Master Thesis - Final Presentation

A structured task-centered framework for online collaboration

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Agenda

I. Motivation
II. Introduction
III. Approach
IV. Evaluation
V. Outlook
VI. Live Demo
VII. Discussion

Evolution of the scientific enterprise

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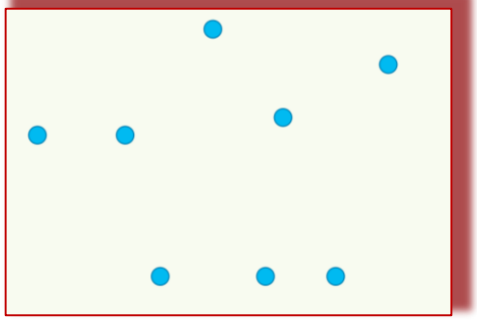
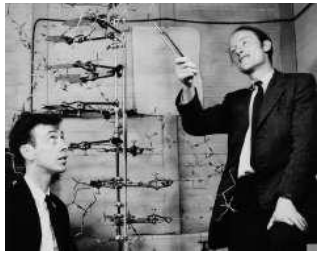
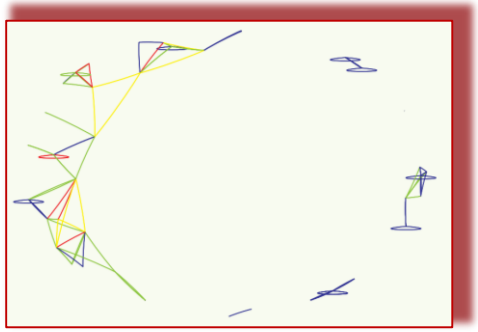
Galileo, Newton, Darwin and Einstein published fundamental work
single-authorship



Individual Intellectual people

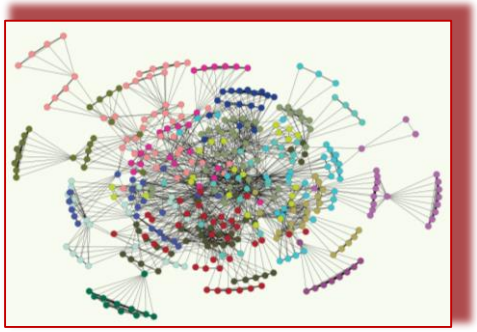
Watson and Crick made progress on unscrambling the DNA's structure
co-authorship





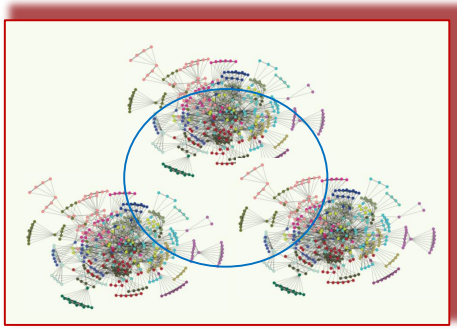
Pairwise Research

International Human Genome Sequencing Consortium
large number co-authors



Collaborative Research

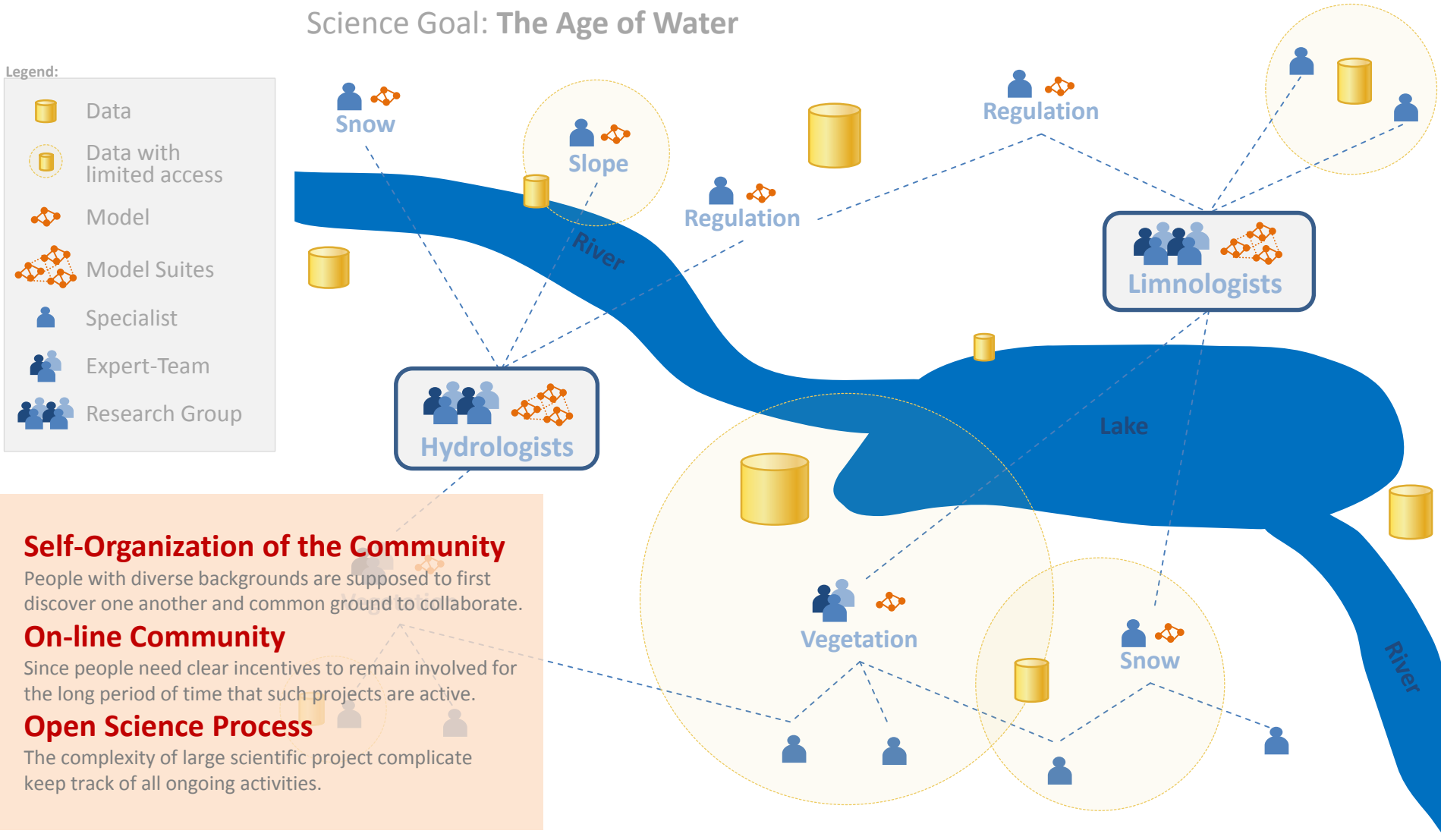
ATLAS Detector Project at the Large Hadron Collider in CERN
the community as author



Collaborative Research Networks

Evolution of the scientific enterprise from [Barabasi, 2005] extended with the ATLAS Detector Project at the Large Hadron Collider [The ATLAS Collaboration, 2012].

Challenges of Scientific Collaborations



Self-Organization of the Community

People with diverse backgrounds are supposed to first discover one another and common ground to collaborate.

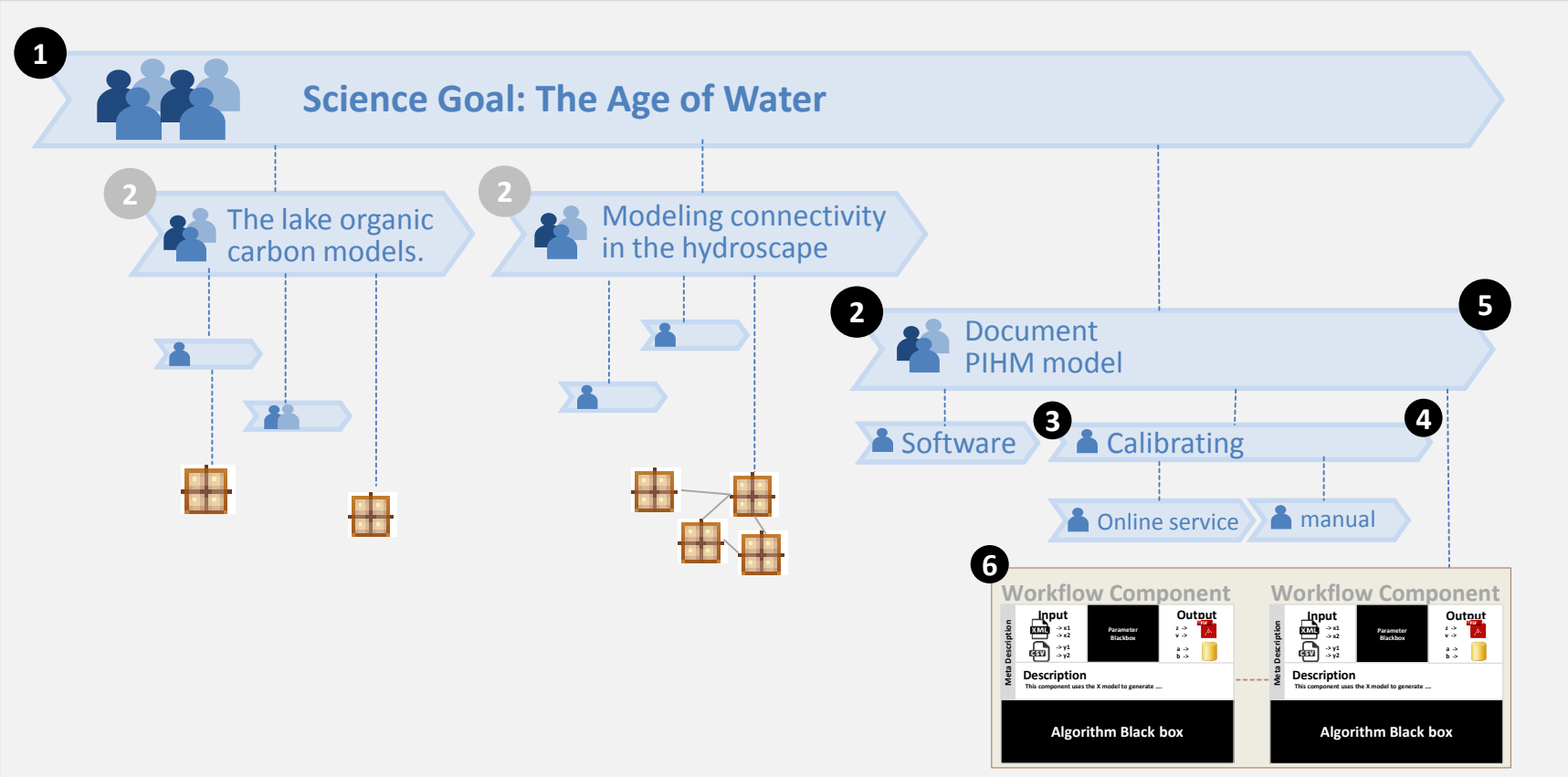
On-line Community

Since people need clear incentives to remain involved for the long period of time that such projects are active.

Open Science Process

The complexity of large scientific project complicate keep track of all ongoing activities.

Organic Data Science Sample Process



1. Defining Science Goal
2. Define Main Tasks
3. Decompose Tasks until they are solvable
4. Accomplish tasks with results
5. Aggregating Knowledge
6. Models as software component

Organic Data Science Features Design

Social Design Principles
[Kraut and Resnick, 2011]

A: Starting communities
- **A1:** Carve a niche of interest, scoped in terms of topics, members, activities, and purpose
- **A2:** Relate to competing sites, integrate content
- **A3:** Organize content, people, and activities into subspaces once there is enough activity
- **A4:** Highlight more active tasks
- **A5:** Inactive tasks should have "expected active times"
- **A6:** Create mechanisms to match people to activities

B: Encouraging contributions through motivation
- **B1:** Make it easy to see and track needed contributions
- **B2:** Ask specific people on tasks of interest to them
- **B3:** Simple tasks with challenging goals are easier to comply with
- **B4:** Specify deadlines for tasks, while leaving people in control
- **B5:** Give frequent feedback specific to the goals
- **B6:** Requests coming from leaders lead to more contributions
- **B7:** Stress benefits of contribution
- **B8:** Give (small, intangible) rewards tied to performance (not just for signing up)
- **B9:** Publicize that others have complied with requests
- **B10:** People are more willing to contribute: 1) when group is small, 2) when committed to the group, 3) when their contributions are unique

C: Encouraging commitment
- **C1:** Cluster members to help them identify with the community
- **C2:** Give subgroups a name and a tagline
- **C3:** Put subgroups in the context of a larger group
- **C4:** Make community goals and purpose explicit
- **C5:** Interdependent tasks increase commitment and reduce conflict

D: Dealing with newcomers
- **D1:** Members recruiting colleagues is most effective
- **D2:** Appoint people responsible for immediate friendly interactions
- **D3:** Introducing newcomers to members increases interactions
- **D4:** Entry barriers for newcomers help screen for commitment
- **D5:** When small, acknowledge each new member
- **D6:** Advertise members particularly community leaders, include pictures
- **D7:** Provide concrete incentives to early members
- **D8:** Design common learning experiences for newcomers
- **D9:** Design clear sequence of stages to newcomers
- **D10:** Newcomers go through experiences to learn community rules
- **D11:** Provide sandboxes for newcomers while they are learning
- **D12:** Progressive access controls reduce harm while learning

F: Lessons learned from ENCODE
- **F1:** Spine of leadership, including a few leading scientists and 1-2 operational project managers, that resolves complex scientific and social problems and has transparent decision making
- **F2:** Written and publicly accessible rules to transfer work between groups, to assign credit when papers are published, to present the work
- **F3:** Quality inspection with visibility into intermediate steps
- **F4:** Export of data and results, integration with existing standards

E: Best practices from Polymath
- **E1:** Permanent URLs for posts and comments, so others can refer to them
- **E2:** Appoint a volunteer to summarize periodically
- **E3:** Appoint a volunteer to answer questions from newcomers
- **E4:** Low barrier of entry: make it VERY easy to comment
- **E5:** Advance notice of tasks that are anticipated
- **E6:** Keep few tasks active at any given time, helps focus

Best Practices Polymath and ENCODE
[Nielsen, 2011] [ENCODE, 2012]

Conceptual Design Features

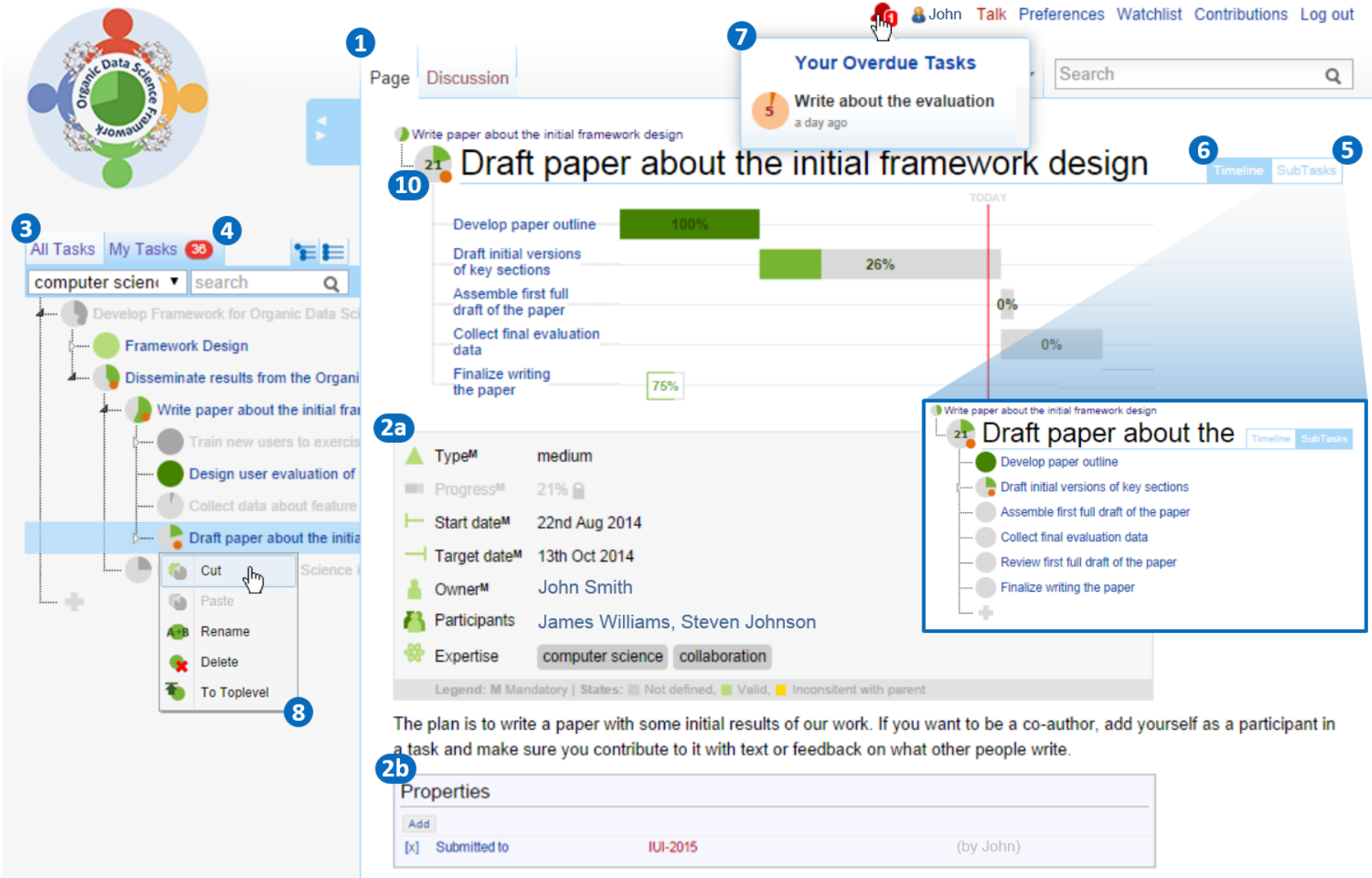
Requirements

- **I** Credits for contribution [R2, R3, B8, F2]
- **II** Task representation [R1, A3, A4, A3, A4, A6, B1, B3, B10, C2, C3, C4, C5, E1, E5, F3]
- **III** Transparent project state [R1, R2, B1, B2, B4, B5, B8, B10, C1, C5, E5]
- **IV** Simple navigation and organization [R1, R2, A3, A4, A5 B1, B3, B4, B5, B9, B10, C1, C2, C3, C4, C5, E5, F3]
- **V** Assist user to complete work [R1, A4, A5, A6, B1, B2, B4, B5, B6, C1, C2, C5, F3]
- **VI** Attract newcomers [R3, A3, A4, A6, B1, B3, B10, C2, C3, C4, C5, E1, E5, F3]
- **VII** Set up new community [R3, A1, A2, A3, B7, D1, D5, D6, D7, E2, E6, F1, F2, E4]
- **VIII** User role concept [R2, R3, F1, D9]

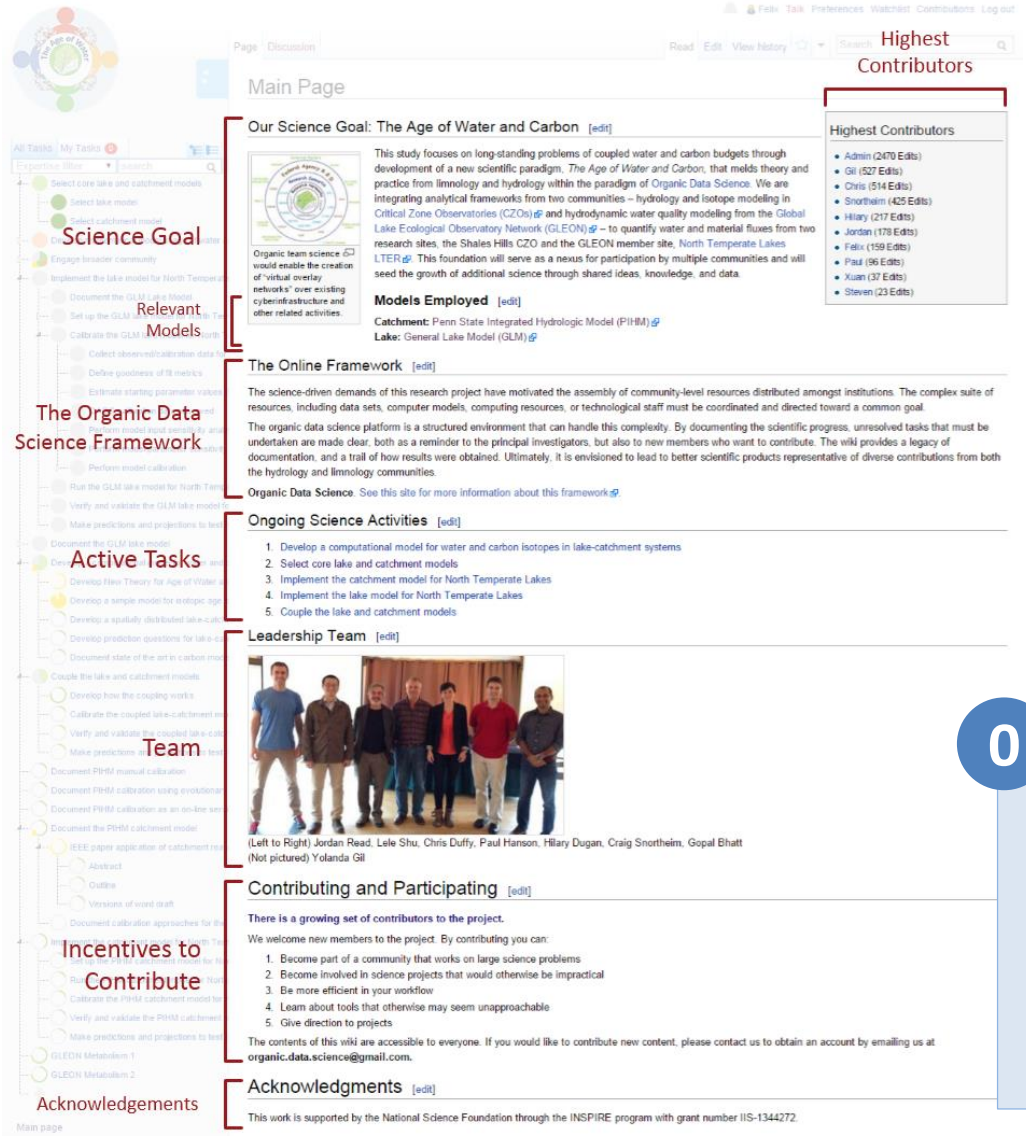
UI Features

- **0** Welcome page [VII]
- **1** Task Representation [II, VI]
- **2** Task Metadata [V]
- **3** Task Navigation [IV]
- **4** Personal Worklist [IV]
- **5** Subtask Navigation [IV]
- **6** Timeline Navigation [IV]
- **7** Task Alert [III]
- **8** Task Management [I, IV]
- **9** Users tasks and expertise [III]
- **10** Task State [III]
- **11** Train new members [VII]

UI Features Overview



0 Welcome Page



0 Welcome Page

A1: Carve a niche of interest, scoped in terms of topics, members, activities, and purpose

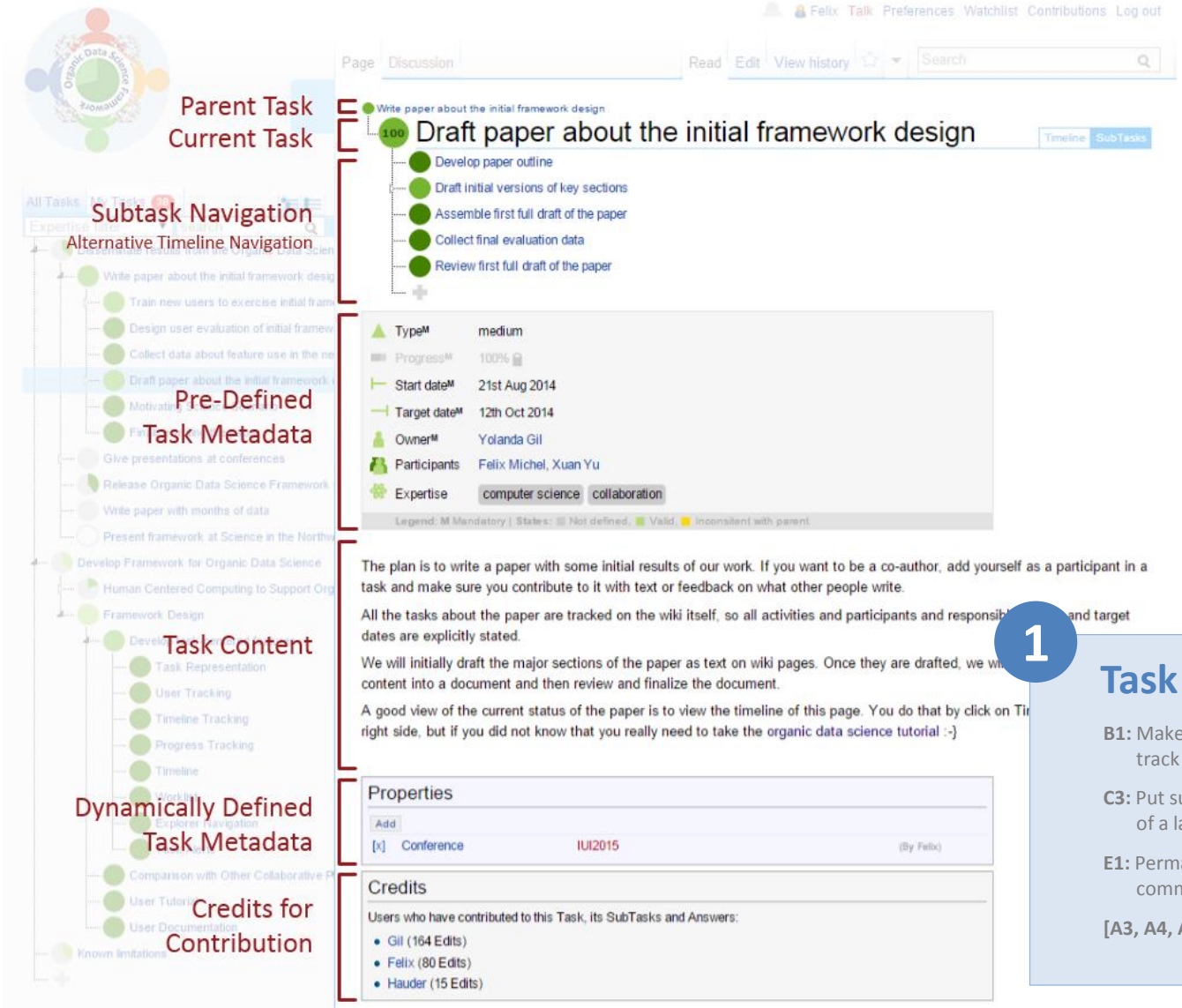
D6: Advertise members particularly community leaders, include pictures

D7: Provide concrete incentives to early members

E6: Keep few tasks active at any given time, helps focus

[A1, A2,A3,B7,D1, D5, D6, D7, E2, E6, F1, F2, F4]

1 Task Representation



1

Task Representation

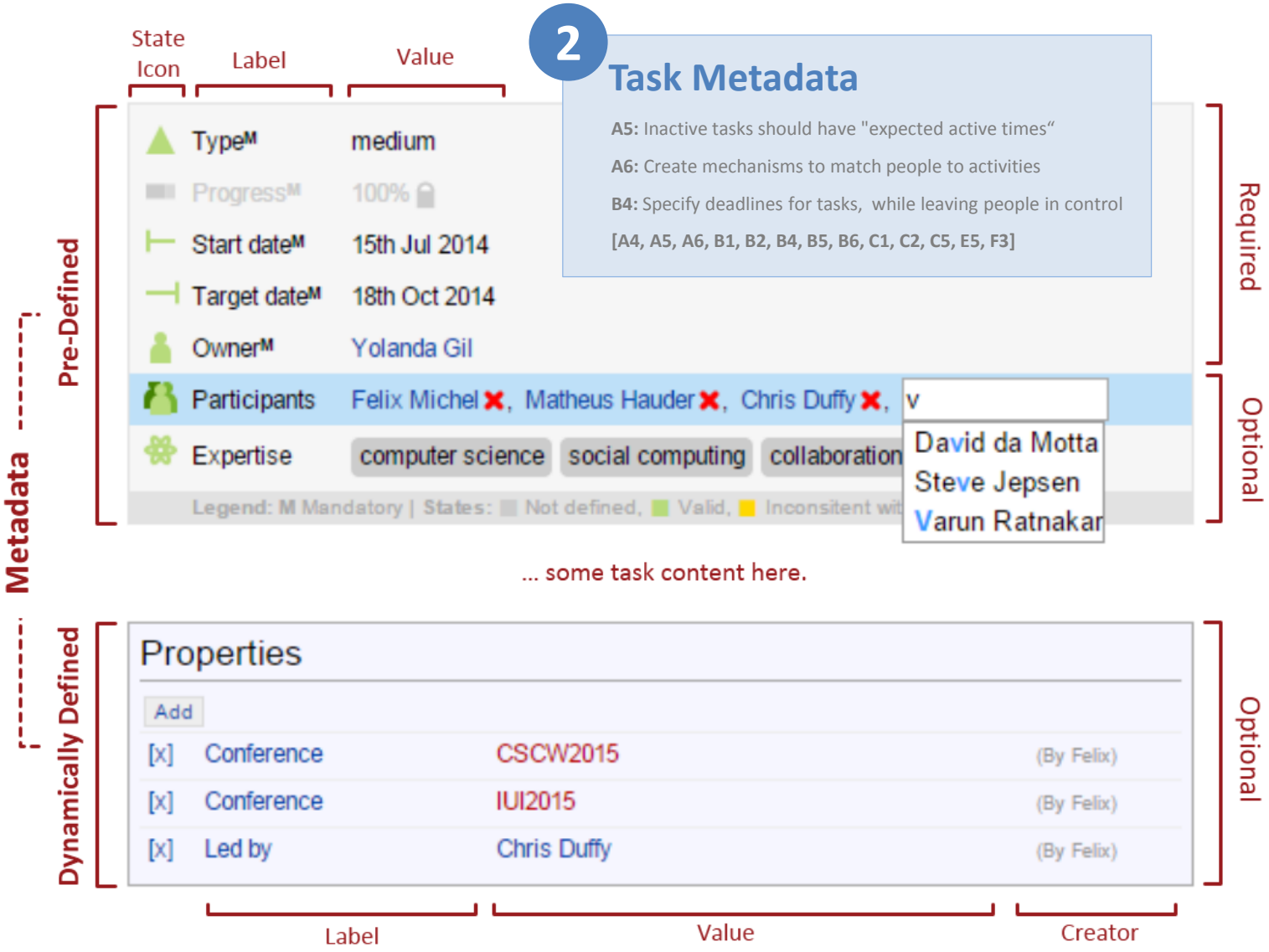
B1: Make it easy to see and track needed contributions

C3: Put subgroups in the context of a larger group

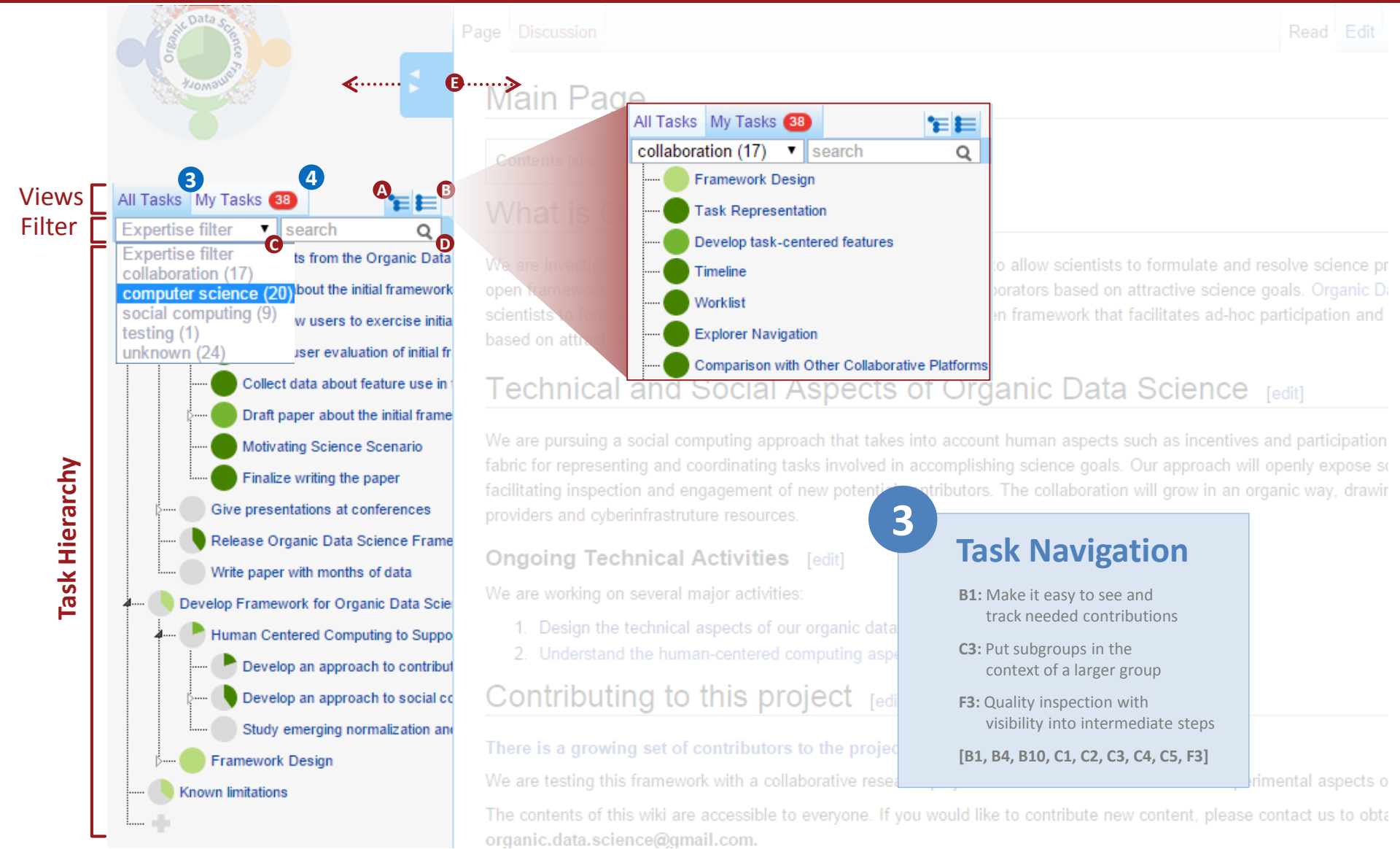
E1: Permanent URLs for posts and comments, so others can refer to them

[A3, A4, A6, B1, B3, B10, C2, C3, C4, C5, E1, F3]

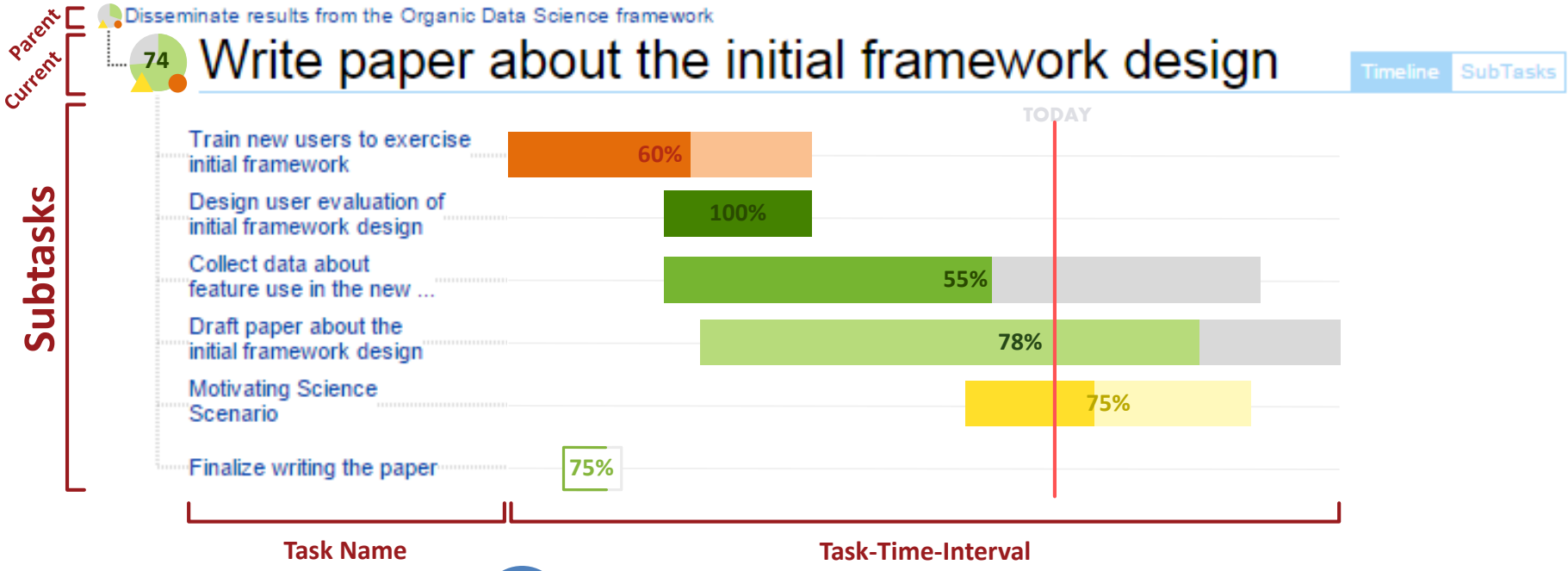
2 Task Metadata



3 Task Navigation



6 Timeline Navigation



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Timeline Navigation

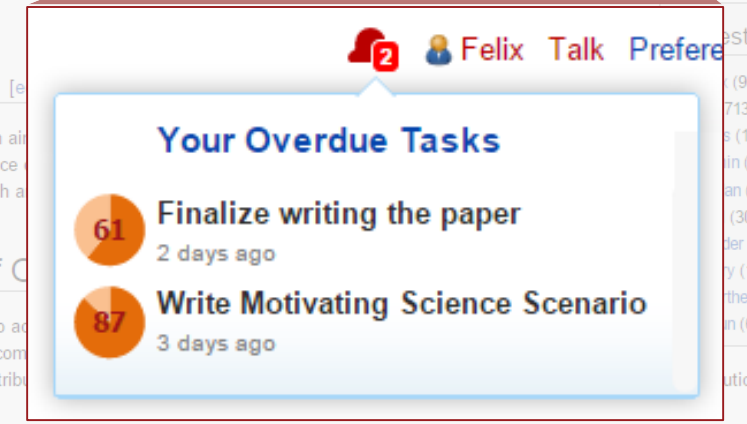
A5: Inactive tasks should have "expected active times“

B5: Give frequent feedback specific to the goals

E5: Advance notice of tasks that are anticipated

[A5, B1, B5, E5, F3]

7 Task Alert



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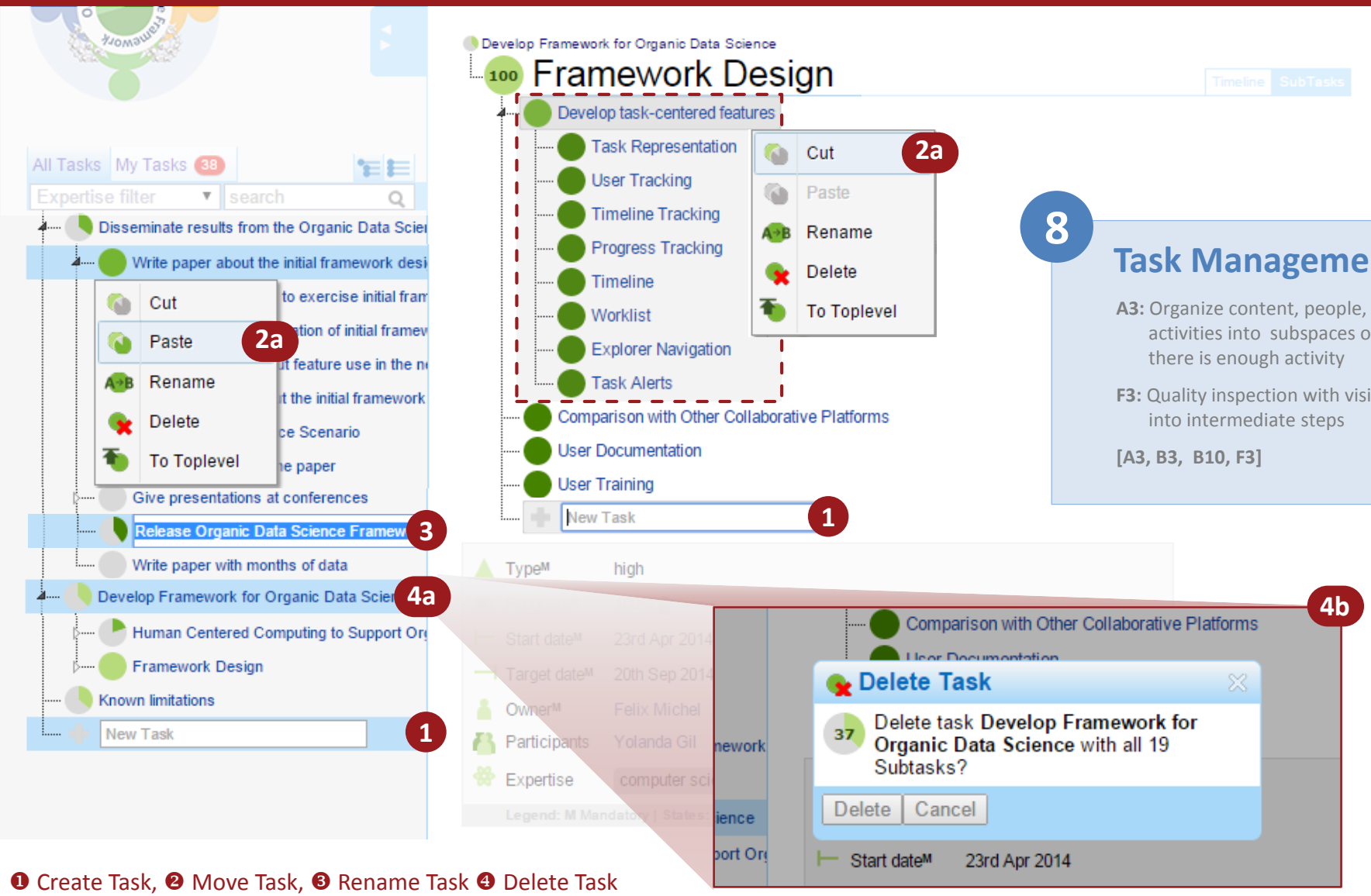
Task Alert

B1: Make it easy to see and track needed contributions

B4: Specify deadlines for tasks, while leaving people in control

[B1, B4]

8 Task Management



8 Task Management

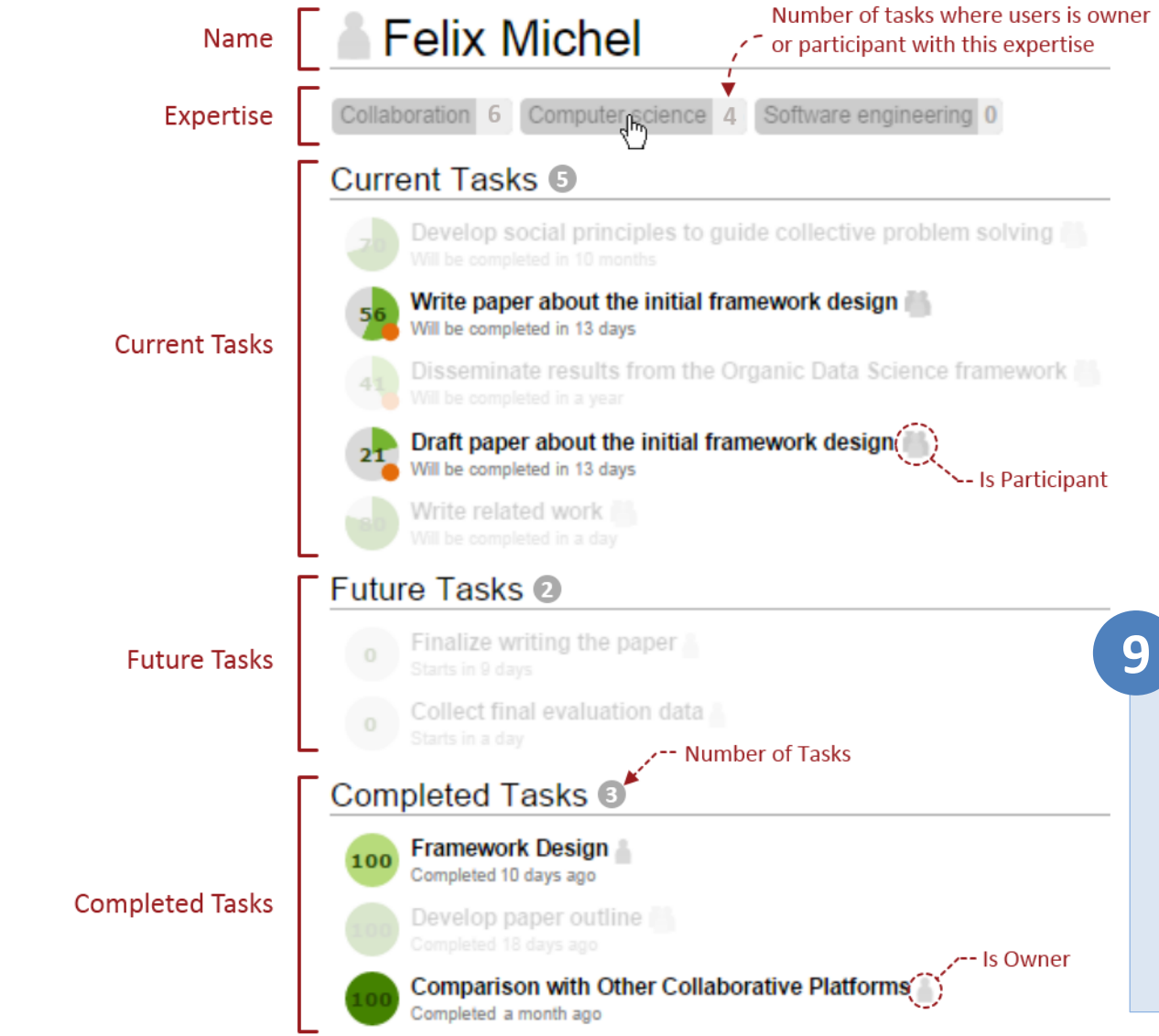
A3: Organize content, people, and activities into subspaces once there is enough activity

F3: Quality inspection with visibility into intermediate steps

[A3, B3, B10, F3]

❶ Create Task, ❷ Move Task, ❸ Rename Task ❹ Delete Task

9 User Tasks and Expertise



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User Tasks and Expertise

B2: Ask specific people on tasks of interest to them

C1: Cluster members to help them identify with the community

C5: Interdependent tasks increase commitment a. reduce conflict

[B1, B2, B5, B8, B10, C1, C5]

10 Task State

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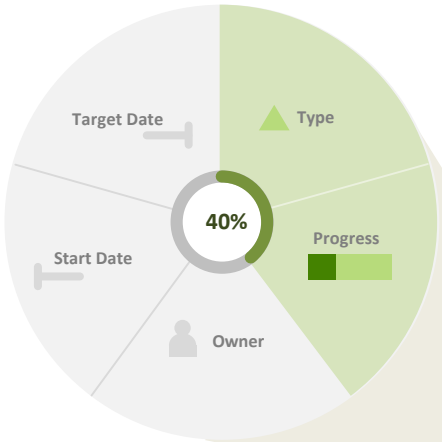

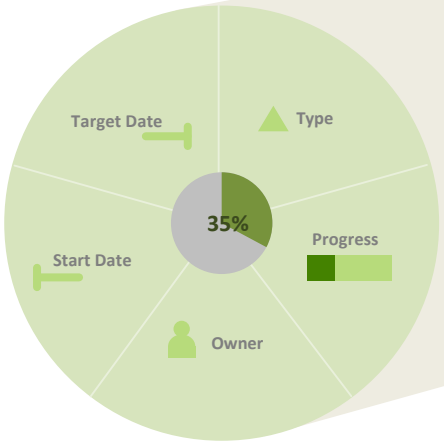

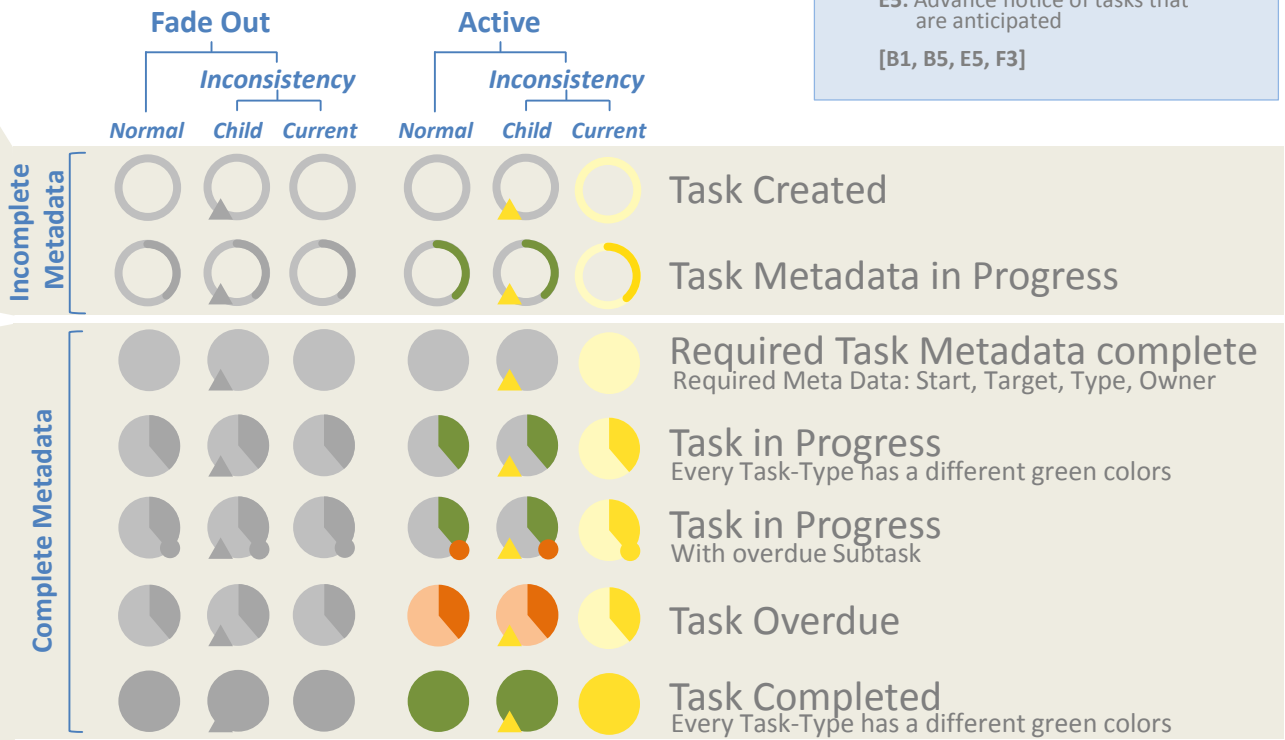

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Task State

B1: Make it easy to see and track needed contributions

B5: Give frequent feedback specific to the goals

E5: Advance notice of tasks that are anticipated

[B1, B5, E5, F3]

11 Train New Members

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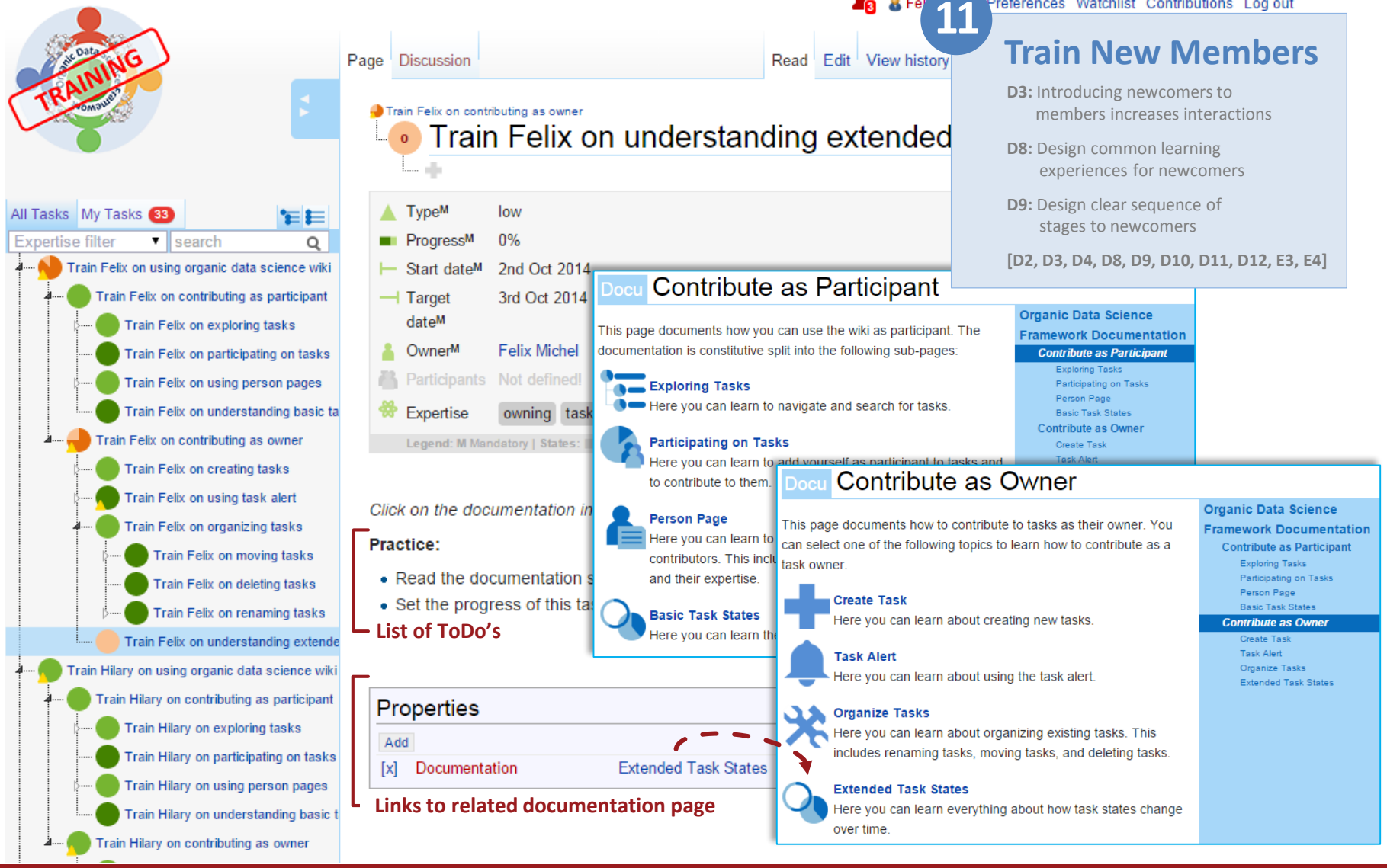

What does the current social network of collaborators look like?

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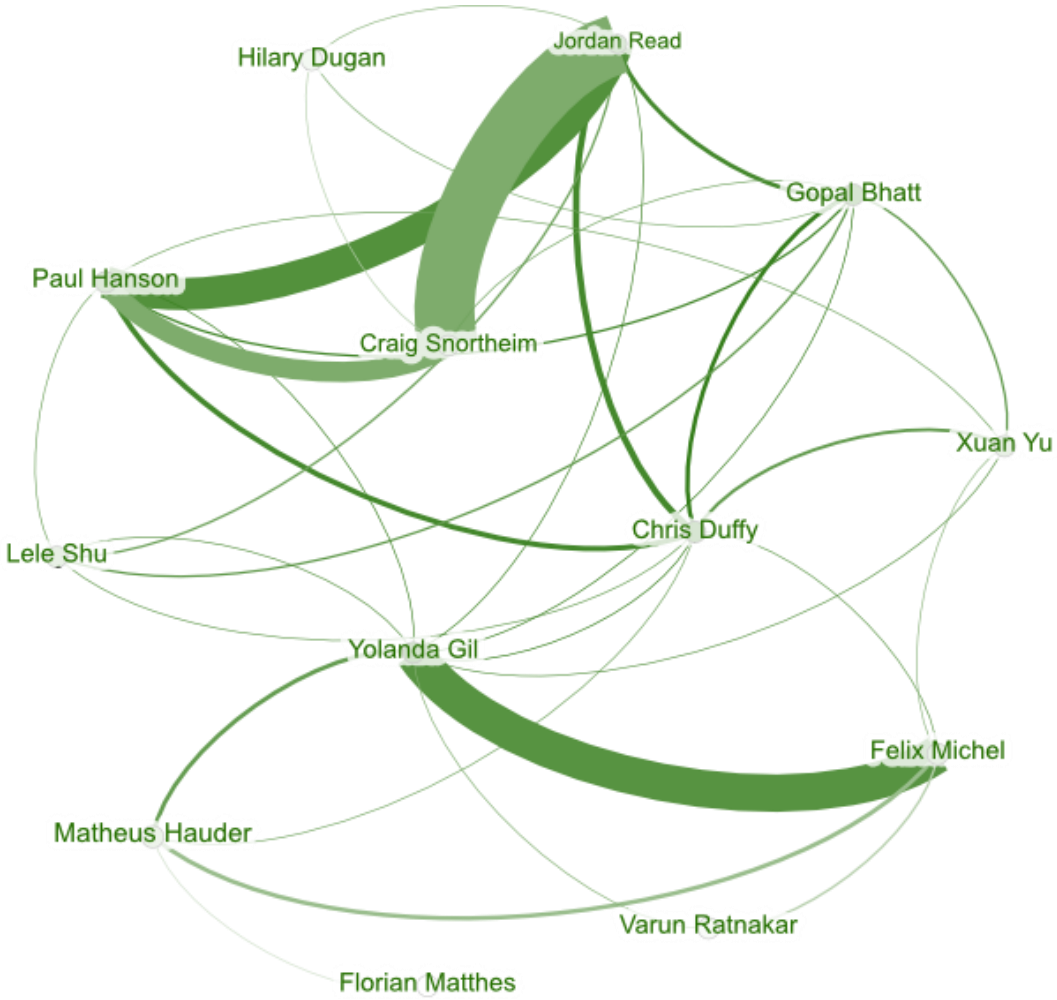


Organic Data Science Collaboration Network

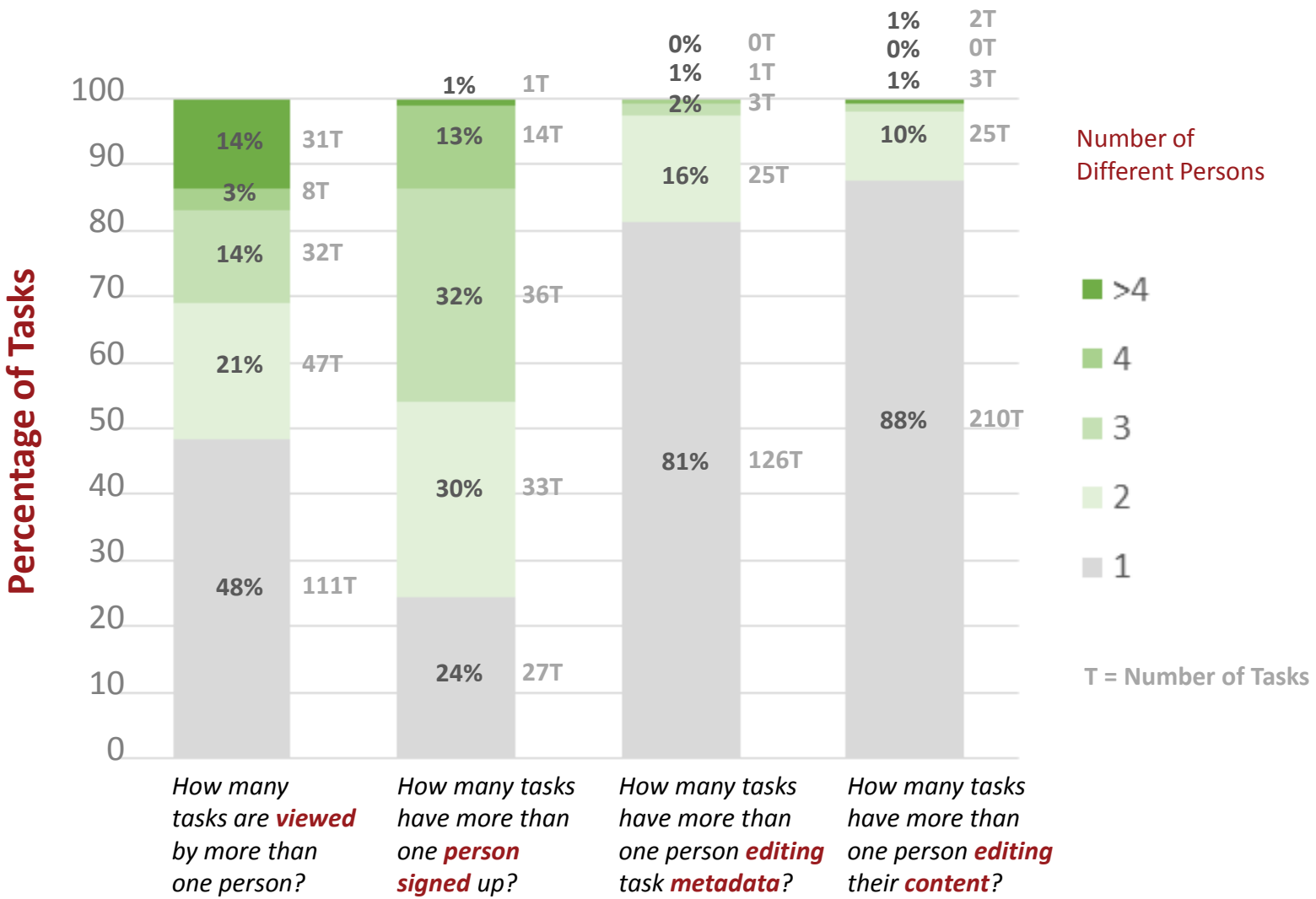
Number of tasks in common = edge strength

Evaluation Facts

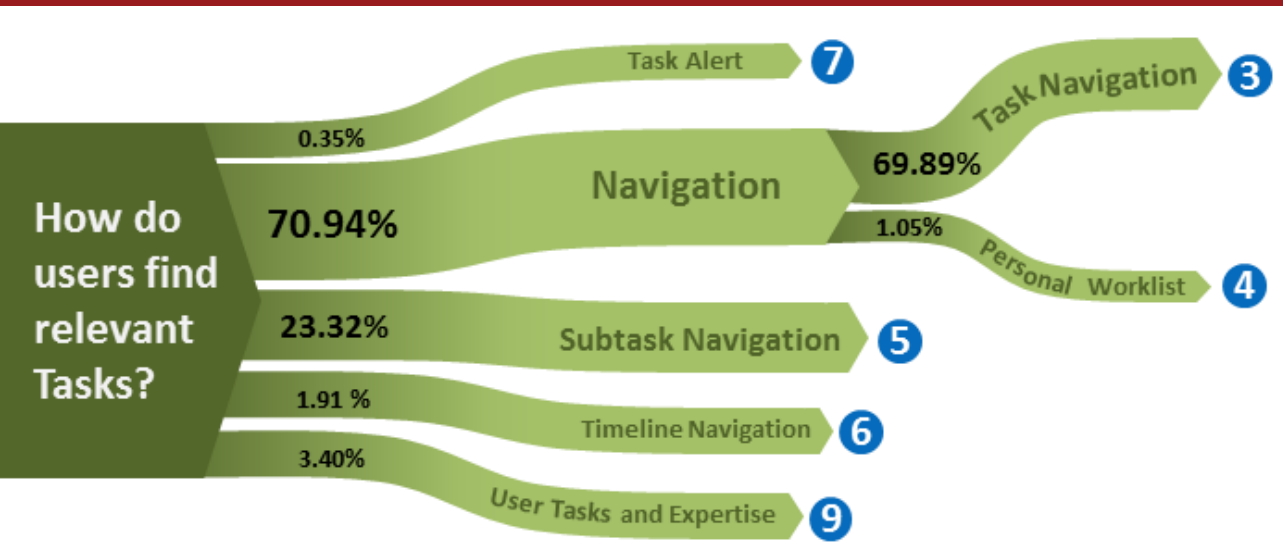
- ❑ 3 Organic Data Science Instances

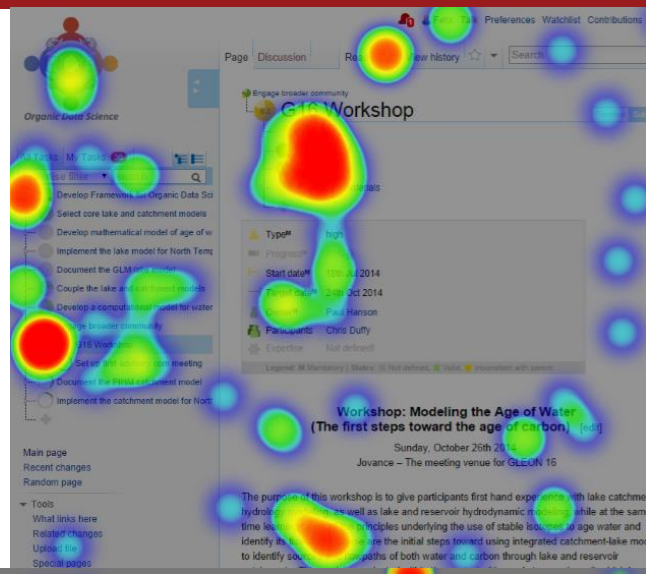
- ❑ 40 Registered participants
- ❑ 1047 RDF data triples
- ❑ 14 Weeks collected data
- ❑ 19,000 Log entries

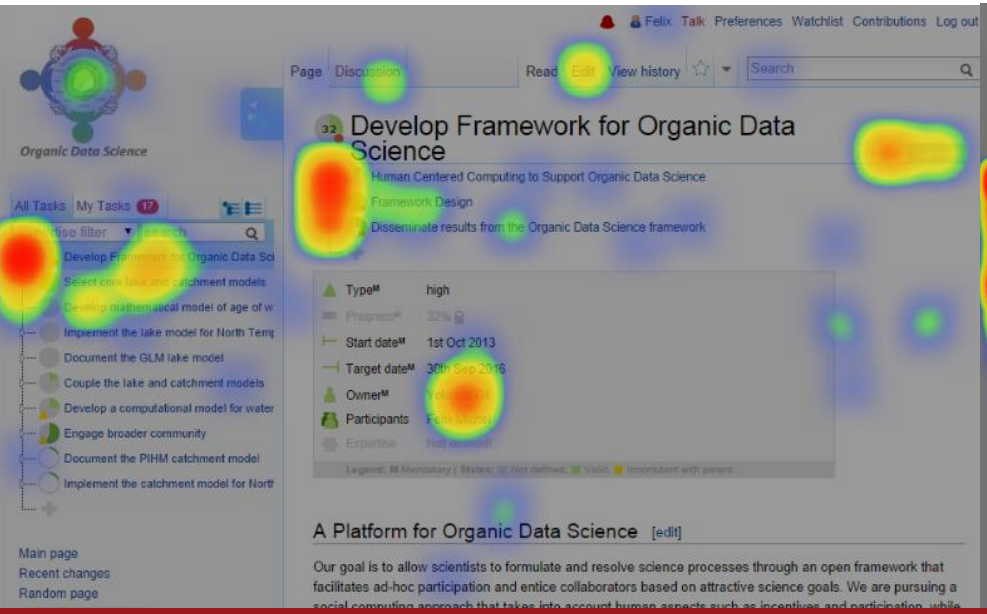
How do users collaborate on tasks?



What features are used to manage tasks?

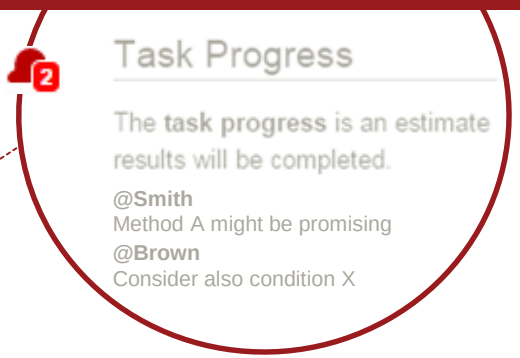




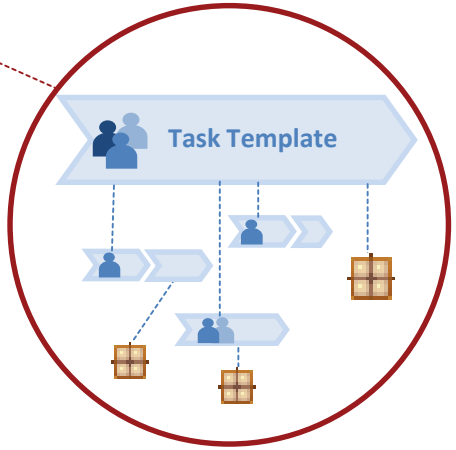


Outlook

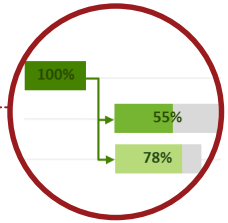
- **Support direct communication**
  via comments on wiki pages with user notifications



- **Support Task Patterns with Templates**
  Write Paper, Geological Model creation, Organize Workshop



- **Support Task Dependencies**



- **Support granular roles and access rights for Tasks**

Outlook: Layers of Collaboration

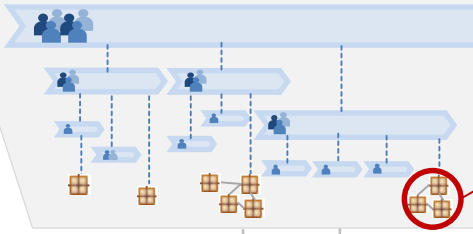
Workflows Types

Meta

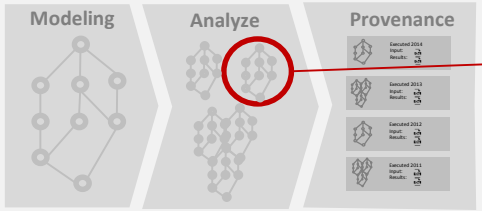
Data, Executable

Implementation

Organic Data Science
Meta Workflows



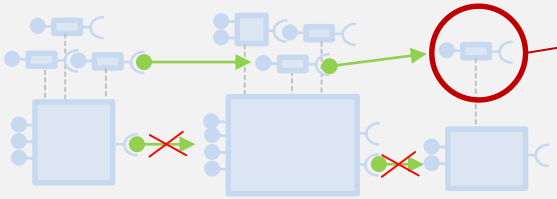
WINGS
Executable Workflows

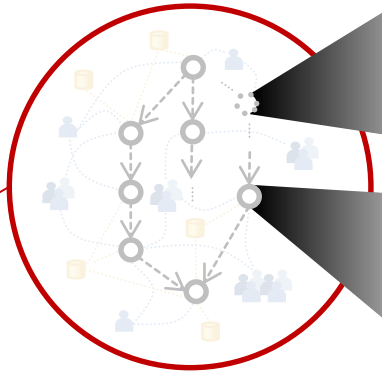


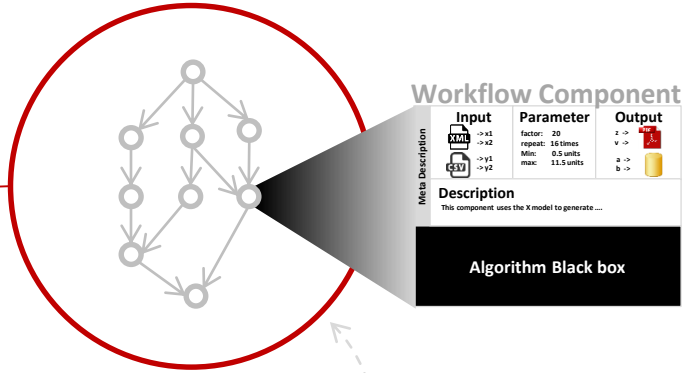
IMPORT:
Component Definitions
and Descriptions

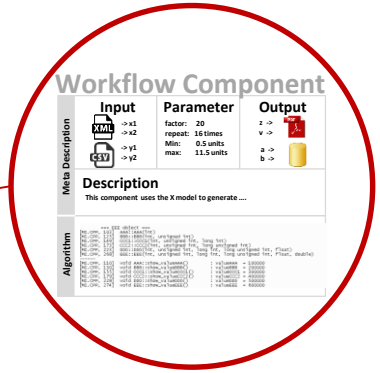
EXPORT:
Workflow Results,
Executable Workflows,
Executable Components

GEOSoft
IO based Workflows









Import Export

Live Demo

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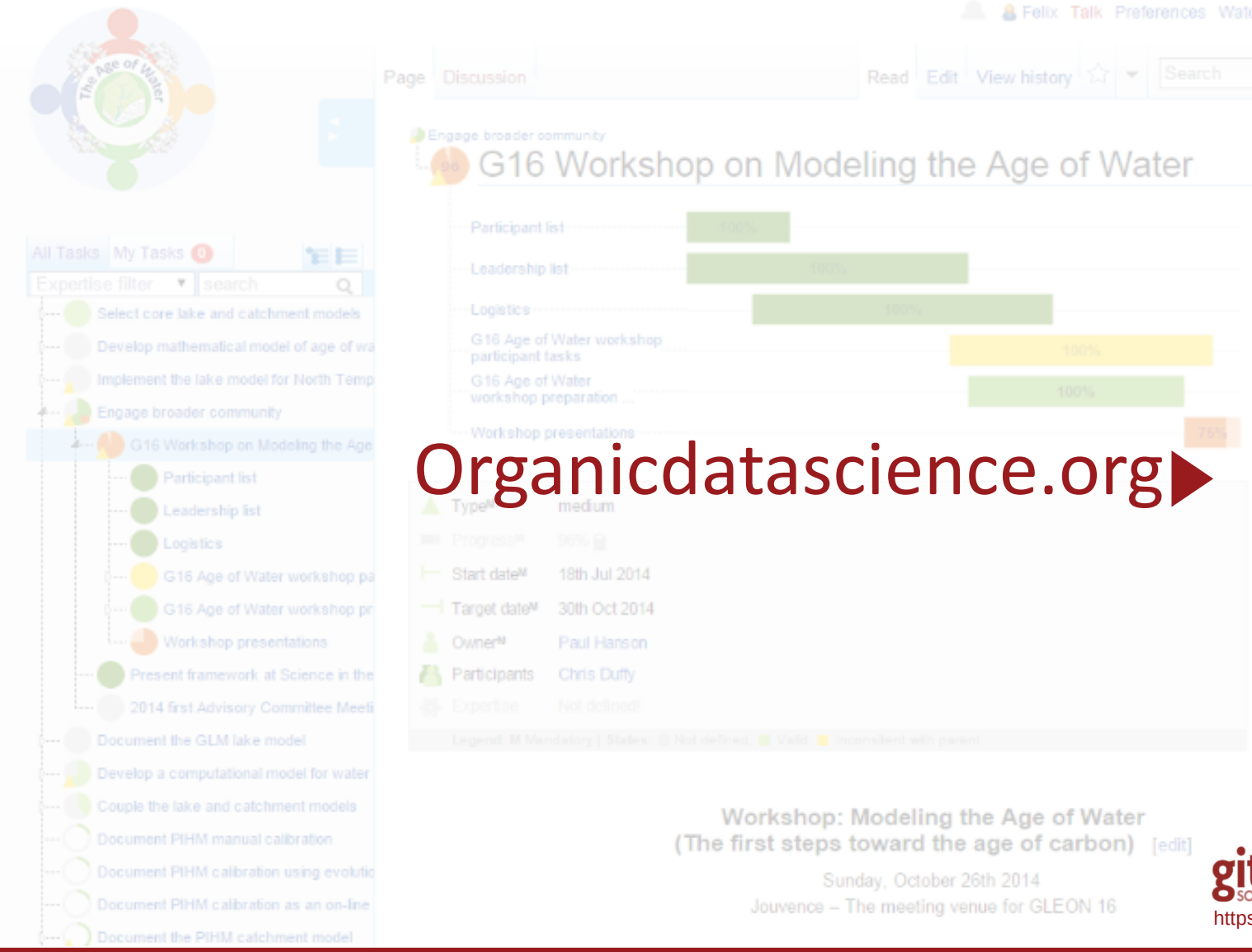
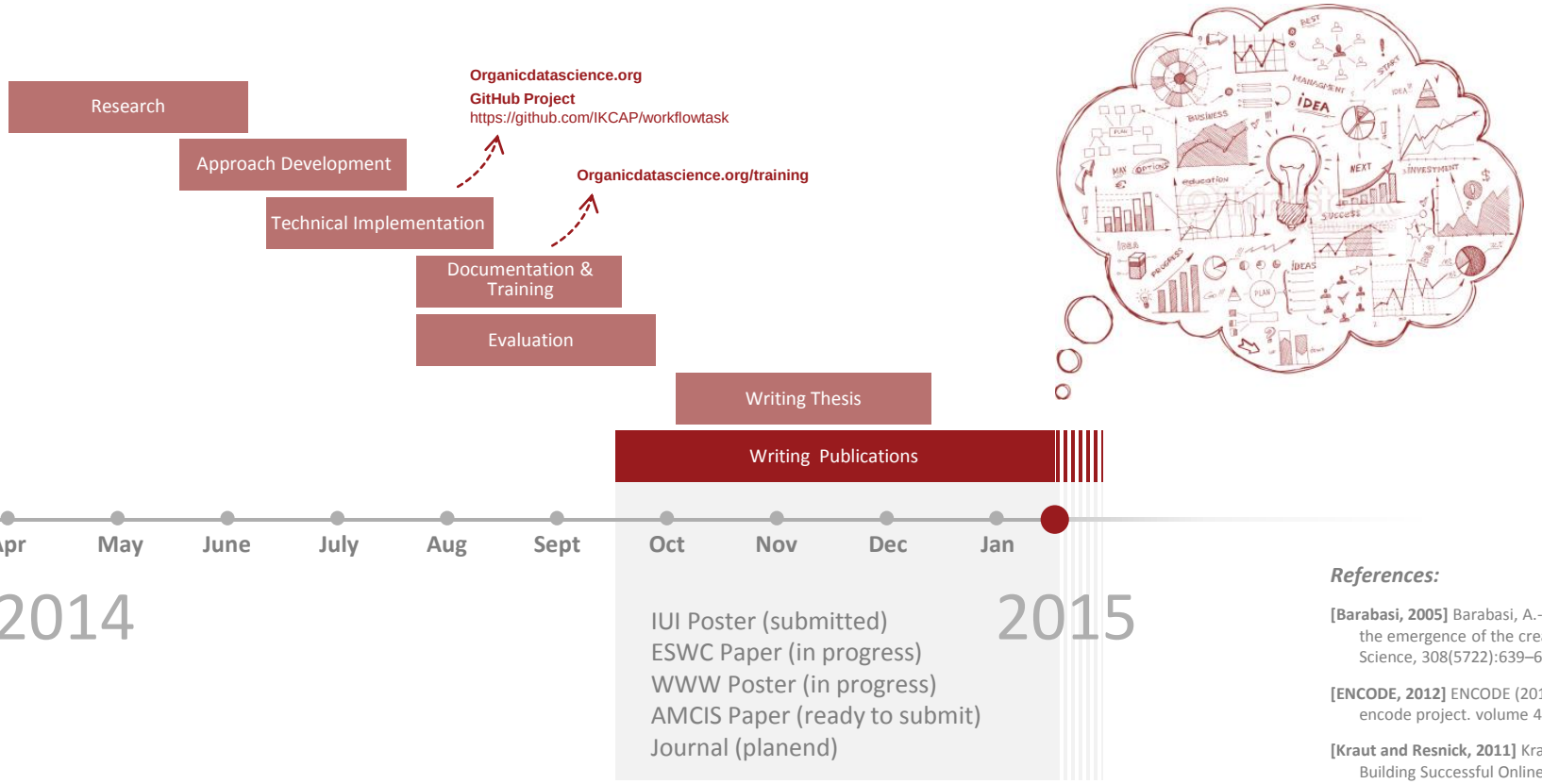


github SOCIAL CODING

https://github.com/IKCAP/workflowtask

Discussion



References:

[Barabasi, 2005] Barabasi, A.-L. (2005). Network theory – the emergence of the creative enterprise. Science, 308(5722):639–641.

[ENCODE, 2012] ENCODE (2012). Special issue on the encode project. volume 489. Nature

[Kraut and Resnick, 2011] Kraut, E. and Resnick, P. (2011). Building Successful Online Communities: Evidence-Based Social Design. MIT Press.

[Nielsen, 2011] Nielsen, M. (2011). Reinventing Discovery: the new era of networked science. Princeton University Press.

[The ATLAS Collaboration, 2012] The ATLAS Collaboration (2012). A particle consistent with the higgs boson observed with the atlas detector at the large hadron collider. Science, 338(6114):1576–1582.

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Backup

I. Conceptual Aspects

- ❑ Requirements
- ❑ Conceptual Architecture
- ❑ Metadata Constraints
- ❑ Task State Concept
- ❑ Task States
- ❑ Task State Sequences
- ❑ Community Instances
- ❑ Trainings Process
- ❑ WINGS Workflows
- ❑ GEOSoft Workflows

II. Technical Aspects

- ❑ Technical Architecture
- ❑ Components

III. Evaluation

IV. Documentation

V. Training

Requirements

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_R1:_ Significant organization and coordination

- _R1.1:_ Support ad-hoc processes
- _R1.2:_ Show responsibilities and commitments
- _R1.3:_ Transparent workflow progress
- _R1.4:_ Support hierarchical structures of tasks

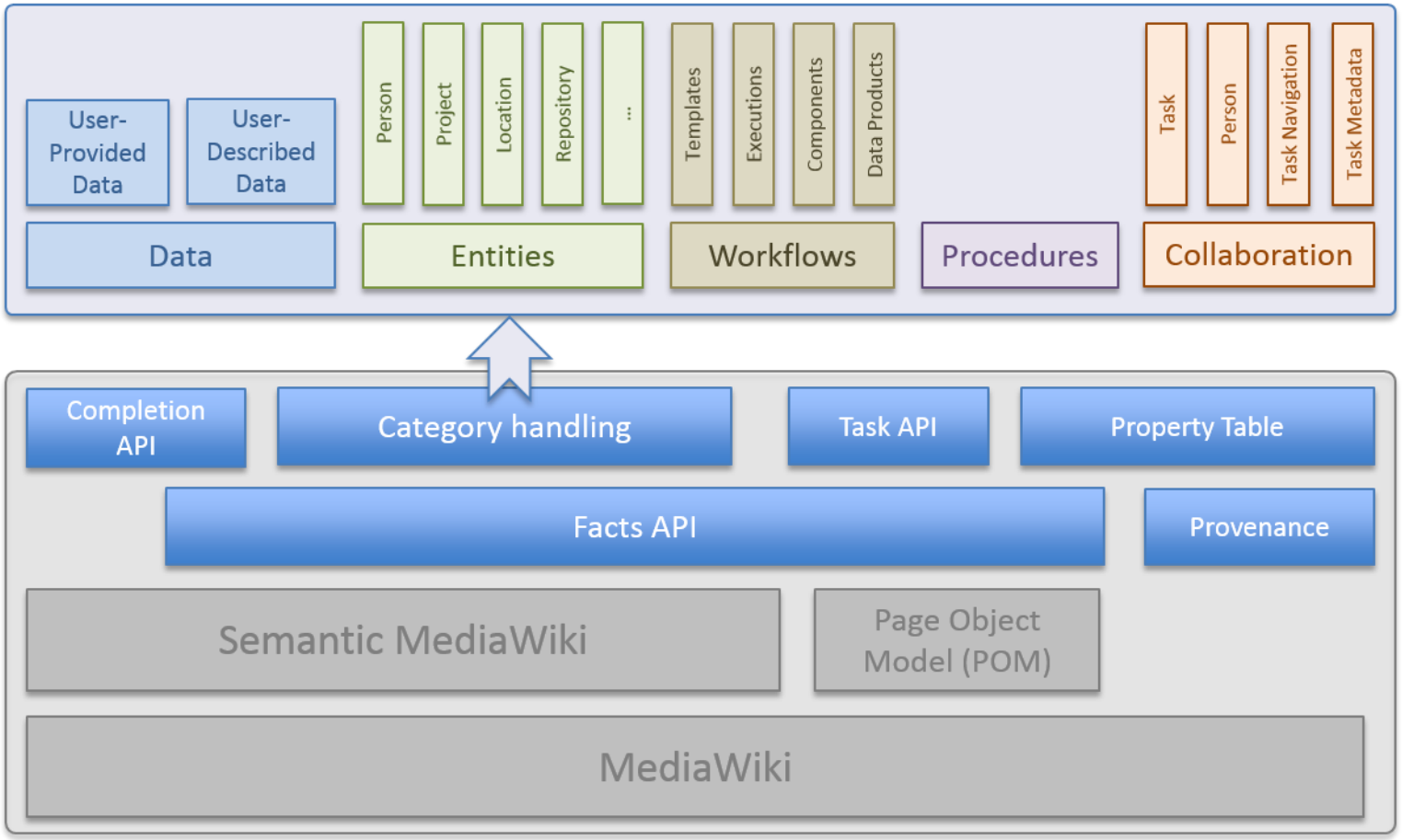
_R2:_ Maintaining a community over the longer term

- _R2.1:_ Highlighting the importance of individuals expertise
- _R2.2:_ Supporting the creation of new communities of practice
- _R2.3:_ Understandable and adaptable for needs of specific groups

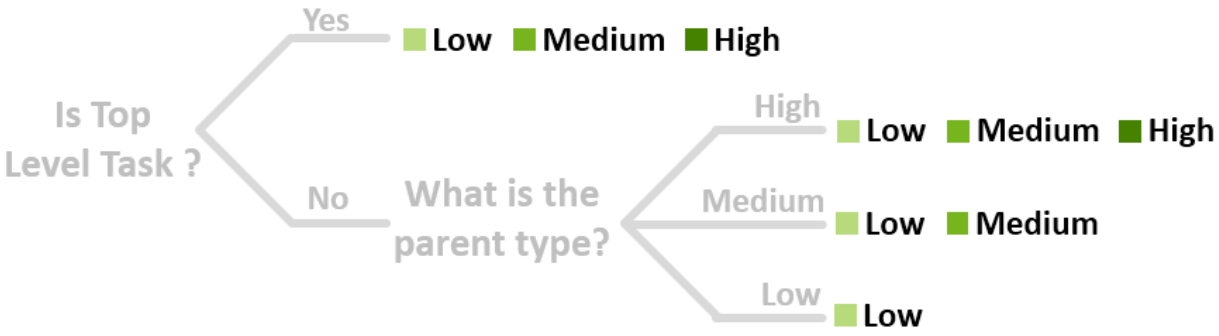
_R3:_ Growing the community based on unanticipated needs

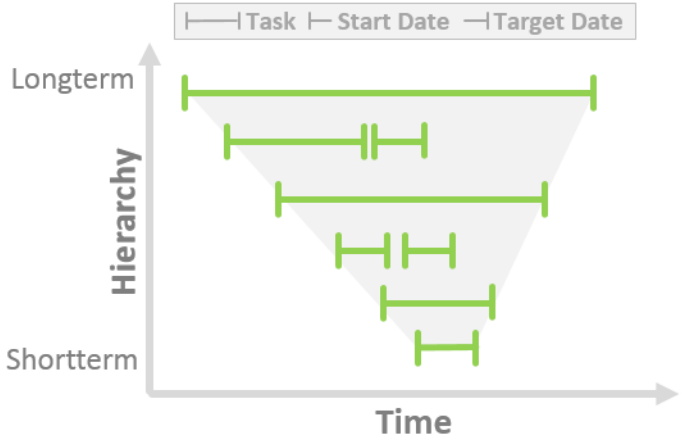
- _R3.1:_ Incorporate new participants as their expertise become relevant to the problem
- _R3.2:_ Formulating new tasks as the groups make progress and understand what is needed
- _R3.3:_ Creating mechanisms to learn about the work of others

Conceptual Architecture



Metadata Constraints





Task State Concept

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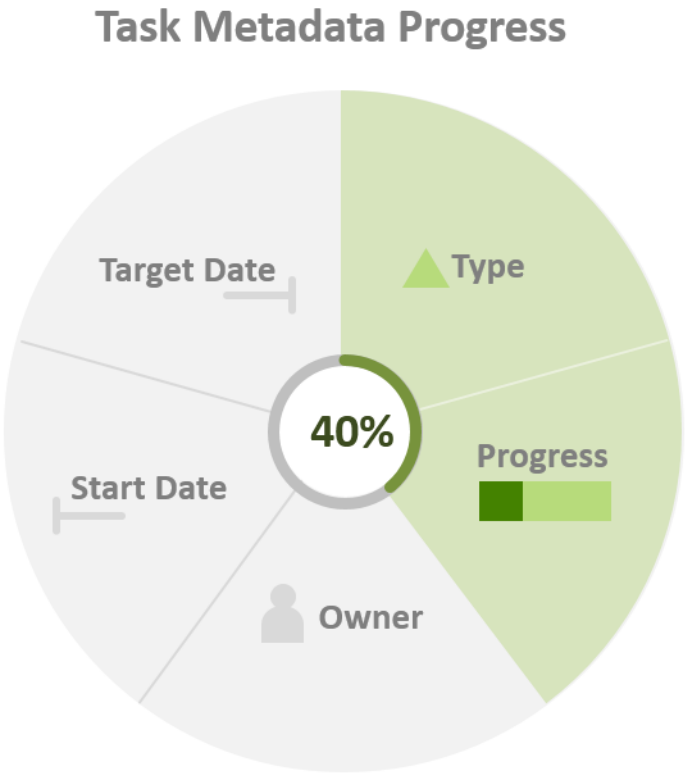
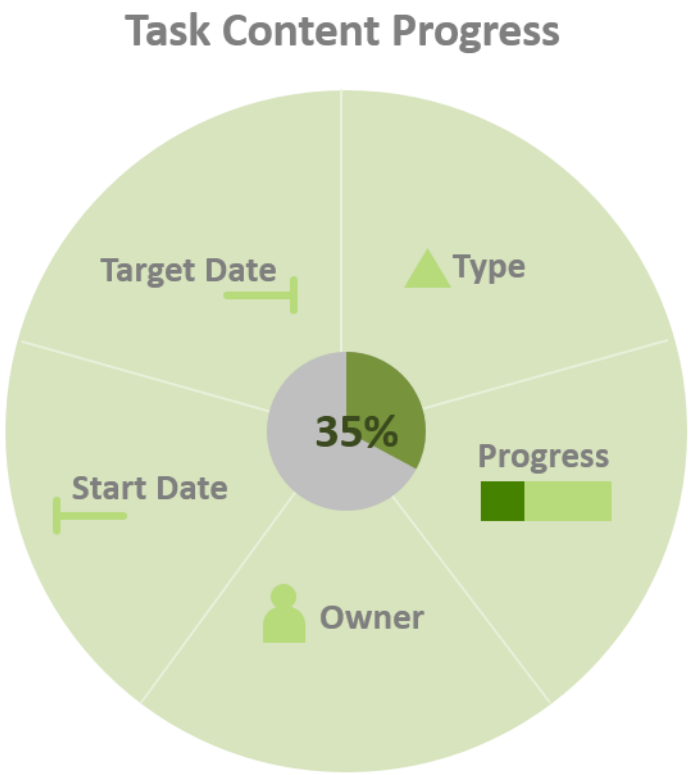
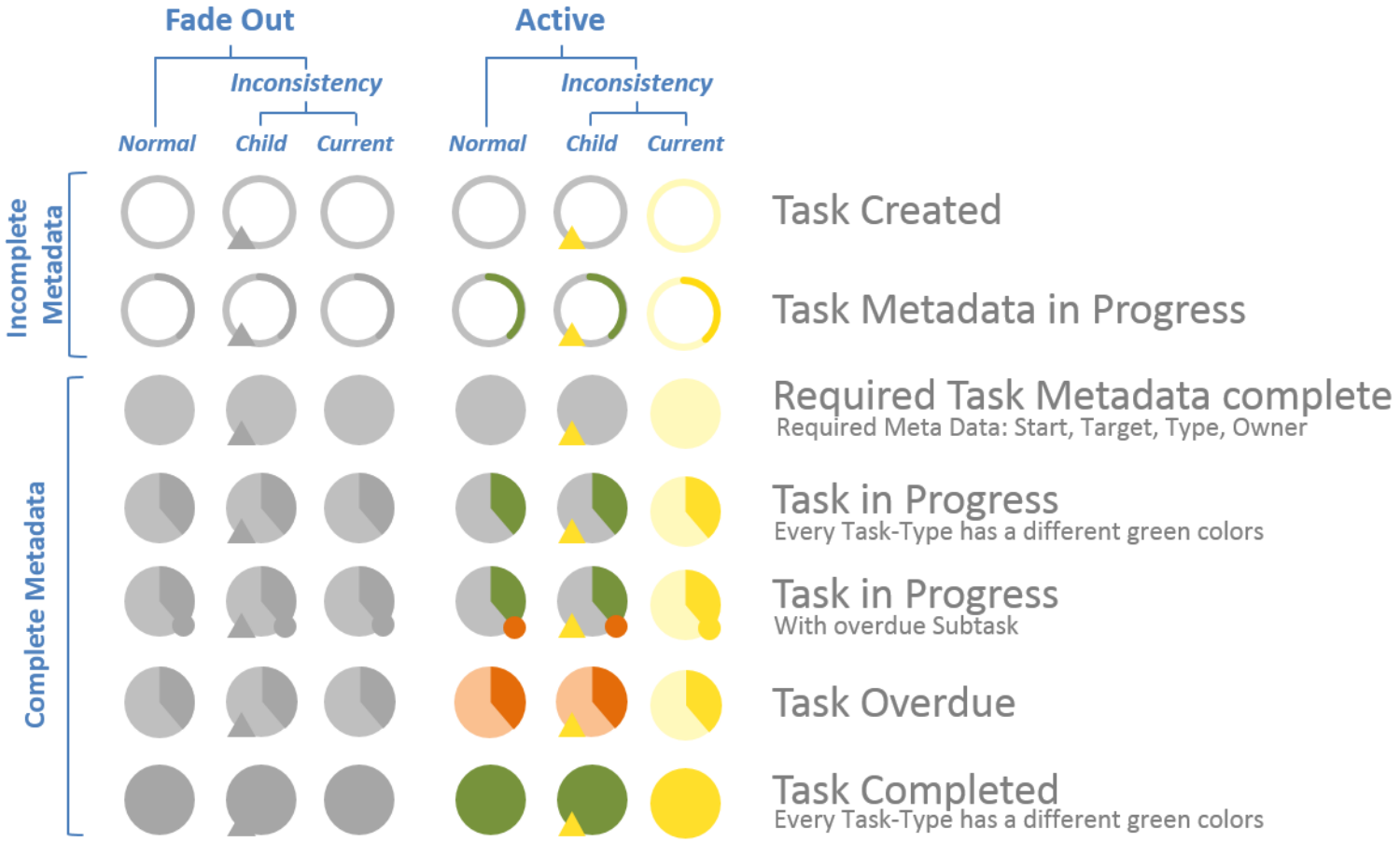
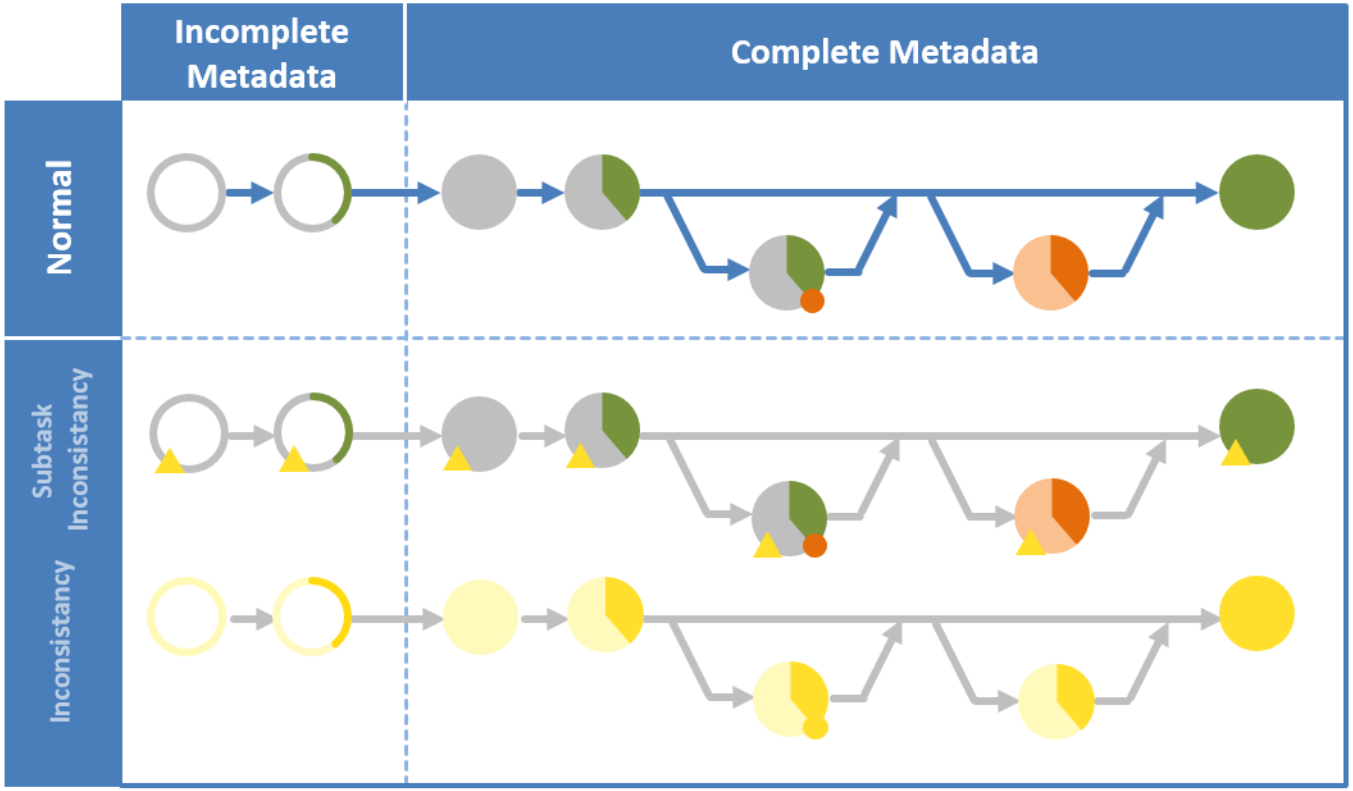




Task States


Fade Out
Active
Inconsistency
Inconsistency
Normal
Child
Current
Normal
Child
Current
Incomplete Metadata
Complete Metadata
Task Created
Task Metadata in Progress
Required Task Metadata complete
Required Meta Data: Start, Target, Type, Owner
Task in Progress
Every Task-Type has a different green colors
Task in Progress
With overdue Subtask
Task Overdue
Task Completed
Every Task-Type has a different green colors

Task States Sequences



Organic Data Science Community Instances

Trainings Process

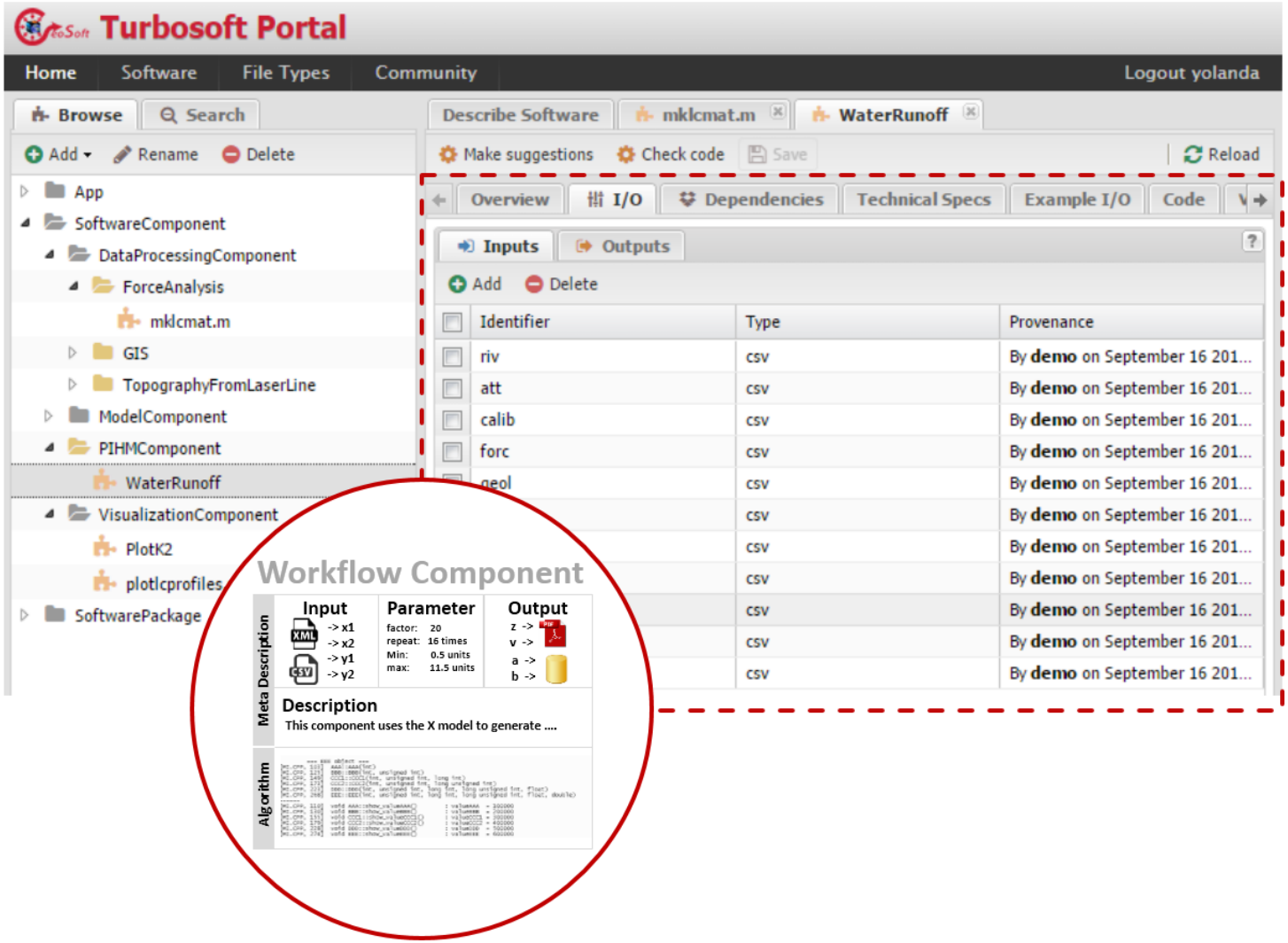
Train Felix on contributing as participant

- **Train Felix on exploring tasks**
  - Train Felix on using the task explorer
    - Train Felix on task name search
    - Train Felix on expertise filtering
    - Train Felix on using task tabs
    - Train Felix on using task views
    - Train Felix on explorer resizing
  - Train Felix on using subtask explorer
  - Train Felix on using timeline explorer
- **Train Felix on participating on tasks**
- **Train Felix on using person pages**
  - Train Felix on using personal expertise
  - Train Felix on using personal tasks
- **Train Felix on understanding basic task states**

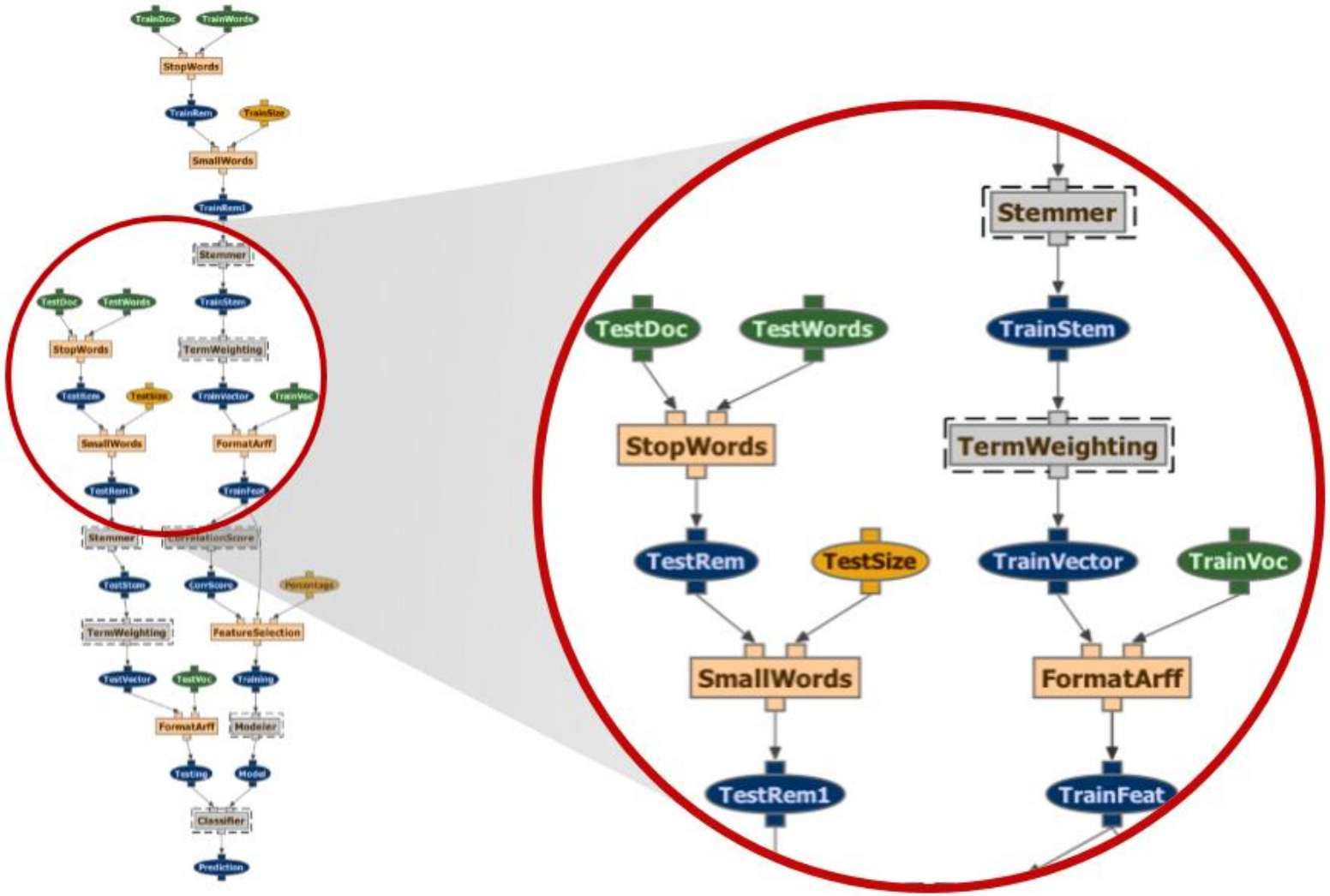
Train Felix on contributing as owner

- **Train Felix on creating tasks**
  - Train Felix on creating task
  - Train Felix on adding task attributes
  - Train Felix on adding additional properties
  - Train Felix on adding content
- **Train Felix on using task alert**
  - Felixs task alert
- **Train Felix on organizing tasks**
  - Train Felix on renaming tasks
  - Train Felix on moving tasks
  - Train Felix on deleting tasks
- **Train Felix on understanding extended task states**

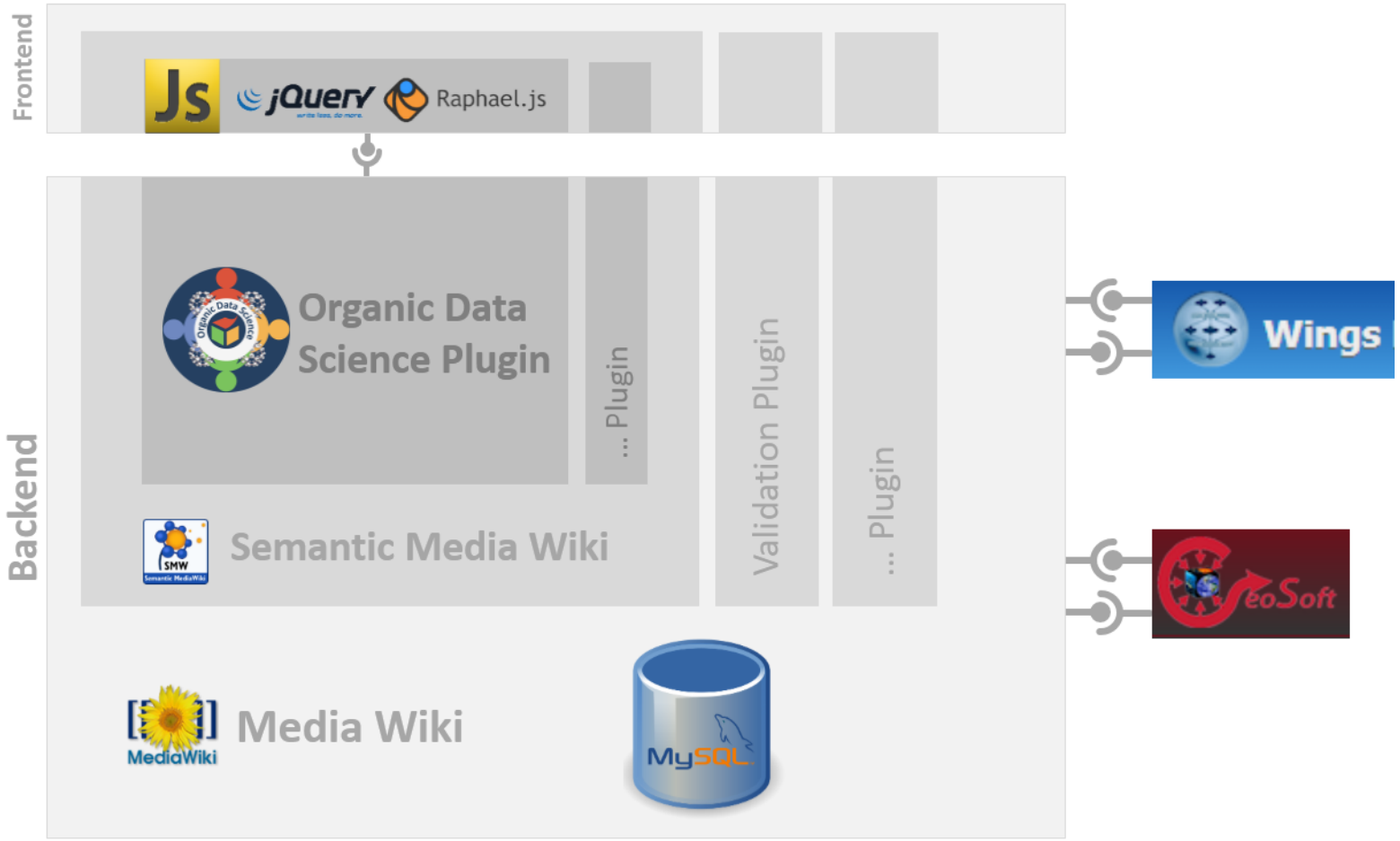
GEOSoft


Turbosoft Portal
Home
Software
File Types
Community
Logout yolanda
Browse
Search
Add
Rename
Delete
App
SoftwareComponent
DataProcessingComponent
ForceAnalysis
mklcmat.m
GIS
TopographyFromLaserLine
ModelComponent
PIHMComponent
WaterRunoff
VisualizationComponent
PlotK2
plotlcprofiles
SoftwarePackage
Describe Software
mklcmat.m
WaterRunoff
Make suggestions
Check code
Save
Reload
Overview
I/O
Dependencies
Technical Specs
Example I/O
Code
Inputs
Outputs
Add
Delete
Identifier
Type
Provenance
riv csv By demo on September 16 201...
att csv By demo on September 16 201...
calib csv By demo on September 16 201...
forc csv By demo on September 16 201...
geol csv By demo on September 16 201...
csv By demo on September 16 201...
csv By demo on September 16 201...
csv By demo on September 16 201...
csv By demo on September 16 201...
csv By demo on September 16 201...
csv By demo on September 16 201...
Workflow Component
Meta Description
Input
-> x1
-> x2
-> y1
-> y2
Parameter
factor: 20
repeat: 16 times
Min: 0.5 units
max: 11.5 units
Output
z ->
v ->
a ->
b ->
Description
This component uses the X model to generate ....
Algorithm

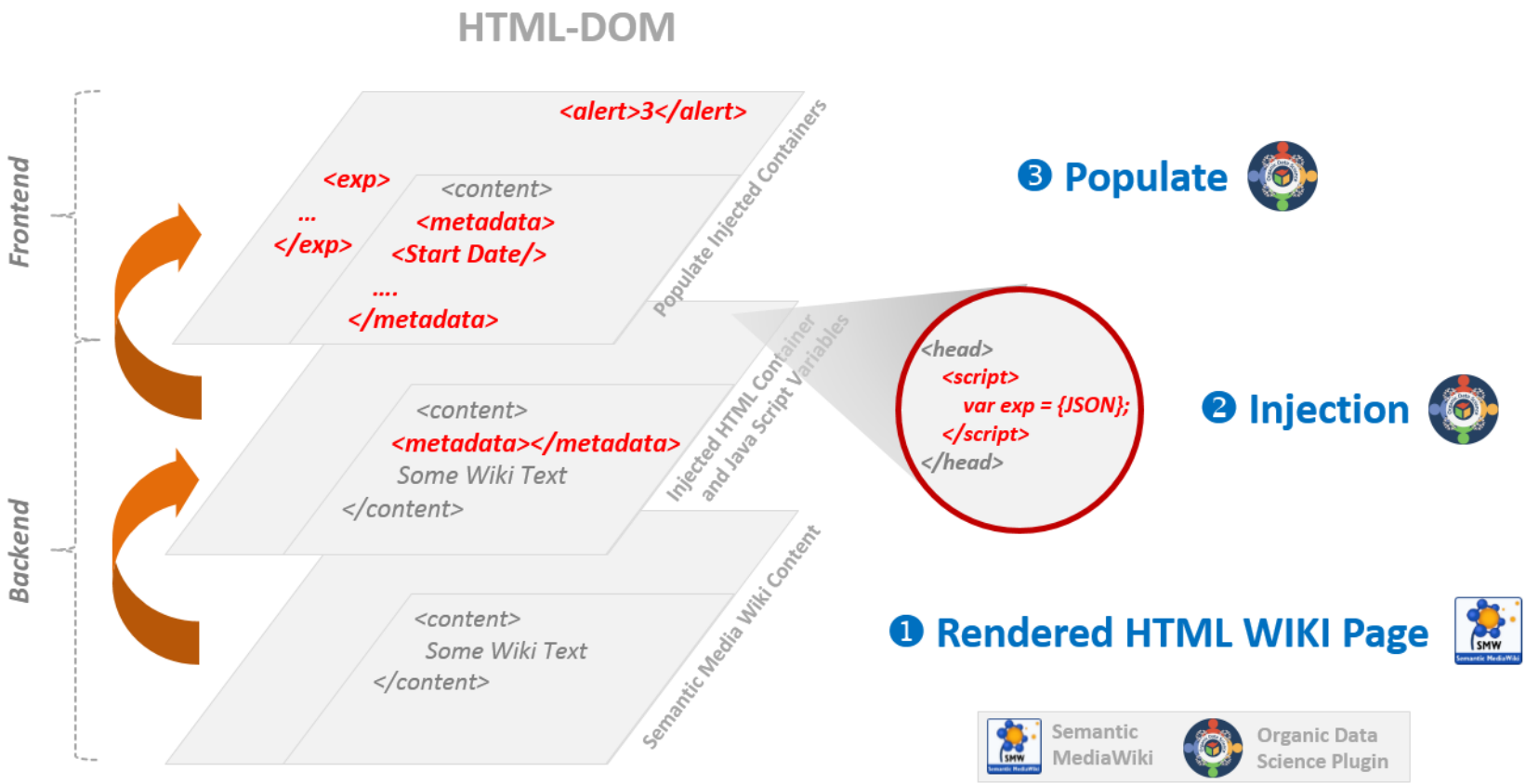
WINGS


TrainDoc
TrainWords
StopWords
TrainRem
TrainSize
SmallWords
TrainRem1
Stemmer
TestDoc
TestWords
TrainStem
StopWords
TermWeighting
TestRem
TestSize
TrainVector
TrainVoc
SmallWords
FormatArff
TestRem1
TrainFeat
Stemmer
CorrelationScore
TestStem
CorrScore
Percentage
TermWeighting
FeatureSelection
TestVector
TestVoc
Training
FormatArff
Modeler
Testing
Model
Classifier
Prediction
Stemmer
TestDoc
TestWords
TrainStem
StopWords
TermWeighting
TestRem
TestSize
TrainVector
TrainVoc
SmallWords
FormatArff
TestRem1
TrainFeat

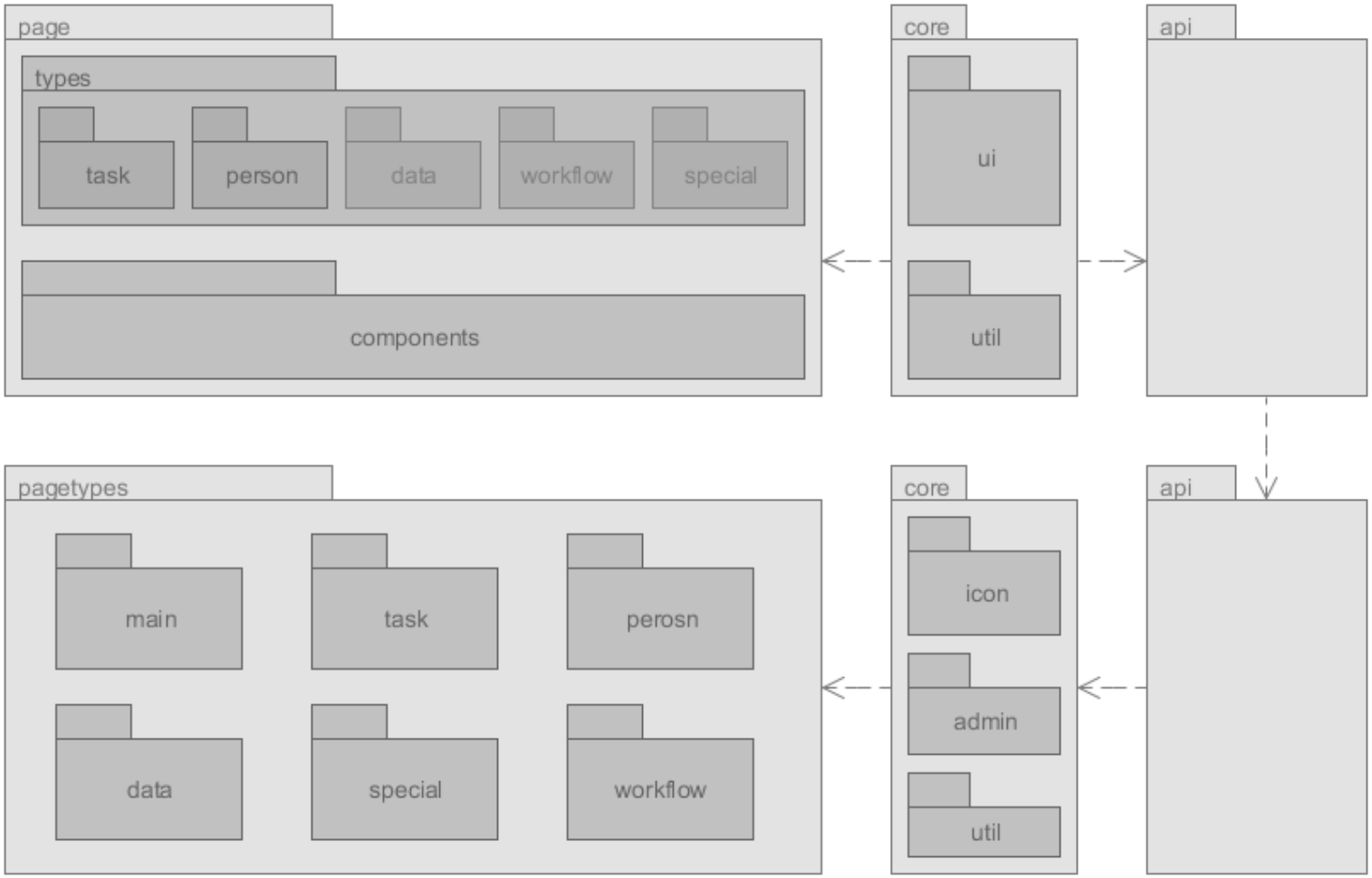
Technical Architecture



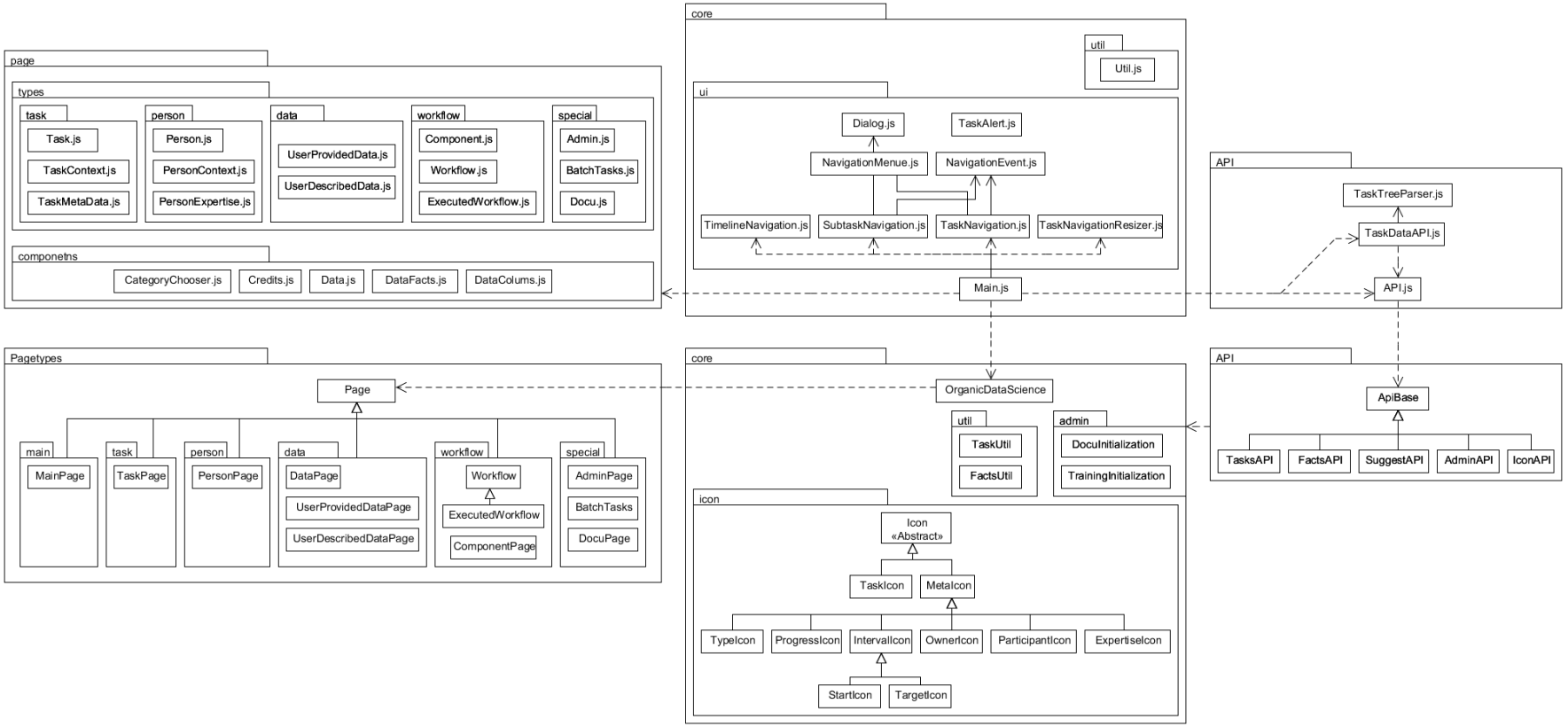
Technical Architecture



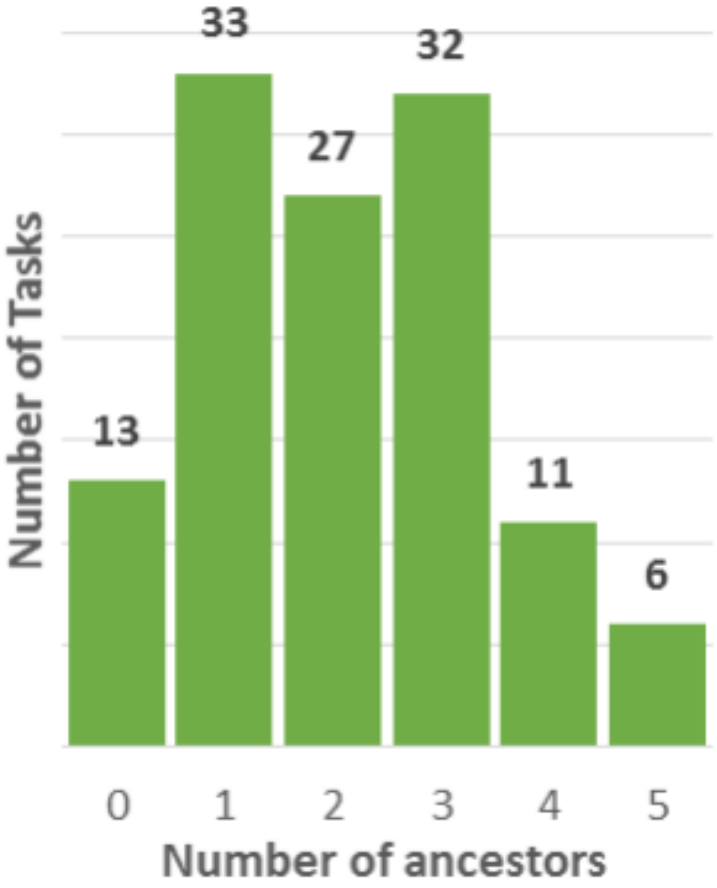
ODS Components I



ODS Components II



Task Hierarchy



Documentation Overview

Docu Organic Data Science Framework Documentation

This page documents how to use the organic data science framework in an effective manner. The documentation is split into the following parts:

Contribute as Participant
Here you can learn to browse tasks in different ways and to contribute to existing tasks.

Contribute as Owner
Here you can learn to create new tasks and organize them over time.

Contribute as Participant

Docu Contribute as Participant

This page documents how you can use the wiki as participant. The documentation is constitutive split into the following sub-pages:

Exploring Tasks
Here you can learn to navigate and search for tasks.

Participating on Tasks
Here you can learn to add yourself as participant to tasks and to contribute to them.

Person Page
Here you can learn to find relevant information on contributors. This includes the tasks they are involved with and their expertise.

Basic Task States
Here you can learn the basics of how to manage task states.

Organic Data Science Framework Documentation

Contribute as Participant

- Exploring Tasks
- Participating on Tasks
- Person Page
- Basic Task States

Contribute as Owner

- Create Task
- Task Alert
- Organize Tasks
- Extended Task States

Exploring Tasks I

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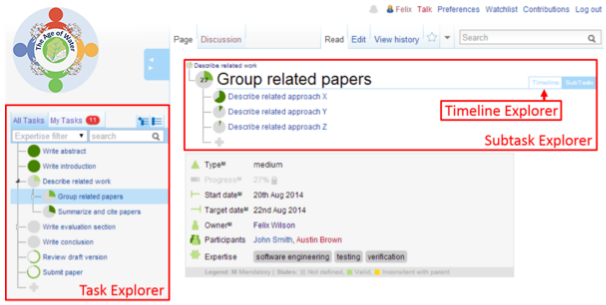
Docu **Exploring Tasks**

The Organic Data Science wiki framework enables scientists to collaborate in new ways doing what we call "task-oriented collaboration". The wiki poses some broad overarching science questions that cut across disciplines and institutions. Answering those questions requires contributors to formulate and collaborate in a variety of tasks through the ODS framework, such as decomposing the high level questions into smaller tasks, sharing datasets, describing data characteristics, preparing them, and running models. Therefore, a major aspect of the framework is to understand how tasks work. Several top-level tasks are formulated to capture the driving science questions, each with subtasks which have other subtasks in turn

Tasks of the organic data science framework can be browsed in many different ways. Depending on your purpose you can choose between the **task explorer**, the **subtask explorer** and the **timeline explorer**. The best choice to browse within all tasks is the **task explorer**, which appears on the left side of the screen. In case you want to browse subtasks of a certain task you should use the **subtask explorer**. Alternatively you can use the **timeline explorer** to browse subtasks and see their time dependencies. The following figure illustrates these three different task browsing options.

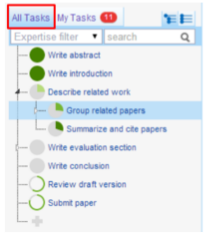


Task Explorer

The Task Explorer appears on the left of the screen. It shows all tasks in the wiki organized in a tree hierarchy, with subtasks indented. This Task Explorer works comparable with the file browser in a desktop. By default all top level task are visible. Every task with a small triangle has at least one subtask, and can be expanded with a left mouse click on the triangle. The wiki page for any task can be opened with a single left mouse click on the task name.

All Tasks Tab

This tab of the Task Explorer shows all existing tasks in the wiki. You can use this to explore tasks within the wiki.



Exploring Tasks II

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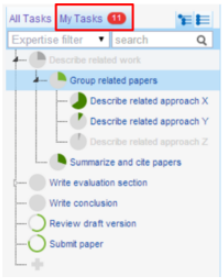
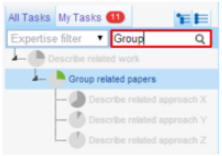
My Tasks Tab

This tab of the Task Explorer shows all tasks that you own. All other tasks are invisible or greyed out. Parent tasks which are needed to represent the task hierarchy are greyed out. A red counter behind the tab label indicates how many tasks you have currently assigned to you as owner. The My Tasks tab is only visible for users who are logged in.



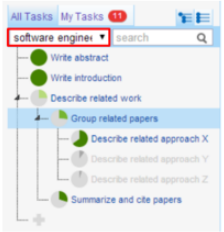
Task Name Search

The Task Name Search allows you to search the task names. You can apply this search either to the All Tasks tab or the My Tasks tab. All matching results are shown in the Task Explorer. Parent tasks of matching tasks are shown but faded, just to provide context.



Expertise Filter

The Expertise Filter works similar to the Task Name Search, but it searches for tasks that are marked with the expertise indicated. It offers a pull-down menu with the kinds of expertise already defined in the wiki. The pull-down menu shows in brackets a number that indicates how many tasks have that expertise. After selecting a certain expertise, the matching tasks are shown. The Task Name Search and the Expertise Filter can be combined. If both are applied, all results shown will match both criteria.



Exploring Tasks III

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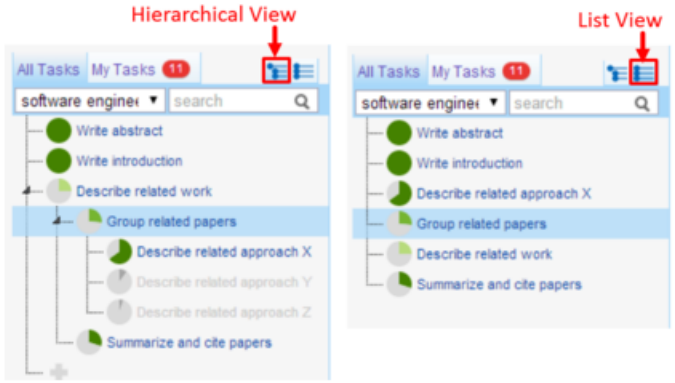
Hierarchical View and List View

The Task Explorer can show two different views of the tasks: the **hierarchical view** and the **list view**. The hierarchical view shows the task-subtask hierarchy, and is the default view. Furthermore the amount of tasks is smaller due to the nested task structure. The list view does not show a parent or subtask hierarchy. The list view is more convenient when the hierarchy view shows a lot of faded tasks.



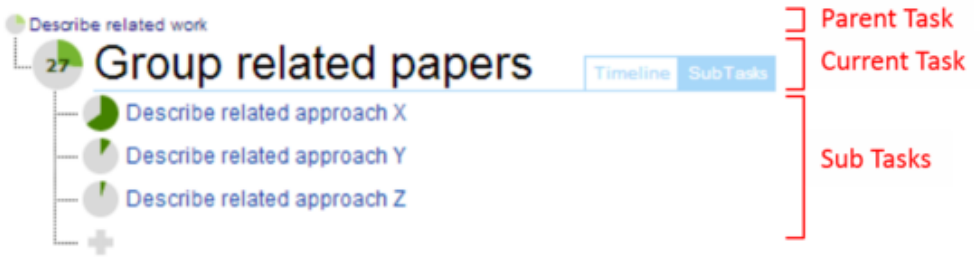
Resizing

Some task names are only partially shown because they are simply too long. Therefore you can resize the width of the Task Explorer. Hover the mouse over the blue rectangle with the white arrows to the left and right. After that, **left click**, then **hold** and then **move to the left** or **move to the right**.

Exploring Tasks IV

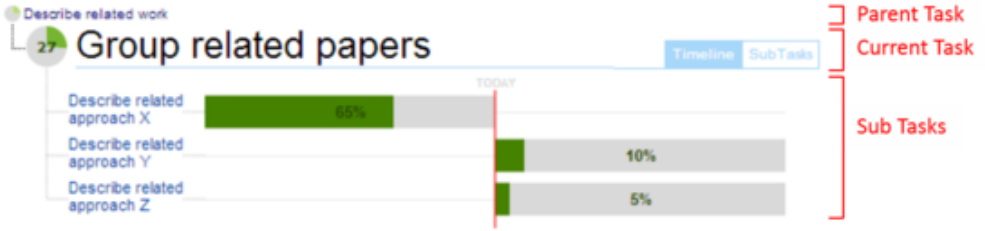
Subtask Explorer

The Subtask Explorer is basically to browse subtasks of the task currently opened in the wiki page. The name of the current task shown in the wiki page is larger and the task icon is more detailed with a number that indicates the percentage of the task that is completed (this will be explained later). Above the current task name, the **parent task** is shown if there is one. Below it, all its **subtasks** are listed and can be expanded.



Timeline Explorer

The timeline explorer can be opened with a click on the blue **Timeline** tab on the top right. Similar to the subtask explorer, all subtasks of the current task are shown. The Timeline Explorer shows all subtasks in a time context comparable to a Gantt chart. The x-axis represents the time, and each bar shows a subtask. A number within a bar represents the progress of that subtask. Today's date is marked with a vertical red line. Every task can be opened with a simple click.



Participating on Tasks I

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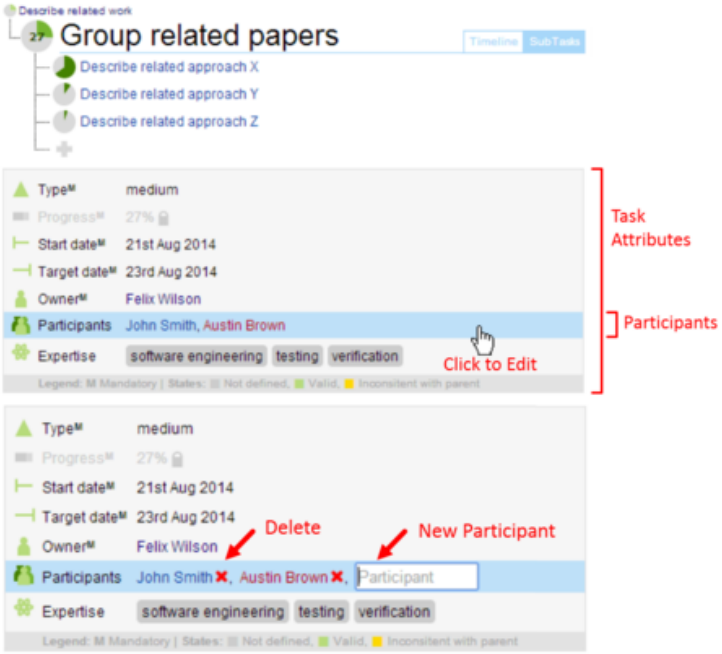
Docu Participating on Tasks

This page documents how you can be a participant in any task with only few simple steps. Once you **add yourself as a task participant**, you can start **to add content**. After you have added content you can **set the progress** on the task so far.

Add yourself as participant

It is important to add yourself as participant before you start working on a task. This helps everyone see who is involved and contributing. Open the task of your choice. Every task page has a **task attributes** section. This section contains an attribute named **participants**. Click on this row to open the edit mode. Type your `<firstname lastname>` and press enter to confirm your participation. If you want to remove yourself click on the red delete button next to the name.



Organic Data Science Framework Documentation

- Contribute as Participant
  - Exploring Tasks
  - *Participating on Tasks*
  - Person Page
  - Basic Task States
- Contribute as Owner
  - Create Task
  - Task Alert
  - Organize Tasks
  - Extended Task States

Participating on Tasks II

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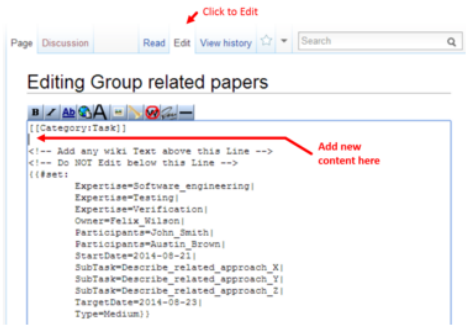
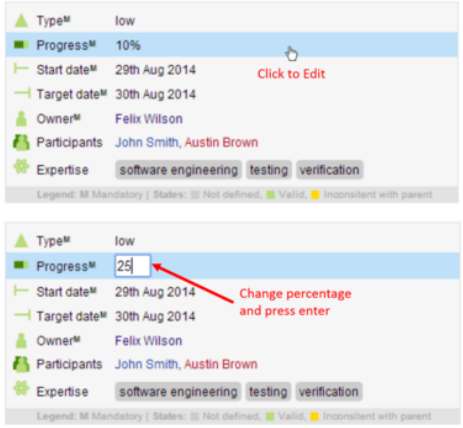
Add Content

After you have added yourself as participant you can start adding content to the task page. Click on **edit** on the top of the page. The page editor opens and shows the current page content. Note that even task pages that appear empty already have content generated by the system. This is shown on the example below. **It is important that all system generated content remains untouched**. You can add your content between the `[ [Category:Task] ]` line and before `{{#set ... }}`.



Set Progress

After you have added content to the task page, you can adjust the progress on the task to reflect how much of it has been completed. Go to the line that has the **progress** attribute and edit the percentage shown.



Hint: A lock next to the progress attribute indicates that the system adjusts the progress automatically.

Person Page I

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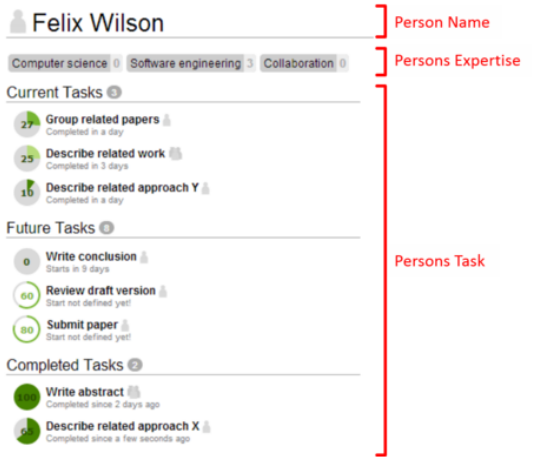
Docu Person Page

A person page contains all relevant information regarding a contributor to the wiki. Every person page has a person icon before the **person's name**. The next section lists the **person's expertise**. After that, all **tasks where the person is owner or participant** are listed.

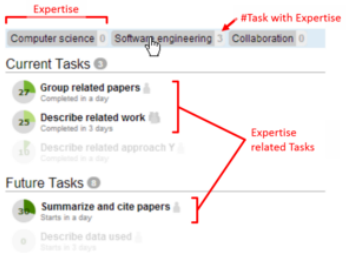


Person Expertise

The Person Expertise section shows expertise keywords for the person. Each expertise keyword is shown with a grey rectangle. Every expertise has a number which indicates how many of the person's tasks have this expertise.

Highlight Related Tasks

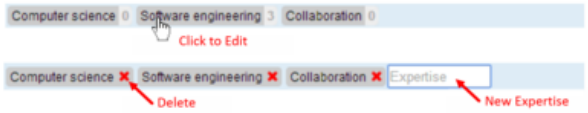
Each expertise can be hovered to see which tasks shown in the person page have this expertise. All tasks which have the selected expertise remain, while all others are faded out.



Person Page II

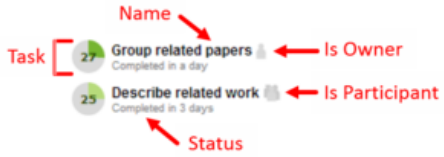
Edit Expertise

Additional expertise keywords can be specified within the edit mode. By clicking on any expertise you can open the edit mode. Type the new expertise and press enter to confirm. By clicking on the red cross you can delete an expertise keyword.



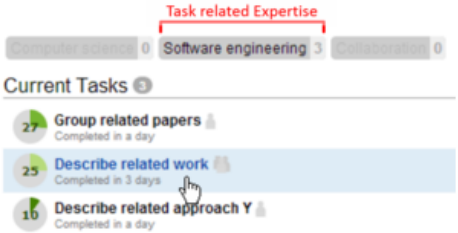
Person Tasks

The person task section lists all person tasks grouped in three categories. First all **current tasks** are listed, then all **future tasks**, and then all **completed tasks**. Every task has an icon which shows the current **task state**. The task name is highlighted in bold. Next to the task name is a small icon with one or several persons to indicate whether you are the **owner** or a **participant** respectively. Below the name the most salient status information is shown.



Highlight Related Expertise

Most tasks are associated with a set of expertise keywords. Move the mouse over a task to see which expertise keywords are associated with that task.



Basic Task States

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Docu **Basic Task States**

This page explains representation of the most common task states. More advanced task states are explained in the section **extended task states**. Tasks can be **underspecified tasks** or **fully specified tasks**. At the end of this page we include a diagram to illustrate how the task state changes over time.

Underspecified Tasks

Tasks are underspecified when important information is missing, such as the start date or the owner (these are **mandatory attributes**). All underspecified tasks are shown with rings. The green portion of the ring represents the progress in adding the mandatory task attributes. Mandatory attributes are the task **Type**, **Progress**, **Start date**, **Target date** and the **Owner**. Tasks missing other attributes such as **Participants** and **Expertise** are not considered underspecified, so they do not affect the ring symbol.

Task created

This is the first task state after creation. A wiki page with the task name exists, but no mandatory attributes have been specified.

Task Specification in Progress

A task has some attributes specified. The proportion of attributes specified is visualized in this state.

Fully specified Tasks

Tasks are fully specified when all mandatory attributes have been set. This state is shown with a pie chart. The grey part shows work left to be done as a percentage, and the green shows the work that has already been done. The colors can differ depending on the task state as we explain next.

Task in Progress

Tasks not yet completed but that have all mandatory attributes.

Certain progress has been made on the task.

Overdue subtasks are indicated with a orange point on the bottom right.

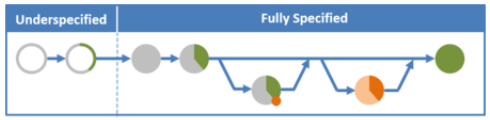
Task Overdue

The task is not yet completed, but the target date is passed. It can also indicate that a subtask is not finished and the task target date is already passed.

Task Completed

The task is completed and its progress is set to 100 percent. The progress calculation depends on the task type.

Typical state progression of tasks



Contribute as Owner

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Docu Contribute as Owner

This page documents how to contribute to tasks as their owner. You can select one of the following topics to learn how to contribute as a task owner.

Create Task
Here you can learn about creating new tasks.

Task Alert
Here you can learn about using the task alert.

Organize Tasks
Here you can learn about organizing existing tasks. This includes renaming tasks, moving tasks, and deleting tasks.

Extended Task States
Here you can learn everything about how task states change over time.

Create Task I

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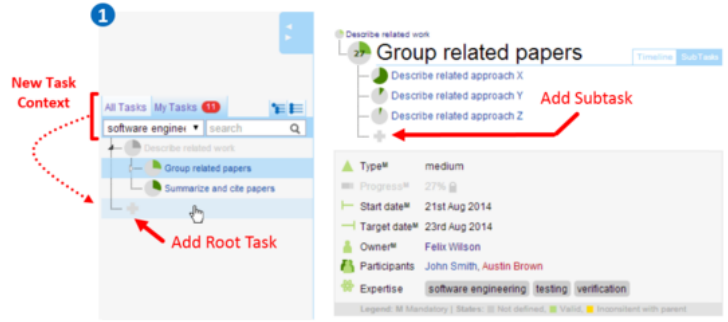
Docu Create Task

This page explains how to **create new tasks** and how to **add task attributes**. It also explains how to **add additional properties** and how to **add new content**. Remember to login before creating an new task.

Create Plain Task

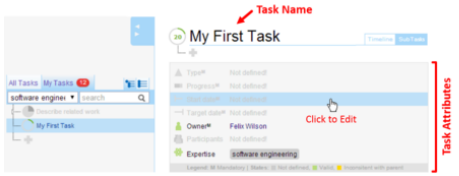
A new **root task** can be created via the **Task Explorer** and **new subtasks** via the **Subtask Explorer**. Start by clicking on the plus button, an input field appears. Type the name of the new task and press enter to confirm. If you have an expertise keyword selected when you create a new root task, then the system will automatically add that expertise keyword to the task. If the My Tasks tab is selected when you add a new task, the system will set you up as its owner.



Create Task II

Add Task Attributes

Task **attributes** are useful to describe tasks. Attributes marked with **M** are **mandatory**, because they are used by the wiki to organize tasks. **Attributes** can be added after a task is created. Click on a attribute row to enable editing. The following sub sections explain all task attributes in more detail. Different attribute states are explained in the last section.



Task Types

Task types are used by the system to estimate **progress** of tasks in different ways. The framework provides three different task types that imply a hierarchical order. We use a different shade of green in the task state icon for every task type.

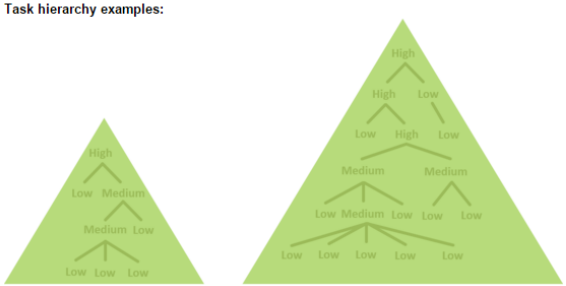
Different task types:

High High abstraction level → High uncertainty in the estimation of task completion.
Tasks at a high level for a project may have uncertain duration and end date.

Medium Medium abstraction level → Medium uncertainty in the estimation of task completion.
Tasks representing an activity within a project may be split into several subtasks.

Low Low abstraction level → Low uncertainty in the estimation of task completion.
Small, well-defined tasks that can be accomplished in a short time period.

Task hierarchy examples:



Rules for assigning a task type:

High ≤ Medium ≤ Low

Create Task III

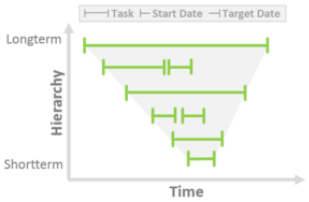
Progress

The progress of a task indicates how much work has been done as a percentage. The system automatically estimates progress depending on the task type. The level of progress of high-level tasks is estimated based on the start date, today's date and the target date. For medium-level tasks, the progress is estimated by aggregating the progress of their subtasks as an average. The progress of low-level task is always set by the user.

Hint: Medium-level tasks will hardly ever get done unless you decompose them into clear smaller low-level subtasks.

Time Interval

This section summarizes the meta data attributes **start date** and **target date**. The time intervals for a task and its subtasks follow a strictly hierarchical approach. Therefore, the start and target dates of any task must be within the time interval of the parent task. This leads to a time funnel illustrated on the figure below. If any inconsistency occurs it will be highlighted in yellow in the Task Status and the Timeline View.



Owner

A task **owner** is responsible for coordinating the activities for a task and overseeing its completion. Therefore the system expects exactly one owner. All task which are assigned to you as owner are shown in your My Task tab and on your person page. Persons who have a wiki account are shown in blue and linked to their wiki page. Persons who do not have an account are shown in red. See participant example.

Felix Wilson

Participant

Every task can have many participants. These persons may represent a team or just a working group for the task. Participants who have a wiki account are shown in blue and linked to their person page. Persons who do not have an account are shown in red.

John Smith, Austin Brown
Existing
Not Existing

Create Task IV

Expertise

Expertise keywords are used to indicate the knowledge you might need to accomplish a task. Several expertise keywords can be assigned to a given task. You can easily recognize expertise keywords in any page by the grey rectangle around them. The task explorer allows to search for tasks with certain expertise keywords.

Computer Science

Attributes States

The task attribute state is represented with different colors for the attribute icons.

Not defined No value for this attribute set.
You can set this attribute value.

Valid A valid value for this attribute is set.
You can modify the value.

Inconsistent A value that is inconsistent with the parent task is set.
You can change this value or value of the parent task. Hover over icon to get more instructions.

Add Additional Attributes

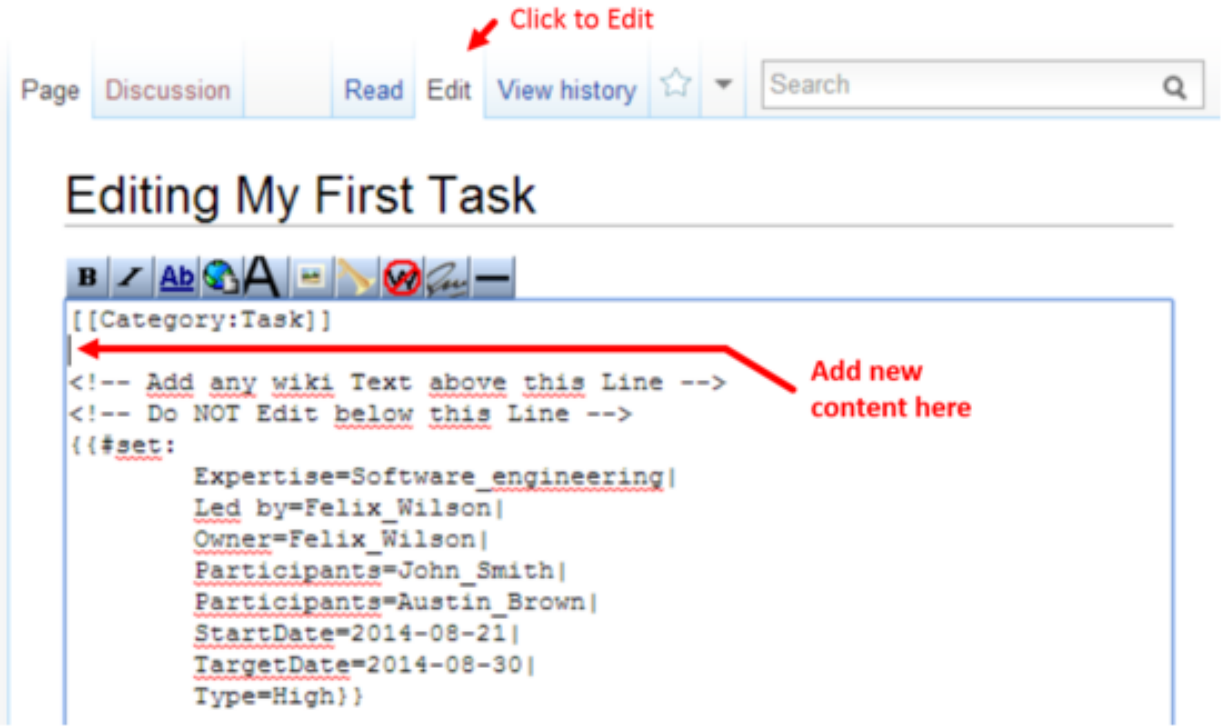
Adding additional custom attributes allow to structure any page content with **key value** pairs. These additional attributes help to make page content searchable by custom properties. You can add a new property by clicking on the add button. Click on the cross to remove a certain property.

Hint: You can add more attributes with the same name and a different value. E.g. this content could be led by two persons.

Create Task V

Add Content

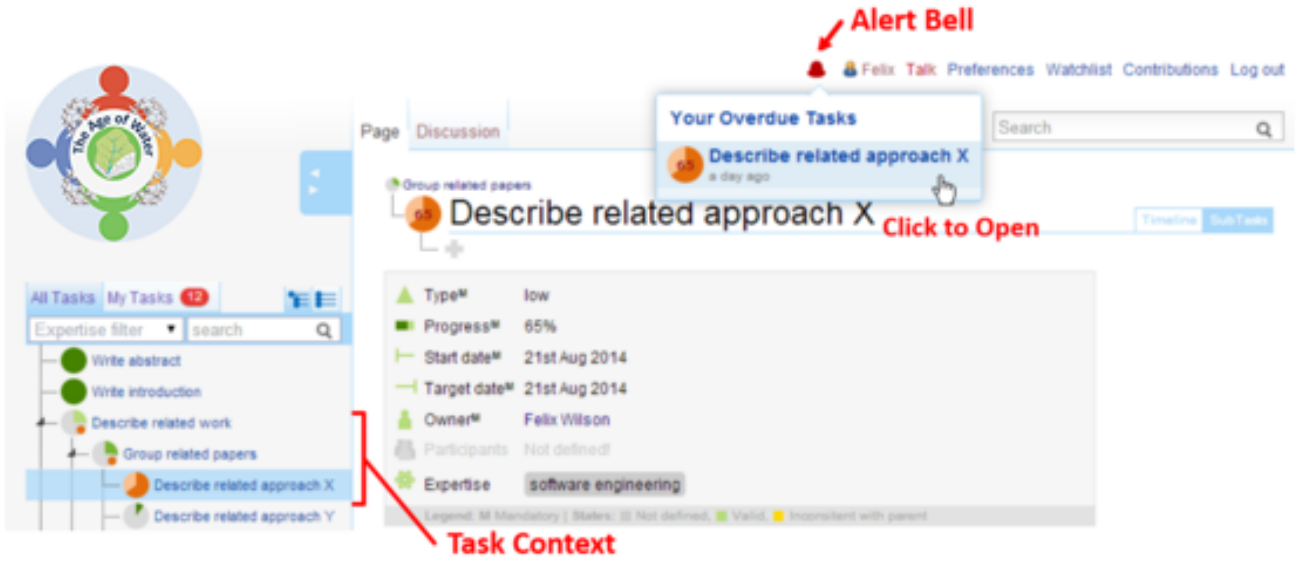
After you have added some attributes, you can start adding content to the task page. Click on **edit** in the top navigation. The page editor opens and shows the current page content. Note that even empty pages may already have content generated by the system. This is shown on the example below. **It is important that all system-generated content remains untouched**. You can add your content between the `[ [Category:Task] ]` line and before `{{#set ... }}`.



Task Alert

Docu Task Alert

The **Task Alert** shows all tasks which are overdue. A task is overdue when the target date is past by and the progress is not 100 percent. On the top of the wiki, a **red alert bell** indicates that you have at least one overdue task. Hover or click on it and all overdue tasks are listed. With one more click you can open the task page. You can modify the target date if you need more time. As you do more work, change the progress until the task is 100 percent completed.



Hint: The alert bell is only visible for users who are logged in.

Organize Tasks I

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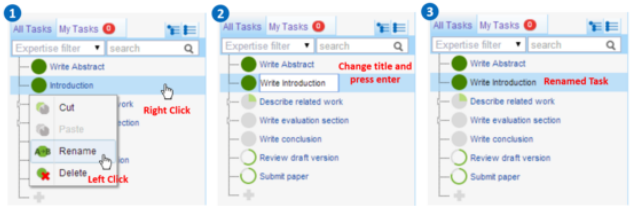
Docu Organize Tasks

This page documents how to reorganize tasks in the wiki. All reorganizing actions can be done within the Task Explorer and the Subtask Explorer. You can rename tasks, move tasks or delete tasks. All possible actions for a task are visible with a right click on a selected task.

Important: *Use only operations to create, rename, move and delete tasks which are described here. The usage of default media wiki operations like delete or move task pages will lead to an inconsistent state.*

Rename Task

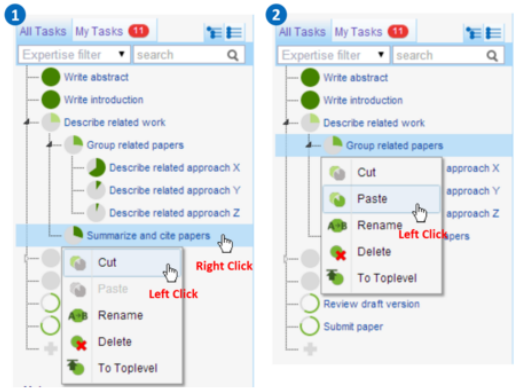
You can **rename** a task with a right click on any selected task. Select rename from the pull-down menu, change the name and press enter to confirm the change.



Hint: With a click on any other task you can abort the action.

Move Task

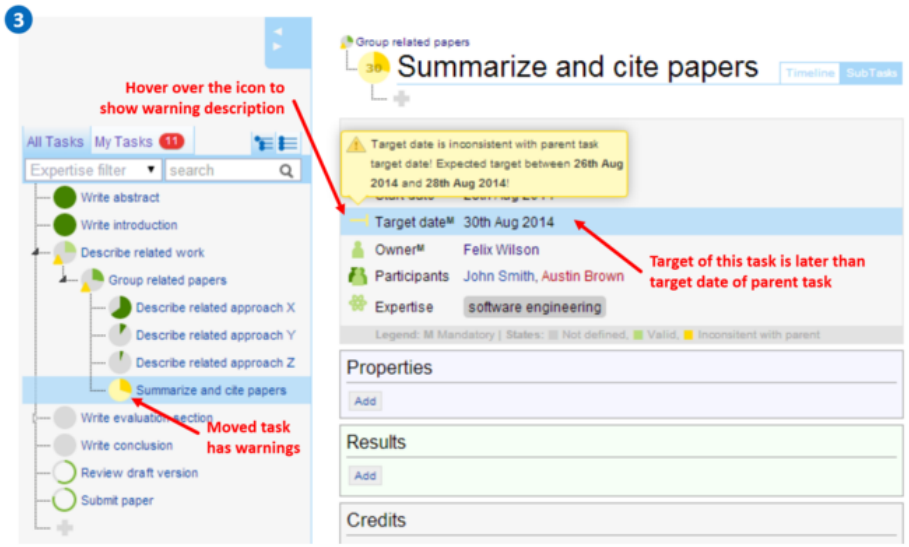
Moving task works similar to the file explorer in the desktop. First you need to *cut* a task by doing a right click to open the menu and selecting cut. In the next step you need to define the destination. Do a right click on the new parent task and select *paste*. With this step the move action is complete.



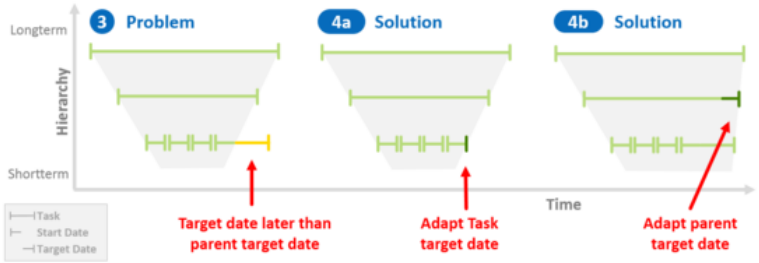
Organize Tasks II

Hint: The following steps are optional.

Tasks are hierarchically organized, therefore subtasks should follow the restrictions of their parent tasks. This means a task target date should be not later than the parent task target date. Similar restrictions exist for the task type. If any inconsistency occurs task are highlighted in yellow. The following steps explain how to make tasks consistent.

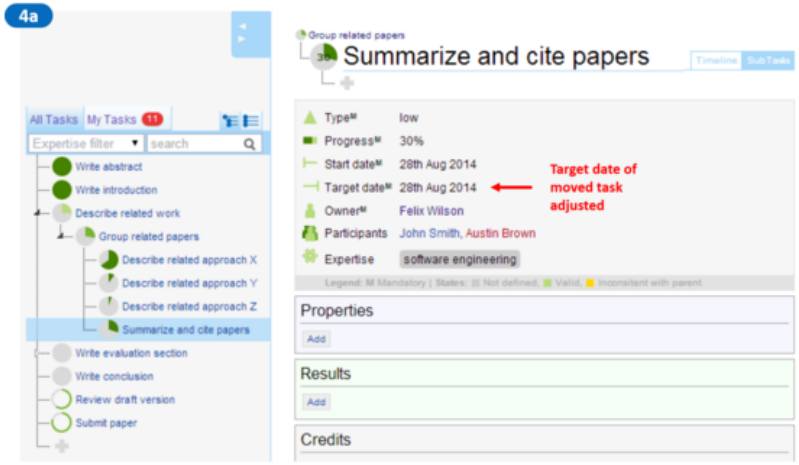


The following figure illustrates the inconsistency problem of target dates on a conceptual level. After moving the task, the target date is inconsistent and it is shown in yellow. There are two approaches to solve this problem. You can postpone the target date of the current task or you postpone the target date of the parent task.

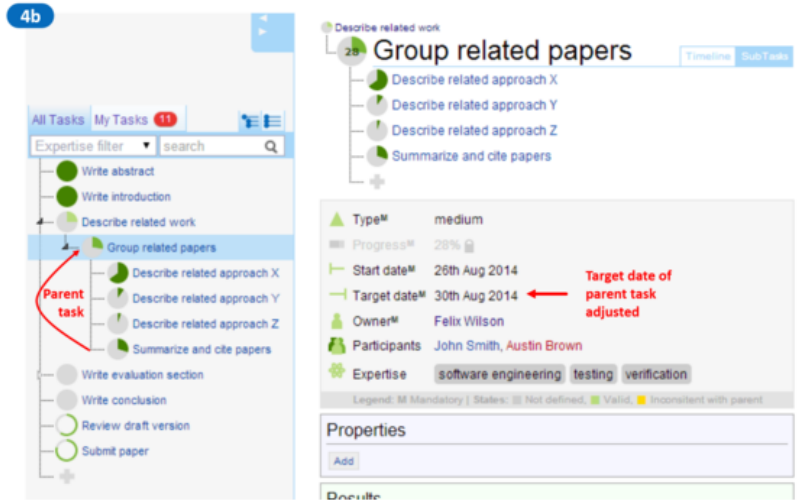


Organize Tasks III

This figure illustrates changing the tasks target date.



The figure below illustrates changing the parent task's target date.

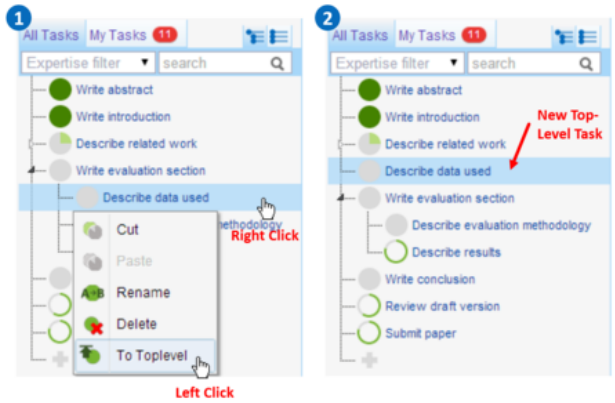


Hint: The task warnings automatically disappear when the tasks are consistent again.

Organize Tasks IV

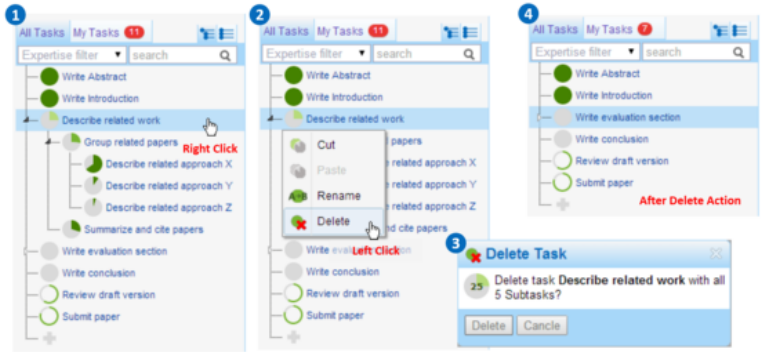
Move Task to Toplevel [edit]

Tasks cannot be moved by cut and paste to top-level. Instead, select a task by right clicking and select **ToToplevel** in the pull-down menu.



Delete Task [edit]

Every task can be deleted with a right click and selecting delete from the pull-down menu. Deleting a task means also deleting all of its subtasks. The system will as you to confirm that you want to delete all these tasks.



Hint: This action can not be undone easily.

Extended Task States

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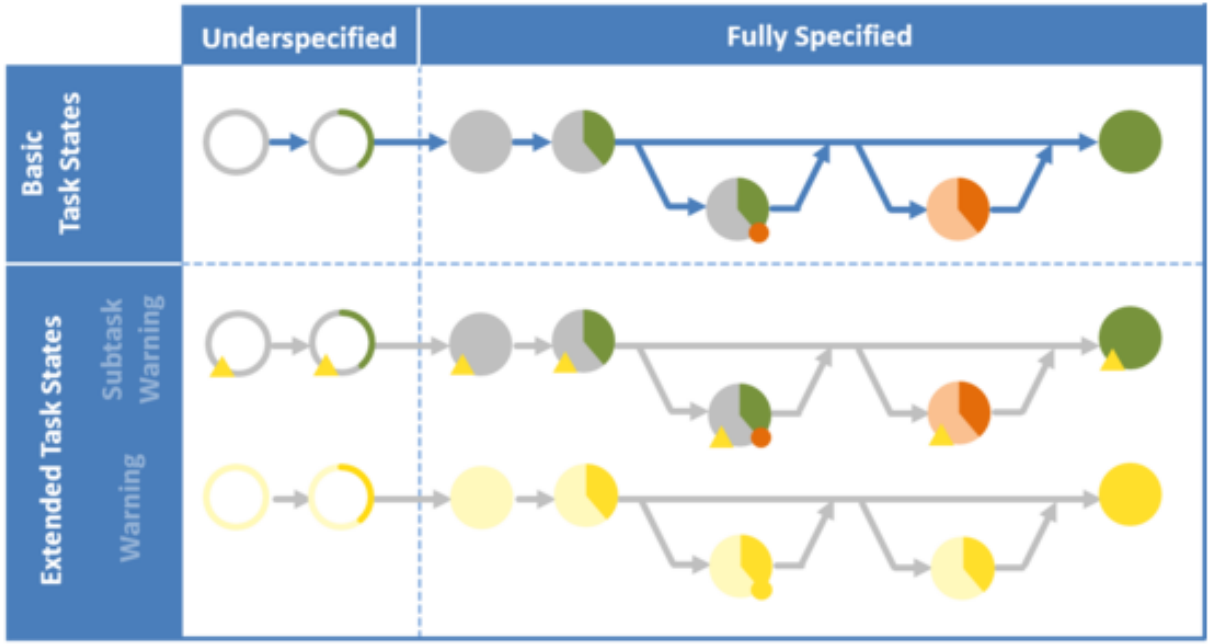
Docu Extended Task States

This page extends the **basic task state** documentation. Organizing tasks, especially moving tasks, can cause inconsistent states. The basic task states are extended with warnings to visualize the inconsistency. We have two different warnings. **Warnings** regarding the task itself are indicated by **yellow colored** status icons. **Subtask warnings** indicate that at least one subtasks has an inconsistent state. This is represented with an small additional **yellow triangle** on the bottom. left of the task icon.

Possible task states and their successors:



Trainings Main Page

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Main Page

The **Organic Data Science framework** is designed to enable ad-hoc unanticipated collaborations. This requires that new collaborators should be able to come up to speed very quickly on what activities are ongoing, and be able to contribute to tasks that are relevant to them. To support this goal, we provide training materials for newcomers. Note that no training is needed if you just want to browse the site and see what is going on, but not edit or change anything.

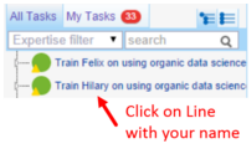
Highest Contributors

- Admin (11313 Edits)
- Felix (190 Edits)
- Flora (75 Edits)
- Katie (59 Edits)
- Derek (53 Edits)
- Hilary (52 Edits)
- Xuan (49 Edits)
- Yoshimura (48 Edits)
- Matheus (46 Edits)
- Fscordo (36 Edits)

Training

Training is only required if you want to contribute by editing the content of ongoing tasks. We first train you as a **participant**, which means that you can contribute to tasks that others are leading. This training takes approximately one hour. If you want to be able to create and lead new tasks, you must take the **owner** training. his training takes approximately two hours.

The training materials include documentation and practice. You can practice in this wiki without fear of disrupting anything in the actual Data Science site. To get started, click on the entry on the left-hand side that has your name in it. Read that page and follow the instructionsin it. Don't forget to login first. If you don't find an entry with your name, please contact us.



Once you are done with the training, you can use the same login information for the Organic Data Science wiki and start contributing.

Questions

Please contact us at **organic.data.science@gmail.com**. We will respond quickly!

Personal Trainings Page