

Welcome to the Maker Faire 2114

A lecture in History of Making

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RASPIBO

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First of all:

- This lecture is a fiction.
- We'll pretend to be at the Maker Faire 2014, exactly one century ago
- We'll see how the makers' movement ignited a major cultural revolution
- This seminar room is a complete reconstruction of a meeting room of beginning of the XXI century

No A.R.T. today.

- Please deactivate your ARTs (augmented reality transducer)
- We want this lecture to be held exactly as it would have been taught in 2014, using the historical devices of this room-museum.

Una lezione di storia. L'attendibilità dei fatti successivi al 2013 e' garantita dall'uso del device brevettato "crystal ball"
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Devices in 2014

- Laptop
- Projector
- Mouse/touchpad/tablet
- Slide
- Portable phone/Cellular phone
Smartphone



Historical period

- In the first decades of the XXI century the modern middle-age terminates and the Second Renaissance begins.
- In the end of the XX century the eastern european regimes collapsed (fall of the Berlin wall, 1989 circa and following years).
- Since 2008 a strong economical crisis deeply affects the stability of markets and the equilibrium among the economical powers of the world.

Concepts of the modern (second) middle-age

- Progressive polarization of the world:
 - External polarization: Rich and poor countries
 - Internal polarization: increase of income spread between social classes
- Decentralized Slavery
- Over exploitation of the environment: anti-ecological usage of the natural resources
- Strength of the global economical powers vs. weakness of local fragmented political powers.
- Very limited vision of the future

The two Middle AgeS

mechanical movable type -> printing revolution -> end of the first middle age (ancient middle age)

(ca. 1450)

- It is simpler to copy software thanks to the Gutemberg's printing device
- It is (a bit) cheaper to broadcast knowledge
- Software revolution (a.k.a. Digital revolution) -> end of the second middle age (modern middle age)

(ca. 2000)

- Hardware and software become independent. Software does not need a hardware support any more.

The cost for knowledge copy/broadcasting tends to zero.

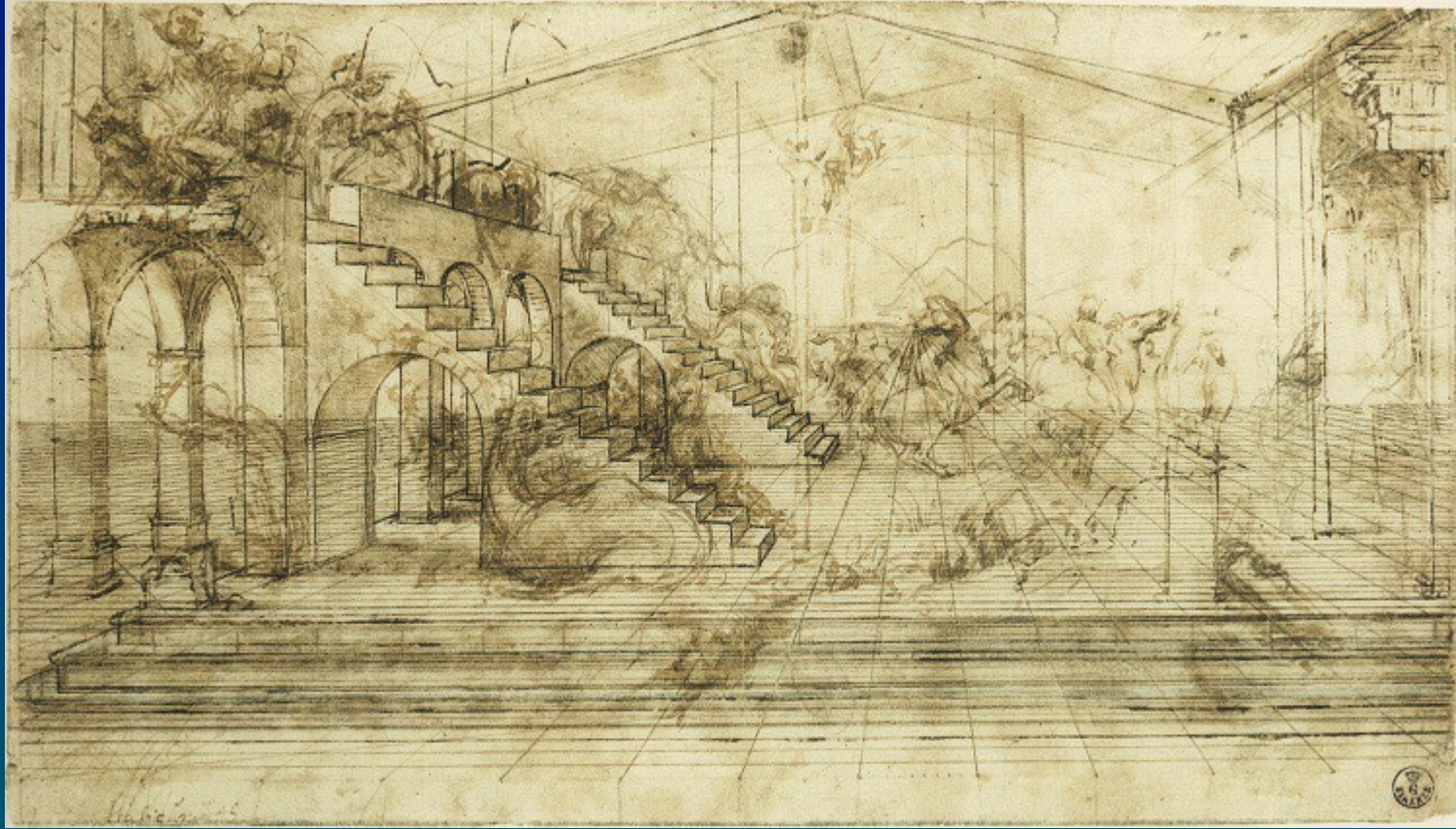
First vs Second Middle Age



Ghirlandaio 1490. Portrait of a Young Man,
Profile Portrait of a Young Woman
Two characters from the online strategy game
Valor by the designer Chris Ng Fhze Yang,
Singapore [Yan 2011].



Perspective



The real millenium change:

- From the modern Middle Age
 - The AGE OF HARDWARE
- To the second Renaissance
 - The AGE OF SOFTWARE

Perspectives in the II Renaissance

Modern Middle Age (XX century)	Second Renaissance (XXI century)
AGE OF HARDWARE	AGE OF SOFTWARE
Market	Ecosystem
Push	Pull
Product	Platform
Competition	Co-Evolution
Proprietary Software	FLOSS
Economy	Wiki-nomics
“Intellectual Property”	Freedom of Speech
Centralization/Hierarchy	Network, Mesh, Grid
Consumer	Citizen (of the World)
Spectator	Actori/Protagonist
Present	Future
To Have, to own	To Be, to know

πάντα πνεύμα

HARDWARE - SOFTWARE

- The milestone of the new Renaissance is the clear definition of Hardware and Software
- Hardware is made of atoms
- Software is knowledge
- It is the ultimate answer to the mind/body dualism

The software component of things

- It became clear that all the objects are composed by software and hardware.
- Objects' shape, mechanical design, electronics schematics, firmware are software components.
- The knowledge of the software part of an object enables its owner. An object can be: fixed, recycled, interfaced, re-programmed etc.

MAKER

- Makers have a central role in the new Renaissance
- Makers are able to create and develop new ideas using the Software of Things knowledge.
- Maker = Software of Things Hackers
- Makers drove the innovation in several fields: 3D printing, electronics, robotics etc.
- The Maker philosophy, based on the sharing of knowledge, was not solely applied in technologically advanced fields (for that time) but also in more traditional applications like wood and metal working.

Maker and FLOSS

- The Maker movement and the Free, Libre Open Source software principles are tightly connected
- The Maker culture is based on knowledge sharing
- This new idea of Libre-software-of-things enabled the creation of new production processes.
 - Bottom-up
 - Request driven
 - Shared over the networks

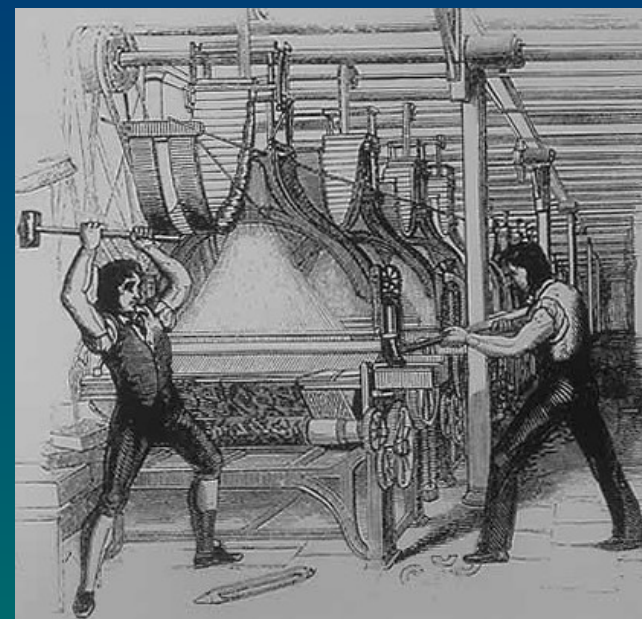
Artisans in the XXI century

- The new artisans are, in the first place, artisans of knowledge
- They were (and still are) Makers
- The middle-age enemies of these new artisans were:
 - Patents
 - Certification
 - Bureaucracy

The end of the “hardware publishers”

In the modern middle age there were “publishers”

- Publishers of books (text on paper)
- “Music industry” publishers of audio on vinyle/plastic made disks
- Film distribution houses (video on tapes/plastic made disks)
- These publishers were created in the beginning of the XX century to enhance the distribution of software when the software needed a hardware support.
- In the beginning of the XXI century these publishers acted as luddites (industrial revolution ca. 1810) of the software revolution. Publishers' lobbies forced parliaments and governments to pass anachronistic copyright/patent laws to delay the effects of the software revolution.



A lot of rules became obsolete and unfair



- “intellectual property is in fact intellectual monopoly and hinders rather than helps innovation and creation.”
- Bodrin, Levine 2007

2014: the obsolete educational system taught "what" and not "how"

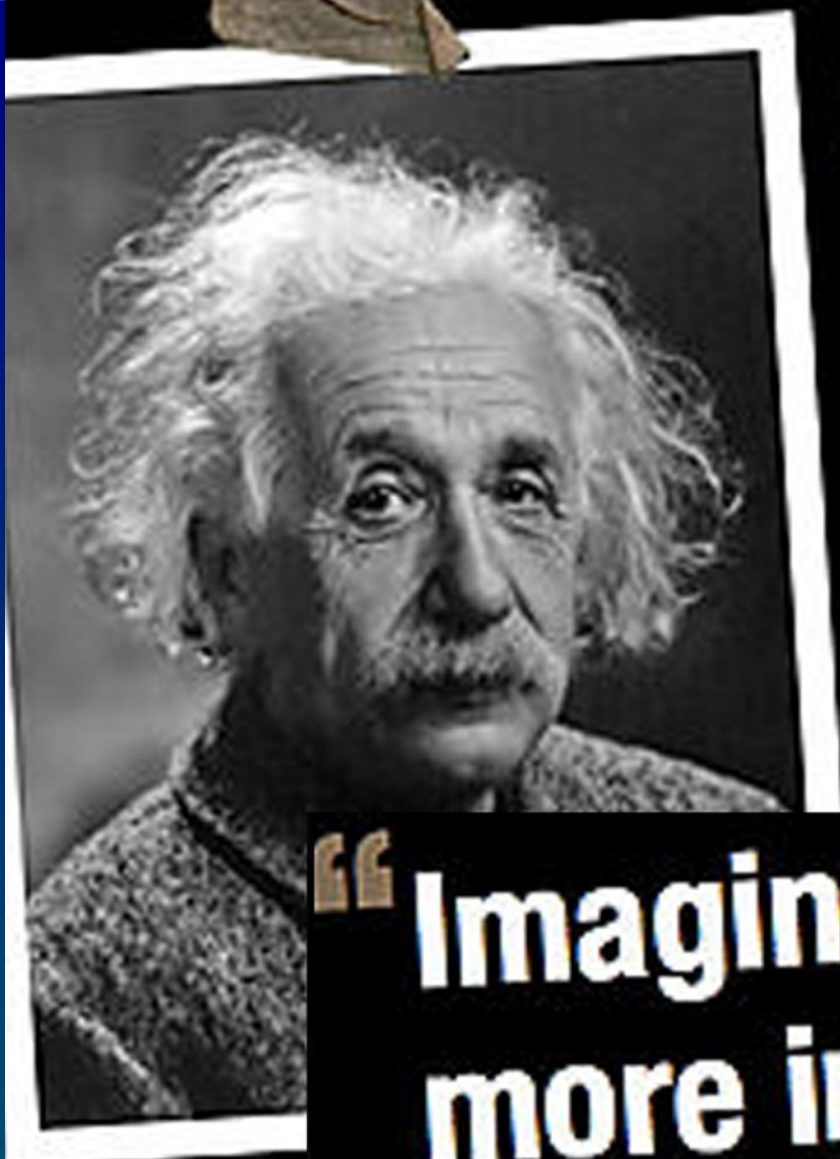
- The goal was to give correct answers in tests.
 - The school seemed to be a "reality show":
 - Oral test = confessional
 - Let us see who is the next one to be "eliminated"?
- Distorted visions:
 - The goal was to take a degree (@school)-> the goal was to get a payroll (as adults)
 - Knowledge was perceived as useless
 - The school was alien to the world, life appeared to be completely unrelated to the concepts learned at school

Tullio De Mauro: illiteracy in Italy in 2013

- 5% of Italians aged 14 to 65 are not able to decypher letters or digits.
- 33% hardly read simple sentences and cannot decypher a text about social facts. A graph is a non-understandable icon to them.
- 70% cannot really understand a written text like an article from a newspaper, a user manual, a job contract, a political program, a dosage/side effects sheet of a drug.

See more at:
ritorno#sthash.dg1HQEqX.dpuf

[http://www.consumatori.e-coop.it/index.php/archivio/2013/2013-settembre/analfabeti-di-](http://www.consumatori.e-coop.it/index.php/archivio/2013/2013-settembre/analfabeti-di-ritorno#sthash.dg1HQEqX.dpuf)



**“Imagination is
more important
than knowledge.”**

— Albert Einstein



“My contention is that **creativity** now is as important in education as **literacy**, and we should treat it with the same status.”

Sir Ken Robinson

The real meaning of education

“Si tu veux construire un bateau, ne rassemble pas des hommes pour aller chercher du bois, préparer des outils, répartir les tâches, alléger le travail, mais enseigne aux gens la nostalgie de l’infini de la mer.”

– *Antoine de Saint-Exupéry*

A resonance phenomenon

Learning is a resonance phenomenon.

Each student has their own capabilities and innate talents, she/he has their own resonating frequencies. Teaching means to expose each student to as many different domains of knowledge and methodologies as possible. When a student meets a vibration having a frequency close to one of their own, she/he will begin to vibrate. This is the beginning of a wonderful adventure.

(R. Davoli 2012).

Second Renaissance pupils in a middle age school

- They did not feel the need to learn. Knowledge already was available on the net, *one click away*. “What is the meaning to remember a notion”?
- They felt to be spectators in this world. They got lost in the ocean of knowledge. Everything seemed to have been discovered and said. The access barrier to became actors seemed to be too tall to climb over it.
- Everything was beautiful, had a nice appearance. The students perceived this *perfection* as the impossibility to compete with the “professional” solutions already available.

Shunryu Suzuki

- *In the beginner's mind there are many possibilities, but in the expert's mind there are few.*
- There may always be a better solution if your mind is open enough to catch it.



Second Renaissance: a springtime for computer science education

- The fool choice to teach I.T. instead of computer science in middle age schools created *problem solving illiterate graduates*.
- In the new century many educational systems throughout the world re-introduced the teaching of computer science, computational thinking, problem solving..
- In Italy the reform of 2008 introduced the teaching of computer science in many schools. The education guidelines published by the Italian government in 2014 stated the central role of coding and making instead of the mere teaching of IT usage.

A global phenomenon

- U.K.
 - Raspberry PI
- United Kingdom:
 - Code.org
 - Sheplusplus
 - Girldevelopit
 - Girlswhocode
 - Womenwhocode



The social Renaissance

- Coder Dojo
 - Coding courses for children
- Makers
 - Public making spaces



WE HOLD THESE TRUTHS TO BE SELF-EVIDENT

SELF-REPAIR MANIFESTO:

REPAIR IS BETTER THAN RECYCLING.
MAKING OUR THINGS LAST LONGER IS BOTH MORE EFFICIENT AND MORE COST-EFFECTIVE THAN MINING THEM FOR RAW MATERIALS.

REPAIR SAVES THE PLANET.
EARTH HAS LIMITED RESOURCES AND WE CAN'T RUN A LINEAR MANUFACTURING PROCESS FOREVER. THE BEST WAY TO BE EFFICIENT IS TO REUSE WHAT WE ALREADY HAVE!

REPAIR SAVES YOU MONEY.
FIXING THINGS IS OFTEN FREE, AND USUALLY CHEAPER THAN REPLACING IT. DOING THE REPAIR YOURSELF SAVES SERIOUS DOUGH.

REPAIR TEACHES ENGINEERING.
THE BEST WAY TO FIND OUT HOW SOMETHING WORKS IS TO TAKE IT APART!

IF YOU CAN'T FIX IT, YOU DON'T OWN IT.
REPAIR CONNECTS PEOPLE AND DEVICES, CREATING BONDS THAT TRANSCEND CONSUMPTION. SELF-REPAIR IS SUSTAINABLE.



REPAIR CONNECTS YOU WITH YOUR THINGS ◊ REPAIR EMPOWERS AND EMBOLDENS INDIVIDUALS
REPAIR TRANSFORMS CONSUMERS INTO CONTRIBUTORS ◊ REPAIR INSPIRES PRIDE IN OWNERSHIP
REPAIR INJECTS SOUL AND MAKES IT UNIQUE ◊ REPAIR IS INDEPENDENCE
REPAIR REQUIRES CREATIVITY ◊ REPAIR IS GREEN ◊ REPAIR IS JOYFUL
REPAIR IS NECESSARY FOR UNDERSTANDING OUR THINGS ◊ REPAIR SAVES MONEY AND RESOURCES

WE HAVE THE RIGHT:

TO OPEN AND REPAIR OUR THINGS—WITHOUT VOIDING THE WARRANTY
TO DEVICES THAT CAN BE OPENED ◊ TO ERROR CODES AND WIRING DIAGRAMS
TO TROUBLESHOOTING INSTRUCTIONS AND FLOWCHARTS
TO REPAIR DOCUMENTATION FOR EVERYTHING ◊ TO CHOOSE OUR OWN REPAIR TECHNICIAN
TO REMOVE 'DO NOT REMOVE' STICKERS ◊ TO REPAIR THINGS IN THE PRIVACY OF OUR OWN HOMES
TO REPLACE ANY AND ALL CONSUMABLES OURSELVES
TO HARDWARE THAT DOESN'T REQUIRE PROPRIETARY TOOLS TO REPAIR
TO AVAILABLE, REASONABLY PRICED SERVICE PARTS

INSPIRED BY MISTER JALOPI'S MAKER'S BILL OF RIGHTS AND PLATFORM 2'S REPAIR MANIFESTO



JOIN THE REPAIR REVOLUTION AT IFIXIT.COM

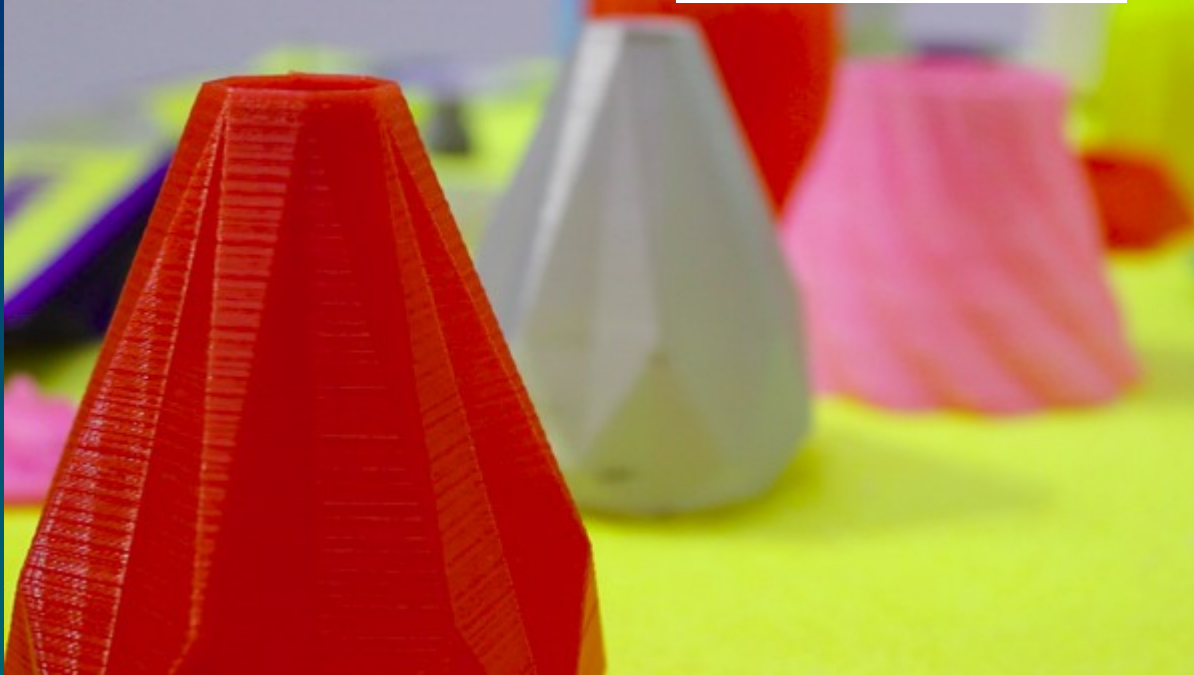
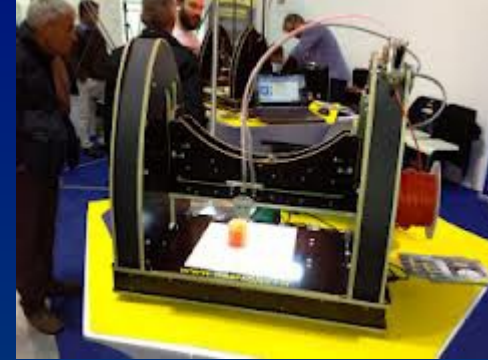
Learning how to fix

OFFPCINA



knowledge based object forging

- 3D printing

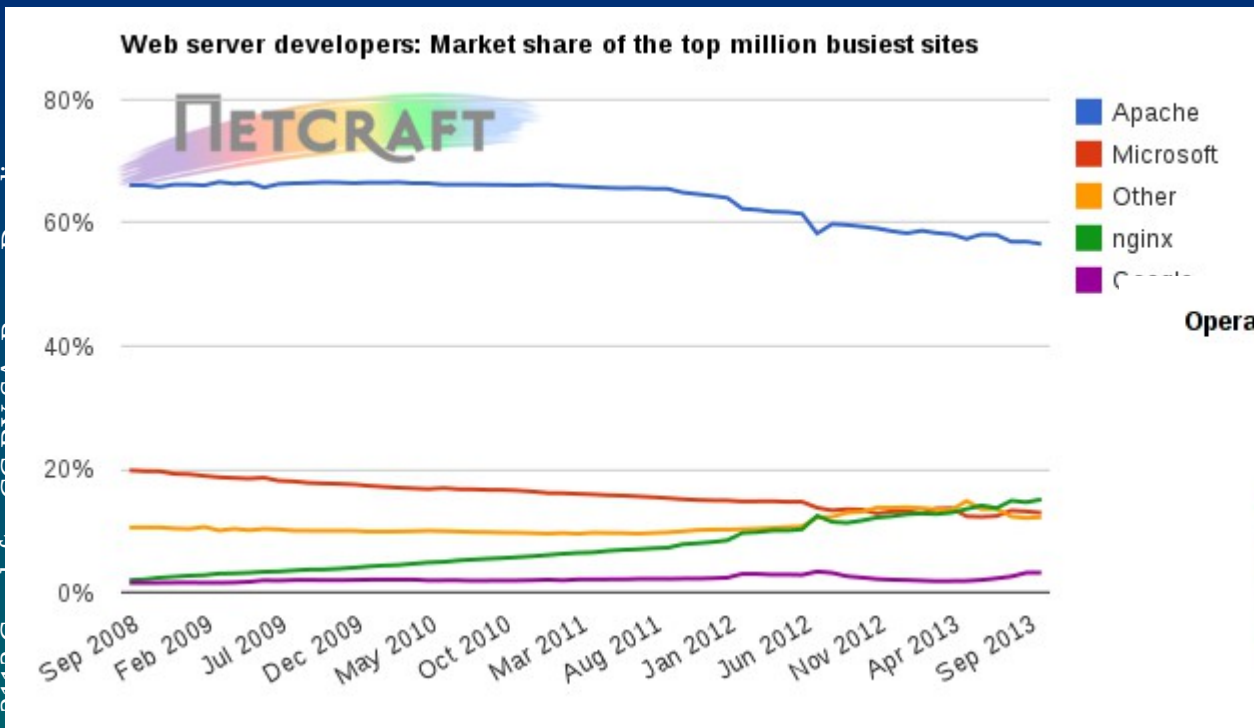


Computing for the Social Good

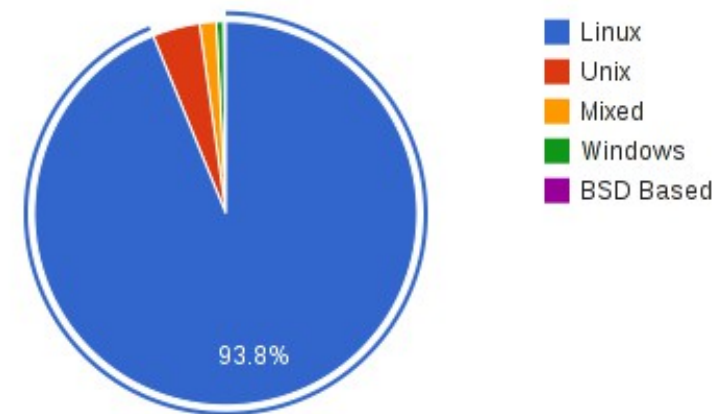
- A new awareness became common in the society
- Computer Science is a means to solve real problems.
- Examples of *real problems*:
 - Disease fighting: e.g. by DNA sequencing
 - Communication services in disaster areas
 - Preserve the cultural inheritance

Software is Libre by definition

- Nowadays this is an obvious concept.
- In 2014 there still was a marginal share of proprietary software...



Operating system Family System Share



The top projects

- The top projects were based on libre software
 - Wikipedia, Debian, Ubuntu, Google, Facebook, Twitter...
- The population was not really aware of that because most products sold in malls installed proprietary software.



Proprietary Software in 2014:

- ... there was a rapid market decay of proprietary software
 - The largest software house at that time (Microsoft):
 - Was loosing market shares for personal productivity applications
 - Still was a leader in Operating Systems for personal computers (mostly abusing its former dominant position on the market). The whole idea of personal computer became marginal, superseded by new devices and services.
 - Microsoft unsuccessfully tried to join the smartphone market buying a Finnish company (Nokia).
 - The core business of Microsoft became the development of Video Games.
 - Microsoft was based on the middle age concept of Proprietary software. It was not able to exploit the power of the code-diversity.
 - In the following years many companies and public agencies became aware of the two basic concept:
 - Microsoft is a private company, it can fail
 - Updates, bugfixes of Proprietary software are provided in a monopolistic regime
 - ... so there can be a domino effect of failures

In the following lectures:

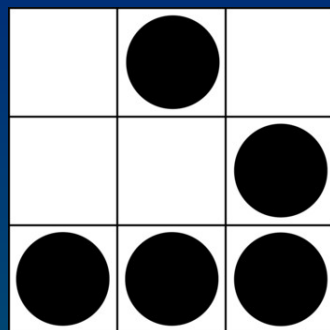
- We will discuss the contrasts between the conservatives (ancient regime) and the liberals of the second Renaissance.
- We will talk about the idea of GRID as a model of social and economical interaction.
 - The change of the energy market from oil to LENR
- We will study the “crisis of the cellar or attic”: the problems related to the overgeneration of data and rules:
 - Internet -> Hypernet
 - AnyLinux

To summarize

- Renaissance means that
 - Hope for the future
 - The dreams can come true
- If you want your dreams to come true, you have to dream first.
- You can dream only if you have the freedom to dream
- and dreams are SOFTWARE.

We are still creating art and beauty on a
computer:

the art and beauty of revolutionary ideas
translated into (libre) code...



renzo, rd235, iz4dje

I dedicate this seminar to the loving memory of
Lucia, my sister, died on Sept. 29, 2014