

A Comprehensive Approach to Support Research Processes in the CRC 1270 ELAINE

WissKom 2019

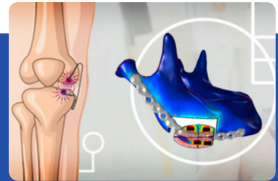
05.06.2019

Max Schröder, Frank Krüger, Robert Zepf,
Ursula van Rienen, and Sascha Spors

more than **50 researchers** from medicine and biology, electrical and mechanical engineering, material and computer sciences, and physics work in **14 research projects**

CRC 1270 ELAINE (ELectrically Active ImplaNts)

- Understanding the impact of electrical stimulation on bones, cartilage and the brain
- Investigation and development of novel conductive biocompatible materials
- Investigation and development of energy autonomous miniaturized stimulators
- Application to large bone defects, regeneration of cartilage, and Deep Brain Stimulation for dystonia and Parkinson's disease



Area A

Multi-scale and multi-physics in-silico modelling, in-vitro analyses of tissue and impact of stimulation

Area B

Conceptualisation, in-silico and in-vitro analyses of materials, energy supply and sensor systems

Area C

In-silico models, in-vitro analyses and in-vivo models of regenerative medicine

Infrastructure
Support Project

Central Tasks of the
Collaborative Research Centre

Integrated Research
Training Group

Service Projects and Integrated Research Training Group

SFB ELAINE Infrastrukturprojekt

Leitung

Prof. Sascha Spors

Institut für Nachrichtentechnik,
Informatik und Elektrotechnik

Prof. Ursula van Rienen

Institut für Allg. Elektrotechnik,
Informatik und Elektrotechnik

Prof. Manuela Sander

Lehrstuhl für Strukturmechanik,
Maschinenbau und Schiffstechnik

Mitarbeiter

Frank Krüger
Max Schröder

**Reproduzierbare und offene Forschung**

- FAIRes Datenmanagement und -analyse
- Beratung und Ausbildung

Projektpartner

Robert Zepf
Sebastian Schick
Antje Meuser

**Universitäts
Bibliothek**
Rostock

**Kuration von
Forschungsdaten**

- Standards und Richtlinien
- Veröffentlichung von Forschungsartefakten

Infrastruktur

- Speicherung und Archivierung von Forschungsartefakten
- Hochleistungsrechnen

Ansprechpartner

Christa Radloff
Jörg Zerbe



Virtual Research Environments (VRE) are “*innovative, web-based, community-oriented, comprehensive, flexible, and secure working environments conceived to serve the needs of modern science.*” (Candela et al., doi: 10.2481/dsj.grdi-013)

VREs, thus, enable more efficient, open, and reproducible research (Barker et al., doi: 10.1016/j.future.2018.12.026)

In the CRC 1270 ELAINE the following central aspects were considered:

- Multidisciplinary solution instead of single domain specific software
- Web-based open source software with central authentication system (LDAP etc.)
- Flexible solution enabling different stages of data management practices

Further domain requirements were revealed from a questionnaire and research group visits

Virtual Research Environment

Web-based, comprehensive, flexible and secure working environment for collaborative and reproducible research

1. Study Planning and Data Collection



2. Collaborative Modeling and Data Analysis



3. Reproducibility, Provenance and Archival



Research Questions / Hypotheses

Dissemination / Publication

The screenshot shows the Redmine web interface for the Elaine project. The top navigation bar includes links for Home, My page, Projects, Administration, and Help. A search bar is present with the text 'General'. Below the navigation bar, the 'Overview' tab is selected, displaying general information about the Elaine project. The 'Overview' section contains a description: 'Contains general information about Elaine. This includes the proposal as well as templates and similar things.' To the right of the overview, there are links for 'New subproject' and 'Close'. Below the overview, the 'Members' section lists project members, and the 'Latest news' section displays recent updates, including an IUK event, Redmine maintenance, and INF Newsletter #1. The 'Subprojects' section is also visible at the bottom.

Home My page Projects Administration Help

Logged in as Elaine (my account) Sign out

General

Search: General

+ Overview Activity Calendar News Wiki Repository Settings

Overview

Contains general information about Elaine. This includes the proposal as well as templates and similar things.

New subproject Close

Members

Elaine (Project Manager) ...

Latest news

IUK event "Electronic Lab Notebooks"
The IUK event on electronic lab notebooks will take place in the time from 14:00 to 17:00 at the university library Südstadt
Added by Frank Krüger about 2 months ago

Redmine Maintenance Tuesday (Jan 22)
Added by Max Schröder 4 months ago

INF Newsletter #1 (October 2018)
The first issue of the Infrastructure Support Project Newsletter is available at https://rdm.elaine.uni-rostock.de/projects/general/wiki/INF_Newsletter_October_2018
Added by Max Schröder 7 months ago

ELAINE lecture by Prof. Dr. Scharnweber tomorrow
Added by Nadine Berger about 1 year ago

ELAINE lecture today - remote viewing access
Added by Nadine Berger about 1 year ago

[View all news](#)

Subprojects

CRC 1400 ...

GitLab for Version Control

Sign in · GitLab - Mozilla Firefox

Sign in · GitLab

https://gitlab.elaine.uni-rostock

GitLab @ ELAINE

Elaine
electrically active implants
SFB 1270

LDAP Standard

LDAP Username

Password

☐ Remember me

Sign in

Git Repositories of the CRC 1270 ELAINE

[Explore](#) [Help](#) [About GitLab](#)

Projects - Dashboard - GitLab - Mozilla Firefox

https://gitlab.elaine.uni-rostock.de/dashboard

GitLab @ ELAINE

Projects Groups Activity Milestones Snippets

Search or jump to...

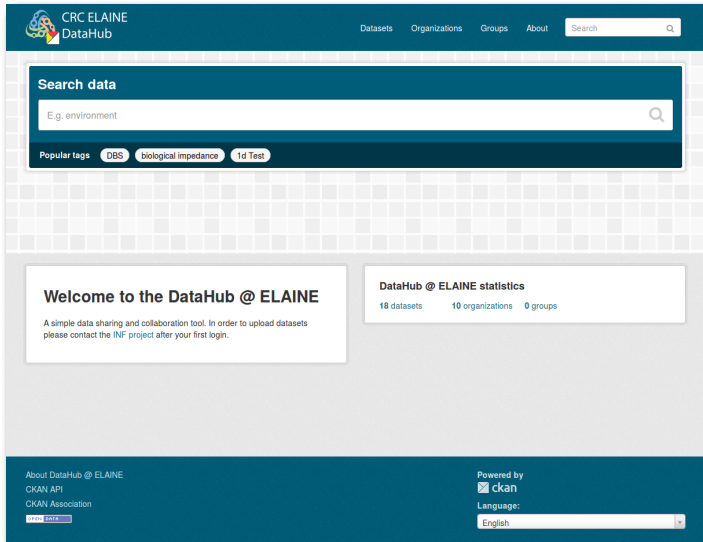
Projects

Your projects Starred projects Explore projects

Filter by name... Last updated

All Personal

- P** INF / Paper / P190131-PROV_NumSim-FK Owner
Paper about Reproducible Numerical Simulation by use Provenance Modelling
updated 20 minutes ago
- P** INF / Paper / P181118_NER-Annotation-FK Owner
Paper about annotation scheme for arduous workshop
updated 6 days ago
- D** INF / Jupyter / Datahub Examples Owner
Contains examples that illustrate how to access the Datahub via python API
updated 1 week ago
- L** INF / CI / Latex-CI-Test Owner
updated 2 weeks ago
- J** INF / Jupyter / Jupyter-Test Owner
updated 3 weeks ago
- P** INF / Paper / P20181130_WissKomm_FDM-LessonsLearned_MS Owner
updated 3 weeks ago
- T** INF / Students / T2018-11_Web-Services_MS Owner
updated 3 weeks ago
- T** INF / Students / T2018-11_Jupyter-Analysis_MS Owner
updated 3 weeks ago
- D** INF / CI / Docker-Build-CI-Test Owner
updated 3 weeks ago
- P** INF / Paper / P181120-Open_means_not_reproducible-MS Owner
updated 3 weeks ago



The screenshot shows the CRC ELAINE DataHub interface. At the top is a dark blue header with the CRC ELAINE DataHub logo on the left and navigation links (Datasets, Organizations, Groups, About) and a search bar on the right. Below the header is a large search area with a 'Search data' title, a search input field containing 'E.g. environment', and a search button. Below the search bar are 'Popular tags' including DBS, biological impedance, and 1d Test. The main content area has a light gray background with a grid pattern. It features two white boxes: 'Welcome to the DataHub @ ELAINE' with a description of the tool and contact information, and 'DataHub @ ELAINE statistics' showing 18 datasets, 10 organizations, and 0 groups. The footer is dark blue and contains links for 'About DataHub @ ELAINE', 'CKAN API', and 'CKAN Association' on the left, and 'Powered by ckan' and a 'Language' dropdown menu on the right.

CRC ELAINE DataHub

Datasets Organizations Groups About Search

Search data

E.g. environment

Popular tags DBS biological impedance 1d Test

Welcome to the DataHub @ ELAINE

A simple data sharing and collaboration tool. In order to upload datasets please contact the INF project after your first login.

DataHub @ ELAINE statistics

18 datasets 10 organizations 0 groups

About DataHub @ ELAINE
CKAN API
CKAN Association

Powered by ckan
Language: English

The screenshot shows the CRC ELAINE DataHub interface. The top navigation bar includes links for Datasets, Organizations, Groups, and About, along with a search bar. The left sidebar contains filters for Organizations (ELAINE INF 6), Groups (none found), Tags (CA Imaging 1, ELAINE 1, named entity recogn... 1, natural language pr... 1, Research Artefacts 1, sentiment analysis 1, software and data c... 1, Survey 1), and Formats (CSV 2, TAR 2, ZIP 2, EDF 1). The main content area displays 6 datasets found, ordered by Relevance. The datasets listed are: Audio Sentiment Analysis (TAR), EmoDB - Berlin Database of Emotional Speech (TAR), Data for CA Imaging V15 (CSV), and Data for: A Systematic Literature Review on the Extraction of Usage Statement... (This dataset contains the supplements for the survey article about the extraction of mention statements of scientific).

 eLabFTW

Login

Note: You need cookies enabled to log in.

Sign in to your account

Email

Password

☒ Remember me

LOGIN

 eLabFTW

EXPERIMENTS

DATABASE

TEAM

SEARCH

DOCUMENTATION



Howdy, **Frank**

Experiments

Create new ▾

Filter status ▾ **Filter**

Order by ▾ Sort ▾ **Order**

Reset

8 results shown [Select all](#)

Ca-Imaging for Regensburg

☐  **RUNNING**  2019.05.14  

Positive Charge

Ca-Imaging

☐  **RUNNING**  2019.05.14 

MTS/KV

☐  **RUNNING**  2019.05.03 

Spreading

☐  **RUNNING**  2019.04.24 

MTS/KV

☐  **SUCCESS**  2019.04.16 

Ca-Imaging

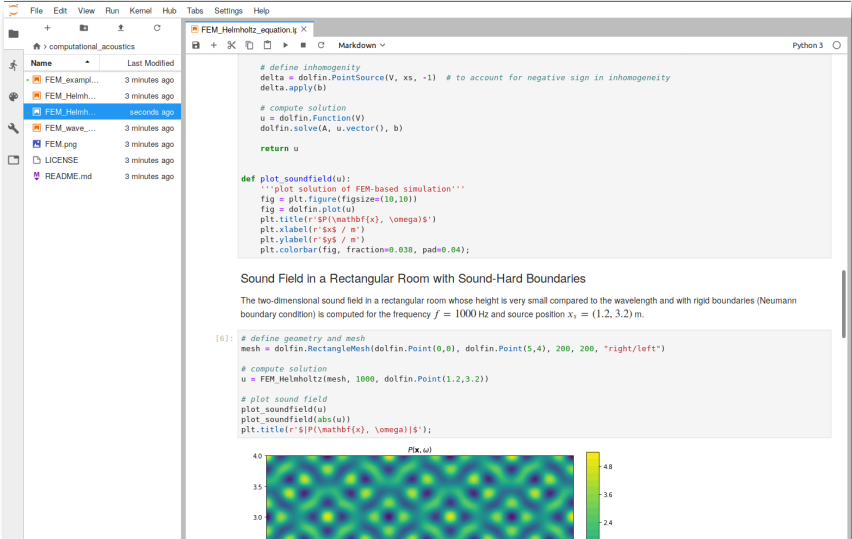
☐  **SUCCESS**  2019.04.15 

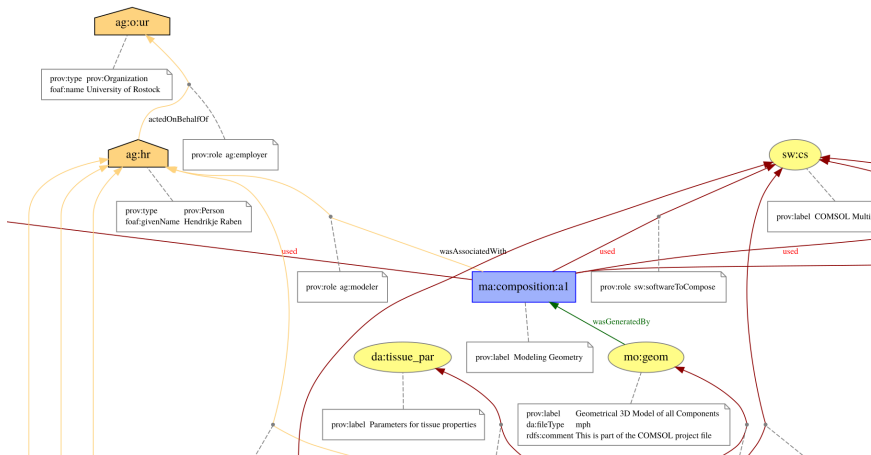
MTS/KV

☐  **NEED TO BE REDONE**  2019.04.09 

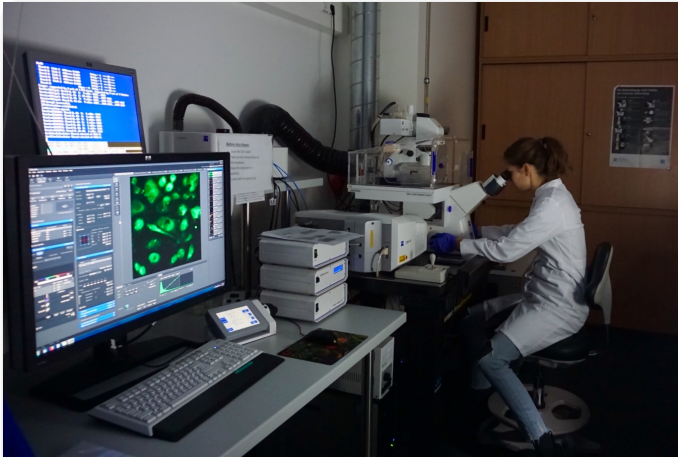
Ca-Imaging

☐  **SUCCESS**  2019.04.05 





1. Usage of Electronic Lab Notebook
2. Data Publication Pipeline



(Thanks to Martina Grüning et al., AG Zellbiologie, University of Rostock)

Video: Electronic Lab Notebook Usage

eLabFTW

EXPERIMENTS

DATABASE

TEAM

SEARCH

DOCUMENTATION

Howdy, Frank

Experiments

[Back to listing](#)

Tags

Add a tag

Date

20190520

Visibility

Only the team

Status

Running

Title

Ca-Imaging

Experiment

Switch editor

Edit

View

Insert

Format

Tools

Table

Paragraph

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Link

Download

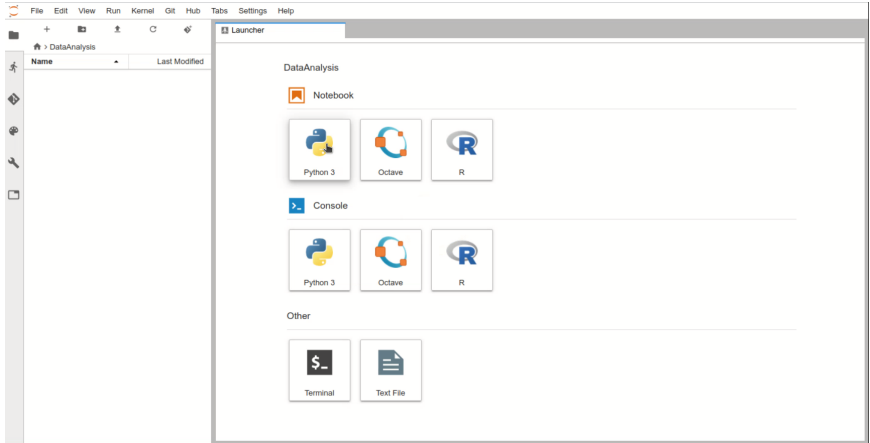
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Video: DataHub Upload

The screenshot displays the CKAN DataHub interface. At the top, there is a dark teal header with the CKAN logo on the left and navigation links for Datasets, Organizations, Groups, and About on the right. A search bar is located in the top right corner of the header. Below the header, a large teal box contains a search bar with the placeholder text "E.g. environment" and a magnifying glass icon. Below the search bar, there are several popular tags: "biological impedance", "DBS", and "1d Test". At the bottom of the interface, there are two white boxes. The left box is titled "Welcome to Data @ ELAINE" and describes it as "A simple data sharing and collaboration tool." The right box is titled "Data @ ELAINE statistics" and shows the following counts: 9 datasets, 9 organizations, and 0 groups.

Video: Jupyter Analysis





Article

Establishment of a Numerical Model to Design an Electro-Stimulating System for a Porcine Mandibular Critical Size Defect

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² Department of Oral and Maxillofacial Surgery, University Medical Centre Mainz, 55131 Mainz, Germany; peer.kaemmerer@unimedizin-mainz.de

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Pre-release during the review process using the internal data platform

<https://data.elaine.uni-rostock.de/dataset/data-for-modelling-minipig-bone-stimulation>

The screenshot displays the Elaine DataHub web interface. The top navigation bar includes the CRC ELAINE DataHub logo, links for Datasets, Organizations, Groups, and About, and a search bar. The breadcrumb trail shows the path: Organizations > ELAINE A02 > Data for: Establishment of ...

The main content area features a dataset card with the title "Data for: Establishment of a Numerical Model to Design an Electro-Stimulating System for a Porcine Mandibular Critical Size Defect". It indicates 0 followers and has a "Follow" button. Below this is the "Organization" section for ELAINE A02, described as "Multi-scale models for studies on electrically active implants in due consideration of uncertainties in the input data" with a "read more" link.

The dataset details section includes a "PRIVATE" status badge, the title, and a description: "This repository contains geometry files for the creation of a model of an electrically stimulated minipig mandible and the corresponding finite element models." It also lists "General Information":

- Principle Investigators:** Hendrikje Raben (1), Ursula van Rienen (1,2), Peer W. Kämmerer (3), Rainer Bader (2,4)
- Affiliations:**
 - (1) Institute of General Electrical Engineering, University of Rostock, Rostock, Germany;
 - (2) Department Life, Light & Matter, University of Rostock, Rostock, Germany
 - (3) Department of Oral and Maxillofacial Surgery, University Medical Centre Mainz, Mainz, Germany;
 - (4) Department of Orthopaedics, University Medical Centre Rostock, Rostock, Germany;
- E-mail:** hendrikje.raben@uni-rostock.de
- Type:** 3D models, finite element simulation models
- Location:** Albert-Einstein-Str. 2, 18059 Rostock, Germany
- Keywords:** finite element simulation, electric stimulation, bone regeneration, computational modelling, electrically active

Citation in the submission for the reviewing process

48. <https://data.elaine.uni-rostock.de/dataset/data-for-modelling-minipig-bone-stimulation>. Note: The data set will be temporarily available to the reviewers at our institutional data platform (Username: _____ Password: _____). In case of acceptance of the article, the data will be published at the Rostock University document server "RosDok" (<http://rosdok.uni-rostock.de/>). We will add the reference (including DOI) to the published dataset prior to publication.

For the publication of the data after reviewing, the RosDok repository service is employed:

https://doi.org/10.18453/rosdok_id00002450

Universität Rostock Traditio et Innovatio

RosDok Rostocker Dokumentenserver

E-Publikationen Historische Bestände Publizieren Über RosDok

Startseite > E-Publikationen > Browsen

Raben, Hendrikje • van Rienen, Ursula • Kämmerer, Peer W. • Bader, Rainer •

Data for: Establishment of a Numerical Model to Design an Electro-Stimulating System for a Porcine Mandibular Critical Size Defect

Rostock : University of Rostock , 2019
https://doi.org/10.18453/rosdok_id00002450

This data set provides the necessary computer-aided design project files (Materialise 3-matic) and 3D geometries to create the finite element model of an electrically stimulated minipig mandible that are described in the paper "Establishment of a Numerical Model to Design an Electro-Stimulating System for a Porcine Mandibular Critical Size Defect" published in the special issue "Biomaterials for Bone Tissue Engineering" of the MDPI Journal Applied Sciences (ISSN 2076-3417). Further, the finite element simulation models (COMSOL Multiphysics) are provided. The simulations allow to determine the electric field distribution and optimised stimulation parameters in the 3D model of the electrically stimulated minipig mandible.

[Dateipublikation](#) [Open Access](#)

Metadaten Dateien

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Lehrjahr Erstellt am: 2019

Dauerhaft zitieren
<http://pub.uni-rostock.de/rosdok/id00002450>
https://doi.org/10.18453/rosdok_id00002450

Daten
Datensatz Raben_et_al.zip (208.8 MB)

Dokumentation
raben_2019_documentation.pdf (0.1 MB)

Teilen
[Twitter](#) [Facebook](#) [Google+](#) [LinkedIn](#) [Xing](#) [WhatsApp](#) [Email](#) [Print](#)

Citation in the camera ready submission

Raben, H.; van Rienen, U.; Kämmerer, P.W.; Bader, R. Data for: Establishment of a Numerical Model to Design an Electro-Stimulating System for a Porcine Mandibular Critical Size Defect, 2019. doi:10.18453/rosdok_id00002450.

Thanks for your attention.
Questions?

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