

DERSE24 WÜRZBURG

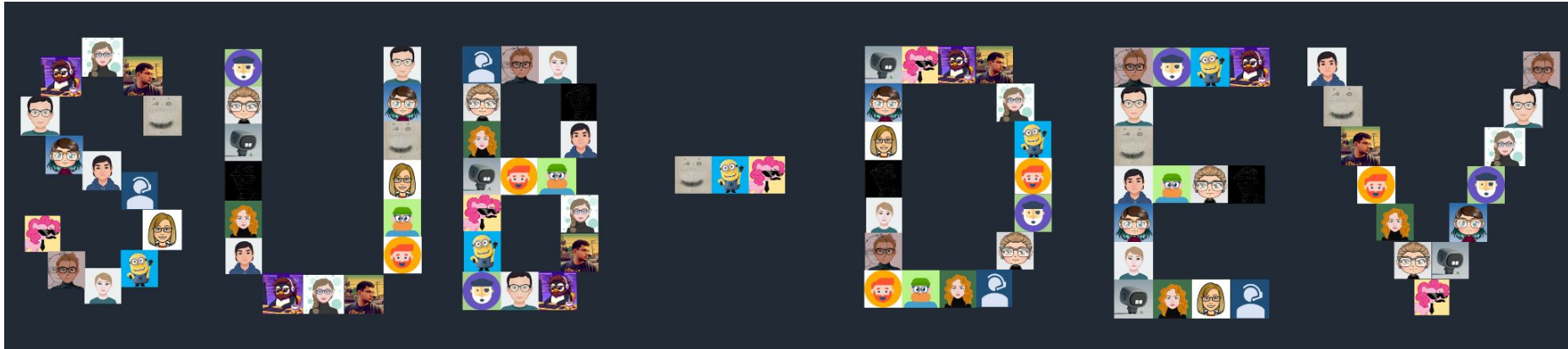
Creating Generic Software Solutions for Specific Research Issues

Research Software Product Development without Reinventing the Wheel

KRISTINE SCHIMA-VOIGT, ZEKI MUSTAFA DOĞAN, INGO PFENNIGSTORF

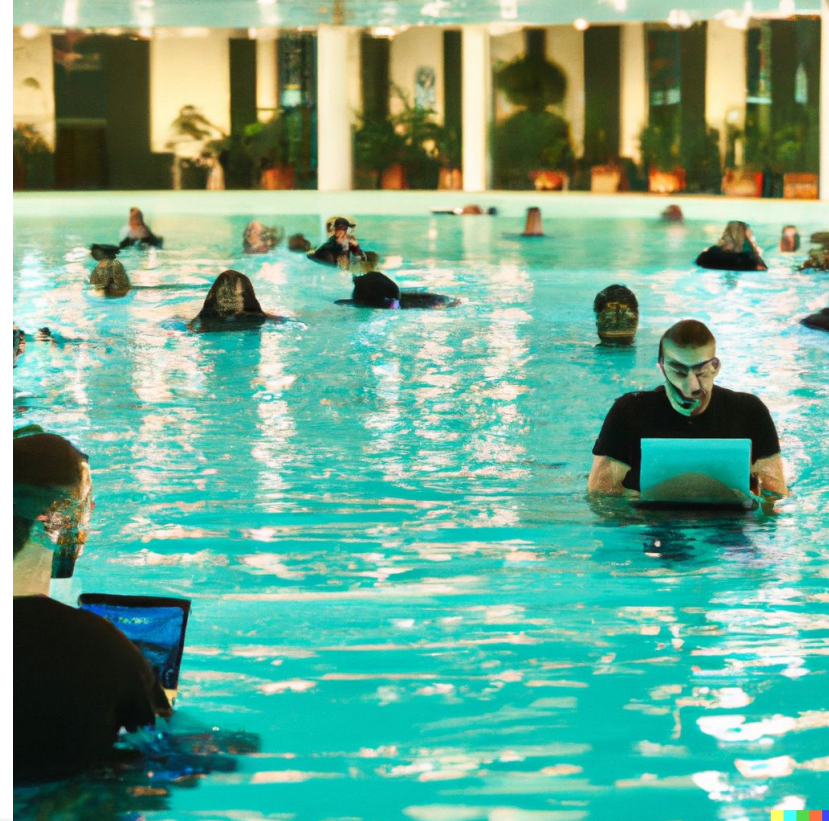
about us

Software & Service Development Team



software development pool

A large agile team



DALL-E

About 30 projects/ cooperations each year



We develop...

Specialized Information
Services for Science

Research data
visualization

Data modeling and
transformation

Digital Libraries Electronic Lab
Notebooks

LLM-based agents

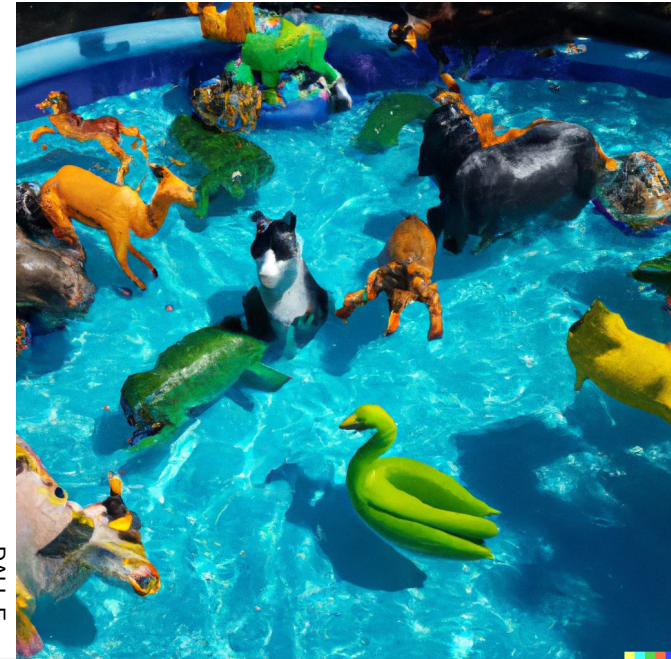
Knowledge Graphs

Digital Lexicons

Pattern Recognition/
Layout Analysis

Text and Data Mining

Scholarly Digital Editions



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DERSE23 Paderborn

- [Agile Research Software Development: Scrum](#)
- [RSE als Service an einer wissenschaftlichen Bibliothek](#)

Code for Thought

[DE] Agil in der Wissenschaft

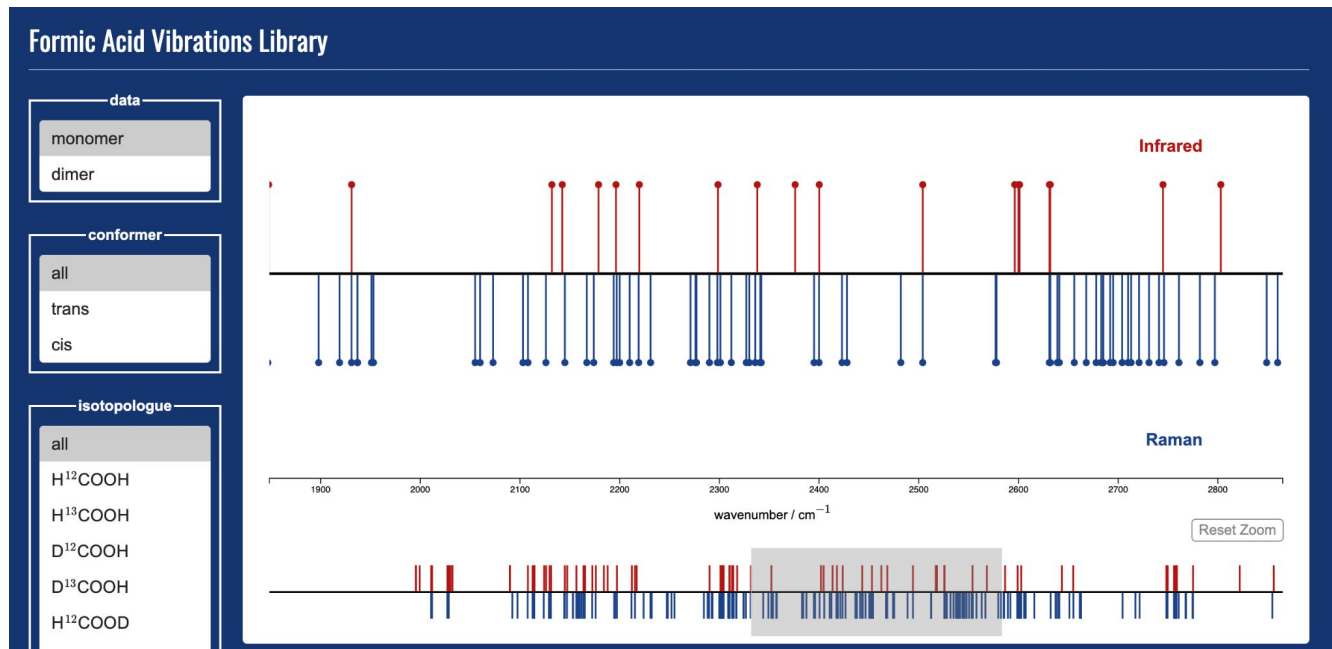
MAY 30, 2023 RSE SEASON 5 EPISODE 15



our observation

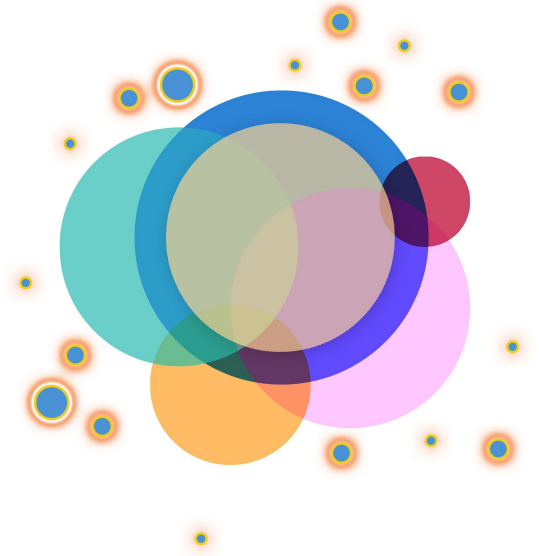
Projects require tailored solutions for complex issues

[qmbench Database](#)



...at the same time there are cases where the core requirements are similar and only differ in detail

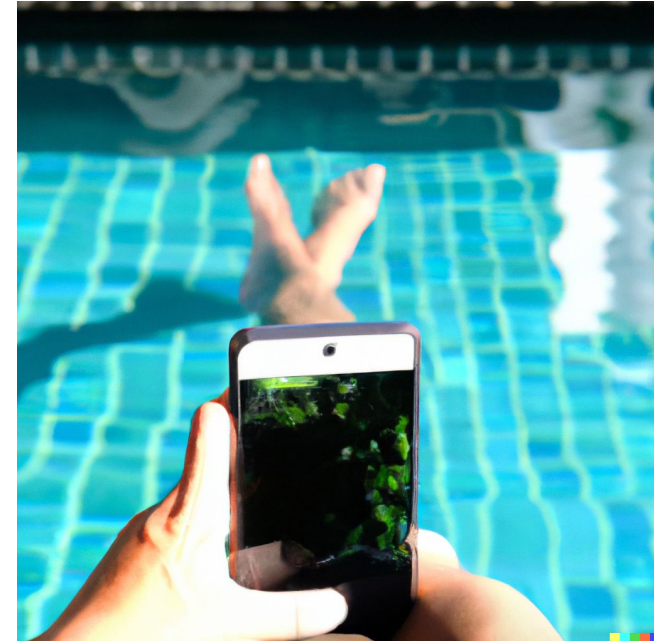
- Research data must be normalized, indexed, searched, listed and presented in detail - same in various disciplines
- API and page viewer for books can also be used for other image types e.g. geo- or bioimaging
- Tools for building and executing bioinformatics workflows has been reused for digitisation and OCR workflows



why?

Why waste time on generic solutions?

- Time and Cost Savings
- Quality Assurance
- Collaboration
- Interoperability
- Standardization
- Innovation
- Sustainability



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research profits from generic solutions

Identify scenarios where requirements overlap!

Benefit: Versatile research software products that cover multiple research questions

Goal: The right balance between tailored and generic solutions



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Developing software products for research requires a combination of

- technical expertise
- domain knowledge
- effective collaboration
- commitment to best practice



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How?

Step 1: Thorough requirements analysis

Talk to stakeholders, researchers and end users to gather detailed information about their specific needs and expectations.

What we do

- Each project has a Product Owner
- Each product has PO and Senior Developer



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Step 2: Cross Project Discussions with RSE and researchers

Organize regular discussions or workshops involving key stakeholders from different projects.

What we do

- sub-develop devcamp
- review meetings
- conferences



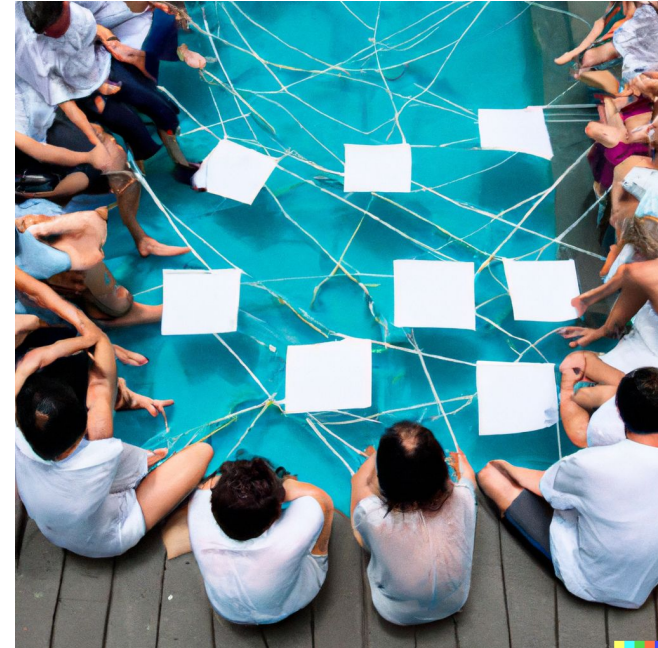
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Step 3: Requirements repository & requirements mapping techniques

Establish a centralized repository to document and track project requirements.

What we do

- Code is open source (Gitlab / Github)
- Feature requests are collected directly in the repository



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Step 4: Engage Research Software Engineers & encourage Standardisation Discussions

Facilitate communication and collaboration among RSEs

What we do

- sub develop devcamp
- sub develop guilds meeting
- mindset: reusing what already exists is more natural than developing something from scratch



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Step 5: Use Project & Portfolio Management Tools

Use project management tools, that provide features for categorizing and tagging requirements

What we do

- we use jira, gitlab, open projects
- and a huge spreadsheet for portfolio management



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Step 6: Stay informed!

Stay informed about trends in research and related state-of-the-art technology

What we do

- sub develop meetings
- conferences
- trainings

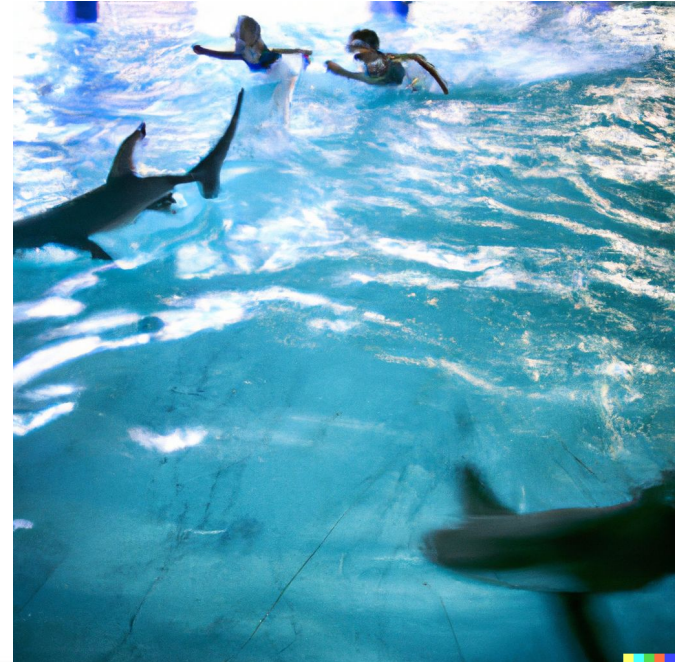


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our learnings

What we struggle(d) with...

- developing generic software is expensive
- funding focuses on research
- generic software may not meet every requirement in future use cases
- generic software must be maintained
- quick and dirty is much easier to code
- a solution-oriented agile working culture must be maintained
- project partners must be taken on board



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What has proven its worth

- working with a software development pool
- working agile
- relying on modular programming and loosely coupled architectures
- using APIs
- make project partners aware of the advantages of generic development
- ...



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our generic solutions

SUB Products



A slim and mobile-friendly IIIF document viewer

<https://tify.rocks/>

TIDO & Text API



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TextAPI and TIDO – An Example of Research Software Product Development

Michelle Weidling, Mathias Göbel, Paul Pestov

Mar 6, 2024, 2:30 PM

Uncharted Waters Ahead. Moving Legacy Software Infrastructure to Kubernetes

Adrian Sturm, Stefan Hynek

Mar 7, 2024, 11:00 AM

Thank you!

Kristine Schima-Voigt

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