

Advance & attack: technology demonstrator to the rescue ... and beyond

Dr Martie van Deventer (CSIR)
&
Dr Heila Pienaar (UP)



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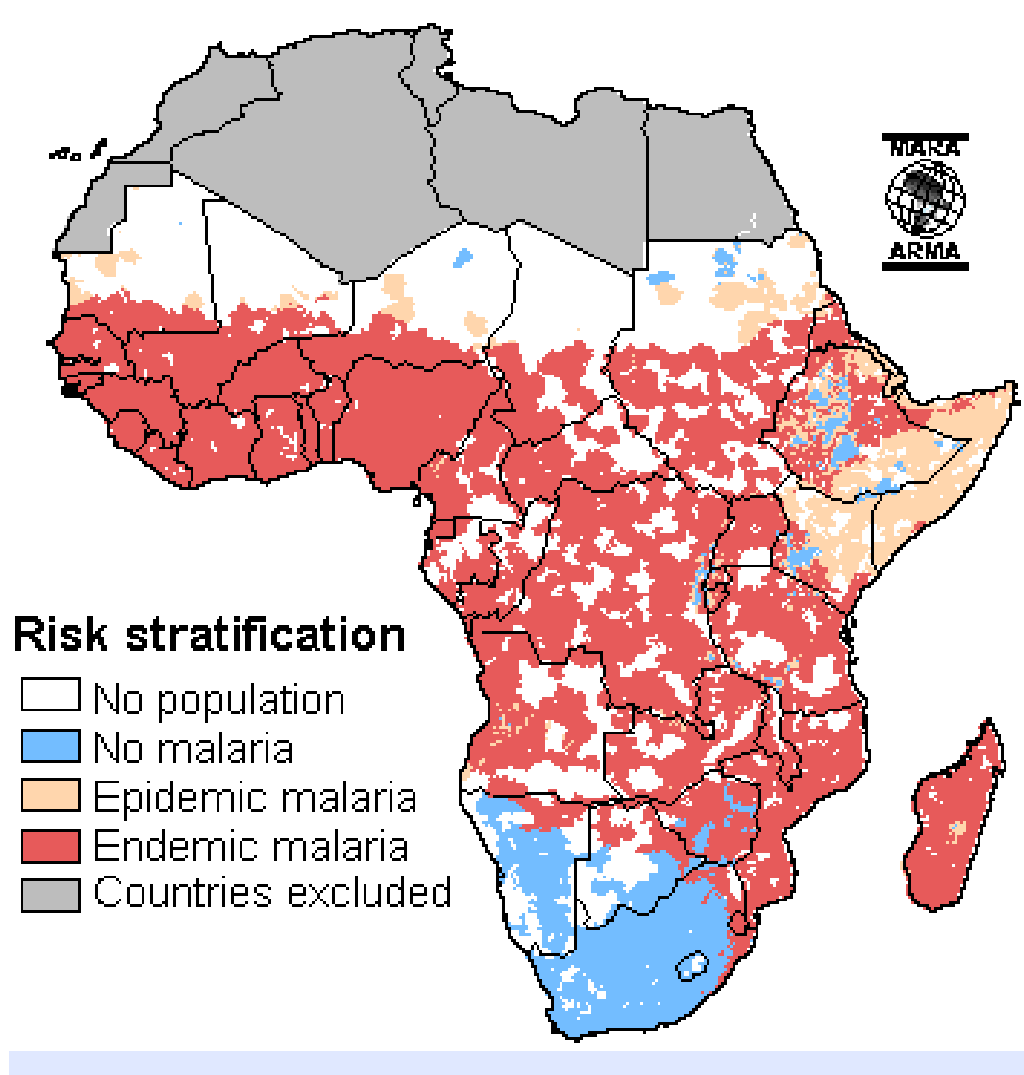
Roadmap

- Context and our research
- Demonstrate the demonstrator
- Convincing Executive
- Way forward

Context

- South African Research Information Services (SARIS) project – 2004
 - Identified virtual research environments (VRE's) as an important component of current global research – no national initiative was forthcoming
- Utilising the SERA relationship between CSIR & UP
 - SERA – Southern Education Research Alliance
 - Our aim was to establish a conceptual framework
 - Needed research area with much data generation
 - African Centre for Gene Technologies' South African Malaria Initiative (ACGT SAMI) was identified by Executives
- Malaria VRE research project
 - ACGT management agreed to participate
 - Completed 'a day in the life' & research tools semi-structured interviews with a variety of malaria researchers in the SAMI network to establish their readiness to move to an integrated VRE

Malaria: Endemic / Epidemic Risk Areas



Source: <http://www.mara.org.za/mapsinfo.htm>

Definition - VRE

- The VRE concept helps to broaden the popular definition of e-science from grid-based distributed computing for scientists with huge amounts of data to the **development of online tools, content, and middleware within a coherent framework** for all disciplines and all types of research (Fraser, 2005).
- The specific aim of a VRE is **to help researchers manage the increasingly complex range of tasks involved in carrying out research**. Therefore a VRE provides a framework of resources to support the underlying processes of research on both small and large scales, particularly for those disciplines which are not well catered for by current infrastructure (JISC, 2006).

Definition - Demonstrator

- A technology demonstrator is defined as an output of an **R&D project** that is in a state of technology readiness to **enhance capability**, manufacture a product or deliver a service in a previously unknown manner.
- Examples of technology demonstrators include a novel machine to extrude polymers, a novel process to manufacture a chemical product, **a novel software application** and a new process (key solution) to improve decision support or the operation of major organisations and government. **Novel research tools that improve R&D capability or productivity are also included in the definition (CSIR).**

“A day in my life”

| | | | | | | Age group | | |
|--------------|--------------|-----------|----------|------------|-----------|-----------|----------|-----------|
| Institution | #Interviewed | Male | Female | Management | Research | <30 | 30-40 | >40 |
| CSIR | 9 | 6 | 3 | 4 | 5 | | 4 | 5 |
| UP | 4 | 3 | 1 | 2 | 2 | | 2 | 2 |
| Other SAMI | 7 | 4 | 3 | 2 | 5 | 1 | 1 | 5 |
| Total | 20 | 13 | 7 | 8 | 12 | 1 | 7 | 12 |

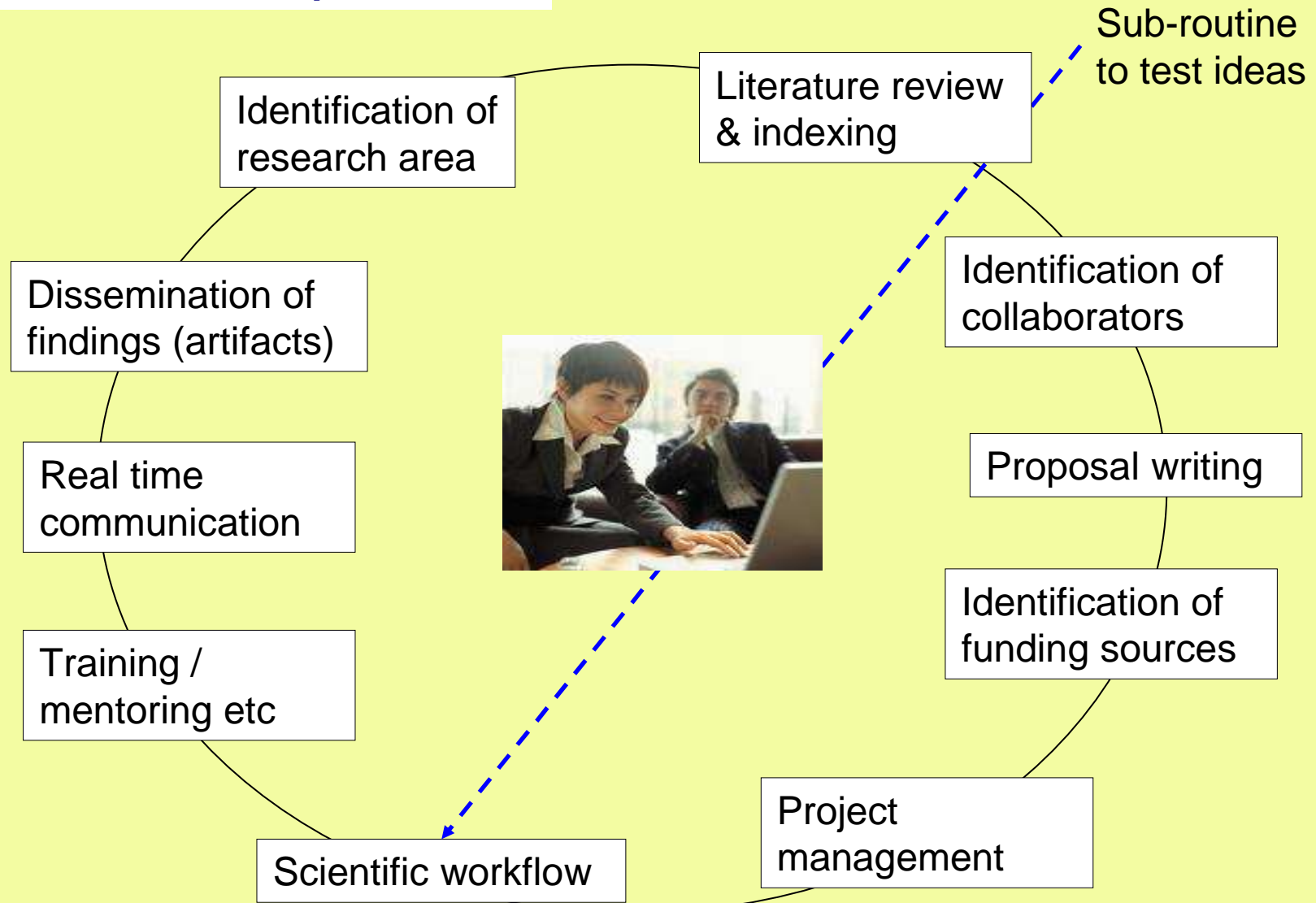
Researchers

- Start the day with e-mail
- Largest chunk of day spend in wet lab
- Articles are written by teams
- Management of research data: majority of files only traceable via the lab book
- Electronic lab books?
- Much time spending on report writing

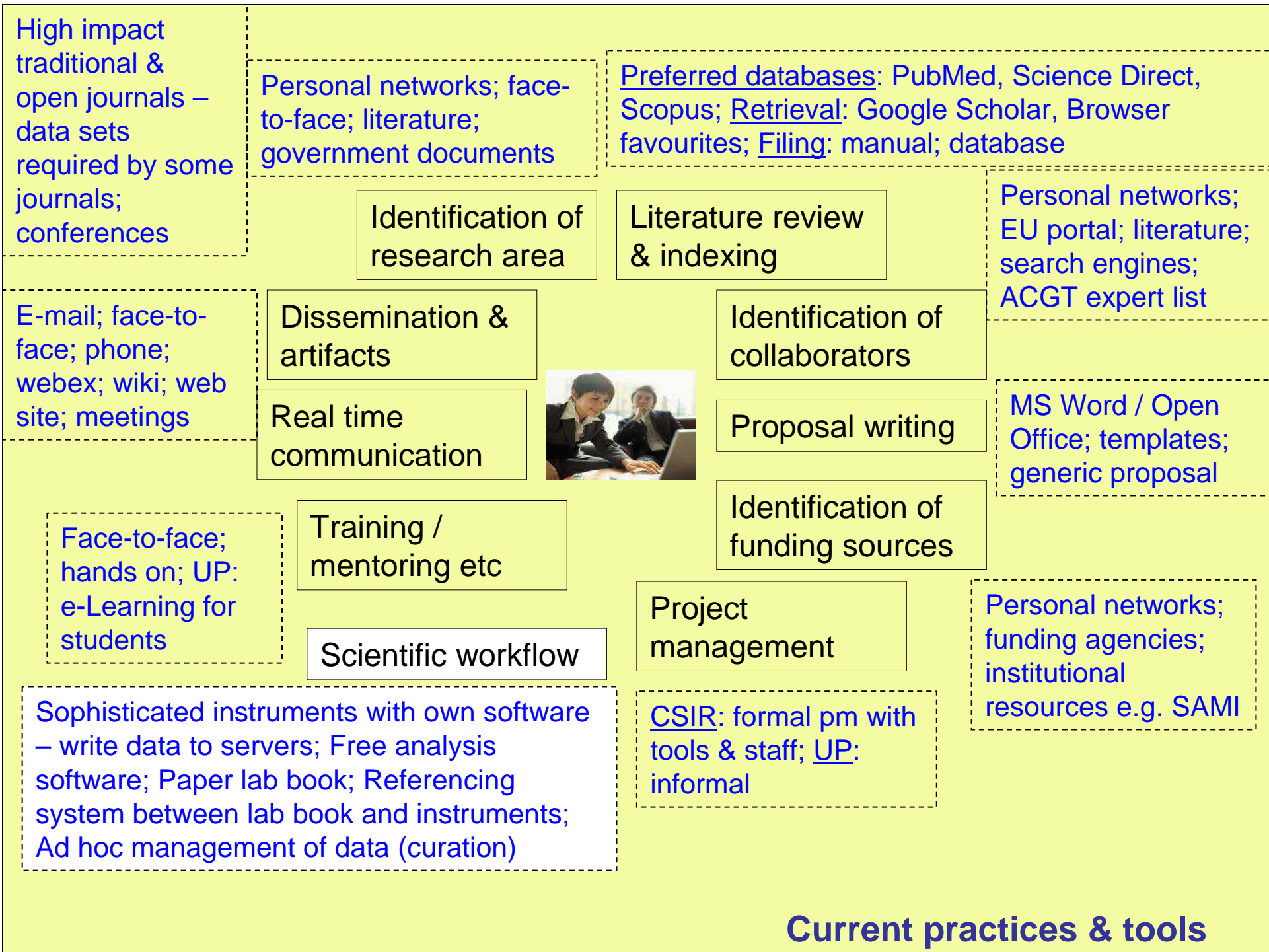
Managers

- Days are planned around scheduled meetings
- Face-to-face their preferred mode of communication
- Spend “alone time” looking at research agendas, trends and opportunities
- Problems with malaria could only be resolved by multi-disciplinary teams

Malaria Research Conceptual Model



IP Management was not identified but needs to be taken into consideration



Research output repository

Grouping of info in one place

List of search engines; Internal shared database of indexed articles; Person to assist in retrieval of relevant literature

Identification of research area

Literature review & indexing

List of researchers & topics

Skype; collaborative e-Lab books; Smart board; video conf; project portal

Dissemination & artifacts

Identification of collaborators

Real time communication



Proposal writing

Document management system

e-Learning system for researchers

Training / mentoring etc

Identification of funding sources

List of funders easily accessible e.g. web site

Scientific workflow

Project management

Even more sophisticated instruments; Electronic lab book; Systems biology software; Experiment repository; Labs with in silico screening+; Bio-information specialist

Proper pm system; MS Project

SAMI wish list

Consolidated SAMI VRE components

Red: none
Orange: some
Yellow: all

Web/wiki/blog: search engines, databases; researchers & topics; funders, portals, communication, projects

Repositories: research results; experiments; literature & documents

Identification of research area

Literature review & indexing

Internal shared database of indexed articles

Dissemination & artifacts

Identification of collaborators

Document management system

Skype, smart board, video conferences

Real time communication



Proposal writing

E-learning system for researchers

Training / mentoring etc

Identification of funding sources

Generic software e.g. MS / Open Office

Scientific workflow

Project management

(Collaborative) Electronic Lab book

Servers with data files

Sophisticated instruments that generate digital information and data

Access to research networks & super computers; access to labs with in silico screening +

Project management system

Integrated data management system

Mathematical modelling tools; numerical algorithm tools; simulation software; in silico experiments

(Free) Data analysis software

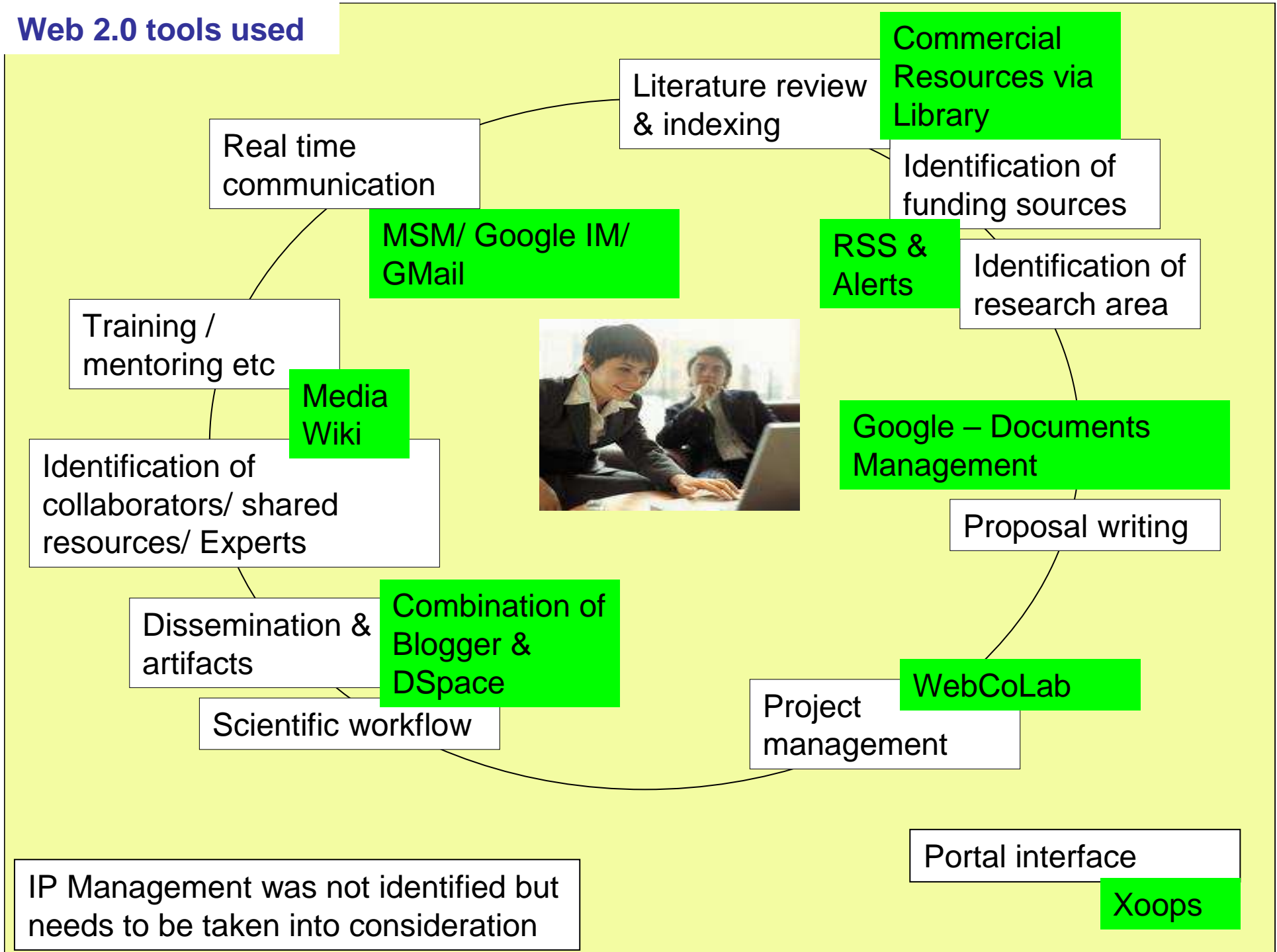
- **None of the researchers indicated that they had access to:**
- A web / wiki / blog to use for lists of search engines, databases, researchers, funders, portals, projects, software, instruments
- Repositories for research results (articles, data etc), experiments and documents
- An integrated data management / curation system
- Collaborative electronic lab book system
- An e-Learning system for researchers, e.g. to transfer knowledge about new methodologies
- **Only some of the researchers are making use of:**
- An internally shared database of indexed articles. Individual databases (paper / electronic) are quite popular.
- A document management system (CSIR)
- A project management system (CSIR)
- Access to research networks, super computers and labs with in silico screening+
- In silico experiment software
- Electronic communication tools (Skype, Smart board, Video conferencing etc)
- **And all of the researchers are making use of:**
- Sophisticated instruments that generate digital information and data
- Servers with data files
- Mathematical modeling tools
- Numerical algorithm tools
- Simulation software
- Data analysis software (mostly freeware)
- Generic software e.g. MS and Open Office

The demonstrator

Building the VRE demonstrator

- This was seen as a mock-up model – not a pilot nor the start of a working VRE
- Made use of third year UP Information Science students (practical work) and CSIR Interns (who were already populating our institutional repository using DSpace)
- Development happened over a two week period

Web 2.0 tools used



Interface

Access and authentication

Library resources

Alerts and RSS feeds – may help with info overload

Internet resources

Tools for data mining

Tools from NCBI

Instant Messaging

MSN Messenger Icon Real time communication amongst researchers

Library Commercial Resources UP

Access to those registered to UP AIS services

Library Commercial Resources CSIR

Access to those registered to CSIR services

Latest publications on malaria

Click here to run an automated Google Scholar search

Click here to go to Malaria Journal

SciDev.Net

Malaria

Welcome

The South African Malaria Initiative (SAMI) is a partnership established to facilitate the integration of malaria research and related capacity development in South Africa and the rest of Africa. The aim is to stimulate the use of modern molecular research tools to improve malaria prevention and control.

The South African Malaria Initiative will facilitate an integrated programme of malaria research and capacity development in South Africa and the rest of Africa and the use of modern research tools to improve malaria prevention and control. Modern research tools will facilitate the validation of drug and insecticidal targets, development of new drugs and insecticides, and the use of modern tools for gathering epidemiological information.

Login

Username:

Password:

User Login

Lost Password?

Register now!

Search

Search

Advanced Search

Library Commercial Resources UP

Library Commercial Resources CSIR

Browser window: http://137.215.75.229/vre/index.php

SAMI VRE - Just Use it! Problem loading page

XOOPS JUST USE IT!

User Menu

- Administration Menu
- View Account
- Edit Account
- Notifications
- Inbox
- Logout

Search

Search [input] Search

Advanced Search

Library Commercial Resources UP

Access to those registered to UP AIS services

Library Commercial Resources CSIR

Access to those registered services

Commercial Resources via Library

Progress Date

Due dates for progress reports due 30 September

Upcoming Events

Laa di daa

Personal space

Blogger

Welcome

Authorisation through application

Wiki

The South African Malaria Initiative (SAMI) is a partnership established to facilitate the integration of malaria research capacity development in South Africa and the rest of Africa. The aim is to stimulate the use of modern molecular research tools to improve malaria prevention and control.

The South African Malaria Initiative will facilitate an integrated programme of malaria research and Africa and eventually in the rest of Africa to improve malaria prevention and control. Modern research malaria research. Outputs will include the identification and validation of drug and insecticidal targets, development of drug and insecticidal candidates, improved diagnostics, and new tools for gathering epidemiological information.

Shared space

DSpace

WebCoLab

ADV: Slide in Banner Exchange for Webmasters

MSM/Google Groups

Latest publications on malaria

Click here to run an automated Google Scholar search

Click here to go to Malaria Journal

Private Space

- Scientific Workflow of Research
- Bridgette
- Linda
- Martie
- Zoleka

Tools for data mining

Tools from NCBI

Shared Resources

- Identification of collaborators and funding

Repository

- Dissemination and Artefacts/Literature review

Project Management

- Project Management for the research team

eLearning

- Sakai's logo Training and mentoring for the researchers

Instant Messaging

- MSN Messenger Icon Real time communication

The repository

The screenshot shows the DSpace at CSIR website interface. The browser window title is "DSpace at CSIR: Communities and Collections - Mozilla Firefox". The address bar shows the URL "http://ls-dspace.poc.csir.co.za:8080/dspace/community-list". The page header features the CSIR logo and the text "CSIR Research Space Open and unrestricted access to our research outcomes". The main content area is titled "Communities and Collections" and includes a search bar, a list of communities, and an "Admin Tools" section. A red box highlights the "Malaria VRE" community and its sub-collections, with a bracket pointing to it from the text "'Artefact type' collections".

Logged in as mvandeve@csir.co.za (Logout)

Search DSpace
Go
[Advanced Search](#)
Home

Browse
Communities & Collections
Titles
Authors
Subjects
By Date

Sign on to:
Receive email updates
My DSpace authorized users
Edit Profile

[DSpace at CSIR >](#)

Communities and Collections

Shown below is a list of communities and the collections and sub-communities within them. Click on a name to view that community or collection home page.

- **A Malaria VRE**
 - **Malaria collections**
 - [Experts' CVs and Biographies](#)
 - [Malaria Articles](#)
 - [Malaria Data Sets](#)
 - [Malaria Photographs](#)
 - [Malaria Presentation](#)
- **Biosciences and biotechnology**
 - **Bioprocessing**
 - [Agroprocessing](#)
 - [Food sciences](#)
 - **Chemistry**

Admin Tools
[Create Top-Level Community...](#)
[Admin Help...](#)

'Artefact type' collections

Lab book

Linda`s CSIR Biotechnology lab-book

This is Blog for Professor Linda Mtwisha. She volunteered to lend her lab-book(for Malaria) in order for us to demonstrate virtual research environment;not everything is accurate. Roller was not working so we subscribed to the www.blogger.com The outcome of the project is fruitful.

Friday, July 13, 2007

Cartoon



"You should check your e-mails more often. I fired you over three weeks ago."

Blog Archive

▼ 2007 (41)

▼ July (41)

[Cartoon](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:16/08/05](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:16/08/05](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:16/09/05](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:26/08/200...](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:18/08/06](#)

[Linda`s CSIR Biotechnology lab-book](#)

[Date:21/10/0...](#)

[Linda`s CSIR Biotechnology lab-book](#)

Wiki

Set \$wgLogo to the URL path to your own logo image.

navigation

- Main Page
- Collaborators
- Experts
- Conferences
- Tools
- Help
- Donations
- Recent changes

search

Go Search

toolbox

- What links here
- Related changes
- Upload file
- Special pages
- Printable version

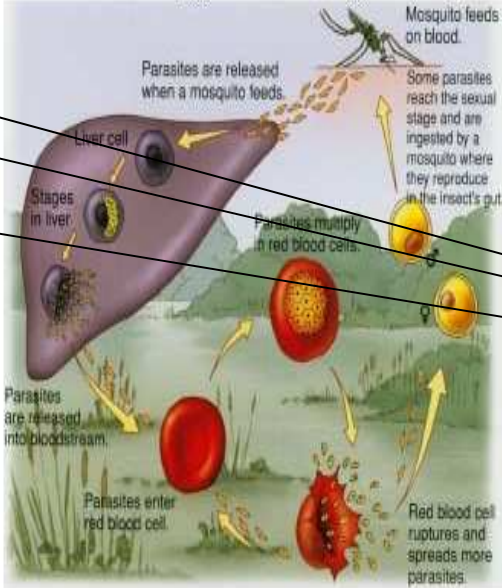
article discussion edit history protect delete move unwatch

Malaria VRE

(Redirected from Main Page)

Welcome to the Malaria VRE Pages, where researchers can read, write and edit articles about all aspects of malaria.

Here you'll find articles [about how to use the site](#), a [community-written FAQ](#), a list of [equipment](#) and [funding opportunities](#), and more. Because the Community Pages are a wiki, any VRE user can start new pages or edit existing ones, so you can talk about anything you like to do with the Malaria VRE.



The diagram illustrates the life cycle of malaria. It starts with a mosquito feeding on blood. Parasites are released when the mosquito feeds. Some parasites reach the sexual stage and are ingested by a mosquito where they reproduce in the insect's gut. Parasites multiply in red blood cells. Parasites enter red blood cells. Red blood cells rupture and spread more parasites. Parasites are released into the bloodstream. Parasites are released when a mosquito feeds. Stages in liver. Liver cell. Mosquito feeds on blood. Some parasites reach the sexual stage and are ingested by a mosquito where they reproduce in the insect's gut. Parasites multiply in red blood cells. Parasites enter red blood cells. Red blood cells rupture and spread more parasites. Parasites are released into the bloodstream. Parasites are released when a mosquito feeds.

Instructions for use

Wiki stored the information the group regards as their reference material.

In addition, each VRE user has their own [Profile Page](#), where they can give as much or as little information about themselves and their collections as they like.

There is a page listing tools for working with data provided by VRE users.

To get started here, take a look around and start your own page or contribute to an existing one. If you would prefer to practice editing before you work on a real page, you can try it out in the [sandbox](#). When you edit a page, you will see more information on how to format text, and if you need any more information, see the help pages. Any problems, ask other users on these pages or email us at mvandeve@csir.co.za or heila.pienaar@up.ac.za

Executive discussion

Demonstrated

- **Easy** (Web 2.0)
 - Web / Wiki / Blog
 - Repositories / database of indexed articles/ data sets
 - Communication devices
 - Project management

Discussed

- **Important**
 - Integrated data management system
 - Collaborative electronic lab book
 - Combining these two applications

Value of the demonstrator

- Visual – the discussion moved from theory to practice
- VRE appeared implementable & useable
- Efficiency gains were easy to understand – it is quite clear that researchers would be able to work smarter
- Effectiveness in terms of new ways of research has become the point of discussion and not the applications (able to move from ICT to content)
- Ability to curate the organisations' digital content has become more feasible (even do-able!)

Recent international VRE-type initiatives

- Integrative Biology VRE
- **HUBzero** generic science gateway platform (will become open source in 2009)
- OPENWETWARE initiative
- **British Library** Research Information Centre beta software
- ResearchGATE science network (science 2) platform
- Taverna workbench software for the bio-sciences, and
- Project 35 open source software for data entry and modelling
- VRE for the **Humanities**



WHAT IS HUBZERO?

HUBzero allows you to create dynamic web sites that connect a community in scientific research and educational activities. HUBzero sites combine **powerful Web 2.0 concepts** with a middleware that provides instant access to interactive simulation tools. These tools are not just Java applets, but real research codes that can access **TeraGrid**, the **Open Science Grid**, and other national Grid computing resources for extra cycles.

HUBzero was created by researchers at **Purdue University** in conjunction with the **NSF-sponsored Network for Computational Nanotechnology**. The technology was originally developed to support **nanoHUB.org**, a national resource for nanotechnology simulation. It has since been extended to create science gateways for other scientific domains.

[View a demo of nanoHUB >](#)

[Learn more about the underlying infrastructure >](#)

HUB Watch

Here is that list of hubs being built with the HUBzero software:

- [cceHUB.org](#)
ccehub.org engineering



Thin Film Nanotubes

Simulate networks of carbon nanotubes

Explore random networks of carbon nanotubes with thousands of tubes and random orientations. Compute the conductivity of these networks and simulate their performance in transistors of various geometries.

[Learn more](#)

A resource for nanoscience and technology, the nanoHUB was created by the NSF-funded NCN and its development is driven by research themes in:

- Nanoelectronics ^{NEW}
- NEMS/Nanofluidics
- Nano-Bio Devices

[Learn more](#)

Simulate

- [Nanoelectronics](#)
Tools for nanoelectronics
- [NEMS/Nanofluidics](#)
Tools for NEMS and Nanofluidics

Research

- [Seminars / Workshops](#)
Cutting edge research
- [Collaborate](#)
Work with your colleagues

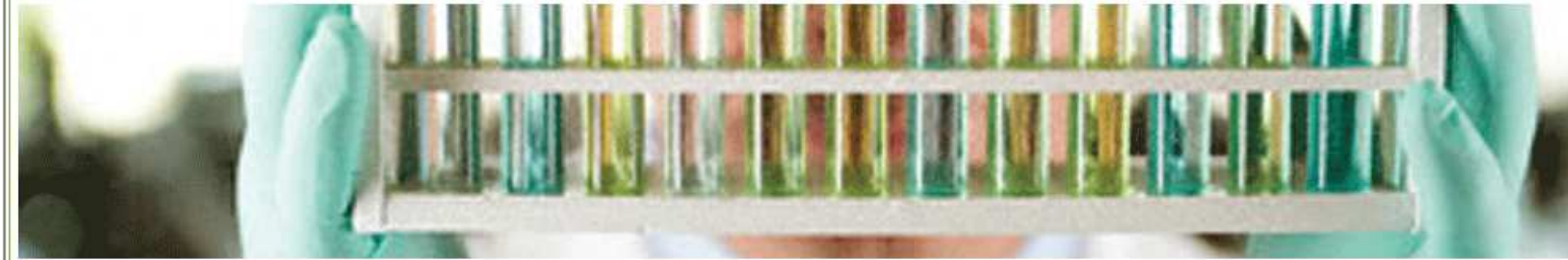
Teach & Learn

- [Nano 101 / Nano 501](#)
Introductory tutorials
- [Nanocurriculum](#)
Curriculum on Nanotechnology

Contribute

- [Contribute Content](#)
Upload your own materials
- [Give us Feedback](#)
Success story? Suggestions?

BRITISH LIBRARY Research Information Centre



British Library for Research

A one stop solution for carrying out research studies in planned & phased manner and networking with fellow community members



Plan The Research

Search the literature, plan the study, and apply for funding.



Network

Connect with fellow researchers for sharing ideas, resources etc.



Experiment

Use online tools to achieve faster results.



Publish

Disseminate research outputs.

I have read and agree to the terms of use and Privacy statement
[Terms of Use](#) [Privacy Policy](#)

Existing RIC Members

Username: *

Password:

Remember me

Login

[Forgot your username or password?](#)

[Trouble signing-in?](#)

New to RIC?

VRE for the Humanities

- Building a virtual research environment for the **Humanities** (BVREH). An initial survey carried out by the BVREH team between June 2005 and September 2006 defined the range of services that a Virtual Environment should offer - from information about researchers and their interests and about conferences, lectures and seminars, to integrated communication and collaboration tools to support advanced research. The "Digital Pen and Paper Technologies" project is showing a lot of promise (<http://bvreh.humanities.ox.ac.uk/>).
- The **VRE for the Study of Documents and Manuscripts** project naturally follows from the outcomes of BVREH project. In this project a broad-based understanding of user-driven needs has been established, and it was shown how tools and resources for studying texts and document might be implemented in a service-based environment and some **annotation and mark-up tools** have also been tested. The project team will now proceed to construct an integrated environment in which the data (documents), tools and scholarly instrumenta will be available to the scholar as a complete and coherent resource (<http://www.jisc.ac.uk/media/documents/programmes/vre2/vre18sdmvreprojectplan.pdf> ; http://www.jisc.ac.uk/whatwedo/programmes/programme_vre/vre_bvreh.aspx ; <http://bvreh.humanities.ox.ac.uk/VRE-SDM>).

Way forward

- Many new developments since we started the conceptualisation project; possibility of open source availability
- ACGT manager has acquired the necessary funding to start building a pilot
- Project will now become a collaborative effort where the researchers determine progress
- We'll be advising on the available platforms & information services that could serve as basis for the development
- **Possibility to develop a generic VRE for SA**

References

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- OpenWetWare (www.openwetware.org) [last accessed 09 July 2008]
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Questions / Comments?

Dr Martie van Deventer

mvandeve@csir.co.za

012 841 3278

Dr Heila Pienaar

Heila.Pienaar@ais.up.ac.za

012 420 2020