

"Multidisciplinary Space Education: A Bridge Between Technological Advances and Social Sciences to Ensure Long-term Sustainability of Space Activities"

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Ideal Dream World: Multidisciplinary Space Education Programs



Max Puzzle Globe World.
Credit: © HDpoly

- Picture of an idea:
Jigsaw Puzzle = Challenge.
- Complete, well rounded, nice, neat
and clean.
- Challenges?
- It's an idea worth fighting for.

My puzzle looks like this

- Identify “areas of opportunity”.
- “Finagle’s Law of Dynamic Negatives”



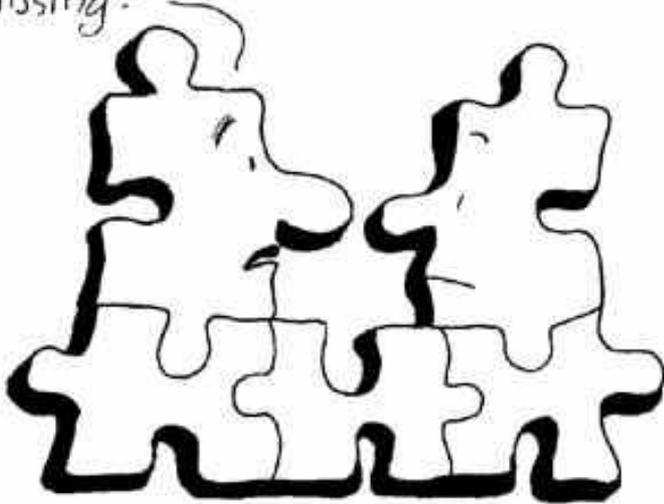
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Finagle's Law of Dynamic Negatives

“Anything that can go wrong, will—at the worst possible moment”.

What's the connection?

Ever get the
feeling something's
missing?



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Space Policy
+
Outer Space Activities Sustainability
+
Multidisciplinary Educational Programs jigsaw
puzzle
+
And Finagle's Law

EVERYTHING!

*“If you are planning for a year, sow rice;
if you are planning for a decade, plant trees;
if you are planning for a lifetime, **educate people.**”*

Chinese Proverb

“By failing to prepare, [we] are preparing to fail”.
Benjamin Franklin

Why is it important?

- National **education and preparation** to create foundation for growth:
- Awareness and interest in the community directly and indirectly related.
- Stimulus for economic growth.
- Establishing domestic policy and legal framework.
- Fulfillment of structural gaps with qualified personnel.
- Incentive cooperation.

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What is Happening?

- Constant growth of space projects and actors regardless economic setbacks.
- Private sector taking over government activities.
- Space activities evolved from exploration and research, to exploitation and use of outer space.
- Highly trained professionals, but due to rapid growth we need human resources in the public and private sector
- **Need to prepare.**

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Why is this important?

- Governments need skilled people to:
- Support infrastructure.
- Draft/implement the policy and laws.
- Authorize, supervise and develop space activities
- Scientists and technology developers must familiarize with binding and non-binding legal framework.
- Social sciences specialists need to know industry technical language to avoid disparity, contradiction and/or ambiguity in terms.

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- Reduce “Brain Drain” and lower training costs of required people.
- Every country is unique and have a specific Space agenda based on:
 - Organizational structure
 - Based on needs, advantages and deficiencies.
 - economic, scientific and technological capabilities.
- Long-term sustainable of space activities rests in a **multidisciplinary approach**.

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Why Multidisciplinary?



Photo Credit: Hendrik Ball
Grand Illusions Ltd

- Interconnection:
 - Academic disciplines
 - Science (Natural, Formal, Social, and Professional Applied Sciences)
 - Technology
 - Government Ministries Sectors

Suggested “Kick off”



National Level

- 1.ID State needs and areas of opportunity
 - A.Based on national development plan.
 - B.Sectors and business clusters
 - C.Areas of positive economic growth.

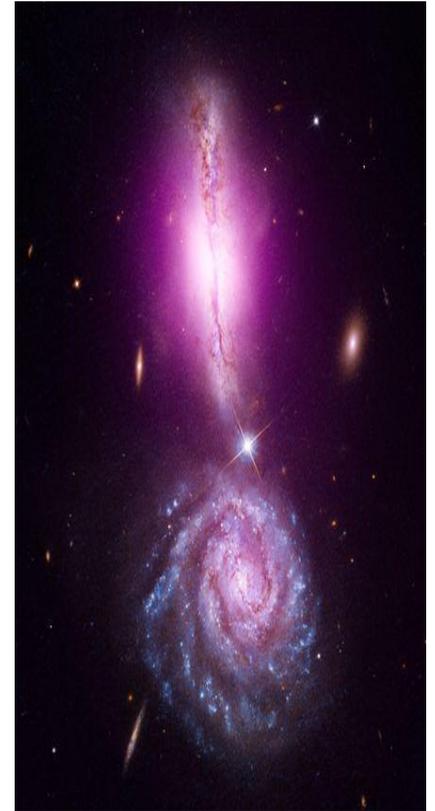
ID Ministries

- D.Milestones
- E.Gaps
 - Possible areas of cooperation among them

Credit: X-ray NASA/CXC/IfA/D.Sanders et al; Optical NASA/STScI/NRAO/A. Evans et al

Suggested “Kick off”

- Develop, implement and disseminate:
 - Space policy
 - Space agenda
 - Domestic Legal Framework
3. Determine skills and expertise required according to Space policy, Space agenda and legal framework.
 4. Locate gaps between the domestic educational system and the required specialization or expertise.



Credit: X-ray NASA/CXC/IfA/D.Sanders et al; Optical NASA/STScI/NRAO/A. Evans et al

Suggested “Kick off”



Credit: X-ray NASA/CXC/IfA/D.Sanders et al; Optical NASA/STScI/NRAO/A. Evans et al

5. Create Multidisciplinary Educational Programs

- A. Agreement with Universities
- B. Agreement with Technical centers
- C. Encourage internships in private sector.
- D. Invest in academia, technological and scientific research.

“The bridge”

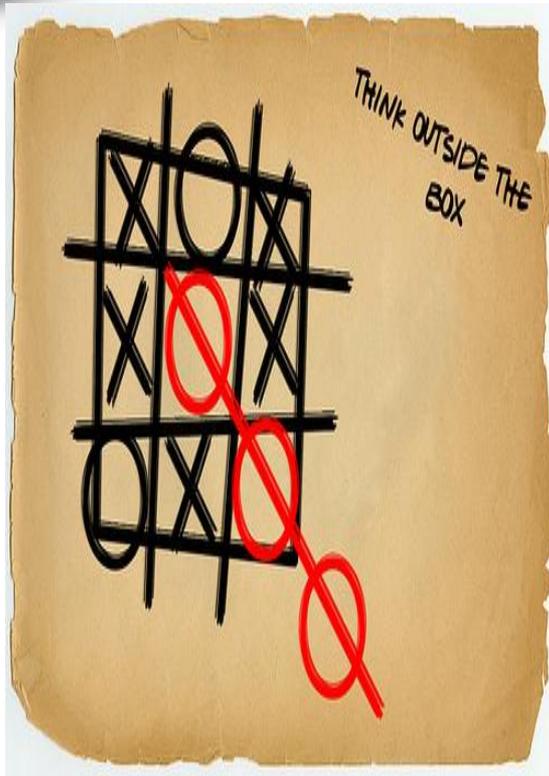


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- Complement scientific and technological national education programs with General Principles of:
 - Binding and non-binding International Space Law
 - National Space Law, and
 - Domestic Space Policy
- Possible Use Technological regional centers infrastructure as spearheads.

“The bridge”

- Engage in international cooperation to ensure harmonization & exchange of space knowledge on scientific, technological and social sciences.
- Disseminate and procure accessibility to national and international technical, scientific, legal framework and policy information relevant to its own space community.
- **Track development, measure progress and modify as needed.**

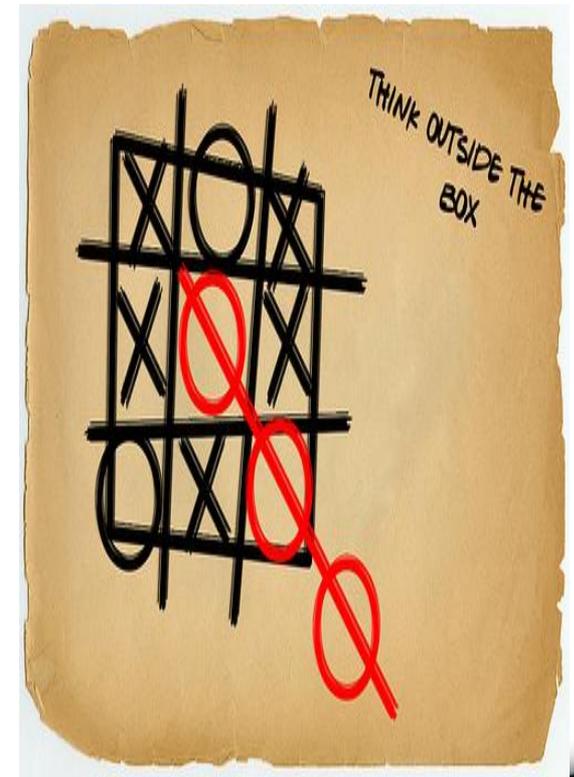


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•One needs to **take action to make things happen.**

•**Successful development and progress is achieved when what we know changes the paradigm we live in.**

•As a community **let's take a leap between knowing what we have to do and doing what need to do!**

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“Information is a source of learning. But unless it is organized, processed, and available to the right people in a format for decision making, it is a burden, not a benefit.”

William Pollard

“Success always comes when preparation meets opportunity”.

Henry Hartman



Red Galaxy Puzzle. Credit © Lynette Cook <http://extrasolar.spaceart.org>

Any questions?



Question Mark Nebula
Photo Credit: NASA

Thank you!
¡Muchas gracias!



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