

UKWIR - Big Question No. 2

How do we achieve zero leakage in a sustainable way by 2050?

Enhancing a Route Map to Achieve the Vision

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Overview of workshop

-  Introduction to UKWIR Zero Leakage Route Map
-  CLEAR IDEAS: Process Overview
-  CLEAR IDEAS: Identify and prioritise any RouteMap omissions
-  CLEAR IDEAS: Generate creative solutions to gaps and blockers
-  CLEAR IDEAS: Assess & select solutions for further development

Big Question:

How do we achieve zero leakage in a sustainable way by 2050?



Vision

How do we achieve zero leakage in a sustainable way by 2050?

Outcomes

We can confidently quantify leakage and demonstrate when it is zero

New leaks on existing networks are minimised

All new leaks are found quickly after they break out

Repairs are quick, economic with min. disruption

Background leakage is eliminated

All new pipework is leak-free when laid, and remains so throughout its economic life

Key Benefits

We can make accurate local water balances

We can install near universal customer metering

We can develop strategies to prevent or minimise new leaks

We can install real-time alarms on new or imminent leaks

We have remote leak detection tools (e.g. drones)

We have effective acoustic & non acoustic detection methods

We have improved zero/minimum excavation techniques

We understand the nature and magnitude of background leakage

We have better tools and techniques, QA and staff training to prevent leaks

We have improved specifications for new networks

We have accurate knowledge of where water is going within DMAs

We have improved knowledge of how and why leaks break out and grow

We have indicators (e.g. flow, pressure, noise) for new or imminent leaks

We know how to make correlators more effective

We know how/where to measure for detection

We have developed plastic and AC pipe tracing tools

We have improved structural lining techniques

We understand how to prevent repeat bursts

How to prevent or minimise leaks on existing pipes

Prediction of future leakage and burst rates for different types of pipes

Causes of transients in distribution networks

Use of remote imagery for leak detection

Use of optical fibres for detection

Development of techniques for tracing non-metallic pipes

Development of platelet-type techniques (by suppliers)

Development of self-healing pipes (by suppliers)

Understand the balance between use, supply pipe leakage, plumbing losses and meter under-registration

How does deterioration of pipes evolve into leakage

Impact of network operation on leakage

Enhancing the transmission and detectability of leak noise on plastic pipes

How to pinpoint leaks very accurately from the surface

Where does background leakage occur? How great is it?

Cost benefit of high spec networks in terms of maint. savings

Establish high spec. DMAs to demonstrate zero leakage is achievable

Use of smart networks for leakage management

Develop low cost local flow measurement techniques

Deterioration processes in mains and services of various materials

Deterioration processes in joints of various types

Transient v steady state detection methods

Incidence and causes of repeat bursts at old repairs)

Comparison of cured-in-place and sprayed structural linings

Making new pipework leak-free with existing techniques

Identify and quantify leakage in new DMAs and relate to installation



A

B

C

D

E

F

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CLEAR IDEAS

So how do we...?

**Create an Effective, Comprehensive and Aspirational
Zero Leakage Route Map?**



Introduction to the CLEAR IDEAS
innovation development model

CLEAR IDEAS model background

- Invented in 2005 by Dr Kamal Birdi (University of Sheffield) after researching creativity and innovation in hundreds of organisations
- Over 2000 people from public, private and third sector organisations in UK and abroad have now taken part in CLEAR IDEAS workshops
- Evaluation shows model is well-received, significant increase in innovation competencies and examples of improvement in organisational efficiency and performance e.g.
 - Helped redevelopment of adult social care service saving £1.5m
 - Reduced cost of fitting smoke alarms
 - Helped win £3.9m TWENTY65 EPSRC collaborative industry-academic water research grant
 - Improvement in child healthcare medication regime

Twitter: @Dr_ClearIdeas



COMMIT
to doing



LEAD
the
initiative



ENGAGE
those
affected



ALIGN
for
delivery



REVIEW
progress
regularly



CLEAR IDEAS: An IDEAS session

Step	Activity	Timing (mins)
	ILLUMINATE: Each group works on the 'How do we.?' challenge	
1.	DIAGNOSE: Identify and group different omissions	20
2.	DIAGNOSE: Prioritise the most critical omissions	5
3.	ERUPT: Generate lots of creative ideas for dealing with critical omissions	25
4.	ASSESS: Evaluate how good your ideas are in dealing with the critical omissions	5
5.	SELECT: Choose which ideas will form your solutions	5
	Share and Wrap Up	15

CLEAR IDEAS: **ILLUMINATE** 'How do we...?' Challenges

Create an

- **Effective**
- **Comprehensive**
- **Aspirational**

Zero Leakage Route Map?

CLEAR IDEAS: Step 1a: **DIAGNOSE**

Individually read the Route Map and identify what you think is missing

Grab a few post-its and on your own write down your thoughts on:

“What are the most important omissions that would stop the Route Map achieving its aim of zero leakage? Omissions could include gaps or altering details regarding what is there already”

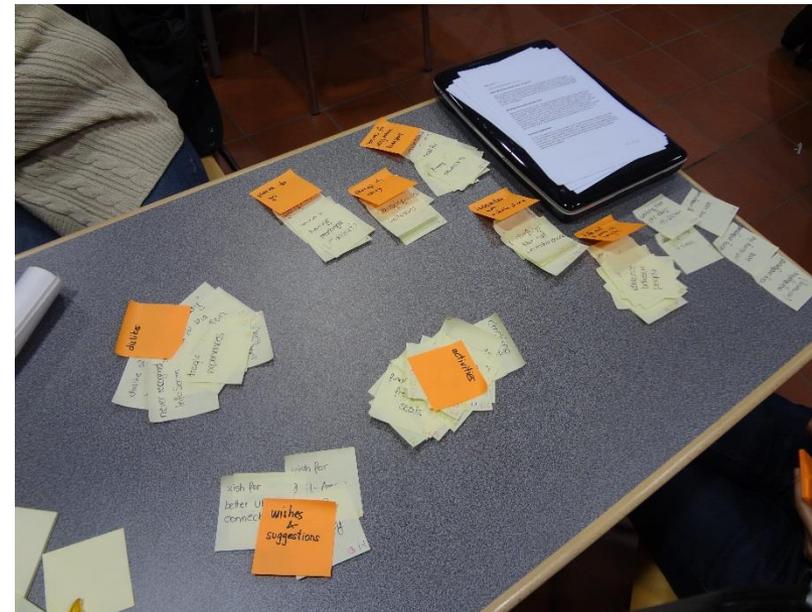
- One omission per post it
- 10 minutes to do this on your own

10 mins

CLEAR IDEAS: Step 1b: **DIAGNOSE**

Sharing and sorting omissions into themes

- Each person to share one omission with the group in round-robin style. If someone else has the same type of omission then add your post-it to it.
- Once all omissions shared, then group them into similar themes. It is fine for a post-it to be on its own if it cannot be clustered with others.
- Put a post-it labelling the theme on each cluster of post-its.



10 mins

CLEAR IDEAS: Step 2: **DIAGNOSE**

Ranking the omission themes

- Each person puts a tick on the omissions themes which they think are the **3 biggest reasons** for potential failure.
- After everyone has voted, circle the three omission themes with the most ticks against them to prioritise what you need to tackle first.
- The three most critical omission themes will now form the specific focus for generating creative ideas to deal with them
 - Write each new 'How do we..?' 2.0 on a piece of A3 paper

5 mins

CLEAR IDEAS: Step 2: **DIAGNOSE**

Priority Omission 1

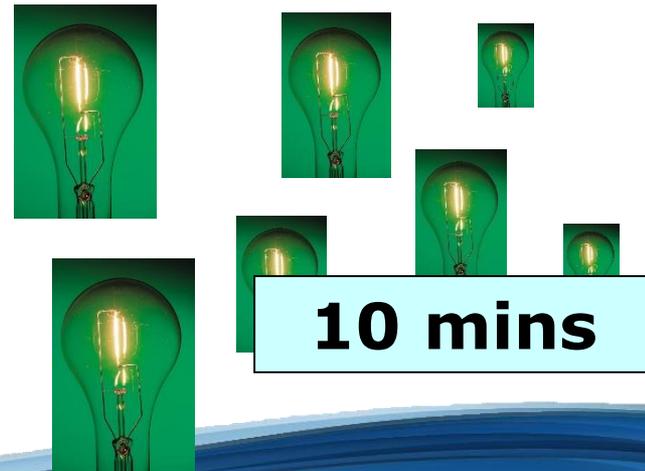
Priority Omission 2

Priority Omission 3

CLEAR IDEAS: Step 3a: **ERUPT** with creative ideas:

On your own

- On your own again, spend a few minutes trying to come up with as many ideas as possible for how we could deal with one or more of the priority omissions.
- One idea per post-it
- Be open-minded and do not judge your ideas – ‘Lots of Ands, no Buts!’
- Be as radical and original as you want.
- Some creative triggers coming up...





Try reversing the order in which you do things



What would you do if you had £5bn to spend on this?

What would your favourite film or historical character do in this situation?



‘Lots of Ands, no Buts!’

CLEAR IDEAS: Step 3a: **ERUPT** with creative ideas:

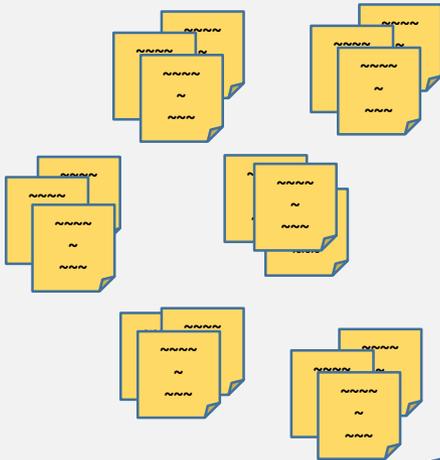
Share them with the group

- Each person to share one idea with the group in round-robin style and put post-it on relevant A3 Omission sheet. Anyone else with a similar idea puts their post-it on it too.
- Next person shares a different idea and puts their idea on the A3. Continue until all different ideas stuck on sheet.
- Create a label for similar types of ideas (different colour)
- Stay open-minded and do not criticise the ideas yet – ‘Lots of Ands, no Buts!’
- Add any new ideas that come out of your discussion.

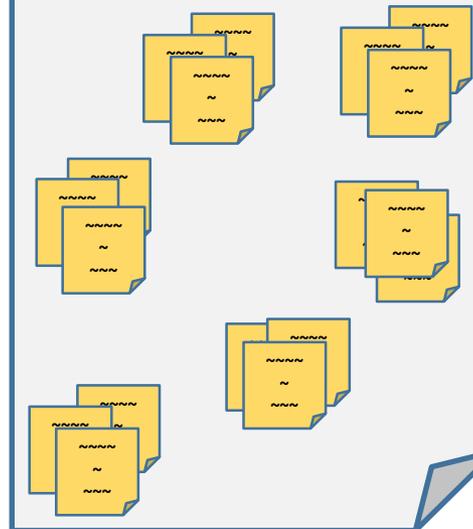
15 mins

CLEAR IDEAS: Step 3a: **ERUPT** with creative ideas:

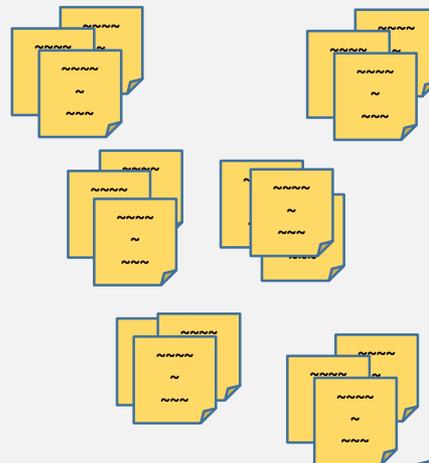
Priority Omission 1



Priority Omission 2

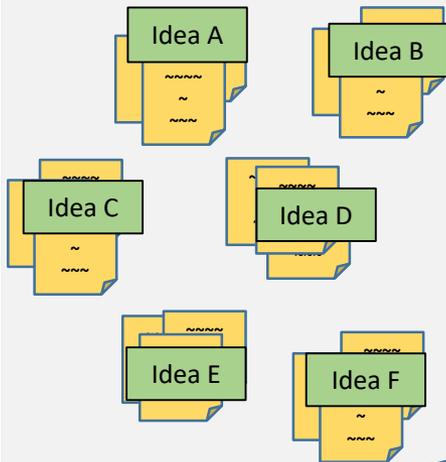


Priority Omission 3

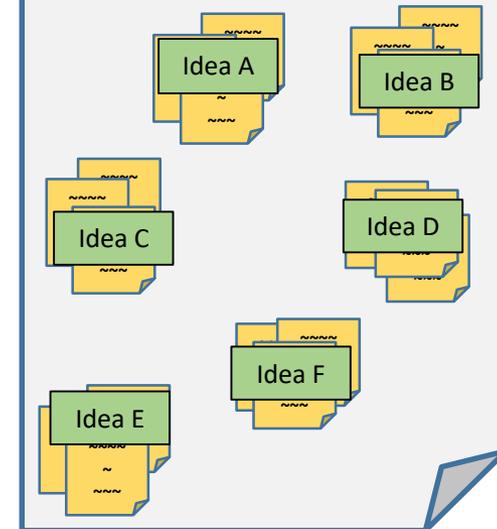


CLEAR IDEAS: Step 3a: ERUPT with creative ideas:

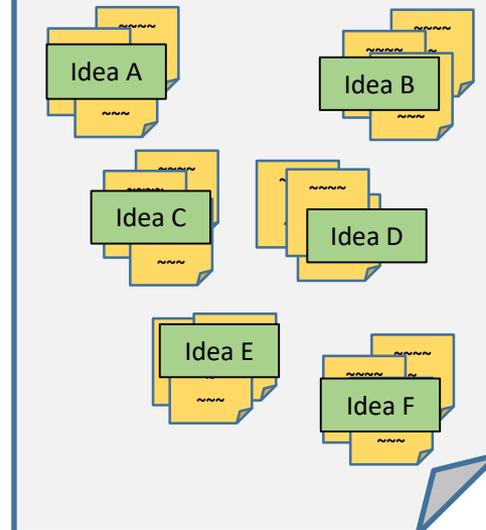
Priority Omission 1



Priority Omission 2



Priority Omission 3



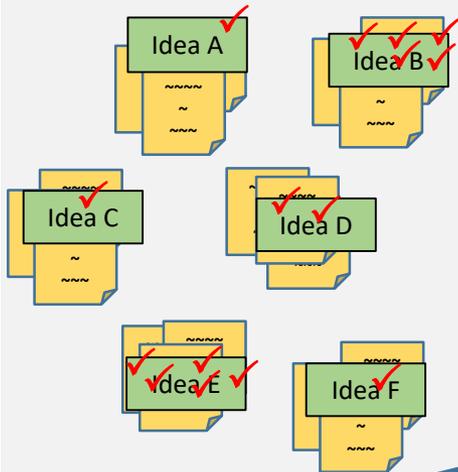
CLEAR IDEAS: Step 4: **ASSESS** quality of ideas

- Each person has two ticks they can put against what they think are the two best ideas on each A3 (i.e. six ticks overall)
- ‘Best’ in this case means in terms of likelihood of dealing well with the critical omission and that we can do something about
- If we had more time, ‘best’ could also be scored more specifically in terms of other criteria e.g. cost, time to implement etc.

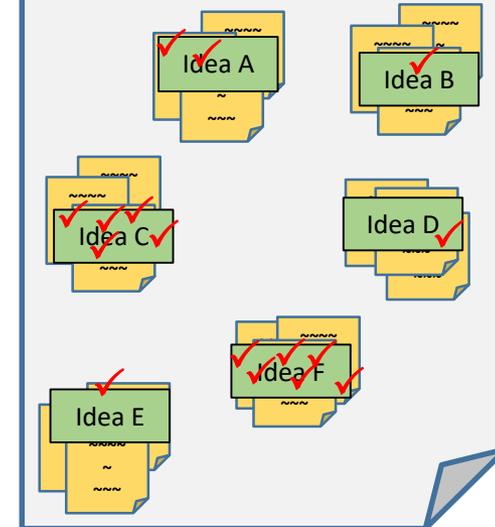
5 mins

CLEAR IDEAS: Step 4: **ASSESS** quality of ideas

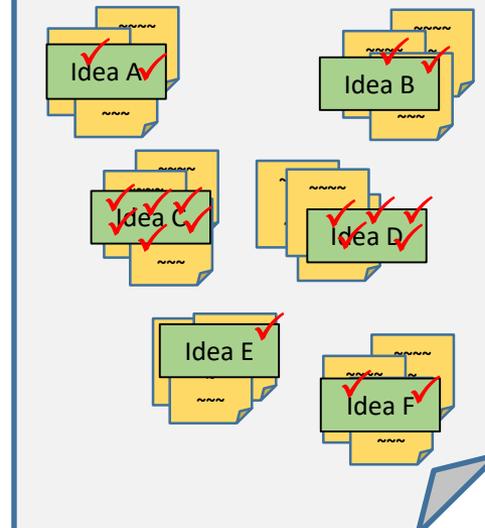
Priority Omission 1



Priority Omission 2



Priority Omission 3

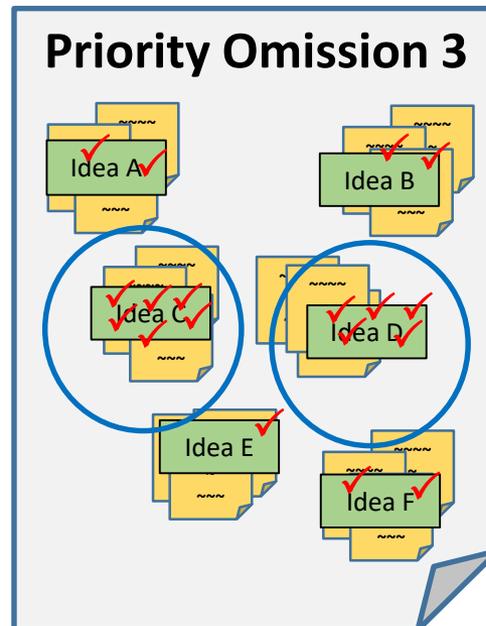
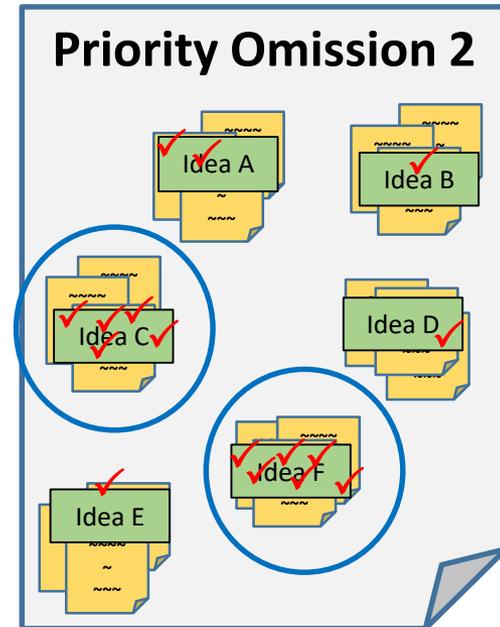
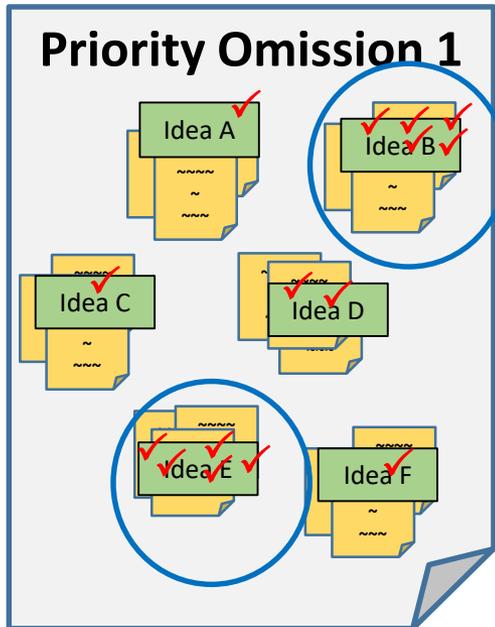


CLEAR IDEAS: Step 5: **SELECT & SHARE** your solution

- Choose the two ideas with the most ticks on an A3 to combine into your solution for that omission
- Ideas can address different needs or may be in terms of short-term, medium-term and long-term strategies
- Feed back the solutions to the group

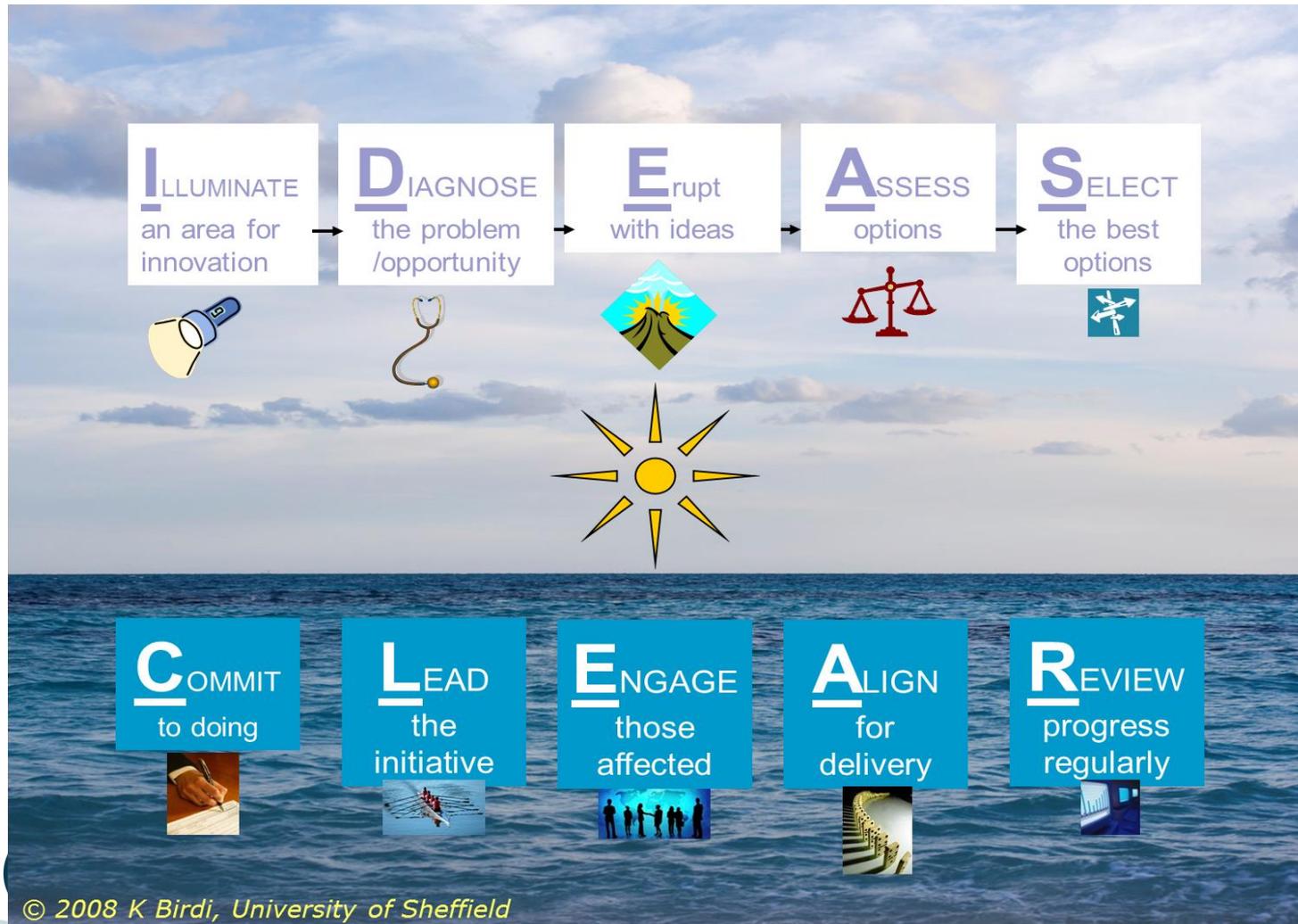
10 mins

CLEAR IDEAS: Step 5: **SELECT & SHARE** your solution



CLEAR IDEAS: Steps 6-10: **CLEAR**

Implementing your solution



CLEAR IDEAS: Steps 6-10: **CLEAR**

Sign up

- If you are interested on working on any of these solutions then please write your name and email on the relevant A3 sheet.

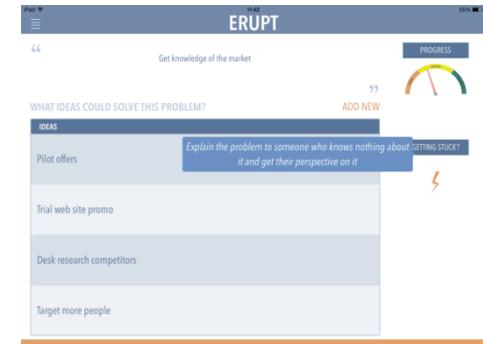
Water Innovation Training Programme

- Developing innovation capabilities of UK water companies and supplier
- 2 x 2-day programme
 - 11th-12th June and 17th-18th July 2019
- Delivered by leading experts in water and innovation
- “Excellent course! Really enjoyed all aspects.”
- “I fully endorse this workshop and will be recommending it to colleagues.”



CLEAR IDEAS Tools!

- CLEAR IDEAS App for iPad - Free!
 - just look for 'CLEAR IDEAS' on iTunes App Store
- CLEAR IDEAS online app (accessible on any web-enabled device) – Free!
 - <http://clearideas.sheffield.ac.uk/>
 - Just register with username and password





**Thank
you**

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