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Agenda 5 – Progress in the Web Interface

Facilitator – Sandra Micallef (UQ)
Reporter – Arllet Portugal (IRRI)

I. Informatics Development at AusWheat CRC by Clare Johnson

- Recurrent introgression
- informatics should have the capacity to integrate genotyping data : the approach is using multi-dimensional database (hybrid OLAP vs SQL)
- XML - as a web standard which contains objects; facilitate interoperability;

Discussion:

Guy Davenport (CIMMYT): What did you use for data mining? Considering the SNP data, we are collaborating with SCRI in the management of these genotyping data using XML. We also developed template for it. There is also a simulation program being done in collaboration.

Graham McLaren (CRIL): I don't understand the great need for multi-dimensional data because Dart is in 2-dimensional. The size is big but not multi-dimensional. Certainly this is not for Access because of the size. My understanding of XML is more of storage but not on computation. My idea is to use MOBY to communicate among systems.

Guy Davenport (CIMMYT): XML is a transmission format.

Graham McLaren (CRIL): What you require is in parallel of the GCP activities.

II. Using Ajax in ICIS Web Application Development – Alex Cosico

Overview of the web development technology that allows access to system like desktop

State of ICIS Web Application development

- ICIS web undergone several generations and modification
- 1st generation: we used Perl/CGI with Apache Web server
- next, Tomcat Web server and JSP/JSTL – user interaction is very limited
- users want more dynamic interaction

Classic Web App Lifecycle

- the user submit a form or link on hyperlink
- the server send a new web page as response
- between the browser and the server response, there is a time delay which is not pleasant for user

Web 2.0 at a Glance

- refers to the 2nd generation of services
- aims to give users an experience closer to desktop-based
- contributing Web 2.0 technology is WIKI and social web application

What is AJAX
- originally stood for Asynchronous JavaScript and XML (coined by James Garret of Adoptive Path in early 2005)
- this technology is developed for rich user interaction

What does Ajax give to us?
- Ajax-based Web apps can act on data as soon as the user enters it
- you need to update the software

Some alternatives:
- Macromedia Flash – programmed in Action Script similar to JavaScript
- built-in in most browsers
- it has limited distribution requiring Java runtime component

Some Priniciples of AJAX
- browser is considered dumb and stateless
- server delivers content
- Ajax can send initial request for data; after it delivers data, the page does not change
- browser connects to server whenever there is a request and
- Ajax : a browser can contact server asynchronously; the browser can connect to server in a background
- when you build Ajax application, you need Java
- Java has an impression of not being a complete programming language;
- Ajax application can run continuously without breaking or slowing down
- At the heart of Ajax is the XMLHttpRequest
- originally implemented by MS in IE 5 (as an Active component)
- but it is not yet a web standard; some browser do not support the behavior of this component
- 'Dojo and Prototype help simplify cross-browser usage

A typical Ajax Intercation'
- The server return data as a response as XML

Ajax Web Application Lifecycle
During the lifetime of the application or client, it can send asynchronously requests to the server
- Ajax development requires more work because it requires programming in the client application

- JavaScript, DOM, SS, XML manipulation : all in all is called dynamic HTML
- Client side: JavaScript
- Server-side: virtually any platform that can provide information via HTTP; it is essentially server-side agnostic
- Examples: maps.google.com

Case Study: Recommended Lines Web Application
- Client-side: uses Ajax
- Server side: uses Java servlets
- Backend: IRIS databases

Demo: This application has tabs; the pages are displayed immediately with no delay as you move from pages to pages of the different tabs; it has several hyperlinks where definition of that term is displayed where that information is obtained dynamically from IRRI; When a node is selected in the LISTS, it will trigger an event without refreshing the pages;
Selecting a study for that list, the traits under that study are shown in the Traits tab; you can click the histogram icon beside a Trait to display the histogram of its values in that study.
A preview report has been added that will run the query in the server based on the filter; there is also a tool to generate the report as PDF file.

Web Browsers and Web Standards
- web standard to deliver the greatest benefit to the greatest number of web users
- however, most web browsers do not implement most of the web standard
- AJAX requires browser to support web standard
- requires extra effort in ensuring Ajax apps that will work with as many Web browsers as possible
- requires high learning curve

Is Ajax for every web application?
- No! but Ajax functionality can be added to existing web applications, one feature at a time; use it when it requires responsive web application
- We are at cross road in web development for ICIS, in fact for the whole web development
- Ajax is still at its infancy
- Browsers is still improving with their web standards
- GCP will also use AJAX in its web development

TurboAjax and Dojo are used for the Recommended Lines Web application

Discussion:

Elkanah Oyetunji (IITA): My initial comment is your objectivity in your presentation. What is the cost of development using Ajax? Can you go through the demo and it what way you developed it? Installation: can any crop use that web application? What amount of effort to implement it? My experience with Tomcat issue and the ICIS 5 web is that the installation is not straightforward.

Alex Cosico (IRRI): About cost, all the components I used is open source so there is no cost. There is technology prior Ajax which allows you develop similar things like in Ajax. Ajax is a defacto standard supported by many browsers. The third is installation: I installed this in a Linux server for 5 minutes. I have a war file which I installed in the server unless you have configuration to set.

Elkanah Oyetunji (IITA): Have you tried it in Microsoft?

Alex Cosico (IRRI): This is not particular to JSP but you can run it in IIS but we only have Linux server in BBU.

Akinnola Akintunde (ICARDA): Your presentation is beautiful but however I cannot help but notice a missing link in your presentation. There are 4 areas I want you to look into. ASP.NET is not mentioned. I also notice in your client side, you did not mention IE. What traditional web design you used? I consider Java as the traditional web design. About the client side: there are so many things you need to do in the client side when you use Ajax. In ASP.NET you don't need so many programming efforts. The several revisions in the ICIS web application require various technologies which reflect like a desperate effort.

Alex Cosico (IRRI): In fact, you can use .NET. Ajax will release a web technology called Atlas which is a complete Ajax component but requires a complete Microsoft technology. With respect to Java, I don't consider it as a desperate effort. There is always a technology being developed to improve web development using Java. Compare to java community there are several frameworks available in the open source community

Sandra Micallef (UQ): When will this be available for the users to implement?

Alex Cosico (IRRI): We still need to interact with users for comments. It is still being perfected by Teri

Graham McLaren (CRIL): I'd like to discuss the use-case behind this web application. Our breeders want a fast web access to IRRI recommended lines. Their suggestion is a static web page but we don't like it. So, we want to develop a web application that allows a user to select a list of recommended lines with associated studies. Once, you have the list of recommended lines, you can mine the database to get the data. The other aspect of it, to make the speed fast, we tried a warehouse where the data will be retrieved. This is similar to what Juan Carlos is using for MaizeFinder.

Elkanah Oyetunji (IITA): One thing I like in this group is that developers and users have choice. Individual can choose which is appropriate to what he requires.

Guy Davenport (CIMMYT): We keep doing new things in the web interface. There are 2 things I am worried about: what is access to user and what is access to developer?

Sandra Micallef (UQ): Would this be a sort of interface available for wheat also?

Graham McLaren (CRIL): It could be.

III. ASP.NET ICIS Web Interface for now and the future – Akinnola Akintunde

Akinnola's computer was not functioning properly and so his presentation could not be delivered

IV. Pedigree Download Tool - Sandra Micallef, University of Queensland

12 months ago:
We were using the Perl version of the Web Interface
We decided to use CITRIX because our breeders don't want their data to be available in the internet for others to see
At present, updated the Perl version to Java version which is password protected. The CITRIX server is too expensive to maintain since very few users access it initially so we dropped it. But now, we have more users.
The GWIS website is a comprehensive reference for Australian wheat pedigrees since we updated all the Australian pedigrees

Data download from interface
- query DMS across studies and you can download it in Excel format
- but it is only DMS data that are downloadable. GMS data are not downloadable and you can only access one pedigree one at a time. Hence, a pedigree download tool was conceptualized and being developed

Pedigree Download Tool
- allows user to select a number of varieties
- you can search just like the pedigree search of the original site; the search is stored and shown in one of the list box
- user can also select what format to download the data

Advantages:
- smaller database; hence faster
- pedigree relationship analysis (COP) is easier

Development
- prototype in VBA
- uses lists from SetGen

Web Enabled tool
- Java/ ASP.NET
- users can create lists on the spot
- Output in spreadsheet or Access format
- It will be good if we can include in the standard ICIS web interface.
- Thomas suggested to post in the cropforge its user requirements.

Discussion:
Casper aan den Boom (Nunhems): why did you only consider GMS data but I will suggest to add columns for DMS data
Sandra Micallef (UQ): I think that is a good idea to include DMS data.
Elkanah Oyetunji (IITA): If you select a particular variety, will it show the pedigree in one row or line or as a tree?
Sandra Micallef (UQ): The original idea is to download the pedigree of interest to the user.
Elkanah Oyetunji (IITA): Maybe like in GMS Search now, you can select number of generations. But in that download tool, will you specify all generations for that variety as a purdy string?
Graham McLaren showed GMS Search and the command to expand the pedigree where all the generations of a line are shown.
Akinnola Akintunde (ICARDA): The ICIS standalone is a heavy user interface. As an ICIS community, we need to decide which parts of the ICIS standalone we should adopt in the Web application. When you are designing the system, the user should have the impression that they are the one designing it with developers being taken advantage for its
Graham McLaren (CRIL): The first functionality we need in the web page is list management. But it is already being considered in that Pedigree Download Tool. And the next is the + button.
Ian DeLacy (UQ) : The wheat breeders are requesting us pedigree information time to time which is the reason behind this Pedigree Download Tool.