

Introduction to Human Factors For Healthcare

Ben Tipney



@MedledTeam

Before we begin...

- Toilets
- Timings & Breaks
- Mobile phones
- Handouts & slides
- Feedback & CPD Points
- Open discussion and confidentiality



@MedledTeam

Agenda

The Big Picture (AM)

- Definitions and application of HFFH
- Lessons from other sectors
- Is one approach to safety always appropriate?

Human Performance (PM 1)

- Understanding our capabilities & limitations

High Performing Teams (PM 2)

- Social factors that most influence performance
- Application in practice

End of day

What are you taking away to implement in your work/department?

Key learning points

What is your 'commitment to action'?

Introductions



One thing that makes your day easier/more difficult?



Human Factors

What does that mean to you?

Just a Routine Operation



Understanding 'Human Error'

“For a long time, people were saying that most accidents were due to human error and this is true in a sense but it’s not very helpful. It’s a bit like saying that falls are due to gravity.”

Dr Trevor Kletz

Human Factors For Healthcare

Creating the conditions that enable people to be and
perform at their best

Human Factors For Healthcare - 3 Domains of Focus

Internal

- Human Performance
- Understanding Human Capabilities and Fallibilities

Interpersonal

- Group/Team Dynamics
- Leadership at all levels

External

- “Designing for People”
- Equipment/environment/technology/processes/policies

What is Human Factors For Healthcare?

Creating the conditions that enable people to be and perform at their best

Five Central Principles:

- A Systems Approach (internal and external)
- Embracing Complexity
- Multi-person Interface
- Contextual Flexibility
- Twin Interdependent Aims of Performance and Well-being

Is your work Simple, Complicated or Complex?

Difference between simple, complicated and complex?

Simple = Baking a Cake



EXPECTATIONS



REALITY

Complicated = Putting a rocket into space



Complex = Raising a child!



3 Approaches to safety

Safer Healthcare – Strategies for the Real World
(C.Vincent/R.Amalberti)

Three contrasting approaches to safety

Ultra safe Avoiding risk

Context: Risk is excluded as far as possible:
Civil aviation, nuclear Industry, public transport, food industry,

Safety model: Power to regulators and supervision of the system to avoid exposing front-line actors to unnecessary risks.

Training in teams to apply procedures for both routine operations and emergencies.

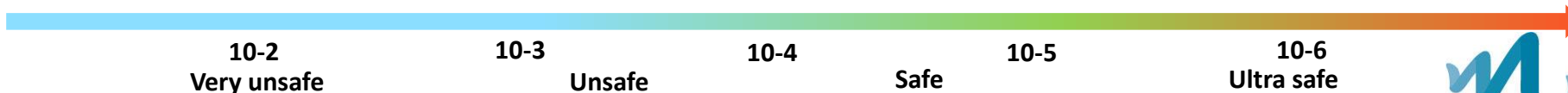
Priority to prevention strategies

Radiotherapy
Blood transfusion

Civil aviation

Railways

Nuclear industry



Three contrasting approaches to safety

Ultra adaptive Embracing risk

Context: Taking risks is the essence of the profession:

Deep sea fishing, military in war time, drilling industry,

Safety model: Power to experts to rely on personal resilience, expertise and technology to survive and prosper in adverse conditions.

Training: through peer-to-peer learning shadowing, acquiring professional experience. knowing one's own limitations.

Priority to adaptation and recovery strategies

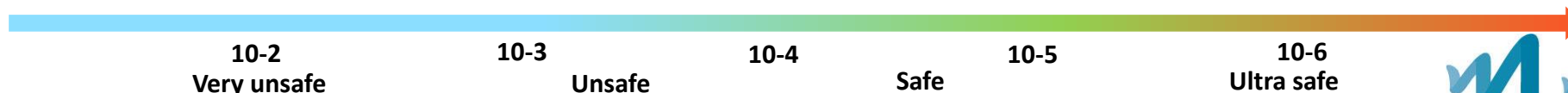
Community Healthcare Trauma centres

Himalaya mountaineering

Finance

Forces, war time

Professional fishing



Charles Vincent & Rene Amalberti 'Safer Healthcare – Strategies for the Real World'

Three contrasting approaches to safety

High reliability Managing risk

Context: Risk is not sought out but is inherent in the profession:
Marine, shipping, oil Industry, fire-fighters,

Safety model: Power to the group to organise itself, provide mutual protection, apply procedures, adapt, and make sense of the environment.

Training in teams to prepare and rehearse flexible routines for the management of hazards.

Priority to procedure and adaption strategies

Elective surgery
Chronic care

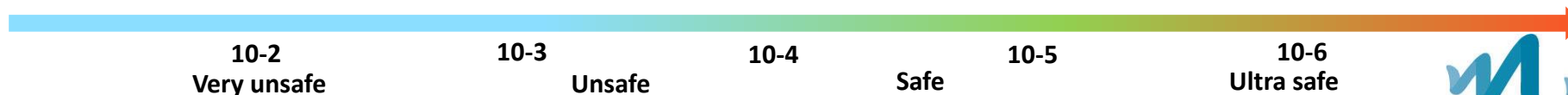
Fire fighting

Chartered flight

Drilling industry

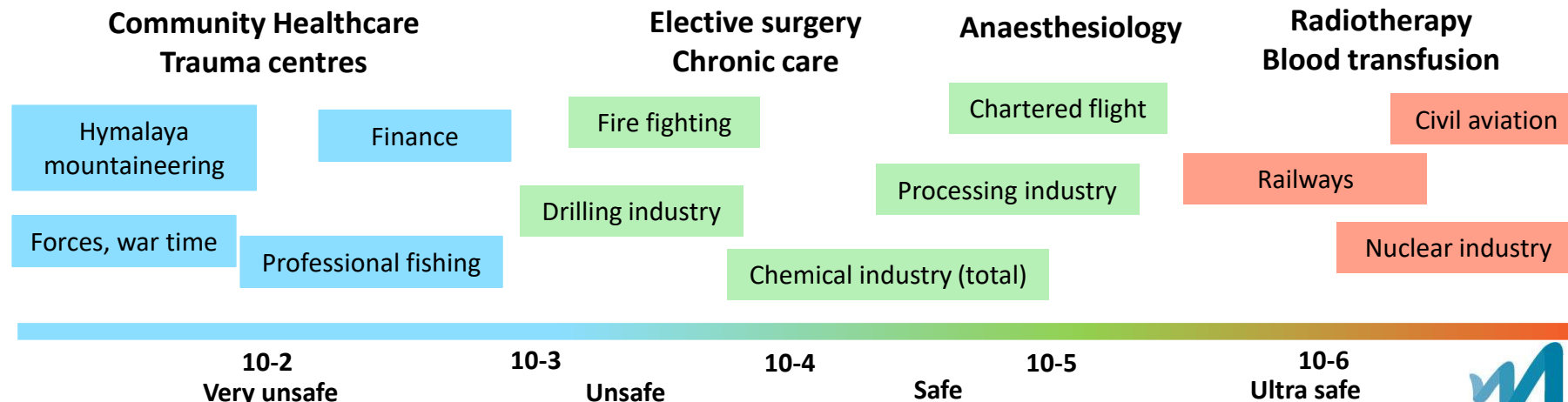
Processing industry

Chemical industry (total)



Three contrasting approaches to safety

| Ultra adaptive Embracing risk | High reliability Managing risk | Ultra safe Avoiding risk |
|---|--|--|
| <p>Context: Taking risks is the essence of the profession: Deep sea fishing, military in war time, drilling industry, rare cancer, treatment of trauma.</p> <p>Safety model: Power to experts to rely on personal resilience, expertise and technology to survive and prosper in adverse conditions.</p> <p>Training: through peer-to-peer learning shadowing, acquiring professional experience. knowing one's own limitations.</p> | <p>Context: Risk is not sought out but is inherent in the profession: Marine, shipping, oil Industry, fire-fighters, elective surgery.</p> <p>Safety model: Power to the group to organise itself, provide mutual protection, apply procedures, adapt, and make sense of the environment.</p> <p>Training in teams to prepare and rehearse flexible routines for the management of hazards.</p> | <p>Context: Risk is excluded as far as possible: Civil aviation, nuclear Industry, public transport, food industry, medical laboratory, blood transfusion.</p> <p>Safety model: Power to regulators and supervision of the system to avoid exposing front-line actors to unnecessary risks.</p> <p>Training in teams to apply procedures for both routine operations and emergencies.</p> |
| Priority to adaptation and recovery strategies | Priority to procedure and adaption strategies | Priority to prevention strategies |



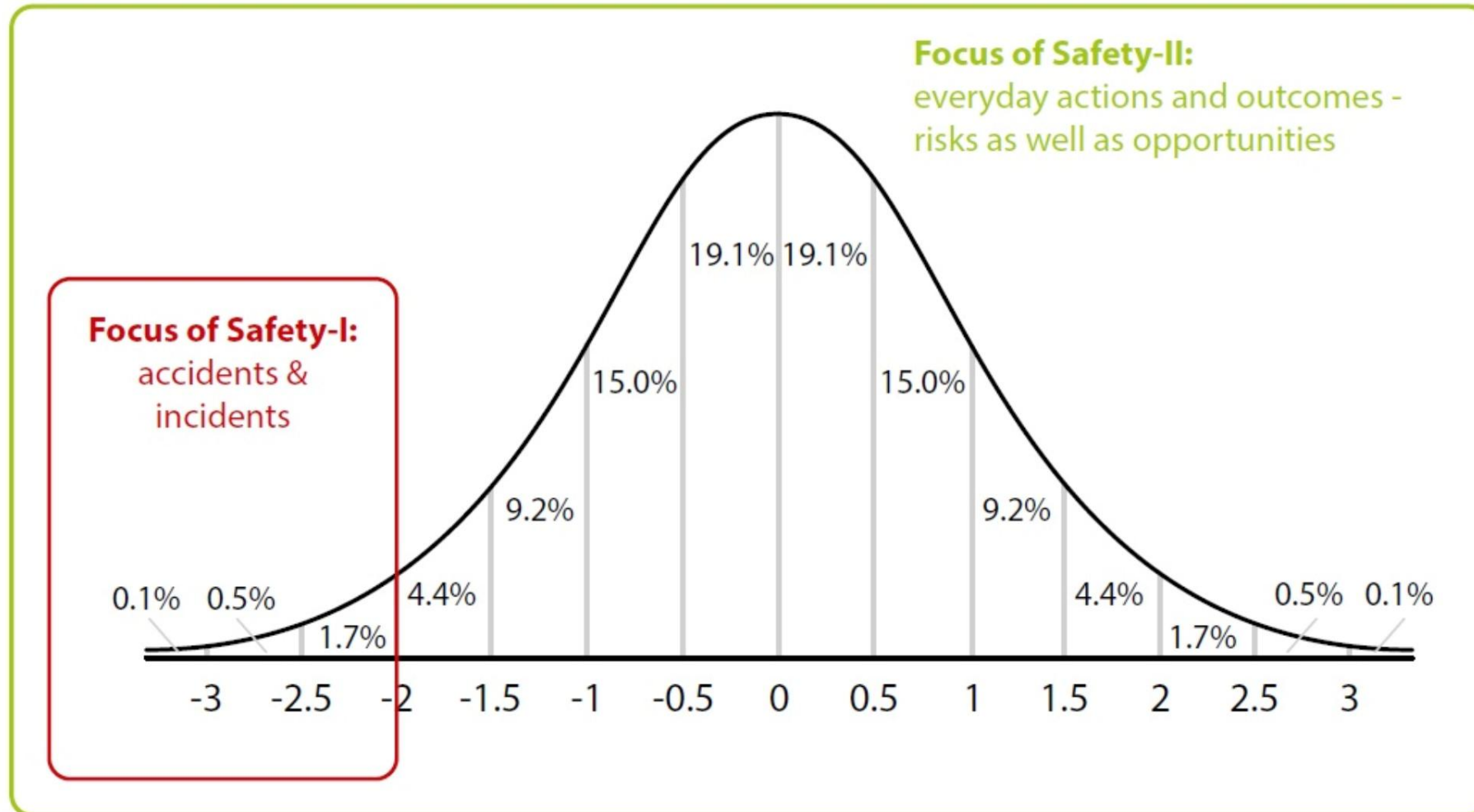
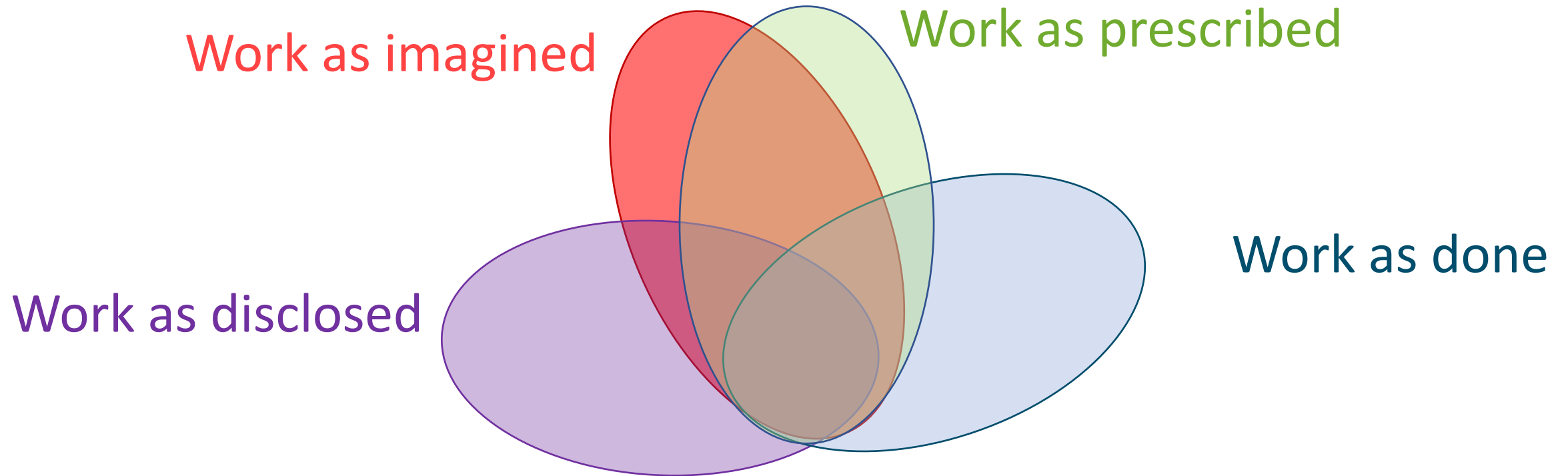


Figure 17: Focus of Safety-I and Safety-II

Ref White Paper Eurocontrol, 2013

The Varieties of Human Work - Steven Shorrock



Work as Imagined vs Work as Done



Work as done

Work as
imagined

Work as Prescribed vs Work as Done



“Trying to improve safety solely through analysing accidents and incidents is like trying to understand the secret of a happy marriage solely through studying divorce”

Professor Erik Hollnagel



**Think of your favourite
Comedian**

Why are they funny?

What is memorable about them?



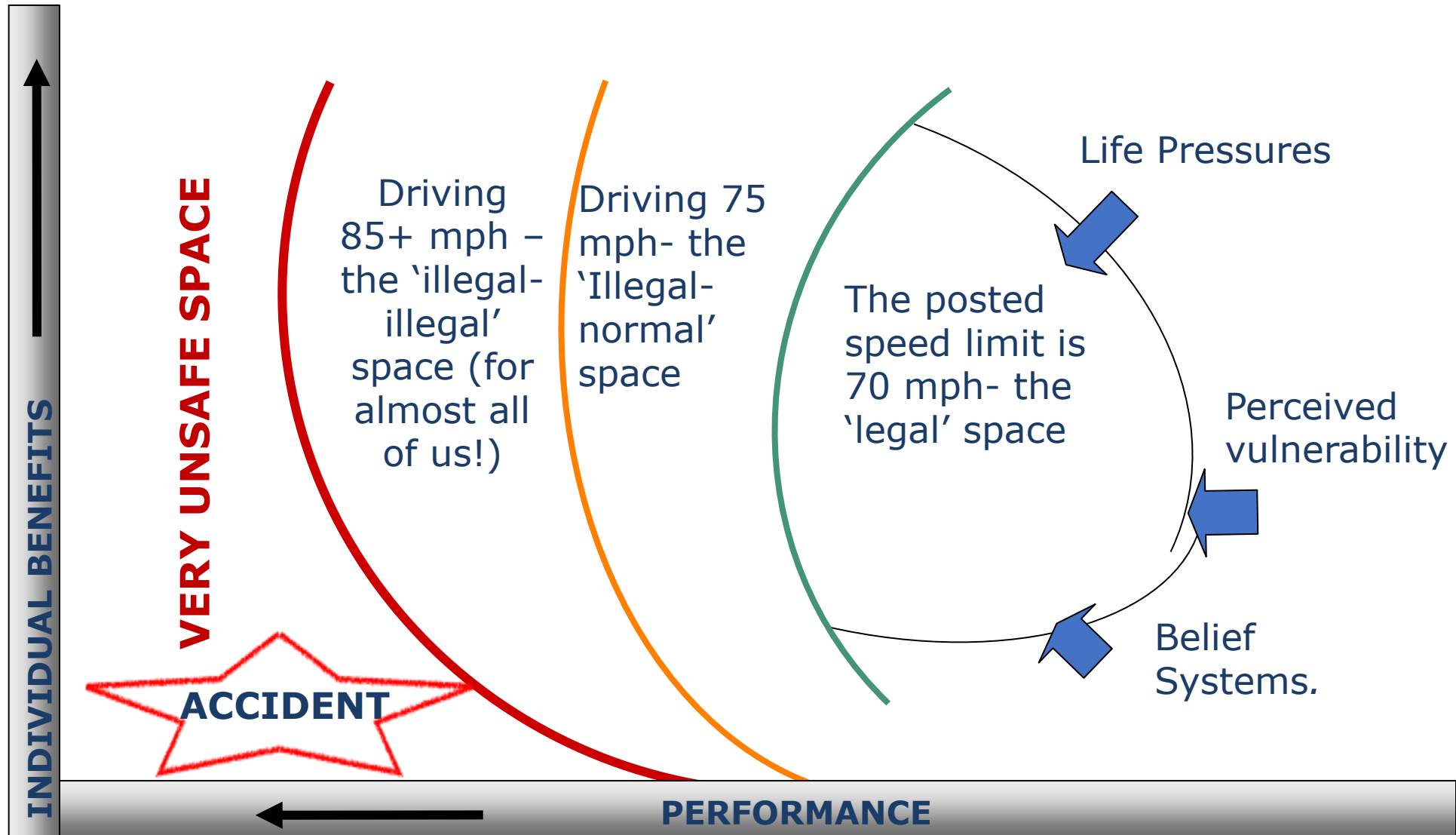
Excellence is unique!

We must go searching for moments of excellence

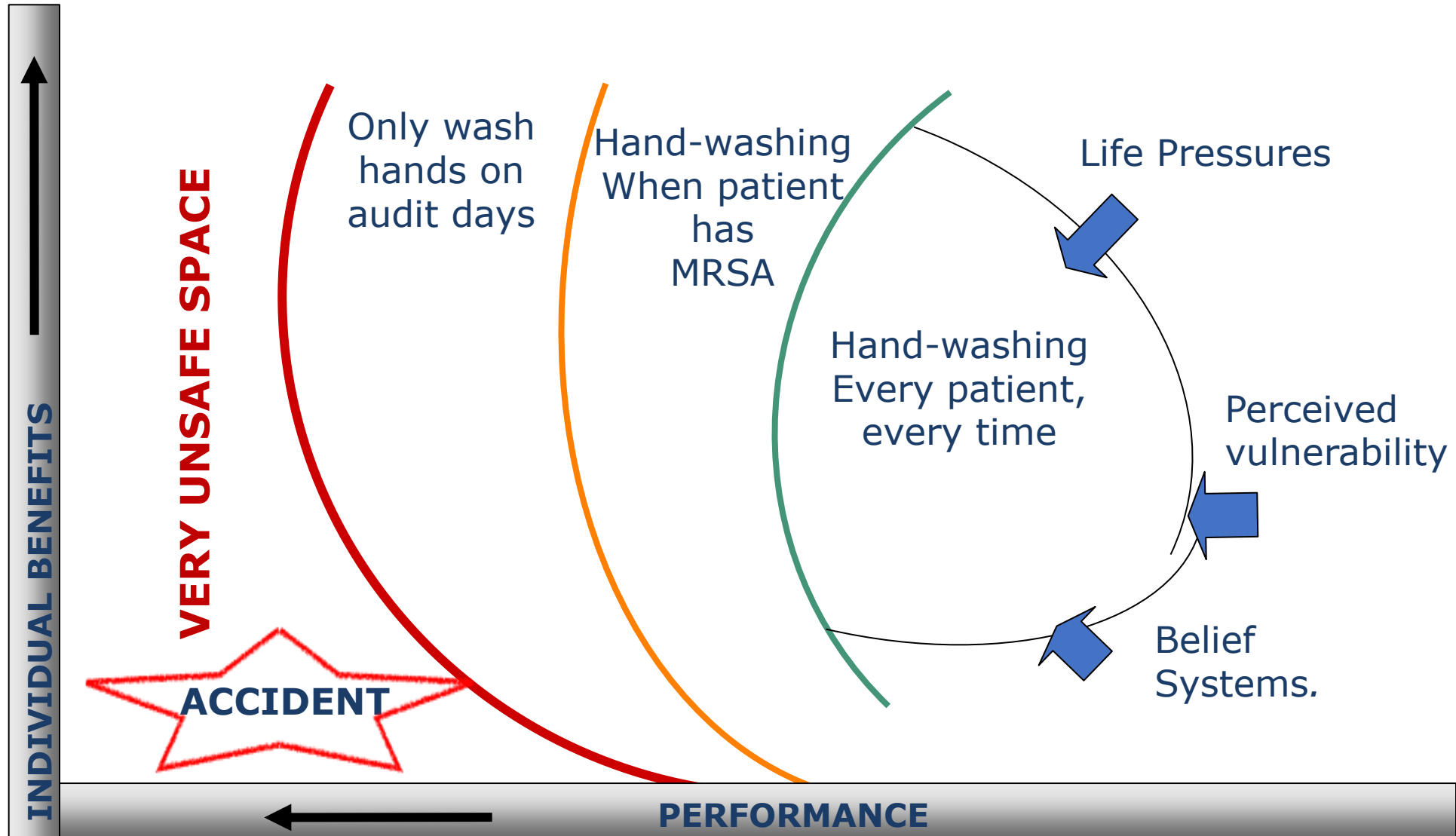
Become “Appreciative Explorers”

Human Capabilities & Limitations

Systemic Migration to Boundaries



Systemic Migration to Boundaries



Costa Concordia



Why rules are broken

Decision Making

Decision Making - Rule Based



Decision Making - Rule Based



Decision Making

How do we as experts
make decisions?

Decision Making

Automatic

- Very quick
- Little effort & energy
- Subconscious level
- Requires repetition



Conscious

- Slow!
- High effort & energy
- Short term memory
- Only as last resort.



Decision Making

Pattern recognition:

According to research at Cambridge University, it doesn't matter in what order the letters in a word are, the only important thing is that the first and last letter be at the right place. The rest can be a total mess and you can still read it without problem. This is because the human mind does not read every letter by itself, but the word as a whole.

Decision Making

Expert/Naturalistic Decision Making Type I

- Its about recognition
- Pattern matching from previous experience
- Happens subconsciously
- Experts have more patterns to match.

Decision Making

*The cat
sat on the
the mat*



Decision Making

Conscious decision making Type II

Decision Making

A bat and ball together cost £1.10

If the bat costs £1 more than the ball

How much does the ball cost?





Bat costs £1.05

Ball costs 5p

Total cost £1.10

Decision Making

Inexperienced Team members?

Agency Staff?

How are they making decisions?

Human Limitations

Attention mechanisms

Who is good at multi-tasking?

Multi-tasking

In pairs:

One person acts as the time keeper

the other

as the multitasker

Multi-tasking

The multi tasker draws 2 horizontal lines
on a piece of paper



Multi-tasking

Start timing when the multitasker
commences the following task:

Multi-tasking

On the first line write:

I am a great multitasker

Multi-tasking

Then

on the second line write the numbers 1 to 20:

I am a great multitasker

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Multi-tasking

Now let's try to multitask

Multi-tasking

Turn over the page and
draw 2 more horizontal lines:



Multi-tasking

This time alternate between the letters
and the numbers

I am

1 2 3

Multi-tasking

Now start timing:

Multi-tasking?

Not Multitasking but Task Switching:

Human Limitations

Attention mechanisms

- Divided attention (Task Switching)
- Focused attention

Human Limitations

Test of focus

Human Limitations

**Count how many times
the players wearing
white pass the ball**

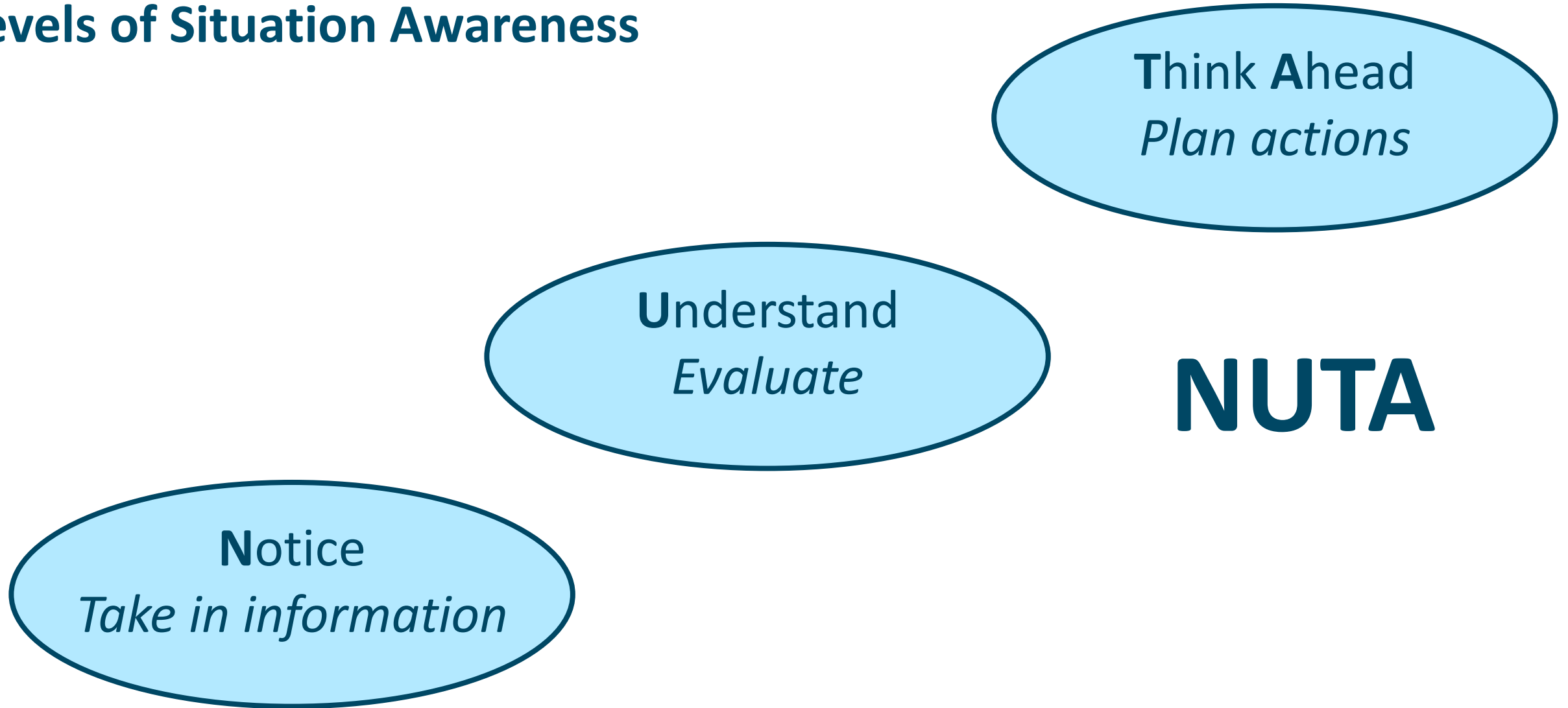
Human Limitations

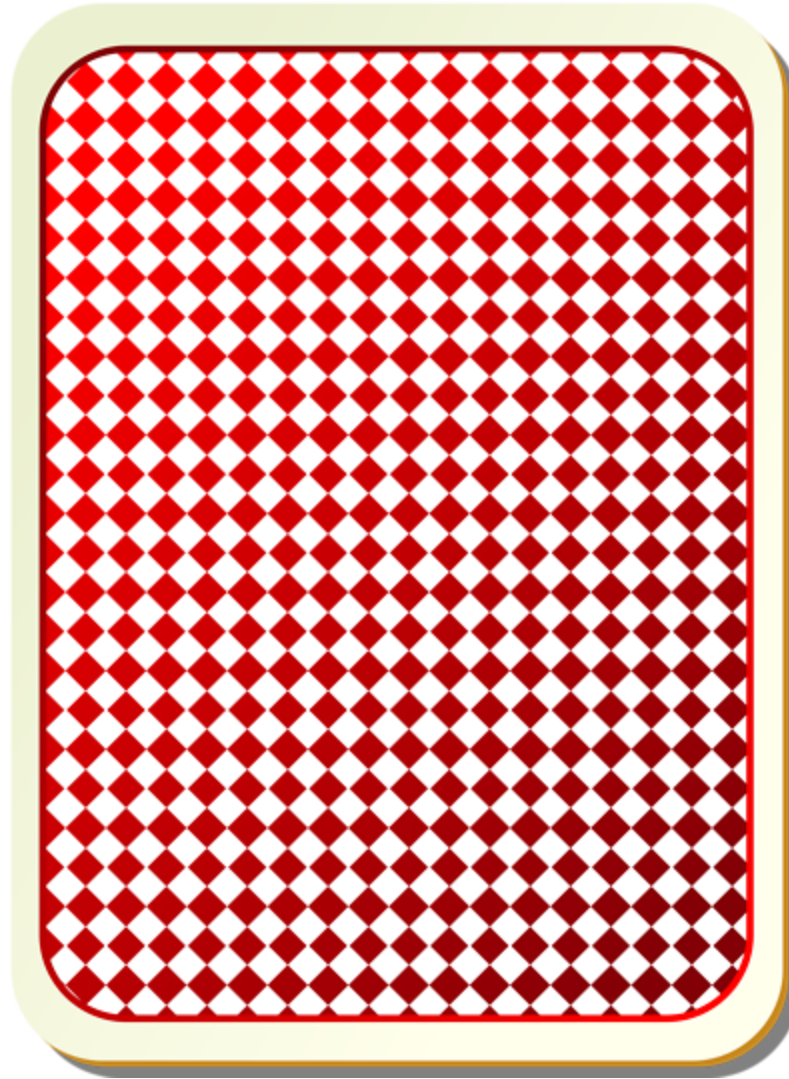
- **We sometimes miss the ‘obvious’**
- **We end up with different mental models**
- **Beware of hindsight bias - Investigations**

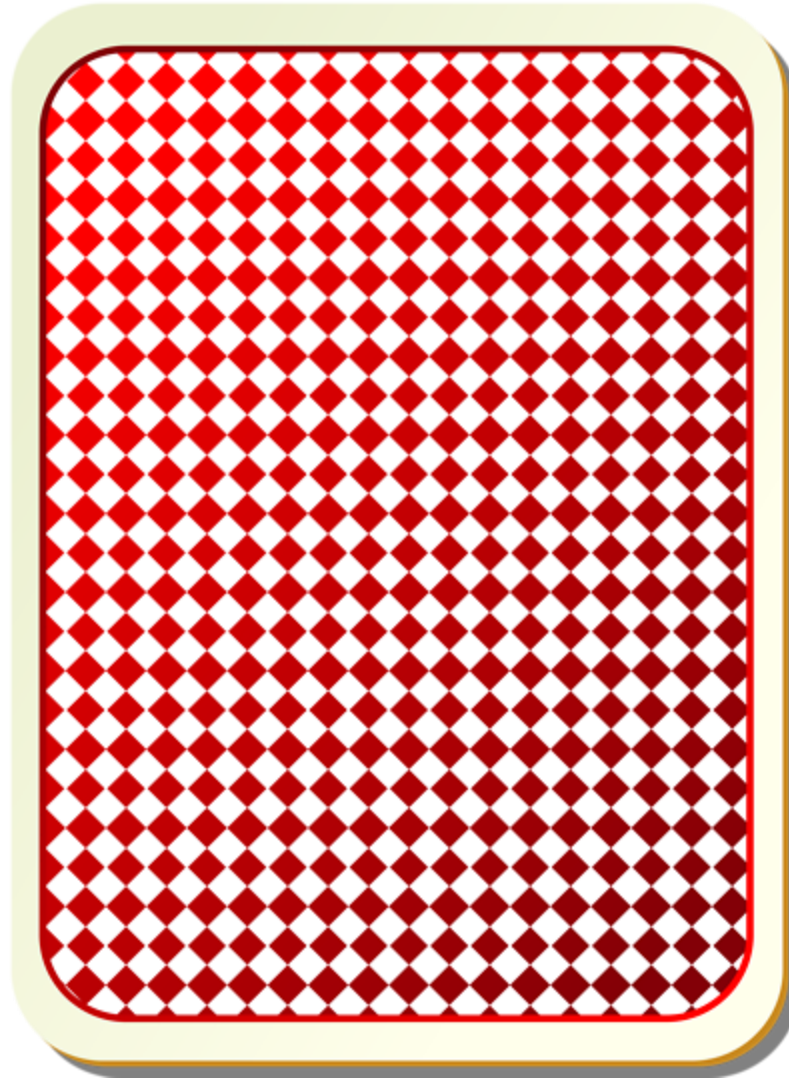
Situation Awareness

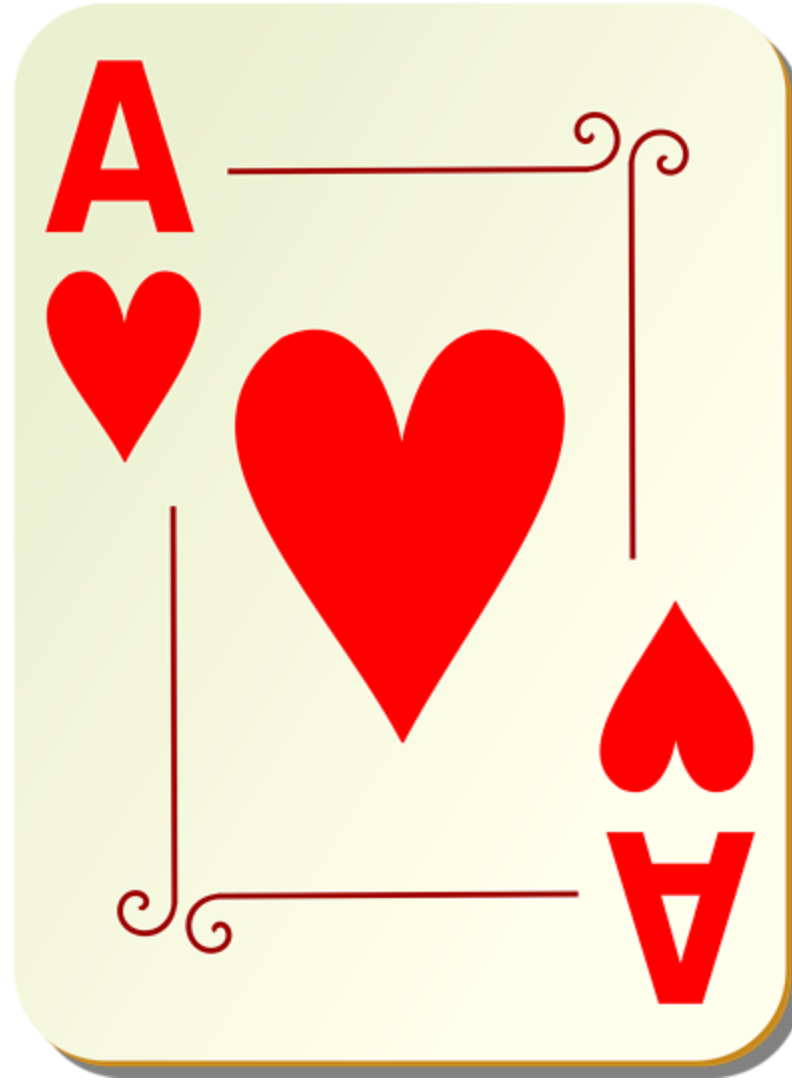


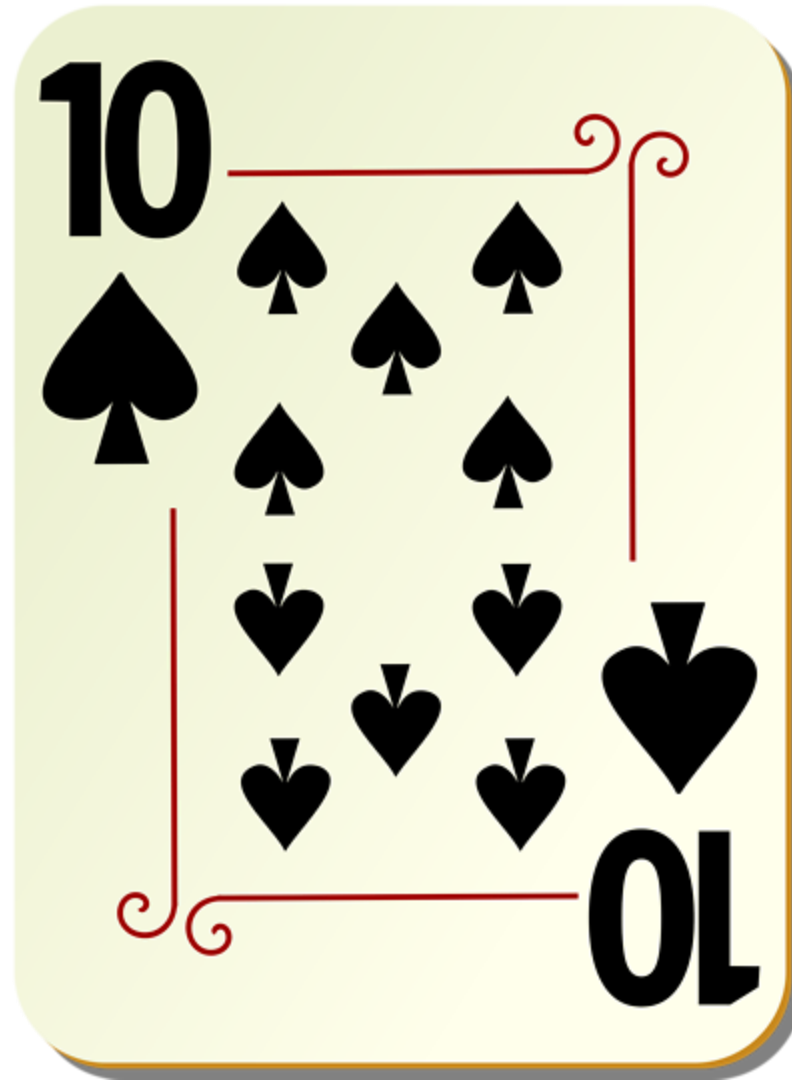
Levels of Situation Awareness

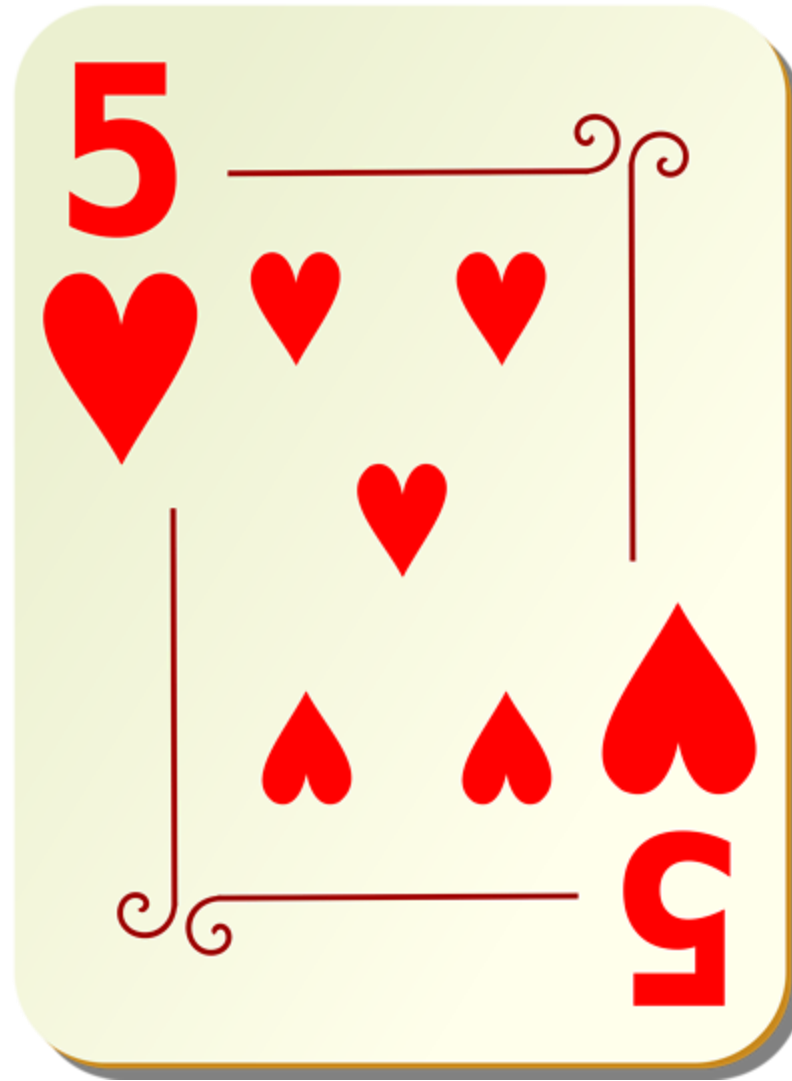


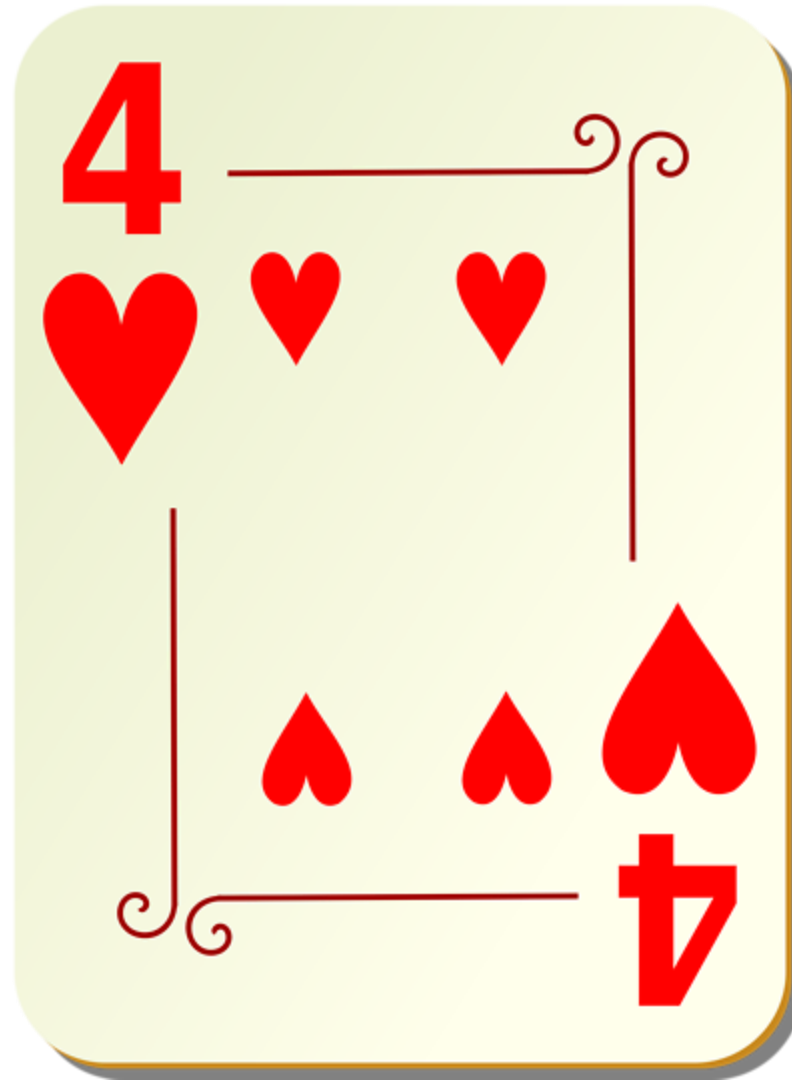


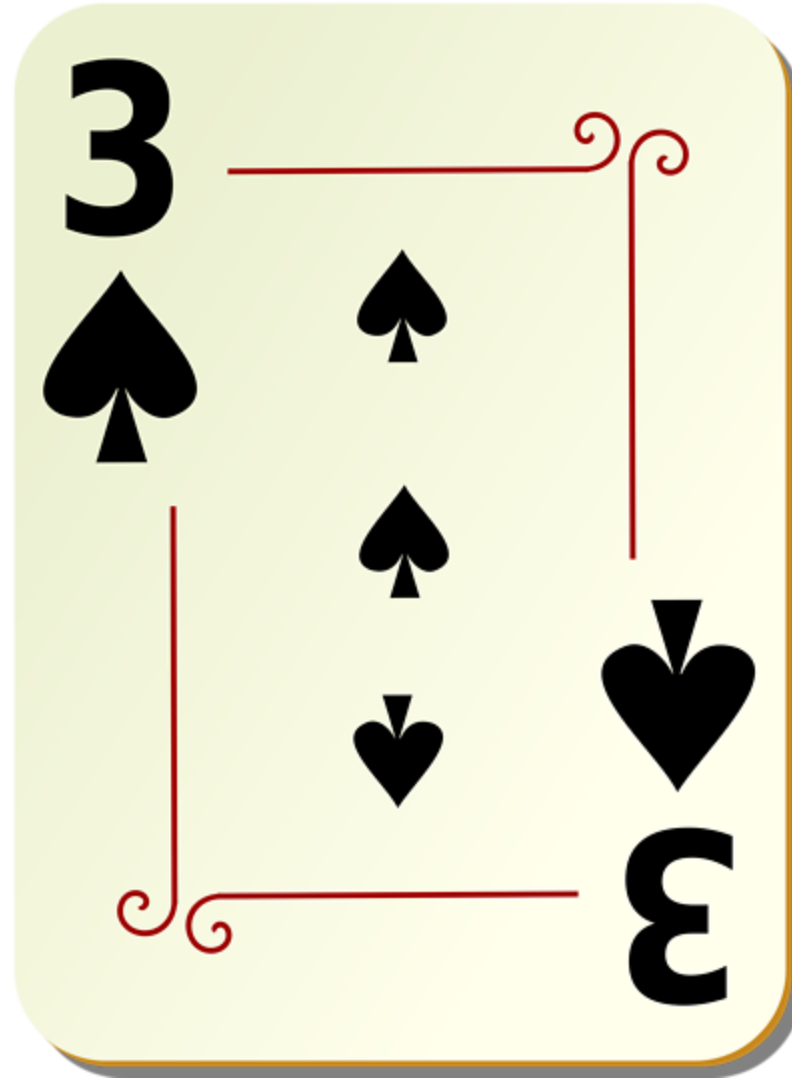


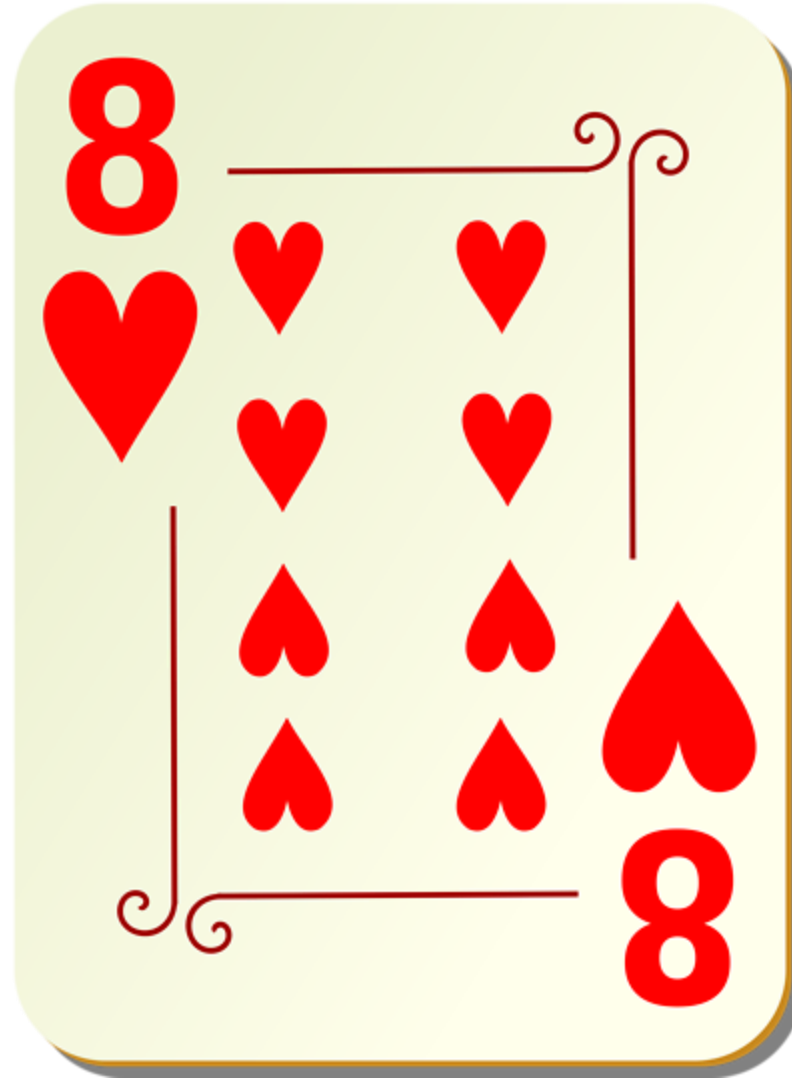


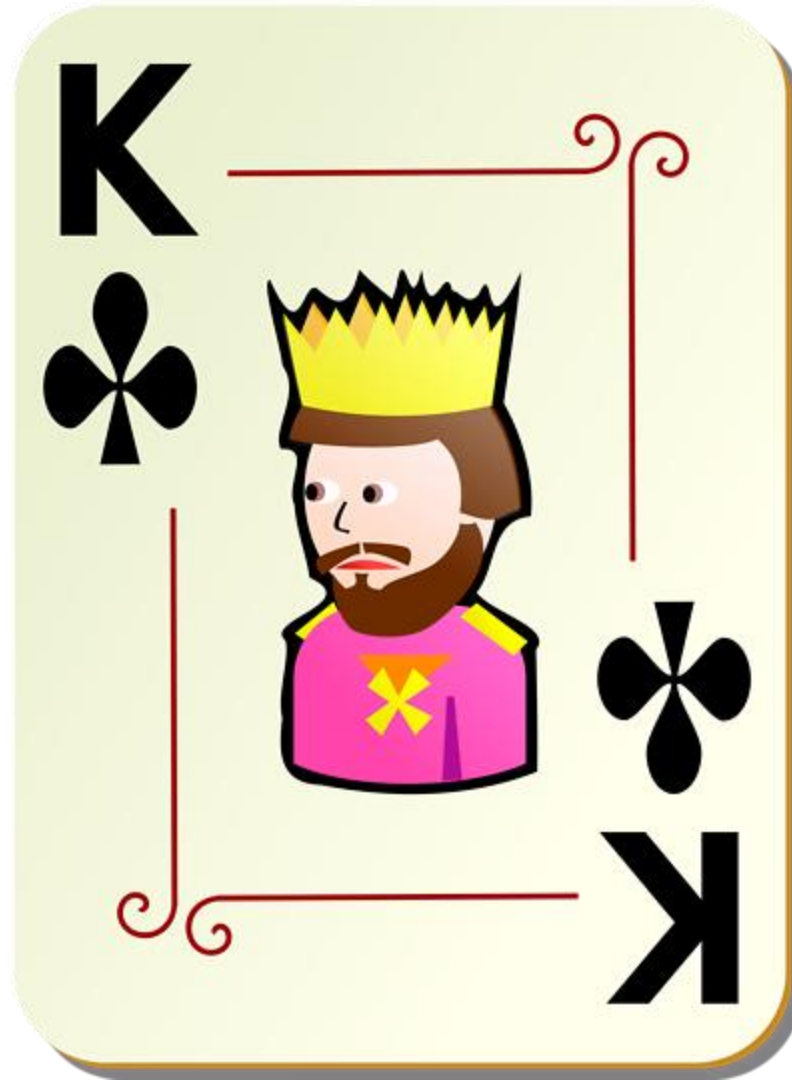


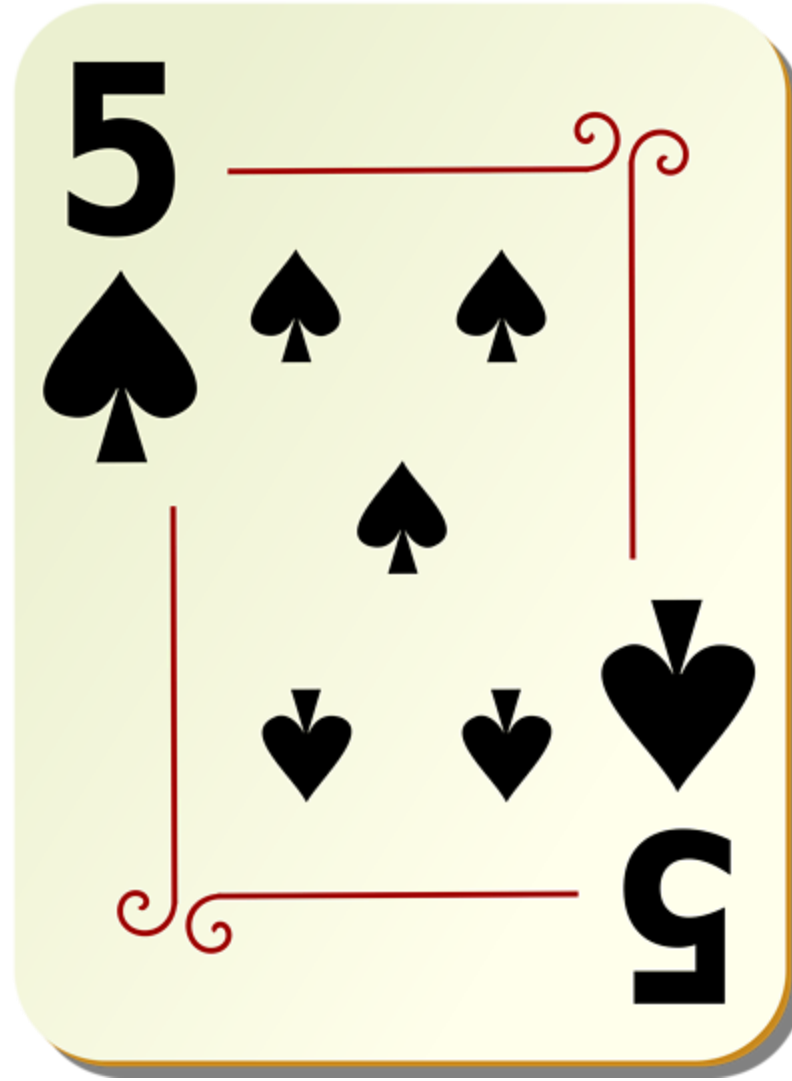


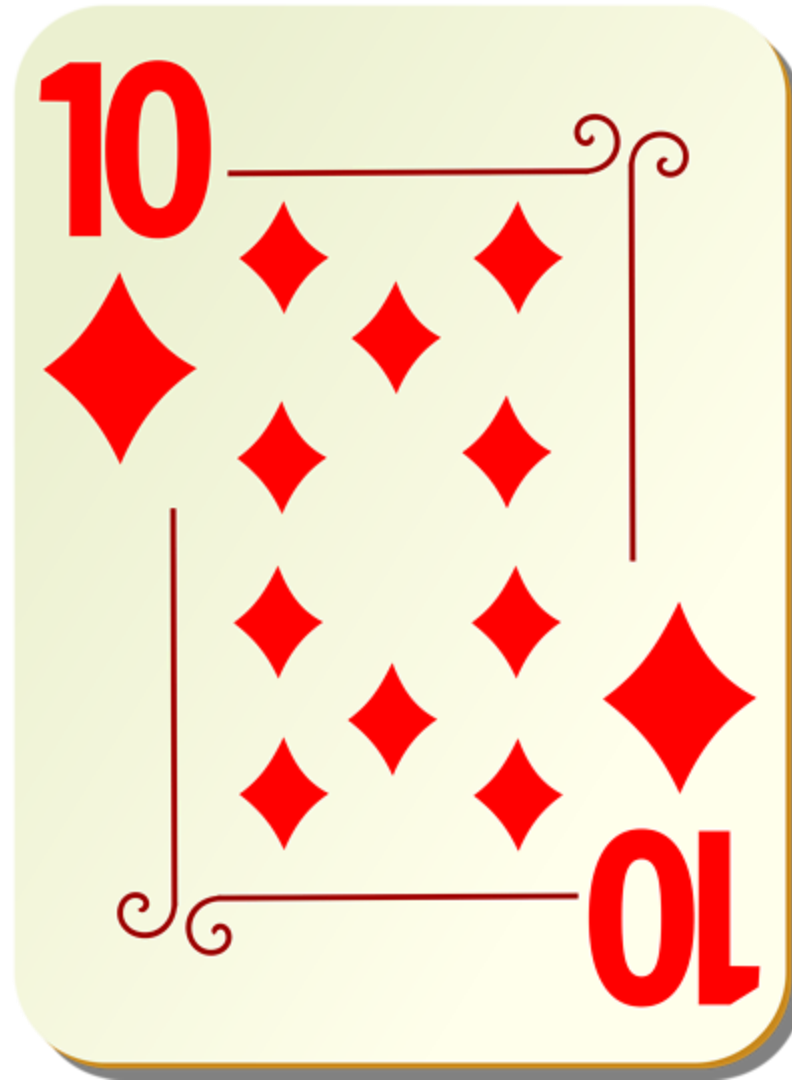


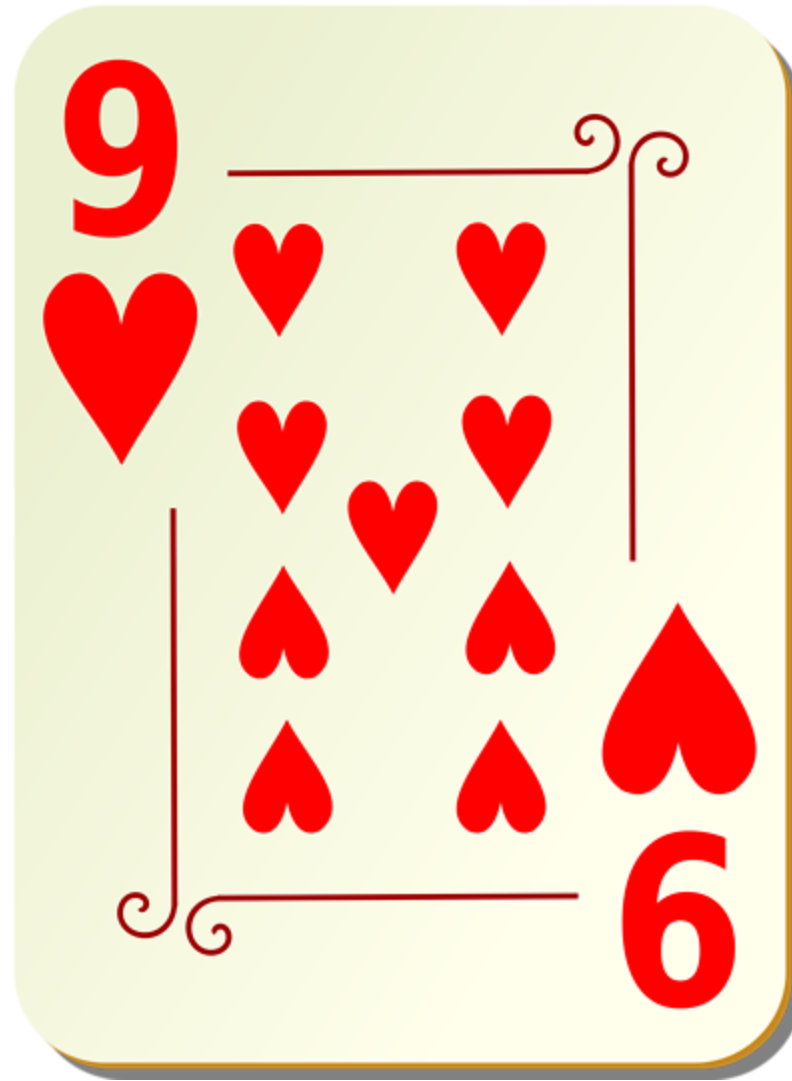


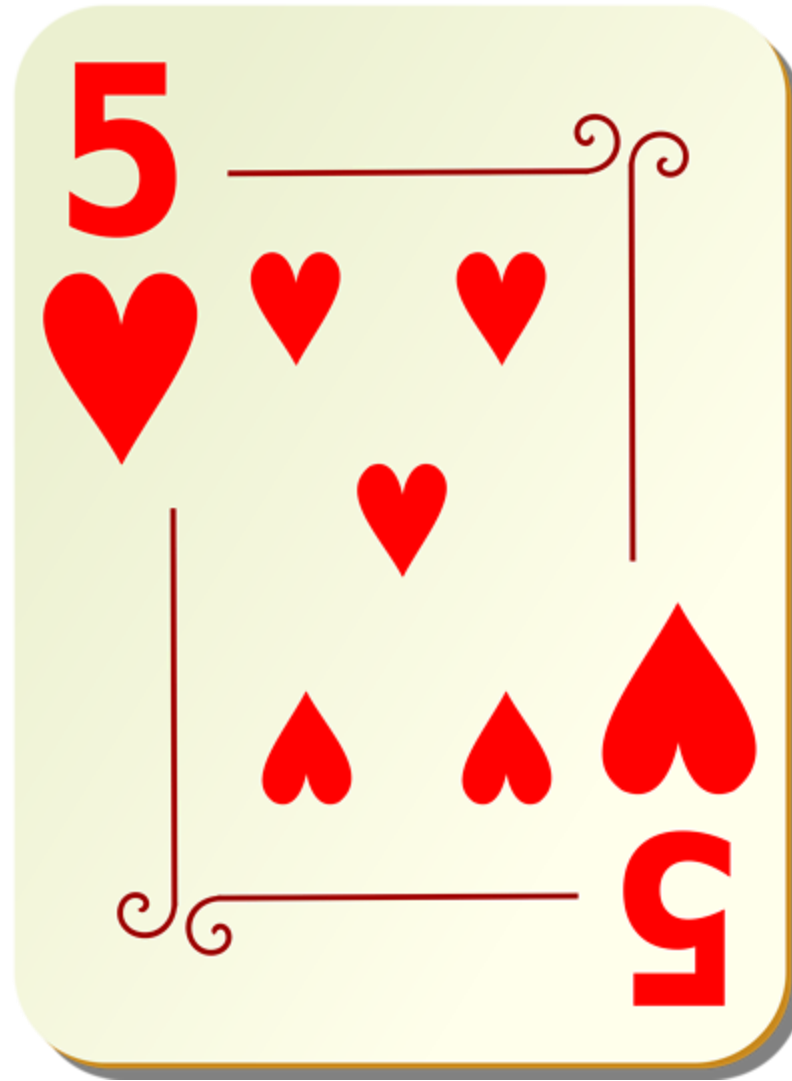


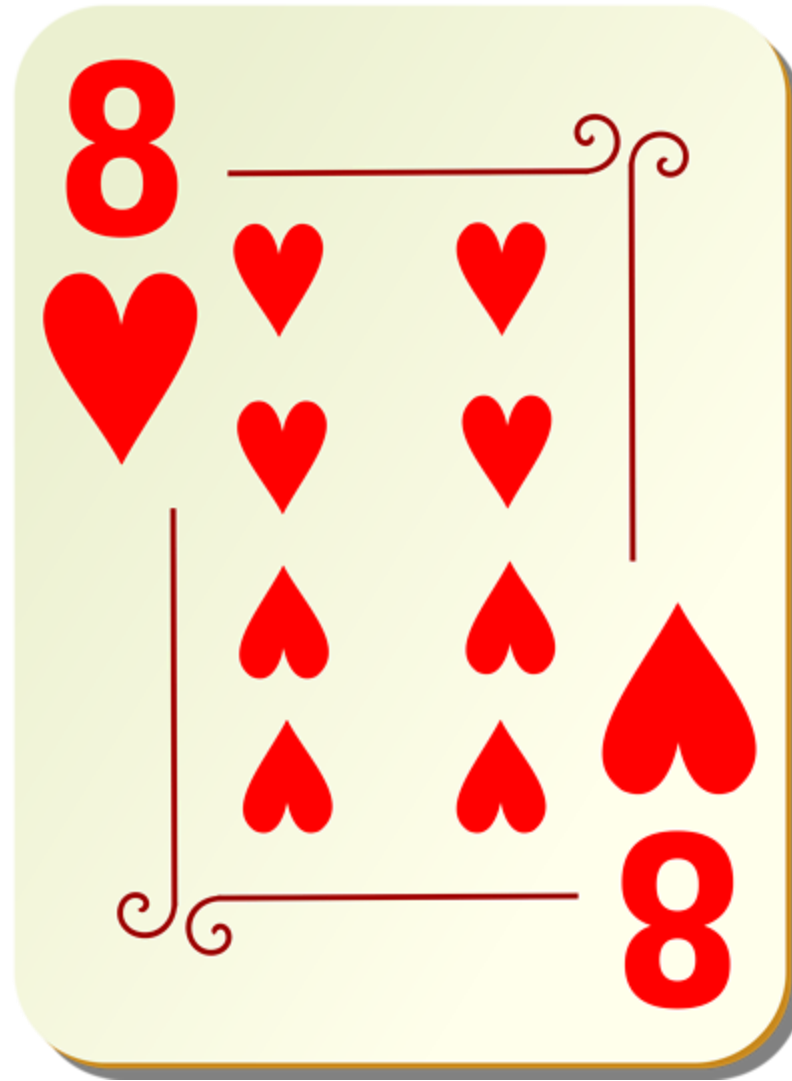


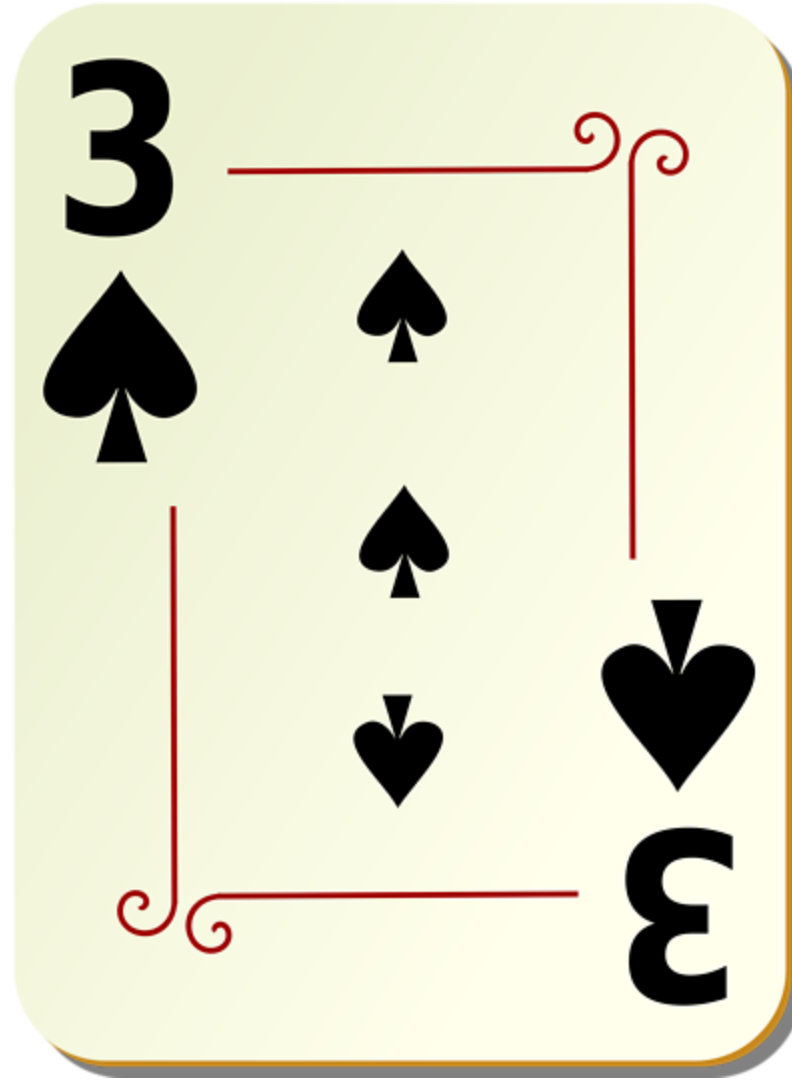


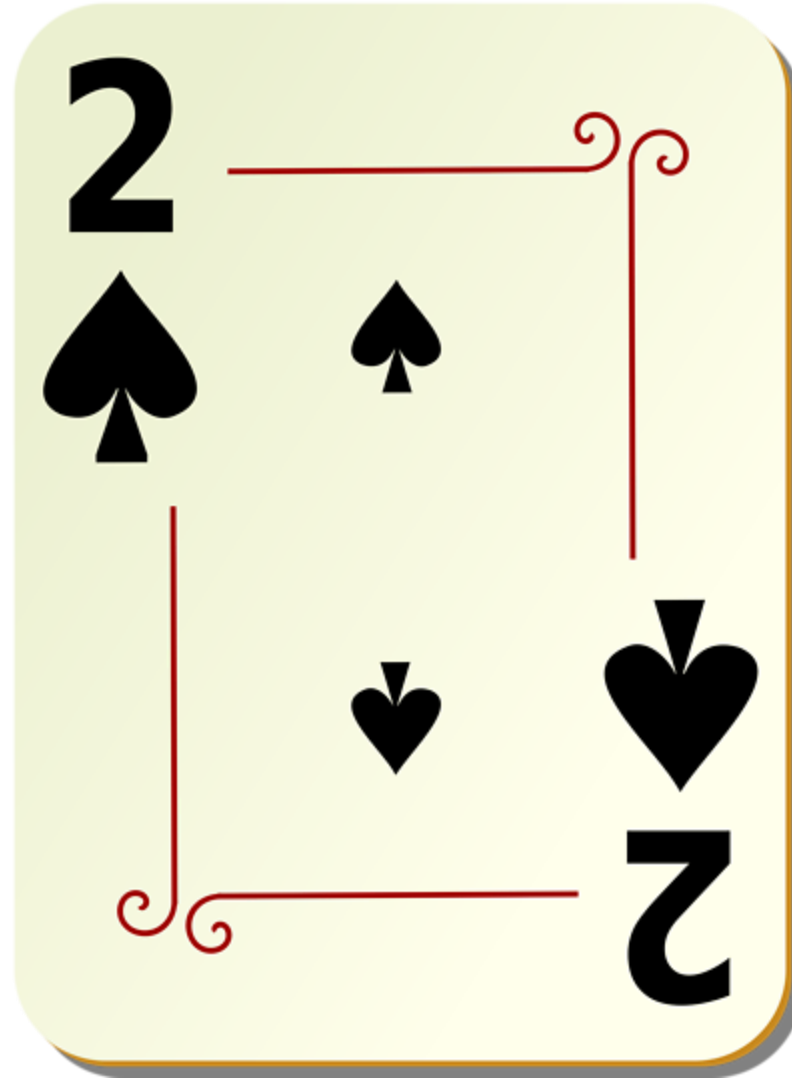


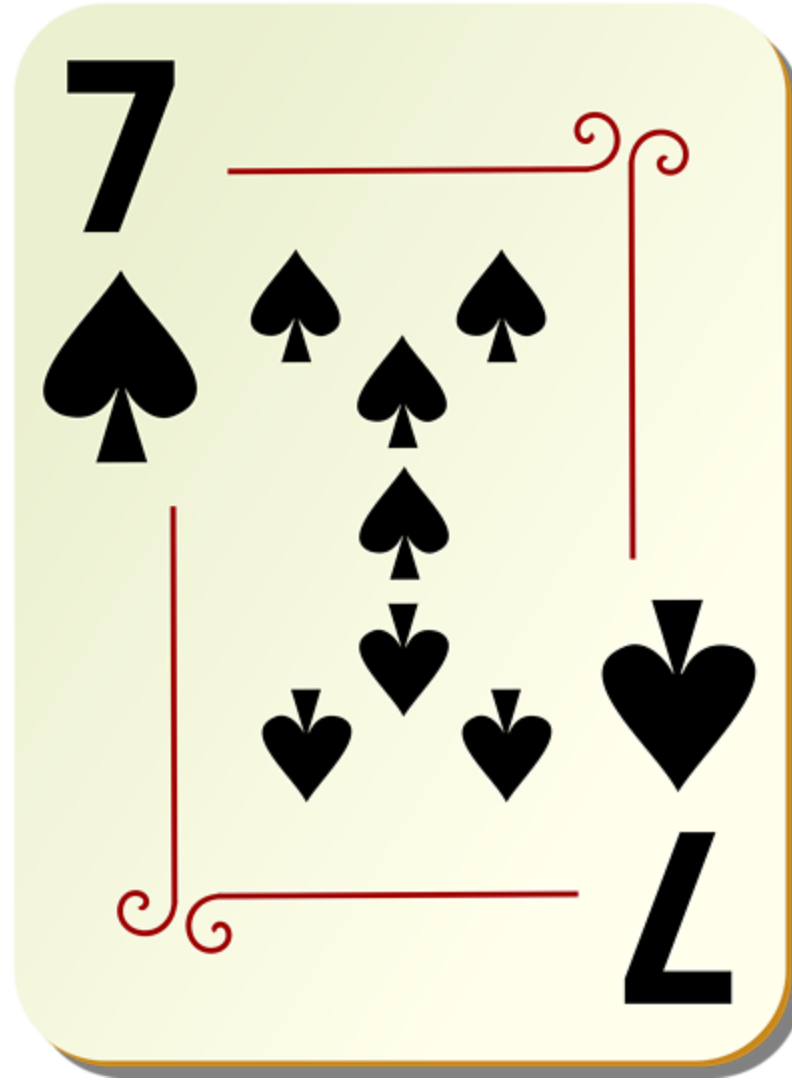


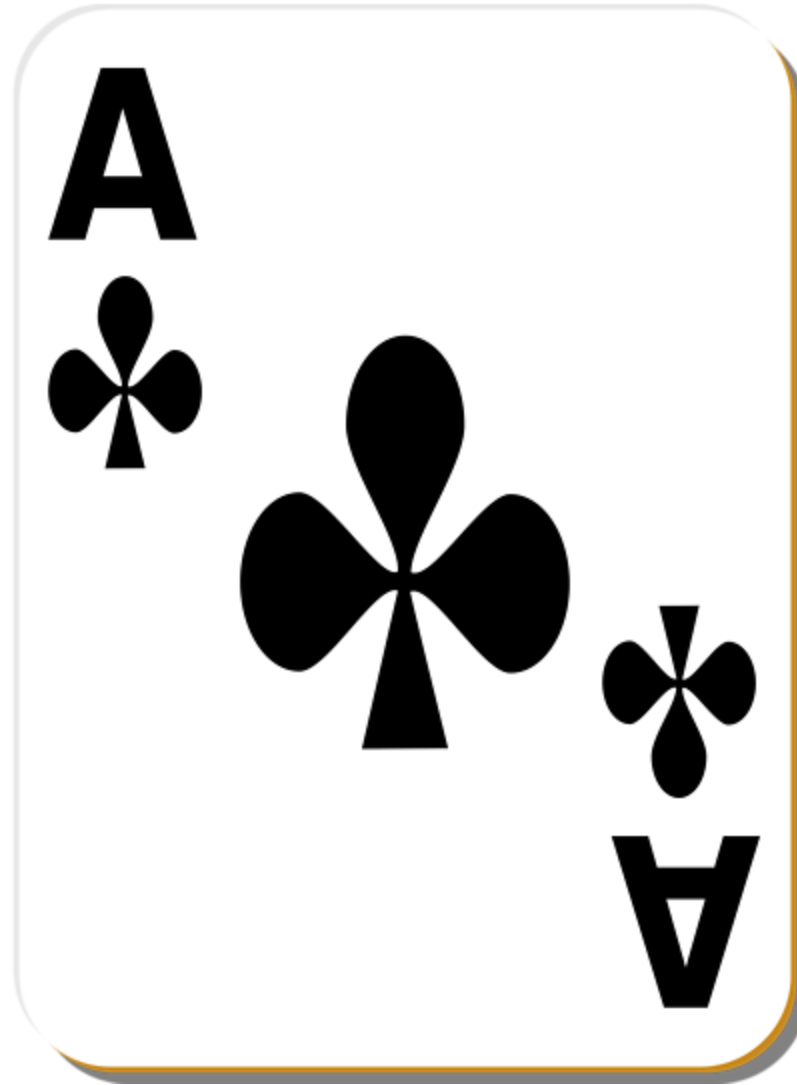


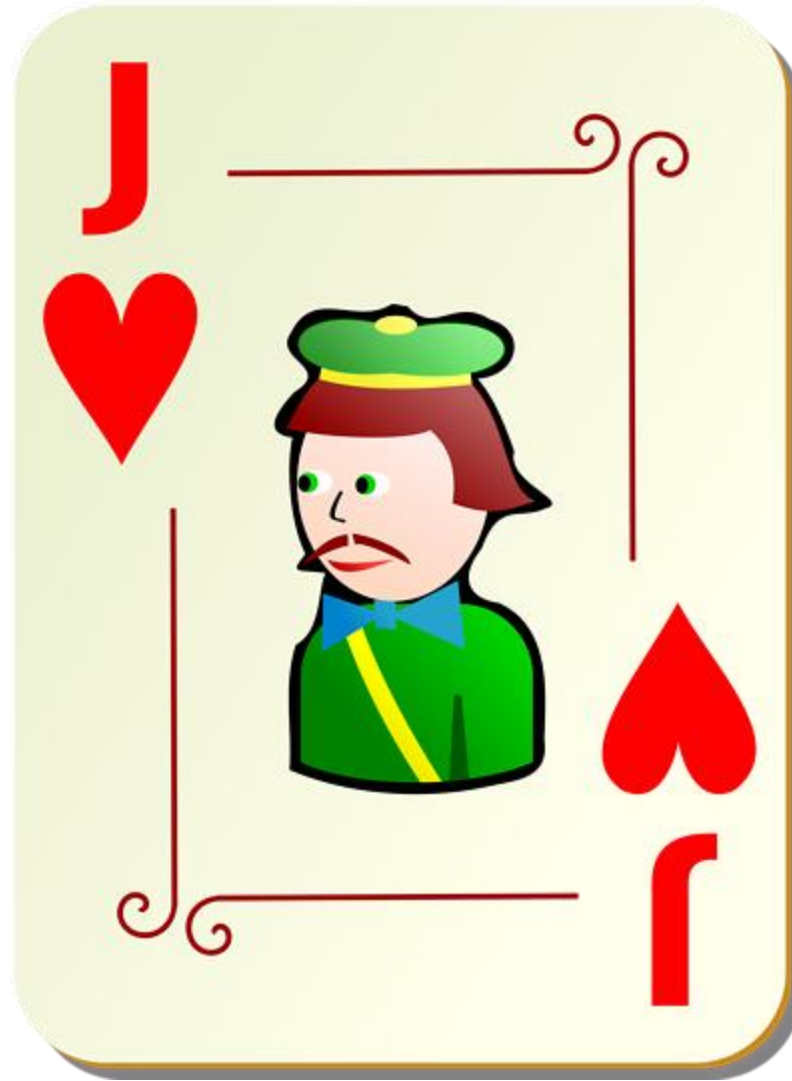


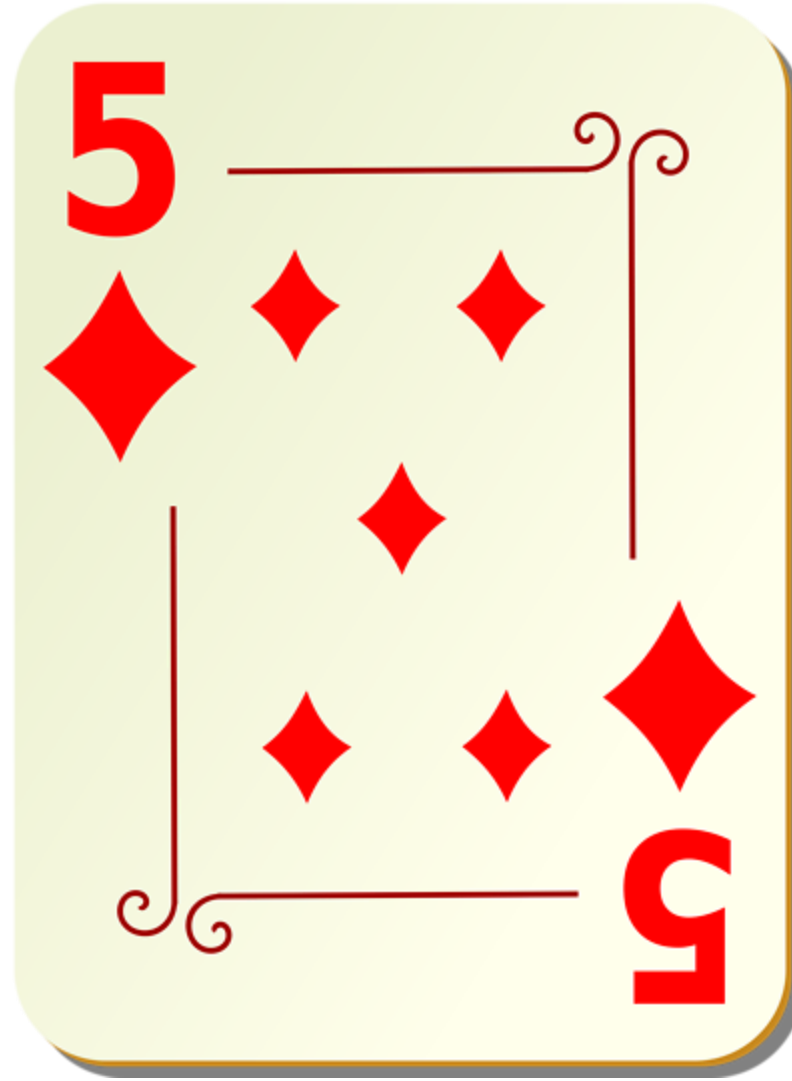


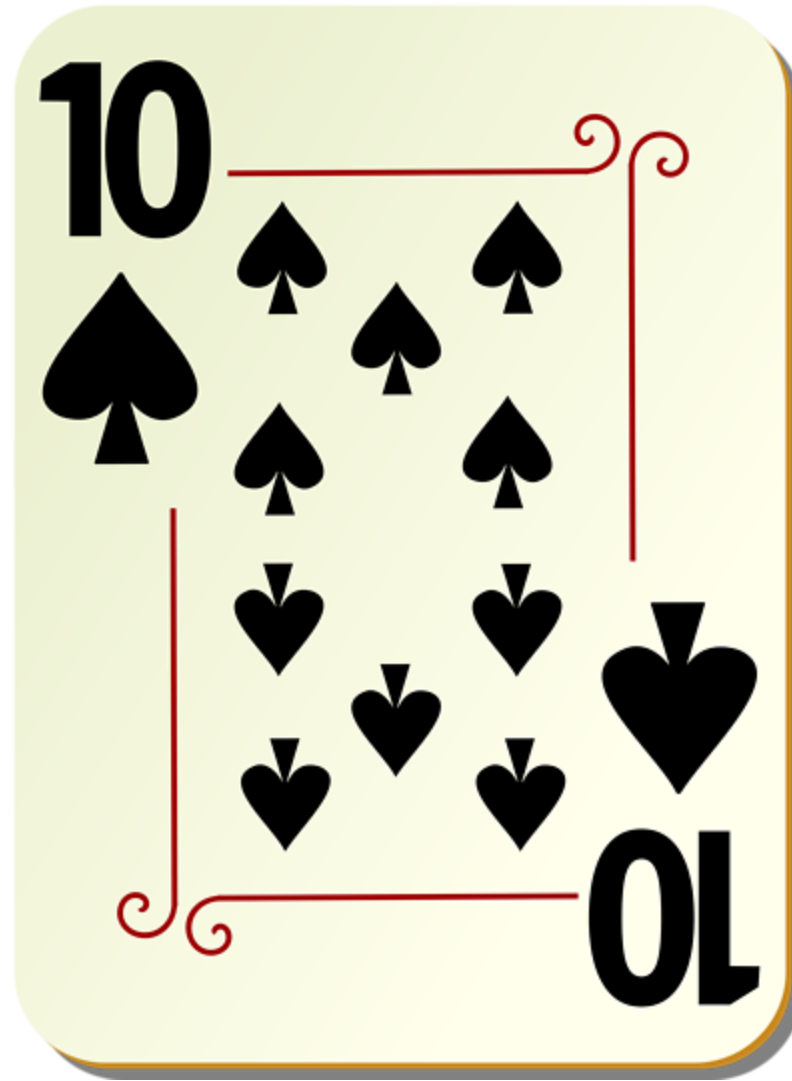


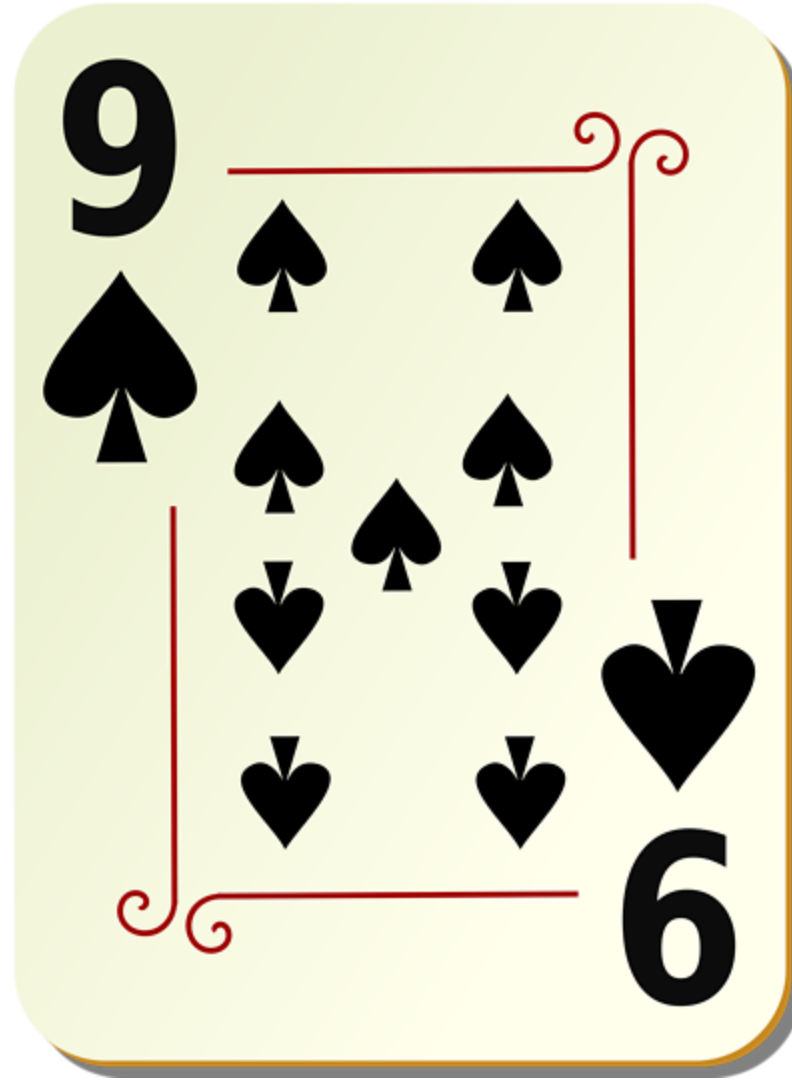


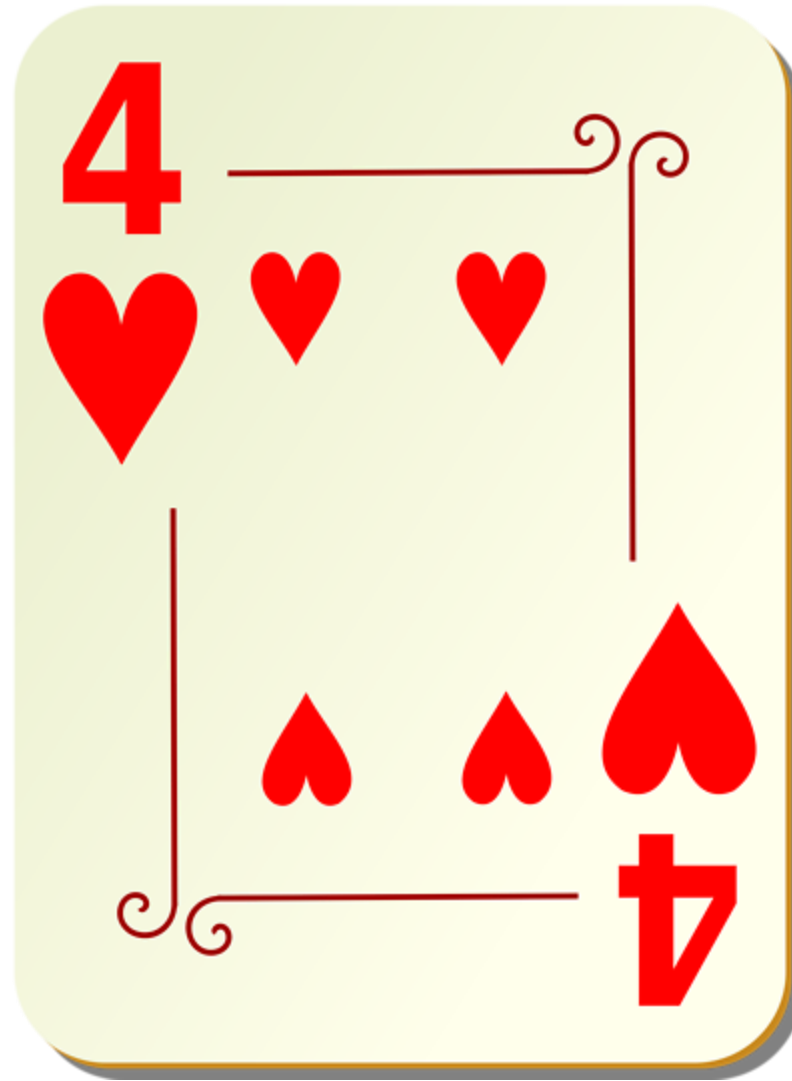


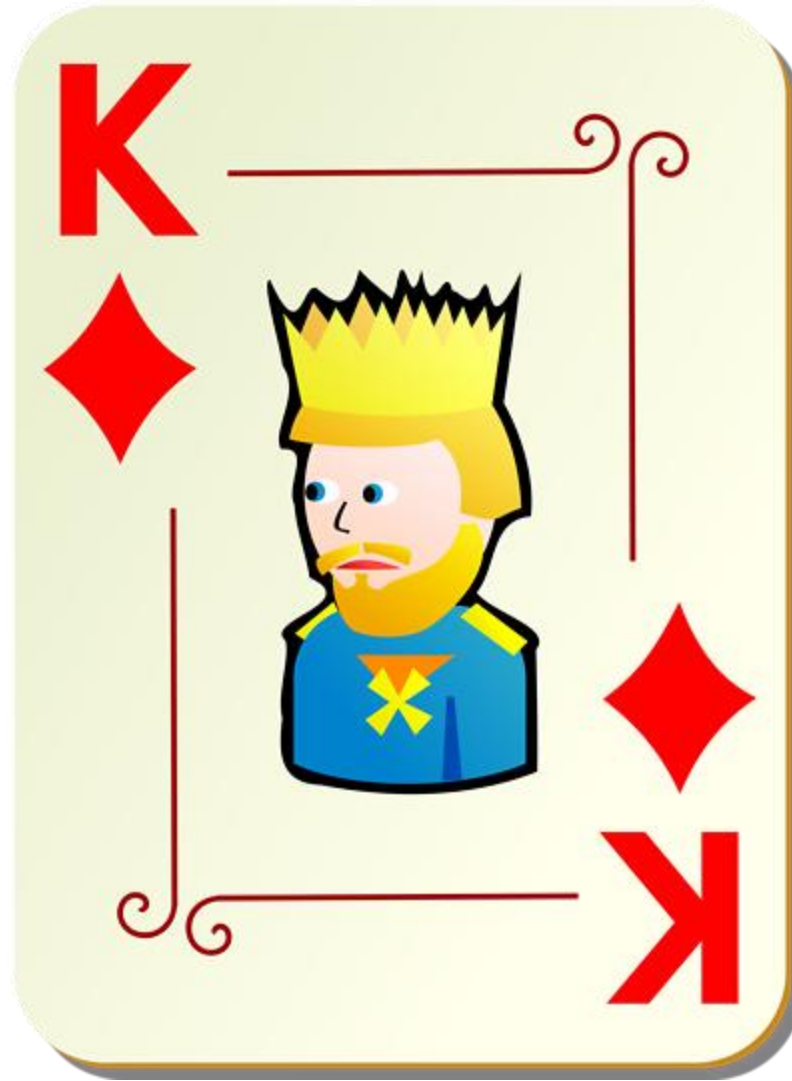


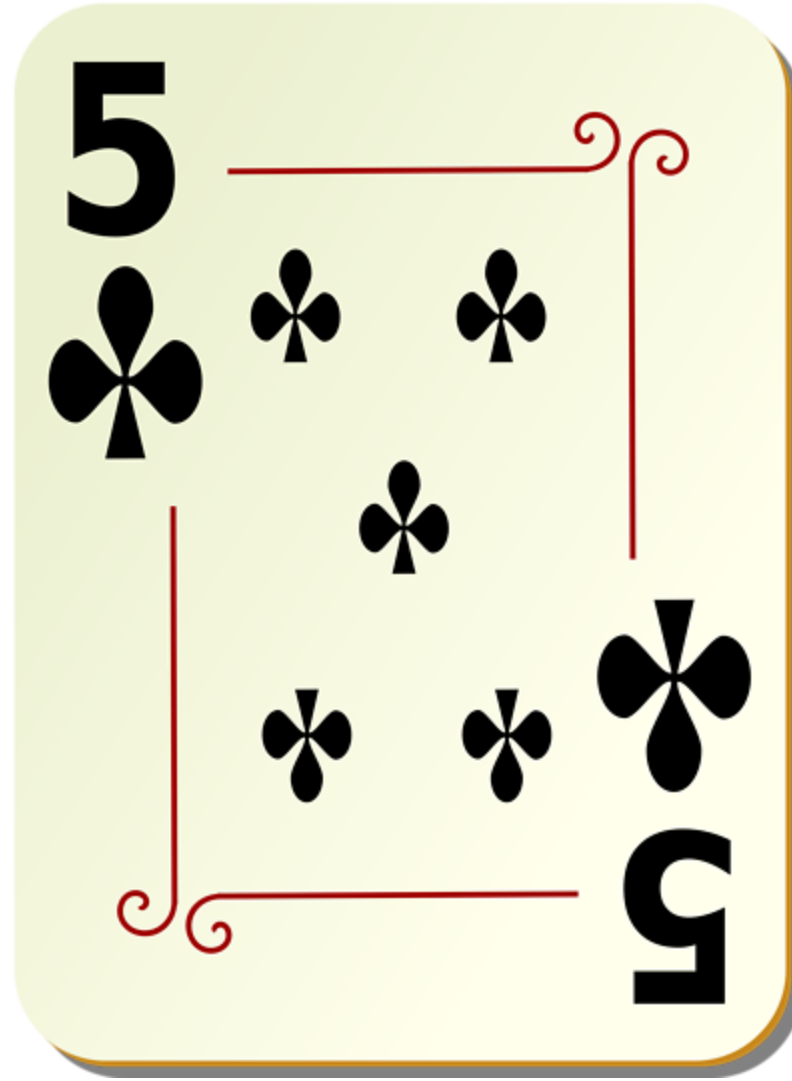


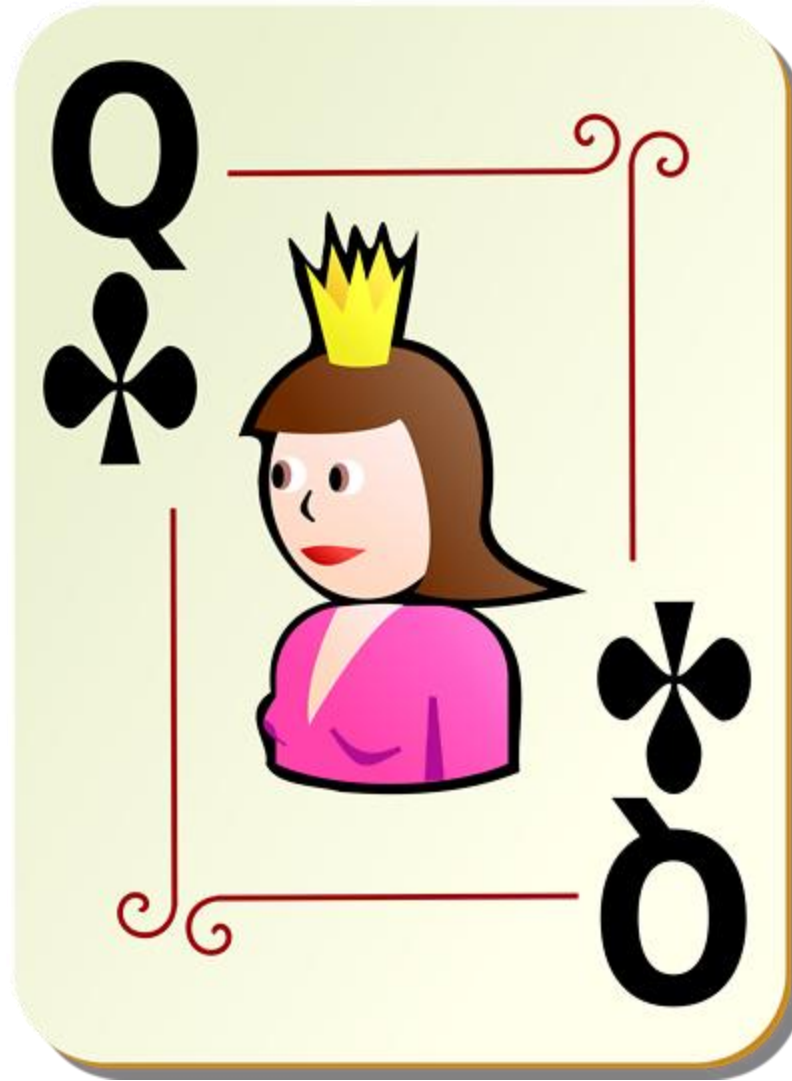


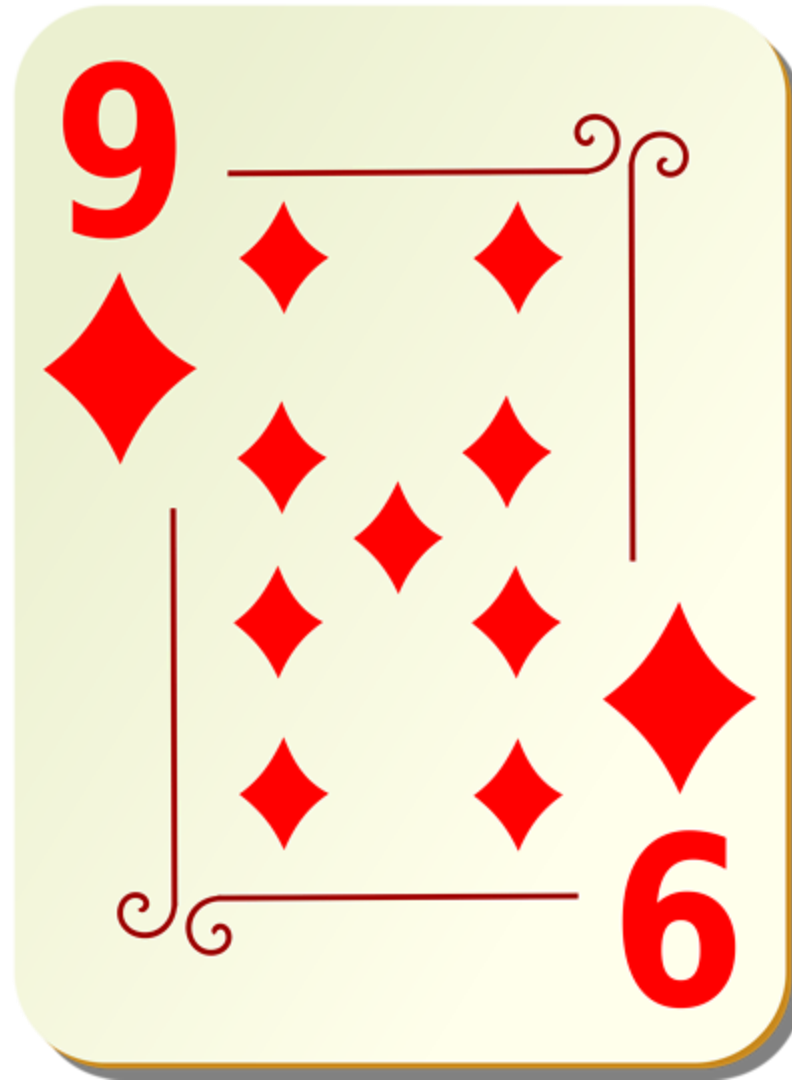


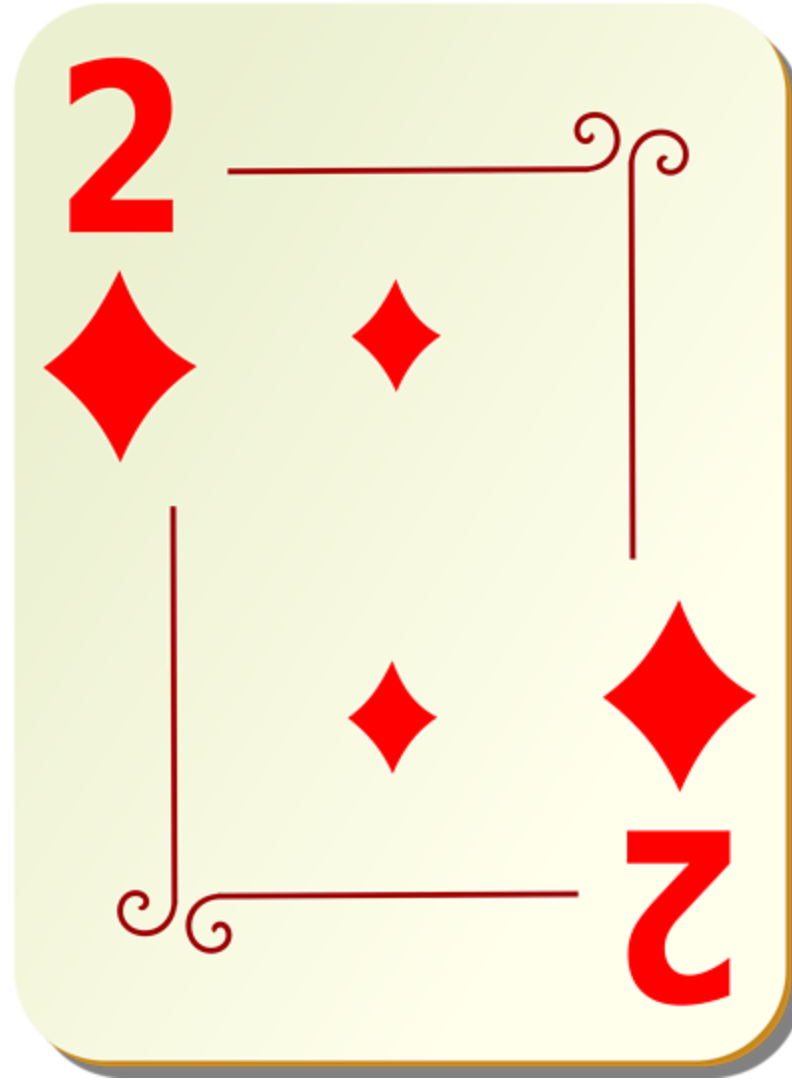


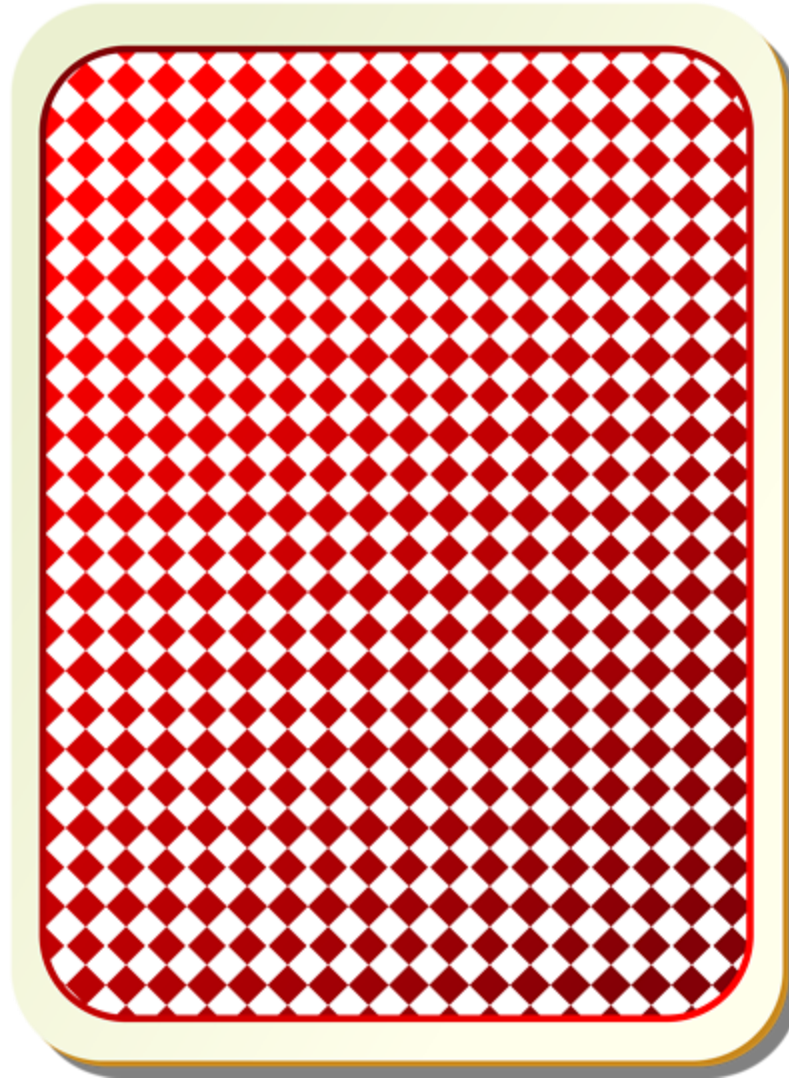












Situation Awareness

- Write down the number of seconds it took to complete the exercise.

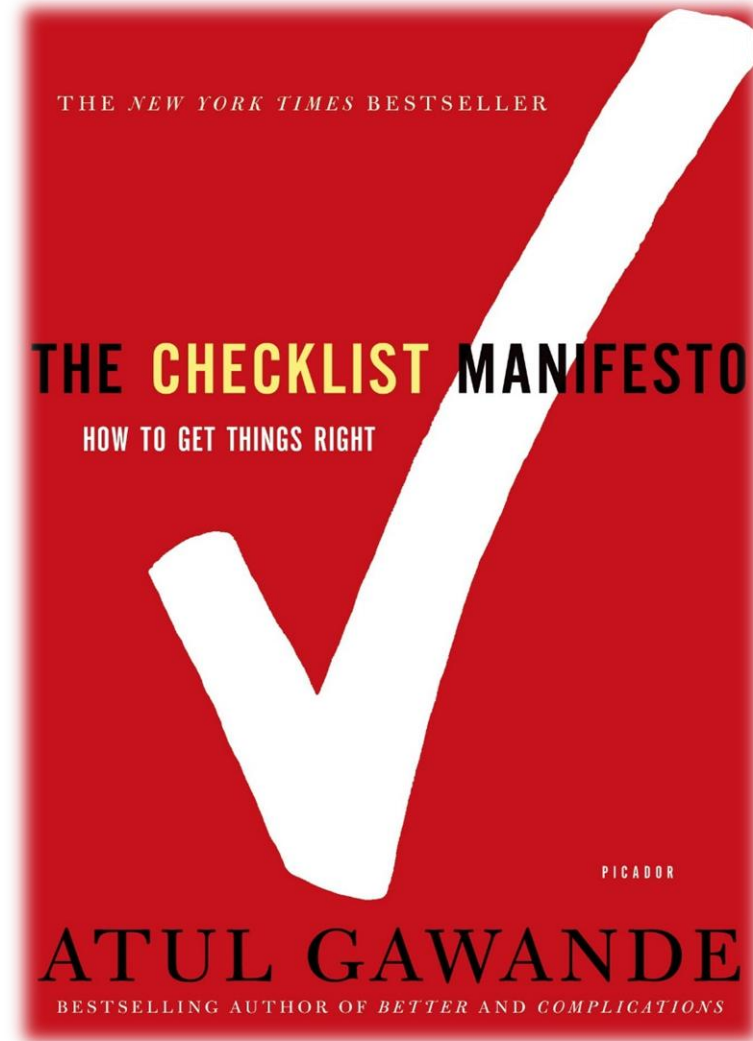
Situation Awareness

The significance of time and how we fail
to notice its passage.

Notice

Take in information

“Beyond the Master Builder” – Atul Gwande



High Performing Teams



Creating High Performance from unrehearsed teams

Teaming



Creating High Performance from unrehearsed teams

Teaming – Professor Amy Edmondson (Harvard University)

- Professional and Situational Humility
- Curiosity about what others bring
- Psychological Safety
- “I don’t like that man very much – I must get to know him better” (Seek to understand)

1 **Psychological safety**
Team members feel safe to take risks
and be vulnerable in front of each other

2 **Dependability**
Team members get things done on time
and meet Google's high bar for excellence

3 **Structure and clarity**
Team members have clear roles,
plans and goals

4 **Meaning**
Work is personally important to
team members

5 **Impact**
Team members think their work matters
and creates change



Aristotle Project

Psychological Safety

What does this mean to you?

Psychological Safety

“Creating an environment for ‘Safe Conflict’ – an atmosphere of healthy give-and-take, rather than tiptoeing around”

(Professor Amy Edmondson – Harvard University)

Psychological safety

- A shared belief held by members of a team that the team is safe for interpersonal risk-taking.
- A team climate characterized by interpersonal trust and mutual respect in which people are comfortable being themselves.
- A sense of confidence that the team will not embarrass, reject or punish someone for speaking up'

Psychological Safety & Patient Safety – Case Study 1

“Fostering openness translates into lower mortality rates: a one-point increase in the standardized openness score is associated with a 6.48 percent decrease in hospital mortality rates”

Study conducted among 137 acute trusts in England – V.Boffolutti & D.Stuckler (Bocconi University and London School of Hygiene & Tropical Medicine)

www.news-medical.net/news/20190507/Hospital-openness-linked-to-lower-mortality-rates.aspx

Psychological Safety & Patient Safety – Case Study 2

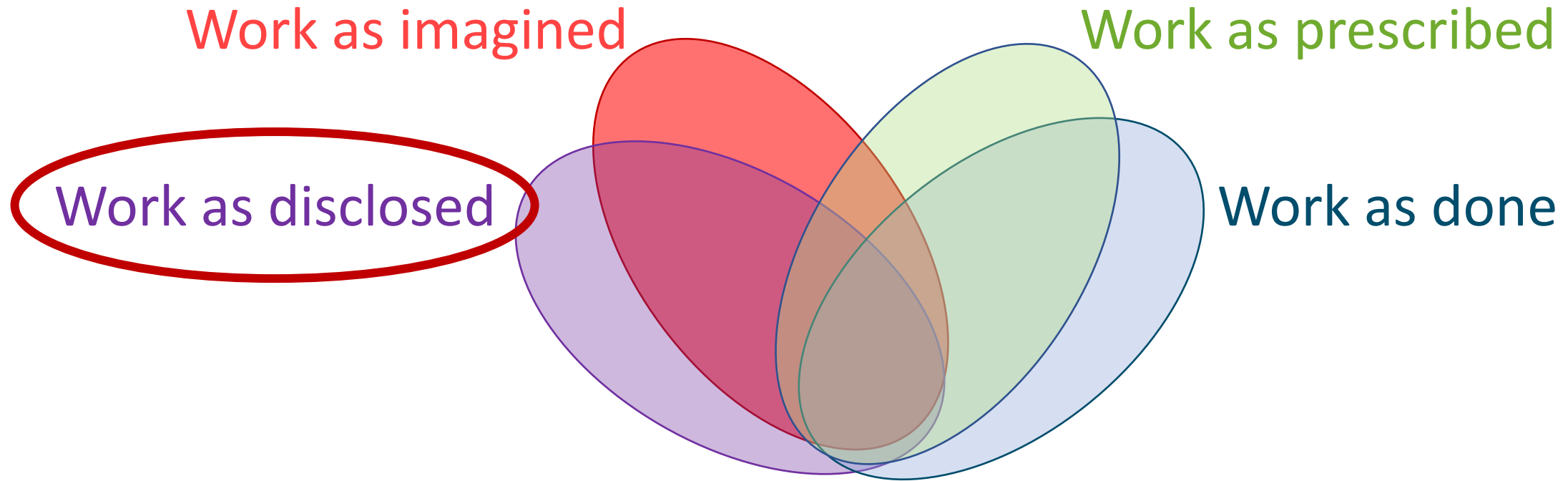
Cancer Teams & Quality Improvement – Halbesleben & Rathert

- Teams with Low P.S relied more on ‘silent workarounds’
- Teams with High P.S focused more on diagnosing problem and improving process to prevent reoccurrence

“Psychological Safety makes it easier for people to speak up about problems and to alter/improve work processes rather than engaging in the counterproductive workarounds”


Halbesleben, J.R.B & Rathert, C. “The role of Continuous Quality Improvement and Psychological Safety in Predicting Work-Arounds.” *Health Care Management Review* 33.2 (2008): 134-144


The Varieties of Human Work - Steven Shorrock



Psychological Safety & Patient Safety – Case Study 3

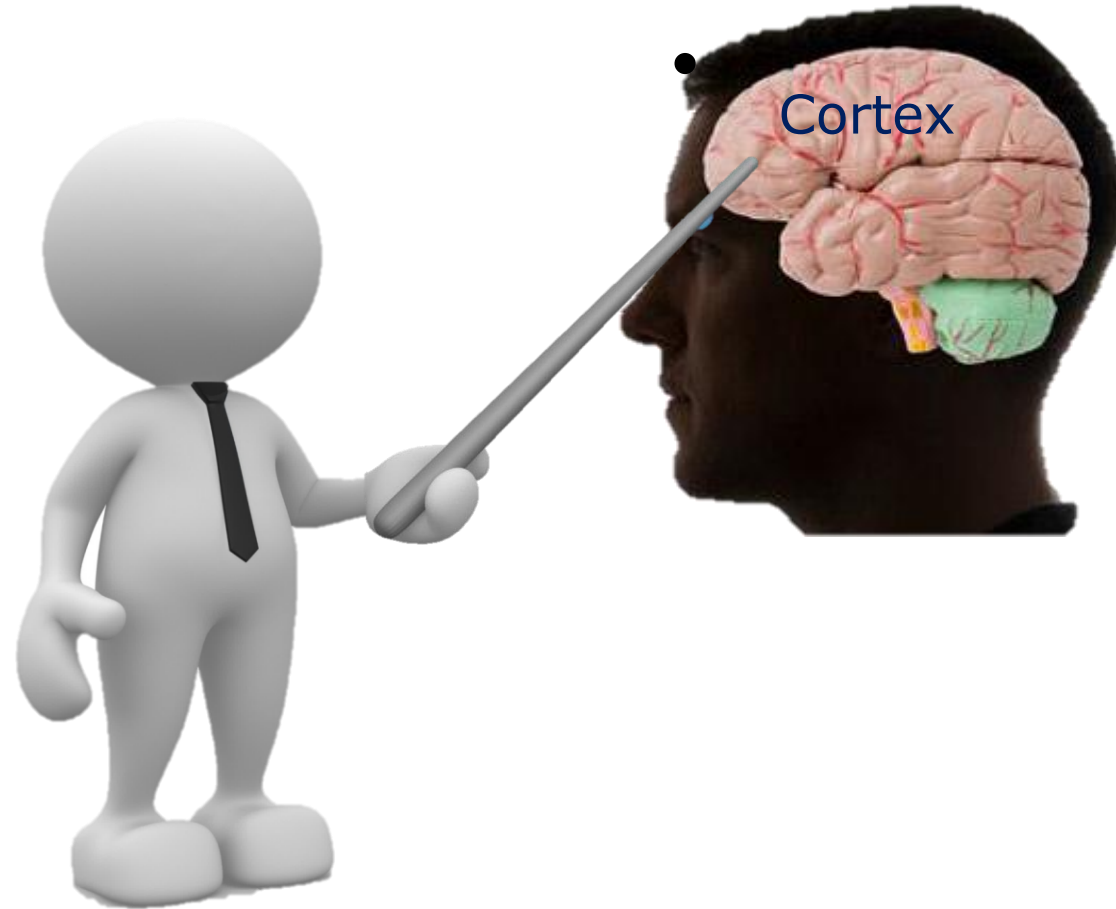
Study of nurses in 4 Belgian hospitals – safety standards and psychological safety (Leroy et al, 2012);

High 'Safety Standards' + Low P.S =  Errors

High 'Safety Standards' + High P.S =  Errors

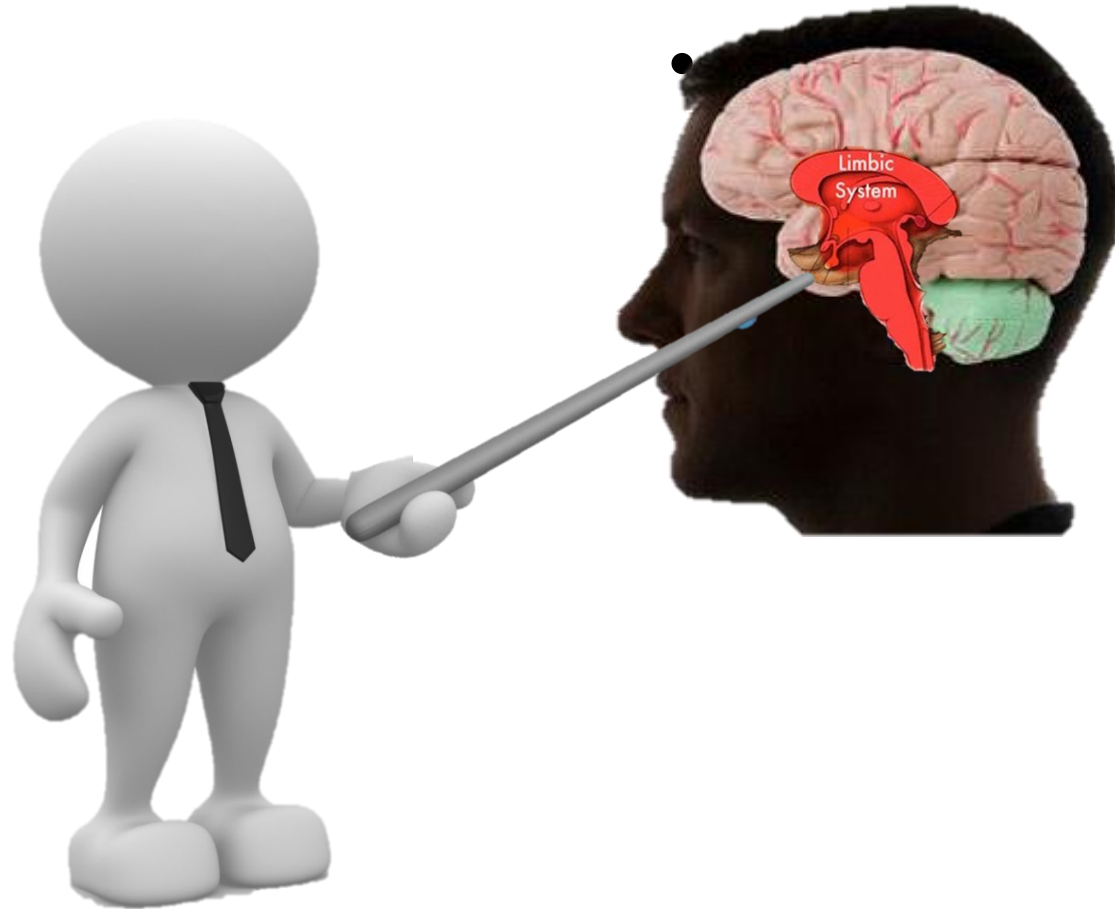
Leroy, H et al. "Behavioural Integrity for Safety, Priority of Safety, Psychological Safety and Patient Safety: A Team-Level Study." *Journal of Applied Psychology* 97.6 (2012): 1273-81

Stress & Error

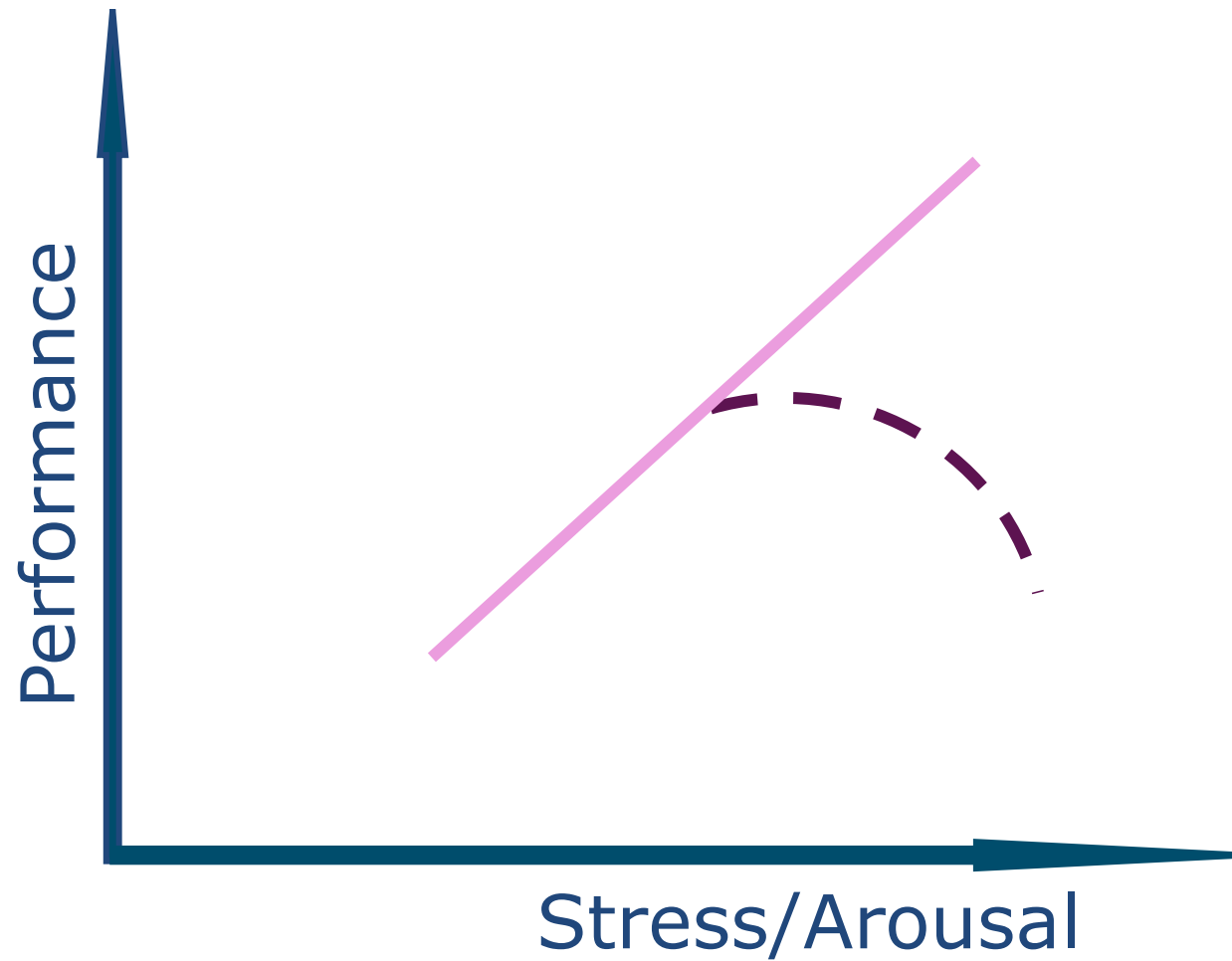




Stress & Error



Transforming threat into challenge



Professional Football Research - penalties

- Shot to win: 93%
- Shot 'not to lose': 63%

One is a 'challenge' (Adrenaline)

One is a 'threat' – fear response (Adrenaline + Cortisol)

What factors influence whether our environment is threatening or challenging?

Predictors of Threat or Challenge

- Our relationship with Stress itself (+ or -)
 - How we frame and talk about it
- Our perception of our ability to cope (experience)
 - Peer Mentoring
 - Experiential Learning
- Level of Psychological Safety

Psychological Safety

It's Fragile

It can be destroyed if the environment becomes threatening



Incivility

- A survey of Doctors and nurses:
- 75% identified bad behaviours within their teams that led to medical errors
- 25% were convinced that these behaviours contributed to the deaths of their own patients

- *A survey of the impact of disruptive behaviours and communication defects on patient safety*
- Alan Rosenstein and Michelle O'Daniel

Incivility

- If I am the recipient:
 - 80% lose time worrying about this
 - 78% reduce their commitment to work
 - 63% lose time avoiding the offender
 - 61% reduction in cognitive ability
 - 48% reduce their time at work
 - 38% reduce the quality of their work
 - (deliberately)
 - 25% take it out on patients
 - 12% leave.

Incivility

- If I am a staff onlooker
- 20% decrease in my performance
- 50% reduction in my willingness to help others.

• *The Cost of Bad Behavior:* Christine L. Porath Christine M. Pearson

Incivility

- I am the patient/relative
- 75% less enthusiasm for the organisation
- 66% feel anxious dealing with employees.

• *The Cost of Bad Behavior:* Christine L. Porath Christine M. Pearson

Civility Saves Lives

“Almost all excellence in healthcare is dependent on teams, and teams work best when all members feel safe and have a voice.”

“Civility between team members creates that sense of safety and is a key ingredient of great teams.”

“Incivility robs teams of their potential”.

<https://www.civilitysaveslives.com/>

Psychological Safety

So how do we do it?

How do we create Psychological Safety?

Steps to Psychological Safety

Julie Morath – COO at Children's Hospital &
Clinics, Minneapolis

Steps to Psychological Safety

- 1 – Setting the Stage
- 2 – Invite Participation
- 3 – Respond Productively

Setting the Stage

Widespread education on Just Culture & Human Factors/Systems Thinking

- Encourage the search for 'What and Why' rather than 'Who'

- Reduce fear of blame

"No passion so effectively robs the mind of all its powers of acting and reasoning as fear"

Edmund Burke, 1756

- Reframe/destigmatise failure

"Failure is not a bug of learning, it's a feature"

Inviting Participation

Structures

- Briefings/Huddles/Action Learning etc
(requires Situational Humility)
- Communicate that you don't have all the answers
- Confidence & Humility are not opposites

Proactive Inquiry

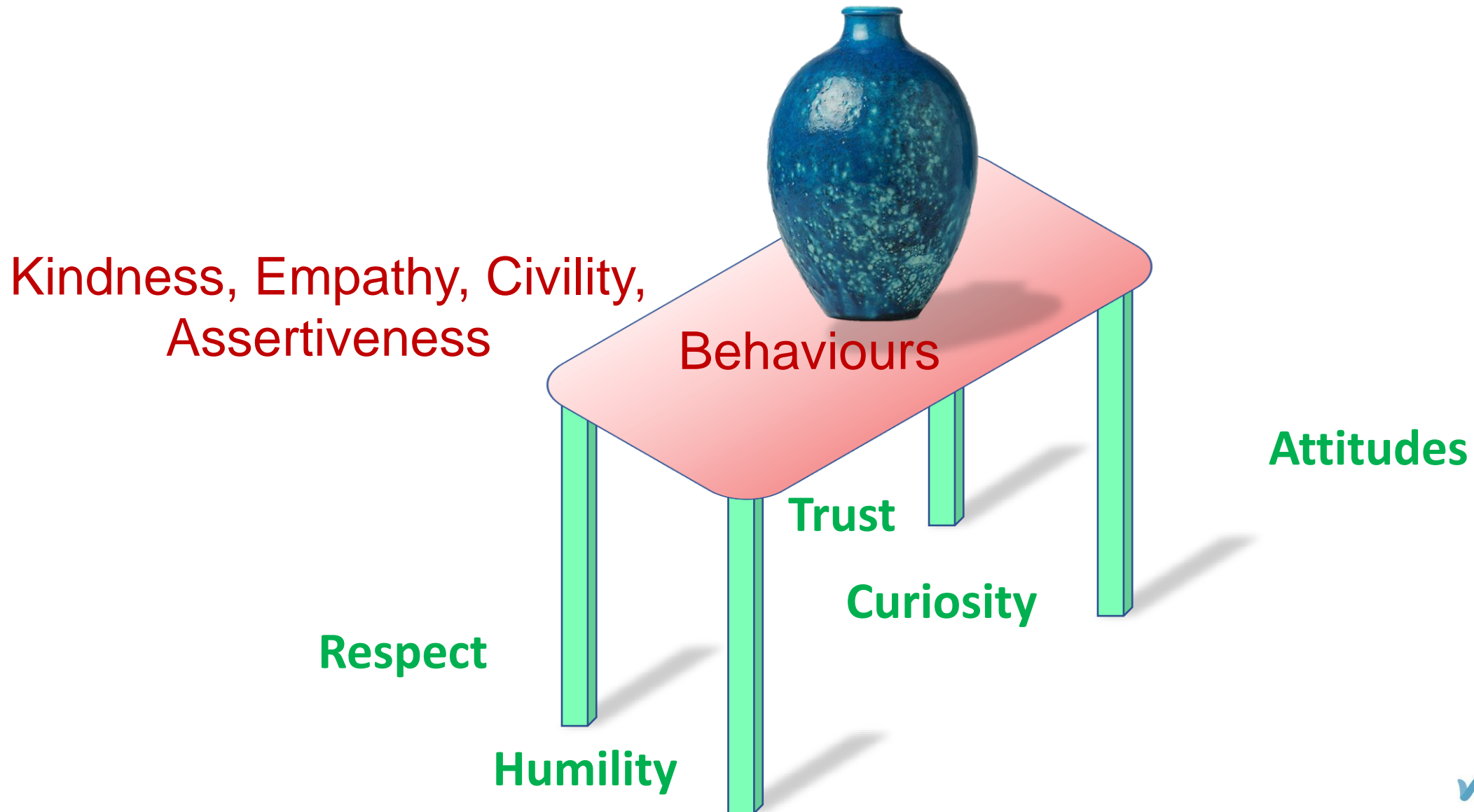
- True listening conveys respect
- *“Seek to understand, then to be understood”*

Develop an attitude of Curiosity over Judgement

Respond Productively

1. Show appreciation (no matter the response) - not the same as agreement!
2. Destigmatise failure (praise effort and strategy more than outcomes in VUCA context)
3. Sanction reckless acts or sabotage (Just Culture)

Psychological Safety



3 C's of Psychological Safety – Amy Edmondson

- Curiosity
- Compassion
- Commitment

“Call it out with Compassion” – Dr Chris Turner (Civility Saves)

<https://www.civilitysaveslives.com/>

When does teambuilding start?

The background of the image is a vibrant, abstract pattern of blue and white. It features a series of concentric, wavy lines that resemble ripples on water or perhaps a close-up of a liquid surface. The colors range from deep, rich blues to bright, almost white highlights, creating a sense of depth and movement. The overall effect is one of fluidity and organic growth.

We all create ripples....

The background of the image is a vibrant, abstract pattern of blue and white. It features fluid, wavy lines that create a sense of movement and depth, resembling liquid or smoke. The colors range from deep cerulean to bright, almost white highlights, giving it a dynamic and ethereal appearance.

What do you want yours to be?

What is Human Factors For Healthcare?

Creating the conditions that enable people to be and perform at their best

Five Central Principles:

- A Systems Approach (internal and external)
- Embracing Complexity
- Multi-person Interface
- Contextual Flexibility
- Twin Interdependent Aims of Performance and Well-being

Human Factors For Healthcare - 3 'Lines of Enquiry'

Internal

- Human Performance
- Understanding Human Capabilities and Fallibilities

Interpersonal

- Group/Team Dynamics
- Leadership at all levels

External

- “Designing for People”
- Equipment/environment/technology/processes/policies

Importance of Psychological Safety

- **Internal** – people perform better under pressure
 - **Interpersonal** – teams communicate more effectively with one another
 - **External** – far greater System Learning (information fed into Quality Improvement work etc)
-
- It's always a work in progress
 - We all create ripples

“You cannot change the human condition, but you can change the conditions under which humans work”

Professor James Reason

Action Plans

What are you taking away to implement in your work/department?

Key learning points

What is your 'commitment to action'?



Thank you for your time

Get involved with our ongoing discussions!

Email ben.tipney@med-led.co.uk



@MedledTeam

@Bentipney