Alcor
A user interface for Mizar

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Goals

- User interfaces to MKM
  - VERY broad
- User focus: mathematicians
- System focus: digital library
- Task focus: creating new mathematics for library

Mizar as test-bed

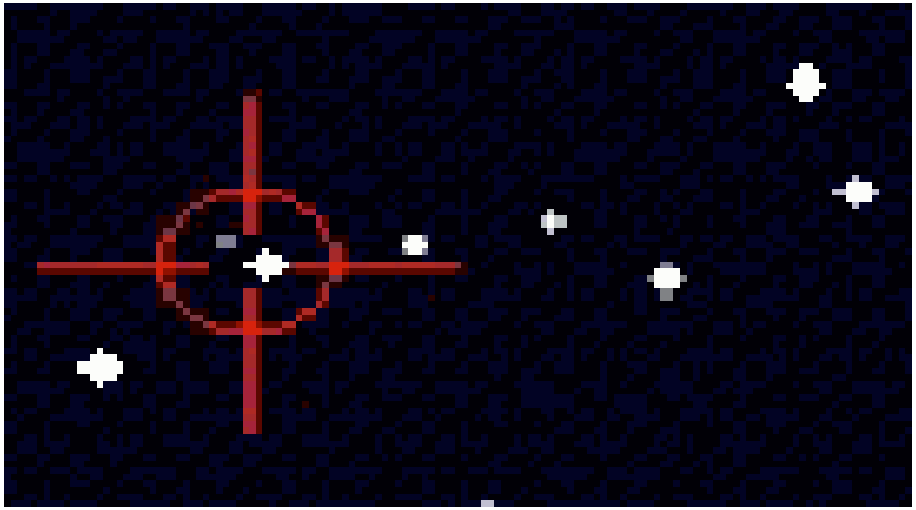
- (Most) substantial library of formal maths
  - homogeneous
  - search/retrieval issues
  - significant resource
- Would mathematicians use it?

Alcor

- Working GUI environment for Mizar
- Very vague at this stage
  - principle rather than a system?
- Strong UCD approach...
- ... but need to start with a system

What's in a name?

- Mizar
- Alcor – companion
- "Horse & rider"
- Alcor sits on Mizar



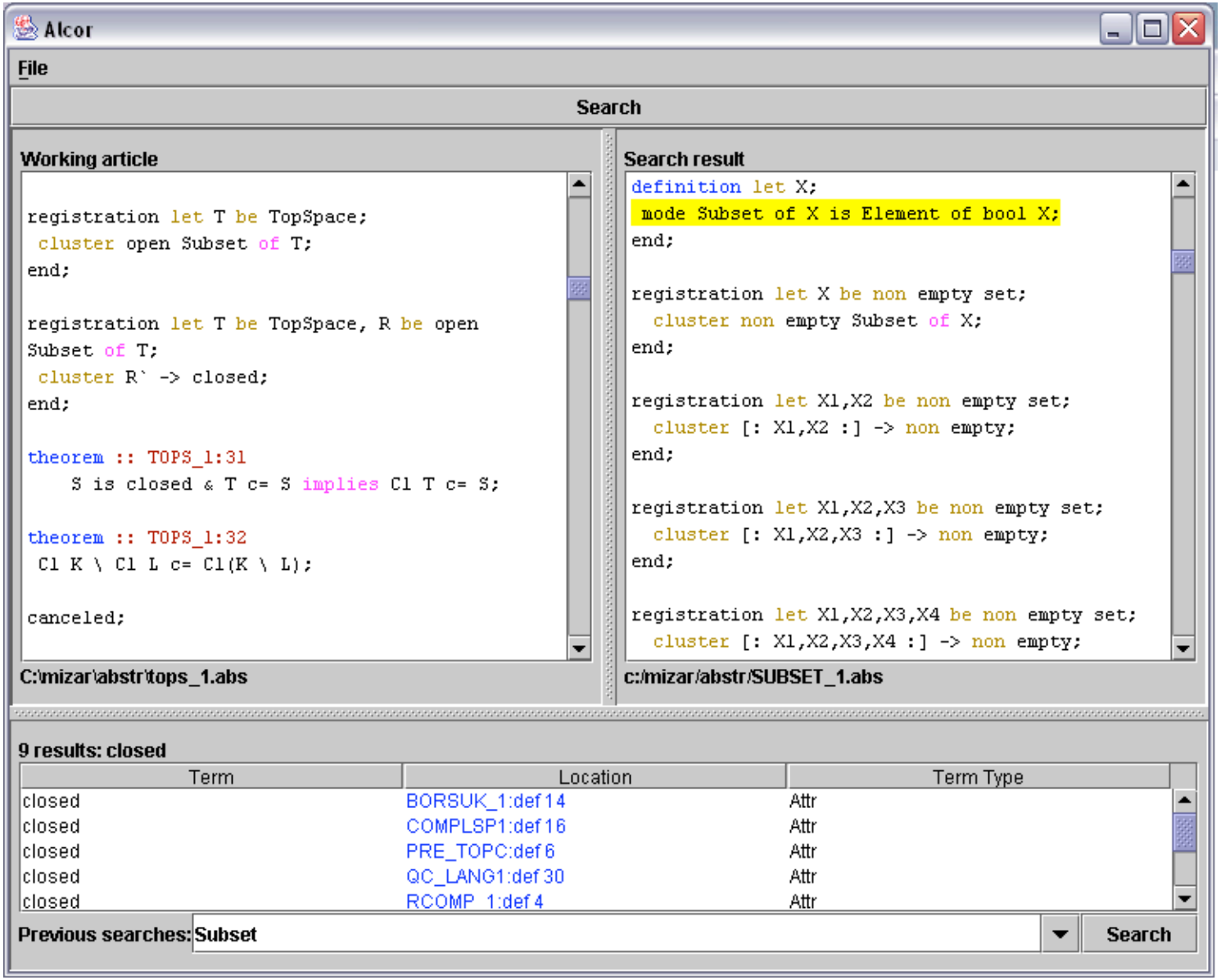
“User” goal

- To add to the MML
- To draw on the library
- No encyclopaedic knowledge
  - 2000 definitions, 30,000 theorems!
  - verbosity (de Bruijn factor)

Barriers to goal

- What's in the library?
- What's like my theorem?
- Can I prove this "by ref"?
- What *is* the definition of compact?

- I am moving up these questions!


Alcor
File
Search
Working article
registration let T be TopSpace;
cluster open Subset of T;
end;
registration let T be TopSpace, R be open
Subset of T;
cluster R` -> closed;
end;
theorem :: TOPS_1:31
S is closed & T c= S implies Cl T c= S;
theorem :: TOPS_1:32
Cl K \ Cl L c= Cl(K \ L);
canceled;
C:\mizar\abstr\tops_1.abs
Search result
definition let X;
mode Subset of X is Element of bool X;
end;
registration let X be non empty set;
cluster non empty Subset of X;
end;
registration let X1,X2 be non empty set;
cluster [: X1,X2 :] -> non empty;
end;
registration let X1,X2,X3 be non empty set;
cluster [: X1,X2,X3 :] -> non empty;
end;
registration let X1,X2,X3,X4 be non empty set;
cluster [: X1,X2,X3,X4 :] -> non empty;
c:/mizar/abstr/SUBSET_1.abs
9 results: closed
Term
Location
Term Type
closed BORSUK_1:def 14 Attr
closed COMPLSP1:def 16 Attr
closed PRE_TOPC:def 6 Attr
closed QC_LANG1:def 30 Attr
closed RCOMP_1:def 4 Attr
Previous searches:
Subset
Search

Implementation

- Phrasier system
  - the plagiarists dream
- Keyword search
- Multiple methods of search

Pros and Cons

- Single focus of attention
- Context of search
- Gesture-based input is less expressive
- Tie-in to context

What's next?

- Better search algorithms
  - **<advert>** see my other talk! **</advert>**
- Work up to full editor
- Workbench for exploration

What about users?

- Me first!
  - attempt bits of my thesis
  - attempt to check some hard/technical maths
- What's the gap?
- Take out to other users

Thanks to...

- Paul
- Grzegorz
- Roman
- And you for your attention