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ID+Lab – Analyzing, Modeling and Designing Interdisciplinarity

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Abstract

Interdisciplinary collaboration is the key to solving complex tasks. At the same time, the communication and cooperation within such a collaboration are themselves characterized by multifaceted, dynamic processes. The ID+Lab explores the structures of interdisciplinary cooperation in order to better understand, visualize and test them. The ID+Model developed for this purpose enables us to acquire an altogether new and detailed view of these structures.

ID+Model allows complex collaborations to be analyzed, modeled and designed as a network of actors and connections. The basic elements are eleven ID+Actors that have proven to be essential in interdisciplinary collaborations: people, organizations, events, tasks, methods, tools, money, topics, time, sources and places. The ID+Actors form a network through semantically

defined ID+Ties with different status, values and intensity. The formal definition of modeling in the ID+Ontology makes research data available for the Semantic Web and the Linked Open Data Cloud.

Based on the ID+Model, the ID+Lab is developing a semantic research contextualization platform – the ID+Stage. The ID+Backstage modeling tool uses a structured question dialogue to gather all the critical actors and connections of a publication, translate them in the background into a machine-readable format, and store them. When a research result is connected to the modeled context of origin, the ID+Publication is formed. Consequently, not only are the research results disclosed, so are their development processes. The ID+Publications are published on the ID+Stage. The ID+Ontology enables the semantic recording and searchability of all data as a modeling foundation.

Keywords

interdisciplinary research, metadata, ontologies, semantic web, research contextualization, semantic publishing

ID+Lab – Análisis, modelización y diseño de la interdisciplinariedad

Resumen

La colaboración entre disciplinas es, a menudo, la clave para resolver tareas complejas. Al mismo tiempo, en este tipo de colaboración, la comunicación y la cooperación se caracterizan por unos procesos dinámicos y polifacéticos. El ID+Lab estudia las estructuras de la cooperación interdisciplinaria para su mejor comprensión, visualización y comprobación. El ID+Model desarrollado con ese propósito nos permite adquirir una visión completamente nueva y detallada de estas estructuras.

Asimismo, el ID+Model posibilita el análisis de las colaboraciones complejas, su modelización y su diseño como red de actores y conexiones. Existen once elementos básicos, o ID+Actors, que han demostrado ser esenciales en las colaboraciones interdisciplinarias: la gente, las organizaciones, los eventos, las tareas, los métodos, las herramientas, el dinero, los temas, el tiempo, las fuentes y los lugares. Los ID+Actors forman una red mediante vínculos definidos semánticamente, los ID+Ties, con diferentes estatus, valores e intensidades. La definición formal de la modelización dentro de la denominada ID+Ontology posibilita que los datos de investigación estén disponibles para la web semántica y para la nube Linked Open Data.

Basándose en el ID+Model, el ID+Lab desarrolla una plataforma de contextualización de la investigación semántica: el ID+Stage. La herramienta de modelización ID+Backstage utiliza un diálogo de preguntas estructuradas per reunir a todos los actores y conexiones críticos de una publicación, los traduce en su entorno a un formato de lectura mecánica, y los almacena. Cuando el resultado de una investigación se conecta con el contexto modelizado de origen, se forma la ID+Publication. Por consiguiente, no solo se revelan los resultados de la investigación sino también sus procesos de desarrollo. Las ID+Publications se publican en el ID+Stage. La ID+Ontology permite el registro semántico y la consultabilidad de todos los datos como base de la modelización.

Palabras clave

investigación interdisciplinaria, metadatos, ontologías, web semántica, contextualización de la investigación, publicación semántica

Introduction

More than any other field of research, the digital humanities are characterized by interdisciplinarity. A broad range of activities, knowledge forms, tools and perspectives must come together in order to find and answer new and exciting research questions. But it is often unclear which influence factors and capabilities are critical to the success of digital humanistic research. Already the term collaborative disciplines is very vague and leaves out many important factors. However, precisely this knowledge is crucial for a globally and digitally networked community of digital humanities. Not only disciplines and publications matter, but all influence variables relevant to the research.

The ID+Lab is dedicated to this pursuit of a better understanding of interdisciplinarity. To this end, a modeling method based on Semantic Web technologies has been developed in order to describe research and its parameters – referred to as actors – at a metalevel. This is also important because it allows research teams to learn from each other and clarifies the conditions for success and problems to be revealed. The aim of ID+Lab is therefore to create a highly networked map of the digital humanities and to position individual publications and closely interconnect them. One application possibility currently under development is a semantic research contextualization platform based on this modeling method, which illustrates research results together with the conditions under which they developed and the semantic relationships. Once completed, this platform will be accessible to all researchers free of charge. This will contribute to making science a more open field by not only disclosing data and algorithms but also the processes, connections and actors.

Image Knowledge Gestaltung - An Interdisciplinary Laboratory

The Excellence Cluster *Image Knowledge Gestaltung* at Humboldt-Universität zu Berlin[1] is currently one of the most ambitious interdisciplinary research organizations in the world. Over 350 researchers from over 40 disciplines in the humanities, science and design/architecture are working closely together on diverse projects.[2] The overall aim of this 'Interdisciplinary Laboratory' is to understand, analyze and model one of the most discussed and still most complex concepts in research: interdisciplinarity itself. Interdisciplinarity is required by funding guidelines for most international research projects, but the forms of implementation vary widely, and many projects fail or fall short of expectations due to ineffective collaboration between the disciplines.

ID+Lab – Modelling Interdisciplinarity

These problems are directly addressed by the research team 'ID+Lab'[3] as part of the 'Interdisciplinary Laboratory'. As an interdisciplinary team with researchers from the fields of culture theory, linguistics, information science, applied informatics, architecture and design, it has developed a method for modeling interdisciplinary structures that achieves far more than just a listing of disciplines and topics, but allows for a far more detailed look into the structures of interdisciplinary collaboration. The ID+Modell[4] is based on 11 actor classes, several relationship types (ties) and modeling rules that have proven to be essential in interdisciplinary collaborations. With this methodology, research projects can be modeled in a new way that reveals structural peculiarities or flaws and also shows new and promising connections to actors that are not yet associated.

ID+Actors

The ID+Model itself is based on Harrison White's Network Theory (White 2008), Bruno Latour's Actor-Network Theory (Latour and Woolgar 1979) and Niklas Luhmann's System Theory (Luhmann

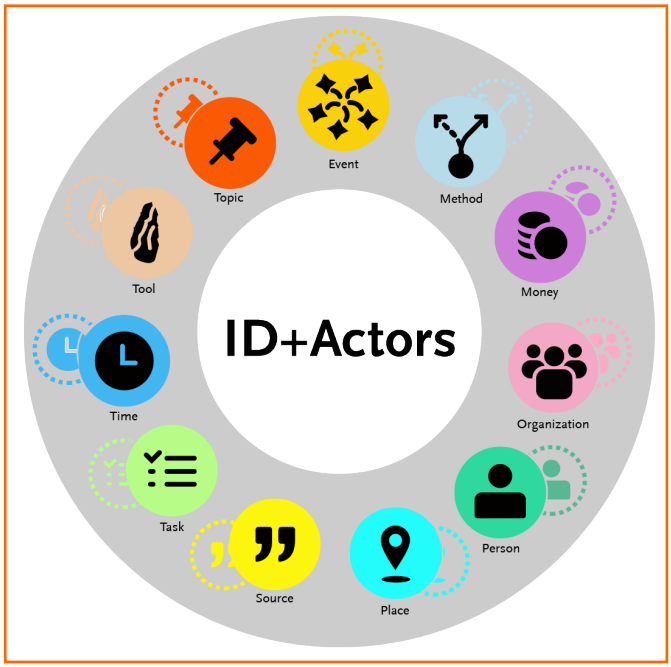

Figure 1 ID+Actors: 11 Classes of Actual and Potential Actors, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

1. See: https://www.interdisciplinary-laboratory.hu-berlin.de/en/bwg/ [Accessed: 25 April 2018].
2. For the relevance and outcome of disciplines from *Gestaltung* in such an Interdisciplinary laboratory see Schäffner (2010) and Doll et al. (2017).
3. See http://idpluslab.de/ [Accessed: 25 April 2018].
4. For further information about the concept, basics of the modelling, a case study and theoretical reflections see Dürfeld and Stein (2018).

1984). Actors are to be understood as both human and non-human actors in the context of the method. Eleven classes of actors have been defined: person, organisation, topic, task, source, method, tool, event, place, time and money. In addition to the existing specific actors – the current actors – unknown actors or actors that have not yet been clearly defined – the potential actors – are modeled. This is very important in interdisciplinary research, since there are many actors that are not yet clearly defined at the beginning. This means that knowledge is rather the knowledge of non-knowledge and must be taken into account and implemented in the model.

An Example

These actors will be presented briefly in the research context: First there are collaborations of researchers with other researchers within the team and outside of the team. These actors belong to the *person* actor class. But there are also cooperations with other universities, museums and non-university research institutes. These actors belong to the *organisation* class. Furthermore, most projects deal with several research topics, e.g. the movements of animals, structure theory and Linked Open Data. These actors belong in the *topics* class. Due to the various disciplines involved, interdisciplinary projects employ many different *methods*, e.g. Semantic Web strategies, historical analyses or experiments. As part of their daily work on projects, the team has many different *tasks* to carry out, e.g. write a report, define an ontology, or design a web app. Within the collaboration, different *sources* are also used, e.g. historical literature, articles, images, samples or preparations. The work is managed through the use of different *tools*, e.g. Sketch as design software, measuring instruments, or the 3D printer. Then there is a series of *events* that are relevant to the research collaboration: conferences, workshops, exhibitions, and also weekly project meetings, which are important for the other actors. *Places* are also important actors because they allow actors to come together, become visible, or collaborate – or prevent them from doing so. Place is understood here in both the physical and virtual sense. Then there is the actor of *time,* a resource that other actors have or do not have, as shared time, a date, or scheduled time. Finally, *money* is also modeled as an actor, since its availability or lack thereof, whether it is discretionary or earmarked, the application for funds, or billing are also important for the organization, scope and execution of science projects. Although additional actor classes may be defined, these 11 actors are of key significance for the modeling of interdisciplinary research within the ID+Model. The discipline itself does not feature as an actor, since the actual organization of disciplines can be understood much more precisely and differences, as well as similarities, can be more precisely described by means of the actor classes presented here.

Figure 2. Project Example: Actors of an interdisciplinary project, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

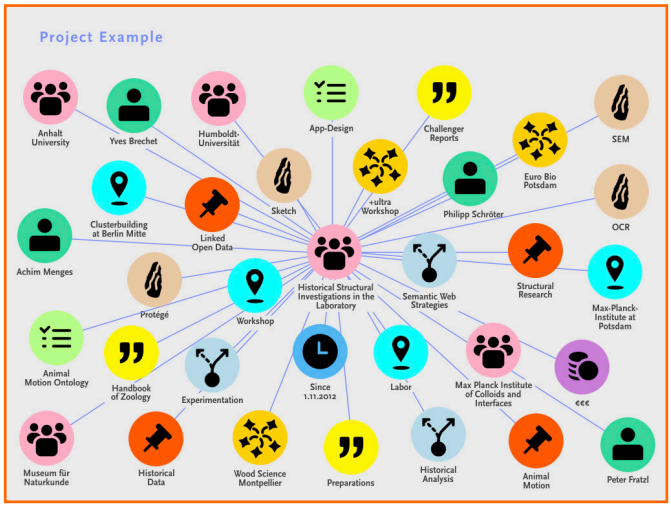

Figure 3. Project Example: Actors and ties of an interdisciplinary project, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

ID+Ties

Every single actor has his or her own agency, builds relationships with other actors, and breaks them up. Within the situational context, this gives rise to so-called *actor clusters*, which refer to groups of interconnected actors. For example, we may refer to a cluster of persons if there is a person at its center around whom the connected actors are grouped. As a result, the connections between two actors are semanticized, i.e. they highlight a specific meaning between the actors, giving rise to a subject-predicate-object structure – what we call a triple. Structures of this kind are used in the Semantic Web (Berners-Lee 2001; Shadbolt et al. 2006) and their corresponding

standards, such as RDF/RDFS/OWL. An example of such a connection could be shown as follows: 'Max' *(subject and a person, therefore a person actor)* 'cites' *(predicate)* 'Laboratory Life' *(object and a book, therefore a source actor).*

Figure 4. ID+Ties: Semantics between human and non-human actors, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

This structure also applies to non-human actors, e.g.: 'Art as a Social System' *(subject and book, therefore a source actor) 'has reference to' (predicate) 'Laboratory Life' (object and book, therefore a source actor).*

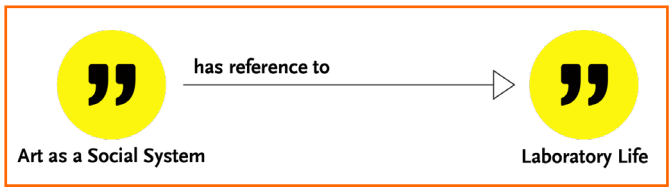

Figure 5. ID+Ties: Semantics between non-human actors, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Semanticized ties are directional, since they connect the subject actor to the object actor in a specific way. Subject and object position are not automatically interchangeable. In this case, the direction of the tie goes from the subject position to the object position. In the diagram, this is indicated by the arrow, which points to the object. For all tie types, reverse ties can be formulated that retain the meaning when the subject and object actors exchange positions. The reverse tie for 'has reference to' would then be 'is reference in'.

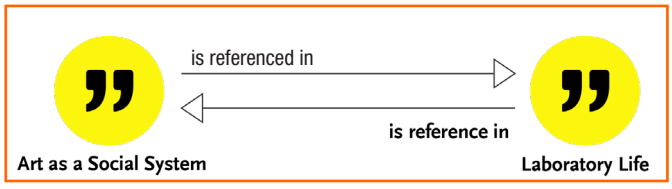

Figure 6. ID+Ties: Inverse semantics, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Symmetrical tie types, which can be read in both directions, are an exception. One example would be 'collaborates with', which ties two actors in the person class. This tie can be read in both directions and is therefore symmetrical.

Figure 7. ID+Ties: Symmetric semantics, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Here are some additional examples of ties between non-human actors:

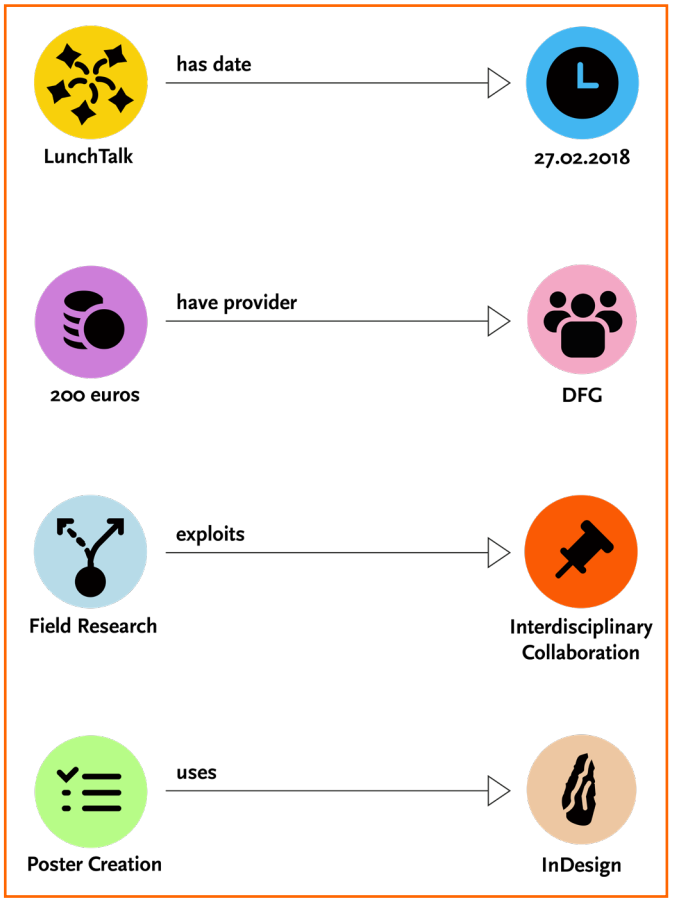

Figure 8. ID+Ties: Semantics between non-human actors, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Status, Value and Intensity

Within actor connections, we also differentiate between the *status*, *value* and *intensity*. In terms of the status of an actor tie, we differentiate between the currently existing ties – the *actual ties* – and not yet existing but possible ties – the *potential ties*. The potential ties allow

requests, possibilities and alternatives to be included in the modeling. These potential ties greatly expand the knowledge area of the classic network models, as the modeler communicates knowledge not only about what has already been achieved, but also about that which is possible and has nonetheless already been envisaged.

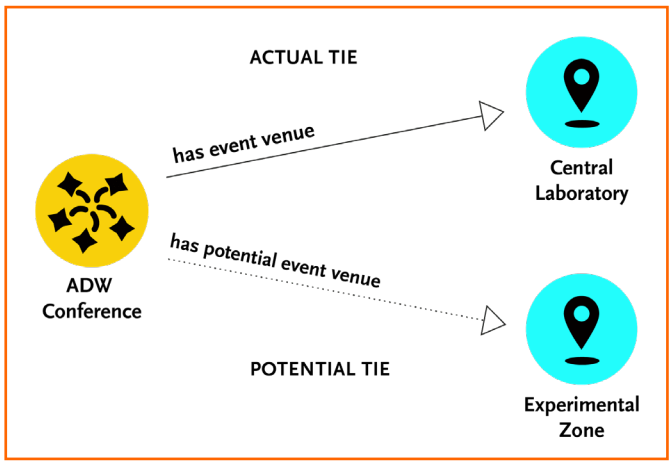

Figure 9. ID+Ties: States, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Ties can express a positive or a negative relationship. A positive value indicates that the tie between the actors is or was conducive to the specific situation; on the other hand, a negative value indicates that it is or was a hindrance.

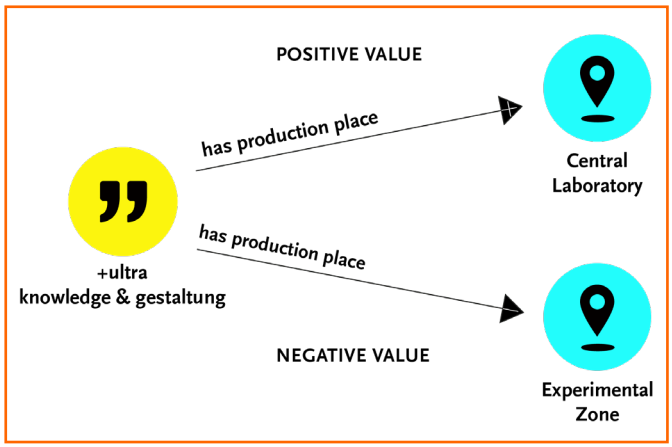

Figure 10. ID+Ties: Values, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Finally, there is the intensity of the tie. Ties between actors can be more or less distinct. The intensity of a tie can take various factors into account; we have narrowed these down to the three most important ones: time spent, interest and expertise. Modeling the intensity of the time spent can provide important information about research activities and the amount of time they required.

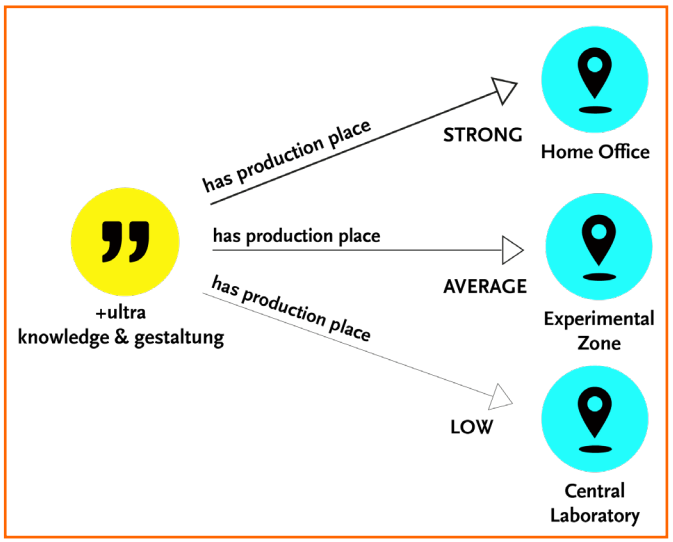

Figure 11. ID+Ties: Intensities - Time exposure, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

The modeling of the interest intensity provides insight into whether the researchers value their work or not. This is of course a very subjective value and is intended to target a rather emotional quality. Needless to say, these emotional qualities are precisely what determines the course of interdisciplinary collaborations.

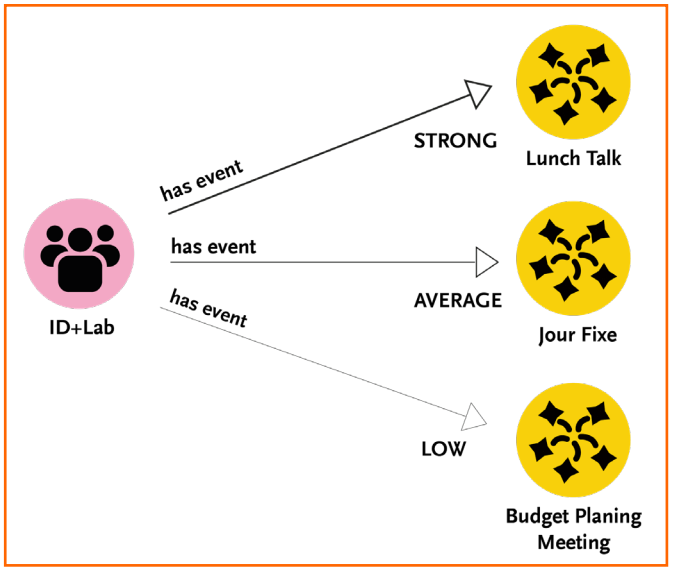

Figure 12. ID+Ties: Intensities - Interest, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Finally, the indication of the intensity of expertise allows a quality classification.

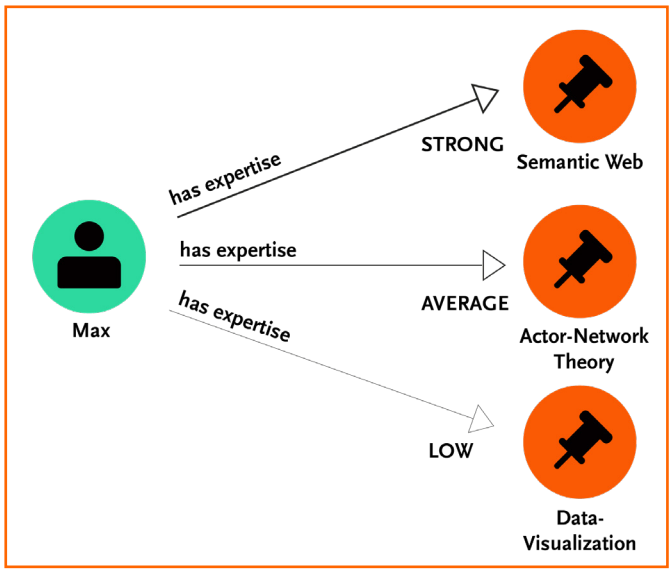

Figure 13. ID+Ties: Intensities - Expertise, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

ID+Ontology

These actors and the types of ties between them allow complex interdisciplinary research contexts to be uniformly and comparatively modeled and analyzed. The ID+Model was transferred to a graph-data model – the ID+Ontology – so that the models created in this way could be read by machine, visualized and processed. To this end, we used the modeling software Protégé,[5] an established open source ontology editor that generates knowledge-based systems. The modeling is formally defined as in the Web Ontology Language (OWL), which enables use by other Semantic Web applications. The ID+Ontology uses parts of existing ontologies such as Dublin Core,[6] FOAF[7] and CiTO[8] for a formally correct subsequent use. We work with React[9] for the front-end development and NodeJS[10] for the back-end, resulting in a homogeneous, full-stack JavaScript application. For data storage, we use Triplestore GraphDB.[11]

Applications

As previously mentioned, the ID+Model can be applied to multiple research interests within three main fields:

(1) *Interdisciplinarity Research:* Existing interdisciplinary structures can be modeled to illustrate an explicit structure of the project development and display the factors that were relevant to the creation of its output. With these modeled structures, general project setups and progress can be evaluated and compared in order to detect patterns of successful configurations in interdisciplinary research. This metaperspective provides research organizations, institutes and faculties with an overview of their activities and optimizes their project planning.

(2) *Project Management:* A more application-oriented approach is the self-modeling of a team that currently works with an interdisciplinary approach. By documenting, modeling and visualizing the different milestones in their research work, they can identify potential gaps in the project structure. This relates to all actor classes and generates measures for correction and optimization. Furthermore, potential connections to other projects or actors become visible and may be established. This makes the ID+Model a valuable tool in determining the critical parameters for scientific project management and planning.

(3) *Semantic Publishing:* The third application relates to the outcome of an interdisciplinary project and feeds into the current debate about Open Science and Open Data. It is argued that researchers should publish details about how exactly they achieved their results and how their experiments were designed, and also include the raw data and algorithms they used in their publications (Herb 2012; Heise 2018). The ID+Model addresses this demand from a structural perspective and allows teams not only to publish their results and data, but also the interdisciplinary actor structure that made this work possible. This information is largely difficult to obtain, but it can be of great interest to other researchers working on similar problems. It also allows for greater visibility and connectivity of the published results for the publishing authors or teams themselves and is therefore genuinely in their interest.

In ongoing research, the ID+Lab focused on the application in semantic publishing and designed a semantic research contextualization platform – the ID+Stage. The development phases and features of this kind of application are described below.

5. See https://protege.stanford.edu/ [Accessed: 25 April 2018].
6. See http://dublincore.org/ [Accessed: 25 April 2018].
7. See http://www.foaf-project.org/ [Accessed: 25 April 2018].
8. See http://purl.org/spar/cito [Accessed: 25 April 2018].
9. See https://reactjs.org/ [Accessed: 25 April 2018].
10. See https://nodejs.org/en/ [Accessed: 25 April 2018].
11. See http://graphdb.ontotext.com/ [Accessed: 25 April 2018].

ID+Publication

Publications are the *currency* of the science system (Luhmann 1990, 432). Other important factors are dependent on them, such as reputation and staffing. The emergence of digital publication platforms has increased accordingly over the last few decades. In the ID+Model, publications are assigned to the source class as actors; these can be texts, images, videos, objects, codes, etc. The modelers are the ones who determine the scope of a publication – whether it is an entire book, a chapter or just a sentence. RDF-based semantic modeling allows the smallest publication unit – the nanopublication – to be modeled and published.[12]

A publication thus established as an actor is called an *initial actor* and considered an operative unit for the subsequent semantic contextualization. This means that the focus of the semantic enrichment is on the context of production of this actor and not on the actor itself. The latter could very well also be divided into additional, smaller elements, e.g. the individual chapters of a book or the individual sentences of a chapter or the words of a sentence (Shotton 2009).

The publication is semantically connected to those actors that were considered by the modeler as relevant for their origin. These are referred to as *direct context actors*. If the source has already been published, much of their traditional library metadata can be interpreted as actors that influenced the production of the work and modeled accordingly: authors become person actors, publishing houses become organization actors, publishing locations become place actors, publishing dates become time actors and keywords become topic actors. In addition, there are now other context actors: the tools and methods employed, funding organizations, dialog partner, tasks to be carried out, or important events during the production, available budget, time required, place of production, other reference sources, and much more.

Different publications can have one or more of the same actors as *direct context actors*. Place A can have a tie with publication X because it is the place of production and to publication Y because it is the place of exhibition. In this case, both publications are reciprocal *indirect context actors*, since they are only connected to each other indirectly through place A. By contrast, the place actor A is then also referred to as a *bridge actor*. Unlike the *direct context space* modeled by the scientists, the *indirect context space* – understood as space of all indirect context actors of a publication – is automatically generated based on the ontology and other modelings. Only then does it become visible that place A is not only the place of production of publication X but also the place of exhibition of publication Y, and only then can it also be challenged: Were the modelers unaware of this tie or was it considered irrelevant and therefore not modeled? Could such a tie – had it been visible – have had a relevance, and if so which one? How could greater visibility be generated so that a relevance could be observed experimentally in future?

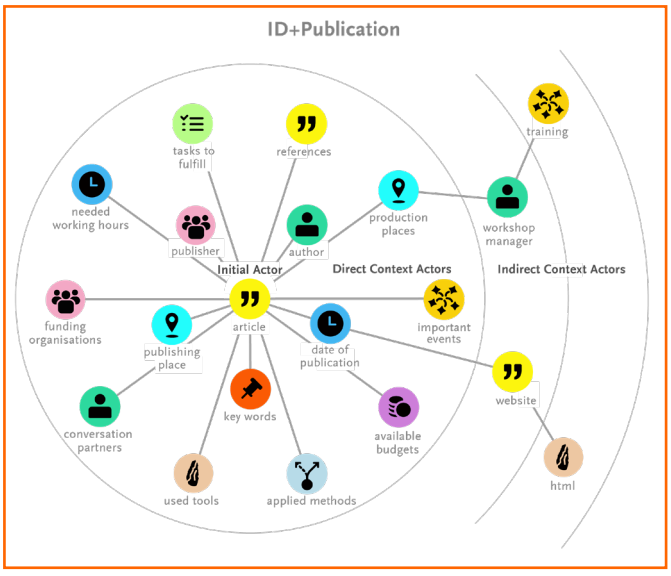

Figure 14. ID+Publication, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Figure 15. ID+Stage/ID+Publication/ID+Backstage, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

12. For references see i.a.: Mons and Velterop 2009; Kuhn et al. 2013; Gradmann 2014; and Golden and Shaw 2016.

With this idea of the ID+Publication and the underlying ID+Model, a semantic research contextualization platform was developed – the ID+Stage. The individual ID+Publications take action on this stage, i.e. they deploy their actor network and connect to other actors. The actual modeling of the contexts of production of the publication takes place on the ID+Backstage. The structure and design of the ID+Backstage and the ID+Stage and the way they work will be described below.[13]

ID+Backstage

As previously mentioned, the modeling of the context of production takes place on the ID+Backstage. Specifically, this happens in the query using a structured question dialogue. Individual actors, whose relevance and semantic connections in relation to the context of production of the publication are successively queried. These data are translated in the background and stored in a machine-readable format. The goal was to design the question dialogue in such a way that the users could enter data and create their ID+Publication without any special training. As a preliminary exercise for this query, we developed a questionnaire in advance and sent it to potential users so that they could model the development process of their research work or publication. We wanted to find out which questions needed to be asked. For the first analysis of the practice questionnaire, we visualized the text-based data of the questionnaire using the open source software tool Visual Understanding Environment VUE,[14] thereby acquiring a better understanding of the scope of the data volume.

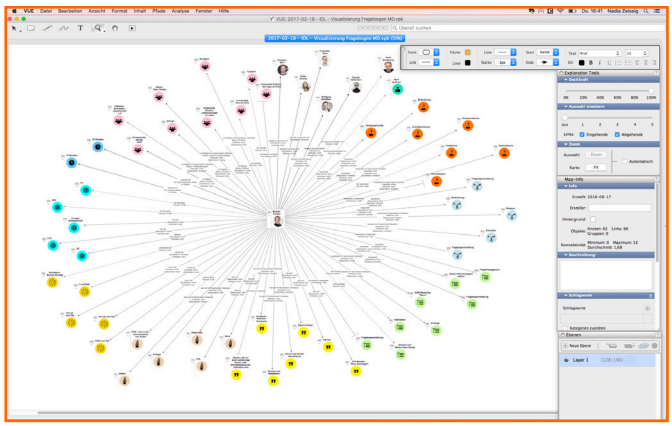

Figure 16. Data visualization from the questionnaires with VUE, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

For the analysis, we then mapped the results of the questionnaire with the corresponding actors and created a paper prototype network. This method allowed us to instantly reconstruct a generic representation of the modeling and complexities and to establish hierarchies and the hierarchization of information.

Figure 17. Paper prototypes: Questionnaire, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

On the ID+Backstage, the user can not only create ID+Publications but also manage and edit the generated modeling and user profile. As such, the ID+Backstage consists essentially of a modeling area,

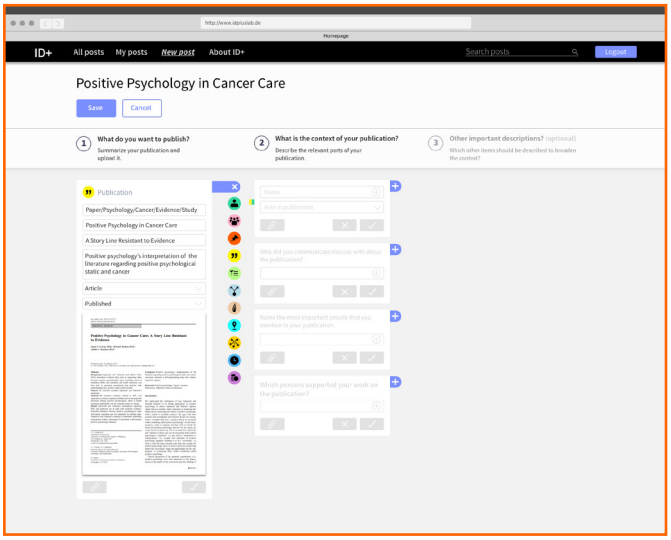

Figure 18. ID+App, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

13. For a closer look at the relationship between the Digital Humanities and Design see (Wessels et al. 2015) and for a look to the user see (Edwards 2012).
14. See https://vue.tufts.edu/.

modeling overview and the user profile. The ID+Backstage is a secure area; this means that the user must have an account in order to create ID+Publications.

ID+Stage

After the users have modeled the context of production of their publication on the ID+Backstage, the ID+Publication can be published on the ID+Stage. The publication causes the individual ID+Publications to be merged into a network in the background, allowing any overlap of contexts of production, patterns and frequencies of interdisciplinary research to be viewed.

The users determine in advance on the ID+Backstage which content will be published. An important design question when developing the ID+Stage was how the network should be presented. Unlike for most network presentations, in which the nodes or, in our case, what we refer to as actors, are only distinguished with a label, we believed it was important for the network visualization to be displayed in addition to the labels and icons. Previous frameworks were not suitable for our purposes because they could not deal with this complexity. For this reason, we developed a network design that never shows the entire network, but rather only one area. This means that only the context of production of an actor and any tied actors up to a maximum of two nodes away are ever displayed.

For the design of the ID+Stage, our first step was to produce paper prototypes, which we used to test the functioning, principles, and layouts for the network view. Emerging from this, the key criteria for the design of the ID+Stage were:

- Actors and contexts of production can be compared and their relationships can be shown.
- The available content should not only be in a text-based format – images and videos should also be integrated into the network.
- For navigation purposes, it should be possible to switch easily between overviews and detailed views of the contents.
- Contexts of production should be searchable in detail.

In parallel, we created a diagram of the basic structure with the key functions of the application in so-called wireframes. In doing so, we also went through several design loops, which gradually led to the network representation and the behavior of the ID+Stage.

In the sequence of different variants, it became clear that the rejected variants have an important epistemic value because they show what does not work and help generate favorites. The ID+Stage is a public domain and the represented contents can be viewed by all users. At the moment, the platform consists of the overview page, which is also the start page, and the context view. Now the area and their functions will be described below.

Figure 19. Paper prototypes: Interface design, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

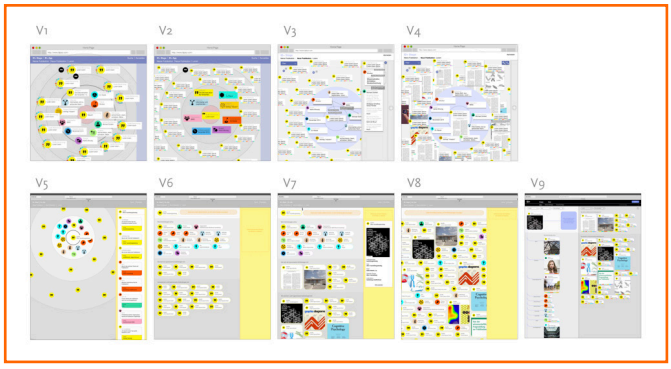

Figure 20. Design development - Interface design, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Homepage

When users visit the website, they land on the start page. The actors of the source actor class are initially shown. These actors are sorted by newness and arranged into actor cards. The content display can also be sorted according to the most connections. An overlay that can be clicked away displays the number of new publications, all publications, the number of all actors and all connections.

In an initial state the actor card displays the title, an image and an actor indication which illustrates connected actor classes. In addition to this, the actor card also shows information like (1) how often the publication is tied to other actors; (2) how often it is compared to other actors; and (3) how often its content is accessed. By clicking on the "Show context" button, users can explore the context of this actor. By clicking on the image, a detailed view is shown. By clicking on the title, the actor card extends and a more detailed actor description is shown. Furthermore, the amount of connected actor classes is specified.

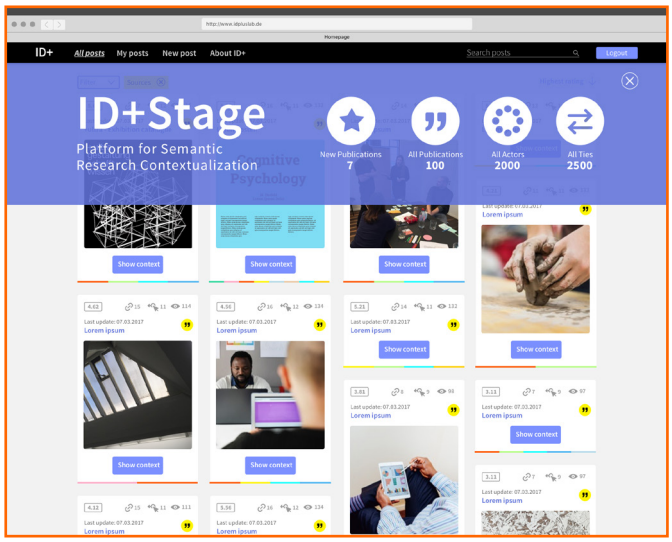

Figure 21. ID+Stage: Homepage, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

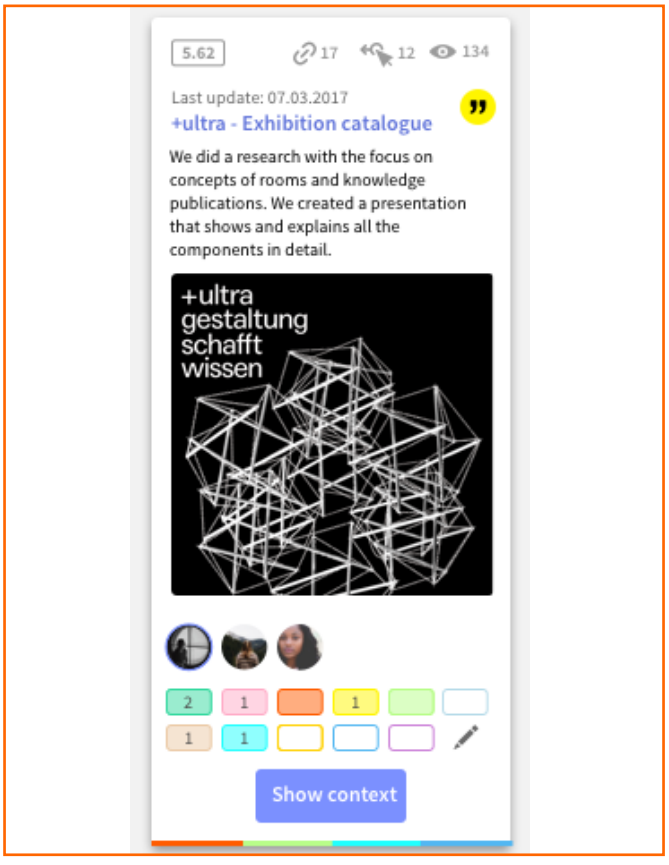

Figure 22. ID+Stage: Extended Actor card, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Context View

The overview page gives access to the context view area. This is where users can view the context of production of a previously selected actor, referred to as the initial actor. On the left side of the page under the initial actor, all actors that are directly connected to the context of production of the initial actor are shown. We refer to these actors as *direct context actors*. They are displayed with the corresponding tie semantics. Since the list of direct context actors can grow very long, actors from an actor class with the same semantics are pooled – for example, all the authors of a publication are grouped together under 'has author'.

The *indirect context actors* are shown on the right side of the context view. These actors are tied to the initial actor through one or more direct context actors. In order to find out through which actors an indirect context actor is connected to the initial actor, the user can drag and drop the latter into a compare view. In this compare view, only the concordant actors of the initial actor and the indirect context actor are displayed. We refer to the concordant actors as

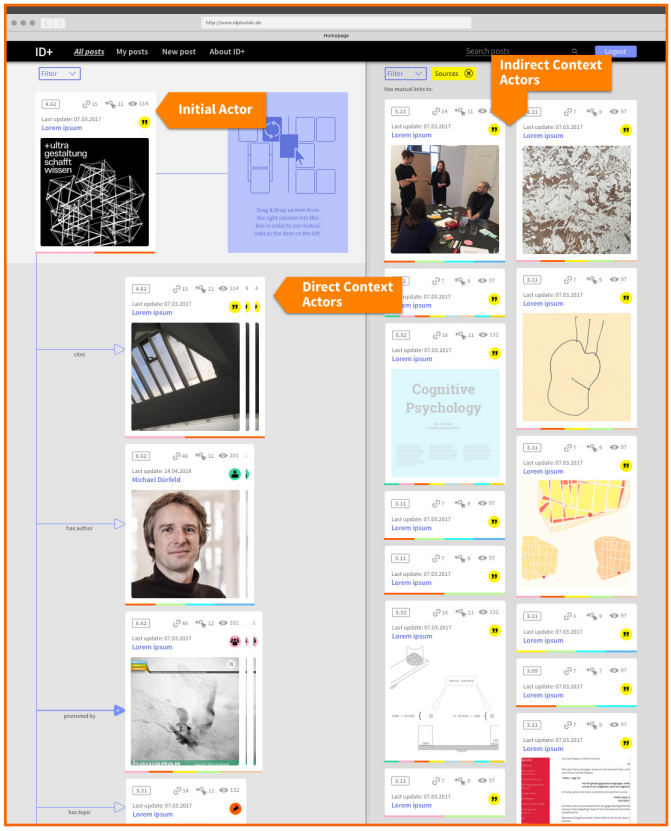

Figure 23. ID+Stage: Context view, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

bridge actors. In addition, there is a color code indicating the actors through which initial actors and indirect context actors are connected; this represents concordant actor classes in a band of color.

As previously mentioned, the selected representation of the network is a selective network representation according to which only immediate environments within the network are shown, and not the entire network.

To change the initial actor in this view, one of the context actors simply needs to be dragged and dropped into the field of the initial actor.

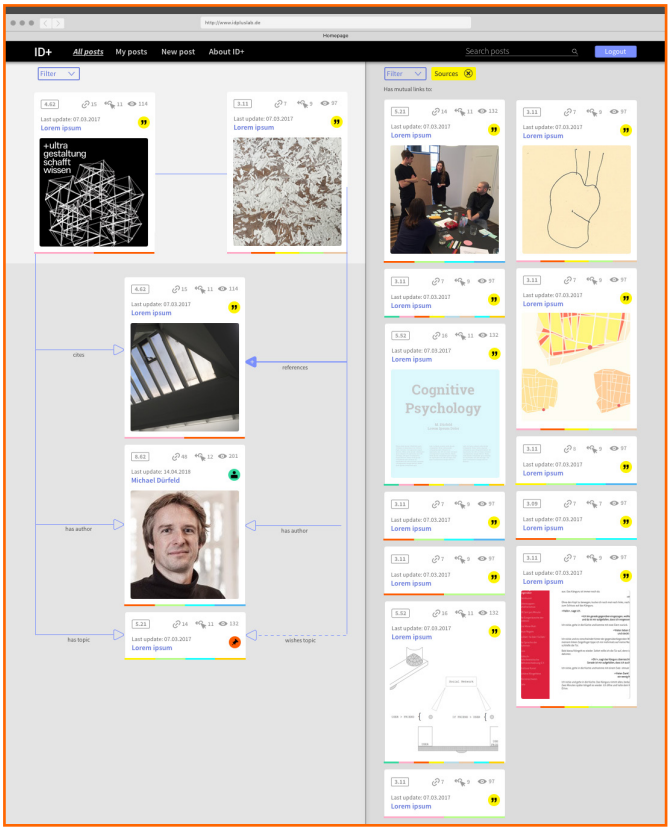

Figure 24. ID+Stage: Context view - Drag & Drop, ID+Lab | Bild Wissen Gestaltung 2018, CC by 4.0

Perspective

The ID+Model has now been tested many times and demonstrates the overall possibility of modeling interdisciplinary constellations in a clear and relevant way and technically illustrating them as an ontology. Based on this, the software tools ID+Stage and ID+Backstage create an intuitive user interface that focuses on good usability, clarity and comprehension for users with widely varying levels of previous knowledge. The resulting package enables digital humanities researchers to position their publications as openly accessible within a diverse network of actors, make them easier to find and reveal relevant relationships. The needs of a wide range of different user groups were considered during the development, with an emphasis on applicability in a multitude of academic contexts. As the number of integrated publications continues to grow, the value and meaning of the network and all of its parts also increases. In order to reflect this growth in functional and technical terms, the ID+Lab will undergo continuous development. With this work, the project team hopes to make a pertinent contribution to the publication culture in the digital humanities.

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