

Welcome

To Advance through Presentation
Use Page Up and Page Down Keys



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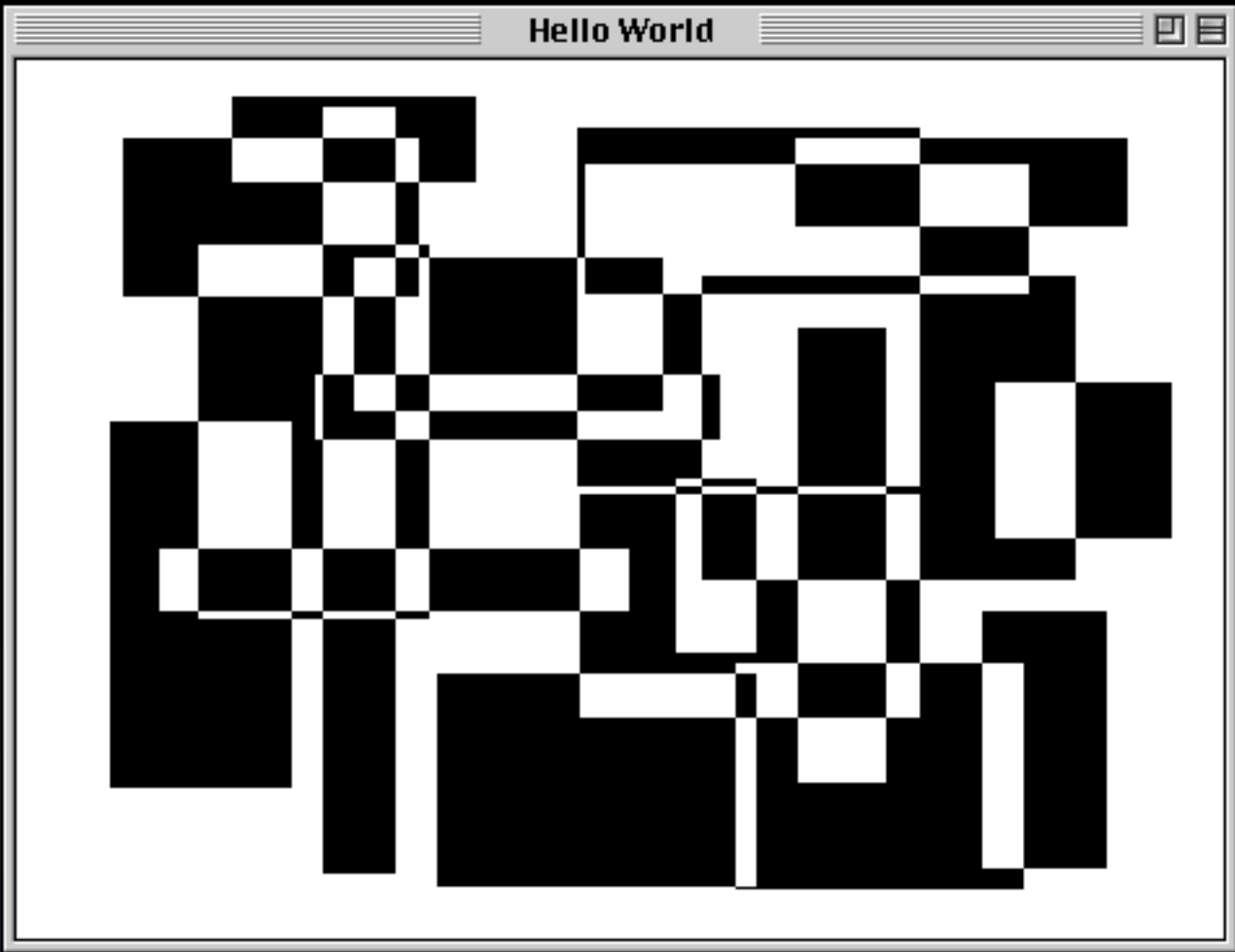
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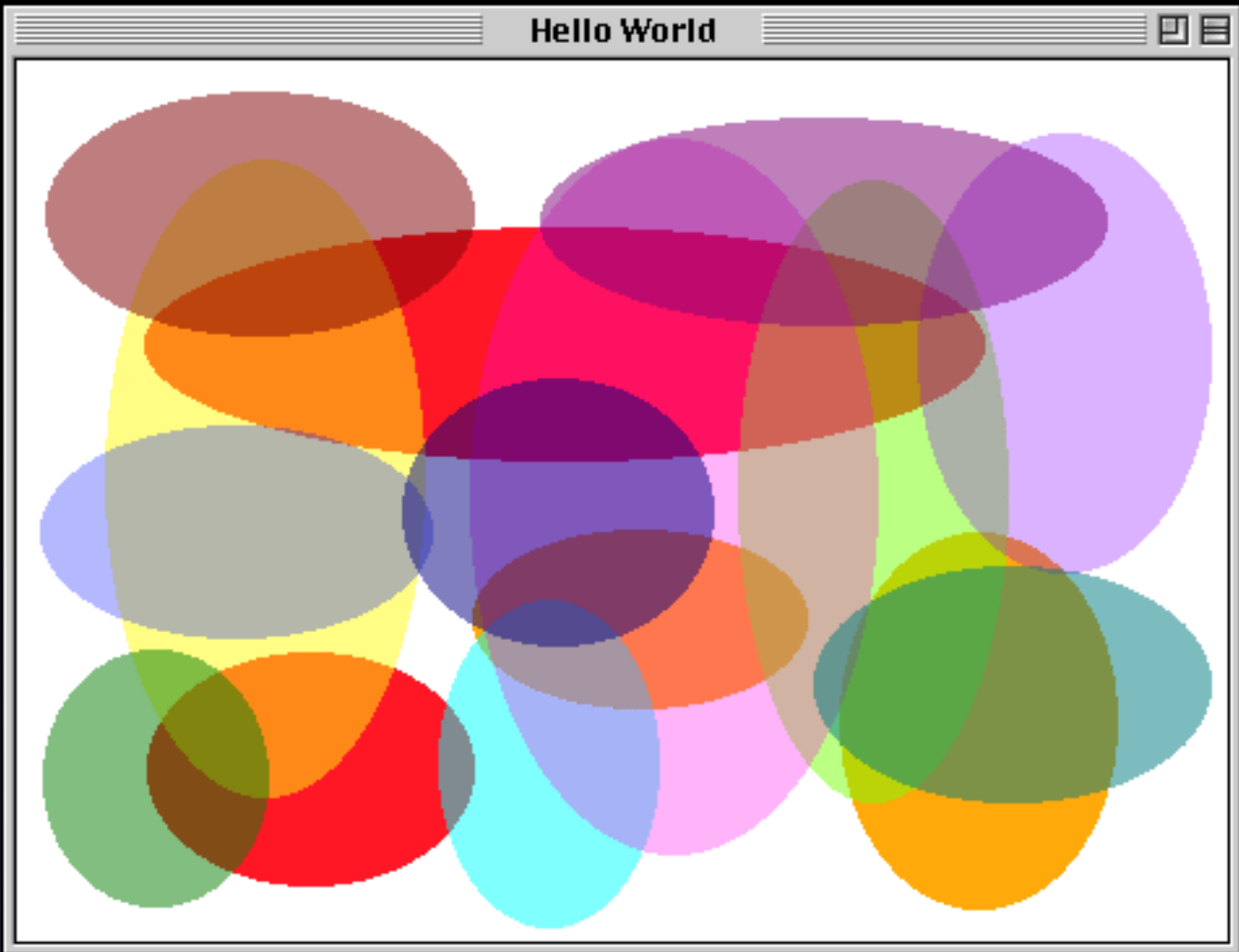
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What's New in QuickDraw

John Calhoun and
Mike Marinkovich

QuickDraw Engineering





Overview

- Long row bytes
- New transfer modes
- Performance improvements
- Mac OS X and getting there
- Cursor plugins
- Q&A



Long Row Bytes

- How to use
- Calling **GetPixRowBytes()**
- Examples



New Transfer Modes

- Java **kColorXOrXFer** mode
- New **kNoiseXFer** transfer mode
- Custom transfer modes (**kCustomXFer**)



kColorXOrXFer Mode

penColor -> xorColor

xorColor -> penColor

All others -> invert



Using kColorXOrXfer

```
{  
    PenMode(kColorXOrXfer);  
    RGBForeColor(&penColor);  
    RGBBackColor(&xorColor);  
    PaintRect(&bounds);  
}
```



kNoiseXFer Mode

- Blends random noise with the destination
- Uses the **opColor** to weight the noise
- A gray **opColor** gives monochromatic noise



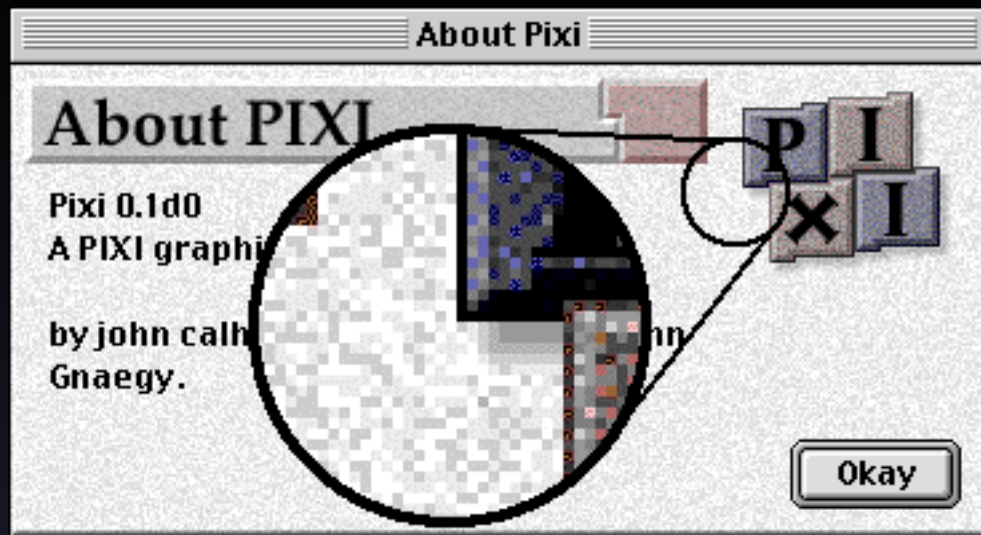
Using kNoiseXFer

```
{    // Using Noise with the QD primitives.  
    PenMode(kNoiseXFer);  
    OpColor(&noiseAmount);  
    RGBForeColor(&penColor);  
    PaintRect(&bounds);  
}
```

```
{    // Using Noise with the CopyBits.  
    OpColor(&noiseAmount);  
    CopyBits(srcPix, destPix, &srcRect, &destRect,  
            kNoiseXFer, clipRgn);  
}
```



Example Using Noise



Custom Transfer Modes

- Per port proc
- Power PC only
- Assign the proc to your port
- Invoke your custom proc
- Handle the transfer mode



Assigning a Custom Proc to a Port

```
{  
    // Determine what flags we want.  
    flags = kXFer1PixelAtATime | kXFerConvertToRGB32;  
  
    // Assign the proc to our port.  
    SetPortCustomXFerProc (myWindow, &CustomProc,  
        flags, refCon);  
}
```



Invoking a Custom Proc

```
{  
    // Invoke our custom proc via PenMode.  
    SetPort(myWindow);  
    PenMode(kCustomXFer);  
    PaintRect(&bounds);  
}  
  
{  
    // Invoke our custom proc via CopyBits.  
    CopyBits(srcPix, destPix, &srcRect, &destRect,  
            kCustomXFer, clipRgn);  
}
```



Your Custom Proc

```
pascal void CustomProc (CustomXFerRec *info)
{
    // Do some stuff here.
}
```



CustomXFerRec

```
struct CustomXFerRec
{
    UInt32          version;
    void            *srcPixels;
    void            *destPixels;
    void            *resultPixels;
    UInt32          refCon;
    UInt32          pixelSize;
    UInt32          pixelCount;
    Point           firstPixelHV;
    Rect            destBounds;
};
```



Sample Custom Proc

```
pascal void CustomProc (CustomXFerRec *info)
{
    UInt32          src;

    // Get source pixels out of info struct.
    src = *(UInt32)(info->srcPixels);

    // Clear all but the red component.
    // We assume 32-bit RGB long.
    src = src & 0x00FF0000;

    // Return result.
    *(UInt32)(info->resultPixels) = src;
}
```





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Transfer Modes



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More What's New in QuickDraw

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Performance



Lock/Unlock Pixels

- Currently is slow
- All software new and old is affected
- 15% speed improvement



QuickDraw and AltiVec

- QuickDraw is tuned for AltiVec
- Core software blitters optimized
- Accelerated offscreen blits
- 20% to 50% performance gains



GWorlds in Hardware

- GWorld surfaces in AGP and VRAM
- Benefits of hardware surfaces
 - Very fast copies to the screen
 - Hardware assisted blits offscreen
- Differences between VRAM and AGP
 - Store static data in VRAM
 - Fast direct pixel access to AGP



NewGWorld Additions

NewGWorld(Gworld*,depth,bounds,cTable,device,flags)

- Device parameter is allocator context
- New flags include

useLocalHWMem—AGP memory

useDistantHWMem—Video memory



GWorlds in Hardware: The Issues

- Base address can be purged or moved
 - Display depth/resolution changes
 - Heap compaction of driver memory
- Handling the purged and moved case
 - Don't cache base address
 - Check base address for nil
 - Register for DM notifications





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Demo

GWorlds

Mac OS X and Getting There...



Carbon QuickDraw

- Existing code requires few changes
- All QD APIs available
- Do not use QDGlobals data structure
- Access data structures with accessors



QuickDraw Accessors

- Moving forward with opaque data structures
- Real function calls
- Provided accessors for every structure element that you should be accessing
- Feedback and requests go to:

graphics-feedback@apple.com



Using Accessors

- Old Way

```
rect = colorGrafPort->portRect;
```

- New Way

```
rectPtr = GetPortBounds(colorGrafPort, &rect);
```



Cursor Manager Plugins (Big Cursor)



What Is A Cursor Plugin

- System cursor is replaced by plugin
- Plugin draws, erases, and moves image
- Provide info to system about image
- Handle reconfigure notices



Cursor Plugins

- Component-based architecture
- Plugin defines cursor format
- Animation capabilities
- Hardware acceleration support
- Interrupt time component setting



Cursor Component API

OpenCursorComponent();

SetCursorComponent();

CursorComponentSetData();

CloseCursorComponent();



OpenCursorComponent

```
// set up the descriptor
theDesc.componentType = 'curs';
theDesc.componentSubType = 'bbcc';
theDesc.componentManufacturer = 'appl';
theDesc.componentFlags = 0L;
theDesc.componentFlagsMask = 0L;

comp = FindNextComponent(0L, &theDesc);
if (comp != nil)
    err = OpenCursorComponent(comp,
    &instance);
```



Cursor Component API

`OpenCursorComponent();`

`SetCursorComponent();`

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CursorComponentSetData

OSErr

SetCursorPictureID(long pictureID, Point hotspot)

{

PrivateCursorData data;

data.pictureID = pictureID;

data.hotSpot = hotspot;

err = CursorComponentSetData (ci, (long)&data);

}



Cursor Component API

OpenCursorComponent();

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Cursor Plugin



Think different.TM



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