



HIDE: A Hydrological Integrated Data Environment

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- Xu Liang at UC Berkeley provides valuable insights and helps on our various questions regarding hydrological datasets, data sources, data retrieval and process



Hydrological Integrated Data Environment (HIDE)

■ What is HIDE?

- A web-based data integration system for heterogeneous datasets from heterogeneous data sources/providers
- Data search and on-the fly data integration based on user queries

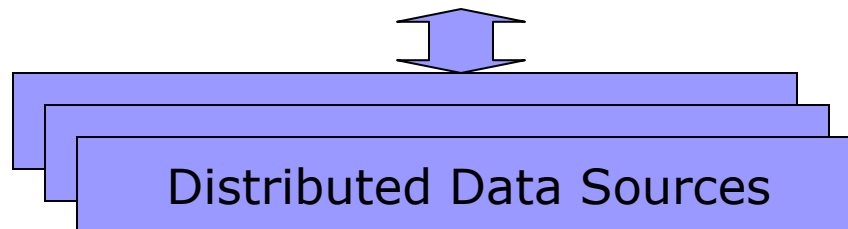
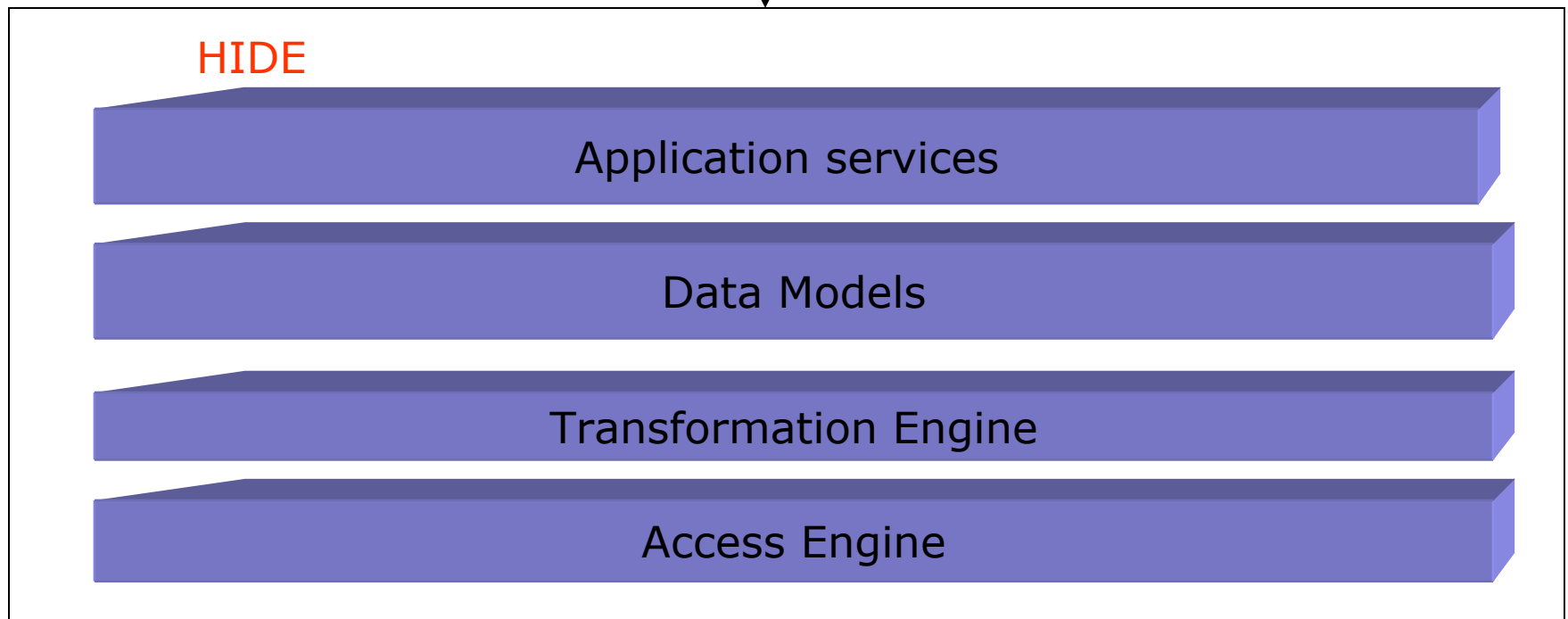


Hydrological Integrated Data Environment (HIDE)

■ How does HIDE work?

- Datasets are published by the data providers through various technologies
- Definition of basic unit of information – DataNode (data sources or data sets)
- **XML Schema** based data integration
- Taxonomical organization of DataNodes while incorporating the domain and structural knowledge.

Hydrological Integrated Data Environment (HIDE)





HIDE: Schema

- XML Schema based data integration.
- Three kinds of schema.
 1. Integration schema.
 2. Syntax and semantic schema of data sources.
 3. Data Model schema of the integrated data.



Integration schema

1. Describe the data source or dataset.
2. What kind of operations is permitted on the data source / dataset?
3. How to access the external data engines?
4. What kind of transformations should be applied to the data for an effective integration?



Syntax and semantic schema

1. What are the syntax and semantic details of the data from the data source?. E.g.: formats, type of data files etc.



DataModel schema

- Describe the data model of the integrated data.
- Temporal, Spatial and Temporal-Spatial data model.
- Records the nature of the integrated data with more emphasis on temporal and spatial characteristics of the data.
- Suitable for data exchange.



DataModel schema contd.

1. A comprehensive description of all aggregated datasets.
2. Temporal and spatial coverage.
3. Syntactic details of the aggregated data.
4. Data representation.

An example of DataModel metadata.

```
<dataModel xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:noNamespaceSchemaLocation='c:\IDAM\xml\xsd\dataModelSchema.xsd' type="temporal">
```

```
<Datasets>
```

```
<Dataset name=" ">
```

```
<DataSource> ..... </DataSource>
```

```
</DataSource>
```

```
<coverage>
```

```
<temporal type="single"> ..... </temporal>
```

```
<spatial> ..... </spatial>
```

```
</coverage>
```

```
</Dataset>
```

Dataset
description &
coverage

```
</Datasets>
```

```
<temporal datasetType="dataTable" column="1" dateFormat="YYYY-MM-DD hh:mm"
timezone="EST">
```

```
<syntax type="Ascii" delimiter="," />
```

```
<<dataTable numRecords="unbounded">
```

```
<dataFields>
```

```
<dataField name="Precipitation" type="integer"/>
```

```
</dataFields>
```

```
</dataTable>
```

```
</temporal>
```

Syntax & data
representation

HIDE - Snapshots

The screenshot shows a Netscape browser window titled "Welcome to Hydrological Integrated Data Environment - Netscape". The address bar contains the URL "http://ari423x16.ari.vt.edu:8080/IDAM/home.html". The browser's menu bar includes "File", "Edit", "View", "Go", "Bookmarks", "Tools", "Window", and "Help". The toolbar contains navigation buttons (back, forward, home, stop), a search button, and a Netscape logo. Below the toolbar is a "Menu Panel" with a list of links: "1. [Search Engine](#)", "2. [Recently Viewed Data](#)", "3. [Visualization tools](#)", and "4. [Help](#)".

The main content area displays the heading "Welcome to HIDE - Search engine" in orange text. Below this heading is a search input field and a "Search" button. Underneath, the text "Search Results" and "1 results found" is shown. The search result is a link to "GPCC Global Precipitation climatology center - precipitation Data for the period 1986-1987". The text below the link states: "Precipitation data are main input to global hydrological cycles and climate models. The conventional rain-gauge measurements are the only direct measure of rainfall. This dataset is comprised of monthly gridded area-mean rainfall totals for the period January 1986 to March 1999 on a 1 by 1 degree global grid." The link provided is "daac.gsfc.nasa.gov/daac-bin/nph-ff/DODS/inter disc/hydrology/precip/gpcp/gpcc/".

The Windows taskbar at the bottom shows the "start" button and several open applications: "America Online pro...", "Inbox - Microsoft O...", "HIDE.ppt", "IDAM_paper_v7.2....", and "Welcome to Hydrolo...". The system tray on the right shows the time as "9:41 AM" and the language as "EN".

HIDE - Snapshots

The screenshot shows a Netscape browser window titled "Welcome to Hydrological Integrated Data Environment - Netscape". The address bar contains the URL "http://ari423x16.ari.vt.edu:8080/IDAM/home.html". The browser interface includes a menu bar (File, Edit, View, Go, Bookmarks, Tools, Window, Help) and a toolbar with navigation buttons and a search box. A "Menu Panel" on the left lists: 1. [Search Engine](#), 2. [Recently Viewed Data](#), 3. [Visualization tools](#), and 4. [Help](#).

The main content area displays a form with the following sections:

- Please select the search conditions**
 - Sites:List of sites for the state of Alabama**
A dropdown menu is set to "UCHEE CREEK NEAR FORT MITCHELL AL".
 - Days:Number of Days in the range 1-31**
An empty text input field.
- Please select the output params**
 - 00060 Discharge (DD01)
 - 00065 Guage Heght(DD02)
 - 00045 Precipiation (DD04)

A "Submit" button is located at the bottom of the form.

The Windows taskbar at the bottom shows the "start" button and several open applications: "America Online pro...", "Inbox - Microsoft O...", "HIDE.ppt", "IDAM_paper_v7.2....", and "Welcome to Hydrolo...". The system clock shows "9:42 AM".

HIDE - Snapshots

Welcome to Hydrological Integrated Data Environment - Netscape

File Edit View Go Bookmarks Tools Window Help

http://ari423x16.ari.vt.edu:8080/IDAM/home.html

Search

Mail AIM Home Radio My Netscape Search Bookmarks

Menu Panel

1. [Search Engine](#)
2. [Recently Viewed Data](#)
3. [Visualization tools](#)
4. [Help](#)

Date	Agency code	Site no	Precipitation
2004-09-25 00:00	USGS	02361000	.00
2004-09-25 01:00	USGS	02361000	.00
2004-09-25 02:00	USGS	02361000	.00
2004-09-25 03:00	USGS	02361000	.00
2004-09-25 04:00	USGS	02361000	.00
2004-09-25 05:00	USGS	02361000	.00
2004-09-25 06:00	USGS	02361000	.00
2004-09-25 07:00	USGS	02361000	.00
2004-09-25 08:00	USGS	02361000	.00
2004-09-25 09:00	USGS	02361000	.00
2004-09-25 10:00	USGS	02361000	.00
2004-09-25 11:00	USGS	02361000	.00
2004-09-25 12:00	USGS	02361000	.00
2004-09-25 13:00	USGS	02361000	.00
2004-09-25 14:00	USGS	02361000	.00
2004-09-25 15:00	USGS	02361000	.00
2004-09-25 16:00	USGS	02361000	.00
2004-09-25 17:00	USGS	02361000	.00
2004-09-25 18:00	USGS	02361000	.00
2004-09-25 19:00	USGS	02361000	.00

start America Online pro... Inbox - Microsoft O... HIDE.ppt IDAM_paper_v7.2... Welcome to Hydrolo... EN 9:45 AM

HIDE prototype

- Can be accessed,

<http://ari423x16.ari.vt.edu:8080/IDAM/home.html>