

# Guiding Principles for Public Sector Software

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## 1 Requirements of the Public Education System by year 2020

### 1.1 Creating a Free Information Infrastructure

## 2 Requirements for Digital Resources

### 2.1 Avoid the term "content"

It is very important to avoid the use of the term “content”, since we should not think that learners are containers ready to be filled with the content. Therefore I use the term “digital resources” instead, which includes digitally performable activities.

A computer provides a space to create and re-create as well as deliver several cultural resources (text, audio, music, video, animations, simulations etc.). Therefore it is better to shape it in such a way that it becomes a creative workspace, a sort of a studio, rather than clerical deskpace.

The development and availability of the Sugar Desktop (used in OLPC) makes the above idea not an abstract principle, but an actual working principle. The environment is designed suitably for collaboratively working to generate a culture of learning-teaching-production.

The studio based learning is not radical, but a natural way of learning-teaching. We need to urgently implement and develop capacity among our education communities. At knowledge.org, we are already conducting workshops to teachers to learn the studio method of teaching using Sugar Desktop.

Sugar is a free GNU/Linux learning environment for all cultural resources, including art, music, languages, science, mathematics, communication practices etc.

## **2.2 Mandatory Requirements**

Free Software Movement demonstrated sufficiently that the methodology used for software also works in other contexts. We need no more demonstrations, except to strengthen our resolve and work towards a default policy that mandates FOSS methodology for creating, updating and publishing all resources required for public sector.

### **2.2.1 open standards**

It is mandatory for all digital resources (whatever be the media) to be encoded in a public language. Operationally this principle means the use of open standards.

Detailed argument on this topic may be found in a transcript of my speech: Roadblocks to Free Society

### **2.2.2 Free Information Infrastructure**

ICT infrastructure is as basic as the need for roads, water and electricity.

The network for public sector should be P2P, and not centrally controlled, for it is easy to manage, and setup, inexpensive, and redundant.

Distributed knowledge bases, vis a viz centralized servers, to be part of such infrastructure.

Mirroring “knowledge commons” like wikipedia, free software, ibiblio, etc. within the country, and use decentralized

### **2.2.3 Collaborative Creation of Resources**

Collaborative creation of resources is already demonstrated to be the best way to create, update and publish. Collaboration is facilitated by a user’s rights to use, modify, blend, adapt, localize and deliver. These rights are granted only if the collaborative creation space uses the principles adopted by the creative commons. (e.g., Wikipedia)

### **2.2.4 Right to re-create**

The users should be able to re-create the available resources within the constraints of a curriculum guidelines. This helps the resources evolve into best practices and products based on both negative and positive feedback that the delivery process provides.

### **2.2.5 Right to re-distribute recreated resources**

The recreated resources should return to the public pool as free resources. Users are better advised and encouraged to not only use for their own purposes, but released for others to use to enable their reuse and further development.

## **3 Sharing my Experience with the projects that I am currently working in Education**

### **3.1 SELF project**

<http://selfproject.eu/>

### **3.2 gnowledge portal**

- Towards an atlas of knowledge!
- gnowledge lab

### **3.3 Sugar Training**

- <http://sugarlabs.org/>
- OLPC

### **3.4 Free Software for Mathematics and Science Education**

The use of ICT is increasingly becoming necessary for universal access to education for all. While several agencies are trying to develop the infrastructure, not much effort is being made in providing guidance, content creation, and empowering the teachers. We (at [gnnowledge.org](http://gnnowledge.org) lab of HBCSE) have been giving workshops to science and mathematics teachers in proper use of ICT without neglecting the traditional modes of class room practices, and also train the teachers in use and abuse of computers and communication technology. We also link it to the general objectives and philosophy set in NCF 2005 in the context of ICT use in the class room and empowering teachers.

As a part of the workshop we will be also arranging a CD and a DVD for all participants which contains all the software used for the workshop as well several hundreds of other selected software. All the software is licensed for use in any number of installations within the state and can be distributed

free of charge or for a nominal amount to all teachers, students, schools and colleges provided they are distributed with the same set of conditions.

The objective of the workshop is for creating an awareness and demonstrate the maturity and immense potential of the recommended software applications for science and mathematics education. The total period of training will be six hours of lecture demonstrations. Hands-on workshops can be from two days to a week, depending on mutual convenience.

1. Introduction to Free Software for School Education
2. GeoGebra (Geometry and Algebra)
3. Step (Physics)
4. Avagadro (Chemistry and Biochemistry)
5. Stellarium (Astronomy)
6. Phoenix (Physics and Electronics)
7. Logo and Netlogo
8. Inkscape and Dia (Technical Drawing)
9. Collaborative Teachers Activities: teaching/learning sequences, question banks, collaborative making of text books.