

Open Source: Toward Innovations through Educational Development in China

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Outline

- Introduction
- Open-source for educational development in China
- Promotion of open-source Scilab in China
- Lessons learned from the promotion

1. Introduction

Education in the Mainland of China (Data for Year 2003)

In primary schools:	116.89 million
In secondary schools:	66.90 million
In high schools:	32.43 million
In universities:	11.09 million

Perspectives on IT applications (I)

“Internet to Every School”

- Program starting from 2000 by Chinese Ministry of Education
- In 2010, over 90% of schools should connect internet
- If not for remote schools, at least apply multimedia facilities for mathematics teaching and training.

Perspectives on IT applications (II)

“New Standard for High-school Mathematics Teaching”

- Issued in 2003 by the Chinese Ministry of Education
- In 2006, most high schools should include some contents on computer algorithms for their mathematical studies.

Challenges for Education

“A story in Shanghai”

- In April 2003, the Educational Department of Shanghai received a letter from Microsoft.
- The schools were asked to buy the copyright software if they put Microsoft's products for their training materials.
- All Microsoft's products were removed from the training list in these schools.

More Challenges

- Educational software plays an important role.
- “*Software piracy*” is a serious problem in China, particularly in schools.
- “*Open source*” is still a new concept for the majority of users.
- Misunderstanding or habits may indicate a long-term campaign.

Objectives

- To demonstrate “*Why OOS is critical in China for educational development*”
- To present the progress and lessons through “*Scilab story in China*”

2. Open-source for educational development in China

- "Fighting Piracy Movement", promoted by some companies, say, Microsoft
- "Copyright Software Movement", promoted by some universities and local governments in China

Question

"Is it possible for the majority of Chinese schools to purchase copyright software"?

Answer:

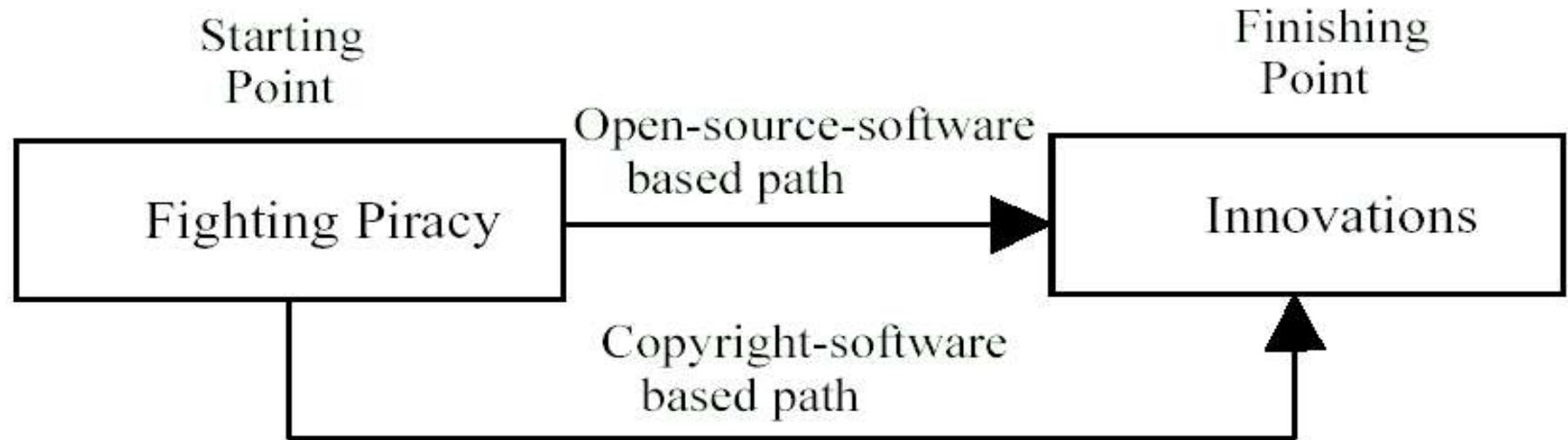
“No”

“One China, Four Worlds”

(Hu Angang, 2001)

- “*Fourth World*” stresses large population having lower income than the average of World Bank's data.
- More than 50% of the Chinese population falls into this world.
- “*If that population were a country, it would be the third largest in the world and rank 141st in terms of per capita income*” (Thurston, 2004)

Selection of the pathways



- “**Fighting Piracy**” is only a starting point in education domains.
- “**Innovation**” is a final goal.
- “**OSS**” is the best solution.

Why select OSS ?

- “Openness” and “Sharing” are important foundations in educational systems.
- Even without "financial difficulties", "OSS" should be encouraged in educational domain.

Benefits from OSS in Education

- Speeding up distribution and improvement of knowledge (including software)
- Stimulating teachers and students toward innovation
- Enhancing collaborations between teachers and students
- Providing more flexibility and independence for software localization
- Promoting software use in the public domain as public goods.

3. Promotion of Open-source Scilab in China

About SCILAB

- OSS - developed by INRIA and ENPC, France
- A general tool in scientific computation
- Potential users are “huge” in China.
 - Scientists
 - Engineers
 - Teachers, professors and students



Scilab in China (2001)



- “2001 Sino-French Workshop of SCILAB”
Beijing, China, April 9, 2001
- Received a warmly welcome by Chinese researchers

Scilab in China (2003)

tems

Third Sino-French Scilab Workshop at Xi'an



The

Scilab in China (2003)

Award Ceremony of “The First Scilab Contest” at “2002 Euro-China Forum on Information Society”



Scilab Team of Xiamen University

“We think and hope that what we have done will provide a sound basis for further development, and that through it, increasing numbers of Chinese scientists will use Scilab in their work”.

- Scilab Team of
Xiamen University
March 10, 2002



Our Group



Comparison with Other Toolboxes

Name	GAOT	GEATbx	GAT	FlexGA	MOEA	GATS
Coding schemes	Bin. Real	Bin. Gray Int. Real	Bin. Gray Int. Real	Bin. Real	-	Bin. Gray Real Perm.
Multi-objective	N	N	N	N	Y	Y
Multi-population	N	Y	Y	N	N	Y
Niche	N	N	N	Y	N	Y
Parallel	N	N	N	N	N	Y
GUI	N	N	N	Y	Y	Y
Source code	Y	-	Y	Y	N	Y
Copyright	GPL	Com.	GPL	Com.	-	GPL
Language	Matlab	Matlab	Matlab	Matlab	Matlab	Scilab
Reference	[8]	[9]	[10]	[11]	[12]	[13]

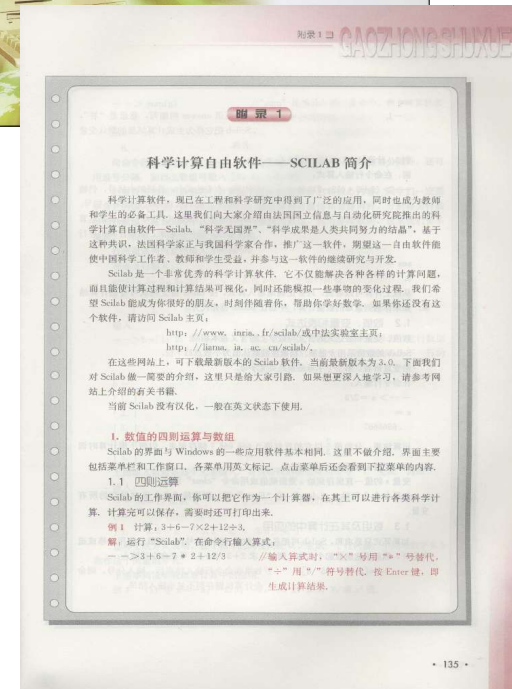
(Bin.=Binary, Int.=Integer, Perm.=Permute, Com.=Commercial)

← **GATS:**
Genetic
Algorithms
Toolbox
on Scilab

developed
by Li Zhong,
a Master
student of
CASIA
2003

Other Progresses (1994)

- Scilab was selected by People's Educational Press in “Mathematics” textbook for high schools.
- 200,000 students in Shan Dong Province used new textbook.
- Capital Normal University developed two toolboxes for high schools, “Math” and “Physics”.



For what kind of proudness?

Market Promotion by some software firms in China:

*“Using copyright software,
I am getting proud”.*

Our suggestion:

*“Developing open-source software,
I am getting proud”.*

Puffin for Scilab
Designed by Who's Hu



4. Lessons learned from the promotion

- ◆ A good eco-environment for intellectual properties should be established within the Chinese educational domain.
(Should have played a leading role)
- ◆ OSS provides the best means for innovation, particularly for Chinese educational development.
(Learn from other countries, say Indonesia)

Lessons leaned

- For an efficient promotion of OSS, scientific computing software Scilab is introduced into schools and universities.
(Great impact to the future IT society in China)
- Encouraging policies should be made in the Chinese educational domain for OSS.
(Also includ data, information, lecture notes, experiments, and all other educational resources)

Final Remarks

The final goal for China is not aiming at being main users of OSS in the world, but being the main contributors for a better and innovative world.

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