

# GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

## Ph.D. SEMINAR TAXONOMY DEVELOPMENT IN INFORMATION SYSTEMS SUMMER 2023

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### Seminar Description

Taxonomies play an important role in information systems research. By classifying objects in a domain into different categories, they allow researchers to focus on the similarities and differences among the objects. Such a focus leads not only to a better understanding of the objects but may also lead to new theories about the objects. Useful taxonomies, however, are not trivial to develop. Numerous research papers describe taxonomies but as Nickerson et al. (2013) point out in their analysis, many taxonomies are developed in an *ad hoc* manner leading to questions about their efficacy. A well-designed taxonomy development method is needed to provide support for the quality of the resulting taxonomy. Nickerson et al. (2013) provide such a method.

The purpose of this seminar is to describe taxonomies and related classification systems and to present the Nickerson et al. (2013) taxonomy development method, which we dub the NVM method for simplicity. Students will spend the first part of the seminar reviewing literature related to taxonomies and taxonomy development, including a thorough review of the NVM method and papers that use the method. Then they will develop a taxonomy for their domain of research using the NVM method and present the taxonomy to the seminar participants for critical review. The goal of the seminar is to develop a taxonomy which will serve as the basis for a paper describing the taxonomy in a form that is suitable for submission to a conference or a journal.

### Seminar Schedule

The seminar will be conducted in person in Goettingen (unlike recent Covid years when the seminar has been virtual). The professor will be in residence in Goettingen and the students will be expected to be in Goettingen. No online presentation of the seminar is planned. Meetings will be on Monday, Tuesday, Wednesday, and Thursday 3:00 pm to 6:00 pm Germany time (3 hours each day, 4 days per week) for 2 weeks (total class time 24 hours). It is likely that the seminar will run shorter than 3 hours each day. The start date is Monday April 17. The end date is Thursday April 27.

A schedule of the topics to be covered during each seminar session and the student expectations for each session will be provided separately. We will begin with a discussion of classification techniques in general and taxonomies in particular. Following this we will review the NVM method in detail. Students will be expected to not only read the fundamental literature on the topic but also read and critique several papers that use the NVM method. The seminar will then proceed with each student presenting the development of their taxonomy in phases. Other students in the seminar and the professor will critique each student's presentation with the intent of helping the student improve their taxonomy. At the last session students will present their final taxonomy for critical review. Finally, each student will

prepare a paper describing the taxonomy and its development. It is unlikely that the paper will be completed during the seminar. Students, however, will work with Professor Nickerson on the paper after the seminar is over. It is anticipated that these papers will be submitted to a journal or a conference for publication. Professor Nickerson will serve as a co-author on these papers.

### **Student Background**

Students should be matriculated doctoral students at Goettingen University with a focus on Information Systems Research. Students will be admitted into the seminar on a first-come, first-served basis. The seminar will be limited to 10 students. Students who have questions about their eligibility for the seminar should contact the professor by email.

### **Required Readings**

- Bailey KD (1994) *Typologies and Taxonomies - An Introduction to Classification Techniques*. Sage, Thousand Oaks, California.
- Nickerson RC, Varshney U, Muntermann J (2013) A Method for Taxonomy Development and Its Application in Information Systems. *European Journal of Information Systems*, 22(3), 336-359.

### **Other Readings**

- Aldenderfer MS and Blashfield RK (1984) *Cluster Analysis*. Sage Publications, Beverly Hills, California.
- Anderberg MR (1973) *Cluster Analysis for Applications*. Academic Press, New York.
- Bailey KD (1984) A three-level measurement model. *Quality and Quantity*, 18, 225-245.
- Bowker GC and Star SL (1999) *Sorting Things Out: Classification and Its Consequences*. MIT Press, Cambridge, Massachusetts.
- Doty DH and Glick WH (1994) Typologies as a unique form of theory building: Toward improved understanding and modeling. *Academy of Management Review*, 19(2), 230-251.
- Eldredge N and Cracraft J (1980) *Phylogenetic Patterns and the Evolutionary Process*. Columbia University Press, New York.
- Glass RL and Vessey I (1995) Contemporary application-domain taxonomies. *IEEE Software*, 12(4), 63-76.
- Gregor S (2006) The nature of theory in information systems. *MIS Quarterly*, 30(3), 611-642.
- Kundisch D, Muntermann J, Obelaender AM, Rau D, Roeglinger M, Schoormann T, and Szopinsky D (2021) An Update for Taxonomy Designers: Methodological Guidance from Information Systems Research. *Business and Information Systems Engineering*.
- Miller GA (1957) The Magic Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information. *Psychological Review*.
- Sokal RR and Sneath PHA (1963) *Principles of Numerical Taxonomy*. W. H. Freeman and Company, San Francisco, California.

### **Student Papers From 2020 Seminar**

(These papers are posted on Stud.IP)

- Sebastian Hengstler, Robert C. Nickerson, and Simon Trang, "Towards a Taxonomy of Information Security Policy Non-Compliance Behavior," *Proceedings of the 2022 Hawaii International Conference on System Sciences*, 2022.
- Laura Schulze, Manual Trenz, and Robert C. Nickerson, "Fingers in the Pie: Characterizing Decision Rights Partitioning on Digital Labor Platforms," *Proceedings of the 2021 International Conference on Information Systems*, 2021. Best paper nominee.

Albert Torno, Oliver Werth, Robert C. Nickerson, Michael H. Breitner, and Jan Muntermann, “More than Mobile Banking – A Taxonomy-Based Analysis of Mobile Personal Finance Applications,” *Proceedings of the 2021 Pacific Asia Conference on Information System*, 2021.

Tobias Nießner, Robert C. Nickerson, and Matthias Schumann, “Towards a taxonomy of AI-based methods in Financial Statement Analysis,” *Proceedings of the 2021 Americas Conference on Information Systems*, 2021.

### **Student Papers From 2022 Seminar**

(These papers are in various draft stages and will be made available if they are completed.)

### **Contact Information for Professor Nickerson**

Students may contact Professor Nickerson at any time, even after the seminar is over. If he is free he will meet with you without an appointment. Otherwise you should request an appointment. He expects to me in his office 2:00-3:00 each day that he teaches.

Email: [RNick@sfsu.edu](mailto:RNick@sfsu.edu)

Office: to be announced

Zoom: by appointment

### **Covid**

Please follow the appropriate guidelines regarding vaccination. (I have had 5 covid shots.) If you are sick, please do not come to class. I will try to arrange something online.