

INTRODUCING THE VIRTUAL COMPANION CANVAS

TOWARDS DESIGNING COLLABORATIVE AGENTS

Extended Abstract

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Due to a significant technological progress in the field of artificial intelligence (AI), a number of new services and products emerged (Gnewuch et al., 2017; Maedche et al., 2016; Seeber et al., 2018). In addition to specific applications in the form of virtual assistants (VA), such as Apple's Siri or Amazon's Alexa, companies are increasingly developing chatbots and enterprise bots for the interaction with customers. Besides these practical uses of AI, many scientific articles in this field are published, including design principles and lists of tips on how to design and implement specific AI applications (McTear, 2017). Due to the overarching research endeavor of AI, various definitions and theories from different research areas exist, are combined and used, which additionally makes it hard to understand the comprehensive perceptions of AI. Terms, such as VA, chatbot, virtual agent and conversational interface are often used synonymously, whereby differences can be found in the applied technology, the implemented functions and the different tasks addressed (Gnewuch et al., 2017; McTear, 2017; Schuetzler et al., 2014). While there is a variety of terms, all have one thing in common, they allow their users to interact with them using natural language. Therefore, these systems can be summarized using the term conversational agent (Gnewuch et al., 2017; McTear et al., 2016).

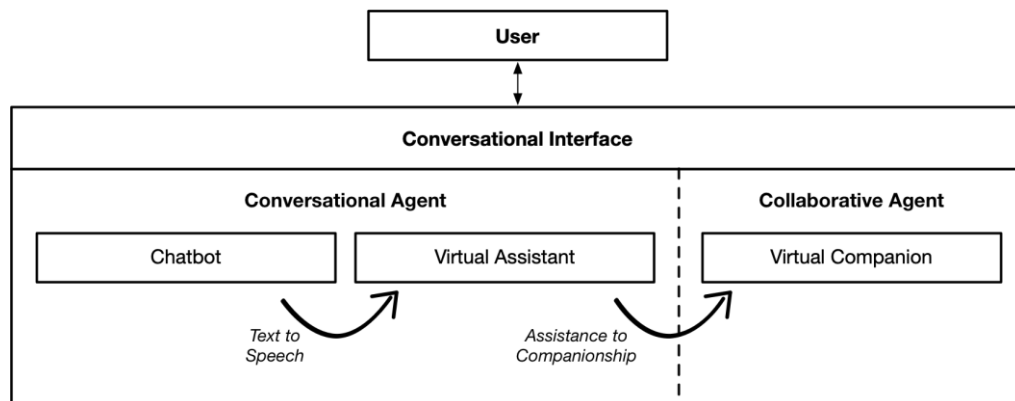


Figure 1. From conversation to collaboration

The front-end for the conversational agent is then called a conversational interface (see Figure 1), which allows the user to interact with the agent using speech, text, touch or other input and output options (McTear, 2017). While the term conversational agent limits the interaction between the system and the user to a conversation, a system that proactively contributes to a given task and autonomously creates content would thus not just be conversational, but rather collaborative. We therefore propose the collaborative agent as an evolution of the conversational agent (see Figure 1). We introduce the virtual companion (VC) as a first instance of a collaborative agent. We chose the name VC, as it represents a more comprehensive view on existing and especially future applications of AI and by forming a companionship between a human and a machine a collaborative scenario might be achieved. We define the VC as follows: A VC is a conversational, personalized, helpful, learning, social, emotional, cognitive and collaborative agent, that interacts with its user proactively and autonomously to build a long-term relationship (Danilava et al., 2012; McTear, 2017; Strohmann et al., 2018; Wilks, 2006).

The difficulty to decide what functionalities to use is furthermore strengthened by the confusing terminology, different frameworks, the plethora of tools and the extensive documentations (McTear, 2018). Therefore, it is necessary to create special tools which are useful for practical developments and applications of AI as well as for design-oriented research in the field of AI. In order to make these design challenges possible, we are proposing a so-called Virtual Companion Canvas (VCC), which is a tool that shows in an easily understandable and transparent way which design characteristics an VC can have. The VCC should be helpful in the design process as well as in the analysis, classification and understanding of existing AI applications. We opted for a canvas approach because of the advantage of visualization (Swaab et al., 2002), allowing users to not only follow lists and design guidelines, but conceptually design AI without considering specific technologies. For the development of the VCC we followed a systematic and iterative Design Science Research (DSR) approach (Hevner et al., 2004). The VCC is successive and iteratively developed based on two different DSR projects, containing three design cycles (Strohmann et al., 2019, 2018, 2017). This continuous development insures a rigorous process in order to create the VCC artifact. We followed the adapted process model proposed by Kuechler and Vaishnavi (2008), that emphasizes the contribution and knowledge generation of DSR.

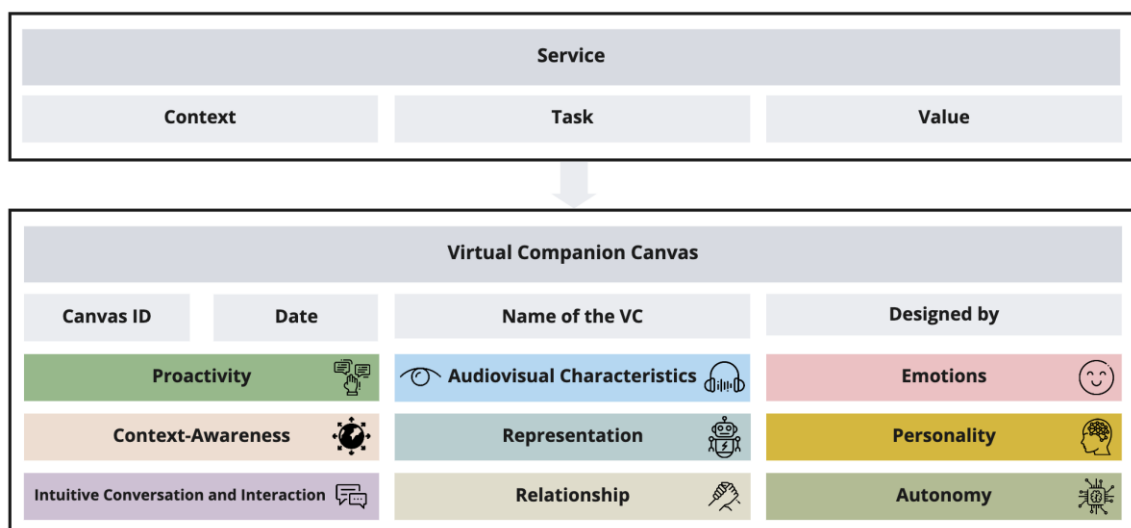


Figure 2. Reduced Version of the Virtual Companion Canvas

Figure 2 presents a reduced version of the canvas, whereas a full version of the VCC can be found here: bit.ly/ecisvcc. It is divided into two parts: the service concept of the VC and the canvas itself in the form of the VC's dimension with its individual design features and characteristics. With the development of the VCC, we not only aim to introduce tool support for the design of VCs, but additionally follow the overarching objective to contribute a design theory giving explicit prescriptions for the design of VCs (Gregor, 2006; Gregor and Hevner, 2013).

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