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Open Software Development  
in the Real World  
for Internet Developer Group 6/17/2003

W. Jolitz  
President  
Valux

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## Real World means Real Issues

- Obstacles
- Control
- Clarity
- History





## Obstacles

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- Mission
  - ◆ What's the point
- Politics
  - ◆ Groups & Agendas
- Liabilities
  - ◆ Patent, Copyright & Trade Secret
  - ◆ Indirect
- Financial
  - ◆ Ongoing
  - ◆ Growth

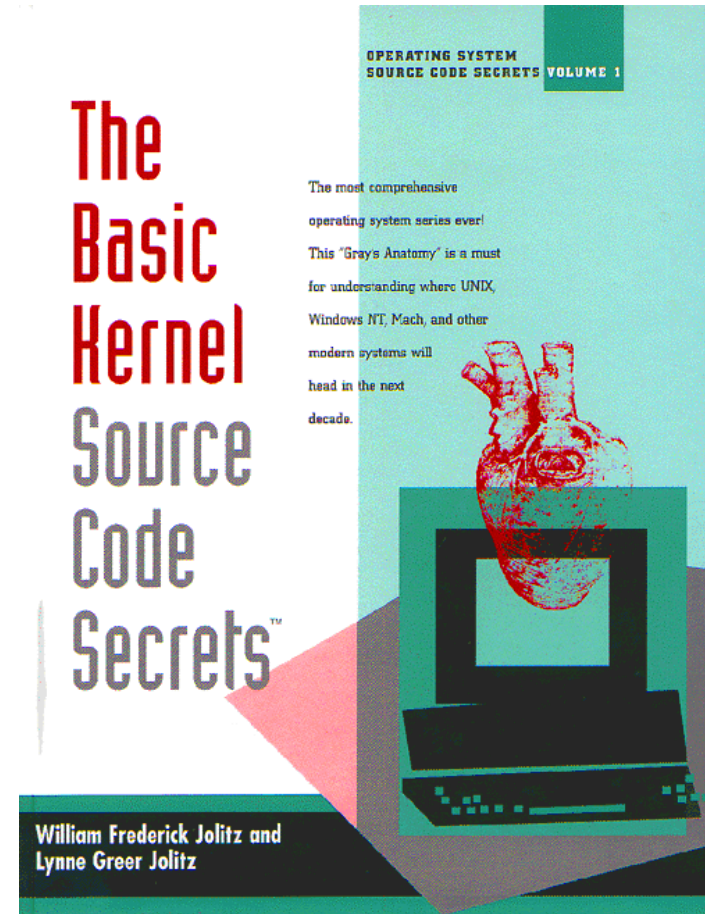


Boston Globe 6/16/2003



# Control

- Loosely Coupled
  - ◆ No process
  - ◆ Frequent releases
  - ◆ Maximum speed
  - ◆ Minimum control
- Tightly Coupled
  - ◆ Grid-locked with process
  - ◆ Major schisms
  - ◆ Fewer releases
  - ◆ Maximum control
  - ◆ Minimum speed





# Clarity

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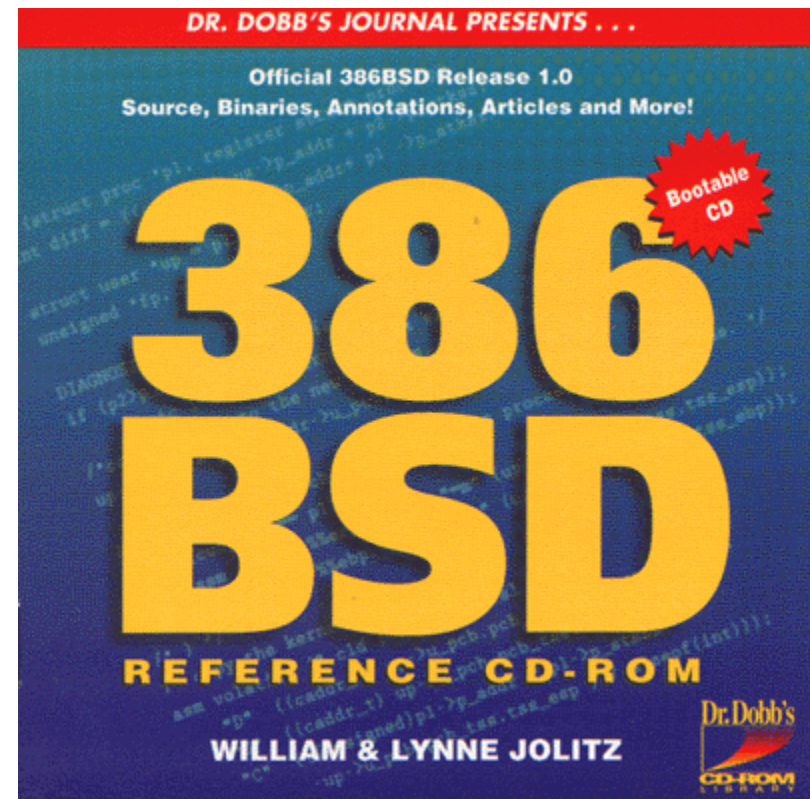
- Audience?
    - ◆ Average person
    - ◆ Enthusiast
    - ◆ Developer
    - ◆ PHD candidate
  - Goals?
    - ◆ Commercial
    - ◆ Research
    - ◆ Human factors
    - ◆ Reductionism
  - A sense of the future
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## History

- Why we were where we've been ...
  - ◆ Successes / failures
  - ◆ Prior agendas
- Why decisions were made the way they were ...
  - ◆ Expedience
  - ◆ Incremental step
- Decides new direction
- Longitudinal effects





# University of California OS History

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- BTSS - 60' - 70's
    - ◆ Butler Lampson et al
  - 2BSD - 70's - 80's
    - ◆ Jolitz, Kridle, Karels, Horton, ...
  - 4BSD - 80's - 90's
    - ◆ Joy, Leffler, Mcusick, Karels, ...
  - NET2/386BSD - 90's - ...
    - ◆ Mcusick, Karels, Bostic, Jolitz, ...
  - 4.4BSD/FREEBSD/NETBSD/BSDI/...
    - ◆ Mcusick, Bostic, Karels, ...
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## 386BSD - Early years

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- Begun in 1989
    - ◆ Original goal - move BSD to 386
    - ◆ "386BSD: A Modest Proposal"
    - ◆ Done at & in Berkeley offices
  - Used community development model
    - ◆ Driver and machine-dependant code
    - ◆ Model for following BSD open involvement
  - Documented in DDJ
    - ◆ An active account as it happened
    - ◆ Vetted code, strategy and direction
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## Early Years - Code Review Process

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- First tier - obvious
    - ◆ Comments, filenames, code structure
  - Second tier - algorithms
    - ◆ Classification
    - ◆ Match with known targets
  - Third tier - heritage
    - ◆ Developer and other works
    - ◆ Progression
  - Fourth tier - hidden aspects
    - ◆ Dependency on similar protected objects
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## 386BSD Prior to NET/2 Release

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- Match against protected code database
    - ◆ Earliest Bell Labs to latest USL
    - ◆ Other systems components besides Unix
  - ... but preserved obsolete design components
    - ◆ C-lists, B-map, cdevsw/bdevsw et al.
    - ◆ Dense memory allocation - break()
  - Later these became important
    - ◆ Where does the boundary end?
    - ◆ Are these Unix "inventions"?
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## 386BSD - Post NET2

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- Release 0.0 and 0.1 - Deliver on Promise
    - ◆ Basic functionality without new issues
    - ◆ Innovate stopgap mechanisms as needed
    - ◆ Dependant on Net/2 entirely for rest
    - ◆ Regulatory issues addressed by removal
  - Release 1.0 - Address Lingering Issues
    - ◆ Implement the Berkeley Architectural Review
    - ◆ Innovate active kernel object model
    - ◆ Reduce the number of redundant interfaces
  - Release 2.0 - Modular, Dynamic Kernel
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## 386BSD in the Present

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```
Tue Jun 10 17:07:00 GMT 2003
swapon: /dev/wd0b: device not configured
Automatic reboot in progress...
/dev/rwd0a: 5122 files, 92341 used, 97593 free (93 frags, 24375 blocks, 0.0% fra
gmentation)
starting network
add host 386bsd: gateway localhost
starting system logger.
checking for core dump...
preserving editor files
clearing /tmp
standard daemons: update cron.
starting network daemons: printer nfsiod sendmail inetd.
starting local daemons:.
Tue Jun 10 17:07:07 GMT 2003

386BSD (386bsd) (console)

login: bill
Password:
386BSD Release 1.0 by William and Lynne Jolitz.
Copyright (c) 1989-1994 William F. Jolitz. All Rights Reserved.
386BSD 1.0.220 10/03/96 20:39

386bsd 1 %
```



## 386BSD - Beyond State of the Art

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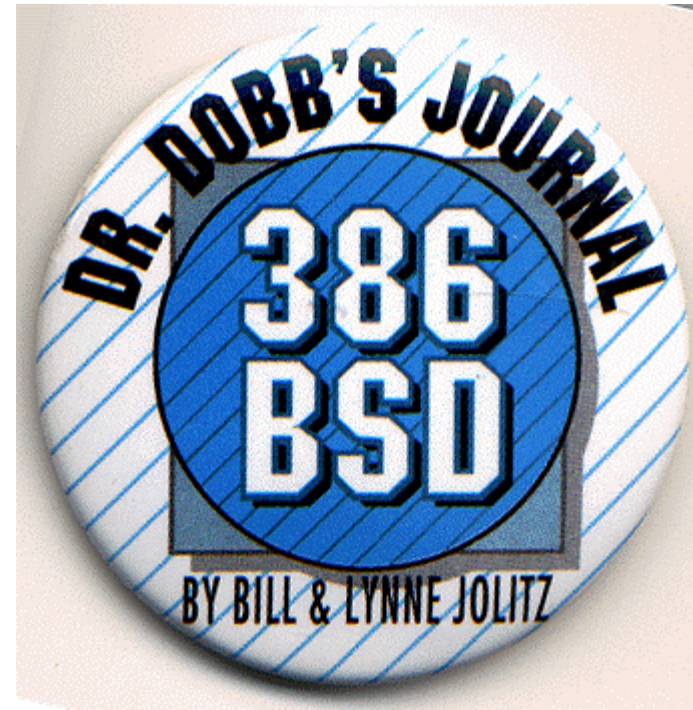
- Modular - Compartmentalized
    - ◆ Components live, changed in real-time
    - ◆ Interfaces independently managed
  - Dynamic - Always current
    - ◆ Web based mechanism
    - ◆ Roll forward/back versions on fault
    - ◆ Fault injection, isolation and verification
  - One version yet many "flavors"
    - ◆ Off multi-homed web site(s)
    - ◆ Choice of many different, interoperable items
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## What's NOT important

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- Licensing - GPL vs Berkeley
  - ◆ Non-issue
- Rights enforcement
  - ◆ Up to rights holder
- Unfounded litigation
  - ◆ Cost of doing anything
- Open Source Business Model
  - ◆ Necessary but unrelated





# What is important

## Leadership

- ◆ Must set a direction
- ◆ “Not a punching bag for ideas”

## Accountability

- ◆ Admitting mistakes
- ◆ Recovery

## Clear and obvious intent

- ◆ Unclear? Pay attorneys
- ◆ Clear? more developers
- ◆ Chosen by your actions





## Necessary Components to Present Open Source Issues

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- No serious IPR process
    - ◆ Qualified review
    - ◆ Issue list and mitigation
  - No independent authority insuring process
    - ◆ BSD had Berkeley
    - ◆ 386BSD had DDJ and publishers
  - Napster - no trust anymore
    - ◆ Rebel status now just "Anti-professionalism"
    - ◆ Tech lost its judicial advocates
    - ◆ "Small time hood" attitude unattractive
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## So when's it all going to end?

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- Its another “bubble burst” ... need:
  - Dedicated, Disciplined Professionalism
    - ◆ No “over the fence” code - a joke!
    - ◆ Clearly documented work from start
    - ◆ Rapid, responsive issue mitigation
  - History of Trust and Reputation
    - ◆ Founded on institutional roots
    - ◆ Justification - papers, articles and books
    - ◆ Recognize “open-ness” requires defense
    - ◆ Proactive - not just playing pathetic
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## What are we in store for?

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### ■ More Litigation

- ◆ Have not seen the “big guns” yet
- ◆ Expect over-reaching claims

### ■ Indeterminacy

- ◆ No clear time of resolution

### ■ Uneven treatment

- ◆ Selective targetting

### ■ New Development Base

- ◆ “Cheap fix” - do it from scratch with “clean team”
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Thanks for being a great audience.



[william@valux.com](mailto:william@valux.com)  
<http://valux.com/wj>

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