RESEARCH THEME

XXXIX cycle – a.y. 2023/2024

Title of the doctoral research	Data Physicalization: Use materials as means for interacting with big data.
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Abstract	We are living in a world imbued with data. Humans are deeply entangled with data generation, collection, and expression processes, both in the digital and physical realms. Information and communication technologies (ICT) is boosting these processes, allowing machines to sense, capture, and generate an enormous amount of data daily. Most of the time, data are perceived as objective, cold and non-manipulable pieces of information, somehow existing far away from people's daily experiences. Whether data describes financial events, environmental phenomena, climate, health indicators, datasets are often presented as numbers, impossible to feel, touch and emotionally engage with. The ongoing *datafication* of reality and pervasiveness of big data propose a relevant research opportunity on how data can be approached as *a shapeable material for design*. Placed in Human-Computer Interaction (HCI) domain, *data physicalization* is defined as encoding data in physical artefacts and materials. Data can thus be expressed through physical objects and materials that facilitate interaction modalities and channels. *Data physicalization* could envision alternative ways on how data can be used to shape meaningful and embodied experiences. The research will largely explore diverse *materials* to represent and communicate data, specifically looking at *Interactive Connected Smart* (ICS) materials and *Hybrid Material Systems* (HMS) through material tinkering. The research will investigate how communicating data through materials, and physical artefacts could support people in understanding those data and mediate complex phenomena.
Keywords	*Human-Data Interaction, Speculation, Material Design, Material crafting*