

Intellectual Output 2

Training contents of the Entrepreneurship
in Renewable Energy (ERE) course

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Name	Role in the project
Irene Beccarini	Project Coordinator

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EntRENEW aims at increasing specific knowledge and knowhow of European students so that they may become effective entrepreneurs and leaders, who are able to address the challenges of Europe's sustainable development and to accompany the transition of the energy sector towards decarbonization —as part of the European Green Deal. EntRENEW's objectives will be accomplished through the creation of a blended-learning course tailored to the needs of target groups operating in the field of entrepreneurship in renewable energy. The project involves six partners, coordinated by the Association Leonard De Vinci (ALDV), and it will be implemented between September 1, 2020 and August 31, 2023.

This publication only reflects the views of the authors, and the Commission cannot be held responsible for any use made of the information contained therein.

More information on the project can be found at <https://www.entrenew.eu/>

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1. Introduction

The present document covers five main parts:

- 1) The EntRENEW Blended-learning training content (ERE Course)
- 2) The EntRENEW Webinar
- 3) The EntRENEW Virtual Incubator HUB (VIH)
- 4) The EntRENEW Train-the-Trainers Toolkit (ToT)
- 5) The final expert's evaluation on the ERE Course

2. Blended learning

The EntRENEW course consists of 4 modules, summarized here:

- 1) Renewable Energy Systems
- 2) Entrepreneurial Ecosystems
- 3) Business Model Innovation and Ecosystems in Renewable Energy
- 4) Launching Successful Start-ups in Renewable Energy

Each of the training modules is detailed in the next section 2.1. For each training module (sections 2.1.1-2.1.4), we report the training content, the video support, and the quizzes developed to cover the topics.

Given the blended-learning approach, the EntRENEW project also organized a webinar, detailed in section 2.2.



2.1 Training modules

2.1.1. Module 1: Renewable Energy Systems

i) Training Content

a. Introduction: Sustainability



INTRODUCTION (PART I): SUSTAINABILITY AND THE 2030 AGENDA



Content

Module 1. Lecture 1. Background, Sustainability and Energy Transition

Lecture 1: Background, Sustainability and Energy Transition

- The evolution of Sustainable Development
 - Three pillars of sustainability
 - Energy transition
 - Group discussions

Pedagogic tools

Lecture (on site or digital)
Internet films
Group discussion
Peer-review assignment

Literature

The sustainable development goals report 2021

<https://unstats.un.org/sdgs/report/2021/The-Sustainable-Development-Goals-Report-2021.pdf>

Accountability Study Load

Lecture 1: 10 study hours

- Presence lecture: 4 hours.
- Reading of literature: 2 hours.
 - Assignment: 4 hours.



What do you know about sustainable development?



The Evolution of Sustainable Development

- Lester Brown: Worldwatch Institute (1974)
- Pioneered the concept SUSTAINABLE DEVELOPMENT

- Watch the video:

<https://www.youtube.com/watch?v=PEzmcggmNj0&list=PLr2L6TB8fh8Ha4XyTDw189hF0Qsx1RInc>



The Evolution of Sustainable Development

- Report of the World Commission on Environment and Development:
Our Common Future/ Bruntland Report (UN, 1987)

UN Conference in Rio de Janeiro (1992)

International action plan (Agenda 21): 40 chapters, 1400 paragraphs



The Evolution of Sustainable Development

UN Millennium meeting in New York (2000)

Millennium goals: goals to meet by 2015 (baseline was 1990)



The Evolution of Sustainable Development

PARIS Agreement

Legally binding international treaty on climate change.

It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016.

Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.



The Evolution of Sustainable Development

- Watch the video:

<https://www.youtube.com/watch?v=WiGD00gK2ug>



Agenda 2030

The Sustainable Development Goals were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

Watch the video:

<https://www.youtube.com/watch?v=0XTBYMfZyrM>



Agenda 2030: SDG 2021 REPORT

• Watch the video:

<https://www.youtube.com/watch?v=pgNLonYOc9s>



12/21/2020



Agenda 2030

COP 26: GLASGOW: WHAT WAS THE OUTPUT? WAS IT ENOUGH?



To reach 2030 goals we need to run 5 times faster than before to reduce CO2 emissions

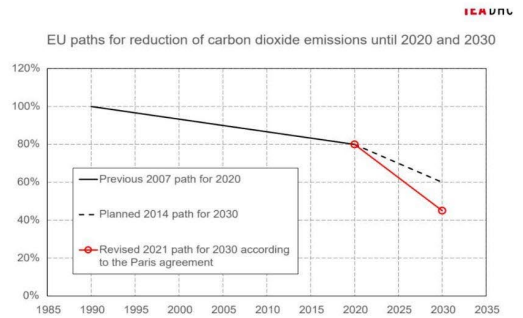


Figure 5. Three paths for the reduction of the EU carbon dioxide emissions through 2030.

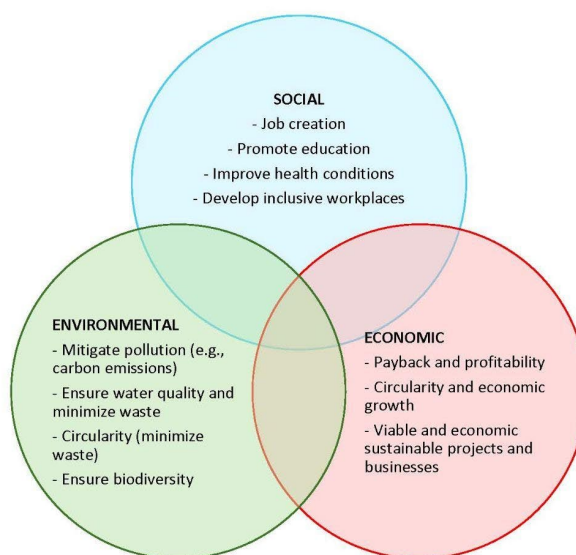
Source: Guidebook on low temperature district heating implementation (2021), Lygnerud & Werner



The three pillars of sustainability



What can be the impact of an energy entrepreneur?



Group Discussion

- Reflect on the development of awareness for the need of sustainable action until now: what happened over time?
- Why is the awareness creation taking long?
- Why is the energy transition an important piece for sustainable development?
- Is the energy transition fast enough?
- How can entrepreneurship in energy support sustainable development?



INTRODUCTION (PART II): ENERGY TRANSITION



Energy Transition

- “The energy transition is a pathway toward transformation of the global energy sector from fossil-based to zero-carbon by the second half of this century. At its heart is the need to reduce energy-related CO2 emissions to limit climate change” (www.irena.org)



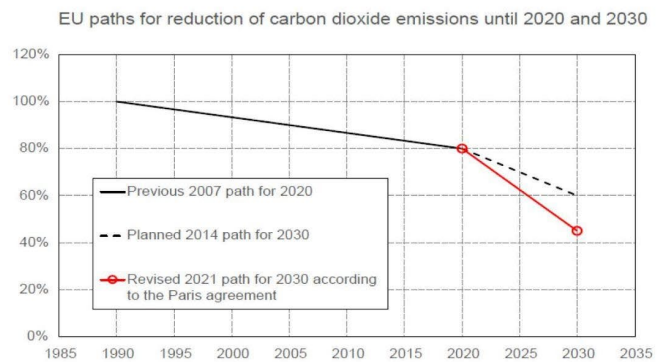
Energy Transition- important SDGs



Energy Transition- COPs

UN meetings (COPs)- the 1.5° goal (Paris) – keep the global temperature rise below 2 degrees- hopefully not above 1.5 ° (November, 2016)

We must run faster!



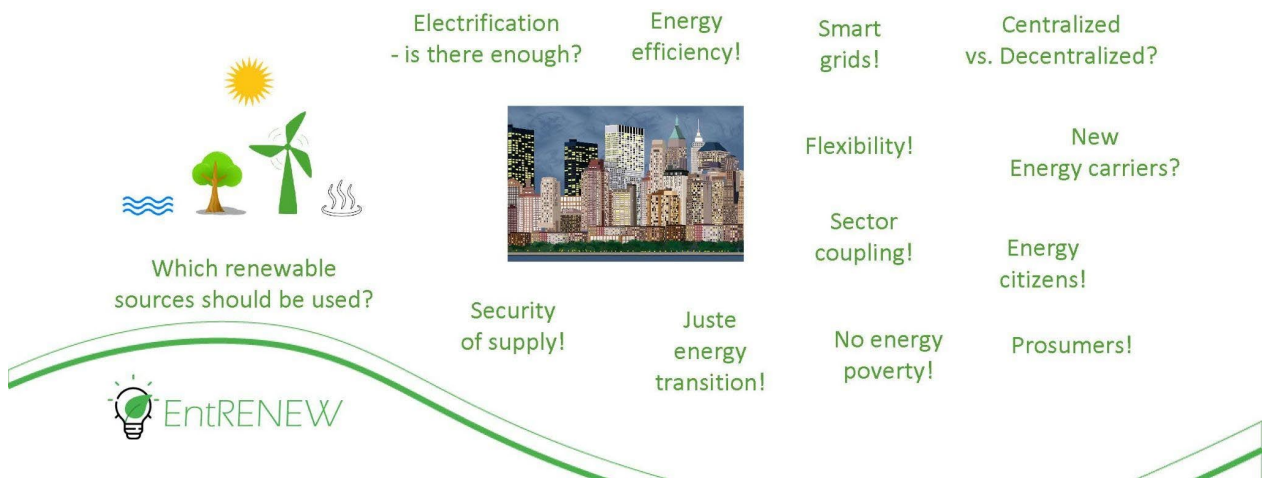
Energy Transition - Cities

- 3% of the globe's surface = 70% of emissions
- Urbanization continues
- SDG #11 and other initiatives are important



Energy Transition- Cities

- A city needs energy- it faces many challenges and choices



Energy Transition- Policy

EU example

- 2030 goals
- Green Deal, Fit for 55
- Mission 100 Climate neutral cities by 2030 by and for the Citizens
- Renewable energy directive
- Energy efficiency directive
- Energy performance of buildings directive
- Integrated pollution and prevention and control directive
- Directive on waste...



Energy Transition- Policy- Example of urban waste heat recovery

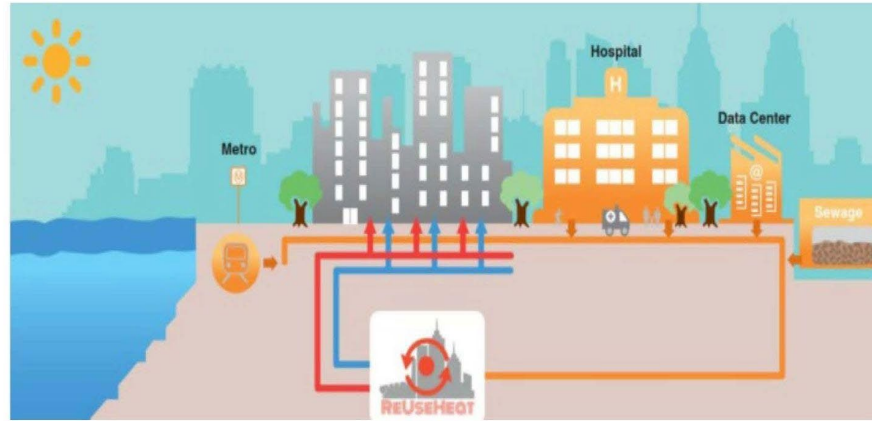
Urban Waste Heat = residual heat from urban processes

- infrastructure (metro/sewage)
- activities (datacenter/ cooling)...

The heat can be recovered into district energy systems and reused. Read more: www.reuseheat.eu



Energy Transition- Policy- Example of urban waste heat recovery



Energy Transition- Policy- Example of urban waste heat recovery

The heating and cooling sector in Europe is large- approximately 10% of it could be heated with urban waste heat!

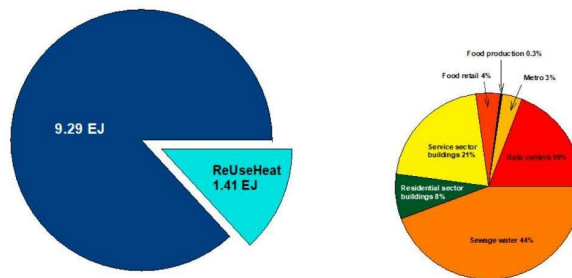


Figure 1. Energy from ReUseHeat as a part of the European heat demand for buildings further split (to the right) into the seven individual sources of ReUseHeat urban waste heat



Energy Transition- Policy- Example of urban waste heat recovery



Energy Transition- Policy- Example of urban waste heat recovery

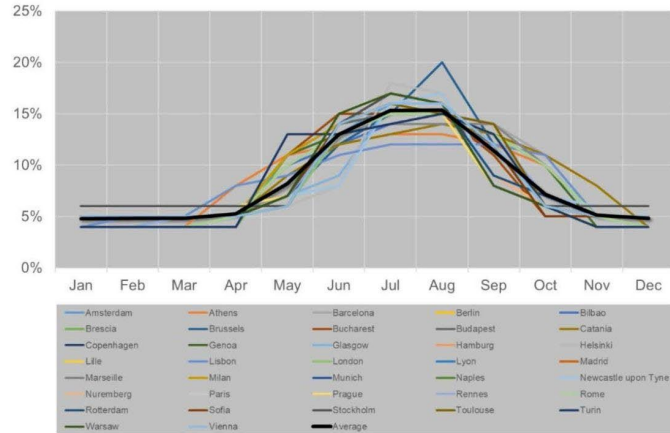
Table 11. Listing of the 37 metro cities included in this study.

Amsterdam	Budapest	Lisbon	Newcastle	Stockholm
Athens	Catania	London	Nuremburg	Toulouse
Barcelona	Copenhagen	Lyon	Paris	Turin
Berlin	Genoa	Madrid	Prague	Warsaw
Bilbao	Glasgow	Marseille	Rennes	Vienna
Brescia	Hamburg	Milan	Rome	
Brussels	Helsinki	Munich	Rotterdam	
Bucharest	Lille	Naples	Sofia	



Energy Transition- Policy- Example of urban waste heat recovery

The seasonality is pronounced
 - we have most waste heat in Summer



There is 35.3 PJ per year Paris-Madrid-Barcelona (more than 3PJ/ yr)
 France (441) - Spain (407)-
 Germany (318): stations

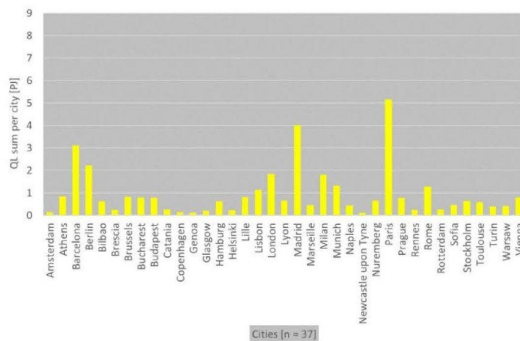


Figure 10. Summation of available excess heat per metro city (all cities).

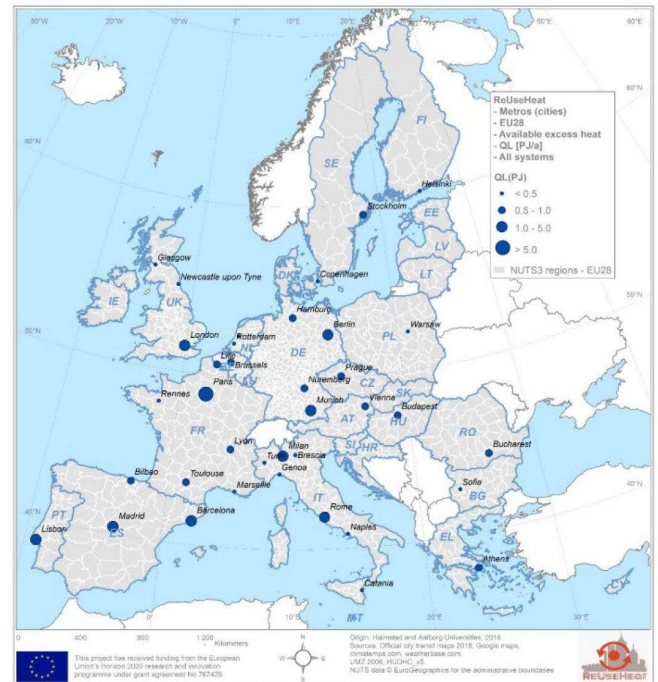


Figure 9. Available excess heat in 37 EU28 cities with metro systems in operation.



Energy Transition- Policy- Example of urban waste heat recovery

Berlin

- 146 km double track
- 144 stations
- 10 lines
- Average distance between two stations is 0.8 kilometers
- Recover air from metro tunnel into a local, low temperature DHN
- Direct electrical heating is being replaced by the heat recovery



Energy Transition- Policy- Example of urban waste heat recovery

Learnings to date

Tunnels

- Permits for working in the tunnels are many
- Access to the tunnel needs to be accommodated by a number of "safety staff"
- The environment in the tunnel is difficult for the heat pump: metal dust



Energy Transition- Policy- Example of urban waste heat recovery

Learnings to date

End user

- It is not easy to find a user of the waste heat close to its source

Temperature of heat source

- Deeper and warmer metro networks have a larger potential (London) but it
- Makes sense also to recover heat from shallow and colder stations (Berlin)

Energy Transition- Policy- Example of urban waste heat recovery

Learnings to date

What is the output in terms of 2030 goal achievement?

- Green energy (otherwise wasted)
- Energy efficiency (of the building)
- Owner of waste heat can replicate across the metro system
- Increased indoor comfort (stable temperature levels)
- GHG emission savings: 60 tonnes of CO₂/ Year



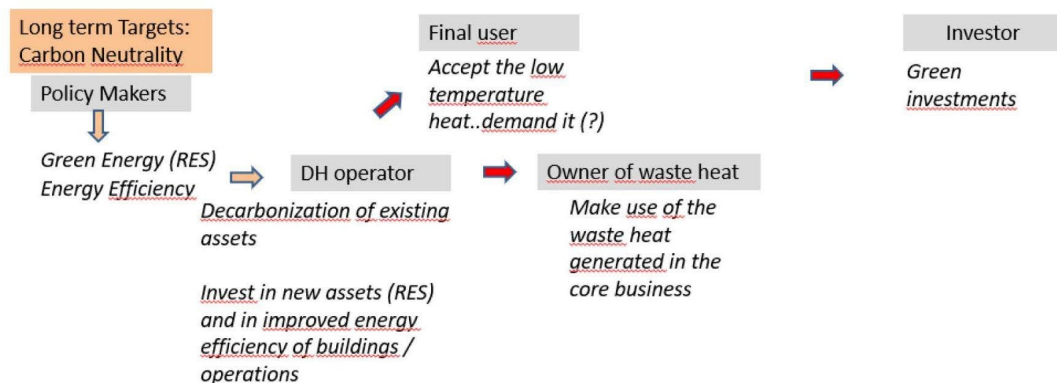
Energy Transition- Policy- Example of urban waste heat recovery

Learnings to date

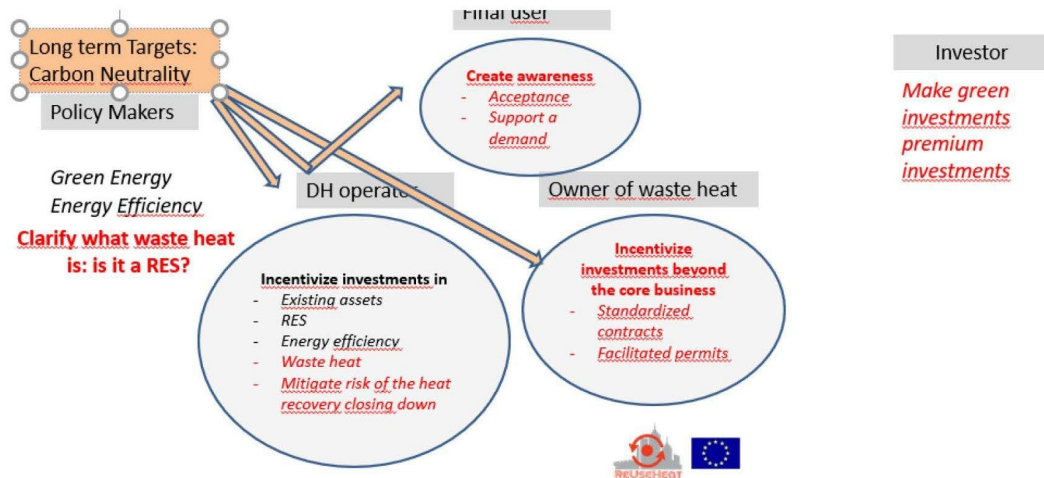
- The technology is there, the components are standardized!
- New stakeholders and new collaboration between them are necessary!
- Policy needs to be upgraded!



Energy Transition- Policy- Example of urban waste heat recovery



Energy Transition- Policy- Example of urban waste heat recovery



Energy Transition – Group Discussion

- Discuss how to address policy in energy entrepreneurship:
 - what are policy hurdles?
 - why is policy adjusting slower than what is technically feasible?
 - the cost of emitting Co2: is it aligned to the impact of emissions?



Peer-Review Assignment 1

- 1) Reflect on what is needed for new renewable energy sources to be adopted and identify five important factors to achieve sustainability in energy systems.
- 2) Position how you with your background and knowledge can support the development and adoption of sustainable sustainable solutions in renewable energy to drive green transition.

Length: 1 page, Arial 12pt, to be handed in before lecture 2.

Grading: This is a peer-review assignment. The students are expected to read each others' assignments (at least 1 per student) and give written and oral feedback in lecture 2. During lecture 2, students will discuss key points from the assignments and based on that, they identify complementary competences and common interests.



Thank you for your attention



b. The Basics of Energy



THE BASICS OF ENERGY

PART I: INTRODUCTION

Content

THE BASICS OF ENERGY: Module 1. Lecture 2.

Lecture 2: Energy.

- Group discussion of assignment 1
 - Energy basics
 - Energy system
- Energy innovation
 - Nuclear power
 - Assignment 2

Pedagogic tools

Lecture (on site or digital)
Internet films
Group discussions
Individual assignment



Literature

ENERGY: Module 1. Lecture 2.

Energy in Sweden

<http://www.energimyndigheten.se/en/news/2021/an-overview-of-energy-in-sweden-2021-now-available/>

IEA Energy Outlook

<https://www.iea.org/reports/world-energy-outlook-2021>

Video (watch in advance):

<https://www.youtube.com/watch?v=0kahih8RT1k>



Accountability Study Load

Lecture 2: 20 study hours.

- Presence lecture: 6 hours.
- Reading of literature: 6 hours.
- Assignment: 8 hours.



Discussion: Peer-Review Assignment 1

1) Reflect on what is needed for new renewable energy sources to be adopted and identify five important factors to achieve sustainability in energy systems.

- 1.
- 2.
- 3.
- 4.
- 5.

2) Position how you with your background and knowledge can support the development and adoption of sustainable sustainable solutions in renewable energy to drive green transition.



Energy Basics - What energy is

- Energy cannot be seen but you notice the effect of it being transferred (from one form to another or one place to another).
- Power is the rate at which energy is transferred often measured in Watt or Joule (1 Joule is 1 Watt per second)



Energy Basics - What energy is

- Watch the video:

https://www.youtube.com/watch?v=1GDsb_kJR20

Energy Basics – Primary energy

- Primary energy refers to energy in its raw form, before it has been converted by humans into other forms of energy like electricity, heat or transport fuels.

Think of this as inputs into an energy system: coal, oil or gas before we burn them; or solar or wind energy before we convert them to electricity.



Energy Basics - Use

- **Residential use** (lightning, heating/cooling, water heating, refrigeration household appliances...(tv, washing machine...))
- **Industrial use** (often linked to production processes)
- **Commercial use** (often heating/cooling/lightning)
- **Transportation** (electricity, gas, diesel, gasoline...)
- **Energy from food** (in the body), burning wood....



The industrial revolution: when mankind started to use energy on a large scale

- Watch the video:

<https://www.youtube.com/watch?v=q1KGWrExYm0>



Energy Basics - Fuels

- An energy transformation is a change from one form of energy to another
- A fuel is a substance that provides energy as a result of a chemical change. A fuel might provide energy in the form of heat, light, motion, or electricity



Energy Basics - Fuels

- Combustion is the burning of a substance, example:

When gasoline burns in a car engine, some of the chemical energy in the gasoline is converted into heat.

The heat is converted into mechanical energy. The mechanical energy moves the car.



Energy Basics - Fuels

- Watch the video:

<https://www.youtube.com/watch?v=gBLQUplzZZo>



Energy Basics – Emissions and Renewables (RES)

- Combustion of fossil fuels renders CO₂
- Renewable energy sources

Renewable energy is power generated from water, wind or the sun, or any other source that is replenished through a natural process



Energy: source vs vector

An **energy source** is the energy stored by Nature in some way. Examples are:

- Solar power → energy of electromagnetic waves collected with photovoltaic/thermal panels;
- Wood or fossil fuels, like coal or oil → chemical energy transformed with fire;
- Wind energy and hydropower → kinetic energy of air/water collected with dynamos;
- Nuclear energy → taken with fusion/fission (of light/heavy nuclei like Hydrogen/Uranium atoms).

An **energy vector** is a way of transporting energy, taken from an energy source. Examples are:

- Electricity → travels via conductors;
- Hydrogen molecule → as a storage of chemical energy (must be taken from an energy source).



Energy Basics – Emissions and RES

Green energy sources:

- Wind power
- Bioenergy
- Geothermal energy
- Solar energy
- Wave power
- Body heat (passive house technology)
- Heat pumps
- Hydrogen (potential)



Energy Basics – Emissions and RES

What about nuclear power*?

- **Nuclear fission** is not renewable (known resources of natural Uranium should end in ~100-200 years). No greenhouse gas production, but radioactive waste production (half-life ~ 10.000 years).
- **Nuclear fusion** would be not strictly, but almost renewable (natural Tritium is limited, but could be produced artificially). No greenhouse gas production, no radioactive waste production.

*We will discuss about nuclear power on Lecture 2 - part II.



Renewable Energy and Climate Change

- Watch the video:

<https://www.youtube.com/watch?v=1kUE0BZtTRc>



BREAK



Energy Systems

A system designed to supply energy services to end users

In the lecture we talked about

- nuclear: generation to transmission to use
- heating/ cooling: generation to transmission to use



Electricity Generation

- Watch the video:

<https://www.youtube.com/watch?v=20Vb6hLQSg>



District heating

- Watch the video:

<https://www.youtube.com/watch?v=j1Vo6JmjaKc>



Energy Systems

- What will the energy systems look like in the future?
- Will they be coupled? (see video in the next slide)
- Will they be decentralized?
- Will they be based on combustion (if so, of what?)
- Will they rely on energy citizens?
- Who will own them?



Sector coupling

- Watch the video:

https://www.youtube.com/watch?v=J0C8rZp_0uE



12/21/2020



Energy Innovation

A dominant source of energy supply is electricity

Can be defined as the flow of electric charge



Energy Innovation - Electricity

- **Residential wind farms**

Constructed from durable stainless steel, carbon fibre and aluminium, the CW1000 model can handle wind speeds of up to 134 miles per hour. To ensure they're fit for domestic use, the units are adapted to have a maximum height of just over 3 metres and make less than 40 decibels of noise – roughly equivalent to quiet conversation: Innovator IceWind



Energy Innovation - Electricity

- **Solar roof tiles**

These work in the same way as roof panels, using photovoltaic cells made of silicon to convert sunlight into electricity. But by covering more surface area, entire roofs can be used to generate solar energy, rather than single panels.

Innovator: Solecco



Energy Innovation- Electricity

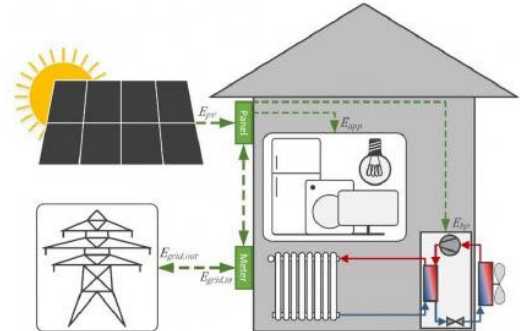
- **Small scale solar generation**

Small scale solar generation into many aspects of the urban environment such as smart benches, rubbish bins, and solar lighting in green spaces. This opens up opportunities for powering cities, including incorporating charging stations and network connectivity, which in turn enables social power sharing. Innovator: Environmental Street Furniture



Energy Innovation- Electricity

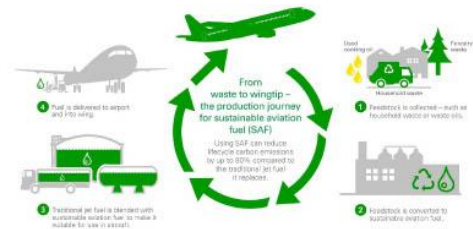
- Solar driven heat pumps**
 Heat Pumps is a flexible technology for heating and cooling. It necessitates electricity which can make its carbon footprint negative. Solar driven heat pumps would offset this problem.
 Innovator: EU project SUNHORIZON



Energy Innovation - Other

- Sustainable fuels for aviation and heavy goods transport**
 Using the Fischer-Tropsch method of **gasifying waste**. This involves turning waste materials – such as domestic refuse and woody waste – into clean jet fuel using a catalytic chemical reaction, where synthesis gases (carbon monoxide and hydrogen) are converted into liquid hydrocarbons that can then be used for fuel. Innovator: Velocys

How is sustainable aviation fuel made?

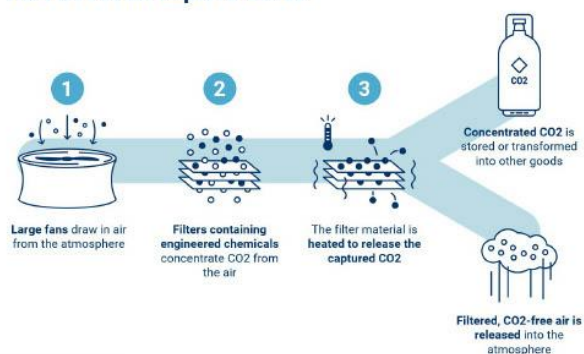


Energy Innovation - Other

- **CO2 Capture**

CO2 capture from the air. Direct air capture – DAC – facilities use a series of huge fans to suck in ambient air and push it through a filter laced with chemicals that carbon dioxide reacts with and sticks to. Think of it as a specialized kind of flypaper. The CO2 gets trapped, while the other components of air pass right through. Innovator: Climeworks

How direct air capture works



Energy Innovation - Others

- **Demand controlled ventilation system**

Demand-controlled ventilation system that can be installed in existing ventilation systems and with fully integrated Bluetooth technology, operation is controlled wirelessly from an app. Ultra BT uses Bluetooth technology and wireless sensors to scan and adapt to the current conditions in each room to create the optimal airflow needed and is only active when the indoor climate requires it. This reduces energy consumption and cost. Innovator: Lindab

- **Hydrogen**

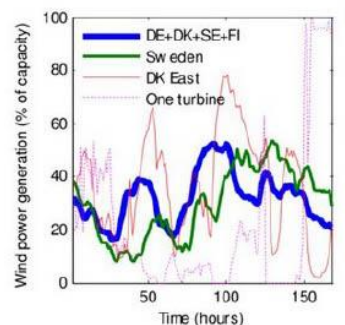
When hydrogen gas comes in contact with oxygen, large amounts of energy are released. The residual product is ordinary water, because hydrogen (H₂) which reacts with oxygen (O) forms H₂O. To be able to use hydrogen as fuel, electricity or heat, an energy converter is needed. It can be, for example, a fuel cell, a kind of energy converter that can be used to convert the chemical energy of hydrogen into electricity. The residual product is pure water and heat is also formed in the process which can be recovered. Innovator: Several



Group Discussion

Identify five advantages and five disadvantages of windpower for generating electricity. Useful concepts to include in your search include but are not limited to:

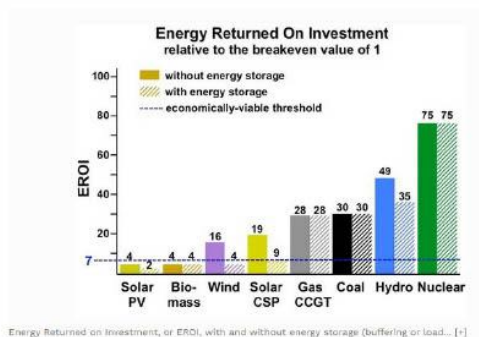
1. Learning curve
2. Energy return on investment (EROI)
3. Storage
4. Swing mass (synchrotron)
5. Nudging
6. Rare earth metals
7. Low frequency noise
8. Weather forecasts and volatility
9. CO₂
10. Realtime adjustment
11. Life Cost Analysis (LCA)
12. Deaths per GWH



Group Discussion

Identify five advantages and five disadvantages of solar power for generating electricity. Useful concepts to look for include but are not limited to:

1. Learning curve
2. Energy return on investment (EROI)
3. Storage
4. Swing mass (synchrotron)
5. Nudging
6. Rare earth metals
7. Low frequency noise
8. Weather forecasts and volatility
9. CO₂
10. Realtime adjustment
11. Life Cost Analysis (LCA)
12. Deaths per GWH



BREAK



THE BASICS OF ENERGY PART II: NUCLEAR POWER



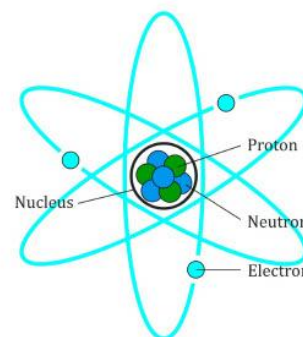
Content

1. The atom and the subatomic particles
2. Radioactivity
3. Nuclear fission reaction
4. Nuclear fusion reaction
5. Scheme of a fission power plant
6. Development of nuclear fission in the world
7. Scheme of a fusion power plant
8. Development of nuclear fusion in the world
9. Summary: Fission vs Fusion



Atoms as made of particles

- An atom is made of a **nucleus** (with positively charged **protons** and neutral **neutrons**) and **electrons** orbiting around it
- A molecule is made of atoms.
- Making or breaking a molecule, by joining or separating atoms, involves chemical reactions.
- Burning 1g of sugar produces: **16 J (= 3.87 cal)**
- Energies linking together protons and neutrons in the nucleus are much higher: **nuclear energies**.
- The fission of 1g of Uranium produces 20.000.000.000 J !
- This energy is the transformation of a small quantity of lost mass, according to the equation $E = mc^2$ [**Einstein, 1905**]



The structure of an atom
[Rutherford, 1917]



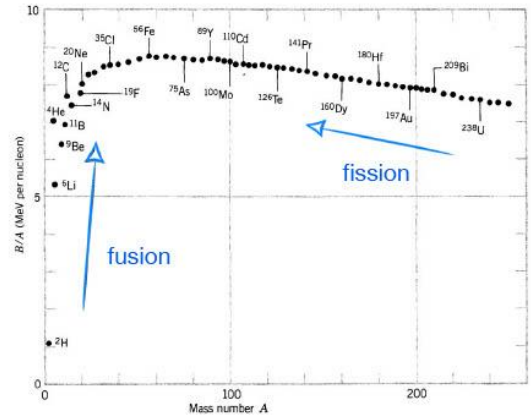
Order from Chaos

- Atoms can be ordered by atomic number (the number of protons) and properties (affinity to retain electrons) [Mendeleev, 1869]

Periodic Table of the Elements

Nuclear binding energy

- We can also plot the binding energy B vs the atomic mass A
- Smaller B/A → less tightly bound
- Larger B/A → more tightly bound
- Nuclei with higher and higher value of B/A are the analogous of a ball positioned deeper and deeper inside a well
- The ball, rolling down the well, releases energy (transformed from gravitational to kinetic energy)



Binding energy per nucleon [Aston, 1922]



Radioactivity

- Some atoms can spontaneously change their internal structure, to fall into a more stable configuration
- This spontaneous nuclear reaction is a process called *radioactivity* [H. Becquerel, M. Curie, 1896]
- Typically, radioactive atoms are those with an unbalance of protons and neutrons (e.g., C_{14}), or too many nucleons (e.g., the Actinides).
- Three typical kinds of radioactive decays are Alpha, Beta, and Gamma decay.
- Alpha decay: emission of a helium nucleus
E.g.: $U_{238} \rightarrow Th_{234} + He_4 + E$.
- Beta decay: transmutation of a neutron into a H^+ , e^-
E.g.: $C_{14} \rightarrow N_{14} + e^- + \bar{\nu} + E$
- Gamma decay: after an alpha or beta decay, high-frequency electromagnetic waves can be emitted, called gamma rays.

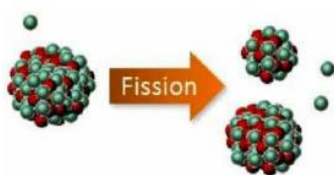
Physics development of nuclear energy

- Discovery of radioactivity [H. Becquerel, M. Curie 1896]
- Theory of relativity [A. Einstein, 1905]
- Discovery of the nucleus [E. Rutherford, 1911]
- Realization of nuclear fusion in the lab [M. Oliphant, 1932]
- Realization of nuclear fission in the lab [O. Hahn, F. Strassmann, 1938]
- First extraction of (small) energy from sustained fission: Chicago Pile-1 [E. Fermi, 1942]
- First large-scale fission experiment: Trinity-Test bomb [U.S.A., 1945, in New Mexico]
- First large-scale fusion experiment: Ivy-Mike hydrogen bomb [U.S.A., 1952, in Enewetak Atoll, Pacific Ocean]
- First demonstration of controlled self-sustained fusion: ITER – International experiment [in program for 2035, Cadarache, France]



Nuclear fission: the reaction

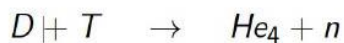
- Typical example of neutron-induced fission reaction:



- A neutron at relatively low speed is shot against a U_{235} to start the reaction.
- The main products (in this case isotopes of Rubium and Cesium) are often unstable, and experience beta decays, and then can emit more neutrons.
- The kinetic energy of the products is the resulting energy of the defect of mass.

Nuclear fusion: the reaction

- Typical example of fusion reaction of reactor interest:

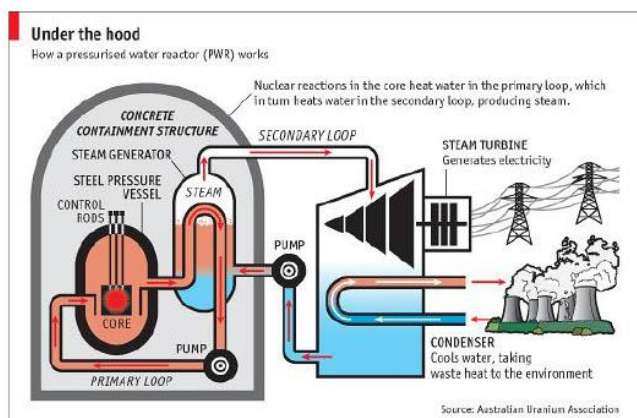


- The reaction starts with Deuterium and Tritium, two isotopes of the Hydrogen.
- The main outcome, Helium, is an inert, non-radioactive gas.
- Like for fission, the kinetic energy of the products is the resulting energy of the defect of mass.

BREAK



Nuclear fission: example of power plant structure



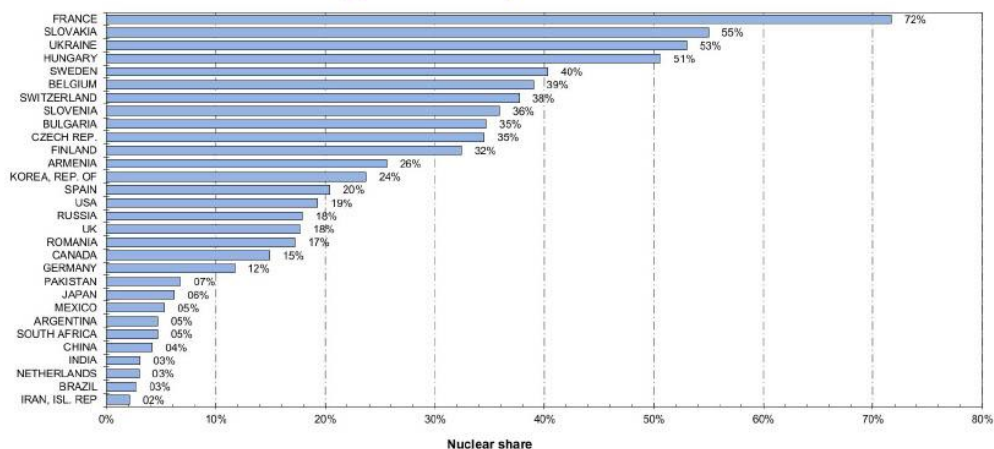
- The nuclear chain reaction occurs in the core, at a rate controlled with the **control rods**.
- The resulting energy heats the water in the primary loop (**coolant**), at high pressure, and indirectly the secondary loop.
- The steam pushes the turbine generating electricity and then it is cooled down with a condenser.

Nuclear fission: international development

Technological development of nuclear power plants (NPP)

- *Generation-I* reactors (first prototypes) [1945-1957]: U.S.A. (6 NPP), U.K. (17 NPP), France (4 NPP), Soviet Union (2 NPP).
- Proliferation of *Generation-II* reactors (still the major part of today's existing capacity) [1958-1984]. Declassification of nuclear energy, founding of "Atoms for Peace" and International Atomic Energy Association [1957]. NPP built in 26 countries.
- China emerges as key player [mid- late-1980']. Design of *Generation-III / -III'* reactors starts (17 operational or under construction today). These are simpler, longer-lasting, safer.
- Post-Fukushima [2011]: decreased interest in building new NPP, with development remaining strong only in Russia and China.
- Climate crisis and political energy crisis [2022]: towards a renewed interest in nuclear energy? *Generation-IV* and *Small Modular Reactors* under consideration.

Nuclear fission: usage today



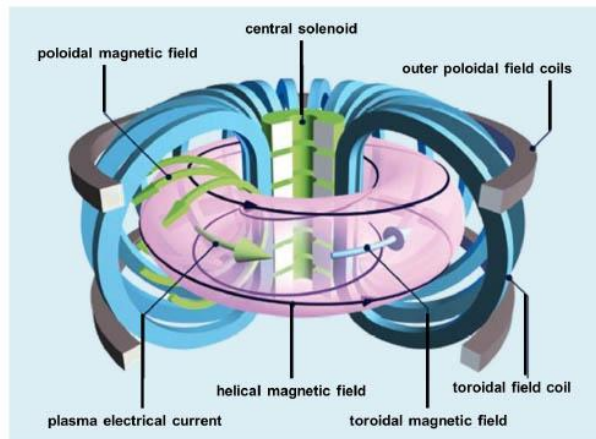
Nuclear share of electricity generation (as of 31 Dec. 2018).

Note: The nuclear share for Taiwan was 11.4% of the total.

Source: International Atomic Energy Association.



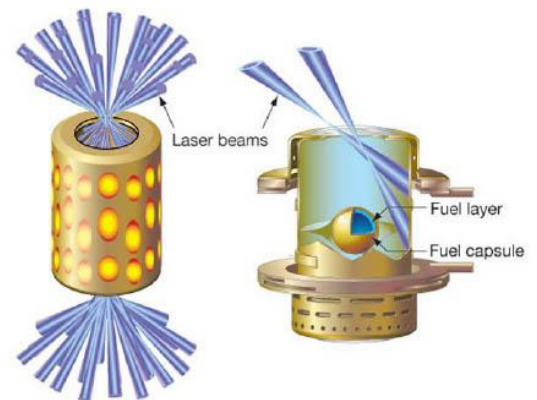
Nuclear fusion: magnetic confinement (MC) concept



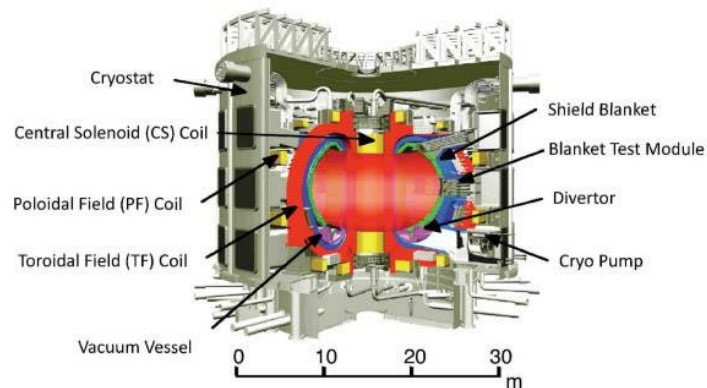
- The fuel gas (hydrogen isotopes), heated to ignition temperatures, is in a state of **plasma**: particles can be trapped with a magnetic field.
- Examples of MC devices are ring-shaped **tokamaks** (see the picture) and **stellarators** (with more complicated and stable geometry).
- A difficulty here is to reduce plasma movement and turbulence while heating up to fusion temperatures (100 million °C !).

Nuclear fusion: inertial confinement (IC) concept

- The fuel (hydrogen isotopes) is here initially in a frozen state, inside a capsule (the size of a few millimetres).
- **Lasers** are shot inside the capsule, hitting the target outer layer. The explosion of this layer compresses the fuel inward, igniting it.
- Like for MC-fusion, the goal here is stabilise the fuel during the required ignition times, by finding optimal configurations.

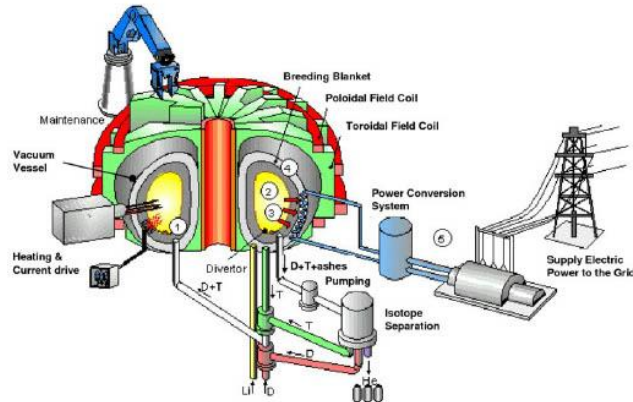


Nuclear fusion: the ITER tokamak



- ITER = **I**nternational **T**hermonuclear **E**xperimental **R**eactor.
- The goal is the demonstration of **self-sustained controlled** nuclear fusion (in program for 2035) to prepare a MC reactor construction.

Nuclear fusion: a MC reactor design



1. Fuel pumped into the tokamak, plasma formed and stabilized.
2. Plasma heated to ignition temperatures, nuclear fusion starts.
3. Hot neutrons emitted, energy collected at the blankets.
4. Thermal power converted into electricity, ashes removed.

Nuclear fusion: international development

- First tokamak built: MC with internally and externally generated magnetic fields [Artsimovich, Soviet Union, 1956].
- First stellarator built: MC with externally generated magnetic fields and a more stable geometry [Spitzer, U.S.A., 1958].
- First inertial confinement experiment built: SHIVA [U.S.A., 1978].
- First plasma of largest stellarator ever built: WENDELSTEIN 7-X [Greifswald, Germany, 2015].
- First burning plasma in the NIF IC device [U.S.A, August 2021].
- First international tokamak: ITER, built in Cadarache (France) with worldwide synergy. First plasma: [in plan for 2025].
- [2000-2020] The number of private investors starting nuclear fusion facilities increases from 2, to 23 (including Amazon's Jeff Bezos).

Summary: nuclear fission and nuclear fusion

	Fission	Fusion	Advantage
Physics principle	Breaking heavy nuclei	Joining light nuclei	
Available fuel	Uranium	Hydrogen isotopes	Fusion
Radioactive products	Rubium, Cesium, ...		Fusion
Control mechanism	Control rods	Plasma stabilization	Fission
Danger level	Decay heat	Disruptions	Fusion

- Note that, although fusion has no direct radioactive products, the reactor's structural steels need to be treated as radioactive waste.
- **In summary:** fusion would be better, if it worked.
- We should continue scientific/technological research in both directions, to improve the existing fission devices, and achieve controlled fusion



Reflection: is nuclear power green?

- Watch the video:

<https://www.youtube.com/watch?v=0kahih8RT1k>

Assignment 2

1. Based on lecture 2 and its associated references, identify what energy sources will be of importance to reach 2050 goals.
2. Select one of the four sectors: transport, industry, commercial and residential and describe how energy supply to the sector will switch from the current to 2050. Identify the necessary shifts in the sector to reach 2050 goals.
3. Select one country or geographical area of reference for which you describe the development, and reflect about specific challenges for this area.

Length: 3 pages, Arial 12pt. Hand in Before Lecture 3.





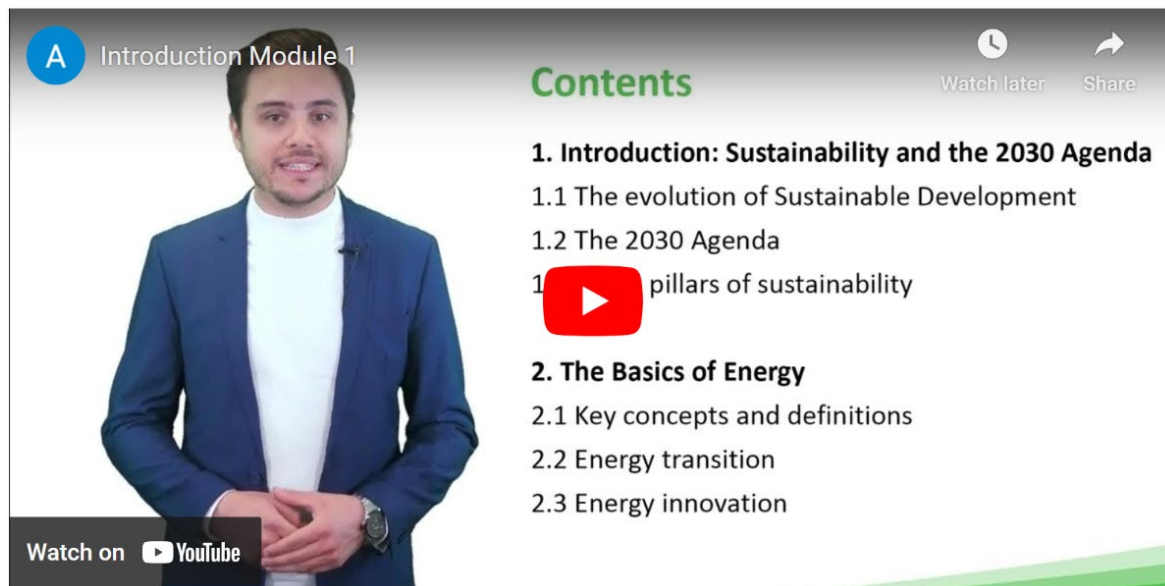
**Thank you for your
attention**



ii) Video material

a. Introduction to Module 1

<https://youtu.be/McTHp2Vi61Y>



The image shows a YouTube video player interface. On the left, there is a video thumbnail of a man in a blue blazer and white shirt, with the text 'Introduction Module 1' and a 'Watch on YouTube' button. On the right, there is a 'Contents' section with the following items:

- 1. Introduction: Sustainability and the 2030 Agenda**
 - 1.1 The evolution of Sustainable Development
 - 1.2 The 2030 Agenda
 - 1.3 The three pillars of sustainability
- 2. The Basics of Energy**
 - 2.1 Key concepts and definitions
 - 2.2 Energy transition
 - 2.3 Energy innovation

At the top right of the player, there are icons for 'Watch later' and 'Share'.



iii) Quizzes

a. Sustainable development

[1 point] Sustainability refers to [more than one alternative may be correct]

1. Environmental aspects
2. Legal aspects
3. Societal aspects
4. Economic aspects

ANSWERS: 1, 3, 4

b. Energy

[1 point] What unit(s) are used for quantifying energy?

1. kW
2. kWh
3. Hz
4. None of the above.

ANSWER: 2

[1 point] Solar panels generate electricity when the demand is the highest

1. Yes
2. No

ANSWER: 2

[1 point] Wind turbines provide stability in the electric grid

1. Yes
2. No

ANSWER: 2

[1 point] Hydroelectric turbines provide stability in the electric grid

1. Yes
2. No

ANSWER: 1

[1 point] Nuclear power is the most dangerous way of producing electricity, in terms of causing the most deaths relative to power produced



1. Yes
2. No

ANSWER: 2

[1 point] Energy sources act on a fully free market, implying laws and regulations can be disregarded for firms and entrepreneurs

1. Yes
2. No

ANSWER: 2

[1 point] Storing electricity is very difficult and/or costly

1. Yes
2. No

ANSWER: 1

[1 point] Photovoltaics (PVs) have decreased exponentially in costs during the last decades.

1. Yes
2. No

ANSWER: 1

[1 point] Batteries have decreased exponentially in costs during the last decades.

3. Yes
4. No

ANSWER: 1



2.1.2. Module 2: Entrepreneurial Ecosystems

i) Training Content

a. Background on Open Innovation



Module II: Entrepreneurial Ecosystem

Content

- **Lecture 1:** Background Open Innovation (Including The Funnel Of Innovation)
- **Lecture 2:** Vibrancy Of An Entrepreneurial Ecosystem (Including Four Important Phenomena In The Entrepreneurial Ecosystem)
- **Lecture 3:** The Life Cycle Of The Small Firm / Venture Development
- **Lecture 4:** Present Your Entrepreneurial Ecosystem



Accountability Study Load

- **Module 2:** 2 Credits = $2 * 28 = 56$ study hours
- **Presence Lectures:** $4 * 2 = 8$ hours
- **Readings Lectures:** $4 * 2 = 8$ hours
- **Essay:** 8 hours
- **Slide Deck:** 24 hours
- **Pitches Contest:** 8 hours
- **Total = 56 hours**

Assessment

- **Individual Essay (50% of end grade)**
- **Team Slide Deck (50% of end grade)**



Preparation Lecture 1

- Read Masurel (2019) Section 1.1 and 1.2



Lecture 1: Background Open Innovation



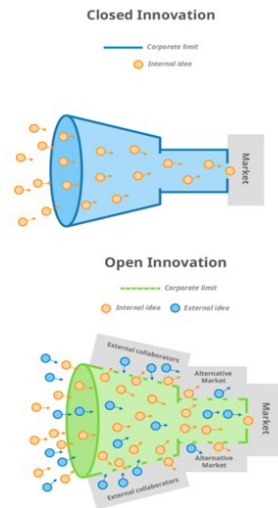
The Basics Of Innovation



- Innovation is the successful market introduction of something new
- What is successful, market, new?
- Five forms of innovation: new products/services; new production processes; new markets; new inputs; new organizational forms
- Radical (disruptive) innovations versus incremental innovations
- The concept of frugal innovation has become more in vogue
- Seminal work in innovation: Schumpeter, J.A. (1934) *The theory of economic development*, Cambridge, Mass.: Harvard University Press
- Joseph Schumpeter (1883-1950): Innovation = Creative Destruction
- Entrepreneurship & Innovation go hand-in-hand
- Difficulties with innovation: uncertainty; reluctance; antagonism
- Motivation of the innovator: the dream; the will to conquer; the joy of creating
- Is there a role for coincidence?

*“What we call coincidence
is in fact a refuge of human ignorance”*
- Baruch Spinoza (1632 - 1677)





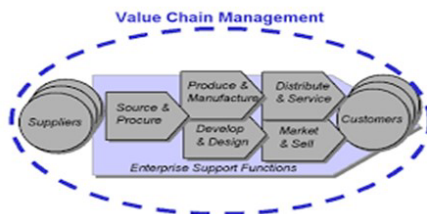
Open Innovation VS Closed Innovation

Closed innovation

- Innovation requires control
- We must do it ourselves
- Rigid organizations (castles)

Open innovation

- Innovation requires collaboration
- We are not the best in everything
- Projects and coalitions (temporary)

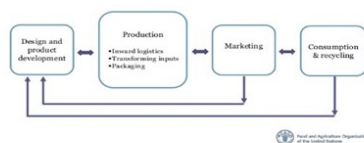


Two Basic Forms Of Open Innovation

- A value chain comprises all steps from origin to end-use (stages and connections)
- Inbound open innovation (outside->in): look for partners that bring in new (semi-)products in your value chain
- Outbound open innovation (inside->out): look for partners that can help you to propel your (semi-)product in the value chain



A simple value chain



Risks With Innovations (Start-ups & Scale-ups)

- Lose your invested capital
- Lose your invested time
- Lose your invested reputation
- Lose other people's goodwill
- All in all, you may lose your invested value

Protection Of Innovations (Start-ups & Scale-ups)

- Legal and registered protection: patents; registered designs; trademarks; copyrights
- Legal and non-registered protection: confidentiality clauses; restrictive covenants in contracts; NDAs
- Informal protection: high trust relations; lead-time advantages; just keep quiet; branding
- No protective actions at all



Branding Your Startup In Five Steps

- Know your target market
- Sell your story
- Refine your language and image
- Be memorable *Positive*
- Maximize your visibility *Optimize*
- <https://digitalbrandinginstitute.com/5-steps-branding-startup/>
- <https://37celsius.nl>

Branding Your Startup In Five Steps

- Why is the answer to this question not (always) yes?

[Why You Should NOT Get a Patent! – YouTube](#)

- Do patents really promote innovation?
<https://www.youtube.com/watch?v=lxwnlM115YU>



Registered Formal Legal Rights -> Firm Performance

- IV -> DV
- IV = registered formal legal rights
- DV = firm growth in employment, sales and labor productivity
- Research among more than 3000 innovative Dutch firms
- On an aggregated level, registered formal legal rights are hardly related to firm growth
- Why is that so? Possibly because of the non-linear nature of firm growth; the current speed of innovation; registered formal legal rights has become a strategic purpose in itself
- Mol (2017)

'Outsiders' -> Innovative Behavior Of Small Firms

- An 'outsider' (or 'involved outsider') to the firm is a voluntarily appointed outside board member, mentor, coach, ...
- The 'outsider' offers the entrepreneur: start-up assistance, planning consultation, help with managing relationships and developing networks, etc.
- The 'outsider intensity' is the combination of 1. presence (dummy); 2. number of outsiders; 3. number of visits per year by the outsiders; 4. annual fee paid to the outsiders; 5. supervision versus advice power of the outsiders; 6. size of information package (finance, production, process, clients, innovation, strategy)
- Conclusion: 'outsider intensity' positively determines the innovative behavior of the firm
- Because an 'outsider' inspires the entrepreneur to undertake innovative behavior and prevents the entrepreneur from being too focused on the daily business
- Pivotal: fresh pair of eyes and access to networks
- Kleijn et al. (2011)
- Paid outsiders are more effective than non-paid outsiders
- Postema (2021)



Example Of An 'Outsider' To A Small Business

- Member of the Advisory Board
- Presence (dummy): check
- Number of outsiders: 3
- Number of visits per year by the outsiders: 4
- Annual fee paid to the outsiders: yes
- Advice or supervision power: only advice
- Information package: no limits
- Specific added value: strategic insights; objective vision; trust; acquisition; access to network

Preparation Lecture 2

- Read Stangler and Bell-Masterson (2015)
- Jacobides et al. (2018)





BEST WISHES!

The EntRENEW team:



b. Vibrancy of an Entrepreneurial Ecosystem

i. The Entrepreneurial ecosystem

Video: <https://youtu.be/5yWZqdYT1U>

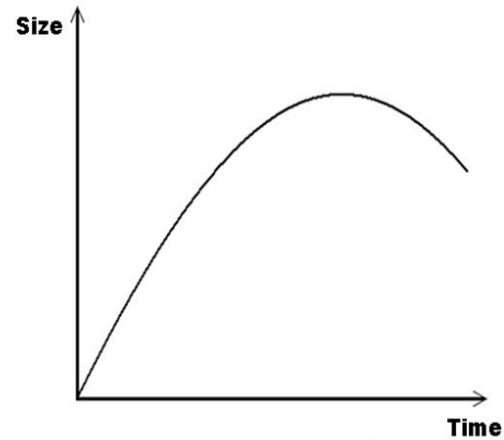
ii. University spin-offs

Video: <https://youtu.be/FDT1eTZQNPC>

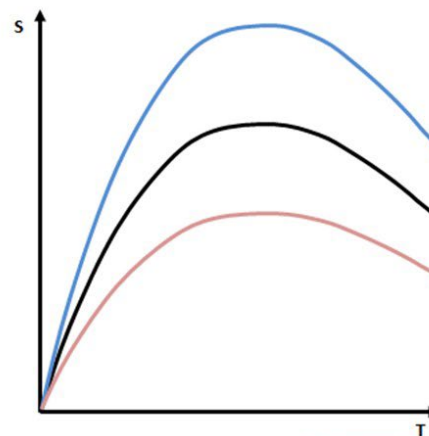
c. The Life Cycle of the Small Firm



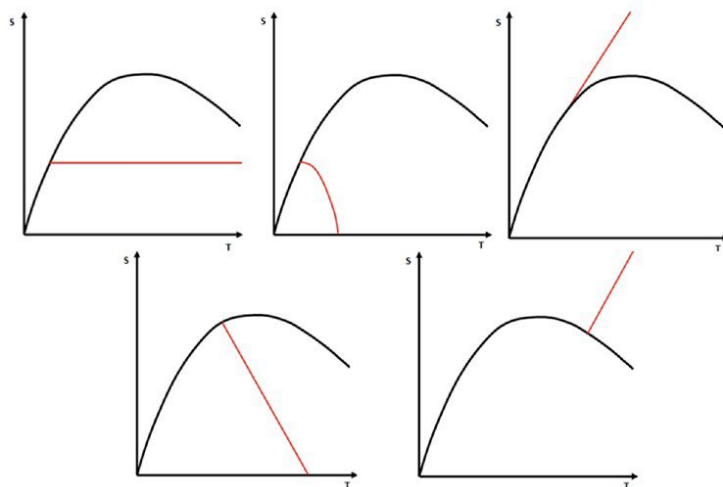
Introduction To The Life Cycle Of The Small Firm



However, it is a bit more complicated.



And it is even more complicated...



Open Innovation VS Closed Innovation



- The concept is borrowed from biology
- From the cradle to the grave
- 'The circle of life' (from the day we arrive on the planet, and blinking, step into the sun)
- Different stages in the life cycle, with mutual differences

The Life Cycle Of The Small Firm

- Many small firms do not grow significantly (also before COVID)
- Why is that so? External constraints? Personal choices of the entrepreneur? Too much cash withdrawal from the firm?
- It seems to be rather independent from the economic circumstances
- Is there a system of development stages with the small firm?
- Is small firm growth a predictable phenomenon?
- Or is small firm growth just the result of opportunities?
- Or is small firm growth even coincidence?

The Life Cycle Of The Small Firm (2)

- There is life cycle pattern for small firms
- General: start -> growth -> maturity -> decline
- Other identifications and labels: courtship, infant organization, go-go, adolescent, entrepreneurial stage, collectivity stage, formalization and control stage, structure elaboration and adaptation stage, survival, expansion, high growth, existence, disengage, early growth, rapid growth, early diversification, formation, late growth, stability, and more
- Diverseness is a key concept here



Case 1: Change Of The Small Firm

The Research Project

- Architects: Design and construction; Knowledge-intensive activities; Highly educated people; Customized services; Creative entrepreneurs; Committed people
- Typical small business sector: Many small firms; Many family businesses; Strong regional/local focus
- Fieldwork: 279 Dutch architecture offices; Commissioned by the umbrella organization BNA
- Masurel and Van Montfort (2006)



Two Hypotheses

H1. The diversification of a firm's sales increases in the first stages of its existence, and decreases in the final stage of its existence

H2. The differentiation of a firm's labor force increases in the first stages of its existence, and decreases in the final stage of its existence

Is there a life cycle of the small firm in the Dutch architecture sector?



Development Stage

Stage	Number of firms	%
Start	9	3.2
Growth	95	34.1
Maturity	139	49.8
Decline	20	7.2
Don't know	16	5.7
All	279	100

Firm Size

Stage	Average number of employed people	Average sales (€)
Start	2.8	154.000
Growth	8.4	574.000
Maturity	17.3	1.252.000
Decline	2.3	123.000

Operationalization Of The Variables

- Sales diversification (1): Sectors: houses (39.5%), agriculture & manufacturing (8.5%), offices (18.3%), shops (4.7%), education (6.7%), health care (7.4%), other (14.9%)
- Sales diversification (2): Clients: professional/B2B (55.1%), private/B2P (27.7%), other (17.3%)
- Sales diversification (3): Activities: standard activities/complete assignments (45.2%), standard activities/incomplete assignments (44.5%), non-standard activities (2.6%), other (7.6%)
- Employment dispersion: 25.9% architects and 74.1% non-architects

Differences Between The Stages

	Growth versus Start-up	Maturity versus Growth	Decline versus Maturity
Sales diversification (1)	PLUS	PLUS	MINUS
Sales diversification (2)	PLUS	PLUS	MINUS
Sales diversification (3)	PLUS	PLUS	MINUS
Employment dispersion	PLUS	PLUS	MINUS

Lessons Learned

- Small businesses change during their life cycle
- Relationship between development stage, firm age and firm size
- Diversification in sales increases and then decreases
- Differentiation in employment increases and then decreases
- Both hypotheses are fully accepted

Case 2: Change Of The Entrepreneur



Three Entrepreneurial Roles

- The professional
- The leader
- The manager

The Propositions

- P1: The entrepreneur in the start-up stage is mainly a professional
- P2: The entrepreneur in the growth stage is mainly a leader
- P3: The entrepreneur in the maturity stage is mainly a manager
- P4: The entrepreneur in the decline stage is mainly a professional



The Research Project

- Collaboration between EY and the VU
- Response: 56 firms, median at 135 employees
- All respondents are members of the EY Entrepreneurship Of The Year society
- Last year (total number of working hours) is 100%
- The 100% was to be divided over leadership, management and professionalism
- Each of the three categories consists of four activities
- Professional: Production; Quality control; Sales; Keeping up to date with developments in the profession
- Leader: Determining the direction of firm development; Making SWOT analyses; Formulating long term goals
- Manager: Planning of daily activities and division of tasks; Control and solving conflicts; Making others do their work; Creating platforms for decision-making
- What is your actual situation?
- What makes the perfect picture for you?
- Masurel and Van der Lugt (2016)

The Results

- Only firms in the growth stage and firms in the maturity stage
- The average entrepreneur considers herself/himself a leader (in 48.8% of the working time), a professional (27.6%) and a manager (23.6%)
- No significant differences between the growth stage and the maturity stage
- In both stages no significant difference in terms of the actual role and the wished role of the professional
- However, in both stages, the entrepreneur wants to pay more attention to her/his role as a leader and less attention to her/his role as a manager
- Response bias? Perception? Socially desirable answers?



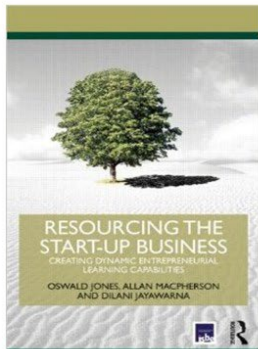
Resourcing The Start-Up Business

What do you need to start your own business?

- A good business idea*
- A good business model*
- A good business plan*
- Tangible resources
- Intangible resources
- Good fortune*



Resourcing The Start-Up Business



- *Tangible resources*
- *Financial resources*
- *Physical resources*
-
- *Intangible resources*
- *Human capital*
- *Social networks*
-
- *Jones et al. (2014)*

Basic Forms Of Financing

- External finance (e.g., bank loan or VC investment)
- *Debt finance versus Equity finance*
- Internal finance (e.g., retained earnings)
- Personal finance (e.g., own savings)



More Forms Of Financing

- Mezzanine capital
- Trade credit
- Factoring
- Leasing
- And much more...
- See:
www.investopedia.com/articles/pf/13/business-financing-primer.asp

The Basic Financial Plan

- Profit and Loss Statement
- Balance sheet
- Cash flow statement
- 'revenue is vanity and profit is an opinion, but cash is king'



Important Practical Questions

- Do I really need funding?
- If yes, how much funding do I need?
- Which form(s) of funding do I pursue?
- What can I offer my funder(s)?
- How much independence am I willing to give up?
- How does my pay-back process look like?
- Which criteria do(es) the funder(s) use?

Financing Forms In The Lifecycle Of The Small Firm

- Jones et al. (2014, P115)

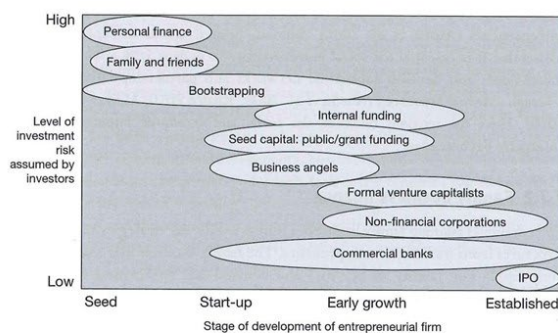


Figure 7.1
Change in financing strategies along the venture lifecycle

Special Attention For Three Phenomena

- Bootstrapping: 'a range of activities aimed at absorbing and borrowing resources at no/low financial cost from the entrepreneur's social networks' (Jones et al. (2014), p. 127)
- Micro credit: 'A small-scaled form of debt finance, possibly accompanied by other forms of micro finance, for example insurance and saving, in combination with weak requirements for collateral' (Masurel, 2019, p. 72)
- Crowdfunding: 'Focused on a large number of investors (the "crowd"), all investing a small amount of money in the firm, be it with or without an intended compensation, be it financial or otherwise, often done via platforms on the internet' (Masurel, 2019, p. 72)

Table 8.1 Bootstrapping: internal, social and quasi-market modes of resource acquisition

Internal mode of resource acquisition	Owner-related financing and resources	<ul style="list-style-type: none"> • Use of manager's credit card • Loan from relatives/friends • Withholding manager's salary • Assignments in other businesses • Relatives working for non-market salary
	Customer-related methods	<ul style="list-style-type: none"> • Cease business relations with late payers • Lease equipment instead of buying • Best conditions possible with suppliers • Offer customers discounts if paying cash • Choose customers who pay quickly
	Payment-related methods	<ul style="list-style-type: none"> • Use routines for speeding up invoicing • Use interest on overdue payment • Delay payment to suppliers • Delay payment of value-added tax • Use routines in order to minimize stock
Social mode of resource acquisition	Joint-utilization of resources with other firms	<ul style="list-style-type: none"> • Borrow equipment from others • Own equipment in common with others • Coordinate purchases with others • Share premises with others • Share employees with others • Practise bartering instead of buying/selling • Raise capital from a factoring company
Quasi-market mode of resource acquisition	Subsidy finance	<ul style="list-style-type: none"> • Subsidy from local, regional and national support and funding bodies

Bootstrapping ('A Little Bit Of This And A Little Bit of That')

- Jones et al. (2014, p. 127)



Example: Startup Funding From The Dutch Government

- <https://business.gov.nl/starting-your-business/launching-an-innovative-startup/startup-funding-from-the-government/>
- Like Innovation credit, Dutch Good Growth Fund (DGGF) and Financial support for self-employed professions (Bbz)
- <https://www.rvo.nl/subsidie-en-financieringswijzer>
- For assistance: <https://www.pnoconsultants.com> and more

Micro Credit

- Not only in LDCs/emerging economies, also in the western world, e.g., Qredits in the Netherlands (helps with financing up to € 250.000, coaching and tools)
- Important for female empowerment in LDCs/emerging economies, connected to Micro Finance Institutions (MFIs)
- Downsides: frequently high interest levels, often no clear effects, some financiers profit unequally, high monitoring costs, lack of clarity about payback (dependence?)
- Important: other financial services, like saving and insurance
- Developments: branchless banking, group lending



Crowdfunding

- Different forms: donation-based, reward-based, lending-based, equity-based,
- Beyond financial advantages only: communication of the project to a wider audience, additional feedback from potential customers,
- The creator is an organization or an individual
- Presenting a web page, with text, pictures, photos, and videos
- Famous examples are www.kickstarter.com and www.wakibi.nl

So, What Did You Need To Start Your Own Business?

A good business idea
A good business model
A good business plan
Tangible resources
Intangible resources
Good fortune
.....



Preparation Lecture 4

- Read Spigel (2017)



BEST WISHES!

The EntRENEW team:



The slide features a decorative green background with a wavy line and a leaf icon on the left side.



d. Local Entrepreneurial Ecosystems



**Module II:
Entrepreneurial Ecosystem**



**Lecture 4:
Present Your
Entrepreneurial Ecosystem**



Film

- Make a film of 10 minutes of your local Entrepreneurial Ecosystem
- Make a slide deck of about 10 slides
- Integrate the slide deck in the film
- Join the pitches contest

The Amsterdam Entrepreneurial Ecosystem

- www.eu-startups.com/2019/02/amsterdams-startup-ecosystem-at-a-glance
- 'The Dutch capital is a true magnet for startups and the 4th most active startup hub in Europe'
- www.iamsterdam.com/en/business/startupamsterdam
- 'Amsterdam is a hyper-connected hub for emerging tech and innovation'
- <https://startupguide.com/shop/startup-guide-amsterdam>
- Startups, programs, spaces, experts, founders, schools, investors
- The AEE goes back to the Amsterdam Staple Market from the end of the 16th Century (and even further back)



UVA

- Energy Spin <https://energyspin.fi/>
- West Coast Start Up <https://www.businessfinland.fi/en/for-finnish-customers/services/startup-companies/startup-companies>
- VASEK <https://www.vasek.fi/start/>
- Vaasa Region Enterprise Agency Startia <https://www.suomi.fi/organization/vaasa-region-enterprise-agency-startia/cda71fd1-2116-42e0-a682-3bd75b887e0f>
- UVA Catalysing innovation, <https://www.uwasa.fi/en/event/catalysing-innovation-driving-innovation-and-start-ecosystem-university-innovation-services>
- Vaasa Innovation Center <https://www.techbusinessvaasa.fi/company/wasa-innovation-center/>
- Hanken Business Lab <https://www.hanken.fi/en/cooperation-and-networks/hanken-business-lab>

The Valencian Entrepreneurial Ecosystem

- <https://ecosistemaempredimientocv.com/>
- VLC tech city <http://vlctechcity.com/>
- Valencia Activa <https://valenciactiva.valencia.es/>
- <https://www.lavanguardia.com/local/valencia/20220301/8089914/startups-valencia-vende-mobile-barcelona-joya-mediterraneo.html>
- StartUPV www.start.upv.es
- Lanzadera <https://lanzadera.es/>
- GoHub - Global Omnium <https://gohub.tech/es/>
- CEEI <https://ceeivalencia.emprenemjunts.es/>
- Plug'n'Play <https://www.plugandplaytechcenter.com/>
- Demium <https://demium.com/locations/valencia/es/>
- Startupxplore <https://startupxplore.com/>



The Halmstad Entrepreneurial Ecosystem

HighFive Halmstad: One incubator for startups, one for students
<https://h5halmstad.se/>

CRED Creative destination Halland
<https://m.facebook.com/CRED-Creative-Destination-Halland-127132744010369/>

Collaboration arenas at Halmstad University
<https://www.hh.se/english/collaboration/collaboration-arenas.html>

Halmstad Business Incubator
<https://www.halmstad.se/kommunochpolitik/organisationochstyrning/kommunalabolag/halmstadbusinessincubatorab.n350.html>

Halland Tech Week
<https://hallandtech.se/>

Essay

- Come up with two more indicators that signal the entrepreneurial ecosystem vibrancy
- One indicator should come from the literature (mention the reference in APA-Style) and one indicator should come from your own personal insight
- Explain clearly the indicators themselves, why these indicators, the differences with the four indicators by Stangler & Bell-Masterson (2015), and how to measure them
- Use about 250 words per indicator
- Note that an essay is basically a text in which you formulate a proposition and defend this proposition, with a clear explanation
- Your essay will be assessed on the basis of persuasiveness
- Ambiguity of the proposition and poor readability may lead to deduction of points



Sources

- Jacobides et al. (2018)
- Masurel (2019) – Section 1.1 and 1.2
- Masurel and Van Montfort (2006)
- Spigel (2017)
- Stangler & Bell-Masterson (2015)



BEST WISHES!

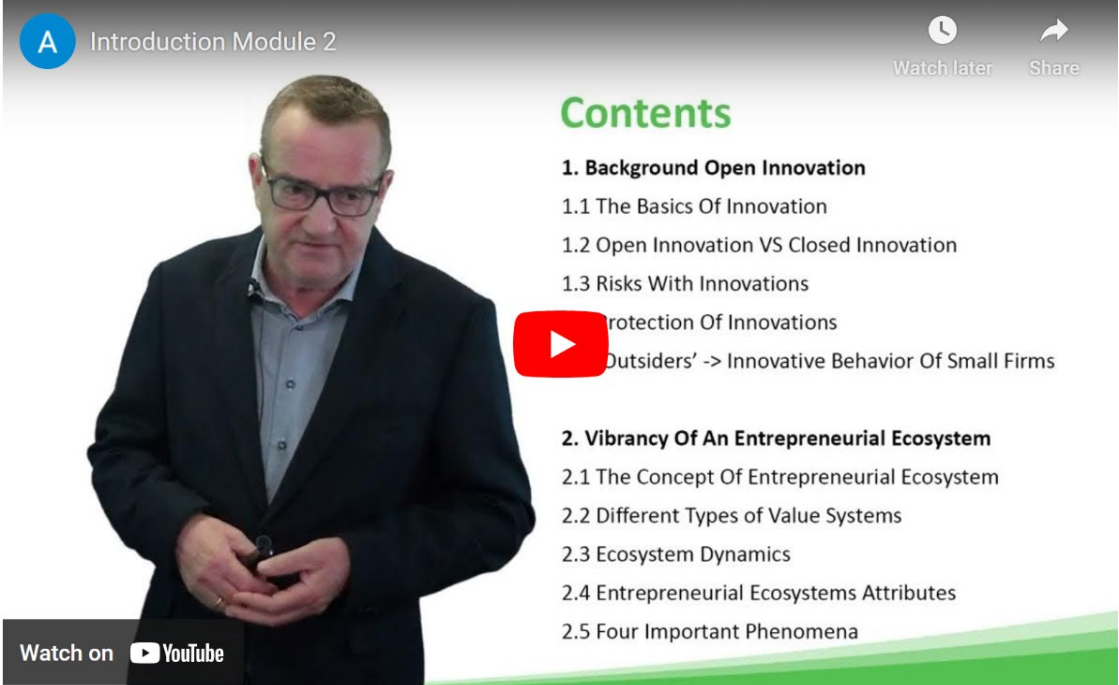
The EntRENEW team:



ii) Video Material

a. Introduction Module 2

<https://youtu.be/i5CpiM5fnSU>




A Introduction Module 2

Watch later Share

Contents

- 1. Background Open Innovation**
 - 1.1 The Basics Of Innovation
 - 1.2 Open Innovation VS Closed Innovation
 - 1.3 Risks With Innovations
 - 1.4 Protection Of Innovations
 - 1.5 'Insiders' vs 'Outsiders' -> Innovative Behavior Of Small Firms
- 2. Vibrancy Of An Entrepreneurial Ecosystem**
 - 2.1 The Concept Of Entrepreneurial Ecosystem
 - 2.2 Different Types of Value Systems
 - 2.3 Ecosystem Dynamics
 - 2.4 Entrepreneurial Ecosystems Attributes
 - 2.5 Four Important Phenomena

Watch on  YouTube

b. Vibrancy of an Entrepreneurial Ecosystem 1

<https://youtu.be/5yWZqdYTi1U>



A Vibrancy of an entrepreneurial ecosystem 1

Watch later Share

The Entrepreneurial Ecosystem

- Three indicators that signal the entrepreneurial ecosystem vibrancy in a region in a certain period: density (e.g., number of entrepreneurial ventures per 1,000 inhabitants); diversity (e.g., number of high-growth firms in % of total number of firms); connectivity (e.g., number of dealmaker networks per entrepreneur).
- Also mentioned as an indicator of vibrancy: 'investment attraction time'.

Watch on  YouTube



c. Vibrancy of an Entrepreneurial Ecosystem 2

<https://youtu.be/FDT1eTZQNpc>



A YouTube video player interface. The video title is "Vibrancy of an entrepreneurial ecosystem 2". The video content shows a man in a dark suit and glasses speaking. The video title "University Spin-offs" is displayed in green text. Below the video, there are three bullet points:

- Universities increasingly develop their new technology ideas through the creation of independent new business, rather than by transferring the ideas through traditional channels
- Importance of Technology Transfer Offices (TTOs), see, e.g., www.ix.nl
- Importance of Demonstrator Labs (D-Labs), see, e.g., www.demonstratorlab.nl

At the bottom left of the video player, it says "Watch on YouTube".



iii) Quizzes

a. Background on Open Innovation

[1 point]

1. What are the two crucial elements in the definition of innovation?

- failed market introduction & something new
- failed market introduction & something existing
- successful market introduction & something existing
- successful market introduction & something new

[1 point]

2. What is one of the main differences between open innovation and closed innovation?

- open innovation requires control whereas closed innovation requires collaboration
- open innovation requires collaboration whereas closed innovation requires control
- open innovation requires closed innovation
- control requires collaboration

[1 point]

3. What are the four risks with innovation (start-ups and scale-ups)?

- lose your goodwill; lose your invested time; lose your reputation; lose other people's invested capital
- lose your invested capital; lose your invested time; lose other people's reputation; lose other people's goodwill
- lose your invested capital; lose your invested time; lose your reputation; lose other people's goodwill
- lose your invested capital; lose your reputation; lose other people's invested time; lose other people's goodwill

[1 point]

4. What are the four levels of protection of innovation?

- non-legal and registered; legal and non-registered; informal; none
- legal and registered; non-legal and non-registered; informal; none
- legal and registered; legal and non-registered; formal; none
- legal and registered; legal and non-registered; informal; none

b. Vibrancy of an Entrepreneurial Ecosystem

[1 point]

1. What is an entrepreneurial ecosystem?

- The whole set of connected players that are relevant for the development of entrepreneurship in a certain region.
- The whole set of players or connections that are relevant for the development of entrepreneurship in a certain region.



- The whole set of connected players that are relevant for the development of entrepreneurship globally.
- The whole set of players or connections that are relevant for the development of entrepreneurship globally.

[1 point]

2. What are the three indicators that signal the vibrancy of an entrepreneurial ecosystem?

- diversity, fluidity, connectivity
- density, diversity, connectivity
- density, fluidity, diversity
- density, fluidity, connectivity

[1 point]

3. What kind of entrepreneurial ecosystem attribute is 'mentors and role models'?

- Social
- Material
- Cultural
- None of these three

[1 point]

4. What is defined by facilities that provide shared resources for young businesses?

- Business accelerators
- Knowledge valorization by universities
- Business incubators
- Entrepreneurial ecosystems

c. The Life Cycle of the Small Firm

[1 point]

1. What are the four stages of the life cycle of a small firm in the proper sequence?

- conception – start – growth – maturity
- start – maturity – growth – decline
- start – growth – maturity -decline
- start – growth – decline – maturity

[1 point]

2. How do small businesses change during their life cycle?

- Only in terms of sales diversification
- Only in terms of employment dispersion
- In terms of both sales diversification and employment dispersion
- In terms of neither sales diversification nor employment dispersion



EstRENEW

[1 point]

3. Which three roles can the entrepreneur exercise:



- professional, leader, manager
- owner, leader, manager
- professional, leader, owner
- professional, leader, owner

[1 point]

4. One alternative approach of the life cycle of the firm consists of seed – start-up – early growth – established. What is the relationship of these four stages with the level of investment risk assumed by investors?

- No relationship
- Neutral relationship
- Negative relationship
- Positive relationship



2.1.3. Module 3: Business Model Innovation and Ecosystems in Renewable Energy

i) Training Content

a. Business Modeling

i. Traditional vs Sustainable Business Models



Content

Module 3. Lecture 1. Traditional business models Vs Sustainable Business Models.



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Module 3. Lecture 1. Traditional business models Vs Sustainable Business Models.

Lecture 1: Traditional business models Vs Sustainable Business Models.

- Purpose of the lecture.
 - Business model.
 - Sustainable business model.
- Sustainable Business Model Typology from a Sustainability Perspective.
 - Sustainable Business Model Innovations
 - The sustainable business model archetypes
 - Assessment of the New Knowledge
- Group Activity: Collaborative Work to use Sustainable BMs

Pedagogic tools

Test on previous knowledge - Individual activity

Lecture

Quiz - Individual activity

Group Activity: Collaborative Work to use Sustainable BMs

Literature

See references



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Accountability Study Load

Lecture 1: 10 study hours.

- Presence lecture: 2 hours.
- Reading of literature: 4 hours.
 - Assignment: 4 hours.



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Purpose of the lecture

- To contrast characteristics between traditional business models and sustainable business models.

But before:

What do you know about sustainable business models?

Please, click in this link to test your previous knowledge about the subject.

https://www.educaplay.com/learning-resources/11427608-previous_knowledge_on_sbm.html



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Business Model (BM)

“A business model describes the design or architecture of the value creation, delivery and capture mechanisms employed. The essence of a business model is that it crystallizes customer needs and ability to pay, defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value, and converts those payments to profit through the proper design and operation of the various elements of the value chain” (Teece, 2010, p. 179).



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Sustainable Business Model (SBM)

A business model for sustainability helps describing, analyzing, managing, and communicating (i) a company’s sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries (Schaltegger, Hansen, and Lüdeke-Freund; 2016).

The Sustainable Business Model Canvas, 11 Steps to designing a successful sustainability strategy

<https://www.youtube.com/watch?v=gVimMEI2u2w>



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Sustainable Business Model Typology from a Sustainability Perspective

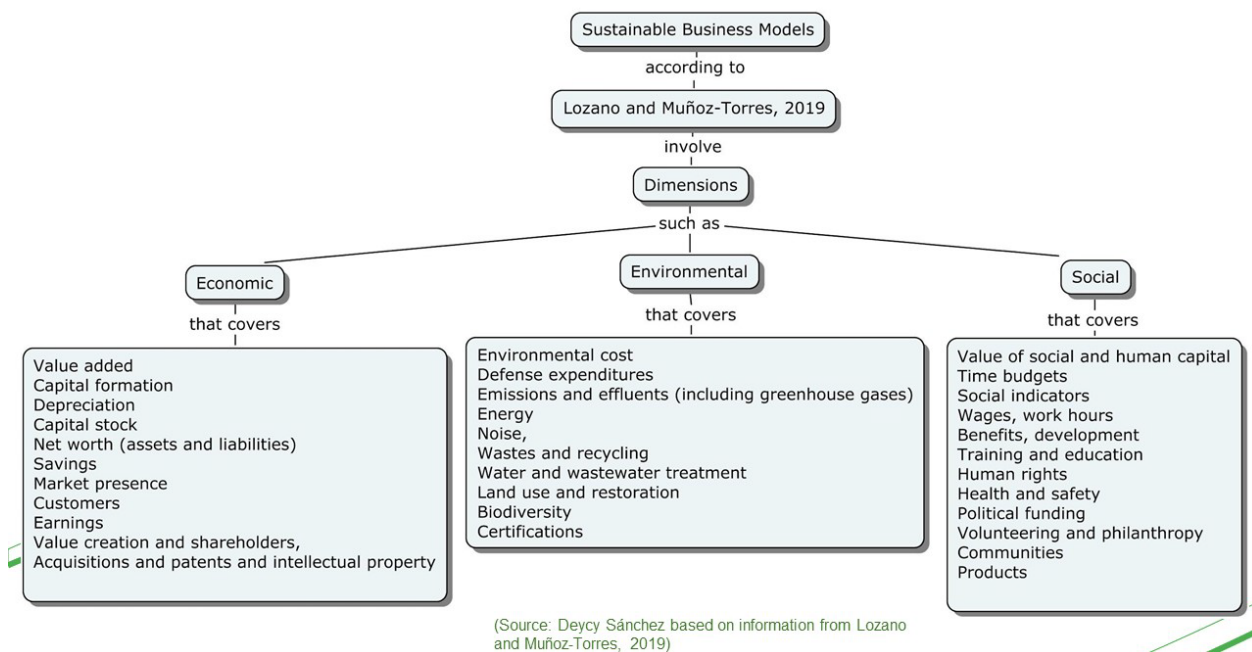
Dimension	More sustainable	Eco-efficient	Eco-social	Anthropocentric	Socialitarian	Eco-centric	Traditional	Noxious
Economic	High	High	Low/No	High	Low/No	Low/No	High	Low/No
Environmental	High	High	High	Low/No	Low/No	High	Low/No	Low/No
Social	High	Low/No	High	High	High	Low/No	Low/No	Low/No

(Source: Lozano and Muñoz-Torres, 2019)



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Sustainable Business Model Innovations

Innovations that create significant positive and/or significantly reduced negative impacts for the environment and/or society, through changes in the way the organisation and its value-network create, deliver value and capture value (i.e. create economic value) or change their value propositions (Bocken et al., 2013).



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The sustainable business model archetypes



Groupings	Technological			Social			Organisational	
	Maximise material and energy efficiency	Create value from waste	Substitute with renewables and natural processes	Deliver functionality rather than ownership	Adopt a stewardship role	Encourage sufficiency	Repurpose for society/environment	Develop scale up solutions
Archetypes	Low carbon manufacturing/solutions	Circular economy, closed loop	Move from non-renewable to renewable energy sources	Product-oriented PSS - maintenance, extended warranty	Biodiversity protection	Consumer Education (models); communication and awareness	Not for profit	Collaborative approaches (sourcing, production, lobbying)
Examples	Lean manufacturing	Cradle-2-Cradle	Solar and wind-power based energy innovations	Use oriented PSS- Rental, lease, shared	Consumer care - promote consumer health and well-being	Demand management (including cap & trade)	Hybrid businesses, Social enterprise (for profit)	Incubators and Entrepreneur support models
	Additive manufacturing	Industrial symbiosis	Zero emissions initiative	Result-oriented PSS- Pay per use	Ethical trade (fair trade)	Slow fashion	Alternative ownership: cooperative, mutual, (farmers) collectives	Licensing, Franchising
	De-materialisation (of products/packaging)	Reuse, recycle, re-manufacture	Blue Economy	Private Finance Initiative (PFI)	Choice editing by retailers	Product longevity	Social and biodiversity regeneration initiatives ('net positive')	Open innovation (platforms)
	Increased functionality (to reduce total number of products required)	Take back management	Biomimicry	Design, Build, Finance, Operate (DBFO)	Radical transparency about environmental/societal impacts	Premium branding/ limited availability	Base of pyramid solutions	Crowd sourcing/ funding
		Use excess capacity	The Natural Step	Chemical Management Services (CMS)	Resource stewardship	Frugal business	Localisation	"Patient / slow capital" collaborations
	Sharing assets (shared ownership and collaborative consumption)	Slow manufacturing			Responsible product distribution/promotion	Home based, flexible working		
	Extended producer responsibility	Green chemistry						

Source: Bocken (2013)

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References

- Bocken, N. M., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of cleaner production*, 65, 42-56.
- Lozano, R. (2018). Sustainable business models: Providing a more holistic perspective. *Business Strategy and the Environment*, 27(8), 1159-1166.
- Lozano, R., & Muñoz Torres, M. J. (2019). Typologies of Sustainable Business. *Decent Work and Economic Growth*, Encyclopedia of the UN Sustainable Development Goals, Springer Nature Switzerland AG 2019, W. Leal Filho et al. (eds.), https://doi.org/10.1007/978-3-319-71058-7_54-1
- Schaltegger, S., Hansen, E. G., & Lüdeke-Freund, F. (2016). Business models for sustainability: Origins, present research, and future avenues. *Organization & Environment*, 29(1), 3-10.



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Assessment of the New Knowledge

Quiz – Individual Activity

- Basic concepts on sustainable business models.
- Please, click the following link to access the questions.
- https://docs.google.com/forms/d/e/1FAIpQLSd3DErLvKBK9CZe0V4uR106H0Jdprj6kja52EB0P0PJMd4Clg/viewform?usp=sf_link



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Group Activity: Collaborative Work to use Sustainable BMs

Value Proposition on Sustainable Housing

- You will use a card game to put in place the elements of your sustainable business model.
- Challenge 1 - Innovative Business Model for a Product/Service in New Entrepreneurial Venture.
- Challenge 2 - Innovative Business Model for a Product /Service/Process in an existing organization.
- Each group will both present a 2-3 minutes pitch and a 20 minutes power point presentation of their problem, solution and its value proposition to a jury during a plenary session

If you want to register the outcome of the game, you can fill the following interactive pdf

<https://goteborg.drivhuset.se/wp-content/uploads/sites/5/2021/09/Business-Model-Canvas-Eng-interactive.pdf>



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Conclusions

- A business model crystallizes customer needs and operation of the various elements of the value chain, among others.
- A business model for sustainability captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries.
- Corporate sustainability shows a shift from selling products to providing service solutions to customer needs.
- High benefits in the dimensions economic, environmental and social is a characteristic of a “more sustainable” business model.
- A business sustainability typology combines the inside out and the outside-in organizational perspectives.



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ii. Card Game for Sustainable Business Models

1.2 CARD GAME: SUSTAINABLE HOMES USING RENEWABLE ENERGY

Sustainable homes are places designed to use environmentally friendly products, optimize energy consumption, use fewer natural resources, consider the affectation of the natural, business and social environment, reduction of CO₂ emissions, green house effects as much as global warming, among others. Other terms for sustainable homes are: ecolive home, green house, sustainable house or eco house.

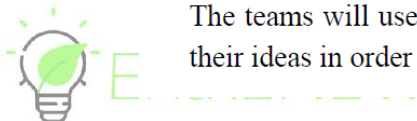
There is interest to guarantee that residential living using sustainability generates benefits (economic, social and environmental) that compensate the investment in the design and technology needed. The incentives for the use of sustainable practices are increasing and policies motivate people and organizations to adopt environmentally friendly perspectives.

The development of sustainable homes involves different disciplines and integrate their efforts, considering that a system approach is inherent to this concept, and it is not possible to understand it without a holistic view of the world. This is consistent with the global trend described in the Sustainable Development Goals 2030 (https://unfoundation.org/what-we-do/issues/sustainable-development-goals/u-s-leadership-on-the-sdgs/?gclid=Cj0KCOiAu62QBhC7ARIsALXjjXR_I-bnH287m9-T3LGWSmsfJBpVA8YcqOOGy1cRfB7in2y8FOslbVYaArq_EALw_wcB)

WHAT IS THE TASK?

The main task for each team (3-4 members) in this course is to identify a problem based on one of the challenges identified in the sustainable housing using renewable energies and then within the team to develop a possible solution to the challenge. The group's presentation of the solution shall be based on the lectures and workshops that are part of the course. Special emphasis will be put on describing the added value of your solution. During the course, we will work on how to design an innovative value proposition according to the The Value Proposition Design Book Review by Ostewalder et al. (2014) as well as the 10 characteristics of great value propositions by Strategyzer.

The teams will use a card game to create business models and play with the different elements of their ideas in order to experiment and define the most appropriate sustainable business model.



Each group will both present a 2-3 minutes pitch and a 20 minutes power point presentation of their problem, solution and its value proposition to a jury during a plenary session. The jury is composed of academics, representatives from the different practitioner groups and a business representative.

The following paragraphs present the challenges:

Challenge 1: Innovative Business Model for a Product/Service in New Entrepreneurial Venture

The team has the mission to define an innovative business model in the context of a new firm. In this case, the team must show, how a product/service/process offers a distinctive value proposition for the new organization.

Challenge 2: Innovative Business Model for a Product/Service/Process in an existing organization

The team has the mission to define an innovative business model in the context of an existing firm. In this case, the team must show how a product/service/process offers a distinctive value proposition for the organization.

EVALUATION RUBRIC FOR A PRODUCT/SERVICE/PROCESS

Theme	Criteria	Description	Score
Idea & Team	Innovation	How creative or innovative is the value proposition of the solution?	20
	Multidisciplinary	Team has different members of different disciplines, backgrounds, countries?	15
Experience	Value	How relevant is the value proposition for solving a sustainable house challenge?	15
Implementation	Functionality	Does the team have a functional prototype of the value proposition?	30
	Scalability	Could the product/service/process scale as a real solution that can be used in our life?	10
Presentation	Rocket pitch	Did the team present a solid pervasive pitch?	10
Overall			100

For inspiration, you can use:

- Book online version

Sayigh, A. (Ed.). (2019). Renewable Energy and Sustainable Buildings: Selected Papers from the World Renewable Energy Congress WREC 2018. Springer Nature.

<https://link.springer.com/book/10.1007/978-3-030-18488-9>





CUSTOMER SEGMENTS

Content

Module 3. Lecture 3. Customer Segments.



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Module 3. Lecture 3. Customer Segments.

Lecture 3: Customer Segments.

- Concept.
- Segmenting Customers.
- Types of Customer Segments.
- Customer Segmentation Strategies for Start-ups.

Pedagogic tools

- Lecture
- Video-clips (embedded in the PPT)
- Group exercise
- Group presentation

Literature

- See references



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Accountability Study Load

Lecture 3: 8 study hours.

- Presence lecture: 2 hours.
- Reading of literature: 4 hours.
 - Exercise: 2 hours.



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What do you know about customer segments?

Customer Segments

- **Customer Segments** are the groups of people and/or organizations a company or organization aims to reach and create value for with a dedicated Value Proposition.
- Customers make the heart of any business model, and without them no company can be profitable.

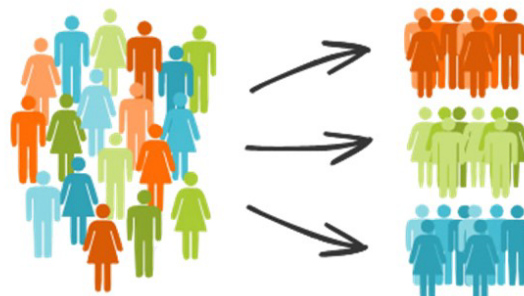


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Customer Segments

- To better serve customers, companies commonly group them into segments distinguished by common needs, common behaviors, or other attributes.
- Companies make a conscious decision as to which segments to serve and which segments to ignore, thus allowing them to focus on matters that vitally affect their business.



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Customer Segments

- A business model can be carefully designed around a strong understanding of specific customer needs.
- Customer groups represent separate segments if:
 - ✓ Their needs require and justify a distinct offer
 - ✓ They are reached through different Distribution Channels
 - ✓ They require different types of relationships
 - ✓ They have substantially different profitabilities
 - ✓ They are willing to pay for different aspects of the offer



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Why segment customers?

Why segment customers?

Benefits to the Organization

- ✓ Identification of unfulfilled needs
- ✓ Better product design
- ✓ More targeted promotions
- ✓ Increased customer satisfaction

Sustainable profit growth

Benefits to the Customer

- ✓ Convenience and time savings
- ✓ Tailored products and services
- ✓ Relevant offers
- ✓ Personalized experience

Compelling customer experiences



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Customer Segmentation Benefits

- Helps to detect and exploit new market opportunities.
- Improves how to predict customer behaviour.
- Increased customer retention and loyalty.
- Improves the perception of a brand through personalization.
- Streamlines and improves workflow.
- Helps to improve customer lifetime value.



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Characteristics of a Useful Segmentation



Characteristics of a Useful Segmentation

For a segmentation to be useful, it must be identifiable, substantial, accessible, stable, differentiable, and actionable.

1. **Identifiable:** An organization should be able to identify customers in each segment and to measure their characteristics, such as demographics or usage behavior.
2. **Substantial:** To be useful, a segment needs to be substantial/large enough for a company to serve profitably.



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Characteristics of a Useful Segmentation

3. **Accessible:** To be accessible, a segment needs to be reachable through communication and distribution channels independent of other segments.
4. **Stable:** A segment should be stable over a long period of time that any market effort would be successful and profitable.
5. **Differentiable:** Consumers in a segment should have similar needs, and these needs should differ from the needs of consumers in other segments.
6. **Actionable:** An organization should be able to create products and marketing programs for attracting and serving customers in the segments identified.



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How to Segment Customers?

Segmentation Variables for Consumer Markets



Segmentation Variables for Business Markets

Geographic	Country, region, city, urban/rural
"Firmographics"	Industry, firm size, global/regional, ownership
Buying Approach	Centralized or decentralized purchase, purchase policies, involvement of decision-makers
Behavioral	Volume, purchase frequency, attitude toward risk, loyalty, urgency
Benefits Sought	Price, product quality, service, relationship



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Bases for Segmentation

Questions to ask:



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Segmenting Customers

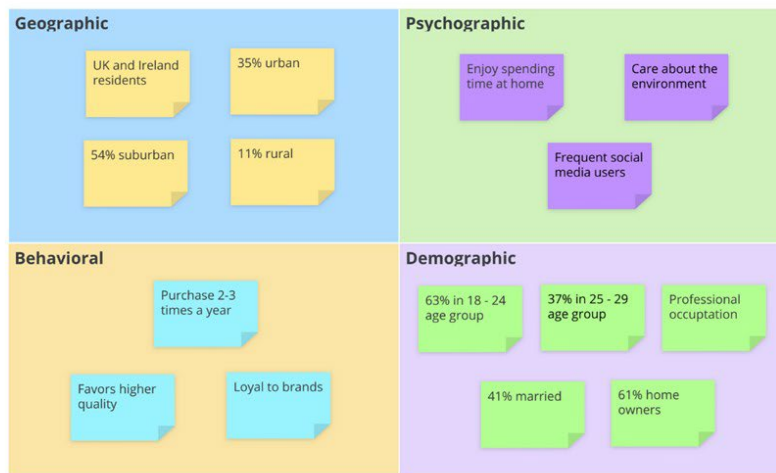
When determining your customer segments, consider the following:

- **Depth of pain:** The greater the pain (need), the greater the chance that the client will be open to your solution.
- **Budget:** Are customers willing to pay for your solution? How many? And how much? The greater the pain (need), the more customers are willing to spend.
- **Reach:** How are you reaching your customers? Is it too expensive to deliver in person or more effectively?
- **Market size:** What part of the market do you need to meet? Does this market share represent more than 10% of the size of your market? Is that safe?
- **Value:** How do you feel about serving this segment? Do these clients match the mission of your company?



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Segmentation Matrix (example)



/2020





Targeting

Targeting

- Once you segmented your market based on *who*, *what* and *why*, it is time to select which segment to choose.
- Targeting involves evaluating the attractiveness of each market segment, selecting one or more segments to pursue, and then designing marketing programs to serve them.
- A firms' choice of target segments depends on the level of segmentation in a particular situation or marketplace, which ranges from mass market, niche market, segmented market, diversified market or multi-sided platforms/markets.



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Mass Market

- Products and services which target the Mass Market segment are appealing or fulfil the needs of a wide cross section of the population and does not discriminate between different customer segments.
- The value propositions, distribution channels and customer relationships are meant for the consumption to a big number of people who have a common problem or need that requires fulfilment.



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Mass Market - characteristics

- Covers many consumers
- Products and services are relatively standard and homogeneous
- Price is the basis of competition
- Companies rely on mass production
- Mass marketing mix is the mainstay



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Mass Market - characteristics

- Ex: Electricity companies



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Niche Market

- Niche market refers to a customer segment with extremely defined characteristics and very particular needs.
- This segment requires, or rather expects, a highly tailored product, custom made to suit their needs.
- The value propositions, distribution channels and customer relationships are closely defined according to the preferences of this particular customer segment.
- These business models are common in supplier-buyer relationships.



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Niche Market

- Ex: Luxury brands.



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Segmented Market

- Some businesses choose to provide products and services to customer segments which may have very minute variations in their needs and requirements.
- The organization creates different value propositions, distribution channels and customer relationships according to these small differences in the customer segments.



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Segmented Market

- Ex: Banks



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Diversified Market

- An organization with a diversified customer business model serves two unrelated Customer Segments with very different needs and problems.
- The customer profiles have few overlaps but due to varying reasons, the organization sees value in investing in appealing to both these diverse segments.



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Diversified Market

- Ex: a company that serves both business to consumer (B2C) and business to business (B2B) markets.

amazon.com

Amazon.com starts its business selling books online. After some time, the company expanded its business by selling “cloud computing” services to business customers.



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Multi-Sided Platforms/ markets

- When customer segments are related through dependency, it makes business sense to serve both ends of the equation.
- Ex: for a credit card company, it is not just imperative that customers opt to use their credit cards but equally important for stores to accept their credit card. If either segment fails, the other will automatically follow suit.
- Simply put, it's a chicken and egg problem.



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How to select segments for targeting?

- Need to take into account:



Exercise: Segmentation Matrix

- In groups of 4-5 students, select one start-up (real or not) in the renewable energy sector
- Elaborate a Segmentation Matrix for this start-up
- Discuss the potential challenges or drawbacks
- Present the segmentation matrix to the whole class

Material: to elaborate a segmentation matrix, students can use paper in A2 format and post-its, or any digital platform according to the teacher preference (e.g., Miro, Google Jamboard, Ayoa).

Time estimated for the activity: 2 hours



References

- Badgett, M., & Stone, M. (2005). Multidimensional segmentation at work: Driving an operational model that integrates customer segmentation with customer management. *Journal of targeting, measurement and analysis for marketing*, 13(2), 103-121.
- Ballestar, M. T., Grau-Carles, P., & Sainz, J. (2018). Customer segmentation in e-commerce: Applications to the cashback business model. *Journal of Business Research*, 88, 407-414.
- Goyat, S. (2011). The basis of market segmentation: a critical review of literature. *European Journal of Business and Management*, 3(9), 45-5.
- Hosseini, M., & Shabani, M. (2015). New approach to customer segmentation based on changes in customer value. *Journal of Marketing Analytics*, 3(3), 110-121.
- Osterwalder, A., Pigneur, Y., Oliveira, M. A. Y., & Ferreira, J. J. P. (2011). Business Model Generation: A handbook for visionaries, game changers and challengers. *African journal of business management*, 5(7), 22-30.
- Tynan, A. C., & Drayton, J. (1987). Market segmentation. *Journal of marketing management*, 2(3), 301-335.



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Thank for your attention



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iv. Value Proposition



Value Proposition Canvas



Content

Module 3. Lecture 4. Value Proposition Canvas.



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Module 3. Lecture 4. Value Proposition.

Lecture 4: Value Proposition.

- Components of the value proposition.
 - Customer jobs.
 - Customer pains and gains.
 - Ranking.
- Customer profiling summary
 - Value map
- Example: 21 days of change
 - Products and services
 - Pains and gains
 - Value proposition

Pedagogic tools

Lecture

(for others: also could be video-clips, group discussions and written, individual assignment, etc)



Literature
See references

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Accountability Study Load

Lecture 4: 8 study hours.

- Presence lecture: 2 hours.
- Reading of literature: 4 hours.
 - Assignment: 2 hours.



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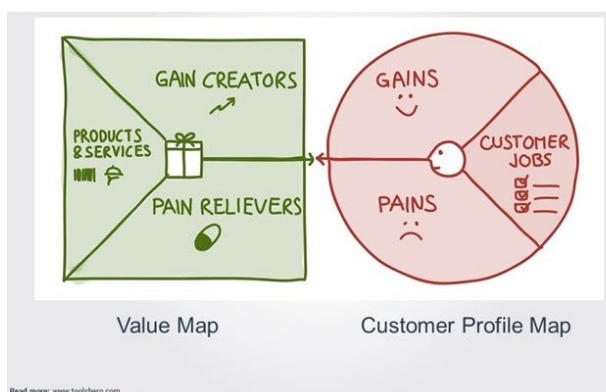
Purpose of the lecture

- To identify the components of the value proposition and their connections.



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Components of the value proposition



Value map: set of value propositions to attract customers.
Customer profile: set of customer characteristics that you assume, observe and verify in the market.



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Customer Jobs

What customers are trying to get done in their work or everyday life.

- Functional - performing a specific task or solving a problem
- Social – how customers want to be perceived by others
- Personal/emotional – seeking for a specific emotional state
- Supporting jobs in the context of consuming or purchasing value
 - Buyer of value – jobs related to buying value (e.g. comparing offers)
 - Co-creator of value - jobs related to creating value (e.g. NPD)
 - Transferrer of value – jobs related to the end of the value proposition’s lifecycle (e.g. disposing of a product)



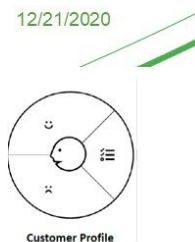
Source: Osterwalder, Pigneur, Bernarda & Smith (2014)

Customer Pains and Gains

- Pains describe anything that annoys your customers before, during, and after trying to get a job done or simply prevents them from getting *a job done*.
- Undesired outcomes, problems, and characteristics (functional, emotional, ancillary)
- Obstacles
- Risks (undesired potential outcomes)
- Gains describe the outcomes and benefits your customers want.
- Required gains – must have
- Expected gains – should have
- Desired gains – good to have
- Unexpected gains – surprised to have

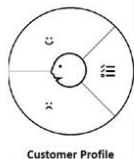


Osterwalder, Pigneur, Bernarda & Smith (2014)



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Customer Profile

Ranking

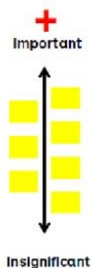
Job importance
Rank jobs according to their importance to customers.



Pain severity
Rank pains according to how extreme they are in the customers' eyes.



Gain relevance
Rank gains according to how essential they are in the customers' eyes.

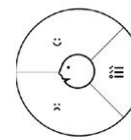


Osterwalder, Pigneur, Bernarda & Smith (2014)



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Customer Profiling Summary



Customer Profile



1
Select customer segment
Select a customer segment that you want to profile.



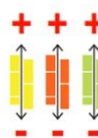
2
Identify customer jobs
Ask what tasks your customers are trying to complete. Map out all of their jobs by writing each one on an individual sticky note.



3
Identify customer pains
What pains do your customers have? Write down as many as you can come up with, including obstacles and risks.



4
Identify customer gains
What outcomes and benefits do your customers want to achieve? Write down as many gains as you can come up with.



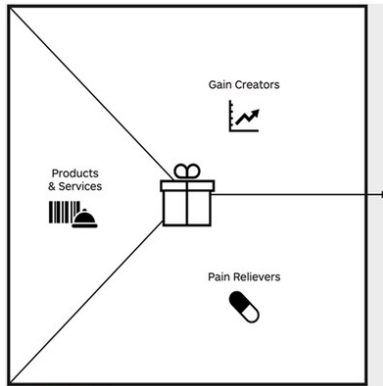
5
Prioritize jobs, pains and gains
Order jobs, pains and gains in a column each with the most important jobs, most extreme pains and essential gains on top and the moderate pains and nice to have gains at the bottom.

Osterwalder, Pigneur, Bernarda & Smith (2014)

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Value map



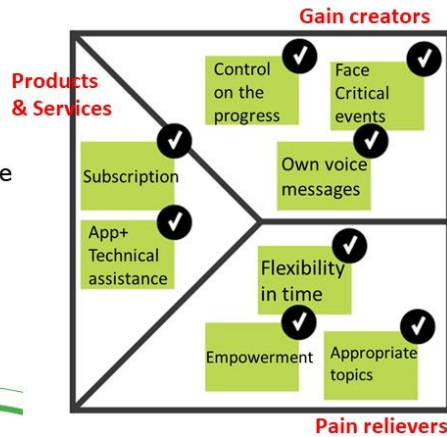
What you offer to help your customers.
 How your products create customer gains.
 How your products alleviate customer pains.



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Value proposition – 21 days of change

Civilians that were victims: the integral support includes therapy and self-therapy



Governmental program

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Products & Services

This is simply a list of what you offer.

- Physical/Tangible – e.g. goods
- Intangible – e.g. aftersales
- Digital – e.g. music download
- Financial – e.g. financing of a purchase



Value Map

Osterwalder, Pigneur, Bernarda & Smith (2014)



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Pains & Gains

Pain relievers describe how exactly your products and services alleviate specific customer pains

How do your products/ services **eliminate or reduce** negative emotions, undesired costs and situations and risks?

Gain Creators describe how your products and services create customer gains

How do your products / services **create benefits** your customer expects, desires or would be surprised by?



Value Map

Osterwalder, Pigneur, Bernarda & Smith (2014)



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Pains & Gains Ranking



Value Map

Products & Services
Rank products & services from nice to have to essential



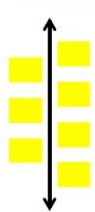
Pain Relievers
Rank pains from nice to have to essential



Gain Creators
Rank gains from nice to have to essential



+
Essential



Nice to have
-

+
Essential



Nice to have
-

+
Essential



Nice to have
-

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Osterwalder, Pigneur, Bernarda & Smith (2014)

Pains & Gains



Value Map

Value Mapping Summary



1

List products and services

List all the products and services of your existing value proposition.



2

Outline pain relievers

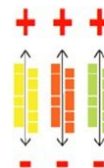
Outline how your products and services currently help customers alleviate pains by eliminating undesired outcomes, obstacles, or risks. Use one sticky note per pain reliever.



3

Outline gain creators

Explain how your products and services currently create expected or desired outcomes and benefits for customers. Use one sticky note per gain creator.



4

Rank by order of importance

Rank products and services, pain relievers, and gain creators according to how essential they are to customers.

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Osterwalder, Pigneur, Bernarda & Smith (2014)



Value proposition

It describes...

... your understanding of your customer

... how you intend to create value for that customer.

Value proposition canvas has two sides: customer profile and value map. You achieve fit between the two when one meets the other.



Reference

- Osterwalder, A., Pigneur, Y., Smith, A., Bernarda, A., & France, F. 4.12. Anexos. Academia, emprendimiento e investigación empresarial: homenaje a la universidad ean en sus 50 años, 55(8), 143. Lozano, R. (2018).



v. Revenue Streams and Costs Structure

Profit and Loss Statement Year X						Balance Sheet 1/1/X							
Sales		Costs				Assets			Liabilities and Equity				
Sold Lunar Panels	450000	Employees	60000	Van	30000	Personal	50000	Rent	30000	Stock	0	Aunt & Uncle	50000
		Van*	10000	Cash	100000	Bank loan	30000	Transport	5000				
		Purchase	250000	Total	130000	Total	130000	Own income	60000				
		Mixed	6000										
				Balance Sheet 1/1/X									
Total Sales	450000	Total Costs	421000	Assets			Liabilities and Equity						
		Profit	29000	Van	20000	Personal	50000	Stock	50000	Aunt & Uncle	25000	Bank Loan	25000
				Cash	59000	Bank Loan	25000	Debtors	0	Retained Profit	29000	Creditors	0
				Total	129000	Total	129000						
Cash Flow Overview													
	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	1-Jul	1-Aug	1-Sep	1-Oct	1-Nov	1-Dec	
Revenues													
Sold Lunar Panels	0	0	45000	45000	45000	45000	45000	45000	45000	45000	45000	45000	450000
Expenses													
Employees	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	60000
Rent	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	30000
Van	0	0	0	0	0	0	0	0	0	0	0	0	0
Transport	0	0	500	500	500	500	500	500	500	500	500	500	5000
Purchase	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	300000
Mixed	1000	0	1000	0	1000	0	1000	0	1000	0	1000	0	6000
Aunt & Uncle	0	0	0	0	0	0	0	0	0	0	0	25000	25000
Bank loan	0	0	0	0	0	0	0	0	0	0	0	5000	5000
Own income	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	60000
Total	38500	37500	39000	38000	39000	38000	39000	38000	39000	38000	39000	68000	491000
Cash balance	-38500	-37500	6000	7000	6000	7000	6000	7000	6000	7000	6000	-23000	
Cash balance (acc.)	61500	24000	30000	37000	43000	50000	56000	63000	69000	76000	82000	59000	



vi. Channels



CHANNELS



Content

Module 3. Lecture 6. Channels.



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Module 3. Lecture 6. Channels.

Lecture 6: Channels.

- Introduction.
- The Channels Participants.
- Channel Strategies.

Pedagogic tools

Lecture

Literature

See references

Status

Draft by HU. (May 3rd 2022)



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Accountability Study Load

Lecture 6: 6 study hours.

- Presence lecture: 2 hours.
- Reading of literature: 4 hours.

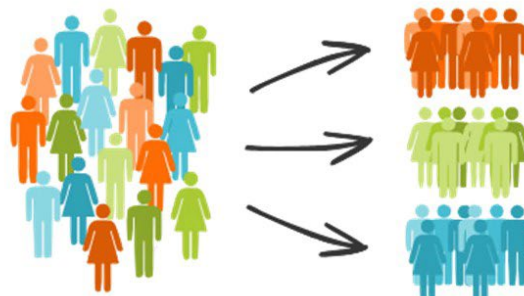


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Introduction: Channels of Distribution

- **Lecture 3:** Customer segmentation variables (e.g., geographic, firmographics, buying approach, behavioral, benefits sought).
- **Lecture 6 (Channels):** how to reach out these customers/markets?



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Introduction: Channels of Distribution

- A channel of distribution refers to the venue that a company chooses for moving its products or services out into the world.
- In other words: channel of distribution describes how a value proposition is communicated and delivered to a customer segment.



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Introduction: Channels of Distribution

WHY STUDYING CHANNELS OF DISTRIBUTION?

- Customers now expect far more and better channel choices for gaining access to the vast array of products and services from all over the planet—*how, where, and when* they want them.
- Customers expect the buying experience to be **simple, quick, and seamless**.



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Introduction: Channels of Distribution

WHY STUDYING CHANNELS OF DISTRIBUTION?

- Channels have several marketing functions, including:
 1. Raising awareness of the company's products and services
 2. Helping customers evaluate the company's Value Proposition
 3. Allowing customers to purchase specific products and services
 4. Delivering a Value Proposition to customers
 5. Providing post-purchase customer support
- Choosing the right channel can be crucial to the success of the product or service that a company offers.



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Introduction: Channels of Distribution

WHY STUDYING CHANNELS OF DISTRIBUTION?

- Around half of the price you pay for a product is absorbed by the channels of distribution (i.e., the activities involved in getting that product to the customer or vice-versa).



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Introduction: Channels of Distribution

- Companies commonly examine their performance to answer such questions as:
 - What channels are best suited to our Customer Segments?
 - How are we reaching customers now?
 - How well are our Channels integrated?
 - Which ones are working best?
 - Which are most cost-efficient?
 - How are we integrating them with sales and after-sales routines?



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Who should participate in the channel of distribution?

The presence or absence of a particular type of channel member is dictated by its ability to perform the necessary channel functions in such a way that it adds value.



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The Channels Participants

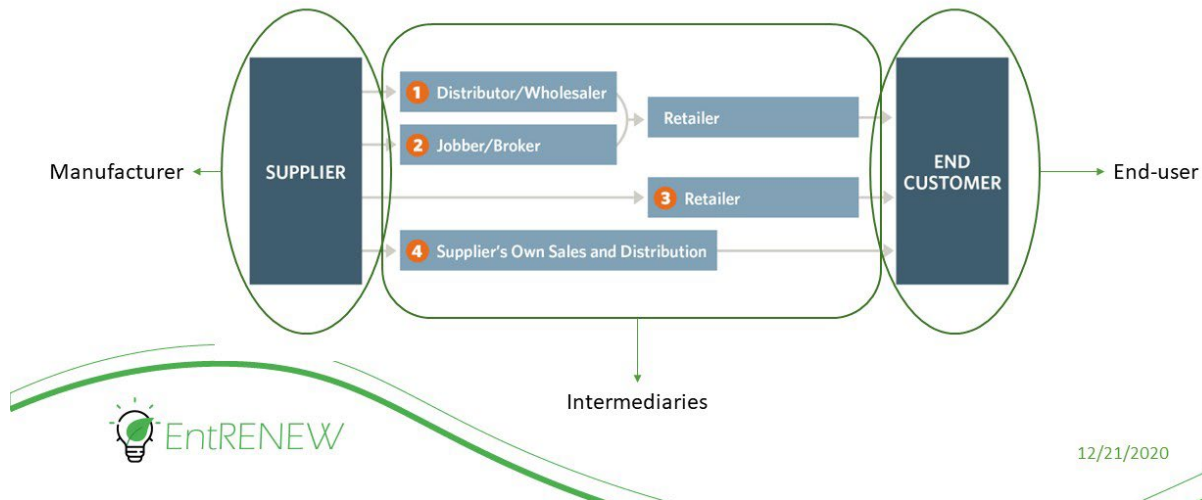
- A supplier has four different ways (or channels) to reach its customers:
 1. Through a **stocking distributor** (also called wholesaler), which connects to a retailer, who then in turn serves the end customer.
 2. Through an **agent** such as a broker (instead of a distributor), sometimes called a jobber, who then serves the retailer.
 3. **Directly to the retailer.**
 4. **Directly to the end customer** through its own sales and distribution system. In other words, the supplier employs a team that calls on customers directly or else takes orders on the telephone or, increasingly, through the Internet.



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The Channels Participants



The Channels Participants

- **Producers/Manufacturers:** Are the producers or originators of the product or service being sold. A common distinction separates *branded* from *private-label* manufacturing:
 - Manufacturers that brand their products are known by name to end-users, even if they use intermediaries to reach them. E.g.:

Coca-Cola

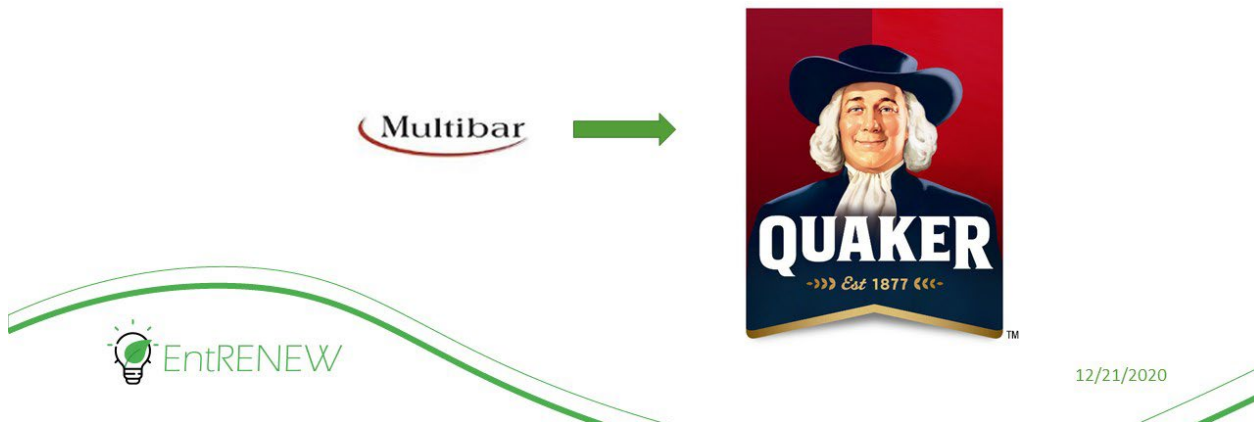


SONY



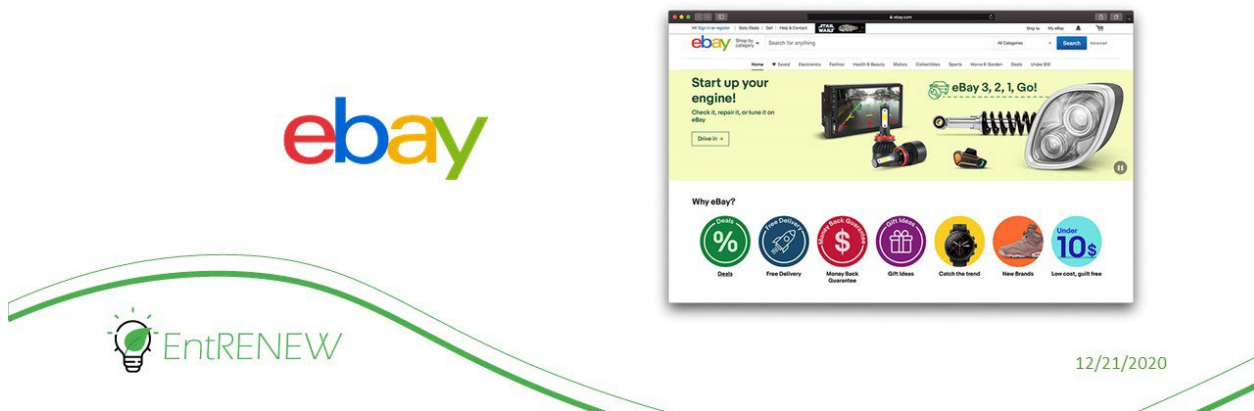
The Channels Participants

- Manufacturers that make products but do not invest in a branded name for them produce private-label products, and the downstream buyer (manufacturer or retailer) puts its own brand name of them. E.g.:



The Channels Participants

- Intermediaries:** Any channel member other than the manufacturer or the end-user.
 - Wholesalers/Distributors:* sell to other channel intermediaries, such as retailers, or to business end-users, but *not* to individual consumer end-users. E.g.:



The Channels Participants

- **Intermediaries:** Any channel member other than the manufacturer or the end-user.
 - *Wholesalers/Distributors:* sell to other channel intermediaries, such as retailers, or to business end-users, but *not* to individual consumer end-users.
 - *Jobber/Broker:* specialized sales agents hired by the supplier and/or manufacturer who focus on a particular customer segment. They are typically compensated by through commissions or fees. E.g.: insurance and credit card companies.



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The Channels Participants

- **Intermediaries:** Any channel member other than the manufacturer or the end-user.
 - *Wholesalers/Distributors:* sell to other channel intermediaries, such as retailers, or to business end-users, but *not* to individual consumer end-users.
 - *Jobber/Broker:* specialized sales agents hired by the supplier and/or manufacturer who focus on a particular customer segment. They are typically compensated by through commissions or fees. E.g.: insurance and credit card companies.
 - *Retail intermediaries:* sell directly to individual consumer end-users, but also to other buyers. E.g.: department stores, mass merchandisers, hypermarkets, specialty stores, category killers, convenience stores, franchises, buying clubs, warehouse clubs, catalogues, online retailers, etc.



The Channels Participants

- To achieve their distribution objectives, channel strategies must address six basic distribution decisions:



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Channel Strategies



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Channel Strategies

- The set of activities focused on designing and managing a marketing channel to enhance the firm's sustainable competitive advantage and financial performance.
- Channel strategies are typically divided into two categories:
 1. *Design decisions*: refer to the structural aspects of the channel, such as which routes to take, or whether to distribute through a selective network of retailers or instead make the product or service widely available to all.
 2. *Management decisions*: include choices about determining incentives and channel margins (profits) and setting the rules that govern the daily behavior of the supplier and other channel members.



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Channel Strategies

- Poor execution of short-term channel management decisions compromises the integrity of the long-term channel design decisions, leading to a vicious cycle of deterioration in channel performance that is hard to reverse.

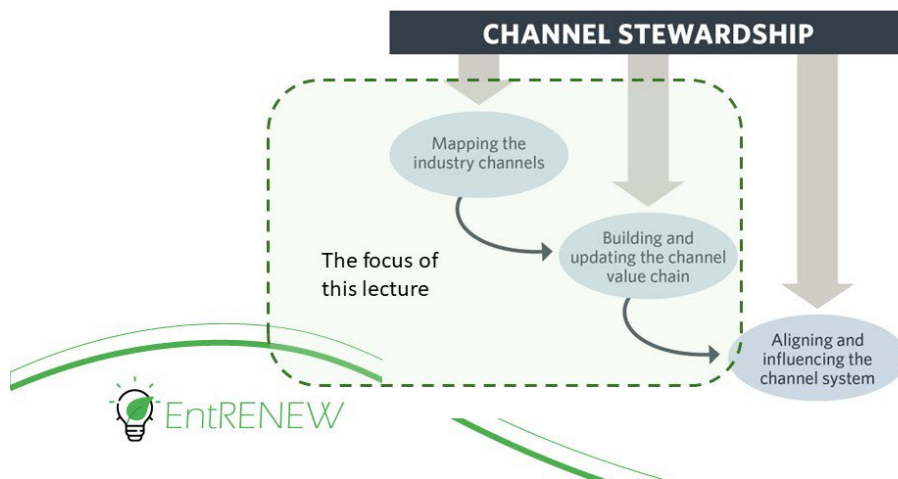


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Channel Strategies

All elements of channel strategy must be combined under the umbrella of channel stewardship.



1 – Mapping the Industry Channels

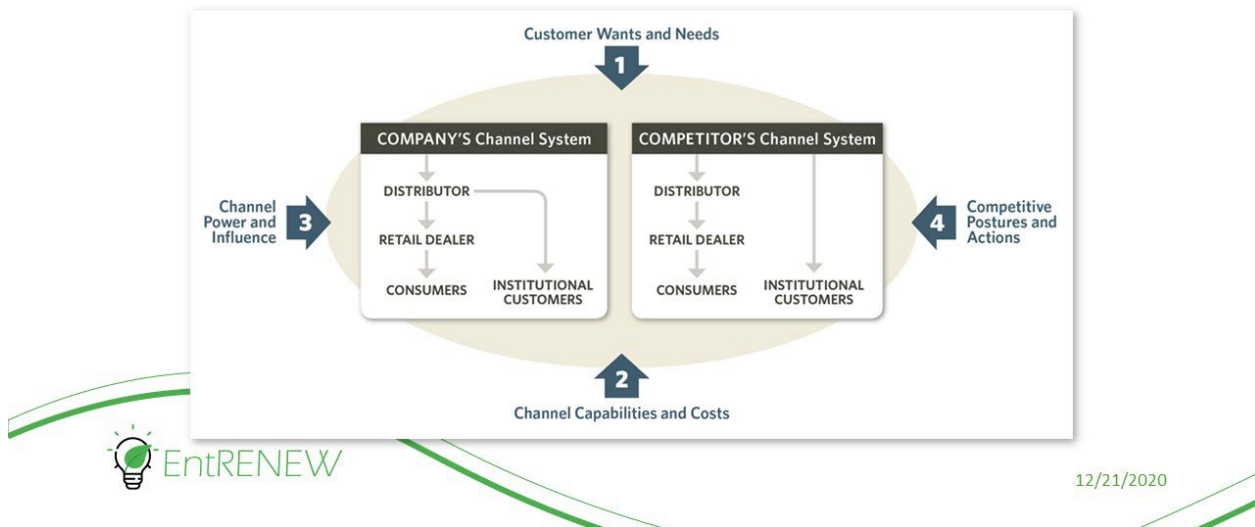
- Mapping a given industry's channels calls for understanding four major forces that drive the short- and long-term evolution of every distribution channel in that industry.
- Based on Michael Porter's Five Forces: maps the degree of rivalry among participants in an industry, the threat of entry by outsiders, the threat of product substitutes, the power of buyers, and the power of suppliers.
- The channel steward should first map the status of each of four essential forces influencing channel strategy and then research how the forces came to their current positions.



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1 – Mapping the Industry Channels



1 – Mapping the Industry Channels

Customer Wants and Needs

1. What do customers buy, how do they buy, and why do they buy the products and services offered by the various players?
2. How do other players in the industry segment their customer markets?
3. What influences have affected customers' wants and needs? How have they shifted?
4. Are customers satisfied with the output of existing channels? What are the gaps in the channel value chain?



1 – Mapping the Industry Channels

Channel Capabilities and Costs

5. What are the industry's broad channel capabilities and costs (e.g., speed of delivery, product assortment, service warranty)?
6. How have channel capabilities evolved over time?
7. How have channel costs and margins evolved?



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1 – Mapping the Industry Channels

Channel Power and Influence

8. How has power shifted among the channel constituencies—vendors, manufacturers, distributors, and retailers?
9. What accounts for the various power shifts?
10. Who has gained power, and why? Who has lost power?



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1 – Mapping the Industry Channels

Competitive Postures and Actions

11. What has been the nature of industry competition? How has it evolved?
12. Who is the dominant player? The most profitable? The most innovative? What are their channel strategies?
13. What has been the nature of competition at the channel level? How has it evolved? Which is the dominant channel? The most profitable? The most innovative?



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2 – Building and Updating the Channel Value Chain

- One of the fundamental decisions that any company has to make is whether to start by selling the product or service directly or through indirect channels.
- *Indirect channel*: any route to market that involves a supplier selling through intermediaries such as distributors or final-tier trade players.
- *Direct channel*: a route to market that involves the supplier in dealing directly with its customers and not going to market through intermediaries. E.g.: any type of sales force which calls on customers, catalogues, direct mail and the web.
- How to choose between direct and indirect channel?



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2 – Building and Updating the Channel Value Chain

Variable	Preferably Indirect	Preferably Direct
Size and distribution of the end customers	If market is fragmented and dispersed, and if the purchase value of each customer is too small on average	If there are several customers who might buy in large enough quantities to justify the cost of a direct sales force
The nature of the product or service	When a product or technology can be used in multiple applications about which the product owner may not be fully informed	If the product requires a large amount of education and explanation to the end customer
The role and position of the product in the end customer's purchasing basket	When products are bought as part of a bundle of products and services, rather than by themselves	When products are the main focus of customer desire
The nature of the producer firm	A startup with no credibility with customers to get initial adoption	A consolidated firm, with good reputation
The relative size of the producer firm	A firm with relatively weak power relative to potential channel partners	A firm with lots of power relative to potential channel partners
The business strategy of the producer firm	The company prefers to preserve its working capital position and need the buffer of an intermediary whom it can bill immediately	The company can wait to recover cash from many customers



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Constructing a Channel Value Chain



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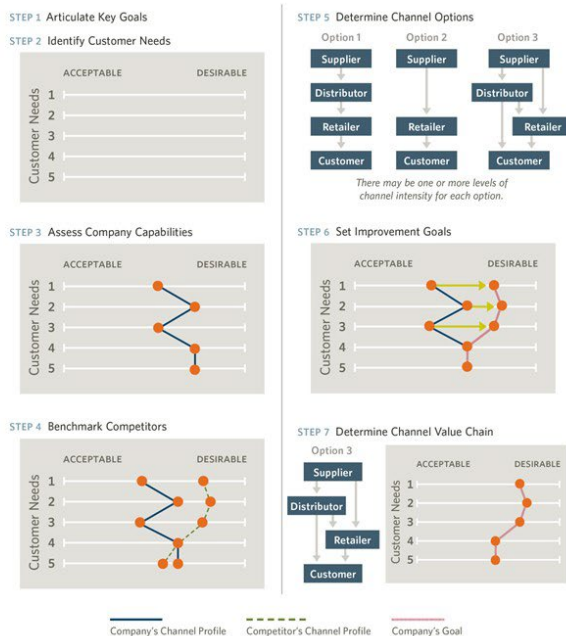
Constructing a Channel Value Chain

- The channel steward must know the customer’s wants and needs in each of those market segments, understand the company’s own supply chain capabilities, and work out an estimate of the potential gains in revenues or profits that will result from any change in the company’s channel system.
- The challenge is to design a distribution channel that contains the full range of capabilities needed to address customers’ needs.
- A seven-step framework translates those principles into action.



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Constructing a Channel Value Chain



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Constructing a Channel Value Chain

SEVEN STEPS FRAMEWORK

1. **Articulate the key goals.** A company often has multiple goals for its overarching channel strategy (e.g., seeking efficiencies, expanding channels to grow revenues).
2. **Start with the perspective of the end users and identify customer needs.** Identifying the attributes that customers seek helps define the tasks that the channel must perform.
3. **Assess the capabilities of the current company channels in fulfilling customer needs.** Using the list of needs identified in step 2, the company makes an honest assessment of where it stands in fulfilling customer needs through its current channels. This assessment should be done for both existing and potential customers.
4. **Benchmark against key competitors.** It is useful to capture the profile of significant competitors who are competing for the same or similar customers.



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Constructing a Channel Value Chain

SEVEN STEPS FRAMEWORK

5. **Determine the appropriate channel options.** The purpose of this step is to pick a small subset of such options that can realistically meet the company's channel strategy goals and then to evaluate those options from the perspective of what customers would like their distribution channels to deliver.
6. **Set improvement goals.** This step overlays the analyses from steps 2 to 4 onto the options identified in step 5, effectively fleshing out the levels of the channel value chain that will address customer requirements.
7. **Determine the appropriate channel option and the channel value chain.**



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- Narus, J. A., & Anderson, J. C. (1996). Rethinking distribution: Adaptive channels. *Harvard Business Review*, 74(4), 112-120.
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12/21/2020



Thank for your attention



12/21/2020





COMPETITIVE ADVANTAGE

Content

Module 3. Lecture 7. Competitive Advantage.



12/21/2020



Module 3. Lecture 7. Competitive Advantage.

Lecture 7: Competitive Advantage.

- Concept.
- Competitive advantage strategy.
 - Key Resources.
 - Human Resources.

Pedagogic tools

Lecture

Literature

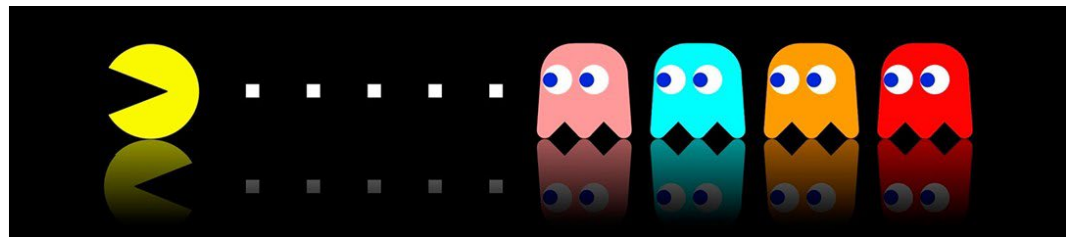
See references

StatusCompleted. (April 13th 2022)

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Competitive advantage

Someone else with ample funds cannot enter your market or beat you because...



12/21/2020



Home > Juegos de Tablero > Star Wars Rebellion (castellano)

CATEGORÍAS

- Novedades
- Top Ventas
- Promociones
- Segunda Mano
- Juegos de Tablero
- Juegos de Cartas
- Juegos para Niños
- Juegos de Importación
- Juegos de Dados
- Expansiones de juegos
- Juegos de Rol
- Suplementos de Rol
- Libros y Revistas
- Accesorios
- Torneos
- Géneros
- Marcas

PROMOCIONES

JUEGOS EN

STAR WARS REBELLION (CASTELLANO)

Vive la Guerra Civil Galáctica como nunca antes la has vivido. En el juego de mesa **Star Wars Rebellion**, controlarás por completo al **Imperio Galáctico** o a la incipiente **Alianza Rebelde**. Con más de 150 miniaturas de plástico y dos tableros de juego representando los treinta y dos sistemas más importantes de la galaxia, Rebellion es tan grande como el universo de Star Wars merece ser.

Cantidad

Disponibilidad: 48 HORAS

87,96 €

Añadir al carrito

OTROS PRODUCTOS DE LA MISMA CATEGORÍA:

- Carcassonne Edición Invierno
- King Of Tokyo 2016
- Martinique
- Los colonos de Catán (edición 2015)
- Ora Et Labora
- Catán: Los Colonos de America
- Catán: Los Colonos de Europa

EntRENEW

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Competitive advantage strategy

- Customer lock-in
- Long-term agreements
 - Suppliers, customers, distributors
- Regulation
- Branding
- Intellectual property
 - Patents, trademarks, copyrights, trade secrets



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KEY RESOURCES

- 1) **PHYSICAL:** Manufacturing facilities, buildings, vehicles, machines, systems, point-of-sales systems, distribution networks...
- 2) **INTELLECTUAL:** Brands, IP, partnerships, customer databases...
- 3) **HUMAN**
- 4) **FINANCIAL**



21/2020

**A very
important
competitive
advantage...**



12/21/2020



YOU ARE THE PERFECT TEAM...



... BUT IF YOU DON'T DESCRIBE IT PROPERLY ...



12/21/2020



... YOU'RE GOING TO SEEM X TIMES THE SAME PERSON.



12/21/2020



Three profiles for a Dream Team:

“To run an efficient team, you only need three people: a Hipster, a Hacker, and a Hustler.”



12/21/2020



HIPSTER



12/21/2020



HIPSTER

Usually working their way into the mix as the **designer** or creative genius, they'll make sure the final product is cooler than anything else out there. But, not only that, they'll ensure the shade of blue used to accent the font really brings out the subtle homage to an artist from the '70's you've probably never heard of.



12/21/2020

HACKER



12/21/2020



HACKER

The one most likely to sit quietly through a board meeting until uttering the three sentences that **answers the all important question of “how?”** the new idea or initiative can be brought into reality. Resembling MacGyver with their ability to wield various lines of code or programing languages, you’ll get dizzy trying to keep up with their keystrokes.



12/21/2020

HUSTLER



12/21/2020



HUSTLER

They have the tendency to be the most misunderstood member of this trio. The Hipster is likely to accuse the Hustler of having sold out to the man because of their constant question of **“It’s cool, but is it something our partners and clients want?”** The Hacker is likely to do their best to avoid one on one conversations with the Hustler as a result of jock vs. geek episode back in high school.



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Three profiles for a Dream Team:

When the **Hipster** brings the **creative design** and cool factor, the **Hacker** brings their utility belt of **technology solutions**, and the **Hustler** finds the right way to package it all up and take it to the masses in the form of **sales** and partnerships, it is a combination that is tough to beat.

The only question is, does your team have all three?



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KEY ACTIVITIES

- 1) PRODUCTION/FABRICATION
- 2) PROBLEM SOLVING
- 3) PLATFORM/NETWORK
- 4) DISTRIBUTION/LOGISTICS
- 5) R&D

KEY PARTNERS

PROVIDERS, DISTRIBUTORS...



21/2020



COMPETITIVE ADVANTAGE STRATEGY

SHORT TERM

--

MEDIUM TERM

--

LONG TERM

--



References

- Joachim Blazer, Chrétien Herben, Frans Nauta, Hans Westerhof. "Climate Launchpad Workbook" Climate Launchpad. EIT Climate-KIC, 2021.
- Andy Ellwood. "The Dream Team: Hipster, Hacker, and Hustler" Forbes, 2012 (<https://www.forbes.com/sites/andyellwood/2012/08/22/the-dream-team-hipster-hacker-and-hustler/>).



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Thanks for your attention



viii. Key Activities and Partnerships

1. Teaching Note



W19641

Teaching Note

DOT AUTONOMOUS POWER PLATFORM: THE FUTURE OF FARMING

Marco Coppola wrote this teaching note under the supervision of Professors Dwight Heinrichs and Michael Taylor as an aid to instructors in the classroom use of the case Dot Autonomous Power Platform: The Future of Farming, No. 9B19A055. This teaching note should not be used in any way that would prejudice the future use of the case.

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Version: 2019-11-21

SYNOPSIS

SeedMaster Manufacturing (SeedMaster), an innovative farm equipment manufacturer based in White City, Saskatchewan, had patented a solution to a major challenge facing western Canadian farmers: as the number of hectares being farmed in western Canada increased to achieve the necessary economies of scale, farmers were faced with a shortage of experienced equipment operators, which forced them to use larger machines to cover a larger area per operator. However, the need to use public roads to transport equipment to fields as far as 30 kilometres from the home yard placed a limit on machinery size, and the cost of equipment was significant.

SeedMaster's solution, the Dot autonomous power platform (Dot), replaced the traditional tractor and carried—rather than pulled—implements such as seeders, sprayers, and grain carts, creating newfound efficiencies in fuel consumption. Further, the Dot's autonomous functionality enabled farm owners to operate the equipment while attending to alternate responsibilities. In late 2019, Dot Technology Corp. was facing the question of how best to commercialize Dot. While farmers were traditionally conservative in their purchase decisions, the disruptive Dot technology and its operating interface were all new, and its reliability and safety when left unattended were not yet fully developed. The company did not yet know the depreciation curves or saleability of used Dot power platforms and Dot-ready implements, and it still needed to work through sales, training, and servicing considerations for the Dot equipment. Should Dot Technology Corp. focus on retailing Dot and Dot-ready implements through a network of farm dealerships in a traditional manner? Should it create a Dot showroom and sales-and-service team, selling primarily online in a virtual showroom, like Tesla? Or should it create a “pop-up” custom seeding and spraying business to further revise the technology while promoting it?

LEARNING OBJECTIVES

This case exposes students to the challenge of commercializing a disruptive technology in the agriculture sector, encourages them to develop systems thinking, and teaches them how to work through a complex issue by identifying high-level options and isolating issues into manageable segments by applying the business model canvas. Students have the opportunity to consider the many aspects of successfully



operationalizing a disruptive technology once it is conceived of and brought to proof of concept by a team of engineers. The case illustrates both the questions that manufacturers need to ask when launching a disruptive technology and the importance of working through both business-to-business and business-to-consumer value propositions. It demonstrates how different professions, such as engineers and business strategists, can create the best possible outcomes through collaboration.

By the end of this class discussion, students should be proficient in applying the business model canvas to accomplish the following:

- Define the key resources and key activities a disruptive innovator will need to undertake in bringing its product to market.
- Identify key partners, the resources they bring, and the activities they perform, given a specific go-to-market option.

POSITION IN COURSE

The case can be used in undergraduate- and graduate-level courses on strategy, strategic marketing, entrepreneurship, or not-for-profit courses. Students should be familiar with classic environmental scanning in order to understand competitive realities at societal, market, and organizational levels. Positioning this case mid-way through a course will help students develop skills necessary for working with the business model canvas particularly assessing critical factors in effective commercialization. This case is also ideal for comprehensively testing skills late in the semester or as a take-home final exam.

RELEVANT READINGS

- Alexander Osterwalder, "A Better Way To Think About Your Business Model," *Harvard Business Review*, May 6, 2013.
- Everett M. Rogers, *Diffusion of Innovations*, 5th ed. (New York: Free Press, 2003).
- Geoffrey A. Moore, *Crossing the Chasm*, 3rd ed. (New York: HarperCollins, 2014).

SUPPLEMENTAL MATERIALS

- "Raven Autonomy: Dot Overview," YouTube video, 3:15, posted by "Raven Position," 1st June, 2020, accessed 4th May, 2022, <https://www.youtube.com/watch?v=4RziLDq8XUE>

ASSIGNMENT QUESTIONS

The following expanded questions could be provided to students if a case summary is assigned for submission prior to class:



1. What key issues and underlying challenges is Dot Technology Corp. facing? As the company's corporate culture is dominated by brilliant engineers, what might they be missing, if anything, in rolling out this disruptive technology?
2. In what ways is Dot superior or inferior to classic agribusiness implements? How can the company make a business case for its net present value? How might purchases be affected by issues of status? What if Dot cannot deliver full autonomy?
3. What activities does Dot Technology Corp. need to consider when selling directly to farmers? Will it need dedicated showrooms and sales teams in all regions and countries where it has a presence?
4. What business areas might Dot Technology Corp. consider acquiring from partners? For example, could it speed up the process by licensing autonomous software from suppliers rather than developing this internally?
5. Given your analysis, would you invest in Dot?

TEACHING PLAN

Students should ideally be familiar with the business model canvas prior to reading the case. The case is suitable for discussion in a 80 minute class, based on the following suggested time allotments:

Discussion Point	Minutes
Introduction: What key issues and underlying challenges is Dot Technology Corp. facing?	10
Value Proposition: In what ways is Dot superior or inferior to classic agribusiness implements?	15
Key Activities: What activities does Dot Technology Corp. need to consider when selling directly to farmers?	20
Key Partners: What resources and outcomes should Dot Technology Corp. acquire from partners?	20
Debrief: Given your analysis, would you invest in Dot? Pull together key learnings.	15

Before Class

The instructor could provide the above questions to the students a number of days in advance of the class and have them fill out and submit a graded three- to five-page concept study of their analysis. This plan will better position them to both add and gain value from the class.



This case can be discussed with the class as a whole, with individual students bringing their own perspectives on the various issues. Alternatively, the class can be divided into groups and specific questions assigned to designated groups; the groups can break out for discussion and then report back to the class for further discussion.

While the instructor will lead and direct the discussion, optimal learning will occur as students are given the opportunity to process and consider what they might be missing and work to hone their skills in systems thinking. This process also helps students develop skills in identifying potential solutions to challenges that have surfaced.

If the case is used as an exam, students could be assigned one of the three specified approaches or be given the option to choose the one of their preference. To manage time for in-class discussions, the class should work through just one of the three specified approaches to commercialization. This teaching note profiles the following approach to commercialization: *Create a Dot showroom and sales-and-service team, selling primarily online in a virtual showroom, like Tesla.*

ANALYSIS

1. What key issues and underlying challenges is Dot Technology Corp. facing? As the company's corporate culture is dominated by brilliant engineers, what might they be missing, if anything, in rolling out this disruptive technology?

The instructor can open the class by playing the video clip profiling Dot (see Supplemental Materials), which reinforces the Dot concept and sets a dynamic tone for the class.

The instructor can explain that technical experts such as engineers and software designers are often central to conceptualizing and creating disruptive value propositions and that business experts are needed to navigate the regulatory and competitive landscape, address capital requirements, and ensure the value proposition is well articulated and fully delivered to clients. At its best, innovation is a team sport that involves multiple disciplines and areas of expertise, each with a complementary role to play.

The instructor can use this introductory part of the class to identify the topics to be discussed in the class. The topic list might include:

- Resistance to trial: What are the reasons that buyers (farmers), might decide to not purchase, or delay purchasing the Dot platform?
- Market Segments: What market segments are optimal to generate fast acceptance and adoption, as well as build a critical mass of revenue to quickly get through the start-up period?
- Competitive Advantage: How is Dot superior to the traditional competitive alternatives that a farmer would consider?
- Competitive Disadvantage: What are the real or perceived shortcomings of Dot compared to traditional competitive alternatives?
- Awareness and Trial: How will the company promote and sell the Dot platform to maximize awareness in its target market and inspire early adopters to try the product?
- Profitability: What are the cost and revenue projections?
- Resources: What resources (e.g., financial, human, facilities, selling skills, training materials, and service support) will be necessary to introduce Dot to the market and grow the business to a critical mass?



2. In what ways is Dot superior or inferior to classic agribusiness implements? How can the company make a business case for its net present value? How might purchases be affected by issues of status? What if Dot cannot deliver full autonomy?

Selling to farmers is fundamentally a business-to-business (B2B) transaction. B2B buyers are concerned with aggregate cost, which includes components such as the initial purchase price; warranty; on-time delivery; interest; training time; quality control; and the impact on down time, longevity, depreciation, and trade-in value. Although there is little direct competition, farmers will compare Dot to the other traditional competitive farm equipment alternatives. It should be noted that farmers tend to choose their profession, at least in part, based on the lifestyle and autonomy it affords them. Many farmers enjoy their equipment and enjoy working the fields. Some also enjoy the competitive rivalry among neighbours regarding who owns the biggest and best; this can make equipment purchases, at least partially, an emotional decision.

Instructors can discuss issues such as increasingly large farms, the shortage of skilled seasonal farm help, and the focus on more fuel-efficient equipment and lower capital costs per output capacity. They can address evolving autonomous and AI technology in parallel industries, which can be imported and adapted.

In theory, once it is fully developed, Dot is expected to increase capacity by being able to work day and night. A single operator is expected to be able to manage multiple Dot power units concurrently. Dot is expected to require less storage space than conventional agribusiness equipment and has fewer moving parts to break down.

As a counterpoint, the full costs and net present value of the equipment have not yet been fully defined; many of the factors are estimates at this time. Classes could discuss how a financial case could be built and presented to potential farm clients in hard numbers—something that could potentially be a strong selling feature. The company does not have a quantifiable value proposition yet. Without specific value to create a net present value of the equipment, the instructor could list a series of questions as stepping stones to create a quantifiable value position. The discussion might include a topic list such as an estimate of percentage yield increases, an estimate of fuel savings and labour cost savings, trade-in value as a percentage of purchase price, an assumption about life span before trade-in, and a standard discount rate used for agricultural equipment.

3. What activities does Dot Technology Corp. need to consider when selling directly to farmers? Will it need dedicated showrooms and sales teams in all regions and countries where it has a presence?

Students could be challenged to consider how other companies have initiated sales to the public. For example, Apple Inc. initially sold online but also alpha-tested an innovative store concept before selling in just a few high-profile brick-and-mortar locations, such as in the Mall of America, near Minneapolis. The company subsequently expanded aggressively with brick-and-mortar stores.

A comparison could also be made with Tesla, a company and product that is more equivalent to Dot. This company has set up a limited number of high-profile showrooms, such as on Robson Street in Vancouver. However, purchases are mainly made through the company's sophisticated website. A relevant discussion is whether farmers will adapt to purchasing this way.

Classes could also discuss Dot-ready equipment. SeedMaster can manufacture and supply seeding equipment. However, other manufacturers will be relied upon for other required Dot-ready equipment. What are the pros and cons of selling these exclusively through Dot retail portals if suppliers are willing?



4. What business areas might Dot Technology Corp. consider acquiring from partners? For example, could it speed up the process by licensing autonomous software from suppliers rather than developing this internally?

Most new business ideas start as entirely in-house ventures. As the business concept materializes, it becomes necessary to rely on partners for expertise, technology, and other resources. The questions remain: What business areas should Dot consider acquiring from partners? What business areas or core competencies should it keep in-house? What are the pros and cons of each idea? The instructor might consider some of the following discussion ideas.

What are the pros and cons of selling direct to farmers? Traditional agribusiness implement dealership networks would be bypassed with a direct-to-farmer distribution system. However, if farmers wish to trade in used equipment when purchasing Dot systems, will Dot then set up retail locations, farm out the used equipment to an auction house, or wholesale to traditional retailers?

Should Dot partner with a company like Tesla, which is presumably further along in autonomous technology but in a non-competing industry, or should Dot continue to forge ahead on its own? What are the pros and cons? Would a collaborative partnership add value to both? What is the urgency to get into the market?

Should Dot partner with an innovative marketing company to bring a next-generation digital interface to the high-dollar agribusiness industry? What are the pros and cons of Dot setting this up in-house given that it is a brilliant but engineering-centric organization? (This would be a fitting place to discuss product-centric versus customer-centric marketing.)

5. Given your analysis, would you invest in Dot?

Instructors could ask the class these questions: If they inherited \$1 million and were free to invest it, would they be inclined to invest in Dot? To what extent would they be inclined to invest if it became a publicly traded company? Why or why not? This helps students to more thoughtfully gauge their sense of risk versus opportunity with respect to Dot.

Another way of approaching this question is to have the class identify the key performance metrics they would need to assess the strength and viability of the Dot business model in real time. This could involve a brief discussion on the importance of both qualitative and quantitative information when making strategic decisions.

Instructors could emphasize that, when it comes to disruptive innovation, first movers often have the advantage of being able to determine the dominant design (e.g., Beta versus VHS video formats) and can create a monopoly around their intellectual property (IP) and, optionally, charge monopoly rents by licensing to competitors.

Second movers do not usually have to educate the market as it is already aware of and understands the new innovation. Second movers also often benefit from supporting technologies and, importantly, can leverage the research and development and costly mistakes of first movers—assuming they can work around the first movers' IP.





KEY ACTIVITIES AND PARTNERSHIPS



Content

Module 3. Lecture 8. Key Activities and Partnerships.



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Module 3. Lecture 8. Key Activities And Partnerships.

Lecture 8: Key Activities and Partnerships.

- Key Activities.
- Types of Key Activities.
- Typical Activities.
- Key Partnerships.
- Types of Key Partners
- Selecting Key Partners
- Assessing Key Partners
- Case Study (additional material)

Pedagogic tools

- Lecture
- Assignment: Case study
- Video

Literature

- See references



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Accountability Study Load

Lecture 8: 6 study hours.

- Presence lecture: 2.5 hours
- Reading of literature: 2 hours
 - Assignment: 1.5 hours



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Key Activities



Key Activities

- Key Activities include the actions that are imperative for a business to work.
- Like Key Resources, they are required to create and offer a Value Proposition, reach markets, maintain Customer Relationships, and earn revenues. And like Key Resources, Key Activities differ depending on business model type.



Key Activities

- E.g: for software maker Microsoft, Key Activities include software development. For PC manufacturer Dell, Key Activities include supply chain management. For consultancy McKinsey, Key Activities include problem-solving.



McKinsey
& Company



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Types of Key Activities



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Types of Key Activities

Production

- These activities relate to designing, manufacturing, and delivering a product in substantial quantities and/or of superior quality. Production activity dominates the business models of manufacturing firms.

Problem solving

- Key Activities of this type relate to coming up with new solutions to individual customer problems. The operations of consultancies, hospitals, and other service organizations are typically dominated by problem-solving activities. Their business models call for activities such as knowledge management and continuous training.



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Types of Key Activities

Platform/network

- Business models designed with a platform as a Key Resource are dominated by platform or network related Key Activities. Networks, matchmaking platforms, software, and even brands can function as a platform. Examples:



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Types of Key Activities

Platform/network

- eBay’s business model requires that the company continually develop and maintain its platform: the Web site at eBay.com



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Types of Key Activities

Platform/network

- Visa’s business model requires activities related to its Visa® credit card transaction platform for merchants, customers, and banks.



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Types of Key Activities

Platform/network

- Microsoft's business model requires managing the interface between other vendors' software and its Windows® operating system platform. Key Activities in this category relate to platform management, service provisioning, and platform promotion.



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Typical Activities



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Typical Activities

1. Research and Development

- **New product research:** Before a product enters the production line, it goes through the research and development department, which will evaluate design, costs, and production time.
- **New product development:** the first phase of research leads to the development of the new product, according to the results achieved in the initial evaluation.



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Typical Activities

1. Research and Development

- **Updates of existing products:** In addition to new products, it is also important to take a look at existing products and how they are aligned with the needs of the market. New demands from the public or changes in the industrial scope may necessitate updating current products. In addition, faults may also appear that need to be resolved.



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Typical Activities

1. Research and Development (R&D)

- **Quality checks:** The R&D department is also responsible for auditing and quality checking to make sure the product meets the standards set by the company.
- **Innovation:** Finally, the department is also responsible for observing and understanding innovations and trends in the marketplace, to ensure that the company and the products comply with the scenarios.



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Typical Activities

2. Production

- **Product selection and design:** to start, you need to choose a product to be marketed, as well as its design. This combination is part of the company's Value Proposition and may be responsible for the success or failure of the venture.
- **Production process selection:** Once the product has been decided, it is necessary to choose the production process that the organization will use, including suitable technology, machinery, and systems.



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Typical Activities

2. Production

- **Correct production capacity:** the organization needs to be aware of the expected demand for the product in order to determine the production capacity accordingly. Both the shortage and surplus of the product can cause problems. Break-even analysis is the most popular tool among production managers to predict capacity.
- **Production planning:** the goal here is to create a healthy, sustainable, and economical flow. Includes a schedule, with a specific calendar of activities, within pre-established hours.



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Typical Activities

2. Production

- **Production control:** it is the responsibility to monitor and control all production processes, correcting eventual deviations to ensure planned production.
- **Quality and cost control:** involves continually improving the product while trying to reduce costs, to achieve a competitive price in the market.



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Typical Activities

2. Production

- **Inventory control:** inventory control is critical in a production-driven business. The focus is to avoid both overstocking, an excess of materials that will eventually be wasted, as well as understocking, which can delay production and result in late deliveries.
- **Machine maintenance and replacement:** it includes everything that concerns maintaining equipment and machinery running in perfect conditions so that there are no interruptions in the production chain.



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Typical Activities

3. Marketing

- **Strategy:** includes the design and implementation of marketing strategies based on the goals and missions of the organization.
- **Market research:** aims to be fully aware of the market as well as strengths and weaknesses of the product, observing target audiences, and potential competitors.



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Typical Activities

3. Marketing

- **Product development:** here marketing works alongside the development team. In this case, there is the identification of gaps in the market that can be fulfilled with the creation of a new product that meets this need.
- **Communications:** encompasses all communication about the product on the market, including press releases, advertisements, e-mails, etc.



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Typical Activities

3. Marketing

- **Sales support:** this is when marketing works closely with the sales team, providing customer leads and promotional materials.
- **Events:** involves the organization and execution of events, such as seminars, product launches, exhibitions, among others, to which key and/or potential customers are invited.



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Typical Activities

3. Sales and Customer Service

- They are the main responsible for customer loyalty, who will become a defender and divulger of your brand.
- They are the ones who respond to customer complaints and have the power and tools to circumvent the situation and seek client satisfaction.
- They can perform some administrative tasks such as registering and controlling client accounts, including new and old ones.



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Final Reflections: Key Activities for Sustainability

- Which key activities are necessary in order to implement your value proposition?
- Which of the activities will you carry out yourself? For which ones will you need partners?
- At which stage of the value chain will you position yourself? What reasons can you give for this?



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Final Reflections: Key Activities for Sustainability

- What role does sustainability play in your key activities? To what extent is sustainable design/implementation of your key activities important for fulfilling your value proposition? (e.g., efficient and safe processes, certification)



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Final Reflections: Key Activities for Sustainability

- How do key activities have to be designed so that the company will be more sustainable? (For example, can procurement, manufacturing, transport, and/or consumption of energy, materials, or water be made more efficient, just, or safe?)
- What risks (e.g., changes in legal requirements, loss of reputation, etc.) can be avoided through more sustainable key activities?



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Key Partnerships

See also: <https://www.youtube.com/watch?v=0lIx3j5lHXI>



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Partnerships

- **Partnerships** help firms leverage their core competencies.
- Partnerships can take different forms, such as integrated relationships (e.g. collaborative planning, forecasting and replenishment at WalMart), buy-side online platforms (e.g. Nestlé, Danone) or service contracting (e.g. Seafax's industry-wide credit reporting for the seafood industry).
- Partnerships are based on a range of agreements.



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Partnerships

Reasons to develop a partnership

1. Optimization and economy of scale:
 - to optimize the allocation of resources and activities
 - to reduce costs
 - outsourcing or sharing infrastructure



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Partnerships

Reasons to develop a partnership

2. Reduction of risk and uncertainty
 - Strategic partnerships can be formed between companies to limit risk and uncertainty between competitors. However, companies can often still compete in other areas despite having formed strategic partnerships.



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Partnerships

Reasons to develop a partnership

3. Acquisition of particular resources and activities

- Sometimes the company – especially a new business – needs resources, knowledge, and/or licenses, which require high investments of time and/or money.
- Therefore, partnerships can be motivated by needs to acquire knowledge, structures, licenses, or access to customers. E.g.: a mobile phone manufacturer, for example, may license an operating system for its handsets rather than developing one in-house.



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Types of Key Partners

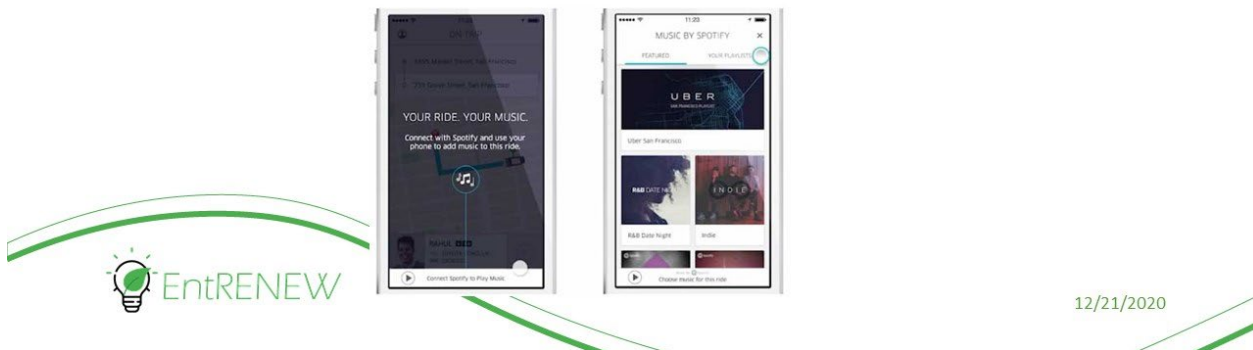


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Types of Key Partners

- **Strategic alliances:** they happen between companies that are not competitors, in an agreement that benefits both sides. E.g.: Uber and Spotify



Types of Key Partners

- **Co-opetition:** happens between competing companies. It helps to divide the risk that both are taking by trying to do something new in the market and can also guarantee some supply that both of them need, to name a few.



Types of Key Partners

- **Joint-Ventures:** the focus here is to develop a new business, due to the birth of a new market or access to a new area, geographically speaking. E.g.: Caradigm.



Types of Key Partners

- **Buyer-Supplier Relationship:** it is the most common type of partnership and aims to ensure reliable supplies. One side gets a quality supplier and the other, a confirmed and recurring buyer. E.g.: Apple iPhone 12 OLED display panels are supplied by LG



Selecting Key Partners



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Selecting Key Partners

1. Which partners are essential to your business?

Who are the entities or people who will contribute to the success of your business, but who are neither employees nor suppliers?



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Selecting Key Partners

2. Who are your main suppliers?

There are suppliers that can be easily replaced, usually those that produce commodities. But other extremely specialized features and services that your business needs come from key suppliers.

You have to find out who they are to strengthen the relationship.



12/21/2020



Selecting Key Partners

3. Which of your suppliers and partners are acquiring your key resources?

4. What key activities do the partners carry out?

5. What can motivate these partnerships?



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Selecting Key Partners

6. How do you achieve optimization and savings with key partners?

7. How do you reduce risks and uncertainties?

8. How do you access certain resources and activities?



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Selecting Key Partners

9. Which partners do you need to make the products/services you offer sustainable? Who else can support you (e.g., trade associations, organizations)?

10. Which sustainability requirements are relevant along your value chain? How can you fulfill these sustainability requirements?



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Assessing Key Partners



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Assessing Key Partners

1. Correct and Sustainable Partnership Agreements: It does not matter if your Key Partner will be another company or an individual. It is important that the agreements are clear and offer benefits to both parties. It is important that to do so, they should be prepared together with legal counsel.



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Assessing Key Partners

2. Defined Expectations: To achieve an agreement, it is essential that each entrepreneur openly share his or her expectations for the partnership that is to be formed, in order to avoid conflicts later on.



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Assessing Key Partners

3. Impact on your customers: The larger goal, in having a Key Partner, is to fill a gap in the Value Proposition or Key Resources.



12/21/2020



Assessing Key Partners

4. Selecting and Suspending Partnerships: Some Key Partners seem interesting and profitable at first, but end up not being successful. If a partnership becomes harmful or even irrelevant, close it as soon as possible.

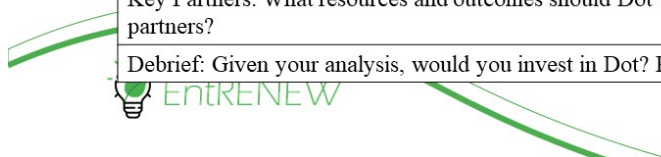


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Case Study: DOT

- See additional material: “1.8 Key Activities and Partnerships – Case Study DOT”
- Time estimated: 80 minutes

Discussion Point	Minutes
Introduction: What key issues and underlying challenges is Dot Technology Corp. facing?	10
Value Proposition: In what ways is Dot superior or inferior to classic agribusiness implements?	15
Key Activities: What activities does Dot Technology Corp. need to consider when selling directly to farmers?	20
Key Partners: What resources and outcomes should Dot Technology Corp. acquire from partners?	20
Debrief: Given your analysis, would you invest in Dot? Pull together key learnings.	15



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References

- Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* (Vol. 1). John Wiley & Sons.
- Strategyzer – Business Models. Available at: <https://www.strategyzer.com/expertise/business-models>
- The Business Model Analyst. Available at: <https://businessmodelanalyst.com/>
- Tiemann, I., Fichter, K., & Hain, A. Developing business models with the Sustainable Business Canvas. https://uol.de/f/2/dept/wire/fachgebiete/innovation/en/download/Manual_Sustainable_Business_Canvas_EN.pdf



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Thank for your attention



12/21/2020



ix. Barriers for Developing Business Models

1. Video https://youtu.be/GLZhmtG_AJk



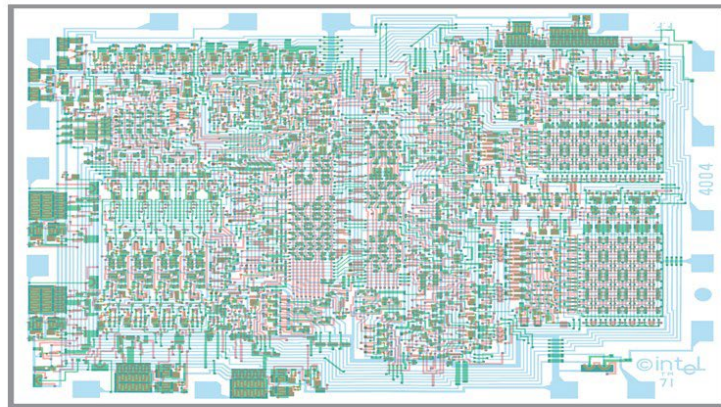
7 tips to kill your startup



By Israel Griol

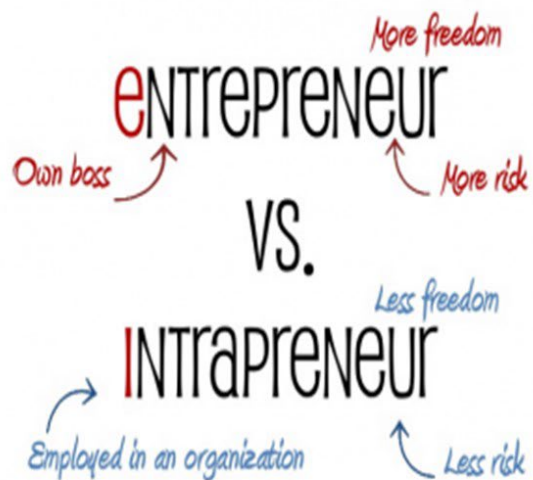
IDEASUPV – Universitat Politècnica de València



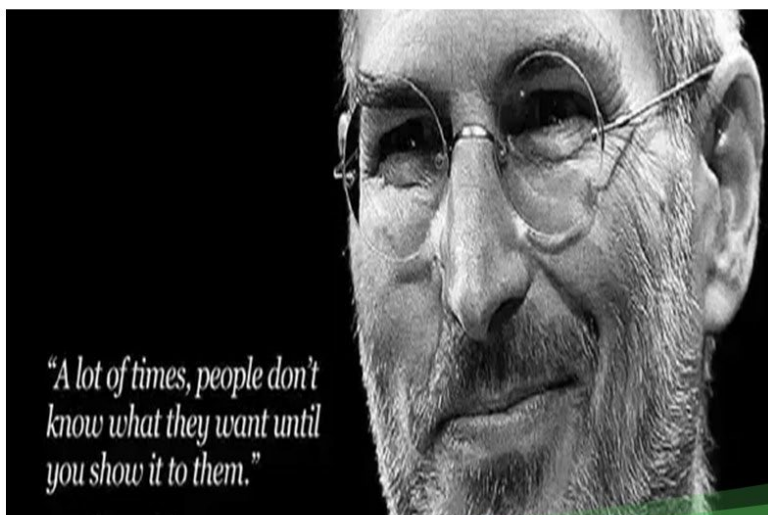


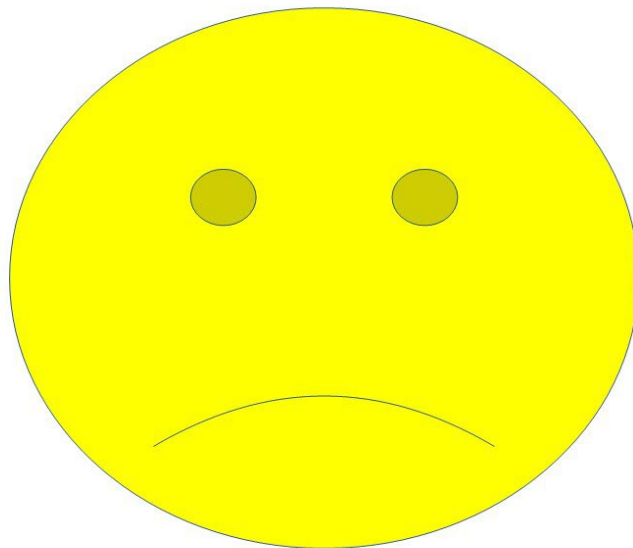
CUBICLES EVERYWHERE!!!



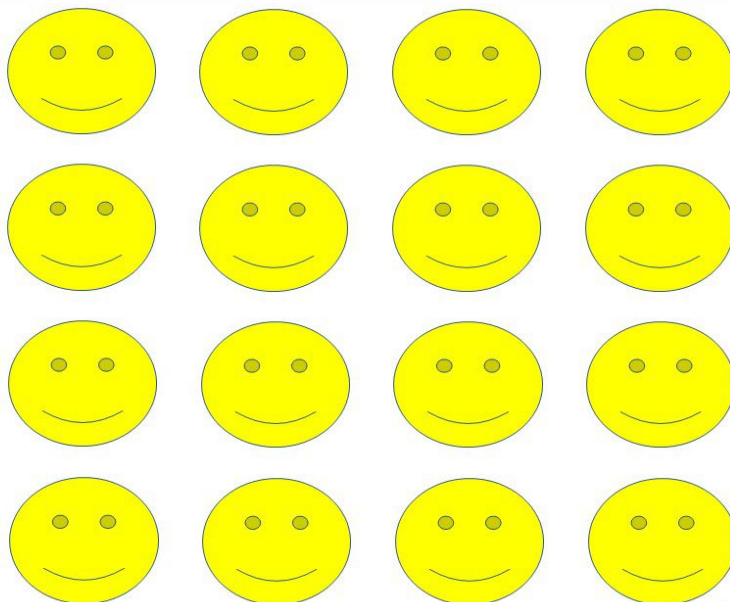


1. Never talk to potential customers





“Hi There...”



2. Core stuff can be outsourced



3. Don't show anything until the product is totally ready



4. If you think you are innovative,
you can say you don't have
competitors



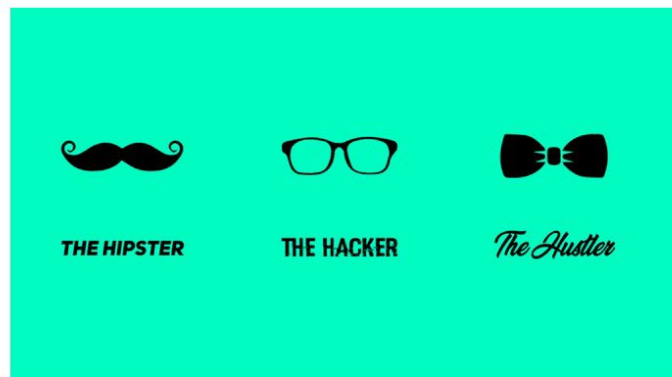
5. Don't quantify anything

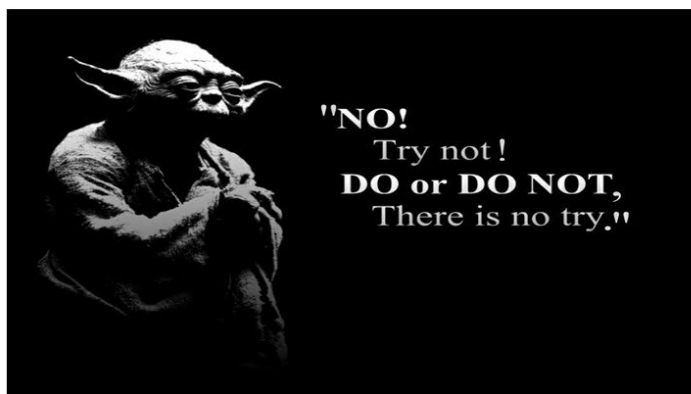


6. Cash flow is not important



7. Your product is more important than your team







**Thank you for your
attention**

Prof. Israel Griol-Barres



b. Climate Impact

i. Life Cycle Assessment and Measure Reduction in Carbon Emissions

1. Video

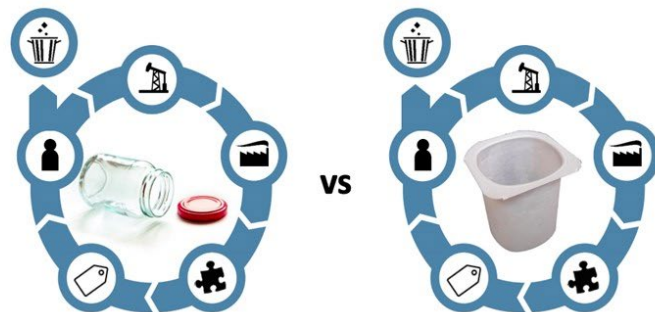
<https://youtu.be/Ek-veSU5QTs>



So where does LCA come in?

The two main questions that LCA can answer are:

1. Where are the **environmental hotspots** in the life of my product or service?
1. How do **alternatives** products and services compare in terms of environmental performance?



"Life cycle assessment of two baby food packaging alternatives: glass jars versus plastic pots".

<https://link.springer.com/article/10.1007/s11367-008-0052-6>



Small capacity, single user

Larger capacity, shared

Functionally equivalent?



Sufficient capacity for N people to do X things

Functional unit



Functional Unit



Bus functional unit might
be 10,000
passenger/kilometer

Functional Unit



Dormitory building functional
unit might be to house 200
students for one year

Functional Unit



Light bulb functional unit
might be 20,000,000 lumen-
hours of light





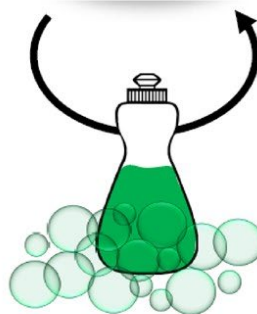
150 ml



250 ml



200 ml



**X 1****X 1000****X 1**

Functional Unit

The determination of the functional unit is the **HIGHEST PRIORITY** in LCA.

*Klopffer, W., and Grahl, B. (2014). "Goal and Scope Definition." *Life Cycle Assessment*

Functional Unit

Must be clearly defined and measured.

It must not be related to Carbon Emissions.

ISO 14044 Components description: Simonen, K. (2014). *Life Cycle Assessment*. Routledge, New York, NY.



Let's make a Climate impact forecast

and C.if your impact startup has positive impact!

Enabler	Mitigation	Adaptation
<p>If you aim to reduce or prevent the emission of GHG in another system than their own, e.g.</p> <ul style="list-style-type: none"> • accelerating electric vehicle adoption • promoting low carbon meals and diets • making biogas installations for farmers • financing solar panels on rooftops 	<p>If your aim is to reduce or prevent the emission of greenhouse gasses directly, for instance by</p> <ul style="list-style-type: none"> • replacing fossil fuel with clean energy • carbon sequestration or capture and storage • preventing resource use • using materials with lower carbon footprints <p><i>the right choice in most cases</i></p>	<p>If you aim to help communities and eco-systems cope with climate change effects, for instance:</p> <ul style="list-style-type: none"> • building flood protection • increasing resilience to drought • decreasing urban heat island effects • supporting fragile ecosystems





% CO2 savings

Product Customer

Product Startup

Total CO2 saving in Beachhead Market: ton CO2

Sources: 1.
2.



References

GOAL AND SCOPE DEFINITION (Life Cycle Assessment); Walter Klöpffer and Birgit Grahl (2014)

LIFE CYCLE ASSESSMENT; Kathrina Simonen (2014)



**Thank you for your
attention**

Prof. Israel Griol-Barres



2. Lecture

LIFE CYCLE ASSESSMENT



La alternativa solar a las calderas
en procesos industriales



<https://www.youtube.com/watch?v=fjpw9bglyg>

LIFE CYCLE ASSESSMENT



START MEASURING CLIMATE IMPACT

Why guess your climate impact if you can measure it? Use Impact Forecast software and expert network to create and measure climate impact.



<https://impact-forecast.com/>

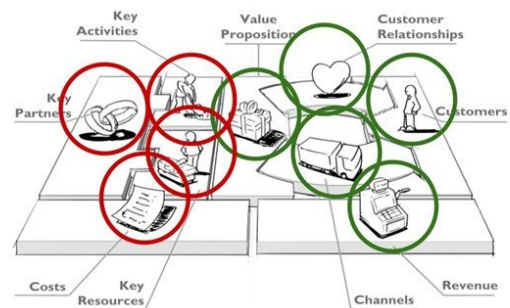
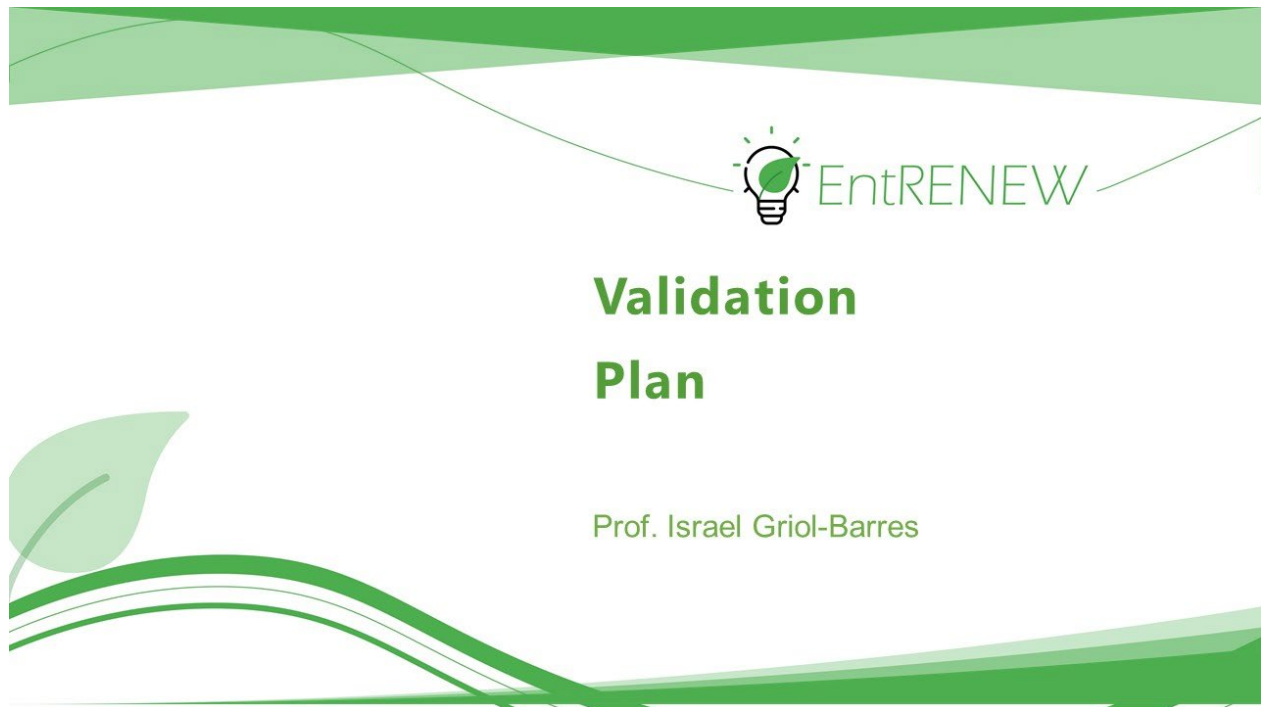


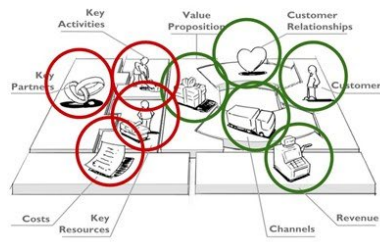
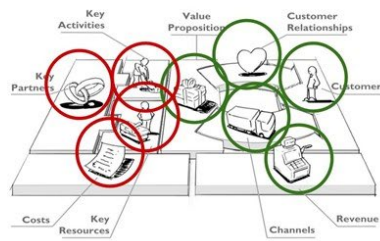
c. Validation

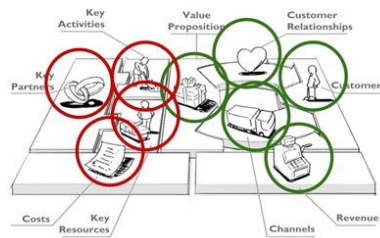
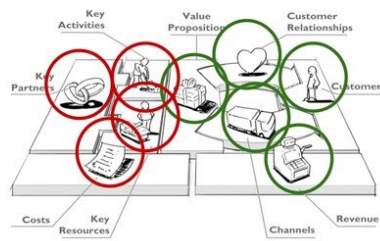
i. Validation Plan

1. Video

<https://youtu.be/GNRfGikyOmQ>







First rule for startups

Life's too short to build
something nobody wants.



Ash Maurya
– Running Lean

MVPs

A **Minimum Viable Product** is that version of a new product which allows a team to collect the maximum amount of validated learning about customers with the least effort.



Eric Ries
– Lean Startup



MVPs

A **Minimum Viable Product** is:

The **smallest** possible experiment to:

Prove the **maximum** set of hypotheses about your business model.

A classical example



Why MVPs?

- Because I need to validate my assumptions in the real world, with real customers.
- Because I need to know what is really important.
- Because I need to go faster than my cash burn rate.

Our startup is our lab!



Choice your MVP

1. Customer interviews
2. Landing pages
3. Test A/B
4. Advertising campaign
5. Crowdfunding campaign “Sell first, build later!”

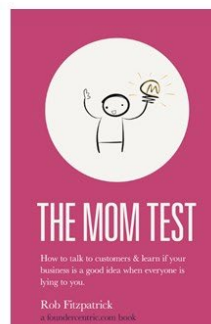
Choice your MVP

6. Explainer video
 7. Wizard of Oz “Fake it until you make it”
 8. Blogs
 9. Pilots
 10. Paper and Digital prototypes
- & much more



Customer interviews

Everybody Lies!



(People tell us what we want to hear,

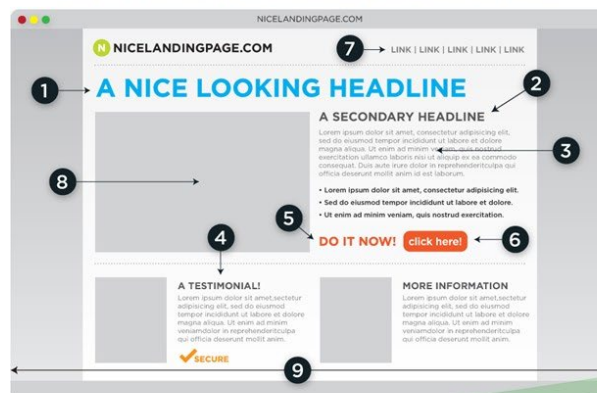
if we ask the wrong questions)

Commitment is the best signal

Landing Page

THE ANATOMY OF A PERFECT LANDING PAGE HOW DESIGN TRANSLATES TO USERS

TEN KEY LANDING PAGE FEATURES THAT DRAW IN USERS



Landing Page

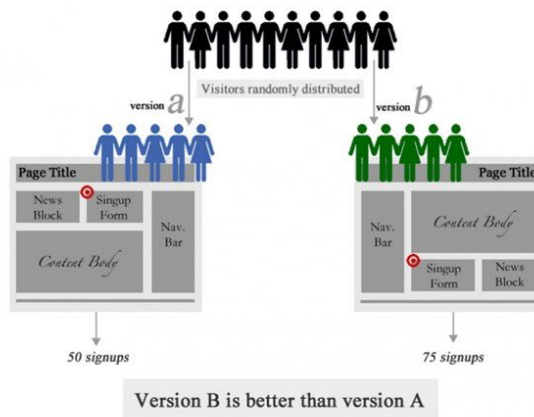
WHAT TYPES OF COLORS ARE GOOD FOR DIFFERENT SITES?

Colors that will entice a viewer will vary among different sites. Applying the right colors might draw in traffic, bore viewers, or scare some away. They set the mood of a landing page and influence viewer's actions.

YELLOW <ul style="list-style-type: none"> Optimistic and youthful Often used to grab a viewer's attention 	RED <ul style="list-style-type: none"> Energy Increases heart rate and creates urgency Often seen with clearance sales and references to food 	BLUE <ul style="list-style-type: none"> Creates the sensation of trust and security Often used by banks and businesses 	GREEN <ul style="list-style-type: none"> Associated with wealth The easiest color for the eye to process and used with finance or entertainment websites
ORANGE <ul style="list-style-type: none"> Aggressiveness Used as a call-to-action and attention grabber 	PINK <ul style="list-style-type: none"> Romantic and feminine Used to market products and services for women and young girls 	PURPLE <ul style="list-style-type: none"> Soothing and calm Often relates to beauty or anti-aging products and services 	BLACK <ul style="list-style-type: none"> Powerful and Sleek Seen as luxurious and sophisticated

Sources: blog.performable.com | colormatters.com | blog.kissmetrics.com

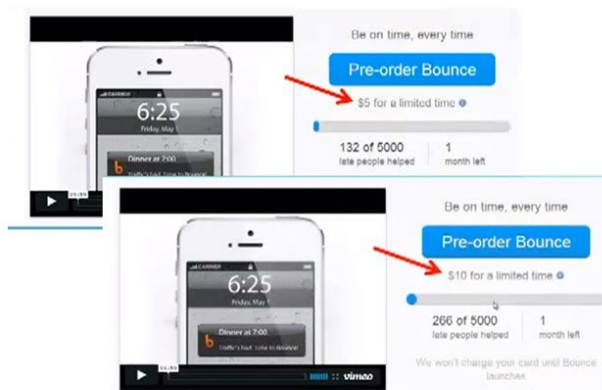
Test A/B



Source: Smashing Magazine



Advertising campaign



Crowdfunding

INDIEGOGO Explorar Cómo funciona

COMIENZA UNA CAMPAÑA Registrarse Iniciar sesión

Cerrado

Closca Bike Helmet - Safety, Functionality & Style

Most elegant and Convenient Foldable Bike Helmet. Red Dot Design Award 2015.

CLOSCA DESIGN
Valencia, España
[Acerca de](#) | [Haz una pregunta](#)

\$79,939 USD fondos totales recaudados
281% financiado el July 25, 2015

[♥](#) [f](#) [t](#) [+](#) [p](#)

Explainer videos



Wizard of Oz



Blogs (for your potential customers)



Pilots

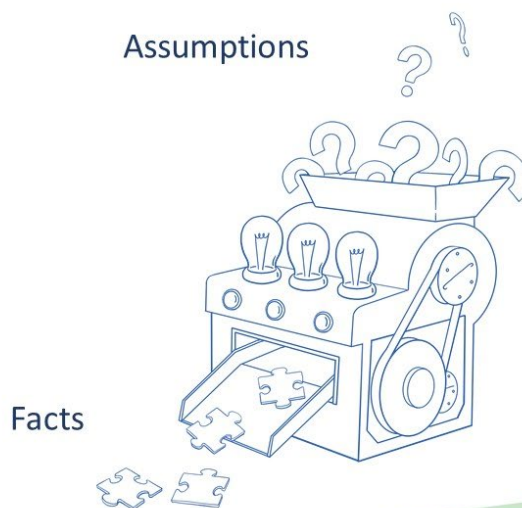
FOOD TRUCK



RESTAURANT



Validate your Assumptions



Types of assumptions

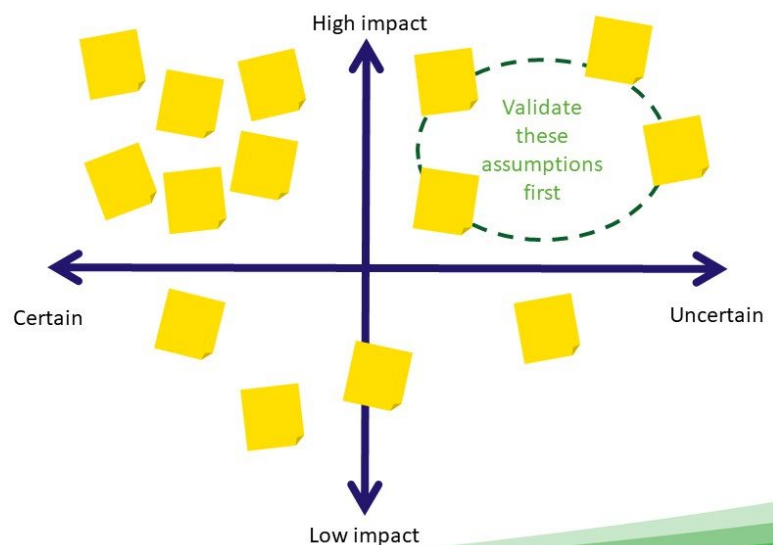
- Customer – is there a problem or opportunity?
- Market – is your beachhead market a big enough market segment? Or is it too big?
- Product – Can I build it?
- Team – Do I have the right people?
- Financial – Will we make money?
- Legal/IP – Do I have Freedom To Operate?

Ranking riskiest assumptions

1. Customer pain level
2. Accessibility
3. Price/Margin
4. Market Size
5. Technical feasibility

Ash Maurya – Running Lean

Riskiest assumptions



Exercise (60 min)

- Write down your riskiest assumptions
- First individual, then compare with your co-founder
- You should have a long list!
- As a team decide on three riskiest assumptions related to customers and market
- Plot your assumptions on the graph

Experiment Design

1. Formulate hypothesis to test
 - *We believe that ...*
2. Design an experiment
 - *To verify that we will ...*
3. Define a metric to measure
 - *And measure ...*
4. Define the success criteria
 - *We are right if ...*



Experiment Results

1. Describe the results
 - *We observed/measured that ...*
2. Describe the lessons learned and insights gained
 - *From that we learned that ...*
3. And come to a decision and next actions
 - *Therefore, we will ...*

31

Experiment Design template

<p>1. Hypothesis Define the assumption you want to validate. <i>We believe that ...</i></p>	<p>5. Results What are the results obtained? <i>We observed ...</i></p>
<p>2. Experiment design Define how you are going to test the hypothesis. <i>To verify that we will ...</i></p>	<p>6. Learnings What can we learn from the results? <i>From that we learned that ...</i></p>
<p>3. Metric Define the metric you are going to use and measure. <i>We will measure ...</i></p>	<p>7. Next steps Decisions and actions. <i>Therefore we will ...</i></p>
<p>4. Success Criteria Define the criteria to validate the hypothesis as true? <i>We are right if ...</i></p>	



Exercise (90 min)

- Design Experiments for 3 critical assumptions related to your Customer
- Fill in Template
- Prepare list of Questions to ask in your 20+ customer interviews



Thank you for your attention

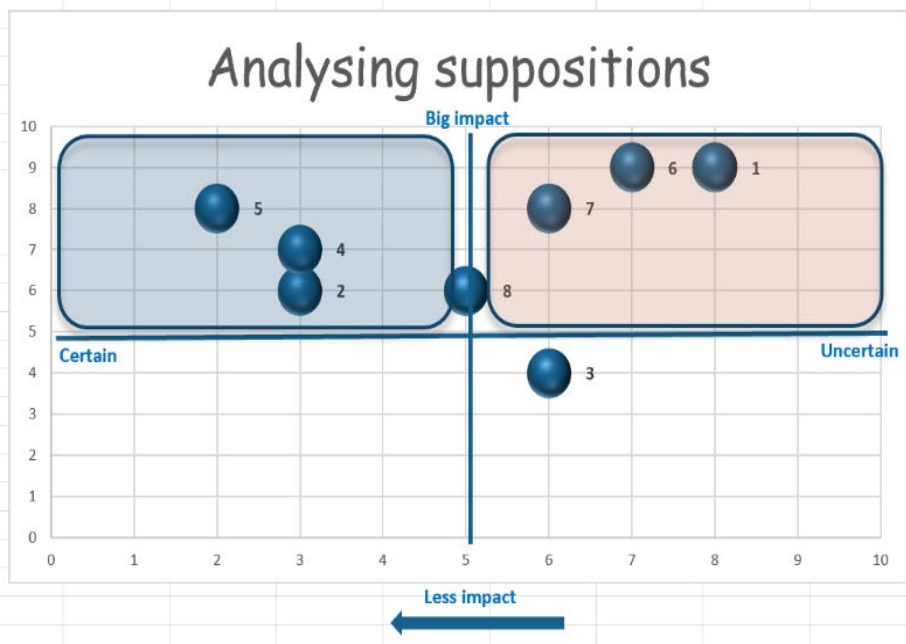
Prof. Israel Griol-Barres



2. Excel spreadsheet

Formulating assumptions			Prioritizing suposiciones	
Assumption Number	Assumption Category	Initial Assumption	Uncertainty (1-10)	Impact (1-10)
1	Value Proposition / Pain	Our potential customer is spending 5000€ per year to	8	9
2			3	6
3			6	4
4			3	7
5			2	8
6			7	9
7			6	8
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Big Impact + High Uncertainty are the first suppositions that need to be validated

Experiments

Designing validation experiments		MUTOS				Deberas ("get out of the building")				
Supposition Number	Supposition Category	Supposition	Experiment	Criterion to be ready for the experiment	Experiment cost	Experiment time	Criterio mínimo de éxito	Resultado	Validado?	Pasos siguientes
1	Value Proposition / Pain	Our potential customer is spending 5000€ per year to solve their pain.								
2										
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ii. Prototyping



PROTOTYPING



Prototyping

Watch the following TED Talk

https://www.youtube.com/watch?v=d5_h1VuWD6g



12/21/2020





Thanks for your attention

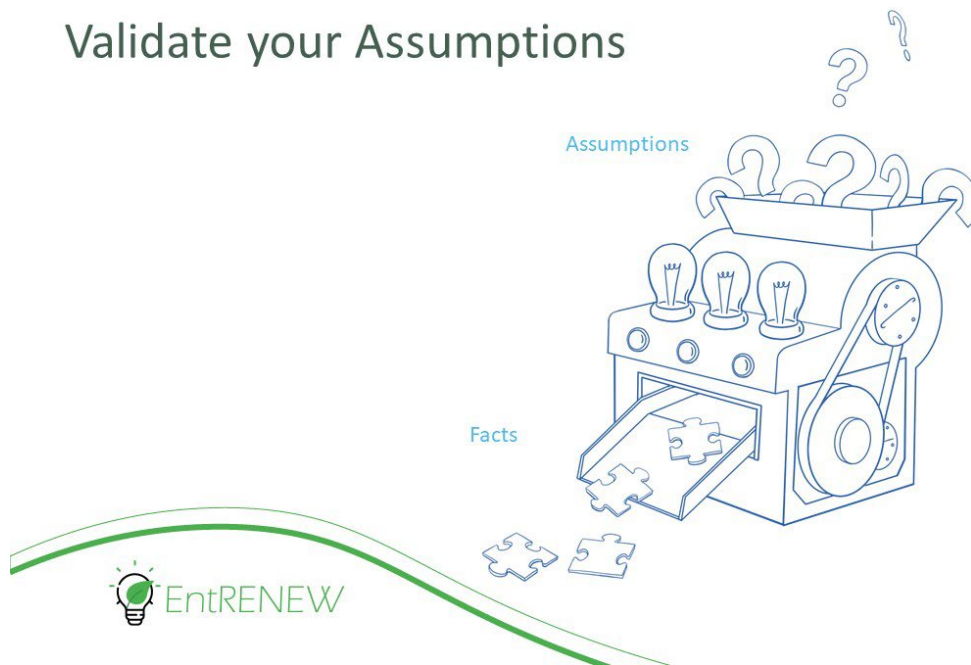
iii. Talking to Humans



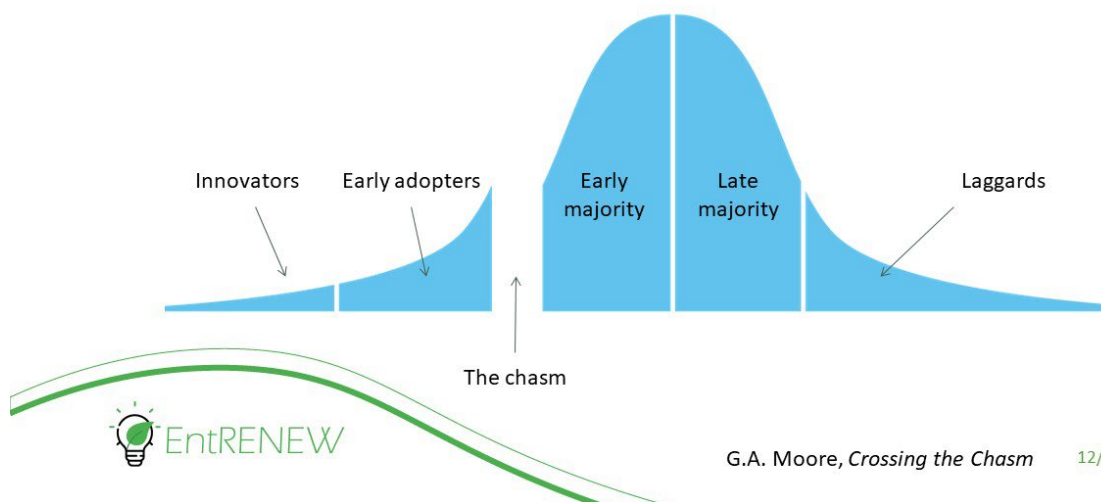
Talking to Humans



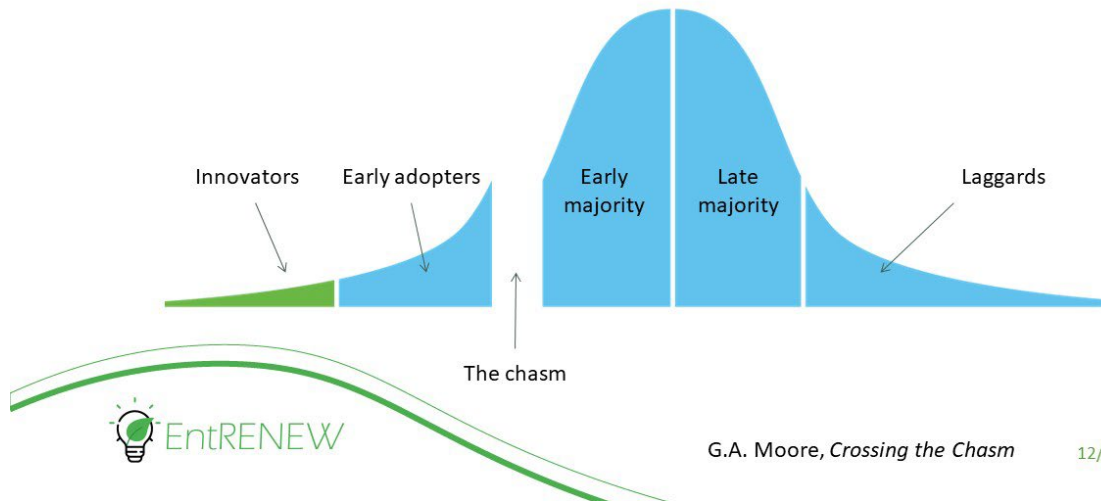
Validate your Assumptions



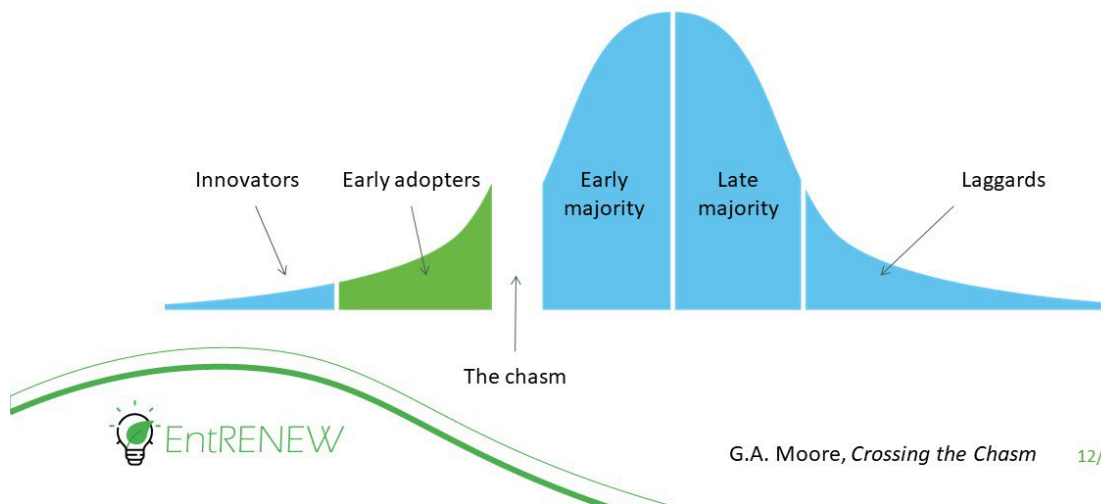
Not everyone is your customer



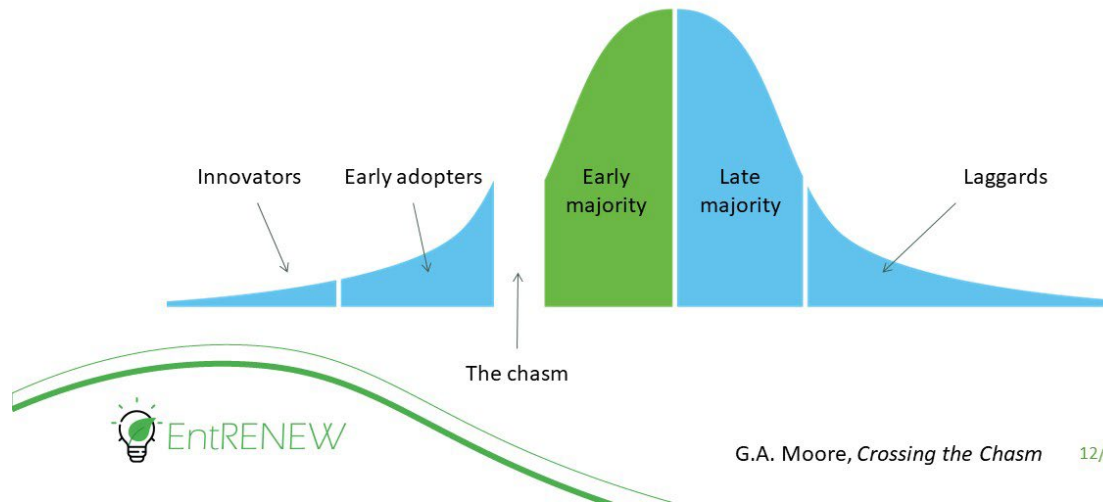
Not everyone is your customer



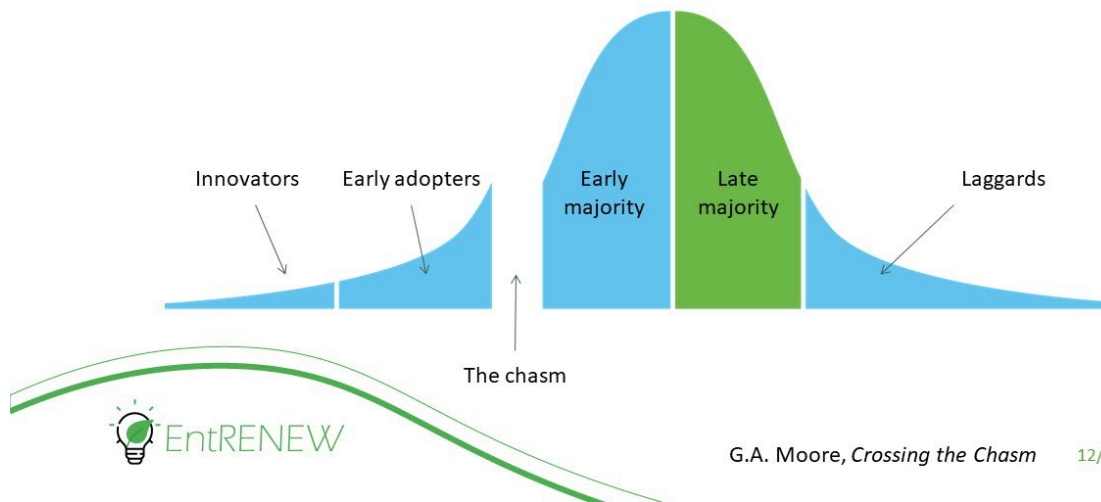
Not everyone is your customer



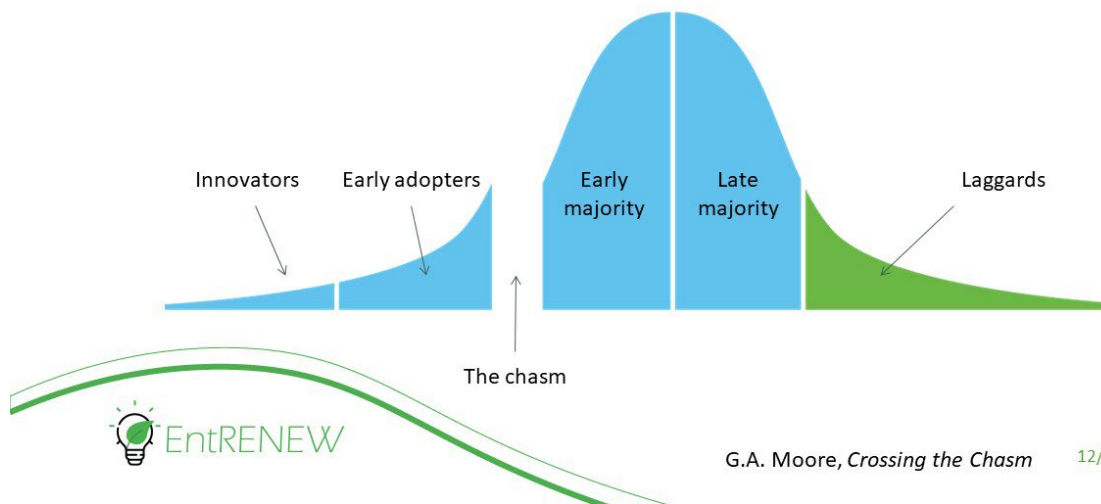
Not everyone is your customer



Not everyone is your customer



Not everyone is your customer



Focus on Early adopters

- Has a problem
- Is aware of having a problem
- Has been actively looking for a solution
- Has put together a solution out of piece parts
- Has or can acquire a budget



12/21/2020



Figuring out if they are your customer

- Identify potential customers in your beachhead market
- Set up meetings with them (in person, phone, skype, etc.)
- Find out if they have a pain
- Find out if they are early adopters



12/21/2020

11



Exercise (30 min)



1. Create list companies/organizations in beachhead market
2. Go online and find people to interview
3. Create a list of at least 30 people
4. Figure out their email and telephone number



12/21/2020



Customer interviews

Interview set-up

1. Find out if they are the customer
2. Explore what keeps them awake at night
3. Get commitment or advancement



12/21/2020



There is one problem ...

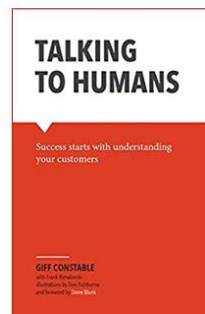
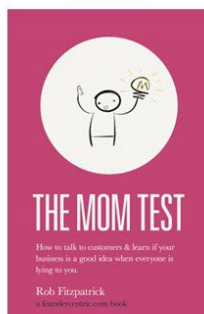


12/21/2020

There is one problem ...



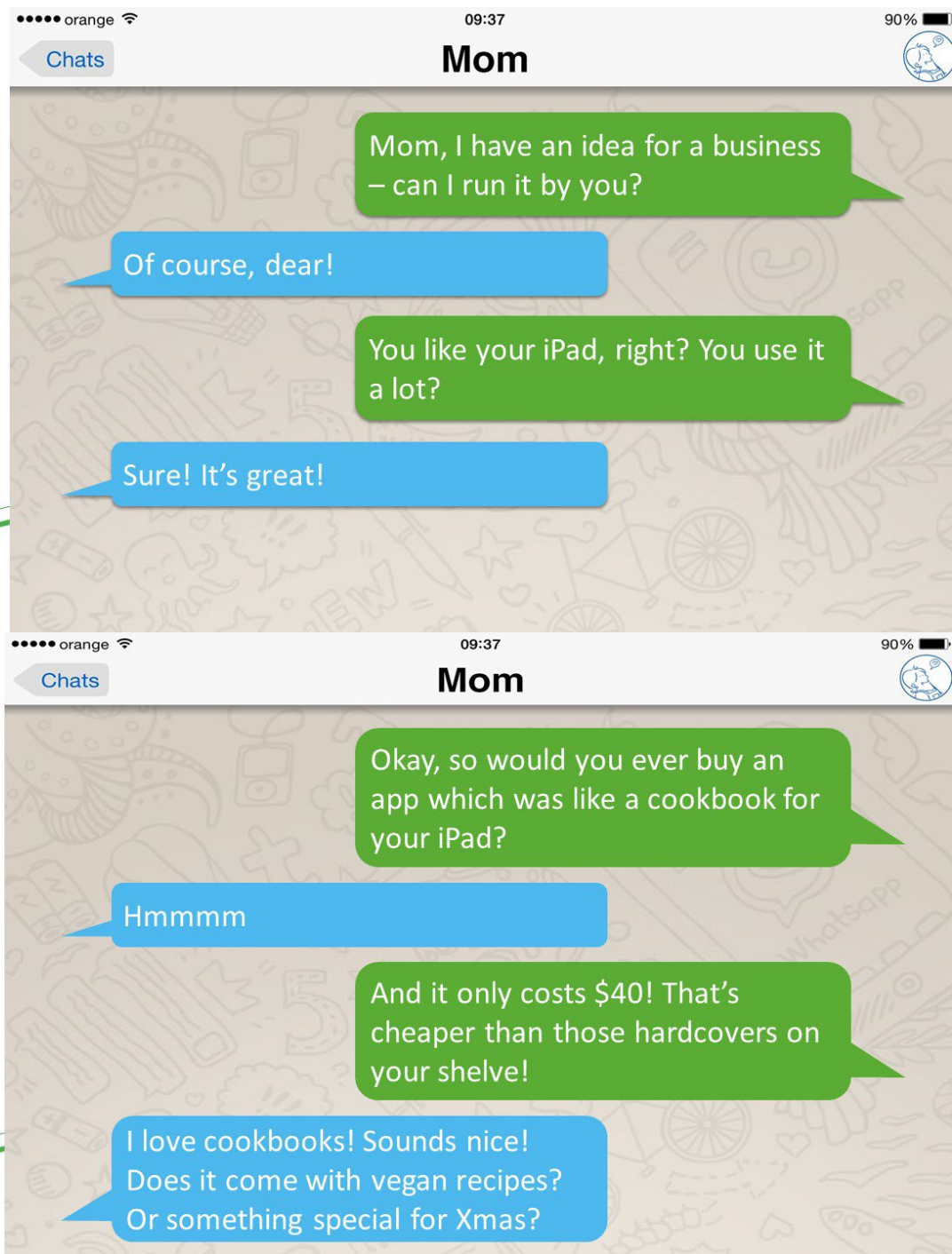
Everybody Lies!



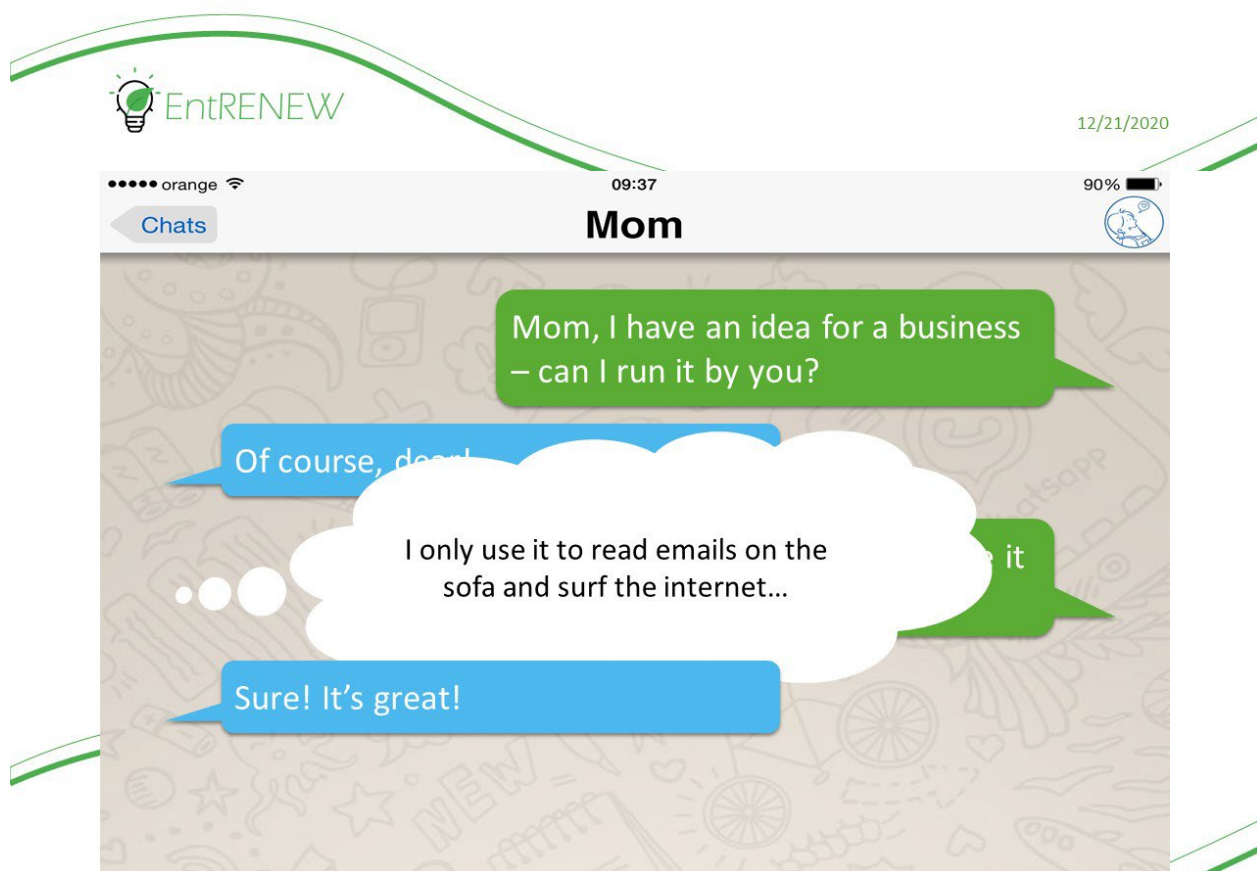
(People tell us what we want to hear,
if we ask the wrong questions)

12/21/2020





But actually...





Quiz

Good Question

Bad Question

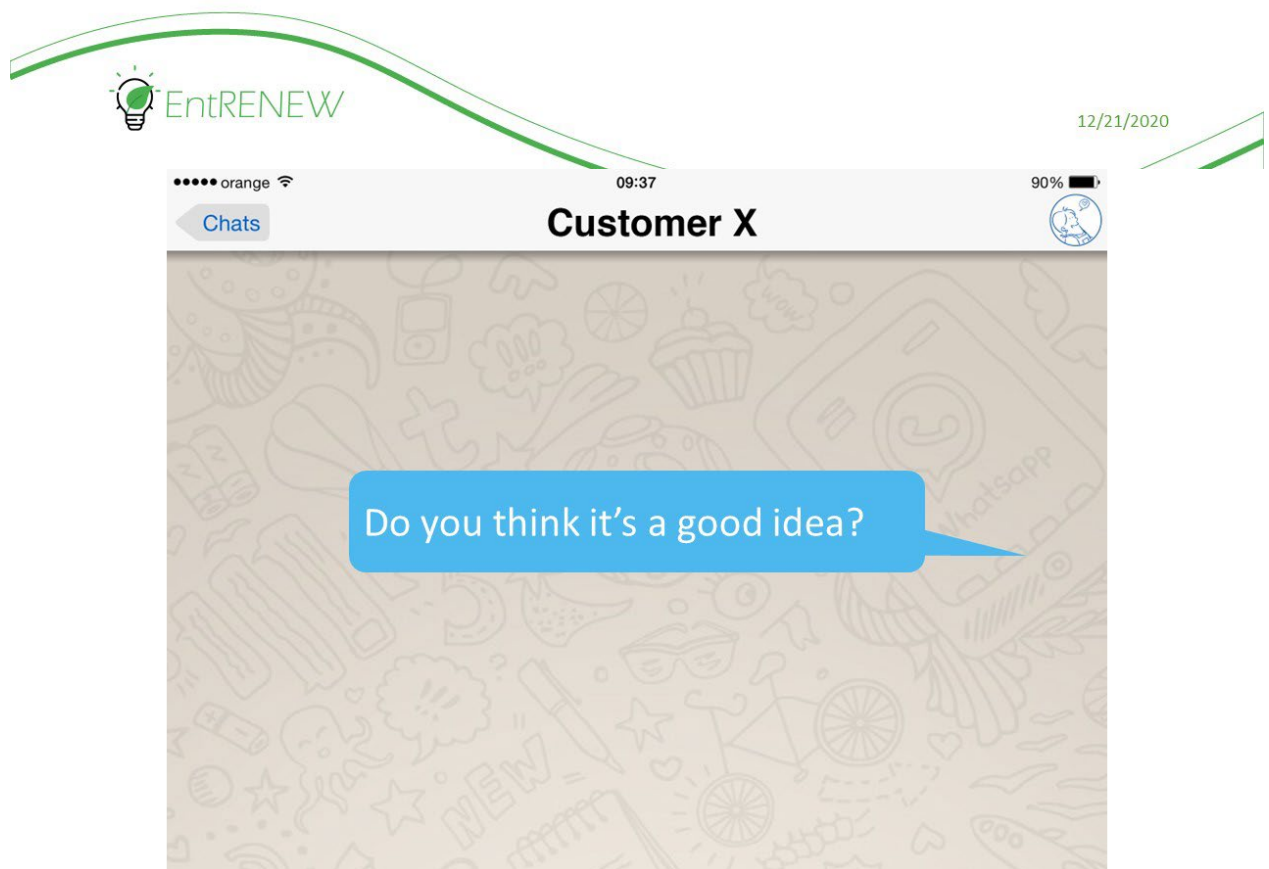


12/21/2020

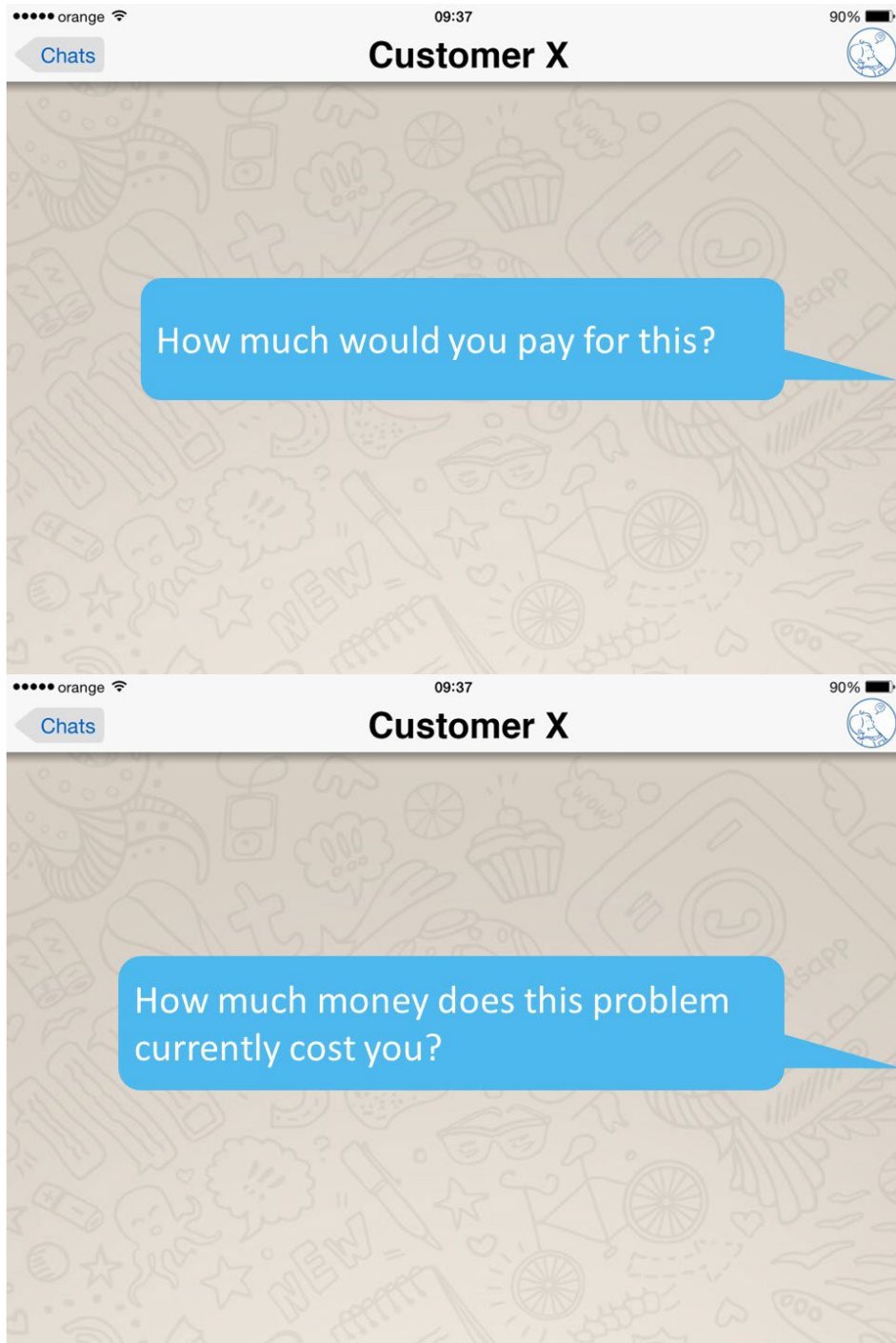


You are looking for emotions

- Frustration
- Excitement
- Things they care about









Ask about

- Frequency & Details
- Current solutions
- Past behaviour



12/21/2020



Mom test

If you asked your parents, could they lie to you?

(Actionable facts, specific, past behaviour)



12/21/2020





- “If we built a product that solved X problem, **would** you use it?”
- “How much **would** you pay for something that did X?”
- “**Would** you like your existing solution better if it did X?”



12/21/2020

How to do it?



12/21/2020



My Customer Interview Script

1. What's the hardest part about [problem context] ?
2. Can you tell me about the last time that happened?
3. Why was that hard?
4. What, if anything, have you done to solve that problem?
5. What don't you love about the solutions you've tried?



12/21/2020

Question #1: What's the hardest part about [problem context] ?

Don't be so specific that you tell them about the problem you want to solve:

What's the hardest part about **finding a good vegetarian restaurant in a new city?**

But you also don't want to be so broad that you're inviting discussion about a range of problems you have no interest in solving:

What's the hardest part about **being a vegetarian?**

You want to ask about a significant problem context :

What's the hardest part about **eating out as a vegetarian?**



12/21/2020



Question #1: What's the hardest part about [problem context] ?

Listen for: The words they use to describe the problem.



12/21/2020



Question #1: What's the hardest part about [problem context] ?

You can discover new problems:

"The portions aren't large enough"

"I don't really trust that the things I order are meat-free"

"A yelp search for 'vegetarian' returns results like 'Joe's All American Steak House' with comments like, 'Don't bring your vegetarian friends here.'"



12/21/2020



Question #1: What's the hardest part about [problem context] ?

Remember to Empathise:

"I've experienced exactly the same problems myself"

"You're not alone there. I've talk to several other people who have said the same thing."

"That makes sense"



12/21/2020

Question #2: Can you tell me about the last time that happened?

- We ask stories because they enable us to dive deeper into paths we could never hypothesize "inside the building."
- You'll learn 23x more from a story than you will a yes/no answer.
- Phrases and jargon you can turn into marketing copy.

Listen for: Have they tried to solve it in the last **6 months**?
If not, **start over** asking about a different challenge.



12/21/2020



Question #3: Why was that hard?

- Customers don't buy a what, they buy the why.

Listen for:

The **real** problem they're trying to solve.

Emotions you can evoke in your marketing copy.



12/21/2020

Question #4: What, if anything, have you done to solve that problem?

- If they aren't looking for solutions already, this isn't a big enough problem for us to solve.
- For someone to take a bet on us, a startup, an unknown entity, we must be solving a problem so pressing, customers are actively searching for solutions.

Listen for:

The **channels** you can use to find other customers like this one.



12/21/2020



Question #5: What don't you love about the solutions you've tried?

- This is our Unique Value Proposition. We'll build something that solves our customer's problem, in a way that's better than their alternatives.
- It helps you quantify your value proposition.

Listen for:

This is how to differentiate your solution from the competition.



12/21/2020

IN-VALIDATION!

- "Can you tell me about the last time you tried to find a good vegetarian restaurant in a new city?" – **If the problem is not mentioned, you still can be direct with Q2!!!**
- Put extra weight on their response to Question #4: "What, if anything, have you done to solve that problem?"

Is the right customer?

Is it better to focus on another problem?

Your hypothesis has been invalidated.




12/21/2020




Interview Tips & Tricks

Know your **goals** and **questions** ahead of time!

 12/21/2020

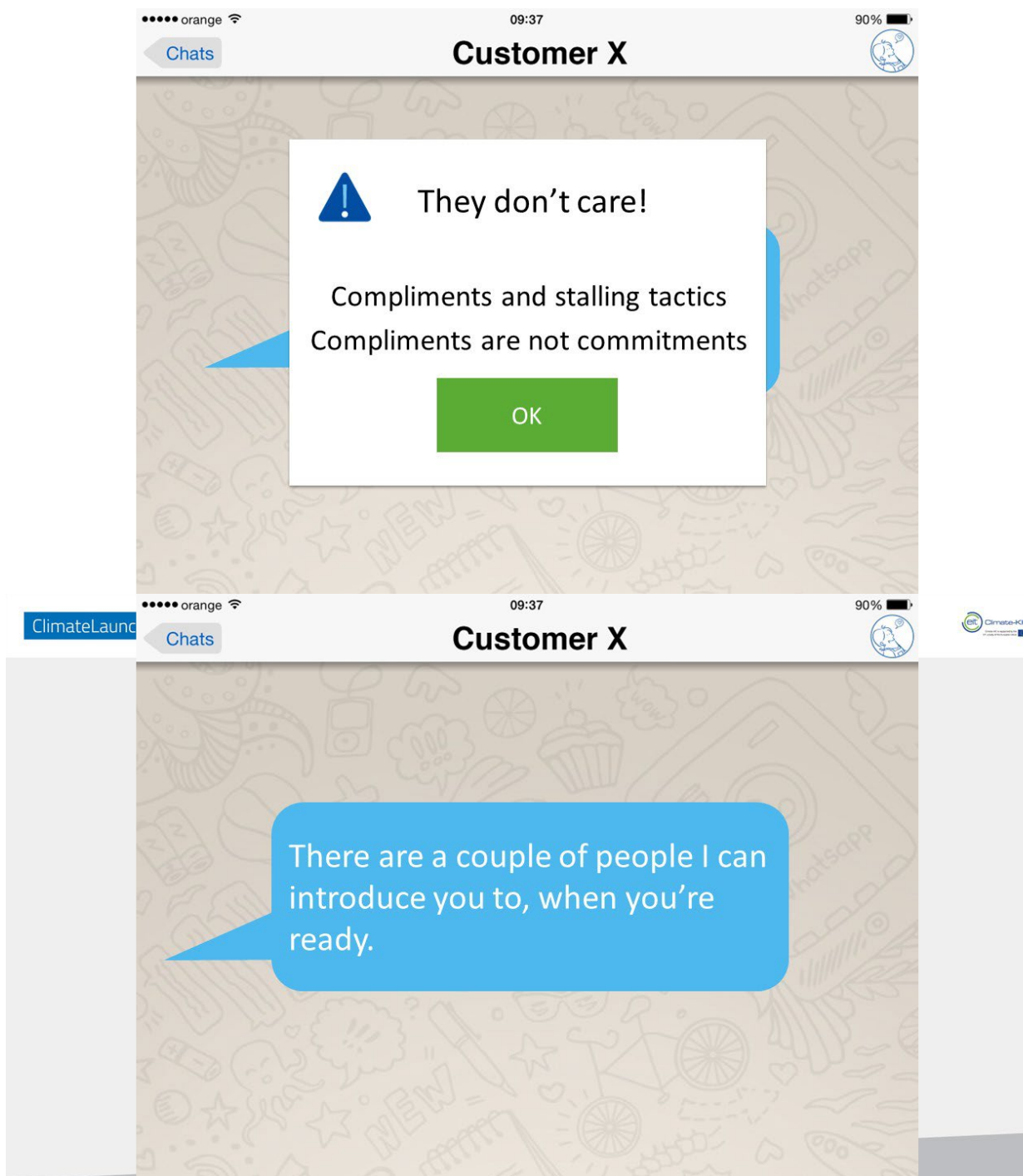
Quiz
Did we make progress?

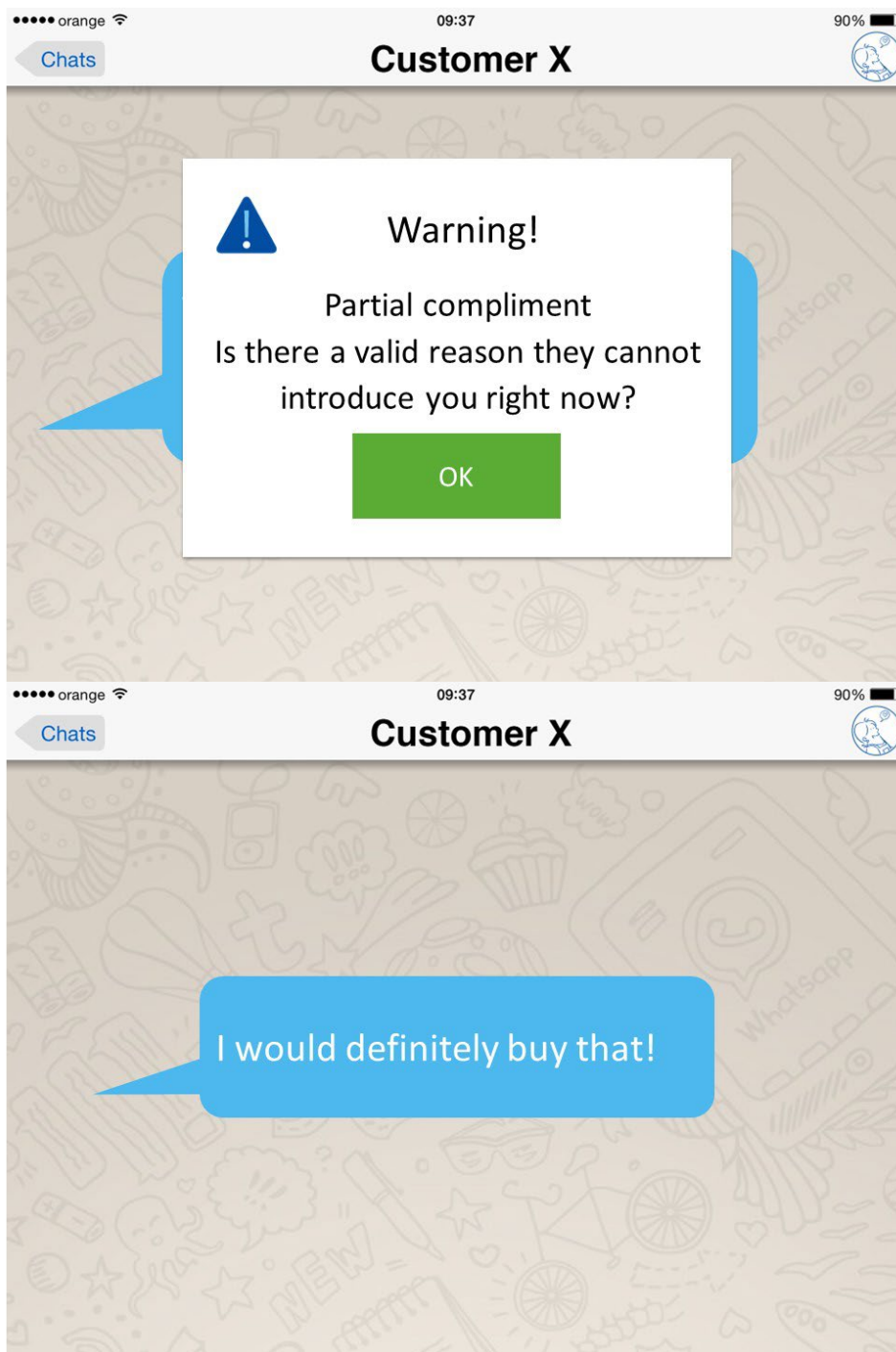
Good meeting outcome	Bad meeting outcome
<input type="checkbox"/>	<input type="checkbox"/>

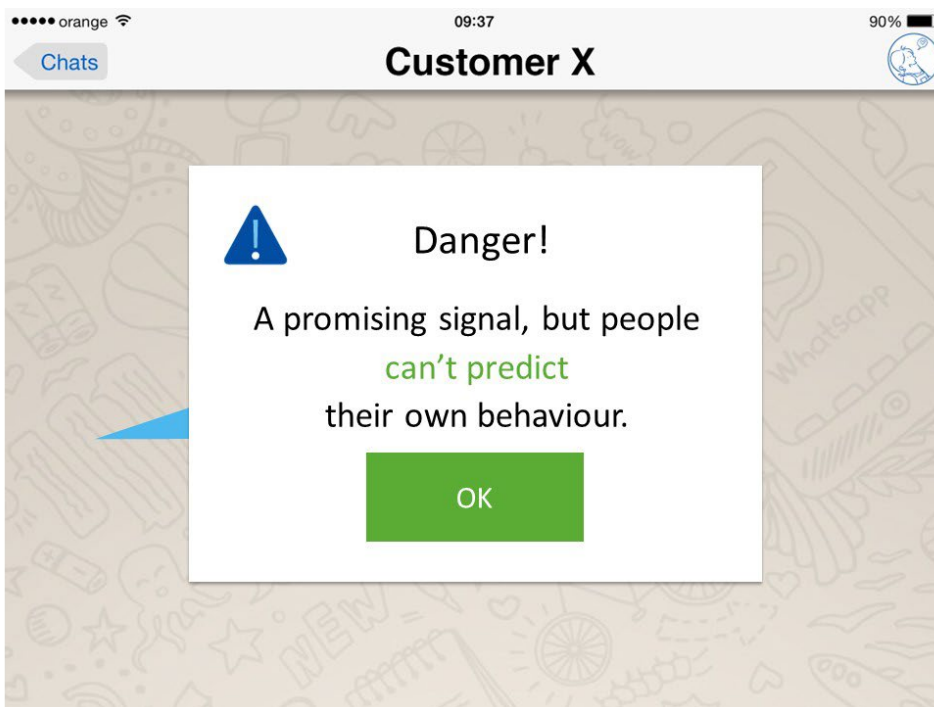
 12/21/2020











Commitment is the best signal

- 1. Time
- 2. Reputation
- 3. Money



12/21/2020



Interview Tips & Tricks (1)

- Know your goals and questions ahead of time
- Be Sherlock, investigate:
 - If you hit a strong signal, ask around it
- Drill down into it, Five Why's, root cause analysis



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Interview Tips & Tricks (2)

- Listen, don't talk
- Encourage, but don't influence
- Parrot back



12/21/2020



Where can I obtain contacts?

Rapportive Hack

JigSaw (now Connect at Data.com)

LinkedIn

Mechanical Turk

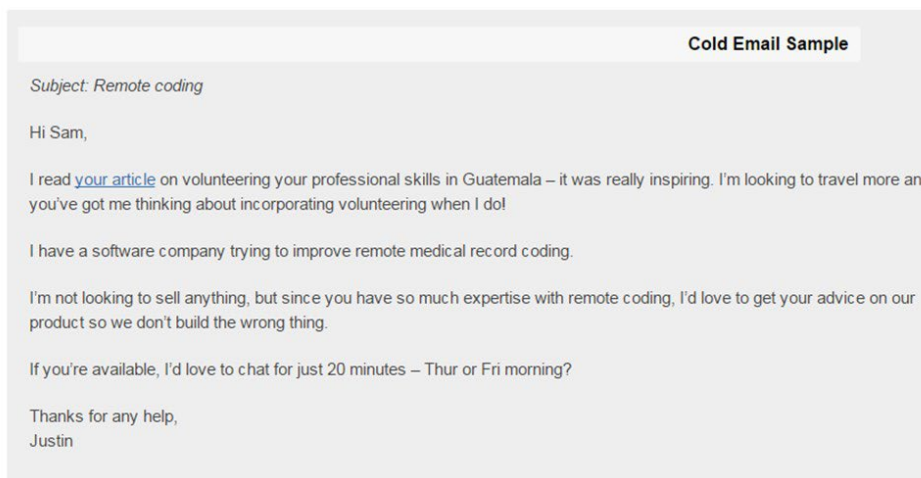
Kimono

Article: [Anybody that Knocks LinkedIn Doesn't Know How to Use It](#)



CHANNEL	EFFECTIVINESS
Postal shipping	Hahahaha
Mail	Low/Medium
Cold Call	Hahahaha
Cold call (pregunto por...)	Low
Cell Phone (reference)	Great
LinkedIn	Good / Very good
Other networks	-----
Personal meeting	Good / Very good





12/21/2020

Short? 5 sentences. That's all you need. Any longer than that and you're wasting their time.

Personal? This part is the most work, but it's what's going to separate you from the spammers. Plus, researching each of your customers to find something unique about them is going to give you incredible insight. Consider commenting on their:

- Blog posts
- Any professional organizations they belong to
- Companies listed on their LinkedIn profile
- Tweets they've sent

This is Important: Don't skip this part. Without something personal in there you're liable to get flagged as spam. If that happens enough times, you'll forever be relegated to junk mail.



12/21/2020



Valuable? In this case we're offering to "improve remote medical record coding." Our hypothesis is that Sam has problems with her remote coding process and by hinting that we're trying to solve them, we're giving her a reason why spending 20 minutes with us will be worth her time.

Without this line you're "offering" to take 20 minutes of her time, and giving nothing back. Why would she sign up for that?

Note: Be vague. You don't want to seed your customer with the problem you're hypothesizing. Note how the email doesn't say anything about making "remote coding":

Faster
Cheaper
More secure
More accurate



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Exercise (30 min)

1. Split your team, create groups of three
2. Assign three roles: interviewer, interviewee and observer/timer
3. Interview for 5 minutes
4. Switch roles and repeat (and repeat)
5. Discuss and share observations

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References

- THE MOM TEST: HOW TO TALK TO CUSTOMERS & LEARN IF YOUR BUSINESS IS A GOOD IDEA WHEN EVERYONE IS LYING YOU; Rob Fitzpatrick (2013)
- TALKING TO HUMANS: SUCCESS STARTS WITH UNDERSTANDING YOUR CUSTOMERS; Giff Constable and Frank Rimalovski (2014)



12/21/2020



Thank for your attention



d. Talking to Investors and Stakeholders

i. Elevator Pitch



ELEVATOR PITCH: HOW TO DO IT

Content

Module 3. Lecture 4. Elevator Pitch: How to do it.



12/21/2020



Module 3. Lecture 4. Elevator Pitch: How to do it.

Lecture 4: Elevator Pitch: How to do it.

- What is an elevator pitch?.
- How long should an elevator pitch be?.
- How to write an elevator pitch
 - Introduce yourself
 - Present the problem
 - Offer the solution
- Explain your value proposition
 - Engage the audience.
 - Elevator Pitch Questions
 - Tips: What to say
- Tips: What Not to Say and Do During Your Elevator Speech

Pedagogic tools

- Lecture
- Video-clips with examples
- Creating an elevator pitch)

Literature

- See references



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Accountability Study Load

Lecture 4: 3 study hours.

- Presence lecture: 1 hour.
- Reading of literature: 1 hour.
- Assignment: 1 hour.



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What is an elevator pitch?

An elevator pitch, also known as an elevator speech, is an opportunity to share a quick summary of yourself and your product offerings. But a pitch can also be your chance at making a real connection that you can use later down the road. It's not always an immediate benefit, but you should be prepared for any scenario in which you could be giving an elevator pitch.

Source: Asana (4th May 2020). *15 creative elevator pitch examples for every scenario.*



"Whoops—I accidentally pressed 'elevator pitch.'"
Source: https://www.cartoonstock.com/directory/e/elevator_pitch.asp



12/21/2020

How long should an elevator pitch be?

A study conducted by Microsoft found that the average person has an attention span of around eight seconds, meaning you'll have to fight for that undivided attention. That's no small task. So when it comes to a great elevator pitch, aim to keep it around 30 seconds—though the exact length can vary depending on your industry and what you're pitching.

Source: Asana (4th May 2020). *15 creative elevator pitch examples for every scenario.*



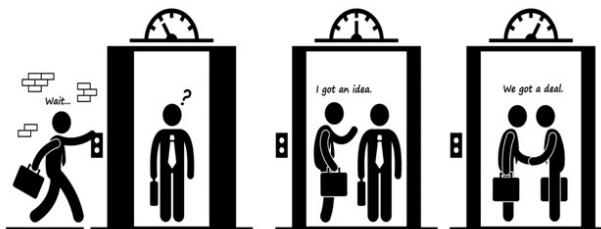
Source: <https://liveillustration.co.uk/what-is-graphic-recording/>

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Elevator Pitch Questions

- Who is the audience?
- What is going on in the world?
- What is the issue you are trying to solve?
- What should you do?
- Why should you do it?
- Resolution: what will be different?
- What is the new idea?
- How is this framed different?



Source: https://soc.kuleuven.be/fsw/afbeeldingen/elevator-pitch.png/image_view_fullscreen



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How to write an elevator pitch



Source: Asana (4th May 2020). *15 creative elevator pitch examples for every scenario.*

12/21/2020



Introduce yourself

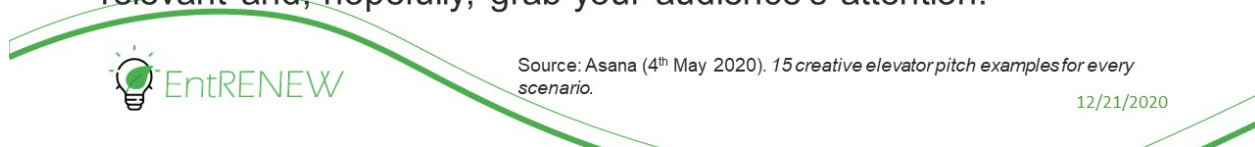
All good pitches start with a short introduction. It could be as simple as stating your name and who you work for if those details apply. But the more personal you can make it, the more natural your elevator pitch will seem. Body language is also an important part of a solid introduction, as is eye contact.



Present the problem

All solutions start with a problem. Whatever you or your business is trying to solve, it's important to get the point across early on in your elevator pitch to set the theme for the rest of your speech. An example problem: coordinating work between teams is chaotic.

If possible, relate the problem back to your audience by using real-world examples. This will help make the problem more relevant and, hopefully, grab your audience's attention.



Offer the solution

The solution is arguably the most important part of an elevator pitch, so spend time perfecting it. If you're pitching for a business, it's likely the quick solution pitch has already been created. But again, it's always better to personalize your pitch. So don't be afraid to tweak it to fit your audience.



Explain your value proposition

Now that you've piqued your audience's attention, it's time to seal the deal by explaining why your solution is better than anyone else's.

The value proposition differs from the solution by focusing on why your audience should use your solution over a competitor's. If you don't have that answer just yet, perform a competitive analysis to compare your offerings or look to your executive summary.



Engage the audience

There is no right or wrong way to engage your audience. While ending with a question can create a dialogue between you and your audience, a genuine compliment can go a long way. Think about what made you want to pitch them in the first place and use that to end the conversation.



Elevator Pitch Questions

For more information, check the following link:

<https://www.thebalancecareers.com/elevator-speech-examples-and-writing-tips-2061976>

<https://asana.com/resources/elevator-pitch-examples>

Examples of elevator pitch

<https://www.youtube.com/watch?v=i6O98o2FRHw>



Tips: What to say

- Restrict the speech to 30-60 seconds.
- You need to be persuasive.
- Share your skills.
- Practice, practice, practice.
- Be positive and flexible.
- Mention your goals.
- Know your audience, and speak to them.
- Have a business card ready.



Source: The Balance Careers (4th May 2020). *How to Create an Elevator Pitch With Examples.*

12/21/2020

Tips: What Not to Say and Do During Your Elevator Speech

- Don't speak too fast.
- Avoid rambling.
- Don't frown, or speak in a monotone way.
- Don't restrict yourself to a single elevator pitch.



Source: The Balance Careers (4th May 2020). *How to Create an Elevator Pitch With Examples.*

12/21/2020



References

Asana (4th May 2020). *15 creative elevator pitch examples for every scenario.*

<https://asana.com/resources/elevator-pitch-examples>

The Balance Careers (4th May 2020). *How to Create an Elevator Pitch With Examples*

<https://www.thebalancecareers.com/elevator-speech-examples-and-writing-tips-2061976>



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e. Marketing

i. Designing a Market Strategy

The image shows the 'Sales Funnel Canvas' tool interface. At the top, there are three tabs: 'PLAN', 'CAMPAIGN', and 'STRATEGY'. Below the tabs is a grid with seven columns representing the stages of a sales funnel: AWARENESS, INTEREST, CONSIDERATION, PURCHASE, UP-SELL, CROSS-SELL, and REFERRALS. The grid has five rows: BUYER PERSONA, CHANNELS, VIRAL LOOP, KPI, and KEEP CUSTOMERS. A circular icon labeled 'UN-BUNDLING' is placed in the PURCHASE column of the BUYER PERSONA row. In the KPI row, there are three circles under INTEREST, CONSIDERATION, and PURCHASE, and three rounded rectangles under UP-SELL, CROSS-SELL, and REFERRALS. The interface also includes a 'SALES FUNNEL CANVAS' logo, the website 'salesfunnelcanvas.com', and various icons for each stage. At the bottom, there are Creative Commons and Safe Creative licenses, a QR code, and a date '04.11.2021'.



ii) Video Material

a. Introduction to Module 3

<https://youtu.be/rlsqvruezzU>



b. Barriers for developing business models

https://youtu.be/GLZhmtG_AJk



c. Life cycle assessment

<https://youtu.be/Ek-veSU5QTs>

A YouTube video player interface for a video titled "Life cycle assessment". The video shows a man with a beard and a dark vest speaking. To his right is a diagram illustrating the environmental impact of different cup types. It features three cups: a 150 ml plastic cup, a 250 ml coffee cup on a saucer, and a 200 ml ceramic mug. Below each cup is an arrow pointing to a trash bin icon, indicating disposal. The 250 ml coffee cup is shown with a recycling symbol and a green liquid, suggesting it is more eco-friendly. The video player includes a "Watch later" button and a "Share" button.

d. Designing a marketing strategy

<https://youtu.be/rbmsHgLRDg>

A YouTube video player interface for a video titled "Marketing". The video shows a man with a beard and a dark vest speaking. To his right is a diagram titled "THE MESS COMES WITH COMPLEX PROBLEMS". The diagram illustrates the marketing funnel process. It features three funnels: a top funnel labeled "Awareness" with stages: Awareness, Discovery, Evaluation, Engagement, Sales, and Loyalty; a middle funnel labeled "Product Views" with stages: Product Views, Product Customizations, Cart Additions, Checkout, and Purchases; and a bottom funnel labeled "Marketing Campaigns" with stages: Awareness, Interest, Evaluation, Commitment, Sale, and Repeat. The video player includes a "Watch later" button and a "Share" button.

iii) Quizzes

a. Business Modeling

i. Traditional vs Sustainable Business Models

[1 point] A business model describes

- a. a strategy to apply corporate sustainability in organizations.
- b. the mechanisms to create new opportunities for innovation.
- c. the design or architecture of the value creation, delivery and capture mechanisms employed.

[1 point] High benefits in the dimensions economic, environmental and social is characteristic of the sustainable business model:

- a. Eco-efficient
- b. More sustainable
- c. Socialitarian

[1 point] The essence of a business model is that

- a. it crystallizes customer needs and operation of the various elements of the value chain, among others
- b. it includes different structural and cultural attributes of an organization, such as trust, among others.
- c. it defines a triple bottom line approach and considers a wide range of stakeholder interests, including environment and society.

[1 point] A business model for sustainability

- a. defines the manner by which the business enterprise responds to and delivers value to customers, entices customers to pay for value.
- b. captures economic value while maintaining or regenerating natural, social, and economic b. capital beyond its organizational boundaries.
- c. converts those payments to profit through the proper design and operation of the various elements of the supply chain.

[1 point] A shift from selling products to providing service solutions to customer needs is part of corporate sustainability

- False
- True
- Other

[1 point] Anthropocentric business model has high benefits in the environmental and social dimensions, but few or none in the economic one

- False
- True
- Other



[1 point] A business sustainability typology

- a. includes competitive advantages to the customers and company.
- b. deploys the role of the supplier as a provider of complementary point of view.
- c. combines the inside out and the outside-in organizational perspectives.

Other

[1 point] Noxious business model has

- a. few or no benefits in the dimensions economic, environmental and social.
- b. high benefits in the economic and social dimensions, few, or none in the environmental.
- c. low benefits in the economic and environmental dimensions, few, or none in the social.

[1 point] Environmental dimension of sustainable business model covers

- a. Safety
- b. Value added
- c. Defense expenditure

[1 point] Social dimension of sustainable business model covers

- a. Capital formation
- b. Political funding
- c. Land use

ii. Customers Segments

[1 point] Customer segments are the groups of people and/or organizations a company or organization aims to reach and create value for with a dedicated value proposition.

- True
- False

[1 point] Customer groups represent separate segments if their needs require and justify a distinct offer.

- True
- False

[1 point] Customer groups represent separate segments if they are reached through the same distribution channels.

- True
- False



[1 point] Customer groups represent separate segments if they require different types of relationships.



- True
- False

[1 point] Customer groups represent separate segments if they have substantially different profitabilities.

- True
- False

[1 point] Customer groups represent the same segments if they are willing to pay for different aspects of the offer.

- True
- False

[1 point] Among the benefits for a company to segment customers, we can consider:

- Identification of unfulfilled needs and increased customer satisfaction
- Better product design
- More targeted promotions
- All alternatives are correct

[1 point] When companies segment customers, they have the opportunity to offer more personalized experiences to their customers.

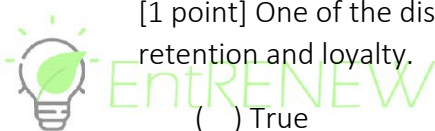
- True
- False

[1 point] Customer segmentation can help companies to predict _____ behavior.

- Competitors'
- Suppliers'
- Customers'
- Distributors'

[1 point] One of the disadvantages of customer segmentation is the reduction of customer retention and loyalty.

- True



False

[1 point] A useful segmentation can be characterized as:

- anonymous, substantial, restricted, unstable, differentiable, and actionable
- identifiable, natural, auditable, complex, differentiable, and ambiguous
- identifiable, substantial, accessible, stable, differentiable, and actionable

[1 point] Customers in a segment should have similar needs, and these needs should differ from the needs of customers in other segments.

- True
- False

[1 point] To be useful, a segment needs to be as small and restricted as possible, so a company can achieve profitability.

- True
- False

[1 point] The main types of market segmentation in **consumer markets** are:

- Demographic segmentation, content segmentation, participatory segmentation and generic segmentation
- Demographic segmentation, geographic segmentation, behavioral segmentation and psychographic segmentation
- Generic segmentation, specific segmentation and mix-method segmentation
- Gender segmentation, ethnic segmentation and economic segmentation

[1 point] The main variables to be consider in market segmentation for **business markets** are:

- Size of the firm, credibility, profitability, net sales
- Revenue, culture, hierarchical structure, nature of the business
- Geographic, firmographics, buying approach, behavioral and benefits sought
- None of the above

[1 point] _____ segmentation divides a group or population based on variables such as age, gender, income, occupation, education, marital status, religion, or nationality.

- Demographic segmentation



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- Geographic segmentation
- Behavioral segmentation
- Psychographic segmentation

[1 point] _____ segmentation groups customers based on variables such as location, urbanicity, climate, culture, and language.

- Demographic segmentation
- Geographic segmentation
- Behavioral segmentation
- Psychographic segmentation

[1 point] _____ segmentation is useful for those companies who want to offer personalized products, services and contents based on customers' preferences and behavioral patterns.

- Demographic segmentation
- Geographic segmentation
- Behavioral segmentation
- Psychographic segmentation


[1 point] _____ segmentation focuses on the customers' psychological attributes such as personality, values, attitudes, opinions, interests, and lifestyles.

- Demographic segmentation
- Geographic segmentation
- Behavioral segmentation
- Psychographic segmentation

[1 point] What are the main five segment types that a company can choose to target?

- generic market, modular market, supermodular market, unique market or multiple market
- mass market, niche market, segmented market, diversified market or multi-sided platforms
- concentrated market, exclusive market, separated market, direct market or multi-sided propositions

[1 point] Mass market is commonly characterized by:

- 
- Products and services are relatively standard and homogeneous
 - Price is the basis of competition



- Companies rely on mass production
- All the alternatives above

[1 point] A niche market refers to a customer segment with extremely defined characteristics and very particular needs, where customers expect highly tailored products, custom made to suit its needs.

- True
- False

[1 point] Credit card companies offer products and services to customers (i.e., credit and debit cards), but they also need to make sure that stores have compatible credit card machines, so customers can use the payment functions. This is an example of:

- Niche market
- Diffusion market
- Multi-sided platform/market
- Focal market

iii. Value Proposition

[1 point] 1. What is a competitor?

- a.** Any alternative solution available in the market that solves the same problem.
- b.** Any other company developing the same product as services that we do.

ANSWER: a

[1 point] 2. When a product in the same category is cheaper, in general...

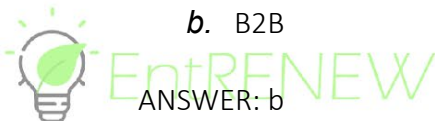
- a.** we can expect a lower quality.
- b.** we can expect the same quality.
- c.** we can expect more quality.

ANSWER: a

[1 point] 3. When a company is selling its products to private hospitals, its business model is...

- a.** B2C
- b.** B2B

ANSWER: b



[1 point] 4. Value proposition is...

- a.** A what. Our products and services.
- b.** A why. The reason why a customer chooses our products or services instead of the available alternatives.

ANSWER: b

[1 point] 5. In the value map, we can find...

- a.** pains
- b.** gains
- c.** customer jobs
- d.** products and services

ANSWER: d

iv. Channels

[1 point] A channel of distribution refers to the venue that a company chooses for moving its products or services out into the market.

- True
- False

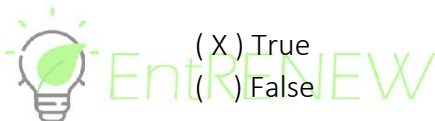
[1 point] A channel of distribution describes how a value proposition is designed and produced by a company.

- True
- False

[1 point] Channels of distribution allow companies to make products and services accessible to customers how, where, and when they want and need them.

- True
- False

[1 point] One of the functions of channels of distribution is to raise awareness of the company's products and services among customers.



- True
- False



[1 point] The costs related to the channels of distribution can influence the final price of a product or service.

- True
 False

[1 point] Which of the following options **do not** describe a type of a channel through which a company can reach its customers:

- Through a stocking distributor
 Through a bank agency
 Directly to the retailer
 Directly to the end customer

[1 point] Retailers and distributors can be characterized as intermediaries in a supply chain.

- True
 False

[1 point] Manufacturers always brand their products, even if they use intermediaries to reach the end-users/customers.

- True
 False

[1 point] Wholesalers or distributors sell products and services to other channel intermediaries (e.g., retailers) or to business end-users, but **not** to individual consumer/end-users.

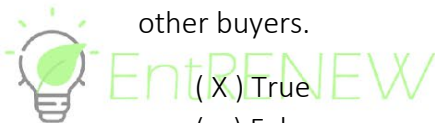
- True
 False

[1 point] Jobbers (or brokers) are specialized sales agents hired by the supplier and/or manufacturer who focus on a particular customer segment. They are typically compensated through commissions or fees.

- True
 False

[1 point] Retail intermediaries can sell directly to individual consumer end-users, but also to other buyers.

- True
 False



[1 point] Channel strategies can be divided into two categories:

- Design decisions and financial decisions
- Design decisions and management decisions
- Marketing decisions and customer decisions
- Production decisions and distribution decisions

[1 point] Design decisions: refer to the structural aspects of the channel, such as which routes to take, or whether to distribute through a selective network of retailers or instead make the product or service widely available to all.

- True
- False

[1 point] Management decisions: include choices about determining incentives and channel margins (profits) and setting the rules that govern the daily behavior of the supplier and other channel members.

- True
- False

[1 point] One of the fundamental decisions that any company has to make is whether to start by selling the product or service through _____ or through _____ channels.

- Open - closed
- Public - private
- Direct - indirect
- Virtual - physical

[1 point] Indirect channel refers to any route to market that involves a supplier selling through intermediaries such as distributors or final-tier trade players.

- True
- False



EntRENEW

[1 point] Direct channel refers to a route to market that involves the supplier in dealing directly with its customers and not going to market through intermediaries.



- True
 False

[1 point for each correct answer] When building and updating the channel value chain, a company must consider some variables to decide whether to choose direct or indirect channels. For each of the following statements, mark (i) when an indirect channel is preferable, or mark (d) when a direct channel is preferable.

- (i) The market is fragmented and dispersed, and the purchase value of each customer is too small on average.
- (i) When a product or technology can be used in multiple applications about which the product owner may not be fully informed.
- (i) When products are bought as part of a bundle of products and services, rather than by themselves.
- (i) A startup with no credibility with customers to get initial adoption.
- (i) A firm with relatively weak power relative to potential channel partners.
- (i) The company prefers to preserve its working capital position and need the buffer of an intermediary whom it can bill immediately.
- (d) There are several customers who might buy in large enough quantities to justify the cost of a direct sales force.
- (d) The product requires a large amount of education and explanation to the end customer.
- (d) When products are the main focus of customer desire.
- (d) A consolidated firm, with a good reputation.
- (d) A firm with lots of power relative to potential channel partners.
- (d) The company can wait to recover cash from many customers.



[1 point] Choose only one answer to each question



What are the components of the value proposition?

- a. Value map and customer profile map
- b. Business innovation and customer value
- c. Desired outcomes and benefits

[1 point] Customer job can be related to:

- a. Value propositions to attract customers
- b. Characteristics that you assume, observe and verify in the market
- c. The context of consuming or purchasing value

[1 point] Fill the gap with only one word

Performing a specific task or solving a problem is a _____ customer job.

- a. Supporting
- b. Functional
- c. Transferred

[1 point] New product development is one example of _____

- a. Co-creation of value
- b. Value proposition to attract customers
- c. Transferer of value

[1 point] The understanding of your customer is described in the _____

- a. Value map
- b. Value proposition
- c. Perceived Value

[1 point] Seeking for a specific emotional state is part of the

Social customer job



Functional customer job

Personal customer job

v. **Competitive Advantage**

1. [1 point] What is a competitive advantage?

- a. Something difficult to copy that our competitors wish to have.
- b. The activities that are outsourced.
- c. The reason why customers buy our products.

ANSWER: a

2. [1 point] A patent...

- a. Assures that our product is going to be sold.
- b. Is a competitive advantage but does not imply sales.

ANSWER: b

3. [1 point] A good action to improve our customers' loyalty is...

- a. Raise the prices of our products.
- b. Offer discounts when they come back to buy again.
- c. To give a present when they buy it for the first time.

ANSWER: b

vi. **Key Activities and Partnerships**

[1 point] Like key resources, **key activities** are required to create and offer a value proposition, reach markets, maintain customer relationships, and earn revenues.

- True
- False

[1 point] We can classify the key activities of a business according to three types:

- Management, commercialization and evaluation
- Planning, execution and feedback
- Production, problem-solving and platform/network



EntRENEW



None of the options above

[1 point] _____ activities are related to designing, manufacturing, and delivering a product in substantial quantities and/or of superior quality. The activities dominate the business models of manufacturing firms.

- Production
- Problem-solving
- Platform/network
- None of the options above

[1 point] _____ activities are related to coming up with new solutions to individual customer problems. The operations of consultancies, hospitals, and other service organizations are typically dominated by these type of activities.

- Production
- Problem-solving
- Platform/network
- None of the options above

[1 point] Business models designed with a platform as a key resource are dominated by _____ related key activities. Networks, matchmaking platforms, software, and even brands can function as a platform.

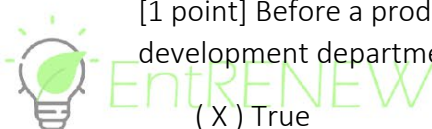
- Production
- Problem-solving
- Platform/network
- None of the options above

[1 point] _____, _____, _____ and _____ are typical activities of a business venture.

- Research and development – production – marketing – sales and customer service
- Planning – acting – evaluating – feedback
- Management – leadership – training – sales
- None of the options above

[1 point] Before a product enters the production line, it goes through the research and development department, which will evaluate design, costs, and production time.

True



False

[1 point] Research and development (R&D) activities are exclusively related to the development of new products and services. It is not the responsibility of R&D to update existing products to make sure that they are aligned with the needs of the market.

True
 False

[1 point] The R&D department is also responsible for auditing and quality checking to make sure the product meets the standards set by the company.

True
 False

[1 point] The Research and Development (R&D) department is also responsible for observing and understanding innovations and trends in the marketplace, to ensure that the company and the products comply with the scenarios.

True
 False

[1 point] Product selection and design are part of the company's Value Proposition and may be responsible for the success or failure of the venture.

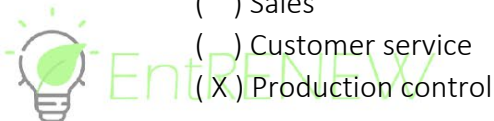
True
 False

[1 point] The main goal of production planning is to create a healthy, sustainable, and economical flow. Includes a schedule, with a specific calendar of activities, within pre-established hours.

True
 False

[1 point] _____ is responsible to monitor and control all production processes, correcting eventual deviations to ensure planned production.

Marketing
 Sales
 Customer service
 Production control



[1 point] _____ involves continually improving the product while trying to reduce costs, to achieve a competitive price in the market.

- Sales
- Quality and cost control
- External auditing
- Leadership

[1 point] The focus of inventory control is to avoid both overstocking, an excess of materials that will eventually be wasted, as well as understocking, which can delay production and result in late deliveries..

- True
- False

[1 point] Machine maintenance and replacement includes everything that concerns maintaining equipment and machinery running in perfect conditions so that there are no interruptions in the production chain.

- True
- False

[1 point] _____ research helps the company to be fully aware of the market as well as strengths and weaknesses of the product, observing target audiences, and potential competitors.

- Internal
- Management
- Marketing
- Production

[1 point] When coordinated with product development, marketing can help with the identification of gaps in the market that can be fulfilled with the creation of a new product that meets this need.

- True
- False



[1 point] _____ encompass all communication about the product on the market, including press releases, advertisements, e-mails, etc.

- Communications
- E-market
- Marketing tactic
- None of the above

[1 point] _____ respond to customer complaints and have the power and tools to circumvent the situation and seek client satisfaction.

- Leadership
- Telemarketing
- Salesforce
- Sales and customer service

[1 point] Partnerships can take different forms, such as integrated relationships, buy-side online platforms (or service contracting. They are based on a range of agreements between partners.

- True
- False

[1 point] Partnerships can help to optimize the allocation of resources and activities, to reduce costs and with outsourcing or sharing infrastructure.

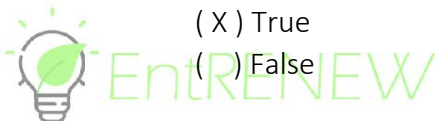
- True
- False

[1 point] Once become partners, two companies will never compete in the same market again.

- True
- False

[1 point] Two companies can often still compete in other areas despite having formed strategic partnerships.

- True
- False



[1 point] Partnerships can be motivated by the need to acquire knowledge, structures, licenses, or access to customers.

- True
 False

[1 point] Typically, partnerships can be classified into 4 types:

- Friendships, collaborations, strategic alliances, and cooperatives
 Strategic alliances, co-opetition, joint-ventures, and buyer-supplier relationships
 Strategic alliances, competition, merger and acquisitions, and cooperatives
 None of the options above

[1 point] _____ happen between companies that are not competitors, in an agreement that benefits both sides.

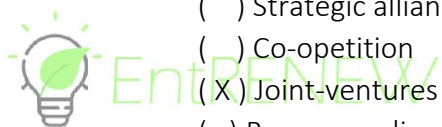
- Strategic alliances
 Co-opetition
 Joint-ventures
 Buyer-supplier relationship

[1 point] _____ happens between competing companies. It helps to divide the risk that both are taking by trying to do something new in the market and can also guarantee some supply that both of them need.

- Strategic alliances
 Co-opetition
 Joint-ventures
 Buyer-supplier relationship

[1 point] In _____ the focus is to develop a new business, due to the birth of a new market or access to a new area, geographically speaking.

- Strategic alliances
 Co-opetition
 Joint-ventures
 Buyer-supplier relationship



[1 point] _____ it is the most common type of partnership and aims to ensure reliable supplies. One side gets a quality supplier and the other, a confirmed and recurring buyer.

- Strategic alliances
- Co-opetition
- Joint-ventures
- Buyer-supplier relationship

[1 point] In assessing a business partnership, it is important that the agreements are clear and offer benefits to both parties, no matter if the key partner will be another company or an individual. It is recommended that the agreements should be prepared together with legal counsel.

- True
- False

[1 point] To achieve an agreement, it is essential that each partner openly shares its expectations for the partnership that is to be formed, in order to avoid future conflicts.

- True
- False

[1 point] The main goal in having a key partner is to fill a gap in the value proposition or key resources.

- True
- False

[1 point] Some key partners seem interesting and profitable at first, but end up not being successful. If a partnership becomes harmful or even irrelevant, it should **not** be ended.

- True
- False



b. Climate Impact

i. Life Cycle Assessment and Measure Reduction in Carbon Emissions

[1 point] When a startup introduces an innovative product that considerably reduces the carbon emissions in its production compared to the most common baseline, it is a...

- a.** Mitigator.
- b.** Enabler.
- c.** Adaptation.

ANSWER: a

2. [1 point] When a startup gives a reward every time a customer takes a green action, it is a...

- a.** Mitigator.
- b.** Enabler.
- c.** Adaptation.

ANSWER: b

3. [1 point] When a startup introduces sensors all around a city to monitor temperatures to help create actions to minimize heat wave effects, it is a...

- a.** Mitigator.
- b.** Enabler.
- c.** Adaptation.

ANSWER: c

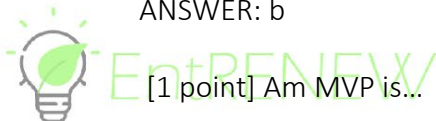
c. Validation

i. Validation Plan

[1 point] A good question to ask in a customer interview is...

- a.** Would you buy this product?
- b.** What solutions are you currently applying?
- c.** How much would you pay for this?

ANSWER: b



[1 point] Am MVP is...



- a.** the final version of a product to obtain the maximum amount of info with the maximum effort.
- b.** the version of a product designed to obtain the maximum amount of info with the minimum effort.

ANSWER: b

[1 point] The validation process should be developed with...

- a.** Visionaries
- b.** Early adopters
- c.** Pragmatics

ANSWER: b

d. Talking to Investors and Stakeholders

i. Elevator Pitch

[1 point] Choose only one answer to each question

How long should an elevator pitch be?

- a. 10 minutes
- b. 5 minutes
- c. 30 seconds

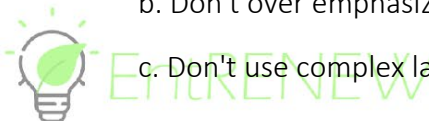
[1 point] The first step to create an elevator pitch is:

- a. Show the product
- b. Present the problem
- c. Introduce yourself

[1 point] What Not to Say and Do During Your Elevator Speech

- a. Don't restrict yourself to a single elevator pitch
- b. Don't over emphasize the cost aspects

c. Don't use complex language



[1 point] In the context of an elevator pitch, the value proposition focused on:

- a. Why this is an innovative product or service for your audience
- b. Why the product or service solve a problem
- c. Why your audience should use your solution over a competitor's

[1 point] What to say in an elevator pitch

- a. Explain what your objective with the elevator pitch is
- b. Mention your goals to materialize your product or service
- c. Ending with a question

e. Marketing

i. Designing a Market Strategy

[1 point] AIDA means...

- a. Awareness, Interest, Desire, Action.
- b. Action, Interest, Desire, Awareness,
- c. Acquisition, Interest, Desire, Award.

ANSWER: a

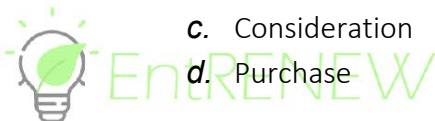
[1 point] A viral loop...

- a. Allows our leads and customers to attract new leads and customers.
- b. Is a discount on our current products.
- c. attracts the potential customers that are not attracted with remarketing.

ANSWER: a

[1 point] According to the marketing channel, when we create a great ad to make our potential customers understand new ways to become more sustainable, we are addressing the stage:

- a. Awareness
- b. Interest
- c. Consideration
- d. Purchase



ANSWER: a

[1 point] According to the marketing channel, when we give a free trial to use our product during two weeks before our customer pays anything, we are addressing the stage:

- a.** Awareness
- b.** Interest
- c.** Consideration
- d.** Purchase

ANSWER: c

[1 point] According to the marketing channel, when we give a flash offer to the potential customers who have a product in their trolley, we are addressing the stage:

- a.** Awareness
- b.** Interest
- c.** Consideration
- d.** Purchase

ANSWER: d



2.1.4. Module 4: Launching Successful Start-ups in Renewable Energy

i) Training Content

a. Final Project

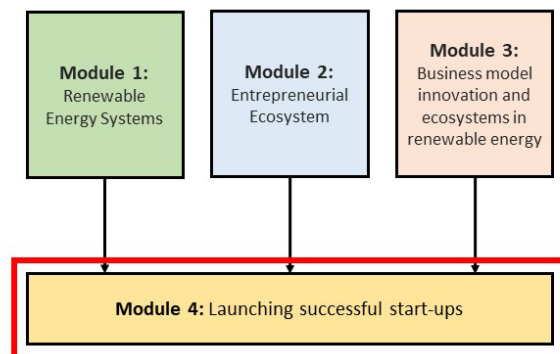
Module IV: “Launching successful start-up”

How to act as a sustainable entrepreneur:

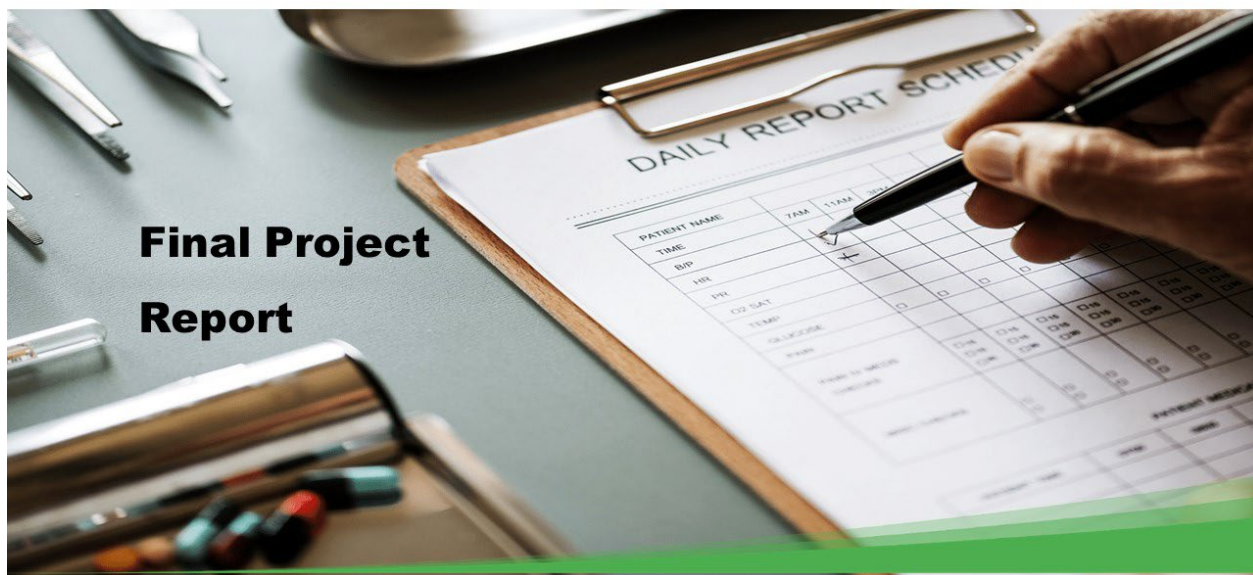
- Formulate an entrepreneurial vision in energy
- Construct and evaluate a business model from a sustainability perspective

Course Structure

- 5.0 - 7.5 ECTS (depending on the university's demands)



Evaluation



Evaluation

1. Business Modelling

Choose an idea and define the deal.
 Define your Market strategy.
 Value proposition canvas. Analysis of competitors.
 Competitive strategy.
 Business Model canvas.

2. Climate Impact

Life Cycle Assessment report of the chosen idea.

3. Validation

Write a list of 30+ potential customers.
 Build a ranking uncertainty-impact of your assumptions.
 Design experiments or MVPs for your top 3 assumptions.
 Show a prototype, sketch model, rendered image of your solution.

4. Talking to Investors and Stakeholders

One Page.

Elevator Pitch: Slides + Video.

1. Business Modelling

Think of a business idea in sustainable energy that you would like to implement.

Deal

Fill the blanks: We sell _____ to _____ at a price of _____ euros.

Market Strategy

Define your beach head market (your first customer segment) and its size. Then describe a market strategy through time explaining how you are going to expand the business (geographically and/or in adjacent markets).

Value Proposition Canvas

What are the main problems of your potential beach head market? What are your solutions? Fill in a value proposition canvas. Who are your competitors (alternatives that solve the same needs or problems)? Try to quantify your value proposition with a bar chart.

1. Business Modelling

Competitive strategy

Define your short/medium/long term competitive advantage according to the template from module 3 1.7.

Business Model Canvas

Describe the whole business model canvas of your chosen business (only for your beachhead market).



2. Climate Impact

Climate Impact Analysis

Define climate impact of your startup/company.

What is the carbon footprint of your product/service? How much greener it is compared with the baseline or most common solution (the one that is not as green as this one)? (Draw a bar chart).

You can use the Climate Impact Forecast platform.

Multiply this carbon reduction by their market share and forecast their climate impact in a year.

3. Validation

Write a list of 30+ potential customers.

Build a ranking uncertainty-impact of your assumptions.
(use the Excel file from Module 3 3.1)

Design experiments or MVPs for your top 3 assumptions.
(use the Excel file from Module 3 3.1)

Show a prototype, sketch model, rendered image of your solution.



4. Talking to investors & stakeholders

One Page

Create a OnePage (two sides of a paper) with the executive summary of your business idea according to Module 3 4.1.

Pitch Deck

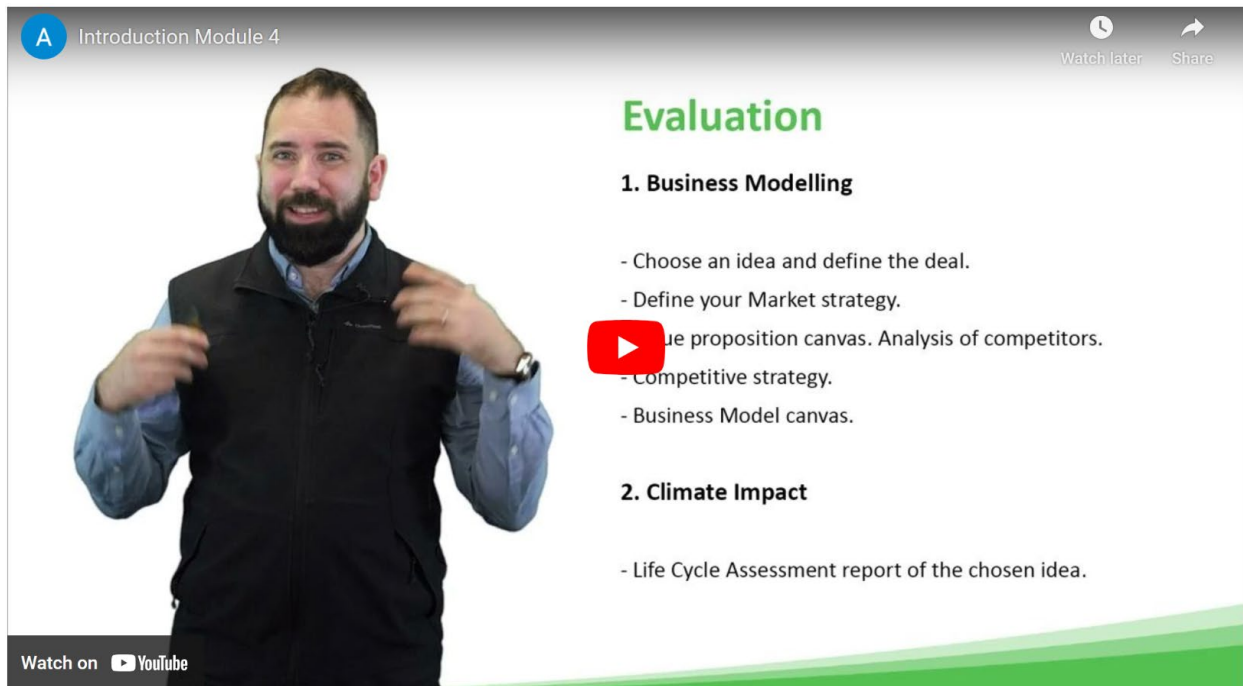
Build an Elevator Pitch of 5 minutes describing your business according to Module 3 4.2. Include the pitch deck presentation and a video of you/your team performing the elevator pitch.



ii) Video Material

a. Introduction to Module 4

<https://youtu.be/RwPOc1V-u6g>



The screenshot shows a YouTube video player. The video title is 'Introduction Module 4'. The main content is a presentation slide titled 'Evaluation' in green. The slide is divided into two sections: '1. Business Modelling' and '2. Climate Impact'. Under '1. Business Modelling', there are four bullet points: '- Choose an idea and define the deal.', '- Define your Market strategy.', '- Value proposition canvas. Analysis of competitors.', and '- Competitive strategy. Business Model canvas.'. Under '2. Climate Impact', there is one bullet point: '- Life Cycle Assessment report of the chosen idea.'. A man with a beard, wearing a dark vest over a light blue shirt, is visible on the left side of the slide, gesturing with his hands. The video player interface includes a 'Watch later' button and a 'Share' button in the top right corner, and a 'Watch on YouTube' button in the bottom left corner.



2.2. Webinar



Co-funded by the Erasmus+ Programme of the European Union

A virtual webinar on the EntRENEW Blended-learning Course

Dear Students,
 We have the pleasure to invite you to a virtual webinar: „**Expanding Entrepreneurship Skills for the Renewable Energy Sector**“, on **20 October 2022, 10:00 am CET**. Join us to learn more about the new innovative EntRENEW blended course on Entrepreneurship in renewable energy and the opportunities offered by the class!

EntRENEW Course is one of the main outcomes of the Erasmus+ Project EntRENEW aiming to increase specific knowledge and thus the capacity of European students to become effective entrepreneurs and leaders to address the challenges of Europe’s future sustainable prosperity and transition of energy sectors towards decarbonisation.

The webinar is for bachelor and master students with a background in business administration, entrepreneurship, or engineering studies related to sustainability, energy, and climate change disciplines. You will have the opportunity to ask questions and discuss the course.

[Please register here](#)

We look forward to seeing you!

 **October 20, 2022**

 **10 am - 12 pm CET**

Expanding Entrepreneurship Skills for the Renewable Energy Sector

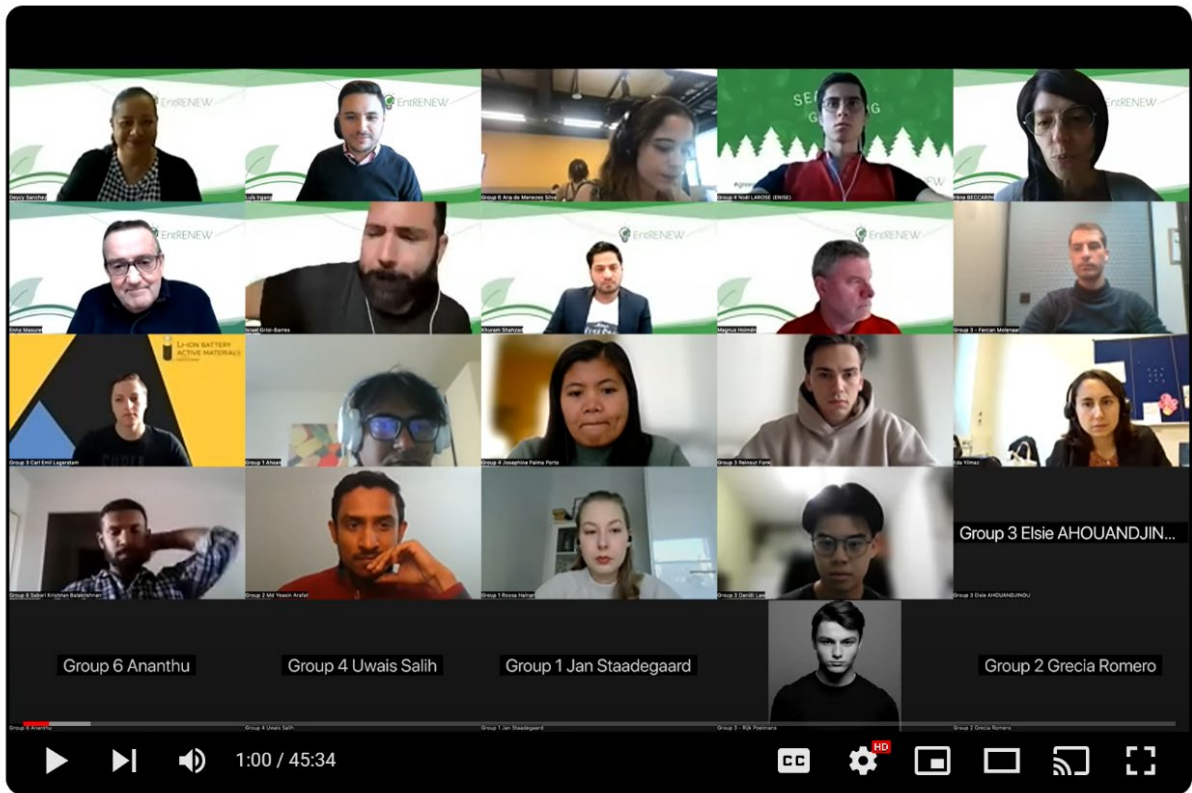
Co-funded by the Erasmus+ Programme of the European Union

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



The link to the webinar is available here: https://www.youtube.com/watch?v=45Ljldh-KQA&ab_channel=AdminEntRenew





EntRENEW Webinar

Unlisted

A Admin EntRenew
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3. Virtual Incubator Hub (VIH)

A virtual business incubator is mainly a combination of a business incubator and a business accelerator, but it also includes elements of demonstration labs, science parks, working spaces, etc. In practice, different labels are used for this phenomenon (like Virtual incubator hub), but the term virtual business incubator is the most regular term, in brief frequently called virtual incubator.

Business incubators are generally known as facilities that provide affordable space, shared office services, and business development assistance for start-ups. Obviously, the adjective 'virtual' in virtual business incubator refers to the situation that it does not have a physical appearance. The virtual business incubator hub does not include the classical concept of 'roof and space', although virtual space can be incorporated in the development of our virtual incubator hub, e.g. online meeting rooms.

Our virtual business incubator can be seen as a combination of a university business incubator, given the scope of the project and the character of the participating organizations in this project, on the one hand, and a sustainable business incubator, with the focus on renewable energy, on the other. In fact, our virtual incubator hub is a platform that offers support to start-ups that are founded or planned to be founded during the course 'Entrepreneurship in renewable energy'. These are our first incubates. Next to that, the platform can be opened for other start-ups as well, both from the five involved universities and beyond in the EU.

For further support and guidance on the selection of relevant incubation programme/ coaching, you may wish to contact Enno Masurel, Full Professor Sustainable Entrepreneurship at Vrije University Amsterdam: e.masurel@vu.nl

The five partners of the EntRENEW project offer the following support:

- **UVA offers:**

[Energy Spin | Business Accelerator](#)

This link gives access to the corporate accelerator program and supports startups to grow in Vaasa.

[Vaasa Entrepreneurship Society \(VES\) https://www.ves.fi/](https://www.ves.fi/)

This link gives access to Vaasa Entrepreneurship society that supports students in creating new businesses in Vaasa.

- **HH offers:**

[High Five Innovation Arena](#)



This link provides access to HighFive, which is an innovation arena in the municipality of Halmstad that supports startups.

[Fab Lab - Högskolan i Halmstad](#)

This link leads to FabLab, which is a “fabrication laboratory” with equipment such as additive manufacturing that is used for producing prototypes.

[Other collaboration arenas](#)

This link provides information about collaboration arenas under the auspices of Halmstad University.

- **UPV offers:**

[StartUPV](#)

This link provides information on the entrepreneurial ecosystem of the UPV

- **ALDV offers:**

[Devinci Startup](#)

This link gives access to a pre-incubation initiative in Paris

[De Vinci Innovation Center](#)

This link gives access to a trans-disciplinary innovation hub where you can join forces with others.

- **VUA offers:**

[Demonstration Lab](#)

This link gives access to a pre-incubation initiative in Amsterdam

[Amsterdam Venture Studios](#)

This link gives access to workspace and incubation support in Amsterdam.

[VU Entrepreneurship & Impact](#)

This link gives access to an innovation hub where you can join forces with others.

Once EP integrates the VIH on the project website, a link to it will be provided, together with screenshots pictures to illustrate its functionality.



4. Train the Trainers Toolkit (TOT)

The "Train the Trainers Toolkit (TOT)" developed for the EntRENEW course serves as a comprehensive guideline for teachers and instructors on effectively utilizing the project's materials to deliver instruction in Sustainable Entrepreneurship in Renewable Energies to master's students.

This toolkit embraces an innovative approach, incorporating a variety of materials, content, techniques, and a blended learning approach. The TOT provides step-by-step guidance on how to leverage the project's resources to create an engaging and impactful learning experience. It equips educators with the necessary tools to navigate the course content, adopt best practices in teaching methodologies, and deliver lessons that inspire students to excel in the field of sustainable entrepreneurship in renewable energies.

The TOT is composed of 7 chapters (see Appendix A).



5. Examination Tools

The pilot course at VUA loaded 6 ECs. The final grade for this course is based on the Business Model Canvas for Start-ups and Scale-ups slide deck (50%) and the exam (50%). Both forms of examination should be sufficient, with grades of at least 5.5/10. The exam is an individual assignment whereas the Business Model Canvas for Start-ups and Scale-ups report is a team assignment. Next to these two obligatory aspects of the course, a number of mandatory assignments have to be delivered, in order to prepare for, or to do exercises after, the lectures. Additional to the regular lectures, tutorials are organized. This way of examining clearly contributed to the realization of the learning goals.

For the Business Model Canvas for Start-ups and Scale-ups, the students in small groups have to develop a 'discipline-related innovation' towards the market. Their knowledge-driven subjects have to be approved by the lecturers and during the tutorials their progress with the different Building Blocks have to be presented. The report is a slide deck.

The criteria for grading are: Innovativeness (25%); Technological feasibility (25%); Commercial feasibility (25%); Pitch & Discussion (25%). Incompleteness of the report and non-readability of the report could lead to points deduction. The pitch is a 2-minute verbal convincing summary about their reports.

The exam is individual, an online and open book. The exam is based on the students' knowledge of the literature, their knowledge of content of the lectures and their personal insights (the latter is partly based on previous knowledge of the literature and of the content of the lectures).

In this way, the following learning goals of the course have to be achieved:

- Be familiar with an innovation outlook on entrepreneurship in renewable energy.
- Be aware that value-adding opportunities not only contain financial aspects but also social and ecological aspects (sustainable entrepreneurship).
- Have developed insight into, and actual developed, one's own enterprising competences.
- Have learned about the processes involved in the recognition and exploitation of opportunities, about creating societal value and about the nature and role of networks.
- Have gained the ability to write a feasibility plan on how to bring an innovation to the market.
- Have gained knowledge of different entrepreneurial processes and the importance of valorization of scientific findings and business ideas for a knowledge-based economy.



6. Final expert's evaluation of ERE Course

The final expert's evaluation has been conducted by Prof. Raoul Frese (r.n.frese@vu.nl), Vrije University of Amsterdam, in his quality of Advisory Board Member, Professor of Biophysics, Director of the VU Art Science Laboratory, Coordinator of the Master track for the Program "Science for Energy and Sustainability", and his expertise in the UN Sustainable Development Goals.

Raoul Frese full profile is available here: <https://research.vu.nl/en/persons/rn-frese>

Learning Goals	1	2	3	4	5	6
Lecture 1	V		V			V
Lecture 2					V	V
Tutorial 1			V			
Assignment 1					V	
SA MvG #1				V		
Lecture 3					V	
Lecture 4			V	V		
Tutorial 2					V	
Assignment 2					V	
Lecture 5	V					
SA MvG #2			V			
Lecture 6	V	V				
Tutorial 3					V	
Assignment 3					V	
Lecture 7			V			V
Lecture 8				V		V
Tutorial 4					V	
Assignment 4		V			V	
Lecture 9		V				
Lecture 10-1		V				
Lecture 10-2						V
Tutorial 5		V				
Assignment 5					V	
Tutorial 6					V	
Pitches					V	V
Main Assignment					V	
Exam Q1				V		V
Exam Q2		V				
Exam Q3				V		
Exam Essay	V					
Exam Case	V			V		V



Appendix A: Train the Trainers Toolkit (TOT)

1. Introduction

Welcome to the master's course EntRENEW: Sustainable Entrepreneurship in Renewable Energy. This training toolkit is addressed to the course lecturers, and it is composed by this document and five recordings. Here we present the motivation for this course, the course objectives, the course structure, the teaching formats, the examination activities and the course literature.

About EntRENEW

The EntRENEW course is the result of a project co-funded by the *Erasmus+ Programme* of the European Union.

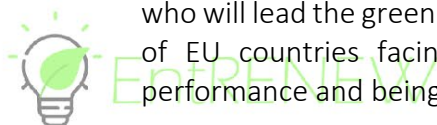
The course aims to answer three major societal challenges:

- Form new skills and competences in future MA graduates in business and environmental/energy studies, bridging the knowledge gap in the current higher educational curricula to answer the demand by new energy businesses.
- The need to increase the use of new and innovative pedagogies in higher educational to enhance students' motivation
- The need to enhance the collaboration between European students and the entrepreneurial community

There was created a multidisciplinary group of researchers from 5 leading universities and 1 technical company:

- Association Léonard de Vinci, France
- Universitat Politècnica de València, Spain
- Halmstad University, Sweden
- Vrije Universiteit Amsterdam, The Netherlands
- University of Vaasa, Finland
- Europroject, Bulgaria

The consortium collaborated to design a master's course that responds to current societal, environmental, and economical challenges. It aims to train a new generation of decision makers who will lead the green transition by developing and exploring entrepreneurial solutions in support of EU countries facing the important challenge of maintaining their social and economic performance and being more eco-responsible, in line with the 2030 agenda.



2. Course Objectives

The main objective of the course is to stimulate master's students to generate innovative energy solutions that are renewable and more environmentally friendly, which are 'packed' in a sustainable business.

The course is intended to be suitable for students with different backgrounds and from different disciplines, e.g., Engineering, Industrial Management and Business, and Environmental Sciences, and therefore the course combines Renewable Energy, Sustainability and Entrepreneurship.

The course links practice and theory and offers a comprehensive knowledge of Sustainable Entrepreneurship and renewable energy for master's students.

Learning outcomes

After completing the course, students will be able to:

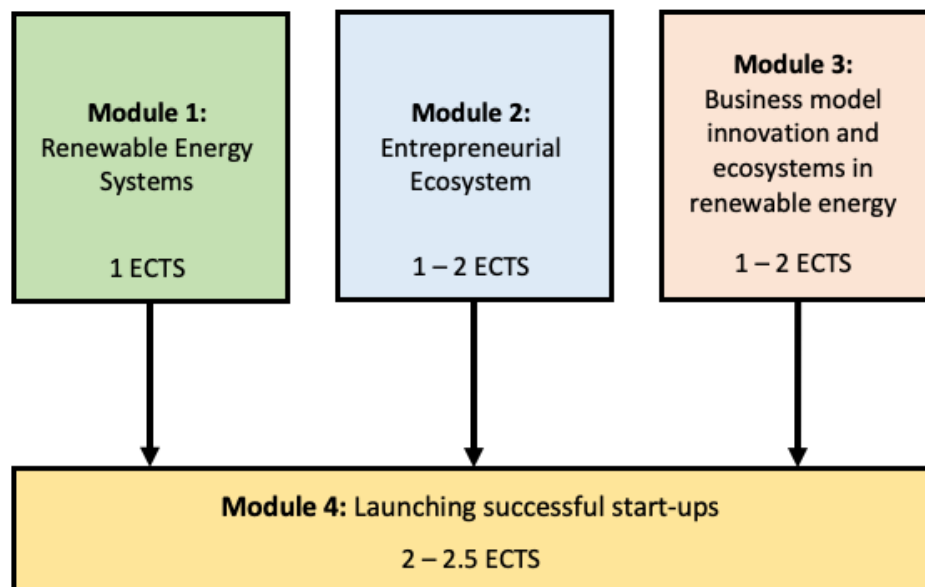
- **Describe** the main aspects of *institutional and regulatory frameworks of sustainability* and how they are related to renewable energy.
- **Apply** concepts, approaches, tools and methods to identify, compare, and select innovative and sustainable business opportunities and models in renewable energy sector.
- **Characterize and analyze** *sustainable business models* that are applicable in renewable energy.
- **Evaluate** *business opportunities* for business models in renewable energy market from meso, macro and micro perspectives.
- **Propose and create** a sustainable business or financially viable *organizational design concept* for the (renewable) energy sector in a cross-sectoral / interdisciplinary setting.

3. Course Structure and Logic

The course offered corresponds to 7.5 ECTS, comprising 210 hours of student work (each ECTS demands about 28 hours of student work). Nevertheless, depending on the specific demands of their institutions, trainers can use their assessment and evaluation to use the material in order to deliver a shorter course, corresponding to the amount of ECTS desired. The course is structured in 4 modules (see Figure 1).



Figure 1: Course structure.



The course logic is as follows: first the nature of energy systems and institutions/legislation in Europe is provided, to show how they act as both barriers to and opportunities for entrepreneurship. The assumption is that not all students master these aspects when starting the course. Second, basic aspects of innovation and entrepreneurship are introduced, especially relevant for e.g. engineering students with less background in these issues. The module introduces concepts relevant for innovative specialization, such as open innovation and ecosystems, but also the life cycle of small ventures. The third module focuses on tools and frameworks for analyzing, designing, and evaluating startups in renewable energy. The final module is the project which applies and synthesizes the students' learning from the other modules as they are to create a business model in renewable energy.

The course modules are presented in more detail in chapters 4 and 5 and through separate videos.

4. Teaching Formats

The course is organized based on a blended learning approach, and is carried out through lectures, seminars, and group discussions. Students have access to multi-media material (e.g., pre-recorded lectures and Internet films) and to scientific articles and books in advance. The course language is English and all examinations are conducted in English (for examinations, see chapter 6). Student - teacher interaction is based on face-to-face lectures, gamified activities, and a supervised course project.

Lecturers are provided with a pedagogical material for each lecture in the course modules, such as PowerPoint presentations, papers and book chapters, pre-recorded videos and Internet videos



(see Table 1). The material includes basic and additional bibliography, and brief instructions on how to carry out the suggested activities, i.e., assignments, group discussions, and games.

Table 1: Overview of the teaching formats and course material (*continued*).

LECTURE	TYPE OF MATERIAL PROVIDED
Module 1: Renewable Energy Systems	
1. Introduction: Sustainability and the 2030 Agenda	Power Point
2. The Basics of Energy	Power Point
Module 2: Entrepreneurial ecosystem	
1. Background Open Innovation	PowerPoint
2. Vibrancy of An Entrepreneurial Ecosystem	Video
3. The Life Cycle of The Small Firm	Power Point
4. Local Entrepreneurial Ecosystems	Power Point
Module 3: Business model innovation and ecosystems in renewable energy	
<i>1. Business Modeling</i>	
1.1 Traditional business models Vs Sustainable Business Models	PowerPoint + Word File + Folder with papers
1.2 Card game for Sustainable Business Model (SBM)	Word File
1.3 Customer Segments	Power Point
1.4 Value Proposition	Power Point
1.5 Revenue Streams + Cost Structure (cash flow analysis)	Excel sheet
1.6 Channels	Power Point
1.7 Competitive Advantage	Power Point
1.8 Key Activities + Partnerships	Power Point + Case Study
1.10 Barriers for developing business models	Video
<i>2. Climate Impact</i>	
2.1 Life Cycle Assessment & Measure reduction in carbon emissions	Video + PowerPoint with additional info
<i>3. Validation</i>	
3.1 Validation Plan	Video + Excel file
3.3 Prototyping	Power Point
3.4 Talking to humans	PowerPoint (includes explanation of a role play)



Table 1: Overview of the teaching formats and course material (*continued*).

LECTURE

TYPE OF MATERIAL PROVIDED



4. Talking to investors & stakeholders

4.2 Elevator Pitch

PowerPoint (draft)

5. Marketing

5.1 Designing a marketing strategy

Video + Sales Funnel Canvas template (pdf)

MODULE 4: Business model innovation and ecosystems in renewable energy

Final project: EntRENEW Project

PowerPoint

5. Course Contents

This chapter presents the course contents distributed in the four modules, the recommended accountability of the study load, pedagogical tools and examination activities. With this information, you will be able to select, together with the course examiner and the master's program coordinator, how many credits per module, which study load, pedagogical tools and examination activities best suit your institution.

Module 1: Renewable Energy Systems (1 ECTS)

Given the varying background of students, module 1 describes and characterizes basic principles and aspects of the energy system, and institutional and regulatory frameworks of sustainability relative to the role and potential of renewable energy.

Recommended accountability study load

Activity	Total
Lectures	6 hours
Reading of literature	10 hours
Assignments	12 hours
Total	28 hours

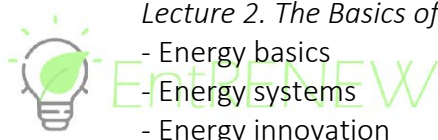
Lectures

Lecture 1. Introduction: Sustainability and the 2030 Agenda

- The evolution of sustainable development
- The three pillars of Sustainability
- Energy transition

Lecture 2. The Basics of Energy

- Energy basics
- Energy systems
- Energy innovation



- Nuclear power

Pedagogic tools

- Lectures (on site or digital)
- Internet films
- Group discussion
- Individual assignments

Examination (see chapter 6 for additional information)

- Individual peer-reviewed assignment
- Individual assignment

Module 2: Entrepreneurial Ecosystem (1 - 2 ECTS)

The module introduces concepts, tools, and methods to identify, and select innovative and sustainable business opportunities in the renewable energy sector, which will be applied in Module 4.

The main focus is open innovation and the funnel of innovation, the nature of innovation and business ecosystems, with a focus on entrepreneurial ecosystems, and the life cycle of small firms/startups and venture development. Students will need to address one (local) entrepreneurial ecosystem.

Recommended accountability study load

Activity	Study Load
Presence	8 hours
Reading of literature	8 hours
Assignments	40 hours
Total	56 hours

Lectures

Lecture 1. Background Open Innovation

- The basics of innovation
- The funnel of innovation
- Open versus closed innovation
- Risks with innovation
- Protection of innovations
- Importance of mentors



Lecture 2. Vibrancy of an Entrepreneurial Ecosystem

- Key concepts



- Indicators
- Knowledge valorization by universities
- University spin-offs
- Business incubators
- Business accelerators

Lecture 3. The Life Cycle of The Small Firm / Venture Development

- Key concepts
- Change of the small firm
- Change of entrepreneurial roles
- Finance formality
- Transformative entrepreneurship
- Lean startup
- Case: EnergySpin

Lecture 4. Present Your Entrepreneurial Ecosystem

- Assignments
- Pitches contest

Pedagogic tools

- Lectures (on site or digital)
- Pre-recorded videos
- Internet films
- Case studies
- Individual and group assignments

Examination (see chapter 6 for additional information)

- Film
- Individual essay

Module 3: Business Model Innovation and Ecosystems in Renewable Energy (1 - 2 ECTS)

The module presents tools and frameworks for analyzing and designing sustainable business models for renewable energy, and for evaluating business opportunities from the meso, macro and micro perspectives. They are intended to manage entrepreneurship issues such as:

1. Emerging business model practices in sustainable entrepreneurship
2. Business model as a source of innovation in renewable energy
3. Ecosystem-based sustainable business models
4. New business logics for firms and new ways to create, capture and deliver value for its stakeholders
5. Barriers for developing business models



Recommended accountability study load



Activity	Total
Presence	8 hours
Reading of literature	8 hours
Assignments	40 hours
Total	56 hours

Lectures

Lecture 1. Business Modeling

- Traditional business models vs. Sustainable Business Models
- Card game for Sustainable Business Model (SBM)
- Customer Segments
- Value Proposition
- Revenue Streams + Cost Structure (cash flow analysis)
- Channels
- Competitive Advantage
- Key Activities + Partnerships
- Business model as source of innovation (ALDV – Irene)
- Barriers for developing business models

Lecture 2. Climate Impact

- Life Cycle Assessment & Measure reduction in carbon emissions

Lecture 3. Validation

- Validation Plan
- Minimum Valuable Product
- Prototyping
- Talking to humans

Lecture 4: Talking to Investors & Stakeholders

- One Page
- Elevator Pitch

Lecture 5: Marketing

- Designing a marketing strategy

Pedagogic tools

- Lectures (on site or digital)
- Pre-recorded videos
- Internet films
- Case studies
- Individual and group assignments
- Game



Examination (see chapter 6 for additional information)

- Card game
- Group activities

Module 4: Business Model Innovation and Ecosystems in Renewable Energy (2 - 2.5 ECTS)

In this module, the students will propose and create a sustainable business or financially viable organizational design concept for the (renewable) energy sector in a cross-sectoral / interdisciplinary setting.

Practical tools that the students may need to draw on to develop sustainable projects include business modeling, validation techniques, funding options. Real case studies from the EntreNEW ecosystem will be studied. Market trends and future challenges are also considered in this process.

Recommended accountability study load

Activity	Total
Teamwork	35 hours
Individual work	35 hours
Total	70 hours

Lectures

Lecture 1. Project instructions

Pedagogic tools

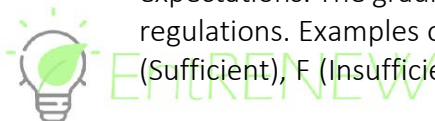
- Pre-recorded videos
- Teamwork
- Seminar presentation/video

Examination (see chapter 6 for additional information)

- Project development
- Final seminar/presentation

6. Examination

The examination instructions are embedded in the course material provided in each module. You can select the assignments, homework and course activities that better suit your schedule and expectations. The grading criteria and overall grades can be adapted according to your university's regulations. Examples of grading include A (Excellent), B (Very Good), C (Good), D (Satisfactory), E (Sufficient), F (Insufficient), or Pass/Fail. It is recommended that the assignments in modules 1, 2



and 3 should be graded as Pass or Fail, and should be a prerequisite for the students to develop the final project in module 4.

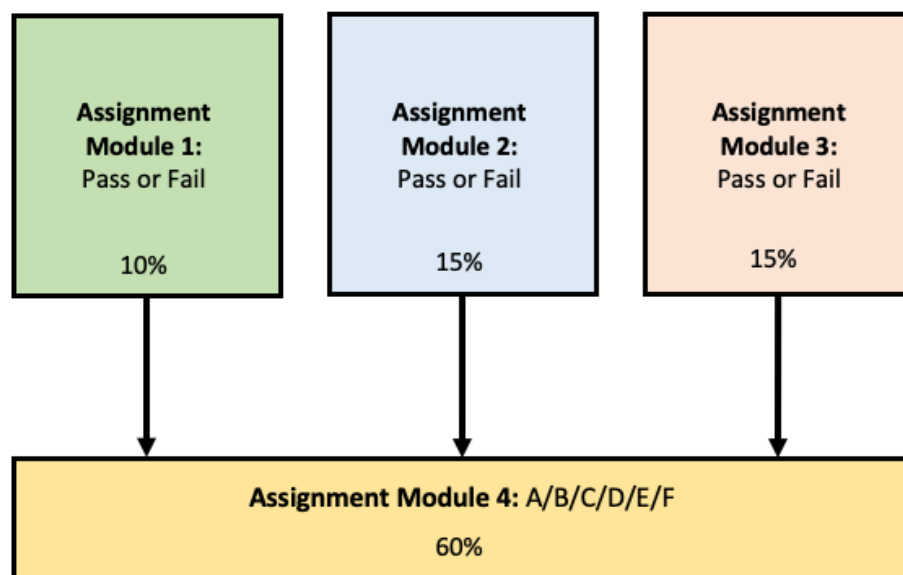
The final grade should be represented by the grade obtained in the final project (see Table 2).

Table 2: Overview of the recommended grading structure.

Module	Grading	% of the final grade
Module 1	Pass or Fail	10%
Module 2	Pass or Fail	15%
Module 3	Pass or Fail	15%
Module 4	A/B/C/D/E/F	60%
Final Grade	A/B/C/D/E/F	100%

To pass the course, all assignments and the projects must be deemed to be satisfactory. It is recommended that lecturers select at least one assignment from each module to compose the final grade (see Figure 2).

Figure 2: Overview of the recommended examination.



Examination activities

Module 1

Lecture 1: Introduction - Sustainability and the 2030 Agenda

Activity	Description	Duration	Format
Peer-review assignment	Students must write a reflection about challenges to adopt renewable energy sources. Students also must reflect about how their competences could help to overcome such challenges. This is a peer-review activity i.e., students must read and grade each other's assignment.	4 hours	Individual-based

Lecture 2: The Basics of Energy

Activity	Description	Duration	Format
Assignment	Students must identify what energy sources are relevant to reach 2050 goals and how the energy supply will switch to reach such goals in a specific industry.	8 hours	Individual-based

Module 2

Lecture 4: Present Your Entrepreneurial Ecosystem

Activity	Description	Duration	Format
Film + team presentation	Students must record a video about their local entrepreneurial ecosystem. The video must be integrated in a slide deck of about 10 slides, and presented in a pitches contest.	36 hours	Group-based
Individual essay	Students must describe two indicators that signal the entrepreneurial ecosystems vibrancy.	4 hours	Individual-based

Module 3

Lecture 1.1 / 1.2: Traditional business models Vs Sustainable Business Models

Activity	Description	Duration	Format
Card game	With the help of a card game, students will design innovative business models for: (i) a new entrepreneurial venture; and (ii) an existing organization. Groups will pitch the problem, solution and value proposition to a jury during a plenary session.	4 hours	Group-based



Lecture 1.3: Customer Segments

Activity	Description	Duration	Format
Segmentation Matrix	Students must elaborate a segmentation matrix, discuss potential challenges or drawbacks and present to the class.	2 hours	Group-based

Lecture 3.1: Validation Plan

Activity	Description	Duration	Format
Exercise	Students must write down their riskiest assumptions, then compare them with the co-founders and plot them on a graph.	1 hour	Group-based
Exercise	Students must design experiments for 3 critical assumptions related to customers, then fill in a template and prepare a list of questions for interviewing customers.	1.5 hours	Group-based

Module 4*Lecture 1: Final project*

Activity	Description	Duration	Format
Final project	Students must formulate a business model, write a report about the life cycle assessment for the idea, validate, produce the “one page” and present an elevator pitch.	70 hours	Group-based



7. Course Literature / Key References

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