Castellum

A data protection-compliant web application for the subject management of human science studies

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Abstract. Research institutions, especially in the human sciences, have been confronted with strict guidelines for the processing of personal data since the European General Data Protection Regulation came into force in 2018. This presents them with new challenges in recruiting and managing study participants and processing the associated data. To meet these challenges, Castellum has been developed at the Max Planck Institute for Human Development since 2016 and has been used successfully since May 2020. Castellum is a turnkey open-source web application for the data protection-compliant management of volunteer data. Among other things, Castellum simplifies study recruitment, appointment management and study implementation. Various institutions have expressed interest in Castellum in the recent past. On the one hand, this may be due to the fact that no comparable open source project exists. On the other hand, Castellum was explicitly designed to be so flexible and expandable that it can be adapted to the workflows and processes of other research institutions with relatively little effort. The use of Castellum has so far been particularly successful for institutions that conduct several studies in parallel, that want to proactively recruit participants from an internal pool of people interested in the study, and that generate data when dealing with these subjects. Since Castellum is subject to the AGPL licence, the software may be used free of charge without restrictions.

Keywords: Castellum, General Data Protection Regulation, Recruiting participants, Open Source

Abstract

At the latest since the European General Data Protection Regulation (GDPR) and the revised Federal Data Protection Act came into force in 2018, strict guidelines apply to the processing of personal data. Research institutions must ensure the implementation of the legal requirements through appropriate technical and organizational measures. This poses new challenges, particularly for research institutions with a focus on human sciences, in the recruitment and administration of study participants and the processing of related personal data. Previous (stand-alone) solutions are often no longer capable of meeting these challenges. However, if the regulations of the GDPR are not complied with, major financial, structural and reputational consequences can occur. At the same time, there is a desire among researchers for a user-friendly, digital application that simplifies the management of subject data and thus efficiently supports the entire research process. However, many institutions lack both the resources and expertise to implement a sustainable and application-oriented solution.

For this reason, Castellum (https://castellum.mpib.berlin) has been developed at the Max Planck Institute for Human Development (MPIB) since 2016. This is a turnkey open-

source web application for the data protection-compliant management of subject related data. The development took place in close coordination with the scientific staff and the data protection officer of the Max Planck Society (MPG). Thus, Castellum takes into account relevant aspects of the rules of good scientific practice as well as data security. To ensure that Castellum can be used as an open-source project, it was designed from the beginning to be flexible and expandable so that it can be adapted to the workflows and processes of other research institutions with little effort.

The application provides a clearly defined structure for handling the data of all study participants. Contact information (e.g. name and postal address), recruitment characteristics (e.g. age and education level) and process information (e.g. existing consents and current availability) are stored in Castellum, scientific data is stored outside of it. The focus here is on compliance with provisions of the GDPR and general IT security in dealing with this data. For example, the listed information is strictly separated from each other through an integrated rights and role management. For example, a "recruiter" is only able to view the contact information of potential study participants, but not the study-specific recruitment characteristics. These, in turn, are defined by the "study coordinator" when creating a study, so that only those potential subjects are suggested to the "recruiter" who fit the corresponding study.

In addition, an important function of Castellum is the pseudonym service: This service links scientific data stored outside Castellum with the data in Castellum. This makes it possible to generate a central overview of all the places where the data of subjects has been stored. This in turn helps to efficiently realize the subject rights provided for by the GDPR (e.g. requests for data access and deletion by subjects). Other features of Castellum include booking appointments, storing recruitment and study consents as the legal basis for data retention, and assigning legal representatives.

Castellum has been successfully in productive use at the MPIB since May 2020 and at the Max Planck Institute for Biological Cybernetics since September 2021. However, deficits in the area of subject management have also been identified at other institutions and the need for a comprehensive software solution is seen. Presumably due to the fact that there is no comparable open-source project that covers this broad range of applications, some institutions have already expressed interest in Castellum (e.g. the Universities of Hamburg and Helsinki, the University Medical Center Hamburg-Eppendorf (UKE), Clinic and Polyclinic for Psychiatry and Psychotherapy, Ernst Strüngmann Institute Frankfurt).

That is why we now want to make Castellum (more) known, with the aim of establishing an active application and development community, in line with the slogan of the conference, "Connecting Communities". An intensive (experience) exchange with all users should then serve to continuously improve Castellum and to jointly benefit from best practice approaches and new ideas. Through a broad use of Castellum, changes with regard to data protection regulations only have to be implemented at one central point and all using institutions benefit together. This allows resources to be used much more efficiently.

The technical installation is already supported by detailed documentation. This is available at the following link: https://git.mpib-berlin.mpg.de/castellum/castellum/-/tree/main/docs/deployment. In addition, our team is available to advise on questions and suggestions regarding (data) security, compatibility and the technical as well as the organizational use of Castellum and supports pilot projects.

This presentation will give a brief overview of the data protection requirements for the subject management of scientific institutions. Castellum will then be presented as an open-source application and possible solution for implementing these requirements. In particular, the functions and roles covered by Castellum will be described (see Figure 1). Selected functionalities will be demonstrated live. Finally, it will be shown which concrete steps scientific

institutions can take to use Castellum for the first time. Therefore, the contribution is assigned to the programme block "Enabling RDM".
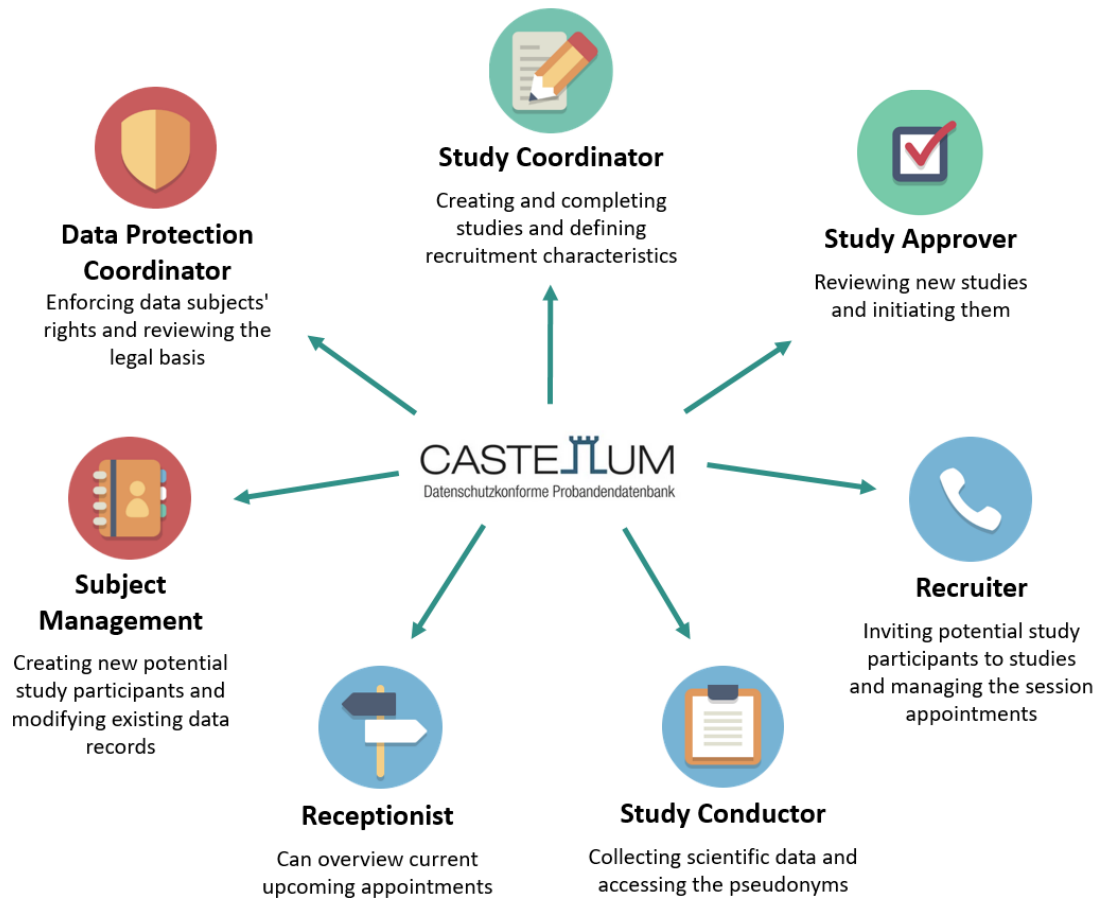

Figure 1. Overview of the role and rights management integrated in Castellum.

Data availability statement

The submission is not based on specific data.

Author contributions

Both authors listed have equally added to the contribution.

Competing interests

The authors declare that they have no competing interests.