

# SCIENCE & INNOVATION ECOSYSTEMS FOR DEVELOPMENT

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# Exponential Challenges

ENERGY

AGRICULTURE

CLIMATE

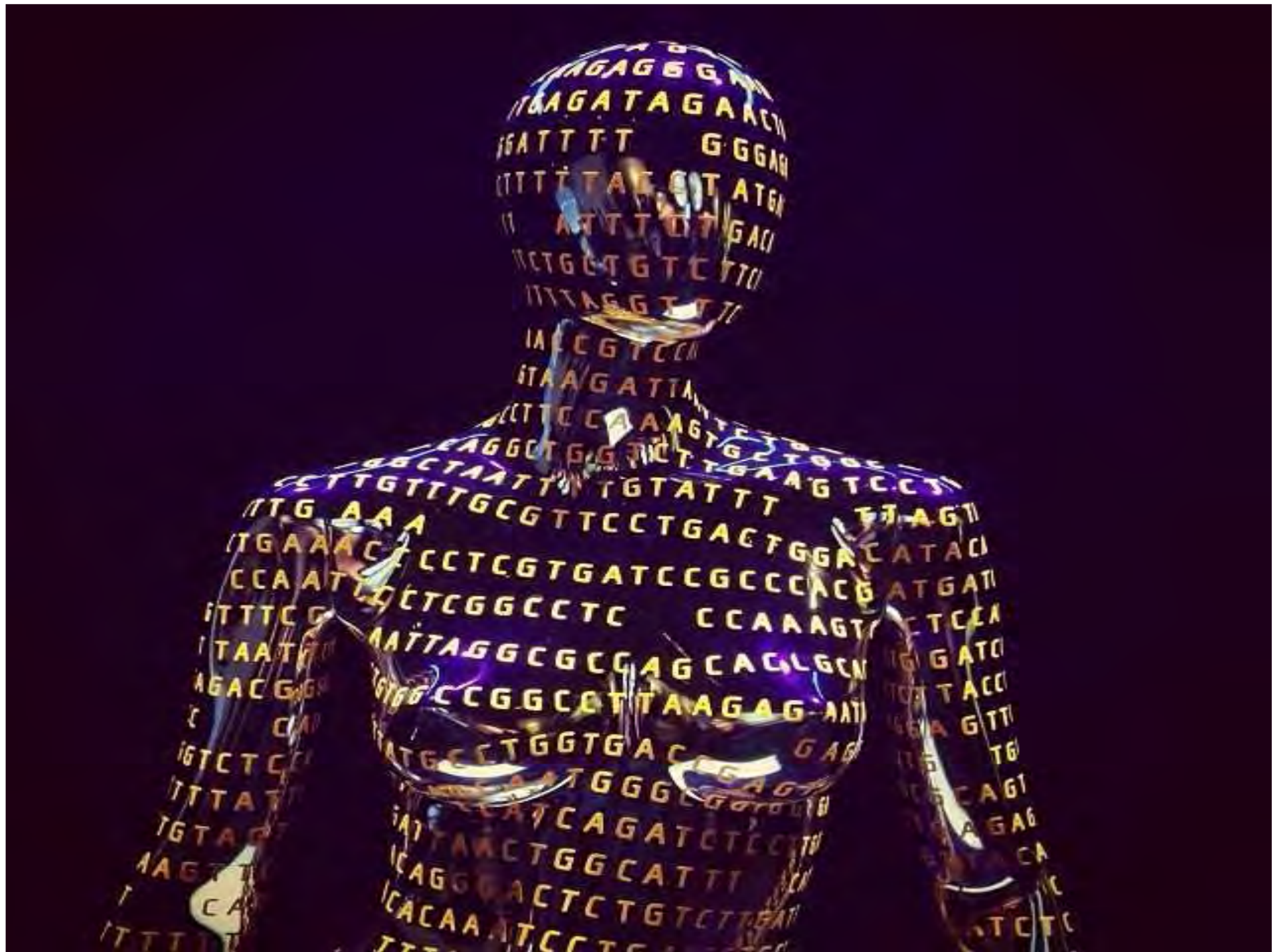
BIODIVERSITY

URBANIZATION

GLOBAL HEALTH

WATER

# Democratization of Science & Technology



# Computing Power (increased power, decreased cost, exponential)

The power of computing is increasing exponentially, while the cost is decreasing exponentially

➤ Moore's Law: The number of transistors that can be placed inexpensively on an integrated circuit doubles approximately every two years.

➤ Cheap Storage

➤ Computing power of the internet – parallel processing

# Connectivity: Mobile

**5 Billion Cell phones around the world – they are now gateways to human knowledge, tools to create music and artwork, they are sensors.**

## **In Africa:**

**It took nearly 20 years to attract the first 100 million subscribers**

**It took less than 3 years to attract the next 200 million subscribers. Leapfrogging.**

**2012: 13 Million fixed Landlines, 500 M+ mobile phone subscriptions.**

## **Developing Countries.**

**In 2000 the developing countries accounted for around one-quarter of the world's 700m or so mobile phones.**

**By the beginning of 2009 their share had grown to three-quarters of a total which by then had risen to**

# Leapfrogging



# Cell Phone v. Landline

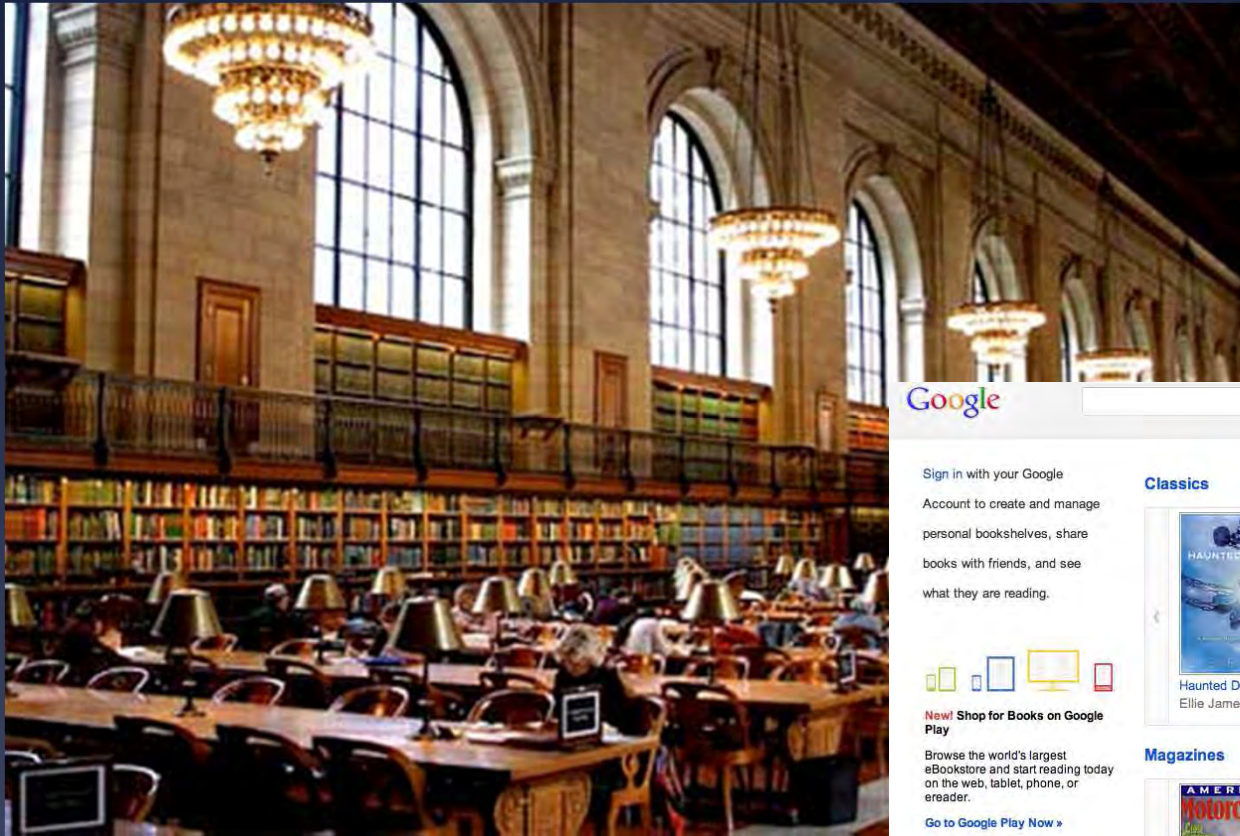




# Banking



# Libraries



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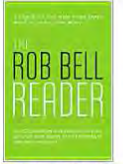
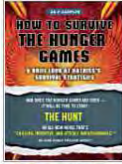



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## Classics

 <p>Haunted Destiny Ellie James</p>	 <p>The Rob Bell Reader Rob Bell</p>	 <p>How to Survive The Hunger Games Lois H. Gresh</p>	 <p>The Jennifer Weiner Reader Jennifer Weiner</p>
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## Magazines

 <p>American Motorcyclist</p>	 <p>Weekly World News</p>	 <p>Network World</p>	 <p>Tampa Bay Magazine</p>
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Research4Life is the collective name for four programmes

**HINARI**  
Research in Health

**AGORA**  
Research in Agriculture

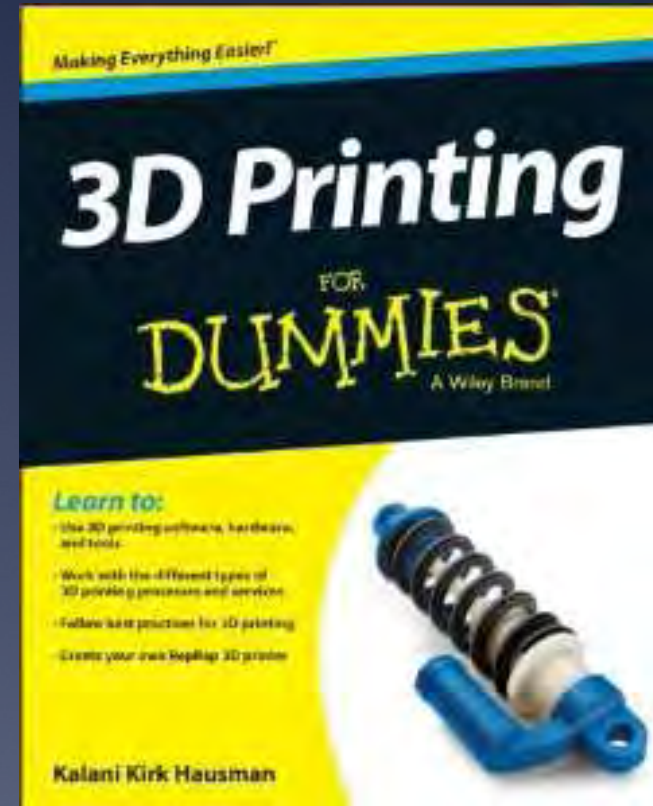
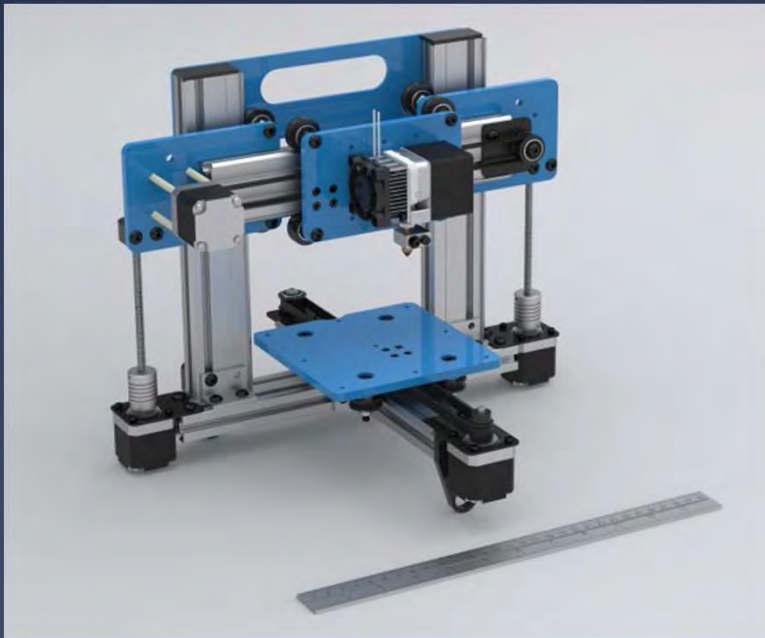
**OARE**  
Research in the Environment

**ARDI**  
Research for Innovation

# Higher Education



# DECENTRALIZATION OF MANUFACTURING



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- UPI
- Velleman
- Airwolf 3D
- Jet
- Jet
- GET
- Octave
- Gizmo Dorks
- ORD Solutions 3D Printer Filament

Toys Age Range

- Birth to 24 Months
- 2 to 4 Years
- 5 to 7 Years
- 8 to 13 Years

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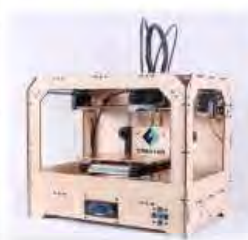
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An equipment which can turn your 3d design into real object.

**Industrial & Scientific:** See all 2,829 items



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Product Features

MakerBot Replicator 2 Desktop 3D Printer

**Industrial & Scientific:** See all 2,829 items



UPI Mini 3D Desktop Printer, 100-240V AC, 50-60Hz, 200W by UPI

~~\$999.00~~ **\$937.95** **4.5 stars** (8)

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**Industrial & Scientific:** See all 2,829 items



Printrbot Simple 3D Printer Kit, PLA Filament, 1.75mm Ujis Hot End, 4" x 4" x 4" Build Volume by Printrbot

**\$299.00** **4.5 stars** (9)

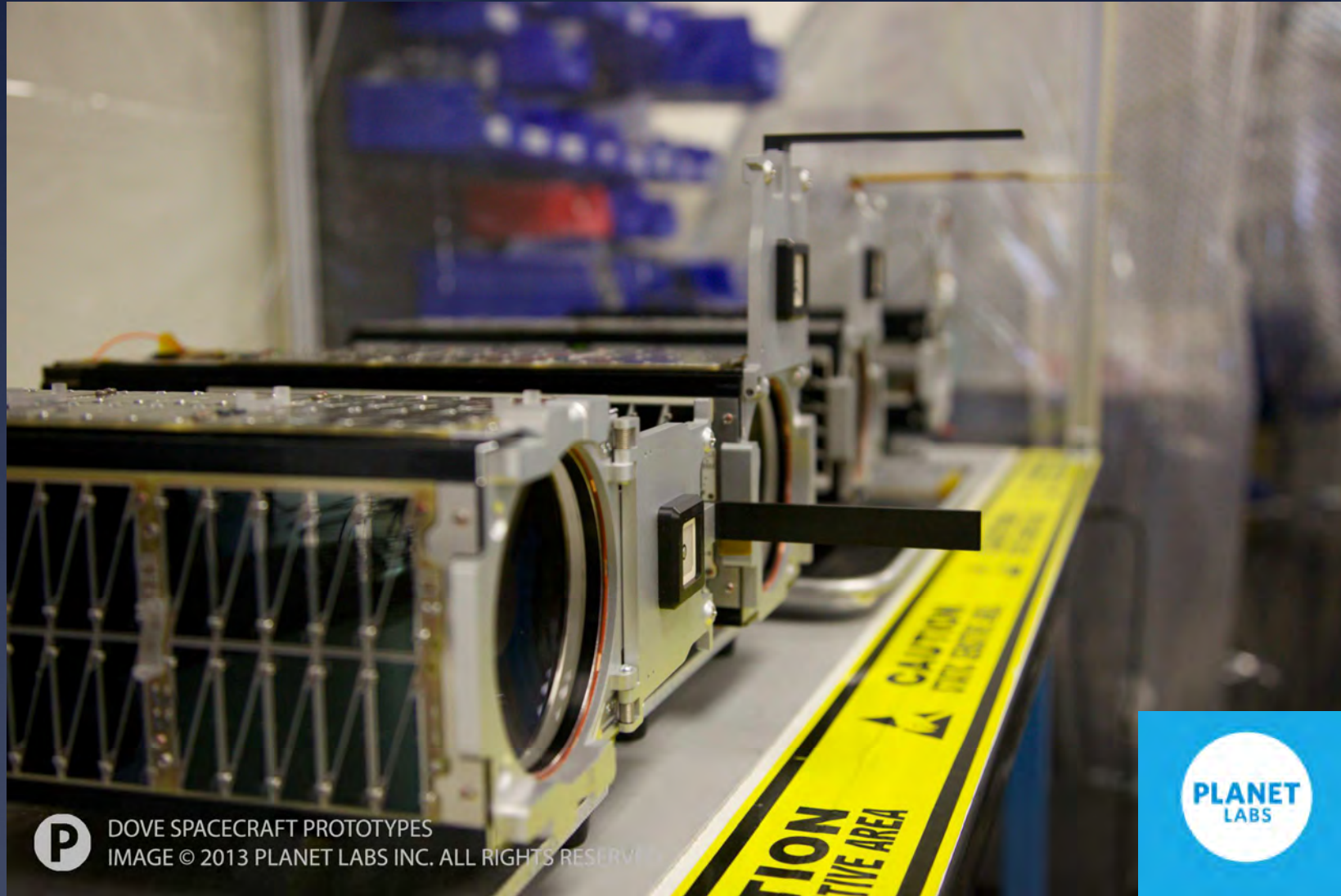
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# Leapfrogging Space



DOVE SPACECRAFT PROTOTYPES  
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# Leapfrogging Work

The screenshot shows the Fiverr homepage with a navigation bar at the top containing the Fiverr logo, 'HOME', 'START SELLING', and 'SIGN IN'. Below the navigation bar is a search bar and a 'CATEGORIES' dropdown menu. A green horizontal bar lists various service categories: GIFTS, GRAPHICS & DESIGN, VIDEO & ANIMATION, FUN & BIZARRE, WRITING & TRANSLATION, ADVERTISING, BUSINESS, and MUSIC & AUDIO. Underneath, sub-categories like 'QA & Software Testing', 'Technology', and 'Other' are visible. The main content area displays a grid of gigs, each with a 'FEATURED' badge and a '\$5' price tag. The gigs include: 'I will resolve your Wordpress issue or question', 'I will secure your Wordpress site against hacking attempts', 'I will design graphics for your iPhone and Android app', 'I will write C Sharp program', 'I will code, debug or give advice in Java or Ruby', 'I will develop or fix csharp projects and programs', 'I will move Your WordPress site to Another Domain or Hosting', 'I will slice psd to responsive html css', 'I will give you 1 to 10 Wordpress mp4 Video', 'I will use PSD File to convert Html, css and css3', 'I will create your website', and 'I will convert your files into ANY format'. A user profile for 'mark74' from Italy is also visible.



**So, how do we leapfrog...**

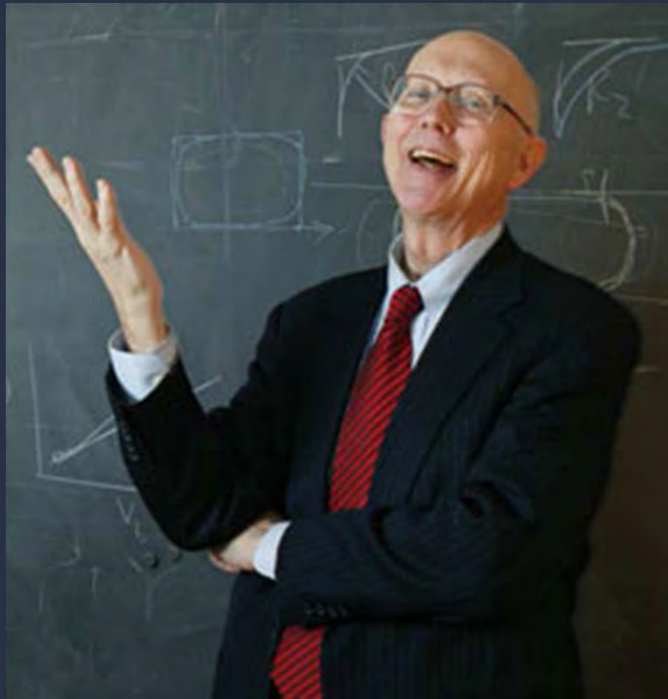
**Global Health, Energy, Water,  
Food Security, Humanitarian  
Assistance, Education, and  
Conservation?**

# **Rethinking Healthcare**

# Cell Phone Microscopy



# Diagnostics on a Chip



# **Rethinking Agriculture**

# Algae-based Proteins



# Rethinking Energy

# Gram Power

Yashraj Khaitan  
Jacob Dickinson





# Development is Changing



- Private resource flows to developing countries dwarf official development assistance (2010: 91% private flows, 9% public flows)
- Boundaries of 'development sector' as we know it are disappearing –public, private and nonprofit sectors, globally and locally, are all part of the development solutions of tomorrow



# Five New Rules

# **Rule 1: Opportunity, not Assistance**

**Proposed Post-2015 DG: Investment of 2% of GDP into R&D/Innovation Ecosystems**

# Rule 2: Understand Demand





## Rule 3: Data & Connectivity as Infrastructure

**Proposed Post-2015 DG: Universal,  
unfettered, and affordable connectivity &  
access to data.**

# **Rule 4: Problem Oriented Education, Research, & Innovation**

**Proposed Post-2015 DG: Harnessing STI  
for Sustainable Development**

# **Rule 5: Rethink Assumptions**