Dual Tool Rule

I made the notes below to suggest a possible two-tool approach to the text and graphics selection in PowerPoint. The purpose is to take better advantage of the two tools we have, focusing the text tool more on selecting than creating. This allows us to start up in text selector mode.

There are three possible modes or states:

Graphics Selector. Equivalent to our current pointer tool. It selects graphics except when it is over the text of a graphics-selected object that contains text. In that area it changes to indicate that it will act as a text selector. Clicking there goes to Text Selector state.

Graphics Selector Cursor. Click to select an object. Drag to move the object or drag out a selection rectangle.

When over the text of a graphics-selected object, the graphics selector changes to this. If you click, the state changes to Text Selector State.

Text Selector. The cursor is an I-beam whenever it is over any text area on the slide. Clicking immediately places a caret in these areas. Outside of a text area, the cursor changes to indicate that it will act as a graphics selector. Clicking there goes to Graphics Selector state.

Text Selector cursor. Click to place a caret. Drag to select multiple characters.

When not over any text area of the slide, the text selector changes to this. If you click, the state changes to Graphics Selector State.

Text Creator. The cursor is an I-beam whenever it is over any text area of the slide. Clicking immediately places a caret in these areas. Outside of any text area, the cursor changes to a text-creation tool (sword cursor) to indicate that it will create a new text object.

Clicking with the Text Tool always changes to Text Selector state, whether a new object is created or not, unless the tool is locked down with a double click (or whatever).

Text Creator cursor. Click or drag to create a new text object.

Over existing text, the text creator changes to this. If you click, it acts as a text selector.

Clicking Arrow Tool: If text is selected, change to object selection on the same object. Go to Graphics Selector state.

Clicking Text Tool: If there is an object selected, change to text selection on the same object and go to Text Selector state. If there is no object selected, go to Text Creator state.

Dennis Austin
November 17, 1992

1 ☐ # Tables in PowerPoint 4.0

- Tables are two-dimensional arrays of cells
  - Analogy with groups
- Cells are shapes
  - Motivated by implementation cost and leverage
    - Lots of work to implement tables as a single text object
    - We already have shapes with attached text
- Better match to Excel than Word
  - Word's tables are a hack
  - Tables should be more object-like than text-like

2 ☐ # Table Components

Selections

- Table
- Rows
- Columns
- Cells
- Gridlines
- Frame?
- Cell contents
- Multiple adjacent cells

Drawing Order

- Table shadow
- Table fill
- Rows
  - Columns
    - Cells
- Gridlines
- Table frame

3 ☐ # Cell Contents

- Text
- Pictures?
  - Currently don't allow pictures in shapes or text
    - But may implement one or both of these features
  - Could allow a cell to be a shape *or* a picture
  - Scaling, resizing, cropping issues
- Embedded objects?
  - Same issues as pictures plus others

4 ☐ # Editing Cell Contents

- Automatically increase row/column sizes?
- Interaction with Fit Text?

5 ☐ # Editing Table Structure

- Inserting and deleting rows and columns
  - Tool, keystrokes, or menu commands?

- Merging and splitting
- Pasting tables into tables
- Resizing table is like resizing a group
- What do Rotate/Flip, other object commands do?

6 Selecting Text *vs.* Cells

- Allow selecting text in multiple cells distinct from selecting the cells?
  - Need different selection highlighting
- Deleting rows/columns vs. clearing their text
  - Word's behavior is wierd:
  - Once you cross cell boundary selection is by cell

7 Object Selected Table

8 Table Open for Editing

- Triangles are analogous to shape adjust handles
  - They change the "shape" but not the overall size of the object
  - Does changing cell size change table size if cells fit to text?
- Show dotted lines where gridlines do not exist

9 Changing Row and Column Sizes

- Use adjust handles
  - Similar to Excel's model
- Don't need Word's cell size adjustment cursor?
  - Only works for columns anyway

10 Typing Behaviors

- Navigating between cells
- Creating new rows

11 Adornment

- Cells are shapes and can be filled and framed
  - How does pen centering affect borders?
  - Change shape and adjust shape?
  - Can different cells have different shapes?
  - No shadows
- Gridlines can have line styles
  - Color, pattern, thickness
  - No arrows or shadows
- Text styles
  - The usual

12 ## Rulers

- Per cell?
- What if we use single ruler below toolbar like Word?
- Prefer to not put column width adjustment on ruler

13 ## Styles

- Excel's AutoFormat command
- Table style defined on master
  - Use body object?
  - Maintain exceptions
- Pick and apply style
  - Style implied by selection
- Allow table, column, row, cell, and text styles?
  - Need priority rules

14 ## Tables in Slide Show

- Builds by row, column, or cell?
- Same sorts of options as bullets
  - Dimming
  - Flying or other effects?

15 ## Tables in Outline View

- Want to avoid dual implementations
- Could use outline structure to organize columns
  - Requires some way to remember "tableness" of text in outline
  - How do you create a table solely in outline view?
  - Could use same idea for org charts
- Use tab stops
  - Need per object ruler in outline (not hard?)
  - Building outline text inserts tabs between columns of text
  - Doesn't handle cells with multi-line text well

16 ## Use Outline Hierarchy

17 ## Compatibility with Word and Excel

- Drawing UI standardization issues
- Excel and Word are very different
  - Is there a standard to follow?
  - Prefer Excel's model

18 ## Import and Export, Linked Data

- Converting between tabbed text and tables
- Importing and exporting RTF
- Linking to data in Graph or Excel

19 ## Table Creation User Interface

- Word's toolbar button doesn't make sense for us
  - In Word, there's a current insertion point to insert the table at
- Table tool on tools column?
  - Set number of rows and columns in same way as you use the shape tool to set the current shape
  - Drag out rectangle to get table with current number of rows and columns
  - Tool placement on left is better for setting a wide grid
- Simpler table tool like rectangle tool?
  - Could set table defaults, including number of rows and columns, with style mechanism

20 ## Setting the Current Table Size

Text UI Proposal

Alice Wang
November, 9, 1992

0. Remark

This document sumarize the text UI (mouse + keyboard) in **Word T3** which are currently not available in PP3(or different), but could be considered to implement in PP4. Items start with ➢ bullet implies the importance for PP4.

1. Mouse shortcuts:

- ➢ Open the character dialog box: **Double Click** anywhere on the ribbon but a button or a box. This task belong to UI group.
- ➢ **Tripple click** selects the whole paragraph. Tripple click on selection bar select the whole document.
- ➢ **Multiple click**: If the mouse is rapidly clicked n times, T3 will select word, paragraph, word, paragraph, etc.. In the selection bar, it will select line, paragraph, entire document, paragraph, entire document, etc..

2 Selecting text with the mouse:

- ➢ Select **A Line**: Click in the selection bar to the left of a line. Note that arrow pointer shape changed to different direction when position mouse on the selection bar, which gives you feedback on what's going to be slected.
- ➢ Select **Multiple Lines**: Drag in the selection bar to the left of the lines.
- ➢ Select **A Sentence**: Hold down the **CTRL** key and click anywhere in the sentence.

3. Character formatting key combinations:

- All capital letters: **CTRL+A**
  Note: In PP3, CTRL+A means select all. Thus, if you place insertion point on a text and then press CTRL+A will select the whole text object.
- ➢ Underline a word: **CTRL+W**
  Note: This is a neat feature.
- ➢ Subscript (3 pnts): **CTRL+EQUAL SIGN**
  Note: PP3 has this feature. It's **CTRL+ALT+SHIFT+<**. We need to standardize this.
- ➢ Superscript (3 pnts): **CTRL+SHIFT+EQUAL SIGN**
  Note: PP3 has this feature. It's **CTRL+ALT+SHIFT+>**. We need to standardize this.
  Note: In PP3, CTRL+= means bring forward. Thus, in slide view and in open edit mode, CTRL+= drops the open edit mode and then object select. In outline view, CTRL+= is no op.
- ➢ May consider shortcuts for **Emboss, Shadow** and **Bullet** styles.
- Change font: **CTRL+F**
  Note: In PP3, CTRL+F is shortcut of Find/Replace command.
- Change point size: **CTRL+P**
  Note: In PP3, CTRL+P is shortcut of Print command.
- ➢ Increase point size: **CTRL+F2**
  Note: PP3 has this feature. It's **CTRL+SHIFT+<**. We need to standardize this.
  Note: In PP3, CTRL+F2 toggle between object select and text select.
- ➢ Decrease point size: **CTRL+SHIFT+F2**
  Note: PP3 has this feature. It's **CTRL+SHIFT+>**. We need to standardize this.
  Note: In PP3, CTRL+SHIFT+F2 toggle between object select and text select.
- Change the case of letters: **SHIFT+F3**
- Remove character formatting from the selected text: **CTRL+SPACEBAR**

4. Deleting and inserting text and graphics

- Delete one word to the left of the insertion point: **CTRL+BACKSPACE**
- Delete one word to the right of the insertion point: **CTRL+DEL**

5. Function keys for Text

- Check spelling of selected text: **F7**
  Note: Should we use Word's spelling dialog?

6. Outlining Keys:

- Expand the text under a title: **ALT+SHIFT+PLUS SIGN (T3)**
- Collapse the text under a title: **ALT+SHIFT+MINUS SIGN (T3)**
  Note: Our "Titles Only" button can serve the purpose of expand and collapse. But, it applies to all titles. You cannot expand or collapse each individual title. However, importance of this feature is low.
- Need a shortcut for "Titles Only" button: *** on the numeric keypad (T3)**

7. Paragraph formatting key combinations

- Format single-spaced lines: **CTRL+1**
- Format double-spaced lines: **CTRL+2**
- Format one-and-one-half spaced lines: **CTRL+5**
- Add one line of space before a paragraph: **CTRL+O**
  Note: T3 will change this to something else which is not specified in current spec. CTRL+O will be used for "File Open".
- Delete space before paragraph: **CTRL+0**
  Note: In my opinion, the above shortcuts aren't necessary for PP4.
- Format a centered paragraph: **CTRL+E**
  Note: PP3 use **CTRL+**. We need to standardize this?
- Format a justified paragraph: **CTRL+J**
  Note: none for PP3.
- Format a left-aligned paragraph: **CTRL+L**
  Note: PP3 use **CTRL+[**. We need to standardize this?
- Format a right-aligned paragraph: **CTRL-R**
  Note: PP3 use **CTRL+]**. We need to standardize this?
- Remove all paragraph formatting from selected text: **CTRL+Q**
- Apply the normal style: **ALT+SHIFT+5**

8. Selecting text using keys

- To extend selection from insertion point to end of a word: **CTRL+SHIFT+RIGHT ARROW**
  Note: PP3 selects the whole word instead.
- To extend selection from insertion point to start of a word: **CTRL+SHIFT+LEFT ARROW**
  Note: PP3 selects the whole word instead.
- Extend selection one screen down: **SHIFT+PAGE DOWN**
  Note: PP3 scroll one screen down, but text is not selected. This feature could be useful in PP3 outline view.
- Extend selection one screen up: **SHIFT+PAGE UP**
  Note: PP3 scroll one screen up, but text is not selected. This feature could be useful in PP3 outline view.
- To select an entire document: **CTRL+5 on numeric keypad**
  Note: PP3 uses **CTRL+A** to select all.
- Using Extend key **F8** to select text.

9 Selecting text or graphics in a table

TBD.

10. Working and moving in a table

TBD.

11. Using the ruler with keys

PP3 does not support keys in rulers.

12. Drag and Drop

- Ideally, we want to implement this feature to be Just like Word (see T3 spec).

  * **Drag-And-Drop Text Editing** checkbox in **Option** dialog: Turn this checkbox on or off controls enabling/disabling of Drag-And-Drop text editing feature. Note: PowerPoint would need to add this command to its menu UI.

  * Proposed Drag and Drop UI for PowerPoint:

    a. Select the text.

    b. Point to the selection. The mouse pointer becomes an arrow.

    c. Press the left mouse button to display a small, dotted box and a dotted insertion point (same as Word). When drag the dotted box around, we need the insertion point feedback. There could be three different feedbacks. First, if the pointer points to a text object, a dotted bar is displayed, release the mouse button will move the text to the insertion point. Second, if the pointer points to a shape with no attachtext, a dotted bounding box is displayed, release the mouse button means attach the text to the shape. The text layout is determined by the shape's fittext attributes. Note that if a shape has attach text, user has to place the pointer exactly on top of attached text in order to drop the text. Third, if the pointer points to place where either there is no objects or the object cannot have text(eg., line object), a special designed insertion point is displayed(I don't know what it is yet), release the mouse button will create a new text object at the given location.

  * T3 introduce a new feature: **a "parking" spot on status bar**. This allows drag and drop over long distance, such as across document windows. PowerPoint would need this feature to drag and drop across slides, views, and documents.

  * T3 introduce a new feature: **smart drag and drop**. This makes Word more tolerant to the dropping point of selection. For example, if a selection being picked up include entire words, the drop point will be restricted to fall between words only. T3 will implement this feature based on smart cut and paste.

13. UI standardization proposed by DavePa

- Text Box Behavior. (not decided yet)
- Move fuzz for text frames.
- Open edit appearance for text object. (remove dotted border in PP3?)

UI Team Vision

- Duty
  - Look like Excel and Word
  - Fix potholes
  - Improve Windows/Eventhandling Foundation
  - Localization
- Option
  - Make it easier for first time users
    - » Help
    - » Wizards
  - High Impact Features
    - » Multiple Masters

Look like Excel and Word

- Menus
  - Main Menu Layout
  - Popup Menus
- Toolbars
  - Floating/Configurable
  - Standardization
  - New Toolbars (e.g. Slideshow)
  - Ruler

Look like Excel and Word cont.

- Dialogs
  - 3D look on Windows (50 Dialogs)
  - "Standard" Dialogs
  - Booktab
  - Core Code
    - » Remove SDM & Pascal
- OLE 2
- Drag & Drop
  - ???
- Drawing UI
  - our job?? Engine Team (DavePa)

which group?

Fix Potholes

- Font Menu
- MRU Files

Windows/Eventhandling Foundation

- Support of Pres Reform
- OLE 2 in situ editing
- Configurable Toolbars (support)
- Core Code
  - Remove Pascal

Localization

- 4 Languages
- Double Byte Character Strings

Team Organization

- Job Descriptions
  - Dennis
  - Laura
- Responsibilities
- Schedules
- Spec

Team Integration

- UI Team consists of Program Management, Development and QA
  - Common Meeting
  - More Meeting in startup phase
- Team members shall have offices close to each other
- UI Team Mail alias
- UI Team Shared Folders
- UI Team T-Shirts

Other Responsibilities

- Coding Style
- Development Environment
  - large screens
  - faster CPUs

Implementation Strategies

- Fallback

Wizards

What is a wizard

A Publisher wizard is a tool that guides a user through a process of creating a publication. There are different kinds of publications, eg newletters, greeting cards, etc. each created by using a corresponding wizard. A wizard guides the user in page layout and adding objects by presenting dialogs that offer choices to the user. The user can also type text and select graphics that the wizard will use when creating objects.

PP4 Wizards

A PowerPoint wizard is a tool that guides a user through the process of creating a presentation. It shows the user how to use PowerPoint to create a presentation. It should essentially ask the same questions that an expert PowerPoint user would ask a novice when asked to help the novice create a presentation.

E.g. Do you want a title slide, the date, company logo on every slide?, then create a title slide. Do you want a table of contents? What are the points, then create the contents slide and maybe a slide for every topic in the table of contents. What is the contents of the first slide - do you want a piece of relevant clipart?. Do you need a graph to show data? When the blanks are filled in, which template do you want to use? Save the presentation, etc.

Features that could be manipulated by a wizard are:

- page layout, number of pages (slides), insert and del pages, master slides.
- objects: Adding objects, selection, cut, paste, control by unique object ids.
- text: selection, text styles and paragraph properties.
- graphics: using OLE to insert eg wordart objs, or clipart, border art.

PP4 Implementation

Tools

There are several approaches to implement a wizard:

1. *Tutor approach*: This is an internal tool that helps you create tutorials. You can also use it to create wizards. It is driven by sending messages and providing journaling hooks to the tutor when your app creates windows. The drawback of using this for wizards is that there is limited user interaction, eg. the app never gets focus because it is event driven and therefore the user cannot type something into eg an edit control. The user interaction is limited mostly to selecting buttons.
2. *VB and Toolbook*: Visual Basic is an OK tool to use, real easy, but has problems in the DDE area. Toolbook is an ideal tool for prototyping., but was too big, ie required too much memory (for Publisher requirements). It is also slow, but that did not bother as much.
3. *Do your own programmability*: The Publisher Wizard group has developed a wizard SDK to create wizards. It is based on DDE execute commands (and some initial data requests). There is a DLL that contains common functionality like reading resource files, the UI and lowlevel DDE stuff. Money and Works is currently looking into this. This toolkit was developed so outside vendors could write wizards for Publisher. Part of the package is toolbook editor to design and create screen layouts and contents.

Table wizard
Org chart wizard
Graph wizard

Publisher Implementation

Once the tools were in place, it took about 1 month for 2 people to create a wizard. One 'graphic artist' to design the wizard and one developer to implement the design in DDE execute commands.

Decide what to support via wizards (2wks)

Estimate what kind of tasks need to be supported and what kind of programmability support is needed and/or exists.

Coordinate with programmability (4wks)

Assuming PP is already programmable, design and prototype the interaction model between PP and the Wizard DLL.

Implement 1st wizard (5wks)

Design and program a wizard and sort out problems with design.

Each additional wizard (3wks)

IDG dialogs

Spelling

There are 2 standards - general and word/excel. PowerPoint will follow the general standard.

Make spell checking and speller core (1wk)

Mac spelling code is in Pascal. Speller code is halfway core.

Changes needed for general spelling only. (1wk)

Add checkboxes (always suggest and upcase ignore).
Distinguish between Change and Change All and Ignore and Ignore All.
Currently PowerPoint does not have Change All and Ingore (once).
Add Undo Last functionality.

To support Options (2wks)

Alternative 1: We could get rid of editing the custom dictionaries and just show the dropdown with custom dictioanies on the General spelling dialog without having an Options button.
Alternative 2: Fully support spelling Options like Word/Excel

- Suggest & Ignore options (1wk)
- Custom dictionary manipulation, new, edit. add, delete (1wk)
- language support and dictionary types. (1wk)

Printing

PowerPoint will follow the general standard.

Changes needed for general printing. (2wks)

Print range extensions:

- In the range box one extra option (pages) is needed which is to print a discontinuous range of pages. This can also be extended to include a discontiguous selection of slides in the sorter view.
- The definition of the 'selection' option need to be changed, ie it should be more at an selected objects level than on a selected slides level.

Modifications:

- Drop the print quality option and add Page ordering options, eg. Normal, Reverse order, Odd or even pages.

Options and Setup buttons:

- If PowerPoint goes to a single printer approach, then we can have this standard behavior for free through the print commdlg.

Page Setup

IDG is proposing a standard Page Setup dialog with booktab sections of Margins, Page, OTher, Header, Footer that is supposed to solve the problem of setting up your document and specify how it should look when printed
The sections are:

- Page: paper size, orientation, scaling
- Margins: size page border,
- Legend: headers/footers
- Other: App specific features, eg gridlines

The Page booktab includes a preview picture that gives some idea of the effect of the changes.

PowerPoint problems

Mulitple formats on the same paper. Apart from having to layout one kind of format on a paper, there are multiple formats (slides, handouts, outlines) with typically different orientations and specifications.

The 2 target printers complicates the layout metaphor. Having only one target printer will simplify matters, not only for the user but also for the developer.

Margins for slides, notes, handouts (3wks)

Design a new paper model. (1wk)

Implement the IDG dialog with preview picture.

Printer Setup

Single target printer (1wk)

Maintain only one target printer. Change the saving of orientation and other info in the document.

PowerPoint needs to go a single printer model. Two printers complicate the user interface and users end up changing the wrong printer anyway. (Even experienced users.)

It would be easy to rip out all the dual target printer code and just use the commdlg Printer Setup.

Find/Replace

Make find/replace code core. (1wk)

Extra options (1wk)

Events

design and prototype strategy (2wks)

core events and methods

interaction with command structure, programmability

implement rest and test (2wks)

Mac and win

working with Frames

International

Localization plan (3wks)

Look at Glosman and tokenization.

Double byte support

Window Architecture

Anders Kierulf

January 12, 1993

Goal

Provide a framework that handles windows, toolbars, and events in PowerPoint 4 on both platforms without the high maintenance cost of the current implementation.

A new window architecture for PowerPoint is necessary to avoid the problems with the current implementation, and to get the following user benefits:

- Configurable toolbars that follow the standard set by Word and Excel.
- Real MDI application (can minimize document windows).
- OLE 2 capability.

Problems with Current Code

High maintenance cost: Own implementation of MDI functionality, curDoc globals, lack of core code, Pascal code on Mac.

- **CurDoc and curWin globals:** Easy to get rid of. Through use of classes, the document or window is automatically bound to its methods.
- **MDI:** Easy, just switch to using real MDI on Windows.
- **Pascal code:** Easy, just rewrite in C.
- **Lack of core code:** Hard problem. Need to introduce new concepts to be able to unify important parts of the two platforms.

Ad hoc layout management: Not suitable for OLE 2 or configurable toolbars.

- Need some equivalent to child windows on the Mac, so that layout within a window can be managed properly.
- Need some module that takes care of reserving space for toolbars and rulers, both for PowerPoint and for OLE objects.

Elements of the Architecture

Layout Management

We need objects that keep track of who controls how much space in the application and document window, and can respond to OLE 2 queries (e.g. "reserve 20 pixels along the top"). Such a **layout** object might contain a list of the panes in its window, so that it can move them around when necessary.

Child Windows on Macintosh

We don't need all the generality of overlapping child windows. All we need in PowerPoint is to divide the document window into non-overlapping rectangular panes. A simple class defining a **pane** as a rectangle in a window with its own local coordinate system, and with methods to provide coordinate transformation and clipping would provide a basis for layout management. Panes should also contain a virtual draw method to draw themselves.

Such a pane class could easily be implemented using child windows on Windows, and the interface could be core.

A list of all panes in a window is needed to handle update events, and to re-layout the remaining panes when a pane is removed.

Toolbars

A toolbar should be the same object regardless of whether it's currently docked or floating (otherwise toolbar management would be too confusing); thus it must be possible to attach a toolbar object to either a floating window or to a section of the document window. Since the user can toggle between these two states, each toolbar contains both the information for the docked state (dock at top, bottom, left, or right) and the floating state (size and position).

Each toolbar also needs a list of the widgets it contains, plus the gaps between buttons. (Very similar to the current toolbar module.)

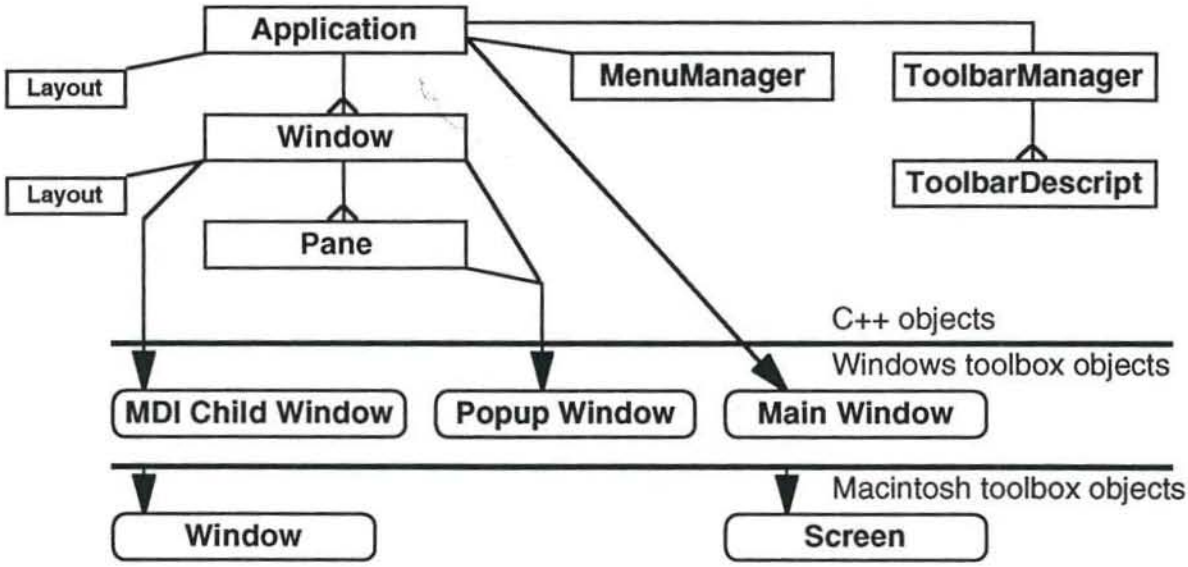
We plan to implement toolbars using CDL, since their behavior is very similar to modeless dialogs, and toolbar buttons can easily be implemented as a special kind of control. It also has the advantage that any dialog control can be used in a toolbar and vice versa.

Event Handling

The platform-specific events will be cracked into platform-independent methods (like CDL). We may inherit from DLEventFrame to get the same interface. This avoids the extra step of converting all events to core event records, and we don't need to unify the event distribution on the two platforms. On Windows, the events automatically go to the right application, window, or child window; on the Mac, the application and window objects are responsible for distributing the events to the affected pane.

Proposed Architecture

Object Hierarchy



Responsibilities

Application: Responsible for the application window as a whole (screen layout on Macintosh). The application object contains a list of all windows.

On Windows, the events sent to the application window procedure are sent to the application object (the application window contains a pointer to that object), where they are split into the appropriate methods. (Possibly, some of that work may be shared between the Application, Window, and Pane classes by using a separate event manager.) On the Mac, the application object contains the main event loop, and handles some events itself while passing others to the appropriate window objects.

Window: Responsible for actual windows on the screen: document windows, floating toolbars, dialog windows. A window contains a list of the panes in that window.

Pane: A rectangular section of a window, non-overlapping. Methods to move, resize, show, hide. Implemented through child windows on Windows, does its own coordinate transformation and clipping on Mac. Core methods to handle events, react to mouse clicks, draw itself, do idle processing. Is subclassed to implement PowerPoint specific classes, such as toolbars, dialog item lists, PowerPoint views, status bar.

MenuManager: Handle menu events and generate command objects. Handle OLE menu sharing. (This part will probably be developed by KimKi in the PowerPoint code, not in the separate application framework.)

ToolbarManager: Keep track of all the toolbar descriptions, and manage the Configure Toolbars dialog.

ToolbarDescription: List of all controls in a toolbar, plus layout information (placement of gaps). There exist both the default description and the current configuration of each toolbar.

Layout: Layout information for OLE is handled by a layout object that knows how much space is reserved at each border of a rectangle, and can keep track of where rectangular objects are allocated within that rectangle. Both the application object and the document window objects contain such a layout object.

Class Hierarchy

Logically, it might be best to let the Application, Window, and Pane classes inherit from CommandTarget. However, to avoid mixing the responsibilities of the Pres reform and UI groups, I'd like to use containment instead.

Class hierarchy	*Comments*
• PPObject	
• Application	*(contains PowerPoint object as its command target)*
• Pane	
• ViewPane	*(contains View object as its command target)*
• DialogPane	*(contains CDL controls)*
• ToolbarPane	*(contains reference to a toolbar description)*
• StatusPane	*(contains status bar)*
• RulerPane	*(contains ruler)*
• Window	
• DocumentWindow	*(contains Presentation object as its command target)*
• FloatingWindow	
• DockedWindow	
• DialogWindow	
• SlideShowWindow	
• MenuManager	
• ToolbarManager	*(contains a list of toolbar descriptions)*
• ToolbarDescription	
• Layout	
• ApplicationLayout	
• WindowLayout	
	(following are the responsibility of the Pres group:)
• CommandTarget	
• View	
• Slide	
• Presentation	
• PowerPoint	

Implementation Strategy

We will start with a simple application for rapid development of the window architecture, and then integrate it in PowerPoint later. This has the advantage of shorter turnaround cycles and should lead to a cleaner design, but the integration phase at the end makes the schedule less predictable.

It's unclear when to best integrate with PowerPoint and continue development within PowerPoint. It's also unclear how the Pres group will be able to test much of their work (e.g. scrolling in Views, mouse trackers) without being integrated in PowerPoint or the window architecture framework.

- Start with MDI sample application (done; see AppFrame project on \\gbusrv\hunter).
- Compile under C++ and "strict" (done).
- Implement classes with a core interface as wrappers for Windows functions in the sample application:
    - Application class.
    - Window class.
    - Pane class.
- Add Macintosh implementation of class hierarchy.
- ***Integrate with PowerPoint ?***
- Interface with core dialog layer:
    - Modal dialogs.
    - Modeless dialogs.
- ***Integrate with PowerPoint ?***
- Implement toolbars based on CDL modeless dialogs.
- ***Integrate with PowerPoint ?***
- After Pres group has integrated with PowerPoint:
    - Add command objects to the Application, Window, and Pane classes to integrate with their command structure.
    - Integrate tracker objects, View scrolling, and other aspects of Pres Reform that depend on user interaction.

Implementation Details

The classes below are still sketchy; their final interface will be determined while working on the framework application.

Application Class

```
//=============================================================================
class Application: public PPObject
//=============================================================================
// Application is responsible for the application window (screen on the
// Mac),and for managing the window list. It handles events and commands
// related to the application as a whole. There will be only one Application
// object.
//
// Menu handling will be split off into its own class.
{
public: //--- Application ------------------------------------- public ---
   Application();
   virtual ~Application();

- direct menu events to menu manager
- direct toolbar events to toolbar handler
- handle commands related to the application as a whole
- Windows: - create appframe window
           - handle resizing of main application window
           - arrange document windows
           - iconify document windows
- Mac: send window events to the right window
- get size (screen size on Mac)

- handle command line events (e.g. open document)

- activate / deactivate application (suspend/resume)
- handle Quit
- handle About
- handle New, Open

private: //--- Application ------------------------------------ private ---

   CObList    m_windows;            // list of windows
   PowerPoint m_commandTarget;

}; // Application
```

Window Class

```
//=============================================================================
class Window: public PPObject
//=============================================================================
// Window is responsible for a window on the screen (e.g. document window,
// floating toolbar window, dialog window). It contains a list of panes.
{
public: //--- Window ---------------------------------------- public ---
   Window( Application& app );
   virtual ~Window();

- create window
- open, close, activate, deactivate
```

```
- Mac: handle update events by breaking them down for each pane (on Windows,
panes are implemented through child windows, so they will automatically get the
proper update events)
- locate the pane containing a given point (e.g. for mouse clicks)
- add a pane
- remove a pane
- resize the window, adjust the panes to fit
- resize a pane, adjust other panes to fit

private: //--- Window ------------------------------------ private ---

   CObList m_panes;     // list of panes

}; // Window
```

Pane Class

```
//============================================================================
class Pane: public PPObject
//============================================================================
// Panes provide rectangular, non-overlapping sections of a window.
{
public: //--- Pane ----------------------------------------- public ---
   Pane( Window& w );
   virtual ~Pane();
   // To create a pane, its window must already exist.

   //--- get information about the pane properties
   Window& GetWindow() const { return m_window; }
   Rect GetRect() const;
   Point GetOrigin() const;
   Integer GetWidth() const;
   Integer GetHeight() const;

   //--- set pane properties
   void SetWindow( Window& w );  // assign to a different window
   void SetOrigin( Point origin );

   void SetRect( Rect r );
   void MoveTo( Point upperLeft );
   void SetSize( Integer width, Integer height );
   // SetRect changes the location and size of the window.
   // MoveTo and SetSize are implemented in terms of SetRect.

- draw method
- idle events?

   //--- event handling: similar to CDL
   virtual Boolean OnMouseDown( DLMouseButtonEvent& /*mouseEvent*/,
                                Boolean             /*doubleClick*/ )
   { return FALSE; }

   virtual Boolean OnMouseMove( DLMouseMoveEvent& /*mouseEvent*/ )
   { return FALSE; }

   virtual void OnKeyPressed( DLKeyEvent& /*keyEvent*/ ){}

   virtual void OnUpdate( DLGraphicsState /*gs*/ ){}
```

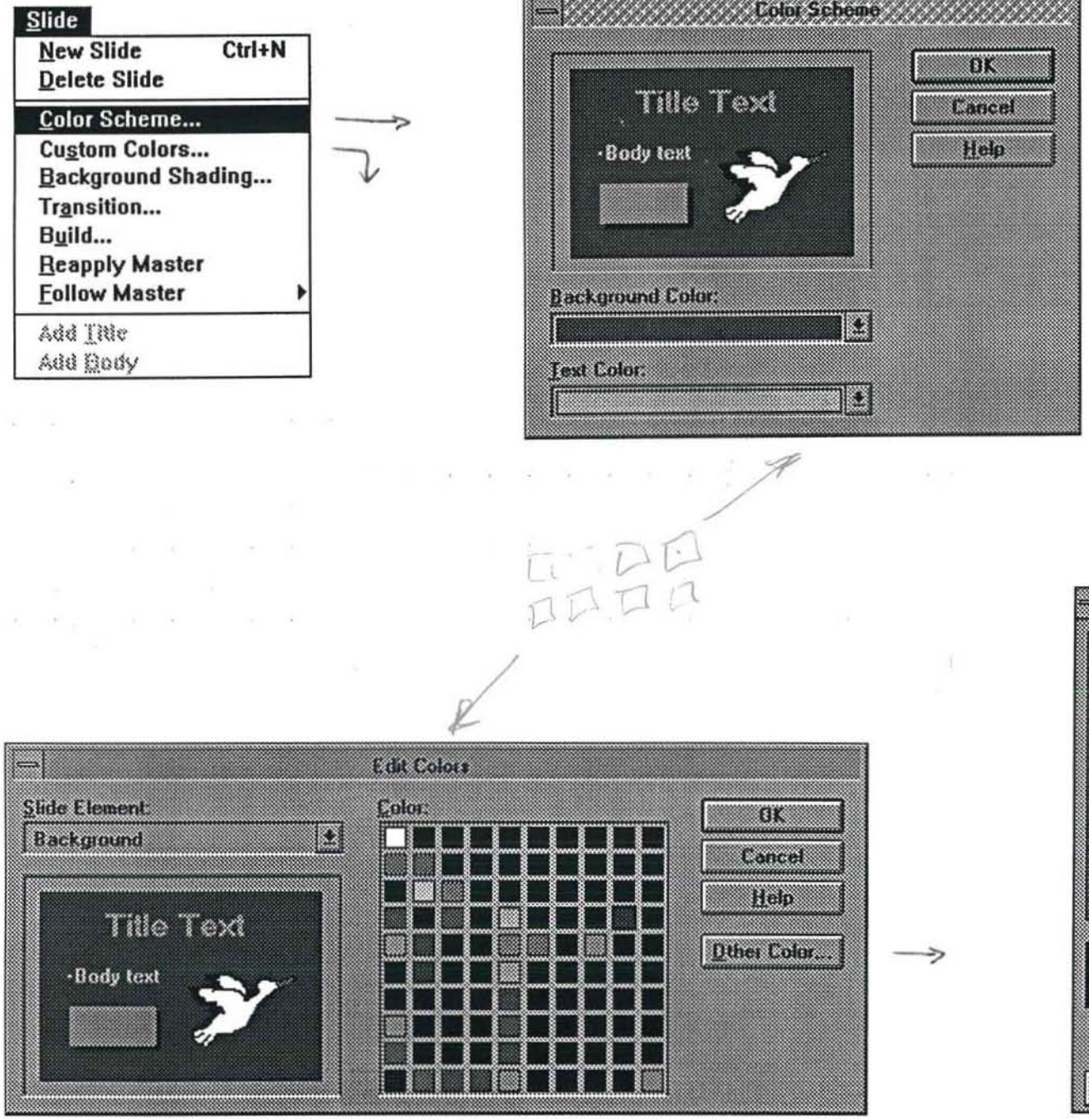
```
   virtual void OnActivate( Boolean /* activate */ ){}
```

(each pane should know how to reposition itself in case the window or adjacent panes are resized, moved, or closed. Give each pane top/bottom/left/right docking capability (or none: what's left in the middle), and the sequence in which it's in the list means that the new layout can be created when adding or removing a pane)

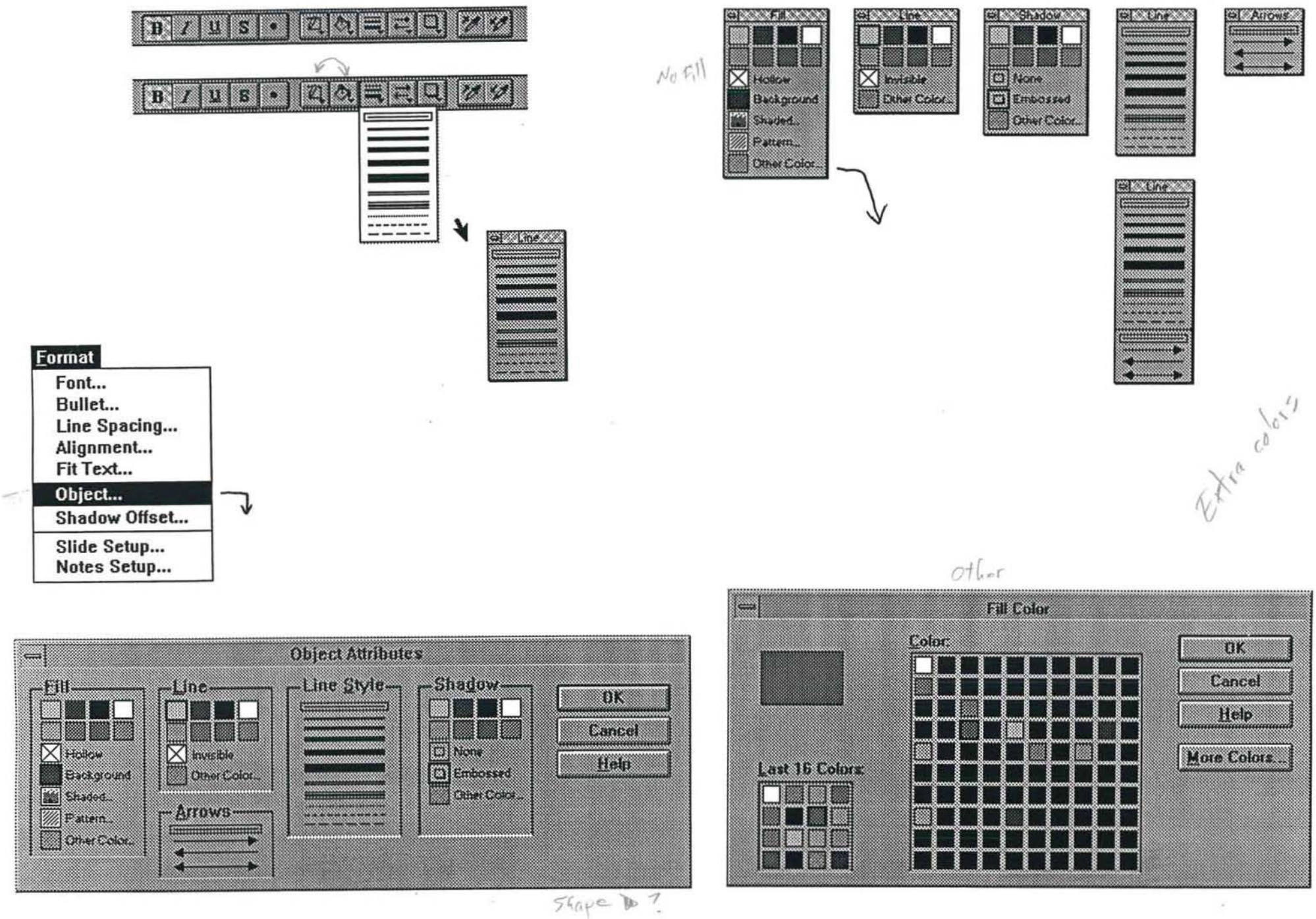
```
private: //--- Pane ---------------------------------------- private ---

   Window& m_window;     // the parent window
   Rect    m_frame;      // the extent
   Point   m_origin;     // (0,0) by default

}; // Pane
```

PP4 (proposed)

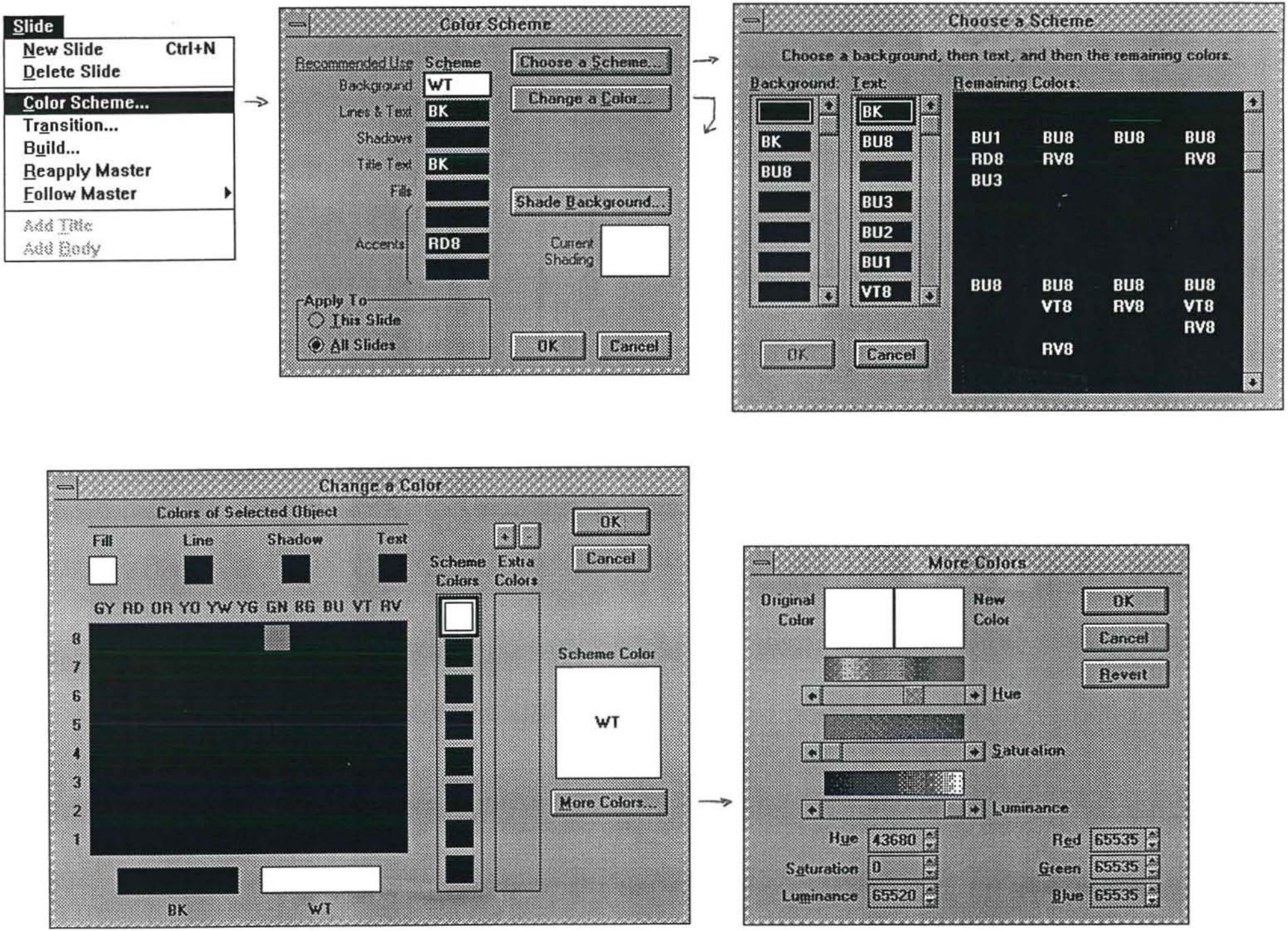
Problems
Extra colors
Need view of scheme in the scheme dialog
Preview slide doesn't correspond to actual
Needs Apply to All/One



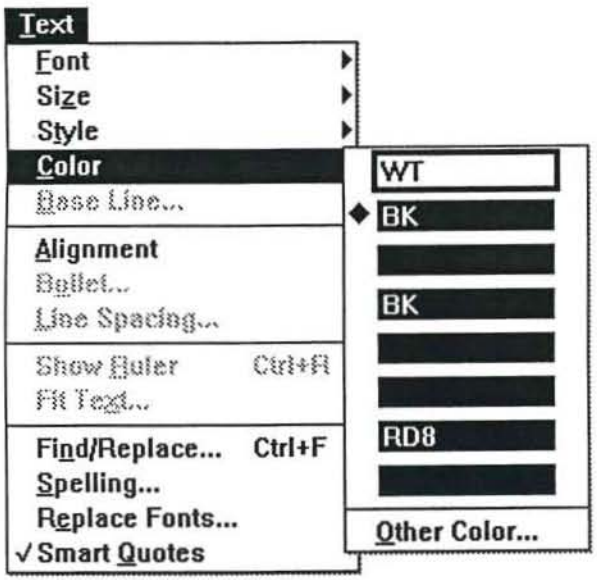
PP4 (proposed)

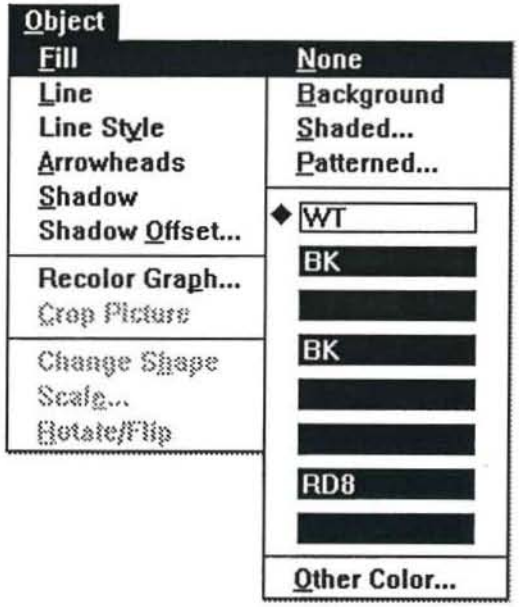


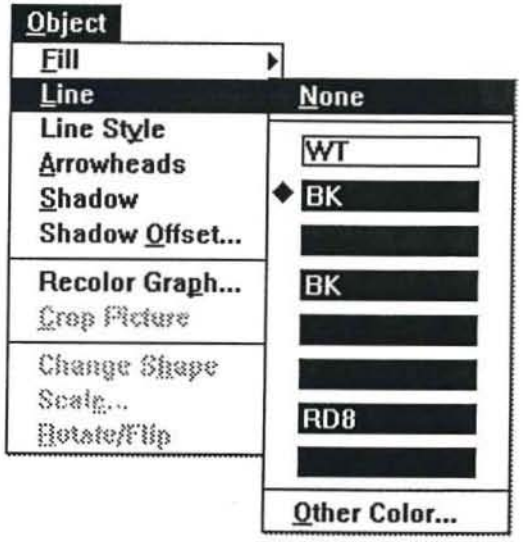
PP3

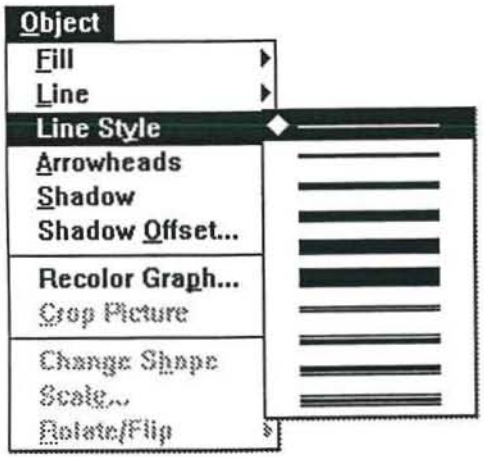

Slide
New Slide Ctrl+N
Delete Slide
Color Scheme...
Transition...
Build...
Reapply Master
Follow Master
Add Title
Add Body
Color Scheme
Recommended Use
Scheme
Background
Lines & Text
Shadows
Title Text
Fills
Accents
WT
BK
RD8
Choose a Scheme...
Change a Color...
Shade Background...
Current Shading
Apply To
This Slide
All Slides
OK
Cancel
Choose a Scheme
Choose a background, then text, and then the remaining colors.
Background:
Text:
Remaining Colors:
BK
BU8
BU3
BU2
BU1
VT8
BU1 BU8 BU8 BU8
RD8 RV8 RV8
BU3
BU8 BU8 BU8 BU8
VT8 RV8 VT8
RV8
RV8
OK
Cancel
Change a Color
Colors of Selected Object
Fill
Line
Shadow
Text
GY RD OR YO YW YG GN BG BU VT RV
8 7 6 5 4 3 2 1
BK
WT
Scheme Colors
Extra Colors
OK
Cancel
Scheme Color
WT
More Colors...
More Colors
Original Color
New Color
OK
Cancel
Revert
Hue
Saturation
Luminance
Hue 43680
Saturation 0
Luminance 65520
Red 65535
Green 65535
Blue 65535

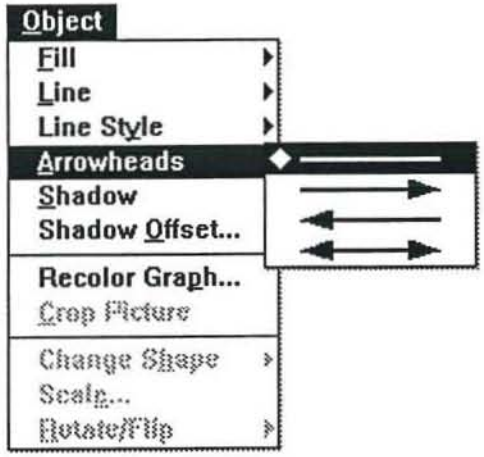
PP3 menus

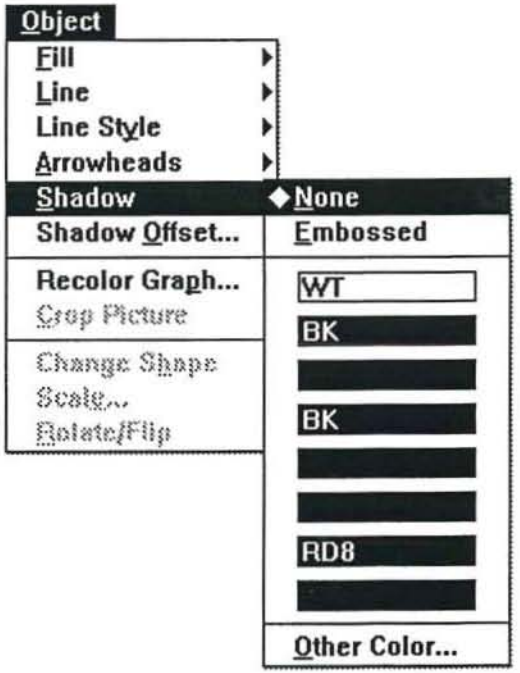

Text
Font
Size
Style
Color
Base Line...
Alignment
Bullet...
Line Spacing...
Show Ruler Ctrl+R
Fit Text...
Find/Replace... Ctrl+F
Spelling...
Replace Fonts...
✓ Smart Quotes
WT
BK
BK
RD8
Other Color...


Object
Fill
Line
Line Style
Arrowheads
Shadow
Shadow Offset...
Recolor Graph...
Crop Picture
Change Shape
Scale...
Rotate/Flip
None
Background
Shaded...
Patterned...
WT
BK
BK
RD8
Other Color...


Object
Fill
Line
Line Style
Arrowheads
Shadow
Shadow Offset...
Recolor Graph...
Crop Picture
Change Shape
Scale...
Rotate/Flip
None
WT
BK
BK
RD8
Other Color...


Object
Fill
Line
Line Style
Arrowheads
Shadow
Shadow Offset...
Recolor Graph...
Crop Picture
Change Shape
Scale...
Rotate/Flip


Object
Fill
Line
Line Style
Arrowheads
Shadow
Shadow Offset...
Recolor Graph...
Crop Picture
Change Shape
Scale...
Rotate/Flip


Object
Fill
Line
Line Style
Arrowheads
Shadow
Shadow Offset...
Recolor Graph...
Crop Picture
Change Shape
Scale...
Rotate/Flip
None
Embossed
WT
BK
BK
RD8
Other Color...

Configurable Toolbars in PowerPoint 4.0

Anders Kierulf — January 6, 1992

Goals

- Implement configurable, dockable toolbars like in Excel and Word.
- Use standard buttons for standard functions.

Proposed List of Toolbars

- Standard: Contains Save, Undo, ... many functions that are common among applications, plus some PowerPoint specific ones.
- Formatting: For text formatting mostly.
- Drawing: Drawing tools.
- Cross app: Icons for all Microsoft applications.
- SlideShow: Tools for setting up slide shows, like transition and build effects.

Toolbars and Views

Many functions only make sense in particular views, e.g. "titles only" makes sense in outline view, "promote" makes sense in slide and outline view. In PowerPoint 3.0, switching between views automatically switched between toolbars. This minimized clutter on the screen while presenting the user with the currently applicable options. However, this scheme doesn't work well with configurable toolbars:

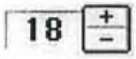
- The states of configuring the toolbar and of using the toolbar would need to be different.
- Switching between toolbars would be confusing when toolbars are floating rather than docked, since the floating window might have to change size when switching views.
- Toolbars configured for particular views make less sense when the user can drag any button to any toolbar.

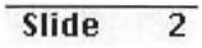
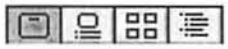
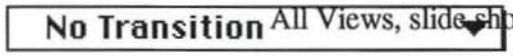
The alternative is to create smaller but more specific toolbars that contain the right buttons for related operations, e.g. one for setting transition effects and slide show timings. Making operations applicable in all views would also help, e.g. the "draft mode" button in outline view might be applied to slide sorter view, and might also be useful in slide view.

Toolbar Functions

The table below shows all the toolbar functions we should provide, which icons are assigned to them, what view or toolbar they fit in, and a short description of what they do. (The icons are approximations, mostly taken from PowerPoint 3.0.)

Function	Icon	View/Toolbar	Description
New Document	(see IDG spec)	Standard	
Open Document		Standard	
Save Document		Standard	
Find File		Standard	
Print Document		Standard	
Print Preview		Standard	

Spelling Checker		Standard	
Undo		Standard	
Redo		Standard	
Cut		Standard	
Copy		Standard	
Paste		Standard	
Copy Format		Standard	
Zoom		Standard	25-400%,with spinner
Wizard		Standard	
Help		Standard	
Run Slide Show		Standard	
Arrow Tool		Drawing	
Text Tool		Drawing	
Line Tool		Drawing	
Arc Tool		Drawing	
Polyline Tool		Drawing	
Rectangle Tool		Drawing	
Oval Tool		Drawing	
Shape Tool		Drawing	
Graph Tool		Drawing	
Promote		Slide, Outline	
Demote		Slide, Outline	
Move Paragraph Up		Slide, Outline	
Move Paragraph Down		Slide, Outline	
Font Size		Slide, Outline, Formatting	must be editable
Font	dropdown	Slide, Outline, Formatting	
Bold		Slide, Outline, Formatting	
Italic		Slide, Outline, Formatting	
Underline		Slide, Outline, Formatting	
Shadow Text		Slide, Formatting	
Bullets		Slide, Formatting (Outline?)	
Numbering		Slide, Formatting (Outline?)	?? may not be implemented

Left Justify		Slide, Formatting	
Center Justify		Slide, Formatting	
Right Justify		Slide, Formatting	
Full Justify		Slide, Formatting	
Frame		Drawing	currently only on/off, should include color and type of frame?
Fill		Drawing	
Object Shadow		Drawing	
Pickup/Apply Style		Standard? Formatting?	
Previous Slide		Slide, slide show	could be below right scrollbar, like page up/down arrows in Word
Next Slide		Slide, slide show	
Slider		Slide, slide show	may be replaced by Slide Titles dropdown, or by right scroll bar
New Slide		All Views	
View Name		All Views (status bar?)	
View Selector & Indicator		All Views (status bar?)	
Transition effect dialog		All Views, slide show	
Transition effect		All Views, slide show	
Build slide dialog		All Views, slide show	
Draft Mode		Outline (slide sorter?)	
Titles Only		Outline	
Show ¶		Standard? (Word)	is on Standard toolbar in Word
Slide Titles	dropdown with all slide titles	slide, slide show (can also be used in other modes)	

PowerPoint 4.0

Draft 4

For seven years, PowerPoint has been designed to leverage new technology in order to bring the impact of artist-created slides to the business presenter. This note examines PowerPoint's continuing mission and the forces now shaping its future. The conclusion is a theme vision for the next version, PowerPoint 4.0.

The PowerPoint Mission

PowerPoint's mission has been constant through its history and will remain for its future:

> *Make it easy and fun for business people to create and deliver high quality presentation graphics themselves.*

Each part of the statement is important. It must be easy to create presentations, but we always wanted it to have an element of pleasure rather than just simplified drudgery. It is important that PowerPoint be capable of creating artist-quality presentation materials, and also delivering them: slides, notes, handouts. Graphics can be overheads, 35mm, or on-screen. Finally, and most important, PowerPoint is meant to be used by the actual presenter—not a separate presentation specialist creating the materials for the speaker.

Each stage in PowerPoint's development, has had a different emphasis in fulfilling the mission. PowerPoint 3.0 is now a mature product reflecting its 1985 vision, completely developed, and much improved from experience and observation of competitors.

Influences for the Future

PowerPoint 4.0 must carry forward the PowerPoint mission while adapting to changing technology, market demands, and new opportunities.

First Time Users. PowerPoint has always been designed to be easy to use, and the goal has been largely achieved. We have even talked about how important simplicity is because many of our customers don't make presentations every day and they have to figure out how to use the product every time they pick it up.

But it turns out that we didn't think about that new users as much as one of our competitors did—Lotus Freelance. Freelance won this contest and it is a critical contest. We can't afford to let that happen in the future. First time use must be PowerPoint's turf.

PowerPoint as a Component. PowerPoint has always been designed to capitalize on existing standards because they make the product much easier to use for customers who are already familiar with those standards. We have been religious about following platform standards and also borrowing ideas and shortcuts from other applications where they fit PowerPoint. The point is that PowerPoint is only one of many tools working together on the customers desktop, and if it doesn't fit in, it won't be welcome.

Platform standards remain crucial in working with other applications, but the Microsoft family of applications now gives us the opportunity to cooperate on an even more stringent set of standards. Because Microsoft's applications have many overlapping functions, users naturally expect all of them to perform the same function in the same way. That saves countless customer brain cycles.

same. Because only the presentation part is new, users are immediately confident that they can master the program. (This won't be fully effective until Word and Excel share more of their user interface, of course.)

Sharing the Microsoft look and feel includes menu arrangement, dialog layouts, tool bars, and also extends to the direct-drive parts of the user interface like typing and drawing. Every detail that can be shared will make for a smoother experience for users.

Guidance for First-time Users. When a new user starts, we need to provide immediate help: how do I type on a slide? how do I determine its appearance? How do I add a graph?

Many of PowerPoint's customers are perennial first-time users because they don't make presentations frequently and they never learn enough about the product to be comfortable. Many of our potential customers never become actual customer precisely because of this hurdle.

Common Tasks. We have discovered the power behind making common tasks easier to do. This is the insight behind the tool bar concept and many of its interesting new functions. Excel's famous auto-sum is the best example.

In PowerPoint, the likely candidate for automation is table building and editing. Simple tables are extremely common in presentations, but not easy enough to create with the existing set of tools.

PowerPoint 4.0 in Brief

The essence of PowerPoint 4.0 is usability. It should be familiar, inviting, and comfortable to Microsoft customers. It should guide new users on how to begin making a presentation so that they won't be left helplessly alone at the controls. For experienced users PowerPoint should remain easy to use, but also begin to work in concert with other applications as a component.

Secondarily, there is a variety of other work to do in satisfying demands of existing customers and continuing leadership.

A short list of work that should be targeted for PowerPoint 4.0 is probably the best way to characterize it.

First-time user orientation and guidance. This will require some user testing and subsequent design innovation. At the least, we need status bar type information and a much improved standard help system.

User Interface standardization with Word and Excel. This includes configurable tool bars and standardized (3D) dialog boxes, but also a host of details in text and drawing. Some standardization actually constitutes new features like Find/Replace for text attributes. The IDG list of standardization items is the first pass at this.

OLE 2.0. We need to do both client and server side with in-place editing. The server side should be improved to allow slide shows to be displayed in-place rather than full screen.

Programmability. PowerPoint requires a great deal of internal architectural work to provide this capability. Because of this extra work, PowerPoint may not provide many commands externally for 4.0, but we should target some simple support for OLE IDispatch and the AppleEvent object model.

File format. PowerPoint needs to improve its own internal format in order to avoid loading all objects into memory when a file is opened. We will incorporate Doc files from OLE 2 to make this easier.

File format conversion. PowerPoint needs to be able to import presentations created by other programs. We plan to do this by defining an standard API ("rich presentation format"—RPF) for format readers. We also have to save PowerPoint 4.0 files in 3.0 format.

Genigraphics. 35mm slide image becomes less important to us with each passing year, but will remain important for some time. The existing Genigraphics software is adequate to meet PowerPoint 4.0 needs, although it is likely that Genigraphics will want to revise the software, especially the Macintosh version.

Finally, a number of other design characteristics are important to note:

Windows configuration: Win 3.1 (and NT 16 bit). 4 megabyte 386 systems.

Macintosh configuration: System 7.0. 4 megabyte systems, Mac Plus or later.

Performance: Equal to PowerPoint 3.0

Double-byte characters fully supported for Japanese localization.

Should offer support for test automation and logging user actions.

Macintosh version will support QuickDraw GX printing and OCE mailers.

Simultaneous ship for Mac and Windows, in English, French, and German in the fall of 1993.

Dennis Austin
November 10, 1992

PowerPoint 4.0 Basic Development Tasks

This is an outline of the basic work that development thinks it needs to accomplish for PowerPoint 4.0. We are currently doing rough estimates to see how long it will take and how much time will be available for other tasks.

Many features we would like to see in PowerPoint 4.0 are not included in this list! Don't worry. We will estimate additional, finer grained items in the next step. At this stage the point is to figure out what our budget is for other features.

Please give your feedback to me.

—Dennis

Windows 46

New Architecture 10

PowerPoint has some fairly serious architectural problems in handling windows consistently, especially across platforms. The goal of this work is to improve the architecture to make changes much easier, to implement tool bars more easily, and to reduce incidence of bugs.

Events model 5

PowerPoint need to change the way it processes events to allow full information to get to the right handler quickly and logically. This is a companion piece of architecture because windows are the main things that receive events.

Toolbars 18

PowerPoint will have at least three customizable tool bars:
Standard—mostly the same for all apps. We will add Show button.
Formatting—font, size, style, color, fill, line, line style, shadow, arrowhead.
Drawing—current complement of drawing tools.

Slide Show Toolbar 2

We also allow for a fourth tool bar used as a controller during slide show.

Instrumentation 5

The user interface needs to have a mechanism built in for journalling commands. The purpose is primarily for user testing after PP4 is complete, but it may also be useful for our own QA process to log testing sessions.

Rulers 6

These are along the top and left of the window in slide views and work like rulers in drawing programs. When text is selected, the ruler at the top doubles as a text ruler. When a table is selected, the rulers can show table controls.

Menus 15

Implementation 11

PowerPoint 4.0 will introduce a completely new menu layout that is similar to the layouts of Word 3.0 and Excel 5.0. PowerPoint 3.0

introduced a new design for implementing menus, but, since we need to rearrange the menus again, it is a good time to reexamine the design.

This work includes adding the MRU file list to the file menu.

Popups 4

OLE 2 and IDG standards call for a pop-up menu that can be invoked for any selection. This will require a context sensitive menu to be generated for every type of selection, but the items on the menu will be commands that are already available in some for otherwise.

Dialogs 72

Core Dialog Layer 10

Foundation

The core dialog layer allows us to easily write core dialog code and retain the appropriate look and feel for either platform. It uses the native controls, but adds a few of its own like the spinner.

Special controls

PowerPoint uses a number of custom controls like the grid used in pattern and bullet dialogs, the demo bit map in the transition dialog, etc.

Interoperability and Design Group 23

The Interoperability and Design Group has written up standards for common dialogs which PowerPoint should adopt in its next version.

Font dialog 4

This is a standard character properties dialog similar to the one supplied in Windows common dialogs. PowerPoint 4.0 will use this dialog instead of separate hierarchical menu items. The various attributes will be mostly settable from tool bar controls as well, however, for more convenient access.

File dialogs 6

This includes the Open (in various flavors), Save As, Find file, and Summary Info dialogs. Find File will be implemented using a DLL that the Word group will provide to other applications.

Spelling 5

The spelling dialog is very similar to the one Word currently uses. It has several new features for PowerPoint such as the ability to change all occurrences and automatic suggestion, but these are easy to implement. Harder is multiple custom dictionaries, but that is probably required to be fully compatible.

Printing 6

The print dialog has fairly minor changes from the current standard, but there is talk of combining the print setup dialog via book tabs. This seems weird because one dialog does a task and one sets attributes.

Find/Replace 2

The new Find/Replace dialog is not terribly different from PowerPoint's, but Word and Excel will be offering some features we should also adopt. These include wild card and special character searches and searching for text with particular formats. (Having this last feature gives us a more general substitute for the Replace Fonts feature.)

PowerPoint dialogs 39

SDM 0

We are planning on writing dialogs in our own core dialog layer to efficiently make required improvements. Some of the current dialogs are written in SDM and eliminating those would improve our efficiency considerably. It would also eliminate a large chunk of our code.

Color 11

The color dialogs need some redesign to simplify their operation and improve their appearance. These are also SDM dialogs and need to be rewritten to be core.

Rewrite existing dialogs 23

Other dialogs may or may not be rewritten to take advantage of CDL. One class of dialogs that particularly benefit are any that use Pascal code on the Mac.

New dialogs 5

Depending on features adopted, there will be a number of new dialogs as well. A Preferences dialog and Summary Info dialog are examples.

Wizards 15

This is a poorly understood area because we have only a little idea of what wizards could do for PowerPoint. The two we think about are the new presentation wizard and the new slide wizard.

The new slide wizard would not be necessary if we had some type of multiple master scheme that would a range of slide types to be easily created to match the masters. In its absence, a wizard might be able to concoct special slide types out of the basic elements.

The new presentation wizard would be a forms-based method of creating a presentation. It would ask for information like a title and your name that it would put on a title slide. It could even ask questions like whether you wanted slide numbers. Then it would give you a choice of templates and finally let you start typing your slides—possibly in outline view.

International 11

Localization Plan 3

We would like to be able to use Glosman for translation so we need to figure out how to set up PowerPoint to do so. We also want to find a replacement for the token file scheme and tools that we use on PowerPoint 3.0 which was too big a burden for development.

Far East localization 8

PowerPoint 3.0 is already equipped internally for basic double-byte character handling. We need to complete the requirements for a Kanji version as far as document content is concerned so that the PowerPoint code doesn't have to be changed for localization.

Help 6

PowerPoint needs to become much easier for new users to approach. One of the ways we hope to do this is with improvements to help. We will have the (new) standard help menu. We will use help-on-top to provide cue card help the way access does.

PowerPoint also needs a status bar for help on menu items, etc. We would like one that can provide more help than is offered on the standard model, but we don't have a design yet. It should at least be able to display the information written for balloon help on Macintosh.

OLE 2.0 Support

PowerPoint will convert its current OLE 1.0 server and container features to the new OLE 2.0 interfaces. New OLE 2.0 specific capabilities such as in-place editing, structured storage and Drag&Drop are also considered to be implemented in PowerPoint 4. The following discussion assumes that the OLE 2.0 structured storage is implemented in PowerPoint:

OLE 2.0 Server

As a Windows/Mac embedded and link server, PowerPoint has the options to implement the following alternatives that are under evaluation:

OLE 1.0 server with OLE 1.0 interfaces (as in PowerPoint 3 except on the MAC) with the addition of a custom OLE handler that allows playing Slide Show inside a container rectangle (similar to the multimedia AVI server).

OLE 2.0 server without in-place editing.

OLE 2.0 server with simple in-place slide show: this is a simple case of in-place editing without the complicated menu merging between the container and server. While basic keyboard navigation is supported, interactive editing of slides within Slide Show is not allowed.

OLE 2.0 server with in-place editing: This includes in-place interactive editing of slides and menu merging between container and server.

OLE 2.0 Container

The following implementation alternatives are currently under evaluation:

OLE 2.0 container without in-place editing: consider basic OLE 2.0 work and link support via monikers. Structured storage like Doc-Files are required.

OLE 2.0 container with full in-place editing: This relies on a PowerPoint menu architecture that facilitates menu merging with the server side while an in-place embedded object is activated.

OLE 2.0 Drag and Drop

Implement OLE 2.0 support for Drag & Drop of text, graphics, and slides between documents and applications.

Tables

Tables in PowerPoint can be treated as a new PowerPoint object type that behaves similarly to adding groups of basic objects. The UI should be a superset of Word/Excel Model and PowerPoint specific enhancements should be evaluated as options. Another important area that needs investigation is Data exchange where various tasks like conversion between tabbed text and PowerPoint tables, importing and exporting RTF should be considered.

Text User Interface

PowerPoint will implement the various Text UI features similar to Word T3. Areas under investigation are mouse, keyboard shortcuts, mouse text selection, Text Drag and Drop.

Drawing

New drawing features for PowerPoint 4.0

Dash Lines

90-degree rotation of Text and Picture objects.

Arbitrary rotation of PowerPoint objects

Standardize Drawing UI: selection handles, text frames, ...

Modular drawing

This task is redesign the drawing engine to be usable in other applications, much as the PowerEdit engine is usable. The target application is MS Draw 2.0.

Pres Reform

Pres Reform is a large group of dependent tasks dealing with many of the architectural changes needed in PowerPoint. Although it is mainly an internal architectural improvement, Pres Reform by itself adds a few features to PowerPoint such as multiple undo, drag and drop, and recoverable file format. Its main benefit is as a foundation for many features desired in PP4 such as programmability, wizards, PDI, backward version file saving and automated testing. It is also a foundation for future technology such as Object Basic, Apple Script and Cairo.

The Pres Reform estimate will be broken down into estimates dealing with the core Pres Reform work and the extra features of that can be added on top of the Pres Reform foundation. The core Pres reform work will be further divided into complete stages, places where the work can be stopped. As a counterpoint to the Pres Reform work, we will present estimates for the features which can be completed without Pres Reform, although probably with more work.

File Migration

We will estimate the amount of work needed to be done by the GBU, assuming that we will find outside contractors for the specific PDI filters. The tasks to be estimated are:

PDI SDK

An SDK needed to support outside contractors. The main work is a PDI to PP3 converter.

Graphing Support

An API to create Microsoft Graphs. This task has a big dependency on IDispatch support from Graph.

PDI to PP4

Estimated with or without Pres Reform

PP3 to PDI translator

Part of the conversion strategy

Slide Show

Each slide show estimate will be consist of list of dependencies plus a description of a reasonable implementation. We will also assume Program Management will be writing the specification.

Control Palette
: A floating windoid used for navigation in the slide slow.

Branching
: The ability to have multiple paths in a slide show

Better Multimedia
: Support more media types. Control them better.

Animate Anything
: Titles, Graphs, and other objects

Faster Navigation
: More extensive saving of screen images.

External Control
: Control a slide show from another application

Slide Shows in small areas
: Part of the work for supporting in-place embedded slide shows.

Clip Art Access

We plan to build an OLE server, designed primarily for PowerPoint's use, that will allow users to efficiently browse, search, and organize clip art. There will be both Windows and Macintosh versions. We will consider using an existing Microsoft database engine as the mechanism for storing and retrieving the clip art. Identify problems with OLE 2 that may stand in our way.

File	Edit	View	Insert	Format	Tools	Draw	Window	Help
New...	Undo	Slides	Picture...	Font...	Color Scheme...	Align	Arrange All	Contents
Open...	———	Notes	Object...	Bullet...	Transition...	———	Fit to Page	Search for Help on...
Close	Cut	Slide sorter	Graph	Line Spacing...	Build...	Group	———	———
———	Copy	Outline	Equation	Alignment...	Follow Master...	Ungroup	1 pres 1	Introducing PowerPoint...
Save	Paste	———	Outline...	Fit Text...	Reapply Master	Regroup	2 pres 2	Examples & Practices
Save As...	Paste Special...	Slide Master	———	———	———	———		———
———	Clear	Notes Master	Date	Object...	Add Title	Snap to Grid		Technical Support
Find File...	———	Handout Master	Time	Shadow Offset...	Add Body	Bring to Front		———
Summary Info...	Select All	Outline Master	Page Number	———	———	Send to Back		About PowerPoint...
———	Duplicate	———	———	Slide Setup...	Spelling...	Bring Forward		
Print...	Edit	Toolbars...	New Slide	Notes Setup...	Options...	Send Bacward		
Slide Show...	———	Help bar	Delete Slide			———		
———	Find...	———				Rotate/Flip...		
Send...	Replace...	Scale...				Scale...		
———	———	Guides				Change Shape...		
MRU1	Links	Rulers						
MRU2								
MRU3								
MRU4								
———								
Exit								

This is—very roughly—what our menus should look like for PowerPoint 4.0

Features

- New user support
  - design needed - cue cards, status bar, etc
  - much better help. path from info
- File format in/out
- Undo/Redo/Repeat
- AppleEvent/IDispatch support
- Slide Sorter improvements
- Arbitrary view scales
- Drawing UI convergence
- OLE 2 client
- spline curves
- drag & drop on text
- show invisibles in text
- sound & video objects control
- new color palette, better dialogs (multiple palettes?)
- find/replace by attributes
- "other" line widths
- dashed lines
- rotated text
- full rotation
- better shapes
- Word/Excel dialogs
- 3D dialogs
- tool bars
- tables
- margin rulers

Open/Save/Find/Spell

Work

- command arch
- RPF
- window/event arch
- doc/view arch
- font arch
- color arch (256 lim
- core dialogs
- menu arch
- new file format & arch

Title	Track	Pri	Category	Status
Command Architecture	App	1	Architecture	Active

We need a command architecture which supports: Apple script, multi-level undo, preview commands, simple CBT and ObjectBasic. The architecture should be expandable and maintainable.

Doc/View Architecture	App	1	Architecture	Active

Allow for manipulation of presentations which are not active or on view. Allow for expansion of the number of views to a presentation. Organize and refine the interfaces.

OLE 2 Server	App	1	Feature	Active

Consider how to support the server features of OLE 2 in PowerPoint. Understand the architectural changes needed to support OLE2 server. Propose different levels of support with cost estimates.

RPF Filters	App	1	Feature	Active

Create an RPF filter for HG, version to be determined, which can be used as a model for subsequent filters.

RPF Support in PowerPoint	App	1	Feature	Active

Support reading in of foreign file formats. Should have high semantic and graphical fidelity. At the same time, it should be capable of supporting more formats easily.

Undo architecture	App	1	Architecture	Active

Devise an undo architecture for the whole of PowerPoint which can be used by all modules. Allow the undo state to be named on the menu. Support multiple undo and preview dialog undo. Work closely with the command architecuture team.

Window Architecture	~~App~~ UI	1	Architecture	Active

Define a window architecture which accommodates the natural behavior of both platforms. Consider the problems of activation and integration with views. The architecture shóûld account for window panes, toolbars, tool palettes, and previewing dialogs. It also needs to support guest windows from OLE2. It needs to It may or may not need to support modeless dialogs.

Better mouse interface in slide sorter	App	2	Improvement	Active

The mouse interface for moving slides in the slide sorter is awkward. It's usually not clear exactly where the slides will be inserted, or whether they will move at all. Anders made the suggestion to follow the Windows file manager's behavior when the cursor is outside the slide sorter window. The NO cursor is displayed and nothing is moved.

Events Model	App	2	Architecture	Active

Devise an event model which can be support on both platforms. It should be rich enough to support platform specific events like QuickTime and Apple Events.

Faster Sorter Miniature Drawing	App	2	Improvement	Active

Consider ways to make drawing or displaying of sorter miniatures significantly faster. Consider a stepwise refinement scheme which draws all slides in "stub" form very quickly, then proceeds to improve them (possibly in more than one pass) in the background so that the user can use the sorter right away. Consider cached and/or stretched miniatures possibly stored with the presentation.

Title	Track	Pri	Category	Status

Page List Module redisign — App | 2 | Architecture | Active

Cleanup the iterator usage of Page List as there are bugs waiting to happen here.

Add ability to cancel importing — App | 3 | Improvement | Active

The user should have the ability to cancel importing an outline or a picture.

Body Overflow — App | 3 | Improvement | Active

When a body object (probably typed in the outliner) is too tall to fit on the slide, consider giving the user some indication that this has occured.

Organization of Text in a Presentation — App | 3 | Architecture | Active

Given the problems of Spelling, Find/Replace, and Outline maintainance, is there a better way to organize the text in a presentation than by Object?

Outline should show notes page text, subtitles — App | 3 | Improvement | Active

We punted this for PP3. Show notes page text in outline view. Allow it to be hidden. Could also add sub-titles.

Outline view should be more wysiwyg — App | 3 | Improvement | Active

Get body text ruler from slide so tabs can be set correctly.

DennisAb: New color architecture might allow color in outline view?

Outline/Page coordination — App | 3 | Architecture | Active

Look at new means to associate Pages with Outline Text. Include investigation on constantly maintained outline text, and divorcing all Outline knowledge from Text layer.

Preview Transition in Sorter Miniatures — App | 3 | Improvement | Active

When a transition is picked for a slide from the toolbar in the sorter, preview the transition on the miniature itself (blt mini n-1 then transition to n).

Redo the RTF parser. — App | 3 | Improvement | Active

The RTF parser is in need of an overall. We now have a much better idea of what its requirements are. The parser can be faster and smaller.

Redundant Pres code in Slide Show — App | 3 | Architecture | Active

Look at redundant code in Slide Show to change and draw current slide. Some of this code is nearly duplicated in Pres, and in Printing code. Look at having a single module be responsible for changing and drawing slides for viewing, printing, and slide show.

Split Panes in Outline View — App | 3 | Improvement | Active

Implement the standard window-split control in outline view, in the vertical dimension only.

Viewer document type — App | 3 | Improvement | Active

Ability to save a presentation as a Viewer file. Double-clicking on this file starts the Viewer, not PowerPoint. Also, the file will have a Finder icon even if the Viewer, but not PowerPoint, is present.

Ralph

General View Scales — Engine | 1 | Improvement | Active

Now that we have TrueType, we should have general view scales including a smart zoom to fit window like WinWord.

Title	Track	Pri	Category	Status

Graphics layer

Engine | 1 | Architecture | Active

Define a core graphics layer for PowerPoint and a possible Drawing application. The layer must support PowerPoint drawing well, but look forward towards future drawing enhancements. It should be implementable on Windows 3.1, Chicago, QuickDraw, QuickDraw GX, and Windows NT, although Win 3.1 and QD are initially most important. It should consider the problems of metafiles, metafile disassembly, palettes and off-screen bitmaps. Drawing for UI should also be consider, but this may be a separate interface.

Memory: finish new memory model

Engine | 1 | Clean-up | Active

Convert all code to use the new memory model. Remove MNewPtr, MNewHandle, etc. Better support for native handles. Implement pools on Mac. Clean up source code into separate Mac/Win implementations. Clean up low-memory handling added at end of PP3 project.
Use the memory module's notification mechanism. Distribute "grow zone" responsibilities hierarchically.

Move Fuzz/Resize Handle Improvements

Engine | 1 | Improvement | Active

Investigate alternatives to our move fuzz and resize handle UI for better UI and more standardization with other MS apps. Possibilities include: larger handles, different fuzz look and/or placement, change cursor over hit areas, 8 handles, centered handles and/or fuzz (related to centered frames issue). Consider alternatives for the shape adjust handle(s).

OLE 2 Client

Engine | 1 | Feature | Active

Consider how to support the client features of OLE 2 in PowerPoint. Understand the architectural changes needed to support OLE2 clients. Propose different levels of support with cost estimates.

Page, Date and Time Stamps

Engine | 1 | Architecture | Active

Allow page, date and time stamps to be placed directly in text. Consider supporting other objects like external objects.

Slide Architecture

Engine | 1 | Architecture | Active

Investigate ways to simplify the slide architecture. Make it easier to add new commands and support editing slides which are not active or on view. Consider reentrant and restartable drawing as well.

Smooth Polygons/Freeforms

Engine | 1 | Feature | Active

Allow polygons to be smoothed and unsmoothed. Investigate interaction with Freeform tool -- should a freeform allow some smooth and some unsmooth portions?

Text: faster, better memory usage

Engine | 1 | Improvement | Active

Improve text performance. Build outline text faster, avoid reformatting the whole text.
Allow cached editing state in slide view to be discarded.
Use a single MHandle for arrays instead of two.
Import and export need to be much faster.

Text UI

Engine | 1 | Feature | Active

Investigate how to match the text user interface of T3. Consider drag and drop. Propose reasonable subsets. Estimate development cost.

Better Sound & Video Support

Engine | 2 | Feature | Active

Figure out how to offer more user control over when multimedia objects are played. For example, allow the user to play a sound each time a bullet appears.

Title	Track	Pri	Category	Status

Color Architecture

Engine | 2 | Architecture | Active

Investigate ways to remove current 256 color limitation. Investigate ways to improve the performance of our palette calculations. Devise ways make the code more maintainable and understandable.

Dashed Lines

Engine | 2 | Feature | Active

Investigate how to implement dashed lines in PowerPoint. Propose different levels of support.

Drop/Replace Recolor Picture

Engine | 2 | Improvement | Active

Consider dropping the Recolor Picture feature in favor of something else like a general batch recoloring feature for PP objects. The user could disassemble a picture if they want to recolor. Recolor Picture will get harder and harder to support in future systems, so the sooner we nuke it the better. Eventually, we should not be scaning metafiles for anything.

RalphP: Note, shadowing of pictures would need to be implemented in a different way then. I think we may still want to enumerate and modify colors for various reasons, but we don't want to scale them ourselves in the long term.

Environment cleanup

Engine | 2 | Architecture | Active

Remove all references to Env by Ptr. Look at ways of cleaning up/simplifying environment.

Find/Replace: more options

Engine | 2 | Feature | Active

Allow Find/Replace to search for text in more ways than just characters, e.g. by font, color, size, containing shape, etc. Allow Find/Replace of non textual items.
Allow user to tab thru objects on slide based on some other criteria than stacking order, e.g. by kind (shape, line, etc.), by whether object has text or not, etc. Allow wraparound search?

Font architecture

Engine | 2 | Architecture | Active

Devise a font architecture which is understandable and maintainable. It should support font embedding, preferences and substitution. It may not have to support font replacement. Above all, it still must be as fast as possible.

From AndreB: Clean up font/device module relationship. Find a way to fix reference counting.

General Line Widths/Styles

Engine | 2 | Improvement | Active

Allow "Other" line widths. This is generally useful and will also improve disassembly. Custom compound styles also?
Border Art a la Publisher?

Init Performance

Engine | 2 | Improvement | Active

PowerPoint's Init performance is miserable. This may become more of a problem with future uses of OLE. Investigate doing lazy-initialization or pre-initialization of most stuff.

Investigate Bitmap Image enhancing

Engine | 2 | | Active

Look at the image enhancer and TrueColor specs as well as define what PP users would like. See how we can integrate better bitmap color handling into PP. This is getting much more important.

PowerEdit: make a DLL, improve documentation

Engine | 2 | Clean-up | Active

This goal does not directly contribute to PP4, but it would help to make PowerEdit available outside the GBU. Also, making PP4 components into DLL's does have the advantage of improving interfaces and re-usability in general.

Title	Track	Pri	Category	Status

Replace Down-Righting with Consistent Pen

Engine | 2 | Improvement | Active

Remove PP's strange down-righting convention in favor of generalized consistent pen centering. Investigate interaction with move fuzz and handles. Consider problems of old presentations and their griddedness.

Rewrite Slide Show

Engine | 2 | Architecture | Active

To implement new features and get rid of much old and unnecessary code, the best would be to rewrite the entire slide show, using the old code as a reference for tricks.
We should discuss the module structure and the interfaces in the group. We need separate modules at least for
- color table handling ("color magic")
- event handling (dispatching non-core events to core functions)
- rehearsal (toolbar / tape player interface?)
- transitions / build effects (animation?)

Rotation

Engine | 2 | Feature | Active

Propose an user interface for and consider the implementation problems of allowing full rotation of PowerPoint objects including the text and pictures they may contain. Propose subset solutions to the general problem.

Shapes

Engine | 2 | Feature | Active

Suggest ways to improve our shapes model. Consider adding another control point, beveled shapes, and user definable shapes. Consider ways to properly shade 3-D shapes such as a can. Investigate applying the "limo stretch" technique to other types of shapes such as the parallelogram to allow more useful resizing.

Simplify Slideshow implementation

Engine | 2 | Architecture | Active

The slideshow code can be partially rewritten for better simplicity and clarity:
1) The slideshow private event loop is overkilled.
2) parameter passing via pLocal, pShare need better encapsulation.
3) DrManage module is obsolete

Slide Show Caching

Engine | 2 | Improvement | Active

Figure out how to cache slide images in a temporary file during slide show so that the user can go backwards faster.

Slide Show Navigation

Engine | 2 | Feature | Active

Figure out how to the user can put "hot spots" on the slide for going to different slides during a show.

Textures

Engine | 2 | Feature | Active

Consider ways to add richer fill patterns into shapes. Effects like marble and brick are highly desirable. Consider the problems of shading and changing colors.

DavePa: other problems are bitmap scaling (getting the right scale and making it less jaggy if stretched) and performance.

Title	Track	Pri	Category	Status

Transition Timing

Engine | 2 | | Active

The current model for transition timing is too dependant on constants and too unsafe. We could try using an adaptive timing model using finer hardware timers. It is sufficient if the resolution of the timer is one screen-refresh cycle, i.e., 16ms. On the Mac, there is such a timer API. On Windows, we could invent heuristics to simulate this.
Some transitions however, like Dissolve or Random Bars, depend on the number of steps being known prior to the actual transition, for geometrical reasons. We should investigate how to solve this problem or use the old (speed measuring) method for these transitions.

Animation effects

Engine | 3 | Feature | Active

Investigate ways of adding and controlling animation effects in PowerPoint. What would be an easy to use, easy to model after metaphor?

Arrowheads

Engine | 3 | Feature | Active

Investigate adding of more types of Arrowheads (End Marks).

Autoscrolling for Polygons

Engine | 3 | Improvement | Active

Investigate allowing of autoscrolling during creation and editing of polygons.

DavePa: i.e., make polygon editing modeless to allow any operation in edit mode, like arc editing

Background Processing

Engine | 3 | Feature | Active

Investigate a better means for background processing to allow several background processes to run simultaneously and to better safeguard them from dependencies on the rest of the code.

Design Widths Investigation

Engine | 3 | Improvement | Active

Make sure we handle design widths correctly. Take a look at the bogons reported to us late in the Win PP3 project.

Draw Title/Body Placeholder always on Top

Engine | 3 | Improvement | Active

Consider drawing the Title/Body placeholder hilite as a UI element on top of all other elements instead of as a special case of show edges in stacking order. This may be a better UI and would make more sense internally because you don't want to draw the UI components in non-screen-slide output.

Enhanced Pen support

Engine | 3 | Feature | Active

Investigate on how to make PowerPoint pen-enhanced:
1) On-drawing scribbing and shape recognition
2) Fix pen annotation in slideshow
3) UI for color/size selection of slideshow pen
4) annotation layer in slide/notes/outline views

Impove slide show info interface.

Engine | 3 | Improvement | Active

The interface to the functions that set and get slide show information about slides has become unwieldy. The interface needs a change.

Improve "color magic" algorithm in Slide Show

Engine | 3 | Architecture | Active

We could investigate better algorithms for color table handling during transitions with clashing colors, e.g. sorting the two color tables according to hue/saturation/brightness and matching the best colors.

Title	Track	Pri	Category	Status

Mitred Corners for Freeforms — Engine | 3 | Improvement | Active

Use the thick shape frame code on Freeforms also, perhaps as an option (for both shapes and freeforms). This involves supporting open figures, centering instead of inside-frame, and fixing the edge intersection problems that cause bogons in some shapes today.

Multiple drawing guides — Engine | 3 | Feature | Active

Allow display of multiple guides for accurateand easier object placement and measurement

Negative cropping — Engine | 3 | Improvement | Active

Allow pictures to be cropped larger than actual size to add a "mat" border as in Publisher. This would allow the fill to show through as a border.

New build slide interface. — Engine | 3 | Architecture | Active

The current interface between text and slide layer for determining how to build a slide is awkward.

Off-Screen Updates — Engine | 3 | Improvement | Active

Consider doing all or some screen updates off-screen for a smoother look. Also consider smooth drag operations by blitting from off-screen at every iteration like some of the better paint programs do. Also investigate vertical retrace synchronization to help eliminate flicker. This is related to caching parts of the slide in off-screen bitmaps for better performance.

Offslide area usage — Engine | 3 | Improvement | Active

Investigate the usage of the offslide area as a scratch area to drag objects to and from different slides instead of cut/copy/paste. Publisher has this.

Offworld Improvements — Engine | 3 | Architecture | Active

The Offworld module has served well, but it needs a tune-up to make it better for the future. For example, if we can require 32-bit QuickDraw in the future, then we can make the code better.

Outline collapsable by point — Engine | 3 | Feature | Active

A user should be able to collapse/uncollapse the outline by point, just like Word.

Pictures in Shapes — Engine | 3 | Improvement | Active

Investigate clipping pictures to arbitrary shapes.

Snap-Dragging Drawing UI — Engine | 3 | Feature | Active

Investigate automatic object snap drawing UI as an alternative to the grid and guides. Investigate interaction with shapes, etc. Consider "automatic" visual guides to indicate snap alignment.

Text: Auto-numbered bullets — Engine | 3 | Feature | Active

Allow bullets to be auto-numbered with various numbering styles like Word. This could be implemented with the same mechanism used to implement slide numbering in outline view.

Text Effects — Engine | 3 | Feature | Active

Consider how to add a simple set of text attributes like glow, shaded, metallic, and swooshed. Look for simple effects which are not done by WordArt 2.0.

Text: show ¶ command — Engine | 3 | Improvement | Active

Add the ability to "see" white space characters like Word's Show ¶ command.
This may fall under compatibility with Word.

Title	Track	Pri	Category	Status
User definable grid	Engine	3	Improvement	Active

Investigate the UI and implementation details for User definable grids. Consider the problems of metric support.

User-definable placement of Duplicated objects	Engine	3	Feature	Active

Investigate UI/Implementation to allow user to define the X-Y displacement of objects created by the Duplicate command.
Similar to the handy feature in FreeHand.

Vector Patterns	Engine	3	Improvement	Active

Investigate implementation of hatch-type patterns with vector drawing instead of bitmaps for better scaling. Could do with system clipping or computed geometry.

Core Dialogs/Controls	UI	1	Architecture	Active

Define a dialog strategy which makes dialogs easy to prototype, construct, localize, and iterate on both platforms. Support the conventions of the Macintosh, Windows, and Microsoft applications. Support help on all dialogs.

Help & prompting support	UI	1	Feature	Active

Explore through prompting, status indicators, help bars, balloon help and general help text ways to make PowerPoint easier to learn. Consider models offered by XL, Word, Freelance, and Intelidraw.

Localization Issues	UI	1	Planning	Active

Work with the international team to define a localization strategy for the PowerPoint 4.0

Menu/Toolbar Architecture	UI	1	Architecture	Active

Allow for easy additions of new menu items and controls. Allow for customization of menus and toolbars. Devise strategies for efficiently updating the status of controls. Support popup menus, mixed selection states, and OLE2 UI merging. Support balloon and control descriptions.

OLE 2 UI	UI	1	Feature	Active

Consider how to support the UI merging features of PowerPoint. Propose different levels of support with cost estimates.

Richer Controls	UI	1	Architecture	Active

Investigate how to implement grid controls, tagged dialogs, control panel dialogs.

UI Style	UI	1	Feature	Active

Design the user interface style for PowerPoint 4.0. Consider the entire product: menus, toolbars, tool palletes, dialogs. Develop UI grammar for PowerPoint. The UI style should solve PowerPoint needs, but feel familiar and comfortable to Word and Excel users.

Instrumentation of PowerPoint 3.0	UI	2	Planning	Active

Instrument PowerPoint 3.0 to get a better idea of the current products usage patterns and frequencies.

Ruler at Top of Document Window	UI	2	Improvement	Active

Change the ruler to be an optional toolbar-like item on the top of the document window. The origin should move appropriately with the selection, etc. The look should be properly 3D like WinWord.

Title	Track	Pri	Category	Status
Coding Standards	Unknown	1	Planning	Active

Investigate and reach consensus for a common coding style guideline. Devise a style for C++. The guidelines should consider syntax, commenting styles, and interfaces. A process should be setup for future modification of the standard.

Exception Handling	Unknown	1	Clean-up	Active

Devise an exception handling strategy for PowerPoint. It should be robust and easily understood, expanded and maintained. It should handle out of memory, out of resource, and user interrupts as well as specific exceptions

File Architecture	Unknown	1	Architecture	Active

Consider a new file architecture for PowerPoint. It should work well with OLE 1 and 2 and work on DOS, NT and the Macintosh. It should support different memory and file representations. This task ties closely file format task.

File Format	Unknown	1	Architecture	Active

Design a new file format which is robust, maintainable, and fast. Consider the problem of forward and backward conversion from the present format and future versions. Also, consider Cario's content filter and VM problems.

Finishing tools	Unknown	1	Feature	Active

After a presentation content is created, consider how to automatic ways to polish of the contents of the presentation. Templates are one tool in this goal. Consider features like T3's AutoFinish dialog which scans for and corrects common errors. Proper capiliatilization and periods are one problem that are easily solved.

Investigate new conversion model	Unknown	1	Architecture	Active

Look into feasibility of an independent conversion module to perform conversion of old presentations. This ties in with the file format work.

Orientation for New Developers	Unknown	1	Planning	Active

Figure out ways to better introduce new developers into the PowerPoint team. Consider the problems of setting up, mentoring, and learning the PowerPoint code.

Remove Pascal	Unknown	1	Clean-up	Active

Investigate the best methods to switch from Pascal to C/C++.

Tables	Unknown	1	Feature	Active

Consider different designs and ways to implement tables in PowerPoint. Direct manipulation techniques should be used through out. Consider the problems of integrating the tables with the outliner and slide show. When possible PowerPoint tables should follow the precedence set by Word and Excel.

Tools	Unknown	1	Planning	Active

Investigate the tools set that should be used in PowerPoint 4.0. Look at both software and hardware. Consider the full debug and build process. Try to improve the build/debug cycle time. Respond to the needs to the developers of the team.

Database for checkin mail	Unknown	2	Planning	Active

Look into most advantageous means to database checkin mail. Consider having cross-links to raid and spec, as well as being able to search for specific types of information. Also consider setting standards for checkin mail in the nature of our coding standards.

Title	Track	Pri	Category	Status
Database for module/layer prefixes	Unknown	2	Planning	Active

Implement a database that contains all the prefixes used byPowerPoint layers and modules.

Debugging enhancements	Unknown	2	Architecture	Active

Improve the debugging module for both use by development and QA. Consider ways to facilitate automated test scripts.

Improve Dev/QA Communication	Unknown	2	Planning	Active

Define goals of Dev/QA communication and propose means to achieve these goals that consume as little time as possible. Development should communicate internal structures and changes, and QA should communicate testing strategies and coverage. Address issues such as performance testing.

Master/Master Object UI	Unknown	2	Feature	Active

Attack the problem of structure without constraints in presentations. Consider previous solutions of multiple masters and styles and try to come up with something better. Work with the Template/Master UI task.

Read/Swap External Objects to Disk	Unknown	2	Improvement	Active

Implement a form of virtual memory for some external objects so that they don't all have to be in memory to edit or show the presentation. This might be useful even on Windows so that really huge presentations that exceeded the system virtual space could be shown. The objects should be read directly from the pres file so that no extra disk is required either. This will likely require a big change to the file format (wanted anyway).

Ref-Counting solutions	Unknown	2	Architecture	Active

Look into alternate solutions for ref-counting, such as garbage collection, or background re-counting.

Remove WIN2 references.	Unknown	2	Clean-up	Active

There are still some references to WIN2 in the code.

Simplified Paper model	Unknown	2	Improvement	Active

Improve the PowerPoint model for output format sizes (slides, notes, handouts). Integrate it better with target printers. It should be more generic and better intergrated with physical paper sizes. Simplify the target printers model - do we need 2 target printers. Investigate use of margins.

Slide Show UI	Unknown	2	Feature	Active

Consider ways to make slide show easier to use. Consider the problems of navigating in slide show.

Template/Master UI	Unknown	2	Feature	Active

Work on the UI for masters and templates. Focus on making PowerPoint easier to learn. Consider user requests for multiple slide styles, and alterable backgrounds.

Code Swapping on Mac	Unknown	3	Improvement	Active

Investigate ways to get code to swap VM-style on the Mac to ease the segmentation and memory problem. Might also want to investigate DLL-like support.

Org Charts	Unknown	3	Feature	Active

Investigate ways to add org charts to PowerPoint, if possible editable both in outline and in slide view. Consider the possibility of an OLE server or a built in approach

Title	Track	Pri	Category	Status
Win 32s Vs. Win 32	Unknown	3	Planning	Active

Investigate the best way to support Windows NT.

Creation Guidance	Unknown	4	Feature	Active

PowerPoint gives the user freedom in the layout and compositions of their slides. For first time users, this wide array of makes it hard to start. Explore ways to offer some guidance in the presentation creation process. Wizards are one solution to this problem. Look at others. This task is closely related to the Help and Prompting task and the Template/Master UI task.

9-15-93

TO: PP4

FROM: GeorgeC

RE: PowerPoint 4.0 Performance Testing for Code Complete

Attached are the results of the performance benchmarks run on PP4 d177 (the Code Complete build).

As with M2 performance testing, performance tests for Windows PowerPoint were automated with slight revisions to the script made to include new CC features and any new UI. Tests for Mac PowerPoint were performed manually. Because of problems opening a file saved in the file format for d177, times for opening a file for Mac PP4 include time for file conversion to the d177 file format. Surprisingly, this problem was not reflected in the times for the file-open operation.Below are results of key PowerPoint operations.

Windows PowerPoint 4.0 (measured in seconds)				
Operation	*PP4*	*PP3*	*Delta*	*%*
Launch	35.29	17.19	18.1	105%
Open(typical)	21.26	16.42	4.84	29%
Open(lg pres)	105.5	55.93	49.57	89%
Save	33.25	11.24	22.01	196%
Exit	5.77	2.38	3.39	142%
Printing	2493.8	2614	-120.2	-5%
Slide Show(typical)	242.93	255.54	-12.61	-5%
Slide Show(lg pres)	1846.04	1125.85	720.19	64%

Mac PowerPoint 4.0 (measured in seconds)				
Operation	*PP4*	*PP3*	*Delta*	*%*
Launch	22.89	13.2	9.69	73%
Open(typical)	10.09	13.39	-3.3	-25%
Open(lg pres)	17.96	18.23	-0.27	-1%
Save	31.28	13.61	17.67	130%
Exit	5.94	2.19	3.75	171%
Printing	1428.84	914.83	514.01	56%
Slide Show(typical)	135.75	99.22	36.53	37%
Slide Show(lg pres)	1065.71	916.75	148.96	16%

Results show some interesting findings:

1. Time to launch, save, and exit for Windows PP4 took twice as long compared to PP3. Moreover, these times regressed compared to M2.
2. Test files with 135 slides continued to show slow performance in slide show and opening a file compared to PP3.
3. All times for Mac PP4 except for opening a typical presentation took twice as long as PP3.

If there are any questions, concerns, or feedback, send email or call me at x8170.

CODE COMPLETE PERFORMANCE TESTING FOR PP 4.0

Goal/Description

PowerPoint 4 must have adequate performance in order to be competitive. The general goal is to have performance approximately equivalent or better than the previous shipping version (PowerPoint 3.0) and our main competitors on the both the Windows (Lotus Freelance Graphics 2.0) and the Mac (Aldus Persuasion 2.1) platforms. We will use performance testing during each milestone as a checkpoint to measure the progress of the application.

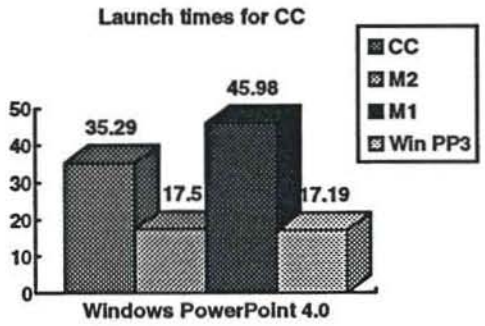
Contents of Code Complete Performance Results

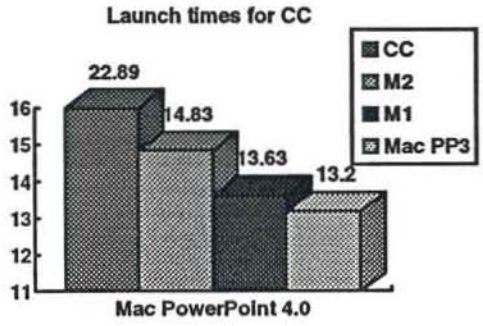
The report is divided into 6 different sections. The test environment is described on the last page of the report.

SECTION	AREA	PAGE
1.	Launch	1
2.	Open	2
3.	Save	3
4.	Exit	4
5.	Printing	4
6.	Slide Show	6

1. Launch

Launching was measured from the time PowerPoint 4.0 was started to the time the user had control of the PowerPoint menu items. For this build, we could avoid the initial PowerPoint and Quick Slide dialogs from appearing thus making it an equal comparison to PowerPoint 3.0. The launch time for both Windows and Mac PowerPoint 4.0 for code complete was significantly slower compared to performance of their version 3.0 counterparts. This could be due to increase in size of the executable being nearly 3 MB compared to 1.5 MB for the previous version.

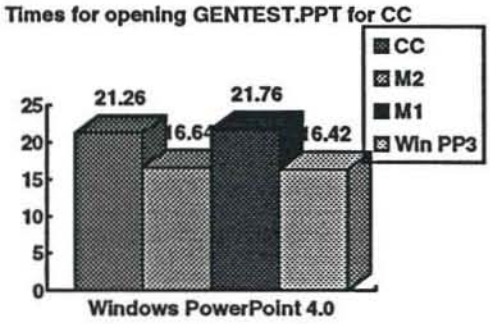


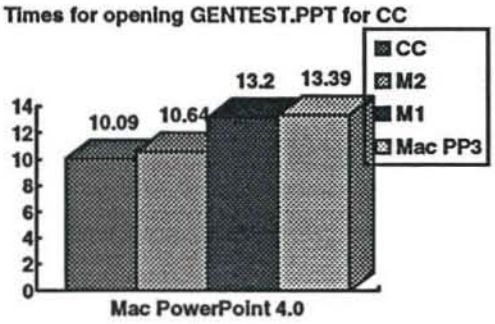


2. Open

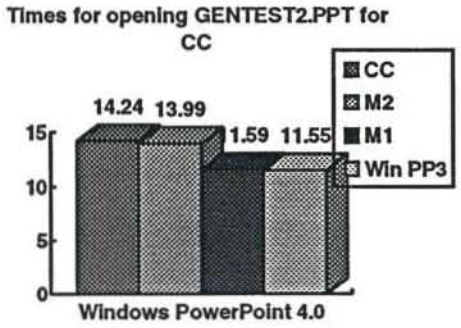
The task of opening a file under PowerPoint 4.0 was measured from the time the OK button is pushed to when the user had control of the PowerPoint menued items. The following results were found using the 3 files mentioned below:

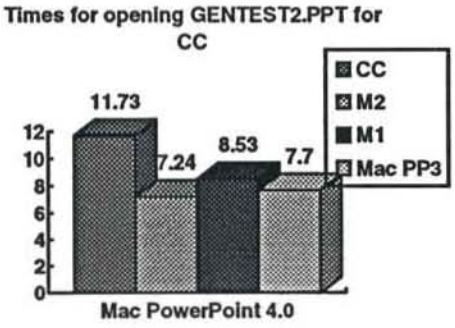
GENTEST.PPT is an 18 slide presentation (340K) with bitmaps, metafiles, shapes, etc. used to represent a typical user presentation. Times below show that opening GENTEST.PPT was slower compared to M2 and and PowerPoint 3.0 on the Windows side. Despite having to convert the file to d177 file format, the Mac side still showed faster times compared to the previous version. However, even taking into consideration the file conversion time, opening the same file under a different name was significantly slower compared to PowerPoint 3.0



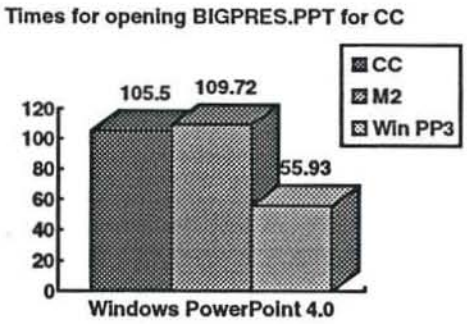


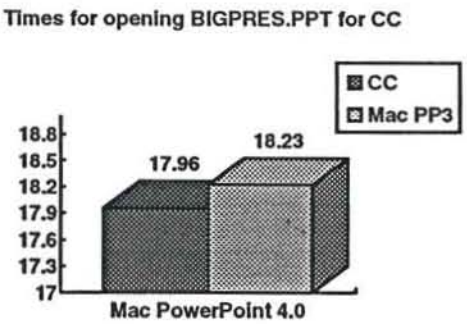
GENTEST2.PPT is the same presentation as GENTEST.PPT under a different name to test how long it would take PowerPoint to open 2 files, one after the other, with the same contents. Results below show that performance for Windows side were almost equal to PowerPoint 3.0.





BIGPRES.PPT is a 135 slide presentation (2 MB) with the same contents as GENTEST.PPT copied in slide sorter view to construct the file. It was used to measure how long PowerPoint would take to open this large presentation. Results continue to show that Code Complete is the same as M2 which is twice as slow as PowerPoint 3.0 to open this 135 slide presentation under the same conditions. The Mac results show just a slight degradation of performance compared to the previous version. Because file conversion for Windows to Mac was not implemented, times for the Mac side were unavailable for M2.





3. Save

Times for saving a file were significantly slower for both the Windows and Mac platforms. It was tested with the following steps used to create the file that is saved:

COPYTEST.PPT is a 5 slide presentation (taken from GENTEST.PPT) and used to create a file used in timing "Save".

MAP.CGM is a multi-colored map of the United States.

OUTLINE.DOC is a Word document which will add 55 slides into a presentation.

The procedure of putting together the file to be saved was as follows:

a. All 5 slides copied to the clipboard from COPYTEST.PPT will be pasted into a new presentation in slide sorter view.

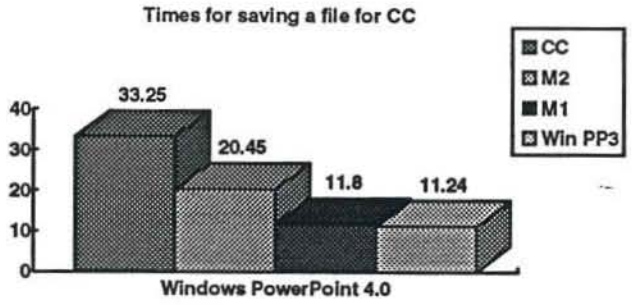
b. Switching from Slide Sorter view to Slides view, the template BEVELV.PPT will be applied as a template for all slides.

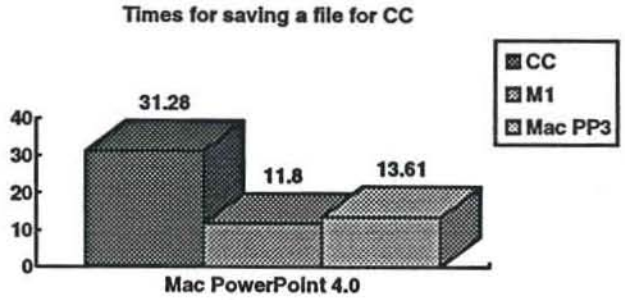
c. MAP.CGM was inserted into a new slide (Windows only).

d. OCCUPAT1.EPS was inserted into a new slide (Mac only).

e. OUTLINE.DOC was inserted in outline view adding 61 new slides.

f. The resulting 66 slide file is then saved as "PTEST.PPT". The time will be measured from the point "OK" is pressed in the "Save As" dialog to the time the user has control of the menued items.

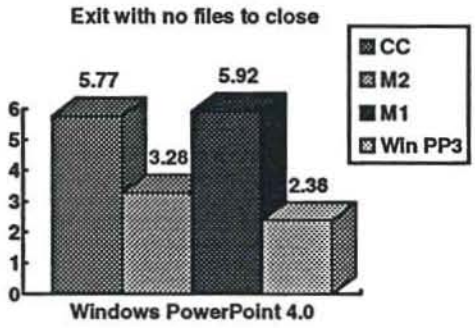


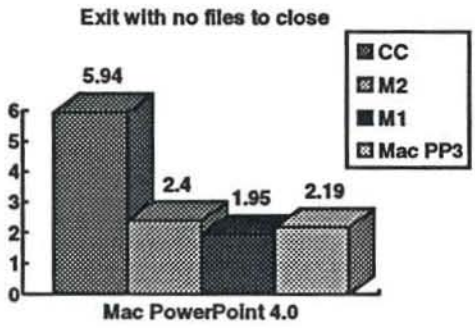


4. Exit

Exit or "close down" time will be measured when PowerPoint is exited to when user has control of the menued items in Program Manager.

Results below show that exiting with no files to close was significantly slower for both Windows and Mac PowerPoint 4.0 when compared to PowerPoint 3.0.



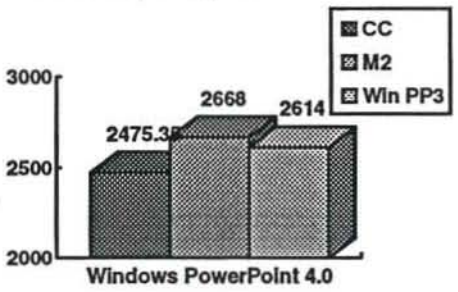


5. Printing

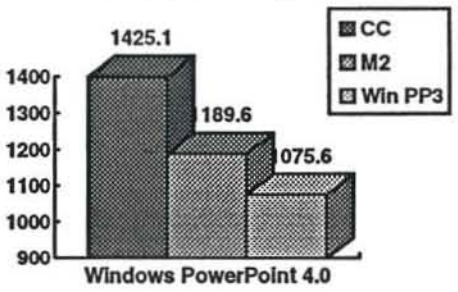
Times for printing were measured for GENTEST.PPT for 4 views of Slides, Notes Pages, Handouts (6 slides per page, and Outline view). All printing was done locally with the Print Manager in Windows disabled and with Background Printing OFF on the Mac.

Results show that printing Notes Pages, Handouts (6 slides per page), and Outline View is significantly slower than compared to PowerPoint 3.0 for Windows. Times for the Mac showed printing slides to be significantly slower.

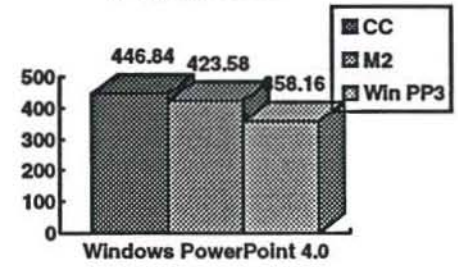
Times for printing Slides for CC



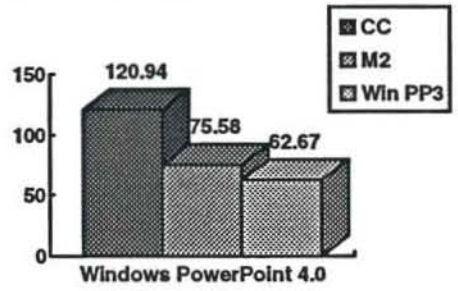
Times for printing Notes Pages for CC



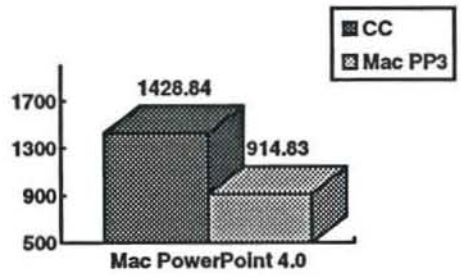
Times for printing Handouts (6 slides per page) for CC



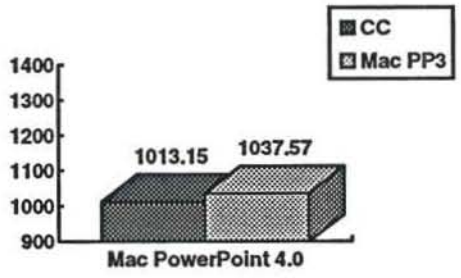
Times for printing Outline View for CC



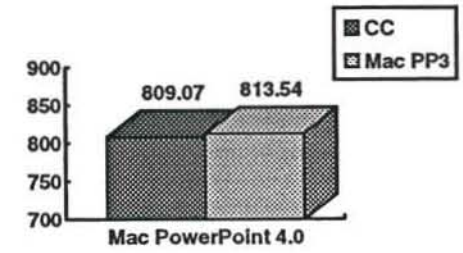
Times for printing Slides for CC



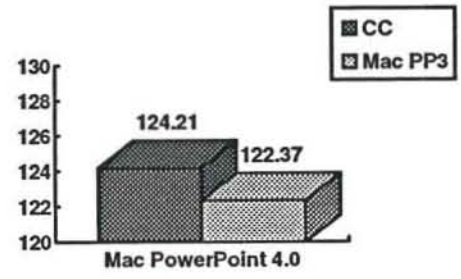
Times for printing Notes Pages for CC



Times for printing Handouts (6 slides per page) for CC



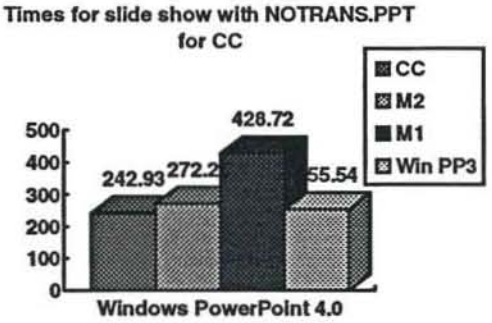
Times for printing Outline View for CC

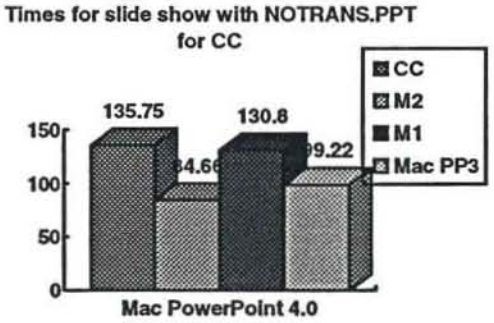


6. Slide Show

Slide Show was measured on the 4 files described below. All results showed a slight improvement in performance for a typical presentation but slower times for a large presentation for the Windows side. The Mac side showed a large drop off in time for all files tested compared to PowerPoint 3.0.

NOTRANS.PPT is an 18 slide presentation with no transitions.



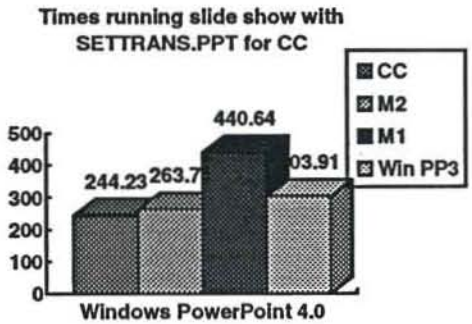


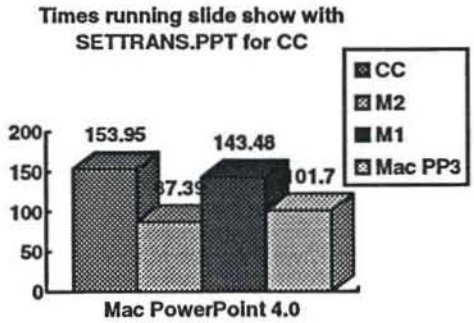
SETTRANS.PPT is a 18 slide presentation with slides having the following transitions:

slides 1,4,7,10,13,16 - Blinds Vertical

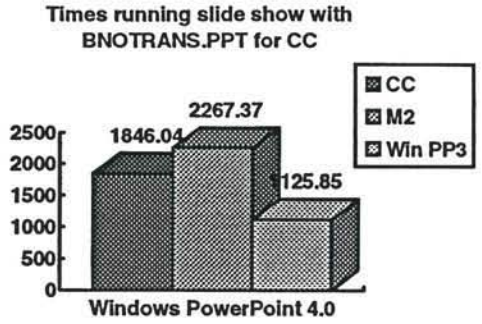
slides 2,5,8,11,14,17 - Checkboard Across

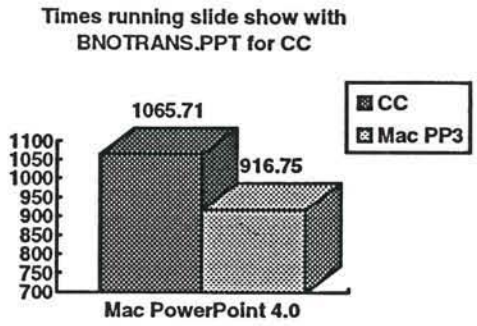
slides 3,6,9,12,15,18 - Strips-Up Down



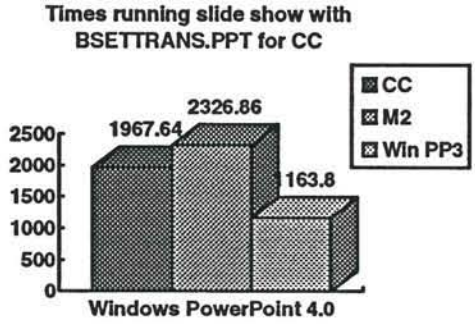


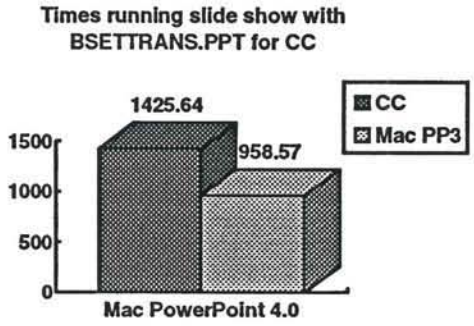
BNOTRANS.PPT is a 135 slide presentation with no transitions. Contents of presentation is a superset of NOTRANS.PPT.





BSETTRANS.PPT is a 135 slide presentation with set transitions. Contents of presentation and transitions will be set in the same pattern as in SETTRANS.PPT.





Test Environment

All test files will be converted to the new file format (for Windows side; unable to do so for the Mac side) before they were tested and ALL network connections were disabled. There were 3 times taken with the average time compared against previous averaged times for available PowerPoint 3.0, M1, and from M2 performance testing.

Machines:

Compaq 386/20e
Windows 3.1
DOS 5.0
6 MB of memory
Video 7 VRAM II card set to 640 x 480, 16 colors

Mac IIci
System 7.1
8 MB of memory
32-bit addressing and Virtual Memory OFF
Memory for PowerPoint 4.0 set to 2000K
Memory for PowerPoint 4.0 set to 4000K for large presentations

CONFIG.SYS and AUTOEXEC.BAT will be the following:

CONFIG.SYS
files=30
buffers=30
DEVICE=C:\WIN31\HIMEM.SYS
DOS=HIGH,UMB

AUTOEXEC.BAT
C:\WIN31\SMARTDRV.EXE /R
PATH C:\DOS;C:;

Printers

Windows testing:
HP LaserJet II with 4 MB of memory

Mac testing:
Apple LaserWriter IIg with 8 MB of memory

"Use Print Manager" was unselected in the Control Panel for Windows testing and "Background Printing" was OFF for Mac testing.

Dennis Austin

3-15-93

TO: PP4

FROM: GeorgeC

RE: PowerPoint 4.0 Performance Testing

Attached are results of the performance benchmarks run on PP4 d108 for Milestone 1. Based on input from development and marketing, additions and modifications were made from PP3 performance testing to the test script and test environment. Also, the test files were selected based on a typical user presentation containing a variety of different types of objects and characteristics such as the same slide format, some clipart, charts with different shapes and colors, bitmaps, Windows metafiles or objects from other Windows applications, as well as bold and shadowed objects and fonts.

Testing highlighted the most significant features of PowerPoint as reflected in both the test script as well as the chosen test file with the above mentioned characteristics. As PowerPoint matures during the project, testing of other new features and functionality will be added to the test script and test file. Times were measured from the start of the operation and ended when the user could gain control of PowerPoint's menu items.

Results for M1 show that switching to slide sorter view the first time is significantly faster compared to Windows or Mac PowerPoint 3.0. This result is mainly due to drawing just the text frames and allowing users to perform other operations without having to wait for the miniatures of the slides to redraw. The only concern is that some users may perceive that actual drawing of the miniatures to be slow.

Other results show that launching Windows PowerPoint 4.0 and running slide show (both Windows and Mac) to be significantly slower than PowerPoint 3.0 (PP40x #644 and #836). The slower launch time is attributed to the difference in size of the executable while the slower slide show times reflect its early stages as bug fixes and other functionality is added to/modified for slide show.

If there are any questions, concerns, or feedback about the testing and what to test for Milestone 2, feel free to send email or call me at x8170.

Windows PowerPoint 4.0 Performance Matrix

Performance Comparisons	PP3 d163			PP4 d108		
	(released version)			M1		
HARDWARE:	COMPAQ 386/20e			COMPAQ 386/20e		
	6 Mb RAM			6 Mb RAM		
	Video7 VRAM II			Video7 VRAM II		
SOFTWARE:	Win 3.1			Win 3.1		
	DOS 5.0			DOS 5.0		
	Himem.sys			Himem.sys		
	Smartdrv.exe			Smartdrv.exe		
	Local printing			Local printing		
	Network disabled			Network disabled		
SCRIPT: (Time in seconds)						
		Delta	%			
[Time launching of PowerPoint]						
Launch PowerPoint	18.92	27.06	143%	45.98		
[Time opening file and loading open code]						
Open GENTEST.PPT (Note3)	16.42	5.34	33%	21.76		
Open GENTEST2.PPT (same Pres under different name)	11.55	0.04	0%	11.59		
Close GENTEST2.PPT w/o exiting PP	5.42	0.97	18%	6.39		
<Maximize both Windows>						
[Compare redrawing of rotated text vs. nonrotated text]						
<Go to slide 19 with rotated text> (Note 4)						
Change slide to 66% view (first time)	n/a	n/a	n/a	8.84		
Change slide back to 50% view (first time)	n/a	n/a	n/a	5.7		
Change slide to 66% view (second time)	n/a	n/a	n/a	5.52		
Change slide back to 50% view (second time)	n/a	n/a	n/a	5.57		
<Go to slide 18 without rotated text>						
Change slide to 66% view (first time)	n/a	n/a	n/a	5.78		
Change slide back to 50% view (first time)	n/a	n/a	n/a	4.38		
Change slide to 66% view (second time)	n/a	n/a	n/a	4.38		
Change slide back to 50% view (second time)	n/a	n/a	n/a	4.34		
Keyboard Guide from Help menu	2.7	n/a	n/a	n/a		
[Time background shading]						
<Choose Color Scheme, Background Shading, Apply the following shades>						
Slides -> Slide Master View	2.27	0.74	33%	3.01		
Diagonal Right	3.3	1.97	60%	5.27		
From Corner	2.57	1.38	54%	3.95		
From Title (Rectanglar)	2.54	1.47	58%	4.01		
Slide Master -> Slides View	4.81	1.32	27%	6.13		
<Close Color Scheme>						
[Time going to slide sorter view]						
Slides -> Slide Sorter View (first time)	50.13	-47.32	-94%	2.81		
Slide Sorter -> Slides View	5.59	2.3	41%	7.89		
Slides -> Slide Sorter View (second time)	3.62	-1.88	-52%	1.74		
Slide Sorter -> Slides View	9.28	-1.85	-20%	7.43		
[Time switching from slide to slide]						
Slides -> Outline View	10.51	1.52	14%	12.03		
<Select slide 4 in Outline view> (Note 5)						
Outline -> Slides View	10.83	8.52	79%	19.35		
Go to slide 5 (Note 6)	12.09	5.13	42%	17.22		
Slides -> Notes View	14.53	5.84	40%	20.37		
Notes -> Slides View	12.14	3.53	29%	15.67		
Insert slide in current format	2.09	1.66	79%	3.75		
[Time insertion of Graph]						
Insert Graph	6.99	5.33	76%	12.32		
[Time update to Graph]						
Change bar graph to pie chart	4.94	7.88	160%	12.82		
[Time spell checking using custom.dictionary]						
<Slides -> Outline View and select slide 1>						
Check Spelling w/ no misspelled words	34.88	19.87	57%	54.75		
Close w/o saving presentation	2.52	1.31	52%	3.83		
[Time rendering slides to clipboard]						
<Launch Clipboard and PowerPoint and open COPYTEST.PPT> (Note 7)						
Choose Slide Sorter View	Note 7a	n/a	n/a	Note 7a		
<Select All and Copy Slides>						

Windows PowerPoint 4.0 Performance Matrix

<Resize PowerPoint window so Clipboard viewer is visible>						
ALT-TAB (task switch) to Clipboard	Note 7a	n/a	n/a	Note 7a		
<Exit Clipboard and task switch back to PP>						
Open a New Pres (Use format of active presentation)	4.76	0.26	5%	5.02		
<Go to window with COPYTEST.PPT and close it without exiting PowerPoint>						
Paste slides	Note 7a	n/a	n/a	Note 7a		
Slide Sorter -> Slides View	Note 7a	n/a	n/a	Note 7a		
Apply Template...(bevelv.ppt)	6.39	4.67	73%	11.06		
Add new slide	3.23	-1.32	-41%	1.91		
Insert Picture... (Map.CGM) (Note 8)	5.81	-0.33	-6%	5.48		
<Slides -> Outline View>						
Insert Outline... (OUTLINE.DOC) (Note 9)	114.84	-9.43	-8%	105.41		
Save As "ptest.ppt"	7.95	3.85	48%	11.8		
Close the New Presentation and Exit PP	2.3	1.82	79%	4.12		
[Print selected slides locally to LaserJet Series II] (Note 10)						
<Launch PP and open GENTEST.PPT>						
Print slide 5 (Note 6)	229.45	3.27	1%	232.72		
Print slide 14 (chart with different colored shapes, arrows)	224.91	2	1%	226.91		
Print slide 18 (text with colored background)	215.74	1.4	1%	217.14		
<Exit PowerPoint (no save)>						
[Run slide show using files with no transitions and set transitions]						
<Launch PowerPoint>						
<Open NOTRANS.PPT (1 second - no transitions)> (Note 11)						
Run Slide Show	255.54	173.18	68%	428.72		
<Close NOTRANS.PPT w/o exiting PP>						
<Open SETTRANS.PPT (1 second - 3 set transitions of Blinds Vertical, Checkerboard Across, Cut Through Black)> (Note 12)						
Run Slide Show	303.91	136.73	45%	440.64		
<Close SETTRANS.PPT w/o exiting PP>						
Exit PowerPoint with all files already closed	3.03	2.89	95%	5.92		
ADDITIONAL NOTES						
1. Items enclosed with "[...]" are comments						
2. Items enclosed with "<...>" are operations that are not timed						
3. GENTEST.PPT is an 19 slide presentation containing Windows Metafiles, bitmaps, bold and italic fonts, colored background, different colored shapes						
4. Slide 19 of GENTEST.PPT contains text rotated left 90 degrees						
5. Slide 4 of GENTEST.PPT contains different shaded and shadowed objects with text						
6. Slide 5 of GENTEST.PPT contains bitmaps, Windows metafiles, bold, italic, and shadowed text						
7. COPYTEST.PPT is a 5 slide presentation taken from GENTEST.PPT						
7a. The task could not be carried out since copying slides and switching back to clipboard generated a GP Fault in PP3 and PP4 (PP40x #817)						
8. MAP.CGM is a map of the United States with states having different colors						
9. OUTLINE.DOC is a Word document which inserts 61 slides into a presentation						
10. All printing done locally to LPT1 to a LaserJet Series II with 4 MB of printer memory using Windows driver 1.1 and Print Manager disabled						
11. NOTRANS.PPT is the same as GENTEST.PPT with no transitions						
12. SETTRANS.PPT is the same as GENTEST.PPT but with 3 transitions as follows:						
Blinds Vertcal on slides 1,4,7,10,13,16						
Checkerboard Across on slides 2,5,8,11,14,17						
Cut Through Black on slides 3,6,9,12,15,18						

Macintosh PowerPoint 4.0 Performance Matrix

Performance Comparisons	PP3 d163			PP4 d108	
	(released version)			M1	
HARDWARE:	Macintosh IIci			Macintosh IIci	
	8 Mb RAM			8 Mb RAM	
	Page length monitor			Page length monitor	
	Gray scale colors			Gray Scale colors	
SOFTWARE:	System 7.1			System 7.1	
SYSTEM ENVIRONMENT:	Memory set to 2000K			Memory set to 2000K	
	Virtual Memory off			Virtual Memory off	
	32-bit addressing off			32-bit addressing off	
	Background Printing off			Background Printing off	
	No Debugger			No Debugger	
	No Virus Protection			No Virus Protection	
	Local printing			Local printing	
	No initialization programs			No initialization programs	
	No Network Connections			No Network Connections	
SCRIPT: (Time in seconds)					
		Delta	%		
[Time launching of PowerPoint]					
Launch PowerPoint	13.2	0.43	3%	13.63	
[Time opening file and loading open code]					
Open GENTEST.PPT (Note 3)	13.39	-0.19	-1%	13.2	
Open GENTEST2.PPT(same Pres under different name)	7.7	0.83	11%	8.53	
Close gentest2.ppt w/o exiting PP	2.59	0.14	5%	2.73	
[Compare redrawing of rotated text vs. nonrotated text]					
<Go to slide 19 in GENTEST.PPT with rotated text>(Note 4 and 4a)					
Change slide to 66% view (first time)	n/a	n/a	n/a	n/a	
Change slide back to 50% view (first time)	n/a	n/a	n/a	n/a	
Change slide to 66% view (second time)	n/a	n/a	n/a	n/a	
Change slide back to 50% view (second time)	n/a	n/a	n/a	n/a	
<Go to slide 18 without rotated text>					
Change slide to 66% view (first time)	n/a	n/a	n/a	n/a	
Change slide back to 50% view (first time)	n/a	n/a	n/a	n/a	
Change slide to 66% view (second time)	n/a	n/a	n/a	n/a	
Change slide back to 50% view (second time)	n/a	n/a	n/a	n/a	
[Time background shading]					
<Choose Color Scheme, Background Shading, Apply the following shades>					
Slides -> Slide Master View	1.04	-0.07	-7%	0.97	
Diagonal Right	2.53	0.15	6%	2.68	
From Corner	2.38	0.01	0%	2.39	
From Title (Rectanglar)	2.41	-0.03	-1%	2.38	
Slide Master -> Slides View	2.72	0.34	13%	3.06	
<Close Color Scheme>					
[Time switching to Slide Sorter View]					
Slides -> Slide Sorter View (first time)	66.12	-64.06	-97%	2.06	
Slide Sorter -> Slides View	2.77	1.63	59%	4.4	
Slides -> Slide Sorter View (second time)	2.27	-0.68	-30%	1.59	
Slide Sorter -> Slides View	3.13	-0.13	-4%	3	
[Time switching from slide to slide]					
Slides -> Outline View	8.3	-1.31	-16%	6.99	
<Select slide 4 of GENTEST.PPT from outline view> (Note 5)					
Outline -> Slides View	2.93	0.87	30%	3.8	
Go to slide 5 of GENTEST.PPT (Note 6)	8.56	0.53	6%	9.09	
Slides -> Notes View	12.3	-0.1	-1%	12.2	
Notes -> Slides View	10.14	0.74	7%	10.88	
Insert slide in current format	1.52	0.18	12%	1.7	
[Time insertion of Graph]					
Insert Graph	5.01	2.64	53%	7.65	
[Time update to Graph]					
Change bar graph to pie chart	4.7	-0.49	-10%	4.21	
[Time spell checking using custom dictionary]					
<Slides -> Outline View and select slide 1>					
Check Spelling w/ no misspelled words	29.95	-6.41	-21%	23.54	
<Close w/o saving presentation>					
[Time rendering slides to Clipboard]					
<Launch Clipboard from System Folder and PowerPoint and open COPYTEST.PPT> (Note 7)					
Choose Slide Sorter View	17.33	-13.71	-79%	3.62	
<Select All and Copy Slides>					
<Resize PowerPoint window so Clipboard is visible>					
Click on Clipboard	12.02	-0.75	-6%	11.27	
<Close Clipboard and go back to PP>					
Open a New Pres while in slide sorter view (Use format of active presentation)	4.64	-0.97	-21%	3.67	
<Close COPYTEST.PPT without exiting PowerPoint>					
Paste slides	23.87	-18.53	-78%	5.34	

Macintosh PowerPoint 4.0 Performance Matrix

Slide Sorter -> Slides View	3.02	-0.03	-1%	2.99	
Apply Template...(bevelv.ppt)	6.57	-0.3	-5%	6.27	
Add new slide	1.85	-0.14	-8%	1.71	
Insert Picture... (OCCUPAT1.EPS) (Note 8)	22.62	-0.38	-2%	22.24	
<Slides -> Outline View>					
Insert Outline... (OUTLINE.DOC) (Note 9)	97.67	-10.95	-11%	86.72	
Save As "PTEST.PPT"	13.61	-3.31	-24%	10.3	
Close the New Presentation and Exit PP	1.18	-0.05	-4%	1.13	
[Print selected slides locally to Laserwriter IIg - Driver 7.1.2] (Note 10)					
<Launch PP and open GENTEST.PPT>					
Print slide 5 (Note 6)	59.59	40.83	69%	100.42	
Print slide 14 (chart with different colored shapes, arrows)	26.7	6.36	24%	33.06	
Print slide 18 (text with colored background)	27.9	1.59	6%	29.49	
<Exit PowerPoint (no save)>					
[Run slide show using a file with set transitions]					
<Launch PowerPoint>					
<Open NOTRANS.PPT (1 second - no transitions)> (Note 11)					
Run Slide Show	99.22	31.58	32%	130.8	
<Close NOTRANS.PPT w/o exiting PowerPnt>					
<Open SETTRANS.PPT (1 second - 3 set transitions)> (Note 12)					
Run Slide Show	101.7	41.78	41%	143.48	
<Close SETTRANS.PPT w/o exiting PP>					
Exit PowerPoint with all files already closed	2.19	-0.24	-11%	1.95	
ADDITIONAL NOTES					
1. Items enclosed with "[...]" are comments					
2. Items enclosed with "<...>" are operations that are not timed					
3. GENTEST.PPT is an 19 slide presentation containing converted Windows Metafiles, bitmaps, bold and italic fonts, colored background, different colored shapes					
4. Slide 19 of GENTEST.PPT contains text rotated left 90 degrees					
4a. Rotated text not in Mac PP4 for M1, will be tested for M2					
5. Slide 4 of GENTEST.PPT contains different shaded and shadowed objects with text					
6. Slide 5 of GENTEST.PPT contains bitmaps, converted Windows metafiles, bold, italic, and shadowed text					
7. COPYTEST.PPT is a 5 slide presentation taken from GENTEST.PPT					
8. MAP.CGM is a map of the United States with states having different colors					
9. OUTLINE.DOC is a Word document which inserts 61 slides into a presentation					
10. All printing done locally to LPT1 to an Apple LaserWriter IIg with 8 MB of printer memory using LaserWriter driver 7.1.2 and Background Printing OFF					
11. NOTRANS.PPT is the same as GENTEST.PPT with no transitions					
12. SETTRANS.PPT is the same as GENTEST.PPT but with 3 transitions as follows:					
Blinds Vertcal on slides 1,4,7,10,13,16					
Checkerboard Across on slides 2,5,8,11,14,17					
Cut Through Black on slides 3,6,9,12,15,18					

Date:	Week of	Week of	Week of	Week of	Week of	Week of	
Totals	**9/13-9/19**	**9/20-9/26**	**9/27-10/3**	**10/4-10/10**	**10/11-10/**	**10/18-10/24**	
New (Sev.1&2)	221(132)	303(161)	264(146)	242(140)	207(115)	246(148)	
Resolved(Fixed)	452(235)	300(191)	375(181)	276(185)	280(170)	296(178)	
Active(Sev.1&2)	1203(545)	1235(560)	1137(495)	1121(492)	1073(447)	1052(389)	
Bugs in Database	3950	4262	4525	4769	4979	5227	
	Detailed Breakdown						
Date:	**9/13-9/19**	**9/20-9/26**	**9/27-10/3**	**10/4-10/10**	**10/11-10/**	**10/18-10/24**	
Drawing	(+Color)						
New (Sev.1&2)	15(9)	16(10)	14(7)	12(8)	15(5)	6(3)	
Resolved(Fixed)	60(18)	30(15)	33(8)	24(16)	18(6)	13(7)	
Active(Sev.1&2)	97(36)	85(31)	67(23)	55(21)	54(16)	48(10)	
Externals	(+Integration)						
New (Sev.1&2)	23(20)	39(24)	39(25)	17(13)	32(25)	51(39)	
Resolved(Fixed)	55(32)	35(24)	37(19)	36(24)	44(31)	46(28)	
Active(Sev.1&2)	167(99)	178(104)	181(105)	164(93)	153(82)	162(86)	
File Mgmt							
New (Sev.1&2)	47(31)	62(38)	43(30)	70(41)	23(20)	30(18)	
Resolved(Fixed)	44(22)	59(50)	60(40)	49(36)	34(25)	39(20)	
Active(Sev.1&2)	146(94)	154(103)	138(90)	163(106)	157(104)	157(83)	
PDI							
New (Sev.1&2)	7(5)	16(11)	5(3)	15(9)	14(10)	15(13)	
Resolved(Fixed)	4(4)	10(5)	5(3)	12(9)	1(1)	9(5)	
Active(Sev.1&2)	9(8)	19(12)	17(12)	22(14)	18(11)	25(16)	
Performance							
New (Sev.1&2)	2(2)	2(2)	4(3)	1(1)	0(0)	0(0)	
Resolved(Fixed)	2(0)	1(0)	10(3)	1(0)	0(0)	7(4)	
Active(Sev.1&2)	38(20)	38(21)	32(18)	32(19)	32(19)	25(10)	
Pres Mgmt	(+Edit)						
New (Sev.1&2)	30(18)	33(17)	30(20)	22(17)	27(16)	33(15)	
Resolved(Fixed)	37(15)	23(12)	66(24)	24(11)	29(20)	55(38)	
Active(Sev.1&2)	211(89)	219(91)	186(76)	188(83)	189(80)	171(53)	
Print							
New (Sev.1&2)	10(7)	7(5)	12(5)	21(17)	4(2)	16(15)	
Resolved(Fixed)	25(7)	14(6)	14(1)	8(2)	27(8)	15(3)	
Active(Sev.1&2)	57(38)	53(36)	52(31)	65(44)	44(30)	43(30)	
Slideshow							
New (Sev.1&2)	8(5)	20(10)	30(20)	23(8)	14(12)	17(11)	
Resolved(Fixed)	33(19)	23(10)	32(20)	20(16)	26(13)	18(10)	
Active(Sev.1&2)	101(49)	101(45)	98(37)	104(30)	94(30)	96(28)	
Text							

New (Sev.1&2)	13(7)	15(4)	15(4)	12(4)	7(1)	14(8)	
Resolved(Fixed)	80(15)	16(10)	19(4)	18(12)	12(7)	7(2)	
Active(Sev.1&2)	87(30)	86(24)	83(22)	77(14)	73(8)	82(12)	
UI							
New (Sev.1&2)	66(28)	93(40)	71(29)	49(22)	70(24)	64(26)	
Resolved(Fixed)	112(76)	89(60)	98(58)	24(16)	70(45)	83(61)	
Active(Sev.1&2)	290(82)	300(91)	279(79)	250(70)	257(65)	243(51)	

Date:	Week of	Week of	Week of	Week of	Week of	Week of	
Totals	9/6- 9/12	9/13-9/19	9/20-9/26	9/27-10/3	10/4-10/1	10/11-10/17	
New (Sev.1&2)	141(85)	221(132)	303(161)	264(146)	242(140)	207(115)	
Resolved(Fixed)	198(143)	452(235)	300(191)	375(181)	276(185)	280(170)	
Active(Sev.1&2)	1423(555)	1203(545)	1235(560)	1137(495)	1121(492)	1073(447)	
Bugs in Database	3728	3950	4262	4525	4769	4979	
	Detailed Breakdown						
Date:	9/6- 9/12	9/13-9/19	9/20-9/26	9/27-10/3	10/4-10/1	10/11-10/17	
Drawing	(+Color)						
New (Sev.1&2)	11(9)	15(9)	16(10)	14(7)	12(8)	15(5)	
Resolved(Fixed)	10(5)	60(18)	30(15)	33(8)	24(16)	18(6)	
Active(Sev.1&2)	139(38)	97(36)	85(31)	67(23)	55(21)	54(16)	
Externals	(+Integration)						
New (Sev.1&2)	12(11)	23(20)	39(24)	39(25)	17(13)	32(25)	
Resolved(Fixed)	10(9)	55(32)	35(24)	37(19)	36(24)	44(31)	
Active(Sev.1&2)	198(108)	167(99)	178(104)	181(105)	164(93)	153(82)	
File Mgmt							
New (Sev.1&2)	24(16)	47(31)	62(38)	43(30)	70(41)	23(20)	
Resolved(Fixed)	24(15)	44(22)	59(50)	60(40)	49(36)	34(25)	
Active(Sev.1&2)	138(81)	146(94)	154(103)	138(90)	163(106)	157(104)	
PDI							
New (Sev.1&2)	0(0)	7(5)	16(11)	5(3)	15(9)	14(10)	
Resolved(Fixed)	1(1)	4(4)	10(5)	5(3)	12(9)	1(1)	
Active(Sev.1&2)	6(5)	9(8)	19(12)	17(12)	22(14)	18(11)	
Performance							
New (Sev.1&2)	1(1)	2(2)	2(2)	4(3)	1(1)	0(0)	
Resolved(Fixed)	0(0)	2(0)	1(0)	10(3)	1(0)	0(0)	
Active(Sev.1&2)	38(18)	38(20)	38(21)	32(18)	32(19)	32(19)	
Pres Mgmt	(+Edit)						
New (Sev.1&2)	17(11)	30(18)	33(17)	30(20)	22(17)	27(16)	
Resolved(Fixed)	22(15)	37(15)	23(12)	66(24)	24(11)	29(20)	
Active(Sev.1&2)	216(82)	211(89)	219(91)	186(76)	188(83)	189(80)	
Print							
New (Sev.1&2)	9(6)	10(7)	7(5)	12(5)	21(17)	4(2)	
Resolved(Fixed)	7(3)	25(7)	14(6)	14(1)	8(2)	27(8)	
Active(Sev.1&2)	70(44)	57(38)	53(36)	52(31)	65(44)	44(30)	
Slideshow							
New (Sev.1&2)	13(5)	8(5)	20(10)	30(20)	23(8)	14(12)	
Resolved(Fixed)	19(13)	33(19)	23(10)	32(20)	20(16)	26(13)	
Active(Sev.1&2)	126(52)	101(49)	101(45)	98(37)	104(30)	94(30)	
Text							

New (Sev.1&2)	5(4)	13(7)	15(4)	15(4)	12(4)	7(1)	
Resolved(Fixed)	7(4)	80(15)	16(10)	19(4)	18(12)	12(7)	
Active(Sev.1&2)	154(43)	87(30)	86(24)	83(22)	77(14)	73(8)	
UI							
New (Sev.1&2)	49(22)	66(28)	93(40)	71(29)	49(22)	70(24)	
Resolved(Fixed)	98(78)	112(76)	89(60)	98(58)	24(16)	70(45)	
Active(Sev.1&2)	337(83)	290(82)	300(91)	279(79)	250(70)	257(65)	

Date:	Week of	Week of	Week of	Week of	Week of	Week of
Totals	**8/23 - 8/29**	**8/30- 9/5**	**9/6- 9/12**	**9/13-9/19**	**9/20-9/26**	**9/27-10/3**
New (Sev.1&2)	228(103)	208(114)	141(85)	221(132)	303(161)	264(146)
Resolved(Fixed)	303(217)	233(170)	198(143)	452(235)	300(191)	375(181)
Active(Sev.1&2)	1489(538)	1486(567)	1423(555)	1203(545)	1235(560)	1137(495)
Bugs in Database	3375	3587	3728	3950	4262	4525
	Detailed Breakdown					
Date:	**8/23 - 8/29**	**8/30- 9/5**	**9/6- 9/12**	**9/13-9/19**	**9/20-9/26**	**9/27-10/3**
Drawing	(+Color)					
New (Sev.1&2)	18(11)	7(5)	11(9)	15(9)	16(10)	14(7)
Resolved(Fixed)	19(12)	18(12)	10(5)	60(18)	30(15)	33(8)
Active(Sev.1&2)	146(43)	136(36)	139(38)	97(36)	85(31)	67(23)
Externals	(+Integration)					
New (Sev.1&2)	15(12)	16(11)	12(11)	23(20)	39(24)	39(25)
Resolved(Fixed)	30(21)	11(5)	10(9)	55(32)	35(24)	37(19)
Active(Sev.1&2)	194(100)	196(103)	198(108)	167(99)	178(104)	181(105)
File Mgmt						
New (Sev.1&2)	31(18)	38(31)	24(16)	47(31)	62(38)	43(30)
Resolved(Fixed)	42(31)	23(15)	24(15)	44(22)	59(50)	60(40)
Active(Sev.1&2)	120(66)	138(84)	138(81)	146(94)	154(103)	138(90)
PDI						
New (Sev.1&2)	0(0)	2(2)	0(0)	7(5)	16(11)	5(3)
Resolved(Fixed)	0(0)	1(1)	1(1)	4(4)	10(5)	5(3)
Active(Sev.1&2)	6(5)	7(6)	6(5)	9(8)	19(12)	17(12)
Performance						
New (Sev.1&2)	2(1)	1(1)	1(1)	2(2)	2(2)	4(3)
Resolved(Fixed)	3(0)	1(1)	0(0)	2(0)	1(0)	10(3)
Active(Sev.1&2)	37(17)	37(17)	38(18)	38(20)	38(21)	32(18)
Pres Mgmt	(+Edit)					
New (Sev.1&2)	24(13)	20(17)	17(11)	30(18)	33(17)	30(20)
Resolved(Fixed)	42(34)	31(17)	22(15)	37(15)	23(12)	66(24)
Active(Sev.1&2)	227(78)	226(85)	216(82)	211(89)	219(91)	186(76)
Print						
New (Sev.1&2)	5(4)	19(14)	9(6)	10(7)	7(5)	12(5)
Resolved(Fixed)	12(10)	8(3)	7(3)	25(7)	14(6)	14(1)
Active(Sev.1&2)	53(29)	67(41)	70(44)	57(38)	53(36)	52(31)
Slideshow						
New (Sev.1&2)	10(6)	7(2)	13(5)	8(5)	20(10)	30(20)
Resolved(Fixed)	24(14)	7(6)	19(13)	33(19)	23(10)	32(20)
Active(Sev.1&2)	131(59)	131(55)	126(52)	101(49)	101(45)	98(37)
Text						

New (Sev.1&2)	14(9)	12(7)	5(4)	13(7)	15(4)	15(4)
Resolved(Fixed)	10(5)	18(10)	7(4)	80(15)	16(10)	19(4)
Active(Sev.1&2)	167(45)	159(40)	154(43)	87(30)	86(24)	83(22)
UI						
New (Sev.1&2)	109(28)	86(24)	49(22)	66(28)	93(40)	71(29)
Resolved(Fixed)	121(90)	115(84)	98(78)	112(76)	89(60)	98(58)
Active(Sev.1&2)	406(93)	388(99)	337(83)	290(82)	300(91)	279(79)

Date:	Week of	Week of	Week of	Week of	Week of	Week of
Totals	8/16 - 8/22	8/23 - 8/29	8/30- 9/5	9/6- 9/12	9/13-9/19	9/20-9/26
New (Sev.1&2)	275(123)	228(103)	208(114)	141(85)	221(132)	303(161)
Resolved(Fixed)	319(218)	303(217)	233(170)	198(143)	452(235)	300(191)
Active(Sev.1&2)	1549(604)	1489(538)	1486(567)	1423(555)	1203(545)	1235(560)
Bugs in Database	3143	3375	3587	3728	3950	4262
	Detailed Breakdown					
Date:	8/16 - 8/22	8/23 - 8/29	8/30- 9/5	9/6- 9/12	9/13-9/19	9/20-9/26
Drawing	(+Color)					
New (Sev.1&2)	29(13)	18(11)	7(5)	11(9)	15(9)	16(10)
Resolved(Fixed)	30(9)	19(12)	18(12)	10(5)	60(18)	30(15)
Active(Sev.1&2)	140(39)	146(43)	136(36)	139(38)	97(36)	85(31)
Externals	(+Integration)					
New (Sev.1&2)	33(21)	15(12)	16(11)	12(11)	23(20)	39(24)
Resolved(Fixed)	43(24)	30(21)	11(5)	10(9)	55(32)	35(24)
Active(Sev.1&2)	210(111)	194(100)	196(103)	198(108)	167(99)	178(104)
File Mgmt						
New (Sev.1&2)	23(17)	31(18)	38(31)	24(16)	47(31)	62(38)
Resolved(Fixed)	21(14)	42(31)	23(15)	24(15)	44(22)	59(50)
Active(Sev.1&2)	134(88)	120(66)	138(84)	138(81)	146(94)	154(103)
PDI						
New (Sev.1&2)	1(1)	0(0)	2(2)	0(0)	7(5)	16(11)
Resolved(Fixed)	0(0)	0(0)	1(1)	1(1)	4(4)	10(5)
Active(Sev.1&2)	6(5)	6(5)	7(6)	6(5)	9(8)	19(12)
Performance						
New (Sev.1&2)	2(1)	2(1)	1(1)	1(1)	2(2)	2(2)
Resolved(Fixed)	1(0)	3(0)	1(1)	0(0)	2(0)	1(0)
Active(Sev.1&2)	38(19)	37(17)	37(17)	38(18)	38(20)	38(21)
Pres Mgmt	(+Edit)					
New (Sev.1&2)	36(18)	24(13)	20(17)	17(11)	30(18)	33(17)
Resolved(Fixed)	35(27)	42(34)	31(17)	22(15)	37(15)	23(12)
Active(Sev.1&2)	245(93)	227(78)	226(85)	216(82)	211(89)	219(91)
Print						
New (Sev.1&2)	13(6)	5(4)	19(14)	9(6)	10(7)	7(5)
Resolved(Fixed)	10(6)	12(10)	8(3)	7(3)	25(7)	14(6)
Active(Sev.1&2)	57(31)	53(29)	67(41)	70(44)	57(38)	53(36)
Slideshow						
New (Sev.1&2)	13(4)	10(6)	7(2)	13(5)	8(5)	20(10)
Resolved(Fixed)	3(0)	24(14)	7(6)	19(13)	33(19)	23(10)
Active(Sev.1&2)	146(73)	131(59)	131(55)	126(52)	101(49)	101(45)
Text						

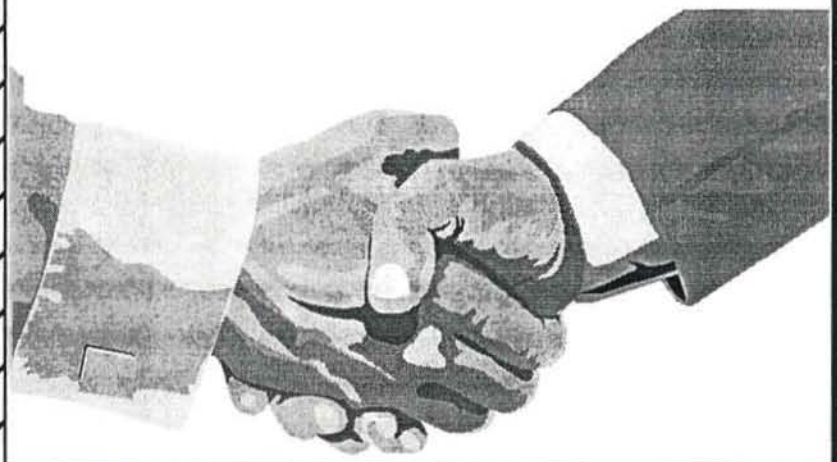
New (Sev.1&2)	23(6)	14(9)	12(7)	5(4)	13(7)	15(4)
Resolved(Fixed)	20(12)	10(5)	18(10)	7(4)	80(15)	16(10)
Active(Sev.1&2)	167(41)	167(45)	159(40)	154(43)	87(30)	86(24)
UI						
New (Sev.1&2)	102(35)	109(28)	86(24)	49(22)	66(28)	93(40)
Resolved(Fixed)	155(126)	121(90)	115(84)	98(78)	112(76)	89(60)
Active(Sev.1&2)	406(104)	406(93)	388(99)	337(83)	290(82)	300(91)

Date:	Week of	Week of	Week of	Week of	Week of	
Totals	**8/9 - 8/15**	**8/16 - 8/22**	**8/23 - 8/29**	**8/30- 9/5**	**9/6- 9/12**	
New (Sev.1&2)	257(103)	275(123)	228(103)	208(114)	141(85)	
Resolved(Fixed)	204(148)	319(218)	303(217)	233(170)	198(143)	
Active(Sev.1&2)	1615(653)	1549(604)	1489(538)	1486(567)	1423(555)	
Bugs in Database	2868	3143	3375	3587	3728	
	Detailed Breakdown					
Date:	**8/9 - 8/15**	**8/16 - 8/22**	**8/23 - 8/29**	**8/30- 9/5**	**9/6- 9/12**	
Drawing	(+Color)					
New (Sev.1&2)	15(1)	29(13)	18(11)	7(5)	11(9)	
Resolved(Fixed)	3(2)	30(9)	19(12)	18(12)	10(5)	
Active(Sev.1&2)	93(16)	140(39)	146(43)	136(36)	139(38)	
Externals	(+Integration)					
New (Sev.1&2)	26(13)	33(21)	15(12)	16(11)	12(11)	
Resolved(Fixed)	6(4)	43(24)	30(21)	11(5)	10(9)	
Active(Sev.1&2)	233(131)	210(111)	194(100)	196(103)	198(108)	
File Mgmt						
New (Sev.1&2)	8(7)	23(17)	31(18)	38(31)	24(16)	
Resolved(Fixed)	9(6)	21(14)	42(31)	23(15)	24(15)	
Active(Sev.1&2)	134(86)	134(88)	120(66)	138(84)	138(81)	
PDI						
New (Sev.1&2)	1(1)	1(1)	0(0)	2(2)	0(0)	
Resolved(Fixed)	1(1)	0(0)	0(0)	1(1)	1(1)	
Active(Sev.1&2)	5(4)	6(5)	6(5)	7(6)	6(5)	
Performance						
New (Sev.1&2)	2(0)	2(1)	2(1)	1(1)	1(1)	
Resolved(Fixed)	1(0)	1(0)	3(0)	1(1)	0(0)	
Active(Sev.1&2)	37(19)	38(19)	37(17)	37(17)	38(18)	
Pres Mgmt	(+Edit)					
New (Sev.1&2)	25(13)	36(18)	24(13)	20(17)	17(11)	
Resolved(Fixed)	9(6)	35(27)	42(34)	31(17)	22(15)	
Active(Sev.1&2)	253(99)	245(93)	227(78)	226(85)	216(82)	
Print						
New (Sev.1&2)	12(9)	13(6)	5(4)	19(14)	9(6)	
Resolved(Fixed)	6(2)	10(6)	12(10)	8(3)	7(3)	
Active(Sev.1&2)	54(33)	57(31)	53(29)	67(41)	70(44)	
Slideshow						
New (Sev.1&2)	18(7)	13(4)	10(6)	7(2)	13(5)	
Resolved(Fixed)	2(1)	3(0)	24(14)	7(6)	19(13)	
Active(Sev.1&2)	137(72)	146(73)	131(59)	131(55)	126(52)	
Text						

New (Sev.1&2)	25(9)	23(6)	14(9)	12(7)	5(4)	
Resolved(Fixed)	8(5)	20(12)	10(5)	18(10)	7(4)	
Active(Sev.1&2)	164(44)	167(41)	167(45)	159(40)	154(43)	
UI						
New (Sev.1&2)	125(41)	102(35)	109(28)	86(24)	49(22)	
Resolved(Fixed)	155(121)	155(126)	121(90)	115(84)	98(78)	
Active(Sev.1&2)	456(126)	406(104)	406(93)	388(99)	337(83)	

71 / person
18 | 1275
126
15

PowerPoint 4.0



MS Confidential

What is PowerPoint?

- Creation and delivery of *speaker support* materials: overheads, 35mm slides, handouts and electronic presentations
- Used to *inform* and/or *persuade*
- Target: business communicators (presenters)
  - ▲ All departments in all large organizations (internal)
  - ▲ All service organizations (external)
- PowerPoint Goals (long term)
  - ▲ Achieve WW leadership on Win & Mac—share and reviews
  - ▲ Reason to buy MS Office; catalyst for MS desktop adoption
  - ▲ Support the positioning of being the easiest way to achieve high impact presentations, the first and every time.

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Long Term Market Requirements

- Be the easiest to learn and easiest to use product for new or infrequent users
- Work like Word and Excel
- Complete the user promise—no rough spots
- Make migration from previous versions and from competitive products easy
- Neutralize key competitive advantages (masters)
- Deliver an enjoyable product to use and demo
- Exploit new media and hardware platforms
- Support Information At Your Fingertips
- Near simultaneously release Win, Mac, Fr, Ger

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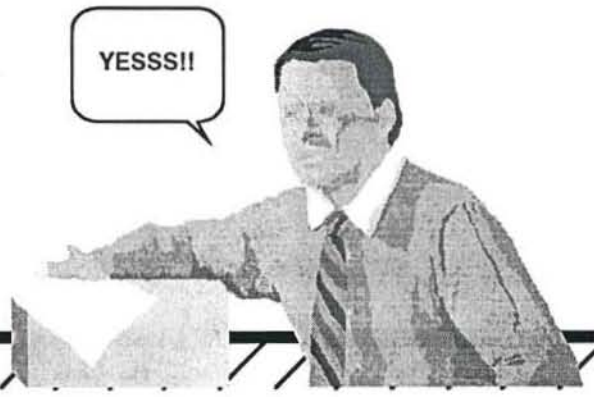
PowerPoint 4.0

Theme: Usability



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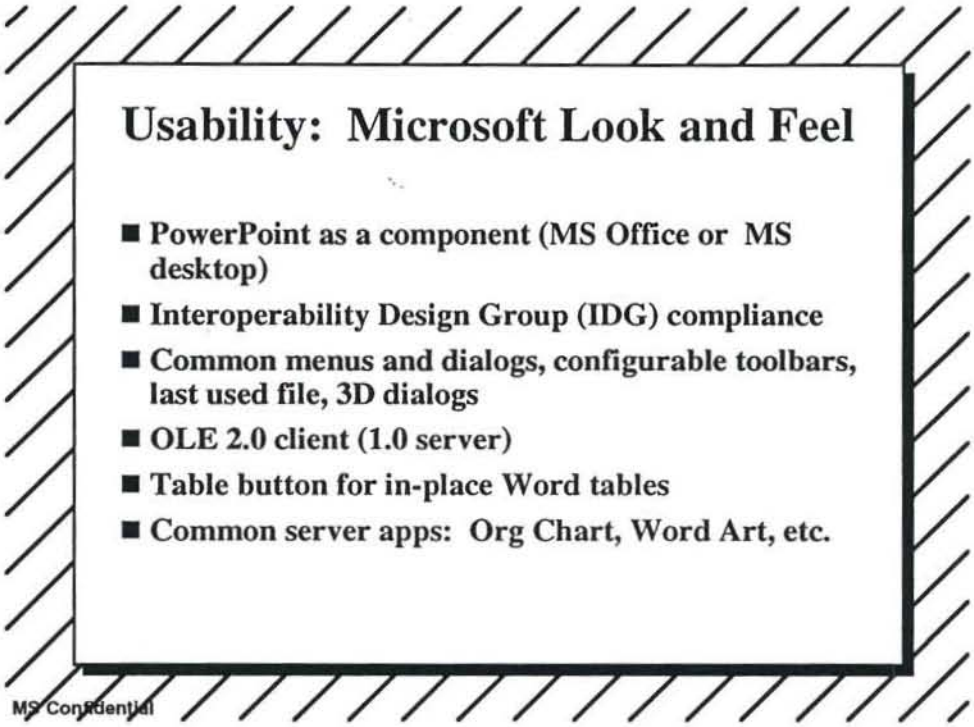
Usability: Microsoft Look and Feel
■ PowerPoint as a component (MS Office or MS desktop)
■ Interoperability Design Group (IDG) compliance
■ Common menus and dialogs, configurable toolbars, last used file, 3D dialogs
■ OLE 2.0 client (1.0 server)
■ Table button for in-place Word tables
■ Common server apps: Org Chart, Word Art, etc.
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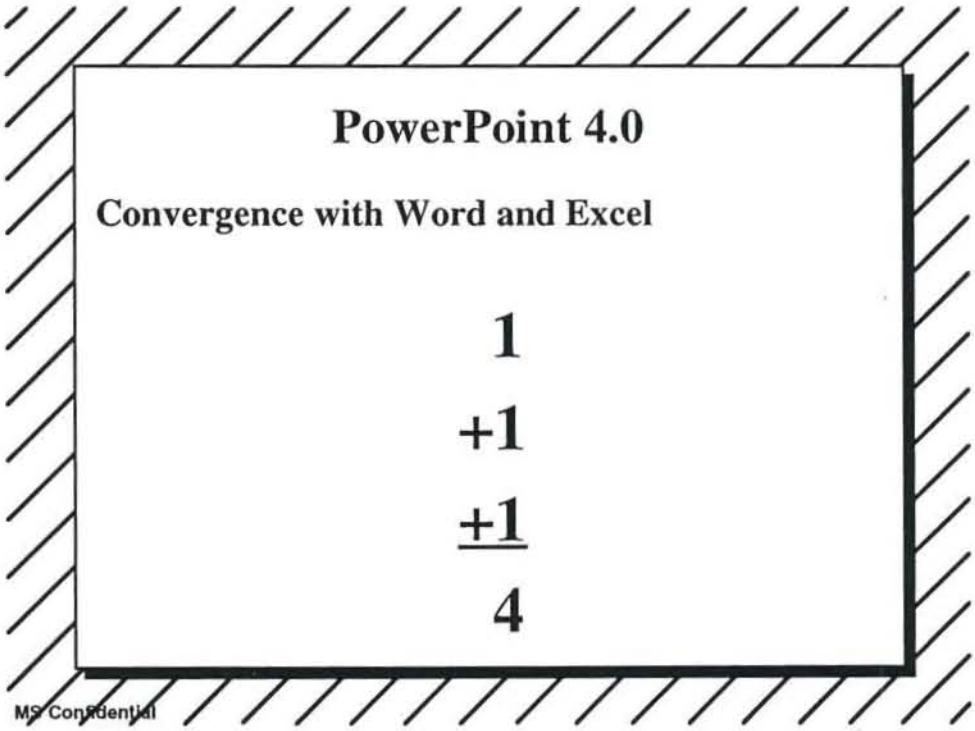
PowerPoint 4.0
Convergence with Word and Excel
1
+1
+1
4
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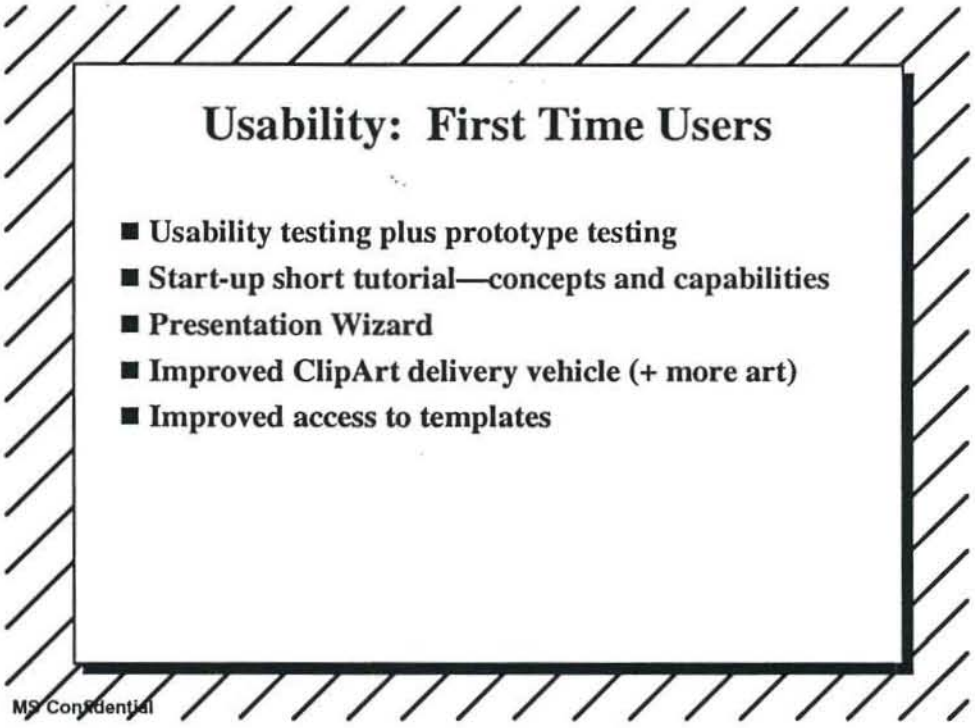
Usability: First Time Users
■ Usability testing plus prototype testing
■ Start-up short tutorial—concepts and capabilities
■ Presentation Wizard
■ Improved ClipArt delivery vehicle (+ more art)
■ Improved access to templates
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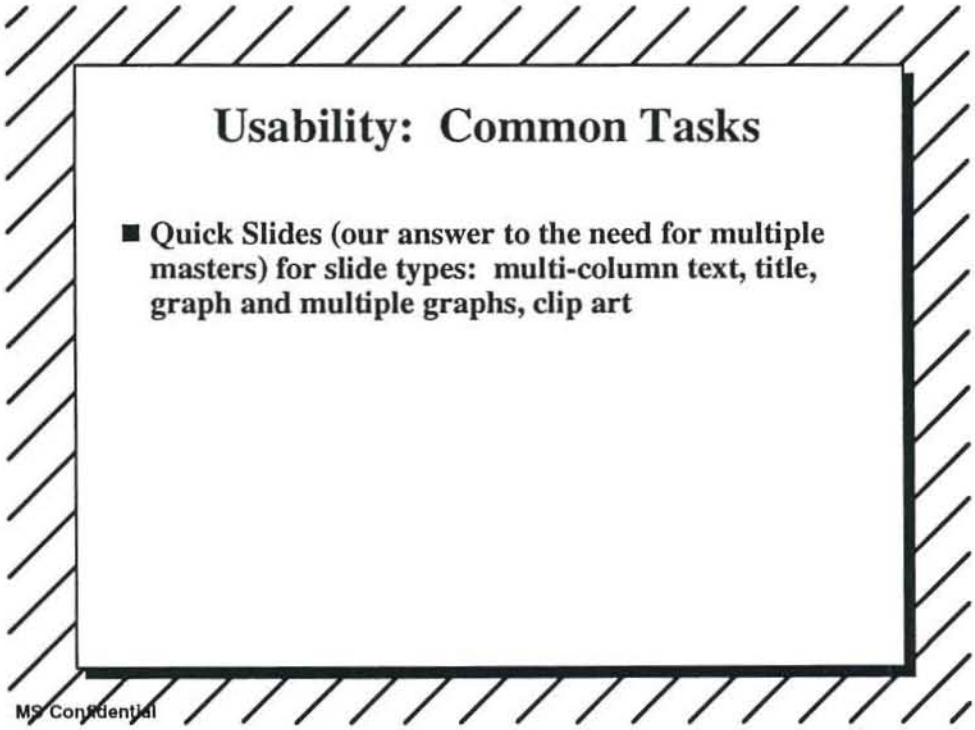
Usability: Common Tasks
■ Quick Slides (our answer to the need for multiple masters) for slide types: multi-column text, title, graph and multiple graphs, clip art
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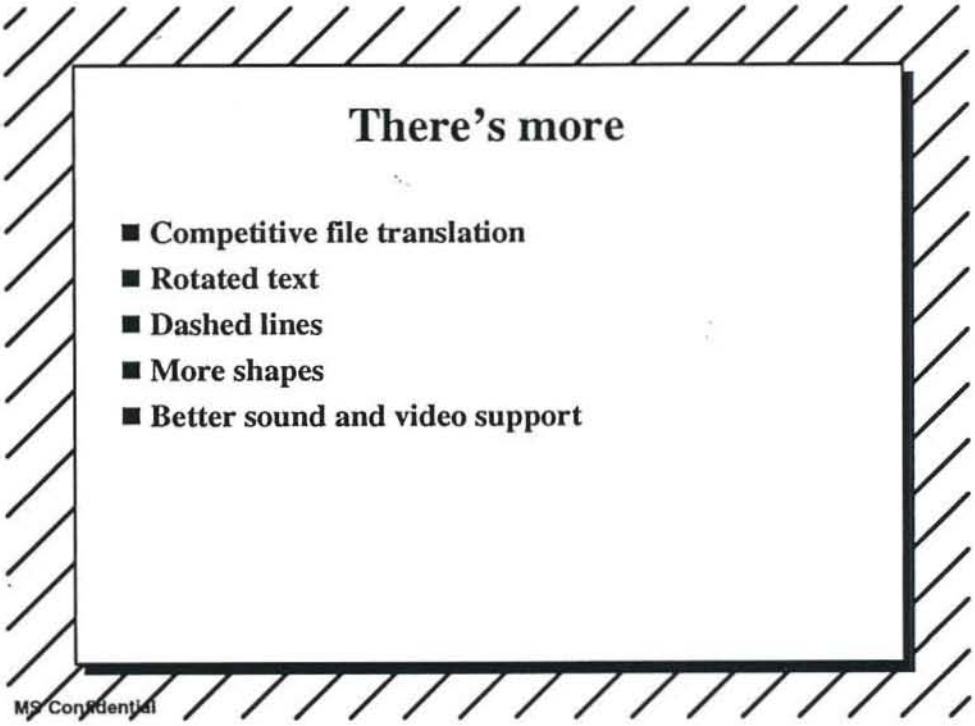
There's more
■ Competitive file translation
■ Rotated text
■ Dashed lines
■ More shapes
■ Better sound and video support
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Product Localization Goals
■ A, Z, German, French = US RTM + 45 days
■ Spanish, French Canadian = US RTM + 60 days
■ Swedish, Dutch, Italian = US RTM + 60 days
■ Far East = US RTM + 190 days
■ Mac version = Win RTM + 1.5 months
Note: Ship date = RTM + (2 - 4) weeks (for manufacturing)
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PP4 RTMs

	Windows	Mac
U.S., A & Z	11/93	1/94
German/ French	1/94	2/94
Dutch/ Swedish	2/94	3/94
Spanish/ Italian/ Portuguese	3/94	n/a
Kanji	Q2/94	tbd

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PowerPoint 4.0 Beta

Development Status, September 30, 1993

Dennis Austin

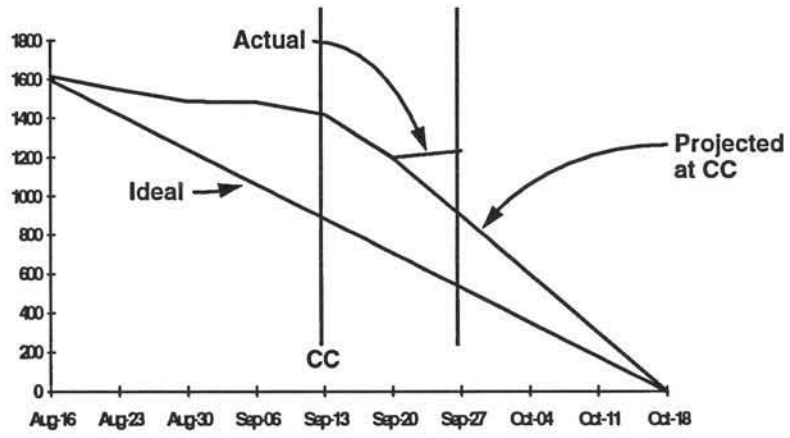
"Milestone 4" Results

- All feature items complete
  - Tip of the day
  - Power indicator
  - 90 rotation of shapes/text
  - Drag & Drop in slide sorter (except scrolling)
  - Document routing
  - PDI with Graph 5
  - Reconnecting Graph links
  - Best Scale for slide show
  - Multiple instances
  - Virtual memory for pictures

"Milestone 4" Results

- Internal work progressing
  - Low memory strategy
  - Resource leaks
  - Reduce Viewer size
  - Segmentation
  - Performance improvements
  - NT conversion cancelled

Active Bug Trend



Bug Progress

- Find rate average = 229/week
- Resolve rate average = 301/week
- Reduction in active bugs average = 63/week

- Trend projects ZBR=RTM=Feb 23, 1995

And yet, there is hope

- Only 1051 bugs are assigned to development
- Only 469 bugs are severity 1 or 2
- 464 hrs (15.5 person-weeks) dev. since CC
- Haven't really gotten aggressive yet
- Incidence of "must fix" bugs will decrease
- Subjectively, PowerPoint 4.0 seems better than PowerPoint 3.0 did two months before RTM

Action Plan for ZBR

- Delay ZBR one week to October 25
- Define ZBR as zero backlog of severity 1 & 2
- Developers concentrate on severity 1 & 2
- Leads review severity 3 & 4

Classsify Bugs Correctly

- Severity
  1 Data loss (typically a crash)
  2 Desired result cannot be accomplished
  3 Problem in usage, but workaround fairly obvious
  4 Enhancement request or complaint
- Priority
  Blank is unprocessed
  1 To be fixed as soon as possible
  2 To be fixed, but not right away
  3 Limbo: fix if easy, could live without if necessary

Unfixed resolutions

- Won't Fix
  - vendor problem (Windows, driver, hardware, etc.)
  - new feature, move to pptidea database
  - not worth effort, and unlikely to be in the future
- By Design
  - legitimate even if design is weak, if it is unlikely the design can be changed
- Postponed
  - too late in schedule
  - easier in shark architecture

Appframe

An Application UI Framework for Windows and Mac

What Is Appframe?

- Window, Menu, Dialog and Toolbar Managers
- Core interface for Windows and Mac
- C++ class library

Goals

- Efficient development
  - Core UI code
  - Fast prototyping
- PowerPoint independent
- Hookable
- Utilize underlying toolbox (thin layer)

Window Manager

- MDI based
- Application / Window / Pane object hierarchy
- Support for floating windows
- Status window

Menu Manager

- Action objects based architecture
  - Perfom, IsEnabled, IsChecked, ToolTip, Status, Help
- Popup menus
- User drawn menus

Dialog Manager

- Layer on top of Windows dialog functionality
  - Native controls
  - Native resources
- Controls modeled as C++ classes
- Uses Ctl3d
- No tab dialog support

Toolbar Manager

- Movable, sizable customizable toolbars
- Controls hook to action objects
- Core code layer on top of Window and Dialog manager
- ToolTips
- No support for on-line icon button creation

Restrictions

- Window Manager tailored to the needs of a desktop application
- We only implemented an abstractions for PowerPoint's needs
- OLE container support is a PowerPoint specific extension
- No OLE server support

Future

- Integrate palette management
- Tab and property dialogs
- OLE server support
- Win32, Chicago, PowerPC versions

Win PP4: The Final Days...

Week	M	T	W	Th	F
-2	December 6 Testing of Pre-release Off completed	7 Last Checkins before Final Code Reviews (Check-In Freeze tonight)	8 Daily bug meetings begin Nightly dinners begin	9	10
-1	13 Last Release Ouside GBU Scheduled QA Testing Complete	14 "Pre-release" turned OFF (GBU distribution only) Release Candidates (RCs) begin	15 Code review required	16 Last PP Build & Master	17 Golden Master Verify/Dup (need 12-15 hours) Complete Rel Admin
0	20 RTR QA flies to Redmond (early)	21 Software Admin finishes disk duplication	22 PSS signs off 11:00 am 12:00 Mfg gets disks RTM Intl S/W Hand Off	23 Release on Redmond & GBU Servers Schedule not complete	24 Docs (everything) must be at warehouse
+1	27 Manufacturing starts product builds Disks duplicated for key customers	28 Project Clean Up Begins	29	30	January 31
+2	3	4 Freeze on, build RC1	5	6 RC1 accepted Project Clean Up Ends	7 Party! Post Mortem
+3	10 1st shipments out of manufacturing	11	12 Graph final	13	14 Product at Distributors Last pre-rel
+4	17	18	19 Last build tonight	20 Golden accepted **Product Available to Customers**	21 dup
	24	25	26 RTM		

11/24/93 LucyP
Rev 4

PowerPoint Vitals

Ver.	Platform	System Requirements	Size	Disks & Media
1.0	Macintosh	Any Macintosh 512K RAM One 800K disk drive or Two 400K drives	Min: none Full: 798K Executable Size: 208K	2 800K diskettes, 400K available through fulfillment.
2.0	Macintosh	Any Macintosh System 4.1 or higher 1 MB Memory Two 800K disk drives or One drive & hard disk	Min: none Full: ~~2~~ 2.3M Executable Size: 409K	3 800K diskettes
2.0	Windows	286 or 386 PC Windows 3.0 or higher Mouse 1 MB RAM Hard Disk plus one disk drive (no network install) VGA or EGA monitor	Min: 3 Mb Full w/out fonts: 10MB With fonts: 20MB Executable Size: 867K	Dual Media SKU: Five 1.2MB 5.25" & Four 1.44MB 3.5" Fulfillment for 720K 3.5" disks.
3.0	Windows	286 or higher PC Windows 3.1 or higher Mouse 2 MB RAM Hard Disk VGA, EGA, or XGA monitor	Min: 5 MB Full: 17 MB Executable Size: 1.6M	Dual Media SKU: Seven 1.44 3.5" & Seven 1.2 5.25" No fulfillment for 720K 3.5" disks.
3.0	Macintosh	Mac Plus or Higher System 7 or higher 4 MB RAM Hard Disk	Min: 5 MB Full: 17 MB Executable Size: 1.2 MB	Seven 1.44 3.5" diskettes Fulfillment for 800K 3.5" disks.
4.0	Windows	386 or higher PC Windows 3.1 or higher Mouse 6 MB RAM Hard Disk VGA or XGA	Min: 11 MB Full: 37 MB Executable Size: 97 K DLL Size: 3 MB	Eleven 1.44 3.5" diskettes. Fulfillment for 1.2MB 5.25" diskettes.
4.0	Macintosh	68020 Macintosh or higher System 7 or higher 6 MB RAM Hard Disk	Min: 7 MB Full: 35 MB Executable Size: 2.4 MB	Eleven 1.44 3.5" diskettes. Fulfillment for PPC is 4 additional disks.
4.0	Power Mac	Power Macintosh System 7.1.2 or higher 8 MB RAM w/VM on Hard Disk	Min: 9 MB Full: 37 MB Executable size: 2.8 MB	Fifteen 1.44 3.5" diskettes.

Important PowerPoint Dates

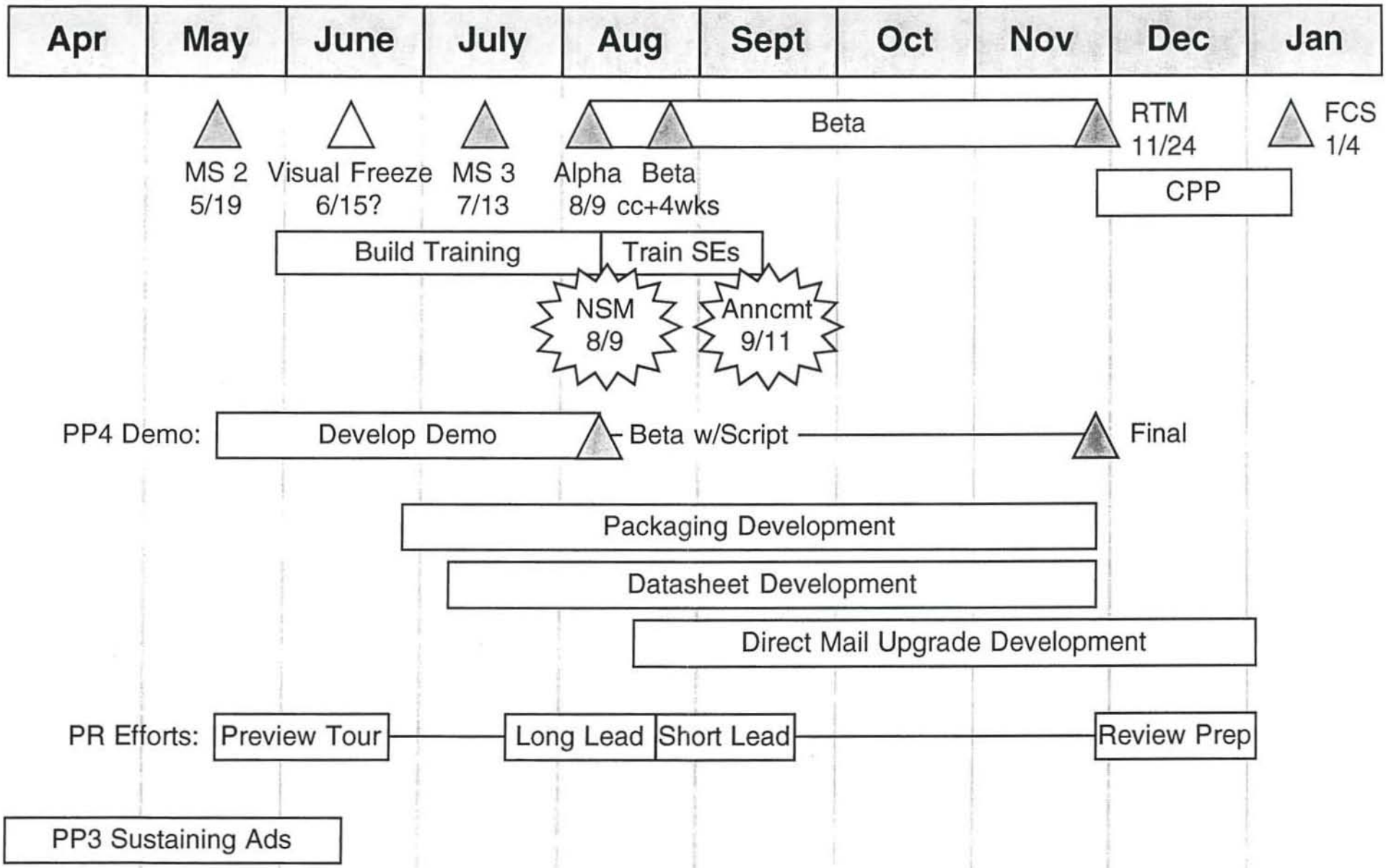
April 1983	Forethought Begins
Nov 1985	Work on "Presenter" (early name of product) begins.
April 1987	PowerPoint 1.0 Ships for Macintosh
July 1987	Forethought Acquired by Microsoft
May 1988	PowerPoint 2.0 for Macintosh Ships, First Microsoft version of PowerPoint.
July 1989	PowerPoint 2.01 for Macintosh Ships. Announced at MacWorld Boston.
August 1989	Microsoft Office for Macintosh premiers. Announced at MacWorld Boston.
March 1990	PowerPoint 2.0 for Windows TWO ships to Unisys to fulfill Desktop III contract. This version was missing Graph and was slow as Molassas.
May 17, 1990	Windows 3.0 is announced and ships. PP2 announced.
May 18, 1990	PowerPoint 2.0 for Windows ships, 1 day after Windows 3.0 ships.
March 26, 1991	PowerPoint 2.0e for Windows ships with Harvard Graphics Translator.
May 17, 1992	PowerPoint 3.0 for Windows ships, 3 days after Widows 3.1 ships.
August, 1992	GBU refuses to go to MacWorld until they have a product to show.
September 1992	PowerPoint 3.0 for Macintosh ships, ending 4.5 year reign of version 2.
October 19, 1993	PowerPoint 4.0 and Office 4.2 announced
February 3, 1994	PowerPoint 4.0 for Windows RTM
August 3, 1994	PowerPoint 4.0 for Macintosh RTM

Win PP4: The Final Days...

Week	M	T	W	Th	F
-5	December 13 Code Reviews Begin	14	15	16	17
-4	20	21	22 Bug Count Milestone 3 bugs/developer	23	24 **Holiday**
-3	27 **Holiday**	28	29	30 Testing of Pre-release Off completed	31
-2	January 3 **Holiday**	4 Last Checkins before Approval Required (Check-In Frz 2:00pm) Nightly dinners begin	5 Daily bug meetings begin	6	7 Last Release Ouside GBU Scheduled QA Testing Complete
-1	"Pre-release" turned OFF 10 (GBU distribution only) Release Candidates (RCs) begin 2:00pm	11	12	13 Last PP Build & Master 10:00am	14 Golden Master Verify/Dup (need 12-15 hours) Complete Rel Admin
0	17 RTR QA flies to Redmond (early)	18 Software Admin finishes disk duplication	PSS signs Off 11:00 am 19 12:00 Mfg gets disks RTM Intl S/W Hand Off	20 **Release on Redmond & GBU Servers**	21 Docs (everything) must be at warehouse
+1	Manufacturing starts product builds 24 Disks duplicated for key customers	25 Project Clean Up Begins	26	27	28

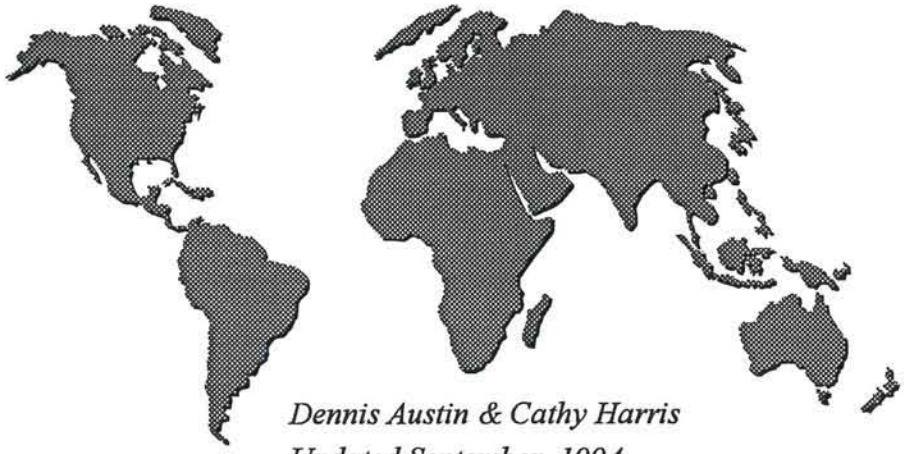
12/8/93 LucyP
Rev 7

PowerPoint Timeline, 1993



Company Confidential March 25, 1993

The History of PowerPoint Design



Dennis Austin & Cathy Harris

Updated September, 1994

This presentation can be found on \\pptpush\public!pptinfo\history.ppt

PowerPoint 1.0

- Inspirational Technology:
  - Macintosh User Interface, LaserWriter, MacDraw 1.0, Windows 1.0
- Improving on MacDraw
  - Better text features, Easier, Presentation Intelligence
- Word Processor Text
  - Tabs, Mixed formatting, Margins, outlining styles, Line spacing
- Presentation Drawing
  - Simpler selection, Smarter constraint keys, Attached text, Easier text/graphics switch, Fewer "features", Shadows as part of objects
- Presentations — Not "Charts"
  - The model slide, Slide Sorter, Titles and Title Sorter, Notes pages, Handout printing, Reading from an outline, No graphs

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PowerPoint 1.0 Vitals

- Forethought PowerPoint Shipped April 1987
- 34 developer-months of development, 2 Developers
- July 1987, Forethought Acquired by Microsoft
- No Hard Disk required, Executable = 208K

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PowerPoint 2.0

- Color Support
  - Color schemes, Color technology on Macintosh, Shading
- More Word Processing Stuff
  - Find/Replace, Spell Checker
- 35mm Slides through Genigraphics (sort of)

PowerPoint 2.0 Vitals

- May 1988 Microsoft PowerPoint 2.0 for Macintosh ships
  - 26 developer-months, 3 developers
- June 1989: PowerPoint 2.01 for Macintosh ships
  - Includes Geni Driver and GraphicsLink
- No Hard Disk required, Executable = 409K

PowerPoint 2.0 for Windows

- 256 Colors meets the PC, Graphing appears, The roots of OLE
- Requires Windows 3.0
- May 1990, MS PowerPoint for Windows ships
  - 185 developer-months (+Graph), 9 developers
- First version to require hard disk
  - Min. Install: 3MB, Full Install: 20MB, Executable = 867K

PowerPoint 3.0: Core Code

- Outlining Everywhere
- Better Drawing
  - Polygon, arc, freehand, group, align, flip, rotate, embossing, picture ungrouping, shapes, clipart, shaded objects, Freeform tool.
- Slide Shows
  - Individual timing, Transitions, Animated builds, On-screen drawing
- Object Linking and Embedding
- Text and Type
  - Automatic bullets, "Smart" Quotation marks, Anchor points, sub/superscript, line spacing, default tabs, TrueType, Font Embedding
- Smarter Intelligence
  - Retroactive formatting from master, Templates, Scaling

PowerPoint 3.0 Vitals

- May 1992, shipped PowerPoint 3.0 Windows
  - 300 developer-months, 15 developers
  - Requires Windows 3.1
  - Min. Install: 5MB, Full 17MB; Executable = 1.6M
  - E release included HG Translator
- September 1992, Shipped PowerPoint 3.0 for Macintosh
  - 50 additional developer months
  - Requires System 7
  - Min. Install: 5 MB, Full 17; Executable = 1.2MB

PowerPoint 4.0: Office

- Consistency & Integration
  - Right mouse, ToolTips, Status Bar, Menus, Selection Model, Cust Toolbar, MRU
  - OLE 2, Present it/Report It, Drag & Drop
- Big Focus on Ease of Use
  - Quick Preview, CueCards, Wizards, Prompt Text, AutoLayouts, Clip Art Gallery, Free Rotation, Change Case, Periods
- Communication Effectiveness
  - AutoContent, Rehearsal, Hidden Slides, Branching, DrillDown
- WorkGroup Support
  - Notes Support in C release, Find File, Routing, Summary Info, Down-Rev Saving

PowerPoint 4.0 Vitals

- February 1994: PowerPoint 4.0 for Windows
  - First release not to require a new operating platform
  - 220 developer-months, 17 developers
  - Min. Install: 11MB, Full 37MB; Executable = 97K, DLL= 3 MB
  - C release in August; Notes & Ability to open PP3 Mac files
- August 1994: PowerPoint 4.0 for Macintosh
  - Added Ability to open Win PP2 files.
  - 49 additional developer months, 5+ developers
  - Min. Install: 7MB, Full 35MB; Executable = 2.4MB
- September 1994: PowerPoint 4.0 for PowerMac
  - 11 additional developer months, 5 developers
  - Min Install: 9 MB, Full 37MB; Executable = 2.8MB