

# Database as a Service (DaaS) – An Introduction

Friday 16 September 2011

**JISC**

Virtual Infrastructure with  
Database as a Service (VIDaaS)



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# What is the DaaS?

- A web-based system that will enable researchers to quickly and intuitively
  - build a relational database from scratch, or
  - Import an existing database in common formats (such as Access)
- Generic data addition, editing, and querying interfaces
  - Research groups may, if desired, develop their own Web front-end interfaces to databases hosted by DaaS
- Databases centrally hosted, maintained, and routinely backed up
- Access controls to determine who can view or edit each database
- Metadata capture to improve data rediscovery
- Economies of scale

# DaaS Components

1. 'Core' DaaS database management system – database admin and user interface for browsing and editing databases
2. Conversion utility - converts existing databases in Access or CSV formats into PostgreSQL
3. Graphical SQL-designer utility - create or modify database structures via a simple Web interface
4. Graphical form-builder utility - drag and drop buttons, text fields, multiple choice menus, and other standard form components
5. Advanced SQL query-builder - construct sophisticated search queries without needing to be an SQL expert [\[In development\]](#)

# Core DaaS System

oxrepProject: Home Browse data

Login

## People Search Filter

Peopfirstname

Peopgreekname

Peopinitials

Peopname

Peopsurname

Peoptype

Match  All  Any

Search Reset

## People Search Results (417)

Peopid	Peopbirth	Peopdeath	Peopend	Peopentry	Peopfirstname	Peopgreekname	Peopinitials	Peopname	Peopstart	Peopsurname	Peoptype	Action
33237136				6/10/10 5:25:31 PM		Ισᾶς Τίβεριου Κλαυδίου Αντωνίνου μητρὸς Λογγινίας		Isas s. Tiberius Claudius Antoninus m. Longinia				<a href="#">View</a> <a href="#">Edit</a>
37560955				6/10/10 5:25:31 PM		Πτολεμαῖος Ἀρτάλου τοῦ Κάνιος μητρὸς Τεφερώτος		Ptolemaios s. Harpalos gs. Kanis m. Tepheros				<a href="#">View</a> <a href="#">Edit</a>
41998486				6/10/10 5:25:31 PM		Μελανᾶς Πνεφερώτος τοῦ Πακύσιως μητρὸς Τασουχαρίου		Melanas s. Pnepheros gs. Pakysis m. Tasoucharion				<a href="#">View</a> <a href="#">Edit</a>
44092470				6/4/10 11:46:46 AM	Gaius Suetonius			Suetonius		Tranquillus	Ancient Author	<a href="#">View</a> <a href="#">Edit</a>
45049573				6/10/10 5:25:31 PM		Πνεφερώς Πτολεμαίου τοῦ Πνεφερώτος μητρὸς Θαήσιως		Pnepheros s. Ptolemaios gs. Pnepheros m. Thaeisis				<a href="#">View</a> <a href="#">Edit</a>
49726302				6/10/10 5:25:31 PM		Διδυμίων Πεθέως τοῦ Διδυμίωνος μητρὸς Τασουχαρίου		Didymion s. Petheus gs. Didymion m. Tasoucharion				<a href="#">View</a> <a href="#">Edit</a>
50558597				5/17/10 11:09:00 AM			R	Matjasic, R.		Matjasic	Modern Scholar	<a href="#">View</a> <a href="#">Edit</a>

- Simple interfaces for
  - Registering projects, users, and databases
  - Editing and browsing data



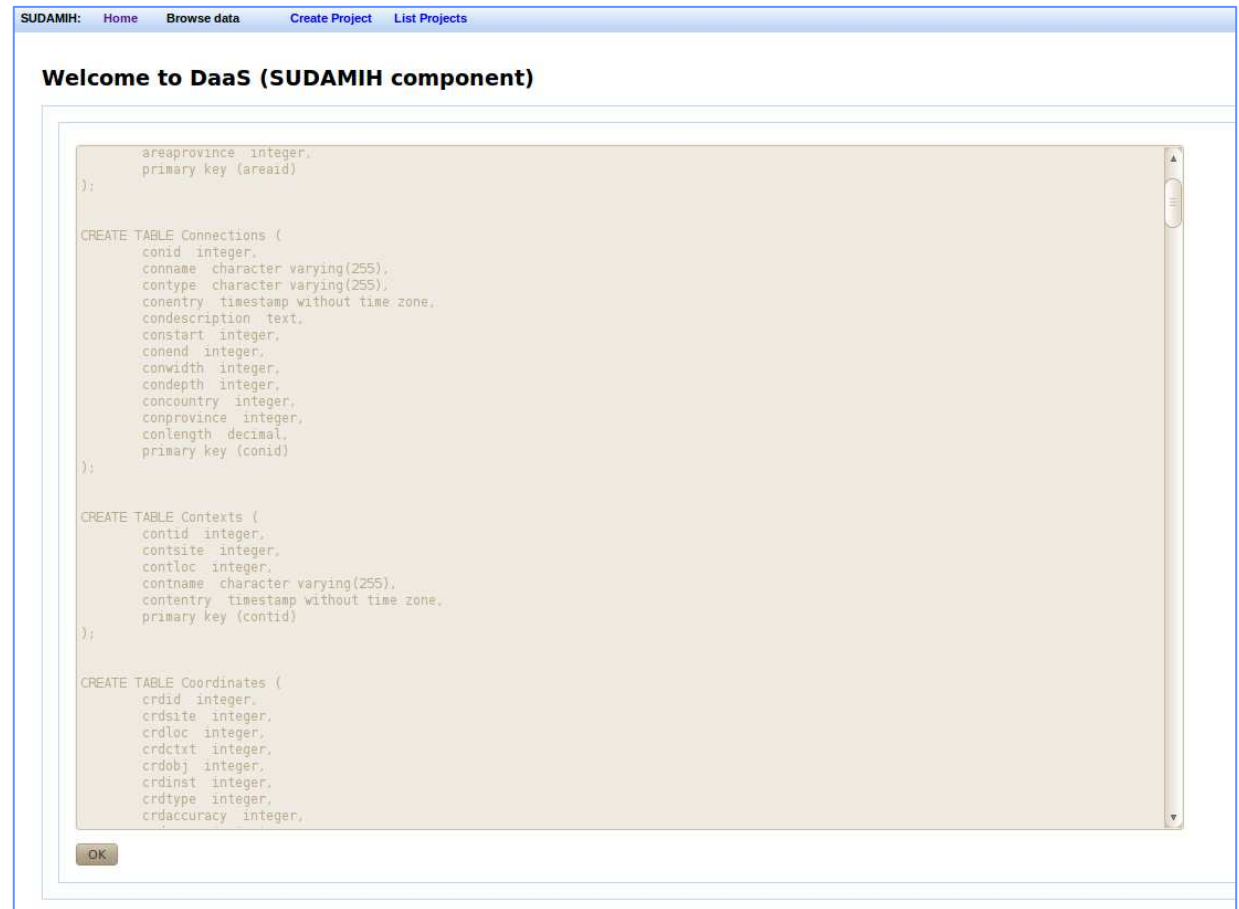
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# PostgreSQL Converter

- Import and export databases in various common formats, including Access



The screenshot shows a web browser window with the URL 'SUDAMIH: Home Browse data Create Project List Projects'. The main content area displays the text 'Welcome to DaaS (SUDAMIH component)'. Below this, there is a large text area containing SQL code for creating three tables: 'Connections', 'Contexts', and 'Coordinates'. The code is as follows:

```
areaprovince integer,
primary key (areaid)
);

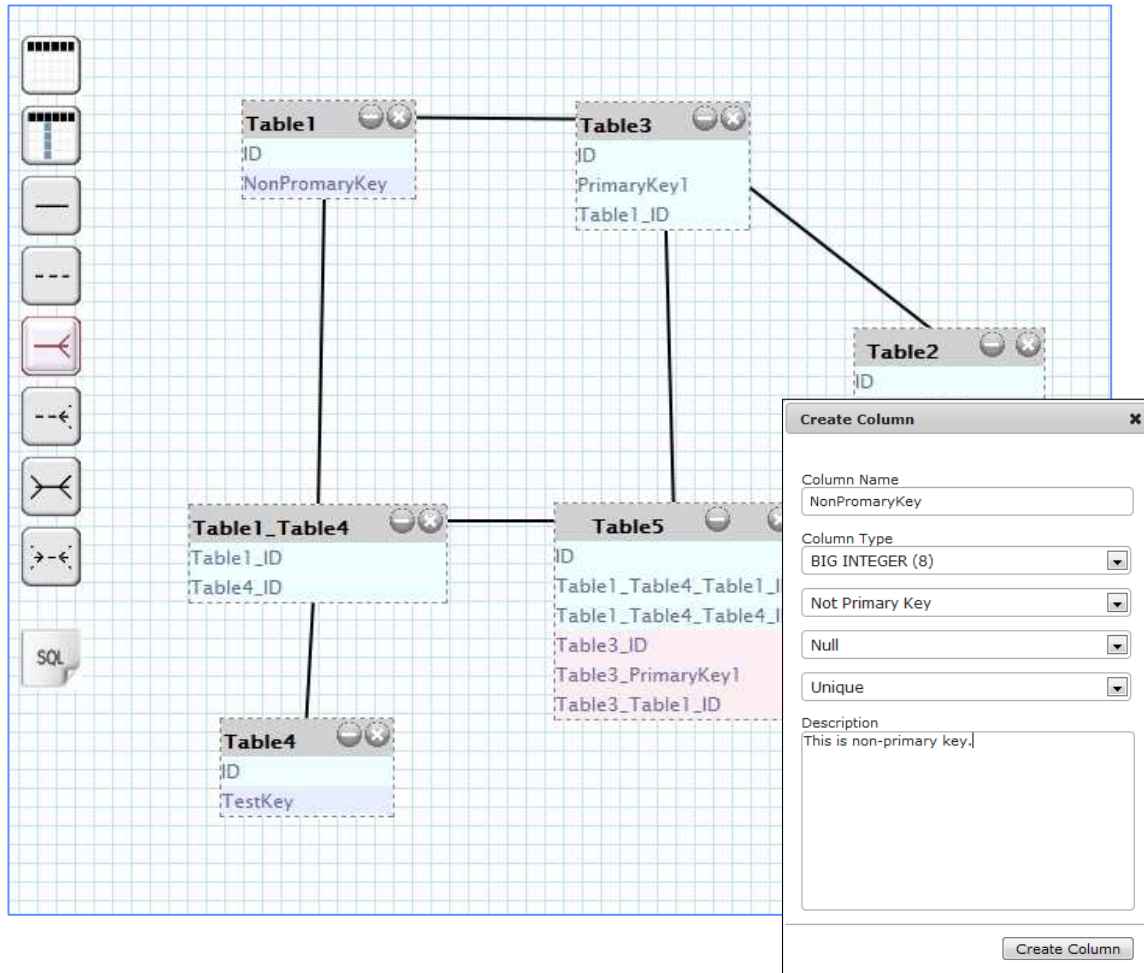
CREATE TABLE Connections (
conid integer,
conname character varying(255),
contype character varying(255),
conentry timestamp without time zone,
condescription text,
constart integer,
conend integer,
conwidth integer,
condepth integer,
concountry integer,
conprovince integer,
conlength decimal,
primary key (conid)
);

CREATE TABLE Contexts (
contid integer,
contsite integer,
contloc integer,
contname character varying(255),
contentry timestamp without time zone,
primary key (contid)
);

CREATE TABLE Coordinates (
crdid integer,
crdsite integer,
crdloc integer,
crdctxt integer,
crdobj integer,
crdinst integer,
crdtype integer,
crdaccuracy integer,
```

An 'OK' button is visible at the bottom left of the text area.

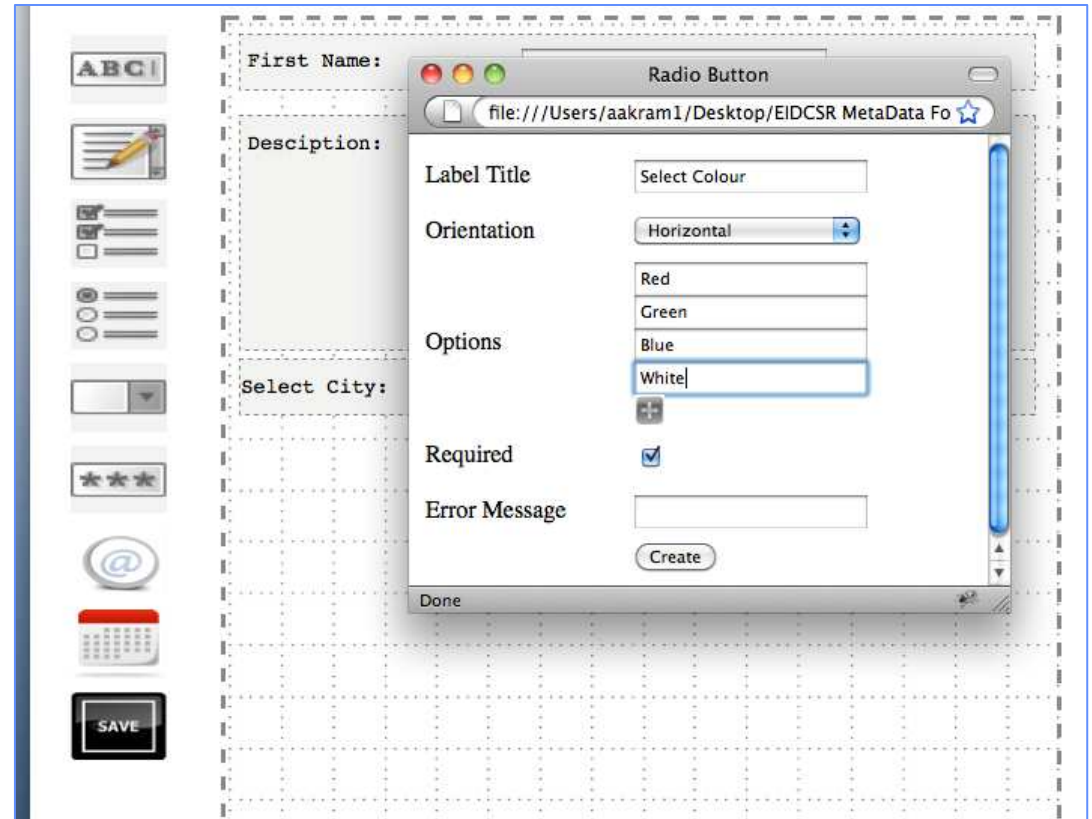
# SQL Designer



- All possible types of relationship between tables are available
- Not limited to use in the DaaS
- Will be able to import and re-structure existing databases

# Form Builder

- Enables the user to drag and drop buttons, text fields, multiple choice menus, and other standard form components via a straightforward Web interface
- Potentially has uses beyond the DaaS



# VIDaaS Project

- Virtual Infrastructure
  - Staging post to national infrastructure
  - Resource management and monitoring
  - Assess bursting into larger HE cloud
- SaaS tools
  - Identity and access management
  - Accounting and billing
- Improved DaaS
  - Robust and user-friendly
  - Extended to function on Cloud environment
  - Documentation and training

# Virtual Infrastructure

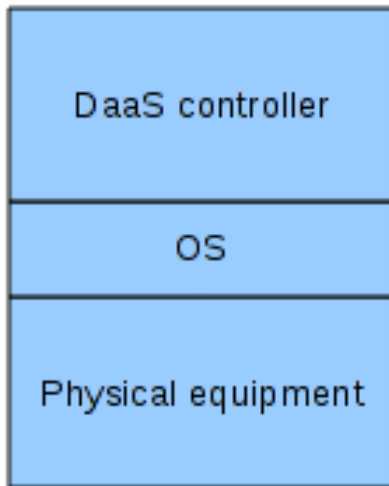


Figure 1. Sudamih DaaS architecture

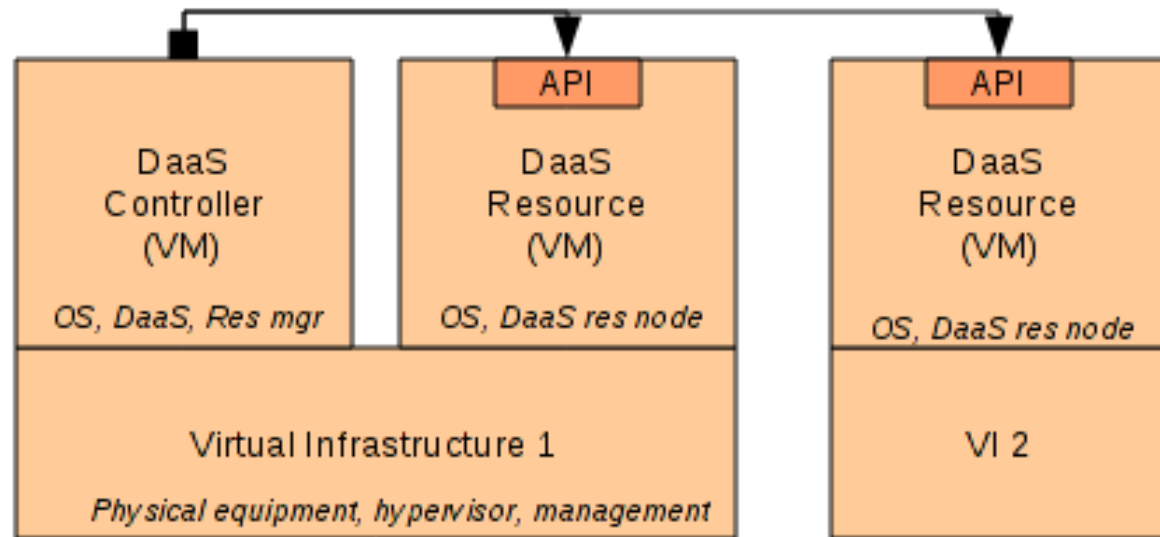


Figure 2. Proposed DaaS architecture

1. DaaS controller coordinates use of dedicated physical equipment.
2. Cluster of virtual machines instantiated from ready-to-run VM images. Extended DaaS controller includes resource management capabilities. Individual resource nodes can be run on any number of VIs offering standardised API to the DaaS controller.

# Contacts

**VIDaaS Project website:**

<http://vidaas.oucs.ox.ac.uk/>

**Sudamih Project website:**

<http://sudamih.oucs.ox.ac.uk/>

Or email us on [vidaas@oucs.ox.ac.uk](mailto:vidaas@oucs.ox.ac.uk)



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