Skills Labs - Deliverable 2.1.a: Casusidee Estuarine systems: the Scheldt

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Skills Labs

Hoogwaardige e-practica Water Management met EMERGO

Deliverable 2.1.a

Casusidee Estuarine systems: the Scheldt

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                - Faculteit Natuurwetenschappen

                - Faculteit Managementwetenschappen

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        Hogeschool Zeeland

        Kennis Netwerk Delta Water (KNDW)

        (Provincie Zeeland, Delta, de Waterschappen, Roosevelt Academy, NIOO-

        Nederlands Instituut voor Ecologie, Rijkswaterstaat, Deltares en Wageningen

        Universiteit en Researchcentrum)

1. Inleiding

Met de in het Surf-project EMERGO ontwikkelde deliverable 1.4.b kunnen de casusontwikkelaars bij Skills Labs vertrouwd raken met de EMERGO-methodiek (zie Figuur 1). Daarnaast worden er vanuit WP 3 een aantal workshops georganiseerd waarin casusontwikkelaars worden begeleid in het toepassen van de EMERGO-methodiek. De basisgedachte is dat via de workshops casusontwikkeling efficiënter en effectiever verloopt. Daarnaast zullen casusontwikkelaars – in het kader van de disseminatie-activiteiten tijdens het Skills Labs project - ook als ambassadeurs binnen hun instelling optreden ('zegt het voort'). Dit is de tweede functie van de workshops. Last, but not least, via workshops kan de teamvorming binnen Skills Labs mede worden vormgegeven.

De deliverables bij de casussen voor Skills Labs zijn achtereenvolgens casusidee, casusframework, testversie casus, en evaluatieversie casus. Bij het doorlopen van de EMERGO-methodiek en het gebruik van de EMERGO-toolkit worden als tussenproducten onderscheiden: casusidee (fase analysis), casusframework (fase design) , casusingrediëntenverhaal (fase design) , casusdetailscenario (fase design), testversie casus (fase development), en evaluatieversie casus (fases implementation en evaluation). Zoals blijkt is bij Skills Labs niet elk mogelijk tussenproduct als deliverable gedefinieerd.
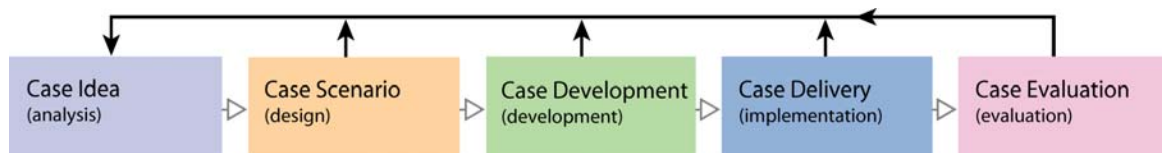
Figuur 1. Methodiek voor casusontwikkeling: van casusidee tot casusevaluatie
De open pijlen geven een geadviseerde volgorde van doorlopen aan. De fasen kunnen bovendien iteratief (gesloten pijlen) worden doorlopen.

Deze eerste deliverable bij de casus *Estuarine systems: the Scheldt* betreft het casusidee.
We beschrijven eerst kort wat een casusidee is en hoe we binnen Skills Labs de uitwerking van het casusidee The Scheldt ter hand hebben genomen.

Casusidee
Voordat de casusontwikkelaars beginnen met het concrete ontwerp- en ontwikkelwerk, is vanuit WP3 gevraagd aan hen om na te denken over uiteenlopende zaken die direct en indirect verband houden met de te ontwikkelen casus. Daarbij gaat het om zaken als:
- opleidingscontext van de casus
- inhoud van de casus
- voortgang in de casus
- studentcontact en studenteninformatie in de casus
- mediagebruik in de casus
- uitleverproces van de casus
- ondersteuning van de casus
- exploitatiekosten van de casus
- rechten en intellectueel eigendom met betrekking tot de casus.

Door diverse malen met elkaar te spreken over deze zaken aan de hand van concrete vragen wordt het projectteam zich nadrukkelijker bewust van het voor wie, wat, waarom en hoe van de casus

(context). Een en ander leidt al vroeg in het ontwikkeltraject tot een realistisch(er) beeld van de mogelijkheden en beperkingen waarmee het team rekening te houden heeft. Mede aan de hand van de antwoorden op deze vragen kan het team een *globale beschrijving* van de casus maken: het casusidee.

In Appendix 1 is een leeg casusidee opgenomen dat als richtsnoer/checklist een opsomming van concrete vragen bevat. Het is dus niet zo dat altijd alle vragen in gelijke mate beantwoord moeten worden. Daarnaast heeft het casusontwikkelteam een uitgewerkt voorbeeld van een in het EMERGO-project ontwikkelde casus (de Waddenzee) gekregen en is een light versie van de checklist als tussenstap gebruikt om tot een definitieve versie van het casusidee te komen. Overigens, het casusidee kan – gegeven de iteratieslagen in de EMERGO-methodiek – bij nadere uitwerking nog tot op zekere hoogte bijgesteld worden. Deze flexibiliteit is nodig om op veranderende contextuele aspecten te kunnen inspelen (bijvoorbeeld: curriculumwijziging, (on)beschikbaarheid van bronnenmaterialen, expertconsultatie).

2. Casusidee Estuarine systems: the Scheldt

Hieronder volgt de uitwerking van het casusidee voor de casus *Estuarine systems: the Scheldt.* Bij de vervolgstappen van de casusuitwerking zal steeds meer "letterlijke" inhoud van de uit te leveren casus in de casusuitwerking aanwezig zijn. Omdat de casus in het Engels aan studenten zal worden uitgeleverd, is besloten de casusontwikkeling eveneens in het Engels te doen. Het casusidee is dus in het Engels uitgewerkt.

Subject	Questions & Answers
Case embedding	Q1: For which courses, curricula and institutions will it be used? A1: This case will be one of four cases within the Skills Labs Water Management project. Each of the four cases covers other parts of the field Delta Water Management. This case will be embedded within the OUNL's advanced distance course (BSc) on "Soil-Water Systems" (N29211). Other institutes are likely to use the case as well, e.g. MSc Delta Water Management (Hogeschool Zeeland), OUNL short academic programme Water Management (in development)
	Q2: Is it a stand-alone item or used with other instructional materials? A2: A strong knowledge base on soil-water systems is a prerequisite to study the case (e.g. offered in the OUNL course (BSc) on "Soil-Water Systems" (N29211)). Assignments in this course (e-workbook) guide the students to the case study tasks.
	Q3: What study load and time interval is expected? A4: We expect that studying this case takes about 20 hours of study load, divided in three assigments. In theory, there are no time restrictions for completing the case, but it has to be completed before the student can participate in the multiple choice exam of the accompanying distance course.
	Q4: How many credit points earn students by successfully completing it? A4: This case is one on four cases with a total of 80 hours of study load. A student can earn 2.81 Ects by completing the four cases (0.7 Ects for completing one case). The case is part of a 120 hour course on the Soil-Water System.
Case content	Q5: What is the main complex cognitive skill? A5: The main cognitive skills deal with analyzing a complex environmental and water management issue. Focussed is on the first and second competence in the triad orientation-analysis-report.
	Q6: Do other complex cognitive (sub) skills need to be acquired? A6: Currently indefinable; Brainstorm among case team and consultation of disciplinary and professional experts is needed.
	Q7: What subject matter domain(s) are involved? A7: This issue is highly multi-disciplinary (from ecology to geology; from exploration of the future to chemical interactions), with the focus on natural sciences issues on soil-water systems in estuarine systems (e.g. The Scheldt Estuary)
	Q8: What prior knowledge and skills are expected for enrolled students? A8: The case is part of an advanced course. Prerequisites are the introductory environmental science courses of the first level and a strong knowledge base on soil-water systems.
	Q9: What is central to the case (for example: patient, equipment, process)? A9: In this case, physical geographical phenomena and processes will be explored and described in time and space, using for instance measurements, experiments and models.
	Q10: What are physical locations in the case? (try to map them to virtual spaces) A10: Because of the strong spatial nature of the case, majority of the sources is geo-refecenced. Locational access to sources is necessary, e.g. experiments and information of the Scheldt estuarine system.
	Q11: What case characters (real persons, virtual persons) are relevant? A11: Field experts, advisors, scientists, local people with strong field/outdoor knowledge, laboratory workers, politicians, ... (to be defined in detail). We do not know yet in which 'real life' setting (an excursion, a research assignment or a consultancy advice) the case will take place. A brainstorm with education experts, tutors from the Hogeschool Zeeland and professional experts (of the Kennis Netwerk Delta Water) with field experience, together with OU distance education tutors is therefore necessary. **Note:** *In an EMERGO-case, playing characters and non-playing characters are distinguished. Non-playing characters can be virtual persons (i.e. all actions, reactions are predefined) or objects/tools. Playing characters are always executed by real persons during case runtime. Case characters can be real or virtual persons.*

	Q12: Do students need to proceed via a stepwise procedure?
	A12: Yes, the case consist of 3 tasks, to be completed in a strict order, one after another. The case will provide leading questions, shaping the three tasks. To help answering these questions, steps to follow are given.
	Q13: What kind of activities do students need to perform for acquiring the main complex cognitive skill?
	A13: Students will perform various activities, using a rich variety of resources and tools, including having a consultation with experts, attending a presentation, studying written reports, looking at documentaries or news, making notes, writing reports, doing virtual laboratory tests, studying outdoor locations (virtually).
	Q14: Is there a strict order for the compulsory tasks?
	A14: Yes, the case consist of 3 tasks, to be completed in a strict order, one after another. The case will provide leading questions, shaping the three tasks. To help answering these questions, steps and hints to follow are given.
	Q15: Are there compulsory tasks, non-compulsory tasks and what determines this?
	Q15: The fulfilling of the three tasks is compulsory: they have to be completed before the student can participate in the multiple choice exam of the accompanying distance course. The stepwise way to finish the three tasks is structured, but students are free to follow a different route and have access to all sources at all time.
	Q16: Is redundant information provided, or is everything strictly needed?
	Q16: The case is authentic, meaning that it is ill-defined, at times contains distracting and useless information and unexpected events (like in reality). It is for the student to decide what is relevant or most useful (part of the competence involved)
	Q17: How realistic and authentic is the case?
	A17: The case will be very realistic as is the existing functioning of the Scheldt Estuary, but the case setting still has to be defined.
	Q18: If students can redo a case: will this be the same case or a variant?
	A18: The case will be the same, but the leading questions will differ. However, studying the same leading questions for a second time can result in different progress and outcomes, based on intermediate decisions taken.
	Q19: Can students undo former decisions?
	A19: Yes, there is no strict route to follow, but a stepwise trajectory is advised. As part of the course assignment, they can not re-submit a completed task.
	Q20: Are different learning routes and tasks for different students offered?
	A20: The case is the same for each student, but the leading questions will differ. We do not model routes according to individual profiles but according to a step-wise research (or excursion e.g.) approach. Students are free to adapt or ignore the structured stepwise way to finish the three tasks.
	Q21: What kind of cooperation is needed by students?
	A21: In the learning process there will be no obliged contact between students, it is an individual trajectory. The input of self-defined new sources as an update to the case knowledge base by students is encouraged.
	Note: *this will have to be different for skills labs cases where cooperation is an explicit competence defined in the project plan*
	Q22: Do students have different case characters?
	A22: We do not know yet in which 'real life' setting (an excursion, a research assignment or a consultancy advice) the case will take place, but all students will have the same role.
	Q23: Do students have active roles?
	A23: Students need to take several decisions and need to perform various activities in order to be able to finish a task successfully. This makes them a rather active participant instead of an inactive spectator.
	Q24: Do teachers have active roles?
	A24: No, the tutor does not have any active role in the case (in exploitation). The tutor assesses the results of the three tasks and provides feedback when needed (the feedback interaction is limited to solving strictly urgent problems). Furthermore we have (good and bad) worked out examples of

	assignment results available for comparison.
	Q25: What aspects induce and sustain interest and motivation? A25: This depends on the case setting. We do not know yet in which 'real life' setting (an excursion, a research assignment or a consultancy advice) the case will take place.
	Q26: What unforeseen circumstances are incorporated? A26: There will be no unforeseen circumstances build in the case environment. The multi-media sources sources might differ over time: it can for instance be that parameters used in a prior report now seem to have become outdated, political change, new report, et cetera. Because of the natural science nature of most sources this might be a problem of minor relevance. It is important to define a setting in which the political discourse has already finished.
	Q27: Is competition incorporated? How do students get rewarded for excellent performance or behaviour? A27: No, they will not be rewarded or punished for their ranking. The results of the three tasks are a part of the exam of the accompanying distance course.
Students' progress	Q28: How do students discover not yet having acquired the main complex cognitive skill? A28: The steps-list provides an overview of actions to be taken to answer the leading question, including an estimation of time for each task. So, time wise they can monitor the amount of study time passed and ahead. Before they start a task in the case, the student has completed a similar task in the accompanying course (off course on a different subject), with written stepwise guidance and accompanied by (good and bad) worked out examples for comparison.
	Q29: How can students monitor their progress? A29: The three tasks will be assessed by the tutor according to a protocol. The tasks will have fixed times. There is a list of assessment criteria available, focusing on content but also structure, source annotation, use of language, etc. Furthermore we have (good and bad) worked out examples of reports available for comparison.
	Q30: How is it checked if students have acquired the main complex cognitive skill? A30: The three tasks will be assessed by the tutor according to a protocol. There is a list of assessment criteria available, focusing on content but also structure, source annotation, use of language, etc.
	Q31: Is summative assessment included and are its results used in formative assessment? A31: Both summative assessment and formative assessment are situated 'outside' the case study tasks, as part of the educational course the case is used in (OUNL N29211).
	Q32: Which students' progress figures are to be used by teachers during run time? A32: The results of the three tasks are a part of the exam of the accompanying distance course.
Contact with peers	Q33: Should contact between students be encouraged? A33: No, currently not because of practical reasons. In the learning process there will be no obliged contact between students, it is an individual trajectory. The input of self-defined new sources by students is encouraged. **Note:** *this will have to be different for skills labs cases where cooperation is an explicit competence defined in the project plan*
	Q34: Should students see if peers are on line, when they have been on line? A34: No, there is no use of online-visibility if the students follow an individual trajectory and have different leading questions.
	Q35: Can students compare their progress with peers? A35: No, there is no use of comparing progress with peers if the students follow an individual trajectory and have different leading questions.
Using media	Q36: Will existing material be used, is new material needed? A36 When possible, we will try to acquire existing material. Feasibility depends on whether we can use Beeld en Geluid collection (especially Dutch and Belgian /Flemish; English subtitling), what will be the acquisition costs for resources beyond this collection and whether we can use external linking, et cetera. New material (mainly video) will be needed to record some real field settings.

	Q37: What media genres are used (e.g., interviews, docudrama, movie, animations)? A37: All kinds of multi-media will be used. Students will perform various activities, using a rich variety of resources and tools, including having a consultation with experts (video), attending a presentation (powerpoint), studying written reports (documents), looking at documentaries or news (video), doing virtual laboratory tests ((interactive)video), going to locations (virtually, geo-referenced video), animations, interviews (interactive video, questions split, so you don't have to look at the whole interview), excel-spreadsheets, audio, websites, …	
	Q38: What media assets are needed and what are their costs? A38: We do not know yet which specific media sources we will use, and therefore what the cost will be. It depends on the author rights and licence agreements.	
Case delivery	Q39: Is the number of students within one run restricted? A39: There are no restrictions as such, although large groups will hamper performance and limit guidance (teacher bandwidth problem)	
	Q40: When can students enrol for a run? A40: This could be as flexible as possible, students can enrol all year long.	
	Q41: Is it possible to change the case after starting a run? A42: No, this is not possible, except for user-generated content, which will obviously change the available sources in the case.	
(embedded) Support	Q42: How will technical support be provided? A42: In the OUNL setting: as the EMERGO application is part of the virtual learning environment STUDIENET, technical and functional support is provided by the ELO service department ELOSA. **Note:** *This will have to be different for skills labs cases. Training super users for each institute is an explicit target defined in the project plan*	
	Q43: How will support be provided for acquiring the main complex cognitive skill? A43: The case will provide leading questions, shaping the three tasks. To help answering these questions, steps to follow are given. The tutor assesses the results of the three tasks and provides feedback when needed. Furthermore we have (good and bad) worked out examples of reports available for comparison.	
Costs	Q44: How many students will enrol each year? A44: The first trial run will be with 10 students. Later runs will depend on enrolment for the accompanying distance course (we expect yearly 20 – 50 students).	
	Q45: What are the development costs per student? A45: The expected costs of case development are incorporated in the SURF Skills Project, including the costs of 10 students in the trial run.	
	Q46: What is the expected teacher/student ratio during exploitation? A46: Hard to estimate, but we think it would be doable for each teacher to monitor 50 students.	
IPR	Q47: Is it allowed for others to use the case? A47: All EMERGO products, including cases, are freely available and adjustable as Open Source software under Creative Commons license. However, in the use of sources one should pay attention to the restrictions of Author rights. The case development of the Scheldt Case is part of the educational course development process of the Open Universiteit. Intellectual Property Rights are arranged in the course development with Author contracts under Open Universiteit NL rights. It is unknown how these rights arrangements match with the EMERGO Creative Commons license. This has to be studied during project development by Ronald Gossieau.	
	Q48: Are materials from other parties incorporated and what are their Intellectual Property Rights(IPR) arrangements? A48: see A47.	

Appendix 1- Template global description / case idea: "XXX"

Introduction
Case developers first need to consider various issues related to the intended case. By discussing them, the project team gains more insight, common ground and awareness: why is the case needed, for whom is it meant, how will it be placed in the curriculum, what are the (learning) objectives, what content and media will be needed, how will it be structured, how will progress be monitored, a.s.o.? A realistic picture of possibilities and impossibilities has to emerge before actually starting case design and development using the EMERGO toolkit. By answering – could be an appropriate subset of - the questions in the table, the case team provides a *global description* of the intended case as input document for the design phase. Case designers will then continue by working-out a framework scenario.

Subject	Questions & Answers
Case embedding	Q1: For which courses, curricula and institutions will it be used? A1:
	Q2: Is it a stand-alone item or used with other instructional materials? A2:
	Q3: What study load and time interval is expected? A3:
	Q4: How many credit points earn students by successfully completing it? A4:
Case content	Q5: What is the main complex cognitive skill? A5:
	Q6: Do other complex cognitive (sub) skills need to be acquired? A6:
	Q7: What subject matter domain(s) are involved? A7:
	Q8: What prior knowledge and skills are expected for enrolled students? A8:
	Q9: What is central to the case (for example: patient, equipment, process)? A9:
	Q10: What are physical locations in the case? (try to map them to virtual spaces) A10:
	Q11: What case characters (real persons, virtual persons) are relevant? A11:
	Q12: Do students need to proceed via a stepwise procedure? A12:
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