

DAhoy project overview (2017-2020)

www.dahoyproject.eu



Time Matters in Collective Decision Making

Rochebrune 2019

Chapter 5

Interdisciplinarity and VUCA

Roger Waldeck, Sophie Gaultier Le Bris, Siegfried Rouvrais

Book Editor(s): Roger Waldeck

First published: 09 December 2019 | <https://doi.org/10.1002/9781119681519.ch5>



Methods and Interdisciplinarity, Volume 1

- **Méthodologie d'apprentissage en situation VUCA.**

Gaultier Le Bris S., Rouvrais, S., and Waldeck R.
FR/UK, "méthodologies pour les sciences sociales" series, "méthodes et interdisciplinarité" theme, published by ISTE Ltd, pages 107-133, May 2019.

- **Interdisciplinarité et VUCA.**

Waldeck R., Gaultier Le Bris S. and Rouvrais S.
FR/UK, "méthodologies pour les sciences sociales" series, "méthodes et interdisciplinarité" theme, published by ISTE Ltd, pages 91-105, May 2019.

Transversal skills in curricula

Semester 1	Course A	Course B	Course C	Course D
Semester 2	Course E	Course F	Course G	Course H
Semester 3	Course I	Course J	Course K	Course L
Semester 4	Course M	Course N	Course O	Course P
Semester 5...	Course Q	Course R	Course S	Course T
<u>Transversal skills</u>	Communication	Teamwork	Project planning	Design

Decision making skills?

- **There is no consensus in structuring engineering education**
 - rather a constructive diversity in programme design
- **Capsules to provide higher level of flexibility to curriculum designers with integrated transversal skills**

EU requirements on Transversal skills

• EUR-ACE® Programme Outcomes alignment (Edition 31st March 2015)



• 8 learning areas:

1. Knowledge and understanding;
2. Engineering Analysis;
3. Engineering Design;
4. Investigations;
5. Engineering Practice;
- 6. Making Judgements;**
7. Communication and Teamwork;
8. Lifelong Learning.



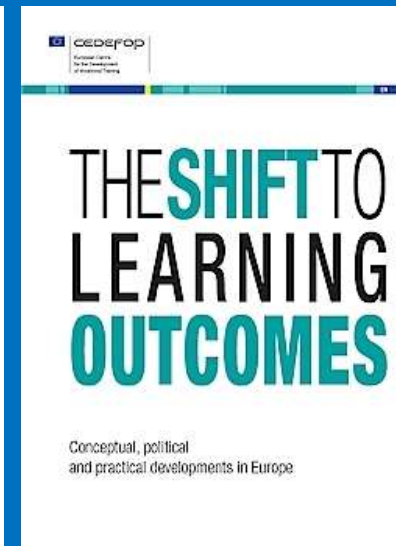
Top 10 skills

in 2020

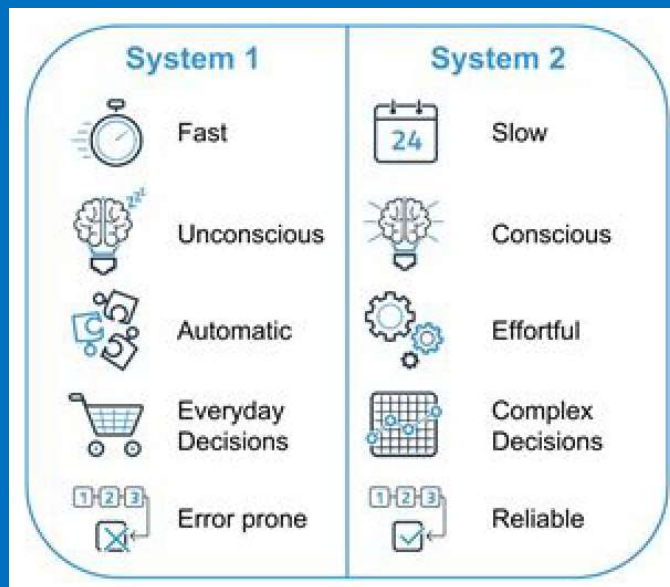
1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility



Source: Future of Jobs Report, World Economic Forum



ENAAEE Graduate Outcome No6 'Making Judgements'



- **The learning process should enable Master degree graduates to demonstrate ability to:**
 1. **integrate knowledge and handle complexity, to formulate judgements with incomplete or limited information, that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgement;**
 2. **manage complex technical or professional activities or projects that can require new strategic approaches, taking responsibility for decision making**



... but in a VUCA world

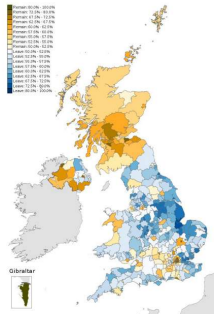
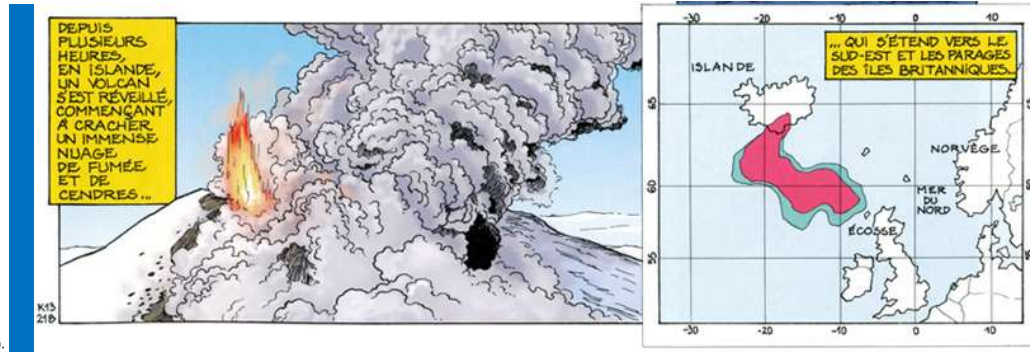


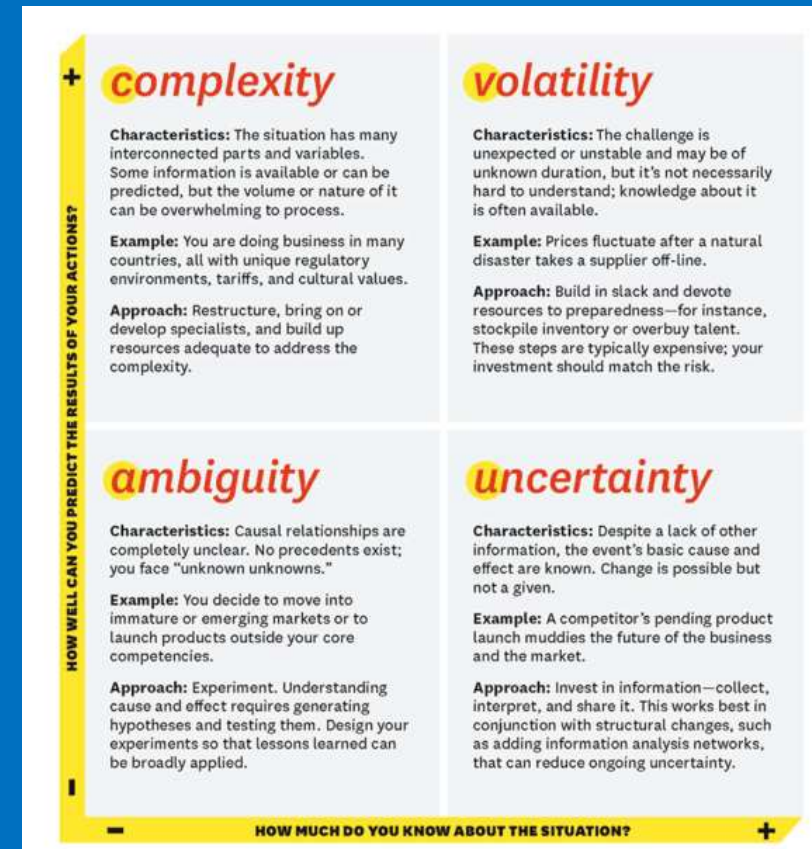
Figure. Brewit UK election map (by Mirrome22BrythonesNifanion,CC BY-SA 3.0).



- **The world is complex, with multiplex of forces and no cause-and-effect chain**
 - HE & VET students to be prepared to make decisions in VUCA environments
 - limits of mathematical decision-making methods, cognitive biases, etc.
- **VUCA conditions strongly affect the decision capacity**
- **Reliability depends on the ability of the actors**
 - to anticipate and cope with unexpected situations,
 - inc. skills of improvisation, constant vigilance, creative bricolage, system D, attitude of wisdom, respectful interactions, a.s.o.

In DAhoy: VUCAilities

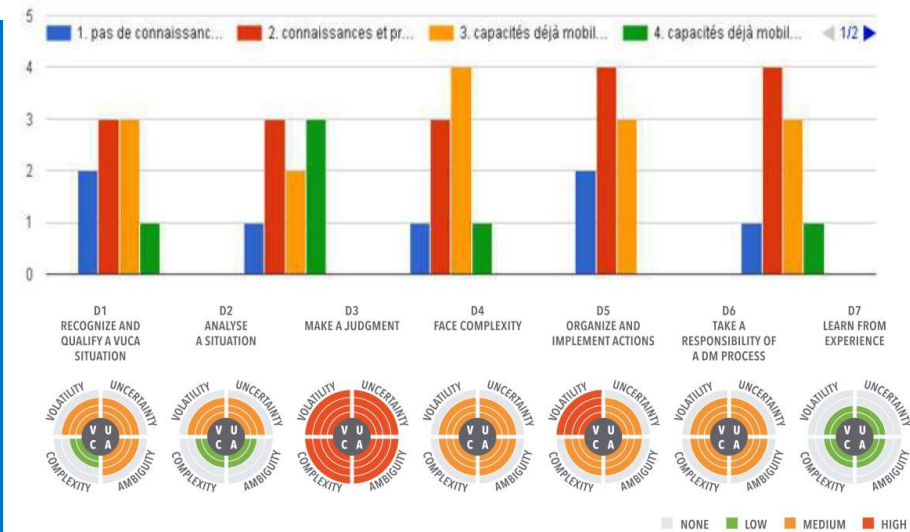
- **Describe and reflect on the Volatility, Uncertainty, Complexity and Ambiguity of professional & learning situations**
 - **V = Volatility:** nature and dynamics of change, and the nature and speed of change forces and change catalysts
 - **U = Uncertainty:** lack of predictability, the prospects for surprise, and the sense of awareness and understanding of issues and events
 - **C = Complexity:** multiplex of forces, the confounding of issues, no cause-and-effect chain and confusion that surround an organization
 - **A = Ambiguity:** haziness of reality, the potential for misreads, and the mixed meanings of conditions; cause-and-effect confusion



Bennett, Nathan and Lemoine, James, What VUCA Really Means for You (Jan/Feb 2014). Harvard Business Review, Vol. 92, No. 1/2, 2014. Available at SSRN: <https://ssrn.com/abstract=2389563>

In DAhoy: VUCAbilities

- D1 Recognise and qualify the VUCALity of situations,**
Reconnaître et qualifier la VUCALité des situations (p.ex. capacité à observer avec clairvoyance, identifier la criticité situationnelle, comprendre les facteurs, enlever les « bruits » pour se synchroniser avec la situation, relever les signaux forts et faibles) ;
- D2 Analyse VUCA situations,**
Analyser les situations VUCA (p.ex. penser globalement, définir des priorités et des points de focalisation, analyser les points d'incertitude) ;
- D3 Make a judgement in VUCA situations,**
Formuler un jugement en pleine conscience (p.ex. faire preuve d'esprit critique, identifier les facteurs de risques notamment ceux de la situation, identifier les clés du succès) ;
- D4 Face complexity of VUCA situations,**
Faire face dynamiquement à la VUCALité des situations (p.ex. utiliser ou inférer un modèle de décision, gérer les priorités et identifier les points de focalisation, évaluer, rechercher des solutions optimales) ;
- D5 Organise and implement actions in VUCA situations,**
Organiser et mettre en œuvre des actions dans les situations VUCA (p.ex. avoir le sens de l'initiative et prendre des décisions en contexte VUCA, interagir et se synchroniser avec les parties prenantes de la situation, oser avec courage, organiser le travail en équipe, gérer les conflits) ;
- D6 Take responsibilities in the decision process in VUCA situations, and**
Prendre ses responsabilités dans la prise de décision dans les situations VUCA (p.ex. avoir le sens de l'urgence, faire preuve d'adaptabilité et de flexibilité) ;
- D7 Learn from experience of VUCA situations.**
Apprendre de ses VUCA expériences (p.ex. être un praticien réflexif, apprendre de ses erreurs, échecs ou difficultés, et succès!).



Magnitude/ variability	Disruption components of a situation				
	Interpersonal	Volatility	Uncertainty	Complexity	Ambiguity
Low	1	Little variation in factors	Identified parameters	Simple factor organization	Plausible interpretation (of a rule or process)
Average	2 or more individuals	Mono-discipline and culture	Predictability of change and factors	Incomplete and limited information, partial knowledge	No obvious interpretation
High	2 or more individuals	Multidisciplinary and multicultural team	High unpredictability of factors	Unidentified, unknown, and non-measurable parameters	No interpretation possible undecidability, indemonstrable statements

Potential formal recognition of DM transferable skills

- **Foster recognition of transferable decision skills for the benefit of the future professional**
 - D1-D7: a common basis of skills that could potentially be linked to National Qualifications Frameworks (NQFs) and other European tools (future work)



Transferable capsules



Week course

Experiential 16h MOB + real navigation
Lectures 7h Intro + navigation + metarules
Practical 9h films + nav preparation + MOB procedure



- ... courses outside classical disciplines

- Risks in mountain, leadership in the forest, Man Over Board, pandemic PjBL, etc.

- **Basis of work to analyse the learning process of a decision-maker in a real situation**

Capsule benefits: flexibility



- **Capsule 2 hours – 20 hours for curricular integration**
- **DAhoy capsules complement the formal curricula**
 - add flexibility to the relatively closed major & minor disciplinary structure/blocs
- **New themes can be reactively incorporated in the curricula**
 - e.g. inclusion in the context of migrant crisis, terrorist attacks intelligence, resilience, etc.

DAhoy capsule example

- @EN, eg
 - Forest leadership
 - Serious Game
 - Falklands

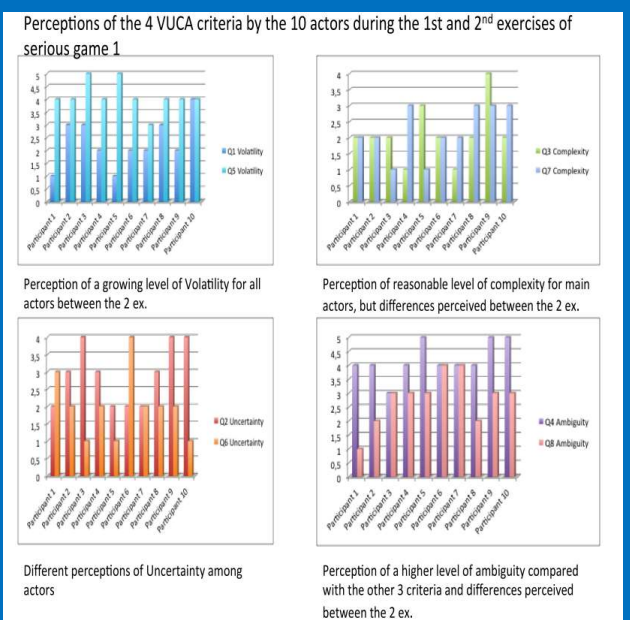


Nom	Veinticinco de Mayo	Déplacement	15 982 t
Classe	COLOSSUS	Taille	Grande
Type	CV	Signature	Très bruyant
Service	1945	Propulsion	Turbine à vapeur
Equipage	1509	Vitesse	24 n

RADARS	Type	Portée				Remarques
		G	M	P	TP	
DA.02	Air	85	53	40	8	
DA.08	Air	145	120	89	38	
LW.01	Air	145	100	74	14	
LW.08	Air	145	142	106	45	
ZW.01	Surface	32	28	16	9	

SONARS			Autres équipements électroniques	
Type	Mode	Portée		
			Mesures de soutien électr.	1ère génération
			Brouilleur radar	
			Lance-leurres	1ère génération
			Contre-mesure acoustique	

ARMEMENT



Identified Learning Outputs from activity, activity A2: Serious Game 1

- To manage to cooperate with team members
- To be able to decide under time pressure
- To assess risks and key success factors in a mission
- To plan different options for a mission
- To think globally by defining priorities

Description

Opportunities consist of training students to deal with a VUCA environment but at a low magnitude (for the criteria of complexity and uncertainty); the volatility and ambiguity criteria were not tested on purpose to concentrate the exercise only on 2 VUCA criteria. The interest in having this exercise carried out by EN cadets is to get closer to the age class of students with a similar level of maturity. We thought this would facilitate understanding of an exercise for non-experts.

2 sessions of 60 minutes were played with for session 1:

teams of the same nationality - the level of uncertainty was increased after 30 minutes; the level of uncertainty is defined from cards drawn randomly called "action cards". After 30 minutes, the number of action cards has increased.

For Session 2, teams of different nationalities were created with a high level of uncertainty (by action cards) and luck cards (influencing the actions taken to create complexity). The teams had 2 vessels: 1 boat and 1 submarine, they could communicate with the commander of the submarine present remotely in another room; they had to interact with the submarine commander. Session 1 and 2 show a progression of the understanding of the rules between the 2 sessions. The team that won had a grouped strategy, unlike the 2nd team.

Observations during the game

First round

One Student assigned to the play board, included in the discussion
A calm and quiet discussion involving everyone. No clear leader.

After a while, a leader seems to appear in the British team. Good cohesion
After the British team detect the 2 enemies boat, they are relax and laugh.
Nevertheless activity keep them focused and they are motivated (gamification effect!).

The first team to applause was the loser → fair play.

Second round

DAhoy capsule example

- @RU, eg

- Prendo serious game
- Mindfull Leadership
- Disaster week

The DAhoy teams presented their results after lunch on Friday.



A total of 220 students participated in the course plus the DAhoy students. Students were split into groups of 6 to 7 students, hence a total of 39 groups. Ten teachers facilitated in the course, each one advising 2 to 6 groups.

To give the event a realistic impact at its kick-off, a local TV station helped out by producing a dramatic news alert. The bulletin announced that an outbreak had started, described some

Dear people of Iceland.

We are forced to interrupt this broadcast to due to serious events threatening our country. This announcement is cooperation with the government, The Directorate of Health and the State Police. We ask you to consider that the following could disturb children and sick people.

Serious human epidemic is now plaguing the world with great fury, the worst ever in historical time. This seems to be a mutant variant of so-called smallpox, a virus that was eradicated in the latter part of the last century. It has been reported that one of the superpowers had stockpiled the virus and several significant variants of it used for research, reportedly, but these stocks had been stolen. It is suspected that terrorists have now spread the virus in a very organized manner almost worldwide.

So far, Iceland has escaped the infection, but it is expected that it will not endure. It is therefore important to respond quickly and orderly, and to take advantage of the country's position in the North Atlantic. Following are the actions that the authorities have decided to take imminently, but more statements will be published in the next few hours:

Iceland's total isolation is scheduled for the next 3 months. This means a ban on all arrivals of ships, aircraft or other potential vehicles. Authorities may be able to authorize the arrival of individual ships or aircraft if very urgently required.

As of today, the country will be divided into quarantine chambers. Further details of this will be published as soon as possible. There is a general ban on transport of any kind between compartments and will therefore be followed harshly.

All schooling is shut down from this moment on. The same applies to all gatherings of any kind. People are encouraged to stay indoors and avoid communication with other people.

Good Icelanders. Many questions are currently not being answered on many issues such as food for everyone, fuel for the next 3 months, healthcare, essential medicines, safety, priority and dosing necessities. But one thing is certain: It is crucial that all Icelanders, and I repeat, everyone, in all political parties, religious groups, age groups, settlements, in towns and in rural areas, work together and strive to act quickly and defend themselves against this horror that ravages the world, and threatens our existence.

God bless Iceland

DAhoy capsule exemple

- @IMTA, eg *fiabilité en mer*

<https://www.youtube.com/watch?v=DR0MhULY>

Grâce à des scénarios de formation de type "homme à la mer" conduit en environnement nautique réel (Rouvrais et Le Bris, 2018), pour des étudiants majoritairement novices de cet environnement, les comportements et capacités de prise de décision sont observés et analysés. L'effet de l'utilisation des règles et métarègles sur la fiabilité et la capacité d'un apprenant à gérer la VUCAIité et maintenir une capacité de discernement, le niveau de magnitude des situations est modifié, continûment et itérativement sur plusieurs séquences.

Les séquences à jouer

- Tout premier scénario: "une casquette à la mer"
- Scenario 2 : "bouée couronne ou pare battage"
- Scenario 3 : "deux éléments à la mer, bouée couronne et pare battage avec seau"
- Scenario 4 : "poupée avec gilet et perche IOR"
- Scenario 5 : "poupée sans gilet et panne moteur"
- Scenario 6 : "2 poupées, une gilet l'autre sans"
- Scenario 7 : "Oscar"
- Scenario 8 : "Oscar + poupée"
- Scenario 9 : "Dérive OSCAR ou poupée depuis une position GPS SPOT"
- Scenario 10 : "Skipper Zodiac blessé critique en PAN PAN PAN"
- Scenario 11 : "un élève MOB en TPS"
- Scenario 12 : "Oscar + Eleve TPS"
- Scenario 13 : "Trois éléments en MOB, à coordonner entre les 2 bateaux"
- Scenario 14 : "Trois éléments en MOB, à coordonner entre les 2 bateaux"
- Scenario 15 : "Lignes de vie"
- Scenario 16 : "Geocaching"
- Scenario divers



PROCÉDURES HOMME À LA MER

SIGNALER

Cas 1 : On reçoit un signalement
Où y va

Cas 2 : Un homme de notre bateau est tombé à l'eau, on ne l'a pas vu tomber
On le signale : VHF (donner des points de repère fixe)
On essaye de retrouver la trajectoire faite (carte, vitesse du bateau etc...)

Cas 3 : On voit quelqu'un tomber à l'eau
Bouton MOB
Possibilité : Fusée de détresse pour signaler la position

On identifie les ressources (bouée, matériels présents pour secourir, nombre de personnes sur le bateau etc...)

RECUPERER

Observation (conscient, tête dans l'eau)

Chief de bord assigne les rôles suivant le nombre et le niveau des gens présents
Pointeur qui guide
Personnes qui récupèrent la personne
Toujours une personne avec la VHF

Préparation du matériel
Bien positionner le bateau (courant, vent, vagues)
Toujours vérifier la sécurité des membres à bord

Pour la récupération
Soit par le côté du bateau, soit par l'arrière (attention à l'hélice)
1ère communication : voir s'il est conscient (possibilité de lui jeter une bouée, un filet)

GESTION DE LA PERSONNE

Le mettre dans une position confortable
Voir s'il respire, prendre son pouls (si ça ne va pas, massage cardiaque, bouche à bouche)

Lui mettre une couverture de survie

DAhoy capsule example

- @RU: *decision collective en >1h*
 - *Mechanismes vs temporalité*



Learning output

- Working in a team and making collegial decisions.
- Taking into account feeling
- Discover that making decisions does not always require sophisticated Tools (use a random)
- The importance of the process of decision making (deciding on the rules more than on taking the decision)
- Test the effects of social interactions and strategies (influence, persuasion, manipulation) in decision making.
- The difficulty to enforce the decision (because of its impacts)
- Better measure the influence of context in decision making

Opportunities of development

Hurry up! ... the last minutes jeopardize decision making

The second module is a simulation (90 minutes 2x7 people)



Seven people are in a boat in distress. The team must decide which three people will leave the boat and die. If the team doesn't make a decision, everyone dies. A debriefing is realized after the exercise. People may refuse to do the exercise.

The exercise therefore applies to a moral decision, is specifically designed to encourage the team members to share feeling and to generate and observe group dynamics in decision-making. The 7 participants get into a circle and discuss who will be the 3 people who will leave the boat.

This activity doesn't require any specific device and is very simple to set up.



The main limit identified for this simulation is that in reality, if the survival of the group requires getting 3 people out of the boat, and even if we have trained our intuition and our feeling, then instinctive decision prevails and there is no time for discussion or argument.

Exercice Rochebrune 2022

Seaside mission

You are the duty officer in charge at the French National Lifeboat Institution's rescue centre (SNSM: the French *Société Nationale de Sauvetage en Mer*) in POINTE DU PORZIC, PLOUZANE. The PLOUZANE lifeboat is currently involved in rescuing some Erasmus sailors from a drifting Pogo sailing yacht close to the POINTE DU DIABLE. It is exactly 10:00AM and the coxswain of the lifeboat has just radioed the following message to you:

- **3 protocoles**

temps contraints (1h en tout)

1. **individuel (en salle plénière)**

1. read you mission till its end, then with intuition, in **60 seconds no more** (sharp), snap your personal decision, tick asap the

best route you choose:

- 1. Gate Bridge
- 2. PLOUGASTEL N165
- 3. New N12

2. **Collectif (chgt de salle, ss-gps)**

3. **Collectif (ss-gps)**



- **Puis 1 questionnaire individuel (10 mins)**

Table top tactics results

Each player was allocated a number and the following data was obtained.

Question Summary				
Player Number	Q1 How challenged on this activity? (1-10)	Q2 At what level do you feel made decisions at?	Q3 During the activity, the level of usability experienced was?	Q4 During the activity, the level of Uncertainty experienced was?
1,4		Analys/Work Independently	High	Medium
2,2		Analys/Evaluated while working	Low	High
3,2		Analys/Evaluated while working	Medium	Medium
4,1		Analys/Eval others	Medium	Medium
5,2		Analys/Evaluated while working	High	High
6,2		Analys/Evaluated while working	Low	Medium
7,1		Analys/Evaluated while working	Medium	Medium
8,2		Analys/Evaluated while working	Low	Medium
9,2		Analys/Evaluated while working	Medium	High
Q5 During the activity, the level of Complexity experienced was?	Q6 During the activity, the level of Ambiguity experienced was?	Q7 At the end of this activity, I feel that my ability to make mathematical decision has improved	Q8 At the end of this activity, I feel that my ability to make social decision has improved	Q9 At the end of this activity, I feel that my ability to make career decision has improved
Low	High	Yes	Unsure	Yes, only a little
Medium	High	Unsure	Yes	No
High	Medium	No	Yes	Unsure
Medium	Medium	Yes	Yes	Yes, definitely!
Medium	High	Yes	Unsure	Yes, only a little
High	Low	Yes	Unsure	Unsure
Medium	Medium	No	Yes	No
Medium	Low	Unsure	Unsure	Unsure
Medium	High	Yes	Yes	Unsure

- **... puis échanges informels (40 mins)**



Ressources

<http://dahoyproject.eu/>

- 1 project brochure (13 pages in English and French), **the good decision** to start with, as more synthetic than detailed reports!
- 17 conference and book publications (see end of this page the PDF, English and French)
- 3 reports of around 100 pages:
 - Output No1 (2018): "Towards Reinforcing Decision Making Skills of Higher and Vocational Education & Training Students" (In English)
 - Output No2 (2019): "Innovative D-SKILLS Training Models for Higher and Vocational Education & Training Students" (In English)
 - Output No3 (2020): "A Decision Skills Framework for Higher and VET students training, continuously integrative for educational programme addressing VUCA contexts" (In English and French)
- 3 reports for the 2018 staff training events (60 pages each), and questionnaire (In English)
- 3 reports for the 2019 student training events (60 pages each), via experiential teaching & learning models (In English)
- A collection of 15 transferable teaching and learning specified courses with capsules, VUCA-catergorized in a tool box (In English)
- A career card game material (In English) and YOU-CDM continuum with 40 DAhoy capsules
- 10 Youtube videos of 3-4 minutes each (In English) www.tinyurl.com/dahoychannel

All in PDF Deliverables to download, under Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

- **Plaquette projet**

- https://www.imt-atlantique.fr/sites/default/files/DahoyDahoy-brochure_vfinale.pdf

- **Rapports**

- https://www.imt-atlantique.fr/en/international/our-network-partners/worldwide-partners-network/european-project-decisionship-ahoy_v2_target293_4

- **Vidéos**

- <http://www.tinyurl.com/dahoychannel>