# QI TALK TIME

**Building an Irish Network of Quality Improvers**


## Intro to Human Factors / Ergonomics for Healthcare

## Dr Marie Ward

**@QITALKTIME**

# Speakers

**Dr Maire Ward**

holds a Ph.D. in Psychology Human Factors from Trinity College Dublin (2005). Post Ph.D. she was based in the Aerospace Psychology Research Group (now the Centre for Innovative Human Systems) where she managed and implemented quality and safety improvement initiatives in aviation, maritime, construction, road and rail industries.

In 2014 she moved to the newly established Health System team in UCD School of Nursing, Midwifery & Healthy Systems (2014-2018) as a Senior Research Fellow in Health Systems. Marie joined Children's Health Ireland as a Project Manager in Quality and Patient Safety in 2018

# Instructions

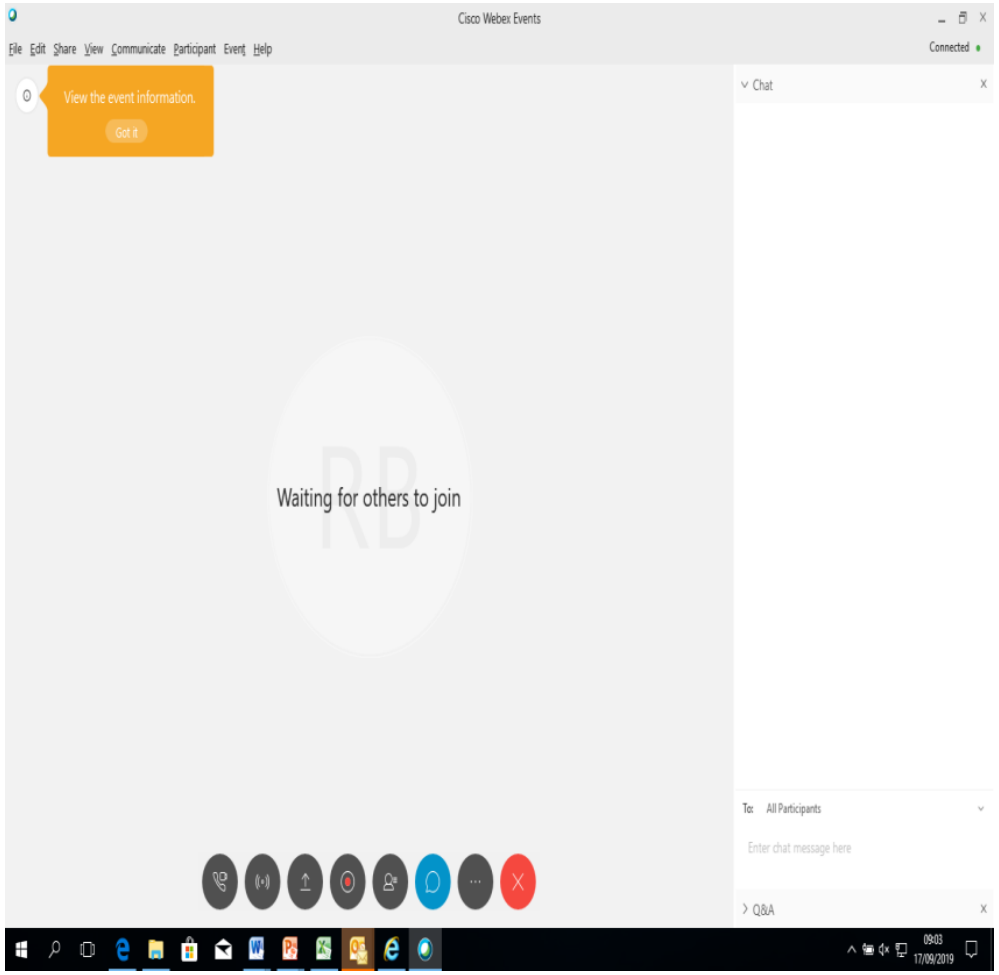
- Sound:

Computer or dial in:

**Telephone no: 01-5260058**

**Event number:844 122 707 #**

- Chat box function
  - Comments/Ideas
  - Keep the questions coming
- **Twitter: @QITalktime**



# Introduction to Human Factors / Ergonomics

**Dr. Marie Ward**
**Quality & Patient Safety Project Manager**
**Children's Health Ireland**
**&**
**Centre for Innovative Human Systems,**
**School of Psychology, TCD**

# Objectives of webinar

1. Give you an introduction to the science of Human Factors / Ergonomics
2. Explain why Human factors is important in safety critical industries like healthcare
3. Give you some ideas on how to go about introducing Human Factors/ Ergonomics principles and practices into your work area

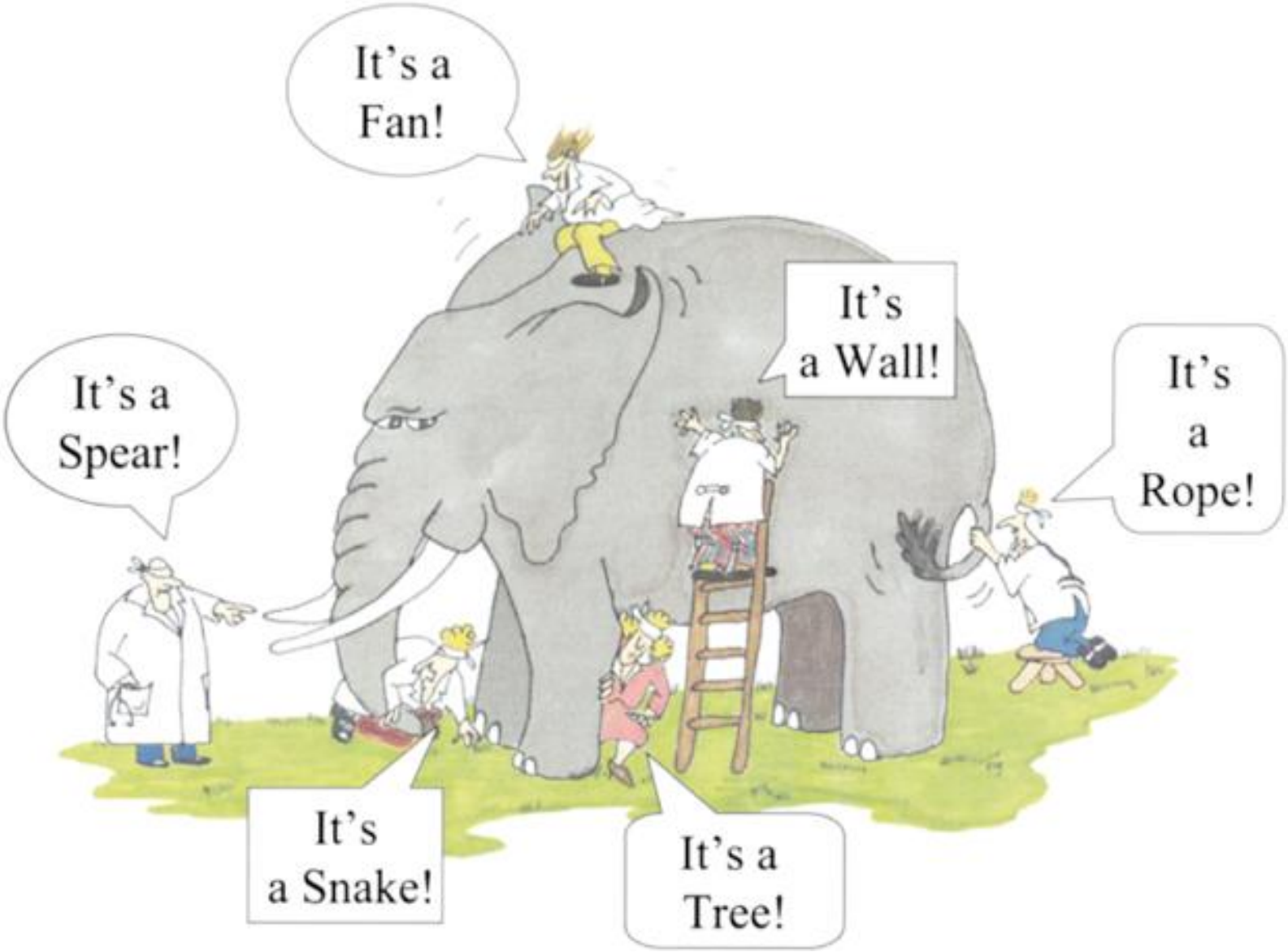
# Human Factors / Ergonomics

Human Factors / Ergonomics is the scientific discipline concerned with

- the understanding of **interactions** among humans and other elements of a **system**,
- and the profession that applies **theory, principles, data and methods**
- to **design**
- in order to **optimise human wellbeing** and
- **overall system performance**.

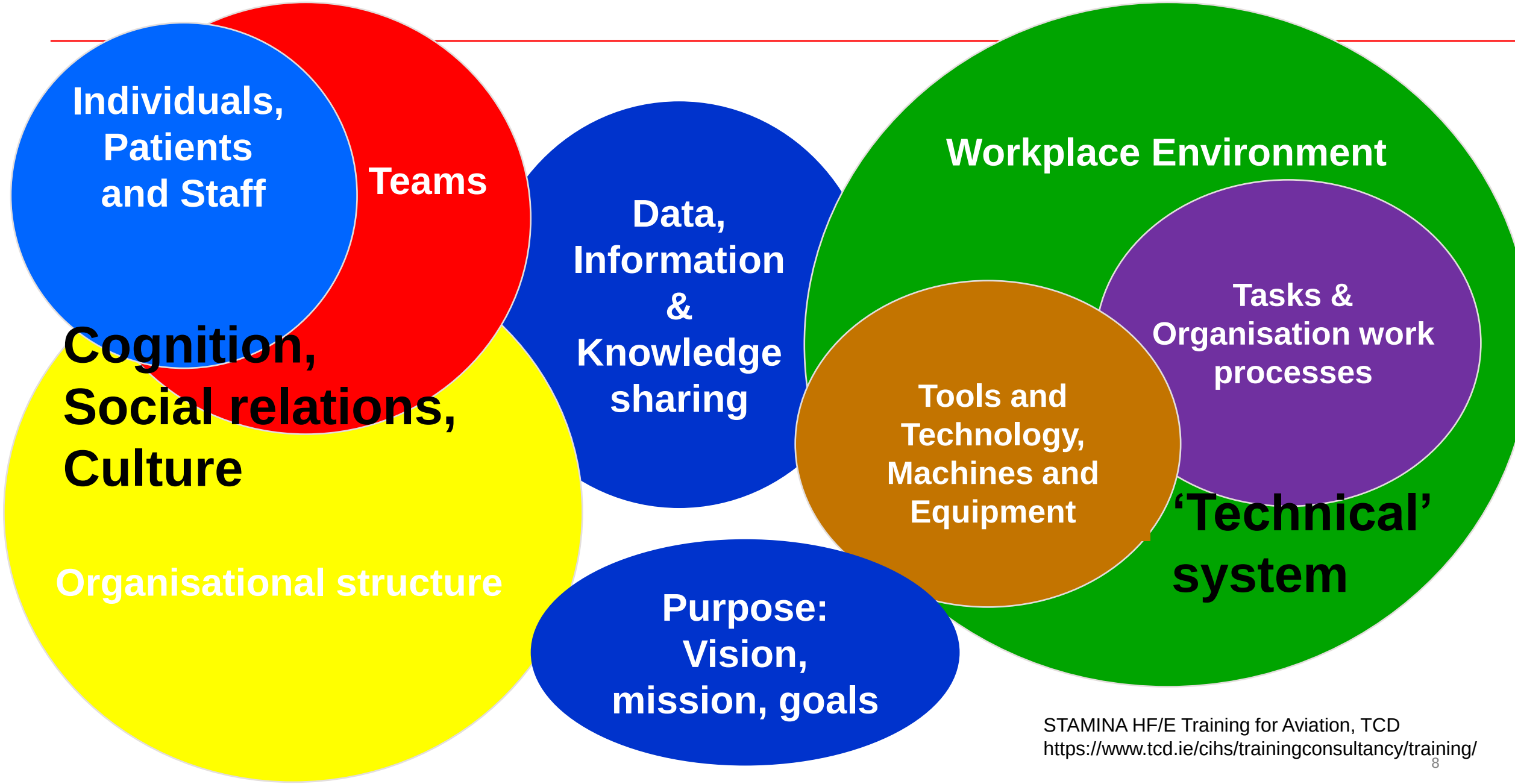
International Ergonomics Association (IEA) Council, August 2000


# Systems thinking



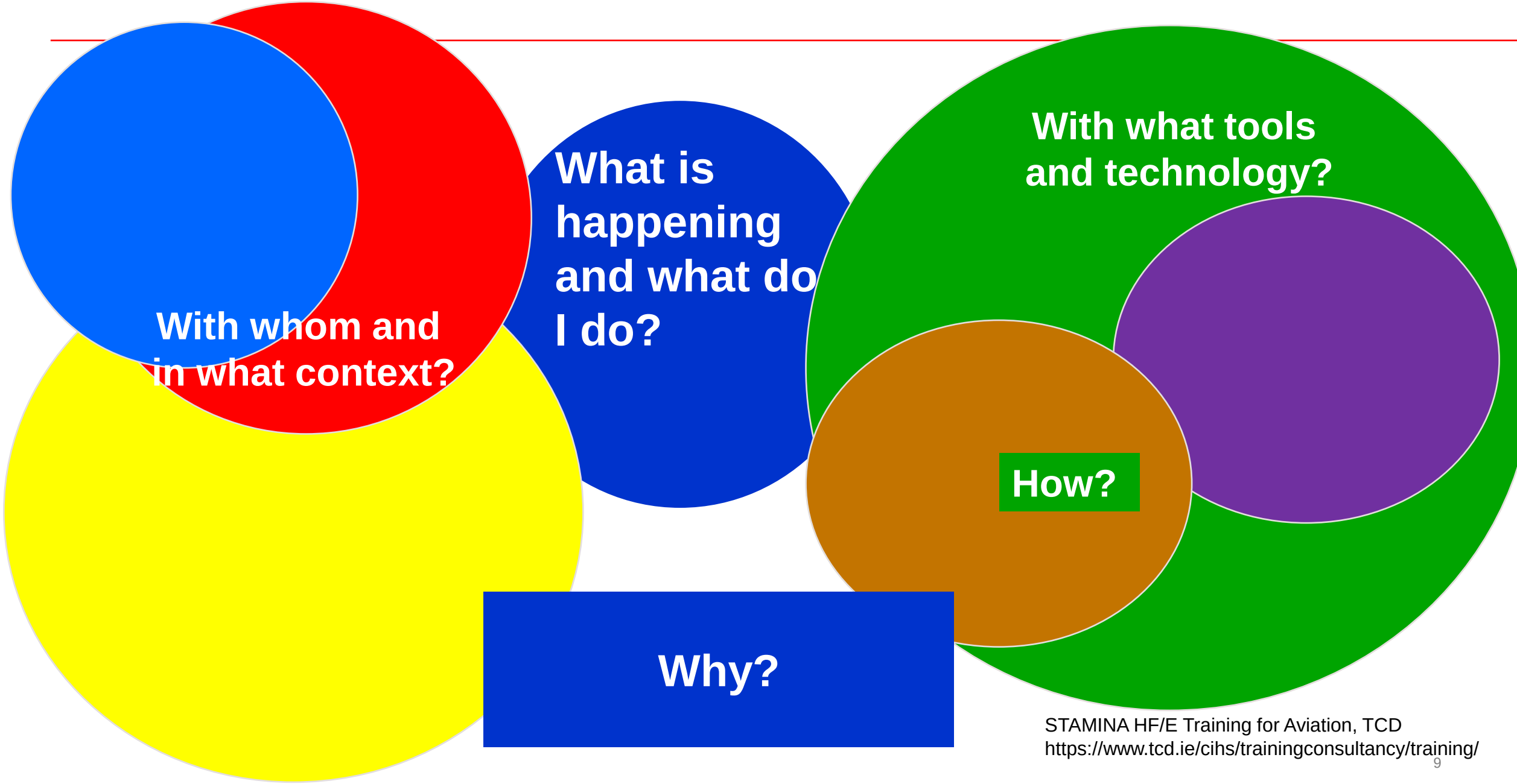

Systems thinking characterises HF/E…always look at the whole and recognise whole as greater than sum of parts.

# Socio-technical System



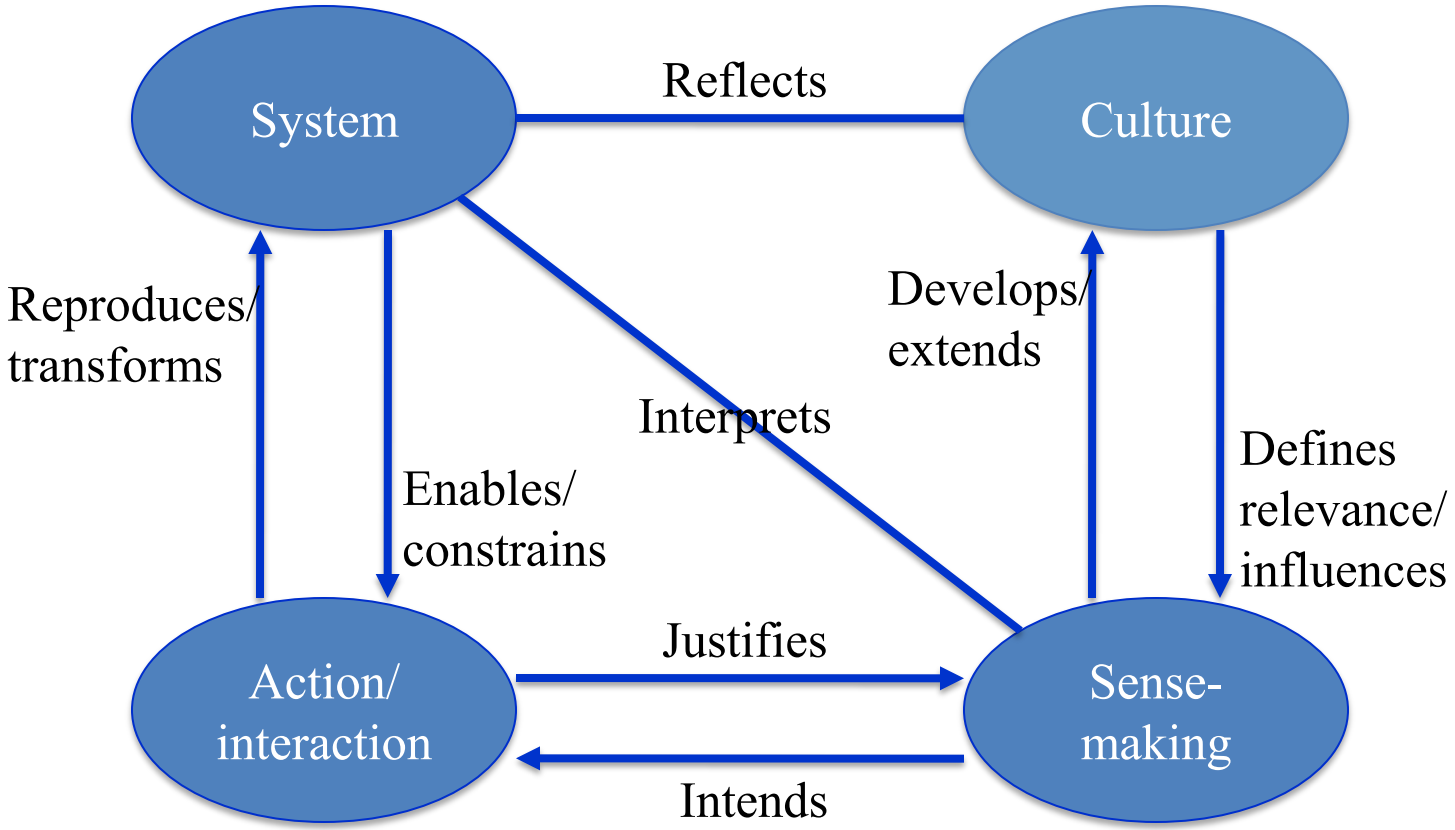

STAMINA HF/E Training for Aviation, TCD
https://www.tcd.ie/cihs/trainingconsultancy/training/

# Socio-technical System




STAMINA HF/E Training for Aviation, TCD
https://www.tcd.ie/cihs/trainingconsultancy/training/

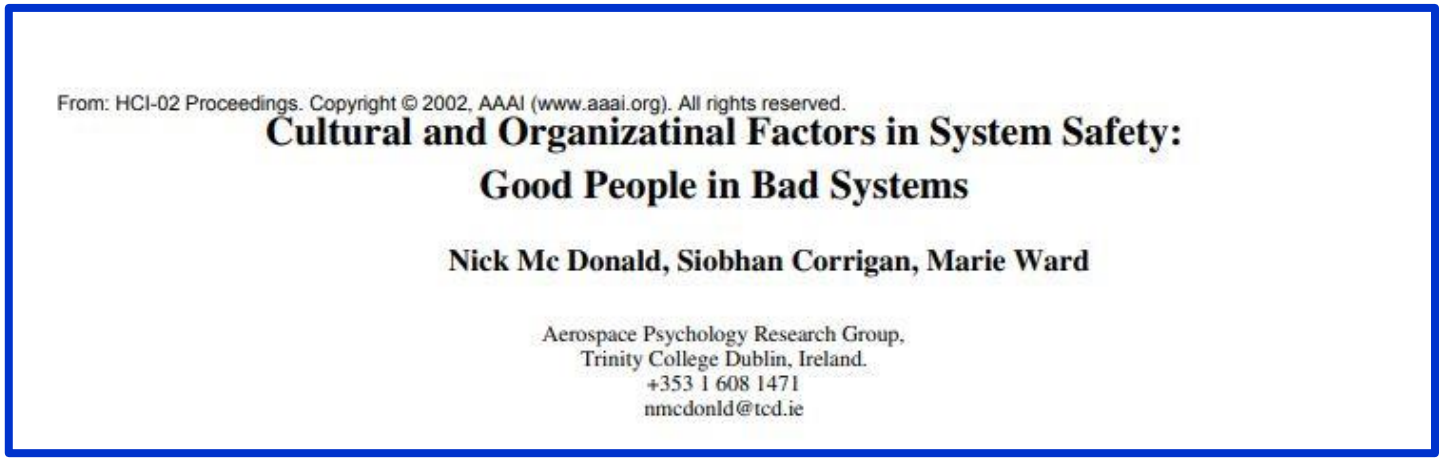
# The concept of Emergence




Outcomes result from the interaction of all the parts…
(McDonald, 2019)

# The concept of WIPIDO

- We talk about ‘functional systems’ with objectives, activity to match these objectives and outcomes
- Well-intentioned people in dysfunctional organisations
- Best AMEs making mistakes (McDonald et al 2000)





**Cultural and Organizatinal Factors in System Safety:**
**Good People in Bad Systems**

**Nick Mc Donald, Siobhan Corrigan, Marie Ward**

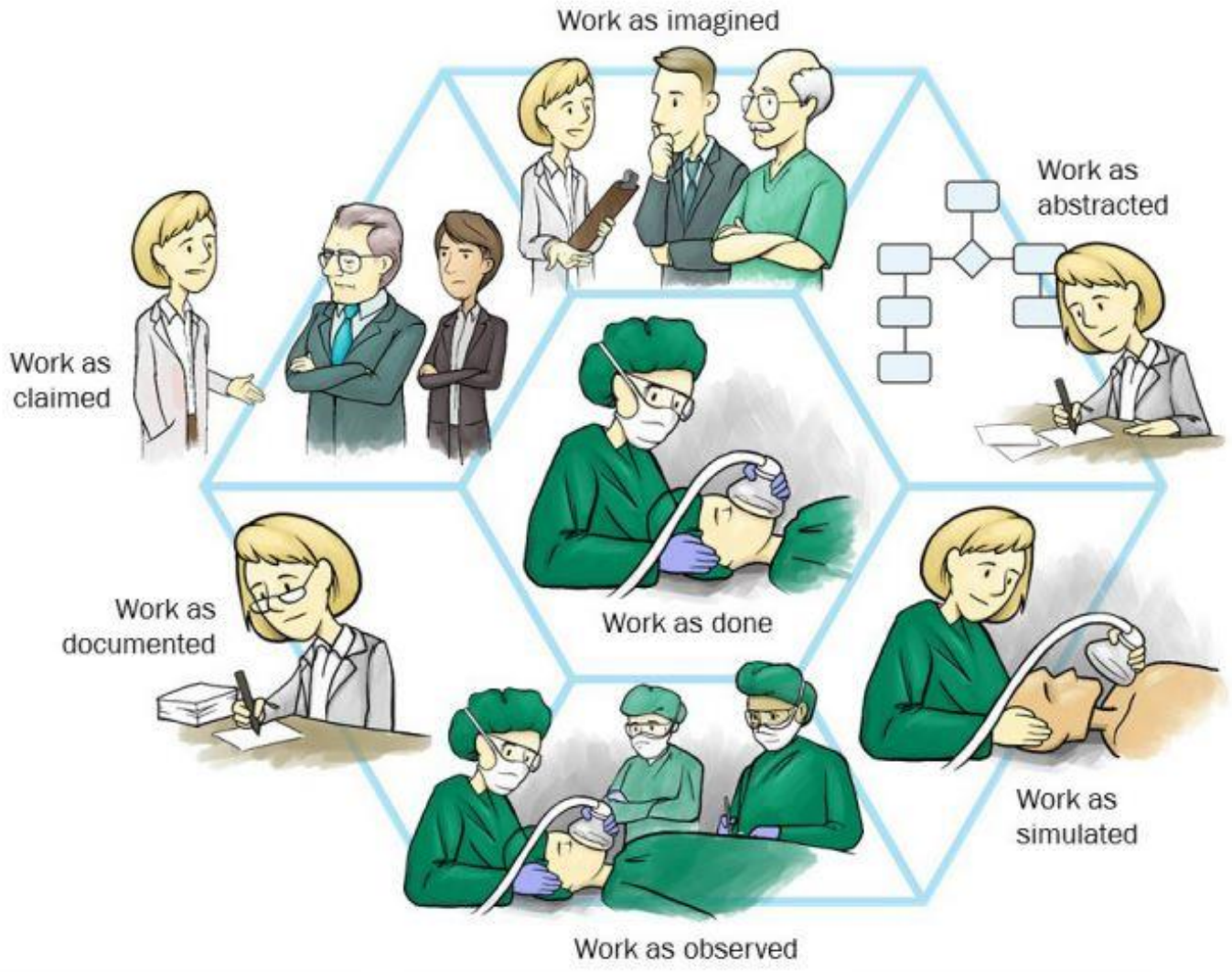
Aerospace Psychology Research Group,
Trinity College Dublin, Ireland.
+353 1 608 1471
nmcdonld@tcd.ie

McDonald N Corrigan S Ward M 2002 Well-intentioned people in dysfunctional systems. Keynote address. Proceedings of the 5th International Human error, Safety and systems development workshop (HESSD 02) 17-18 June 2002 Newcastle, Australia

ISBN: 1920701575

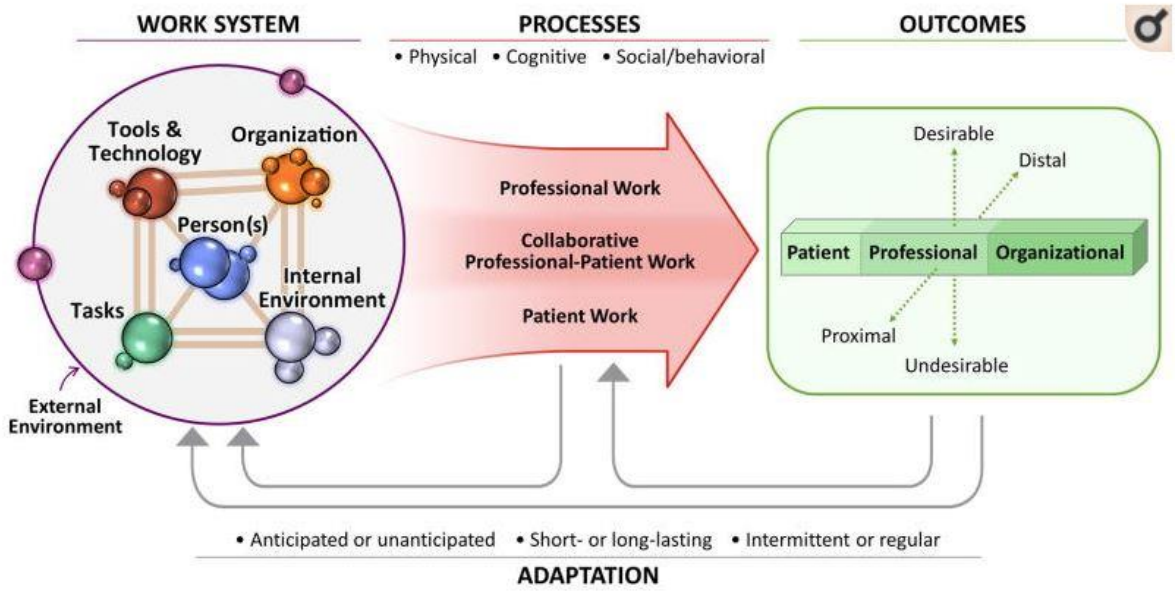
# Work as Imagined (formal system) vs Work as Done (informal system)

- Formal work system (work as described in PPPGs, SOPs)
- ‘Normal’/informal system (how work actually happens)
- Mistake made – we judge behaviour against the formal system
- AMEs following SOPs – 33% of time
- Gurses et al 2010 - clinician, guideline, system, and implementation characteristics



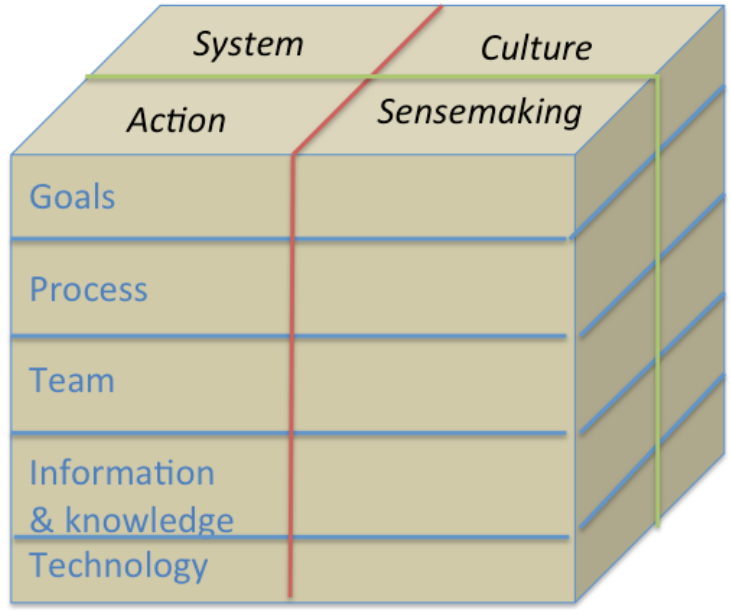

Deutsch, 2017

# HF/E Starting point – Understanding Current System




SEIPS 2.0 model.

SEIPS 2.0 Model




SCOPE Model

Int J Environ Res Public Health. 2018 Apr; 15(4): 714.
Published online 2018 Apr 10. doi: 10.3390/ijerph15040714
PMCID: PMC5923756
PMID: 29642646

## A Socio-Technical Exploration for Reducing & Mitigating the Risk of Retained Foreign Objects

Siobhán Corrigan,[1,*] Alison Kay,[1] Katie O'Byrne,[1] Dubhfeasa Slattery,[2,3] Sharon Sheehan,[4] Nick McDonald,[1] David Smyth,[5] Ken Mealy,[6] and Sam Cromie[1]

# HF/E Methods…very mixed but always take H-C and Systems Approach

**Ergonomics**
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/terg20

## A performance improvement case study in aircraft maintenance and its implications for hazard identification

Marie Ward [a] , Nick McDonald [a] , Rabea Morrison [a] , Des Gaynor [a] & Tony Nugent [a]
[a] HILAS Project, Aerospace Psychology Research Group, School of Psychology, Trinity College Dublin, Republic of Ireland

International Journal of *Environmental Research and Public Health*

MDPI

*Article*

## Using Co-Design to Develop a Collective Leadership Intervention for Healthcare Teams to Improve Safety Culture

**Marie E. Ward [1,*], Aoife De Brún [1], Deirdre Beirne [2], Clare Conway [3], Una Cunningham [4], Alan English [5], John Fitzsimons [6], Eileen Furlong [1], Yvonne Kane [3], Alan Kelly [4], Sinéad McDonnell [2], Sinead McGinley [1], Brenda Monaghan [7], Ann Myler [4], Emer Nolan [2], Róisín O'Donovan [1], Marie O'Shea [1], Arwa Shuhaiber [8] and Eilish McAuliffe [1]**

ELSEVIER

Safety Science
Volume 119, November 2019, Pages 252-265

## Human factors and safety culture: Challenges and opportunities for the port environment

S. Corrigan [a], A. Kay [a], M. Ryan [a], M.E. Ward [b], B. Brazil [c]

BMC Emerg Med. 2019; 19: 7.
Published online 2019 Jan 14. doi: 10.1186/s12873-018-0220-3

PMCID: PMC6332627
PMID: 30642263

## Developing outcome, process and balancing measures for an emergency department longitudinal patient monitoring system using a modified Delphi

Marie E. Ward,[1] Abel Wakai,[2] Ronald McDowell,[3] Fiona Boland,[4] Eoin Coughlan,[5] Moayed Hamza,[1] John Browne,[5] Ronan O'Sullivan,[6] Una Geary,[7] Fiona McDaid,[8] Éidín Ní Shé,[1] Frances J. Drummond,[9] Conor Deasy,[10] and Eilish McAuliffe[1]

# **HF/E Design** ISO 6385 (HF/E principles in the design of work systems)

- Consider major interactions between people, tasks, equipment, workspace and environment
- Consider human beings as the main factor and an integral part of the system to be designed, including the work process as well as the work environment.
- HF/E shall be used in a preventive function by being employed from the beginning - HF/E efforts should be greatest at this stage.
- Co-design & Co-production - Workers involved in design of work systems in all stages.

# Optimising performance

Impossible to eliminate all mistakes in any complex STS

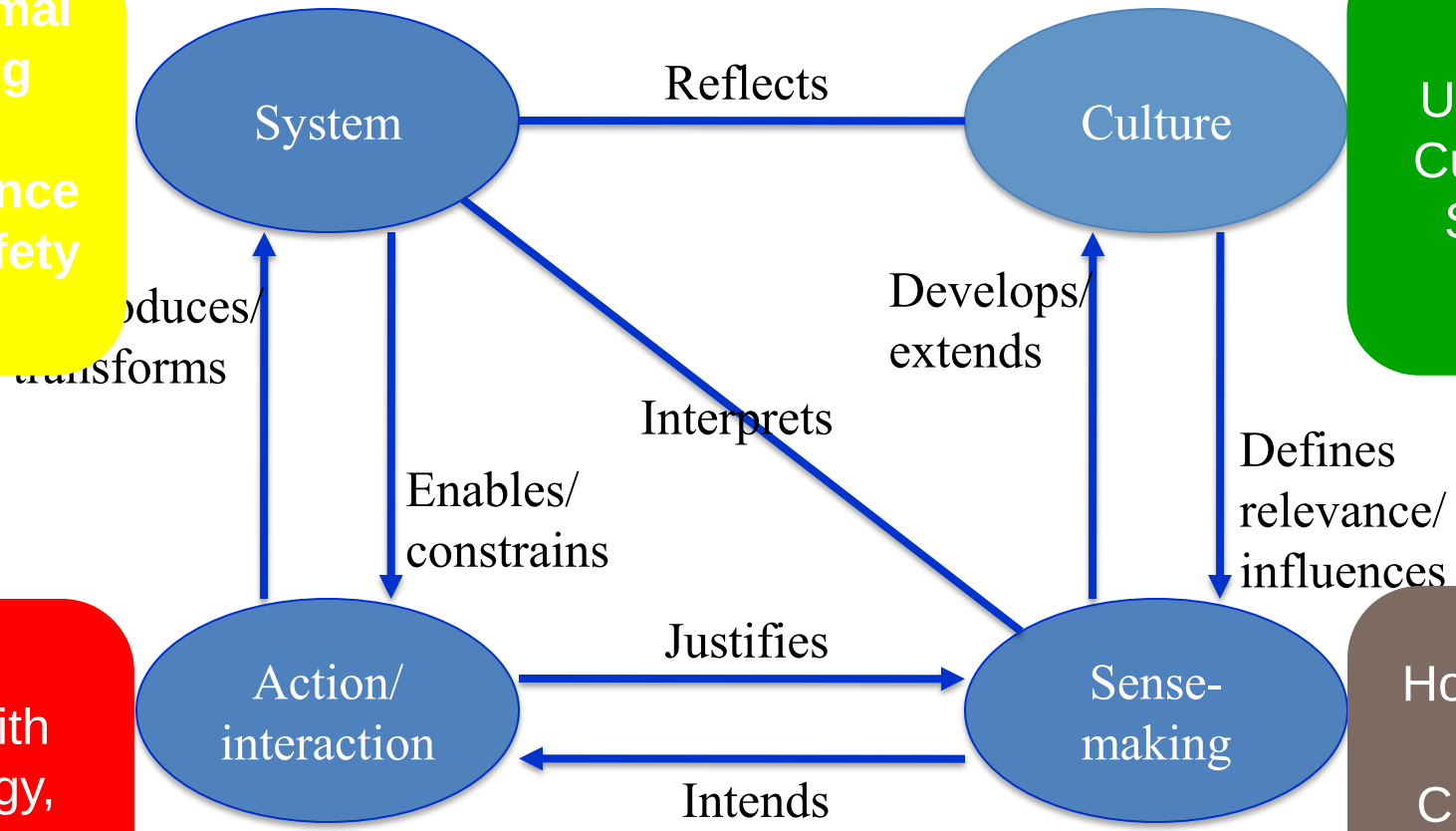
HF/E aims to reduce potential for making mistakes through good design & design for error capture

HF/E definition of safety is not about reduction of ‘error’ but about understanding how to optimise overall system performance and human wellbeing

**In Healthcare**
**10% - 30% - 50%**
**M – W – R**

# Optimising Performance

**Understanding formal & normal, learning from mistakes, everyday performance and excellence, Safety I & Safety II**




Understanding Safety Culture, Psychological Safety, Just Culture

How we interact with tools and technology, with others - Team working, Simulation

How we make sense of our world/work, Checklists, Situational Awareness, Safety Huddles

# Safety Culture

Chernobyl 1986

"The product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management"

UK HSC 1993

How committed we are to safety in words and deeds.

Received: 6 November 2018 | Revised: 30 November 2018 | Accepted: 9 December 2018

DOI: 10.1111/jonm.12740

REVIEW ARTICLE

WILEY

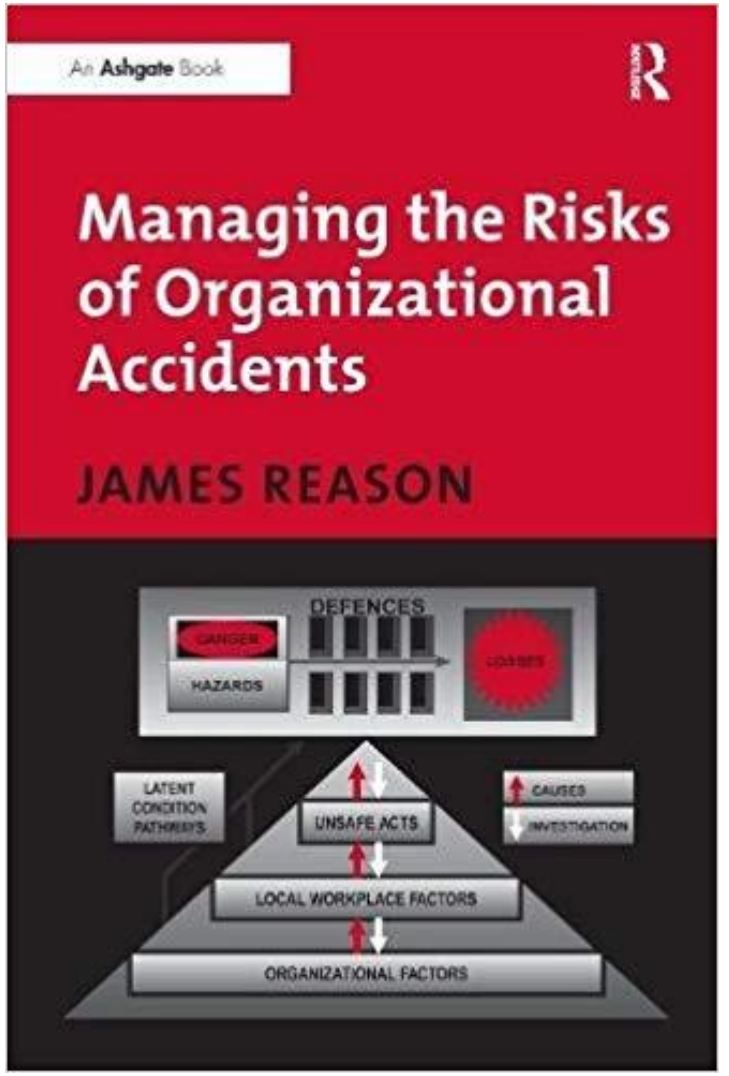
Safety culture in health care teams: A narrative review of the literature

Roisin O'Donovan | Marie Ward | Aoife De Brún | Eilish McAuliffe

# Safety Culture - Just Culture

"A 'no-blame' culture is neither feasible nor desirable. …A blanket amnesty on all unsafe acts would lack credibility in the eyes of the workforce. More importantly, it would be seen to oppose ***natural justice***.

What is needed is a ***just culture***, an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are also clear about where the line must be drawn between acceptable and unacceptable behavior."




Prof. James Reasons, 1997

# Safety Culture – Just Culture - Psychological Safety

The shared belief held by individuals and teams that their psychological safety and well-being is protected and supported by **senior management.**

“Psychological Safety is a basic precondition of a safe workplace…disrespectful treatment of workers increases the risk of patient injury.”
Leape Institute 2013

# Sensemaking & Paris in

# the springtime…




Deal or no Deal
https://www.youtube.com/watch?v=ZnUSeD-0bIl


https://www.youtube.com/watch?v=IGQmdoK_ZfY

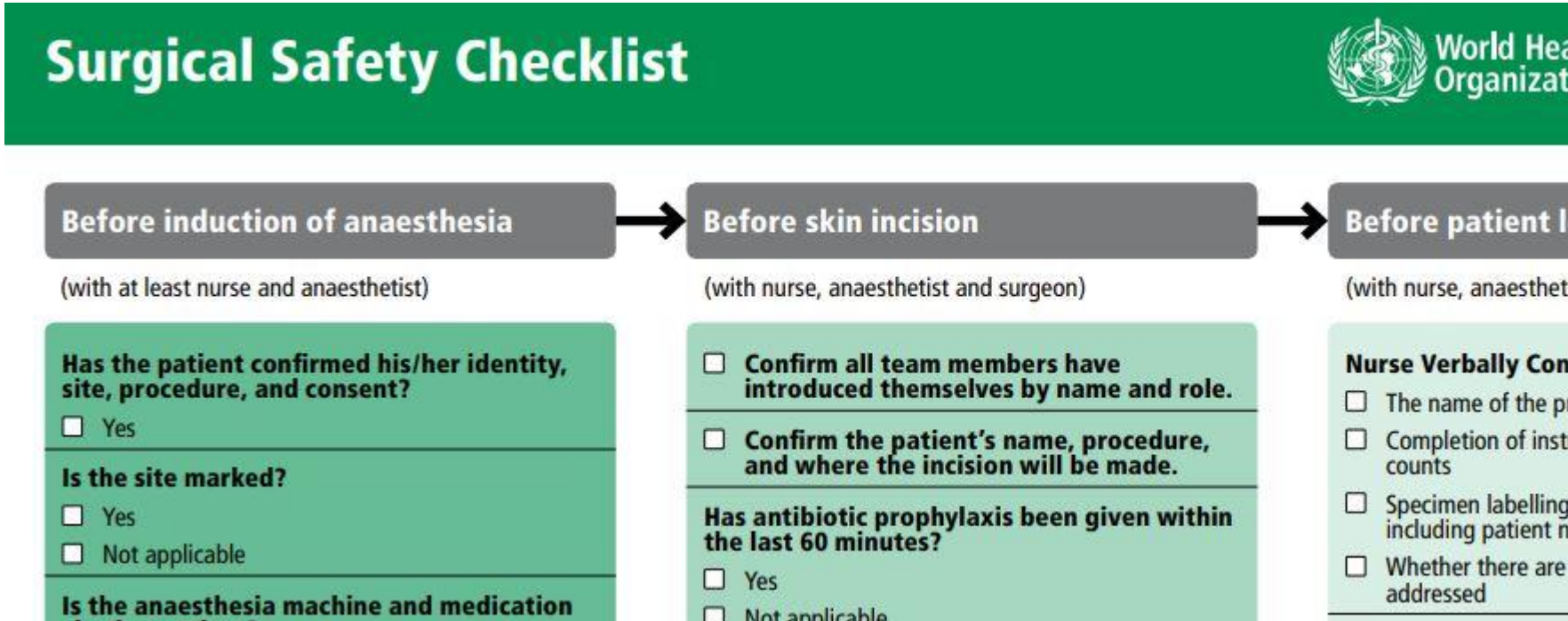
# Situational Awareness

Understanding my current environment and what is happening, and what is likely to happen in the future (Endsley, 87/88)

If we get interrupted during safety critical task: Go back three steps

Using ISBAR / ISBAR3

Surgical Safety Checklists

# Safety Huddles / Briefings

Received: 17 October 2017 | Revised: 6 December 2018 | Accepted: 14 December 2018

DOI: 10.1111/jan.13984

REVIEW PAPER

WILEY JAN

## Do safety briefings improve patient safety in the acute hospital setting? A systematic review

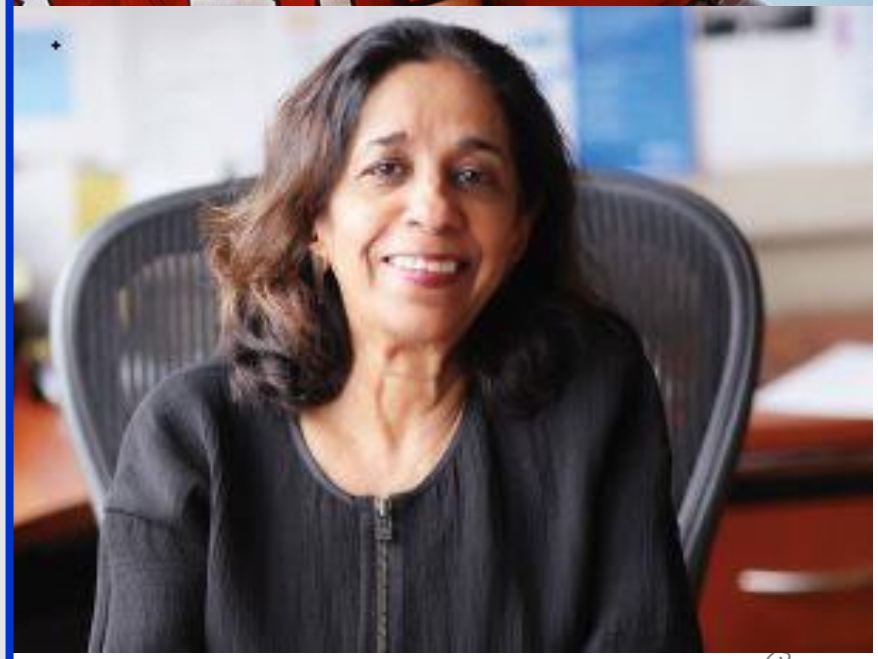
Sharon Ryan[1] | Marie Ward[1] | David Vaughan[1] | Bridget Murray[2] | Moore Zena[2] | Tom O'Connor[2] | Linda Nugent[2] | Declan Patton[2]

[1]Children's University Hospital, Dublin, Ireland

[2]School of Nursing and Midwifery, Royal College of Surgeons in Ireland, Dublin, Ireland

**Abstract**

**Aims:** To synthesize current knowledge about the impact of safety briefings as an intervention to improve patient safety.



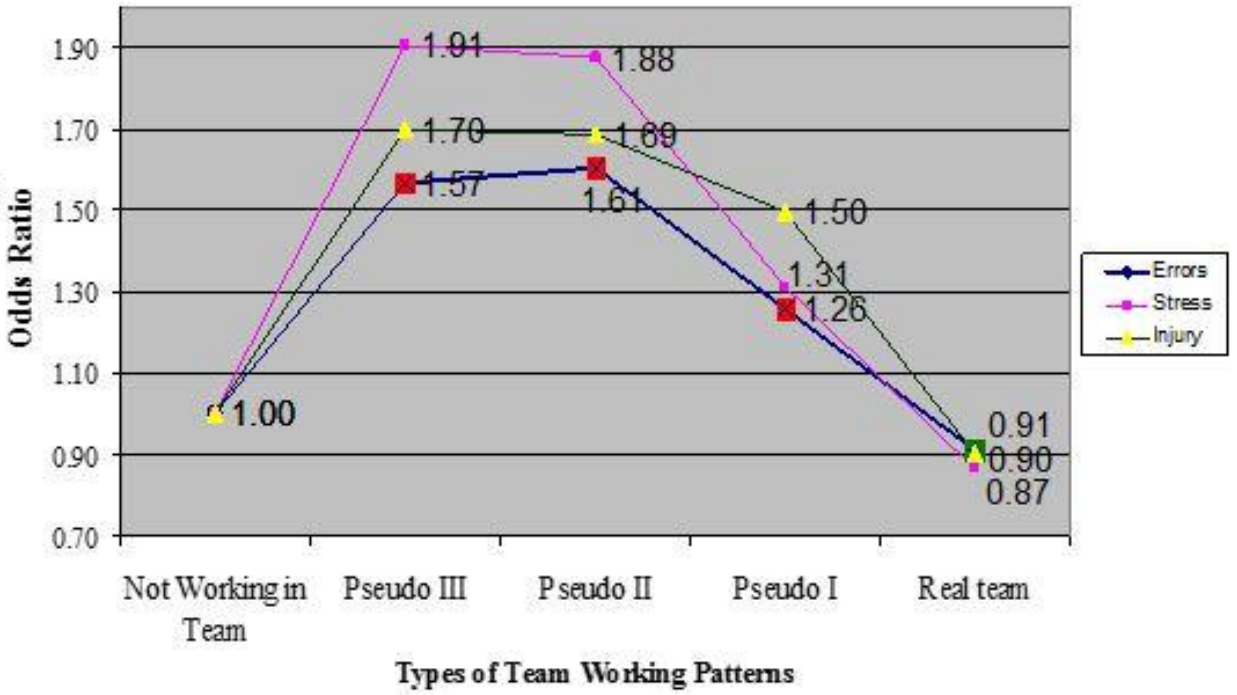
# Teamworking, Communication and Simulation

Crew Resource Management (CRM)
Non-Technical Skills (NOTECHS)
Non-Technical Skills for Surgeons (NOTSS)
Anaesthetists' Non-Technical Skills (ANTS)
Oxford NOTECHS System
TeamSTEPPS
Simulation Based Team Training (SBTT)

## Benefits of 'real' team working

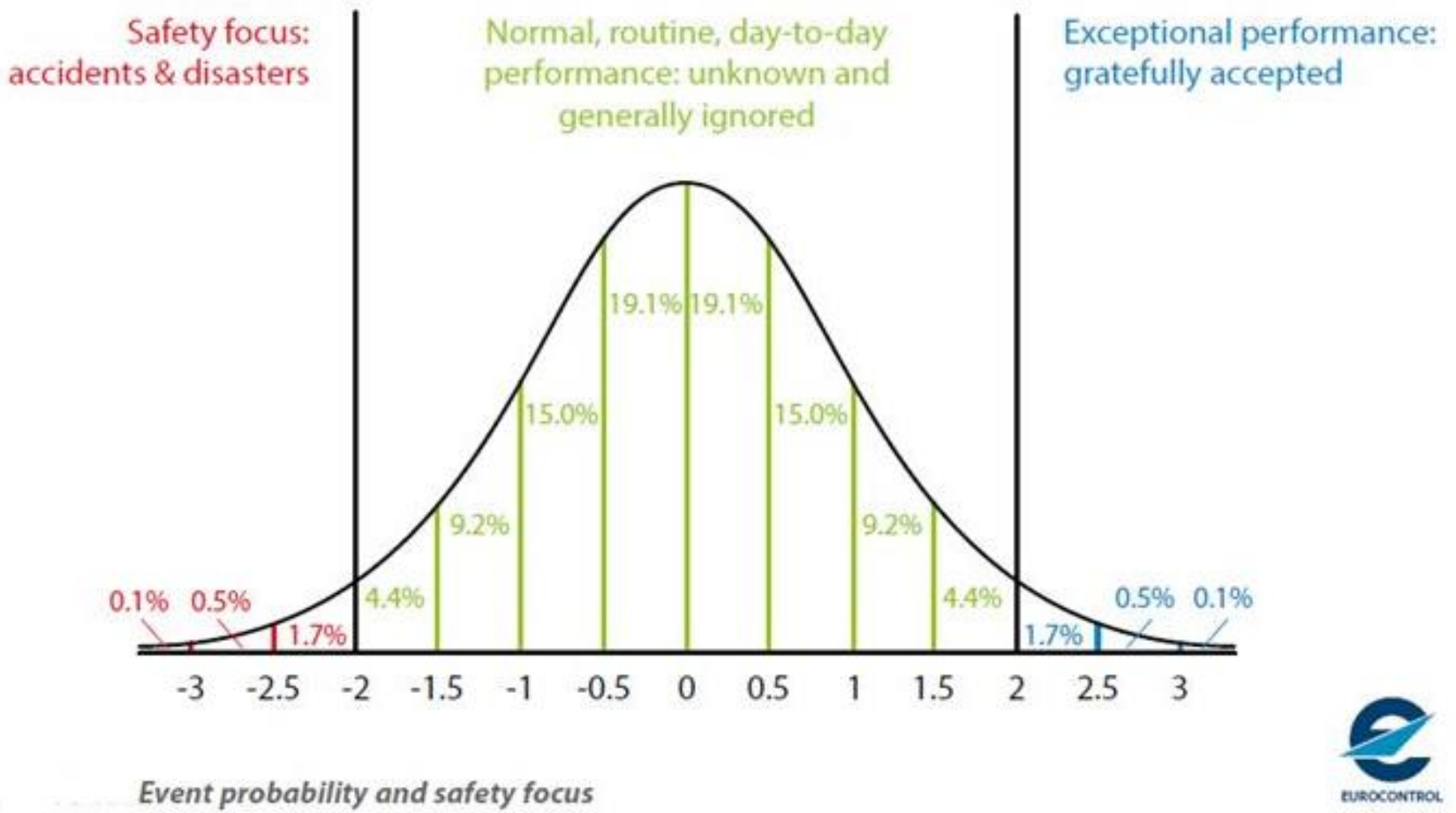
- Healthcare staff involved in real teams

(defined as having shared objectives, structural interdependence and engage in team reflexivity, building on work of Hackman et al.)

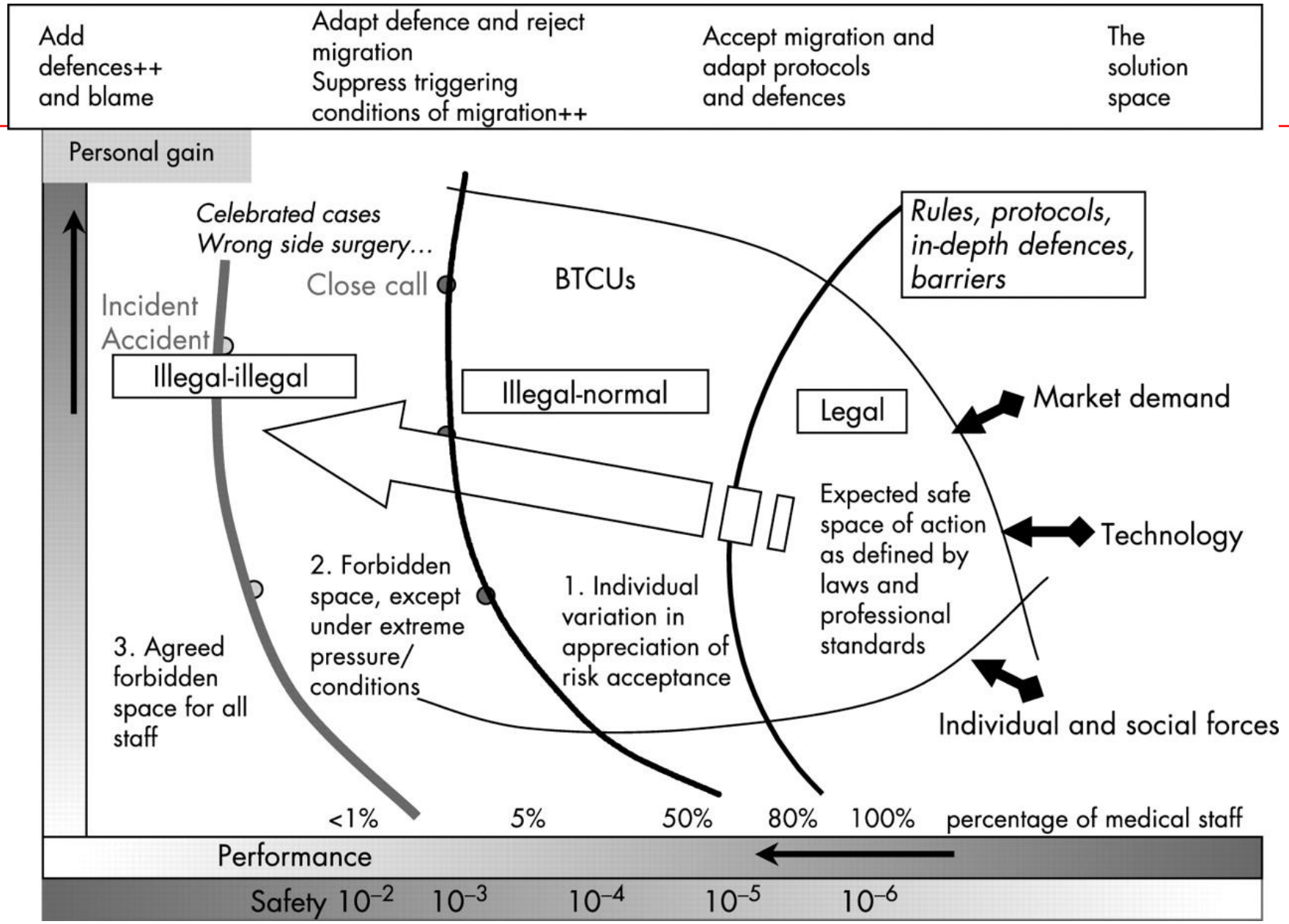



Lyubovnikova, West, Dawson & Carter (2015)
https://www.tandfonline.com/doi/abs/10.1080/1359432X.2014.992421

# SAFETY I SAFETY II




*Event probability and safety focus*




Amalberti R, Vincent C, Auroy Y*, et al*

Violations and migrations in health care: a framework for understanding and management

# Governance and Accountability

Governance of Data, Info & Knowledge; Transparency & Flow

Accountability for managing and changing the system – Lucian Leape

Saf

American Psychological Association

International Perspectives in Psychology: Research, Practice, Consultation

© 2018 American Psychological Association
2157-3883/19/$12.00

2019, Vol. 8, No. 1, 53–56
http://dx.doi.org/10.1037/ipp0000101

POLICY BRIEF

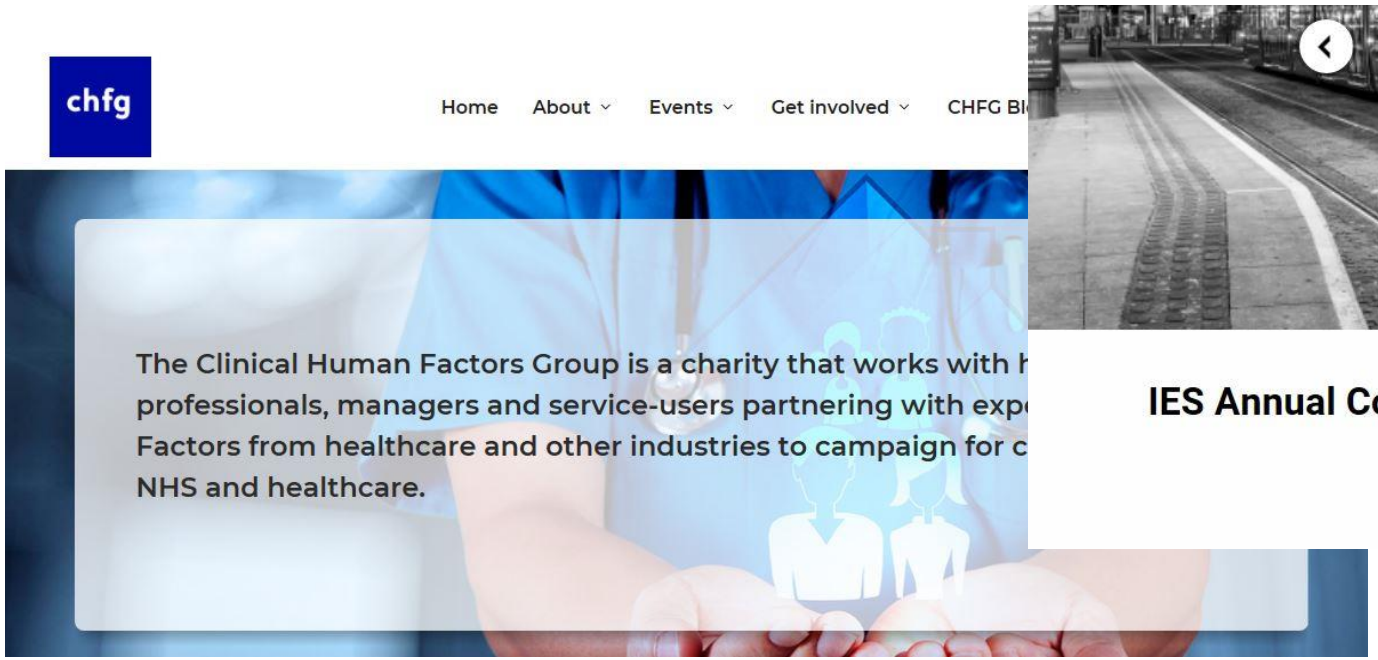
Informing Healthcare Team Performance: Integrating Data to Improve Quality and Safety

Marie Ward and Eilish McAuliffe
University College Dublin

John Fitzsimons
Dr. Steevens Hospital, Dublin, Ireland

Róisín O'Donovan
University College Dublin

# Resources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The Clinical Human Factors Group is a charity that works with h
professionals, managers and service-users partnering with exp
Factors from healthcare and other industries to campaign for c
NHS and healthcare.


IES Annual Conference 2019 & special session on Human Factors in Health Care Systems
6th of June 2019 TU Dublin Grangegorman Campus Dublin


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RESOURCES
CONTRIBUTORS
ABOUT
IS IT 1947 YET?
OVERCOMING COWERED DOG SYNDROME
LEAN AND SAFETY DIFFERENTLY
SAFETY AS ITS OWN WORST ENEMY


SafetyHealthSystems
@SHSIRL
We are a group of Irish researchers and practitioners who are committed to changing and improving healthcare from a systems perspective. Image:Ramco Systems
Joined May 2017


THE DIALOGUE MANIFESTO
20 APRIL, 2019
RON GANTT
6 COMMENTS
RECENT COMMENTS
Steve Picton on The London Luton Airport Safety Differently Journey

# Further Reading


ELSEVIER

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ISSN: 0925-7535

## Safety Science

Editor-in-Chief: Georgios Boustras

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**BMJ Quality & Safety** Latest content Current issue A

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Article Text

Article info

Viewpoint

## The science of human factors: separating fact from fiction

Alissa L Russ[1, 2, 3, 4], Rollin J Fairbanks[5, 6, 7], Ben-Tzion Karsh[8, *], Laura G Militello[9], Jason J Saleem[1, 2, 3, 10], Robert L Wears[11, 12]

Author affiliations

# Further Study

RCSI

Royal College of Surgeons in Ireland *Coláiste Ríoga na Máinleá in Éirinn* Search

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  - National Surgical Training Programme
  - National Emergency Medicine Training Programme
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  - Master of Surgery (MCH by Module)
  - MSc in Human Factors in Patient

Home > Surgical Affairs > National Surgical Training Centre > MSc in Human Factors in Patient Safety >

## Masters (MSc.) in Human Factors in Patient Safety

**Improve the safety and quality of patient**

## Online M.Sc. / Postgraduate in Diploma Managing Risk and System Change


# Healthcare


Marie.ward3@nchg.ie

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| Dates Of QITalktime 2019 | Topic | Speakers |
|---|---|---|
| Tuesday 26th Nov 1-2pm | University Hospital Limerick – QI Journey | Team from UL |
| Tuesday 10th Dec1-2pm | Co-Lead Collective Leadership – Introduction to Tools available for teams use | Dr Aoife Dr Brun, UCD Health Systems |

**Thank you from all the team @QITalktime**

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Noemi.palacios@hse.ie

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