Testing Transformative Energy Scenarios through CLA Gaming

Presenter Matti Minkkinen

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Conference on *Improving Scenario Methodology: Theory and Practice*
Warwick Business School, Coventry, UK
14th – 15th December 2015

Structure of Presentation

1. Testing and elaborating scenarios through serious gaming
2. Transformative energy scenarios
3. Applying the Causal Layered Analysis game to test scenarios
4. Conclusions and open questions

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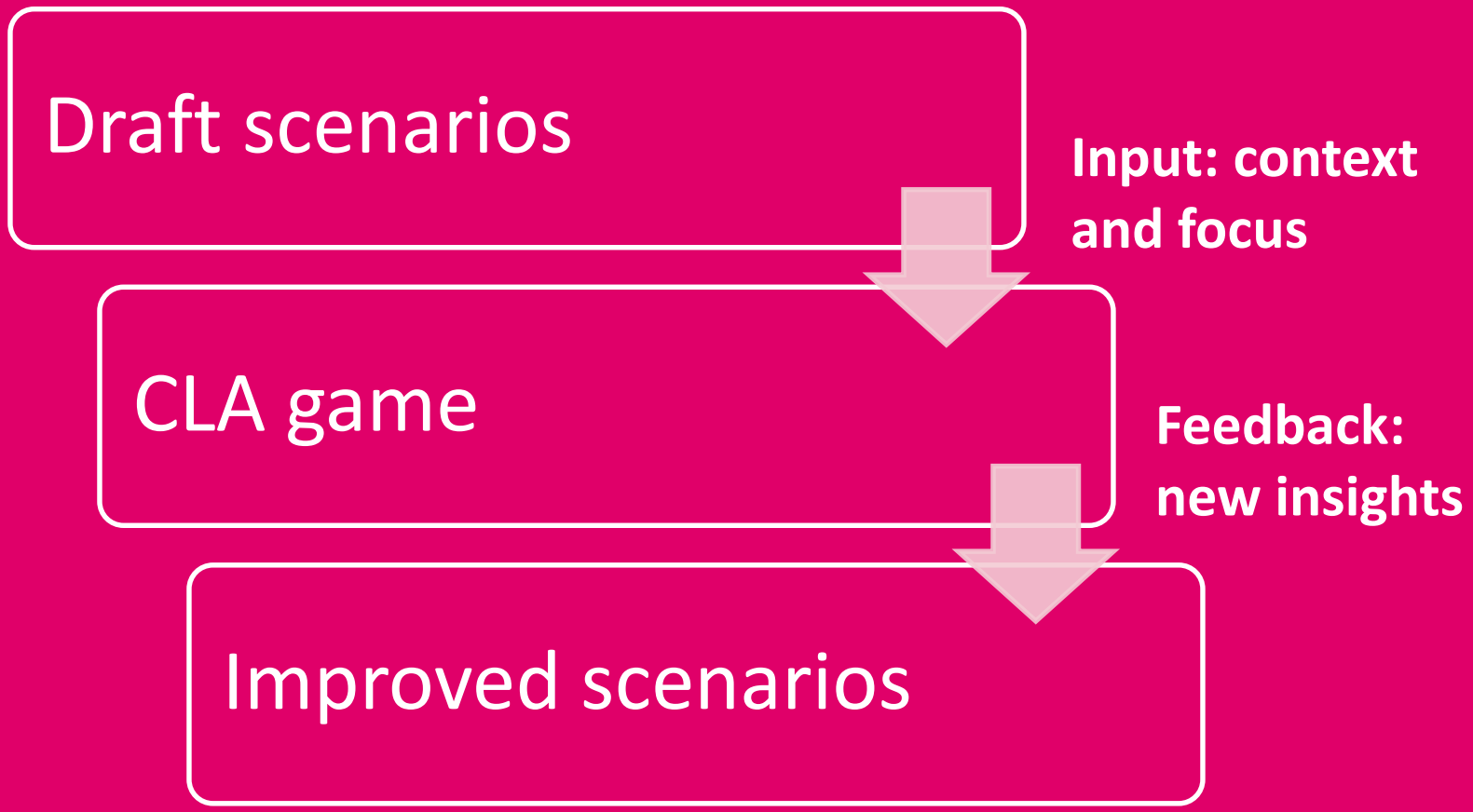
Development of CLA scenario game by Heinonen, Minkkinen and Inayatullah started at Future Infinite Conference in Helsinki 2014

CLA game session by Inayatullah for the FFRC students and staff

Pilot CLA game was conducted at “Futures Studies Tackling Wicked Problems” conference, June 2015

Testing and elaborating scenarios



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2. Transformative energy scenarios

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Transformative Scenarios 2050

- NEO-CARBON Energy Project (2014–2019)
  - VTT Technical Research Centre of Finland, Lappeenranta University of Technology, FFRC
  - Funded by Tekes, the Finnish Funding Agency for Innovation
  - Zero-emission energy system: renewables, energy trading, storage
- FFRC: *socio-economic* futures related to energy system
  - What kinds of societal changes does the neo-carbon energy system promote and enable?
  - Citizen perspectives and transformational futures
  - How can businesses utilize these changes?

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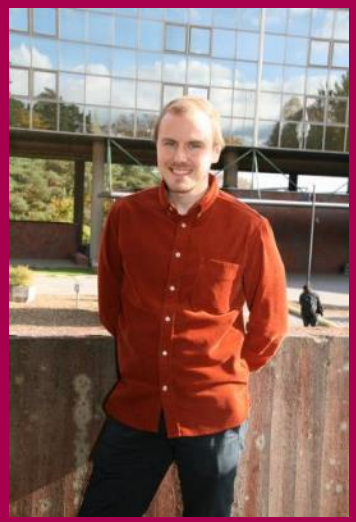
Research team of the foresight part of NEO-CARBON ENERGY

Finland Futures Research Centre (FFRC)/
University of Turku (UTU)

Lead: Prof. Sirkka Heinonen



Project Researcher Juho Ruotsalainen

Project Researcher Joni Karjalainen

Research Intern Marjukka Parkkinen

Research Intern Nick Balcom Raleigh
(Millennium Project Intern)

TRANSFORMATIVE SCENARIOS 2050

Deep ecology

ECOLOGICAL AWARENESS

Pragmatic ecology

RADICAL STARTUPS	NEW CONSCIOUSNESS
VALUE-DRIVEN TECHEMOTHS	GREEN DIY ENGINEERS

Corporate *("Centralized")*

PEER-TO-PEER

Neo-Communal *(Distributed)*

Radical startups
(deep ecology + corporate P2P)

Society is business-oriented, but economy is driven by small startups known for radical values.

New consciousness
(deep ecology + distributed P2P)

Threat of collapse has led to less individualism and new consciousness of interconnections.

Value-driven techemoths
(pragmatic ecology + corporate P2P)

Peer-to-peer approaches are practiced within global technology giants (“techemoths”) which develop energy technologies.

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Green DIY Engineers
(pragmatic ecology + distributed P2P)

After ecological collapse, engineer-oriented citizens have organized themselves as local communities to survive.

3. Applying the Causal Layered Analysis game to test scenarios

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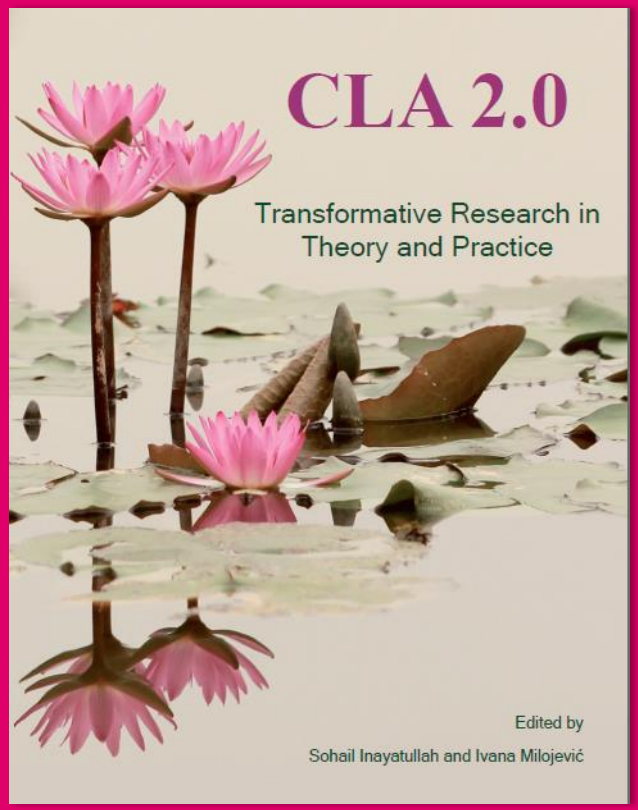
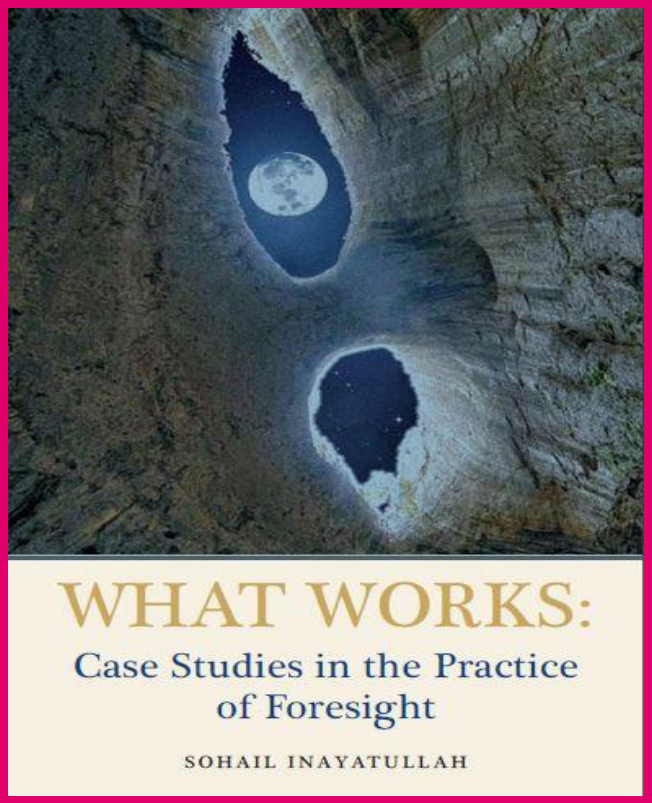
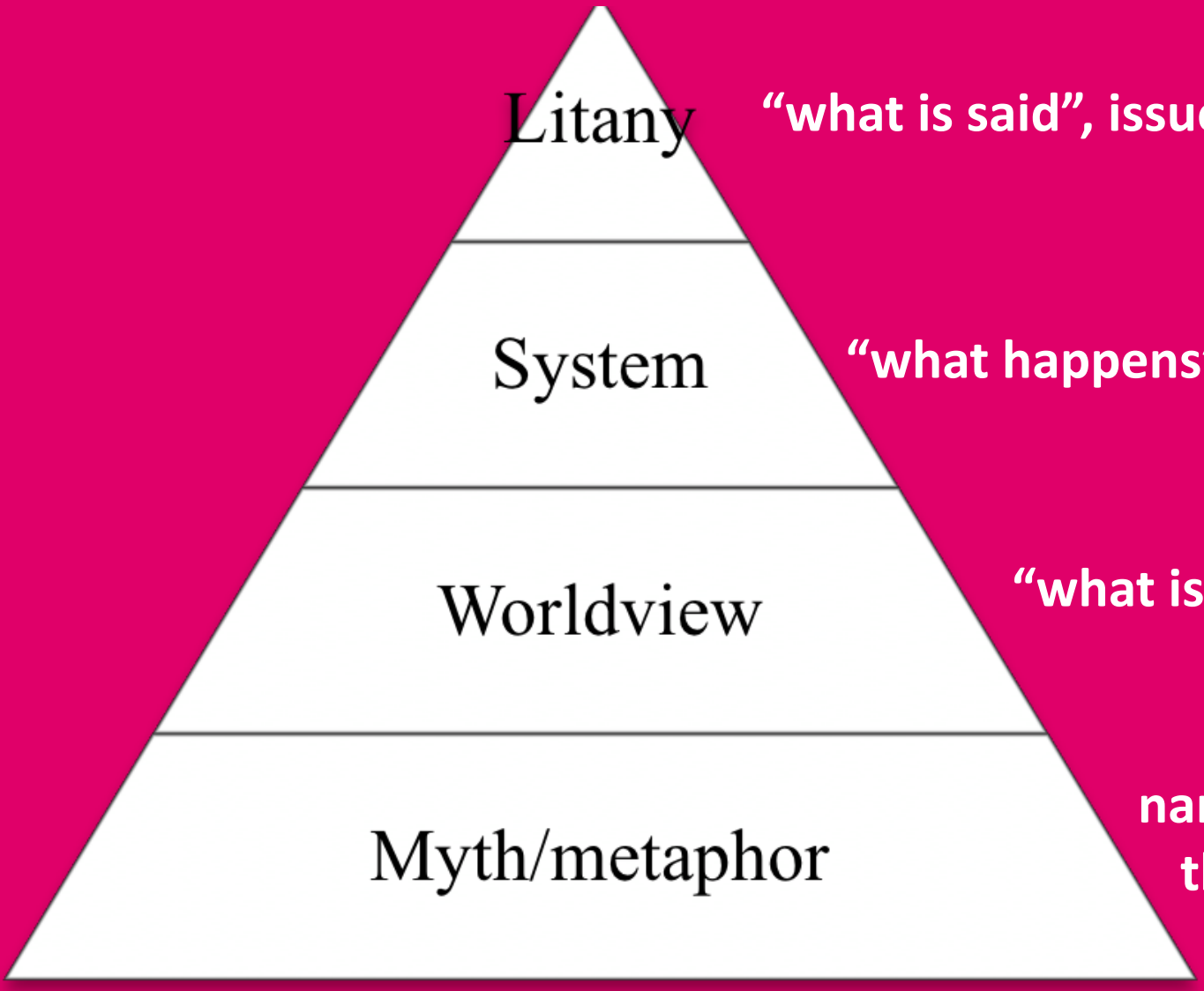
Causal Layered Analysis (CLA) is a futures research method developed by Sohail Inayatullah.

Investigation of alternative futures by studying beliefs and assumptions.





CLA Layers



"what is said", issues

"what happens", causes and effects

"what is believed"

narratives that inform the other layers

“Original” CLA game according to Inayatullah (2015a)

Participants divided into four groups according to CLA layers: litany, system, worldview and metaphor

1) **Choose a topic**
2) **Litany group presents a headline**
3) **Back-and-forth interaction between groups**
   - **System view, stakeholder viewpoints, metaphors**
4) **Outcome: a new litany based on the discussion**

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Neo-Carbon CLA Game

Format was modified for the objective of elaborating existing scenario drafts

Participants were divided into five groups according to the four scenarios – not into the four CLA layers

Game proceeded in two phases

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Phase 1: Working on one of the scenarios in a small group
CLA layers were covered sequentially

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Litany

Front page of a future newspaper was presented

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DIY Engineers Fix It

As the world has faced an unforeseen
communities have begun to sprout a
oriented citizens have lit up their bright
problems we all are today facing. Their
survive in today's harsh conditions, but
locally to actually thrive in prosperous
earth.

I had the chance to visit one of these
Otaniemi, which is located on the geo
Espoo of Southern Finland. Life in Ot
rumors had been telling me. Consen
achieved surprisingly well, as a techni
found to any issue imaginable and a
resources. Cutting edge bio hacking te
recycling have ensured abundance in su

A Deadly Fungus Is Killing All Our Bananas

You might be glad you stored those 18 black bananas in your freezer ("in case you want to make muffins"), if a killer fungus that's wiping out the world's banana crop continues to spread.

The crop-killing, soil-borne fungus called Fusarium wilt had been killing banana plants in Southeast Asia recently appeared in the Middle East, Africa, and Australia, leaving fruit exporters baffled and nervous.

Read more at:
http://motherboard.vice.com/read/elect-me-if-you-want-to-live-forever

U.S. INTERNATIONAL 中文网

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Radical Startups to Save the World

It has become increasingly clear that the ecosystems of startups are the new engines of economic growth. Not only does the new breed of startups help us prosper, but promises societal and environmental good as well. Startups are the vanguards of deep ecology values, and they often offer the best environment for self-expression and spiritual growth.

Finland is an illuminating case example. The Nordic country, which for long suffered from the demise of Nokia, was never saved by a new Nokia as many Finns hoped. Instead, flocks of small gaming companies emerged to lift Finland from the depths of depression. After these ambitious companies had reached hundreds of millions of happy gamers, they continued to use their influence to gamify the battle against climate change.

This business path proved so lucrative that the whole country followed the example of the gaming industry (as it had followed Nokia before). Finland is now the world's leading peer-to-peer society, organised around grass-roots startup ecosystems.

The Quest for Electromagnetic 'Full Absorption' and the End of Power Lines

"Harvesting the energy of electromagnetic waves" sounds redundant. As energy is a thing at all—in its most reduced, pristine sense—it is just that: electromagnetic waves. These waves, which can be viewed as electric and magnetic waves traveling separately but joined together, are just charged particles accelerated, reflecting changes within electric and magnetic fields. This is how energy freed from mass gets from place to place at the speed of light.

Harvesting these waves is the subject of a paper out this week in the Applied Physics Letters boasting the possibility of "full absorption." This means the conversion of electromagnetic waves within a given range of frequencies with almost 100 percent efficiency. Fully absorbent materials reflect nothing and waste nothing.

Read more at:
http://motherboard.vice.com/read/the-quest-for-electromagnetic-full-absorption

The Neo Carbon Times
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Cool Things That Matter – Techemoths Offer Platforms for Talent

It was only ten years ago that Alex, a Disruption Manager at Google, had to leave his San Francisco apartment every morning for a gruesome commute to Google Headquarters. The sight of armies of beggars and Standard Engineers made him shiver in disgust. Luckily for Alex, those are days long gone, as he has moved with his family to Google residential area.

-"It is such a pleasure to see this abundance of healthy smiles, smooth skins and sleek bodies around you every day. Thanks to Google, I Only Do Cool Things That Matter[1] with the smartest and the most talented people money can buy. I think the new Google best represents the Silicon Valley vision of emancipation, creativity and open source", Alex tells The Neo Carbon Times.

In 2010s, Google was one of the first big companies to transform itself as platform for peer-to-peer worker teams. This radical change in organisation structures has proved lucrative for Google as well as many other technology companies, which have grown into Techemoths – companies resembling cities or city-states of the past in many respects.

Elect Me If You Want to Live Forever

Zoltan Istvan wants to remove his own arms and replace them with stronger, robotic ones. He's also running for president.

On this week's podcast, we meet Zoltan and talk about all things transhumanism and immortality. We haven't exactly been beating around the bush with this week's Goodbye, Meatbags! theme, but on this episode of Radio Motherboard, we tackle the idea that our bodies are terribly limiting; and we talk at length with a guy who has fully bought into the idea that technological advances can not only extend our lives, but can perhaps help us conquer death.

Read more at:
http://motherboard.vice.com/read/elect-me-if-you-want-to-live-forever

The Neo Carbon Times
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We the Post-Human

The Girl Who Would Live Forever

Matheryn Naovaratpong was two years and two months old when she didn't wake up on the morning of April 19th, 2014. She was rushed to a hospital in Bangkok, where

many, for reasons I really cannot fathom, still linger
dating back to at least the 16th century. I mean, it
Scott, 35, a post-human. For those who have
bout this new notion of humanity, "post-human"
ly strengthening movement which in recent years
argued that humanity is facing a change in
r.

does not see humans as individuals separate from
nature, but instead as deeply interconnected.
s not only a philosophical idea but concrete reality.
connected to the Network, how can I draw the line
and the Hive Mind which I am part of? How can I
more important than a mouse, when 99 % of our
nd in the end, when everything from physics to
o the Network is information, aren't we all part of
we really have found the science of God!", Scott

differ from what was so long understood to be a
der why many people are finding hard to take the
However, a staggering 75 % of people under 40
post-human. This new generation might end up
modern view of separate, self-profit seeking
major factor behind the global environmental
als pursued increasing material wellbeing and to
ds. Now, as this notion of selfish individuals has
believe the ecological crisis can finally be tackled
New Age.

System / social causes
PESTEC Futures Table

Worldview

Roles: motivating, threatening factors; allies, enemies

Date: 11.6.2015 Group 2 NeoCarbon Scenario: Value-Driven "Techemoths"

Underground anti-corporate hacker

Your Real Name: _____

Motivating **Threatening**

Best Ally **Worst Enemy**

Date: 11.6.2015 Group 3 NeoCarbon Scenario: Green DIY Engineers

Retired University Teacher

Your Real Name: _____

Motivating **Threatening**

Best Ally **Worst Enemy**

Date: 11.6.2015 Group 4 NeoCarbon Scenario: New Consciousness

Robot/Artificial Intelligence/Cyborg

Your Real Name: _____

Motivating **Threatening**

Best Ally **Worst Enemy**

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Each group had seven role cards, plus blank cards for invented roles.

Metaphor

Participants created metaphors in character

"Harmony inside the fences"
- Retired Civil Servant

"Back to Basics"
- Deep Ecologist

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"The kids have taken over"
- Retired University Teacher

Phase 2: Presenting (‘selling’) the scenarios to the whole group

Groups reported back to a larger session led by Sohail Inayatullah.

He encouraged groups to "*sell* their scenarios" to the other groups.

Groups presented their scenarios in character, each participant describing the scenario from their role's perspective.

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4. Conclusions and open questions

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Outcomes

- 41 people participated from more than 15 countries
- The experiment was successful: participants were able to generate relevant and thought-provoking metaphors and causal dynamics for the NEO-CARBON scenarios
- Analysis of the feedback for the original scenarios is ongoing

Outcomes

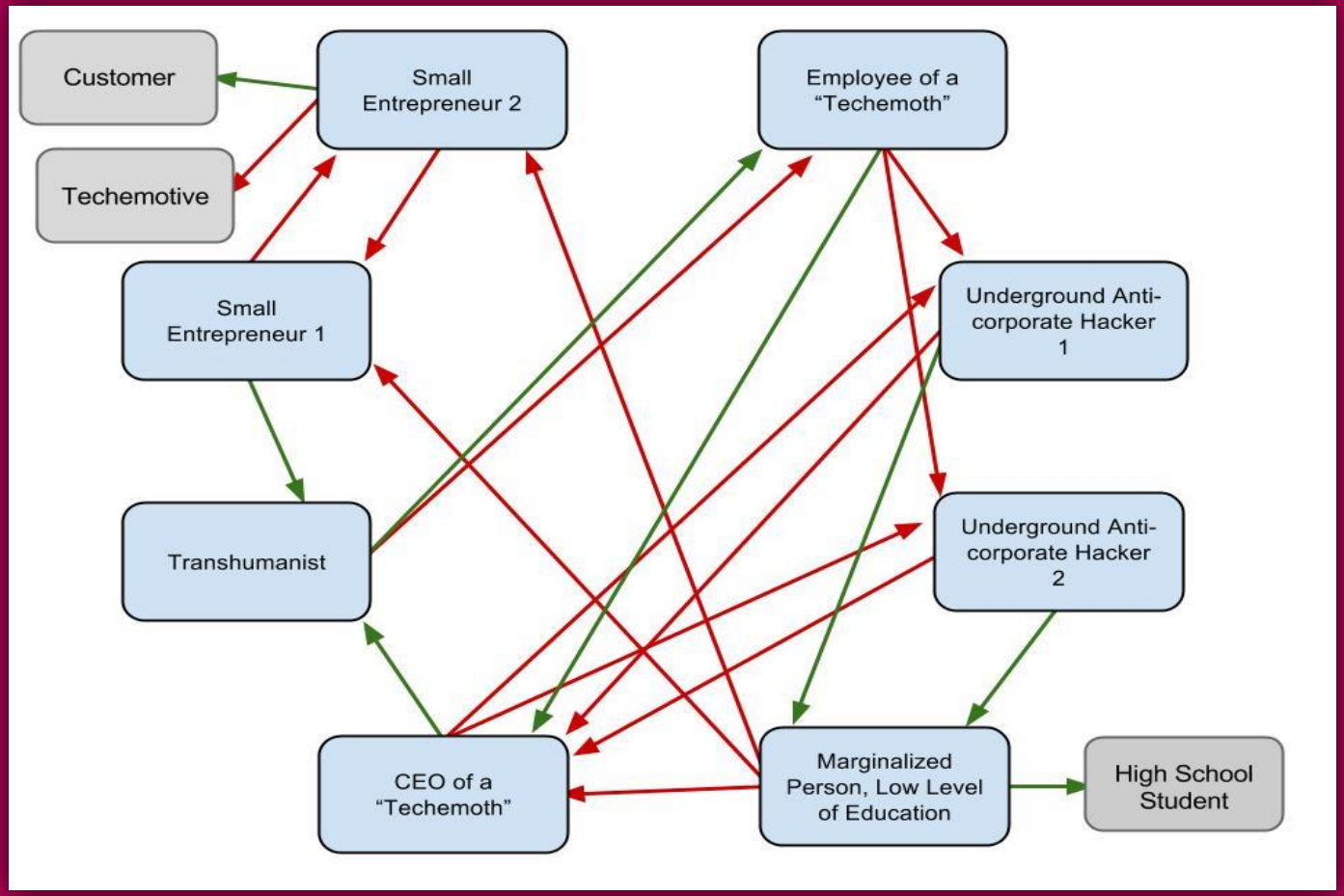
- FFRC will continue experimenting with CLA game in scenario building

- Future applications of CLA Game may include an online game

Further development challenges

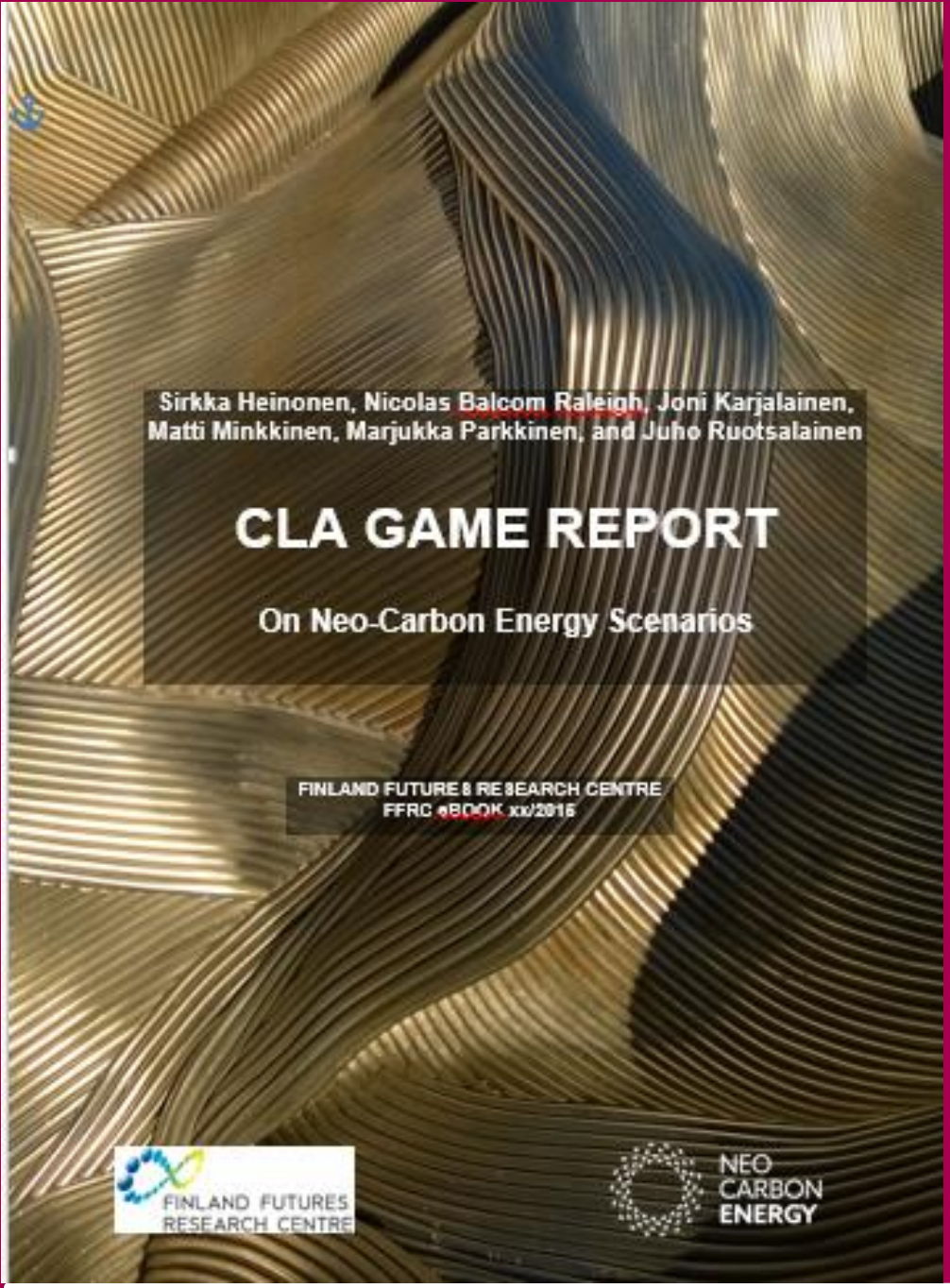
Analysing social dynamics, e.g. alliances and conflicts

Green arrows = allies
Red arrows = enemies



Further development challenges and open questions

- **How to familiarise participants with the scenarios?**
- **Which aspects of the game need more refinement?**
- **What is an appropriate duration for the game?**
- **Could the game be continued as an online version?**



A complete report on the game session will be published as an FFRC eBook

https://www.utu.fi/en/units/ffrc/publications/Pages/FFRC-eBooks.aspx

Contact

To participate in development of CLA Game, please contact us:

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Sirkka Heinonen at sirkka.heinonen@utu.fi
Matti Minkkinen at matti.minkkinen@utu.fi

THANK YOU!

REFERENCES

Heinonen, Sirkka, Karjalainen, Joni and Ruotsalainen, Juho (2015). Towards the Third Industrial Revolution. Neo-Carbon Energy Futures Clinique I. eBook 6/2015. Finland Futures Research Centre, 74 p. http://www.utu.fi/fi/yksikot/ffrc/julkaisut/e-tutu/Documents/FFRC-eBook-6-2015.pdf

See also Demonstration video of CLA game experimentation with Neo-Carbon Energy Scenarios https://sites.google.com/site/futuremediac/videos--presentations

Inayatullah, Sohail & Milojevic, Ivana (eds) (2015). CLA 2.0, Transformative Research in Theory and Practice". Tamkang University Press, 2015.

Inayatullah, Sohail, Heinonen, Sirkka & Minkkinen, Matti (2015). A CLA Game on neo-carbon energy scenarios in action learning. In Session on Research Tools II & III: Causal Layered Analysis. Conference "Futures Studies Tackling Wicked Problems", Turku 12th June. https://futuresconference2015.files.wordpress.com/2015/06/inayatullah_minkkinen_heinonen1.pdf Paper forthcoming