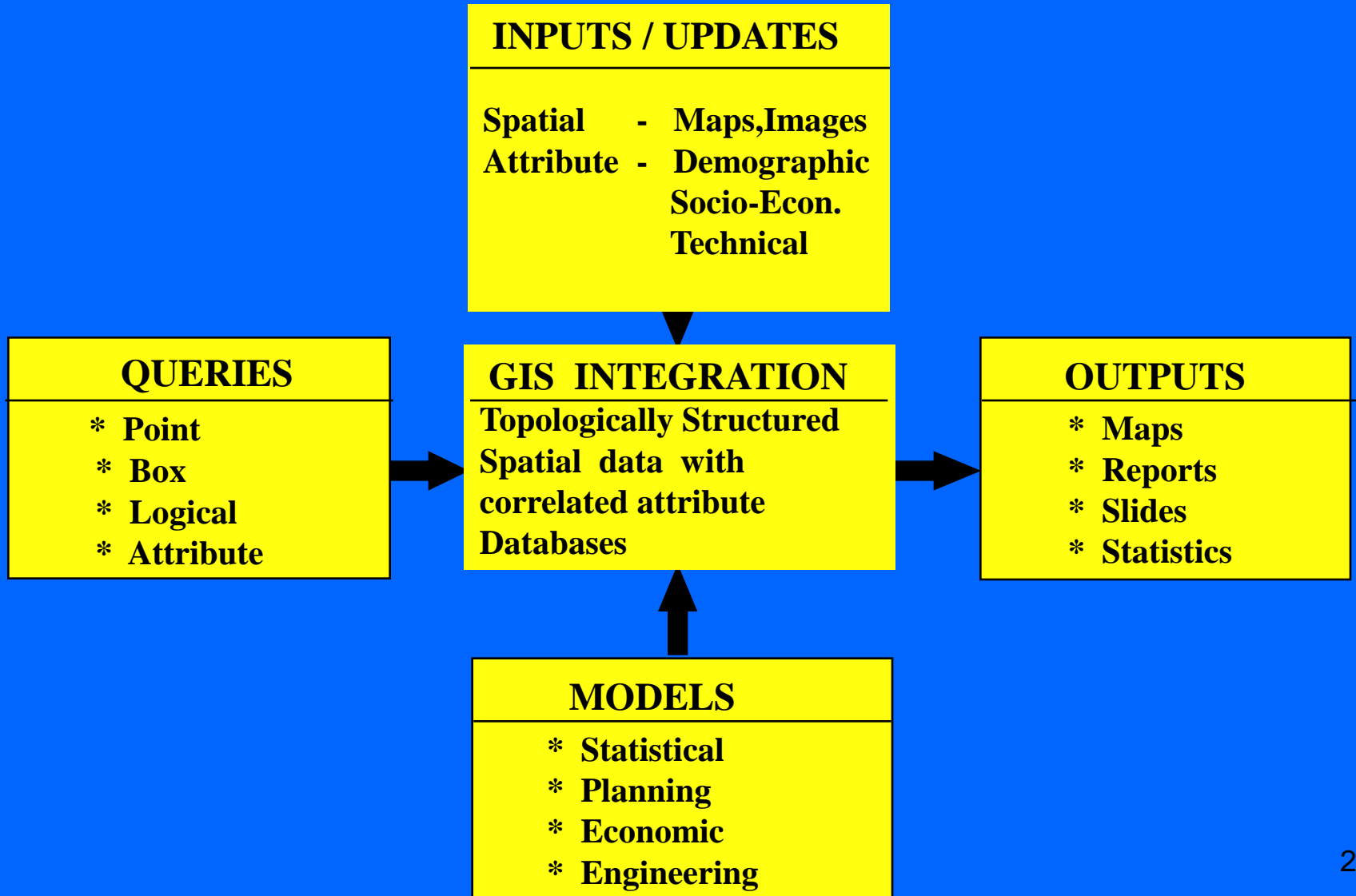
<i>Database</i>	<i>Application</i>
Academic enrollment	Socio-economic linkages
Academic performance	Relation between socio-economic factors & marks
Question bank	Effectiveness evaluation
Intellectual contribution	Faculty publications and library usage
Website hits	Courses redesign/marketing

New Technologies

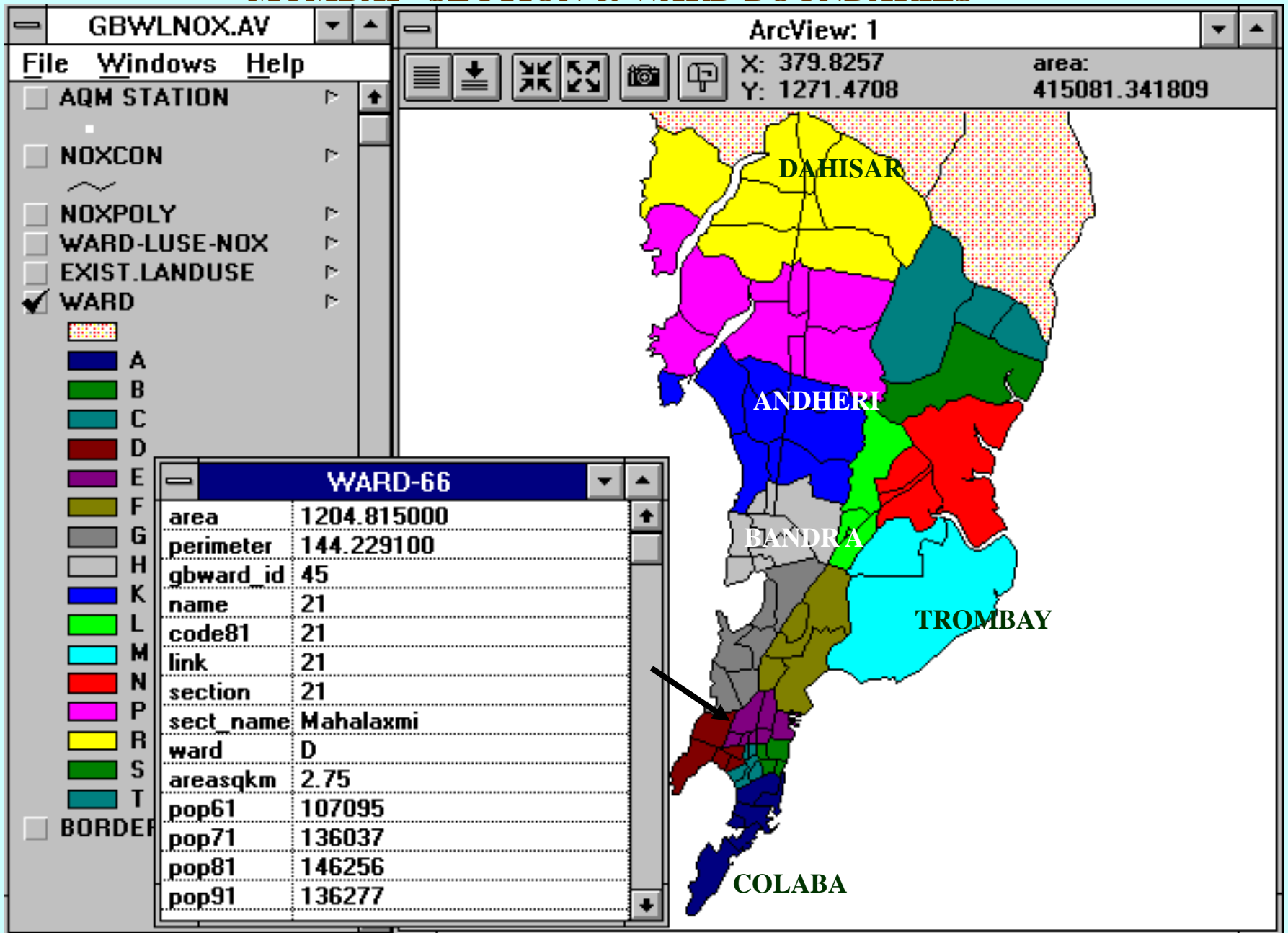
Geo-referencing Technologies:

- **Nondestructive (Remote Sensing)**
- **Noninvasive (GIS)**
- **Precision site mapping (GIS, GPS)**
- **Virtual simulation (GIS, VR)**
- **Item tracking (Bar Coding, RFID)**

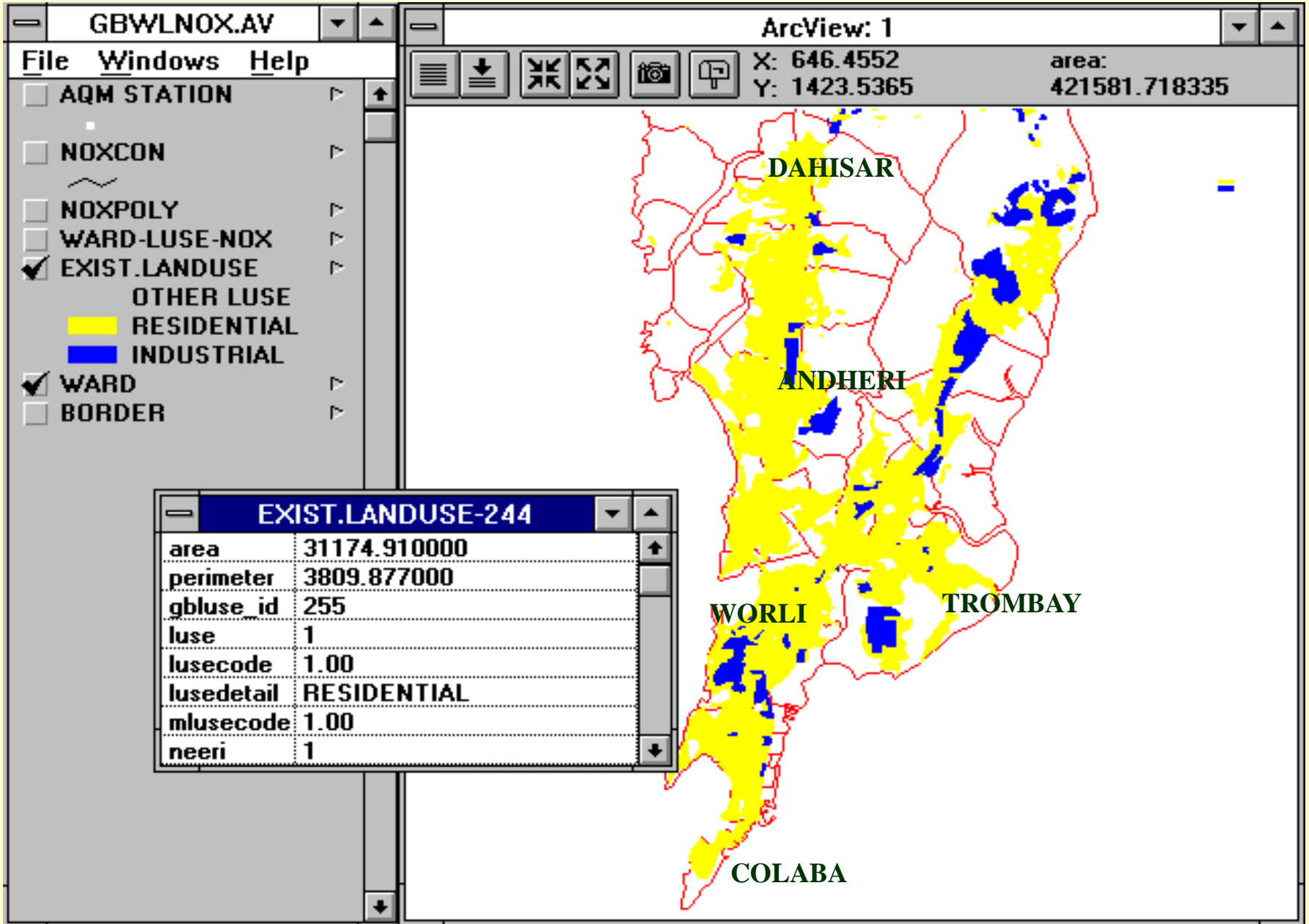
GIS FRAMEWORK



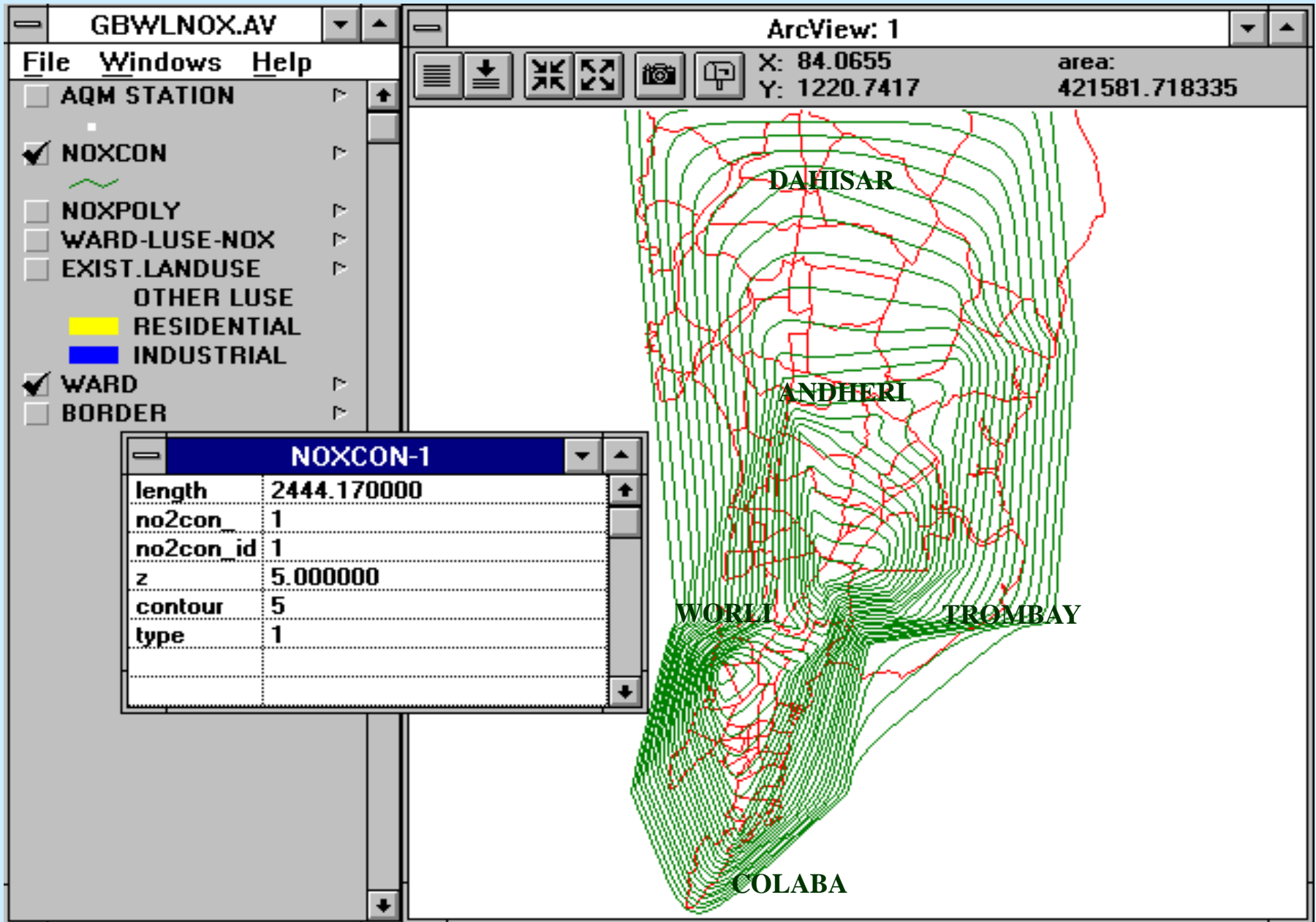
MUMBAI - SECTION & WARD BOUNDARIES



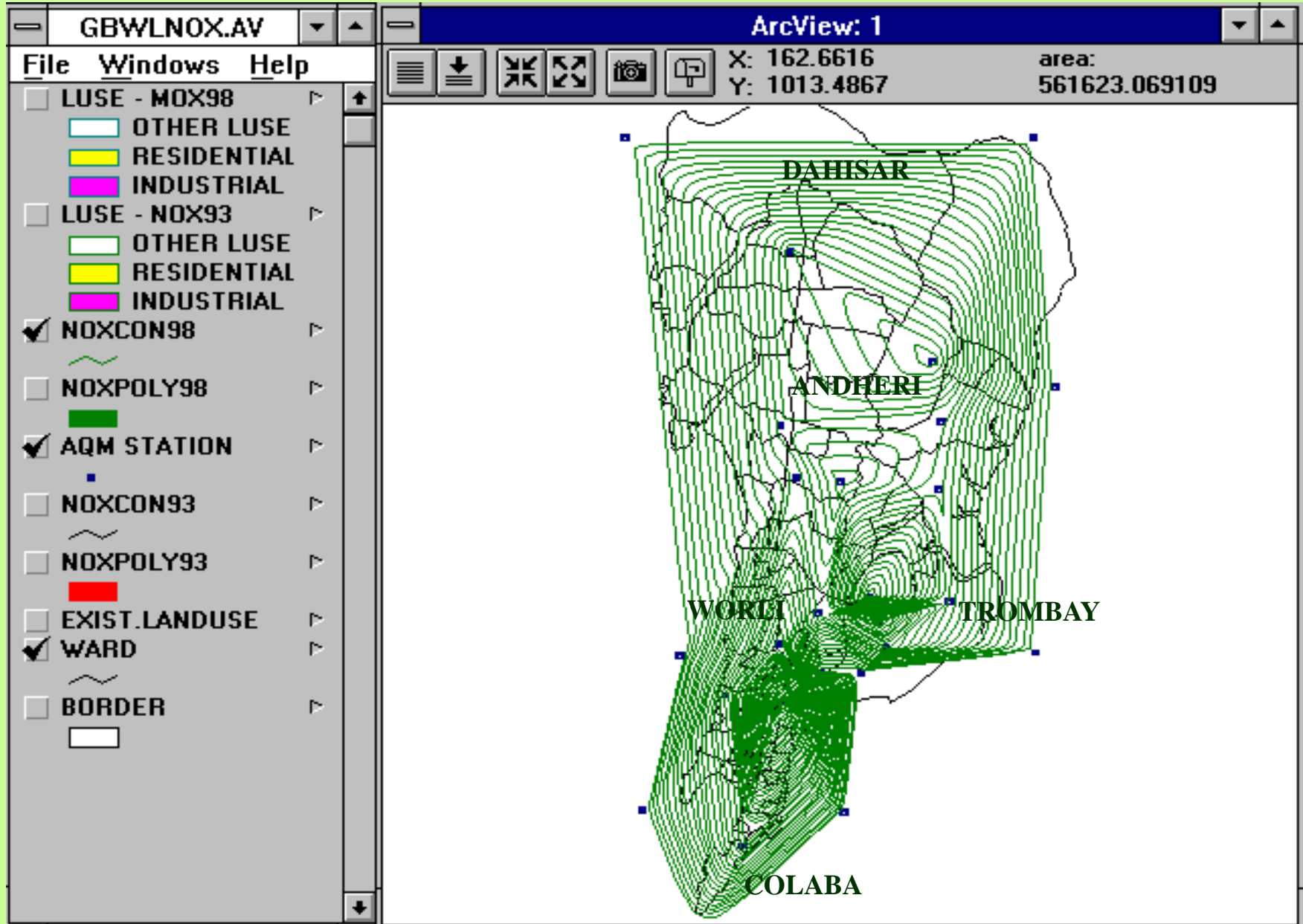
MUMBAI - RESIDENTIAL & INDUSTRIAL AREAS



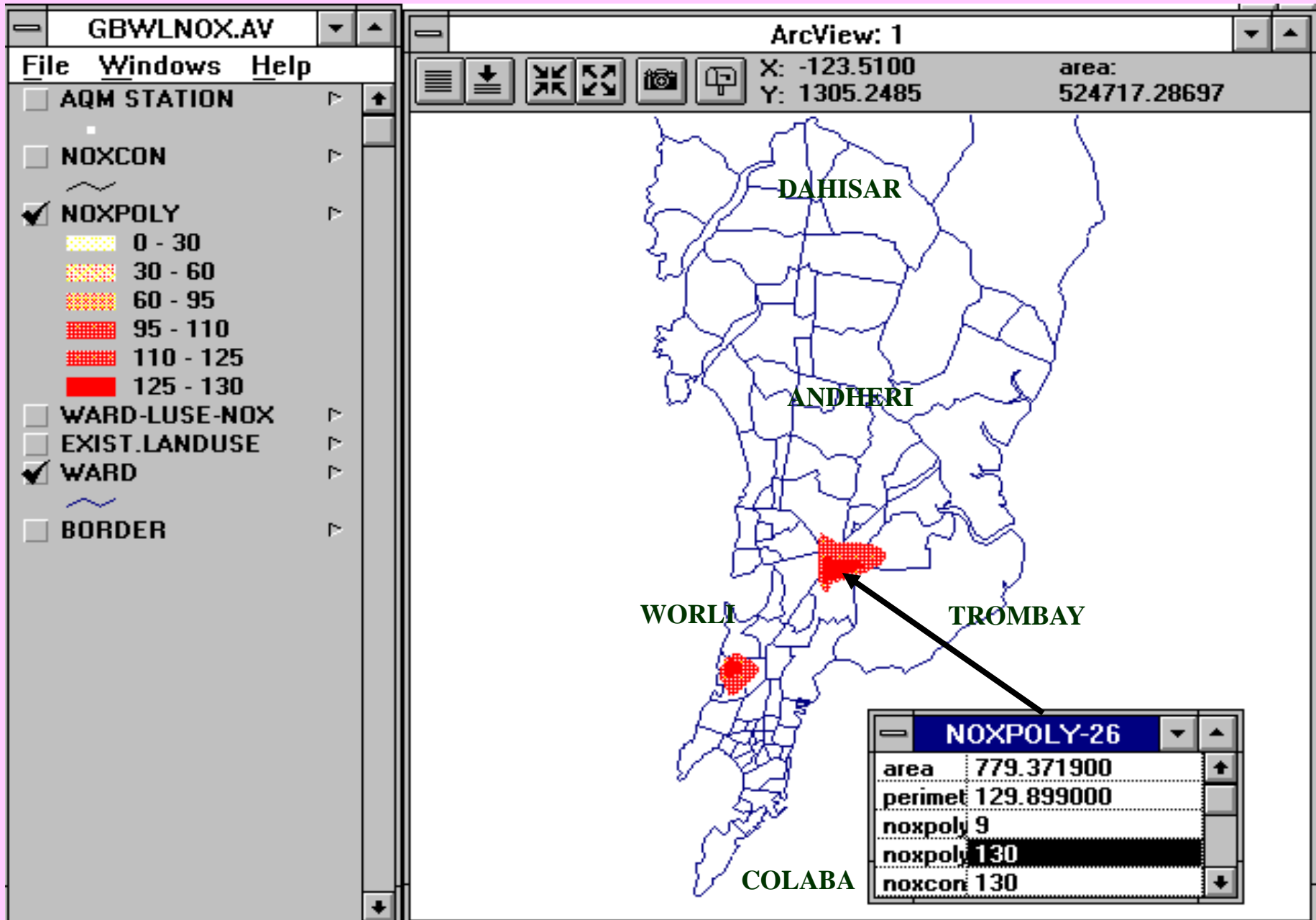
MUMBAI - NOX - ISO LINES (1992-93)



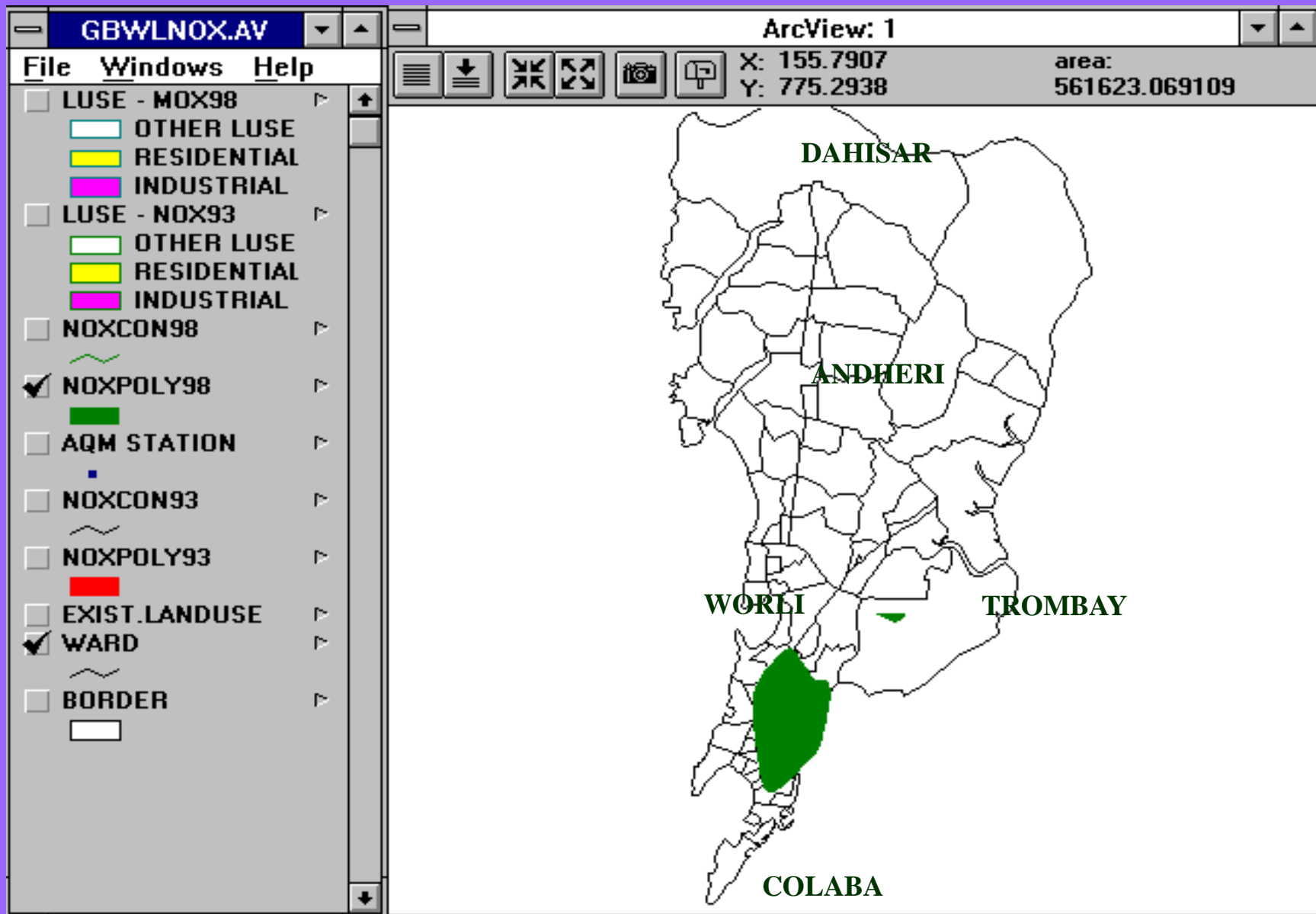
MUMBAI - NOX - ISO LINES (1998)



MUMBAI - MOST POLLUTED AREAS FOR NOX (1992-93)



MUMBAI - MOST POLLUTED AREAS FOR NOX (1998)



New Models

- **Information Envisioning**
- **Information Mapping & Projecting**
- **Incorporating experience and judgment of individuals in participatory decision making e.g.**
 - **Analytical Hierarchy Process**
 - **Interpretive Structural Modelling**
 - **Compromise Programming**

Priority Determination Model

- Analytic Hierarchy Process (AHP) developed by Prof T L Saaty is one useful method.

AHP Steps:-

- 1) Define a comparison relation like
“Project P_i is *more important* than Project P_j ”
- 2) Use the scale from 1 to 9 to measure the perceived degree of relative importance
- 3) Compute normalised priority weights from the comparison matrix

Comparison Scale

- 1** --- Equally important
- 3** --- Slightly more important
- 5** --- Definitely more important
- 7** --- Conclusively more important
- 9** --- Absolutely more important

Comparison Matrix

	P1	P2	P3	P4	P5	P6
P1	1	2	1/3	4	1/2	5
P2	1/2	1	7	3	6	1
P3	3	1/7	1	4	1/3	2
P4	1/4	1/3	1/4	1	1/7	1/5
P5	2	1/6	3	7	1	1/4
P6	1/5	1	1/2	5	4	1

Priority Weights

The normalised priority weights for the six projects by processing under the AHP are:

$$P1 = 0.19$$

$$P2 = 0.27$$

$$P3 = 0.15$$

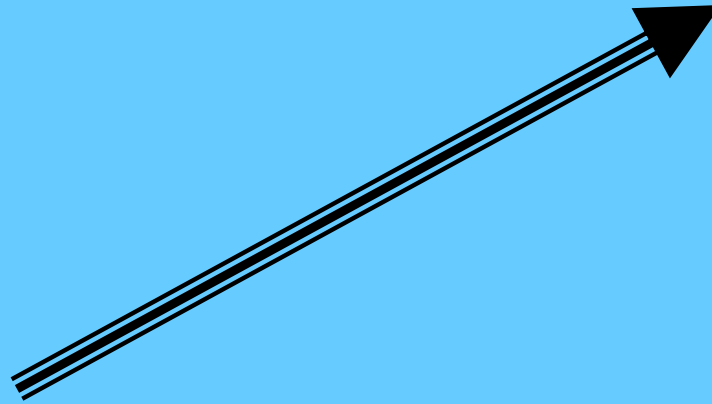
$$P4 = 0.03$$

$$P5 = 0.19$$

$$P6 = 0.17$$

$$1.00$$

Knowledge Organisation



Moving Towards

Actions

- **Identifying the data gaps**
- **Conducting surveys and studies to fill the identified data gaps**
- **Strengthening the library with diversified material & services and encouraging to partner with other institutions**
- **Developing a suitable information system to exchange the experience and viewpoints**

Actions (2)

- **Adopting new models & technology**
- **Managing man-machine collaboration**
- **Developing portable skills to face the changing demands**
- **Promoting inter-disciplinary research**
- **Initiating knowledge refining**

WITHOUT LOSING THE HUMAN TOUCH

Thank You