

Dialog Design 1

Command languages and WIMP

**The topic :
How does a user interact
with the interface?**

Dialog Style

1. Command languages
2. WIMP - Window, Icon, Menu, Pointer
3. Direct manipulation
4. Speech/Natural language
5. Gesture, pen, VR



Dialog Style

1. Command Languages

- **Earliest UI interaction paradigms**
- **Examples**
 - MS-DOS shell
 - UNIX shell
 - dBase
 - GPSS
- **CL Attributes**
 - Work primarily by recall, not recognition
 - Heavy memory load
 - Little or nothing is visible
so...
 - Poor choice for novices
but...
 - Advantages for experts ?



CL Advantages

- **Advantages for experts**
 - **Speed, conciseness**
 - %ls (hard to beat)
 - **Can express actions beyond a limited set**
 - Flags, piping one command to another
 - **Repetition, extensibility**
 - Scripting, macros
 - **Easier implementation, less overhead**
 - **Power**
 - Abstraction, wild cards

CL Danger

- With added power, comes added responsibility and danger
 - **UNIX**
 - `% rm -r *`
 - **Deletes every file that you have, and you can't get them back**

CL Reflection

- **Command languages are often maligned (for good reason)**
- **But increased functionality can win out over bad UI (e.g., UNIX)**
 - **Try to get both**
 - **Avoid excess functionality (comes at cost)**

CL Design Goals

- **Consistency**
- **Good naming and abbreviations**
- **Doing your homework in design can help alleviate some of the negatives**

Consistency

- **Provide a consistent syntax**
 - **In general: Have options and arguments expressed the same way everywhere**
 - **UNIX fails here because commands were developed by lots of different people at different organizations**
 - **No guidelines provided**

Order

- **English: SVO subject verb object**
"you" assumed on computer
- **CL: S assumed (you)**
 - Is VO or OV better?
 - % delete file
 - or
 - % file delete
- **V dO iO vs. V iO dO**
 - % print file calvin Which is better?
 - % lpr -Pcalvin file

Syntax

- **Pick a consistent syntax strategy**
 - **Simple command list**
 - e.g, vi, minimize keystrokes
 - **Commands plus arguments**
 - realistic, can provide keyword parameters
 - % cp from=foo to=bar
 - **Commands plus options plus arguments**
 - what you usually see

Terminology

- **Keep terminology consistent**
 - **Same concept expressed with same options**
 - **Useful to provide symmetric (congruent) pairings**
 - **forward/backward**
 - **next/prev**
 - **control/meta**

Example :

- **vi text editor**
 - **w - forward word**
 - **b - backward word**
- **Wouldn't 'f' be better for forward?**
 - **'f' already used**
- **How about 'fw' and 'bw'?**
 - **Extra keystrokes**

Ordering

- **Keep ordering consistent**
 - VO seems to be the most natural
 - Typically need to pick where options go
- **Example**
 - % ln -s file1 file2 (I can never remember)
 - Think of % cp file1 file2

Names and Abbreviations

- **Specificity versus Generality**
 - **General words**
 - More familiar, easier to accept
 - **Specific (typically better)**
 - More descriptive, meaningful, distinctive
 - (Nonsense does surprisingly well in small set)

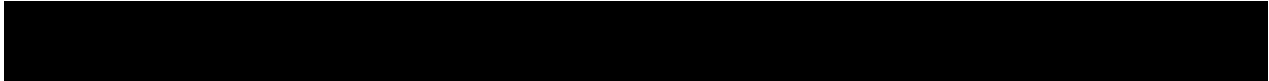
Abbreviations

- **Abbrevs. allow for faster actions**
 - Expert performance begins to be dominated by motor times such as # of keystrokes
 - Not good idea for novices
 - (Allow but don't require)

Picking Good Abbreviations

- **Strategies**
 - Simple truncation (works best, but conflicts)
 - Vowel drop plus truncation (avoid conflicts)
 - First and last letters
 - First letters of words in a phrase
 - Standard abbrev from other contexts
 - qty, rm, bldg
 - Phonics
 - xqt

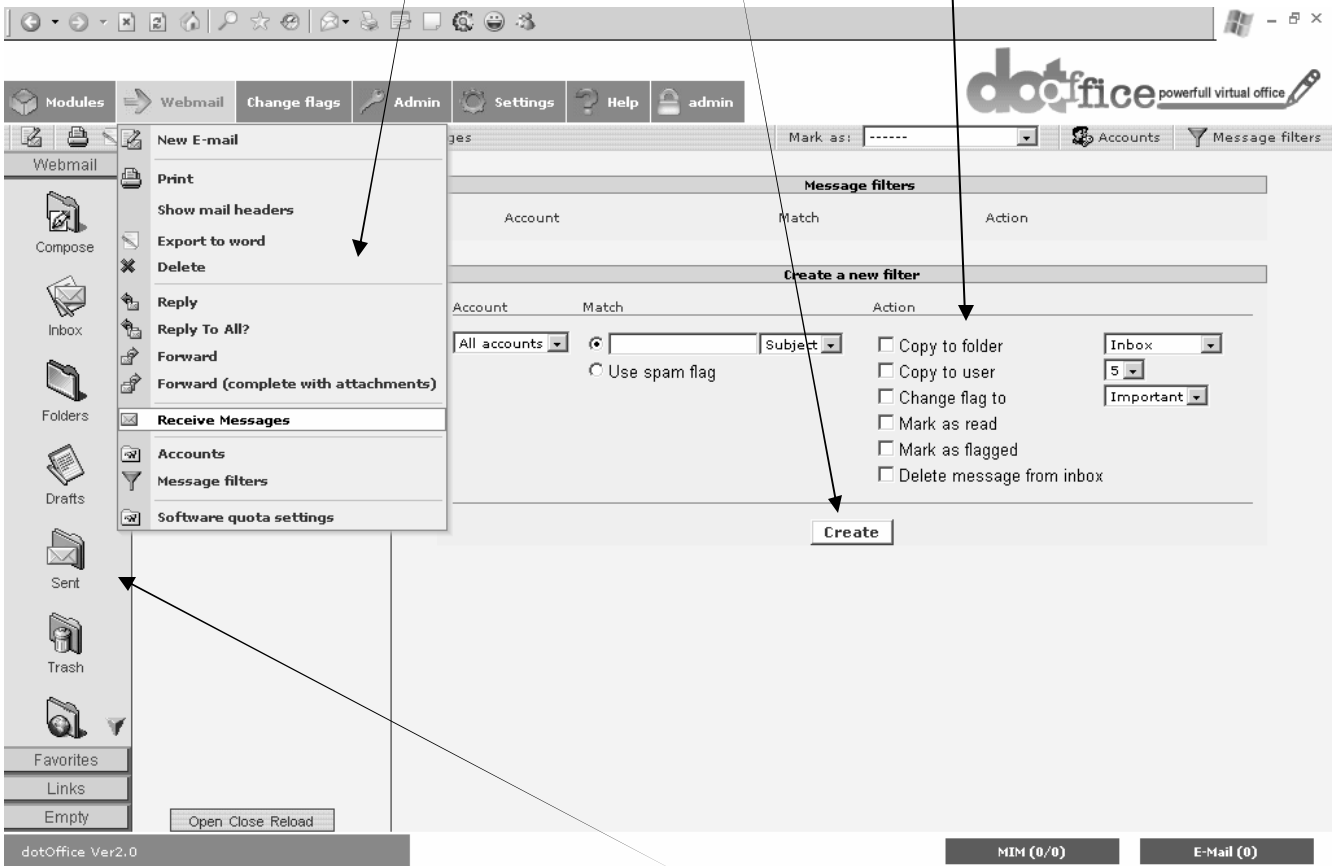
Abbreviation Guidelines

- **Use single primary rule (with single fallback for conflicts)**
 - **Use fallback as little as possible**
 - **Mark use of fallback in documentation**
 - **Let user know primary and secondary rules**
 - **Truncation is good but generates conflicts**
 - **Fixed length is better than variable length**
 - **Don't use abbrevs. in system output**
-
- 

Dialog Style

2. WIMP

- Focus: Menus, Buttons, Forms



- icon

Menus

- **Key advantages:**
 - 1 keystroke or mouse operation vs. many
 - No memorization of commands
 - Limited input set
- **Many different types**
 - pop-up
 - pull-down
 - radio buttons
 - pie buttons
 - hierarchies

Menu Items

- **Organization strategies**
 - Create groups of logically similar items
 - Cover all possibilities
 - Ensure that items are non-overlapping
 - Keep wording concise, understandable
- **Bad Example**
 - Travel web page links:
 - Flight page
 - 3 Best Itineraries
 - Flights & Prices
 - Timetables
 - Fares
 - Which do you choose for reservations?

Presentation Sequence

- **How does Mac, Netscape, etc, do it?**
- **Use natural if available**
 - **Time**
 - **e.g. Breakfast, Lunch, Dinner**
 - **Numeric ordering**
 - **e.g. Point sizes for font**
- **Choices**
 - **Alphabetical**
 - **Group related items**
 - **Frequently used first**
 - **Most important first**

Presentation Sequence

- **User studies**
 - **Novices: alpha > functional > random**
 - **Experts: categorization**
- **How would you do it in general?**
- **One possible methodology (first->last)**
 - **Natural order (if exists)**
 - **Frequency of use**
 - **Order of use**
 - **Categorical**
 - **Alphabetical**
- **Don't change dynamically!**