happen, and the vision the authors have for its future. On the way, we will provide some detail on the technical solutions that were found and the reasons why they were chosen.

## Background

From the earliest conversations of the initial group of KDE developers about which applications would need to be included in order for a desktop offering to be considered complete by users, email handling, calendering, task list management, and an address book were always considered obvious and important user needs. Consequently, KMail, KAddressbook, and KOrganizer (applications to handle email, contacts, and events and tasks, respectively) were among the first projects to be taken on, and the first usable versions emerged quite quickly. User needs were comparatively simple then, and the standard modes of receiving email were through local mail spools or from POP-3 servers. Mail volume was low, and mail folders were generally stored in the mbox format (one continuous plain text file per folder). HTML content in emails was overwhelmingly frowned upon by the user community that KDE was targeting, multimedia content of any kind was very rare, and encryption and digital signatures were equally exotic. Along similar lines, the custom formats used for address and calendaring data were text-based, and the overall volume of the information to be stored was easily manageable. It was thus relatively straightforward to write basic applications that were already powerful enough to be quickly adopted by other KDE developers and, after the first releases of KDE, also by the user community.

The early and continuous success of the personal information management (PIM) applications would prove to be a double-edged sword in the years to follow. As the Internet and computer use in general skyrocketed, the PIM problem space started to become a lot more complex. New forms of access to email, such as IMAP, and storage of email, such as the maildir format, had to be integrated. Workgroups were starting to share calendars and address books via so-called *groupware* servers, or store them locally in new standard formats such as vcal/ical or vcard. Company and university directories hosted on LDAP servers grew to tens of thousands of entries. Yet users still expected to use the KDE applications they had come to appreciate under those changed circumstances and get access to new features quickly. As a result, and given the fact that only a few people were actively contributing to the PIM applications, their architectural foundations could not be rethought and regularly cleaned up and updated as new features added, and the overall complexity of the code increased. Fundamental assumptions—that access to the email storage layer would be synchronous and never concurrent, that reading the whole address book into memory would be reasonably possible, that the user would not go back and forth between timezones—had to be upheld and worked around at times, because the cost of changing them would have been prohibitive given the tight time and resource constraints. This is especially true for the email application, KMail, whose codebase subsequently evolved into something rather unpleasant, hard-to-understand, hard-to-extend and maintain, large, and ever more featureful. Additionally, it was a stylistically diverse collection of work by a series of authors, none of whom dared to change things too