



Service: The Promise of Free and Open Source Software “Back to the Future”

Jon “maddog” Hall
Linux International
maddog@li.org

Trademarks



- Linux is a trademark of Linus Torvalds
- Unix is a trademark of X/Open
- Non-service is a trademark of proprietary software

Who Am I?



- Long time in Computer Science
 - 1969
 - Unix since 1980
 - Linux since May, 1994
- Many different jobs
- Small companies and large companies
- Customer and Vendor

Who Are You?



- Technical audience of today
- Software Entrepreneur of tomorrow
 - Half engineer
 - Half architect
 - Half technical salesman

Remember



- Free Software is more than Linux
- Free Software is not necessarily gratis
 - Freedom to see source
 - Freedom to change source
 - Freedom to redistribute source changes
- Pay for service, not for software

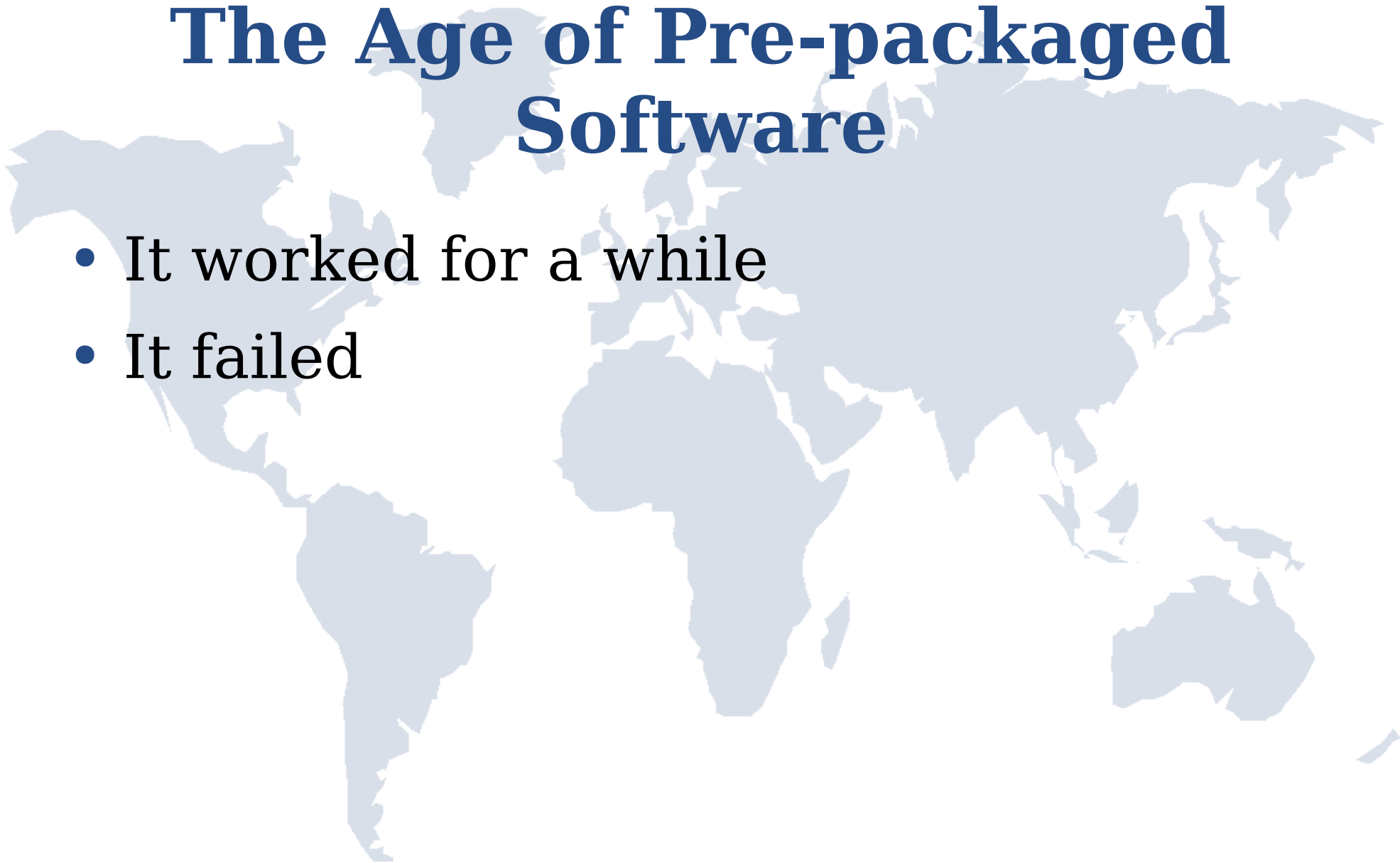
Not “communism”, but “cooperativism”

Open Source Is Not New

- 1943 – 1980 - At one time, ALL software was “Open Source”
 - Hardware large and expensive
 - Communication was hard or non-existent
 - “Shrink wrap” software did not exist
 - Software written on contract basis
 - Does not work?
 - Late?
 - Buggy?
 - Poor Documentation?

1980-1990

The Age of Pre-packaged Software



- It worked for a while
- It failed

What Do People Really Want?



- Service
 - Beam me up
- What do they get?
 - Muzak
- EDS

Most people actually HATE computers

“IT Does Not Scale”

- Proprietary Software companies say that “service does not scale”
 - What they mean is, it is difficult
- Customers experience that proprietary software does not scale
 - Can not get fixes
 - Can not get enhancements

1000 Business People In A Room...



- How many have had a bug in proprietary software? How much did that cost?
 - Lost time
 - Lost effort
- How many have had to change the way they did business? How much did that cost?
 - Retraining
 - Loss of sales
 - Customer dissatisfaction

Software Freedom allows Business Decisions

Why Is This Apparent Now?



- Drop in prices of hardware
 - Brings computers to use of many more diverse cultures than before
 - Amplifies losses for a given company as computers are used for different purposes
- Software prices
 - Have not fallen unilaterally
 - Are still out of range in the third world
 - Non-global pricing structure

Henry Ford



- At first all cars hand built
 - “For repair, send to manufacturer”
- Assembly line
 - Standards
 - Interchangeable parts
- The corner garage
 - Fast, friendly service
 - Cheap, slow service

Linux In Government



- Military
 - Would you trust your weapons.....
- Government
 - Would you trust your email system....
- Not just war
 - Companies bankrupt
 - Companies drop support
 - Balance of trade

A Balance of Trade

Software Freedom means...

- Less money leaves your country for packaged software
- More money can be spent **locally** on tailoring Open Source, which..
 - Creates **local** jobs
 - Who eat **local** food, buy **local** housing, pay **local** taxes
 - Which creates more **local** businesses
 - Who need more tailoring of software
 - Which creates more **local** jobs...

Open Source and Culture

- How many languages are “fiscally sound”?
 - India has 18 official languages, two character sets
 - India has 5000 unofficial languages
- Can you make a computer affordable and usable by the illiterate?
 - What if the software company sees “no profit” in doing that?
 - What if your country is called “India”?

In one way or another, aren't we all “Indian”?

The New Model



- Pull down the basic software
- Use as it exists (shrinkwrap)
- Hire local talent to tailor
 - Changing software
 - Adding new capabilities as needed and afforded

Do Not Be Afraid Of The Word **Service**

- This is not Venezuela
- This is Brain Surgery
- This is like being a lawyer

But in their own economic structure

Robots In New Hampshire

- RWI, Jaffrey, NH
- Robots use 1, 2 or three Linux systems (depending on size) to control them



Supercomputers 1994/95

- NASA
 - Dr. Thomas Sterling
 - Dr. Donald Becker
- Beowulf
 - COTS systems
 - High speed networking



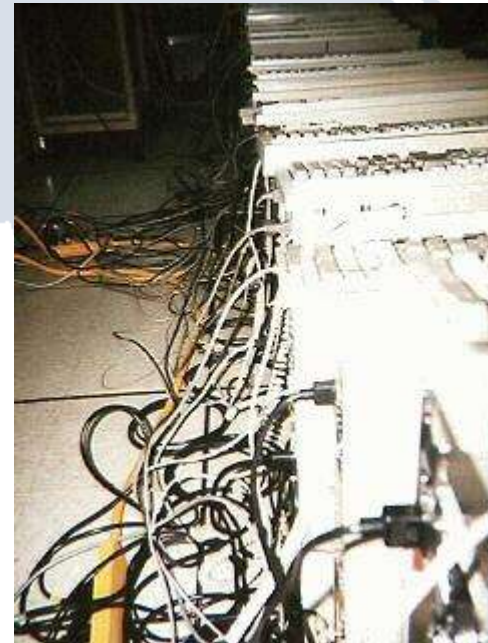
Supercomputers Today

- Beowulf Clusters
 - Thousands of nodes
 - Even more processors
- NUMA machines
- The GRID



...to Workstation Farms...

- Lots of COTS
- Tied together with high-speed networking



Barriers to Entry

In the past hardware was expensive....how expensive is it now...

- ...to hire someone who speaks English?
- ...to purchase one “seat” for a design engineer?
....or 10 seats?
- ...to buy all the software you need to start your business?
- ...to negotiate all the software contracts you need?

“We are waiting for the letter of authorization...”

Rio de Janeiro



- Company of 18 people
- Investigating new products from Rain Forest
- Software needed was breathtakingly expensive
- Duplicated software with PostgreSQL, Perl, GNUplot, grace, ordpack, Apache
- And in Portuguese, and local jobs

St. Petersburg Turbine Test Bed

Software needs

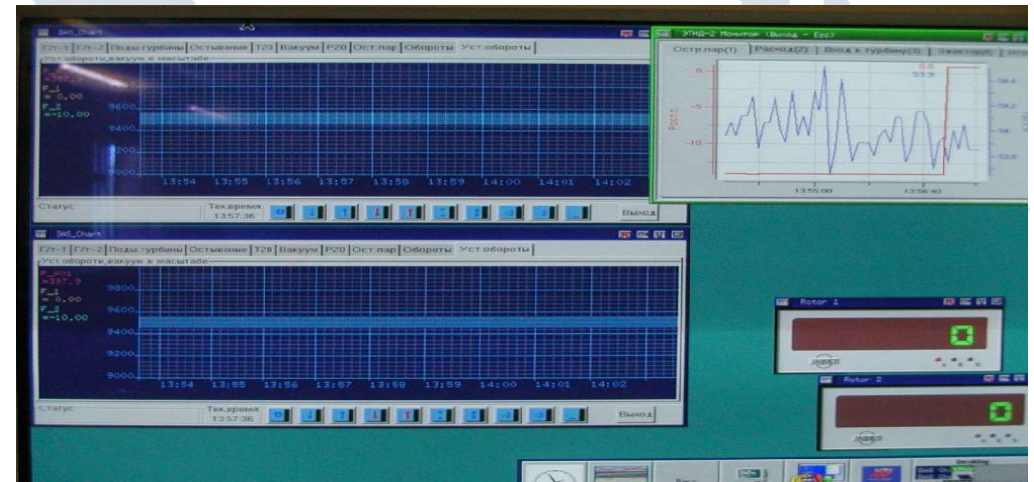
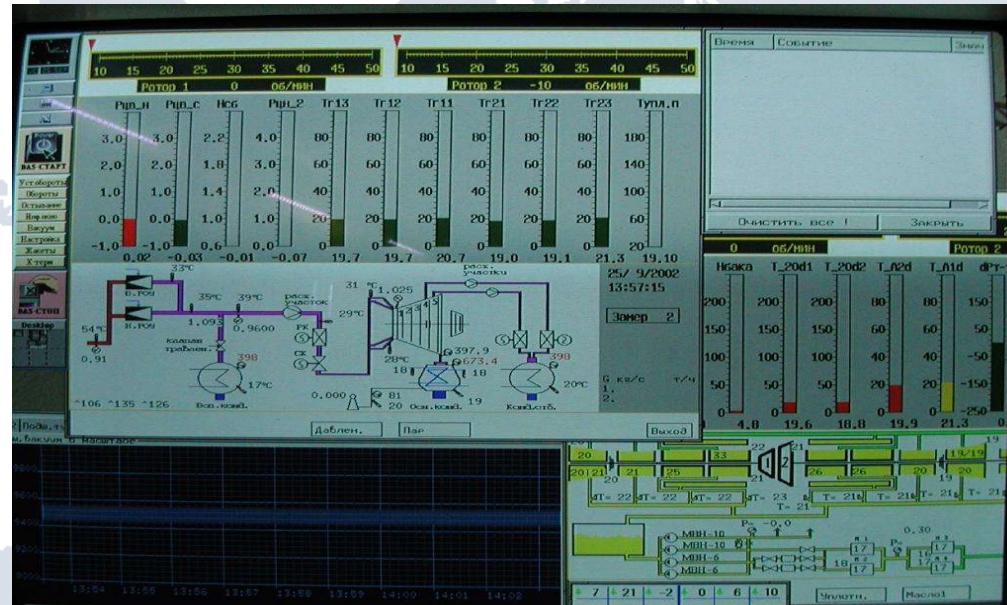
- Low cost
- Flexible



St. Petersburg Turbine Test Bed

Answer:

- Linux
- MySQL
- GNUplot
- Apache
- Tcl/Tk
- Python



Helsinki – June 1997

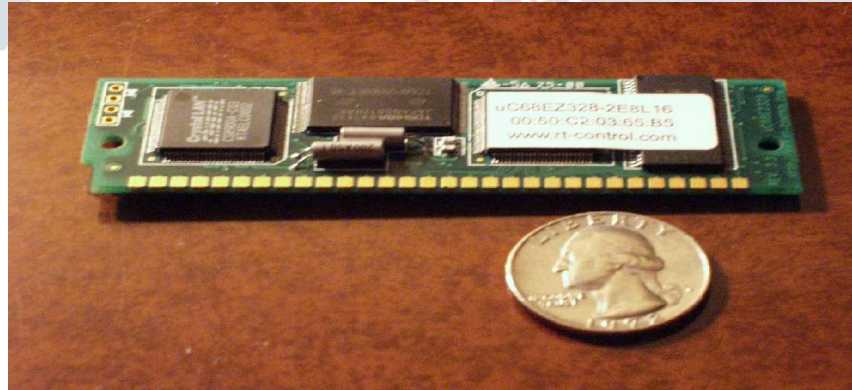
- Kiosks
- Linux Ideal for Embedded
 - Secure
 - Stable
 - Multi-tasking
 - Multi-architecture
 - Royalty-free
- How many kiosks will you need?

How many will your customers need?



...Other Embedded Systems...

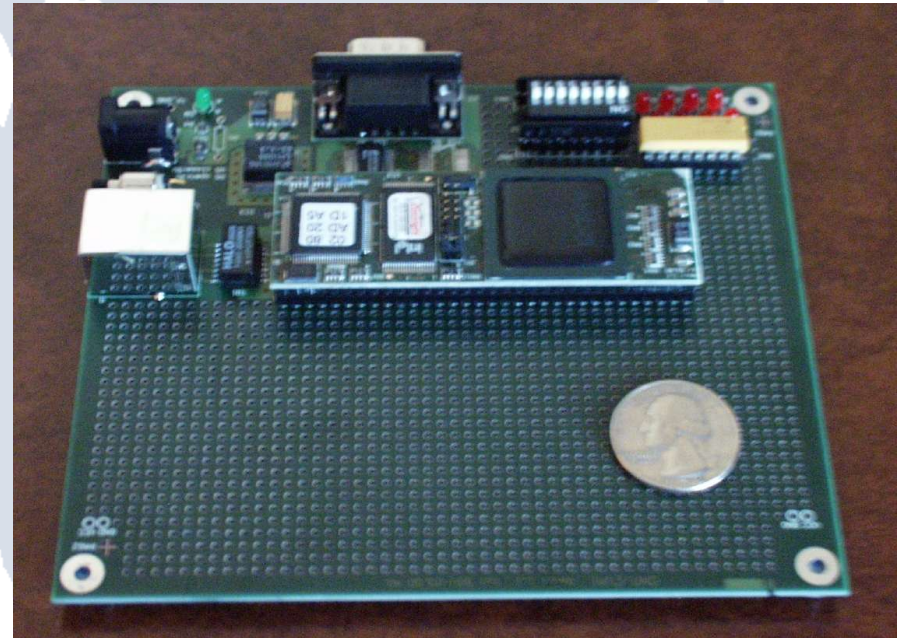
- Imagine Denmark designing these
- Imagine Denmark building products with these



IBM/Citizen Watch WatchPad

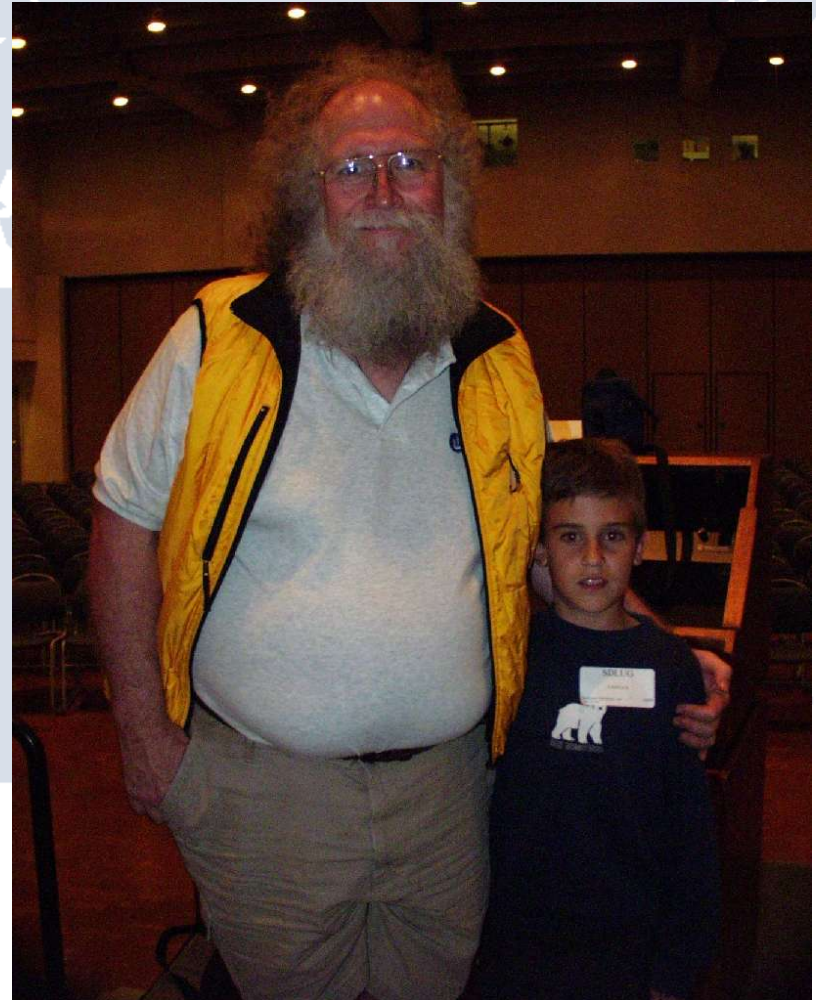
Start Embedded Systems Projects

- Buy tools for Universities
- Encourage Students to develop projects
- Encourage manufacturers to produce new projects



More Importantly

- A 15 year old kernel developer
- A 14 year old distribution developer
- A 13 year old systems admin
- An 11 year old programmer of supercomputers



Universities



- Microsoft
 - In courseware
 - In research
- Free Software
 - collaboration
 - readily useful
- Jobs

SAGU



- University of Utah
- University in Australia

Things to Teach In New Model

- How to do distributed development
- How to license software
- How to develop formal standards
- How to write code to standards
- How to motivate software developers
- How to locate and engage the community of users and developers

Things to Teach In New Model

- How to size projects and write contracts
- How to determine, define and “sell” projects

You Will Be Told



- TCO of Linux is not any better than Windows
 - Who cares?
- Value of software, not TCO!

You Will Be Told...

- Linux does not scale
 - False: 10240 processors on SGI
 - False: thousands of processors on NUMA
- Linux is hard to use
 - False: Linux is different
 - New installations find it no harder
 - Thailand
 - KDE study
 - Ball Music

You Will Be Told...

Some company's code is "open"

- To all countries?
- To all universities, colleges, grade schools?
- To all companies, competitors or not?

If it is not completely open....it is worse than being completely closed.

You Will Be Told....

Proprietary companies "innovate"...

- Look at www.sourceforge.net
 - 90K+ projects
 - 1000K+ registered developers
- Do proprietary companies distribute innovations when those innovations do not make business sense for **their** current business?

How To Implement Linux



- Firewalls and DNS servers
- File and Print Servers
- Intra and Internet web servers
- Thin clients
- Free Software on MS systems
 - Open Office
 - Mozilla
- Fat clients

Capabilities of Linux Today



Easier to talk about where it is not...

- Single System Image Clusters still need some work
- Scheduler for soft real time needs work
- Home support system not set up
- Applications still need to be ported
- Not supported by every peripheral

“Every place but largest database...”

- Jonathan Eunice, Illuminata

Examples



- Germany has switched its parliament to Linux Servers
 - Munich – 14000 desktops
- China has made Linux “Operating System of Choice”
 - No “BSA” for them
 - 700 USD functionality for 70 USD
- Brazil has blended government, industry and the Software Livre! Community to work together on various projects

Projects large and small, all over the world

Interesting Opportunities



- Cheap Hardware accelerators
 - Engage engineering
 - Recover in volume sales
- Service and Integration
- Secondary investments
 - Business amplifiers
 - Better products
 - Less expensive products
 - Faster innovation

I Would Like to Thank



- Linux International
- IBM (for this really cool laptop)
- LinuxForum for inviting me and paying my travel expenses

Thanks to The Linux Community on behalf of:

- The Bore hole Project in Africa (allows clean water for 7000 additional families)
- Creation of low-cost community computers for India bringing Internet capabilities (\$200 for a sharable computer)
- The Royal Navy Air and Rescue Force (allows faster rescues)
- The Genome project (allows easier sharing of data)
- Faster Detection of Cancer (20 hours to 10 minutes)
- For the hundreds of students at the University of the South Pacific in Fiji (to study and learn)
- 1600 doctors in Cuba who use it (to spread information)
- Scientists at Fermilab looking for the smallest bit

Remember



- Free Software is more than Linux
- Free Software is inevitable.

Questions?

