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New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems

Capacity Building in Higher Education

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Joint Project Curricular Reform



Geoclic



PhD Aleksandras Chlebnikovas

**Intermethods for discipline:
Commercialization of
innovative products, start-
up initiatives for future
engineers**



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

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Discipline: Commercialization of innovative products, start-up initiatives for future engineers

Aim of course

To acquaint with the concept and policy of innovation, to provide the knowledge and skills to discover the connection between innovation and research and development, and to apply in the development of innovation and understand the basics of innovation, their importance in the context of engineering sciences and intellectual property synthesis for the student.



The formation of ever new areas of activity and directions in industry, the scientific world, IT technologies dictates new tasks for finding ways to create new products and start-up objects. Understanding the concept of an object and the fundamental ways to create them is essential to the development of increasingly complex models.

An important component of This discipline is the creation of an original model of an innovative product that is more efficient among competitors, taking into account fewer shortcomings. At the moment, a large number of such objects, on the one hand, confirms the relevance of this area, on the other hand, creates additional challenges for the novelty of this product, and thus shows its *innovativeness*.

The whole process of start-up objects is to formulate an idea, search for a development model and finance its adaptation to the market, implementation for use and provision to the market. An important point is knowledge about the factors that affect the popularity and spread of this innovation, as well as familiarization with real examples of already implemented objects.

Coastal ecosystems are at risk from environmental influences. This influence can be reduced using various types of engineering technologies. There are also environmental problems in the Caspian Sea region, which could be solved with modern methods of environmental protection, as well as creating new innovative products that could improve the quality of life in general and in particular the Caspian region.



Effective, innovative teaching and learning methods during lectures

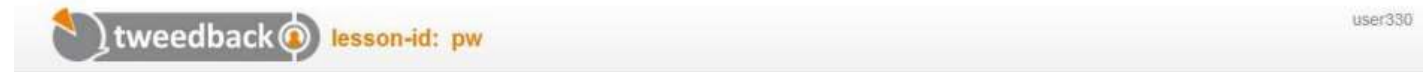
During the interpretation of definitions / wordings / terms

Apply interactive tools such as:

AnswerGarden - options for existing listeners to read the description (relevant as you will be asked to provide a quick short answer).

Tweedback - throughout the lecture, students write to Chatwall their questions/a short section that remains unclear and will be given extra time at the end of the lecture. Each question is registered and the one who collects the most likes wins. The listeners themselves can also answer the questions asked by others ("reply").

[Tweedback.de](https://tweedback.de)



Chatwall

What is the most important for innovators?

Effective, innovative teaching and learning methods during lectures

[AnswerGarden.ch](https://www.answergarden.ch)

Topic (required)

Type the topic of your new AnswerGarden. This can be a question or a topic, such as:

"你的兴趣爱好是什么?"

More options (optional)

For your convenience, you can change the following settings for your new AnswerGarden. If you're using AnswerGarden in the classroom, we recommend that you provide a password, so that you can moderate the contents during the session.

AnswerGarden Mode

 Brainstorm

 Classroom

 Moderator

 Locked

Answer Length

You can set the answer length to 20 or 40 characters. For clear and understandable AnswerGardens we recommend using 20 character answers.

 20

 40

AnswerGarden



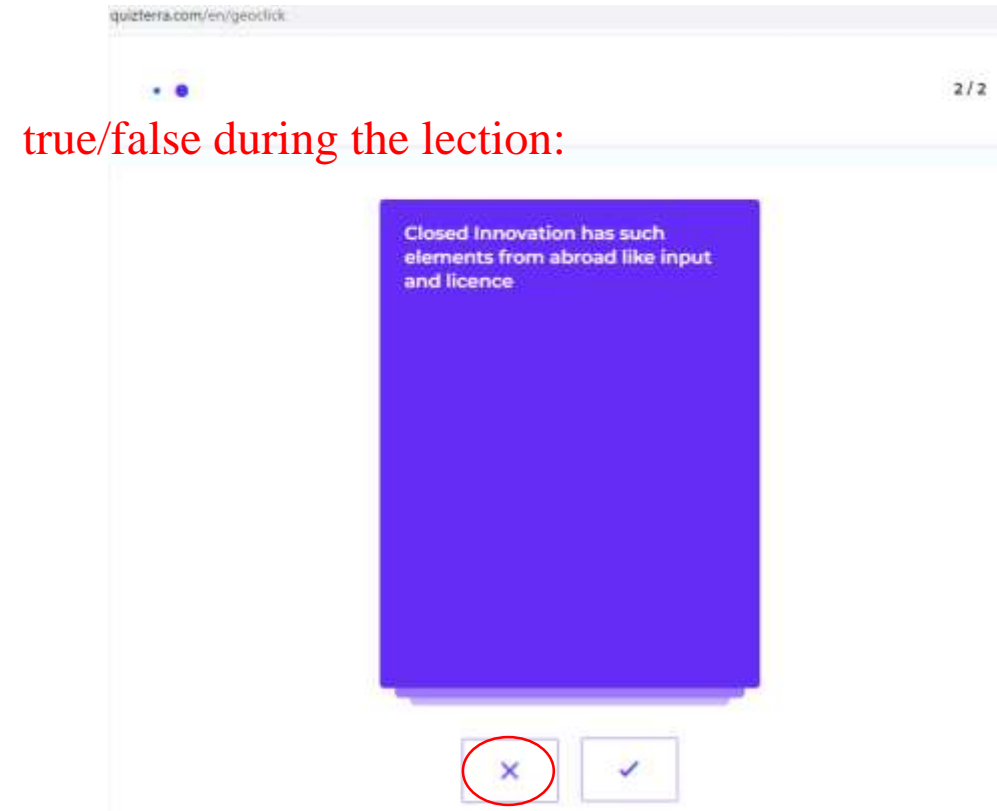
What is Start-up?

40 characters remaining

efficient technology new company
 spacex innovative product
 software object

Effective, innovative teaching and learning methods during lectures

During the interpretation of definitions / wordings / terms



Additional information or link to glossaries or explanatory web pages along with the QR code on the slide

- ✓ Topics that teach about differences between typologies, e.g. types of innovation
It is important to distinguish what the essential difference is between adjacent types

Basic points in Patent application:

1. Title

Disclosure of the Idea and Application of the Invention
(e.g. Environmentally friendly sea water intake system)

2. Technical Field

Scope and performance result to solve the problem
(e.g. *This invention relates to a sea water intake system for delivering sea water to a treatment plant, such as a desalination plant*).

3. Background of the Invention

An overview of the upcoming Patent and Non-Patent Sources
(e.g. *Pre-treatment unit for removing floating and suspended material from the water. Open intakes typically employ screen meshes and prevent fish/other marine life from being drawn into the system. Organisms are sucked into the piping or smear on the screen, leading to damage of environment and to facilities*).

Basic points in Patent application:

4. Summary of the Invention

Description about: 1) the technical problem to be solved; 2) the technical solution of the invention; 3) the advanced technical effect which the invention makes possible by solving the problem.

(e.g. pipe, chamber, regulation system, inlet, outlet, auxiliary equipment connections).

5. Description of the Invention

The invention, its variants, experiments and their results are described in detail.

(e.g. all operations from intake pipe to removing pipe of water to the sea indicating with marking numbering).

Basic points in Patent application:

6. Drawings with their description and **Drawings** cited in the text of the **Detailed Description**. A detailed description of the operation is required. Provide design / layout / application and performance indicators for various elements

7. Claims

Essential part of the patent application. Claims emphasize the most important aspects / features of the novelty of the invention.

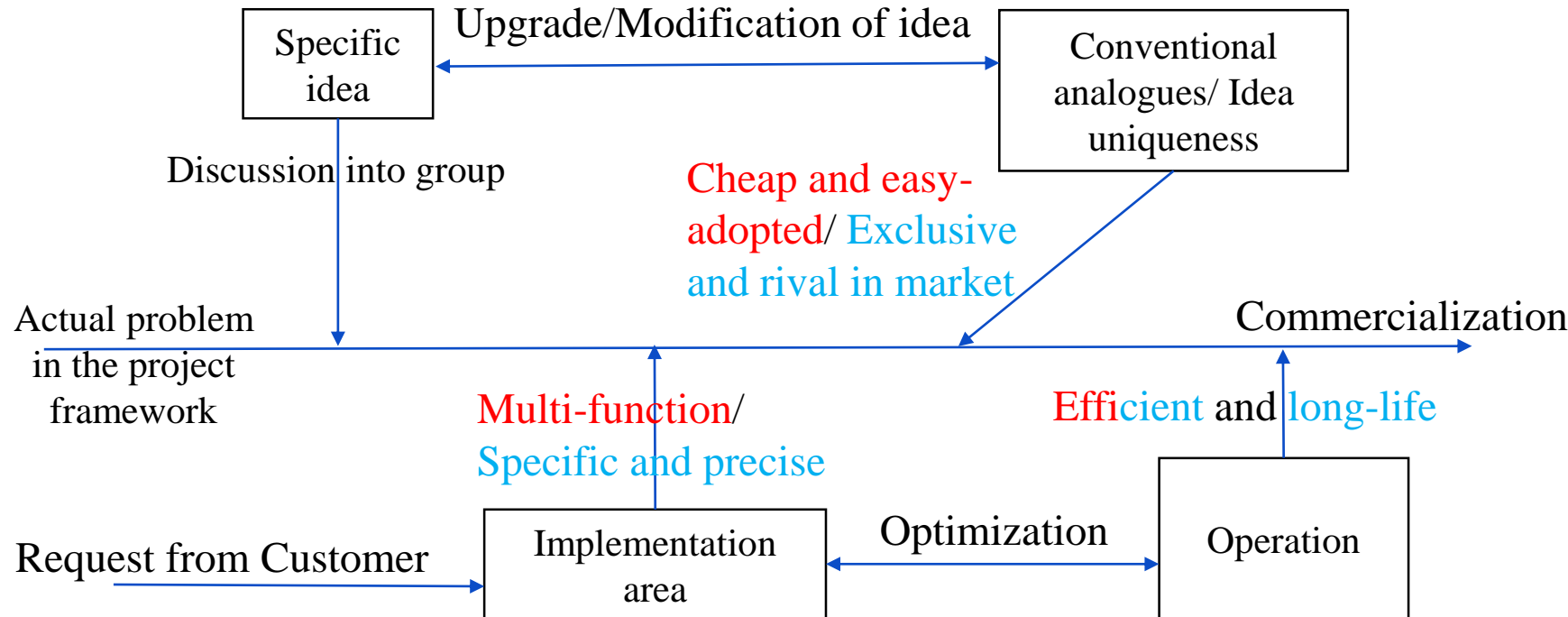
XXX, characterized by in that at least 3-4 points must be.

(e.g. sea water intake system; ...multiple tangential inlets arranged around a vertical/horizontal axis...; ...at least one inlet into the centrifugal chamber...; inlet to the chamber is provided by a channel between adjacent curved vanes; inlet is protected by a mesh or screen to prevent entry of large marine life).

Practical class 1. How start “To make an innovation and to prepare a patent”. Real example and practice for preparation

Work in small groups (up to 5 person) + perception of “a way” of innovation = to make a short, but fast decision in class for the next individual self-work

Distribution in groups:



Innovation beneficiaries/Innovation developers

What is the essential need for innovation among the beneficiaries (vision of need) / What kind of innovation can developers generate (vision of an unimplemented idea) -

Experts/Developers

The cycle of the emergence of innovation - the sequence of stages, works, human and Financial resources

Published Patent application examples(1):

In Ecological Engineering

- Oyster Reef Structure, Coastal Protection Device, and Coastal Protection Method;

(12) INNOVATION PATENT		(11) Application No. AU 2021102653 A4	
(19) AUSTRALIAN PATENT OFFICE			
(54) Title	Oyster Reef Structure, Coastal Protection Device, and Coastal Protection Method		
(51) International Patent Classification(s)	E02B 3/04 (2006.01)		
(21) Application No:	2021102653	(22) Date of Filing:	2021.05.18
(30) Priority Data			
(31) Number	(32) Date	(33) Country	
202010650673.7	2020.07.08	CN	
(45) Publication Date:	2021.07.08		
(45) Publication Journal Date:	2021.07.08		
(45) Granted Journal Date:	2021.07.08		
(71) Applicant(s)	Second Institute of Oceanography, MNR		
(72) Inventor(s)	WANG, Degang;SUN, Li;DOU, Yujian;CHENG, Jie;LV, Duian;YU, Miao		
(74) Agent / Attorney	Michael Buck IP, PO Box 78, Red Hill, QLD, 4059, AU		



[Patent link](#)

Published Patent application examples(2):

In Ecological Engineering

- Module for a modular erosion-control system of coasts and modular system comprising said module.

In Water Engineering

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number
WO 2017/195100 A1

(43) International Publication Date
16 November 2017 (16.11.2017)

WIPO | PCT

(51) International Patent Classification:
E02B 3/04 (2006.01)

(21) International Application Number:

PCT/IB2017/052682

(22) International Filing Date:

09 May 2017 (09.05.2017)

(25) Filing Language:

Italian

(26) Publication Language:

English

(30) Priority Data:

UA2016A003343 11 May 2016 (11.05.2016) IT

(72) Inventor: and

(71) Applicant: TAMBURRANO, Giuseppe [IT/IT]; Via Carlo Cattaneo 5, 72100 Brindisi (IT).

(74) Agent: BIESSE SRL, Via Corfù 71, 25124 Brescia (IT).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG,

MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))



(54) Title: MODULE FOR A MODULAR EROSION-CONTROL SYSTEM OF COASTS AND MODULAR SYSTEM COMPRISING SAID MODULE

[Patent link](#)

Published Patent application examples(3):

In Ecological Engineering

- Environmental Friendly Sea Water Intake System;
Engineering and Construction

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
03 December 2020 (03.12.2020)



(10) International Publication Number
WO 2020/240359 A1

(51) International Patent Classification:
C02F 1/38 (2006.01) *E03B 3/04* (2006.01)
F16L 55/46 (2006.01) *C02F 103/08* (2006.01)
E02B 1/00 (2006.01)

(21) International Application Number:
PCT/IB2020/054825

(22) International Filing Date:
21 May 2020 (21.05.2020)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1907713.0 31 May 2019 (31.05.2019) GB

(71) Applicant: **I.D.E. PROJECTS LTD** [IL/IL]; Hamatech St. Hasharon Industrial Park, 60920 Kadima (IL).

(72) Inventor: **LIBERMAN, Boris**; c/o I.D.E. Projects Ltd, Hamatech St. Hasharon Industrial Park, 60920 Kadima (IL).

(74) Agent: **FISHER, Zeev**; 32B Habarzel Street, 6971048 Tel Aviv (IL).

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(54) Title: ENVIRONMENTALLY FRIENDLY SEA WATER INTAKE SYSTEM



[Patent link](#)

Published Patent application examples(4):

In Ecological Engineering

- Method of collecting hydrocarbons using a barrier tunnel;

<p>(12) United States Patent Kobler et al.</p>	<p>(10) Patent No.: US 7,644,769 B2 (45) Date of Patent: Jan. 12, 2010</p>
<hr/>	
<p>(54) METHOD OF COLLECTING HYDROCARBONS USING A BARRIER TUNNEL.</p> <p>(75) Inventors: Michael H. Kobler, Sebastopol, CA (US); Dana Brock, Sebastopol, CA (US)</p> <p>(73) Assignee: OSUM Oil Sands Corp., Alberta (CA)</p> <p>(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days</p> <p>(21) Appl. No.: 11/873,180</p> <p>(22) Filed: Oct. 16, 2007</p> <p>(65) Prior Publication Data US 2008/0087422 A1 Apr. 17, 2008</p> <p>Related U.S. Application Data</p> <p>(60) Provisional application No. 60/829,599, filed on Oct. 16, 2006, provisional application No. 60/864,338, filed on Nov. 3, 2006.</p> <p>(51) Int. Cl. <i>E21B 43/16</i> (2006.01) <i>E21B 43/08</i> (2006.01)</p> <p>(52) U.S. Cl. 166/369, 166/50; 299/2; 299/10</p> <p>(58) Field of Classification Search 166/369, 166/54.1, 166, 50, 263, 306, 250.03; 299/2, 299/10, 18, 19</p> <p>See application file for complete search history.</p> <p>(56) References Cited U.S. PATENT DOCUMENTS</p>	<p>1,520,737 A 12/1924 Wright 1,660,187 A 2/1928 Ehrat 1,722,679 A 7/1929 Ranney 1,735,012 A 11/1929 Rich 1,735,481 A 11/1929 Uren 1,811,560 A 6/1931 Ranney 1,816,260 A 7/1931 Lee 1,852,717 A 4/1932 Grinnell et al. 1,884,859 A 10/1932 Ranney 1,910,762 A 5/1933 Grinnell et al. 1,936,643 A 11/1933 Reed 2,148,327 A 2/1939 Smith et al. 2,193,219 A 3/1940 Bowie et al.</p> <p>(Continued)</p> <p>FOREIGN PATENT DOCUMENTS</p> <p>CA 986146 3/1976</p> <p>(Continued)</p> <p>OTHER PUBLICATIONS</p> <p>"Thermal Recovery of Oil and Bitumen", Roger M. Butler, ISBN 0-9682563-0-9, 2nd Printing by GravDrain, Inc. Calgary, Alberta 1998.</p> <p>(Continued)</p> <p><i>Primary Examiner</i> - Shane Bomar (74) <i>Attorney, Agent, or Firm</i>—Sheridan Ross P.C.</p> <p>(57) ABSTRACT</p> <p>The present invention relates generally to a method and means of collecting oil from a reservoir overlying a water aquifer or basement rock using a manned tunnel. A manned tunnel is used as a physical barrier to intercept oil and water flowing downward along a formation dip and to preferentially collect the oil or the water through a series of collector stations. This method can be used for oil spill clean-ups or for hydrocarbon recovery in appropriate reservoirs.</p>



[Patent link](#)

Published Patent application examples(5):

In Ecological Engineering

- System to prevent and mitigate storm surge damage, sea-level rise damage, riverine flooding damage comprising modified concrete culverts, pedestrian access and natural coastal, river, creek, and wetland ecosystems;



US 20210148068A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2021/0148068 A1**
Prins (43) **Pub. Date: May 20, 2021**

(54) **SYSTEM TO PREVENT AND MITIGATE STORM SURGE DAMAGE, SEA-LEVEL RISE DAMAGE, RIVERINE FLOODING DAMAGE COMPRISING MODIFIED CONCRETE CULVERTS, PEDESTRIAN ACCESS AND NATURAL COASTAL, RIVER, CREEK, AND WETLAND ECOSYSTEMS**

(71) Applicant: **Edmond Leonard Prins**, Highland Beach, FL (US)

(72) Inventor: **Edmond Leonard Prins**, Highland Beach, FL (US)

(21) Appl. No.: **17/123,261**

(22) Filed: **Dec. 16, 2020**

Publication Classification

(51) **Int. Cl.**
E01F 5/00 (2006.01)
E02B 3/10 (2006.01)
E02B 11/00 (2006.01)

(52) **U.S. Cl.**
CPC *E01F 5/005* (2013.01); *E02B 11/005* (2013.01); *E02B 3/10* (2013.01)

(57) **ABSTRACT**

Protection of upland areas adjacent to a variety of water body shorelines from flooding events by combining modified drainage culverts with and hidden by natural ecosystem flood attenuation environments.



[Patent link](#)

Published Patent application examples(6):

Power engineering

- A system that enables electrical energy generation from sea and ocean waves.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
21 December 2017 (21.12.2017)



(10) International Publication Number
WO 2017/217953 A1

(51) International Patent Classification:
F03B 13/20 (2006.01) *F03B 13/18* (2006.01)

(21) International Application Number:
PCT/TR2017/050260

(22) International Filing Date:
13 June 2017 (13.06.2017)

(25) Filing Language: Turkish

(26) Publication Language: English

(30) Priority Data:
TR2016/08214 16 June 2016 (16.06.2016) TR

(71) Applicant: CELIKER, Celil [TR/TR]; Cayirkoyu Mah Golkent 1 Etap Sok. 1B-3 Blok Kat 4 Daire 17, Kocaeli (TR).

(72) Inventor; and
(71) Applicant: BIYIKLIOGLU, Ahmet [TR/TR]; Mehmet Ali Pasa Mah. Hasan Kaya Cad. Dalgic Sok. No:24 K:4, Bekirpasa, 41050 Izmit (TR).

(74) Agent: ATALAY, Baris; Stan Advoka Patent Ltd. Bahriye Cad. H. Beser Is Mrk. Sakizgulu Sok. 35/15, 34713 Kadikoy/Istanbul (TR).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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Potential topic for class work:

- Pollution (oil, pesticides, chemicals, heavy metals or bacteriological) reduction of water;
- Soil salinisation and sandstorm;
- Renewable energy technology;
- Protection of wildlife.

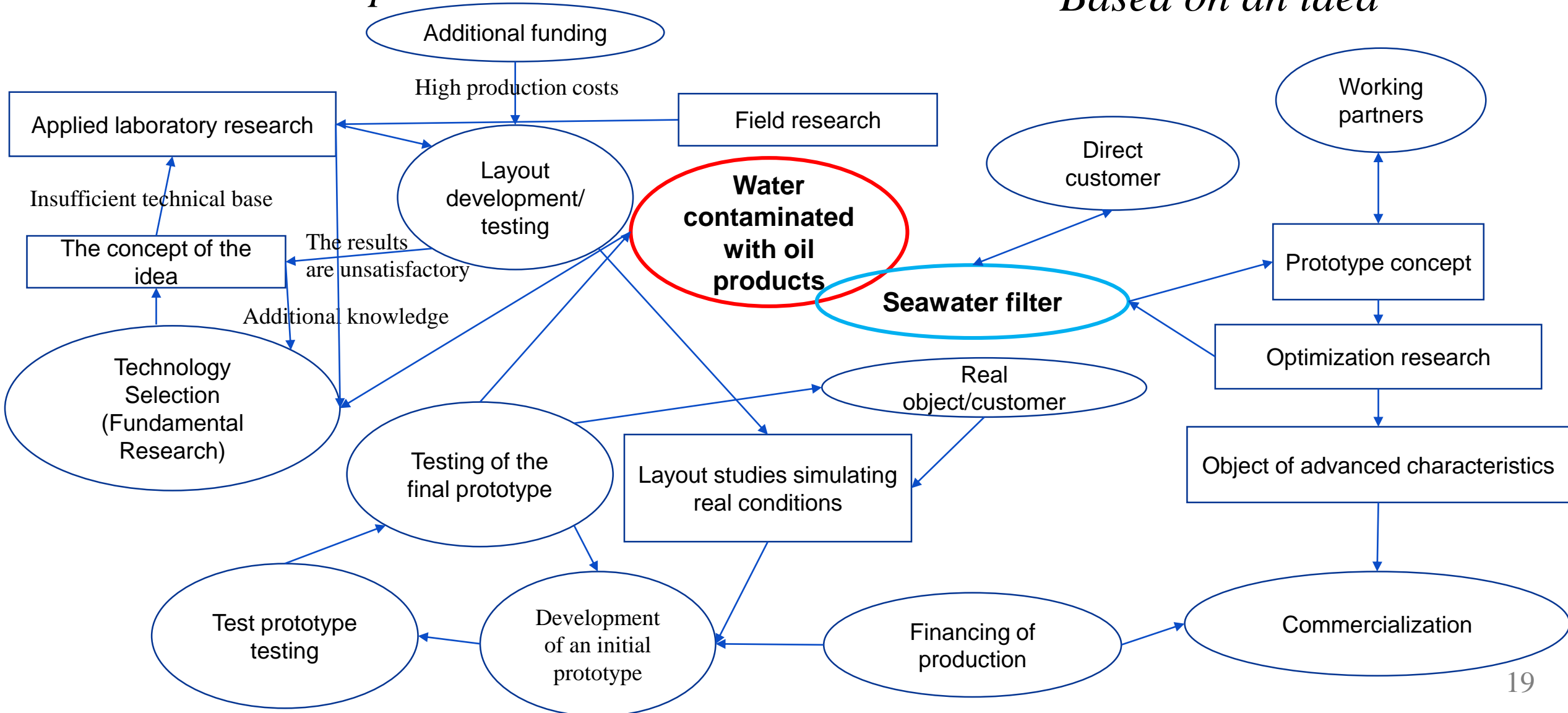


Effective, innovative teaching and learning methods during exercises (2)

From the idea to the starter - running with barriers

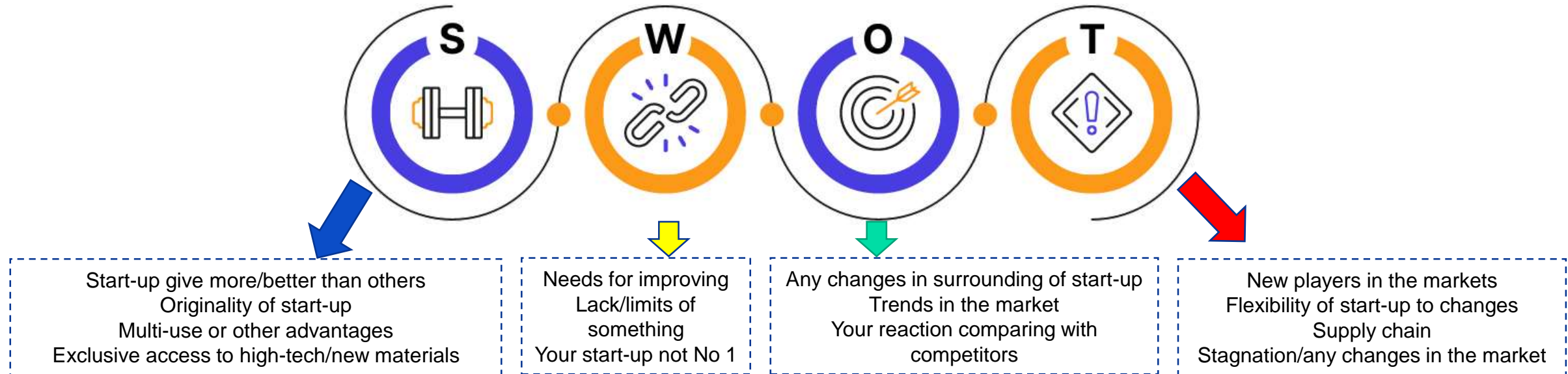
Based on the problem

Based on an idea



Funding opportunities and tools. Funding as an economic driver of innovation.

SWOT analysis in the implementation of innovation and the establishment and development of a start-up



Innovation and internationalization as a promising area of research

Especially important for students to present cases, that involve academic institutions and its places in innovation life-cycle

Start-up Problems and Success Factors and Case Study. Part 4

Discussion: what is the **problem** or **success** for start-up?



Ecosystem problems in the Caspian region. Ecological enhancement of coastal engineering structures

What the main ecological problems in the Caspian basin are?

For example:

- 1 – 10+ coastal hotel install high-efficiency wastewater filtration system (Trend Agency, 2021)
- 2 – waste-water from residential areas drain directly into the Caspian through the Hovsan Canal – installation of utility networks and individual facilities for wastewater and storm water treatment
- 3 – deoxidated water areas - forced aeration, artificial water mixing facilities (Stiles et al. 2014 - Dissolved Oxygen Control System for Aquaculture)



Start-up in Lithuania

Active start-up's – ≈800

[Website link](#)

New community

Unicorn LT



Investments

420 M Eur

No.	Name	Taxes paid	QoQ	YoY	Salary	QoQ	YoY	Employees	QoQ	YoY
1	Tesonet	€6,121,754	55%	38%	€3,033	-4%	14%	1987	11%	34%
2	Vinted	€3,229,368	-6%	10%	€4,053	0%	10%	990	7%	48%
3	KiloHealth	€1,421,681	-42%	14%	€2,778	-2%	13%	477	0%	71%
4	Boredpanda	€1,118,511	27%	42%	€2,457	-6%	25%	297	17%	25%
5	Hostinger	€1,110,459	-6%	11%	€3,185	-7%	25%	321	-3%	-13%



In 5 years – not less than 10 “unicorns” 22

The best way to predict the future is to invent it

Alan Kay

Thank You for Your Attention!

Dr Aleksandras Chlebnikovas,

Research Institute of Environmental Protection - Research Fellow,
Vilnius Gediminas technical university/Vilnius Tech
Saulėtekio al. 11, LT-10223, Vilnius, Lithuania
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Design, Technology, Transportation

SpaceX Mars Base Alpha Update