
Worldwide
Developers
Conference


Building
Java-based
Applications for
Rhapsody
Scott Forstall
Manager, Java
Application Technologies

Take Home Points

Take Home Points

- Apple is fully embracing Java

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- Apple will provide the best platform to build and run Java apps

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- Apple will open up the Yellow Frameworks to Java
- Apple will integrate the Yellow platform with the standard Java platform

Java, Java, Java

Java is really three things

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- Virtual Machine (VM)
- Libraries

Java the Language

Full-featured and powerful

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- Object oriented

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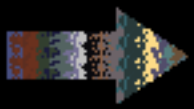

Apple will provide a compiler for the language, but any standard Java compiler will work

Java the Virtual Machine (VM)

Turns every machine into a Java machine

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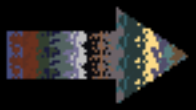

Apple will provide an optimized Virtual Machine

Java the Libraries

Java the Libraries

- Foundation
  - String
  - Number
  - Dictionary

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- UI—Abstract Windowing Toolkit (AWT)
  - Button
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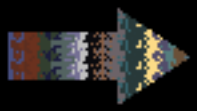

Apple will provide all standard libraries

How Will Apple Provide AWT?

- Through Yellow Frameworks…

Yellow Frameworks

Full-featured object-oriented frameworks for building apps

Yellow Frameworks

Full-featured object-oriented frameworks for building apps

- Widgets: windows, buttons, text
- Events, fonts, graphics
- Drag and drop
- International text
- Printing support
- ColorSync
- QuickTime

Yellow Frameworks

The basis of Rhapsody

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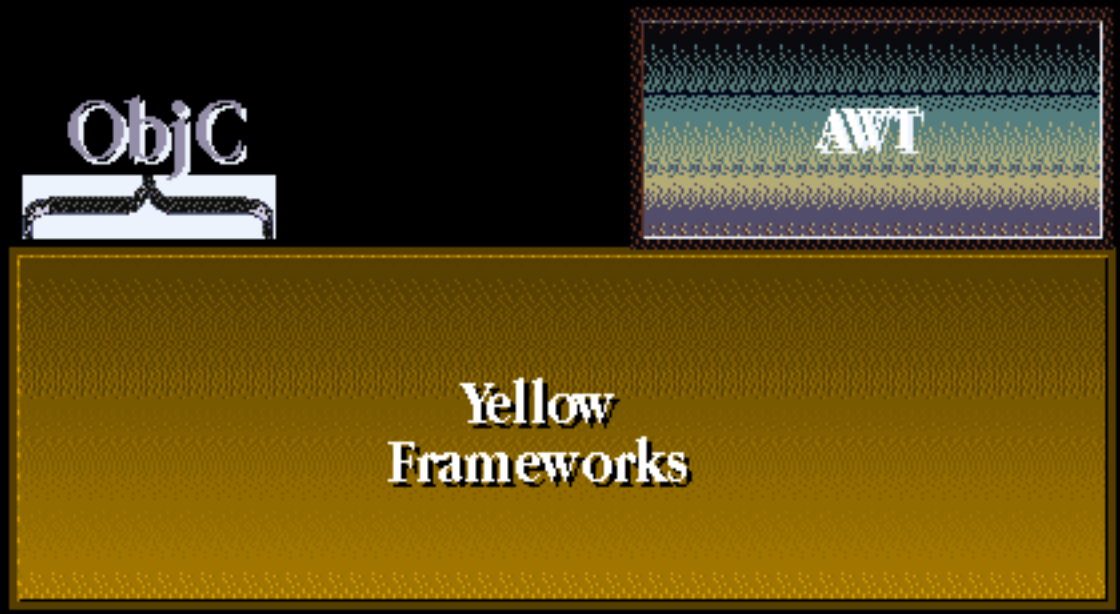
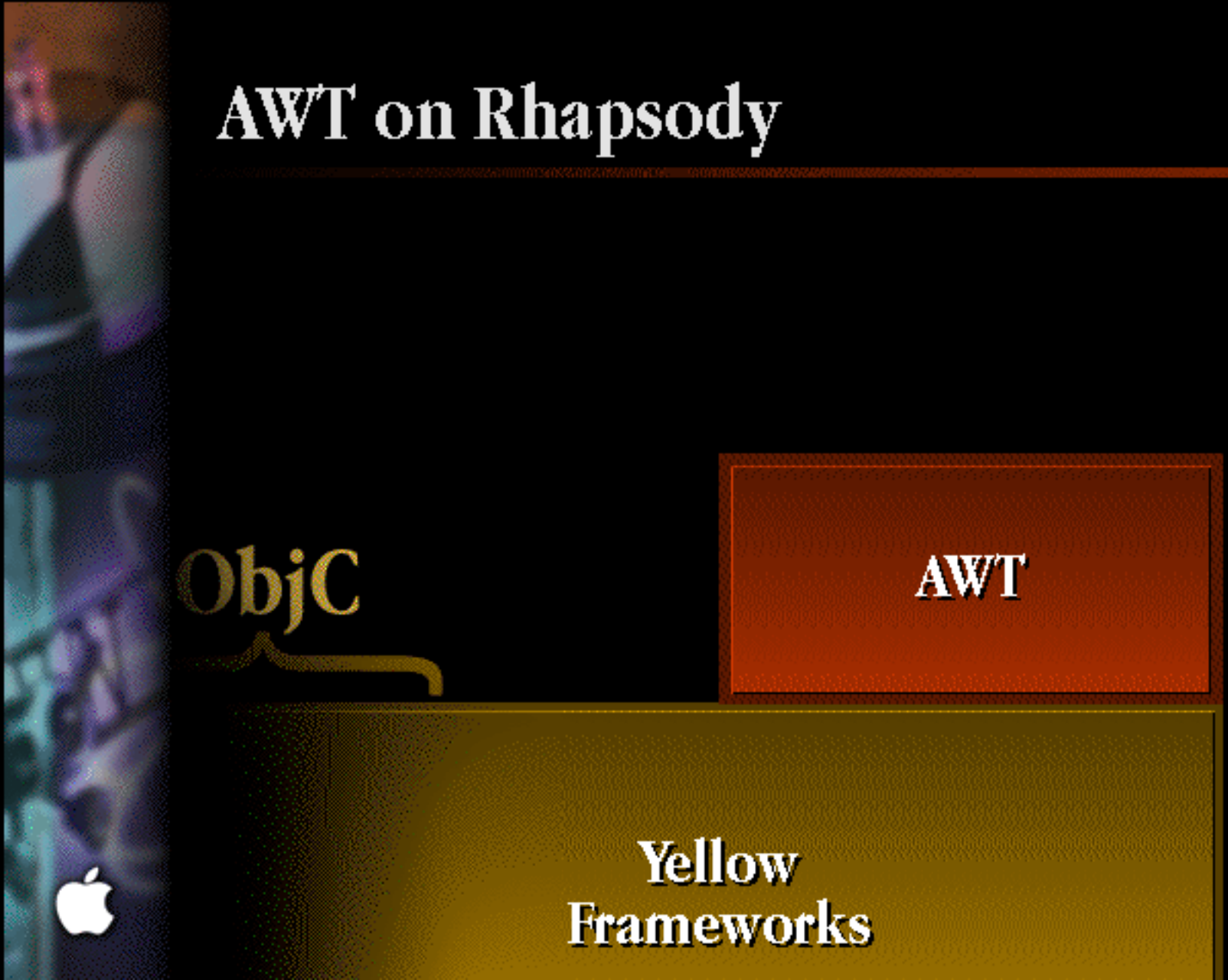
Yellow Frameworks

The basis of Rhapsody and AWT



AWT on Rhapsody



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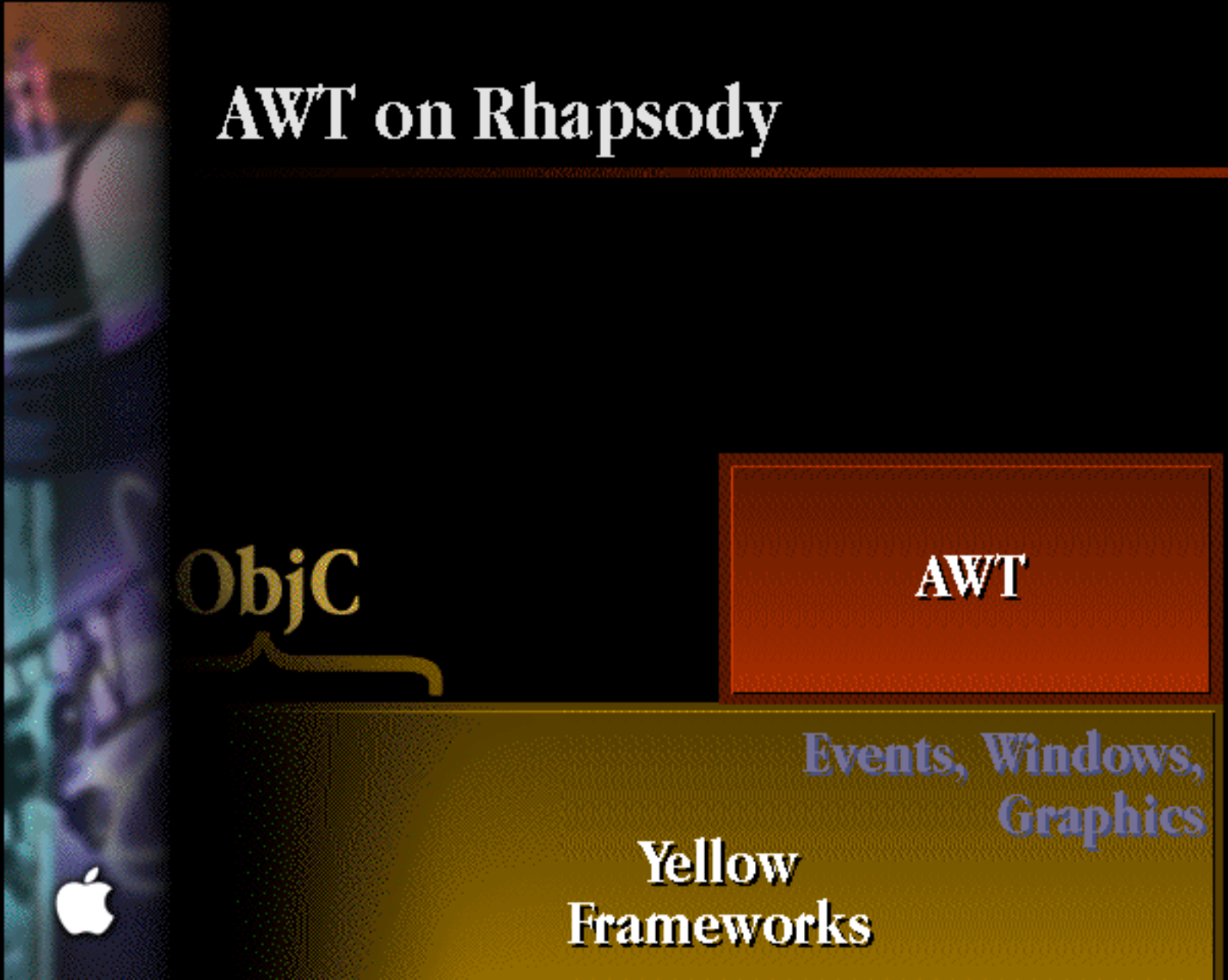

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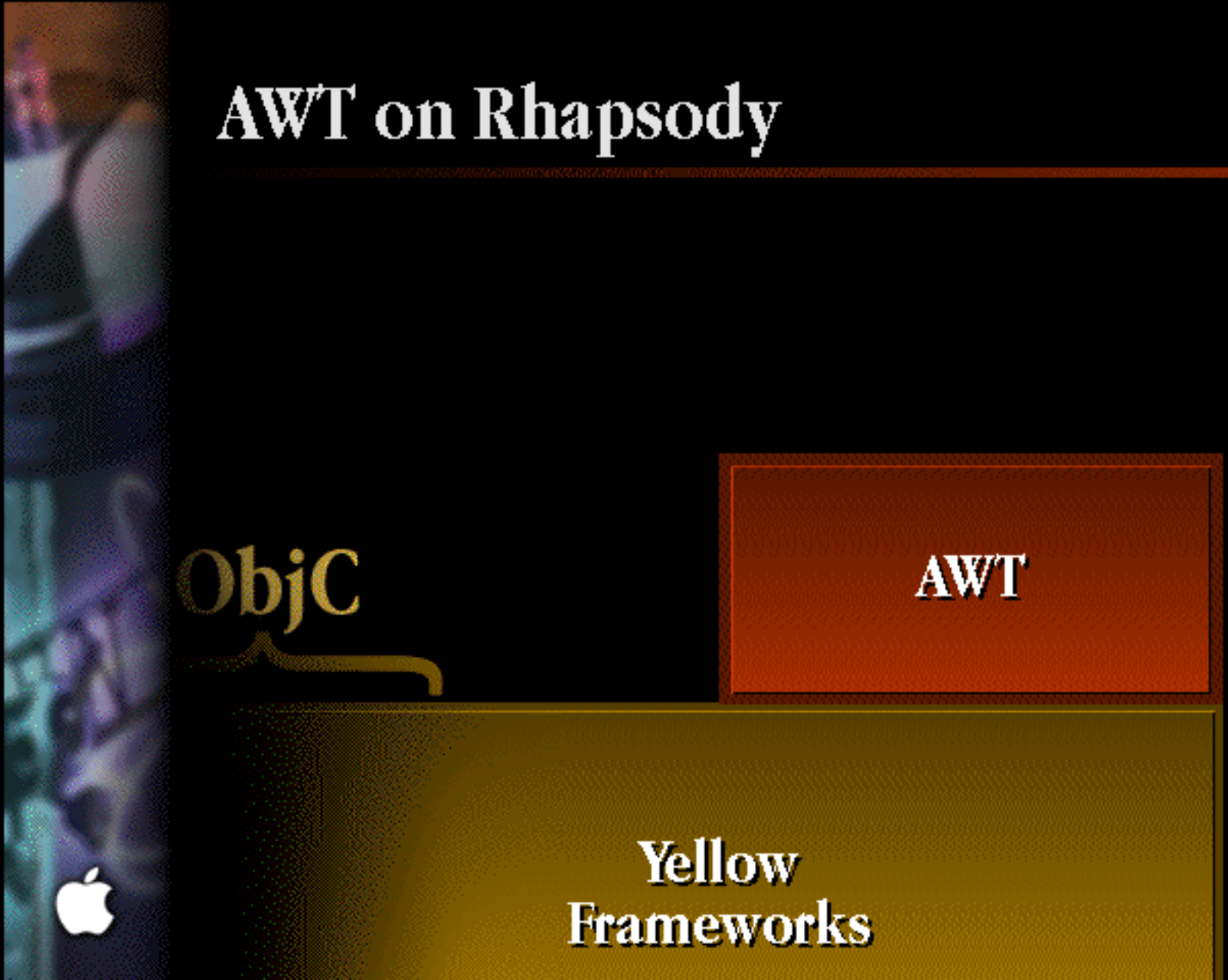

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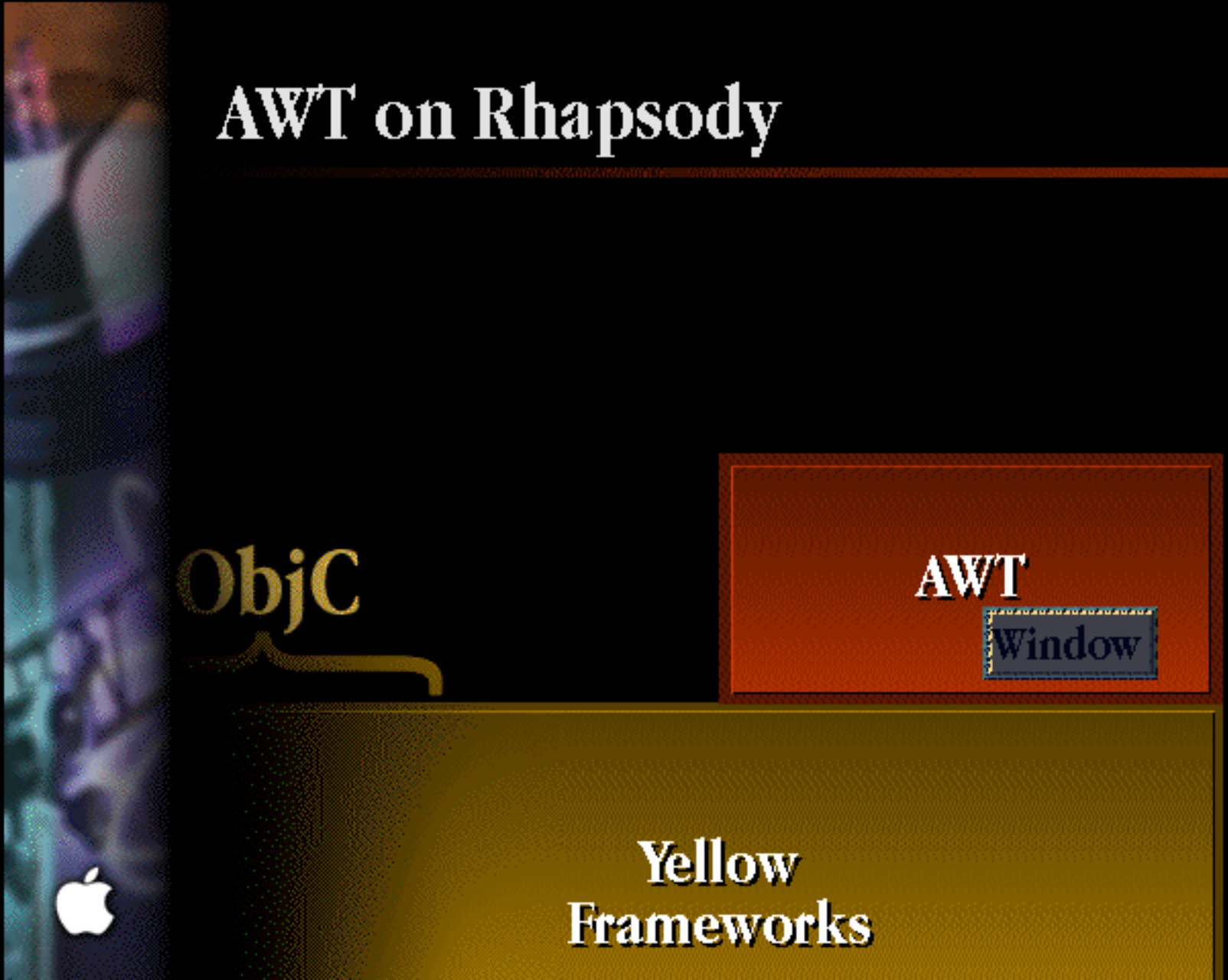

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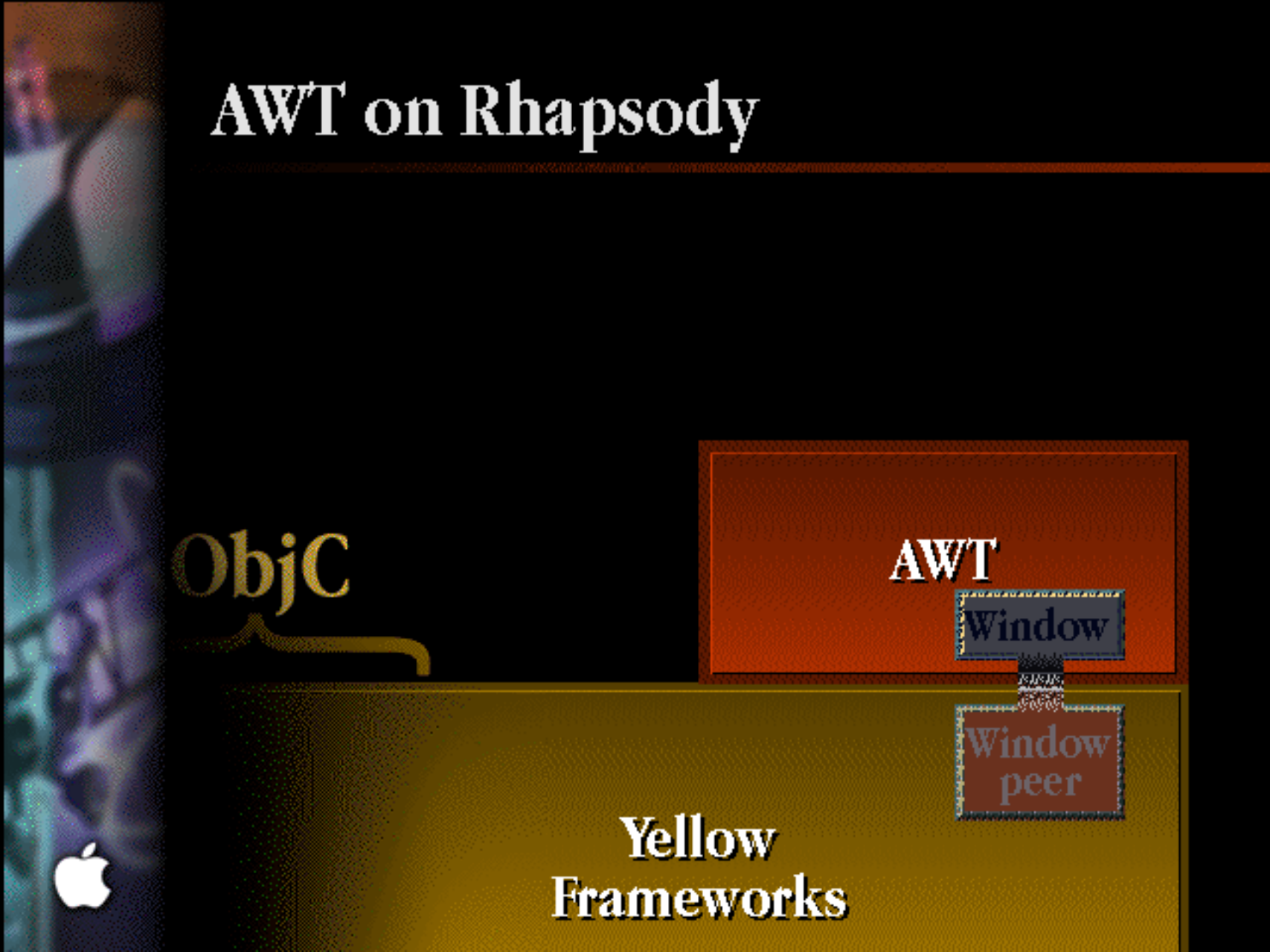

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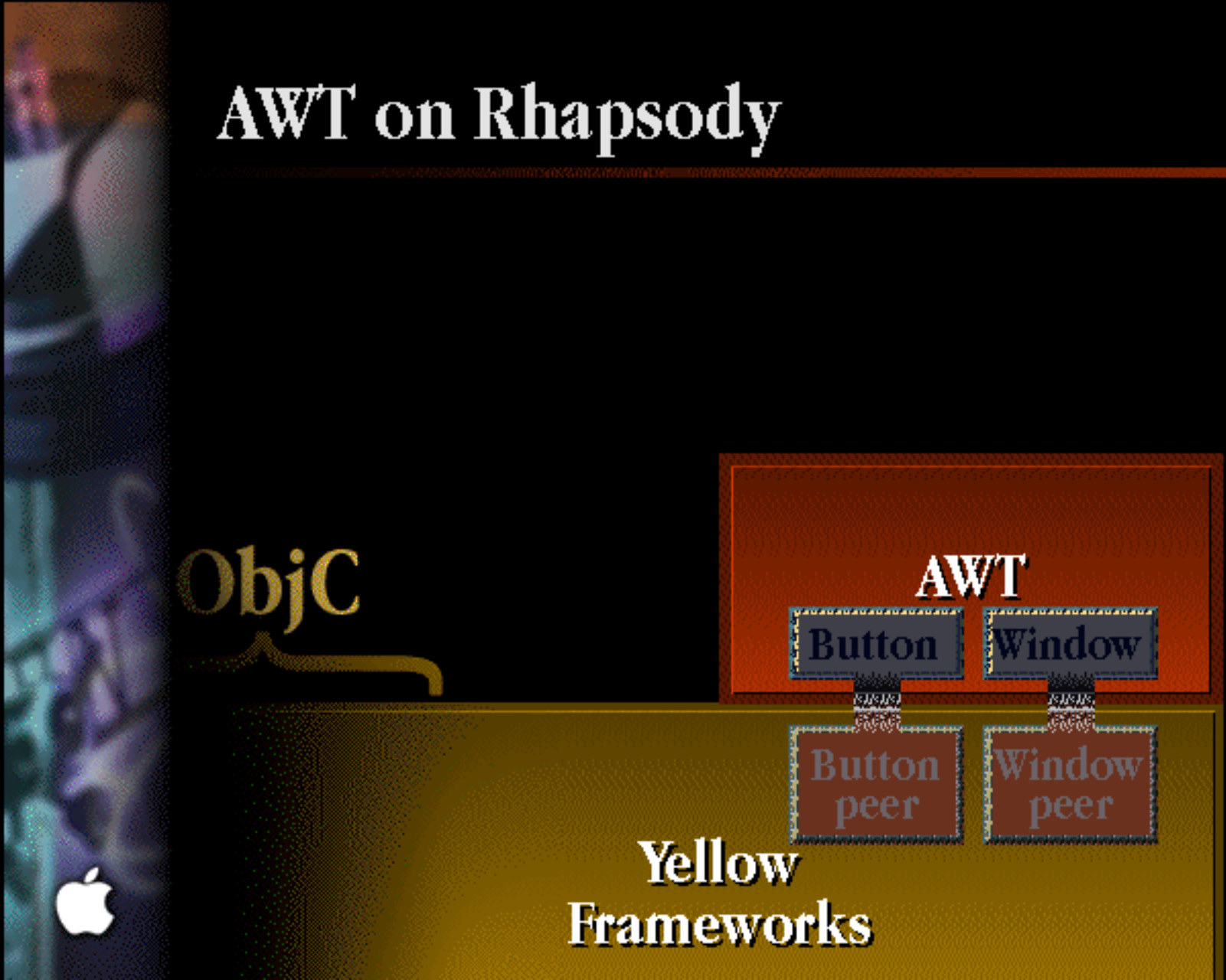

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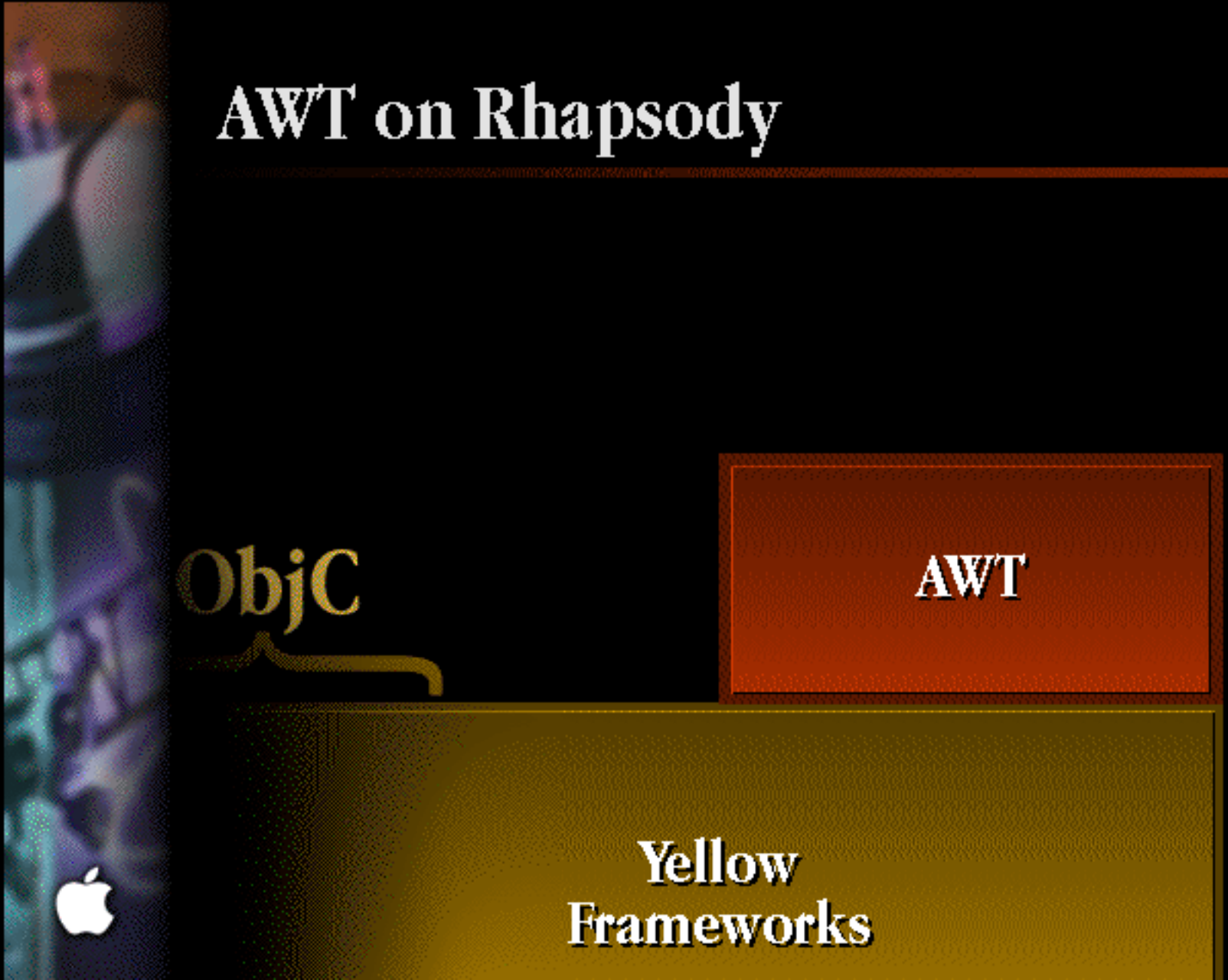

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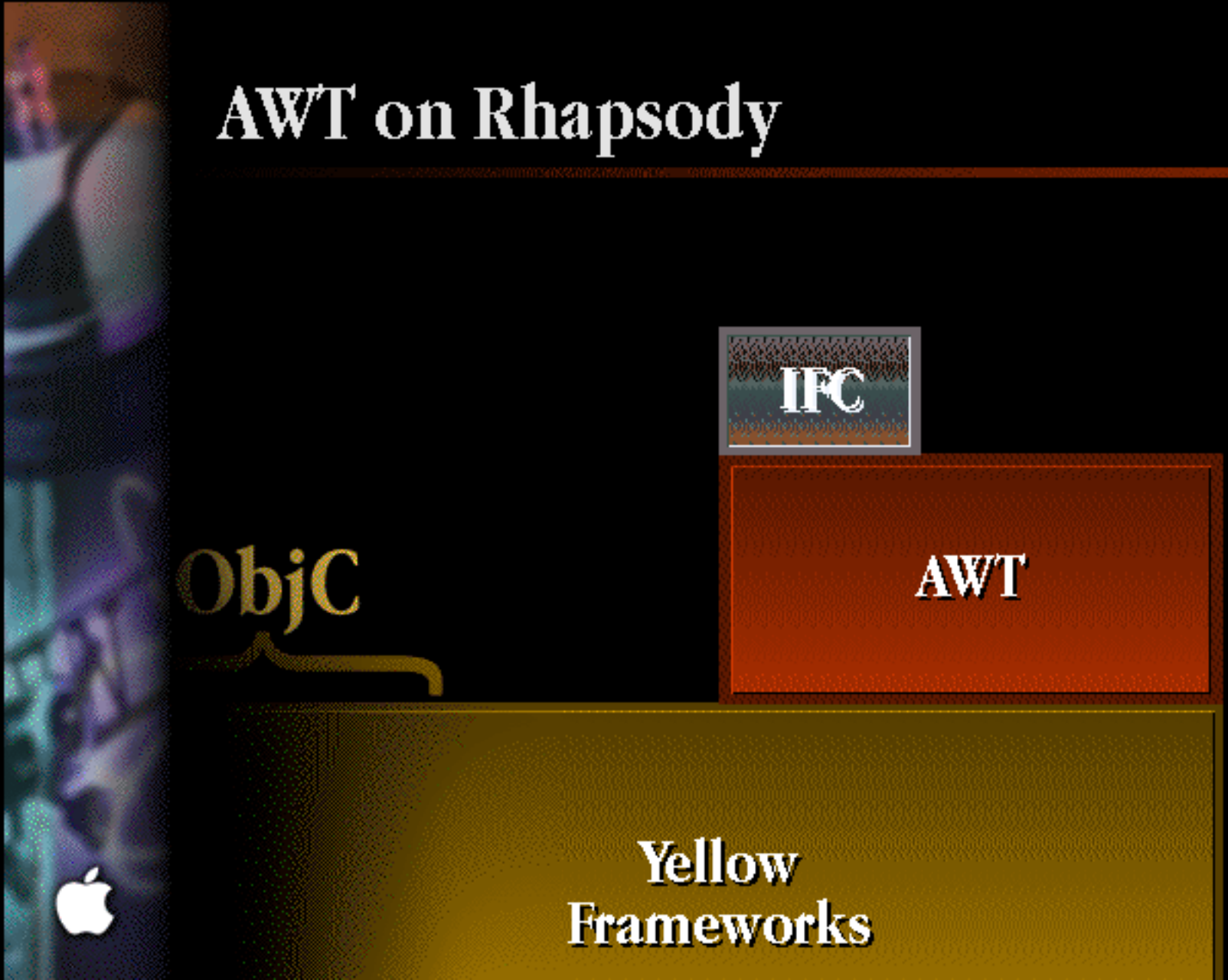

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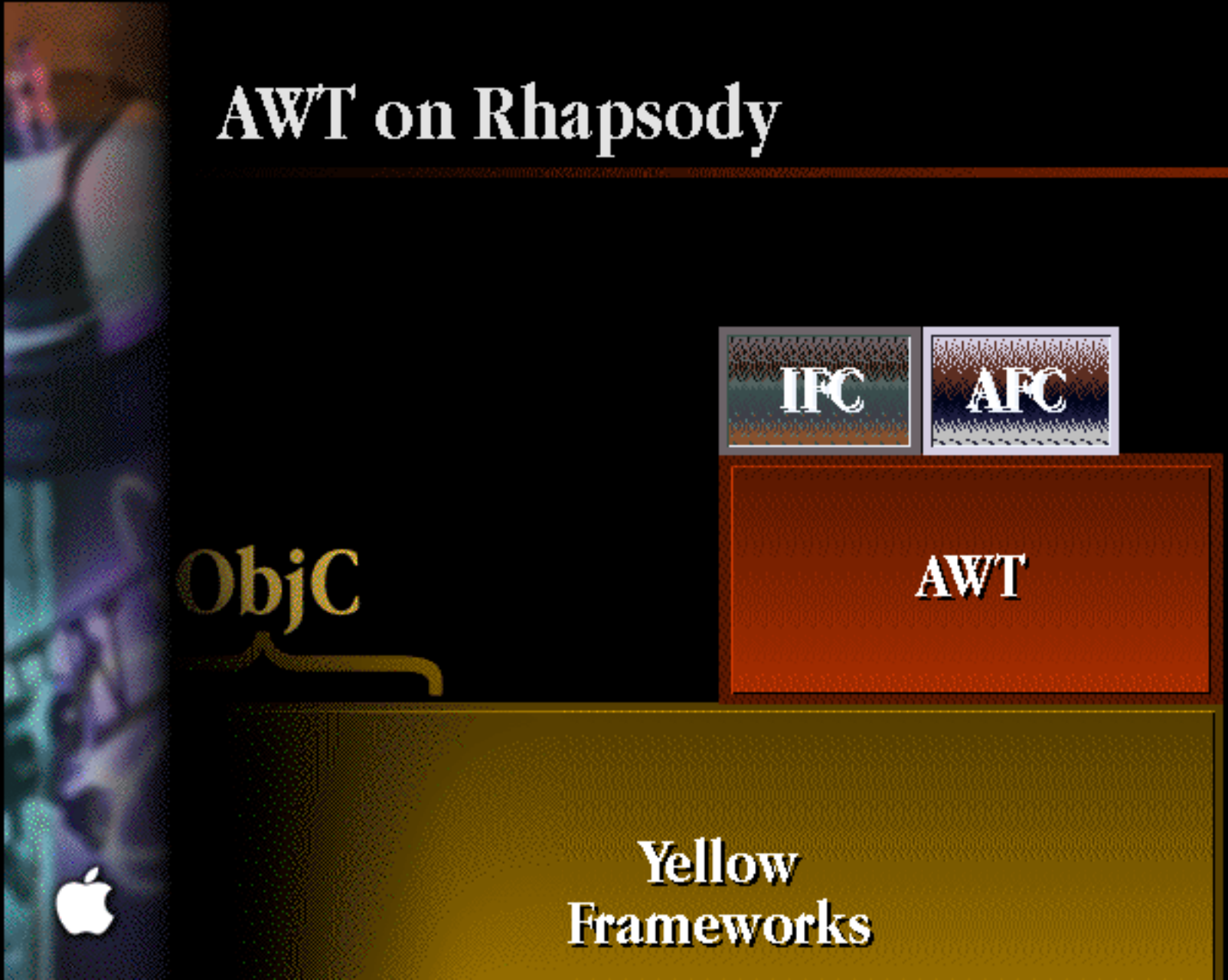

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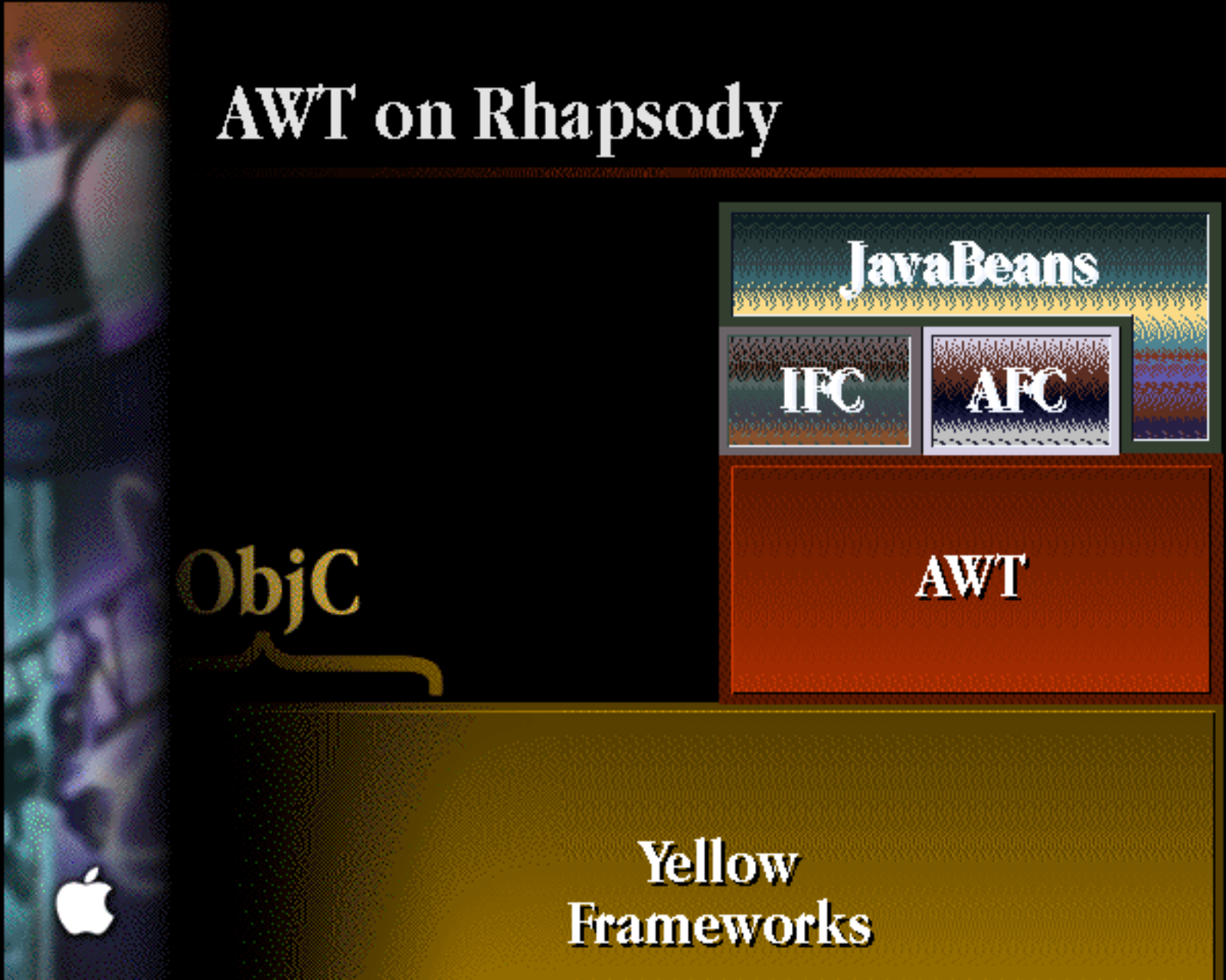

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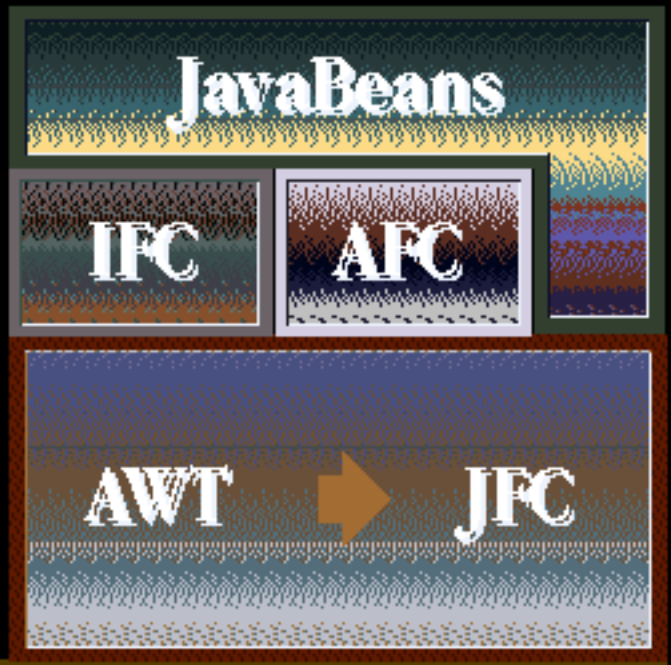
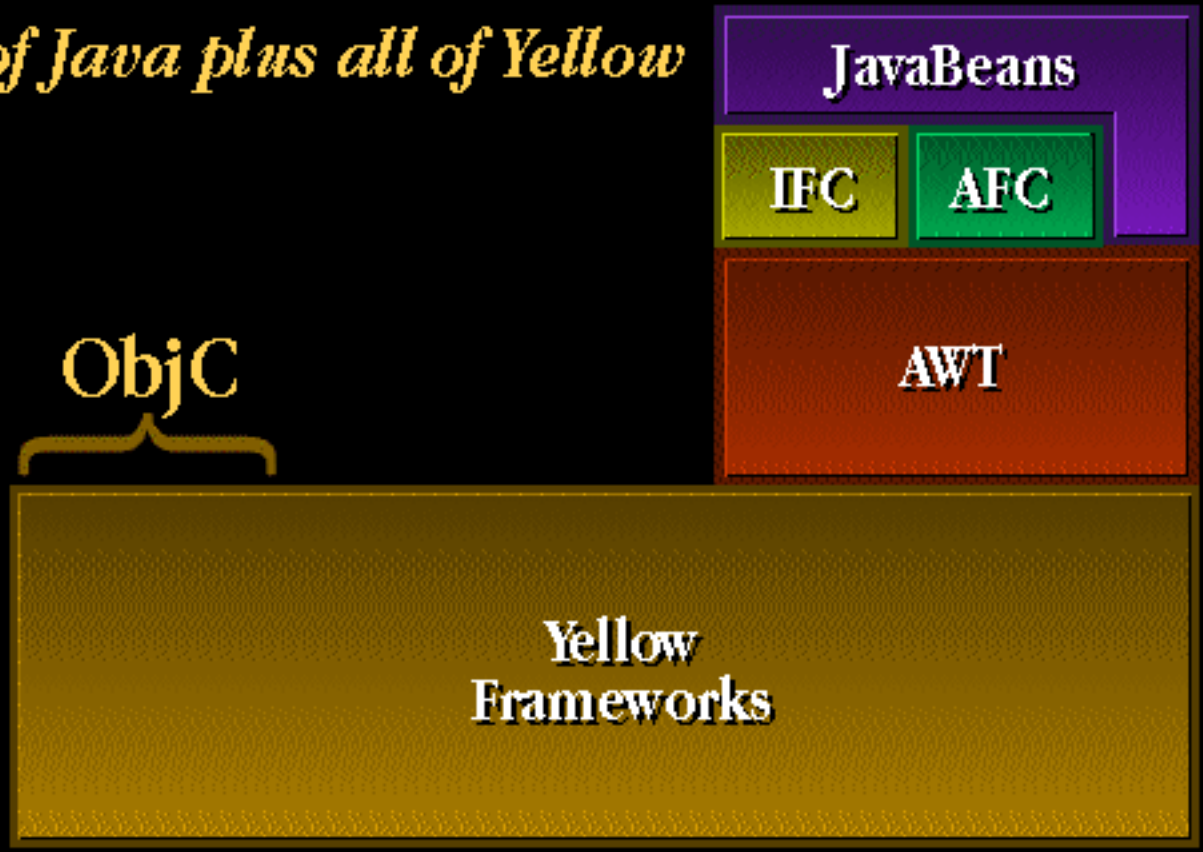


ObjC

Yellow
Frameworks

The Yellow Platform

All of Java plus all of Yellow



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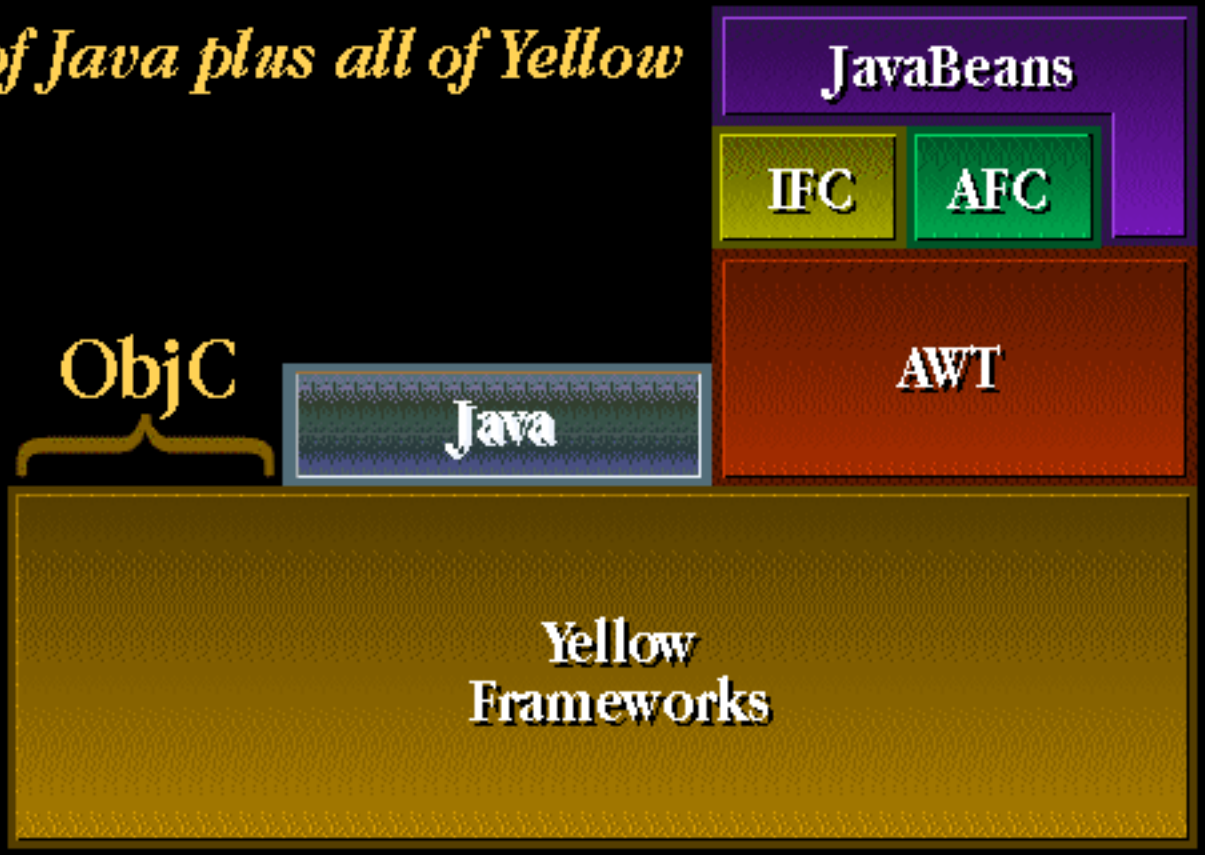

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- Yellow Frameworks add the functionality required by a full-featured desktop application

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- Yellow Frameworks add the functionality required by a full-featured desktop application
  - Drag and drop
  - Printing
  - Font support
  - ColorSync
  - International text
  - Scripting
  - QuickTime

Let's Grow 7-Eleven into Safeway

- Apple is actively working with JavaSoft to improve AWT in the form of JFC

The Yellow Platform in Java

Integration between Java and Objective-C opens up the platform

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- Any program written to the Yellow Frameworks in Objective-C can now be written in Java
- Developer can write in Java, Objective-C, or a combination of both

Is This Magic?

Java and Objective-C similarities enable integration

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- Multiple inheritance for interfaces

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  - Message Objective-C from Java
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- Tools available to help create cross-language bindings
- Provide new Java APIs in Objective-C through Modern Objective-C syntax

Is It a Toll Bridge?

Usage patterns determine performance

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Usage patterns determine performance

- Some performance cost for crossing bridge
- Execution that remains on one side performs at native speed
- Apple researching many ways to improve performance

Cross-Platform with Single Executable

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- Yellow Frameworks are cross-platform
  - Rhapsody
  - Mac OS
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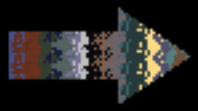
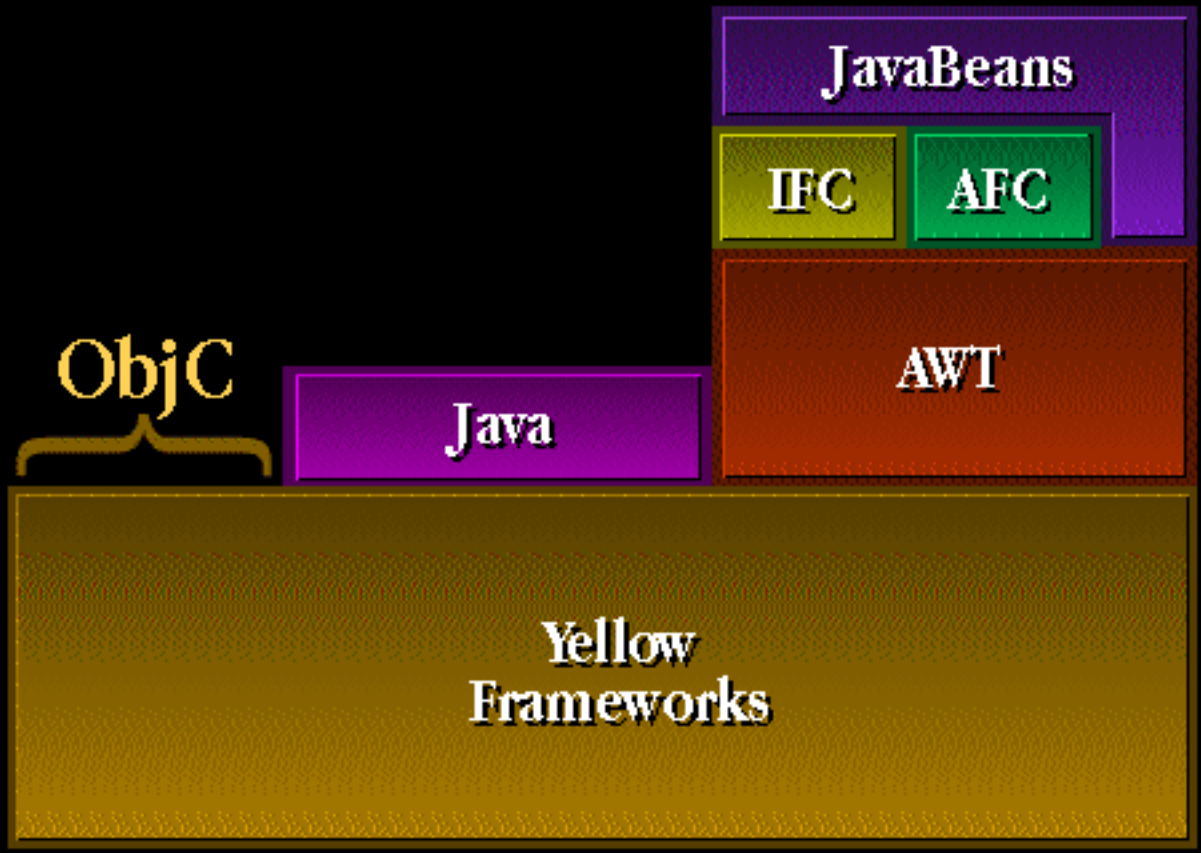


Yellow Box apps written in Java are cross-platform without recompilation

Cross-Platform Yellow Box



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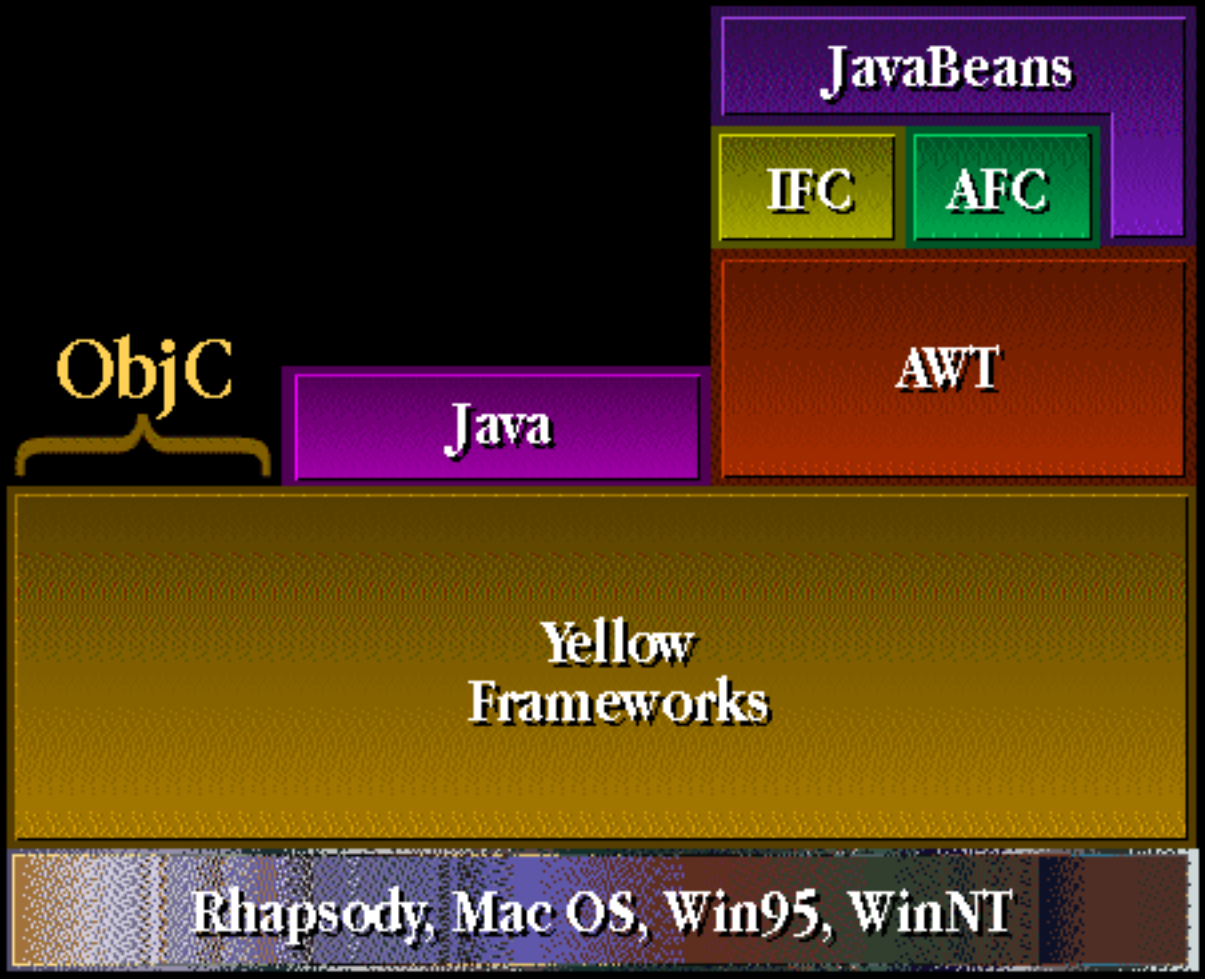

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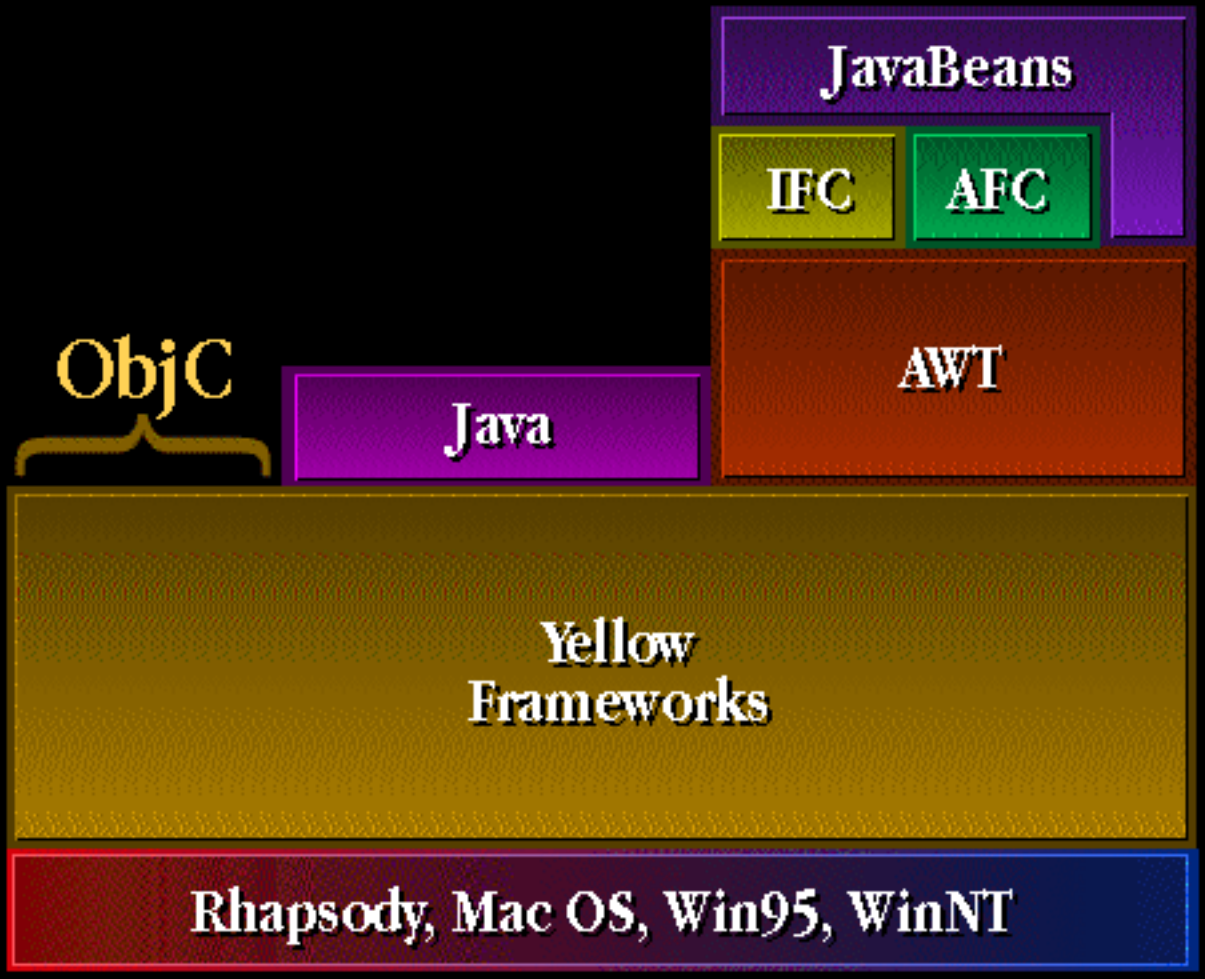
Can't We All Just Get Along?

Java Yellow Frameworks and AWT can!

- Apple will tightly integrate AWT, Beans, and Yellow Frameworks
- JavaBeans will live as first-class citizens in Yellow apps
- Developer tools will support Java
  - Java editing and debugging
  - Interface Builder support for JavaBeans

Cross-Platform Yellow Box



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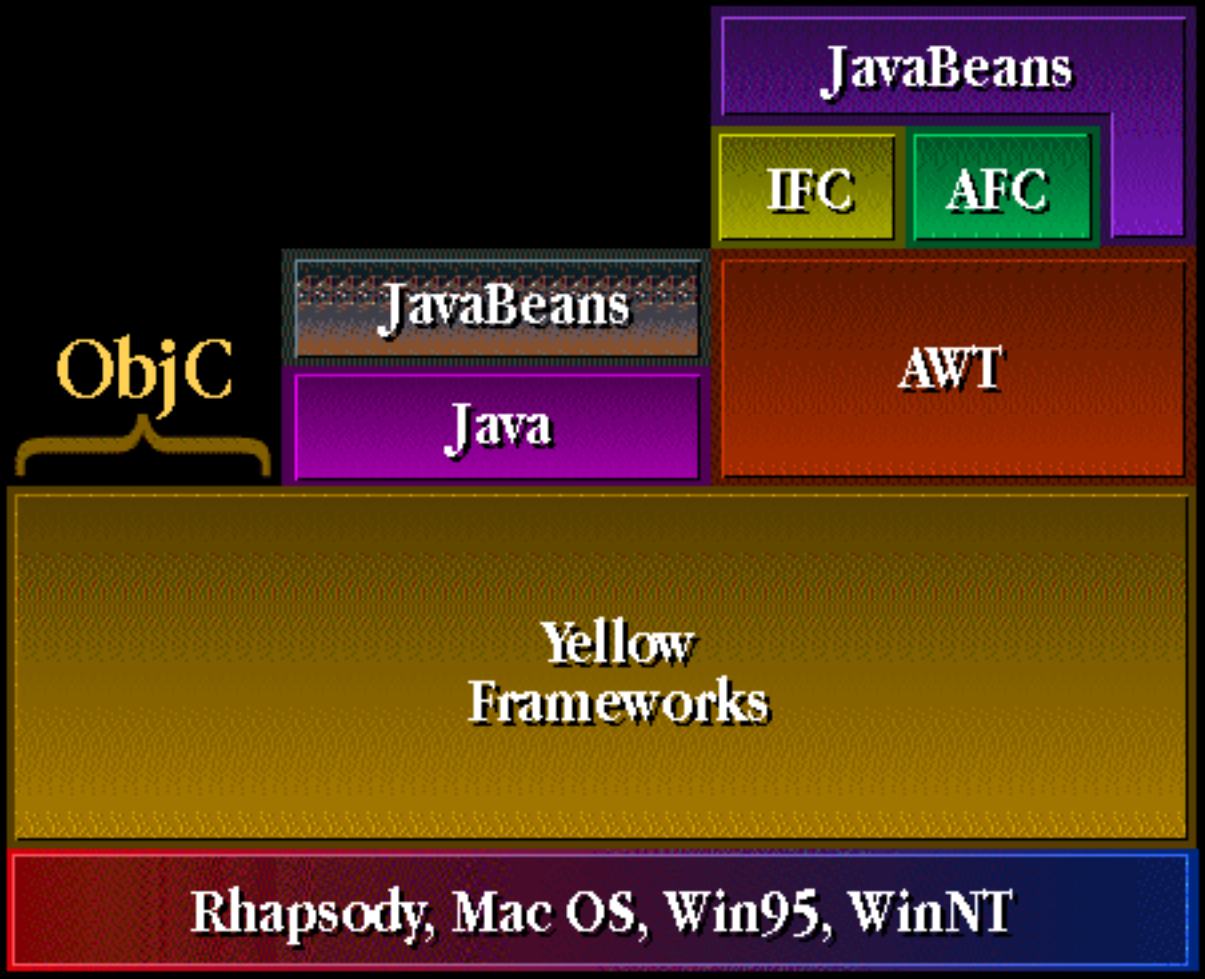
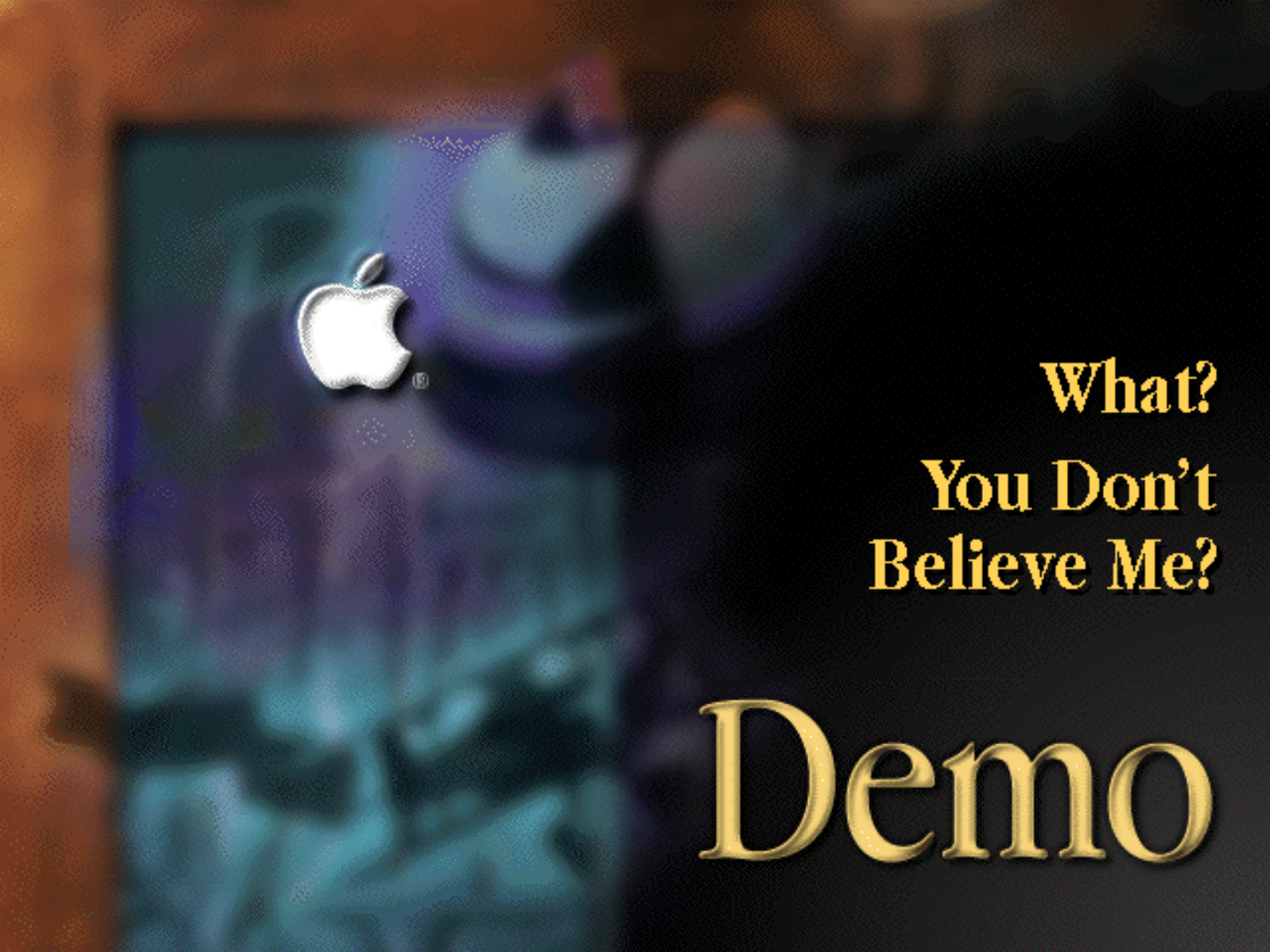
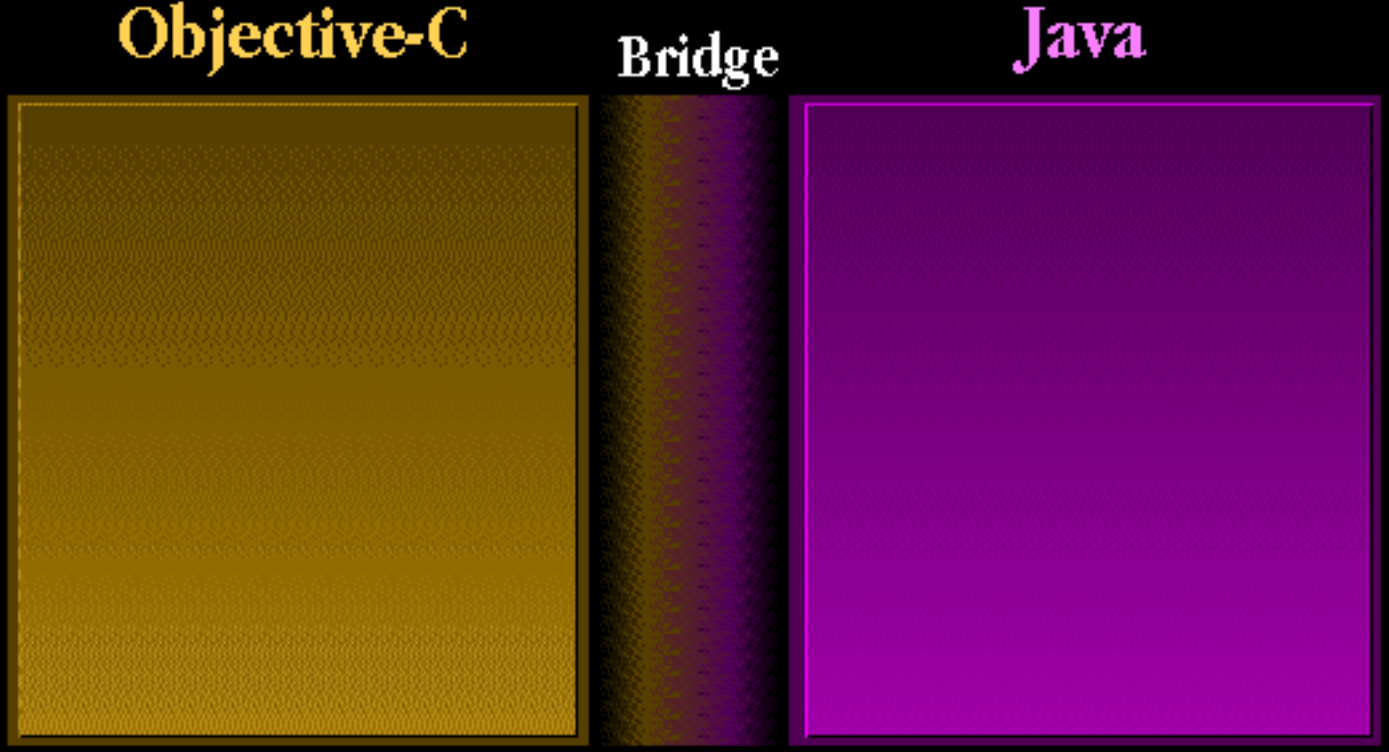



What?
You Don't
Believe Me?
Demo

How It Works



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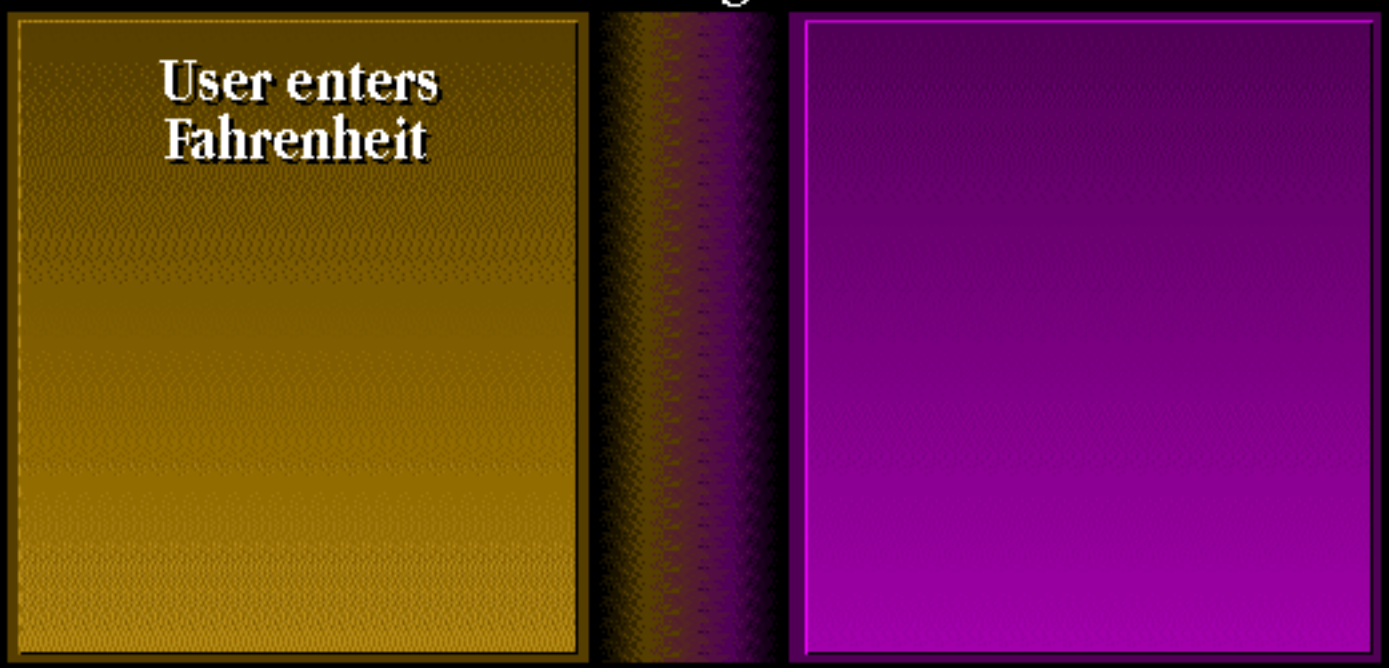

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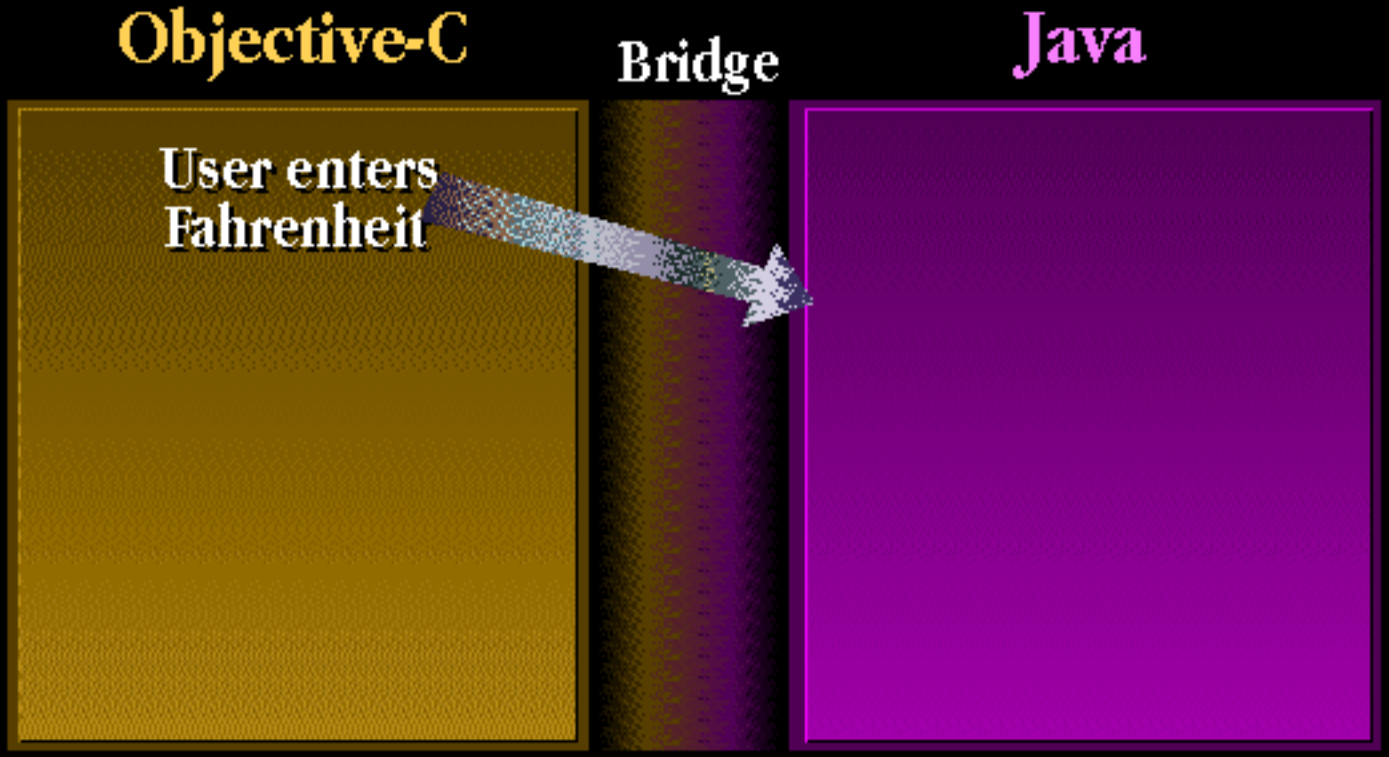

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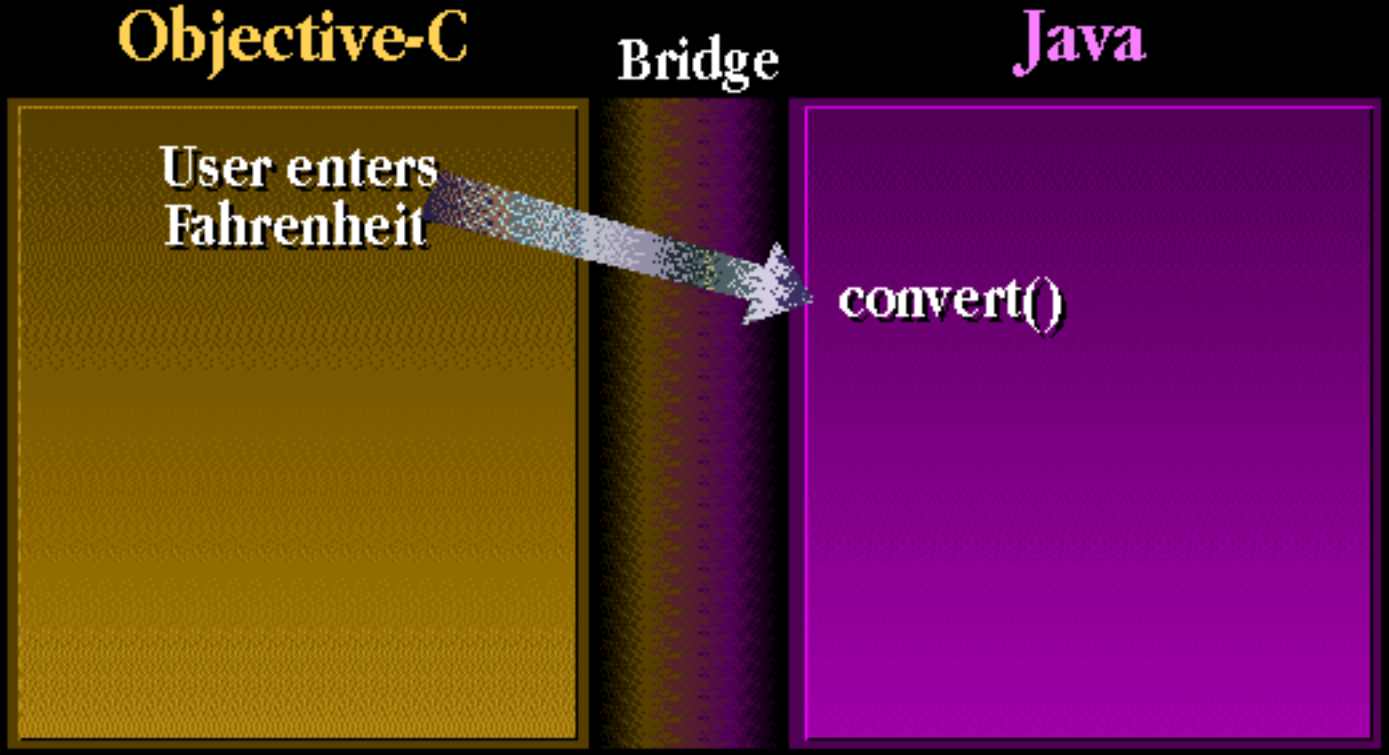

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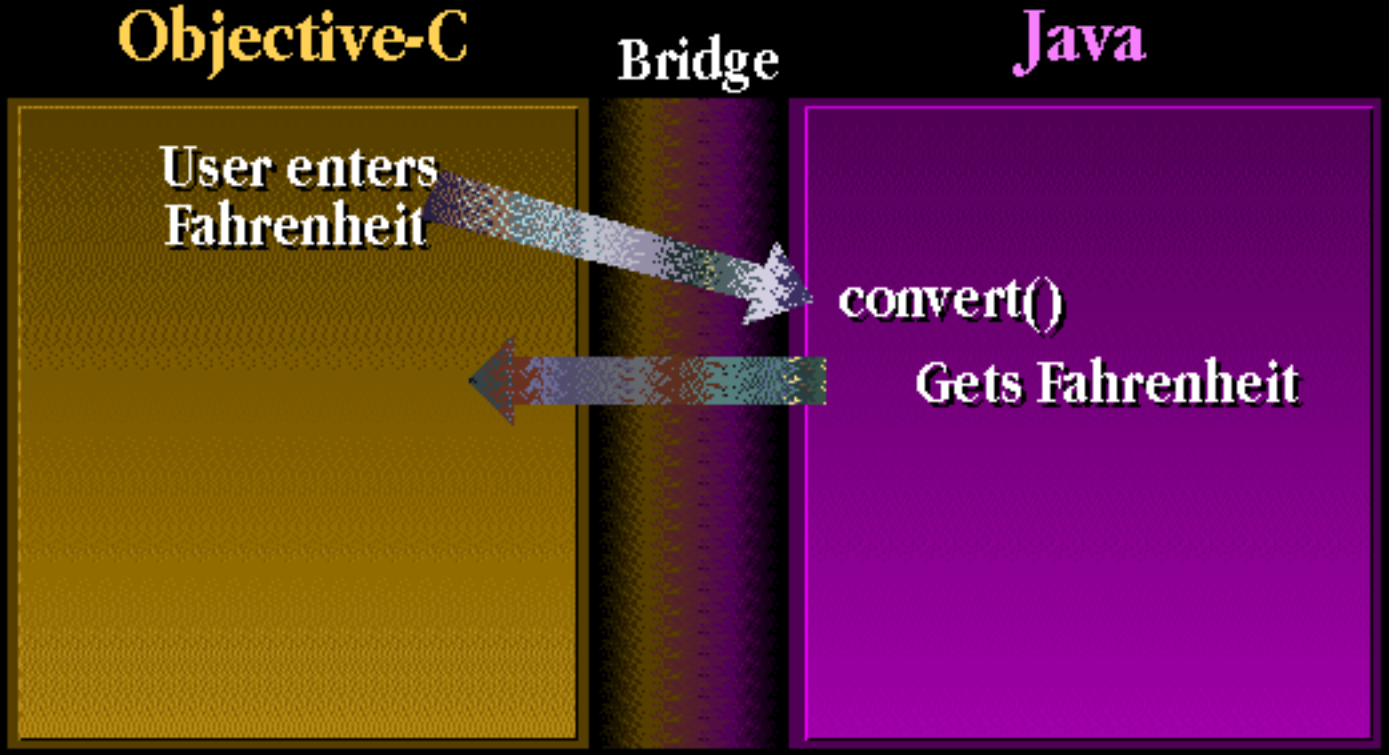
Objective-C
Bridge
Java
User enters Fahrenheit
convert()
Gets Fahrenheit

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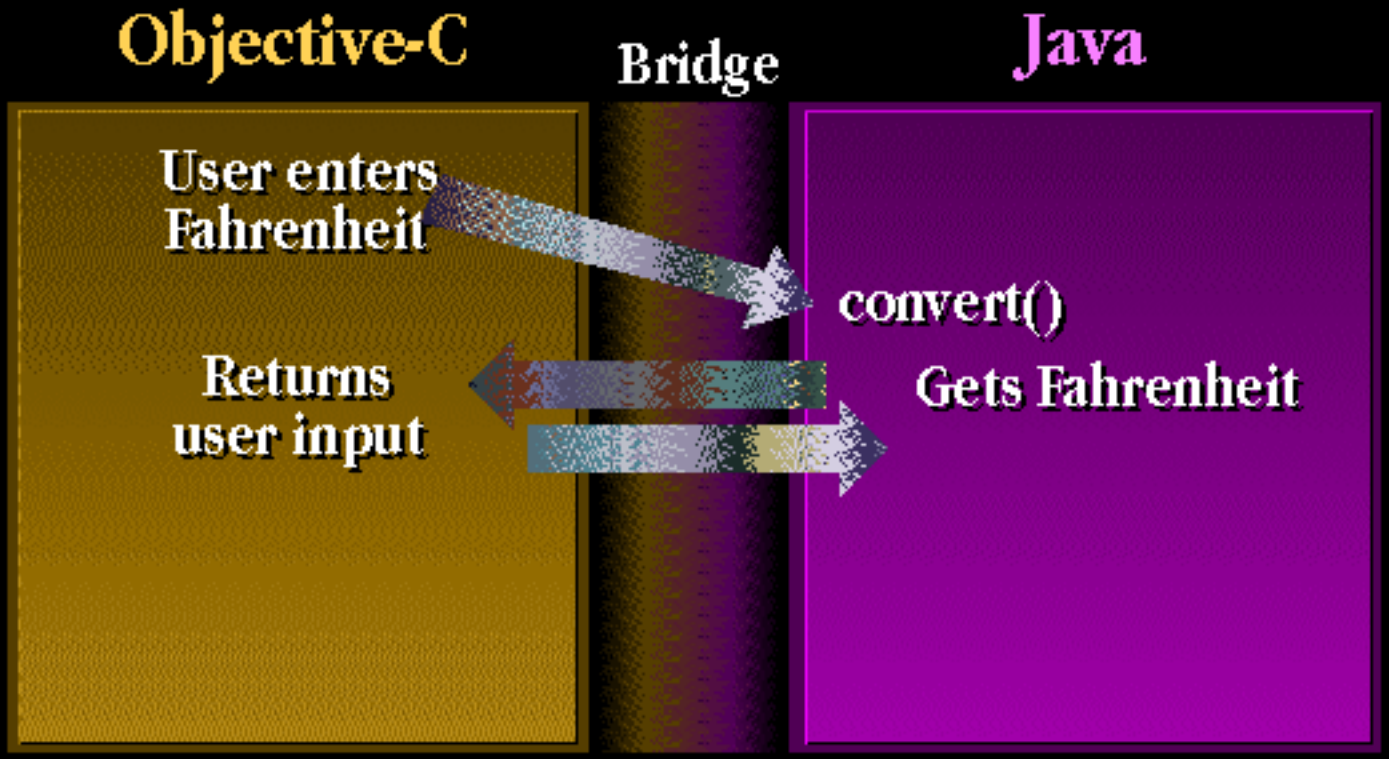
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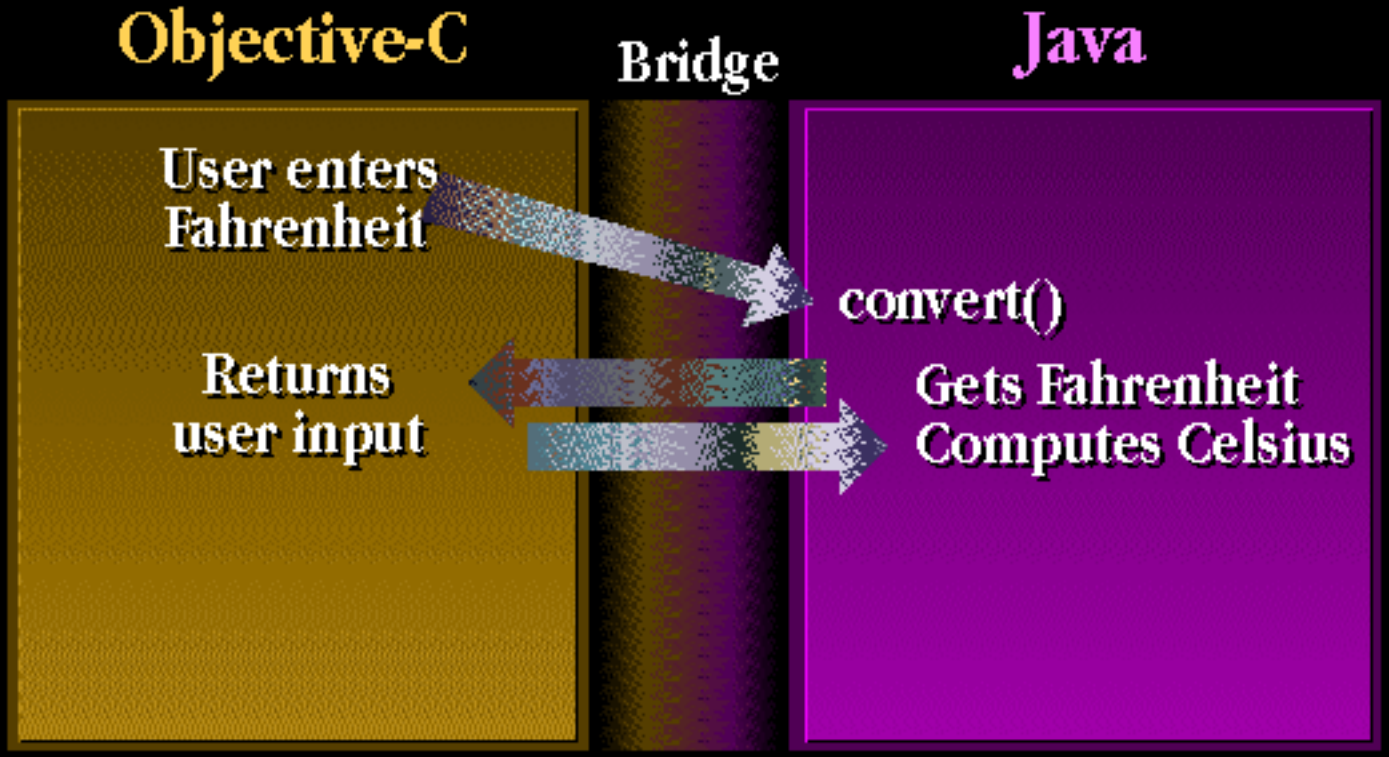
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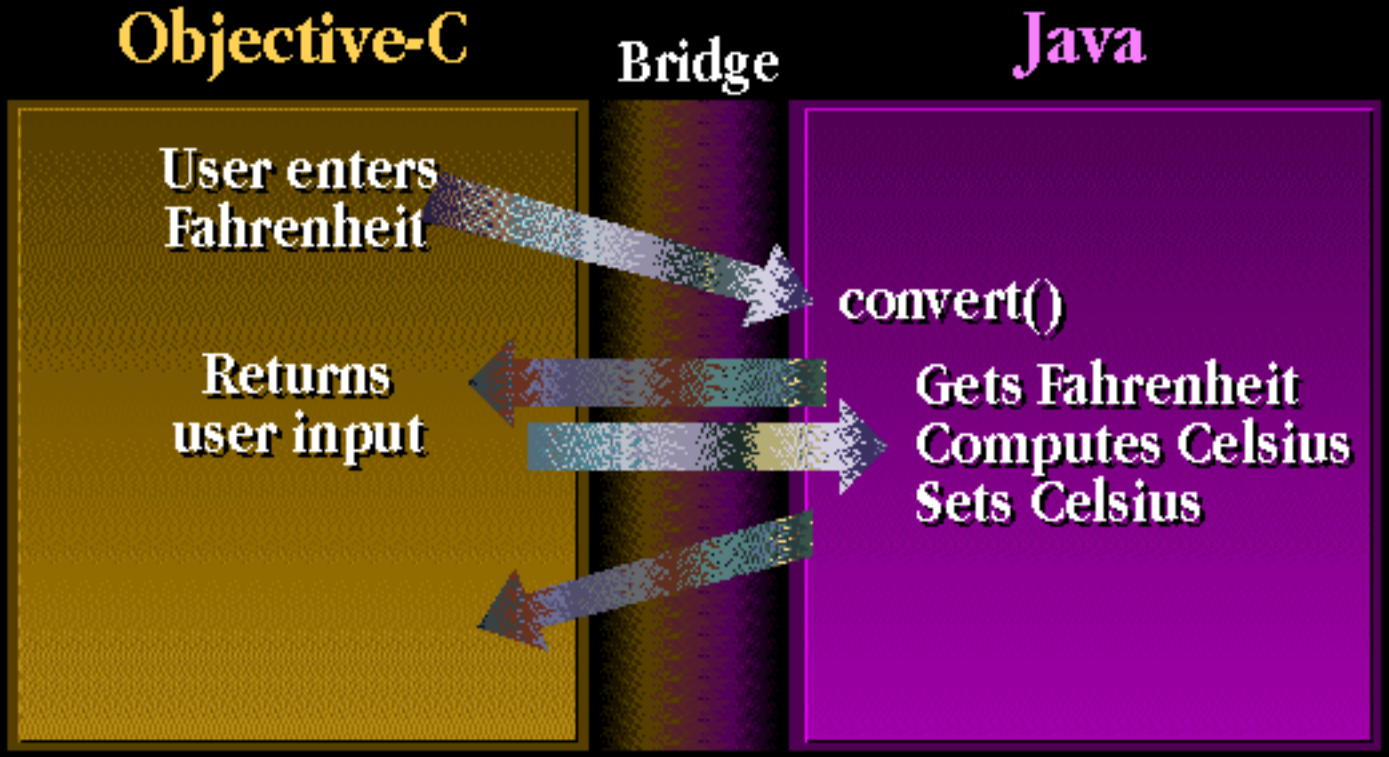
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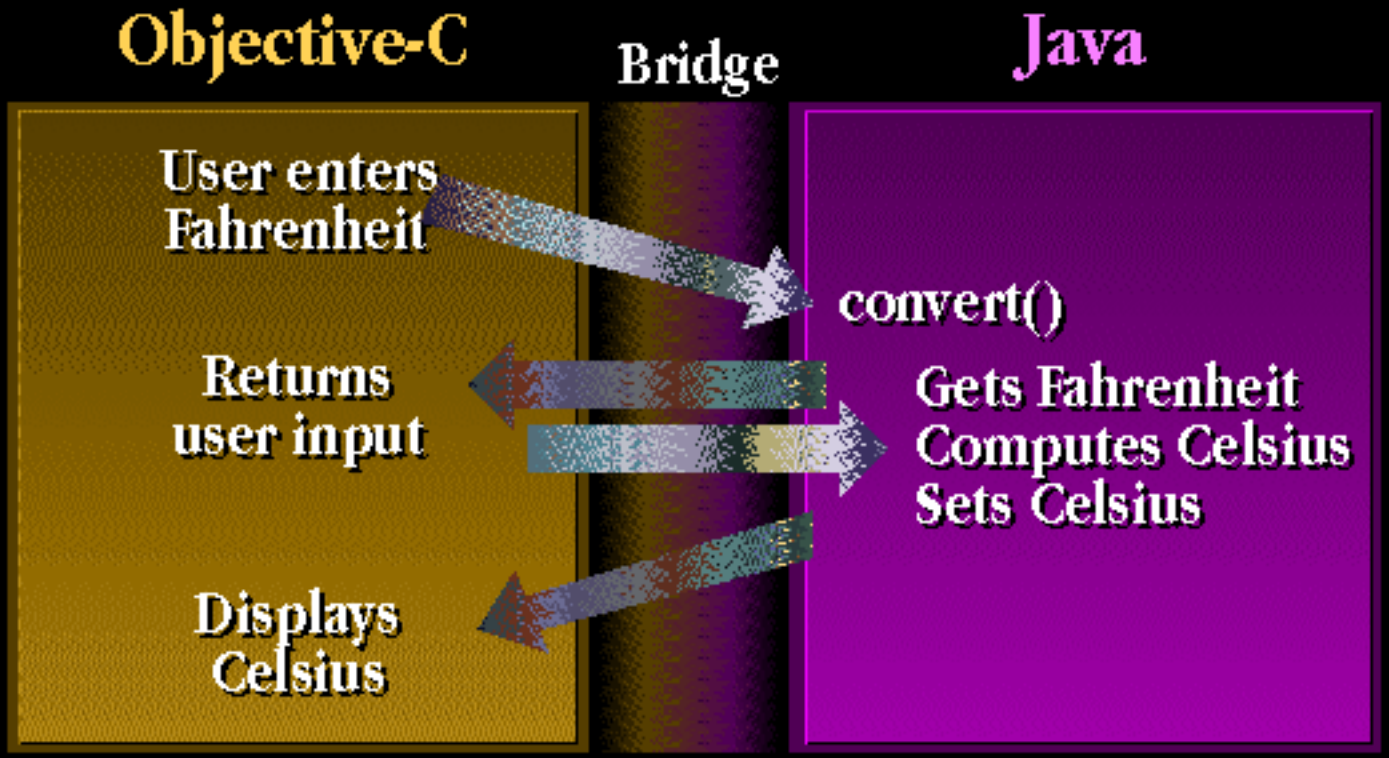
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Demo

Thank You and Good Night

More Take Home Points

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Thank You and Good Night

More Take Home Points

- Apple will provide complete JDK
- Access Yellow Frameworks through Objective-C or Java
- Choose
  - JDK platform
  - Yellow Frameworks
  - Integrate best technologies of each to produce best applications


Q&A


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