

Skills Labs

Hoogwaardige e-practica Water Management met EMERGO

Deliverable 2.1.b

Casus-framework Estuarine systems: the Scheldt

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Skills Labs penvoerende instelling:

Open Universiteit Nederland

- CELSTEC (Centrum voor Leertheorie en Technologieën)
- Faculteit Natuurwetenschappen
- Faculteit Managementwetenschappen

Skills Labs partner instellingen:

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)

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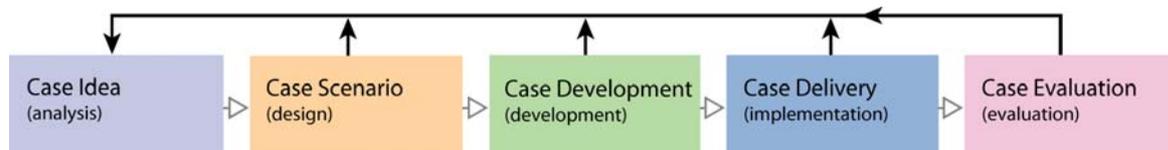
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1. Inleiding

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 en dat de gewenste professionalisering van casusontwikkelaars ook transparanter en herhaalbaarder wordt. 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 casuevaluatie
De open pijlen geven een geadviseerde volgorde van doorlopen aan. De fasen kunnen bovendien iteratief (gesloten pijlen) worden doorlopen.

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

Casusframework

De casusontwikkelaars nemen het casusidee als input voor het uitwerken van het casusframework. Het casusframework (onderdeel van de ontwerp fase) beschrijft de globale activiteiten die reële personen (studenten, docenten) en virtuele personen (ingebouwd in het casusmateriaal) gedurende de casus ondernemen, en met welke middelen. Er gelden geen strikte voorschriften voor de uitwerking van het casusframework, maar als standaard formaat voor het noteren van de activiteiten wordt voorgesteld: "Where the *management assistant* (student-playing character) will...<description of the activity>". Op deze wijze kan een eerste serie van activiteiten worden geïdentificeerd zonder dat er het gevaar bestaat voor het zich verliezen in details (eerste voordeel). In de opsomming van activiteiten kan men bovendien al een onderscheid maken tussen verplichte en facultatieve activiteiten, of er al dan niet sprake is van een bepaalde volgorde in activiteiten, en of er activiteiten onverwacht opduiken in het 'to do-lijstje' van de casusspeler. Deze aanpak verschaft snel een blauwdruk voor aspecten die nadere uitwerking behoeven (tweede voordeel). Het opstellen van het framework lijkt op het maken van een bouwtekening voor een gebouw. Het casusteam hoeft derhalve niet al te veel tijd te besteden om al in een vroegtijdig stadium diverse elementen in detail uit te werken (derde voordeel). Op deze manier kan vergelijkbare aandacht aan alle elementen in de uitwerking worden besteed. Het casusframework kan eenvoudig en flexibel worden bijgesteld bij de vervolgstappen in de ontwerpfase. Overigens, het casusframework 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: (on)beschikbaarheid van bronnenmaterialen, expertconsultatie).

2. Casusframe-work 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 casusframework is dus in het Engels uitgewerkt.

Voor deze casus geldt als centrale vraag:

What is the need for managed realignment (of coastal defences) based on natural scientific arguments using the characteristics of 'natural dynamics' and 'human influences' in the Western Scheldt estuary.

PART 0

WHAT- START CASE

In which the candidate receives an e-mail (or a phone call) from Prof. dr. Carlo Heip who congratulates the new employee on the new job. Moreover the employee is invited for a freshman interview with his new boss and mentor dr. Ad Huiskes.

- Prof. dr. Carlo Heip e-mails (phones) the candidate to inform him, that he /she has the job. (**E-MAIL or PHONECALL**)
- Prof. dr. Carlo Heip invites for a freshman interview with his new boss and mentor dr. Ad Huiskes. (**same E-MAIL or PHONECALL**)
- Prof. dr. Carlo Heip tells that in attachment the employee can find some information on the NIOO and the recent report of the Commission Nijpels) (**same E-MAIL or PHONECALL**)

LIBRARY:

WEB: NIOO website (if possible: intranet access)

WEB: Nijpels website

WEB: Deltacommissie website

PART 1

WHAT- PART 1A & PART 1B

WHAT- ASSIGNMENT 1

In which the new employee is asked by Ad Huiskes to explore the context of the public debate in the province of Zeeland about the realignment of the coastal defences, the so-called 'ontpoldering'.

- In which the new employee meets Ad Huiskes at the lobby of the NIOO. (**VIDEO**)
- Ad Huiskes asks to explore the context of the public debate in the province of Zeeland about the realignment of the coastal defences , the so-called 'ontpoldering'. (**same VIDEO**)
- Ad Huiskes explains the aim and scope of this new project the employee will work on. (**same VIDEO**)
- Ad Huiskes mentions that he has interesting articles which he will send to the employee. (**same VIDEO**)

LIBRARY:

VIDEO: The introductory speech of Ad Huiskes at the lobby of the NIOO with the aim and scope of the project

PART 1A

In which the new employee gets the promised articles and some extra guidance on how they could be useful for the project.

- The employee gets an e-mail with the promised articles. (**E-MAIL + ARTICLES**)
- In this e-mail Ad Huiskes also provides some extra guidance on how they could be useful for the project. Be aware to start by exploring the context of the problem. (**same E-MAIL**)

- In this e-mail Ad Huiskes also writes that one important article is by Patrick Meire and colleagues (see Meire, P. et al, 2005) and informs the employee about the qualities of Patrick (professional position; network position). (same **E-MAIL**)
- Ad Huiskes also advises that the first article the employee reads should be the one of Meire et al. (2005) and the he/she should at least read the abstract and introduction,
- Ad Huiskes also advises to contact the employee's roommate if the employee would have any remaining questions. (same **E-MAIL**)
- Ad Huiskes also points out that the employee can find a life jacket in the library. (same **E-MAIL + LIFE JACKET¹**)

LIBRARY:

ARTICLES: All the e-mails articles including Meire, P. et al. (2005)

WEB: www.scheldemonitor.be

LIFE JACKET: who to...

- a) **VIDEO-QUESTIONS** (Carolien Kroeze?): How do I cope with the amount of articles Ad Huiskes offered? Carolien offers some more hints; selecting articles through short reading titles, names, key words.
- b) **VIDEO-QUESTIONS** (Carolien Kroeze?): How do I cope with the English in the articles? Carolien transfers to a "DEMO-VIDEO" on how to use Google translate glossary. (**DEMO-VIDEO**)
- c) **DEMO-VIDEO** (anonymous): replay of virtual classroom with Google translate glossary instructions (how to translate English terminology in the articles; how to translate Dutch into English; French into English / Dutch by hand of Scheldt sources).

In which the employee orientates him/herself on the project Ad Huiskes gave him and explores the location.

- As advised by Ad Huiskes, the new employee asks his roommate how to start with the project Ad Huiskes gave him/her. (**VIDEO-QUESTIONS**)
- The roommate advises to explore the Western Scheldt estuary. And he advises to use Google Earth and the fly tour tool to explore the Westerscheldt. (same **VIDEO-QUESTIONS + Google Earth**)
- The roommate also tells that the employee can explore the context by watching videos for half an hour, on the public protest and the TV news documentaries on the subject. He explains the NIOO has access to ACADEMIA (public broadcast archive). (same **VIDEO-QUESTIONS + LINKS to EXISTING VIDEO'S**)
- After exploring in the library, the employee gets an automatic e-mail / pop-up in which the roommate advises the employee to concentrate on the scientific and not on the political impact (**POP-UP²**)
- In the same automatic e-mail / pop-up, the roommate also advises to read the article of Meire et al. (2005) and give attention to sea-estuary-river transitions, their major habitats and to give attention to major problems in the system (see parts abstract and introductory of the article). (same **POP-UP**)

¹ This life jacket can inform you on how to deal with big amounts of articles and English texts etc.

² POP-UP appears if the employee has clicked on 2 items from the library. This is a sudden event.

- The roommate also tells that the employee can find some notes in the library, from when the roommate read the article himself. (same **POP-UP + NOTES MEIRE PART 1 ROOMMATE**)
- In the same automatic e-mail / pop-up, the roommate reports that Ad Huiskes asked the roommate to tell the employee that if he finished reading/studying the abstract and introductory of the article, he should press the “ready button” for further instructions. (same **POP-UP + READY BUTTON**)
- The employee asks the roommate what the best way is to contact another colleague. (same **VIDEO-QUESTIONS**)
- The roommate answers that the restaurant is the best location to start a conversation. (same **VIDEO-QUESTIONS**)

LIBRARY:

EXISTING VIDEO's: TV news documentaries

VIDEO: Protests on Hedwige-polder

VIDEO: News on results of Cie Nijpels (NOVA/ NETWERK?TERZAKE?/ ACADEMIA)

VIDEO-QUESTIONS: roommate

Google Earth: Westerscheldt exploration (ex. Fly tour)

LIFE JACKET: Google Earth: how to use? + ACADEMIA: how to use?

NOTES MEIRE PART 1 ROOMMATE: notes of the roommate from reading the same article of Meire et al. (2005). Underneath the content of these notes (it consists of 2 parts: 1A and 1B). for more details see at the end of the document.

PART 1B

In which the employee explores the data sources (library).

- After pressing the “ready button”, because he finished the previous task of the project, the employee gets an e-mail from Ad Huiskes. (**E-MAIL**)
- In this e-mail the employee is referred to the original project aims, as discussed in the first meeting with Ad Huiskes. (same **E-MAIL**)
- In this e-mail the employee is also asked to continue with the project and therefore advised to look for the opportunities (ecosystems services in the Scheldt area) and the problems. Ad Huiskes hints the employee that Meire et al. (2005) mentioned them. (same **E-MAIL**)
- Ad Huiskes also thinks to remember that the roommate once read the article and made some useful notes, available in the library. (same **E-MAIL**)
- Ad Huiskes asks to inform him by clicking the “ready button” if the employee finished reading/studying the opportunities (ecosystems services in the Scheldt area) and the problems of the article for further instructions. (same **POP-UP + READY BUTTON**)

LIBRARY:

NOTES MEIRE PART 2 ROOMMATE: notes of the roommate from reading the same article of Meire et al. (2005). Underneath the content of these notes (it consists of 2 parts: 1A and 1B). for more details see at the end of the document.

PART 2

WHAT- PART 2A & PART 2B & PART 2C

In which the employee is asked by Ad Huiskes on his regular meeting to study models of discharge, fate of nutrients in river basins, natural dynamics and human influences on soil and groundwater, and to keep a concept map and factsheet(s) for his colleagues.

- In which the new employee meets Ad Huiskes for his regular meeting at Ad Huiskes room. (**VIDEO**)
- Unfortunately Ad Huiskes' previous meeting with Johan van de Koppel is in a delay. (same **VIDEO**)
- Ad Huiskes introduces Johan van de Koppel to the employee and discusses his qualities: spatial ecology and formation of mudflats. (same **VIDEO**)
- Johan van de Koppel leaves the room and tells the employee that he is always welcome for a chat or advice. (same **VIDEO**)
- Johan vd Koppel also mentions that says Jim Van Belzen is presenting his thesis on spatial distribution of tidal mudflats and that the employee is welcome there, because it may be of interest for the project. (same **VIDEO**)
- Ad Huiskes asks the employee to continue with the project and hereby to study the models of discharge, fate of nutrients in river basins, natural dynamics and human influences on soil and groundwater. (same **VIDEO**)
- Ad Huiskes also asks the employee to start an concept map and factsheet on each subject, as a part of the NIOO internal knowledge management system (so the colleagues can access this information easily). (same **VIDEO**)
- By stopping/ending watching this VIDEO an e-mail is automatically sent to the employee (see part 2A).

PART 2A

In which the employee studies the nutrient transport and river characteristics of the Scheldt (ex. discharge) with Global NEWS.

- After watching the previous VIDEO the employee gets an email from Ad Huiskes. (**E-MAIL**)
- In which the employee gets an invitation from Ad Huiskes to board on the monitoring vessel Temse-Vlissingen to study the N patterns in the Scheldt Watershed. (same **E-MAIL**)
- In which the employee measures the concentration of nitrogen in the water at different locations in the Scheldt river (**INSTRUCTION/EXPERIMENT VIDEO**)
- In this e-mail Ad Huiskes describes the further project steps as described below: (same **E-MAIL**)
 - In which the employee compares the measured yearly average nitrogen concentrations (from the monitoring vessel) with total value of N input in the Scheldt watershed river retrieved from the Global NEWS (Nutrient Export from Watersheds) model.
 - In which the employee tries to explain the patterns of Nitrogen transport in the Scheldt by comparing the concentration at Ghent and near the North Sea

- (i.e. downstream ward loss of nitrogen because of denitrification on land and in the river)
- In which the employee studies how the outflow of N in the North Sea could be diminished (less N inputs: changes in land-use, energy consumption and a better sewage water purification)
 - In which the employee studies the effect of managed realignment on the patterns of nitrogen transport (downstream extra loss of nitrogen by possible sedimentation in the new flood plains)
 - In which the employee studies the effect of global warming and sea level rise on the patterns of nitrogen transport
 - Ad Huiskes asks the employee to inform him whenever he is ready with this part of the project, by pressing the “ready button”³. (same **E-MAIL**)

LIBRARY:

- **INSTRUCTION/EXPERIMENT VIDEO:** Nitrogen measurements

PART 2B

In which the new employee gets an e-mail of Ad Huiskes as a follow-up on the talk they had earlier (see VIDEO), in order to be aware of the impact of re-creation of by managed-realignment-reclaimed-land into tidal mudflats.

- After pressing the “ready button”, because he finished the previous task of the project, the employee gets an e-mail from Ad Huiskes. (**E-MAIL**)
- In this e-mail the employee is referred to the original project aims, as discussed in the second meeting with Ad Huiskes. (same **E-MAIL**)
- In this e-mail the employee is also asked to continue with the project and therefore advised to firstly study the natural formation and dynamics of tidal mudflats and land use changes and soil formation by post land reclamation. (same **E-MAIL**)
- The employee is also asked to secondly study the re-creation of reclaimed land into tidal mudflats by managed realignment. (same **E-MAIL**)
- The employee is also asked to thirdly compare historic land reclamations using soil maps and cross sections. (same **E-MAIL**)
- The employee is also asked to fourthly study the land-use changes and its effects (example. creek inversion, lutum-gradients; soil formation (bioturbation; soil ripening; heavy metal bio-availability); land use gradients (grass – beets - orchards))
- The employee is also asked to fifthly indicate some arguments on managed realignment. (same **E-MAIL**)
- Ad Huiskes also reminds the employee of the expertise of Johan van de Koppel is these issues (such as the formation and spatial distribution of tidal mudflats). (same **E-MAIL**)
- Ad Huiskes asks as mentioned in their second meeting to note the statements and data of importance in a factsheet, as part of the NIOO’s internal knowledge management system. (same **E-MAIL**)

³ Idea for the “ready button”: The employee can be asked to inform Ad Huiskes whenever the “DELIVERABLE” is ready to be sent to the project manager, in stead of saying “I’m ready”. Problem herewith is that the employee can not be forced to really prepare deliverables. → point of concern, to be discussed and solved later.

- Ad Huiskes asks the employee to inform him whenever he is ready with this part of the project, by pressing the “ready button”. (same **E-MAIL**)

In which the employee stalks Johan van de Koppel about information to continue with the project.

- The employee contacts Johan van de Koppel with questions about formation and spatial distribution of tidal mudflats. (**VIDEO-QUESTIONS**)
- The employee asks Johan van de Koppel some questions on mudflat formation and soil formation. Johan van de Koppel refers to Daphne van de Wal. Also some sources in of the library and his old schoolbooks may be of interest. (same **VIDEO-QUESTIONS**)
- The employee asks Johan van de Koppel some questions on the natural formation of tidal mudflats (same questions/ different colleagues/ different answers). Johan van de Koppel mentions different sources like videos, texts and articles. (same **VIDEO-QUESTIONS**)
- The employee asks Jim van Belzen some questions on the natural formation of tidal mudflats during his thesis presentation (same questions/ different colleagues/ different answers). Jim van Belzen mentions different sources like videos, texts and articles. (same **VIDEO-QUESTIONS**)
- The employee asks the roommate about an expert in soil formation and estuarine patterns in the soil map. (**VIDEO-QUESTIONS**)
- The roommate advises that the tutors of his/her university could be of help, these are soil scientists. (same **VIDEO-QUESTIONS**)
- The employee asks the roommate for help about making some sketch cross-sections both in areas with tidal mudflats and in historic reclaimed land.

LIBRARY:

VIDEO-QUESTIONS: roommate

VIDEO-QUESTIONS: Johan van de Koppel

VIDEO-QUESTIONS: Daphne van der Wal

VIDEO-QUESTIONS: Jim van Belzen

Powerpoint of Johan van de Koppel (formation of tidal mudflats)

Powerpoint of Jim van Belzen (aerial images of tidal mudflats; GIS spatial distribution + VIDEO of tidal mudflats + aerial photographs of tidal mudflats + soil maps + cross sections)

PART 2C

In which the employee studies the groundwater of the Westerscheldt watershed and starts a factsheet.

- The employee received some weeks ago an assignment of Ad Huiskes to study the groundwater of the Scheldt watershed. (see **VIDEO** at the beginning of Assignment 2)
- An e-mail reminder from Ad Huiskes reminds the employee of this groundwater-study-task (including fact sheet assignment). (**E-MAIL**)
- The employee was also asked to keep a fact sheet with the most important facts and figures of the Scheldt Watershed, as this is an easily accessible source of information for his colleagues. (same **E-MAIL**)

- The employee starts to read the report “Karakterisering van het grondwater in het stroomgebieddistrict Schelde” of Meinardi et al. (2005). **(REPORT)** **(OR the employee starts by himself to read the report, OR he asked a colleague on how to start with the assignment OR Ad gave him the report in the e-mail-reminder)**

LIBRARY

VIDEO: see part 2B

REPORT: Meinardi et al. (2005)

In which the employee studies why dunes can be seen as a separate groundwaterbody.

- The employee asks a colleague groundwater-expert on how to continue studying the groundwater of the Scheldt watershed. **(VIDEO-QUESTIONS)**
- The colleague tells him “as you could read in the report of Meinardi et al. (2005), dunes are seen as a separate groundwater body. This because of their exceptional geohydrological situation and their role in nature and fresh water extraction. If I were you I would continue by studying how dune system works”. **(VIDEO-QUESTIONS)**
- If the employee asks the colleague groundwater-expert again on how to continue studying the dune system, the employee is transferred to the library. Here he can find articles and a website (www.natuurkennis.nl onder landschapstypen – duin en kustgebied) **(VIDEO-QUESTIONS + ARTICLES + WEBSITE)**

LIBRARY:

- **VIDEO-QUESTIONS**
- **ARTICLES**
- **WEBSITE**

In which the employee studies the effect of climate change on groundwater extraction in areas with disposed radioactive waste in the aquitards. AND In which the employee realises the importance of a cross boundary governance.

- The employee receives an e-mail/Phone call of Ad Huiskes. Ad Huiskes heard from his Flemish colleagues at the Research Centre for Nuclear Power (SCK-CEN) that they are doing experiments on disposal of radioactive waste in aquitards. Ad Huiskes asks the employee to study their long-term effect on the groundwater extraction (including freshwater extraction) in the Scheldt area, if climate change is taken into account. Als de employee niet goed weet hoe hij aan deze opdracht moet beginnen, mag hij dit altijd laten weten aan Ad Huiskes. Ad Huiskes also names the e-mailadress of one the “fake SCK-CEN researchers” in case the employee would have further questions. **(E-MAIL / PHONE CALL)**
- The employee can send an e-mail to the “fake SCK-CEN researcher” for more information **(E-MAIL)**
- The employee receives an email of “fake SCK-CEN researcher” with references of reports and articles about the subject: report of SCK-CEN “Paleohydrogeologische studie van de site te Mol” van Wemaere et al (2007) or the English version of similar articles; report “Karakterisering van het grondwater in het stroomgebieddistrict

Schelde" van Meinardi et al. (2005) paragraphs 3.1.3, 3.1.2-Diep zand GWL and 4.1.3.
(E-MAIL + 2 x REPORTEN + ARTICLES)

LIBRARY:

ARTICLES:

Meinardi, K., van Ek, R., Zaadnoordijk, W.-J. (2005). Karakterisering van het grondwater in het stroomgebieddistrict Schelde, *VROM, V&W*, 73 p. (In Dutch; abstract (2pages, including preface) has to be translated in English)

www.natuurkennis.nl website over duinen.

Wemaere, I., Marivoet, J., Labat, S. (2007). Paleohydrogeologische studie van de site te Mol, tijdschrift Water, maart-april, 6p. (In Dutch)

Gedeon, M., Wemaere, I., Marivoet, J. (2007). Regional groundwater model of north-east Belgium, *Journal of Hydrology*, **335**, 133-139.

Vandenbohede, A., Lebbe, L., Van Houtte, E. (2008). Artificial recharge of fresh water in the Belgian coastal dunes, 20th salt water intrusion meeting, 23-27/06/2008, Naples, Florida, USA.

van den Akker, C. (2007). On the spreading mechanism of shallow groundwater in the Hinterland of the Dutch Dune hill area, *Engineering Geology*, **91**, 72-77.

PART 3

WHAT- PART 3A & PART 3B

In which the employee is asked by Ad Huiskes on his third weekly/monthly/regular meeting to study the natural dynamics and human influences on surface water with specific focus on the effects of deepening on river discharge at different time scales. And to explain the need for managed realignment resulting in an abstract and poster⁴.

- In which the new employee meets Ad Huiskes for his third regular meeting at Ad Huiskes room. (VIDEO)
- Ad Huiskes also asks the employee to start a poster and abstract on each subject, as a part of the NIOO internal knowledge management system (so the colleagues can access this information easily). (same VIDEO)
- By stopping/ending watching this VIDEO an e-mail is automatically sent to the employee (see part 2A).

PART 3A

In which the employee has an appointment with Ad Huiskes for a two weekly consultation and studies main hydrological processes in formation of the Scheldt estuary

⁴ This part should still be worked out in detail.

- The employee enters Ad Huiskes room who is just working on a PPT of the history of the Scheldt Estuary and the main processes in the formation of the Scheldt Estuary **VIDEO**
- Ad Huiskes invites the employee to have a look with him at the presentation **VIDEO-PPT**
- Ad Huiskes tells the employee that it is important for the employee to get insight in the most relevant hydro dynamical, morphological and ecological processes responsible for shaping the tidal landscape and in the current discussion involving managed realignment **Same VIDEO**
- In which the employee is suggested to look at the Comcoast project Zeeland (Ellewoutsdijk en Perkpolder) and listen carefully to the most important issues involving the naturality, safety and accessibility of the Westernscheldt relating to hydrological dynamics in the river and sea level rise **EXISTING VIDEO**

LIBRARY:

- **VIDEO-PPT:** Ad Huiskes – PPT
- **EXISTING VIDEO:** Com Coast: Dutch video-documentary

In which the employee gets an email from Ad Huiskes to also look at the UK com coast film and invites the employee to join one of the NIOO researchers (Daphne van de Wal) to join here on a sampling trip, a similar project as the UK ComCoast project.

- In which Ad Huiskes ask the employee if he managed to figure out the most relevant processes mentioned in the ComCoast movie **EMAIL**
- In which Ad Huiskes suggests the employee to also have a look at the Com Coast UK project since it has some overlap with the work carried out at the Spatial Ecology group **same EMAIL**
- In which Ad Huiskes mentions that Daphne vd Wal will go on field work soon and that the employee could maybe join her **same EMAIL**.
- In which Ad Huiskes advises the employee to prepare for the fieldtrip by considering some relevant articles and study some topics considering to main processes, locations, etcetera. The employee is also advised to search for relevant material in the library or maybe contact a colleague or two at the Spatial Ecology department **same EMAIL**

LIBRARY:

- **EXISTING VIDEO:** Com Coast UK video documentary
- **WEB:** short description of Daphne's work or link to her website
- **VIDEO-QUESTIONS** from absent colleagues
 - HINT (sources) on main physical biological processes
 - HOW (methodologies) on methods used in scientific research
- **SCIENTIFIC ARTICLES:**
HINT Sources *articles*;
 - Sections with articles and instructions on where to find data on
 - ECOFLAT
 - Scientific articles

- Widdows et al 2004 Role of physical and biological processes in sediment dynamics of a tidal flat in Westerschelde Estuary, SW Netherlands. Mar. Ecol. Prog. Ser. 274: 41-56
- Temmerman et al 2007 Vegetation causes channel erosion in a tidal landscape
- Meire et al 2005 The Scheldt estuary: a description of a changing ecosystem. Hydrobiol. 540:1-11.
- Climate change:
 - Bouhkris: Climate change impact on the hydrology of the highly urbanized Belgium areas (http://www.kuleuven.be/hydr/cci/reports/Paper_UrbanWater_Conference_OBoukhris.pdf)
 - Koningsveld et al 2008. Living with sea-level rise and climate change: a case study of the Netherlands
- International context/
 - http://www.scaldit.org/uploads/146Scalditrapport_ENG_DEF_beveiligd.pdf

- WEBSITES

general websites (the Scheldt):

- Salt Marshes and more:
 - Coastal portal
http://www.encora.eu/coastalwiki/Salt_marshes
- Scaldit: a project within the International Scheldt Commission, www.scaldit.org
- Scheldenet.nl
- Scheldeschorren.be
- www.getij.nl

HOW Sources *articles*;

- Molenplaat:
 - Herman et al 2001. Benthic community structure and sediment processes on an intertidal flat: results from the ECOFLAT project. Continental shelf research 21
- Stromingsmodellen:
 - van NIOO (Uit Widdows et al p45: a 2D Hydrodynamical model)

In which the employee gets an email (or phonecall) from Daphne saying when and where the employee should be ready for the fieldtrip

- In which Daphne gives instructions on where the employee should (**EMAIL**)

LIBRARY: as above

In which Daphne is in the field explaining the most

- Where Daphne van de Wal explains important processes in the field and shows (at the mudflat – salt marsh transition zone: To be discussed in detail with NIOO employees) **(VIDEO)**
- In which Daphne ask the employee to work on the obtained data and analyze the data together with her **(same VIDEO)**

VIDEO: fieldwork

LIBRARY: as above

PART 3B

In which the employee prepares a poster about coastal realignment to present at a conference

- In which the employee gets an email forwarded by Ad Huiskes, with in attachment the announcement for the yearly symposium of the Managed Realignment Society about Managed Realignment. Ad Huiskes asks the employee to prepare an abstract and a poster to present at the conference. **(E-MAIL)**
- In which Ad Huiskes proposes to make a poster about the natural scientific arguments pro and contra managed realignment (general research question of the case Estuarine systems the Scheldt). The employee can ask the roommate to help him with the preparation of the poster(same **E-MAIL**)
- In which the employee rephrases the research question, based on (to be decided):
 - A) his own interests or
 - B) the most important aspects of managed realignment (same **E-MAIL**)
- In which the employee contacts his roommate for help with the following steps: **(VIDEO-QUESTIONS)**
 - To evaluates the research results gathered in the previous assignments on usability for the new research question. **(VIDEO-QUESTIONS)**
 - To search extra information to feed the new research question (if necessary) **(VIDEO-QUESTIONS)**
 - To write an abstract to submit for the conference **(VIDEO-QUESTIONS)**
 - To create a poster to present at the conference **(VIDEO-QUESTIONS)**
- The employee gets a grade for the poster and abstract. This could be in an e-mail from a colleague who saw the employees poster at the conference and liked it or disliked it. **(E-MAIL)**