

From Eye-to-Eye to Hand-in-Hand: Collaborative Solution Building in Interdisciplinary Manuscript Research

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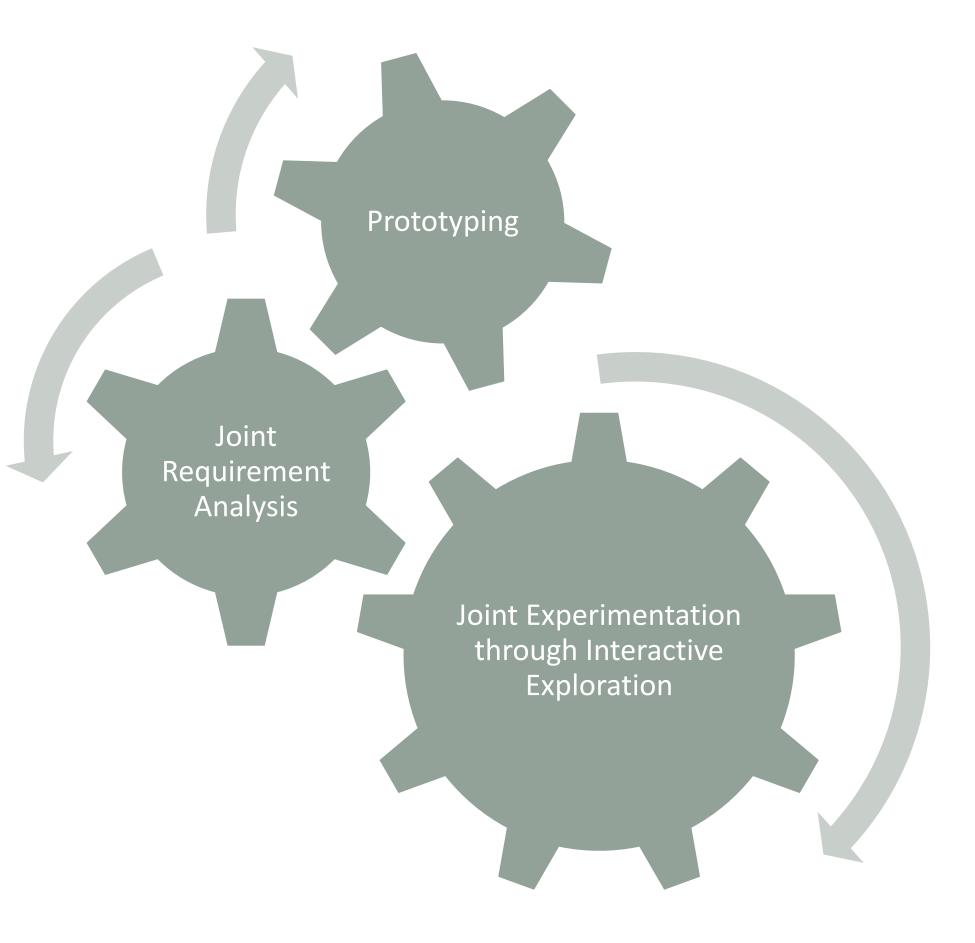
#### BACKGROUND





The humanities are usually considered to be an inexact science and, in that context, it is often difficult to achieve quantification. This is in contrast with Informatics, considered to be an exact science that typically aims towards finding algorithmic solutions. Digital Humanities is placed in a situation, where conflicting perspectives and objectives not only have to be met but also have to produce working solutions. Hence, DH solutions with wide-spread acceptance are rare and often face problems with usability and usefulness.

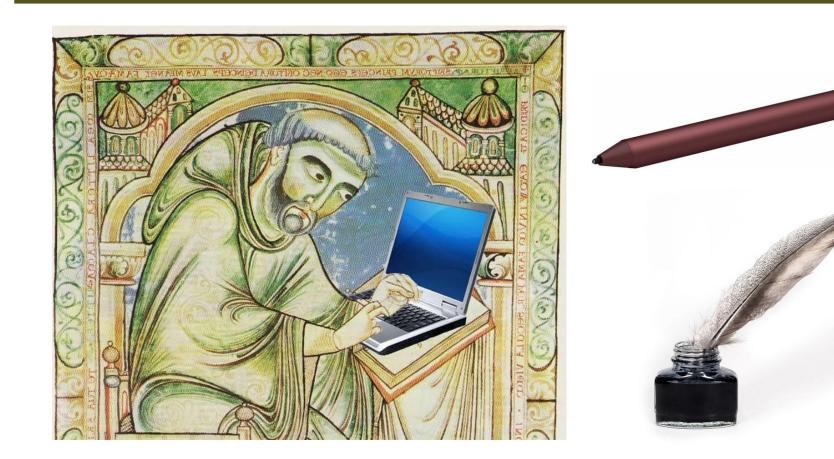
# DEVELOPING COLLABORATIVE SOLUTIONS



# iXMan\_Lab

Our iXMan\_Lab will deploy/bring to bear the above methodology to provide solutions for the subprojects of SFB 950 at the Centre for the Studies of Manuscript Cultures, University of Hamburg. Even though primarily situated within the Department of Informatics, the lab is uniquely placed within the Centre through its capability for web access of scholars from

## INTERDISCIPLINARY MANUSCRIPT RESEARCH



#### JOINT REQUIREMENT ANALYSIS

Scholars from Humanities pose their research questions from their perspective, while from Informatics solutions are suggested via:

- Using a common language (and creating a project-specific *glossary*.)
- Clarifying conditions under which methods relevant to the problems tend to work.
- Agreeing the extent to which the problem can be solved within the realms of viability.
- Documenting the process through Image

#### SFB 950.



In terms of hardware resources, our laboratory is equipped with a custom-built 65" MTT driven by a multi-core gaming engine allowing for GPU-accelerated image processing/analysis and even deep learning.

Our focus is on the field of Interdisciplinary Manuscript Research providing ample opportunities for researchers working in the field of image processing to apply their methods in the domain. This typically involves components such as image pre-processing, layout analysis, OCR and writer identification. However, one has to avoid the fallacy that solutions can be constructed through a simple daisy chain of available computational methods. The reality on ground is far from that.

#### PROBLEMS





Requirements, Design Mockups, etc.

## JOINT EXPERIMENTATION THROUGH INTERACTIVE EXPLORATION

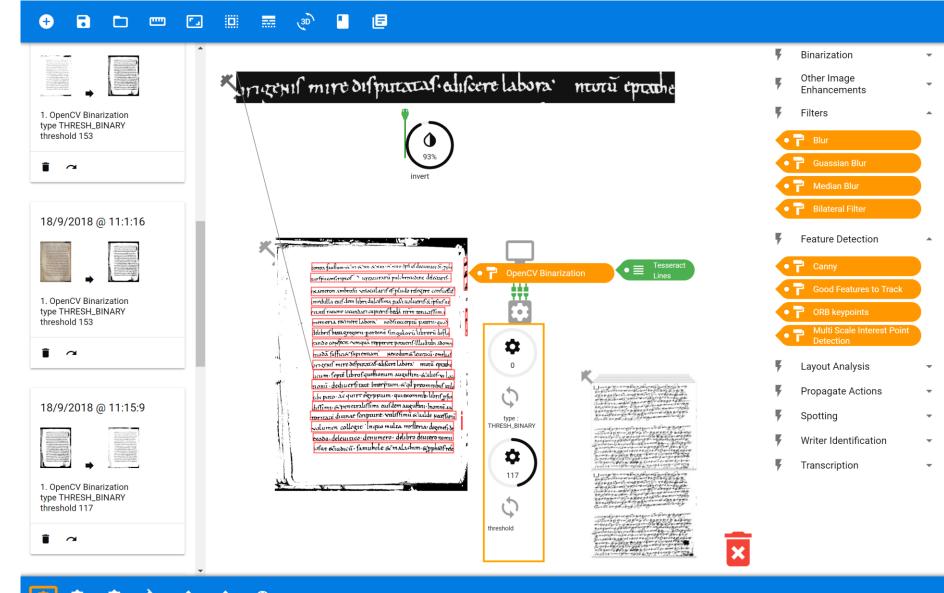
Our main focus is on providing an appropriate medium for solution building through collaboration.

- Multi-Touch-Table is the ideal medium.
- Joint experimentation and exploration of solution spaces is facilitated.
- Humanities scholars are put in action for consensual workflows.
- Proper logging records of methods, parameters, etc. are furnished.

## PROTOTYPING

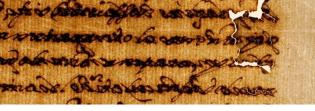
Once agreed, workflows are packaged as prototypes and delivered to the Humanities scholars.

Currently the Advanced Manuscript Analysis Portal (AMAP 2.0) is under development for e.g. joint experimentation, exploration of solution spaces, and workflow design. To this end, further case studies will be carried out to refine our methodology.



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#### **CONCLUSION & FUTURE WORK**





In our context, one frequently has to deal with issues such as degraded data, limitations of computational methods, parameter regimes, presentation of results, and experimental setups. Also, due to the specificity of research questions, we have to provide customized solutions and a one-size-fits-all approach is not practical. Thus, both a joint interdisciplinary problem analysis at eye-level and a hand-in-hand solution building is demanded.

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- Focusing on end-users as much as possible according to the user-in-the-loop paradigm.
- After a period of testing in the wild, a formal usability and usefulness study is to be conducted.
- If the studies yield positive results, the prototypes are provided as tools.
- If the prototypes are found to be insufficient, the stakeholders must return to the previous stage and iterate.

We have elaborated on the difficulties faced during the development of solutions in the context of Digital Humanities, along with reasons for such difficulties. We proposed our methodology aiming at supporting scholars from Interdisciplinary Manuscript Research by joint development and validation of solutions through interactive exploration. Finally, we briefly introduced our iXMan\_Lab and sketched future work.