

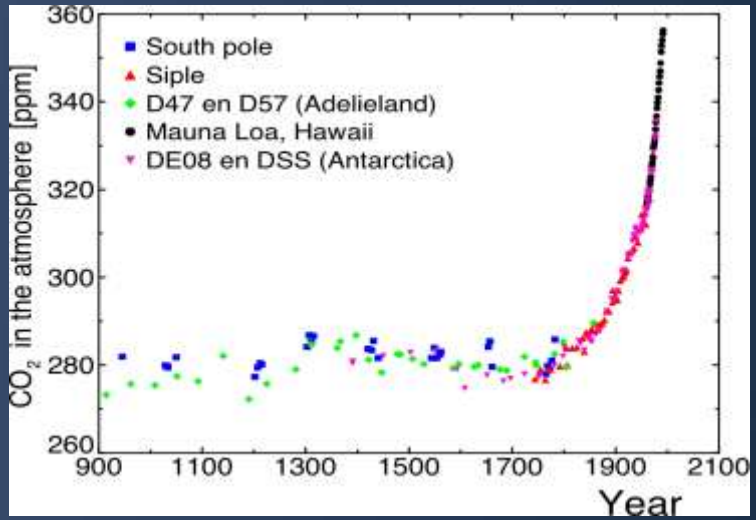
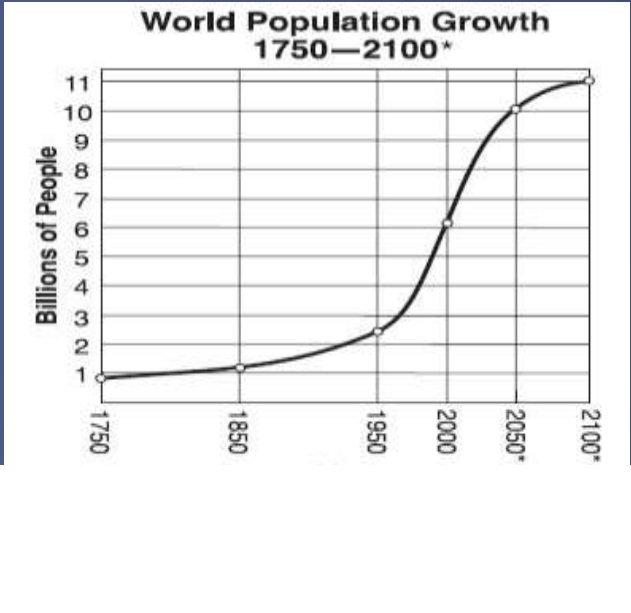
TECHNOLOGY IN A TIME OF CHANGE

Ray Pinto



Creating 'green solutions' implies that we have the answers.

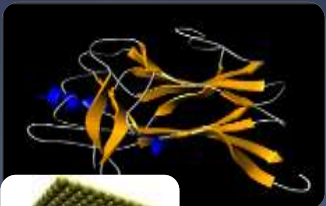
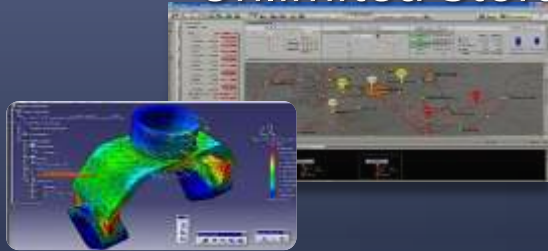
Our real value is to develop tools to ENABLE solutions.



ITS ALL **CONNECTED**

Technology Tools

Performance of
Hardware,
Unlimited Storage



Cloud Computing

Digitization
of the Economy



Broadband,
Mobility, New Devices,
Form Factors,
High Fidelity Displays

Software
Breakthroughs,
Natural User
Interface



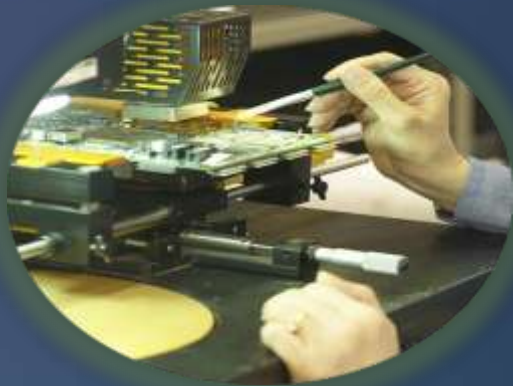
Healthcare



Communication



Entertainment



Science &
Engineering



Education



Energy &
Environment

LONG-CYCLE TRENDS DRIVE **INNOVATION**

**Responsible
Environmental
Stewardship**



**Accelerate Research
Breakthroughs**



**New Collaboration
Across Borders**



HOW WE THINK ABOUT THE CHALLENGE



REDUCING **OUR** ENVIRONMENTAL IMPACT

Evolution of the disappearing datacentre

1989-2005

Generation 1



Colocation



Server

*Capacity
~2 PUE
20 year Technology*

2007

Generation 2



Density



Rack

*Density and Deployment
1.4 – 1.6 PUE
Minimized Resource Impact*

2008

Generation 3



Containers



Containers & Pods

*Scalability and Sustainability
1.2-1.5 PUE
Air & Water Economization
Differentiated SLAs*

2010+

Generation 4



Modular



**ITPAC
(Pre-Assembled Components)**

*Reduced Carbon, Rightsized
1.05-1.20 PUE
Faster Time to Market*

Driving to a Simplified Datacenter

From Science Project

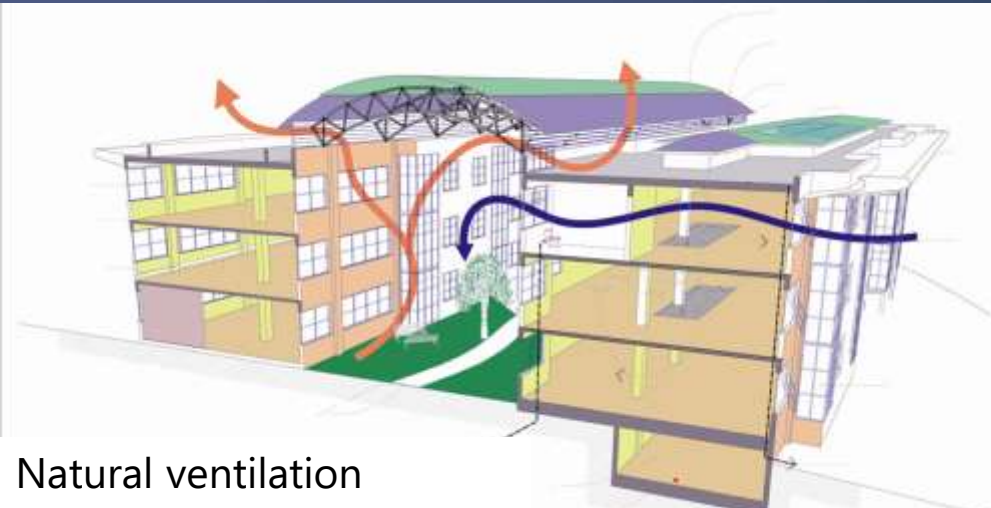


To Reality



ITPACs : built recycled materials. PUE 1.05 – 1.20. Garden hose of water

Microsoft partnership with UNEP and UN Habitat in Nairobi



Natural ventilation



ITPAC



Designed for sustainability



Solar power

ICTs to accelerate development, adaptation and mitigation



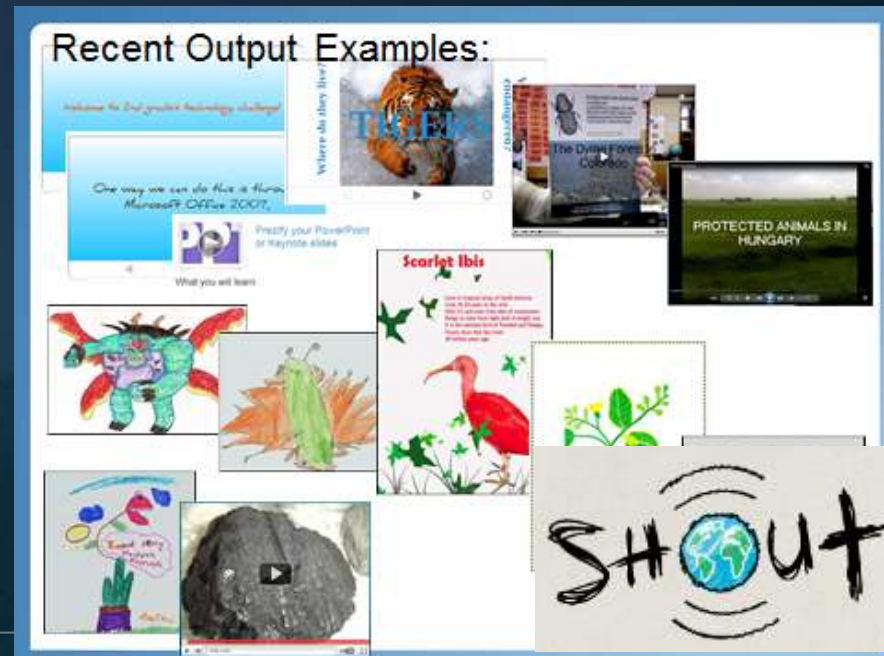


- 1st West Africa hub in Accra Ghana
- 4.4 jobs new per member 1,500 Enablis entrepreneurs networking and learning together from eleven chapters across Africa located in South Africa, Kenya, Tanzania, Rwanda and Ghana.



- World Wide Innovative Education Forum 2010 Winner
 - Innovation in Community
 - Best Practice: Samuel Avornyor (Ghana), "Rural Food Processing Industries"

Shout launched November 2011 in S. Africa currently around 5000 classrooms participating teaching children about their local environment





soak

Farm Overview

Morning Star

Action Toolbox

New Sector

View Reports

System Options

INVENTING THE FUTURE

110 m/s



Thank You!



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