


A shirtless male acrobat with a beard is performing a handstand on a wooden floor. He is wearing black pants and is in a dynamic, balanced pose with one leg raised and arms extended. The background is a dark, solid color. The image is framed by dark blue horizontal bars at the top and bottom, and vertical bars on the left and right sides.

WICKED PROBLEMS, CHAOS AND COMPLEXITY THEORIES, AND YOUR NEW VENTURE

PROF. GREGG LI, SEPT 2021 (30 MINS)



“Everyone has a plan
until they get

PUNCHED

in the

FACE!”

Mike Tyson



FINAL DAY'S AGENDA

- Recap of MMM One, The Grand Challenge for Your Business...What New Venture to Create?
- Getting ready to spring, refining the business model, and fire
- Introduction to MMM Two – A company-based team acceleration process
- Market Sizing, the First 2% of the Market
- Introduction to UN's 17 SDG Goals
- Are you ready as a Transformation Systems Leader and the Agent of Change?

LET'S UNLEARN

- Small gradual changes often do not just give rise to large impacts.
- Events can be predicated.
- Complicated systems can always be understood if you break them down sufficiently.
- $1 + 2$ does not always equal to 3 or greater than 3 (Synergy). Studying the parts does not give you more understanding of the whole.
- Autopoiesis, Emergence, Co-evolution, ecosystem, fitness landscape are not just for biology.



What do you see? What can you describe?



" We don't describe the thing we see. We see the things we can describe".

Descartes.

INNOVATION BUTTERFLY

■ The innovation butterfly arises because many innovation systems are made up of a large number of elements that interact with each other via several non-linear feedback loops containing embedded delays, thus constituting a complex system. In innovation settings, however, because success is based upon creativity, managers must actively embrace uncertainty. (Wikipedia.)



SESSION AGENDA

1. Today's Agenda
2. What is a Wicked Problem?
3. Wicked Problem and Your New Venture.
4. **MMM Two => Young Marco Polo Programme at a University**
5. Your New Space Venture (30 Second Pitches for 50% of the Class)

WHAT IS A WICKED PROBLEM?

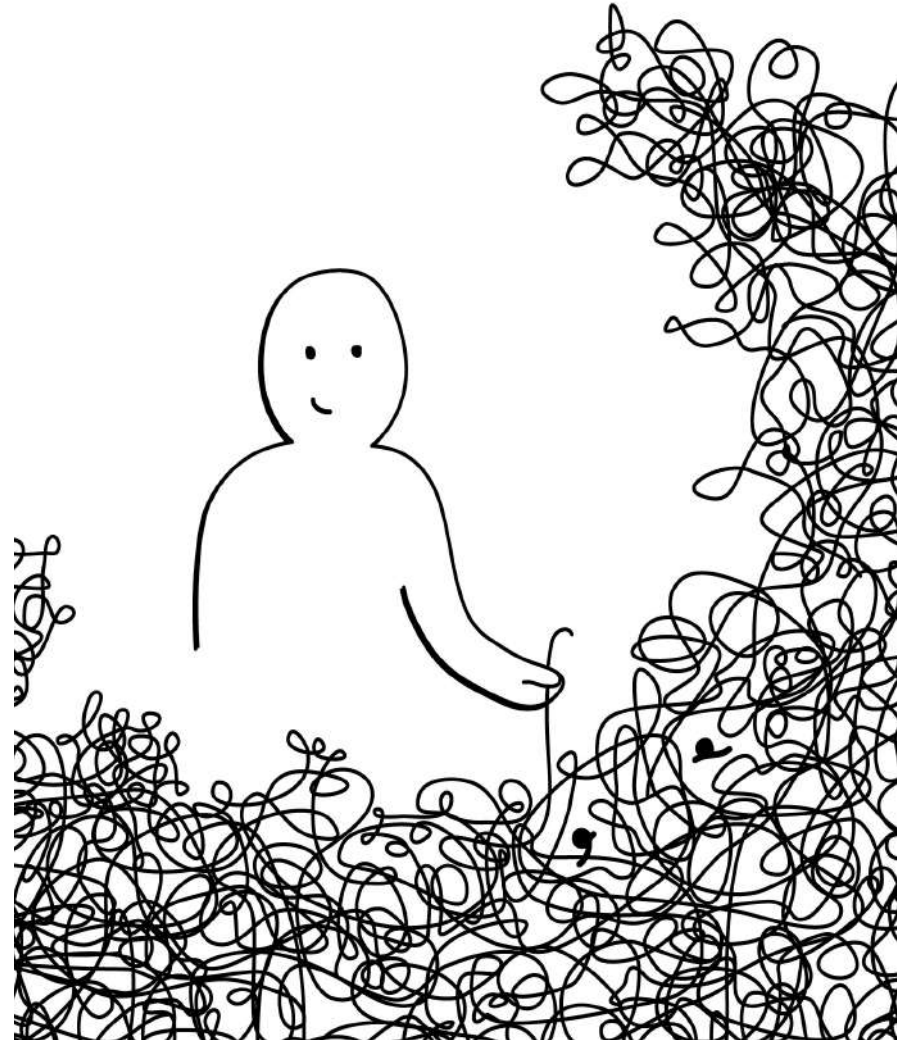
- A wicked problem is defined as a problem that is difficult or impossible to solve. It resists any one-off solution, and it is not “evil” per se. Because of complex interdependencies, solving one part may create other problems (unintended consequences). (Rittel and Webber, 1973)

CHARACTERISTICS OF WICKED PROBLEMS

1. No definitive formula for a wicked problem.
2. No way to know your solution is final. It's an on-going set of problem solving.
3. No true or false option, just second best. No immediate test of a solution to a wicked problem.
4. Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts and have knock-on effects.
5. Do not have a set number of potential solutions. Finite choices.
6. Every wicked problem is essentially unique.
7. Every wicked problem can be considered to be a symptom of another problem.
8. Not one view of the world. There is always more than one explanation for a wicked problem because the explanations vary greatly depending on the individual perspective.
9. The planner/designer has no right to be wrong and must be fully responsible for their actions.

KEY CHARACTERISTICS OF A WICKED PROBLEM

- 1.** It depends on how the problem is framed.
- 2.** Stakeholders have radically different views.
- 3.** Resources and constraints are fluid.
- 4.** Problem is never solved definitively.



EXAMPLES

- Poverty
- Education
- Climate Change
- Health and Wellness
- Social Welfare
- Famine or feeding the poor
- Water shortages
- Disease
- Political Instability
- **Your New Venture**



“The problems worth working on, are complex, require sophisticated equipment, intellectual tools, and won’t yield to narrow approaches...”
Heidi Ledford,
2015

WHAT DOES THIS MEAN TO THE NEW VENTURE?

- The economy will never reach equilibrium, the market does not know best.
- Knowledge cannot be managed like commodities because it can create more of itself, for almost nothing – like computer software.
- Ordered systems do not collapse into chaos if left alone.
- People do not behave rationally in their economic choices.
- It is impossible to assign clear boundaries to systems like nations, MNCs, or local government organizations.
- Nobody is in charge of the Internet.
- Ideas spread not by rational thought, but by fashion and fads.
- **It is almost impossible to determine how successful your new venture is going to be, by looking at your initial value proposition.**

(Source: Battram, 2001)



WHY WE BEGAN WITH A MOONSHOT?



HOW TO USE THIS MOONSHOT FRAMEWORK?

- Three key implications that merit highlighting are:
 - The need for **different learning strategies at different situations**.
 - Challenging the notion of 'learning lessons' and good and best practice ambitions of many companies, as only of value for certain types of situations and issues (the 'simple' and 'complicated' domains). **No such thing as a one solution fits all.**
 - Recognizing the value of '**probing**' as an action strategy, which means 'investing in failure'. Understand 'weak signals' and the role they play in innovation and change processes. Most information systems zoom in on and only hear 'strong signals'.
- ***"too much focus on the expert role in the complicated can hinder innovation that could come about from a more 'let's see what happens' approach to problem solving."*** (Woodhill, 2008)

SOURCE: IBM 2010
"CAPITALIZING ON
COMPLEXITY"

1. Today's complexity is only expected to rise, and more than half of CEOs doubt their ability to manage it.
 2. Creativity is the most important leadership quality, according to CEOs.
 3. The most successful organizations co-create products and services with customers and integrate customers into core processes.
 4. Better performers manage complexity on behalf of their organizations, customers and partners.
- **As a result, The three main factors which led to the success of these companies in a complex environment were (3 Critical Success Factors or CSFs):**
 1. **Embodying creative leadership**
 2. **Reinventing customer relationships**
 3. **Building operational dexterity**

Conclusion: Implications for the Space Entrepreneurs

1. Be mindful of pattern management, **and not of control.**
Because complex systems have unpredictability built in, the certainties of of “Command and Control” approach to management no longer holds true.
2. Focus on relationship between systems.
3. Focus on Critical Success Factors (**CSF**)
4. Honor the power of emergence in complex adaptive systems
5. Don't micro-manage but find ways to enhance trust and let managers lose
6. Identify the **critical control components (CCC)** that must be controlled and let go of the rest.
7. Keep a set of simple rules and general specs
8. Encourage diversity and recombination
9. Keep a tight watch on the ecosystem and be ready to move with it.
10. Learn faster than the rate of change.

YOUR NEW VENTURE IS
A WICKED PROBLEM





NEXT STEP: HOW MIGHT WE START A BIGGER FIRE?

LEVERAGING ON OASA AND YOUR MMM





- SPACE PORTAL : HONG KONG -

GRAND OPENING | 20 FEB 2021



DOORWAYS TO THE SPACE ECONOMY

THE NEW SPACE ECONOMY FOR ENTREPRENEURS AND BUSINESSES
HAS NOW ARRIVED IN HONG KONG

- SPACE PORTAL : HONG KONG -



The Wicked Problems Worth Solving for OASA

**How might we develop global systems leaders
who can help solve the world's many wicked
problems?**

**How might we leverage the wisdom of our
global leaders, the uniqueness of our
universities, Industry 4.0, and challenges
confronted by entrepreneurs and Smart
Cities?**



OASA VMV

VISION

HONG KONG AS A SPACE PORTAL
BY 2030

KEY MISSIONS

DELIVERY OF THREE MISSIONS
1. SPACE “XCCELERATORS”
2. SPACE READY
3. SPACE PIONEERS AND
AMBASSADORS



But “How” can we help young leaders
become Astropreneurs?



MMM AND HOW YOUR NEW VENTURE IS IGNITING OUR YOUTH?

MMM TWO OVERLAPS INTO OUR YOUNG MARCO POLO PROGRAMME



MMM **TWO** => YOUNG MARCO POLO

1. Each of the Champions here, with sponsors support, decides to proceed to MMM Two by **mid December 2021**.
2. OASA identifies the right university and organizes the student team, based on the size of the problem. Maximum 5 students per team. Max duration, 6 months. Ave is 3 months. Project kicks off in Jan 2022.
3. Each Champion becomes the Project Manager and convince the students why that problem is worth solving. Should show them your Most Viable Product, Data for Marketing Size, etc.
4. OASA will be providing monthly problem solving tools, one topic once a month.
5. Champions present their new business to the sponsor over 30 minutes, at the end of MMM Two.



OASA's YMP Approach

Discovery questions are the hard questions; and wicked questions are the hardest of them all.

- To articulate the problem, form hypothesis, conduct experiment using multi-interdisciplinary innovative problem-solving approaches.
- To work together and leverage the strengths of **teamwork**.
- To reference wisdom across space-time (asynchronous and tailored learning platform).
- To consider others' viewpoints and convince others with data.
- To put together a sound proposal and convince sponsors to action.

What is the System behind the Young Marco Polo Program™?

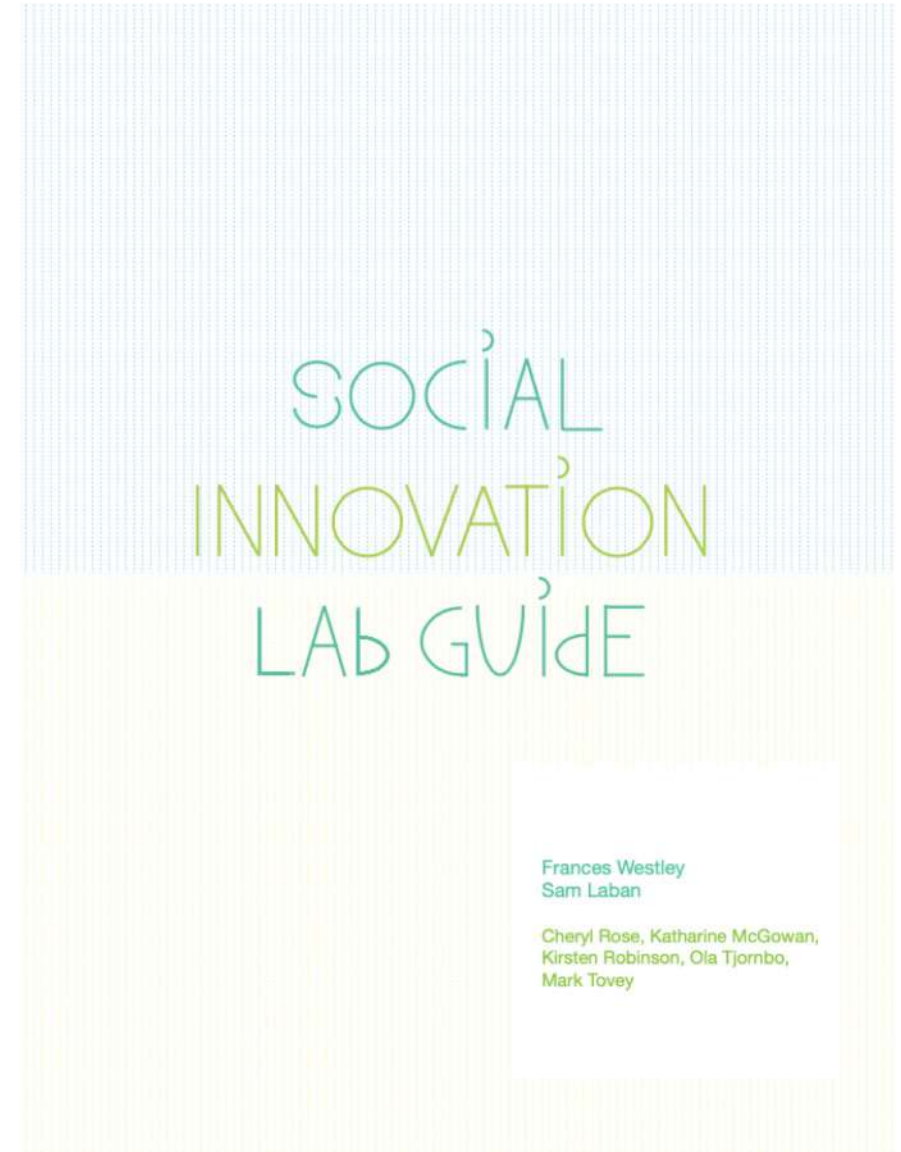
Roles and Accountabilities

- **The Young Marco Polo Program is administered by students, guided by older students interned at OASA, and powered by OASA headquartered in Hong Kong. *OASA provides overall coordination, competency workshop, project overview and continuous quality improvements, new business and science know-how, and links to incubators and accelerators.***
- **One Process, Three Stages, and Seven Elements over One Semester**
- **Systems and Relationships:**
 1. An OASA Corporate Member with a wicked problem for the digital economy,
 2. The Project Manager who owns the project.
 3. A University, One to Five Students.
 4. OASA's global mentors (global executives, scientists, the government institutes, and international organisations such as the UN.)
 5. OASA Quality Assurance and Project Directorship



One Process. Three Stages. Seven Elements

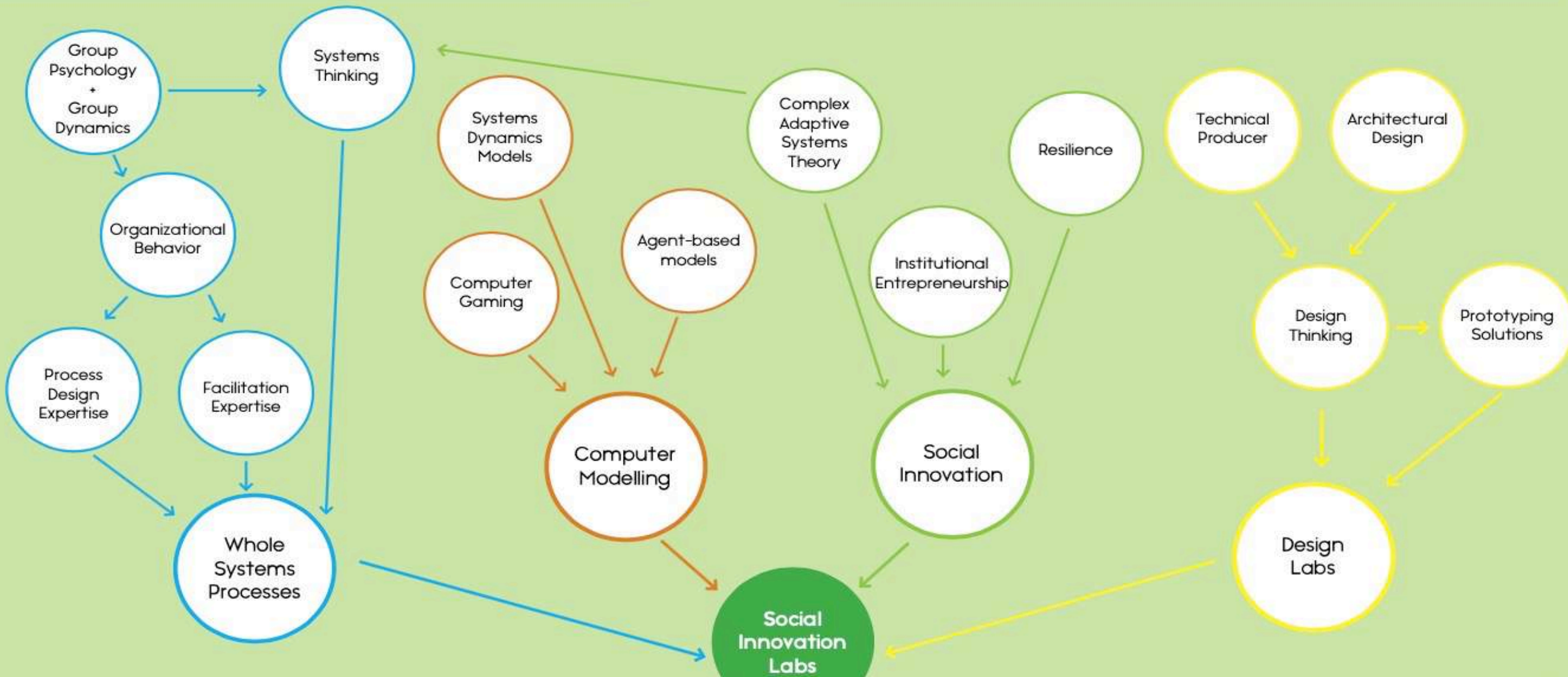
- **One Process:** The Social Innovation Lab Process (On the Space Economy)
- **Three Stages:** co-sensing, co-inspiring, co-creating with a company, over 3 - 6.
- **Seven Elements:**
 1. reframing with a space context,
 2. forming hypotheses,
 3. embarking on a learning journey,
 4. sense-making with global team mentors,
 5. testing and data validation,
 6. creating prototypes and minimum viable products, processes, or service (MVP), and
 7. demonstrating a pitch to the sponsors.



ANTECEDENTS

to Social Innovation Labs

Lab processes are certainly an important element in the suite of emerging and evolving practices that can support the urgent need to tackle big social and environmental challenges. It's clear that effective labs hold great potential yet also true that these processes often fall short of their ultimate change goals. Nor are lab like processes a new idea. Although it may be argued that both connectivity and complexity are intensifying, those determined to act assertively and creatively to address these challenges have been proposing new forms of collective decision making and action since the early 1960s; new forms proven better able to govern our responses to social and ecological issues than the electoral process.



Process, Learning, and Applications

What Project Executives from Sponsors and Students Would Learn

Articulating and Reframing the Problem Statement

A problem that can be framed, can be solved. The challenge is how to articulate a moving and complex problem that has many evolving parts and many stakeholders.

Creating and Considering a Problem-Solving Approach

Learning to formulate a roadmap, being mindful of the risks along the way and the limited capabilities and resources of the team for example, and coming up with a process that would arrive at the mission, is the real test. Like a Space Mission, once engaged, there is no turning back. Key contingencies and risks must be mapped and mitigated away.

Presenting and Convincing Power-brokers

No one wants to be solving the wrong problem or one where few are willing to commit resources, energy, or time to resolve. Our process allows the problem solvers to present and justify their challenge to the sponsors.



Sample Monthly Subjects and Applications

For Students and Change Champions

Innovation and Entrepreneurial Subjects and Tools: Business Canvas, Rapid Prototyping, UX, Canva, KPI, Critical Success Factors (CSF), Critical Control Components (CCC), Digital Canvas, Padlet, MVP, and Lean Start-up Methodologies.

Consulting and Six Sigma Tools: DMAIC (Define, Measure, Analyze, Improve, Control) , DMEDI (Define, Measure, Explore, Develop, Implement), Gap Analysis, Change Management, and Agile Innovation.

Space Technology Subjects and Tools: UN 17 SDG Goals, ESG, Quantum Technology, Miniaturisation, Remote Sensing, Kessler Syndrome, Space Law, Space Insurance, Long Distance Communications, Humane Technology, and 3D Printing.

Leadership Development Subjects and Tools: Executive Coaching, Team Mentoring, Problem-Based Learning, Competencies, AI-Assisted Learning, Chatbots, Cross Cultural Team Development, and Project Management and Governance.

SUMMARY : MMM TWO FEATURES – JAN 2022

- Company Specific – One Problem Per Company
- Matching of University and Student Team
- Advisory on Linkage into University Funding
- Four Hours of Coaching for the Change Champion
- Jam Sessions and Roundtable with Students
- Half-Day Training Course Each Month at OASA Facilities or Your Office
- A Research Proposal
- A Map of the Journey
- OASA accompanied pitch to Sponsor
- Advisory on Linkage to Your Company's ESG
- HK\$ 8,800 per student per month x (3 to 6 months). Minimum two students on the team.
- Waived individual membership for Change Champion and student membership (valued at HK\$ 780 + \$390)

WHY WOULD YOUR SPONSOR SUPPORT YOU?

LEVERAGING ON OASA AND YOUR MMM



Case: How Does Venture Capital Invest in a NewSpace Company?

Investing in Tomorrow's Star Businesses

- **Alignment with Chaos:** Thesis and value-driven
- **Diligence:** Intentional, emergent, and diverse
- **Huge upside with disruptive technologies:** Where is the market?
- **Synthesis and not just analysis:** Quantifiable and Comparable:
 - Team (30%), Deal Dynamics (12%), Product and Services (12%), Board/Governance (9%), Business Model (9%), Market (9%), Competition (9%), and Financial (9%).

Source: Space Capital, 2021.

WHY SHOULD YOUR SPONSOR INVEST IN YOU?

1. The Champion or Highflyer (55% → 15%)

- Innovativeness + Grit + 10,000 Hours + An Experienced Surfer + Your Aim + Integrity + Self Awareness

2. The Projected Market (15% → 30%)

- How Painful + Value Proposition + Unique Selling Proposition + Your Solutions or Key Activities
- Sensing + Total Available Market (TAM), Serviceable Available Market (SAM), Serviceable Obtainable Market (SOM)
- Competition + Readiness of the Ecosystem

3. The Customer Franchise (how customers love your product) (15% → 20%)

- Reinventing customer relationship + customer segment + channel +key partners

4. The Founding Team (10% → 25%)

- Complementary Skills, Camaraderie (Team Spirit), Bench-strength, Advisory Board, Angels, etc.

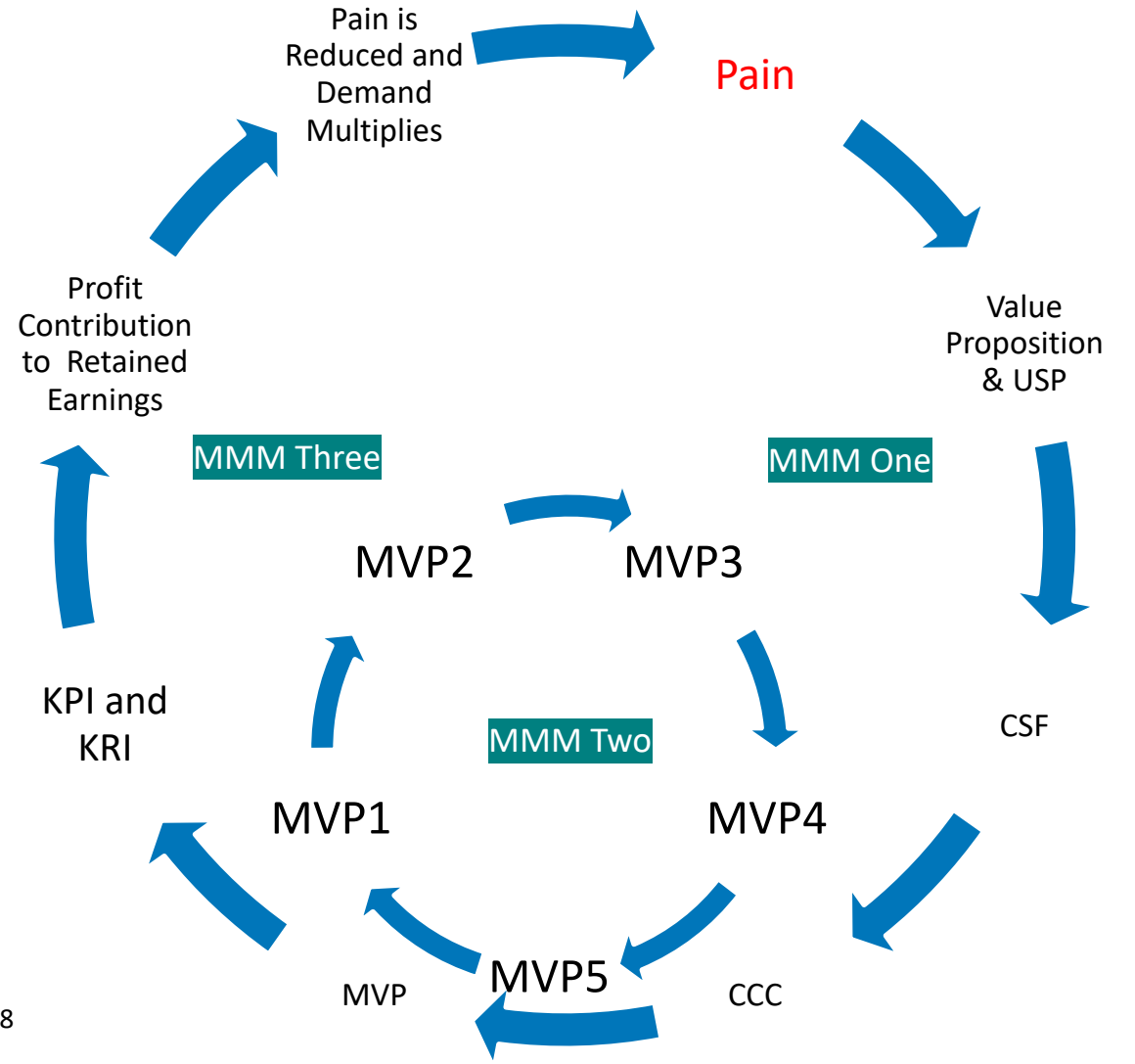
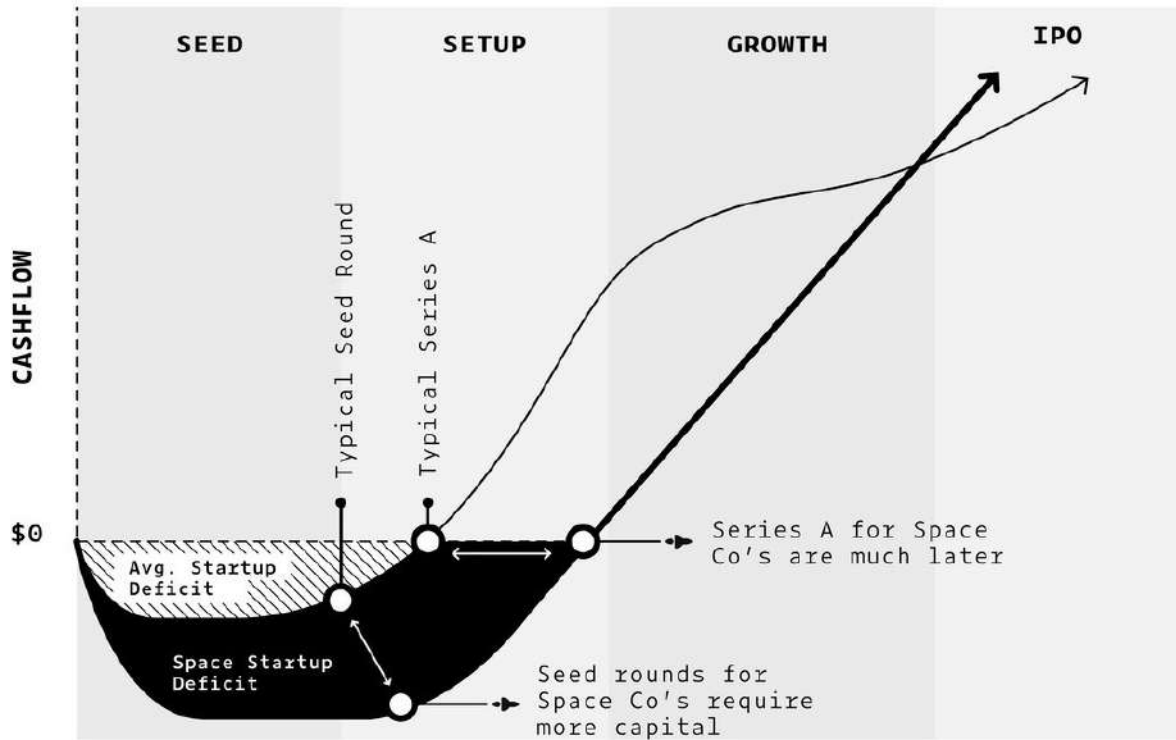
5. The Evolving Business Model and Governance of that Model (5% → 10%)

- The Power Dance + The Evolving Products and Services (MVP) + scalability + underlying technologies + IP
- Finance + cost + resources needed + revenue stream (this is last but will be first at time of IPO!)

Your One Page Start-Up Journey

In becoming an on-going concern

THE SPACE FUNDING GAP





Concluding Remarks

Are you ready?

- The NewSpace Economy has arrived.
- Do you want to manage a 7-11 as a business or do you want to change the game?
- **Only Student Members can be a Young Marco Polo. 150 Free annual membership for 2021.**

*But whatever the venture questions
being posed, we will need you to
become systems leaders who can
listen well, work outside one's
discipline, one's culture, and one's
mindset.*

*Entrepreneurship is about active
exploration.*

聽心



YOUR NEW VENTURE

USING 30 SECONDS, DESCRIBE YOUR NEW VENTURE

