

## Master project: Modeling in Support of Business Continuity Management

**Term:** Winter term 2019/20

**Language:** English

### Motivation

Business continuity is defined in ISO 22301 norm as “capability of an enterprise to continue with the delivery of products or services at acceptable predefined levels following disruptive incident”. Business continuity management (BCM) aims at avoiding any interruptions that could lead to significant losses and/or a failure to achieve the organization’s main objectives. BCM encompasses such areas as business continuity planning, service continuity, and crisis management.

Effective BCM ensures that organizations can provide a minimum acceptable service in the event of a disaster, and helps preserve organizations’ reputation, image and revenue. In order to support BCM many standards have been proposed, e.g., ISO 22301, BSI 100-4, Good Practice Guidelines, BS25999-1 and BS5999-2, or ITIL. A growing body of legislation requires organizations in essential areas to design and implement effective business continuity arrangements. Among others, organizations operating in critical infrastructure industries (e.g., healthcare) are required/soon will be required to implement incident response capabilities in line with, e.g., the requirements of EU’s Directive on security of network and information systems.

Taking into account the growing role of IT artifacts for organizations – virtually every business relies on information technology – on the one hand, BCM needs to consider additional threats that may disrupt the business, e.g., cyber-attacks, failures in the cloud environment, resulting out of the usage of IT, on the other hand, BCM considers IT as a way to cope with some potential threats, and be able to respond and recover in case something happens.

A BCM lifecycle involves identifying threats, performing a business impact analysis, designing and implementing a business continuity plan, compiling documentation, measuring and testing performance, and maintaining and improving BCM processes. Business continuity planning involves developing, testing and maintaining business continuity plans that enable an organization to continue operating during and after a disaster. The resulting business continuity plan must identify the key business functions that must be resilient, define recovery of critical business functions and define contingency measures when recovery is not possible. Many researchers and practitioners argue that the process of business continuity management in general, and business continuity planning in particular, can be efficiently supported by applying conceptual modeling. The main benefits of application of conceptual modeling in general, and enterprise modeling in particular, during the planning process is

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that an enterprise model provides required information on the enterprise action system (e.g., business processes) and enterprise information systems needed to generate such a plan, allows to take a holistic approach when analyzing the organization, provide information on the existing dependencies (e.g., which processes depend on which IT resources), and provide related guidance across all the phases.

### **Description**

The main goal of this project is to conduct analysis of the BCM field with the aim to analyze the possible role of modeling in general, and modeling of IT infrastructure in particular, in the BCM processes. To this aim the students should:

1. Make themselves familiar with the relevant literature and norms/standards on BCM with the emphasis on the role of IT in the BCM process
2. Identify the possible role of conceptual modeling in support of BCM process
3. Identify main scenarios and use cases, which should/could be effectively supported by using conceptual models of IT infrastructure (integrated with other perspectives on organization, e.g., business process, business goals)
4. Derive a set of requirements for effective support and use these requirements to evaluate existing approaches to model IT infrastructure (both stand-alone as well as being part of Enterprise Modeling/Enterprise Architecture approaches)
5. Formulate recommendation and assess the maturity of the field.

### **Expected outcomes**

A final report encompassing above-mentioned aspects, critical reflection on effectiveness of the support provided by the modeling approaches. Final presentation of the obtained results.

### **Exemplary Introductory Literature:**

- Standards such as: ISO 22301, BSI 100-4, Good Practice Guidelines, BS25999-1 and BS5999-2, or ITIL.
- Kersten H., Klett G. (2017). Business Continuity und IT-Notfallmanagement. Grundlagen, Methoden und Konzepte. Springer Vieweg, Wiesbaden
- Spörrer S. (2014) Business Continuity Management. ISO 22301 und weitere Normen im Rahmen der Informationstechnologie. Edition KWV. Springer Gabler, Wiesbaden
- Watters J. (2014) Essentials of Business Continuity Management. In: Disaster Recovery, Crisis Response, and Business Continuity. Apress, Berkeley, CA
- Veronneau, S., Cimon, Y. & Roy, J. A model for improving organizational continuity. J Transp Secur (2013) 6: 209. <https://doi.org/10.1007/s12198-013-0112-4>
- Turetken, O. Is your back-up IT infrastructure in a safe location? Inf Syst Front (2008) 10: 375. <https://doi.org/10.1007/s10796-008-9081-8>
- Bajgoric, N. and Moon, Y. (2009), "Enhancing systems integration by incorporating business continuity drivers", Industrial Management & Data Systems, Vol. 109 No. 1, pp. 74-97.

- Bajgoric, N. (2014), "Business continuity management: a systemic framework for implementation", *Kybernetes*, Vol. 43 No. 2, pp. 156-177.
- Doughty, K, "Business Continuity: A Business Survival Strategy", *Information Systems Control Journal*, 2002 (1), pp. 28-36.
- Furfaro A., Gallo T., Saccà D. (2016) Modeling Cyber Systemic Risk for the Business Continuity Plan of a Bank. In: Buccafurri F., Holzinger A., Kieseberg P., Tjoa A., Weippl E. (eds) *Availability, Reliability, and Security in Information Systems*. CD-ARES 2016. Lecture Notes in Computer Science, vol 9817. Springer, Cham
- U. Winkler and W. Gilani, "Model-Driven Framework for Business Continuity Management," in *Service Level Agreements for Cloud Computing*, P. Wieder, J. Butler, W. Theilmann, and R. Yahyapour, Eds. Springer Berlin / Heidelberg, 2011, ch. Model-Driv.

**Application procedure:**

Please apply via email to the supervisor. Please attach a short letter of motivation (app. ½ A4 page) and a recent performance record ('Leistungsnachweis'). You can apply individually or in a group of 2-4 participants (in this case each person should still send a separate e-mail, however point to the other members of the group).

**Application deadline:** 20. October 2019, 23:59