Human Factors for Test Automation (90mins)

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Agenda and objectives

• (Some) human factors
  – Exercises
• Lessons from Industrialisation
  – Exercises
• People and teams
  – Exercises

1. Understand that automation / industrialization involves human factors;
2. Remember that other disciplines and industries have lessons for us;
3. Be introduced to models to help us understand how to work with people.
1. Implementing automation and industrialization involves human factors of teamwork and beyond teamwork

(SOME) HUMAN FACTORS TO START
Managing mental and physical territory

Personal space
- Continually panicky
- Flight distance: Continually alerted
- Alert distance: Can retreat

Home range
- Pathological behaviour
- Alerted
- Able to roam

Territory
- Hyperagressive
- Alerted
- Coexist

Animal behaviour and its implications. Ellis
Kubler-Ross: Attitudes to change

- Denial
- Anger
- Bargaining
- Depression
- Acceptance

A New Change!
Another New Change!
A change!


Be happy - do good - leave the world a better place than you found it.
Temperament – when do people adopt?

https://ameyakulkarni.com/2014/06/

Be happy - do good - leave the world a better place than you found it.
And when do ideas cross the chasm?

Fashionistas Will Move On to the next thing

Now it is implemented into the main stream

So obvious we don’t have to talk about it...
“Focus your effort on crossing the chasm and the first half of the curve”

https://scheubel.wordpress.com/2014/06/27/the-snake-that-swallowed-the-elephant-the-changeinnovation-adoption-curve/
Have a go...
think
pair
share

- Influences on automation
  - Why automate?
    - Reasons to automate
    - Reasons NOT to automate
  - How to automate
    - Enablers to automation
    - Blockers to automation

5 mins
Influences (1)

- hunger
- fullness
- eat

Be happy - do good - leave the world a better place than you found it.
Be happy - do good - leave the world a better place than you found it

Influences (2)

- fat
- sad
- eat

Diagram:

- fat
- eat
- sad

Arrows:
- fat to sad
- fat to eat
- eat to sad
Influence, Habits and Triggers

Identify the routine
Experiment with rewards
Isolate the cue
Have a plan

What is the new routine?

Write down your plan – new habit!

Does it have to be that reward?

Disrupt your habit

The Power of Habit: Why we do what we do and how to change By Charles Duhigg
Trickster Makes This World By Lewis Hyde

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Be happy - do good - leave the world a better place than you found it

Influences (3)

- fat
- eat
- sad

- Improved mood
- Reduced sadness

Taste - Short term reward

New reward: Fresh air

New routine: Go for walk

- Improved mood
- Reduced sadness
Have a go... think pair share

15 mins

• Influences on automation
  – One reason (for managers) to automate... is to reduce cost and time?
  – What happens to cost and time when you automate?

• Discuss what happens to cost and time when you introduce automation

• Draw a diagram to show what happens to cost and time when you introduce automation
Automation – short term effect on perceived cost and time

- New automation
- Desire for automation
- Change
- Disruption
- Morale
- Desire for change
- Change in direction
Automation – medium term effect on actual cost and time

Cost / Time to run Tests (this time)

- New automation
- Desire for automation

- Change
- Disruption
- Morale
- Trust in change

- Desire for change
- Change in direction

- Time to market
- Medium term effect on actual cost and time
Automation – long(er) term effect on cost and time

Cost/time to run once bedded in

Bedding in

Cost / Time to run Tests (this time)

Desire for automation

new automation

Desire for change

change

trust in change

disruption

morale

desire for change

change in direction

Time to market

Automation – long(er) term effect on cost and time

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2. Other disciplines and industries have lessons we should apply to the industrialisation of our own industry

LESSONS FROM INDUSTRIALISATION
Industrial revolution 1

Factories & Steam Power (~1760)
Industrial revolution 2

Steel & Mass Production (~1850)
Industrial revolution 3

“in 20 years time, there won’t be any working class people – they will have just died out…”

Computer Science student 1976

Electronics & IT (~1970)
Industrial revolution 4

“Industrie 4.0 with the idea of the smart factory, made up of smart communicating robots – and where the product itself is ‘smart’ enough to know aspects of how it should be built (for example, with an RFID chip describing its size, colour, etc.)”

Dr Stuart Reid STA
And whose job is affected now?

http://crest.cs.ucl.ac.uk/cow/47/slides/cow47_White.pdf (Borrowed from David White, CREST, UCL)

“Looks forward to a world in which our successors regard human programmers as a quaint anachronism of the past, in the same way that we now regard the human computers of our nineteenth and twentieth century forbearers…”

People fear automation

• We value...
  – Craftsmanship
  – Cognitive skills
  – Inventiveness & intelligence
  – and other human traits

• We resent and fear
  – Robotics
  – Industrial steps
  – When they affect our speciality.
Have a go... think pair share

- What fears might people have about automation?
  - Choose 2 or 3 roles in an IT project
  - For each role discuss and list
    - What affect will automation actually have for them?
    - What might they perceive as the affect of automation?

10 mins
3. Models exist to help us understand how to work with rather than against people in and affected by our projects

MORE PEOPLE - MODELS FOR TEAMWORK
Wish Mania: From heroes to demons...

‘a rapid, spontaneous spread of false, exaggerated, or unsubstantiated beliefs within a diffuse collective such as a community, region or country’

Heightened level of adoration
Euphoric joy, awe and hope
Positive expectations
That are disproportional to what can be achieved
Volatile and easily replaced by dashed hopes and hostility
Leading to...

Heightened level of concern
Viewed as a threat
Consensus that it is a serious threat
Requiring action
Safety bias: can we trust automation? Always...?

• We still need people
  – operate the automation
  – over-ride it if it malfunctions

• We need a team
  – Wallace needs Gromit, and
  – Gromit needs Wallace
Do you trust your automation?

Software tester finding decision making not supported by IT toolset:

“The test tool marked all the tests as passed except 1, but in fact none of the tests marked “passed” had actually run”

Quote from Fewster and Graham “Experiences of Test Automation”
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Team work needs preparation

1 ME
2 OTHERS
3 GOAL
C
5 IMPLEMENT
6 PERFORM
7 RENEW

Thanks to Nadine Raes of AQIS for this insight and model
Clean workspaces

• Keep it clean!
  – Ship shape and Bristol Fashion
  – Back stage rules
  – Horticulture and garden sheds

• So – code, automation, tests?
Information design

• People-centred, not tech-centred
• Apply Nielsen’s Heuristics to the automation interfaces
  – https://www.nngroup.com/articles/ten-usability-heuristics/
• Apply information design models from Tufte to the reporting from the automation
  – https://www.edwardtufte.com/tufte/
Quality viewpoints

• When designing automation, remember to consider all quality viewpoints:
  – Manufacturing
  – Product
  – User
  – Value
  – Transcendent
Have a go... think pair share

- Is there hero-worship or demonization in your workplace?
- Any safety bias?
- When you built the automation team did you go through steps to build it?
- Did you include automation users?
  - People centred approaches?
  - Quality viewpoints?

10 mins
Action plan

• What will you do as a result of this session?
  – This week?
  – This month?
  – This year?

Or do nothing!
Three key points

• 1. Implementing automation and industrialization involves human factors of teamwork and beyond teamwork;
• 2. Other disciplines and industries have lessons we should apply to the industrialisation of our own industry;
• 3. Models exist to help us understand how to work with rather than against people in and affected by our projects.
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