

Integrating Taverna Player into Scratchpads

www.taverna.org.uk | scratchpads.eu

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Scratchpads and Taverna Player

- What are Scratchpads?
 - Taverna and Taverna Player
 - Why integrate the two?
 - Lightweight integration (embed)
 - Tight integration (Web Service)
-
- Scratchpads developed in ViBRANT
 - Taverna Player developed in BioVeL





Scratchpads

Virtual Research Environments

The screenshot shows the Scratchpads website interface. At the top left is the Scratchpads logo (a grid of green squares) and the text "Scratchpads biodiversity online". To the right is a search bar with a magnifying glass icon and the text "contact us". Below the search bar are two radio buttons: "Search this site" (selected) and "Search across Scratchpads". A navigation menu includes "Home", "News", "Explore", "Support", "Develop", and "About us". The main content area is titled "Why choose Scratchpads?" and features four columns: "Create your own site" with a "Create your own Scratchpad!" button; "Publish your data online" with a "READ MORE" link and a "Create your own Scratchpad!" button; "Contribute to biodiversity knowledge"; and "Collaborate with your peers". Below this is a "Join the community!" section with links: "Create a Scratchpad", "Join a Scratchpad", "Try our sandbox", "Become a Scratchpads ambassador", "Develop Scratchpads source code", and "Read about our policies". To the right is a "Case studies" section for the "African ichthyology portal" (Africhthy), which is described as a web portal for African ichthyology. A "VISIT THIS SCRATCHPAD" link is provided. A thumbnail image of the Africhthy portal is shown on the right.

Making taxonomy digital, open & linked



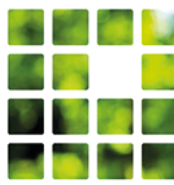
What are Scratchpads?

- Virtual Research Environments
- Hosted websites for biodiversity data
- Virtual research & publication platform
- Curated data and analysis
- Completely open access & open source
- Modular & flexible

The screenshot shows the website for Cyripedioideae (Slipper Orchids). The header includes the title "Cyripedioideae (Slipper Orchids)" and navigation links for Home, About Slipper Orchids, Cyripedioideae, Literature, Media Gallery, Specimens, and Blog. A search bar is also present.

The main content area features a "Welcome to Cyripedioideae" section with introductory text about the sub-family and its characteristics. Below this, there are three columns of "Recent Blog Entries" and "Recent Taxon Descriptions".

At the bottom of the page, there is a footer with logos for eMonocot, Scratchpads, and the Sierra Orchid Foundation, along with a Creative Commons license notice and a citation for the page.



What are Scratchpads?

facilitate

development of online research communities

through

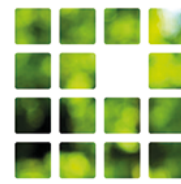
standardized environment of entering and curating data

that allow

sharing and interlinking

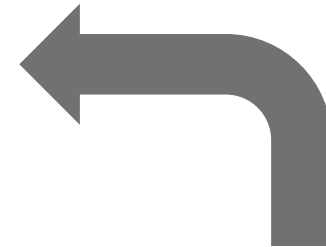
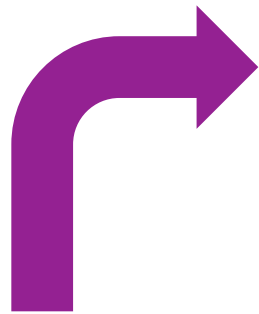
and

dissemination of research products



The Scratchpads concept

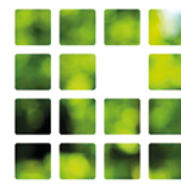
A Scratchpad is a website that holds data for you and your community



Your data



External data & services



The Scratchpads concept





Scratchpads details

- Drupal CMS (7.26) with both custom and Drupal.org contributed modules.
- Over 500 Scratchpads sites managed by Aegir
 - www.aegirproject.org
- Hosted on two application servers
 - Load balancing and caching performed by Varnish
- 2 MySQL database servers
 - master-master configuration
- 1 Apache Solr search server

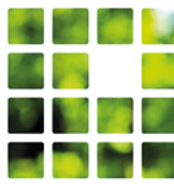




Taverna

- Scientific Workflow Management System
- Workbench
 - Desktop application
- Command-line tool
 - Batch
- Server
 - Multi-user
 - Secure separation of workflow runs
 - REST and SOAP interfaces

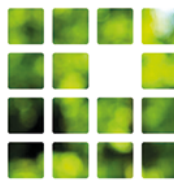




Taverna Player

- A Ruby on Rails plugin library
 - Hooks into host application's
 - Workflow model
 - Authentication and authorization system
 - Provides a REST interface
- Talks to Taverna Server's REST interface
 - Uploads the workflow, sets inputs
 - Presents workflow interactions to the user
 - Retrieves results, logs and provenance data

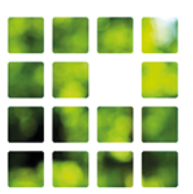




Taverna Player

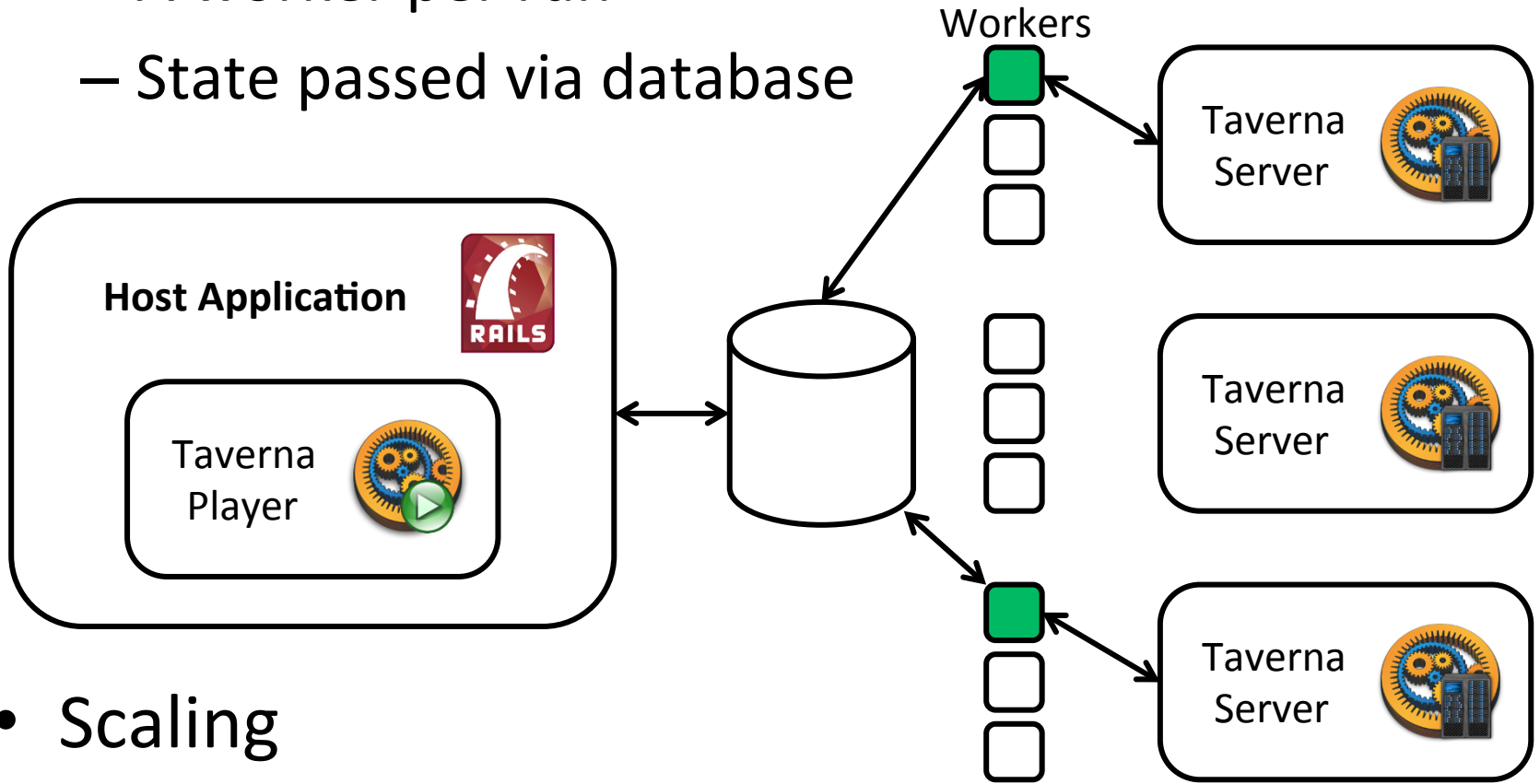
- Surfaces a workflow run in three ways:
 - As a Web interface in the browser
 - In the host application
 - As an embeddable widget
 - In any Web page (c.f. YouTube videos)
 - As a REST-based Web Service
- All look-and-feel and styling is derived from the host application
 - Rails's hierarchical layouts and views



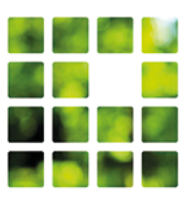


Taverna Player

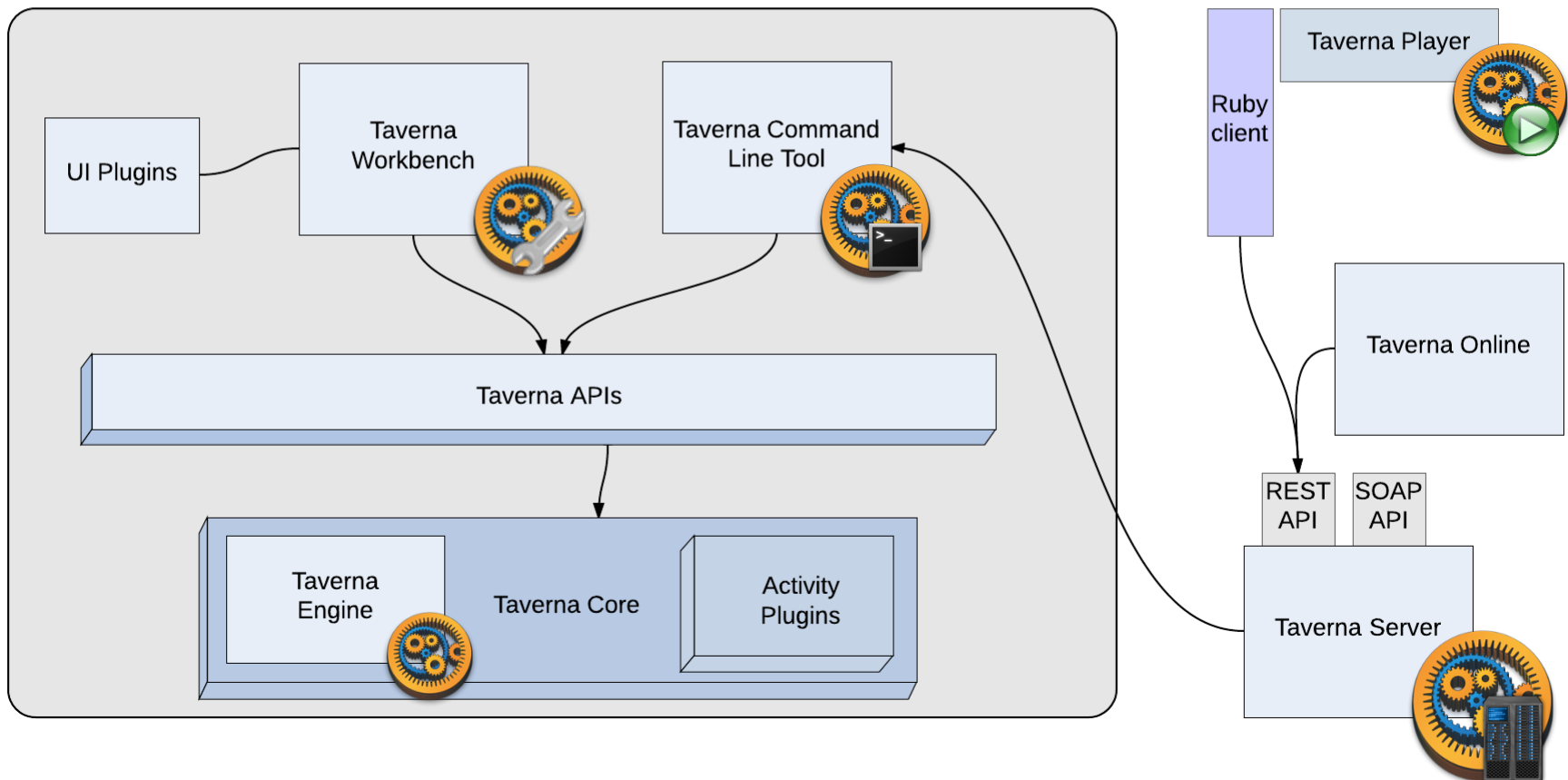
- Total workflow run isolation
 - A worker per run
 - State passed via database

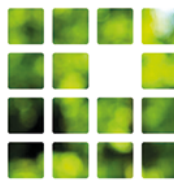


- Scaling



Taverna all together





Taverna Player details

- Ruby on Rails
 - Version 3.2 (released) and 4.x (testing)
 - Plugin
- Delayed Job for workflow run isolation
 - Manages workflow run queues
 - Start workers to match Taverna Server capacity
 - Loss of a workflow run will not affect any others





Player in the BioVeL Portal

Home Workflows Runs Contact Robert Haines Admin Log out

Photo by Matthias Obst

SEEK
Carole Goble,
1400

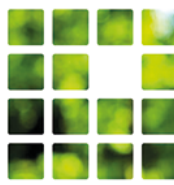
Welcome to the BioVeL Portal
For technical support or questions about...

Taxonomic Refinement Ecological Niche Modelling Metagenomics Phylogenetics Population Modelling Ecosystem Modelling My BioVeL

BioVeL has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 283359.

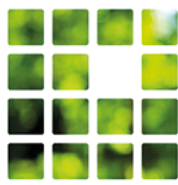
Portal version: 1.1.0-11709





Why integrate?

- Join two communities
- BioVeL Portal
 - Good for the “day job”, collaboration with others in, or close to, the project.
- Scratchpads
 - Dissemination; wide reach but focussed area
 - Move science into the public domain
 - Lots of data compatible with BioVeL pipelines



Workflows in Scratchpads I

- Lightweight embedding of a workflow
- Scratchpads updated to expose public data
 - As CSV
 - For each individual taxa
- Workflow is run as “guest” user
 - Embedding only available for “public” workflows
- Results stay in Taverna Player



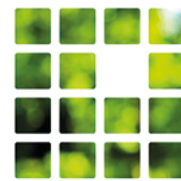
Workflows in Scratchpads I

- Embed like a YouTube video
- Embedded workflow is passed the URI of data

```
<iframe src="http://portal.org/runs/new?  
        embedded=true&  
        workflow_id=1&  
        input_uri=http://scratchpad.org/taxa/1234/data"  
>  
</iframe>
```

- This level of integration is lightweight
 - Science showcases
 - One off analyses

<https://github.com/myGrid/taverna-player/wiki/Embedding>



Workflows in Scratchpads I

Antk ID guide |

HOME ABOUT TAXA LUCID KEY CHECKLISTS

Antkey ID guide | introduced ants

Search... SEARCH

● All ○ Taxonomy

HOME ABOUT TAXA LUCID KEY CHECKLISTS MEDIA VIDEOS GLOSSARY LITERATURE SPECIMENS FORUMS BLOG

- TAXA (ALSO SEARCH BY USING TAXONOMY SEARCH BAR IN HEADER)
- Amblyoponinae (1)
 - Janina malariscephala (1)
 - Technomyrmex silioides (1)
 - Ceracanthinae (1)
 - Ecitoninae (1)
 - Dolichoderinae (1)
 - Formicidae (1)
 - Myrmicinae (17)
 - Acromyrmex (1)
 - Anergates (1)
 - Atta (1)
 - Camponotus (1)
 - Cephalotes (1)
 - Crematogaster (1)
 - Cyphomyrma (1)
 - Euponerotidae (1)
 - Monomorium (1)
 - Myrmica (1)
 - Pheidole (1)
 - Pheidole anastasi (1)
 - Pheidole billmeki (1)
 - Pheidole ferruginea (1)
 - Pheidole flavens (1)
 - Pheidole megapachala (1)
 - Pheidole mepanica (1)
 - Pheidole obscuricorax (1)
 - Pheidole surdatissima (1)
 - Pheidole teneriffana (1)
 - Pseudomyrmex (1)
 - Solenopsis (1)
 - Strumigenys (1)
 - Technomyrmex (1)
 - Volkmannia (1)
 - Wasmannia (1)
 - Penininae (1)
 - Pseudomyrmecinae (1)

Home » Pheidole megapachala » Myrmicinae » Pheidole » Pheidole megapachala

Run status: Waiting for user input

Bio STIF Biodiversity Spatial Temporal Interactive interface Version 0.2.0 Help

Continue the Workflow Abort the Workflow

Selection layer: 1.194 results with location information

Map selector tools: 1.194 results with location information

Aggregation type: 1.194 results with location information

Hide coordinates: Longitude: -34.97652, Latitude: 7.26301

0 results with time information

2012-01-01 2012-04-01 2012-07-01 2012-10-01 2013-01-01 2013-04-01 2013-07-01 2013-10-01

1-100 of 1194 Results Page 1 of 12

	decimalLatitude	nameComplete	occurrenceID
<input type="checkbox"/>	-24.95694	Pheidole megapachala	CASC-BLF05316-CASENT0019150
<input type="checkbox"/>	-13.08333	Pheidole megapachala	CASC-BLF09426-CASENT0041336
<input type="checkbox"/>	-16.01	Pheidole megapachala	CASC-BLF06812-CASENT0025506

Contact us Report abuse Cite me Language Log in

Search... SEARCH

● All ○ Taxonomy

HOME BLOG

Version 0.2.0 Help

Continue the Workflow Abort the Workflow

Hide coordinates Longitude: -34.97652, Latitude: 7.26301

1.194 results with location information

2012-01-01 2012-04-01 2012-07-01 2012-10-01 2013-01-01 2013-04-01 2013-07-01 2013-10-01

1 occurrenceID

CASC-BLF05316-CASENT0019150

CASC-BLF09426-CASENT0041336

CASC-BLF06812-CASENT0025506

BioVeL Home Workflows Runs

Welcome to the BioVeL Portal

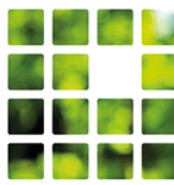
For technical support or questions a

Taxonomic Refinement

Ecological Niche Modeling

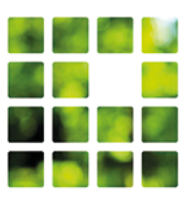
BioVeL has received technological developme

Cancel

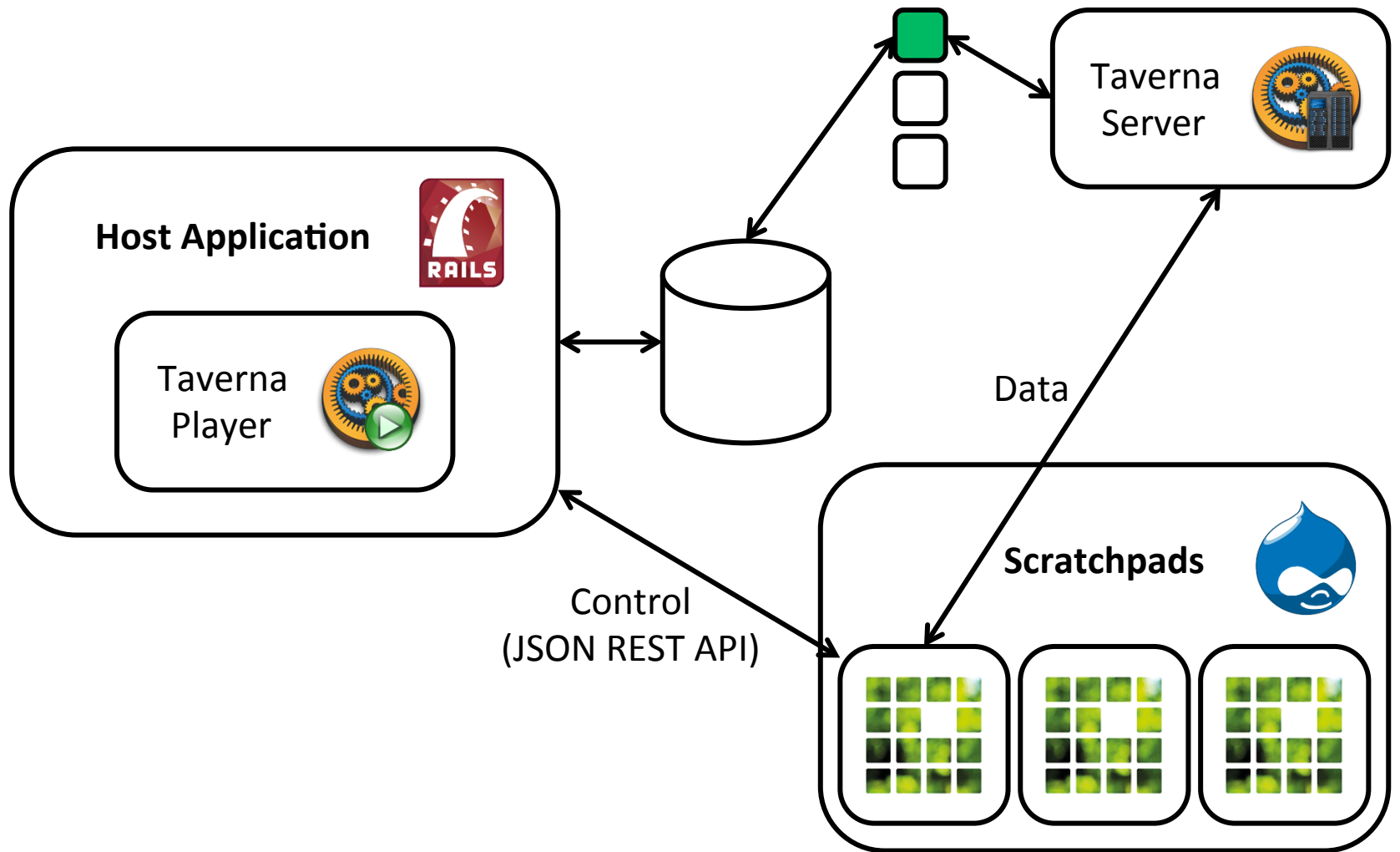


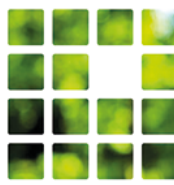
Workflows in Scratchpads II

- Tighter integration of analysis pipelines
 - Scratchpads directly controls Taverna Player
- Scratchpads has ‘offsite computation’ modules
 - Large scale batch operations, etc
 - Workflow runs added to this group
- Scratchpads uses the Taverna Player REST API
 - Within the host application/portal



Workflows in Scratchpads II





Workflows in Scratchpads II

- Scratchpads can
 - Authenticate to Taverna Player
 - Get a list of workflows and show these to the user
 - Set up the workflow run, inputs, etc
 - Present interactions to the user
 - Retrieve results for further analysis
- This level of integration is more suited to
 - Long-running workflows
 - Larger, repeated studies



Workflows in Scratchpads II

The screenshot shows a web application interface with a dark blue header and a light gray sidebar. The header contains navigation links: [Dashboard](#), [Content](#), [Services](#), [Structure](#), [Appearance](#), [People](#), [Configuration](#), [Import](#), [Help](#), [Hello username](#), and [Log out](#). A dropdown menu is visible on the right side of the header. Below the header, there is a dark gray bar with the text "Edit shortcuts". The main content area is a light gray window titled "Create Multi-interaction run" with a breadcrumb trail: [HOME](#) > [ADD TAVERNA RUN](#) > [MULTI-INTERACTION](#). The window contains a form with a label "NAME" and a red asterisk, followed by a text input field containing "Simple Interaction". Below the input field is a "Create" button. A vertical sidebar on the left side of the window is labeled "Issues...".



Workflows in Scratchpads II

[Home](#) » [Services](#) » Simple Interaction

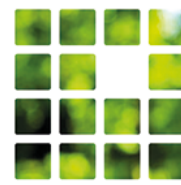
Simple Interaction

View

Delete

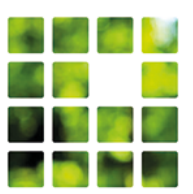
Job name	Simple Interaction
Job type	Multi-interaction
Created	Thu, 2014-07-10 15:31
Changed	Thu, 2014-07-10 15:31

Id	1103
Name	Multi-interaction (Multi-interaction (Thu, 2014-07-10 15:31))
Workflow id	52
State	running
Start time	2014-07-10T15:31:55Z
Finish time	
Status message	Running
Inputs	



Workflows in Scratchpads II

The screenshot displays a Scratchpad window titled "Interaction" with a close button (X) in the top right corner. The main content is a map of Europe and the Mediterranean region. A yellow polygon is drawn over the map, covering parts of Scandinavia, Central Europe, and the Mediterranean coast. Within this polygon, there are several red circular markers of varying sizes, representing data points. The map labels include: Island, Eslovya, Norge, Suomi, Esti, Danmarks, Lietuva, Polska, Ukraina, Česko, France, Österreich, Moldova, Saint-Pierre-et-Miquelon, Bernuda, Andorra, España, Gibraltar, Maroc, Algérie, Malta, Gruzija, Georgia, Shqipëria, Armenia, Azerbaijan, Iraq, Kuwait, and Bahrain. The interface also shows a sidebar on the left with "HOME" and "View" buttons, and a top right area with "Help" and "SEARCH" buttons.




Workflows in Scratchpads II

[Home](#) » [Services](#) » Simple Interaction

Simple Interaction

View

Delete

Job name	Simple Interaction
Job type	Multi-interaction
Created	Thu, 2014-07-10 15:31
Changed	Thu, 2014-07-10 15:34
Output file	 taverna-1103.zip

Id	1103
Name	Multi-interaction (Multi-interaction (Thu, 2014-07-10 15:31))
Workflow id	52
State	finished
Start time	2014-07-10T15:31:55Z
Finish time	2014-07-10T15:34:32Z
Status message	Finished
Inputs	
Log	/runs/1103/download/log



Integration comparison

Lightweight embedding

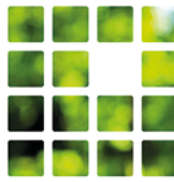
- Run a specified workflow
 - Chosen by the Scratchpads owner
- Results are not stored in the Scratchpads itself
- Workflow run retains host app look and feel

Tight integration

- Run any workflow
 - That the Scratchpads is authorized to see
- Results are available for further analysis
- Workflow appears as part of the Scratchpads

Common

- Workflows are run within Taverna Player in the host app
- Interactions are presented to the user
- Results can be downloaded



Tool Statistics

Taverna

- Workbench
 - Over 90,000 downloads
 - 1,000 in month after release
 - Over 380 sites use/used it
- Server
 - ?
- Player
 - Over 2000 downloads

Scratchpads

- Over 500 Scratchpads
- Over 900,000 pages
- Over 6,000 users



Thank you!

- Taverna Player
 - Robert Haines: robert.haines@manchester.ac.uk
 - Web: www.taverna.org.uk
 - Code: github.com/myGrid/taverna-player
 - Licence: BSD
- Scratchpads
 - Simon Rycroft: s.rycroft@nhm.ac.uk
 - Web: scratchpads.eu
 - Code: git.scratchpads.eu/git/scratchpads-2.0.git
 - Licence: GPL2

This work was enabled by BioVeL (grant no. 283359) and ViBRANT (grant no. 261532) that received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration.

www.biovel.eu | www.vbrant.eu

