

ViBRANT: Following up an EDIT success

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Scratchpads represent one of EDIT's success stories, although they were not anticipated in the project proposal. As EDIT's funded phase draws to a close, there are over one hundred ninety Scratchpads and over two thousand four hundred registered users who have produced more than two hundred sixty thousand web pages (see <http://scratchpads.eu/scratchpads/stats> for current figures) and this with only one full-time developer (Rycroft). The essence of Scratchpads is that they aim to mobilise data, thus to make data easier to find and use, by providing an infrastructure and tools. Scratchpads do not own content, that very firmly remains the property and responsibility of the site community. They are both cheap and easy to establish, so we give one to anyone that asks, subject only to a statement of purpose that fits EDIT's goals. This, in turn, means that many of the individual sites are experimental and a proportion will never develop into a dynamic site for collaboration. London's Natural History Museum has underwritten the continuation of the Scratchpad service for the next five years.

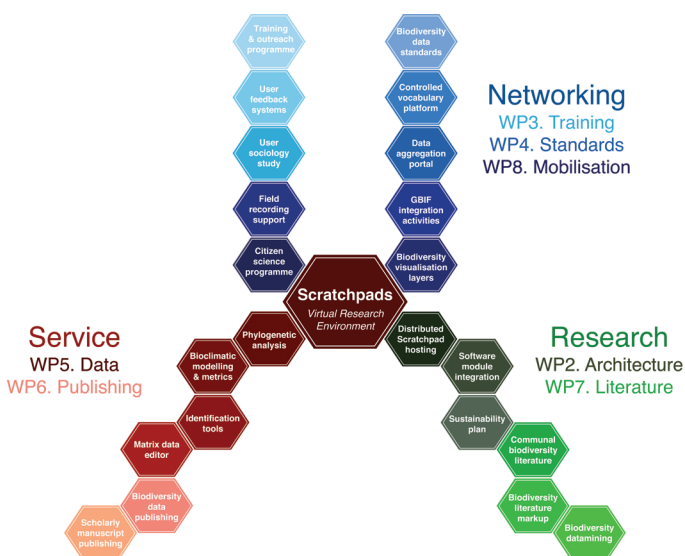


Fig.1. The extension of the EDIT Scratchpads with new functions under ViBRANT.

The Scratchpad team, however, had greater ambitions and wanted to help focus the collective output of biodiversity science, making it more transparent, accountable, and acces-

sible. Mobilising these data will address global environmental challenges, contribute to sustainable development, and promote the conservation of biological diversity. This gave us ViBRANT (<http://vbrant.eu>), an e-Infrastructure project that started on 1st December 2010 and runs for three years. ViBRANT has been funded with an EU contribution of 4.75M €. The project will distribute the management, hardware infrastructure and software development of services operating through Scratchpads, to connect with the broader landscape of biodiversity initiatives. Our overall goal is to establish the means, tools and infrastructure to produce a more rational and a more effective framework for European biodiversity research.

ViBRANT will put in place a sustainable programme to support:

- A Virtual Research Environment (Scratchpads) where users can safely store, share and manage their research information.
- Analytical services for users to build identification keys and phylogenetic trees.
- A publication platform for users to automatically compile taxonomic manuscripts from their research database.
- A portal for users to centrally access publicly accessible biodiversity research information and literature.
- Training, support & sociological study, helping research communities to use these tools and services.
- A standards compliant technical architecture that can be sustained by biodiversity research community.

Networking activities

ViBRANT's networking activities foster a culture of co-operation within the various user communities. As biodiversity research moves from small, autonomous scholarly guilds to larger, more enlightened and more interconnected communities our networking activities take on a new level of significance. These will foster a stronger, more professional infrastructure within the consortium and an enriched and more valuable set of scientific services for our user communities. A third set of networking activities have been developed to focus on integrating ViBRANT with a wider group of stakeholders who use biodiversity data, but are not traditionally part of the core taxonomic and systematic research communities.

ViBRANT networking activities are grouped in three workpackages (WP3, Training; WP4, Standards and WP8, Mobilisation) each of which has the goal of both raising levels of co-operation and facilitating new or enhanced service capability to the programme.



Fig.2. The main Scratchpad site, from where you can find usage statistics and a list of existing Scratchpads (under 'Sites') and apply to get your own.

Service activities

ViBRANT services are based on feedback from a series of independent user studies that identified and prioritised new functionality requested by the current userbase. The purpose of these activities is to foster the development of an ongoing integrated knowledge resource within the ViBRANT framework, and to use this as the basis for scientific infrastructure serving science and society. Central to these activities is the need to integrate the existing infrastructure more effectively. Work is stratified into two service layers. Data services (WP5) that perform some analytical or synthetic task on data present within the ViBRANT framework (specifically a Scratchpad), and a publishing service that provides the means for ViBRANT users to publish species descriptions and taxonomic acts in a manner that is compliant with the codes of Zoological and Botanical nomenclature. These services are aimed at maximising the efficiency and reuse of biodiversity data. Service activities are spread between six ViBRANT partners including two SME's.

Research activities

ViBRANT's research activities are in two workpackages focused on developing an enhanced and sustainable technical architecture to host the Scratchpad virtual research communities, and research supporting biodiver-

sity literature access and data mining. The first (WP2) is a prerequisite to hardening our technical infrastructure. ViBRANT needs to make it as easy as possible for any institution to host their own Scratchpad node server. Currently all the Scratchpads are on a virtual machine hosting a single Scratchpad node server at the Natural History Museum, London. We want to develop a network of Scratchpad servers each of which has local server failover to ensure constancy of service. Failover means that if one server goes down its workload is shared between the remaining servers until it returns to service and external users will continue be able to use the services offered by the failed machine.

The second workpackage (WP7) addresses the problem of accessing biodiversity literature. Recent studies amongst biodiversity researchers have highlighted access to literature as a major obstacle to efficient research. Access to literature, or more specifically, data within published literature, also hinder a broad range of other disciplines including education, biodiversity conservation, protected area management, disease control, and maintenance of diverse ecosystems services. For this reason biodiversity literature access and data mining has been selected as a prime research area within ViBRANT.

User communities

ViBRANT's potential user base spans a large fraction of the worldwide community of biodiversity researchers, from back-garden naturalists to professional academics. This is because ViBRANT supports multidisciplinary groups in the construction of their own virtual research communities. These activities include: 1) the monitoring of environmental change; 2) biodiversity conservation; 3) the sustainable economic use biodiversity; 4) biological collections; and 5) education & training activities. Each group typically has a taxonomic, regional or thematic focus surrounding the construction of work such as eBooks, eJournals, conservation assessments, flora & faunal studies, data collection, community vocabularies, and citizen science projects.

International aspects

ViBRANT is working with a range of projects and partners worldwide. These include LifeWatch where we are acting as the prototype service centre; ELIXIR where we are providing taxonomic metadata services; and EMBRC where we are supporting marine model organism research. ViBRANT also has a relationship with PESI and 4D4Life EU project; the Encyclopedia of Life;

the Barcode of Life and the Biodiversity Heritage Library. We are also working with the South African National Biodiversity Institute and Atlas of Living Australia.

Direction and planning

Unlike most EU projects, ViBRANT is flexible and uses an agile approach to development. This means we need to measure how well we are doing as we go along, modifying the infrastructure and introducing new features in response to user feedback. Some feedback will be of the write-in variety but we will also monitor usage by building counters into our services from the outset. It is enormously valuable to have pages automatically generated (e.g. <http://scratchpads.eu/scratchpads/stats>) so that anyone can monitor progress and impact. This allows the project to be more sustainable and motivates contributions. As part of this process we need to support a high level of granularity in the data we capture. For example for individual site maintainers, data for their site are important, but have to be judged against the background of data from other sites. *Overall, ViBRANT success will be judged by usage.*

As with the Scratchpad project ViBRANT products will be Open Source and we will encourage data reuse by having a Creative Commons licence by default on all public content. Individual sites can, as before, use any licence they wish on multi-media content. Once data are placed in the public domain it has become important to follow and quantify how those data are used. ViBRANT will develop an enhanced set of citation and impact metrics comparable to the system for traditional paper publication. This is urgently needed so that we can better measure the impact of on-line resources.

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