

**CfP: International Conference
“Digital Twins & Doubles: Data of Cooperation”**

**Annual Conference of the CRC “Media of Cooperation”,
University of Siegen, July 17-19, 2023**

Submission Deadline: January 31, 2023, info@sfb1187.uni-siegen.de

‘Digital Twins’ are currently the most important drivers of the fourth industrial revolution. The technical products and processes that are becoming ever more complex are now developed and tested in the virtual sphere before they emerge in the ‘real’ world. Future artifacts and practices are first produced as software models and simulated as so-called digital twins. The paradigm of digital media technologies is therefore subject to fundamental change through the prevalence of digital twins in industry and research: the digital is no longer a real-time virtual representation of a real-world physical object: it is exactly the opposite and concurrently much more than that, allowing the analysis of future performances of objects *without* the physical presence of the objects. Digital twinning therefore promises not only the potential of making futures predictable through recognition and correlation of virtual and physical (Chun 2021), but the ability to do so without physical counterparts.

Whether or not the counterpart already exists in the real world or will only exist in the future is almost insignificant, as it’s simply a matter of engineering and marketing decisions. Digital twins make clear that the real world is just one possible realization of the primarily virtual world. At the same time, digital twins and other haunting ‘data doppelgangers’ allow overarching data exchange and cooperation. They are more than pure data, proving once more that so-called “raw data” does not exist (Bowker 2005; Gitelman 2013). Digital twins consist of technical and social models of acting objects, and integrate various embedded sensors related to vital areas of functionality that make things and processes sense-able (Gabrys 2019). Digital twins can therefore also include simulations and services, asking anew if there is anything worldly which may must remain “uncomputable” (Galloway 2021).

To date, theoretical concepts of digital twinning consist of three levels that are based on one another: first, a physical object or process; second, a vivid digital model of that object/process; and third, data streams between both entities: the physical and virtual world(s). As such, the theoretical concepts of digital twinning reference Harold Garfinkel’s research on mock-ups as models for representing and assessing social phenomena (Garfinkel 1943 [2019]). Cooperative data, running through production and operational chains as a digital thread, form the real and virtual world(s). Thus, they are the focus of our discussion on digital twins.

Datafication in the analogue era followed a different logic than do today’s processes, with all their entanglements and interdependencies with and within the ‘real’ world. Human bodies, system processes, and their data traces und virtual models are deeply intertwined in current postdigital – or rather, more-than-human (Lupton 2019) – media cultures. It is surely not a new idea that data and the technologies of its collection, storage, circulation, and evaluation are shaping how societies and individuals see themselves. But it is a novelty that processes of datafication within the context of digital twins and their future predictions and simulations of behavior – mostly systems behavior but also human purchasing and movement behaviors, with their political implications – are fundamentally changing the methods of planning production processes and products. Technologies of digital twinning ask once more how data practices affect and mold decision-making within institutions (Vertesi 2020).

Digital twinning is no longer restricted to single entities – like objects being studied – but allows for modeling complex chains of co-operations, thus making it a central driving force in the ongoing digital

revolution. If the 'data self' is not a subordinate virtual correlate of actual human beings and processes, but is deeply interwoven and in interaction with the physical, then the same holds true for digital twins: they are not mere virtual re-presentations and simulations of actual physical processes and things, but, on the contrary, are constitutive for them – resulting in scenarios where they do not rely on physical models or have physical counterparts at all. This might fundamentally change the way that agency is distributed across physical and virtual actors: data models are becoming more and more decisive and more-than-human spaces like the “dataverse” and other “360°” immersive media (Stiegler 2021) make clear that neither the physical nor the virtual are separate or even stable categories, nor are the 'physical' and the 'digital twin.' Implementations of spaces in which individuals and (their) data twins collide, such as the metaverse or Second Life, are evermore a social reality.

Taking the digital twin as an analytic lens, we also try to understand aesthetics, politics, genders and economies of 'digital doubles.' These new symptoms of postdigital data cultures differ from previous motifs of doubles, e.g. literary doppelgangers as in the work of E. T. A. Hoffmann, among others. Selfies are emblematic of digital data cultures and their visual regime (Eckel et al. 2018), as are avatar images in avatar-based gaming (Klevjer 2022), since they are no mere pictorial representations but digital images of self-perception and self-modeling. They stand as digital doubles exemplary for the self in extended realities (XR), the self-embodiment in digital spheres, and the continuum between offline and online (Coleman 2011). Similar to digital twins, digital 'doubles' even without a physical 'original' can unfold influence, literally, as virtual influencers or actors such as Hatsune Miku demonstrate.

Media practices of doubling and storing the self might have predigital histories (Humphreys 2018). But only digital tracking applications can be regarded as real-time feedback loops that influence human behavior. This can be seen positively since it transforms the way humans self-optimize, e.g. their athletic behavior, as shows the quantified self-movement. But it can also be critically reflected from a political standpoint, since it evokes a shift from individuals to 'dividuals' and an interpretation of human beings as conglomerates of sensor technology, flesh, and data doubles within surveillant assemblages (Haggerty and Richard 2000).

To account for this complex technological situation and its social impacts, the planned conference will bring together researchers from different fields: engineering and social science, informatics and media studies. The aim is to understand concepts and technological practices of digital twins and 'twinning' that are not restricted to purposes of system and production monitoring, maintenance and simulation – that is, processes of digital engineering. We will expand its scope to include real-time interrelations of digital data acquisition and simulation, on the one hand, and the physical performance of humans, things, and systems, on the other.

Digital twins and doubles draw our attention to the central medial, technical, and social challenges posed by digitization. Yet, to date, only rudimentary research has been conducted into its cultural and social impact. The annual conference of the Collaborative Research Center “Media of Cooperation” on “Digital Twins & Doubles: Data of Cooperation” aims to change this.

We are seeking **abstracts** (500 words) for submissions until **January 31, 2023** (to be sent to **info@sfb1187.uni-siegen.de**, subject: “**Conference Digital Twins**”), that might address – but are not limited to – one or more of the following topics:

- how is data agential (in digital twinning)?
- interrelations and interdependencies between physical and digital twins and doubles
- politics, (data) economies, and technologies of digital twinning and doubling
- boundaries in the modeling of twins
- (de)central places of twinning: where is it to be done, and by whom?

- twinning as labor: precarious work and/or precarious for workers?
- how do AR and VR contribute to twinning?
- histories of twinning: from science fiction, to NASA, to the public?
- future digital practices of twinning
- imaginaries and aesthetics of twinning and data doubles, potentials of real-time blueprints
- living in multi-sensored environments, smart building infrastructures, and digital cities
- case studies of digital threads: critical reflections on full product lifecycle traceability and live surveillance/monitoring
- gendering and aesthetics of avatars
- selfies and the practices of digital doubles
- challenges and difficulties of data governance, data rights, and data sustainability
- sensor ecologies and their impact on digital twinning
- media and social theories of digital twinning
- socio-cultural consequences of the fourth industrial revolution
- digital methods, ethnographic, and ethnomethodological approaches for further research on digital twinning
- applications for digital twins in the industrial and consumer metaverse