

Fellowship Overview Document: François Grey

Focus Area: Open Science

Fellowship: Citizen Cyberscience

Fellowship term: 1 September 2010 – 31 August 2011

1. The world as it is

Out of my Beijing apartment window, I see the world as it is. In front of me are shiny skyscrapers in various stages of construction, rising out of the smog. Below me are the makeshift plastic roofs of migrant worker shacks. Along China's coast live about 400 million people – more than the entire population of the US – most of whom have already joined the industrialized world.

There are more internet connections here than in the US, and three times as many mobile phones. Yet travel a few hundred kilometers inland, and you are in another world, where a billion Chinese – roughly the population of Africa – eke out a meager existence. Like the world as a whole, China is a mix of breakneck economic development and debilitating poverty and oppression. The challenge of this century is to ensure that development brings a decent standard of living and opportunity to all, without destroying the planet in the process. This is a political and economic challenge. But because economic development depends on technological progress, and technology is the fruit of scientific research, this is a scientific challenge, too.

2. What change do you want to make?

As a scientist, I'm keenly aware that along with the benefits of science come considerable risks. The greatest risk of all, in my view, is fear of science. The major source of this fear is ignorance. And the best cure for ignorance is education. Yet too often, science education fails to inspire, leaving many with the impression that science is a cult accessible only to the initiated.

This is where I believe I can make a change, by helping to promote a worldwide movement that will allow ordinary citizens to participate in real scientific research. I call this movement citizen cyberscience. And practically anyone with an internet connection can join:



schoolchildren, office workers, pensioners. Using PCs, laptops and even mobile phones, volunteers can classify images of distant galaxies or track the migration patterns of endangered species, to name just two examples. Citizen cyberscience is social networking with a purpose. It turns science education into a highly motivating participative activity.

At present, citizen cyberscientists are mainly concentrated in Europe and North America, and number in the hundreds of thousands. I want to make this number grow to tens of millions. I want to achieve this by catalyzing a trend in the scientific community that will boost the number of online science projects, from dozens today to thousands in a few years. Most importantly, I want to help more scientists in the developing world – Africa, Latin America and South-East Asia – to exploit citizen cyberscience, since it is a highly appropriate technology for researchers with limited resources.

3. What do you want to explore?

In 2005, while working at CERN, I launched a project called [Africa@home](#) to explore ways of making citizen cyberscience more relevant to the needs of the developing world. This included organizing training workshops in South Africa and Mali to teach the necessary IT skills for citizen cyberscience to African researchers.

In 2008, I moved to Tsinghua University in Beijing and started a similar project called [Asia@home](#), running further training workshops in Taipei and Beijing. In 2009, based on the success of these projects, I helped establish a novel partnership between CERN, the United Nations Institute for Training and Research and several top universities, called the Citizen Cyberscience Centre (CCC), to promote citizen cyberscience throughout the developing world. So far, all this work has been done in my spare time. To make this dream come true, however, I now want to devote myself full-time to the goals of the CCC.

In particular, I want to explore new ways in which academic institutions in developing regions can collaborate with leading research centres like CERN, UN agencies, NGOs and the IT industry, to help educate scientists in how to use citizen cyberscience effectively for their research. And I want to do this in a way that emphasizes openness: both technologically in terms of using open source solutions, and sociologically in terms of democratizing the scientific establishment through citizen participation.



4. What are you going to do to get there?

This is a big dream. I've been working towards it for five years, and surely need at least another five to make it come true. But with the support of a Shuttleworth Foundation fellowship, I believe I can achieve three important goals on the way to that dream.

Establishing a global training programme. Based on my experience in Africa and Asia, a major challenge for the CCC is to ensure training workshops can scale to a whole region and sustain themselves through local initiatives. To this end, I want to establish a global network of trainers, and provide them with an online and up-to-date educational material. I plan to draw heavily on the existing grass-roots community supporting citizen cyberscience projects in the US and Europe, as well as contacts I have made in developing regions, such as the African Institute of Mathematical Sciences and the Chinese Academy of Sciences, which have the infrastructure to sustain regional training programmes.

Concretely, I plan to organize three training workshops in Africa, Asia and Latin America, and work with academic partners to turn the material from these workshops into an effective online resource. Promoting appropriate technologies. Based on the current state-of-the-art in citizen cyberscience, and in particular on the open-source programmes BOINC and BOSSA used for a wide range of volunteer computing projects, I want to engage with leading IT companies such as Google, IBM and Nokia, to develop new citizen cyberscience projects that exploit software and hardware developed by these companies for novel types of citizen cyberscience. My goal here is not to do R&D myself – I am not an IT professional – but to run a series of meetings around the world, called the Citizen Cyberscience Lectures, to explore ways in which academia and the IT industry can collaborate on citizen cyberscience, with an emphasis on open source technologies and open access science.

Ensuring sustainability and visibility. To achieve the long-term goal of massively increasing global public participation in citizen cyberscience, the CCC needs to hire people with the right skills for promoting citizen cyberscience in schools, on the web and through novel approaches such as online gaming. To do this, the CCC must achieve a sustainable level of support. I want to run a fund-raising campaign, taking full advantage of the Shuttleworth Foundation's networks to raise awareness about the goals of the CCC and attract future sponsors and partners. In addition, I want to use the time afforded me by the fellowship to intensively promote citizen cyberscience through blogging, twittering and even good old-fashioned writing: I also aim to use the fellowship to complete and publish a popular science book on the subject, which I began writing last year, to attract a wider audience to citizen cyberscience.