

Warning!

This is **not** science fiction

Reality is now!

RC

S&T ecosystem

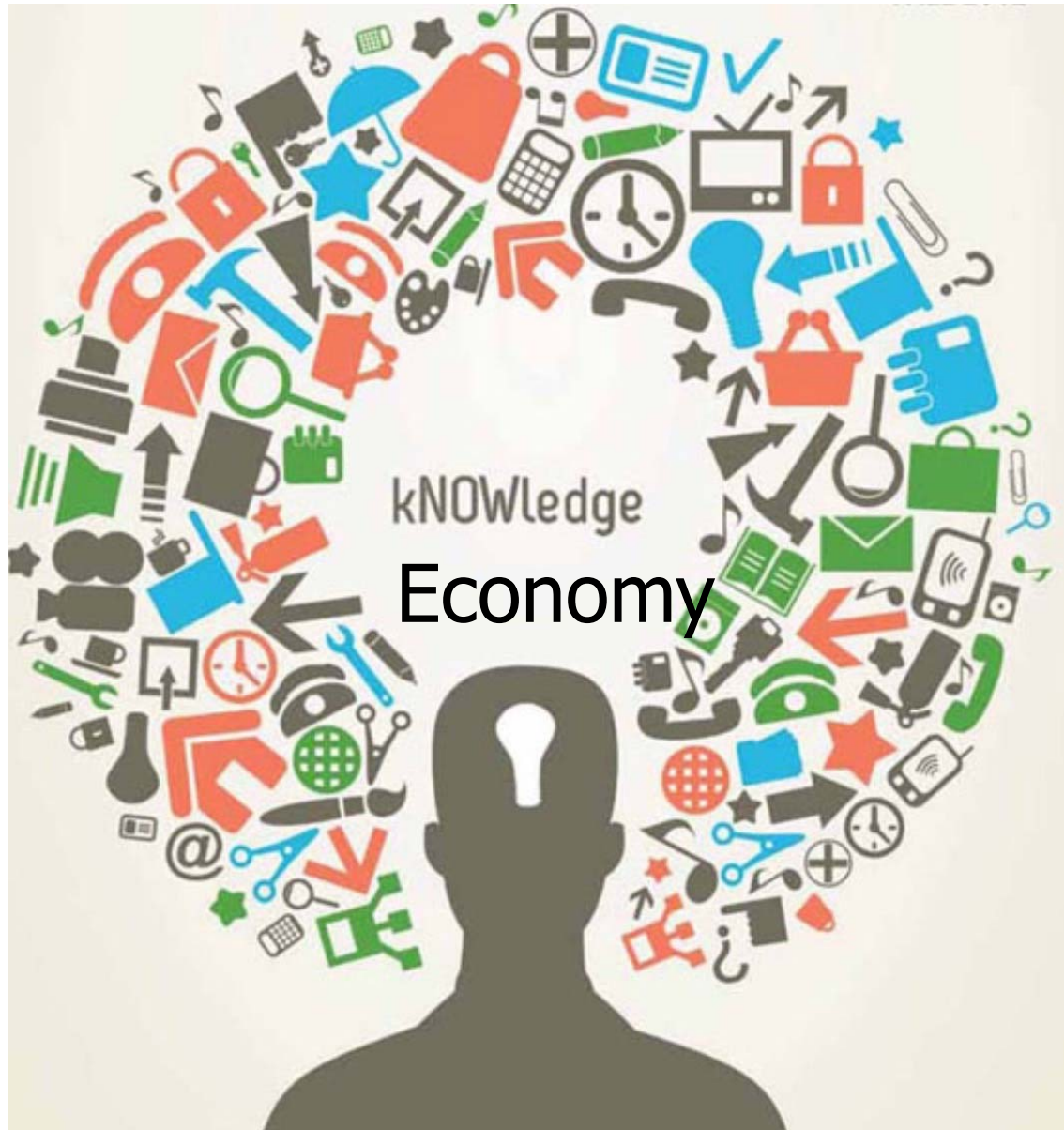
Man, Machine, Money

(Social ST agents)

(S&T infrastructures)

(R&D)

Within a visionary
national policy framework



K generates tangible and intangible values

Science is *organized* knowledge



Can Cambodians do science?

Science

Observation

Experiment

Critical thinking

Acceptance of
disagreement

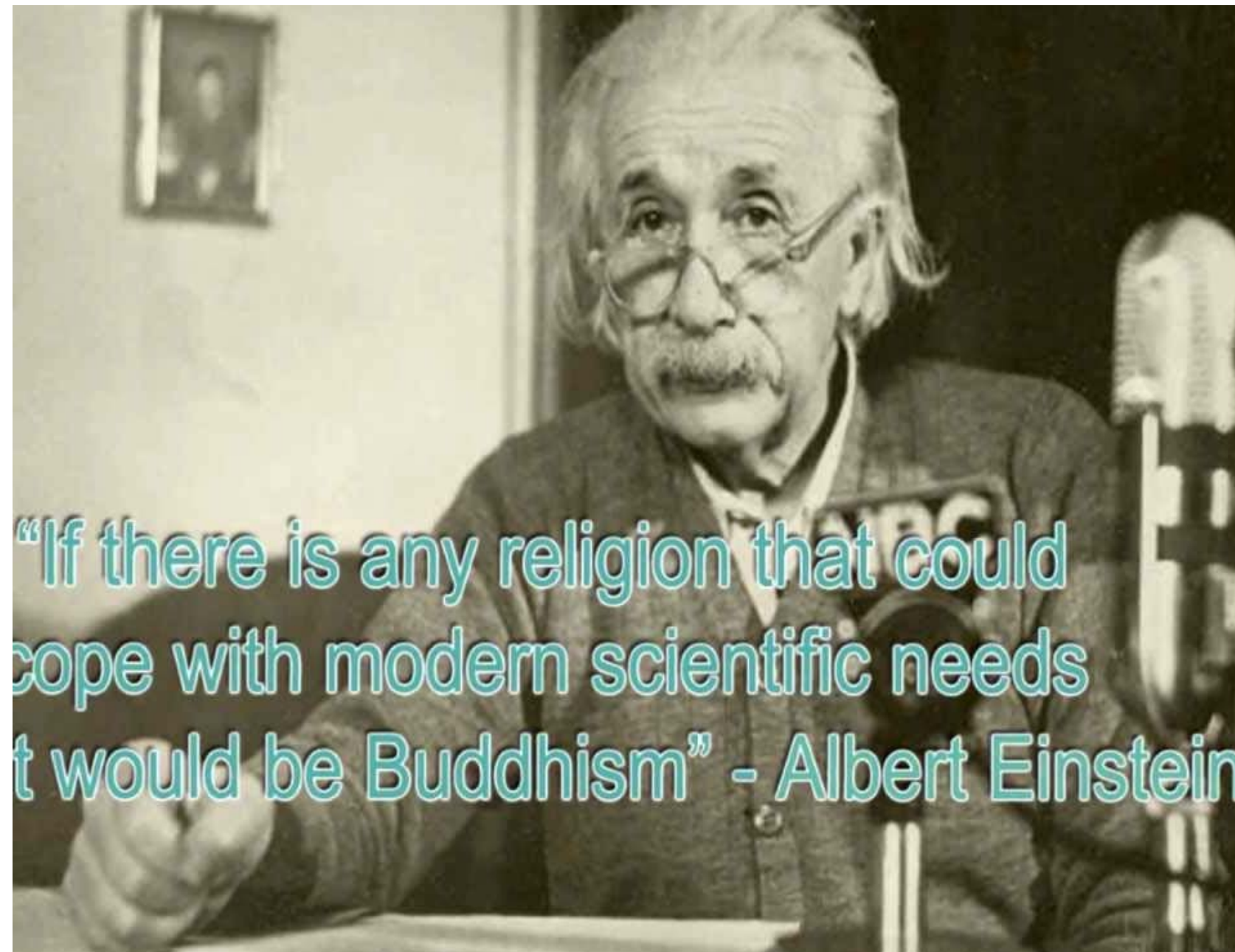
Buddhism

Vipassana: seeing things as they
really are

Experimental path 4 enlightenment

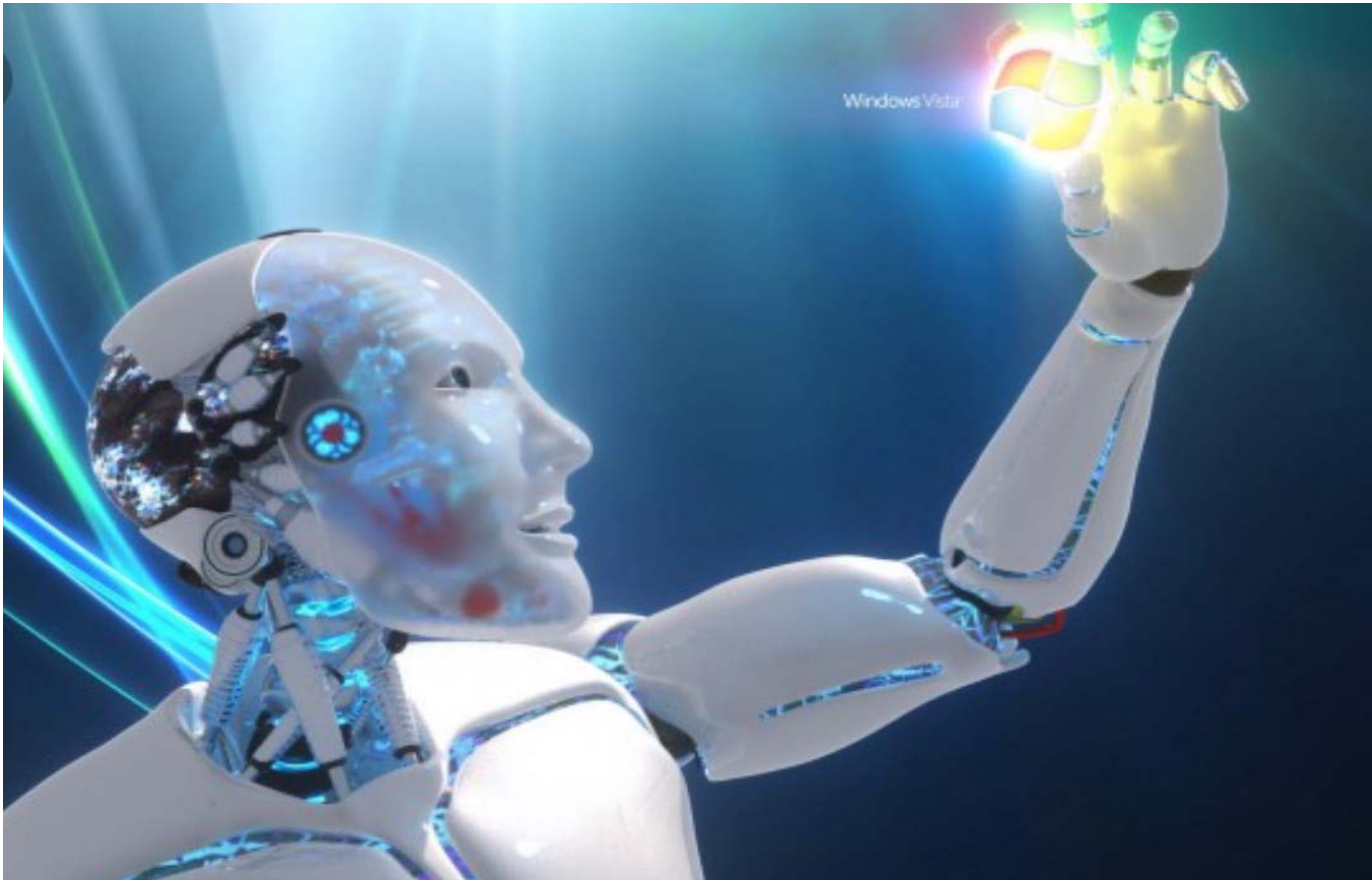
Everyone: responsible to think for
oneself, using reason and logic”

Metta: Tolerance to disagreement
with others.



“If there is any religion that could cope with modern scientific needs it would be Buddhism” - Albert Einstein

Technology produces goods and services



Science & Technology

Interactions between the two.



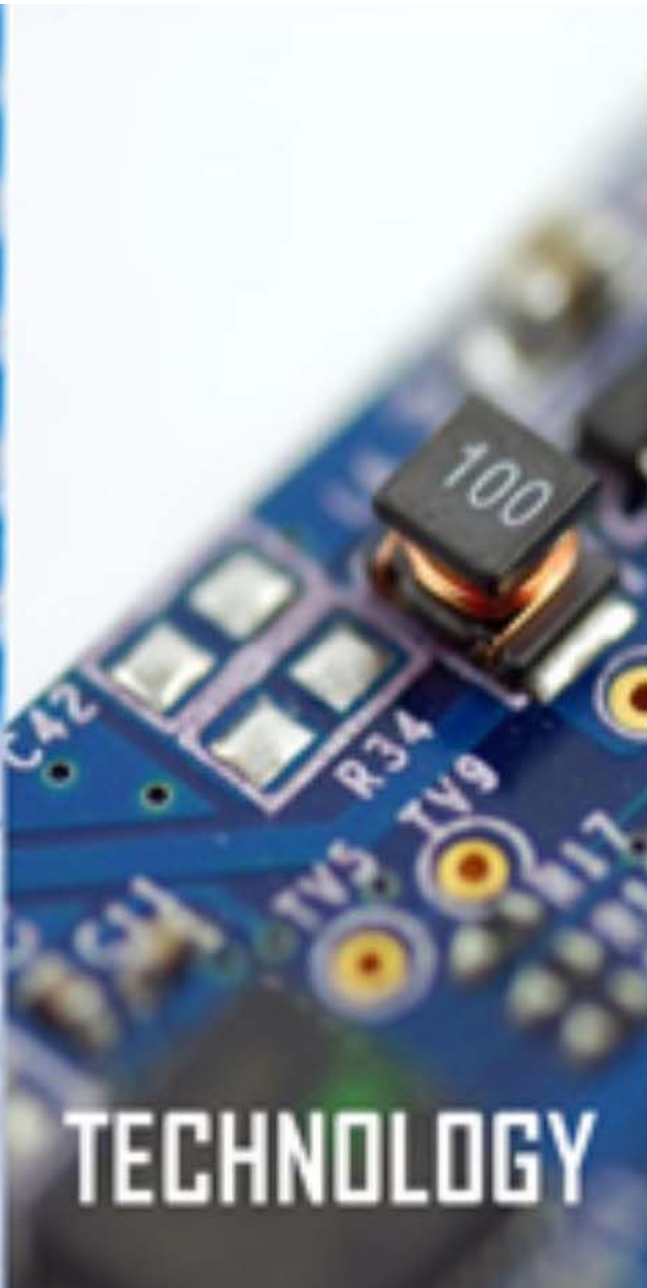
IT is NOT S&T but an *enabler* of S&T



ICT

Access to info via *telecommunications*





STI is a government strategy!

Articulates STI vision

Set priorities for public investment in STI

Engages stakeholders

C.2030

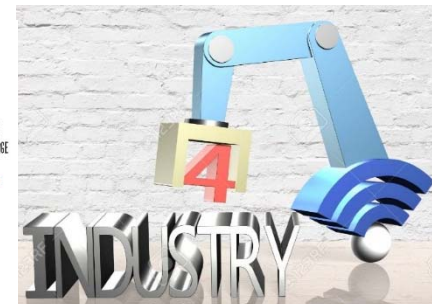
C.2050

New impulsion-New economy

via

Digital revolution

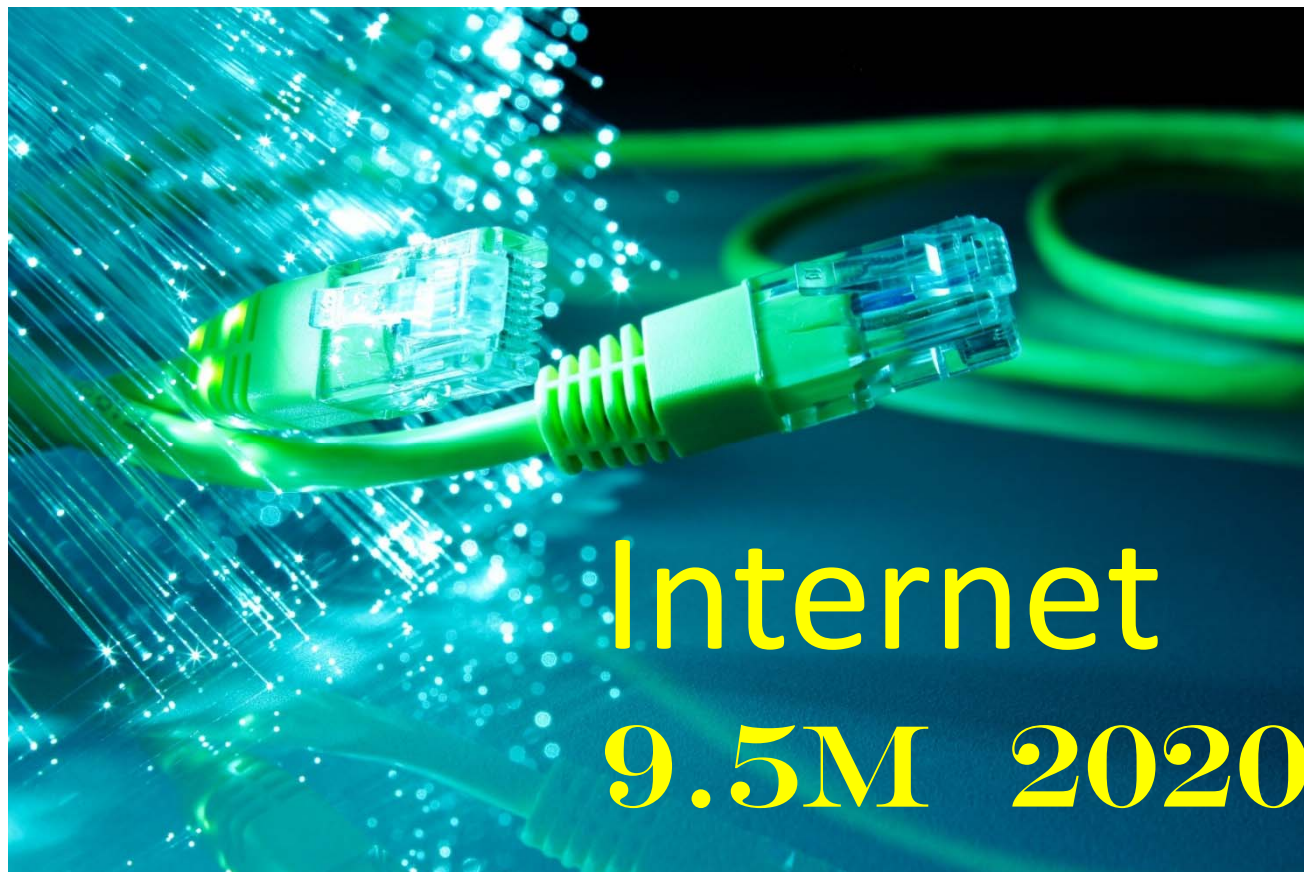
Industry 4.0




Towards a digital Cambodia



Cambodia
digital economy
Young tech savvy population





Digital technologies
change the way we live



Metfone 3G 9:03 AM 74%

Choose service

From 0,000 KHR

Preorders not available

ម៉ូតូកងប៊ី- Rickshaw

3

100

From 3,000 KHR

Preorders not available

រថយន្ត SUV

4

100

From 7,000 KHR

Preorders not available

ម៉ូតូខ្មែរ-Khmer TukTuk

3

100

From 4,000 KHR

Preorders not available



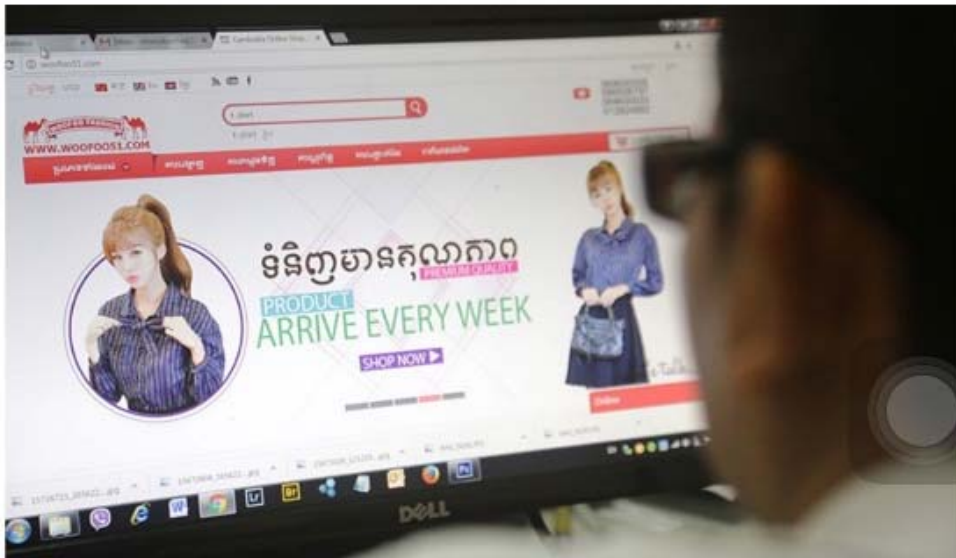
Business

4 hours ago - BREAKING NEWS

Cambodia to be a digital economy by 2023

Sum Manet / Khmer Times

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The Ministry of Posts revealed that it plans to turn the country into a digital economy by 2023. KT/Mai Vireak

Business

January 9, 2018

Digital signatures to speed up transition to online economy

Sok Chan / Khmer Times

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An office worker using a computer. Experts say the introduction of digital signatures will facilitate many online operations. Reuters

Digital signatures will soon be a standard element of doing business in the kingdom

A digital globe composed of binary code (0s and 1s) with a bright light source creating a lens flare effect.

Dawn of new era

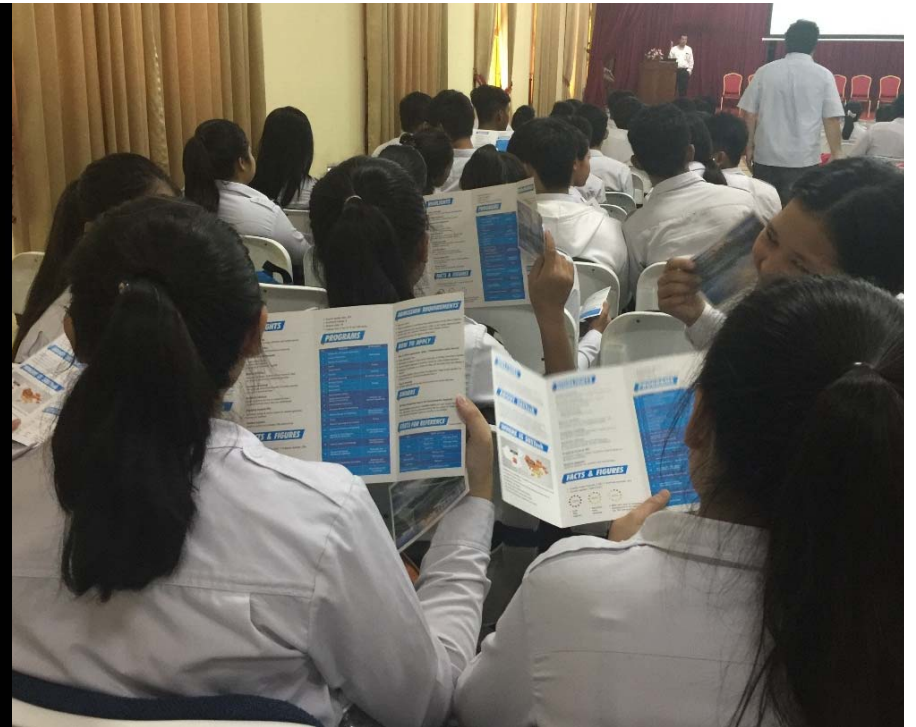
Little scientists on the move

Nobel Physics Laureate D. Gross

Dara 16

Reaksmei 16





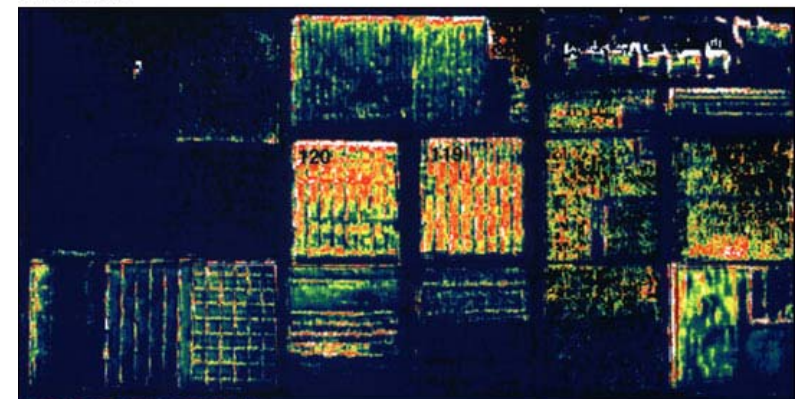
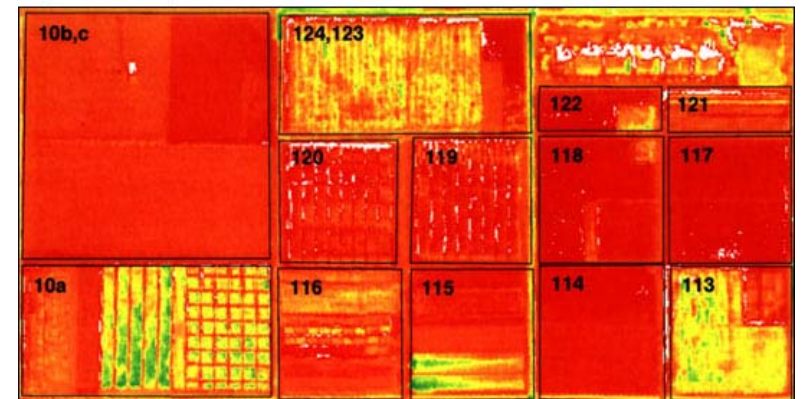
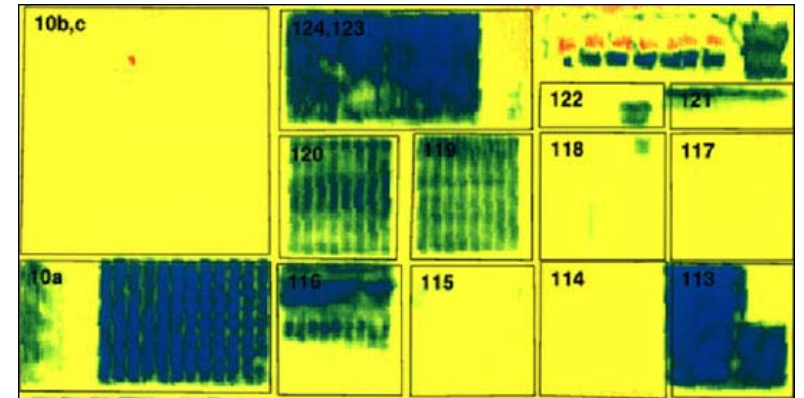
SUSTech, Shenzhen



Precision agriculture



SMWay



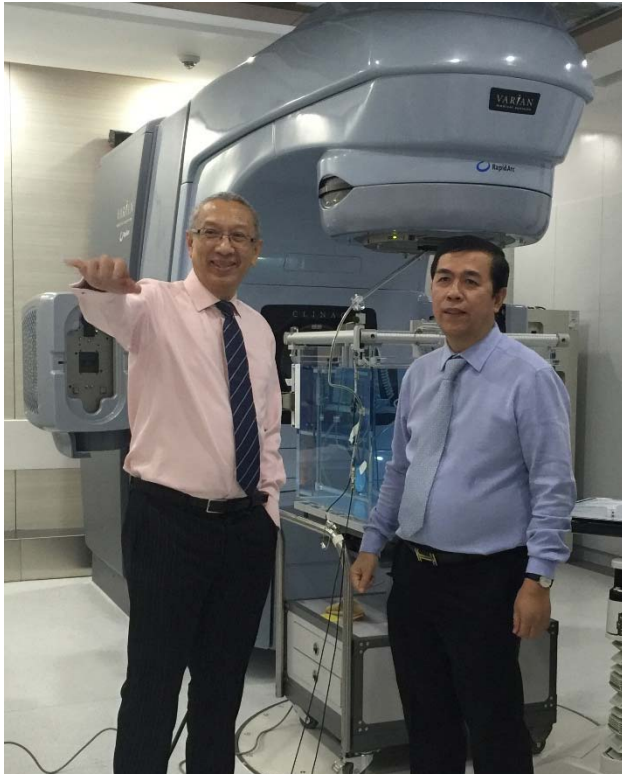
Biotech @ RUPP

Tissue cultures to plants





Nuclear Sciences in Cambodian medicine National Cancer Center 2018



Heritage Science

Material Sciences and Geo-physics

X-rays diffraction/Diffusion

Physico-chemical and magnetic analysis

Mortar-Chanchhaya





Natural resources *depleted*



Human knowledge *increases* every 12months

Redefining Knowledge in the 21st Century

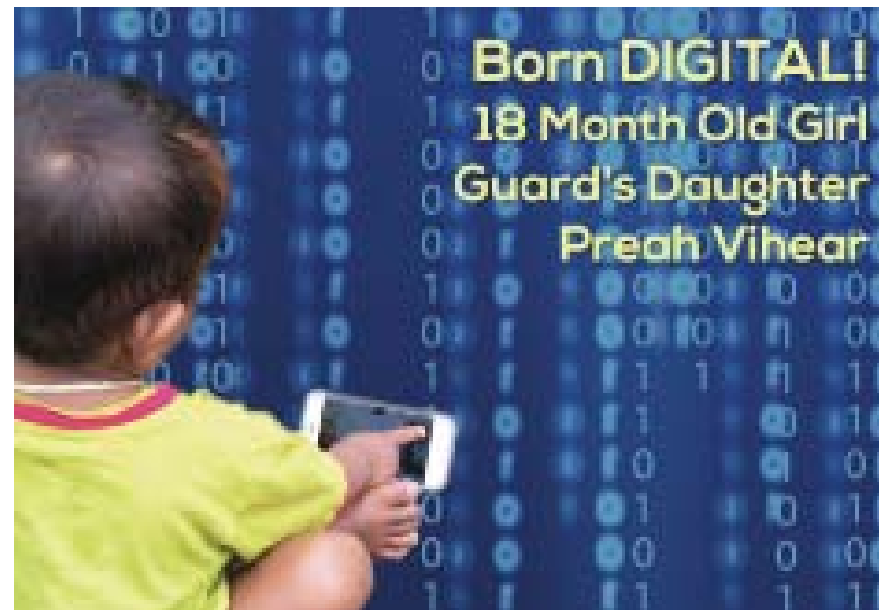
The 21st century is redefining the knowledge relationships that connect people, time and place. Novel curriculum problems cannot be solved by familiar solutions. Educators in schools, universities, colleges and workplaces are working to prepare learners for an uncertain world, equip them with the knowledge and skills appropriate for their chosen fields, and ensure a sustainable competitive advantage in an increasingly globalised and competitive workplace.

The Internet continues to be a disruptive technology, calling for profound curricular reform within the education sector. Mobile devices, apps, MOOCs (massive open online courses) and the internet of things are transformation enablers for 21st century education. The technology is here and its use is increasing rapidly at all levels of education.

Rapid incorporation of these revolutionary technologies into education is imperative if Cambodia is to produce a better trained workforce equipped with the STEM (science, technology, engineering, mathematics) skills and knowledge needed in an industrialising economy. STEM graduates form the core human resources needed to strengthen science, technology and innovation, which in turn will contribute to Cambodia's social and economic development.

Elements of this education transformation are already available and easily accessible, and can complement the traditional age-worn curricula which are of doubtful efficiency. This new learning in the digital era requires two essential skills – English and information literacy, easy access to the Internet via mobile phone, and a new type of classroom that is conducive to blended learning – a combination of both face-to-face and online education.

Technical infrastructure (i.e. mobile devices) and numerous apps are already accessible to the majority of Cambodian tertiary students. Abundant educational resources are freely available to learners through MOOC platforms (e.g. Coursera, edX, Degreed). These new learning technologies can greatly enhance



education across Cambodia. However, there are barriers to the widespread adoption of online learning. Bandwidth, for instance, significantly affects the ways in which learners can access and interact with online materials. To be successful, online learners typically engage in peer-to-peer dialogue or networking with intensive mentoring offline.

Mentoring has not always been favoured by largely conservative teachers accustomed to one-way communication via lectures. But we need go no further than one of the coffeehouses proliferating in Cambodia's urban landscape to see that students have wholeheartedly embraced this new online learning. Every day a veritable army of digital students colonises the coffeehouses of Phnom Penh, turning them into digital classrooms! But where are the digital teachers? Surely, it falls upon us to support the current momentum and enthusiasm by ensuring that Internet connectivity meets learners' needs, and to help our educators use new media technologies in a way that will turn them into learning coaches in this digital era.

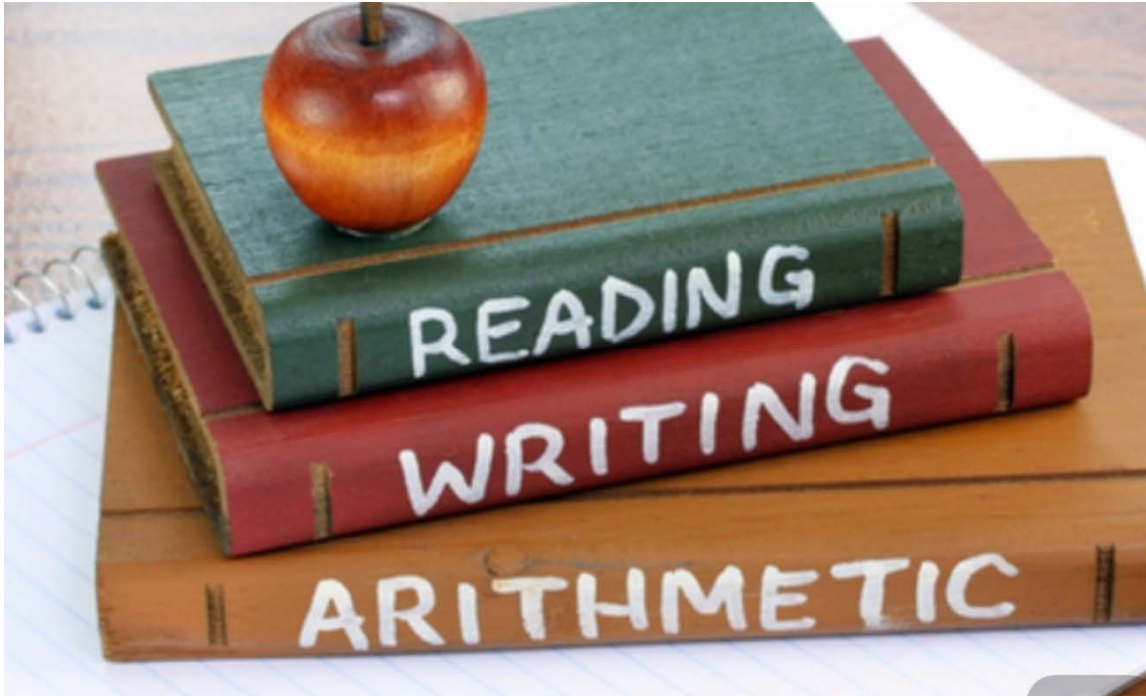
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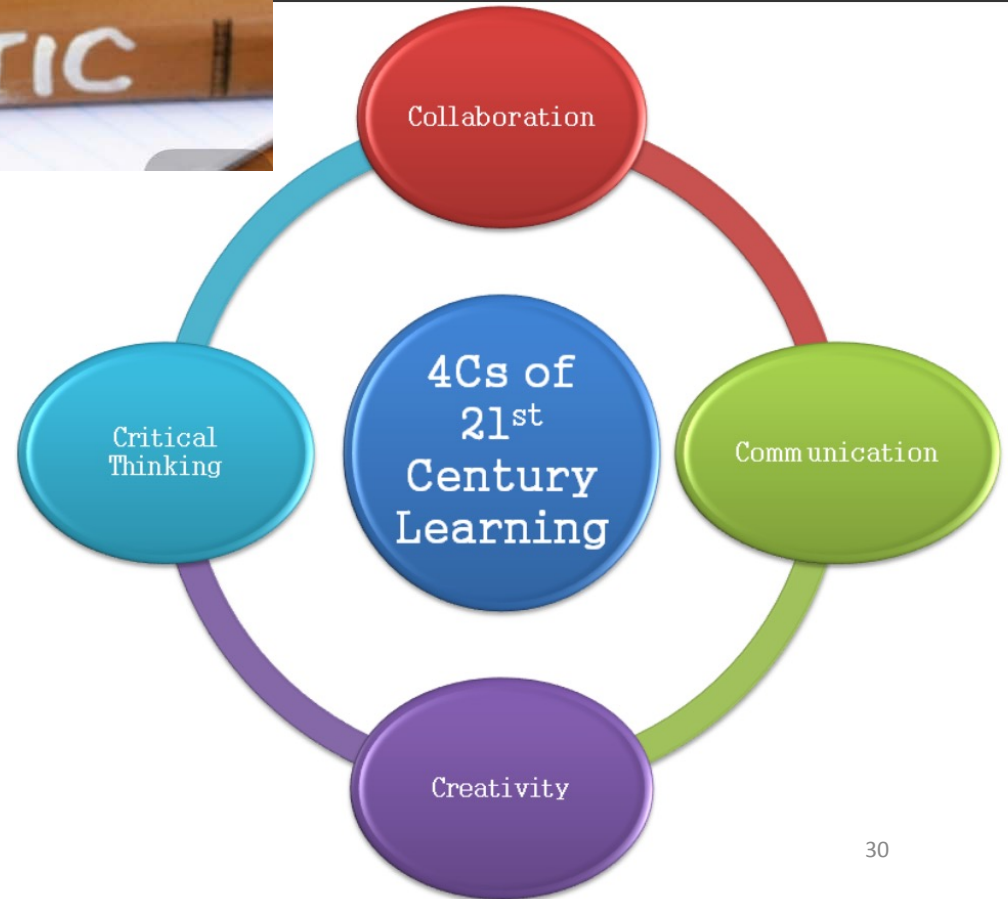


The digital learning imperative

What kind of education?



The 7 RC's



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C.2050

HOW TO GET THERE?

Policy coordination

IDP
STEMP
TVETP
STIP

+

S&Tagents
R&D

What professional competencies for S&T?



Technology Leapfrogging?



References, pictures credit and links available upon request