

# Dynamic Risk Assessment and Management

WELLINGTON OCTOBER 2018





# Clarifying meaning and giving context

FOUNDATIONS

# Dynamic Risk Assessment and Management

The continuous cognitive (mental) assessment of risk in a changing (dynamic) environment which aids decision making to provide an acceptable level of safety.

Ashbury and Jacobs (2014)

### Dynamic Risk Assessment

Real-time decisions, which rely upon the adaptation of predictive risk assessment outcomes.  
Workers are empowered.

### Predictive Risk Assessment

Documented arrangements to meet moral and legal obligations –  
Operational assessments made within the constraints of the Strategic risk assessment.  
Line Managers are empowered.

### Strategic Risk Assessment

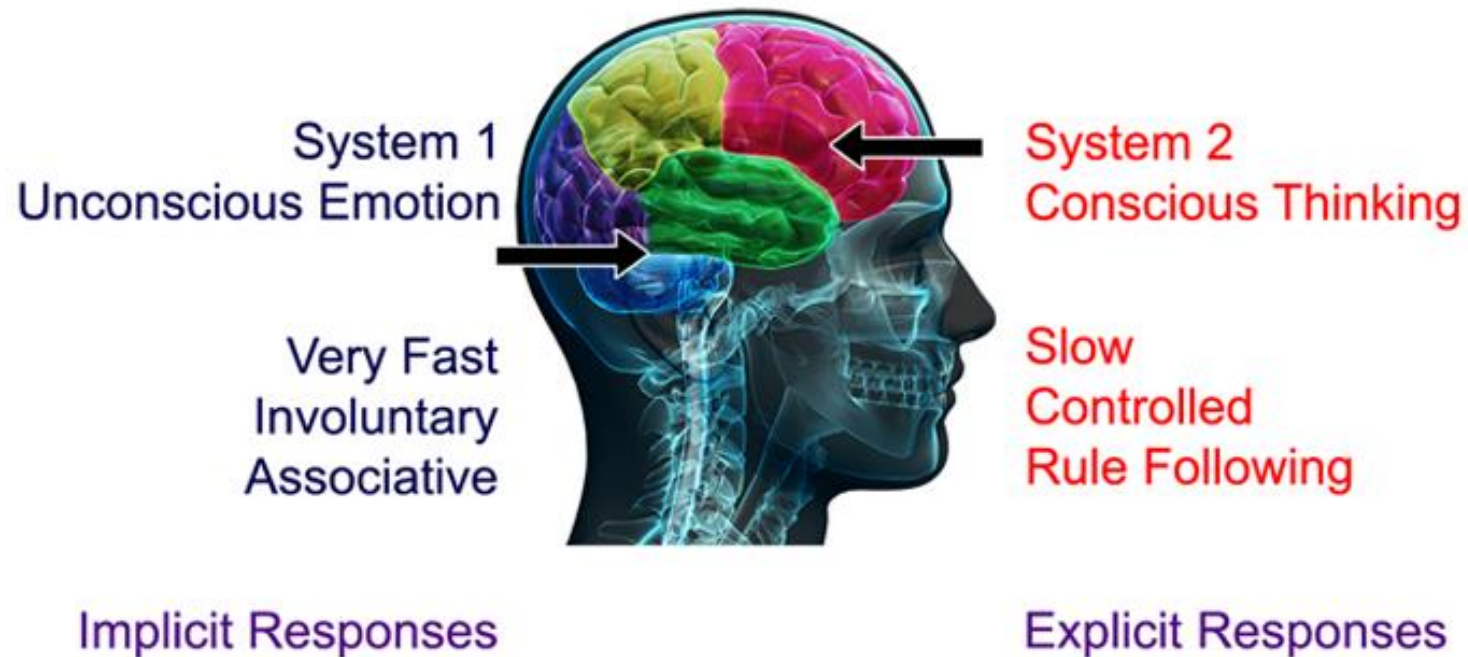
Policy and strategy decisions –  
Highly informed, developed over time.  
Executive team

# The 3-level risk model

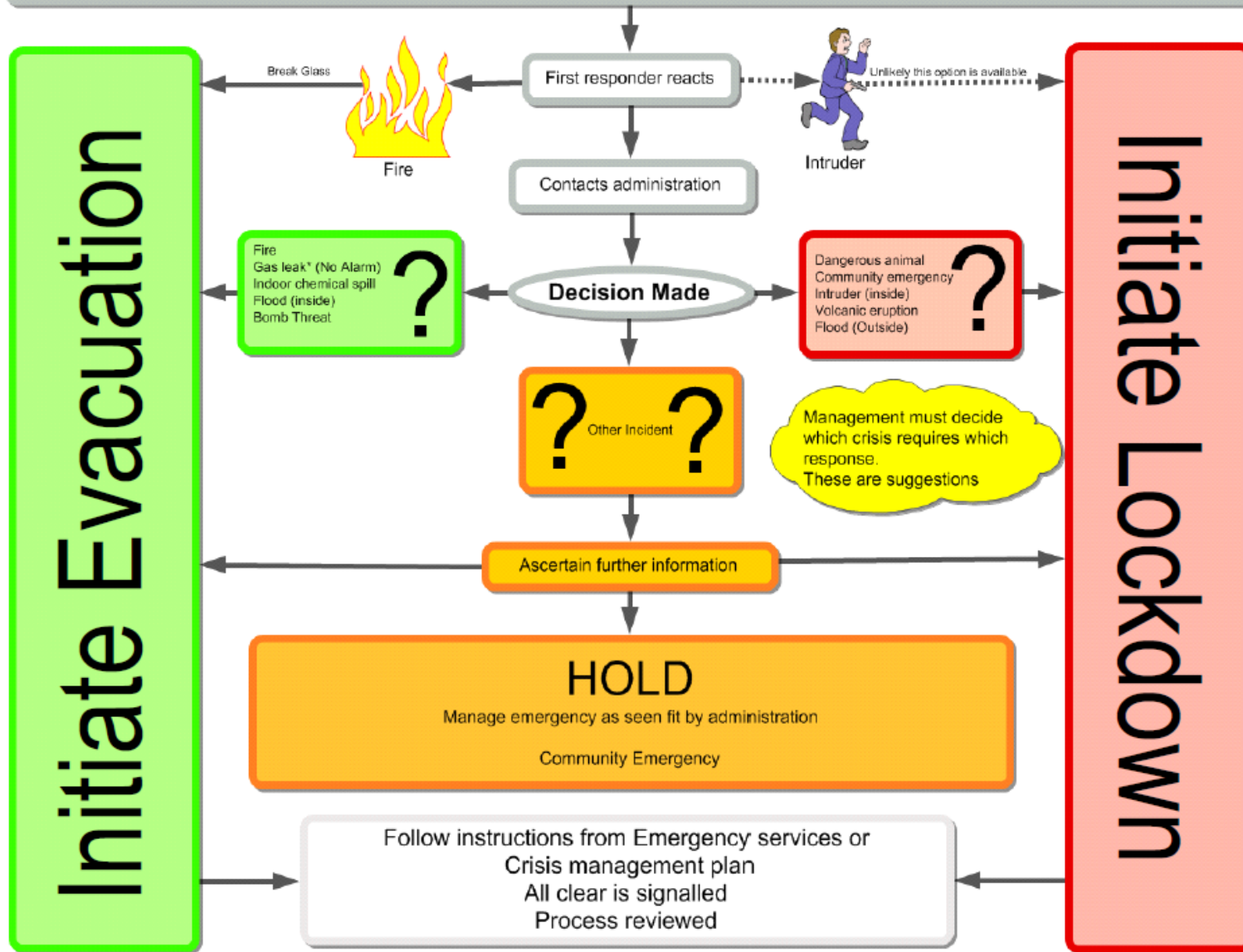


# The 3-level risk model

# Two Decision Making Routes



# Emergency Situation Arises

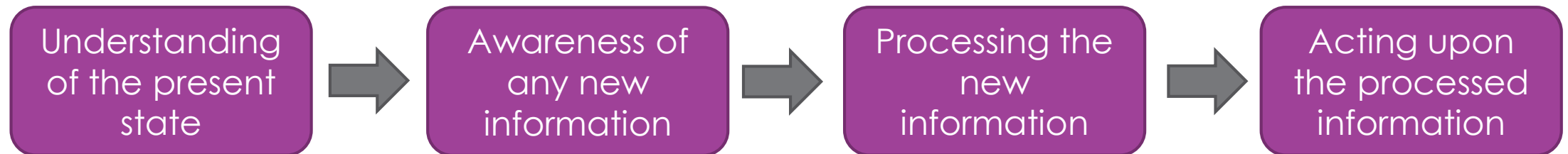


Dynamic Risk Assessment

Predictive Risk Assessment

Strategic Risk Assessment

# Good Risk Decisions







# Understanding the present state

STAGE 1

# Understanding the present state

“If you can't explain it to a six year old,  
you don't understand it yourself.”

— **Albert Einstein**

# Understanding the present state

Q. How risky is the task during normal operation?

A. It's about a 6...look...



# Understanding the present state

What is the hazard?

What is a hazard?

What is the risk?

What is a risk?

What are the controls?

What are controls?

# Understanding the present state

**Hazard** is the 'thing' that has the potential to cause harm

**Harm** is what safety is concerned with preventing: Stopping the 'ouch', the pain or the damage.

**Risk** is the effect of uncertainty on objectives (ISO 31000)

**Risk** is the numerical estimate of the probability or likelihood that a given hazard will occur (ISO 13043:2001)

**Risk** is the probability of loss or injury from a hazard (ISO22538-4:2007)

**Risk** is the probability of a specific undesired event occurring so that a hazard is realised (ISO/TR11610:2004)

**Risk** is the exposure to the chance of injury or loss as applies to safety (ISO/TR15916;2004)

# Understanding the present state

**Risk** is factor, R, that reflects both likelihood, L, of the occurrence of a hazard in a particular situation and severity, S, of the consequences or extent of harm to the individual to be expected from the hazard  $R = L \times S$  (ISO/TR21808)

**Risk** is the effect of uncertainty (ISO 21101:2014)

**Risk** is the probability of a specific undesired event occurring so that the hazard is realised (ISO/TR 11610:2004)

**Risk** is the combination of the probability of an event and its consequences (ISO/IEC16085:2006)

**Risk** is the combination of the probability that a specified undesirable event will occur combined with the severity of the consequences of that event (ISO19906:2010)

# Understanding the present state

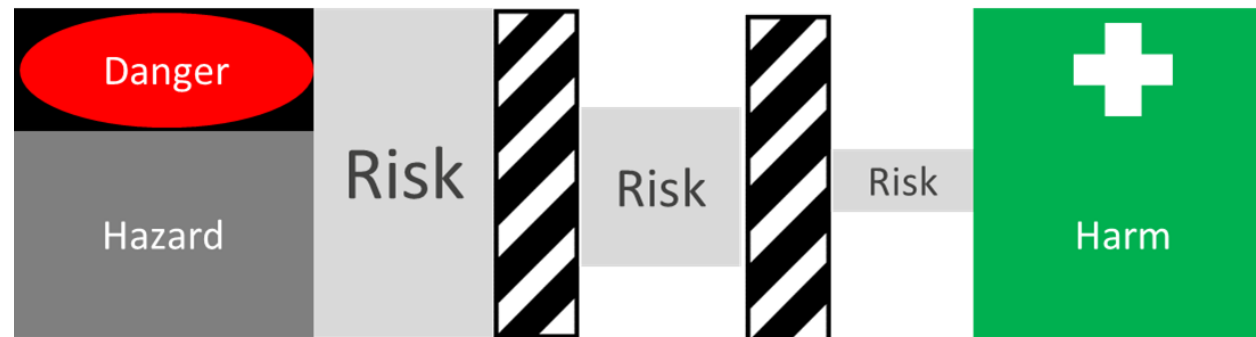


Hazard



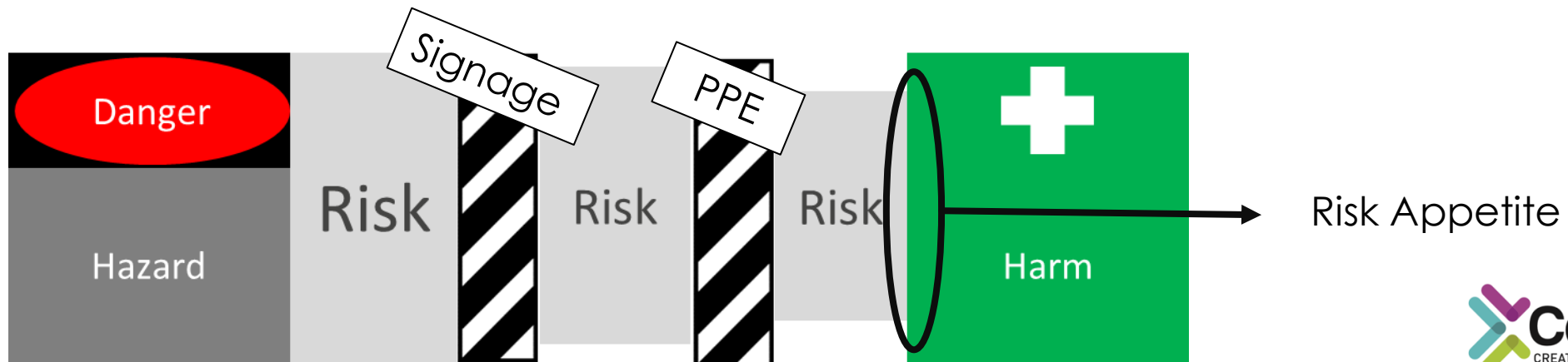
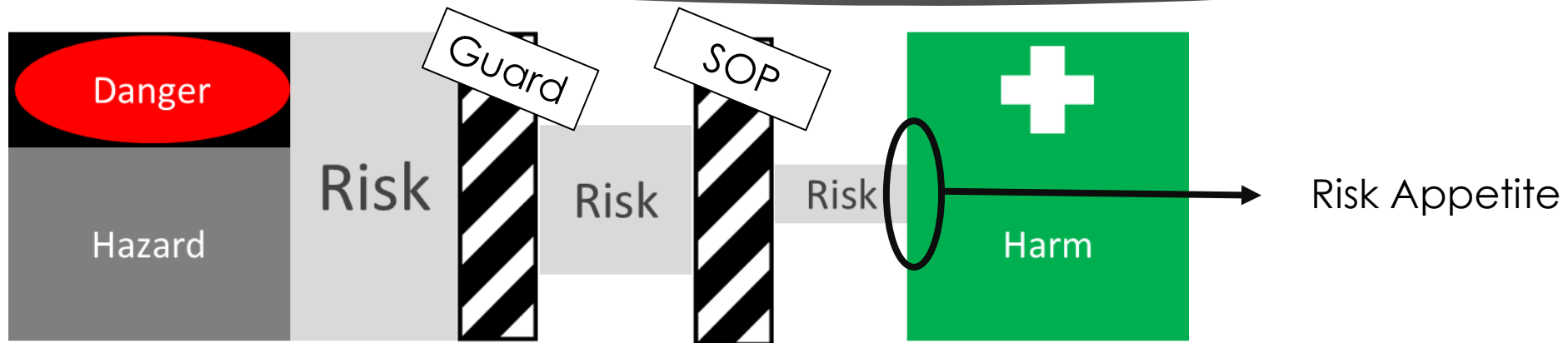
Risk

# Understanding the present state





# Understanding the present state



# Understanding the present state

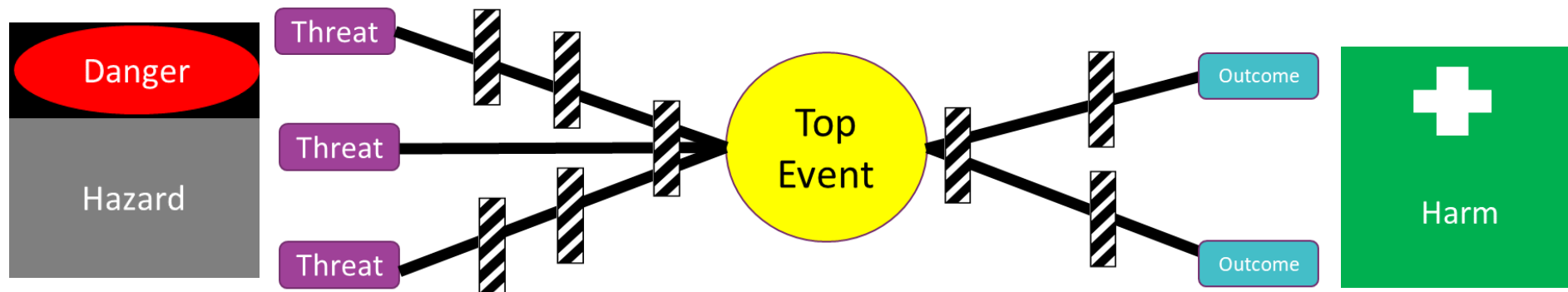
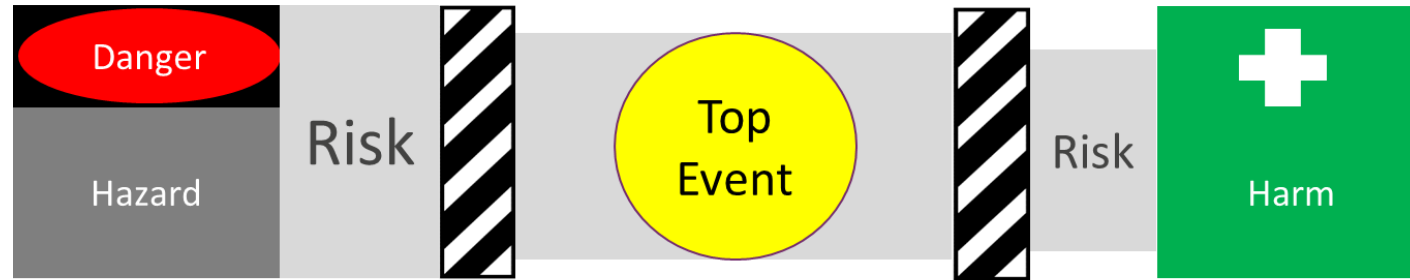


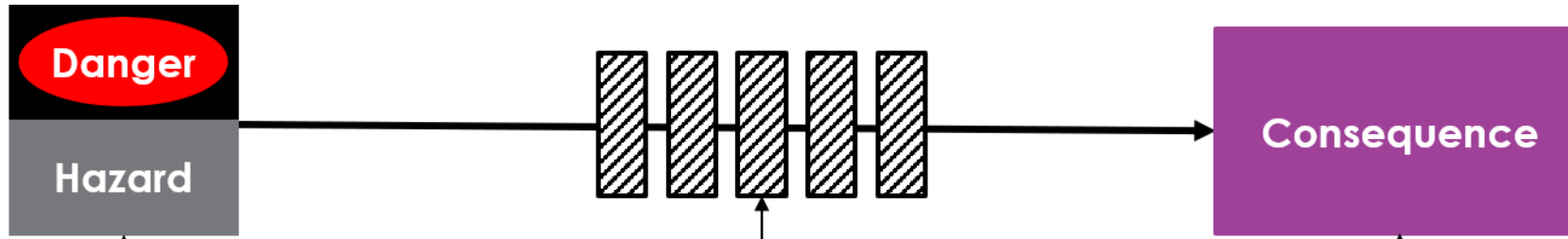
Risk Rating = Likelihood x Severity

S e v e r i t y	Catastrophic	5	5	10	15	20	25
	Significant	4	4	8	12	16	20
	Moderate	3	3	6	9	12	15
	Low	2	2	4	6	8	10
	Negligible	1	1	2	3	4	5
			1	2	3	4	5
		Improbable	Remote	Occasional	Probable	Frequent	
		Likelihood					

- Catastrophic STOP
- Unacceptable URGENT ACTION
- Undesirable ACTION
- Acceptable MONITOR
- Desirable NO ACTION

# Understanding the present state





**Workers**

**Worker's responsibilities and tasks in organisational risk assessment and management**

Dynamic Risk Assessment and Management

**Supervisors**

**Supervisor's role in organisational risk assessment and management**

Predictive Risk Assessment and Management

**Managers**

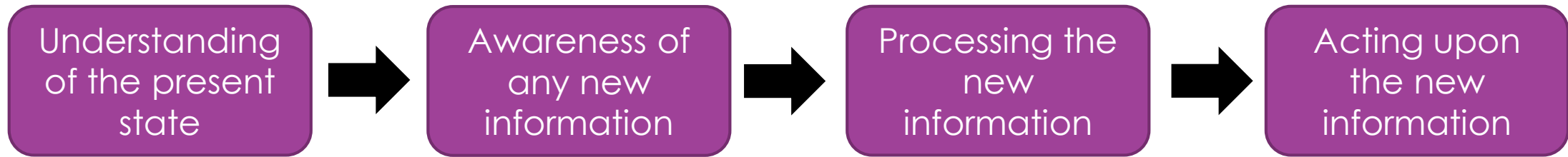
**Manager's role in organisational risk assessment and management**

Strategic Risk Assessment and Management

**Directors/  
Exec. team**

**Due Diligence**

# Good Risk Decisions



**Explain:**

Hazard  
Harm  
Risk  
Risk Control  
Risk Appetite

To a 6 year old.



# Awareness of new information?

STAGE 2

# Awareness of new information

Observant (experience/previous learning)

Available to receive new information (not in the tunnel)

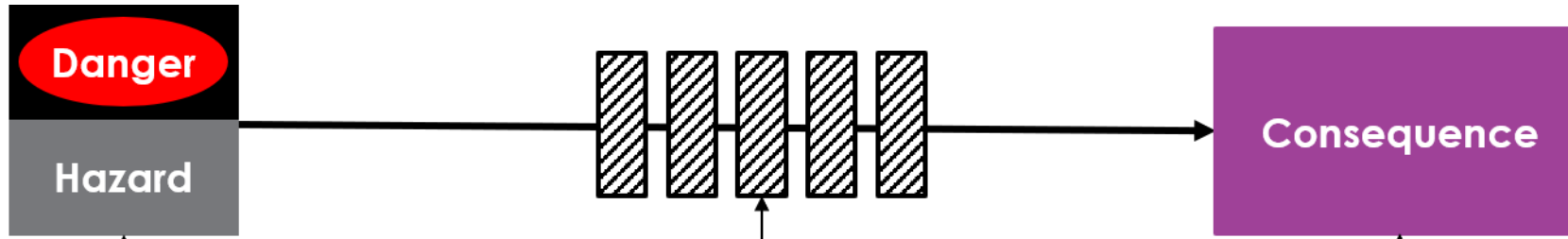
Presented with information in an accessible manner (3/9/27)

Systems developed to get information to decision maker

# Setting up communication systems







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**Due Diligence**

# Awareness of new information

Actively look for and communicate things that impact upon the Risk, Hazard or Risk Controls

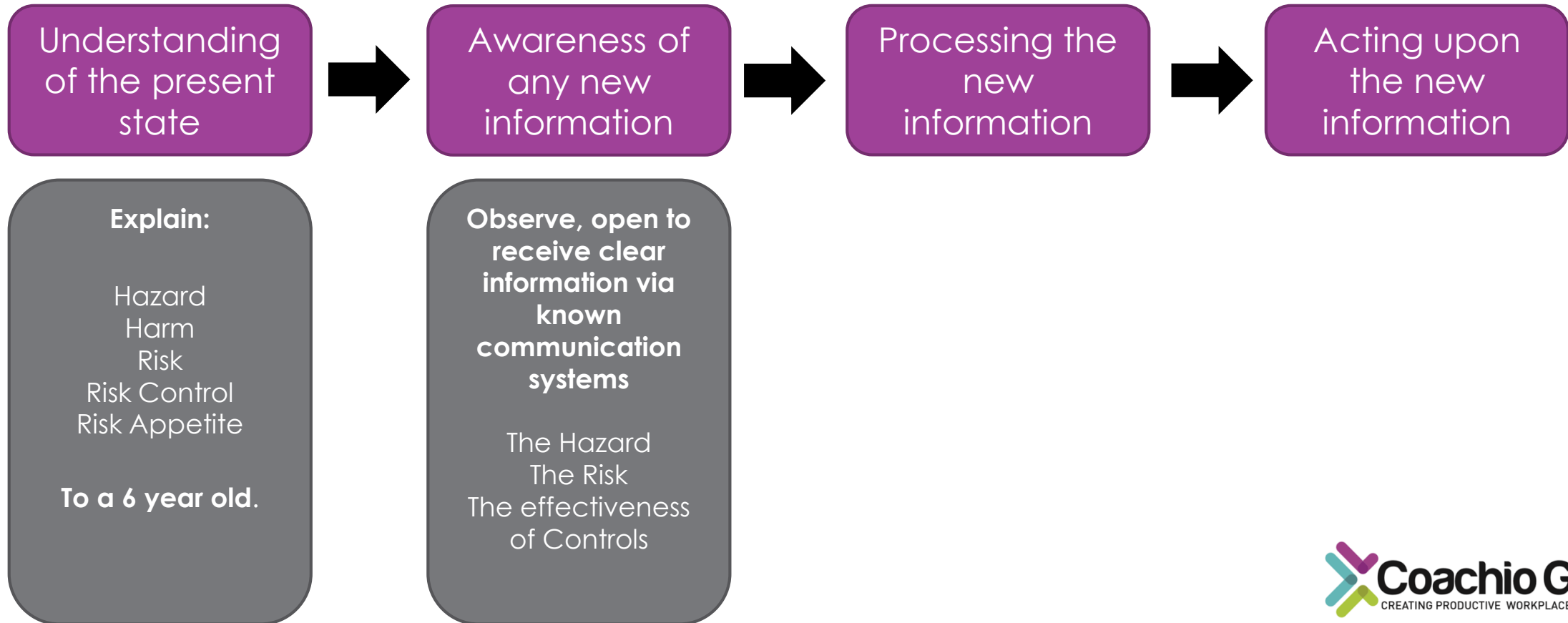
Including:

People:

Equipment:

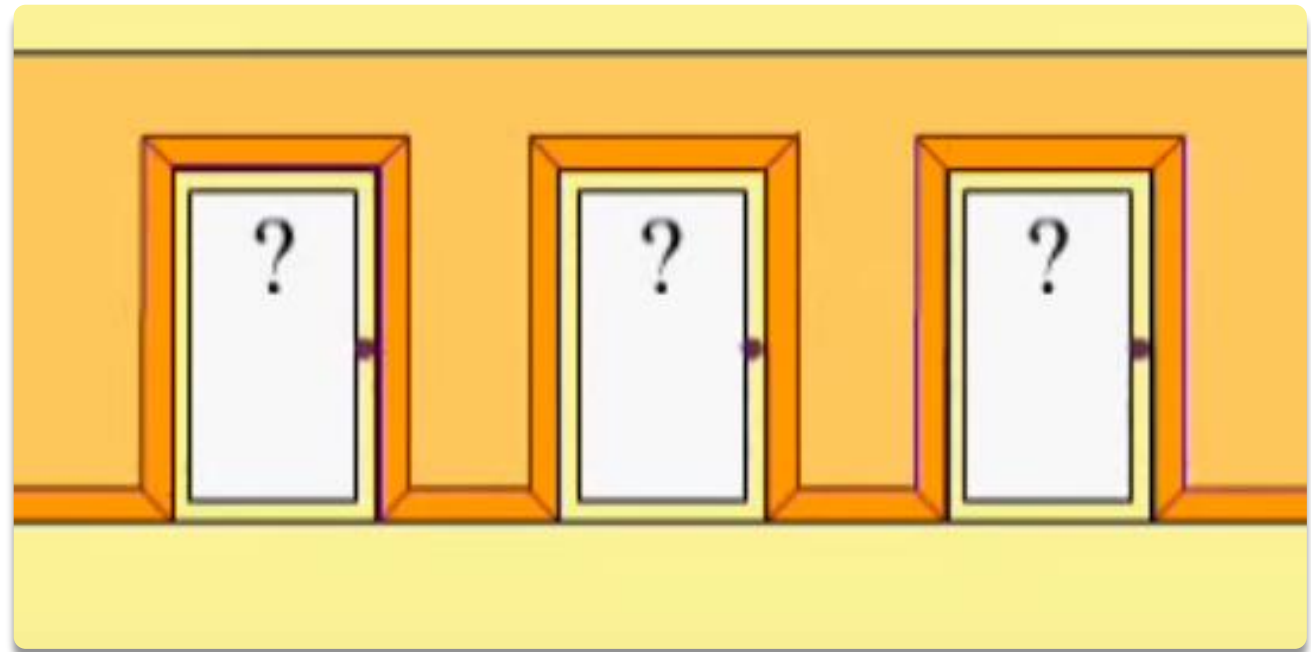
Environment:

# Good Risk Decisions



# The Monty Hall Problem

- ▶ <https://www.youtube.com/watch?v=mhlc7peGIGg>



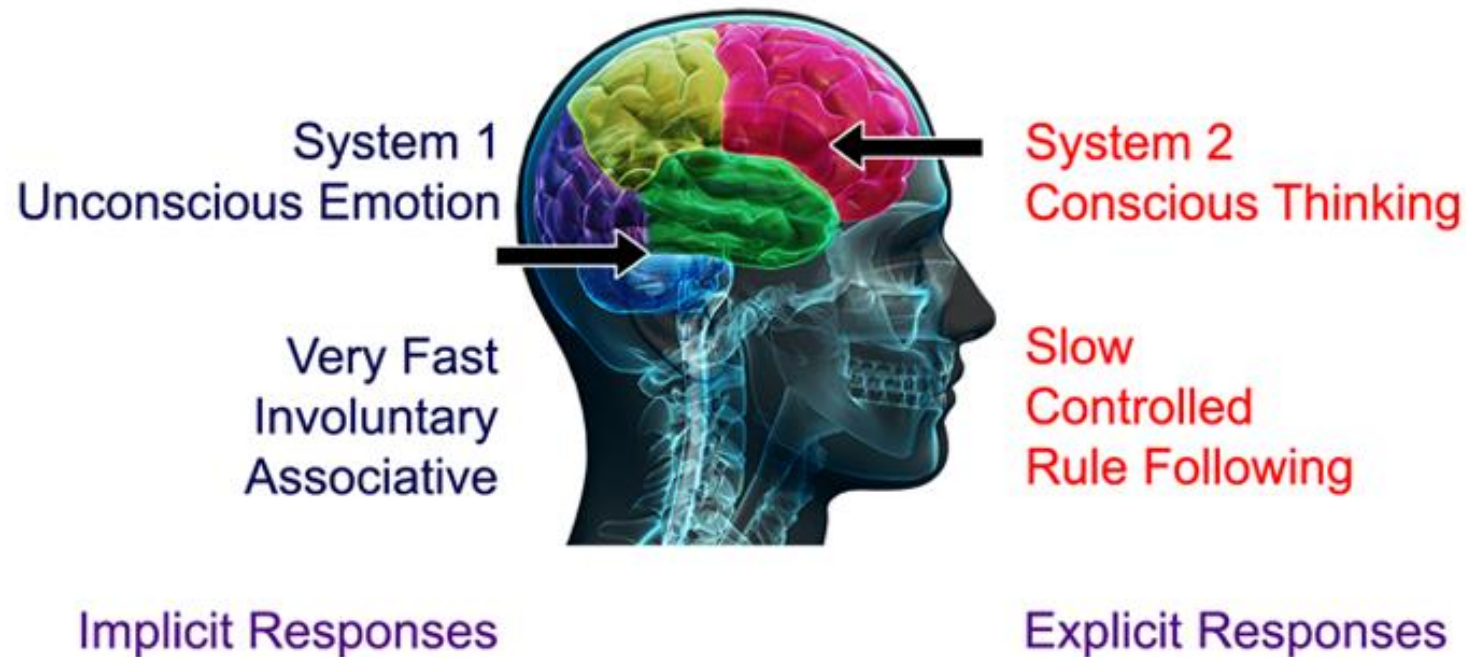


# Processing new information

STAGE 3

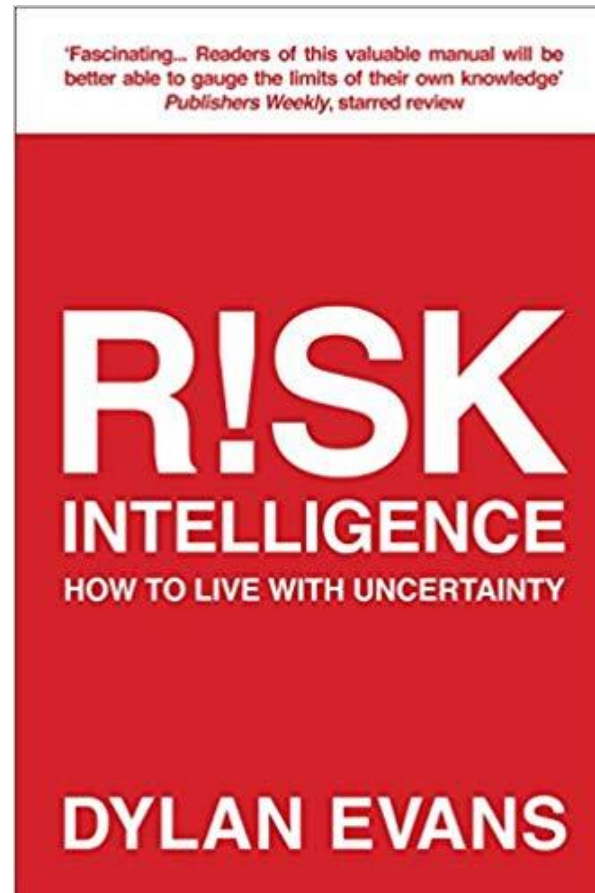
# Processing new information

I've got this new information what do I do with it?



# Processing new information

Risk intelligence – RQ



# Processing new information

The power of the team

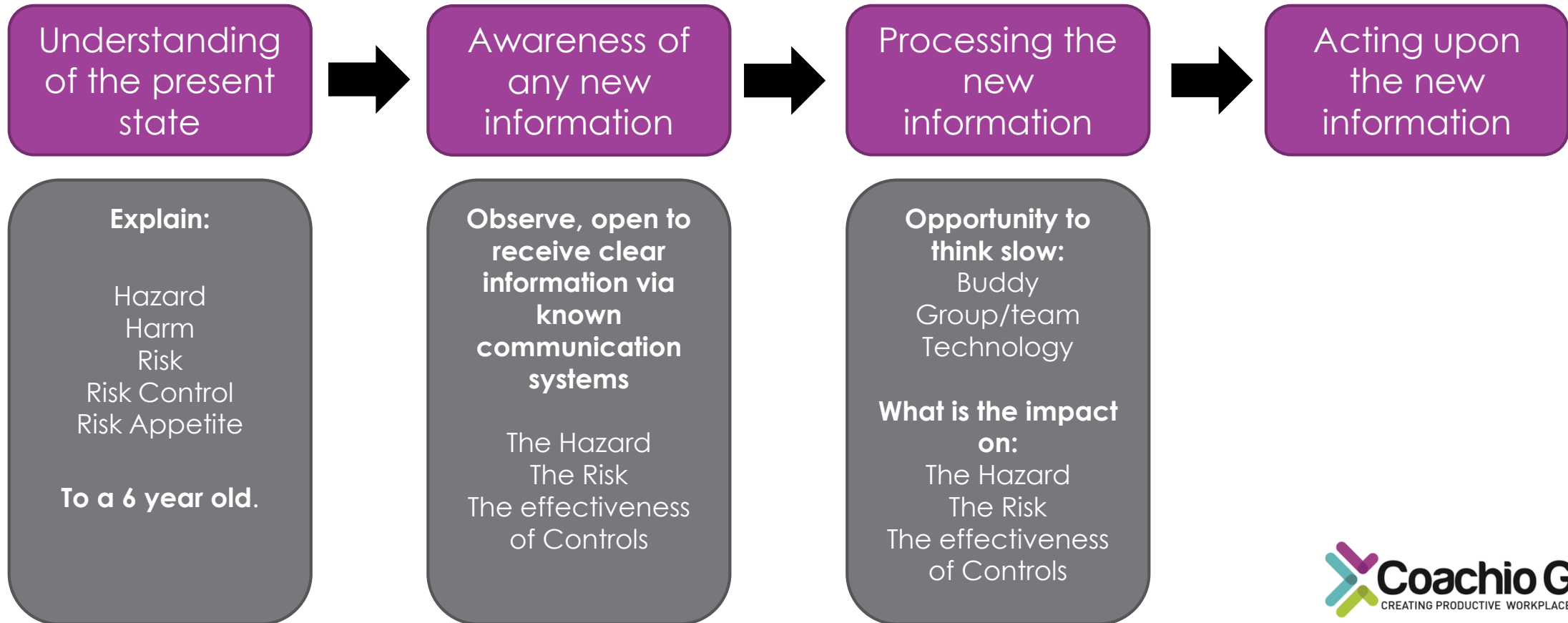
The remote buddy

Predictive risk prompts (SLAM)

Technology (RADeMS)



# Good Risk Decisions

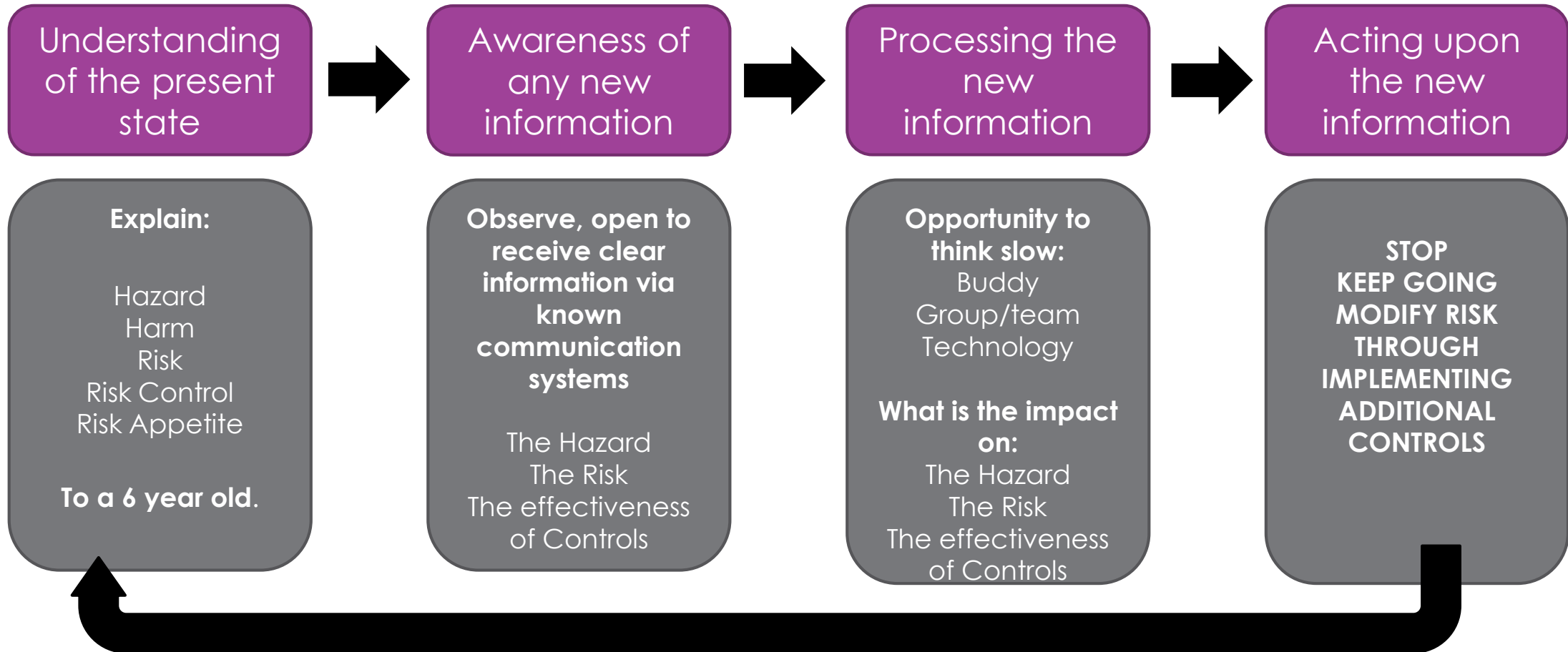


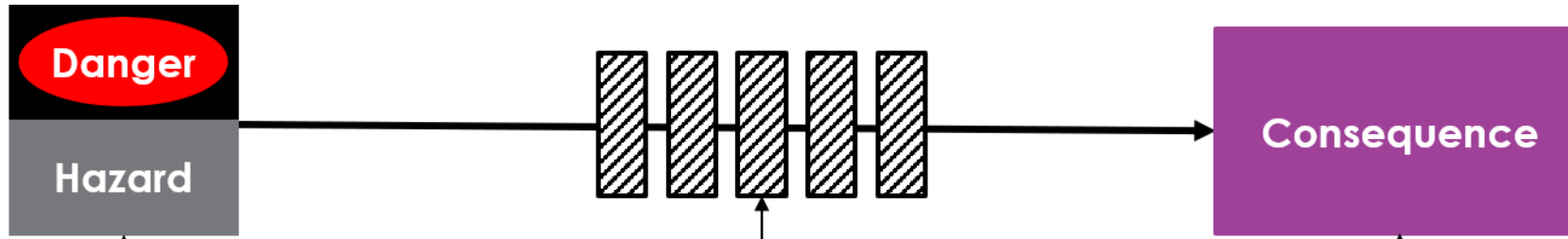


# Acting upon the new information?

STAGE 4

# Good Risk Decisions





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Exec. team

Due Diligence



Thank you for your time

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