



GCP Informatics Platform

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I am going to tell you...

- ...about the GCP Informatics Platform
 - what it should be,
 - what it is,
 - what it could be,
 - and what it will be.
- ...and also a bit about how you could be involved

GCP Informatics Platform

- Is a set of **software programs** that can be used in uniform and user-friendly ways
- Is a **view** of data resources of many kinds but **integrated** together
 - databases, network services, template files, web pages
- Is a **scientific definition** of the data types used and needed in the plant-sciences domains
 - GCP Domain Model

GCP Platform is also...

- The most comprehensive software project in the GCP, perhaps even in the CGIAR
- It has a potential to be used far beyond the GCP/CGIAR boundaries – because it creates a general solution for integration based on
 - domain data model
 - formalized use cases
 - software interfaces (API)
- All the above is called “plumbing”
 - and I am not going to talk about it here
 - see it here: <http://pantheon.generationcp.org>

So... What the Platform offers
to the end-users today?

"Zeus" – an application in a web browser

Query **Germplasm Sets** Study Details Help

List of Germplasm Sets

Germplasm Set Name	Study Count
▶ INGER NOMINATION LIST	
▶ SEED HEALTH UNIT	
▶ INGER NURSERY	
▶ PLANT BREEDING, GENETICS	
▶ HYBRIDIZATION BLOCK	
HB2000DS	1
HB2000WS	1
HB2001DS	1
HB2001WS	1
HB2002DS	1
HB2002WS	1
HB2003DS	1
HB2003WS	1
HB2004DS	1
HB2004WS	1
HB2005DS	1
HB2005WS	
HB2006DS	
HB2006WS	
HB2007DS	
HB2007WS	
HB2008DS	
HB2008WS	
▶ IR F1 CROSSES	
▶ IRRI LINENAME DESIGNAT	
▶ IRRIGATED	
▶ MICRONUTRIENT	

List Information

List Name : HB2000DS [get studies](#)
Description : HYBRIDIZATION BLOCK
Creation Date : 2000-01-17
Type : HB

Germplasm

#	Designation	Cross	Entry Code	Source	GID
1	132	IR 8/IR 36	HB7730	INGER	116
2	AGAMI M 1	AGAMI MI	HB7729	BC450	115
3	AZUCENA	AZUCENA	HB7714	HB7297	100
4	BASMATI 370	BASMATI 370	HB7715	HB7298	101
5	BG 300	BG 94-1*2/ASD 7	HB7716	HB7299	102
6	CR 333-10	?/?	HB7665	SSINGH	152
7	CT 9993-5-10-1-M	CT 6241-2-2-1-3//CT 1	HB7664	HB7457	59
8	DAEYABEO	DAEYABEO	HB7731	HB6931	117
9	FRI 3 A	FR 13 A	HB7717	HB7301	103
10	GAUTAM	RASV.	HB7732	HB7534	118
11	HEERA	CR 404-48/CR 289-12	HB7614	A7255	13
12	IR 20	IR 262-24-3/TKM 6	HB7601	HD313	1
13	IR 24	IR 8/IR 127-2-2	HB7733	HB179	119
14	IR 26	IR 24/TKM 6	HB7734	HB195	120
15	IR 29	IR 833-6-2-1-1//IR 156	HB7602	HD239	2
16	IR 29723-143-3-2-1	IR 19661-131-1-2//IR 4	HB7757	HRSP945	140
17	IR 34686-179-1-2-1	IR 19661-267-1-3-3//IF	HB7758	HRSP978	141
18	IR 36 (MS)	IR 36/.	HB7761	MS22	144
19	IR 42436-266-3-2-3	IR 54//RD 19//IR 11288	HB7718	HB7302	104
20	IR 43	IR 305-3-17-1-3//IR 24	HB7603	HB7403	3
21	IR 49830-7-1-2-3	IR 4568-86-1-3-2//IR 2	HB7666	HB7458	60
22	IR 52713-28-8-28	IR 64//RD 4630-22-2-5	HB7719	HB7303	105

Page 1 of 7 Export Germplasm List Displaying 1 - 25 of 162

Features of the "Zeus"

- It integrates data from more databases
 - searching and showing database contents
- It is a collection of data-specific viewers
 - Germplasm, Studies, Passport, etc.
 - "Cropfinder" – a cross-study browser
- It adds to it specialized "viewers"
 - Germplasm Pedigree Viewer
- It works in any modern web browser

Query Results Germplasm Sets **Germplasm** Study Details History Help

IR 20 (GID 1) IR 18348-36-3-3, IR 64, IRTP 12158 (GID 50533)

Basic Information

GID: 50533 Location: IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS
 Name: IR 64 Reference: PARENTAGE OF IRRI CROSSES IR 1-IR 50000
 Method: SINGLE PLANT SELECTION SF Group: IR 18348
 Date: 1985 Source: IR 18348-36-3
 Country: PHILIPPINES (PH) Display: Pedigree Show Pedigree

Alternative Names

Name Type	Value
DERIVATIVE NAME	IR 18348-36-3-3
RELEASE NAME	IR 64
INTERNATIONAL TESTING NUMBER	IRTP 12158

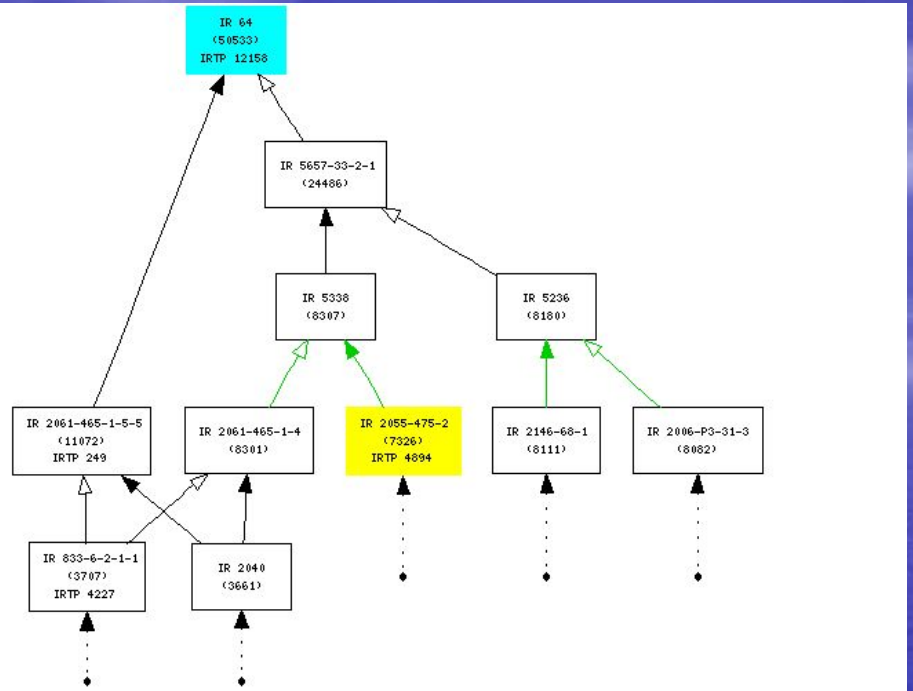
Germplasm Attributes

Attribute Name	Description	Value	Date
INGER	INGER IRTP NUMBER, ORIGIN, VARIETY GROUP AND PHOTO	12158 PHL 005 1IRGC 66970	1997-5-19
MLS_DATE	MLS DESIGNATION DATE	29-JUN-2004	2006-12-22

GRAMENE - IR 64

Studies where Germplasm IR 64 with Id 50533 was tested(131 studies found)

#	Name	Description
1	AS8195	AS8195
2	HB19820	1982 Hybridization Block, Dry Season
3	HB19821	1982 Hybridization Block, Wet Season
4	HB19830	1983 Hybridization Block, Dry Season
5	HB19831	1983 Hybridization Block, Wet Season
6	HB19840	1984 Hybridization Block, Dry Season



50533 Pedigree tree

Update

History Used GIDs

Note that the changes made below will be recognized only after updating the pedigree by the Show button.

Neighborhood Do not show

3 Maximum steps

Restore all branches

Show selection history

Germplasm methods

- Show methods
- Colorize method types
- Generative
- Derivative
- Maintenance

Highlighting GIDs

Graph orientation Top to Bottom

10 Nodes font size

7 Methods font size

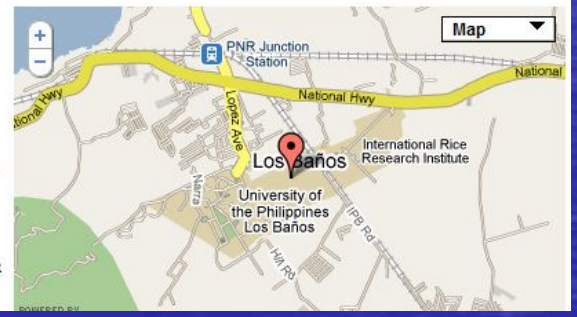
No Wrap long names

Nodes customization

- GID
- Preferred name
- Preferred ID
- Preferred abbreviation
- Germplasm creation
- Attributes

including labels

GID 7326
Name IR 2055-475-2
Method SINGLE PLANT SELECTION SF
Method type Derivative
Date
Country PHILIPPINES [PH]
LSID urn:lsid:irri.org:IRIS.Germplasm:7326:1
Location IRRI-INTERNATIONAL RICE RESEARCH INSTITUTE, LOS BANOS
Crop name Rice
Reference PARENTAGE OF IRRI CROSSES IR 1-IR 50000
GROUP IR 2055 (3698)



Study Name: IR200005
 Show Study Table Top
 Show Study traits measured at this study

Factors:

#	Factor Name	Description	Property	Scale	Method
1	GENOTYP	GENOTYP	Name	NOT DEF	
2	NUMBER1	NUMBER1	Numeric Type		
3	YEAR	YEAR	Year (YYYY)		
4	SEASON	SEASON	Season Code (S, W)		
5	ENV-IND	VARIETY	Envy Number	NOT DEF	
6	SEX	VARIETY	SEX		

Variates:

#	Variate Name	Description	Property	Scale	Method
1	GRAIN YIELD	GRAIN YIELD	kg of grain	GRA FILE	
2	PLANT HEIGHT	PLANT HEIGHT	cm	AT 847L	
3	TILLERING ABILITY	TILLERING ABILITY	(No. of Panicles)	AT 040L	
4	LOGGED PHENOLIC	LOGGED PHENOLIC	(% of panicle fresh weight)	AT 040L	
5	TANINABILITY	TANINABILITY	(% of panicle fresh weight)	AT 040L	
6	PANICLE EXTENSION	PANICLE EXTENSION	(% of panicle fresh weight)	AT 040L	

Study Observation Units

STUDY	NUMBER1	YEAR	SEASON	ENV-IND	SEX	GENOTYP	STUDY-UNIT-NO	STATUS	ENV
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	1	1	1
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	2	1	1
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	3	1	1
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	4	1	1
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	5	1	1
IR200005	IR200005	2000	Dry	487744	FFFF44	IR 2055-475-2	6	1	1

"Zeus" in action

Zeus Cropfinder - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://koios.generationcp.org:8083/cropfinder-dev/index.jsp?crop=wheat

Photoshop Tutorials o... LAB-4005: Servlet Ad... LAB-4004: Session Tr... javapassion.com root ... Ext 3.0 - API Docume... Ext JS 3.0 Samples Ext JS Forums - Powe... Ap

Disable Cookies CSS Forms Images Information Miscellaneous Outline Resize Tools View Source Options

Zeus Cropfinder

Report Format Builder Query Builder Help

Select your Column Headers below

Find a Column Header here

Headers

GERMPPLASM_ENTRY_(GEN)_GID(GID_N)

GERMPPLASM_ENTRY_(GEN)_Entry_Number(ENTRY NUMBER_N)

my format 1

Headers

SNAME

TITLE

PLANT_HEIGHT_cm(PLNTHT_cm)

Zeus Cropfinder - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://koios.generationcp.org:8083/cropfinder-dev/index.jsp?crop=wheat

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Zeus Cropfinder

Report Format Builder **Query Builder** Query Results

Select Report Format

my format 1

Specify Query Filters

PLANT_HEIGHT_cm(PLNTHT_cm)

Query Filter

Fields

PLANT_HEIGHT_cm(PLNTHT_cm)

Zeus Cropfinder - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://koios.generationcp.org:8083/cropfinder-dev/index.jsp?crop=wheat

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Zeus Cropfinder

Report Format Builder Query Builder **Query Results** Help

Result Query

SNAME	TITLE	PLANT_HEIGHT_cm(PLNTHT_cm)
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	600.0
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	540.0
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	493.333
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	438.333
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	485.0
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	543.333
24 ISWYN	24TH INTERNATIONAL SPRING WHEAT YN	760.0

Choose Values

417.38 - 857.78

“Zeus - CropFinder” in action

Germplasm pedigree viewer

- Fully integrated into "Zeus" ...but also available as a component for other applications
 - Documentation with many examples:
http://www.cropinfo.org/icis/index.php/ICISWiki/pedigree_viewer
- Features:
 - Parental trees, germplasm neighborhood trees
 - Show/Hide the full selection history and number of shown generations
 - Selectable information that is included in the pedigree nodes
 - Exportable to various image formats
 - Customizable look & feel
 - Included links to detailed germplasm sources

The screenshot shows a settings panel for the Germplasm pedigree viewer. It includes sections for History, Neighborhood, Germplasm methods, Highlighting GIDs, Graph orientation, and Nodes customization. Each section has various options like dropdown menus, checkboxes, and buttons.

History Used GIDs ▾
Note that the changes made below will be recognized only after updating the pedigree by the Show button.

Neighborhood
Do not show ▾
3 ▾ Maximum steps
Restore all branches
 Show selection history

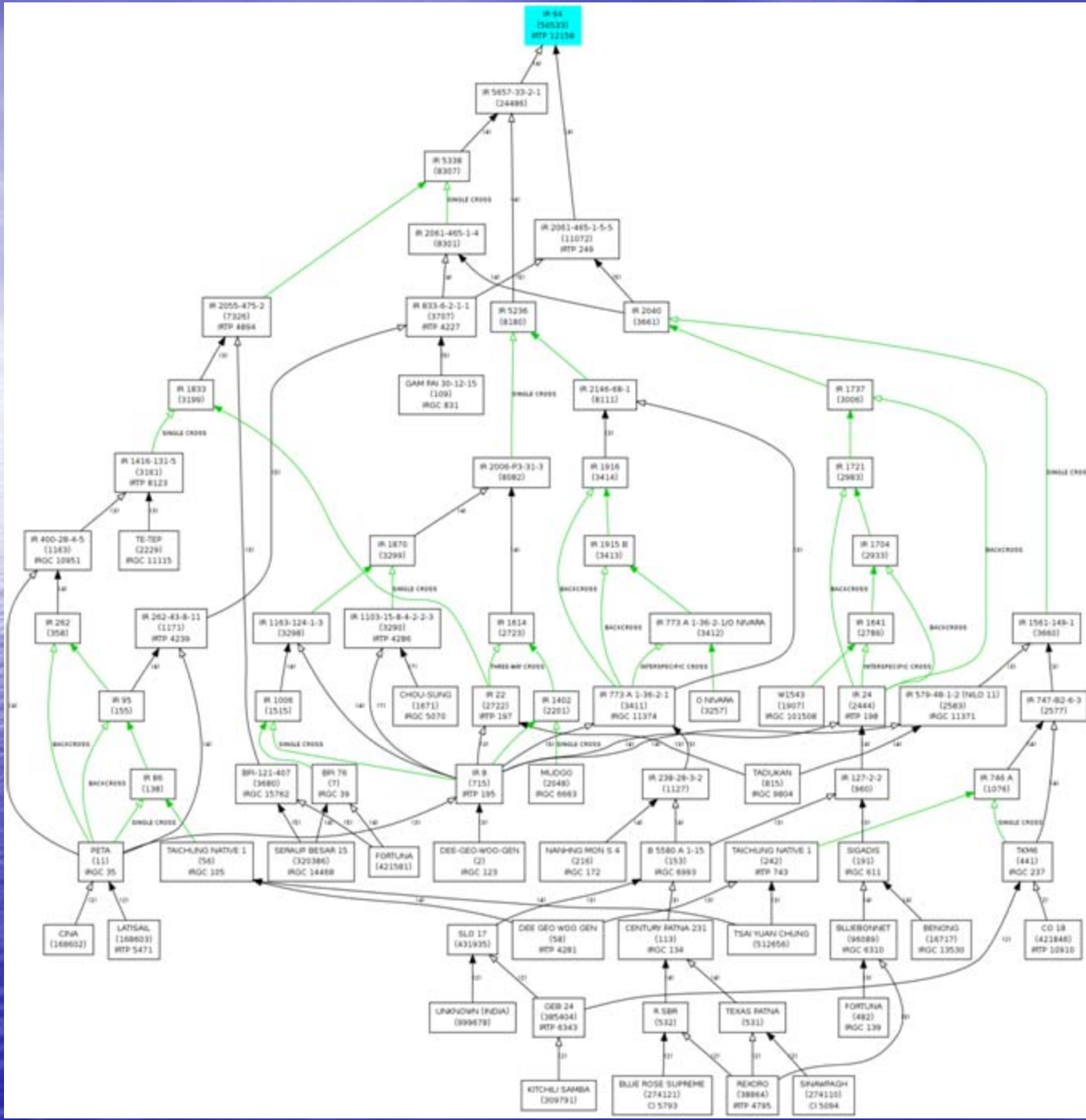
Germplasm methods
 Show methods
 Colorize method types
■ Generative
■ Derivative
■ Maintenance

Highlighting GIDs
■

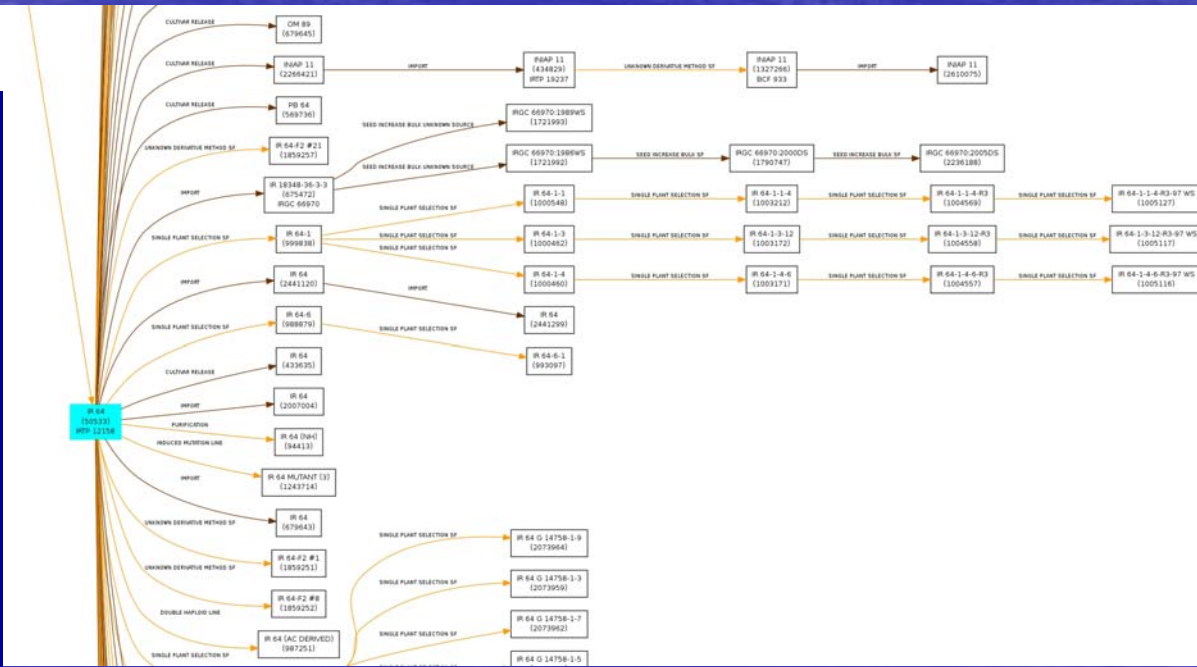
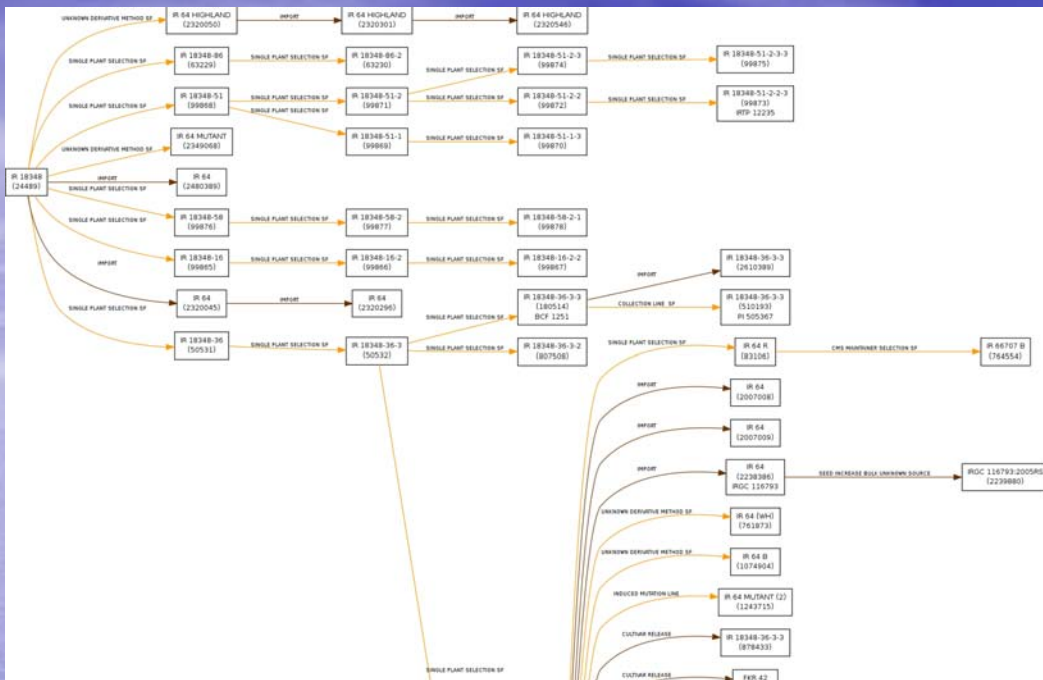
Graph orientation
Top to Bottom ▾
10 ▾ Nodes font size
7 ▾ Methods font size
No ▾ Wrap long names

Nodes customization
 GID
 Preferred name
 Preferred ID
 Preferred abbreviation
 Germplasm creation
 Attributes
 including labels

Partial parental pedigree (without full selection history) for IR 64



Partial pedigree of derivative neighborhood for IR 64



Other applications

- They are not less important but they may have their own presentations and/or posters
- GenDiversity (CIRAD)
 - Querying for genotyping data and making diversity analysis
- GenoMedium (CIMMYT, ICRISAT)
 - Molecular breeding design tools and more
- GCP Crop Ontology browser (IRRI, Bioversity)
 - Maintaining and showing various ontologies

So... this was what the Platform
offers to the end-users...

Let's look for the past problems
and future solutions

Problems and solutions

- Communication with the end users is now much better - but still can be improved
- The “level of desperation” of the end users is still lower than we expected
 - Are the end users really desperate to integrate data from many sources?
 - Are perhaps the incoming SNPs (with huge amount of data) the silver bullet for the Platform?
- Is the Platform’s infrastructure too complicated?
 - It is complex, not complicated. But it still may discourage developers to use it.
 - Therefore, we need to establish better training and documentation of/for the Platform

Summary

- We have a working Platform “plumbing”
- We have working applications
- We talk to end users and they talk to us
- We understand our bottlenecks
- ...and the Platform task is a solid base for the next generation: the MBP

- Thank you!

Partners contributing to the GCP Platform (in alphabetic order)

- Bioversity
- CIMMYT
- CIRAD
- ICRISAT
- IRRI