### ZINC ... Galvanizing CIF to Work with UNIX

"... the information we possess often has nothing to do with the information we need. It has to do with how the information is packaged and presented to us."

From *Stats*, by Bill James

## A Visit from a User

- No understanding of the DDL discusion
- Overwhelmed by the size and complexity of the mmCIF dictionary
- Not confident that my software will solve their problem.
- Does not have time nor staff to devote to "serious" programming projects - seat of the pants operations

### Why CIF does not work with Unix tools

- Line orientation of Unix tools
  - grep, (g)awk, sed, perl
- Field orientation of Unix tools
  - (g)awk, perl, sort
- Position orientation of Unix tools
  - diff, head, tail
- These are all piping tools very different from many being developed for CIF.

## Which leads to ... ZINC

- A piping format
- block <\t> name <\t> index <\t> value <\t> loop-id
  - new-lines replaced by "\n"
  - comments are included
- This format is accessible to most Unix tools (long lines are sometimes a problem with the older tools)

# Applications

- zincGrep search a CIF for a regexp
- cifZinc convert a CIF to a ZINC
- zincCif convert a ZINC to a CIF
- zincNI Create a namelist input from a ZINC
- cifdiff find real differences in CIFs
- zincSubset Extract a subset of a CIF.
- zb A simple browser in tcl/tk. << 200 lines</li>

# SimpleCif - 1

data_bigloop			
_name	"lots of	points"	
_author			
;			
Dave Star	mpf		
;			
loop_			
_x	_У	_color	
0	0	red	
1	1	red	
2	4	red	
3	9	orange	
4	16	orange	
5	25	orange	
_status	complete		
		Zinc - (	Galvanizing CIF to Work with UNIX CIF Tools/Brussels

### zincGrep

bach 1% grep author simple1.cif \_author bach 2% zincGrep author simple1.cif bigloop author ;\n Dave Stampf\n; bach 3%

### cifdiff - the "similar file"

#### data\_bigloop \_status complete loop\_ \_color \_У \_\_X 0 0 red 1 1 red 2 2 red 9 3 orange 16 4 orange 5 25 orange "lots of points" name author ;

Dave Stampf

;

### cifdiff - the result

bach 4% cifdiff simple1.cif simple2.cif
18c18
< bigloop y 2 4
---> bigloop y 2 2
bach 5%

### cifdiff - the program

```
#! /bin/csh
#
# @(#) cifdiff 1.1 9/24/94
#
# find difference in two cifs.
#
cifZinc $1 | sort -t\ +0 -1 +4 +1 -2 +2n -3 |\
gawk -F\ -v OFS=\ '{print $1, $2, $3, $4}' > /tmp/$1.zinc
cifZinc $2 | sort -t\ +0 -1 +4 +1 -2 +2n -3 |\
gawk -F\ -v OFS=\ '{print $1, $2, $3, $4}' > /tmp/$2.zinc
```

diff /tmp/\$1.zinc /tmp/\$2.zinc
rm /tmp/\$1.zinc /tmp/\$2.zinc

### zincSubset - generating a cif subset

bach 1% zincSubset coords simple1.cif | zincCif

data\_bigloop

loop\_ \_x

\_У

0	0
1	1
2	4
3	9
4	16
5	25



### zincSubset - the program

```
#!/bin/csh
#
# code to determine the values of the v and c switches removed
# for display purposes.
```

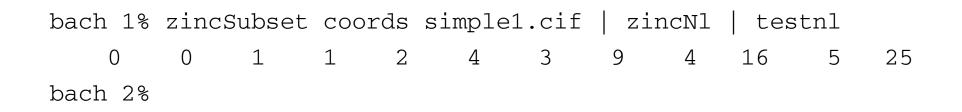
cifZinc \$c \$2 | egrep \$v -f \$1

### zincNI - the application program

```
program testnl
```

```
C Get namelist to work.
C integer x(6), y(6)
namelist /bigloop/ x, y
read (5,nml=bigloop)
write(6,600) (x(j), y(j), j=1,6)
600 format(12(1x,i12))
stop
end
```

### zincNI - the result



### **Gains and Losses**

### • +

- Huge number of potential application programmers
- Huge base of existing software
- Empowers the individual consumer
- -
- Big change in size
- Unreadable in a different way than CIF