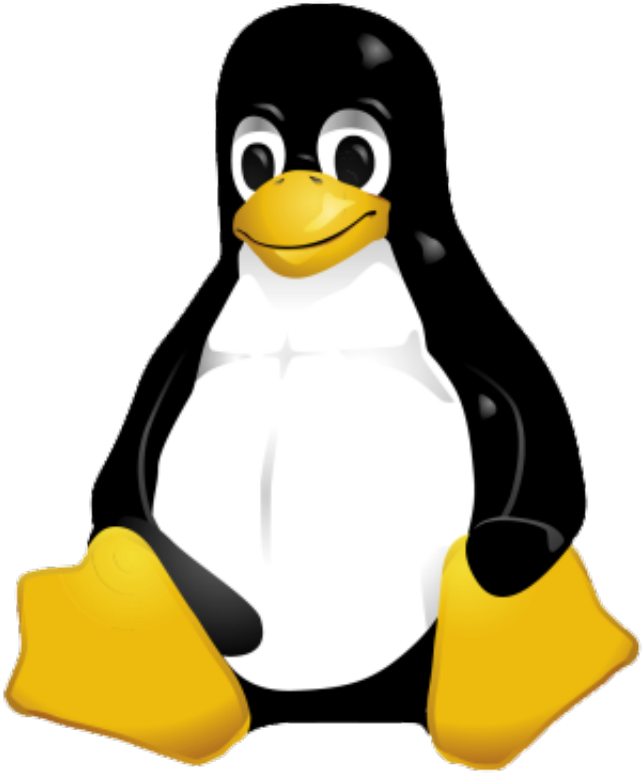
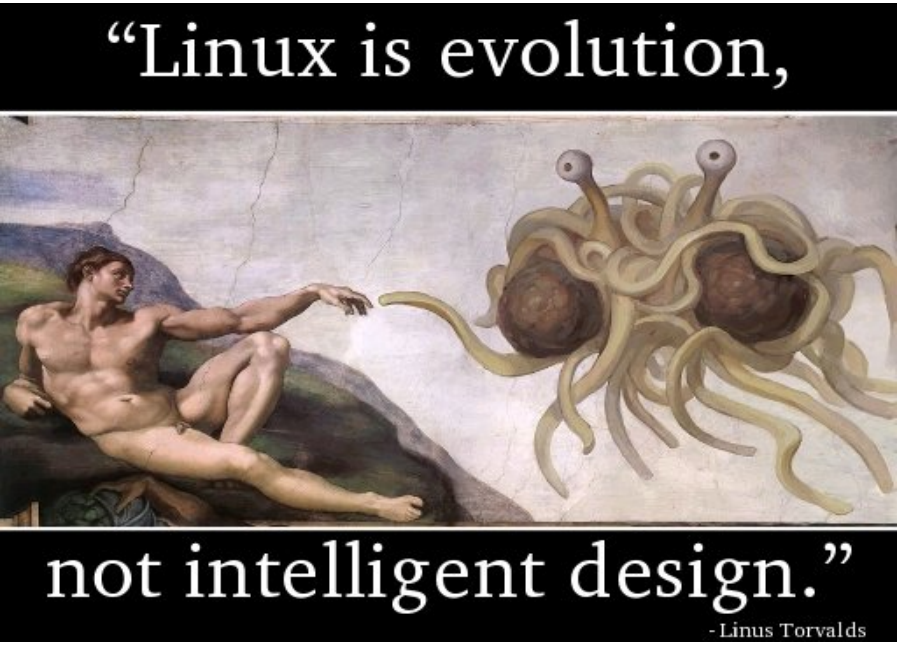
Evolution and Diversity

The meaning of Freedom and Openness In Linux

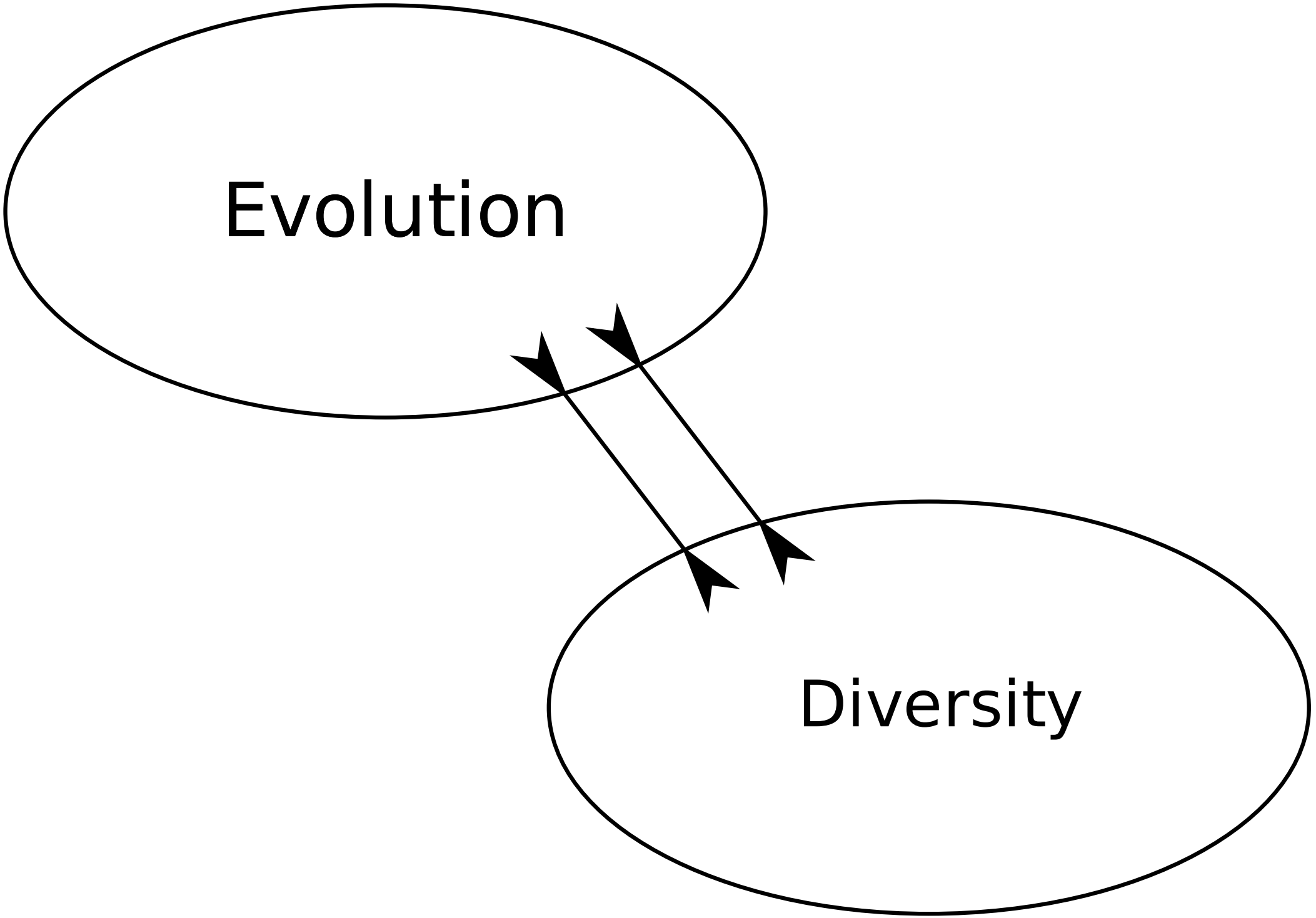
James Bottomley
SteelEye Technology

Evolution

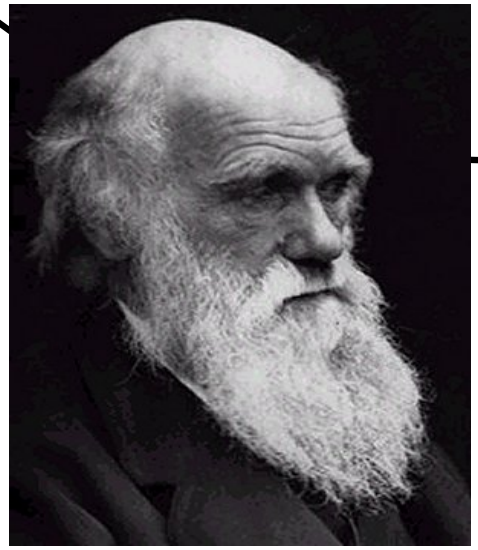




Diversity

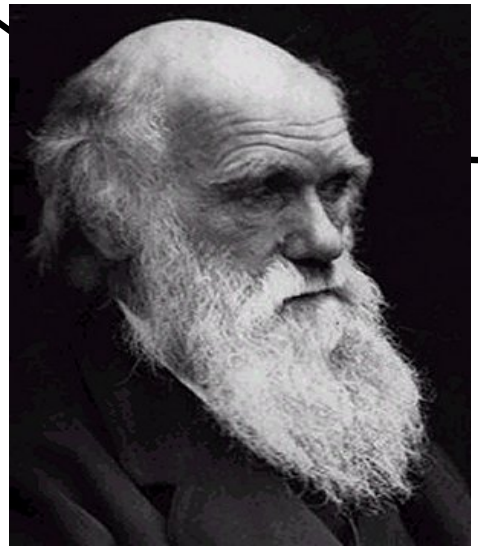

Evolution
Diversity

Evolution



Diversity

Evolution



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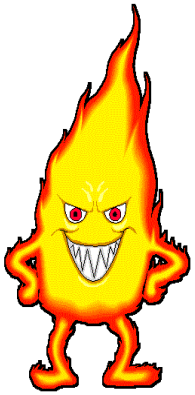
Diversity

HMS Beagle

Evolution



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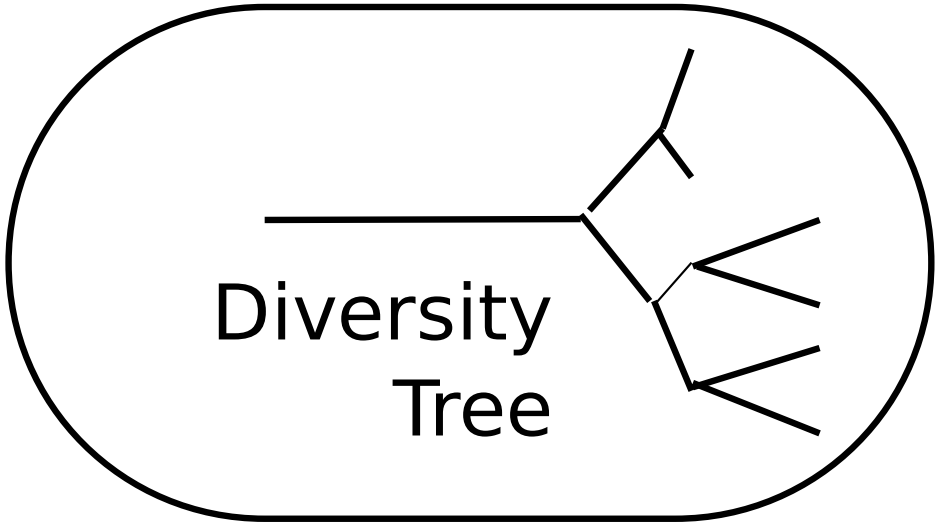

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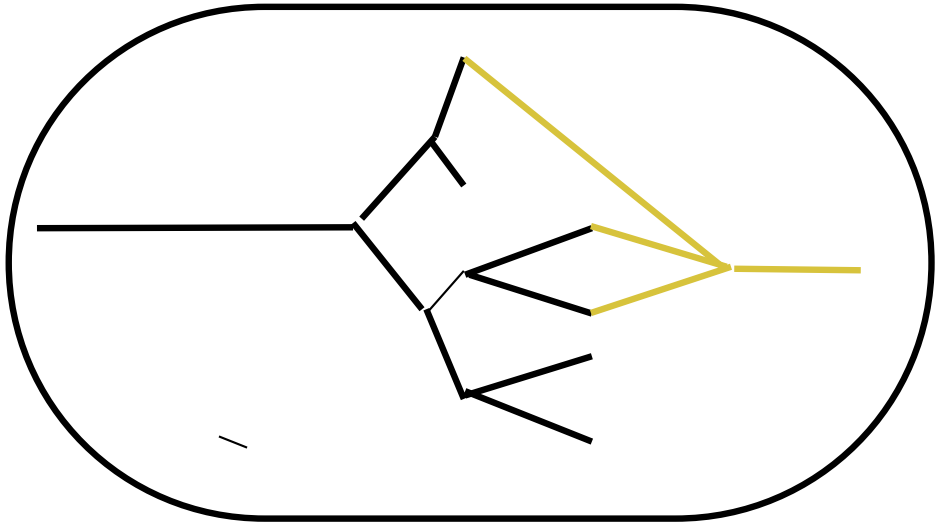
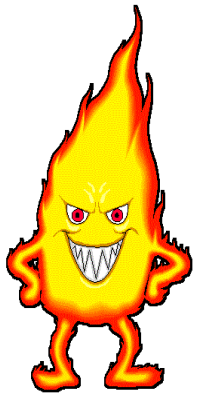


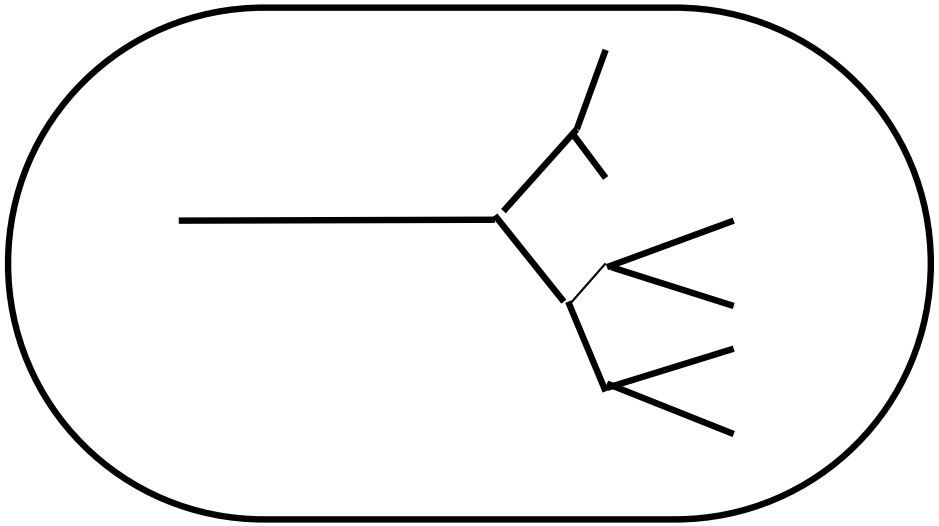
Perfection

Evolution



- Adversarial Process
- Patch Reviews
- LKML
- Testing
- Taste ...

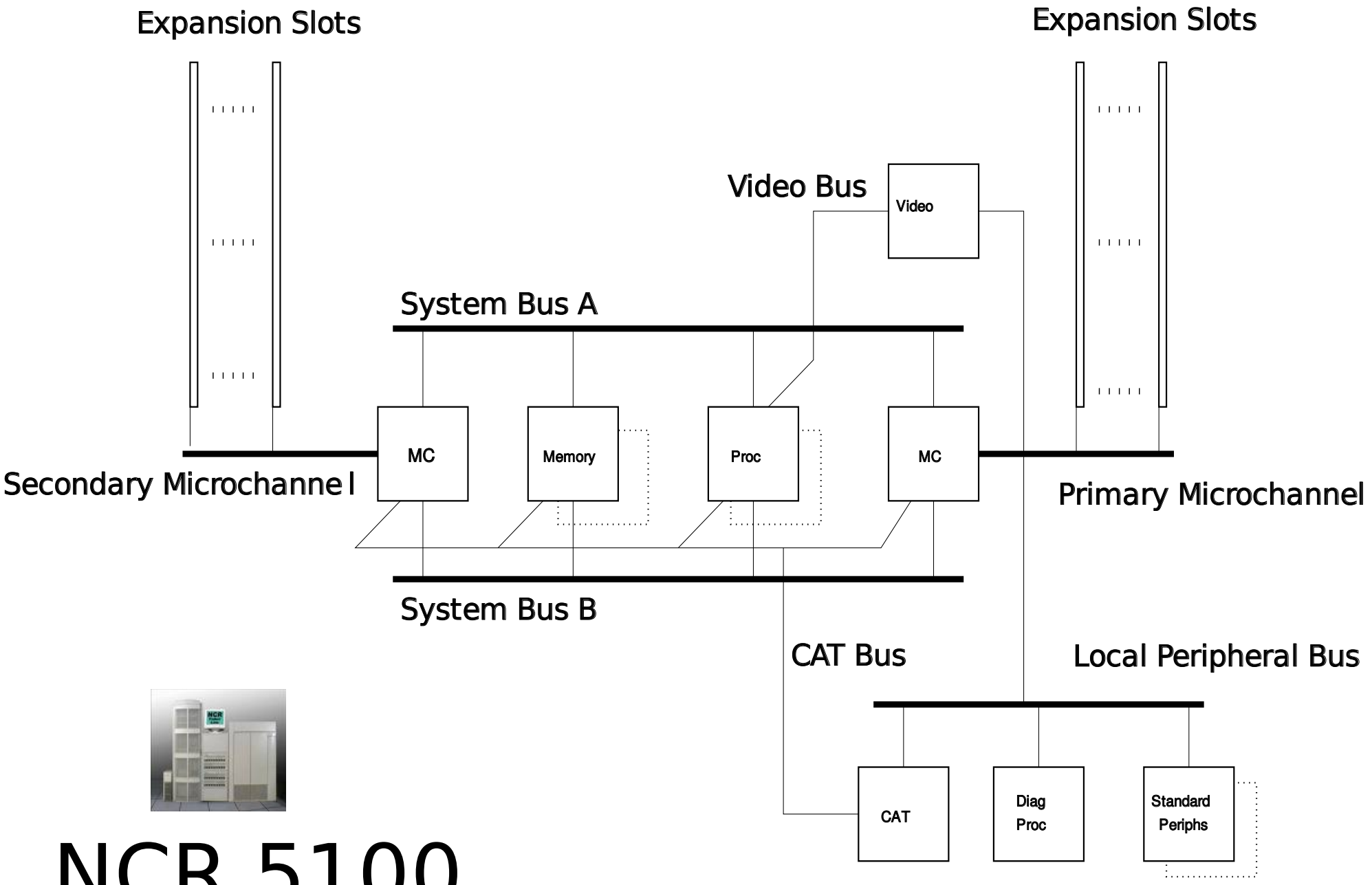
Diversity



- Patch Input
- Feature Requirements
- User Needs
- General Innovations
- Fun stuff ...

Voyager

NCR 5100


Expansion Slots
Expansion Slots
Video Bus
Video
System Bus A
MC
Memory
Proc
MC
Secondary Microchannel
Primary Microchannel
System Bus B
CAT Bus
Local Peripheral Bus
CAT
Diag
Proc
Standard
Periphs

NCR 5100

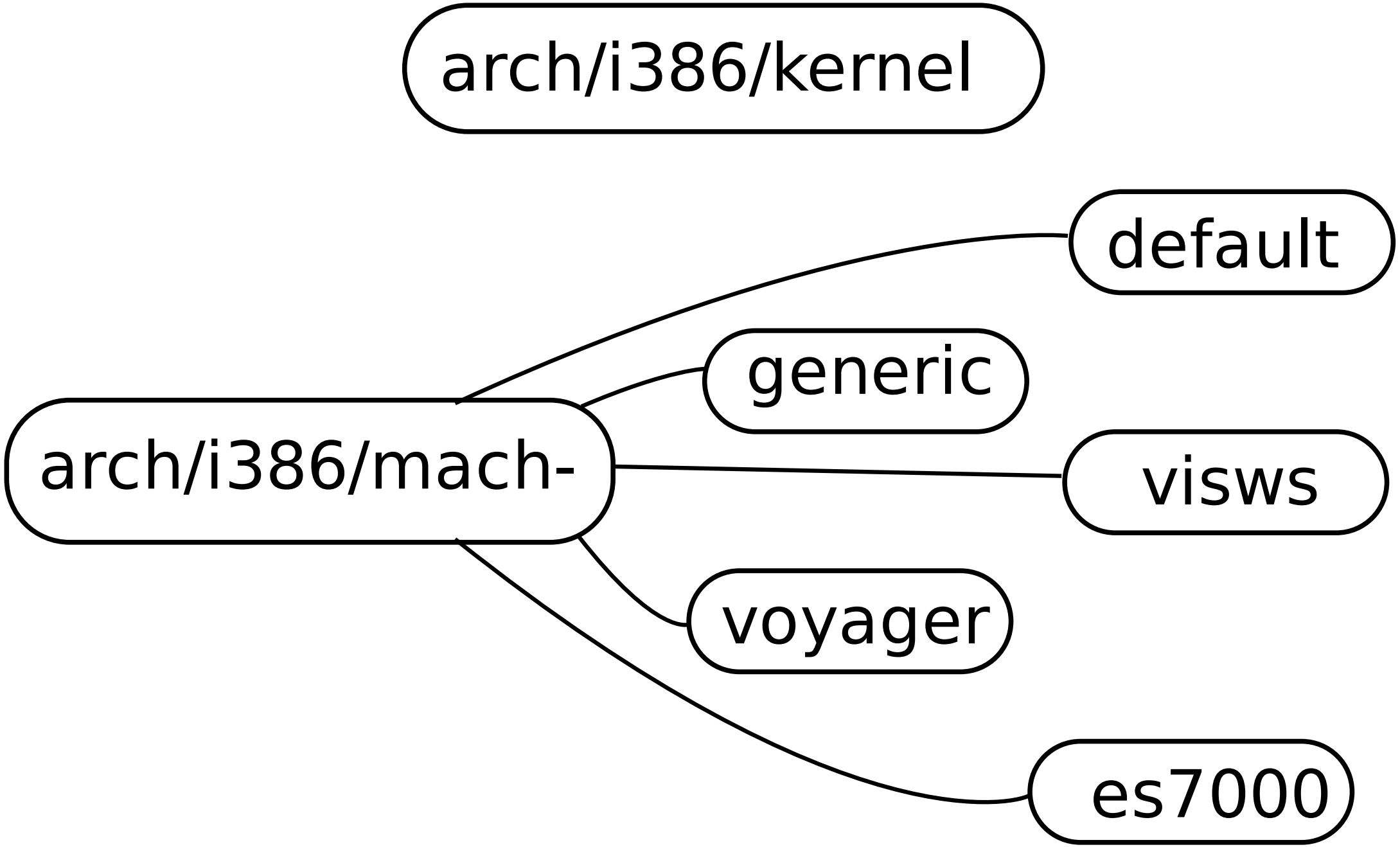
- Last Production 2000
- 8 CPU card slots
  - 4 CPUs per slot
- Dual Microchannel Bus
- VIC/QIC based IRQ
  - (not APIC based)

How did Voyager get included?

Monolithic 2.4 patch

2.4.19:
28 files changed
4609 insertions(+)
74 deletions(-)

Subarchitectures



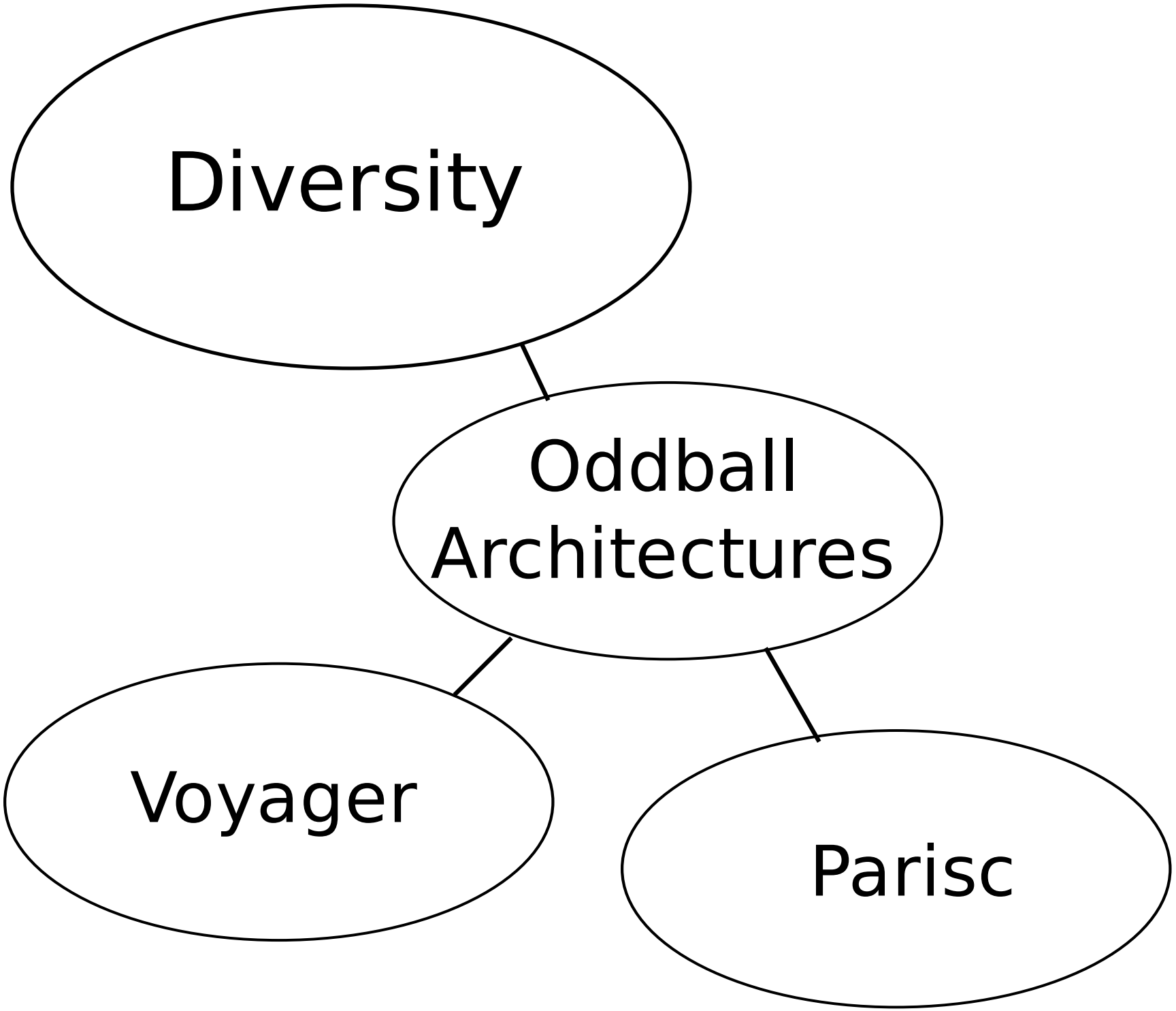
How did Voyager get included?

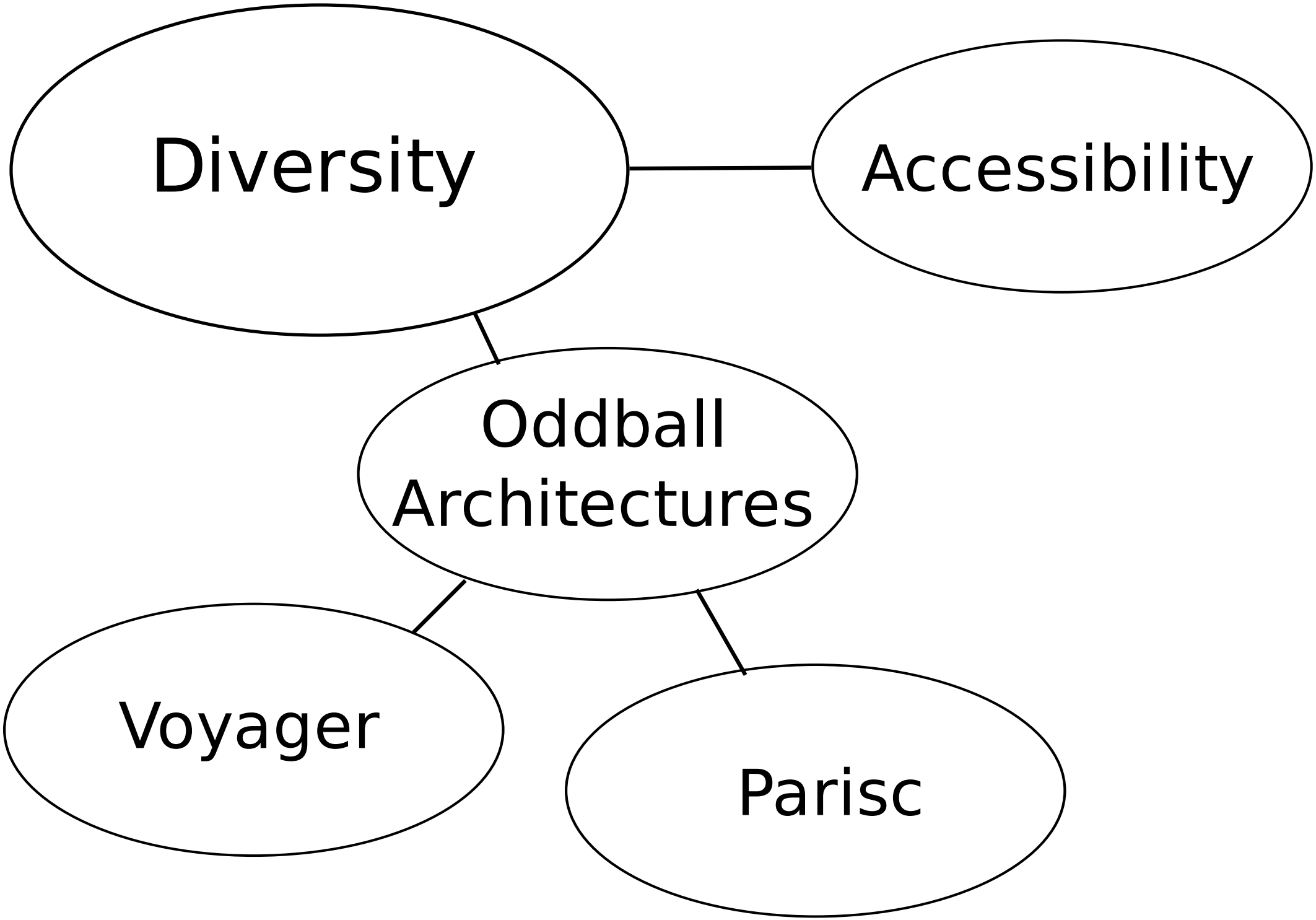
Subarchitecture 2.5 pach

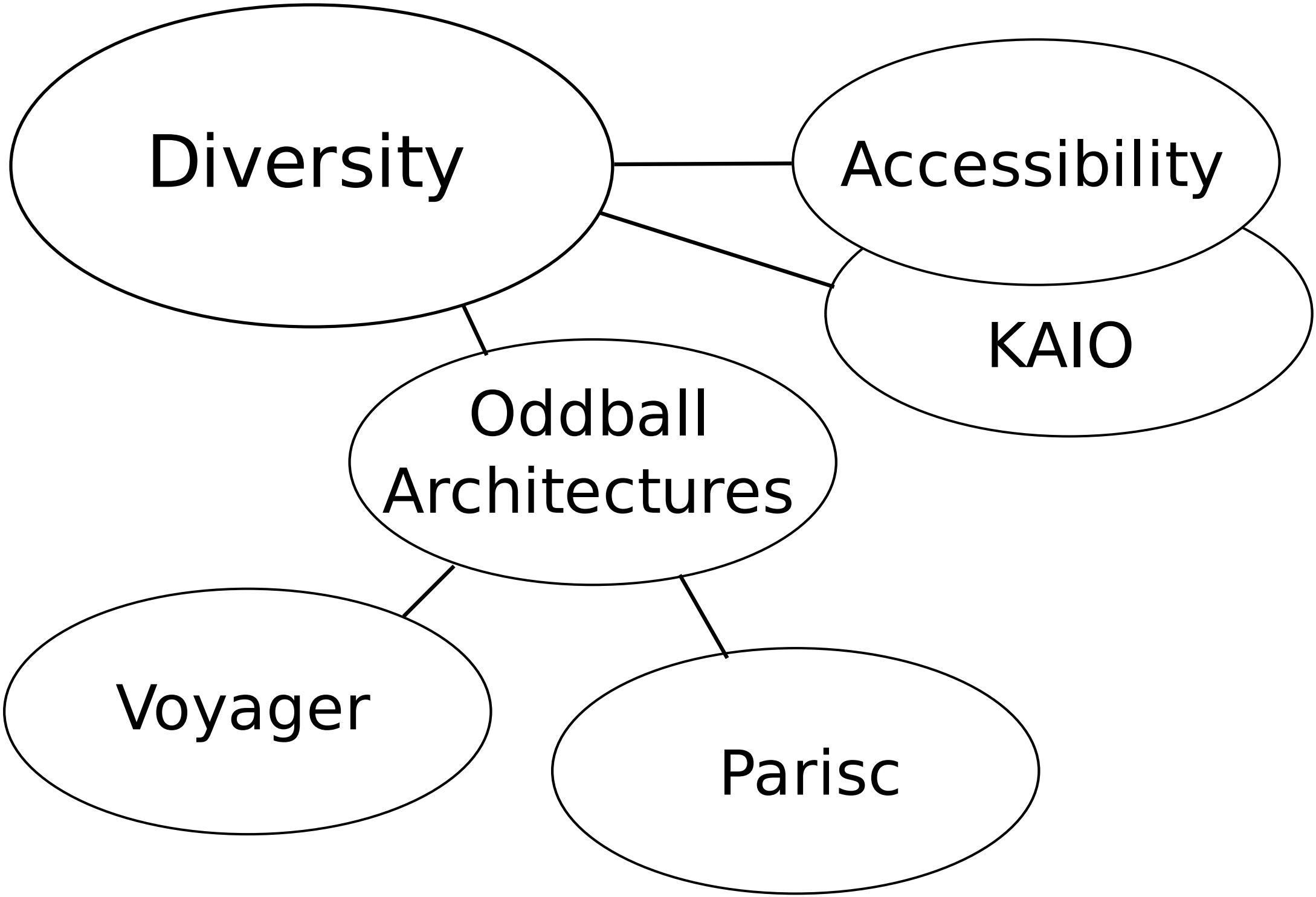
2.5.33:

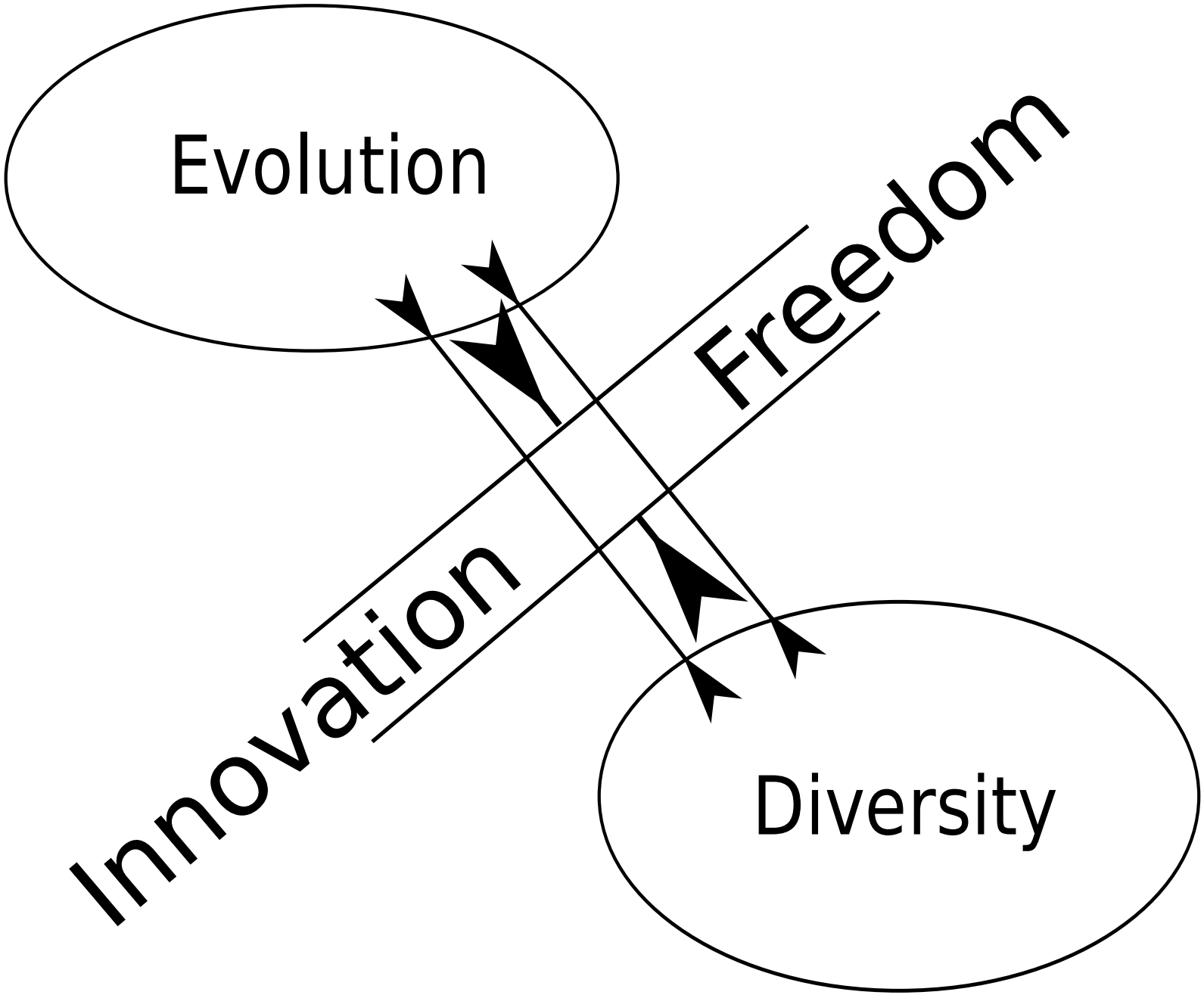
subarch:
43 files changed
2019 insertions(+)
1405 deletions(-)

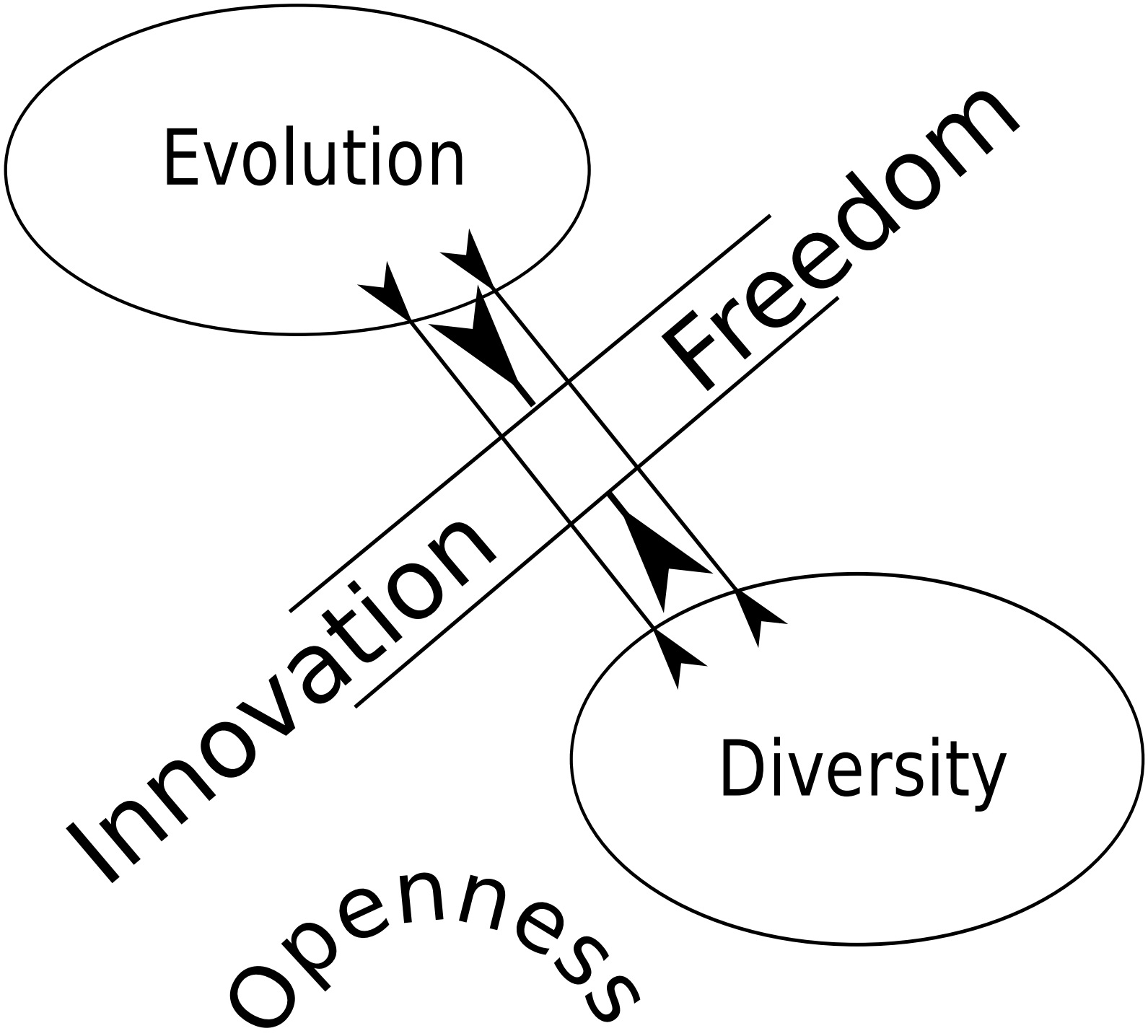
voyager:
29 files changed
4753 insertions(+)


Diversity
Oddball Architectures
Voyager
Parisc

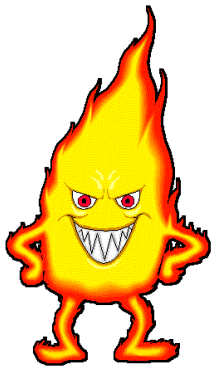

Diversity
Accessibility
Oddball Architectures
Voyager
Parisc


Diversity
Accessibility
KAIO
Oddball
Architectures
Voyager
Parisc


Evolution
Freedom
Innovation
Diversity

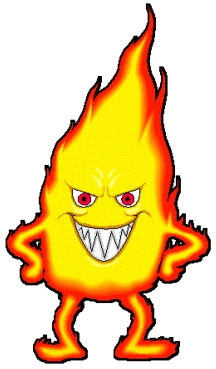

Evolution
Freedom
Innovation
Diversity
Openness

Evolutionary Pressures



- Stabilisation
  - But keep time constant
  - Therefore need more testers
- Testing
  - Anybody can do it
  - Users have more diverse hardware

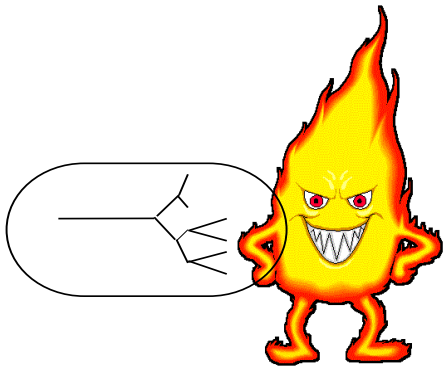
Evolutionary Pressures



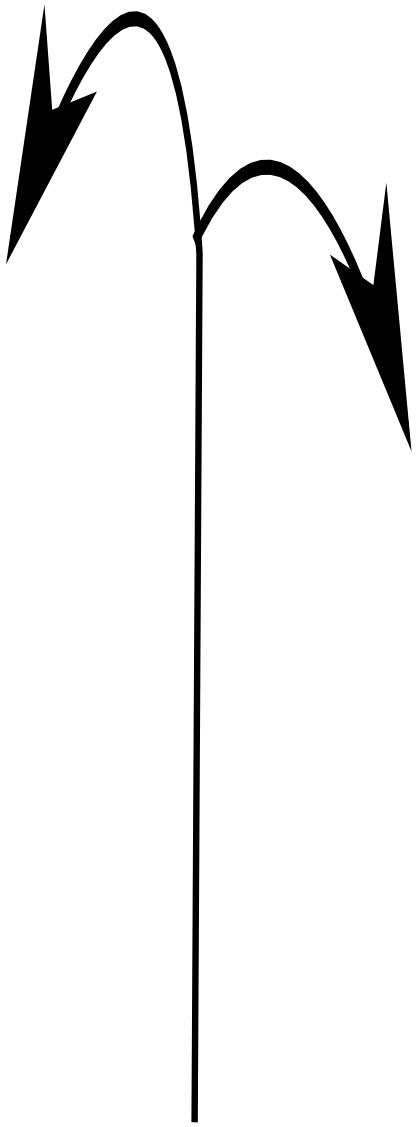
Maintainers

- Guardians of Evolution
- Also encouragers of Innovation

Diversity as Evolution



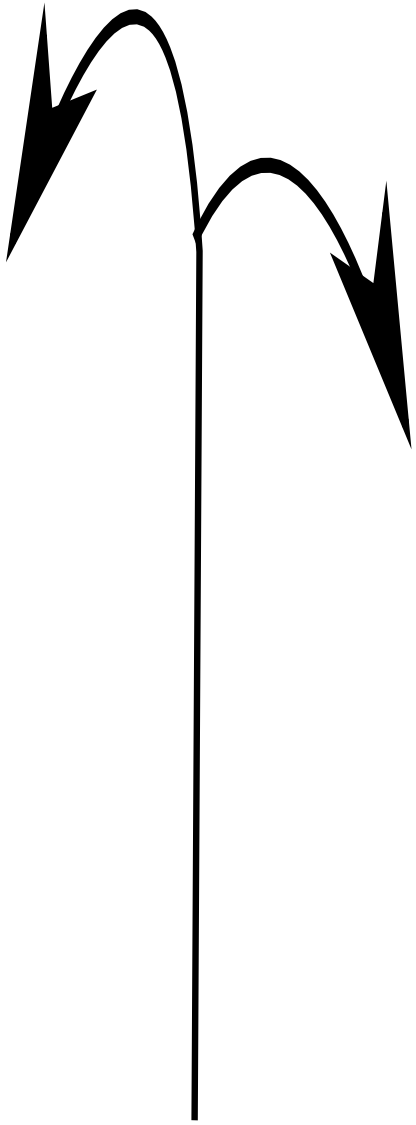
Forking

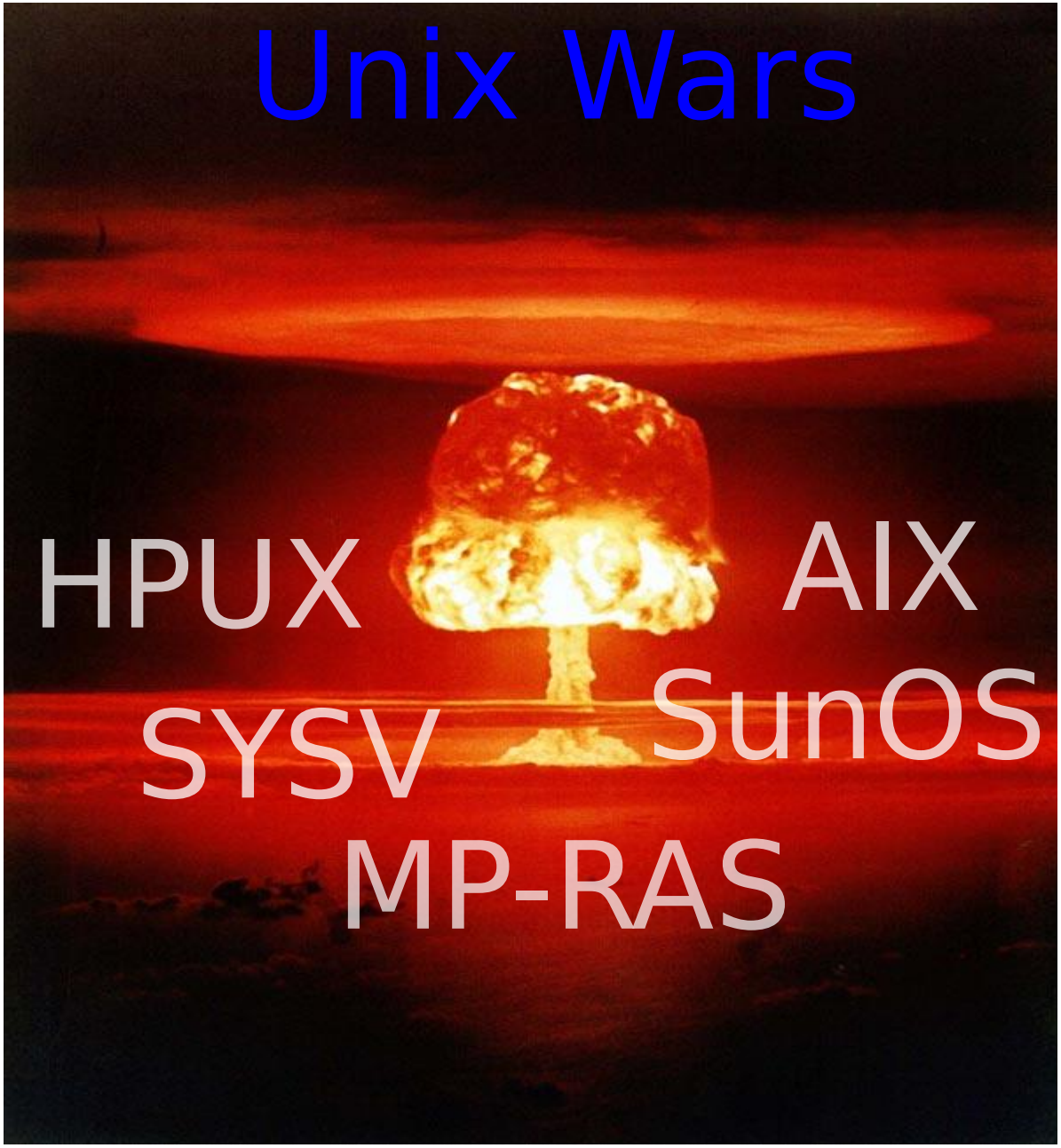


"They like to paint the battle as Sun vs. the community, and it's not. Companies compete, communities simply fracture."

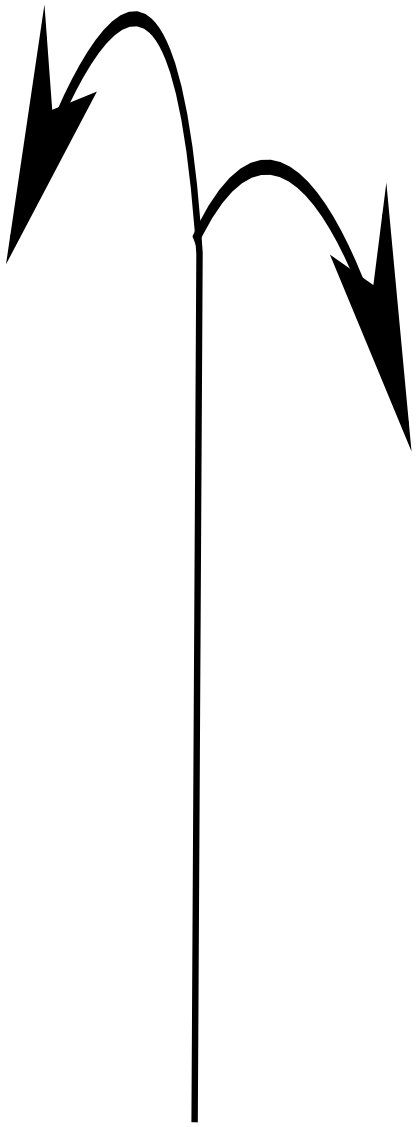
- Jonathan Schwartz

Forking



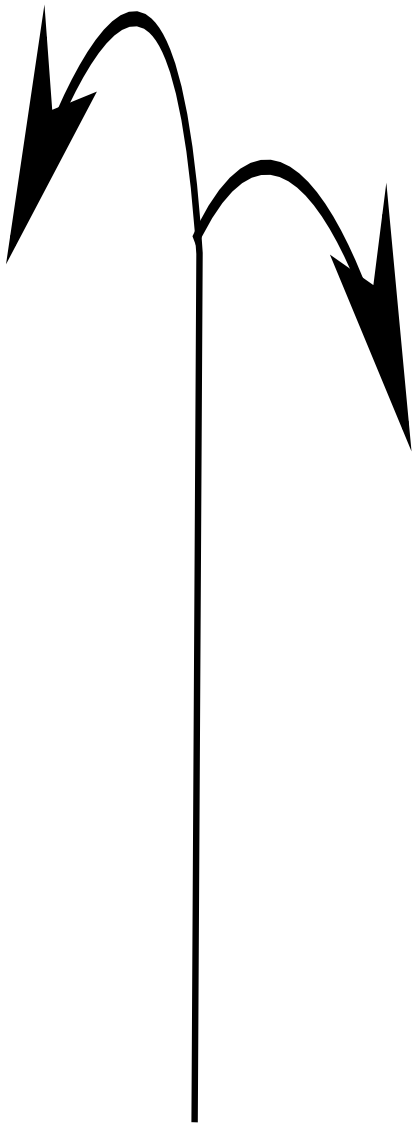


Forking



Forking Drives Diversity
Forking is necessary
for innovation

Forking

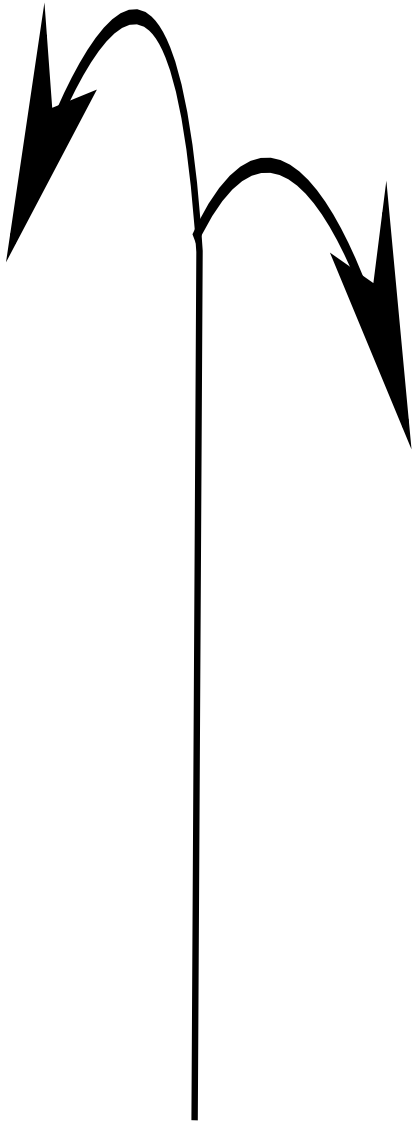


Forking Drives Diversity

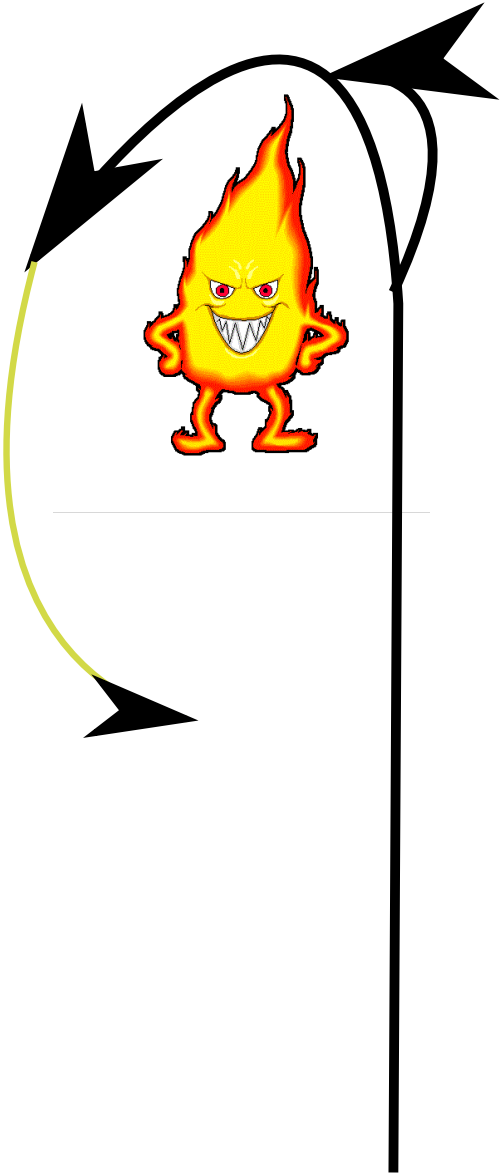
Forking is necessary
for innovation

No project is truly open
source unless it forks

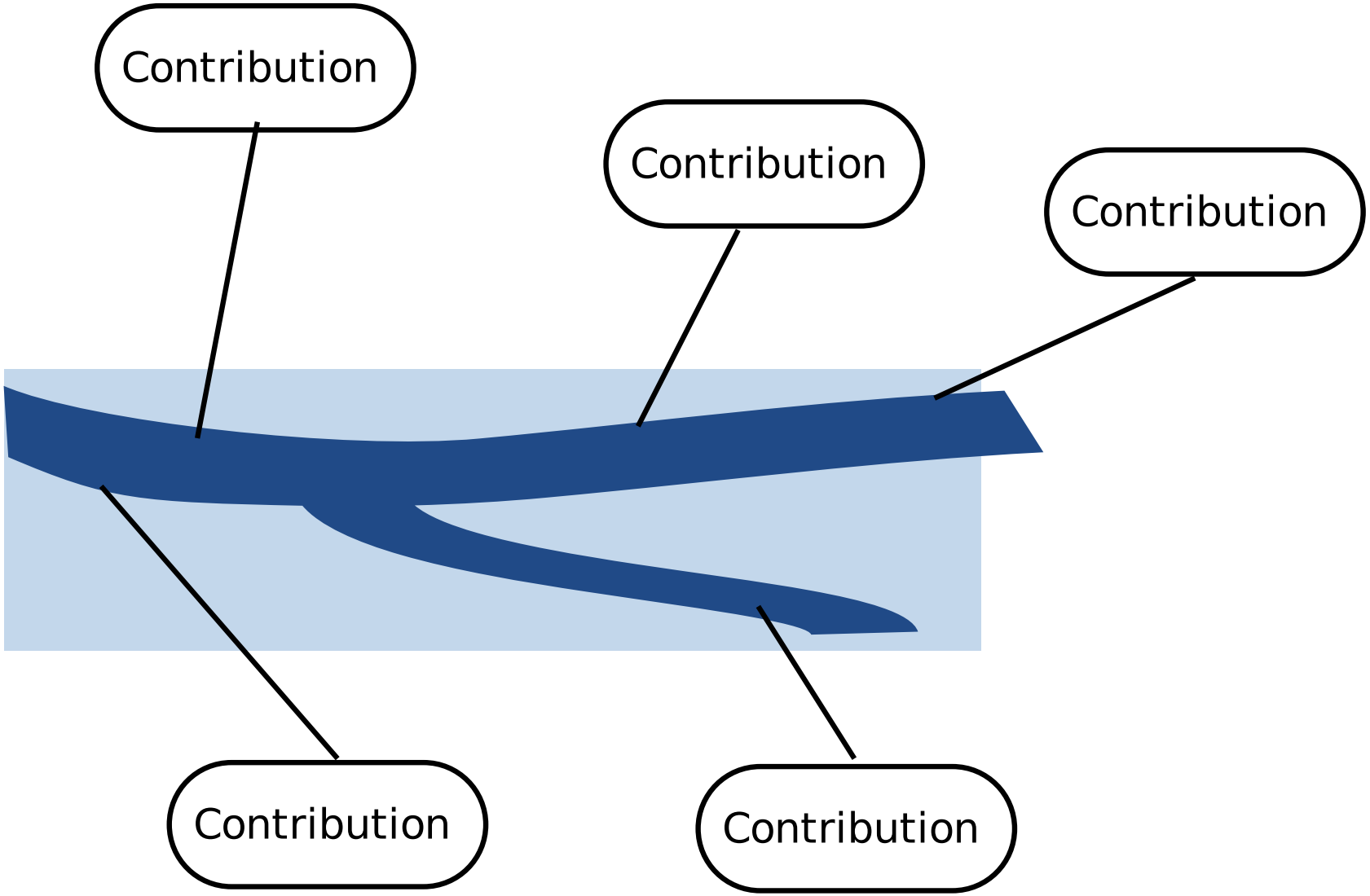
Forking



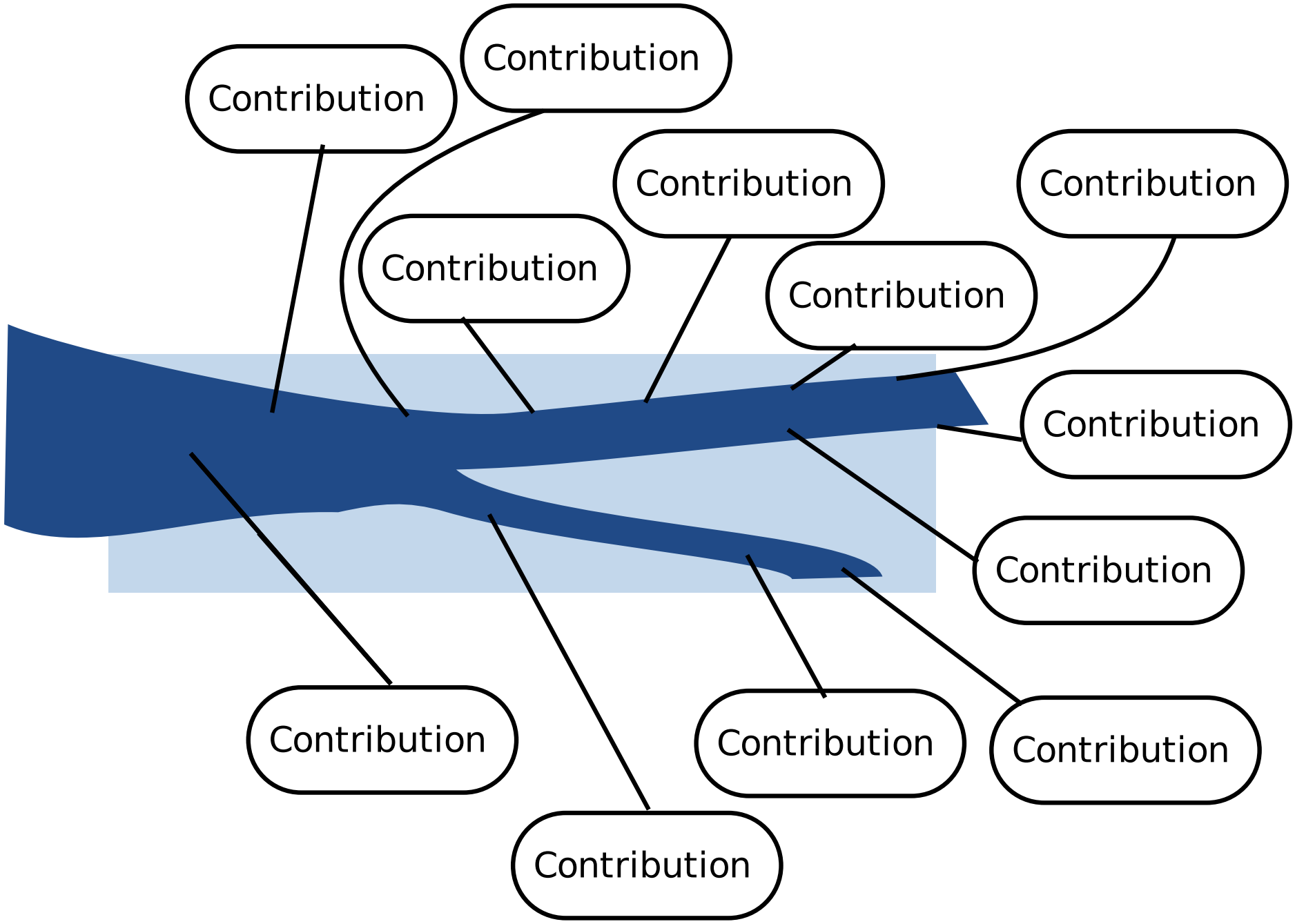
Openness
and
Evolution
forces
forks
to merge



Innovation Stream



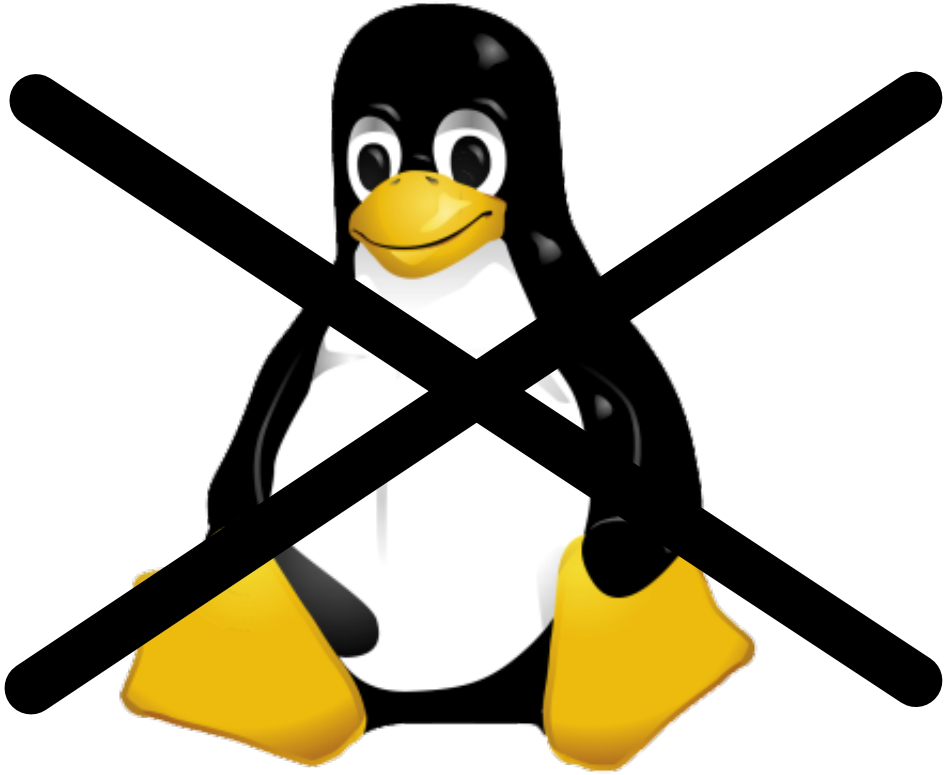
Innovation Stream



Innovation Stream

- Make it Broader and Deeper
- Get contributions from all parts of the globe

Closed Source Drivers



Closed Source Drivers

Linux, It's all about the Code, Stupid.

Closed Source Drivers

Encouraging good people to do the right thing

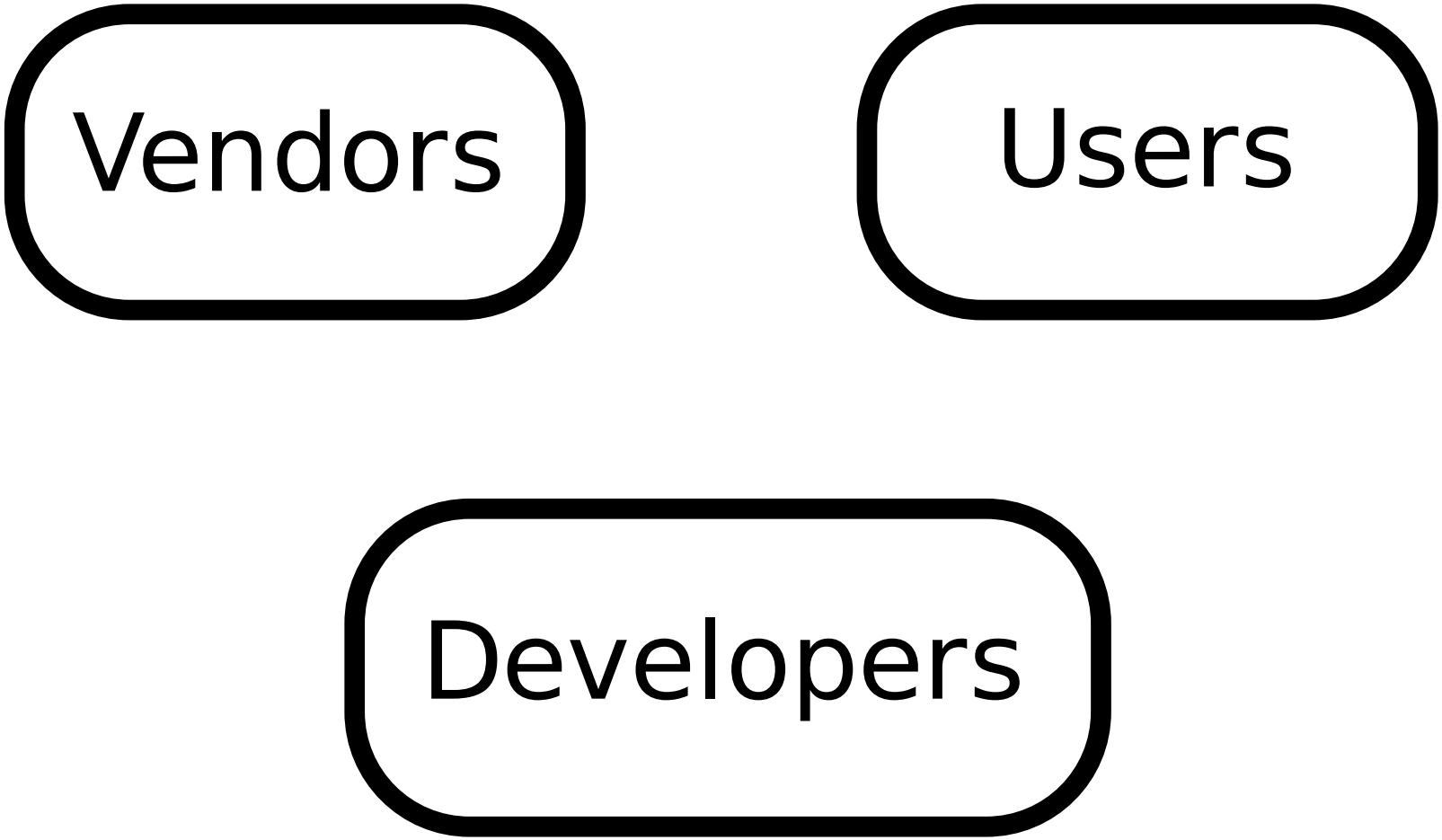
Closed Source Drivers

Encouraging good people to do the right thing

NDA program

Encouraging their lawyers and managers to do the right thing

Building Partnerships



Enhancing Innovation

THE LINUX FOUNDATION

Travel

Func

Conclusions

Evolution/Diversity tension produces Freedom

Forking is Good

We're not there yet

Conclusions

But we are getting closer

Final Plea

Final Plea

If you see a voyager user
Tell them to 'phone home