Chapter 8

Conclusion

This research makes an attempt to look into the current use of Biotechnology in Sri Lanka, identify its main stakeholders and create a coordinating point to share information among the various institutes that already practice Biotechnology.

There is no coordinating point for Biotechnology communities currently available. During this project I tried to develop an on-line Web portal as the coordinating point. I have achieved the objectives in this project. Next, I briefly describe how we achieve each objective.

8.1 Introduction

The first objective of this project was to study and analyze the current status of Biotechnological activities in Sri Lanka. It is a fact that at present, there is no coordinating body for Biotechnology in Sri Lanka. I found that National Science Foundation, the Central Environment Authority, the Ministry of Science and Technology, the Ministry of Health and the Ministry of Agriculture playing key roles in this field in Sri Lanka. The Government of Sri Lanka, Semi-government bodies and the Private sector are involved with Biotechnology activities but on a very small scale as compared to other Asian countries. The main Biotechnological activities identified during this research were: conducting courses, doing researches, making policies, supplying resources (equipments, grants and consulting) and investments.

Identifying main stakeholders with Biotechnology was the second objective. There are six main stakeholders identified, namely: Academic, Research, Policy Makers, Investors, Resource supplier and the General public. We can find Academic institutes, Research, Policy Makers, Investors, Resource suppliers with the government and the Semi-government sector. The Resource

suppliers and investors play a key role in the private sector. The required information was collect from them using a questionnaire.

As the first step, information sources were identified to collect requirements from the main stakeholders. Then, from the sample of stakeholders representing the whole community, requirements were collected. At the design stage, user requirements were transferred as features in the proposed system and tools and technology relevant to the requirements were also selected. The features of BioWEB with its implementation reflect the needs of the stakeholders and their real requirements.

Post implementation tests were done to make sure the features of the BioWEB really reflect the needs of the stakeholders.

User feed back from information collected during the post implementation test, the features of BioWEB benefited all stakeholders. This recognizes that BioWEB contributes towards the development of Biotechnology in the country as it is entirely dependent on its stakeholders.

8.3 Major problems faced

Major issues rose to identify the stakeholders. There is no proper documentation or a place to collect information of stakeholders including their contact details. I collected information and prepared a list of stakeholders for requirements collection by visiting several institutes one after the other.

Issues that occurred during the requirements gathering stage included the difficulty to contact top level management by making an appointment. Lower grade people are easy to access but they may not know the exact technical situation and they cannot provide information without permission. Among those interviewed many would like to gather important and up-to-date information from others while sharing little of their information.

Collecting data from the private sector is difficult because they are business oriented and do not like to devote time for researches. It is very difficult to collect details from Government/Semi Government sectors due to Political issues.

In the phase of implementation, I faced many problems in ASP and resolved these by referring several books in ASP, following an online tutorial in advanced ASP controls and contacting people involved in the software development industry. I also referred several source codes downloaded from the World Wide Web for implementation issues.

8.3 Limitations

- Effectiveness of the BioWEB depends on how popular Biotechnology in Sri Lanka.

- The quality of BioWEB and its services are totally depended on the web hosting company and Internet service provider. The loading time (time taken to prompt the home page of BioWEB) is depending on the transferring rate of data and the bandwidth of the communication link.

- This requirement gathering was based on only a few months of data gathering and analysis. A further detailed analysis of the problem domain is required.

- BioWEB should be hosted in an ASP/Access enabled Web windows Web server. To host it on other operating systems, it requires additional software components.

- BioWEB was totally tested for two popular Web browsers namely Internet Explorer and Mozilla in 1024 x 768 pixels resolution. The appearance may vary due to other computer configurations.

8.3 Further work

The newest trend of the Web is service-oriented architecture. By implementing a Web service, BioWEB can easily access other Web portal services. By adding a searching mechanism for other Web services, BioWEB can be more intelligent. It automatically consumes other Web services and gives information instantly.

Mobile devices are developing rapidly and getting popular day by day. So, BioWEB can be introduced as a mobile interface to mobile phone and other hand held devices.

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Appendices

Appendix A

C.J. Wickramarathne
Faculty of IT,
University of Moratuwa.

Dear Sir / Madam,

I'm a postgraduate student of Faculty of IT, University of Moratuwa and currently engaged in a research study on the M.Sc. in IT degree program.

This questionnaire is a part of the research study. My intention of this to identify the current status of the Biotechnology in Sri Lanka among various institutions including Government, Semi-government and Private sector.

Information contains in this questionnaire will remain completely confidential and be used solely for the academic purposes. Further, if you wish you to undisclosed your name and other personal information please leave the relevant cages in questionnaire blank as I want to ensure your anonymity.

Please take few minutes to fill this questionnaire, which is greatly helping me to meet the objectives I aimed.

Your cooperation for this is highly appreciated.

.....
C.J. Wickramarathne

Appendix B

Date:	Serial No:

Information Collection Sheet

(For Individuals)

01) Name of the Professional :

a. Designation :

b. Professional Level/Qualifications : (use √)

Tertiary	1	Undergraduate	2	Graduate	3	Postgraduate	4	Higher	5

c. How far you worked in the same field ____ Years

02) Contact Details :

Address:	Telephone / Fax :	
	E-mail :	
	URL :	http://

03) Major Field/Business :

04) Connection to Biotechnology : (use √)

Academic Institute	1	Research	2	Resource Suppliers	3	Policy making	4	Investor	5	General Public	6

05) Use of IT :

Are you familiar with Information Technology? (use √)	Yes	No	
If 'Yes' select the relevant fields : (use √)			

	Very Good	Good	Poor	No Idea
a) Computer Literacy				
b) Internet				
c) E-mail				
d) Software – Office packages				
e) Software – Other packages				
f) Software – Programming				
g) Software – Web development				
h) Software – Portals				
i) Hardware				
f) Networking				

06) Use of Bio Technology : (fill)

How you describe Biotechnology				
Do you believe that it is useful to develop Sri Lanka? (use √)		Yes	No	
If "Yes" indicate your reasons :	If "No" indicate your reasons :			

07) Biotechnological Issues Related to the Field/Carrier and Solution Expected :

	ical Issues Related to the Field / Business	Solution Expected
I		
Ii		
Iii		

08) What is your Idea about usefulness of web portals? (use √)

Useful	No idea	Not useful

09) Idea of Integrating/Coordinating portal for Biotechnology in Sri Lanka :

10) D o you have Information to share with Biotechnology community / Others? (use √)	Yes		
b) If "Yes", do you like to share information? (use √)	Yes		

i) If "yes", what information?	ii) If "no" please indicate your reason

11) What are the information you need from others/other institutes :

I	
ii	
iii	
iv	
v	

12) **Idea of proposed coordinating portal (BioWEB) : (use √)**

	a) Like to pay	b) Need free service	c) Can manage using own staff
i) Information access			
ii) Information upload			
iii) Information update			
iv) Site maintenance			
v) Information Security			

13) **Can you believe this type of portal is useful to you(r) business?** Yes | No (use √)

If it is "yes" reason(s)	If it is "No" reason(s)

14) **What are the features / functionalities you proposed to BioWEB :**

Feature(s) / functionalities	Reason
i)	
ii)	
iii)	
iv)	
v)	

15) **Other remarks :**

Appendix C

Date:	Serial No:

Information Collection Sheet

(For Institutes)

01) Type of Institute : (use √)

Private	1	Government	2	Semi government	3

02) Contact Details :

Address:	Telephone/Fax	
	E-mail	
	URL	http://

03) Major Field/Business :

04) Connection to Biotechnology : (use √)

Academic Institute	1	Research	2	Resource Suppliers	3	Policy making	4	Investor	5

05) Use of Internet & e-mail : (fill)

	a) Internet		b) E-mail	
	yes	no	yes	no
i) None				
ii) Only for selected people				
iii) For all Employees				
iv) No response				

06) Use of Website : (use √)

i) Do you have a registered domain name?	Yes				no
if "Yes" please indicate	http://				
ii) Do you have a Website?	Yes				no
if "Yes" please indicate	http://				
iii) Do you have a Webmaster/Web development team?		Yes			no
if "Yes" please indicate their technology					
Interface	HTML	DHTML	XHTML	XML	Other
Validation & Dynamic programming	Java Script	J Script	VB Script		Other
Server side programming	ASP / ASP.	JSP	PHP		Other

	net				
Database	MS Access	MS SQL Server	MySQL	Oracle	Other

07) Software, Hardware: (use √ / Fill)

a) Software			b) Hardware
i) Operating system	ii) Office packages	iii) Other	i) Computers only
Microsoft	Microsoft office		ii) Computer Network
Linux	Open Office		iii) Other pheripharels (scanner, printer etc.)
Sun Solaris			
Unix			

08) IT Staff : (use √)

a) Category	b) No. of Employees	c) Qualification (summery)			
Operating staff Eg. Operator					
Administrating staff Eg. System administrator		i) Lowest Qualification:			
Development staff Eg. Programmers		Certificate	Diploma	Degree	Post Graduate
Management staff Eg. IT Manager		ii) Highest Qualification:			
		Certificate	Diploma	Degree	Post Graduate

What is your Business related to the biotechnology? Is it a Service or a Product?		Yes	No	
If it is a product			If it is a service	
Name(s): Eg. Orchids	i) ii) iii)		Service(s): Eg. consulting	i) ii) iii)
Technology: Eg. Tissue culture			Resources: Eg. Labs/Equipments	

09) Biotechnological Issues Related to the Field/Business and Solution Expected :

	Biotechnological Issues Related to the Field / Business	Solution Expected
i		
ii		

10) Biotechnology Products and Services : (fill)

11) Idea of Integrating/Coordinating portal for Biotechnology in Sri Lanka :

a) Do you have to share Information to Biotechnology community / Others? Yes | No	
›es you like to share information? Yes No (use √)	
i) If "**Yes**", what information?	ii) If "**No**" please indicate your reason

12) What are the information you need from others/other institutes :

I	
Ii	
Iii	

13) Idea of proposed coordinating portal (BioWEB) : (use √)

	a) Like to pay	b) Need free service	c) Can manage using own staff
i) Information access			
ii) Information upload			
iii) Information update			
iv) Portal maintenance			
v) Information Security			

14) **Can you believe this type of portal is useful to you(r) business?** Yes | No

If it is "**Yes**" reason(s)	If it is "**No**" reason(s)

15) **Other remarks :**

Appendix D

Date:	Serial No:

Post Implementation - Information Collection Sheet

01) Type of Institute : (use √)

Private	1	Government	2	Semi government	3

02) Contact Details :

Address:	Telephone/Fax	
	E-mail	
	URL	http://

03) Major Field/Business :

04) Usefulness : (use √)

		A (Enough)	B (No enough)	C (Poor)
I	Information			
Ii	Up to date			
Iii	Accuracy			
Iv	Information Security			
V				

05) How frequent you use BioWEB:

Daily	Weekly	Monthly	Never

06) Usefulness of available Features: (use √)

	Relevant		Usefulness	
	Yes	No	Yes	No
Announcements				
Bio FAQ				
Biotechnological News Search				
Biotechnology Courses				

Biotechnology Dictionary Calendar module				
Course Materials				
Create Profile				
Delete Registrations				
Edit Registrations				
File sharing module				
Funds Scholarships				
Guest book				
Journal				
Members list				
New Registrations				
News Letter Subscription				
Newsletter				
On – line Exams				
Personnel work/study experiences				
Policy Archive				
Policy Downloads				
Policy For Investors				
Policy Making Bodies				
Policy Search				
Post cads				
Profile search				
Publications				
Research Opportunities				
Research Search				
Research Institutes				
Resource Search				
Resources Suppliers				
Review panel				
Scholarships				
Site search				
Top site selector				
Video/audio chat				
Weekly Pool				
Your Responsibilities				

07) Other remarks :
