PIMMS: Documenting Simulation Workflow in the 'Cascade' Cloud Modelling Project

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JISC MRD workshop, Oct 2012

Infrastructure to allow

- Scientists to document their (climate) modelling workflow
- Interested 'consumers' to discover and understand data

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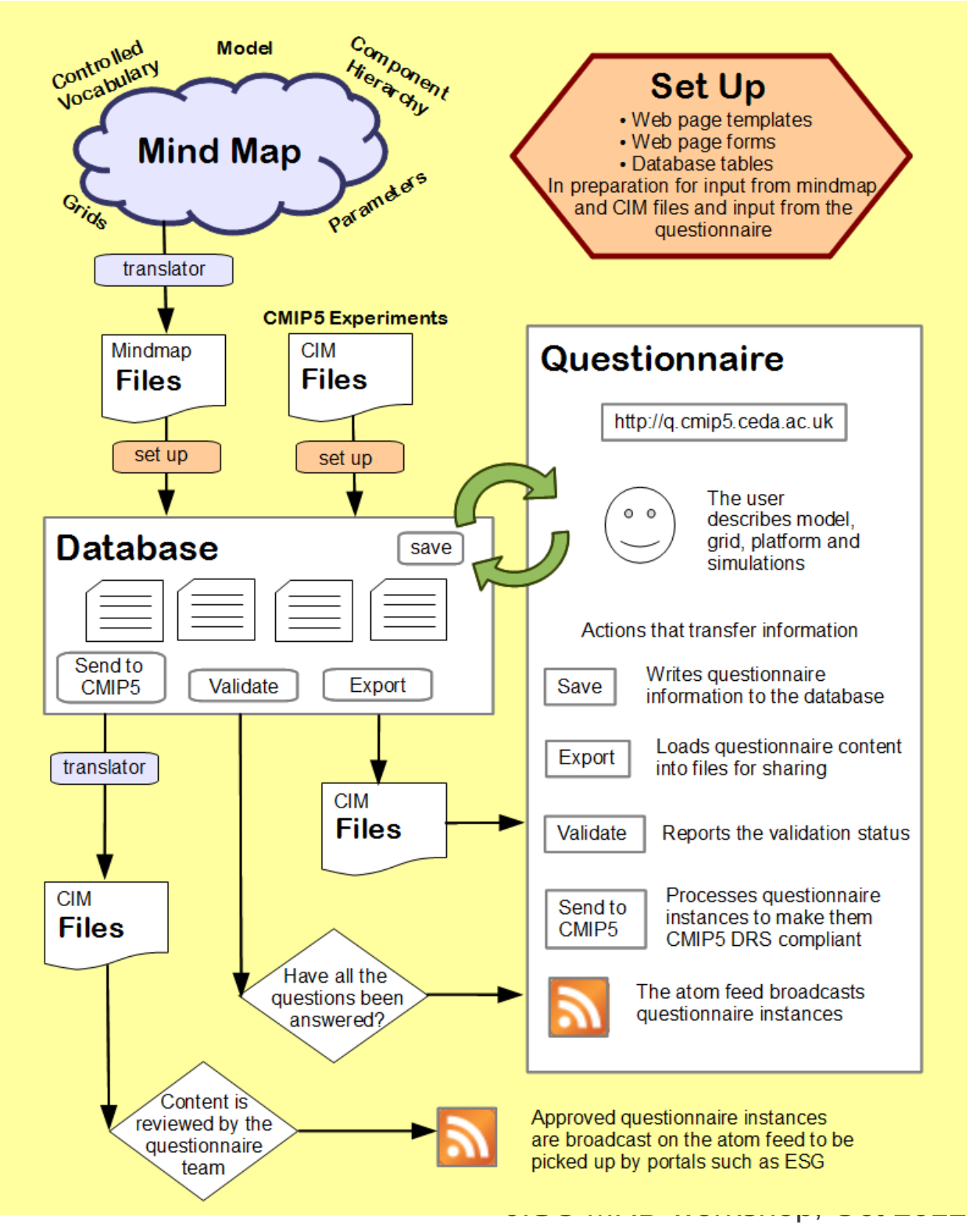
METAFOR

A suite of interconnected software has been created that:

- derives a 'controlled vocabulary' of terms to document climate models (in a cmip5 'tailored' way);
- Creates a web environment where institutions can give 'answers' to those terms
- Generates metadata records particular to the cmip5 domain
- Automatically feeds these records into a system that makes them discoverable to the rest of the world



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Portable Infrastructure for the Metafor Metadata System (http://proj.badc.rl.ac.uk/pimms)

PIMMS wants to bring the same infrastructure to the local level, i.e. the individual scientist or research group who wants to manage their own everyday modelling workflow

Deployable software stack that the user community can install locally at a desktop/department level
- tailor to their own needs.
- Use/extend already existing controlled vocabularies (greater comparison ability with other projects)
- call into developed web services to upload metadata to centralised repositories – make metadata, and thus data, discoverable

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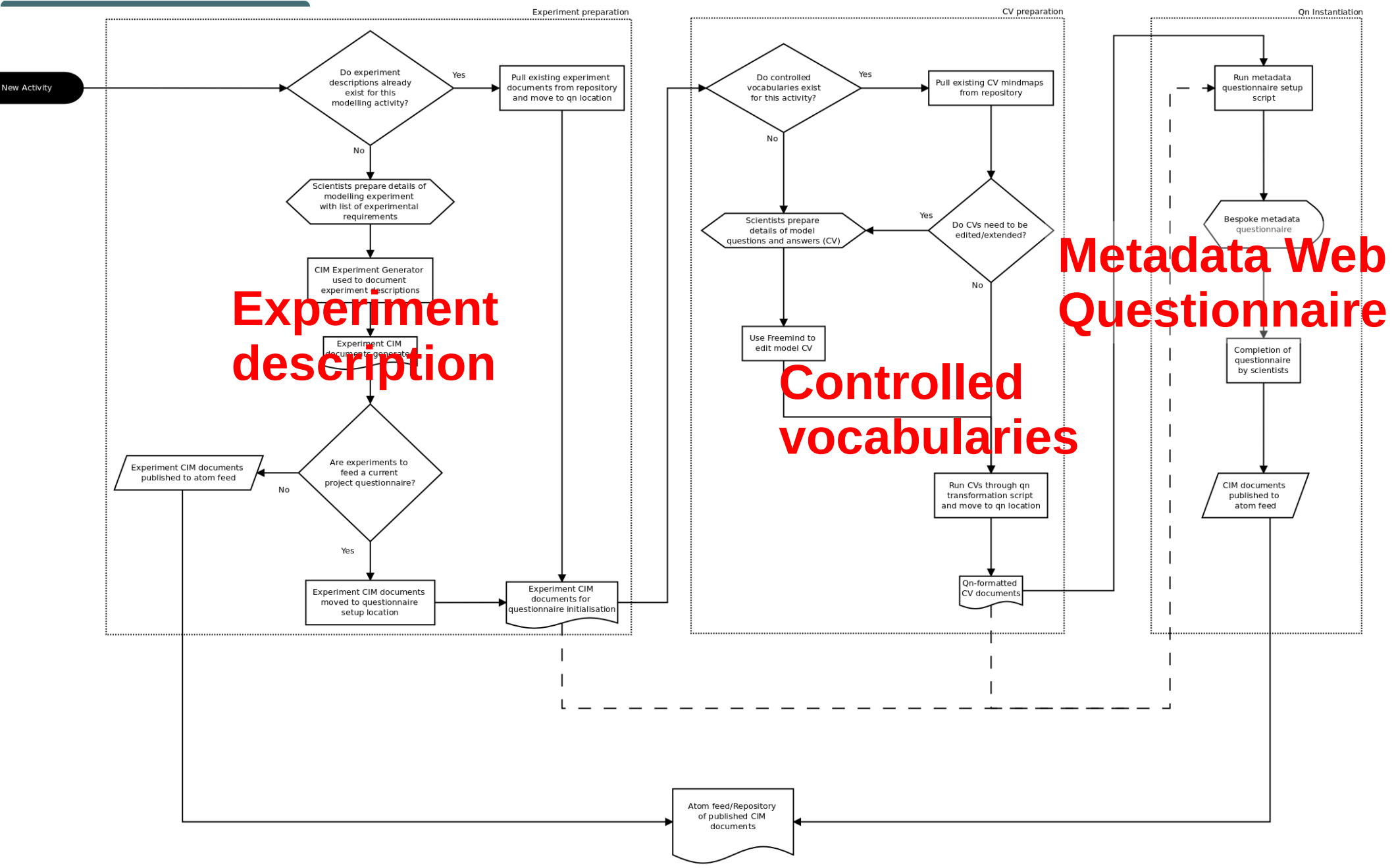

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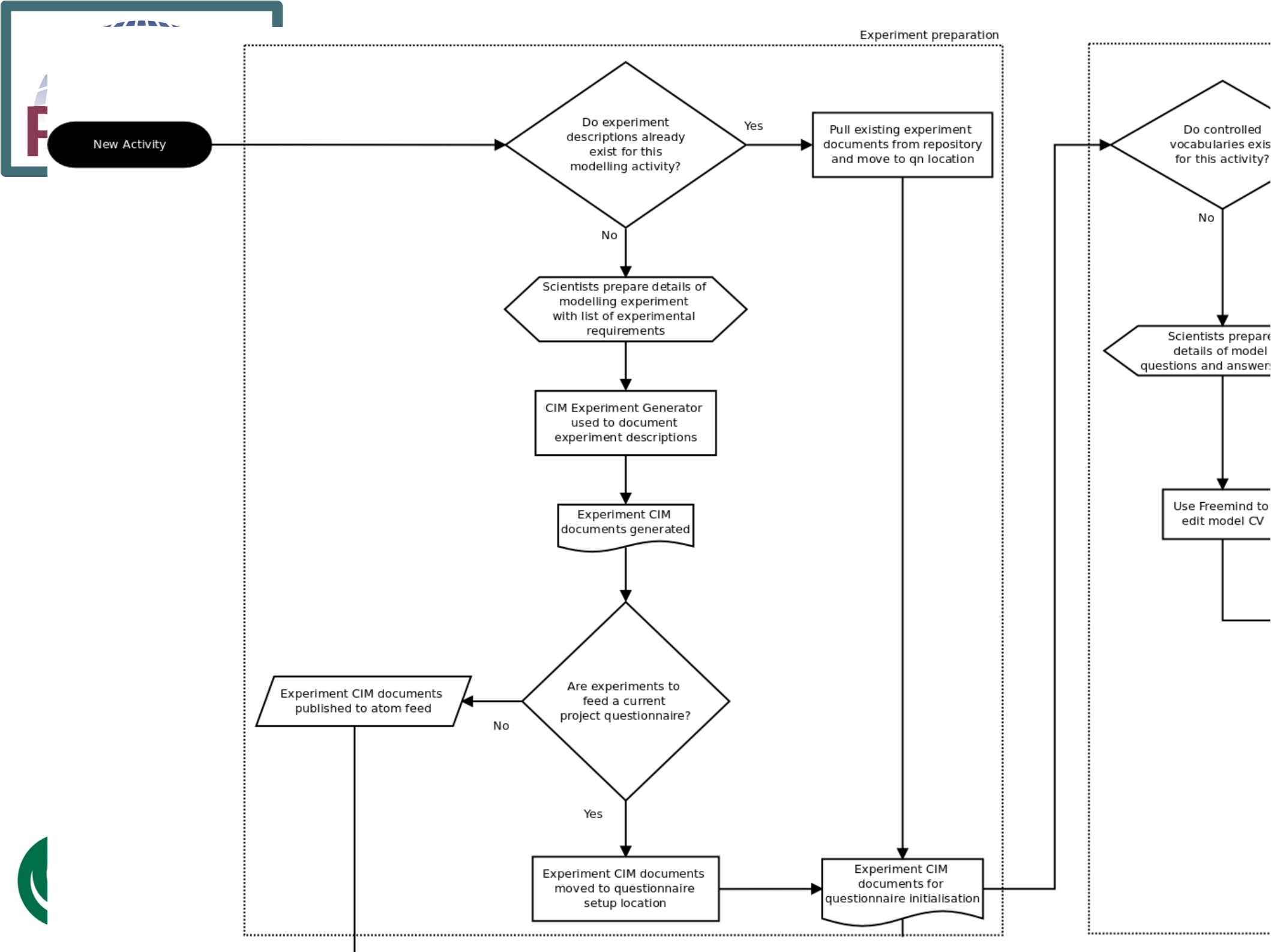
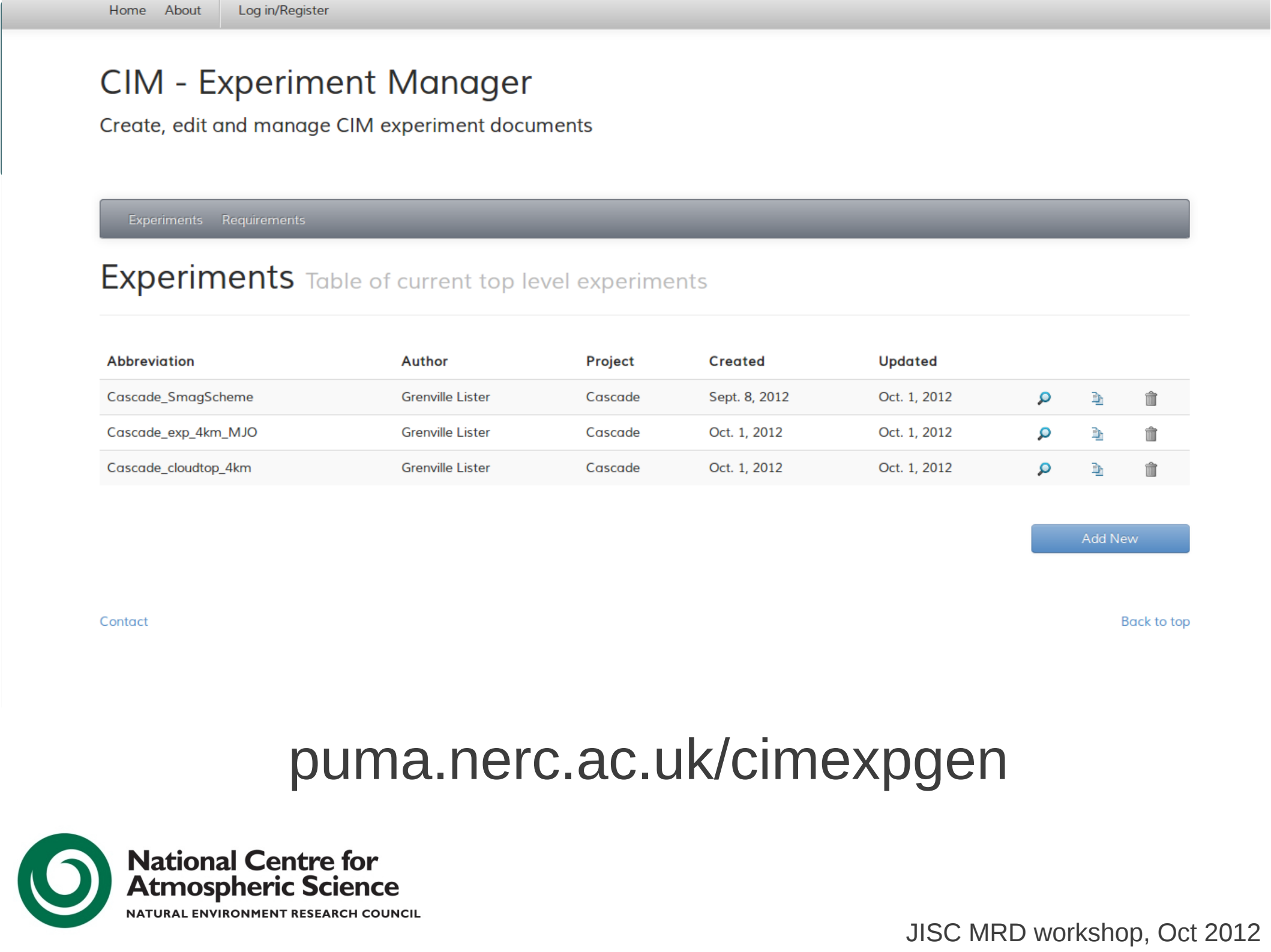

Experiment preparation
New Activity
Do experiment descriptions already exist for this modelling activity?
Yes
No
Pull existing experiment documents from repository and move to qn location
Scientists prepare details of modelling experiment with list of experimental requirements
CIM Experiment Generator used to document experiment descriptions
Experiment CIM documents generated
Are experiments to feed a current project questionnaire?
No
Yes
Experiment CIM documents published to atom feed
Experiment CIM documents moved to questionnaire setup location
Experiment CIM documents for questionnaire initialisation
Do controlled vocabularies exis for this activity?
No
Scientists prepare details of model questions and answers
Use Freemind to edit model CV



puma.nerc.ac.uk/cimexpgen

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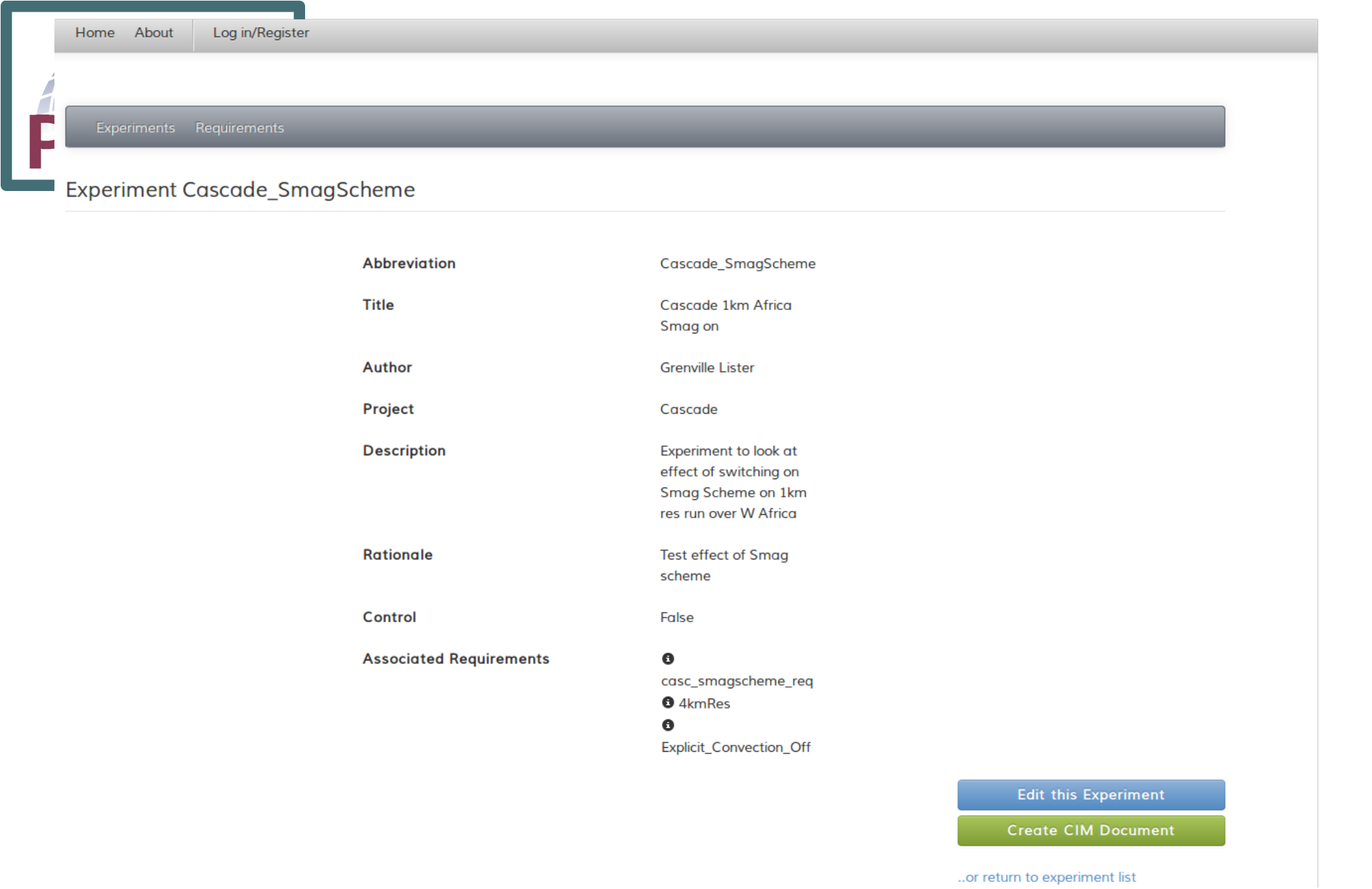

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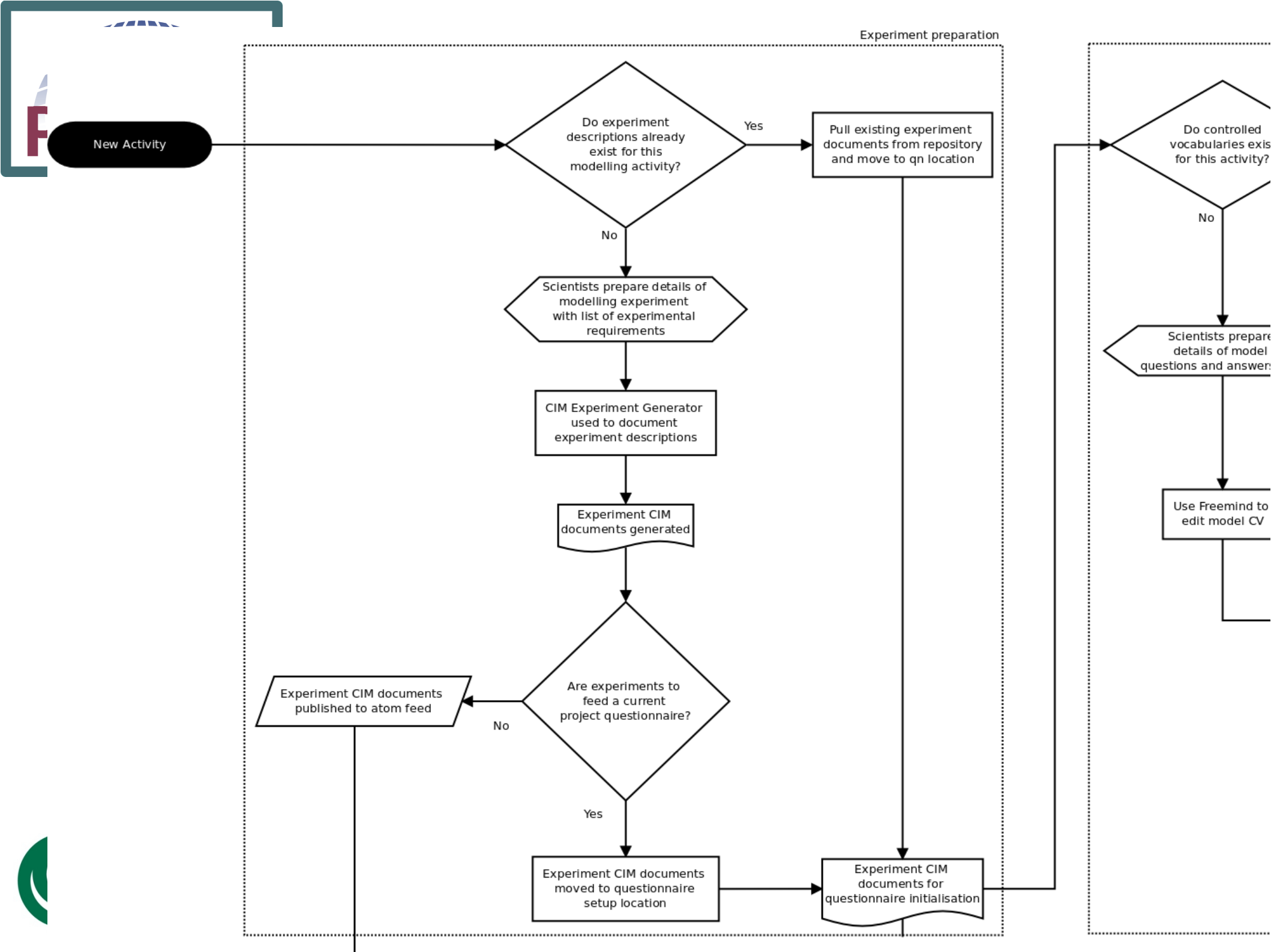
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- What works:
  - Tool is easy to use
  - Makes sharing of experiments easy
- Difficulties
  - Getting scientists to separate the idea of simulations and experiments
  - Login accounts: Standard Django tools vs more centrally managed system (e.g. openID)

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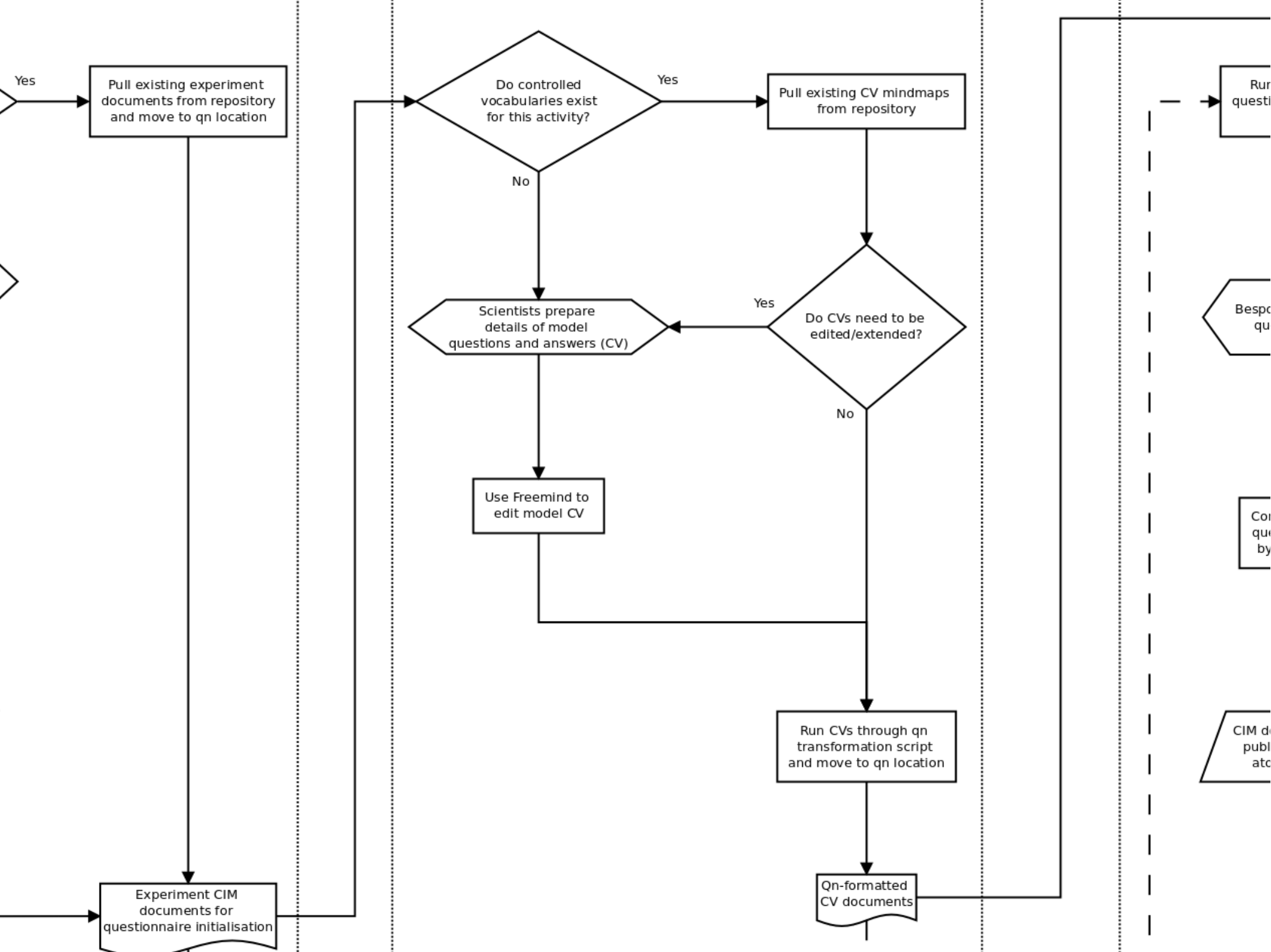
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Pull existing experiment documents from repository and move to qn location
Experiment CIM documents for questionnaire initialisation
Do controlled vocabularies exist for this activity?
Yes
No
Pull existing CV mindmaps from repository
Do CVs need to be edited/extended?
Yes
No
Scientists prepare details of model questions and answers (CV)
Use Freemind to edit model CV
Run CVs through qn transformation script and move to qn location
Qn-formatted CV documents
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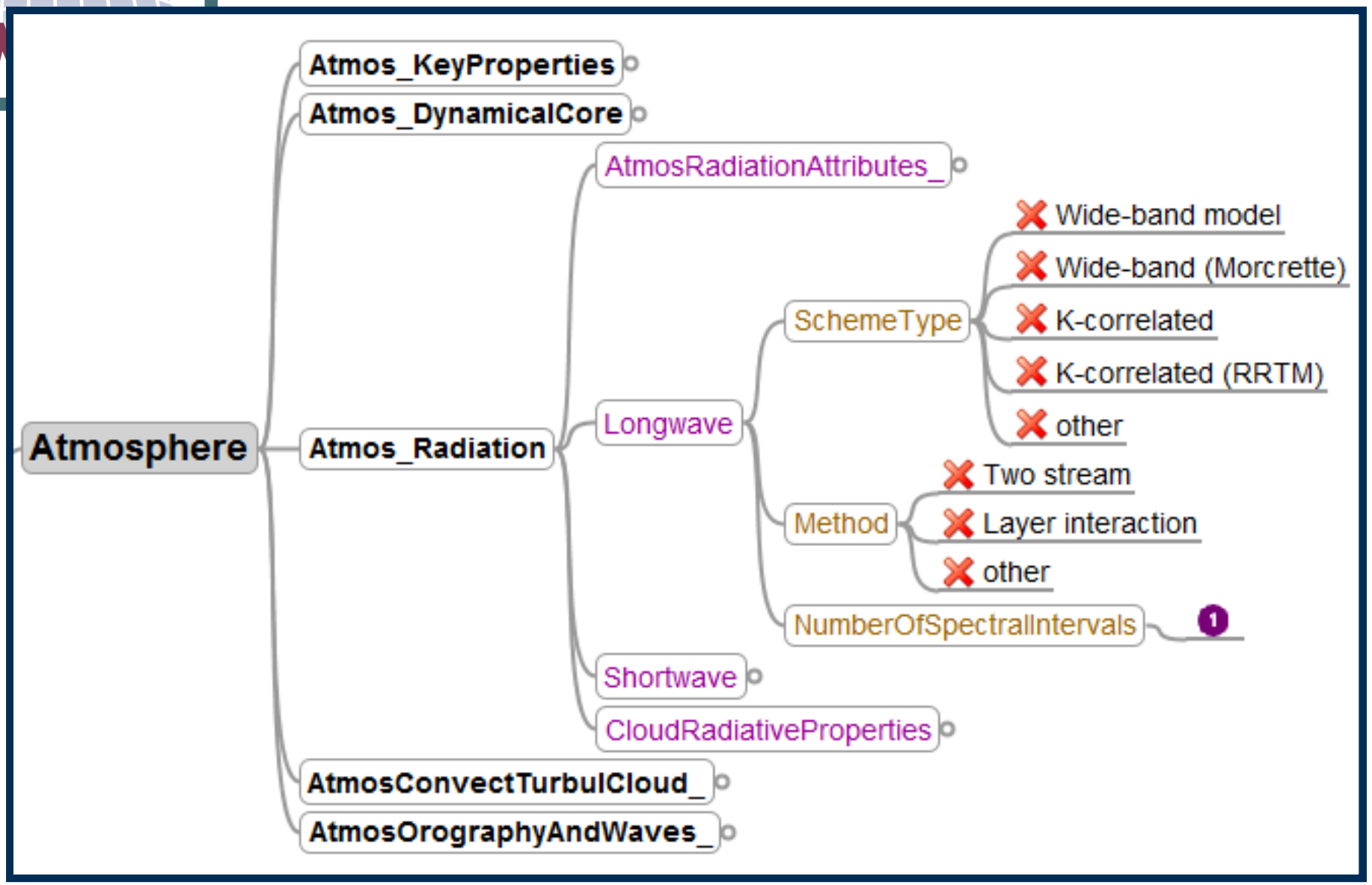

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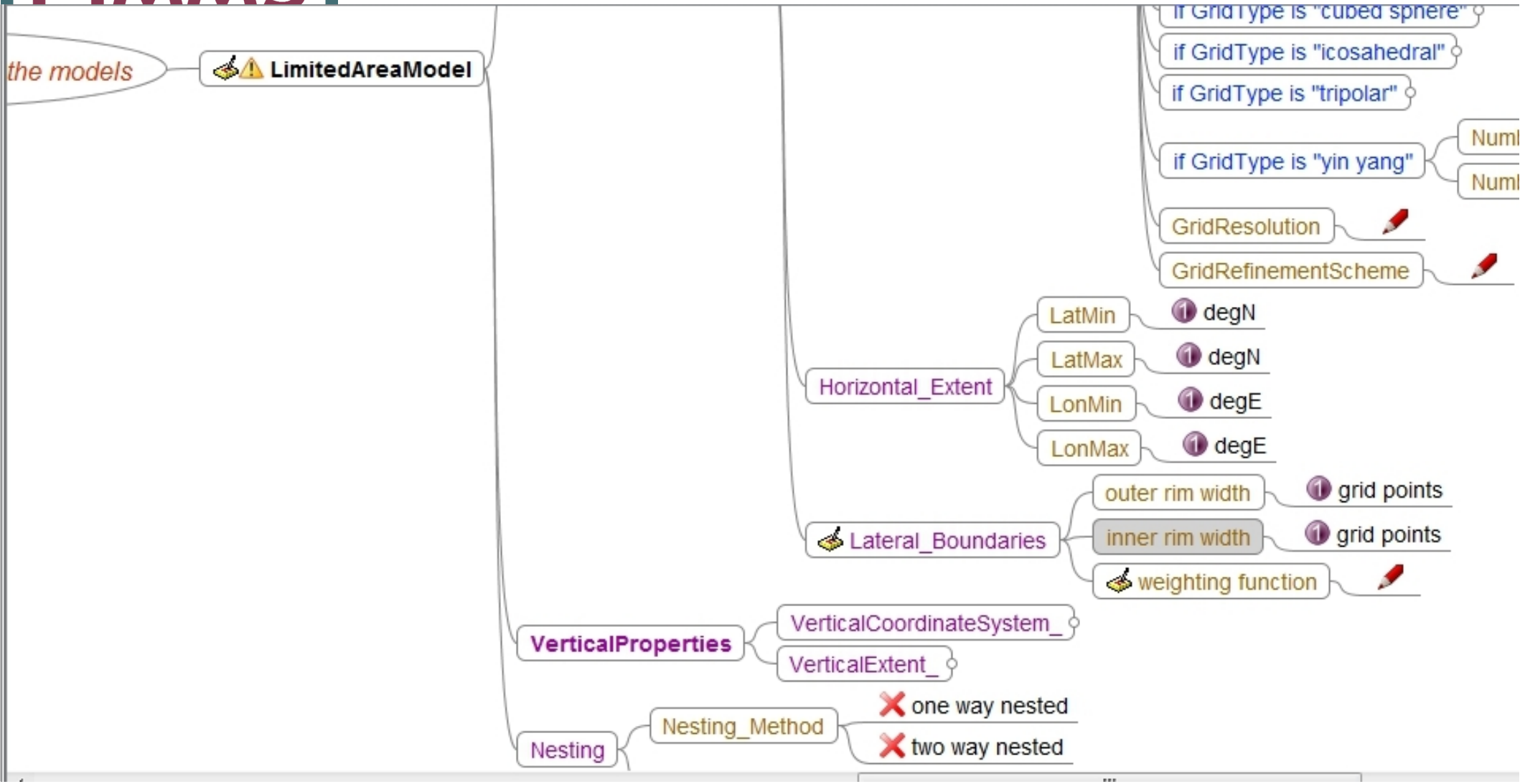

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- What works:
  - Users like the graphical breakdown of a model
  - With a little training, they can quickly get going with their vocabularies
- Difficulties
  - Finding a 'natural fit' for extending controlled vocabs
  - From an infrastructure perspective, we need a better system for managing/governing controlled vocabularies – other projects are also extending these vocabularies

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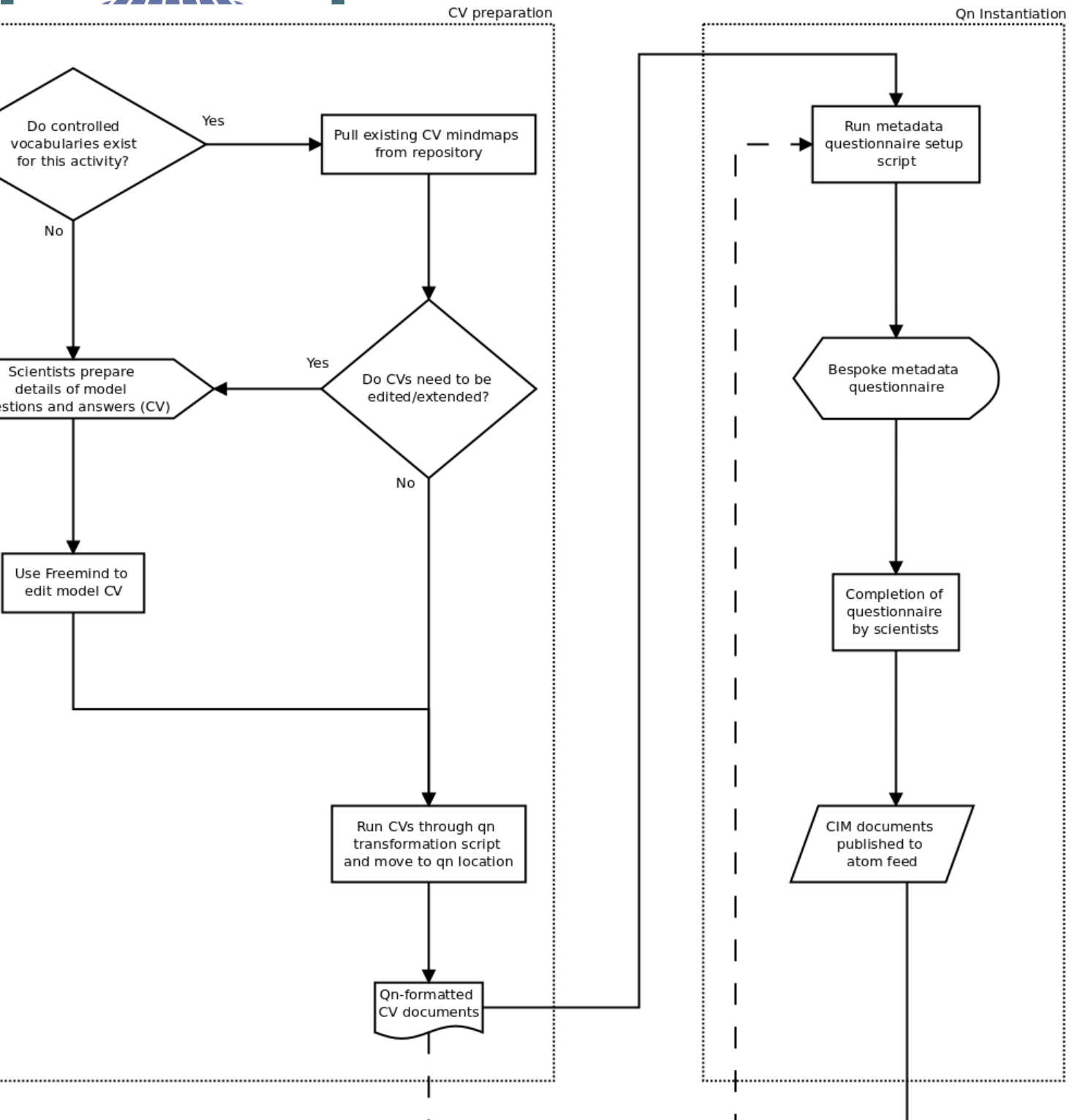
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Run CVs through qn transformation script and move to qn location
Qn-formatted CV documents
Run metadata questionnaire setup script
Bespoke metadata questionnaire
Completion of questionnaire by scientists
CIM documents published to atom feed

Summary | Experiments | Model:JustAtest | Grid:T156L31 | Simul:decadal1960 | Files | References | Parties | Help | About

Model Component Atmos Radiation

Validation Status: 0.0

All buttons and links above and in this column navigate away from this page. Save your work first!

Available Models

- JustAtest
  - Aerosols
  - Atmosphere
    - Atmos Key Properties
    - Atmos Dynamical Core
    - Atmos Radiation
    - Atmos Convect Turbul Cloud
    - Atmos Orography And Waves
  - Atmospheric Chemistry
  - Land Ice
  - Land Surface
  - Ocean Biogeo Chemistry
  - Ocean
  - Sea Ice

Component Atmos Radiation

Please add details of any other relevant subcomponents of this component

Add Subcomponent

The button(s) in this box navigate to pages which further describe this **component**.

Inputs Needed

Short Name: Atmos Radiation (type: AtmosRadiation)

Implemented: ☑ Untick the box if there is no representation of AtmosRadiation in your model.

Long Name:

Responsible Parties (Use the parties tab to add more choices here):

Contact: --------- Principal Investigator: --------- Funder: --------- Copy Parties to sub-components ☐

Grid

Please select an appropriate grid from those you have described using the grid tab

Grid: --------- Copy Grid to sub-components ☐

General Attributes

TimeStep	Enter string value:	
AerosolTypes	Choose one or more of:	sulphate, nitrate, sea salt
GHG-Types	Choose one or more of:	

- ☑ sulphate
- ☑ nitrate
- ☑ sea salt
- ☐ dust
- ☐ ice
- ☐ organic
- ☐ BC (black carbon / soot)
- ☐ SOA (secondary organic aerosols)
- ☐ POM (particulate organic matter)

Use the **Name** and **Value** boxes to enter an additional par…rate entry boxes for another parameter/attribute.

Name … Delete ☐?

Longwave

SchemeType	Choose one of:	
SchemeMethod	Choose one of:	---------
NumberOfSpectralIntervals	Enter string value:	

Use the **Name** and **Value** boxes to enter an additional parameter or attribute and it's value. The "Save" button below will generate entry boxes for another parameter/attribute.

Name **Value** Delete ☐?

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Other issues:

- Data to metadata (and vice versa) mapping

- Limiting access to published metadata

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