

JabRef CLI

Software Composition Seminar Project

The Goal

Implement a CLI for JabRef

What is JabRef?

- Reference manager for BibTeX libraries
- Full-text downloader for bib entries
- Open source, on GitHub
- Written in Java

What is JabRef?

JabRef - C:\Users\Silas\Desktop\demo-bib\demo-bib.bib (BibTeX mode)

File Edit Search Groups View BibTeX Quality Tools Options Help

demo-bib.bib

#	entrytype	author/editor	title	year	journal/booktitle	bibtexkey	ranking
1	InProceedings	Corrodi	Towards Efficient Object-Centric Debugging with Declarative Breakpoints	2016	Post-proceedings of the ...	Corr16b	
2	Misc	Ducasse	SUnit Explained			Ducasseb	
3	TechReport	Walker	Recognising structural patterns in code --- A k-means clustering approach	2016		Walk16a	
4	Book	Ducasse et al.	Pharo by Example 5.0	2017		Ducasse2017d	
5	InProceedings	Merino et al.	On the Impact of the Medium in the Effectiveness of 3D Software Visualization	2017	VISSOFT'17: Proceeding...	Meri17b	
6	InProceedings	Merino et al.	MetaVis: Exploring Actionable Visualization	2016	VISSOFT'16: Proceeding...	Meri16c	
7	InProceedings	Chis et al.	Exemplifying Moldable Development	2016	Proceedings of the Progr...	Chis2016	
8	InProceedings	Osman et al.	Exception Evolution in Long-lived Java Systems	2017	Proceedings of the 14th I...	Osma17d	
9	InProceedings	Merino et al.	CommunityExplorer: A Framework for Visualizing Collaboration Networks	2016	Proceedings of Internatio...	Meri16b	
10	InProceedings	Merino et al.	CityVR: Gameful Software Visualization	2017	ICSME'17: Proceedings o...	Meri17c	
11	InProceedings	Corrodi et al.	A Graph-Based Semantics Workbench for Concurrent Asynchronous Programs	2016	Proc. International Confer...	Corr16a	
12	Misc	Tymchuk et al.	[Artifact] Walls, Pillars and Beams: A 3D Decomposition of Quality Anomalies	2016		Tymc16c	

Required fields Optional fields Deprecated fields Other fields General Abstract Review Related articles BibTeX source

Author: Leonel Merino and Mohammad Ghafari and Craig Anslow and Oscar Nierstrasz

Title: {CityVR}: Gameful Software Visualization

Booktitle: {ICSME}'17: Proceedings of the 33rd IEEE International Conference on Software Maintenance and Evolution (TD Track)

Year: 2017

Bibtexkey: Meri17c

Status: JabRef is up-to-date.

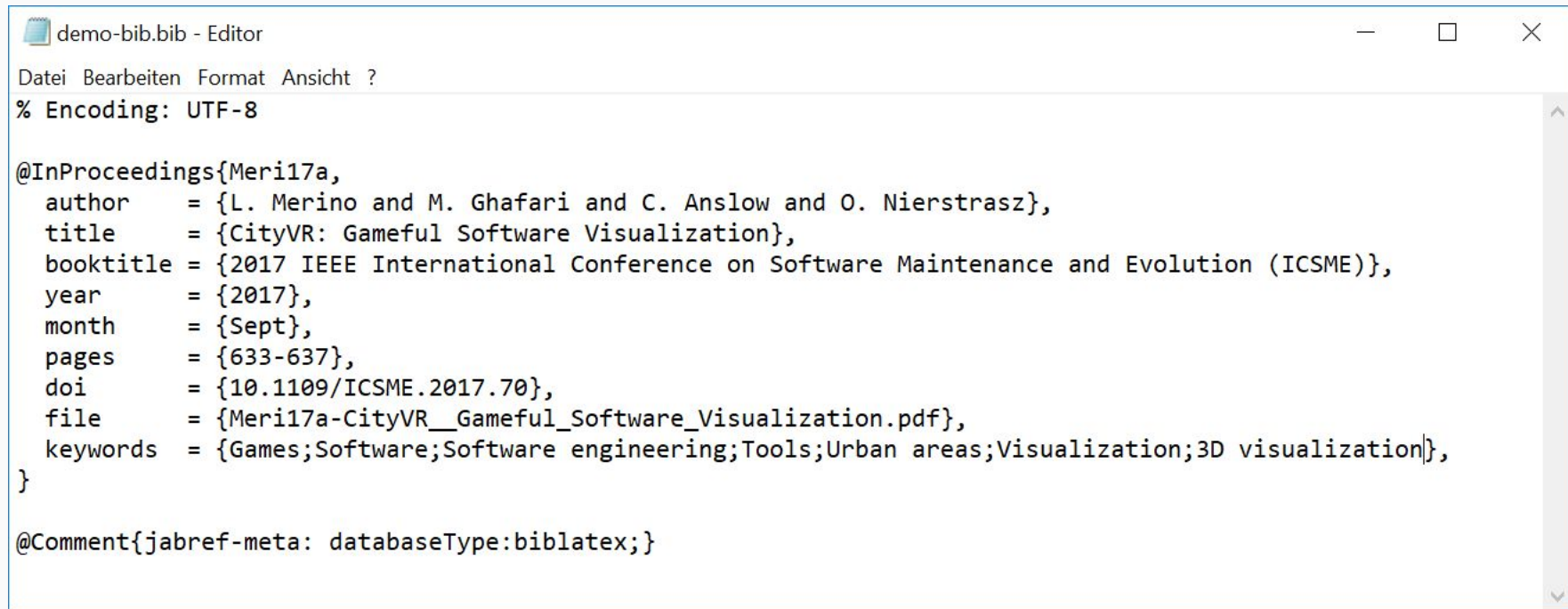
Looking Up Full Text Documents

The screenshot shows the JabRef application window titled "JabRef - C:\Users\Silas\Desktop\demo-bib\demo-bib.bib (BibTeX mode)". The menu bar includes File, Edit, Search, Groups, View, BibTeX, Quality, Tools, Options, and Help. The "Quality" menu is open, displaying several options with keyboard shortcuts. The option "Look up full text documents" is highlighted, with the shortcut "Alt+F7" shown next to it. The main window displays a table of bibliographic entries with columns for #, entry type, author/editor, year, journal/booktitle, bibtexkey, and ranking. Entry 10 is selected, corresponding to the highlighted menu item.

#	entry type	author/editor	year	journal/booktitle	bibtexkey	ranking
1	InProceedings	Corrodi				
2	Misc	Ducasse				
3	TechReport	Walker				
4	Book	Ducasse et al.				
5	InProceedings	Merino et al.				
6	InProceedings	Merino et al.				
7	InProceedings	Chiş et al.				
8	InProceedings	Osman et al.				
9	InProceedings	Merino et al.				
10	InProceedings	Merino et al.	2017	ICSME'17: Proceedings o...	Meri17c	
11	InProceedings	Corrodi et al.	2016	Proc. International Confer...	Corr16a	
12	Misc	Tymchuk et al.	2016	[Artifact] Walls, Pillars and Beams: A 3D Decomposition of Quality Anomalies	Tymc16c	

Status: JabRef is up-to-date.

JabRef Uses Plain Text BibTeX Files



```
demo-bib.bib - Editor
Datei Bearbeiten Format Ansicht ?
% Encoding: UTF-8

@InProceedings{Meri17a,
  author   = {L. Merino and M. Ghafari and C. Anslow and O. Nierstrasz},
  title    = {CityVR: Gameful Software Visualization},
  booktitle = {2017 IEEE International Conference on Software Maintenance and Evolution (ICSME)},
  year     = {2017},
  month    = {Sept},
  pages    = {633-637},
  doi      = {10.1109/ICSME.2017.70},
  file     = {Meri17a-CityVR__Gameful_Software_Visualization.pdf},
  keywords = {Games;Software;Software engineering;Tools;Urban areas;Visualization;3D visualization},
}

@Comment{jabref-meta: databaseType:biblatex;}
```

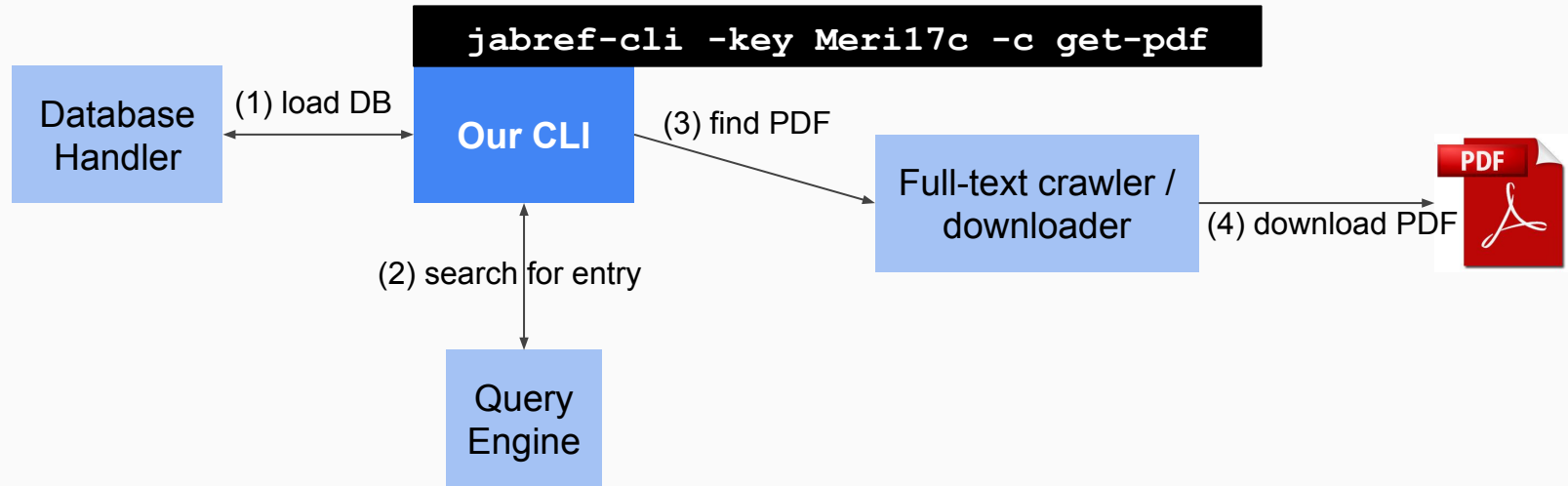
Why do we want a CLI?

- GUI is not intuitive and has screen scaling issues
- CLI is scriptable
- CLI can be much faster to work with

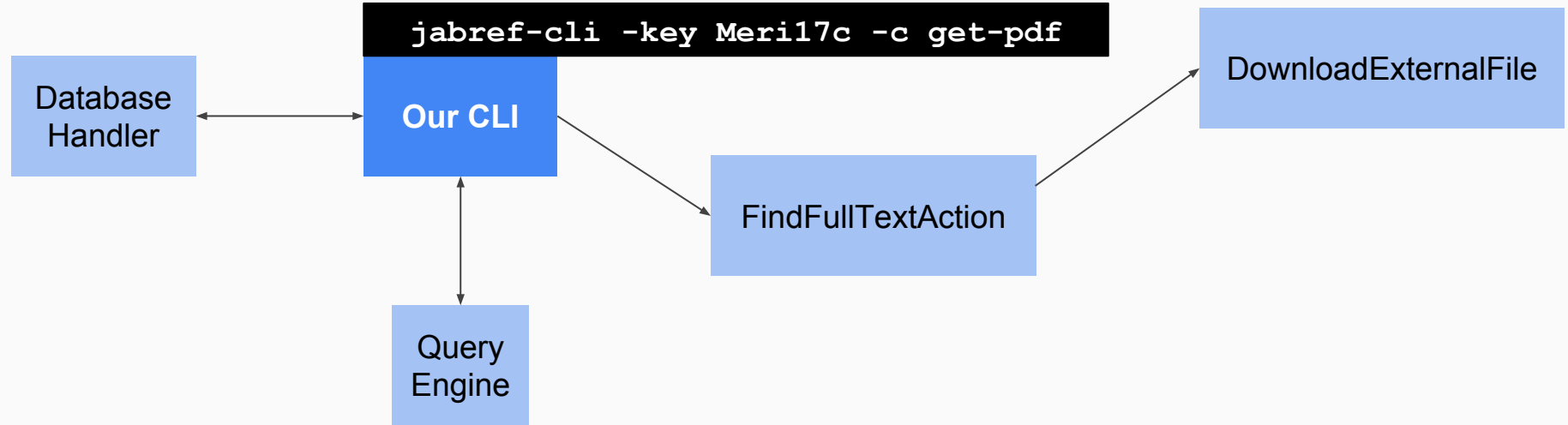
Our Approach

1. Fork project on GitHub
2. Define a command line interface
3. Implement command line parser
4. Wire up CLI to existing logic
 - Load library
 - Find BibTeX entry
 - Find PDF source
 - Download PDF
 - Format entry, add file reference
 - Save changes to BibTeX database

Expected Architecture

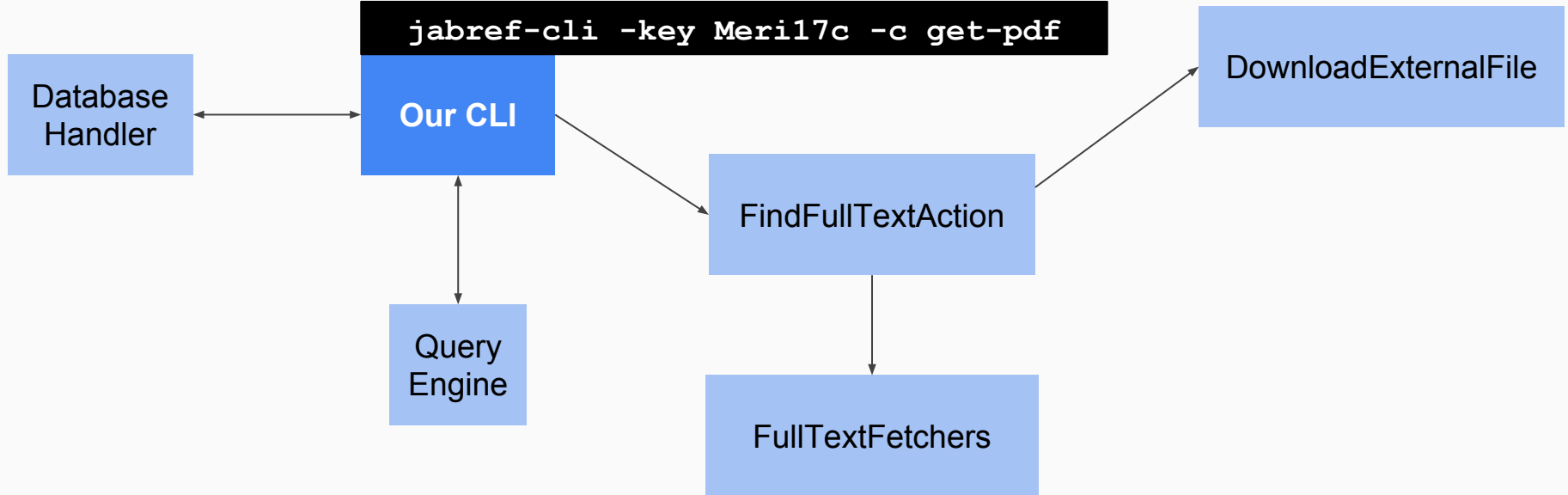


How it actually was...



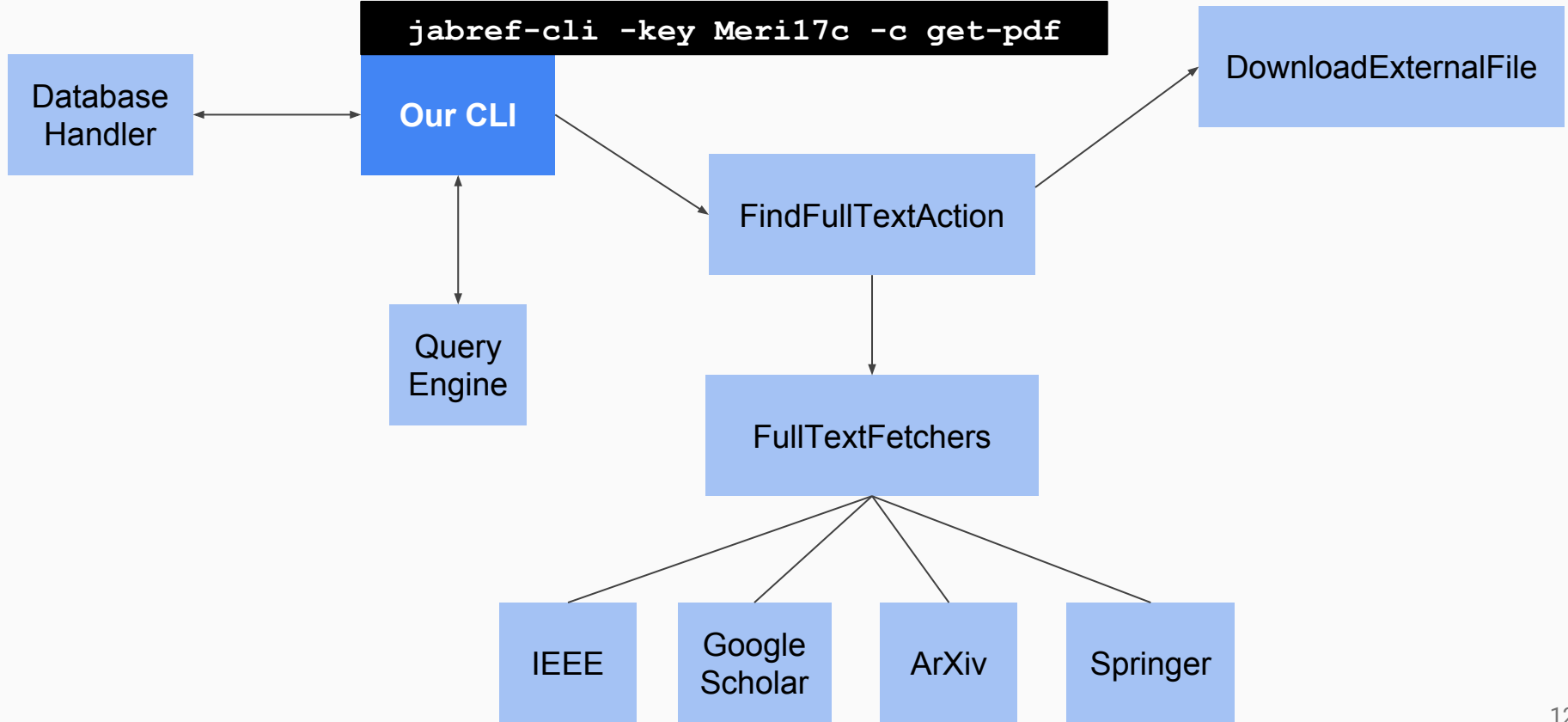
How it actually was...

```
jabref-cli -key Meri17c -c get-pdf
```



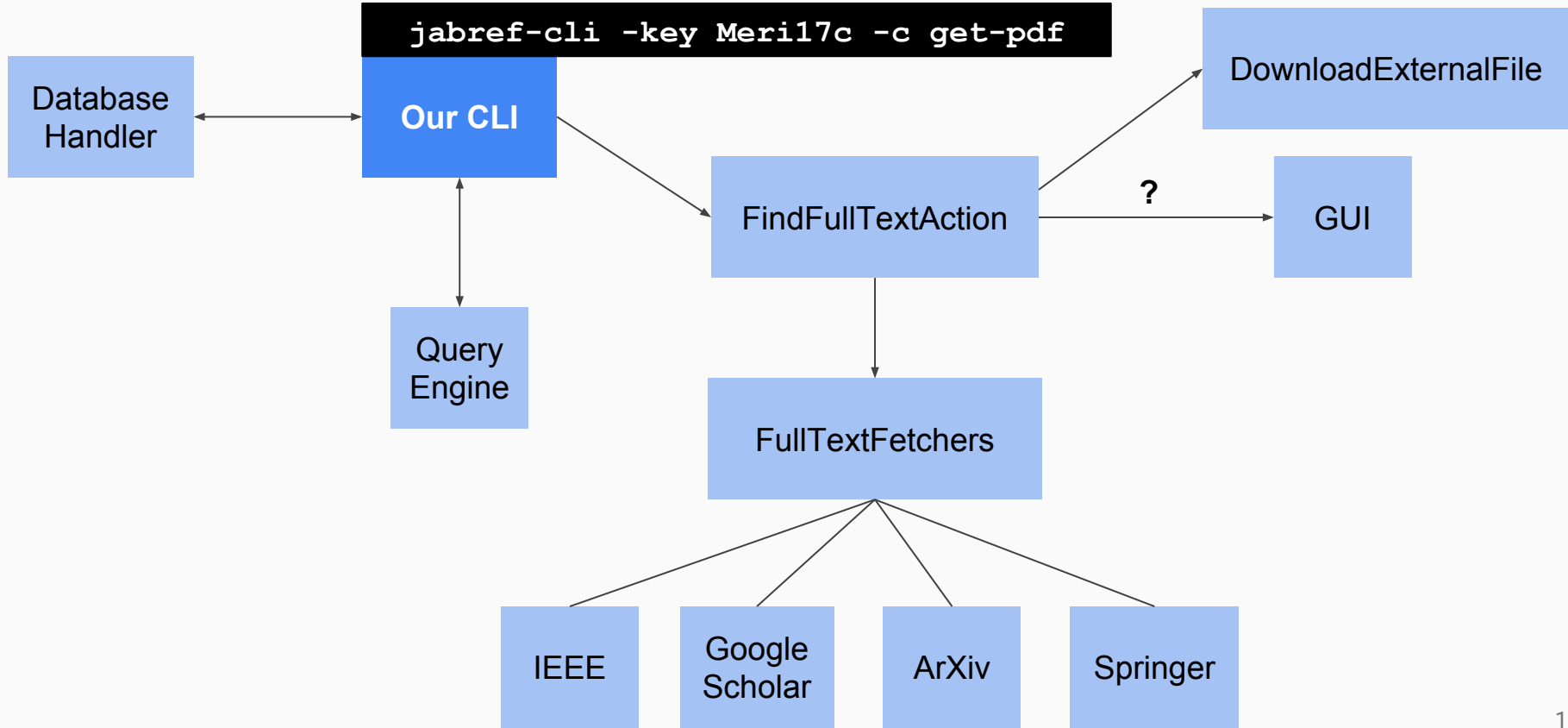
How it actually was...

```
jabref-cli -key Meri17c -c get-pdf
```

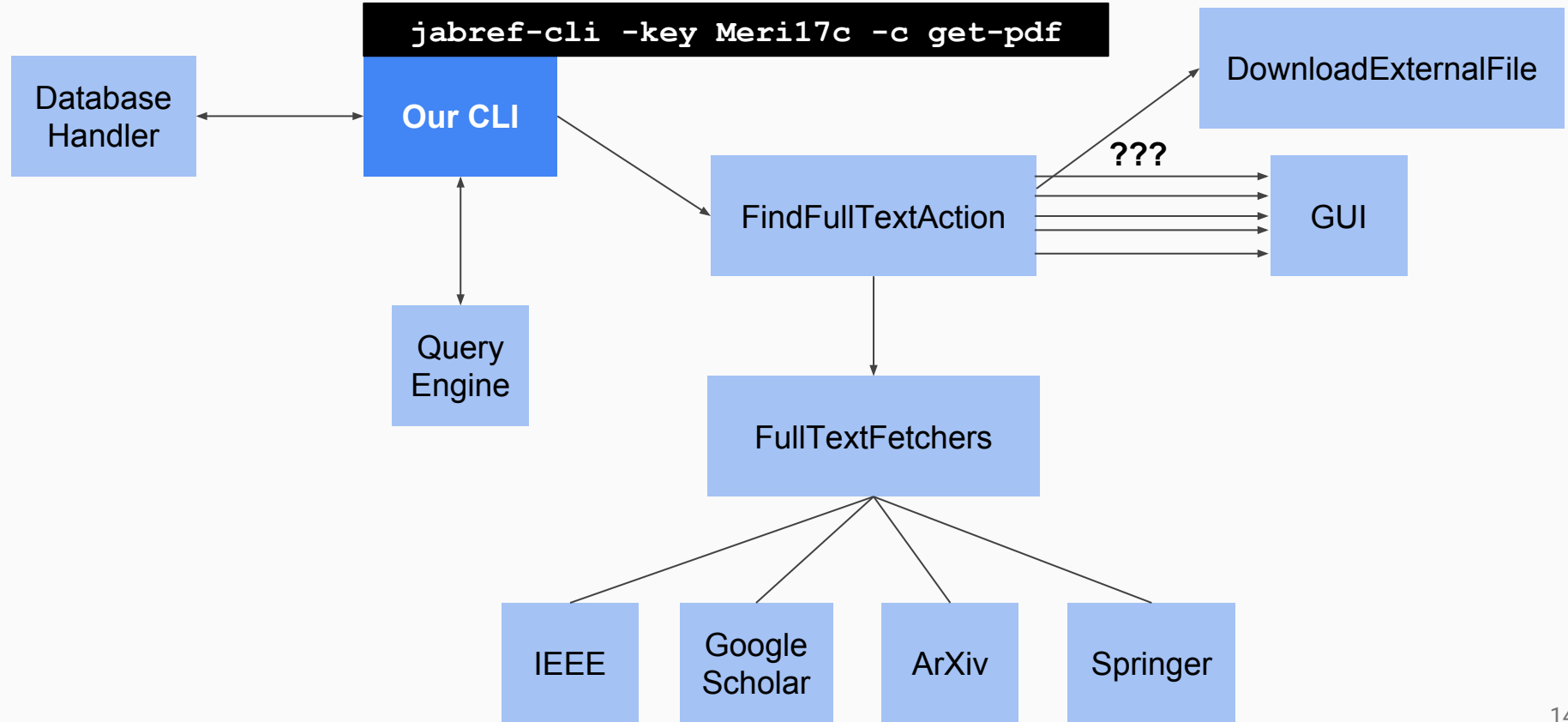


How it actually was...

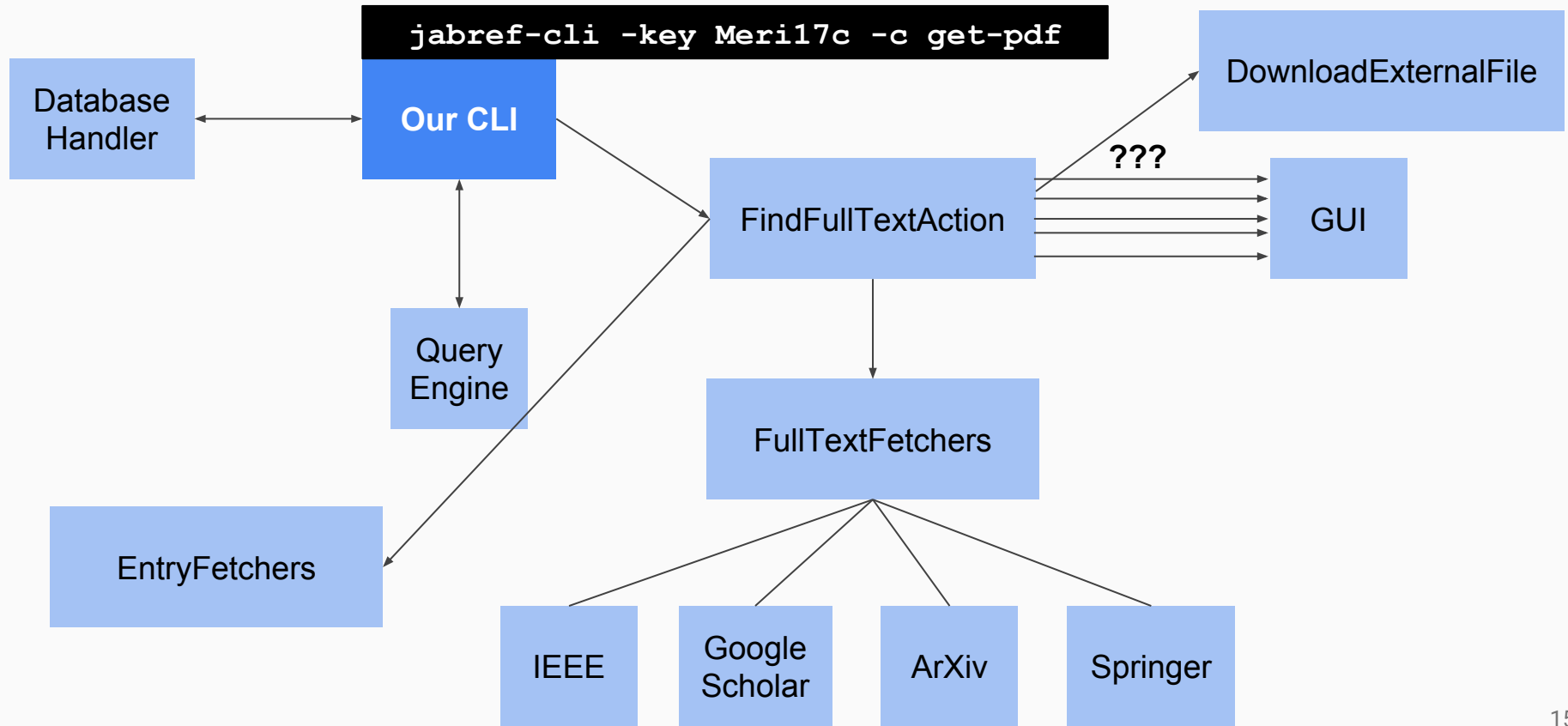
```
jabref-cli -key Meri17c -c get-pdf
```



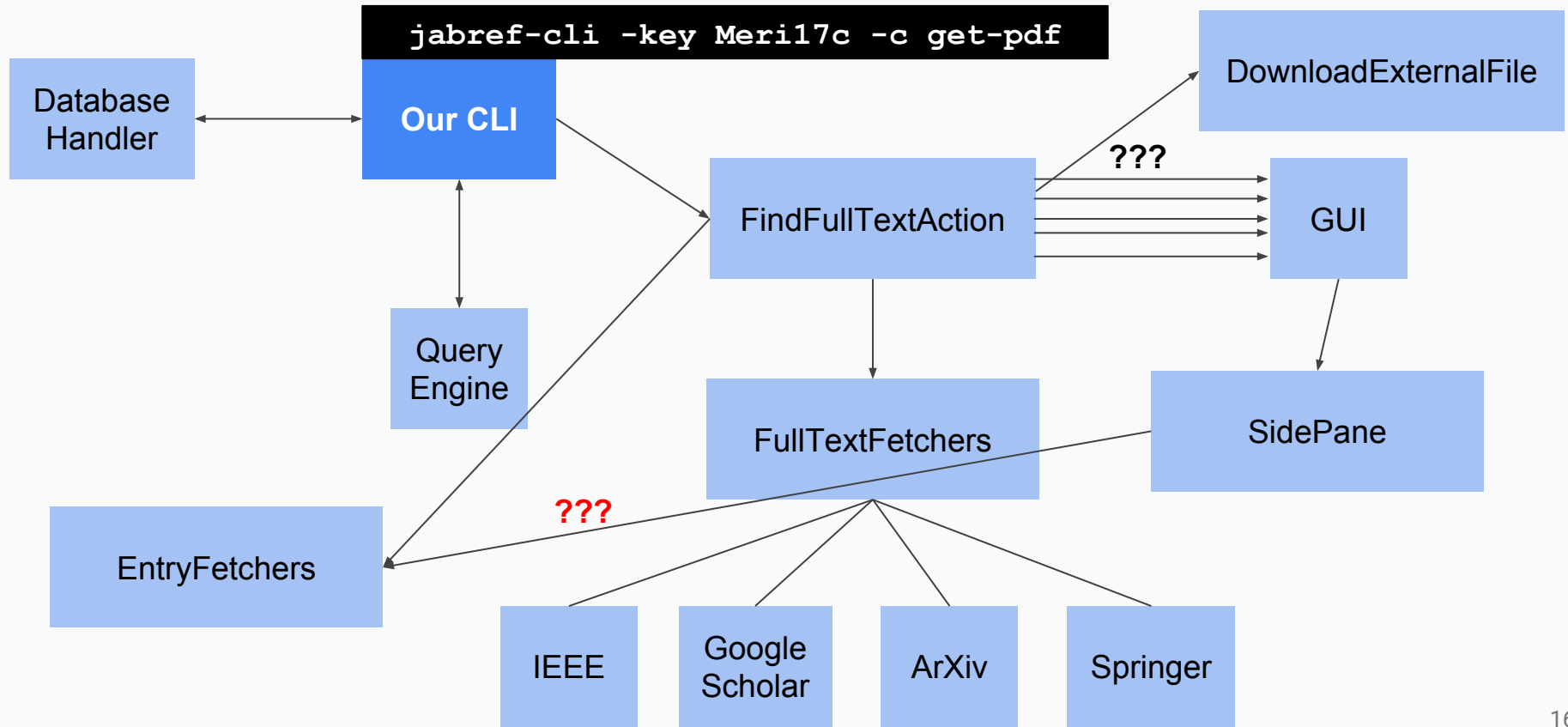
How it actually was...



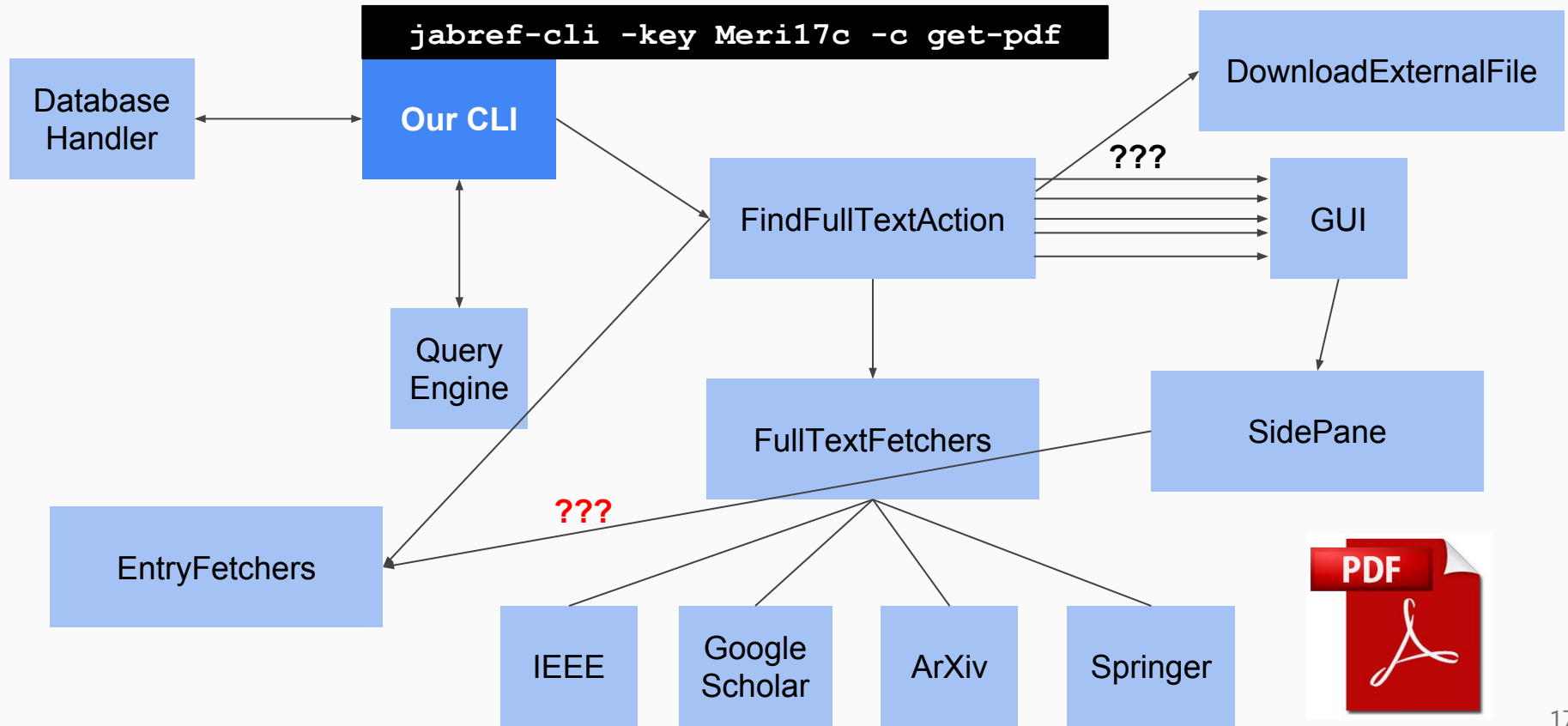
How it actually was...



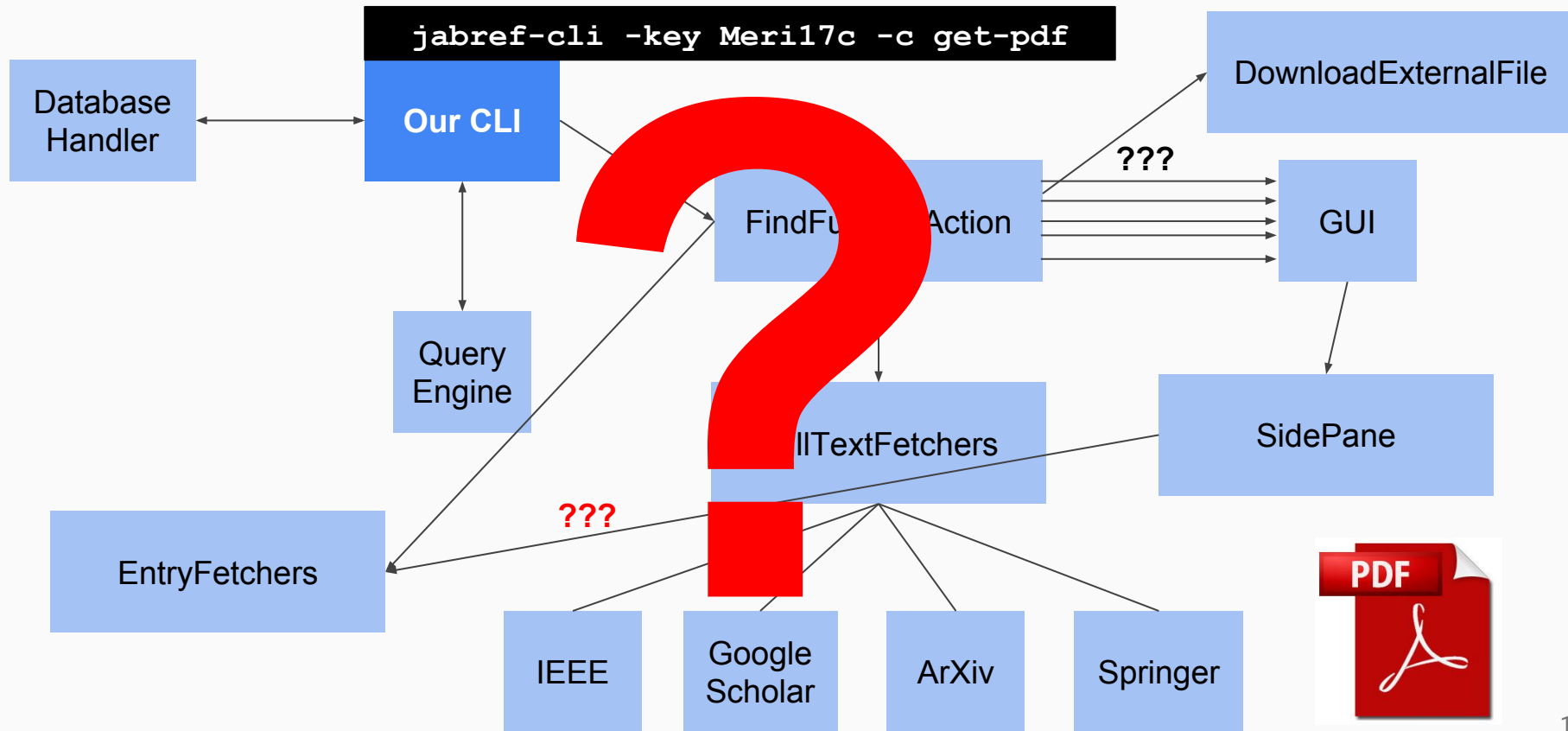
How it actually was...



How it actually was...



How it actually was...



But we did it!

Current Features

- Find a paper by key in the BibTeX library and download the PDF
- Find and download PDFs by URL (ArXiv, ACM, IEEEExplore, doi.org, Springer) and add entry
- Insert *file = {...}* in BibTeX file

Lessons learned

- Spent way more time reading code than writing
- Well-maintained doesn't mean well-engineered
- Accidental complexity?
- “Hacking” does the job, but the solution will hardly be sustainable

Don't judge a book by its cover...

...or a project by its package structure

- ▼ org.jabref
 - ▶ architecture
 - ▶ cli
 - ▶ cli2
 - ▶ collab
 - ▶ gui
 - ▶ logic
 - ▶ migrations
 - ▶ model
 - ▶ pdfimport
 - ▶ preferences
 - ▶ shared
 - FallbackExceptionHandler
 - Globals
 - JabRefException
 - JabRefExecutorService
 - JabRefGUI
 - JabRefMain

- ▼ logic
 - ▶ autosaveandbackup
 - ▶ auxparser
 - ▶ bibtex
 - ▶ bibtexkeypattern
 - ▶ bst
 - ▶ citationstyle
 - ▶ cleanup
 - ▶ exporter
 - ▶ formatter
 - ▶ groups
 - ▶ help
 - ▶ importer
 - ▶ integrity
 - ▶ journals
 - ▶ l10n
 - ▶ layout
 - ▶ logging
 - ▶ msbib
 - ▶ net
 - ▶ openoffice
 - ▶ pdf
 - ▶ preferences
 - ▶ protectedterms
 - ▶ remote
 - ▶ search

- ▼ importer
 - ▼ fetcher
 - AbstractIsbnFetcher
 - ACS
 - ArXiv
 - AstrophysicsDataSystem
 - BibsonomyScrapper
 - CrossRef
 - DBLPFetcher
 - DiVA
 - DoiFetcher
 - DoiResolution
 - GoogleScholar
 - GvkFetcher
 - IEEE
 - IsbnFetcher
 - IsbnViaChimboriFetcher
 - IsbnViaEbookDeFetcher
 - LibraryOfCongress
 - MathSciNet
 - MedlineFetcher
 - MrDLibFetcher
 - ScienceDirect
 - SpringerLink
 - TitleFetcher
 - zbMATH

Future work

- Batch mode (run it on entire SCG bibliography)
- Handle multiple search results
- Refactoring

Applications

- SCG bibliography
- CiteWise
- Integrated Literature Research Environment
- Have a single command during daily work: get entry, get PDF, format entry, add file link