Chapter 4
Identity and Privacy Issues Throughout Life

Jaromir Dobias, Marit Hansen, Stefan Köpsell, Maren Raguse, Arnold Roosendaal, Andreas Pfitzmann, Sandra Steinbrecher, Katalin Storf, and Harald Zwingelberg

4.1 Challenges and Requirements

Much research and development has been done during the past couple of years to assist users in managing their partial identities in the digital world by several types of identity management [BMH05]. A comprehensive privacy-enhancing identity management system would include the following components [CK01]:

- an Identity Manager (IdM) on the user’s side;
- IdM support in applications (e.g., at content providers, web shops, etc.);
- various third-party services (e.g., certification authorities, identity providers).

However, current concepts for identity management systems implicitly focus on the present (including the near future and recent past) only. The sensitivity of many identity attributes and the need to protect them throughout a human being’s entire lifespan is currently not dealt with. The digital lifespan is the range of time from the emergence of the first information that is related to the human being until the point in time when no more personal data is generated: from the moment of birth until death. Hence, lifespan refers to the temporary aspects of privacy and identity management and, in particular, to the challenges involved in realising (privacy-related) protection goals over very long periods of time. The area of challenges regarding privacy is vast – even when not considering an entire lifespan (see, e.g., [ENI08]). In the following, we describe which additional problems occur concerning lifelong protection of individuals concerning their privacy in a technology-based society.

4.1.1 Dealing with Dynamics

Our society, as well as the individuals that form them, underly dynamics. We distinguish between dynamics in the surroundings of the individual and dynamics in
the individual’s ability or willingness of managing her private sphere on her own as outlined in the following subsections [CHP+09].

4.1.1.1 Dynamics in the surroundings of the individual

The dynamics of the effects from the outside world – possibly affecting the individual’s private sphere – comprise, among others, technological developments, replacement of administration, changes in law and policies, and – last but not least – the evolvement of society.

The least dynamics we have to deal with is the increasing processing of personal data during one’s lifetime. This involves the disclosure of personal data to many data controllers, partially because the disclosure and processing of data is officially required (e.g., because of school attendance, tax liability), partially because the data are needed to fulfil tasks in the areas of e-commerce, leisure, communication etc. Fig. 4.1 shows a simplified model of increasing data disclosure to different data controllers, depicted by coloured stripes. The lighter colours on the right-hand side express that the personal data are not needed anymore for the task to be fulfilled, but the data may still live on in official archives, at Internet services, or in the storage of communication partners [MS09]. The data might not be deleted after the time of death nor after the funeral.

The coloured stripes in Fig. 4.1 might also correspond to several partial identities [HPS08], for example (but not exclusively) individuals in different areas of their life. Areas of life are sufficiently distinct domains of social interactions that fulfil a particular purpose (for the data subject) or function (for society). Formal areas of life include education, work, and health care. Informal areas of life cover mainly a user’s social network including family, friends, leisure, religion etc. Some of these informal areas might become formal by institutionalisation, e.g., for religion in the form of membership in a church.

Another dynamic results from the development in technology including possible risks. The technological progress of the last decades triggers the transformation of our society towards a computerised social community highly dependent on information. The more structures of our society depend on information, the more important is the role that data plays in our everyday lives. During decades of technological evolution, several methods were invented for storing data in various forms and on various types of media. However, the processes and events in the nature, society, and in the life of the data subject cause failures, which might lead to loss of the data during the lifetime of the data subject. Even if unwanted data loss might not be a common phenomenon encountered within the life of every data subject, it may become an evident and serious problem, which emerges in the lifelong extent of time.

Privacy becomes an increasing problem, e.g., unauthorised access to personal data which enables attackers to read them, link them with other data, or modify them. Personal data, which are assumed to be secure at a specific point in time, may be at risk after some time if no additional precautions have been taken.