

# GSCF Data model examples for LIMS discussion

- TemplateField
  - Name (string)
  - Type: any of
    - STRING, STRINGLIST
    - FLOAT, DOUBLE, ...
    - ONTOLOGYTERM, FILE
    - DATE, RELDAPTE
  - Unit [references Units of measurement ontology]
  - Extra properties:
    - STRINGLIST: items in list
    - ONTOLOGYERM: ontologies to choose from

# Template

- Template
  - Name
  - Target entity (Study, Subject etc.)
  - Collection of TemplateFields
- TemplateEntity
  - Superclass of Study, Subject, Event, Sample...
  - Instances implement 1 template
  - Allows to iterate over collection of 'domain fields' + 'template fields'

# Example resulting object

- Subject implements TemplateEntity:
  - Domain field Subject.name
  - Domain field Subject.species
  - Template fields... e.g. for template Human:
    - BMI
    - Date of birth
    - etc.

# Leveraging Grails...

```
TemplateEntity  TemplateEntityController  TemplateEntity Views  Tests

Map templateRelTimeFields = [:] // Contains relative times in seconds
Map templateFileFields = [:] // Contains filenames
Map templateTermFields = [:]

static hasMany = [
    templateStringFields: String,
    templateTextFields: String,
    templateStringListFields: TemplateFieldListItem,
    templateIntegerFields: int,
    templateFloatFields: float,
    templateDoubleFields: double,
    templateDateFields: Date,
    templateTermFields: Term,
    templateRelTimeFields: long,
    templateFileFields: String,
    systemFields: TemplateField
]

static mapping = {
    tablePerHierarchy false

    templateTextFields type: 'text'
}

def fileService

/**
 * Constraints
 *
 * All template fields have their own custom validator. Note that there
 * currently is a lot of code repetition. Ideally we don't want this, but
 * unfortunately due to some issues we cannot use the code. Co-maintain
```

Text domain classes dependencies

# Hibernate/Grails persists to database

## **SAMPLE**

ID	MATERIAL_ID	NAME	PARENT_EVENT_ID	PARENT_SUBJECT_ID
1	6	11_B	12	31
2	6	9_B	12	29
3	6	7_B	12	27
4	6	8_B	12	28
5	6	6_B	12	26
6	6	3_B	12	23
7	6	10_B	12	30
8	6	4_B	12	24
9	6	5_B	12	25
10	6	1_B	12	21
11	6	2_B	12	22

## **SAMPLE\_TEMPLATE\_DATE\_FIELDS**

SAMPLE_ID	TEMPLATE_DATE_FIELDS_DATE	TEMPLATE_DATE_FIELDS_ELT
-----------	---------------------------	--------------------------

## **SAMPLE\_TEMPLATE\_DOUBLE\_FIELDS**

SAMPLE_ID	TEMPLATE_DOUBLE_FIELDS_DOUBLE	TEMPLATE_DOUBLE_FIELDS_ELT
-----------	-------------------------------	----------------------------

## **SAMPLE\_TEMPLATE\_FIELD**

SAMPLE_SYSTEM_FIELDS_ID	TEMPLATE
-------------------------	----------

## **SAMPLE\_TEMPLATE\_FILE\_FIELDS**

SAMPLE_ID	TEMPLATE_FILE_FIELDS_ELT	TEMPLATE_FILE_FIELDS_IDX
-----------	--------------------------	--------------------------

## **SAMPLE\_TEMPLATE\_FLOAT\_FIELDS**

SAMPLE_ID	TEMPLATE_FLOAT_FIELDS_ELT	TEMPLATE_FLOAT_FIELDS_FLOAT
-----------	---------------------------	-----------------------------

## **SAMPLE\_TEMPLATE\_INTEGER\_FIELDS**

SAMPLE_ID	TEMPLATE_INTEGER_FIELDS_ELT	TEMPLATE_INTEGER_FIELDS_IDX
-----------	-----------------------------	-----------------------------

# Generic Study Capture Framework

a joint initiative of the NMC and NuGO

## Study wizard

- 1. Start
- 2. Study
- 3. Subjects
- 4. Events
- 5. Groups
- 6. Samples
- 7. Confirmation
- 8. Done

### Add subjects to your study

Describe the subjects studied with all details available. Use the template that contains the necessary fields. New templates can be defined (based on existing templates). To add select the correct species and template, input the number of subjects you want to add, and click 'Add'. They will appear below the 'Add' button. As multiple species may be studied is no hard link between the template and the species.

Note that you can edit multiple subjects at once by selecting multiple rows by either ctrl-clicking them or dragging a selection over them in the space between the fields. Note that depending on the size of your browser window and the template, additional fields can be reached by the slider at the bottom of the page.

Number of subjects to add

of species

with template

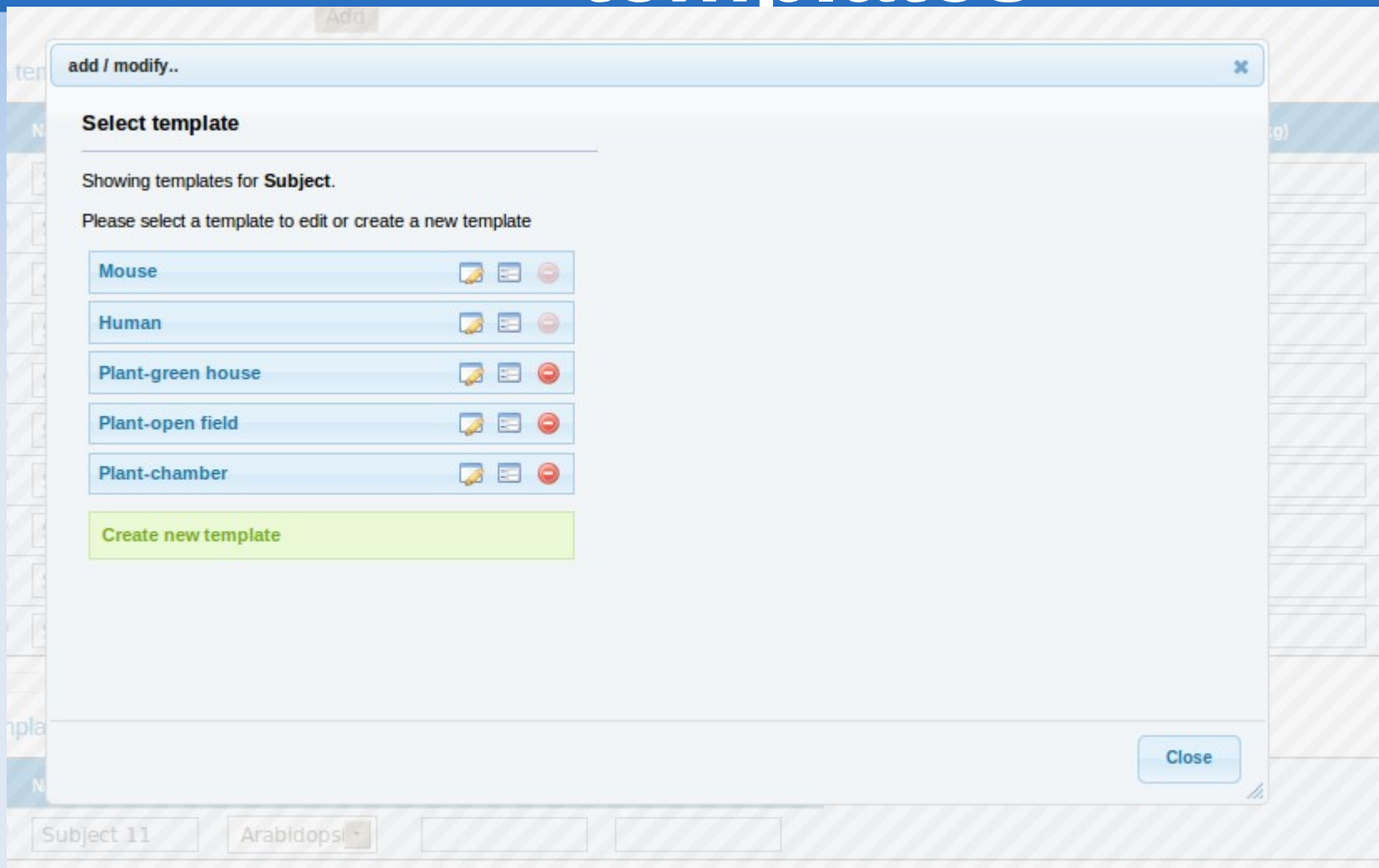
- Human
- Human
- Mouse
- Plant-chamber
- Plant-green house
- Plant-open field
- test

### Human template

#	Name	Species	Age (years)	DOB	Height (m)
1	Subject 1	Homo sapi	Male		
2	Subject 2	Homo sapi	Male		
3	Subject 3	Homo sapi	Male		
4	Subject 4	Homo sapi	Male		

add / modify..

# Template editor: Subject templates





# Template editor

add / modify..

### Human (switch)

Currently, this template contains the following fields. Drag fields to reorder. Drag fields to the list of available fields to remove the field from the template.

Gender (String list)	[-]
Age (years, Integer)	[-]
DOB (Date)	[-]
Height (m, Double)	[-]
Weight (kg, Double)	[-]
BMI (kg/m2, Double)	[-]
Race (String)	[-]
Waist circumference (cm, Float)	[-]
Hip circumference (cm, Float)	[-]
Systolic blood pressure (mmHg, Float)	[-]
Diastolic blood pressure (mmHg, Float)	[-]

### Available fields

These fields are available for adding to the template. Drag a field to the template to add it.

#Mice in cage (Integer)	[+]
Additional info (Text)	[+]
Age (weeks, Integer)	[+]
Age type (String list)	[+]
Block (String)	[+]
Block (String)	[+]
Cage (String)	[+]
Chamber no. (String)	[+]
Chamber no. (String)	[+]
Ecotype (String)	[+]
Genotype (String)	[+]

Close

### Blood (ml, String)

Name: Blood

Type: STRING

Unit: ml

Comment:

Required:

Save Close



# Ontology template field

- Example: Subject.species: Ontology field that targets the NCBI species taxonomy

## Study wizard

1. Start 2. Study 3. Subjects 4. Events 5. Groups 6.

### Add subjects to your study

Describe the subjects studied with all details available. Use the template that contains the necessary fields to the study, select the correct species and template, input the number of subjects you want to add, and the number of subjects studied within one study, there is no hard link between the template and the species.

Note that you can edit multiple subjects at once by selecting multiple rows by either ctrl-clicking them or by using the checkboxes. Note that depending on the size of your browser window and the template, additional fields can be reached by scrolling.

Number of subjects to add

1

of species

Arabis thaliana

with template

Arabis thaliana

Homo sapiens

Mus musculus

+ add more...

« prev | next »

## Generic Study Capture Framework

a joint initiative of the N

Home Studies Contacts Publications Import data

add more...

tomato|

Add term

Solanum lycopersicum (synonym) from: 'tomato'

Tomato geminivirus (preferred name) from: Tomato geminivirus

Amphiprion frenatus (synonym) from: 'tomato clownfish'

Cephalopholis sonnerati (synonym) from: 'tomato hind'

Dyscophus antongilii (synonym) from: 'tomato frog'

Helicoverpa zea (synonym) from: 'tomato fruitworm'

Manduca quinquemaculata (synonym) from: 'tomato hornworm'

Manduca sexta (synonym) from: 'tomato hornworm'

Physalis peruviana (synonym) from: 'gooseberry-tomato'

Solanum betaceum (synonym) from: 'tree-tomato'

Solanum lycopersicum var. cerasiforme (synonym) from: 'cherry tomato'

Solanum peruvianum (synonym) from: 'Peruvian tomato'

Solanum pimpinellifolium (synonym) from: 'currant tomato'

Tomato leaf curl Kerman virus-[Roodan:tomato] (preferred name) from: Tomato leaf curl virus-[Roodan:tomato]

Bipartite tomato geminivirus (preferred name) from: Bipartite tomato geminivirus

« prev | next »