Wyeth Dashboard

for general and managerial staff

User Requirements and Use Cases

29 May 2020

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Executive Summary

This report will document the purpose, methodologies, use cases and also the user requirements extracted from interviews held between 22nd April and May 7th, 2020. In total, 22 Wyeth Nutrition staff were contacted requesting an interview of which 11 participated. Due to Covid-19 restrictions, all interviews were conducted online and not on-site at Wyeth Nutrition. Each semi-structured interview comprised of a set of open-ended questions, whereby the participant was encouraged to expand on their answer, make comments and recommendations. This section of the interview was followed by a short survey, which both the participant and interviewer were present, the latter providing any assistance needed. The interviews ranged in duration from 30 to 90 minutes. This difference in durations was due to the level of detailed information which some participants provided.

The principle findings of these interviews determined that the Wyeth Dashboard needs to address the lack of water awareness in a friendly, informative manner using relatable language and contextual references. To offer real value to users and stakeholders alike, it is essential that the dashboard be approachable, engaging and personable, while seeking to empower staff when it comes to saving water at work and at home. The general dashboard should be located in a common area with good footfall. In addition to this dashboard, smaller screens displaying key information contained on the main dashboard should be located in several areas including: Canteen; Shoe change area; Coffee dock; and Daily operations review areas for each department.

By featuring video content depicting the plants' surrounding areas, including actual staff members' farmsteads, the general dashboard will attract staff, who will interact with the menu infographic, drilling-down into the various plant areas to discover real data (updated on a daily or weekly basis) from the plants' meters and database, pertaining primarily to the cost of water.

This video content is unnecessary for the managerial version, as no 'hook' is needed for managerial staff to engage. Instead, it will contain greater detail on the various plant areas in real-time (updated every 15 minutes) along with graphical representations of such data, for example, an eSankey diagram depicting water flows.

One participant, already involved with Covid-19 hygiene and security measures at Wyeth Nutrition, raised the question of the dashboard format, i.e., a touchscreen would not be recommended, especially if the 'new normal' is to be considered. Taking this into account, research has been made into a gesture responsive screen for the general dashboard, as this version will be situated in a common area for maximum engagement. After discussion, the managers' dashboard will be touchscreen only.

Additional to these findings, specific to the dashboard user requirements, several observations were recorded pertaining to: Essential equipment; Water optimisation; Communication; and Culture. Addressing these issues will also lead to greater water awareness at the plant.

This report will also feature general dashboard storyboard, use cases for both the general and managerial dashboard, the basic flows, based on scenarios inspired by several interviews and use case diagram.

Purpose of the Interviews

The primary reason for conducting the interviews was to gather user requirements under specific criteria such as: concept and content; target market; existing attitudes and behaviours; working procedures; user experience and interface; and user recommendations.

Interview insights will be used to inform dashboard content, user experience and interface, with the usability goals including intuitive, ease-of-use and enjoyment-of-use for the end user. The problem statement can be described as follows;

'More water awareness is needed at Wyeth Nutrition.'

By encouraging conversations about saving water, for both cost and environmental reasons (dashboard featured content), the dashboard aims to solve this problem statement. The dashboard's simple and intuitive user journeys must appeal to all staff, contractors, company tours, visitors and auditors alike. While one participant interviewed described a need for a certain level of privacy,

"… it involves people looking at it, a certain sense of privacy is involved, so no one's going, what he's doing there."

– Nial Mullane, Special Projects

potential for a shared experience should also be encouraged to promote as many conversations as possible at work, to be continued at home.

Participants

22 Wyeth staff were contact by email representing many areas of the plant including: Utilities; Finance; Quality – Lab Process; Janitor Operations; Procurement; Hunan Resources; Manufacturing; Technical Training; Quality Operations; Research and Development; Safety, Health, Environment; Special Projects; and Process Operations (Shift Supervisor and Process Operator). They were given a standardized email which briefly described the project and offered a breakdown of the interview format. Of the 22 staff, 11 were available to participate in the interviews.

Managerial staff were selected by the project lead, and after their interviews they were asked to recommend a member of their team (where possible) to participate in the interviews as well, to give insights particular to the general dashboard.

Below is a table summarizing the 11 staff who participated in the interviews.

Participant	Department	Interview Details
Ian Ryan (Test Interview)	Utilities	Tuesday 21at April
Maura Monahan	Finance	Wednesday 22nd April
Adrienne McMahon	Quality – Lab Process	Monday 27th April
John Ferris	Janitor Operations	Thursday 23rd April
Anthony O'Brien	Procurement	Thursday 23rd April
John Creedon	Technical Training	Wednesday 22nd April
John O'Connell	Research and Development	Wednesday 29th April
Nial Mullane	Special Projects	Thursday 23rd April
Dave	Process Operator	Thursday 7th May
Ana Andas	Shift Supervisor	Thursday 7th May
Rachelle Harris	Finance	Thursday 7th May

Method

A combination of semi-structured interview and short survey were employed during the interviews. Responses, commentary and recommendations were recorded (where possible). In some cases, the level of detail exceeded expectations and both set of prepared questions and short survey were partially completed. This allowed the participant to share their extensive knowledge on the topics in question.

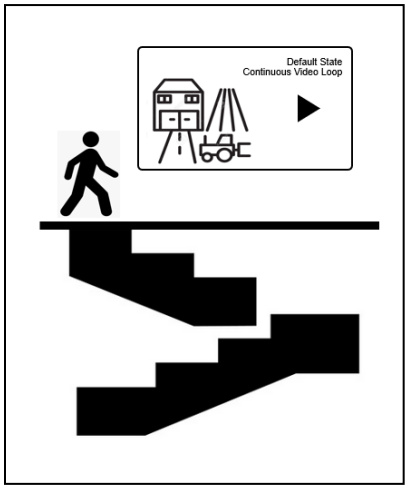
Each interview was conducted on a one-to-one basis (Wyeth staff participant and interviewer). The interviewer for this testing was performed by a UX Researcher from Irish Manufacturing Research (IMR). The interviews were conducted on a DELL laptop using Microsoft Teams Audio and Video connection within the Windows operating system. Where possible, the interviews were recorded using Icecream Screen Recorder (Audio only) to supplement notetaking (manual and Microsoft Word). Network speeds varied as interviews were conducted in the interviewer's home (Vodafone 4G, with Three personal Hotspot available when Vodafone connection failed) connecting with various WiFi service providers in the Limerick to Mallow locality.

Each interview began with an initial greeting and brief introduction of the project – its concept and intended goals. The participant was asked to answer several open-ended questions. Every opportunity was given to each participant to speak freely and voice any concerns and recommendations they may have relating to the dashboard and water awareness in general.

After the interview, the participant was asked to answer a short survey. The purpose of this survey was to establish the participant's level of knowledge and interest in water usage, as well as testing existing water bulletin's engagement, by including questions on bulletin content. The mood of this survey was light and entertaining and was not perceived as a test for participants.

The most relevant, revealing and informative interviews were transcribed (2). The content contained in these interviews together with audio and notes of the remaining 9 interviews were analysed, noting common user requirements relating to dashboard content, format and location.

Storyboard – General Dashboard



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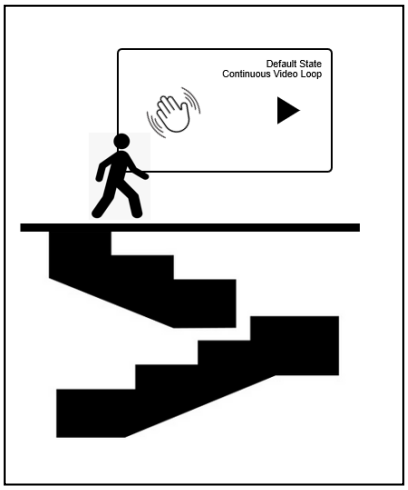

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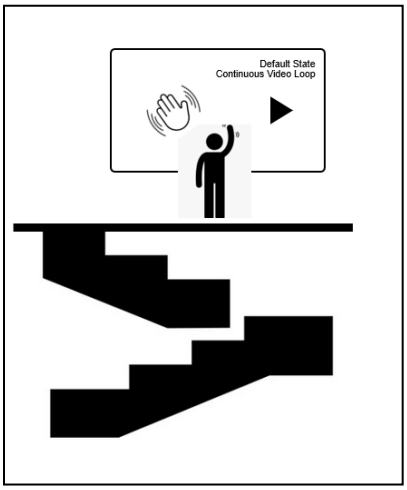

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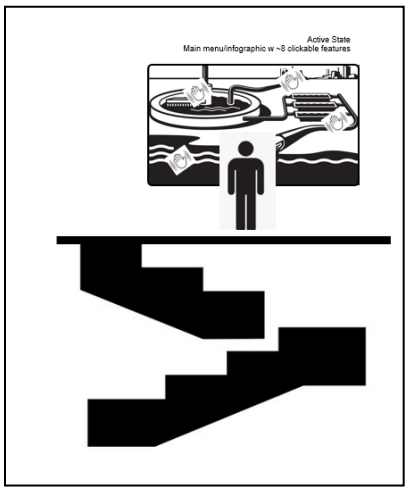

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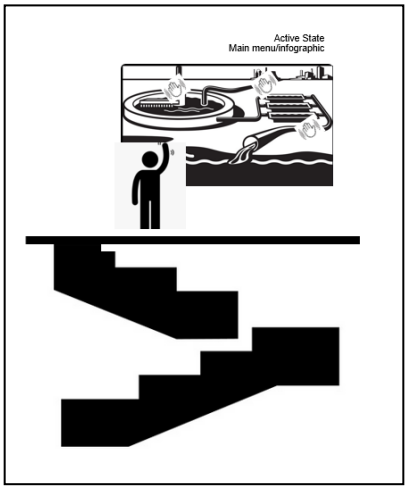

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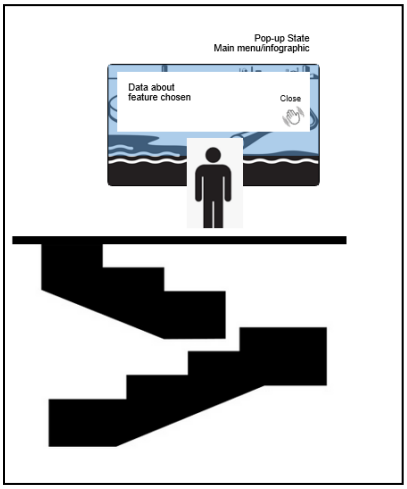

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Use Case – General Dashboard

Actors: Wyeth staff, Contractors, Company Tours, Visitors, Auditors

Stakeholders: SEAI, Wyeth, IMR (indirectly, AWS Committee, ISO 14001, 50001)

Target Actor: Process Operator

Preconditions: The gesture responsive screen is situated at the top of the stairs. It is running a default, continuous loop featuring images and videos of the surrounding countryside including the River Deel and farms with cattle, sheep and horses. Alongside these images and videos, text is displayed with facts relating to the River and to the farms, equating the true cost of water in context terms, i.e., 1,000 litres of RO water costs one sheep etc.

Trigger: The Process Operator in question has a farm, with cows and horses. He notices a video of his colleague, also a process operator, displayed on the screen, standing beside a milk tanker. He moves towards the screen to read the text displayed with the video. It tells him that every hour, 5 milk tankers of water are used at Wyeth, and 1 of those tankers is used every hour for RO water. A direction on the screen appears after his colleague's video. The direction informs him to wave at the screen to learn more.

Basic Flow: The Process Operator waves/gestures at the screen. An infographic appears, displaying the water journey from the River Deel, through the various areas in the Wyeth plant, and back to the River Deel. The Process Operator surveys the flow of water illustrated on the infographic. As the Process Operator works in the Wet Process Area (1 of 3), he is particularly interested in this section of the infographic. He reads a direction underneath the picture of the Wet Process Area, which tells him to wave to learn more. He waves or gestures at this part of the screen. A pop up appears, giving him more information on the water usage in this particular area of the plant. He wishes to learn more about other areas of the plant. He sees a direction, "Wave to close". He waves or gestures to close this pop-up. He is presented again with the original infographic. He waves at another section of the infographic, the Effluent Treatment Plant, as he has a friend who works in this area. He is curious to find out about their water usage. Again, he waves at this section of the infographic. A pop-up appears containing real-time information about the water usage in the Effluent Treatment Plant.

Use Case – Managerial Dashboard

Actors: Wyeth Managers and Engineers, Company Tours and Visitors with access to Managers' offices, Auditors.

Stakeholders: SEAI, Wyeth, IMR (indirectly, AWS Committee, ISO 14001, 50001)

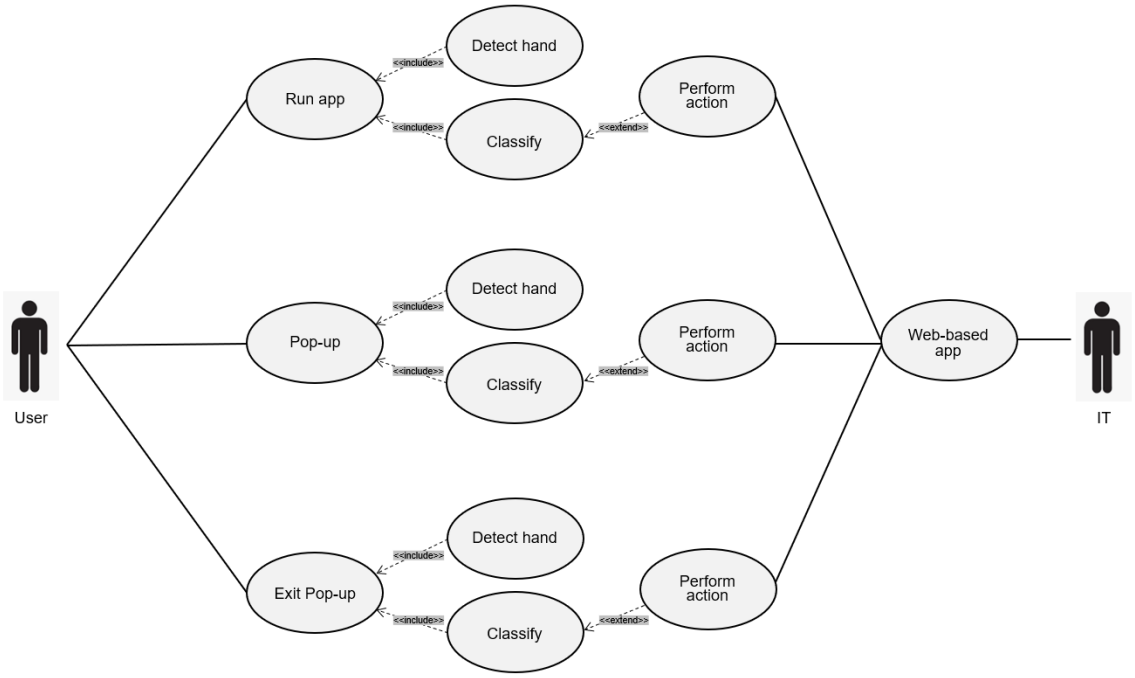
Target Actor: Energy and Utilities Manager

Preconditions: The gesture responsive screen is situated in the Managers' office. An infographic (the same as the general dashboard) is displayed.

Trigger: The Energy and Utilities Manager has been informed of an oil spill in the Wet Process Area. He wishes to learn more about the water usage during the cleaning up procedure of the oil spill.

Basic Flow: The Energy and Utilities Manager locates the Wet Process Area within the infographic. He waves at this section of the screen to open the pop-up. This pop-up appears, containing real-time information of the water usage in the Wet Process Areas. Briefly, this real-time data will include: m3/h of water flow (around 30 meters); mg/l of some specific polutants (Ammonia, hidrocarbons, Nitrogen and Phosphorus) (around 5 meters); and €/m3 (for the 3 main water streams). An eSankey diagram will also appear, displaying real-time data from Wet Process Area flow meters. He checks the real-time data to make sure water is not being wasted during the clean-up. He sees a direction, "Wave to close". He waves or gestures to close this pop-up. He is presented again with the original infographic.

Use Case Diagram – General / Managerial Dashboard



Content

The dashboard should illustrate the life cycle of water at the Wyeth plant. The following areas need to be graphically illustrated: River Deel intake; Pumping House; Service Water Treatment Plant; RO Building; Main Building; Process Areas (1, 2, 2X, 3); Utilities; NDC Building; Boiler House; External Buildings; and Effluent Treatment Plant.

For the general dashboard, a high level view of the plant is displayed, featuring most staffed sections which deal with water. Once a staff member gestures over a particular area of the plant, a pop-up will appear containing real-time water usage metrics for this area (with particular attention to cost), displayed in a relatable context.

For the managers' dashboard, the same high level view of the plant is displayed, however, more detailed real-time data will be contained within the pop-up, relevant to managers and engineers.

The default state could feature facts about water usage at work and at home in relatable context for staff. These facts could equate water usage or savings to farming and the rural lifestyle. This display could be a continuous loop of facts, similar to those detailed in the water awareness bulletins created by Ana, which were very well received. For further engagement, the default loop could display images and videos of the Limerick countryside, the River Deel, for example, along with actual staff members at their farms. The accompanying text could relate to these local images and videos, detailing water usage and the cost of RO water in relation to the cost of livestock, respectively. In between each video segment or image with complementary text, a direction for the user on how to engage the infographic should be included.

Format

During interviews the format of the dashboard was discussed. Reservations about an interactive, touchscreen dashboard were noted by one interviewee. These concerns were based around Covid-19 and the cleaning of the dashboard. In light of this, a gesture responsive screen is advised.

Both the Shift Supervisor and Process Operative interviewed expressed that staff would be unlikely to interact with the dashboard. However, if the information was on a continuous loop, with new information every month, the message would be more likely to get across to staff. They both expressed that the canteen, coffee dock and shoe change areas would be the best locations for the version of the dashboard.

Locations

In order of preference, the following locations for the dashboard were suggested by those interviewed:

1. Top of the stairs
2. Coffee dock
3. Canteen
4. Shoe change area
5. Daily operations review areas

Additional Observations

Interviews, in particular with Nial Mullane, Special Projects, Dave, Process Operator and Ana Andas, Shift Supervisor, highlighted several challenges when faced with solving the problem statement. Addressing these challenges will result in saving water.

Essential Equipment

RO water, instead of service water, is being used to clean equipment. Hot water is needed to clean the equipment. It seems that hot service water is not available to Process Operators.

> "So, we are kind of spending much money cleaning and going to the drain with RO water, instead of maybe getting some hoses with normal water, service water, to wash the place."
> "I was talking to him [Dave, Process Operator] and he's like, 'Anna, we work with products and we need to use hot water'".
>
> – Anna Andras, Shift Supervisor

Solution: Supply Wet Process Areas with hot service water with new colour coded hoses, which stand out to Process Operators as the new alternative to using RO water for cleaning. Before installing hot service water hosing, ask the Process Operators which colour coding system they would find most useful.

Water Optimisation

Original manufacturer settings allow for additional rinse time/water, which is unnecessary. Re-using final rinse water is another procedure which saves water. CIP automation may not be an ideal solution, as it allows for a "fire and forget scenario" (Nial Mullane). More emphasis on CIP as an integral part of the process is needed.

"So, an awful lot of these things when they were set up by the manufacturers, there was a bit added on…. everywhere… it's going straight down the drain, it's not going back, and another thing about CIP, a lot of other companies do it, we don't do it, is that they take their final rinse, which is clean, it's just rinsing out some acid, and then storage, and they use if for the first rinse of the next CIP… a lot of it is down to optimisation of water, saving of water, there are 3 big ones; times of rinses; temperature of rinses is another big save; and re-use of final rinse water."

"CIP unfortunately has become, over the years, with the introduction of automation, a kind of a fire and forget scenario, where someone is so glad to be getting to the end of their production run, they throw on a CIP and they go away for their dinner… and they come back and the CIP is finished and they don't know if it went over by 10 minutes, or if it was very successful or whatever, so CIP should go from being that, to being a pre-requisite for production."

– Nial Mullane, Special Projects

Solution: If new CIP procedures are to be put in place, perhaps use the dashboard as a platform to emphasise these new solutions, alongside information on water usage per area and the life cycle of water at Wyeth.

Communication

Communication between engineers and operators needs to be further improved.

"Probably the big thing is that, if they're putting in something new, they don't talk enough to the operators, they just put it in, like you know, they're not getting enough of an input, it mightn't end up the best way of doing it, you know?"

– Dave, Process Operator

[Ana Andas, Shift Supervisor describes a good day when she was without Shift Manager, and targets were exceeded by 1.5 batches]

"They were really like resilient and they were happy that they were doing this for me… I treat them well, I treat them as friends. I think they know they can count on me, so they wanted me to feel the same. They were really like communicative between themselves, like 'I'm going for a break now, who's going next', so they did all by themselves and I didn't ask much, and they appreciated, they said 'Anna, it's simple and we're going to organise it by ourselves, to see how happy you were and how proud you were of us', it's great, so it shows that they care as well."

– Ana Andas, Shift Supervisor

Solution: By having more conversations, operators will feel more included, and their long-term, hands-on experience, more valued. By having more involvement and responsibility, where possible, old habits can be broken and new procedures adopted, if they have a say in their creation.

Culture

Generally, water is not regarded as a resource in Ireland for obvious reasons. This attitude may be further compounded by the fact that Wyeth receives its water for treatment from the River Deel. Also, a lot of staff at Wyeth come from farming families, some of whom have their own wells on their lands. The cost of water, both economically and environmentally, is not fully realised. Apart from the introduction of water tax in 2017, the idea of paying for water remains a foreign concept to the Irish people.

Solution: Include contextual data in the dashboard, which relates to the staff at Wyeth. This could refer to the rural lifestyle, for example, the inclusion of contextual notions of cost saving and water usage instead of cubic metres and abstract metrics. Make it personal for each staff member, to encourage conversations both at work and at home. If staff members are made aware of the true cost of water, in all areas at Wyeth, they may be encouraged to re-consider their water usage at home also.

Summary of semi-structured interview responses

Please describe a really good day at work. What happened that day to make it memorable?

Delivering training which is engaging and receives a good response, Good production output
- John Creedon, Technical Training

Success of the 3 day Chinese audit
- Ian Ryan, Energy and Utilities Manager
- Jon O'Connell, Research and Development

Reacting to the various concerns around Covid-19, reconfiguring how we interact
- John Ferris, Janitor Operations

Which apps, sites tools do you enjoy using and why?

"RTE, BBC, Irish Independent because they are factual, you trust them, they tend to have some pretty good articles, well researched, fact based, short to the point and well written."
– John Creedon, Technical Training

- Youtube
- Amazon
- Sustaineo presentation with dynamic graphics (No dropdown menus)
- Mindmaps
-Textual brainstorming apps

What are you missing in your current management/process system?

- Resources are always an issue
- Results vs developing
- Energy Saving CIP training
- Knowledge transfer after initial good reaction
- Business impact of training is not yet measured
- Cost of water is not yet measured
- Guidance is needed on SOPs
- Everything is rinsed 3 times
- Some ageing system
- Smell of ammonia when arriving for work

How often do you think about saving water at work?

a) Often 4/5
b) Sometimes 0/5
c) Rarely 1/5

(6 participants did not directly answer)

How often have you noticed water being saved at work?

a) Often 0/5
b) Sometimes 2/5
c) Rarely 3/5

(6 participants did not directly answer)

Are there any processes, where you think water could be used more efficiently? If yes, which processes and how could these be improved?

"There are no posters on cleaning wet process areas directly in the control room, only in corridors"

– John Creedon, Technical Training

"Fight for capital expenditure required when registering heat, water recovery opportunities"

– Maura Monahan, Finance

"In all areas, experience on the floor is limited…"

– Anthony O'Brien, Procurement

"There is no water re-use"

– Ian Ryan, Energy and Utilities Manager

- Wet Process Areas (2 citations)
- CIP
- 6-7 acres of roof space and storm drains - a wasted resource

If you knew that a more efficient, water-saving process existed, how likely would you be to use this process?

a) Very likely, I am concerned with saving water (cost & environment) 5/5
b) Likely, I would use the efficient process if I remembered 0/5
c) Not very likely, I am not concerned with saving water 0/5

(6 participants did not directly answer)

What would be the best way to get your attention about saving water?

a) TV display containing information with pictures and explanations of the life cycle of water at Wyeth 0/4
b) Interactive touchscreen TV display with information on water-saving processes available for the various sections at Wyeth 3/4
c) Display focussed on the various sections' staff, and their individual processes 1/4

(7 participants did not directly answer)

What would you like to see included in such a TV display?

a) Information on how I can improve my water-saving, at home and at work 1/6
b) Statistics on how much water costs for each process, and therefore how much can be saved 4/6
c) Information on how I can benefit from saving water, at home and at work 1/6

(5 participants did not directly answer)

Do you feel motivated at work, to save water?

a) Yes, I know the cost and environmental benefits to saving water 3/3
b) Sometimes, I do try to save water but at times it is not possible 0/3
c) Rarely, I have my processes and routines, saving water does not concern me 0/3

(8 participants did not directly answer)

What could Wyeth do to motivate you more to save water?

"Weekly operating reviews… water could be an item on it… then ownership will remain in that area"

– Maura Monahan, Finance

"… targeted messages, volumes used are so huge, compared to what I use. Make it relevant to them, the amount of water extract from the river to run… Its more about influencing than anything else. Put volumes in a context, cost figures compared to if we sourced from Limerick County Council"

– John Creedon, Technical Training

"Information on stands, tables in the canteen, on an infrequent basis"

– Anthony O'Brien

"Positive news stories" – Ian Ryan

"No incentive at the moment, a league table… competition between shifts/departments"

– John Ferris

If you knew the savings (cost & environment) within each sector, with and without water-saving processes, would you be more mindful about saving water?

a) Yes, if I knew how much water and cost could be saved	4/4
b) Yes, but I would not go out of my way	0/4
c) No, saving water (cost & environment) does not concern me	0/4

(7 participants did not directly answer)

What do you think are the challenges Wyeth faces in its attempts to save water? What's the most difficult part of your current process?

"Competing with the product safety message" – John Creedon, Technical Training

"Not seen as a scarce resource… we need a sharp shock" – Maura Monahan, Finance

"Nestle vs Pro-active" – Anthony O'Brien, Procurement

"Attitude to saving water… they do not realise the cost of water, how much water they use, for example the dryer operators… there is a subconscious attitude there, a lack of real awareness. The average age of employees is 47… it is generational, they are not as concerned as younger generations"

"There are conflicting priorities in process areas. They have a lot of different jobs to do, so by the time they have to clean the area, using extra water is not on their mind. Also, they do not have the time to consider water usage. There is no consequence for using too much water, as in, if they added too much vitamin, a whole batch would be useless."
– Ian Ryan, Energy and Utilities Manager

Do you have any ideas for saving water at work which are not currently in practice?

"More competition between areas" - Adrienne McMahon, Quality Lab Process

"Emphasise the processes, costs" "We need to address the Irishness"
– Anthony O'Brien, Procurement

"A roadshow to get people involved, similar to VHI, with engaging information"
– John Ferris, Janitor Operations