2 A world-wide survey of CIPACS

The intention of this chapter is to draw an overall picture of the present CIPAC "scene". Therefore, it aims at identifying the CIPACs that have been set up so far, their retrieval capabilities and potential, and some of the issues interconnected with their creation. As no such comprehensive survey of CIPACs has been undertaken before, a number of methodological steps was required:

- various and repeated attempts were made to identify all institutions that operate CIPACs, and a web-page was created to document the findings of this search;
- literature on the individual CIPAC projects (articles, reports, and other documents) was searched, collected and scrutinized for relevant facts and figures;
- the CIPAC Library Questionnaire (CLQ)\(^1\) was sent out to the institutions identified, in order to obtain details on the various CIPACs and maybe also additional documents;
- the web-pages of all institutions identified were repeatedly checked for information on their CIPACs; the various CIPACs themselves were searched and examined with regard to software, main features, help texts, etc.

The information obtained will be presented as follows: The chapter starts with a brief account of the CIPAC web-page maintained by the author. Then, four main categories of software for CIPAC systems are identified and the features of these systems are illustrated. What follows is a comparative survey of the characteristics of the fifty CIPACs known today. A geographically organized inventory of these CIPACs and their main features is included as Appendix A.

2.1 An international CIPAC web-page

The author's endeavour to systematically record all known CIPACs dates back to 1999 and in early 2000 led to the first version of a web-page which listed some 20 CIPACs. Additions to this list have been made continuously since. Information on existing and new CIPACs was obtained from a variety of sources, such as the relevant literature, word passed on by fellow librarians, the LCQ, repeated checks of the web-pages of relevant software providers, the CIPAC user survey,\(^2\) and by regularly searching the WWW using the Google search engine.

\(^1\) For details see Chapter 3 (introductional paragraphs) and Appendices B1/B2.

\(^2\) See Chapter 4.
# The International CIPAC List

CIPAC = Card-Image Public Access Catalogue

<table>
<thead>
<tr>
<th>Country</th>
<th>Cities/Institutions</th>
</tr>
</thead>
</table>
| AUT | Graz: Graz University of Arts Library, Styrian State Library  
Innsbruck: University of Innsbruck Faculty of Theology Library  
Vienna:  
- Austrian National Library  
- Vienna University of Economics and Business Administration Library  
- Vienna City and State Library (Manuscript Collection)  
- Austrian Museum of Applied Arts Library |
| CHE | Basel: Basel University Library  
Berne: Swiss National Library, Berne City and University Library  
Luzerne:  
- Luzerne Central and University Library  
- Luzerne State Archives Library  
- Library of the Swiss Capuchin Order  
Zurich: Zurich Central Library |
| CZE | Brno: Moravian Library  
Prague:  
- National Library of the Czech Republic  
- Parliamentary Library of the Czech Republic  
- Library of the Academy of Sciences of the Czech Republic |
| DEU | Berlin: Berlin Central and Regional Library  
- University Library of Free University Berlin  
- Berlin Senate Library  
Bochum: Bochum University Library (test version)  
Dortmund: Dortmund City and Regional Library  
Dresden: Saxony State and Drasden University Library  
Frankfurt: Hessi-Retro Union Catalogue  
Göttingen: Goettingen State and University Library  
Greifswald: Greifswald University Library  
Halle: Saxony-Anhalt University and State Library  
Hamburg: Hamburg Institute of International Economics  
Heidelberg: Heidelberg University Library |
| ESP | Barcelona: Library of Catalonia |
| FRA | Paris: Interuniversity Medical Library (Catalogue ancien 1477-1952) |
| GBR | Edinburgh: Edinburgh University Library (Special Collections)  
London: British Library of Political & Economic Science (LSE), University of London Library |
| ITA | Bologna: Archiginnasio Library (Catalogo Frati-Sorbelli)  
Florence:  
- Manucciana Library  
- Central National Library (demo version)  
- Uffizi Gallery Library (Fondo Carocci)  
Rome:  
- Alessandrina University Library (IE only!)  
- Trieste: University Library |
| LTU | Vilnius: National Library of Lithuania |
| POL | Cracow: Jagiellonian University Library |
| USA | Princeton, NJ: Princeton University Library  
Richmond, VA: Library of Virginia |

**Fig. 2-1: The International CIPAC List**
In the last two years, this web-page – now established as *The International CIPAC List* and hosted by the Vienna University of Technology Library\(^3\) – has grown to a list of fifty CIPACs in eleven countries (02/2002). The list is arranged geographically by countries\(^4\) and (English) place names, and gives both the (English) names of the respective institutions and the web-addresses (URLs) of their CIPACs in the form of http-links. Links to this list can be found already on LIS-related web-pages in various countries such as Australia\(^5\), Germany\(^6,7\) and the United States\(^8\). In a recent Italian publication it is referred to as a useful source of information (Lunati, 2001, p. 4).

### 2.2 Major CIPAC software solutions

#### 2.2.1 CIPACs based on binary searching

CIPACs based on the principle of *binary searching* feature a browsing algorithm where the user makes a number of decisions which reduce the set of documents step-by-step until there are just a few left that can be viewed easily in sequential order. The best known software of this kind is *KatZoom*,\(^9\) which was developed at the Austrian National Library (ONB).\(^10\) In 1996/97, when the ONB first started to think about converting its old catalogues – more than 6 million cards – into CIPACs, solutions such as the Swiss *Spider* system\(^11\) and CIPACs based on manually created indexes\(^12\) were considered but soon declined as too costly. The Library decided to opt for a strategy in which CIPACs would play a role only as *interim* online catalogues, i.e. until the implementation of a *final* (better) conversion was feasible. The software for such an interim CIPAC was required to be cheap (no manual/intellectual input for indexes), simple, and suitable for offering the catalogue via WWW – it needed to be developed in-house.

*KatZoom* makes use of a "division factor" that splits the total set of documents into *n* parts, the subset selected by the user again into *n* parts, and so forth, until the resulting

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\(^3\) [http://www.ub.tuwien.ac.at/cipacs/c-i.html](http://www.ub.tuwien.ac.at/cipacs/c-i.html) (formerly: [http://www.8ung.at/oco/cipacs-international.html](http://www.8ung.at/oco/cipacs-international.html))

\(^4\) The three-letter ISO 3166 country codes are used for this purpose.

\(^5\) [http://www.library.unsw.edu.au/links/Search_Engines/Library_Catalogues/more2.html](http://www.library.unsw.edu.au/links/Search_Engines/Library_Catalogues/more2.html)


\(^7\) [http://www.bsz-bw.de/wwwroot/text/zkdial32.html](http://www.bsz-bw.de/wwwroot/text/zkdial32.html)

\(^8\) [http://www.photonics.cusat.edu/links_library.html](http://www.photonics.cusat.edu/links_library.html)

\(^9\) Dikovich & Wilhelm (1997); Dikovich (1998; 2000)

\(^10\) By W. Dikovich of the ONB's IT department.

\(^11\) *BerninaSpider* is described in section 2.2.4.

\(^12\) An example of this principle is the *Chopin* system described in section 2.2.2.
subset is less/equal $2^n$. If the division factor is 4, a set of 1,000 documents can be browsed by four clicks (= decisions), and if the factor is 8, only two clicks are required. From the user's point-of-view, a small division factor (e.g. 4) should be more convenient, because on each step only a small number of subsets is created, which makes it easier to decide which one to select. This means that by employing 4 as the division factor, a search of the ONB's largest card catalogue requires eight mouseclicks until a result set of eight cards or less (in fact: six) is reached.

![Nominalkatalog 1930 - 1991](image)

**Fig. 2-2: KatZoom – first division (letter "P")**

When KatZoom was programmed it was decided to use the letters of the alphabet (A–Z) for supporting the first decision to be made by the user, so that the total set of documents would be divided into subsets of varying size. The system makes use of cropped images for symbolizing the resulting subsets; it shows the first card of each of the subsets, plus the last card of the last subset. Figure 2-2 shows an example of a known-item search in the ONB's 1930–1991 author/title catalogue: After the first decision – a click on the letter "P" – five cropped images are displayed (normally just one screen). Now the user has to determine the section into which he/she wishes to "zoom" and click on the respective button shown between the cropped images (in the present example this is the third section). Another screen with five cropped images follows, and, after that, four more screens until the last one with such short displays appears.

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13 This is the 1930–1991 subject catalogue with approx. 1.69 million cards.
14 This was actually the librarians' rather than the software designer's wish.
15 In this example and in the following ones the 1935 edition of Karl R. Popper's *Logik der Forschung* (The Logic of Scientific Discovery) is the item looked for.
Whenever the user wishes to skip "zooming", he/she can click on the "List"-button (down or up) to the right of each cropped image in order to get a screen with the full images of 16 consecutive cards, starting at this position. The card numbers (also to the right of each cropped image) indicate roughly how far one has gone; in the case of the screen in Figure 2-3 one can tell that the next screen will show full card-images. A mouse-click on one of the card numbers brings up a full view of the corresponding card in a new window (optional feature, not implemented on all KatZoom CIPACs).

Finally, after having selected the fourth section (in Figure 2-3), the user is shown a screen with full images (Figure 2-4) which either includes the desired card or proves that the library does not hold that document (provided all clicks were correct).

KatZoom also has an optional functionality for ordering books from the stacks. If this feature is implemented, the user finds an "Order"-button to the right of each full card-image (as in Figure 2-4). When clicked, this button opens a new window that shows both the card and a form for ordering the book. The user needs to copy the call number from the card (manually) and enter his/her personal data and userID.

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16 For example, if one of the cropped images happens to be the card searched for.

17 However, on the collection of the ordered items the user needs to fill in traditional loan slips again. An example of the form is shown in Appendix A (Fig. A-1).
Chapter Two: A world-wide survey of CIPACs

An interesting module for librarians is the KatZoom editing tool that supports features such as loading new batches of card-images, deleting and/or moving individual card-images, replacing a card-image by text (for correcting call numbers etc.), and inserting newly written (textual) cards.

Fig. 2-4: KatZoom – full image display

Fig. 2-5: KatZoom – modified version
After the initial installation at the National Library, a number of other Austrian libraries started using the software for their CIPACS as well.\textsuperscript{18} In 2001, a modified version of KaiZoom was released that does not rely on binary searching but features index browsing as well as Boolean searching of the text of the index (which can be useful for subject headings). In the example shown in Figure 2-5, the user can either position the display of the subject headings index at a specific letter (by clicking on the desired letter in the table shown in the upper section of the screen), or find all subject headings containing one and/or two specific terms (by filling in the search box/es and selecting the appropriate Boolean operator if two search terms are entered).

In either case the system displays in the left frame a scrollable list of all matching index terms (e.g. subject headings) including the number of hits, and after the user has selected (clicked) the desired entry he/she is shown a full display of the corresponding card-images in the right frame (Figure 2-6).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig2-6.png}
\caption{KatZoom – index browsing}
\end{figure}

\subsection{CIPACS based on partial indexes}

CIPACS based on the principle of a \emph{partially indexed} catalogue need some sort of manual and/or intellectual input as a prerequisite to their creation. A partial index can be made of existing leader cards (guide cards), newly produced leader cards, or simply by index-

\textsuperscript{18} See Appendix A1.
ing every n\textsuperscript{th} card by keying in the headings (author/title headings, subject headings). Typical examples for the latter are indexes based on the headings of every 20\textsuperscript{th}, 50\textsuperscript{th}, 100\textsuperscript{th} or 200\textsuperscript{th} card.\textsuperscript{19} The best known software of this kind is Chopin\textsuperscript{®},\textsuperscript{20} a system developed by the German software firm Schneider GmbH (Friedberg)\textsuperscript{21} and marketed by MikroUnivers GmbH (Berlin),\textsuperscript{22} a service bureau for scanning, OCR and microfilming.

On the www it first became visible in 1997 when the Berlin Central and Regional Library – that had already been offering its first CIPAC on an in-house network since 1996 – was looking for a new software that would replace its previous CardView\textsuperscript{23} system and make the card-image catalogue available over the Internet (Rönsch, 1998). This library and others (e.g. the Saxony State and University Library at Halle) also contributed to the development of the software. Today, Chopin is the CIPAC software with the largest number of libraries applying it, with installations in Germany and Switzerland,\textsuperscript{24} including some of the largest CIPAC sites (Halle, Kiel, Hamburg, Berlin).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{chopin.png}
\caption{Chopin – entering a search term}
\end{figure}

On the first screen of a typical Chopin CIPAC, the user finds a search box where he/she can enter a search term, e.g. the surname of the author or the first letters of that name (Figure 2-7). This "search term" is used by the system not for searching the database but for finding the section of the leader card or headings index that represents – in an

\textsuperscript{19} Details of individual CIPACs are given in Appendix A1.
\textsuperscript{20} MikroUnivers (1998); a folder is available on http://62.104.137.109/chopin/info/prospekt_chopin.pdf
\textsuperscript{21} http://www.schneider-mt.de
\textsuperscript{22} http://www.mikrounivers.de
\textsuperscript{23} Developed by MikroUnivers together with a Munich software house.
\textsuperscript{24} The software developer maintains a web-page on Chopin implementations (http://www.dilib.de).
alphabetical sense – the term. It may well be that the term typed by the user actually appears as one of the index entries shown. This is more likely if the catalogue represents many works of a specific author and many cards were indexed (e.g. every 20th card), it is less likely if there are only few publications by that author and/or the gap between entries is wide (e.g. every 200th card), and it is – obviously – impossible if there are no works by that author in the catalogue. In any case, the system marks or highlights the index entry which makes the closest match for the user's input, and also offers to browse the index up or down (Figure 2-8).

![Figure 2-8: Chopin – display of browse index](image)

If the index is based upon leader cards, the user can safely click on the highlighted entry and start browsing through the card-images. This is also true when the original search term is not shown as one of the index entries. However, if it is shown as the highlighted entry the user must be aware that only every n-th card has been indexed, which means that there may be works by the same author filed before the indexed card, so that he/she needs to click on the preceeding index entry just to be on the safe side. In the present example the user will probably click on the highlighted entry to receive a full view of the indexed card (Figure 2-9).

It is now possible to browse forward/backward card by card, or to "jump" 5, 20, or 100 cards forward/backward, in order to find the desired work (Figure 2-9) or to make sure

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25 For an experienced user it should be obvious that some works by Popper must be filed before the one shown, but a novice user may not reckon with that.
that the library does not hold a copy. The description of Chopin CIPACs in Appendix A1 shows that the intervals for jumping may differ from catalogue to catalogue.

Chopin makes use of a Java applet for the visualization of TIFF-images in the user's web browser. This applet also permits setting the size of the image, zooming in/out, changing the resolution, the brightness and the contrast, rotating the picture, inverting the colours, printing the card-image and downloading it on the user's local workstation (Figure 2-10). Some earlier versions of Chopin which are still in use have a somewhat simpler interface for displaying GIF-images.26

If implemented, the full display of every card-image includes an "order"-button which, on mouse-click, opens a new browser window containing a form for ordering the book from the stacks.27 The user only needs to enter his/her personal data and to select the desired collection point from a list. It is not necessary to copy the call number to this form as the order slip that is printed out in the library includes the image of the catalogue card.

Other features of Chopin include Boolean searching of the terms in the browse index (mainly for subject headings),28 and interfaces specially designed for classified catalogues (navigation in up to ten levels of the classification's tree structure) as well as for book catalogues.

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26 For an example, see Appendix A1, CIPAC no. 19 (Fig. A-4)
27 For an example, see Appendix A1, CIPAC no. 10 (Fig. A-2)
28 For an example, see Appendix A1, CIPAC no. 29 (Fig. A-6)
2.2.3 CIPACS based on virtual drawers

CIPACS based on the headings of virtual drawers are a variation of partial index systems. They also feature a partial index but one that is made of the labels on the original catalogue drawers (and racks). The indexes of such systems are normally much smaller and less specific than they would be if every nth card was indexed, but more specific than just the letters A–Z as used by KatZoom. Furthermore, drawer labels are usually inclusive as they indicate both the beginning and the end of the sequence of cards (e.g. "POOLER TO PORRE", "PORRI TO POSTE", "POSTG TO POV", and so forth). Whereas a typical partial headings index only shows every nth card (so that novice users might believe that the author looked for is not in the catalogue), a virtual drawer index suggests completeness, just as the card cabinets and drawers previously did.

In the virtual drawer category of CIPACS there is no leading software product; most programs are home-made solutions of individual libraries and not shared with other institutions. One that is actually used by two libraries is the (unnamed) system created in 2000 by the British Library of Political & Economic Science (BLPES) at the London School of Economics (LSE) that is also used by the University of London Library. This system starts with a search box; when the user enters a term, the software displays

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29 A drawer may hold 1,000 cards or even more.
30 A partial index based on guide cards of the same "from–to"-type as drawer labels would be even better though.
31 Price (2000)
Chapter Two: A world-wide survey of CIPACs

a list of the matching section of drawer labels, highlighting the one to look in for the search term (Figure 2-11). The user may scroll the index up or down, or click on one of the virtual drawer labels. On the selection of the desired drawer, the system displays the first ten cards of this drawer as cropped images (Figure 2-12). Now the user can either browse through the drawer by viewing ten cards at a time, or jump to a specific card by entering its number (the total number of cards in this drawer is also shown). Finally, when those ten cards have been found that include the work the user was looking for, a full display can be seen by clicking on the respective short view (Figures 2-13, 2-14).

The University of London Library implemented a slightly modified version of this system. It also starts with a search box but, as an alternative, offers to click on one of the letters A–Z to start displaying the drawer labels index at this letter; the full display of the card-images is shown in a separate browser window32 and also has a button for online ordering books from the stacks.

Whilst several more or less similar systems can be found in a number of libraries around the world,33 a unique variation that combines drawer labels with binary searching was

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32 See Appendix A1, CIPAC no. 41 (Fig. A-9)
33 For example, the system at the Marucelliana Library at Florence skips the first two steps (selection of drawer, short views) by going straight to the display of the first full card-image of the drawer that matches the user's search term; see Appendix A1, CIPAC no. 43 (Fig. A-10)
developed by the Moravian Library (Czech Republic). This CIPAC shows the cropped images of every 100th card in the drawer, i.e. cards no. 1, 101, 201, etc. The user selects one of these batches and now gets cropped images of every 10th card, e.g. 201, 211, 221, ... , 291. After another click the full images of ten cards are displayed.34

![Fig. 2-13: BLPES – cropped card-images (including sought document)](image)

![Fig. 2-14: BLPES – full display of document](image)

2.2.4 CIPACs based on searching of OCR processed text

Although CIPACs based on the searching of OCR processed text were among the first implemented card-image online catalogues, they have remained the exception rather than the rule. The best known of these systems is BerninaSpider35 that goes back to the first half of the 1990s when a team at the Zurich Federal Institute of Technology started experimenting with probabilistic indexing and retrieval of texts derived from the scanned images of catalogue cards36 by optical character recognition (OCR). They found that even if the texts were rather short (on average only 23 terms per card) and very noisy (33 percent recognition errors), a term weighting approach based on a probabilistic model of search term occurrences – taking OCR errors into account – would lead to very good retrieval results (presented as ranked lists of hits). When searching the author headings only, the algorithm always finds the desired card within a distance

34 See Appendix A1, CIPAC no. 15
35 The system was originally called Spider, then EuroSpider, until the latter term became the name of a company that was founded to market this and other information retrieval systems. Today, a few other Swiss libraries are using the system but it has not been sold to libraries in other countries.
36 From the old author/title catalogue of the Zurich Central Library; this catalogue contains many old cards of bad typographical quality and cards with handwritten headings and/or amendments.
Chapter Two: A world-wide survey of CIPACs

of ±10 cards; in 98 percent this distance was even less than ±3 cards (Mittendorf, Schäuble & Sheridan, 1995; Schäuble, 1996; Schäuble & Sheridan, 1996). In contrast to other CIPACs this system makes it possible to search not only the headings but also the full text of the cards. The system produces significantly better search results if many search terms (from the full-text) are used, but if any of the search terms matches with the heading the card is judged as more relevant (Schäuble & Sheridan, 1996). In spite of its probabilistic full-text retrieval features, BerninaSpider is still a card-image OPAC system – what the user is shown is the digitized image of the catalogue card and not the result of the OCR conversion (which remains invisible).

As shown in Figure 2-15, the system offers two search boxes – one for terms from the catalogue card headings, and a second one for terms from the full texts of the cards. The version used at the Zurich Central Library has an additional option not present on the other Bernina-Spider CIPACs: It can perform (simultaneously) a free-text search of the Swiss Union Catalogue (a "normal" Aleph 500 OPAC system; second checkbox). In our example the author's name was searched as a headings term, and a word from the title plus the publication year were searched in the body of the cards. Searching the union catalogue was requested, too (second checkbox).

The reaction of the system is quite impressive as it manages to locate the correct card straight away (Figure 2-16). Only a single mouseclick was necessary to get this result. The obvious drawback is that it is relatively slow; while the Spider system was still working the parallel OPAC search had been long finished. Even so, the time needed for a search is about the same as on the other systems where the user needs to make several decisions/mouseclicks. The image of the card that the system identifies as most relevant finally appears in the right frame. The headings of the neighbouring cards are also displayed and the user can browse backward or forward at will. In the example it seems
unlikely that the author’s name was read properly when the scanned card-image was processed by OCR, but the system nevertheless arrived at the correct card.\footnote{When searching by words from the headings only, the system is normally less precise if the headings were not dechiffred properly by OCR.}

\centering
\includegraphics[width=\textwidth]{fig2-16}

\textbf{Fig. 2-16: BerninaSpider – display of search results}

\textit{BerninaSpider} has also an optional component for ordering the retrieved documents online. The user is required to identify the call number (and its structural parts) on the catalogue card, type it into the search boxes beneath the card-image and click on an "order"-button. Subsequently, the system shows in a new browser window the call number index of the library’s OPAC where the correct number needs to be identified once more before an order can be placed (Figure 2-17).

Recently, two other systems based on OCR processed text were released. One of them, a newly developed add-on for the existing CIPAC of the Heidelberg University Library\footnote{See Appendix A1, CIPAC no. 30}, is based on a similar algorithm to that used by \textit{BerninaSpider} but claims to be simpler and faster (Pietzsch, 2001b). The second one was developed for the conversion of the Hesse Union Catalogue, \textit{HeBIS-Retro}.\footnote{See Appendix A1, CIPAC no. 25} This system was created by means of a number of sophisticated techniques for the recognition of the structures of the catalogue cards and – after rigorous quality control – the transformation of these structural elements into HTML-coded categories suitable for online retrieval (Dugall, 2001).
2.3 A comparative overview of CIPACs

In this section the attempt is made to illustrate the present CIPAC "scene" by comparing the fifty card-image online catalogues listed on the CIPAC web-page.\textsuperscript{40} For this purpose, the main characteristics and features of these catalogues – as identified in the literature, the \textit{CLQ}, and on the \textit{WWW} – were recorded in two ways:

- A structured inventory of CIPACs was established, based on the following categories: country, location, year of implementation, URL, contact, type of catalogues, technical information (number of cards, image format, manual input, OCR processing, software), navigation/retrieval, online ordering, online help, and sources.\textsuperscript{41}
- This inventory, together with additional information, was then used for creating a matrix which provides a comparative overview of CIPACs.\textsuperscript{42}

\textsuperscript{40} See section 2.1
\textsuperscript{41} Included as Appendix A1.
\textsuperscript{42} Included as Appendix A2. Although every attempt was made to fill every cell of the matrix, this has not been possible in \textit{all} cases. For this reason, the figures presented in the following sections are sometimes based on less than 50 CIPACs; the number of cases is always given as N.
2.3.1 Geographical distribution

With reference to the geographical distribution of CIPACs (Figure 2-18), Germany lies far ahead, followed by two smaller countries (Austria, Switzerland). Although CIPACs have been implemented in a number of other countries, it can be claimed that they are predominantly a phenomenon of the German-speaking world.

![Geographical distribution of CIPACs](image)

**Fig. 2-18: Geographical distribution of CIPACs**

- **In Germany** the Chopin system plays an important role, but several other software solutions are used as well. The earliest implementer was the Berlin Central and Regional Library that offered its first CIPAC in 1996 (even if only on an internal network).

- **In Austria**, the Austrian National Library (ONB) has played the leading role in CIPAC development and implementation. In fact, all but one of the Austrian CIPACs are based upon its KatZoom software package, presumably because it was made available to them at very reasonable cost.

- **Switzerland:** Only four of the seven CIPACs identified are BerninaSpider systems. Two libraries opted for the (German) Chopin system, and recently the Swiss National Library employed yet another system for the conversion of its classified catalogues.

- **Italy:** Some of this country's CIPACs are still experimental (Lunati, 2001, p. 9); for example, the Florence Central National Library's project – to name the most prominent institution – is only a demo version and therefore not included in the inventory.44

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43 Nevertheless, the few implemented CIPACs have some interesting features certainly worthwhile looking at, and some of them are also good examples for tasteful and/or unusual web-page design.

44 http://www.bncf.firenze.sbn.it/progetti/palatino/home.htm
• **Czech Republic:** CIPACs were identified in four libraries. In terms of software and technology used, they are all different; there are both commercial and home-made solutions. However, all four user interfaces are based on the "virtual drawer" approach.

• **United Kingdom:** Only recently, two major academic libraries adopted the technique. The software, originally developed by the Library of the LSE, was subsequently made available to the University of London Library.

• **United States:** Most probably, the Princeton University Library was the first library in the world that ever implemented a card-image public access catalogue on a large scale. Although the project was certainly successful, there has been remarkable little resonance in the USA. To the author's knowledge, only one other US library has employed the technique. On the other hand, the Princeton project definitely influenced the development of CIPACs in Europe to a great extent.

2.3.2 Growth and size

The growth of CIPAC implementations since the mid-1990s is depicted in Figure 2-19 that shows the cumulative number of CIPAC sites by year of implementation (of the first card-image catalogue per site). The curve illustrates that, after a cautious start, the take-off began only in 1999; more than two thirds of all CIPACs have been installed since.

![Fig. 2-19: Growth of CIPAC implementations, 1994–2001](image)

Although it might not be justified to draw a trend line based on these data, one is inclined to hypothesize that in the next few years a further increase of the number of

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45 It may well be that among the thousands of US libraries some more are using card-image OPACS; however, no mention of this has been found in the literature or on the WWW.
CIPACs can be expected – not only because some software manufacturers are advertising their products heavily. Studies with a nation-wide focus such as one recently published in Italy (Lunati, 2001) have started recommending the technique as an appropriate measure for bringing greater numbers of bibliographic records onto the Internet. It also seems that among (academic) libraries the urge is growing to have records of all their holdings on the WWW.

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Institution</th>
<th>Cards (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEU</td>
<td>Frankfurt</td>
<td>HeBIS-Retro Union Catalogue</td>
<td>7,750,000</td>
</tr>
<tr>
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<td>University Library</td>
<td>6,000,000</td>
</tr>
<tr>
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<td>Prague</td>
<td>National Library</td>
<td>4,479,000</td>
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<tr>
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<td>Halle</td>
<td>University and State Library</td>
<td>4,020,000</td>
</tr>
<tr>
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<td>University Library</td>
<td>3,928,000</td>
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<tr>
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<td>Kiel</td>
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<td>State Library</td>
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</tbody>
</table>

Table 2-1: The largest CIPAC sites (2m+ cards)

Table 2-1 lists the largest CIPAC sites, i.e. those where more than two million catalogue cards are available online. Of these 13 sites, 9 are based in German-speaking countries. The largest single card-image catalogue is offered by the University of Princeton Library. At the present time, a total of approximately 75 million card-images is held online.

Fig. 2-20: Size of CIPAC implementations

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46 For example, adverts for Chopin are often to be seen in German LIS journals.

47 If the HeBIS-Retro Union Catalogue is considered as several databases (see Appendix A1, CIPAC no. 25).
For the diagram shown in Figure 2-20, the 46 CIPAC sites for which data are available were grouped into seven size categories according to the number of card-images held online. The largest category is "over 1 million" (and under 2m) card-images which applies in about one fourth of all cases. As the cumulative curve indicates, about half of the CIPAC sites are holding one million or more card-images online. On the other hand, only four institutions are dealing with just up to 100,000 images which possibly can be regarded, by and large, as the "lower limit" for sensibly implementing a CIPAC.

2.3.3 Software used for CIPACS

Figure 2-21 gives a picture of the software presently used for CIPACS which can be described as rather scattered. Both commercial (c) and non-commercial (n/c) systems are used for CIPACS, and although it seems that the German commercial product, Chopin, has a somewhat dominating position, there is a large number of other (presumably) commercial software solutions as well. The same is true, just on a slightly smaller scale, for non-commercial or in-house solutions.

![Fig. 2-21: Software used for CIPACS](image)

2.3.4 Number of catalogues

Most CIPAC sites offer only a very small number of card-image catalogues (Figure 2-22). In 50 percent of all cases this number is one or two. On the other side of the scale, there are only a few institutions that use the CIPAC approach for a large number of (mostly smaller) catalogues.
Chapter Two: A world-wide survey of CIPACs

As Figure 2-23 illustrates, all but four CIPAC sites offer one or more author/title catalogue(s). Subject catalogues and classified catalogues have been converted into CIPACs only in 19 and 9 cases, respectively (with almost no overlap). This probably reflects the actual catalogue situation in the libraries concerned, but might also be seen as an indication of the lower status traditionally given by libraries to subject searching.

2.3.5 Processing and index creation

Optical character recognition has not played a major role in CIPAC creation yet, as only in 8 of 50 cases this technique was applied (Figure 2-24). On the other hand, most CIPACS are using (manually created) indexes for browsing, mainly based on headings

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48 Princeton's dictionary catalogue was counted both as author/title and as subject catalogue.
and/or leader cards, and not so often on drawer labels. Other indexes (classification tables etc.) were also created in some cases.

![OCR processing and index creation](image)

**Fig. 2-24: OCR processing and index creation**

### 2.3.6 Navigation

Accordingly, browsing of (partial) indexes is the most common method of navigating in CIPACs (Figure 2-25). Binary searching is not so often used (mainly on KatZoom CIPACs), and neither is searching of fields (author, year, etc.) and/or keywords (full texts) which is restricted mostly to OCR-based systems. In a few cases, the texts of the browse indexes were made searchable by keywords ("limited" field/keyword searching).

![Features for searching of CIPACs](image)

**Fig. 2-25: Features for searching of CIPACs**

A feature present on a rather small number of CIPACs is a component for ordering documents online. The number given in Figure 2-26 indicates that about one third of the 50
CIPAC sites are offering such a feature. However, this does not mean that when several catalogues are offered as CIPACS, all of these will feature online ordering, so that the true percentage (based on catalogues rather than sites) is even smaller. As it seems justified to assume that most users approach online catalogues not only to search but also to access library holdings, this fact is somewhat surprising.

Likewise, printing and downloading of results (card-images) are important for many users. However, only a rather small number of CIPACS supports this explicitly by their user interface (Figure 2-27). This is mainly true when the software uses a Java applet or plug-in for the visualization of the card-images. Obviously, printing and/or downloading can be achieved in many other cases as well (not counted here) just by using the local browser's functionalities. However, this depends on the individual browser used and may not be taken for granted in every case.\(^49\)

\[^{49}\text{For example, not all browsers can print out easily a card-image that is displayed in a new window.}\]
Other navigational features such as displaying the search history or collecting several images in a "basket" (for printing/downloading them together), exist in solitary cases only.\textsuperscript{50}

### 2.3.7 Card-images

The majority of CIPACs make use of the GIF format for the display of the card-images (Figure 2-28). In about one third of the cases the images are shown in TIFF format by means of some Java applet or plug-in. The JPEG format is employed by only a relatively small number of CIPACs, and the (new) PNG format by hardly any of these catalogues.\textsuperscript{51}

![Image formats used](image.png)

**Fig. 2-28: Image formats used**

Practically all CIPACs display black and white images of catalogue cards; the only CIPAC with colour images is to be found at the Uffizi Gallery Library (Florence).\textsuperscript{52}

Only in a minority of cases, cropped images are used for a short display of results (Figure 2-29). In most CIPACs the users are shown a full image straight away. For moving to other images of the result set, techniques for jumping forward or backward are widely used (including both options such as ±5/10/50 cards and jumping directly to a particular card by entering its number). In almost half of the cases, some sort of picture enlargement is supported, often by flexible zooming (in and out the card-image). When Java applets or plug-ins are used, other techniques for image manipulation (rota-
ting the image, inverting the colour, etc.) are sometimes supported as well. In about a quarter of the cases, the users are offered the opportunity to change the resolution of the images in order to improve the quality of the display.

![Fig. 2-29: Features for image navigation](image)

### 2.3.8 Other features

The great majority of CIPACs offer at least some sort of online help; only in 6 cases there is practically no such help at all (Figure 2-30). For the purpose of this study, the online help found on the various CIPAC web-sites was categorized (in a simplifying and obviously subjective way) into four commonly used size groups (S, M, L, XL). As the figure illustrates, most help systems fall into the small or medium categories, even if there also several longer or maybe even lengthy varieties.

![Fig. 2-30: Size of online help](image)
Figure 2-31: Language of CIPAC interface

Figure 2-31 shows that the user interface of most CIPACs is in only one language which is mainly German and in some cases English or Italian. Relatively few CIPACs are in two or even in three languages.

Finally, it was also recorded whether or not the various CIPAC systems are equipped with some sort of administrative tool or editing module that makes it possible to delete individual images, to make corrections or amendments, to change the sorting sequence or even to insert new cards. However, relatively often no such feature was explicitly mentioned in the available sources, so that the resulting picture remains rather incomplete (Figure 2-32). Only in three cases it became evident that no editing tool exists, whereas many CIPACs seem to have at least some of the capabilities mentioned above.\(^5\)

\(^5\) As in some of the remaining cases a software product is used that does include an administrative tool (as mentioned in the description of some other CIPAC but not necessarily purchased by all customers), it may well be that this number is in fact much higher.