A New Resource for International Emissions Inventory Development and Data Retrieval: A Proposal

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The Problem:

➤ Emissions inventory data is a fundamental part of any air quality or climate modeling effort or policy analysis

➤ Emissions from abroad have an impact on air quality and climate within the US, and vice versa.

➤ Sharing data across borders is a painful process

➤ Integration of information kept by regulators and academic researchers, especially with respect to GHG emissions, is needed to maximize data quality and completeness.

➤ Much data is missing from the global emissions data set, most notably from developing countries.

- *No system exists that can facilitate cooperation and coordination among nations and sectors*

Proposal: Found an international emissions inventory system (IEIS) :

➢ Using the latest web-based, distributed database technology, do the following:

- *Forge a consortium of inventories and their developers from all geospatial scales*
- *Further develop database technology to facilitate vertical integration of emissions inventory data, with interoperable GIS capability*
- *Expand existing data to include inventories from developing countries through technology capacity building*

"Interoperable GIS" means...

       ...open information systems that are spatially aware and distributed so that users can effectively share data and tools.
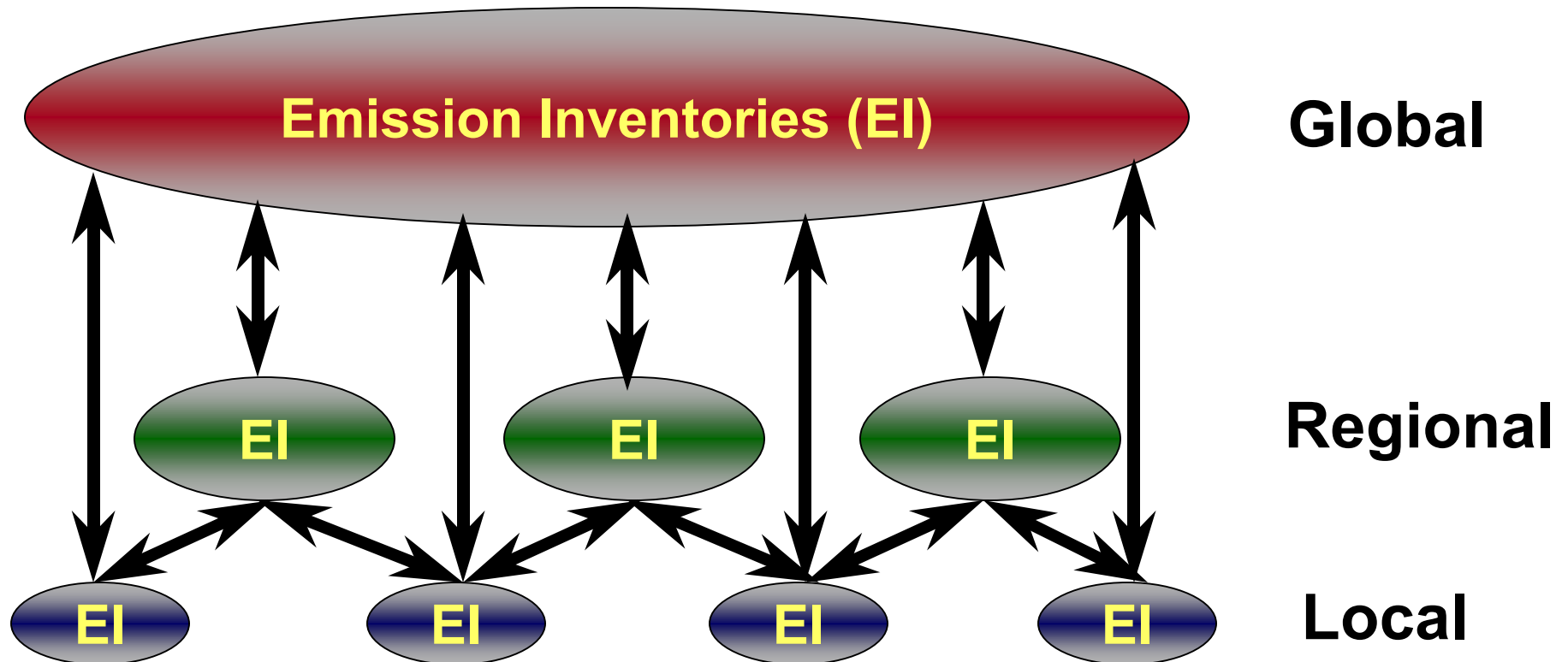
Interoperable systems are:

❖Scalable – Operate at local and global levels both in terms of spatial coverage and information load

❖Flexible – Adapt to changes in data provider and user needs

❖Updateable – Include mechanisms for incorporating feedback at multiple stages of the system
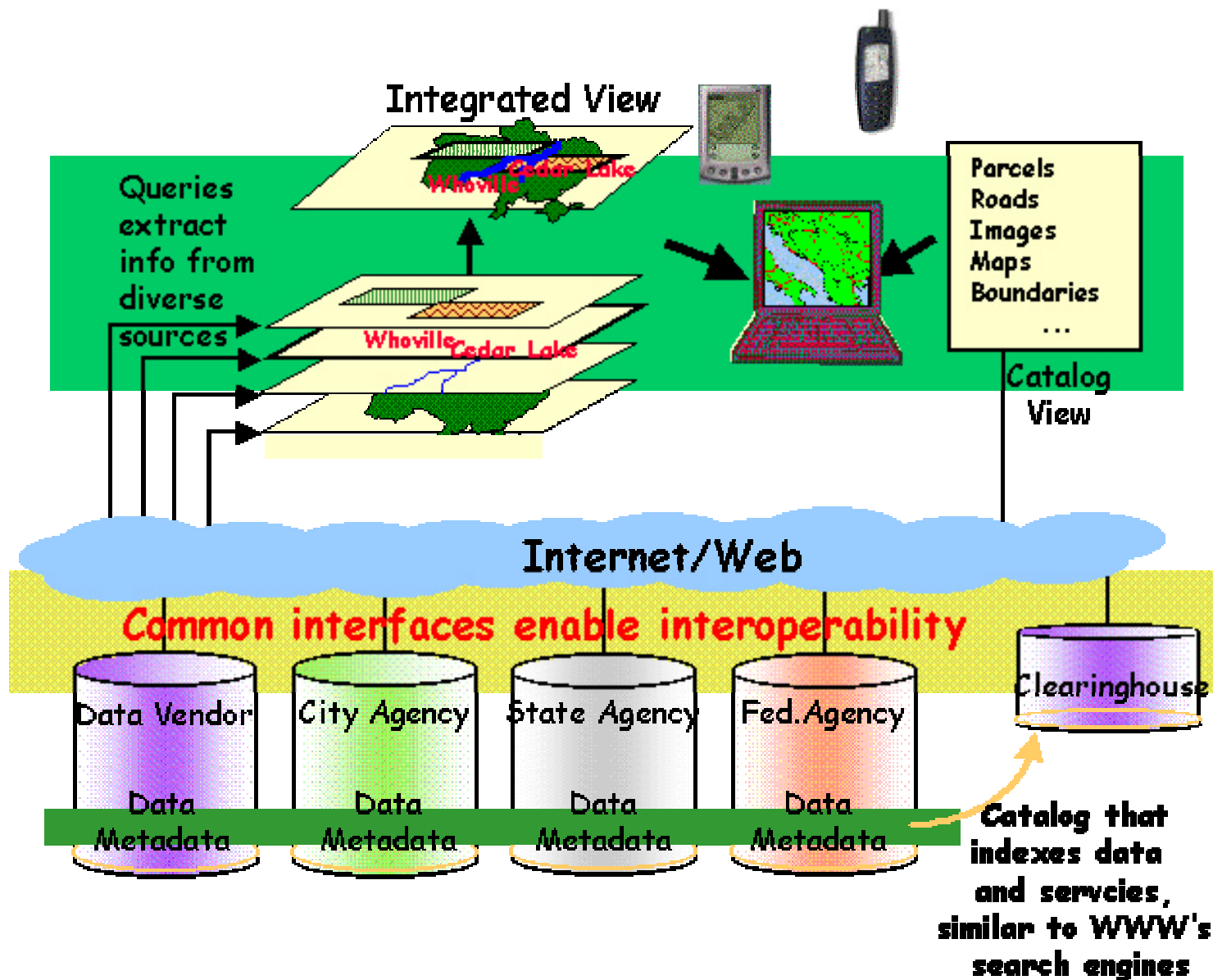
Local – Global Interaction

Local, regional and global emission inventories are linked and exchange data

Global scale benefits from regional and local data that fill spatial gaps

Local scale benefits from a broader spatial view that aids modeling

Distributed and Integrated System

Integrated View

Queries extract info from diverse sources

Whoville Cedar Lake

Whoville Cedar Lake

Parcels
Roads
Images
Maps
Boundaries
...

Catalog View

Internet/Web

Common interfaces enable interoperability

Data Vendor
Data Metadata

City Agency
Data Metadata

State Agency
Data Metadata

Fed.Agency
Data Metadata

Clearinghouse

Catalog that indexes data and servcies, similar to WWW's search engines

Features of an IEIS

◆ Standardized methodology for international data collection, transfer and storage

  ❖ Facilitates quality assurance and control
  ❖ Simplifies air-shed and regional air quality modeling
  ❖ Facilitates comparability of analyses between parties
  ❖ Establishes a clear basis for trading mechanisms and other international control approaches

Features of an IEIS, con't

◆ High resolution, interoperable, geographically-referenced (GIS) data description and interface offers specific benefits

  ❖ Reduces uncertainty in the modeling of international criteria pollutant transport and in accounting for emissions trading systems

  ❖ References sources directly, facilitating local control strategy analysis

  ❖ Allows convenient aggregation on the basis of source-type, pollutant-type, etc, across geographic scales

  ❖ Allows integration with related data, such as topography, meteorology, population, for analysis and modeling

Features of an IEIS, con't

◆ Publicly accessible electronic storage

❖ Fosters trust among parties participating in joint pollution reduction efforts

❖ Facilitates efficient emissions trading markets, as demonstrated by the US Acid Rain Program

❖ Facilitates study and analysis by multiple sources, whose results can enhance the policy development process, i.e. academics and NGOs

Potential users and data sources

◆ Regulatory organizations for individual cities, states and nations

◆ Regional and global political entities

◆ NGOs

◆ Scientific organizations, such as the IGBP

◆ Individual researchers

◆ The Public

Steps Towards Building an IEIS

◆ Recruit appropriate funding for individual components of the project

◆ Recruit multinational, multi-sector teams for main project activities

◆ Achieve agreement on protocols for transfer, archiving, and sharing of data

Where do we stand?

◆ Recruit appropriate funding for individual components of the project

  ◆ Have won the interest of the US National Science Foundation for the technical development aspects of the project

  ◆ Have received preliminary interest from the World Bank for the capacity building aspect of the project

  ◆ Are pursuing other sources of international funding

Where do we stand?

◆ Recruit multinational, multi-sector teams for main project activities

    ◆ Have partnered with US EPA's EFIG group

    ◆ Am in discussions with the GEIA inventory program coordinator

    ◆ Have partnered with CIESIN, Columbia University

Where do we stand?

◆ Achieve agreement on protocols for transfer, archiving, and sharing of data

  ◆ Will be adopting the OpenGIS framework, a new international standard for web-based data archiving and distribution

  ◆ Will be holding an NSF-sponsored workshop in the coming months to discuss the standards needed for emissions inventory data

Where do we stand?

◆ Recruit inventory developers and experts into membership in the consortium

  ◆ We are here to invite your participation
  ◆ And have a question for you…..

"What would you do differently if you had your emissions inventory to do over???"

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