

The Genomic Diversity and Phenotype Connection (GDPC)

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Generation Challenge Programme – Subprogramme 4
Domain Modeling

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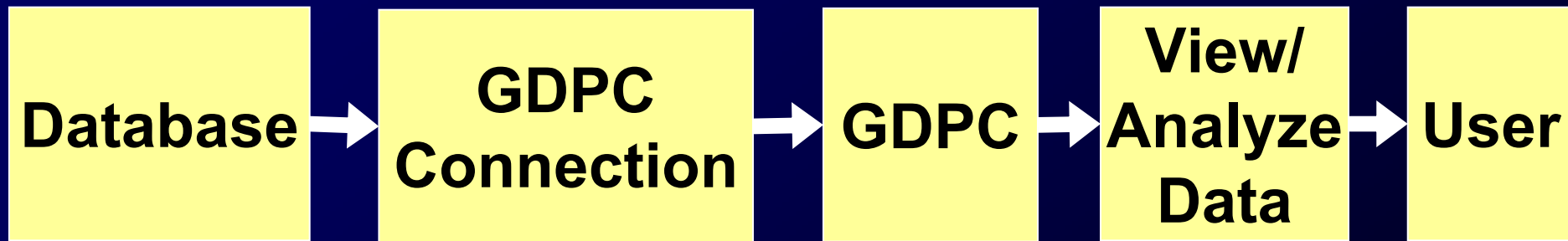
Purpose

The purpose of GDPC is to simplify access to the large genomic and phenotypic datasets that are becoming available in plant biology.

www.maizegenetics.net/gdpc



Data Flow via GDPC



Databases

- **Gramene (work in progress)**
- **Panzea (GDPDM schema)**
- **Germinate (generic schema)**
- **Aztec (private)**

Databases (future)

- **GRIN**
- **CIMMYT**
- **MaizeGDB**
- **etc.**

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GDPC Connection

- Adapts database schema to GDPC data model.
- Made available via a web service

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GDPC

- **Data Model**
- **Filtering**
- **Exporting**
- **API**
- **Multiple Sources**

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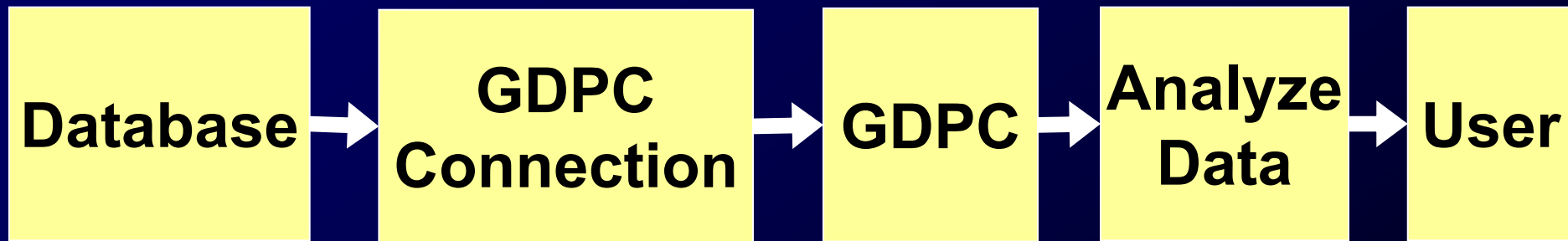
View/Analyze Data

- **Front-end GUI**
- **Uses GDPC API**
- **GDPC Browser**

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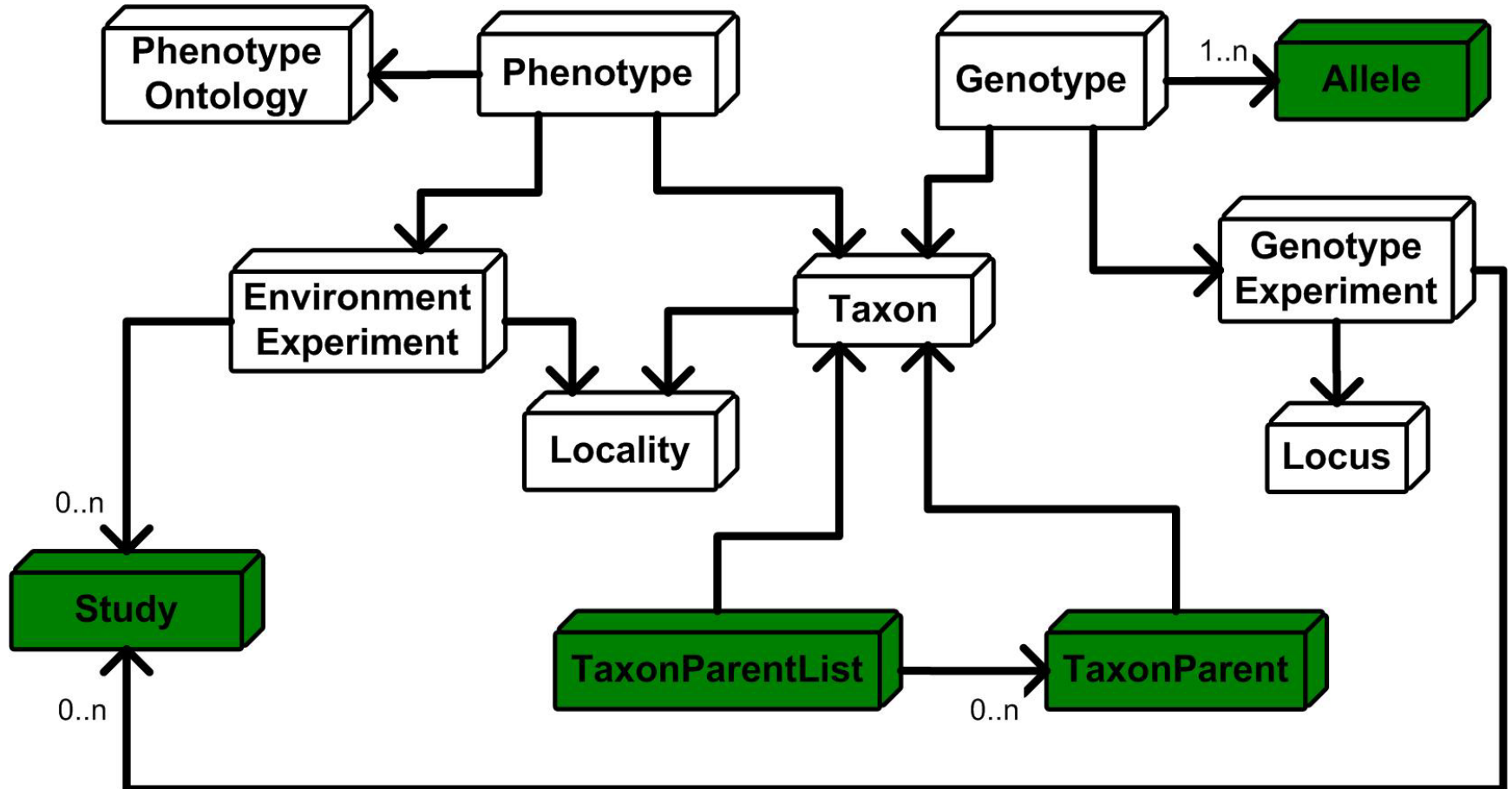
Data Flow via GDPC



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GDPC Data Model



Locus Properties

- Chromosome Name
- Comments
- Data Source
- Genetic Bin
- Genetic Map
- Genetic Position
- ID
- Locus Type
- Name
- Physical Position

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Locality Properties

- **Altitude**
- **City**
- **Country**
- **Data Source**
- **ID**
- **Latitude**
- **Longitude**
- **Name**
- **State/Province**

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Genotype Properties

- Allele List
- Data Source
- Genotype Experiment
- Taxon

Allele Properties

- Num
- Quality
- Value

Entity Properties Overview

- **Required / Optional**
- **Well defined**
- **Mapping to database field(s)**
- **Properties added as needed**
- **Allows for arbitrary addition of properties**

www.maizegenetics.net/gdpc/impl/GDPC_Entity_Properties-2.0.pdf



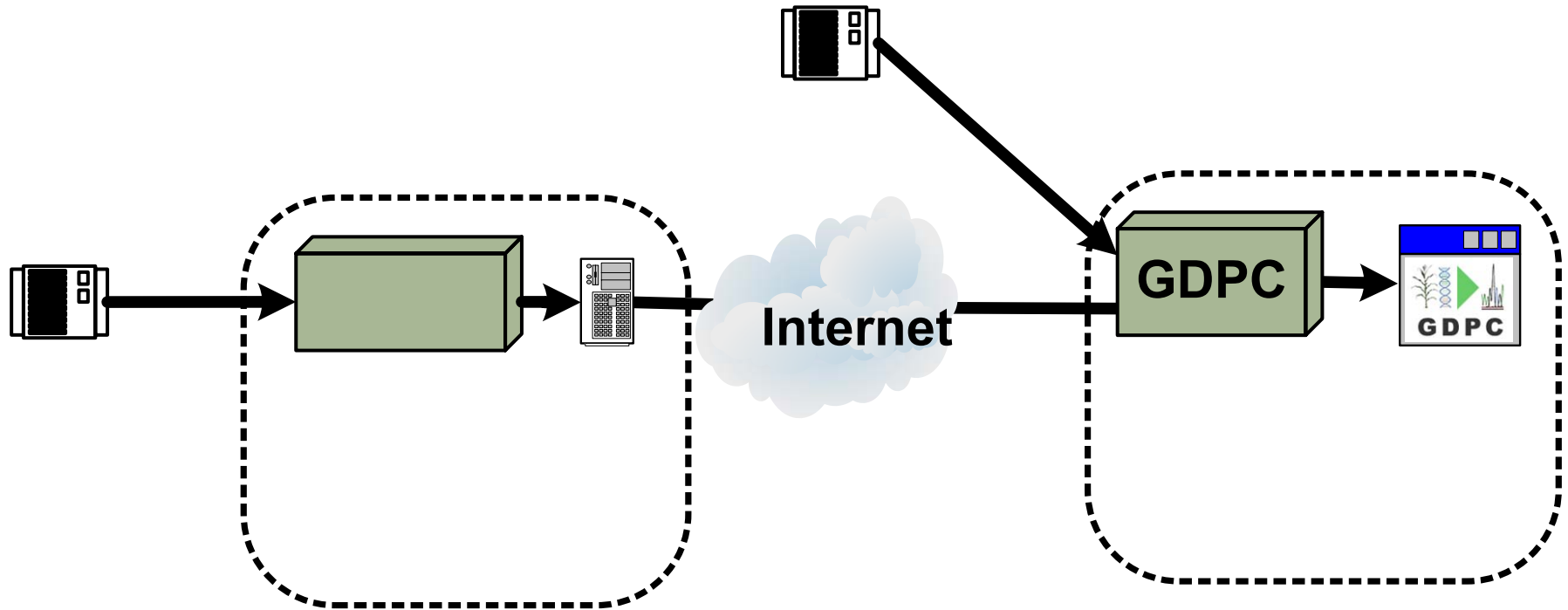
Technologies Used

- **JAVA**
- **JDBC**
- **Web Services (AXIS)**
- **SOAP/XML**
- **Web Server (Tomcat)**

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GDPC Data Flow Diagram



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IDBC

GDPC



GDPC Browser Demo

GDPC Browser

File View Connections Help

Open Save As... Export Get Data Deselect All Add Conn Get Started Print Heap

Taxa Loci Genotype Experiments Environment Experiments Localities Genotypes Phenotypes Connections Log

	bnlg1014 S...	bnlg1017 S...	bnlg1018 S...	bnlg1022 S...	bnlg1028 S...	bnlg1043 S...	bnlg1046 S...	bnlg105 SS...	bnlg1065 S...	bnlg
38-11_PURD-AG_BEZ/94...										
38-11_PHI_NA_3	161:161	208:208	160:160	67:67	151:151	159:159	172:172	106:106	243:243	239:
38-11_PURD-AG_NA_1	161:161	208:208	140:168	67:67	151:151	159:159	172:172	106:106	219:243	250:
38-11_PURD-AG_NA_2	161:161	208:208	168:168	67:67	151:151	159:159	172:172	106:106	243:243	250:
A272_NATAL_252-1/94 1...										
A272_NATAL_252-1/94_1	161:161	174:174	132:132	67:67	159:159	NOT_DET...	179:179	88:88	230:230	277:
A441-5_NATAL_8310-1/9...	163:163	196:196	142:142	121:121	159:159	181:181	188:188	98:98	232:232	254:
A441-5_NATAL_8310-1/9...	163:163	196:196	142:142	122:122	159:159	181:181	188:188	98:98	NOT_DET...	254:
A441-5_NATAL_8310-1/9...	163:163	196:196	142:142	121:121	159:159	181:181	188:188	98:98	NOT_DET...	254:
A441-5_NATAL_8310-1/9...										
A441-5_NATAL_8310-1/9...										
A554_MINN_RHP/94_1	169:169	176:176	142:142	123:123	159:159	165:165	173:173	92:92	219:219	248:

Taxa (working list)

- 33-16_PURD-AG_NA
- 33-16_PURD-AG_02C4634...
- 33-16_PURD-AG_02C4634...
- 33-16_PURD-AG_02C4634...
- 33-16_PURD-AG_02F1086...
- 33-16_PURD-AG_02F1086...
- 33-16_PURD-AG_02C4634...
- 38-11_PHI_NA_3
- 38-11_PURD-AG_BEZ/94|1...
- 38-11_PURD-AG_02C4915...

Genotype Experiments (working list)

- bnlg1014 SSR Survey
- bnlg1017 SSR Survey
- bnlg1018 SSR Survey
- bnlg1022 SSR Survey
- bnlg1028 SSR Survey
- bnlg1035 SSR Survey
- bnlg1043 SSR Survey
- bnlg1046 SSR Survey
- bnlg105 SSR Survey
- bnlg1056 SSR Survey

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