

# CalSWIM: A Wiki-Based Data Sharing Platform

Crista Lopes

Stanley Grant

Yasser Ganjisaffar

Sara Javanmardi

University of California, Irvine

# Introduction

- CalSWIM: California Sustainable Watershed Information Manager.
  - A platform for sharing information about water resources.



The screenshot shows the CalSWIM website interface. At the top left, the logo "CalSWIM" is displayed in blue, with the full name "California Sustainable Watershed/Wetland Information Manager" below it. A navigation bar contains links for "Home", "More Information", "CalSWIM Tools", "Related Links", and "Feedback". The main content area features a large blue vertical bar on the left and a white background on the right. The right side has a heading "Investigate Newport Bay with CalSWIM" and a paragraph of introductory text. Below this text is a box titled "Access the Tools" which lists "Which tool should I use?", "Explorer Application", "Interactive Simulation Tool", and "Analysis Tool". On the far right, there are two small images: one of a sailboat in a harbor and another of a white egret standing on a beach.

**CalSWIM**  
California Sustainable Watershed/Wetland Information Manager

[Home](#) | [More Information](#) | [CalSWIM Tools](#) | [Related Links](#) | [Feedback](#)

## Investigate Newport Bay with CalSWIM

CalSWIM is a new watershed information and management tool designed both as a public forum for exploring local watersheds and as a web location for professionals to acquire data and to interactively model watershed changes. Currently, the


### Access the Tools

Which tool should I use?

Explorer Application

Interactive Simulation Tool

Analysis Tool



# Stakeholders

- Organizations
  - They have databases of *historical* and *real-time* data from monitoring sites.
- Environmental Experts
- General Public

# Traditional Data Access

**Data Retrieval**  
**By Data Category**  
**By Location**

**Data Retrieval - By Data Category**

Select a Data Category

- Atmosphere
- Benthic
- Fisheries
- Plankton
- Soil
- TimeSeries
- Toxicity
- Water Quality

**Data Retrieval**  
**By Data Category**  
**By Location**

- Data Summaries
- BDAT Links
- Provider Login
- Special Reports
- Sponsors
- Contact
- FAQ
- Home

**Data Retrieval**

Select Analytes-Fraction Codes

- 1% Light Depth
- 1,1,1,2-Tetrachloroethane
- 1,1,1-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- 1,1,2-Trichloroethane
- 1,1-Dichloroethane
- 1,1-Dichloroethene
- 1,1-Dichloropropene
- 1,2,3-Trichlorobenzene
- 1,2,3-Trichloropropane
- 1,2,4-Trichlorobenzene
- 1,2,4-Trimethylbenzene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane
- 1,2-Dichlorobenzene

**Data Retrieval**  
**By Data Category**  
**By Location**

- Data Summaries
- BDAT Links
- Provider Login
- Special Reports
- Sponsors
- Contact
- FAQ
- Home

**Data Retrieval**

The number of records that will result from this set of selections is: **612**

Select Fields:

- Project
- Agency
- Agency link
- Metadata link
- Station Code
- Station Name
- Region
- River km Index
- x coord
- y coord
- Spatial Unit
- Sample Date
- Sample Time
- Sample ID
- Sample Type

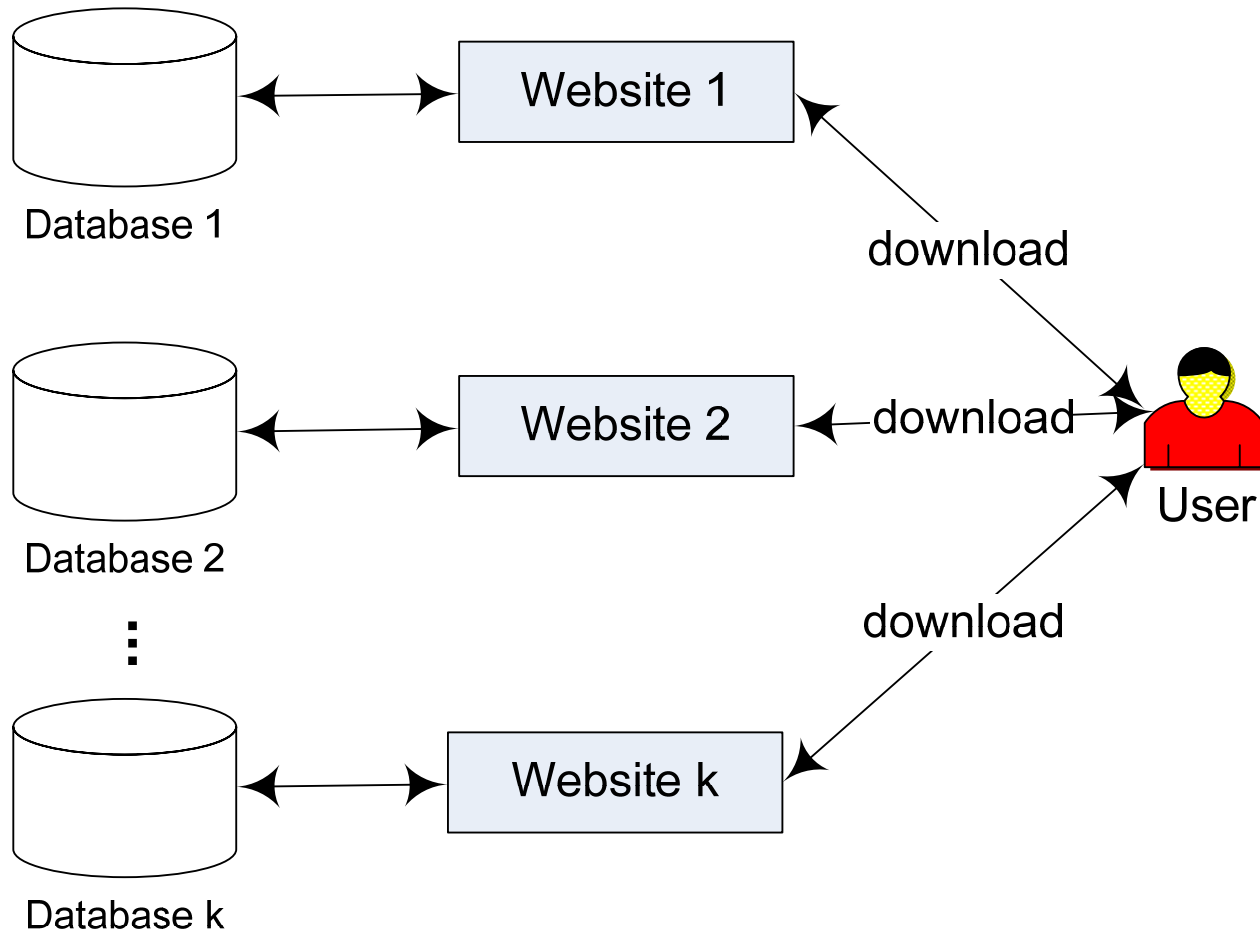
- Display up to 2500 rows as HTML
- Display up to 2500 rows as Excel
- Download up to 65000 rows as zipped text file
- Email a link to download all data

[Selecting multiple fields](#) [Note: Data will be unsorted.]

**Data Retrieval**  
**By Data Category**  
**By Location**

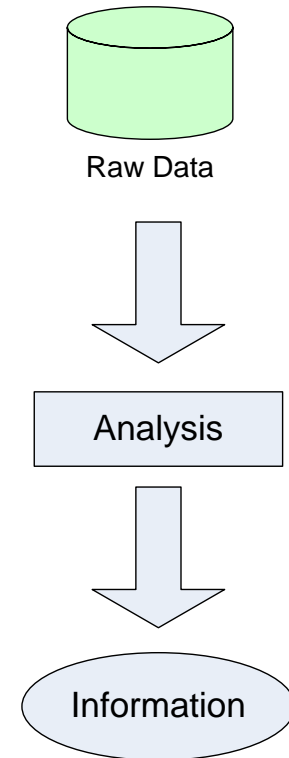
- Data Summaries
- BDAT Links
- Provider Login
- Special Reports
- Sponsors
- Contact
- FAQ
- Home

# Traditional Data Access

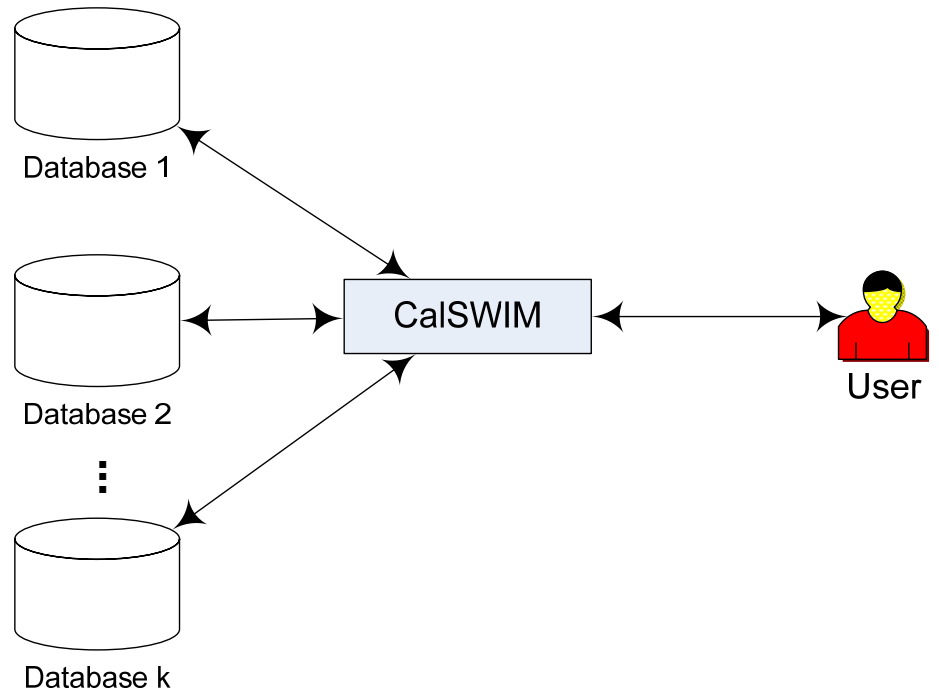
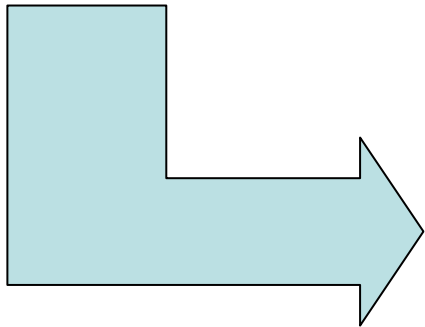
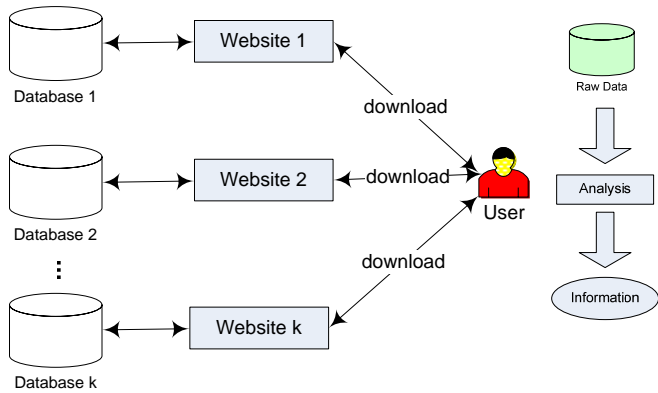


# Data Analysis

- Download data
- Run analysis tools on it
- Report results
  
- Download updated data
- Run analysis tools on it
- Report results
  
- ...



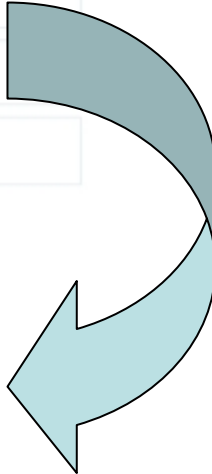
# CaISWIM



# Database Registration

Nick name:	<input type="text" value="SampleDB"/>
Database Type:	<input type="text" value="MySQL"/>
Host name:	<input type="text" value="trung.ics.uci.edu"/>
Port:	<input type="text" value="3306"/>
Database name:	<input type="text" value="sampledb"/>
Database Username:	<input type="text" value="calswimreader"/>
Database Password:	<input type="password" value="....."/>
<input type="button" value="Register"/>	

Only Read Access



## Metadata

### Table: Analyte

- ID (INT UNSIGNED)
- Name (VARCHAR)
- TypeID (INT UNSIGNED)

### Table: AnalyteType

- ID (INT UNSIGNED)
- Name (VARCHAR)

### Table: Project

- ID (INT UNSIGNED)
- Name (VARCHAR)

### Table: Sample

- ID (INT UNSIGNED)
- ProjectID (INT UNSIGNED)
- StationCode (VARCHAR)
- Date (VARCHAR)
- Time (VARCHAR)
- AnalyteID (INT UNSIGNED)
- Result (VARCHAR)
- UnitID (INT UNSIGNED)

### Table: Station

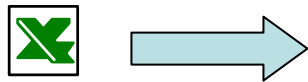
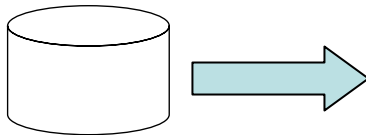
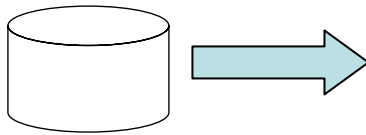
- Code (VARCHAR)
- Name (VARCHAR)
- Longitude (VARCHAR)
- Latitude (VARCHAR)
- Region (VARCHAR)

### Table: Unit

- ID (INT UNSIGNED)
- Name (VARCHAR)



# Online Content Assembly



**A Sample 3D Bar Chart**

Category	First	Second	Third
Category 1	1	5	4
Category 2	4	7	6
Category 3	3	6	2
Category 4	5	8	3
Category 5	5	4	6

**Charts from Data of Attached Excel Files**

If your data is in an attached excel file and you want to display it in your web page on a chart, you can use a code like the following:

```
{chart:
  sourceType:excel, file:sample.xls, sheet:1, range:A1:C10
  type:bar
  width:700
}
```

Here, the sample.xls specifies that the data is in the attachment file with the same sample.xls. It's also specified that this data is in sheet 1 and in range A1:C10. The result would be:

Item	Count1	Count2
Item 1	50	100
Item 2	20	40
Item 3	10	30
Item 4	10	60
Item 5	200	80
Item 6	250	90
Item 7	200	30
Item 8	150	90
Item 9	20	20
Item 10	20	30

**Charts from Results of Database Queries**

The following code executes a query on the SampleDB database and plots the result on a time chart:

```
{chart:
  sourceType:query,
  displayName:SampleDB,
  command:SELECT Date, Result FROM sample Where StationCode = '07' and AnalyteID = 1
  type:line
  title:Sample Time Chart
  data_sourceType:custom, path:yyyy/MM/dd
  width:700
}
```

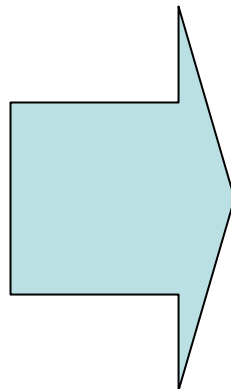
The result is:

**Sample Time Chart**

Year	Result
1974	15.0
1976	20.0
1978	18.0
1980	22.0
1982	16.0
1984	25.0
1986	12.0
1988	28.0
1990	18.0
1992	24.0
1994	15.0
1996	20.0
1998	18.0
1999	22.0

# Wiki Markups

```
{{Infobox musical artist
|Name = Will Smith
|Img = Will Smith 2.jpg
|Img_capt = Will Smith in 2008
|Background = solo_singer
|Birth_name = Willard Christopher Smith, Jr.
|Alias = The Fresh Prince
|Born = {{birth date and age|mf=yes|1968|9|25}}
|Spouse = [[Jada Pinkett Smith]] (1997-Present)
|Origin = [[Wynnefield, Philadelphia, Pennsylvania|Wynnefield]],
[[West Philadelphia]], [[Pennsylvania]]
|Occupation = Actor, [[rapping|rapper]], [[Film
Producer|film]],[[record Producer|music]] and [[television
producer]]
|Years_active = 1986–present
|Label = [[Jive Records|Jive]], [[Columbia Records|Columbia]],
[[Interscope Records|Interscope]]
|Associated_acts = [[DJ Jazzy Jeff & The Fresh Prince]], [[DJ
Jazzy Jeff]]
|URL = [http://www.willsmith.com/ www.willsmith.com]
}}
```

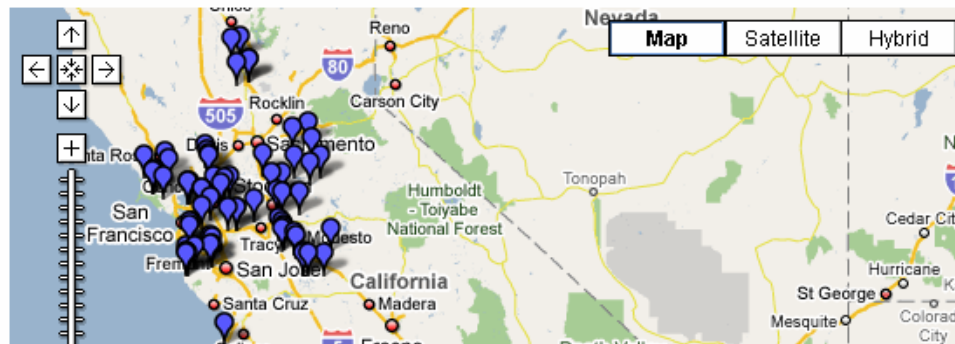


Will Smith	
	
Will Smith in 2008	
Background information	
<b>Birth name</b>	Willard Christopher Smith, Jr.
<b>Also known as</b>	The Fresh Prince
<b>Born</b>	September 25, 1968 (age 40)
<b>Origin</b>	<a href="#">Wynnefield, West Philadelphia, Pennsylvania</a>
<b>Occupation(s)</b>	Actor, <a href="#">rapper</a> , <a href="#">film</a> , <a href="#">music</a> and <a href="#">television producer</a>
<b>Years active</b>	1986–present
<b><a href="#">Label(s)</a></b>	<a href="#">Jive</a> , <a href="#">Columbia</a> , <a href="#">Interscope</a>
<b>Associated acts</b>	<a href="#">DJ Jazzy Jeff &amp; The Fresh Prince</a> , <a href="#">DJ Jazzy Jeff</a>
<b>Website</b>	<a href="http://www.willsmith.com">www.willsmith.com</a> 

# Dynamic Maps

## Sampling Stations

The following map shows location of sampling stations. You can zoom the map for better views. In addition, by clicking on each of the stations you would see its name.



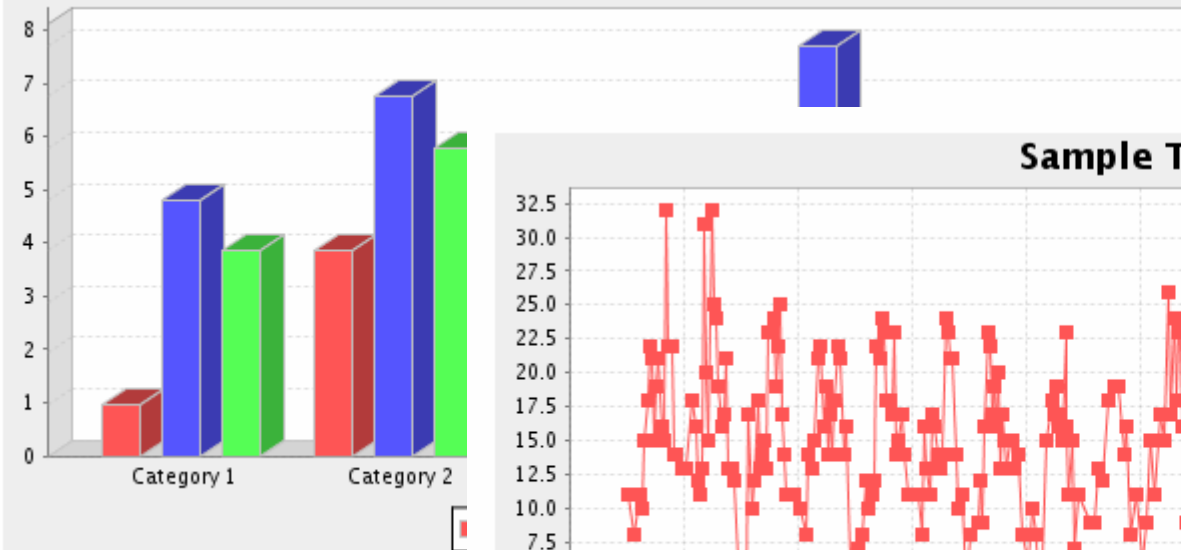
## 1.1 Sampling Stations

The following map shows location of sampling stations. You can zoom the map for better views. In addition, by clicking on each of the stations you would see its name.

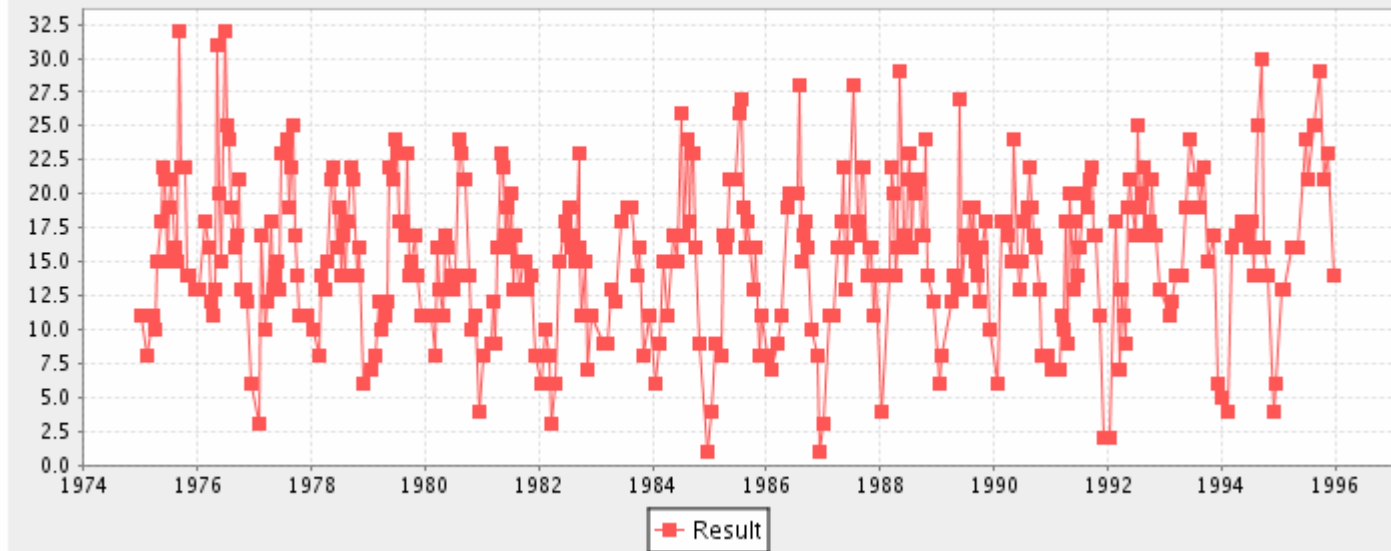
```
#mapFromDB("TrungDB", "Select Name, Latitude, Longitude FROM Station")
```

# Dynamic Charts

A Sample 3D Bar Chart



Sample Time Chart



```
{chart:  
source=type:query;  
dbnickname:StateWaterDB;  
command:SELECT Date, Result FROM sample Where StationCode = 'D7'  
type=time|  
title=Sample Time Chart|  
}
```

# Dynamic Forms

## Watershed Bibliography

---

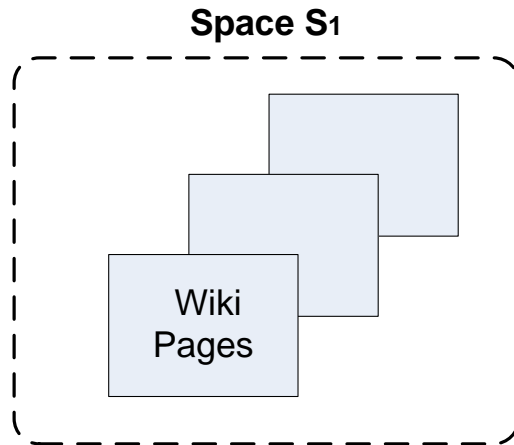
Area:	<input type="text" value="Lower Newport Bay"/>
Subject:	<input type="text" value="Current"/>
<input type="button" value="Search"/>	

Title	Summary
Historical Hydrographic and Hydrologic Changes In The Newport Bay - San Diego Creek Watershed	This report examines the history of drainage in the central Orange County (Irvine/Newport Bay present. San Diego Creek in particular has been frequently and massively altered and then re activities. The report concludes that many of the drainage courses in this area are now unstat "Newport Bay/San Diego Creek Watershed Study".
Symposium and Public Meeting on The State of Newport Bay and Its Watershed Summary Report	This document summarizes the results of the symposium that was held in October, 1997. The define the current state of Newport Bay and foster interest and support for the cooperative de address specific watershed issues. The symposium identified a common interest amongst the implementing a watershed management approach to addressing impacts to the watershed's b

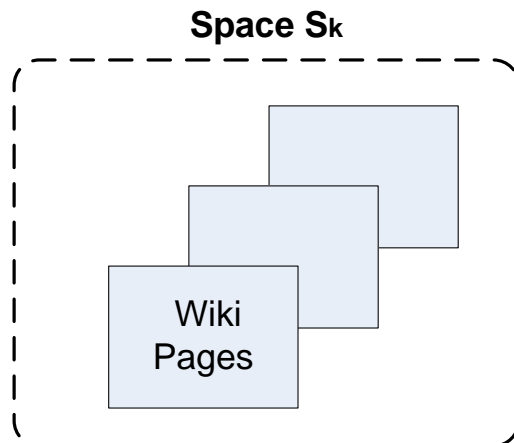
# Wiki Systems

- 1<sup>st</sup> Generation
  - Wikipedia and similar wikis
    - Static content
    - Revision history
- 2<sup>nd</sup> Generation
  - XWiki, CalSWIM, ...
    - **Dynamic content**
    - Revision history
    - Access Control
    - Structured Content

# Content Structure & Access



⋮



## Access Levels:

- Global Access
- Space Level
- Page Level

## Access Rights:

- View
- Edit
- Delete
- Comment

# What else are we doing?

- More powerful analysis tools
  - We are integrating Matlab with the Wiki Engine.
    - Researchers submit their Matlab code as a job.
    - Analysis Engine retrieves data from online databases and Run the code on the data.
    - User can see the results of the finished jobs and can publish them.
- Reputation Estimation & Reliability Assessment.
  - We analyze past behavior of users to estimate their reputation and assign a reliability value to the content they have contributed in the system.
- LaTeX markup support



# Questions?

CalSWIM: <http://calswim.org>

CalSWIM Wiki: <http://nile.ics.uci.edu/xwiki/bin/view/Main/>