

Air Power Forum 23 Nov 2017

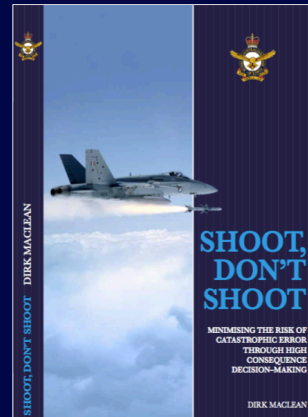
shoot, don't shoot

minimising the risk of catastrophic
error through High Consequence
Decision Making



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the initial question

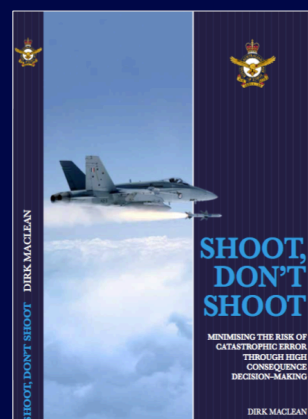
'how can we help relatively junior
personnel who have decisions to
make with potentially catastrophic
outcomes ?'
what is out there ?

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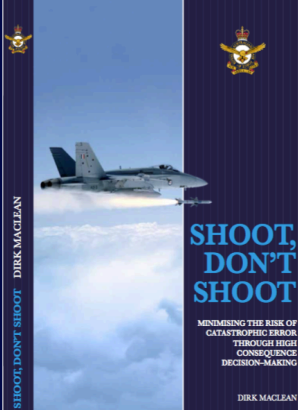
so, what is out there ?

what **research** has been done
into this question ?
what **resources** are available ?



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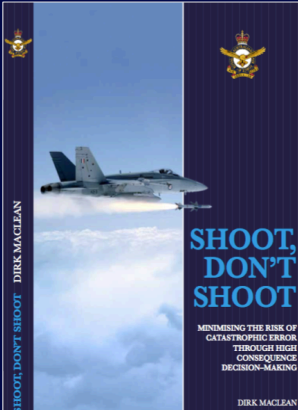
so, what is out there ?
in terms of **research** and **resources** ?

quite a lot



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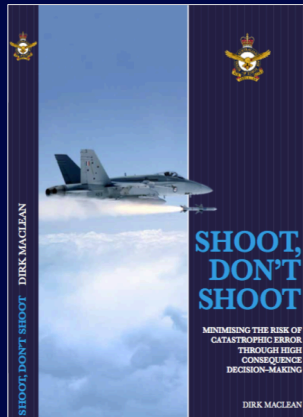
inputs into HCD

- incident management
- emergency and crisis response
- high reliability organisations
- accident investigations
- crew resource management
- safety management
- rapid military decision making
- systems engineering
- organisational behaviour



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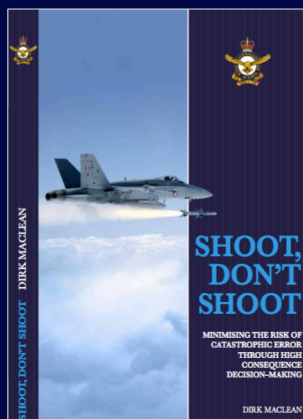
what did the literature say ?

- incident management
- emergency and crisis response
- high reliability organisations
- accident investigations
- crew resource management
- safety management
- rapid military decision making
- systems engineering
- organisational behaviour



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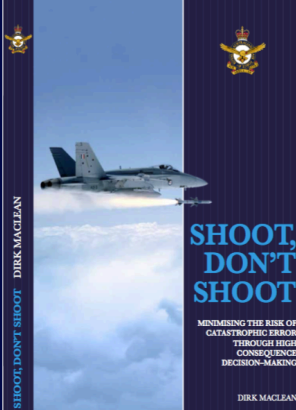
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on one level, the problem is **insolvable**



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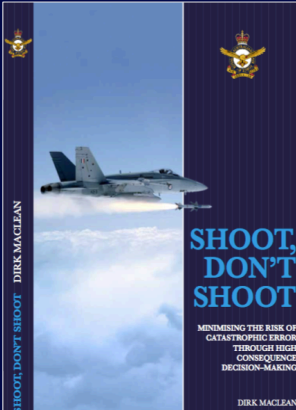
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from the perspective of the **shooter**,
the risk of catastrophic error can **never** be eliminated
no amount of doctrine, systems,
procedures, checks and balances,
training or preparation can remove
the risk



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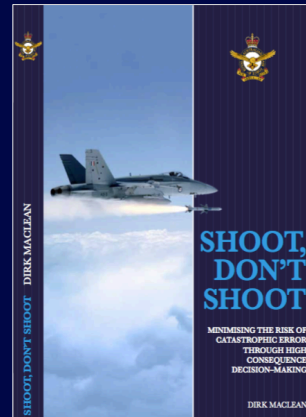
awareness of this fact of military life is the first step
HRO's do this very well
'we are **always** potentially seconds away from disaster'

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HCD training reinforces this awareness through two scenarios

- the **Black Hawk** friendly fire incident in Northern Iraq 1994
- the shooting down of Iran Air Flight **IR 655**

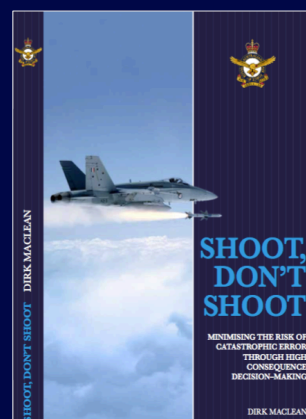
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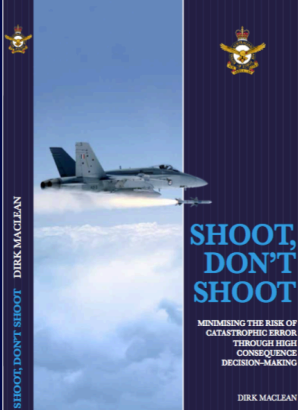
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so if the problem is **insolvable** on this level, what can we do ?



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so if the problem is **insolvable** on this level, what can we do ?

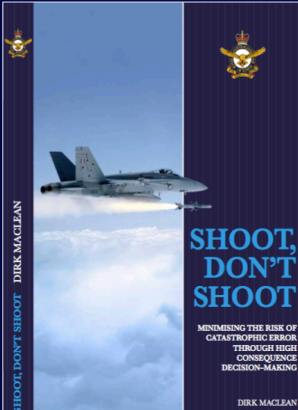
shift perspective

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in **all** our case studies, key decisions that directly affected the outcome were made –

- hours
- days
- weeks
- months
- and even years

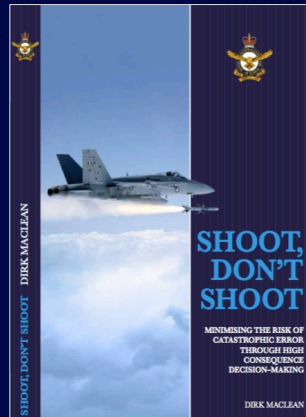
before any 'shoot, don't shoot' decision was posed

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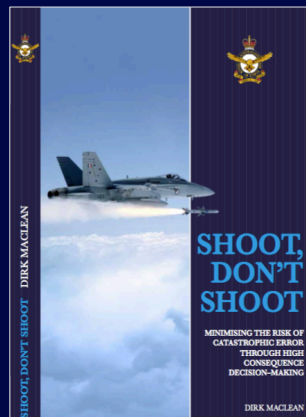
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this is **good news**



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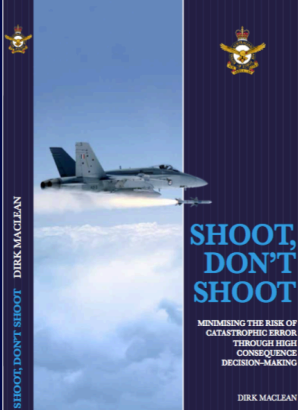
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it gives us **options** to play with
it removes **time compression**



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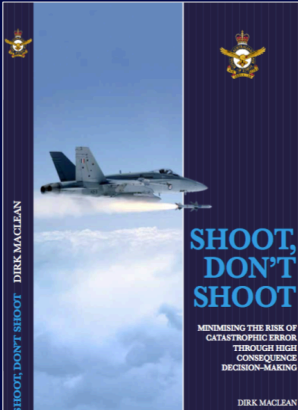
the shift in perspective means HCD is
above all about **organisational**
decision making

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are we setting our people up
to **succeed** ?
or to **fail** ?

'don't be there'
'decision making made impossible'

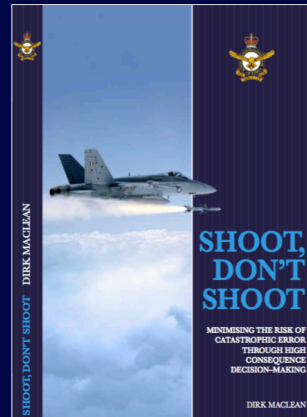
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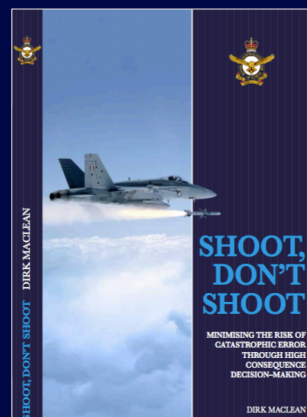
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HCD is a **management** program
its goal is to **detect** when the risk of
catastrophic error has moved into the
high or extreme range **before**
anything bad happens



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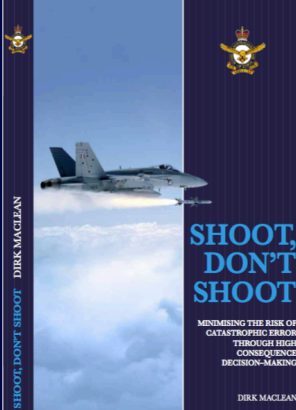
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the focus is on **risk**
it is **forward looking**, about
prediction and **prevention**, in real
time, in an operational environment



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the research supports this approach –
the point of decision is only **one
element** in a much larger picture
so, what does this picture look like ?

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the HCD framework –

- **SITUATIONAL AWARENESS**

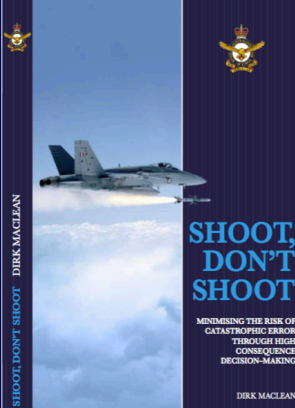
SA is **the** critical factor in decision making

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the HCD framework –

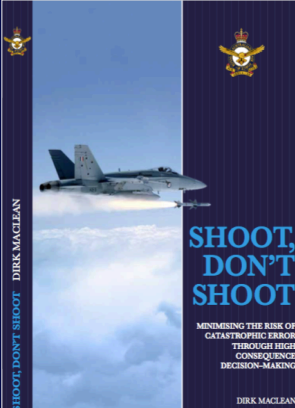
- SITUATIONAL AWARENESS
- **SITUATION UNDERSTANDING**

SA is of value only to the extent it contributes to a **sound** understanding of the situation
this needs to be a **shared** understanding



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the HCD framework –

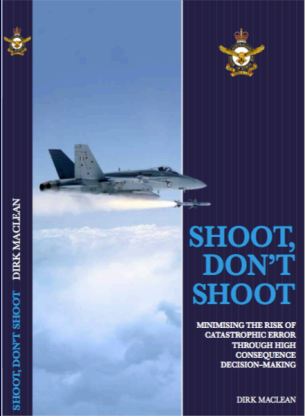
- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- **OWN SITUATION**

‘organisational inputs’
these are often assumed to be **unproblematic** but in fact are a **major** challenge



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the HCD framework –

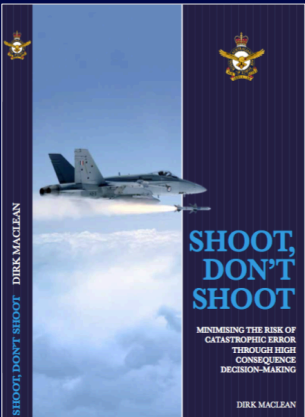
- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- **THE DECISION**

who, how, and when ?
managing the **process** not the outcome



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the HCD framework –


- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- THE DECISION
- **CONSEQUENCES**

of the situation
of our decisions



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the HCD framework –

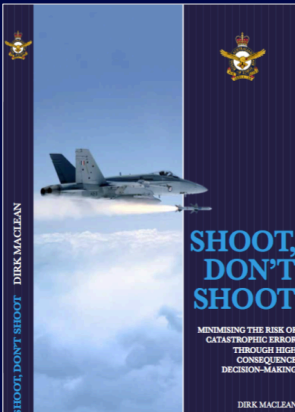
- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- THE DECISION
- **CONSEQUENCES**

this allows us to establish and
monitor our current **risk status** in **real
time**



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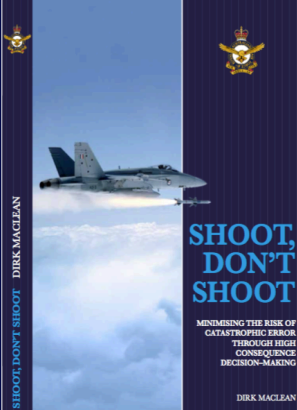
- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- THE DECISION
- CONSEQUENCES

and locate the **source** of the risk, eg poor SA



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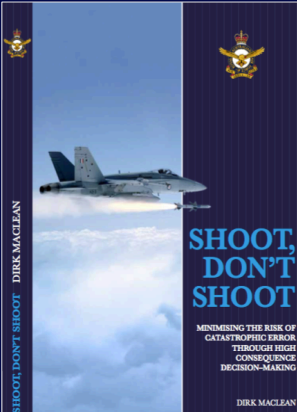
we can identify potentially catastrophic outcomes in advance

- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- THE DECISION
- CONSEQUENCES



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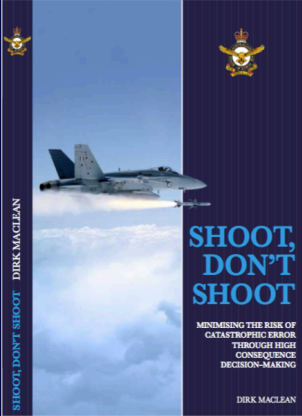
we can identify potentially catastrophic outcomes in advance **and** the combination of elements that will produce each one of them

- SITUATIONAL AWARENESS
- SITUATION UNDERSTANDING
- OWN SITUATION
- THE DECISION
- CONSEQUENCES



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we can also identify the **critical safety controls** that must not be violated except under the most extreme circumstances

- 'vertical separation'
- 'control by the ACE'
- 'line of sight'

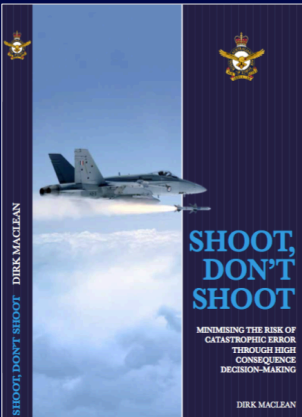
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HCD also concentrates its focus on **error**, because errors are in principle **avoidable**

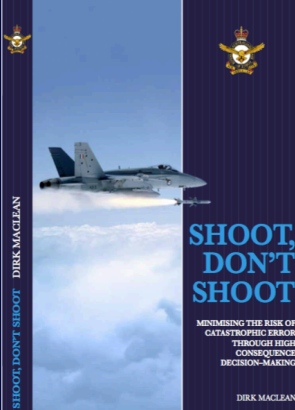
they always involve a choice, there are always options

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likewise the focus of attention is on **controls**

are controls **working as intended**, in real time ?

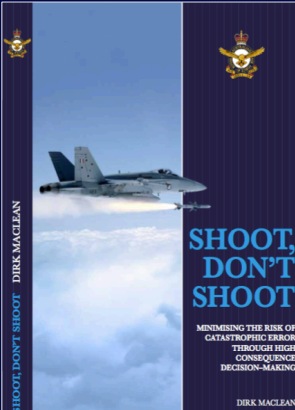
or are they failing, and if so what impact does this have on the overall risk status ?

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controls are **variables**, the probability of failure can be predicted

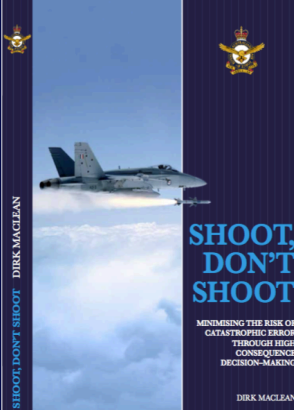
- CRM

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we can also track the **quality of processes** as an indicator of the likelihood of failure

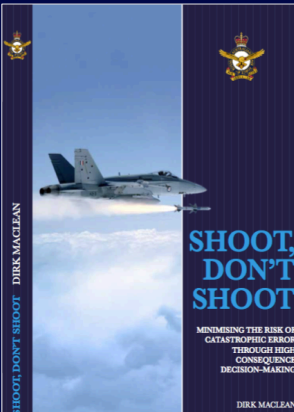
- PID
- selection of ammunition

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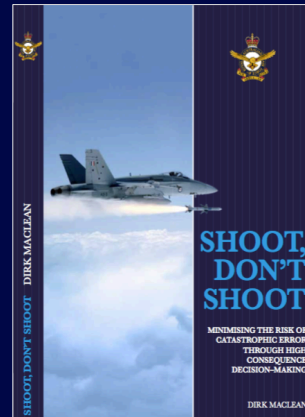
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all of these tools provide us with the capability to manage the **risk** of catastrophic error **in real time, before** anything bad happens

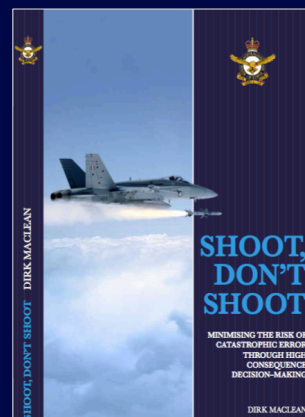
- the HCD framework
- potential for catastrophe
- status of controls
- identification and status of critical safety factors
- process guardian



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this has several benefits, it –

1. **informs** any 'shoot, don't shoot' decisions
2. **identifies** the sources of the risk
3. allows for **options** to be created



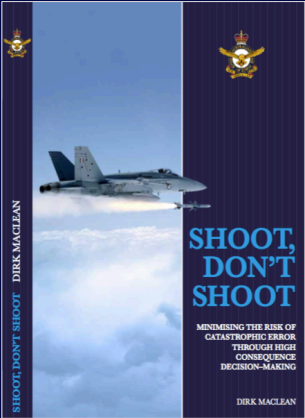
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the book therefore has several 'spin offs'



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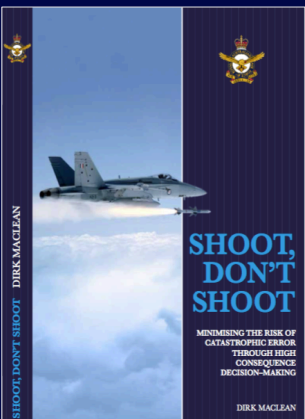
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- the 'spin offs'
- HCD scenario based training using the case studies in the text



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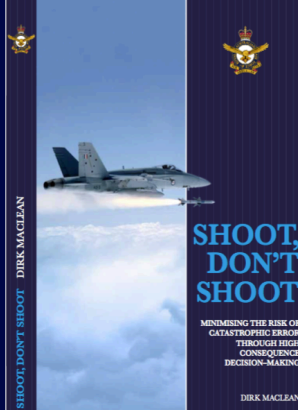
the 'spin offs'

- HCD scenario based training using the case studies in the text
- NTS training emphasising team dynamics



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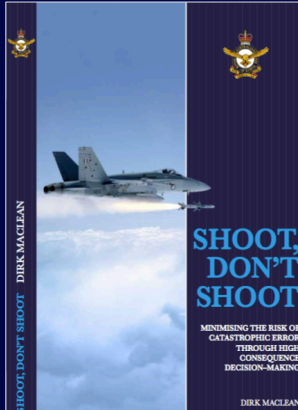
the 'spin offs'

- HCD scenario based training using the case studies in the text
- NTS training emphasising team dynamics
- a method of conducting risk management in real time



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MINIMISING THE RISK OF
CATASTROPHIC ERROR
THROUGH HIGH
CONSEQUENCE
DECISION-MAKING

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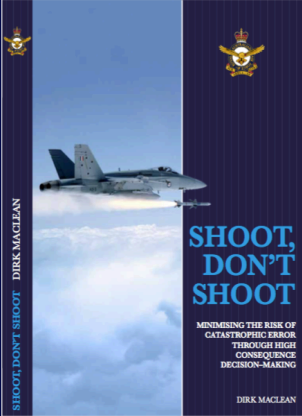
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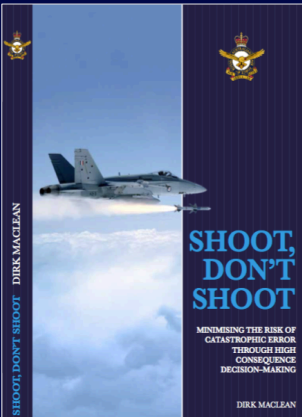
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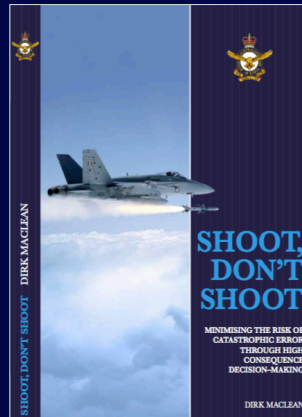
all of these have both **civilian** and **military** applications

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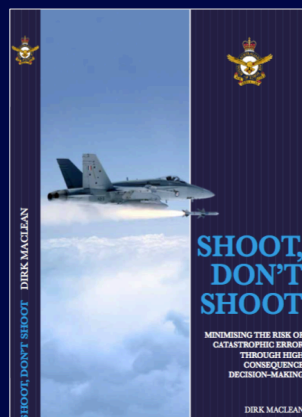
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why is the book written the way it is ?
why so much **detail** to the case studies ?



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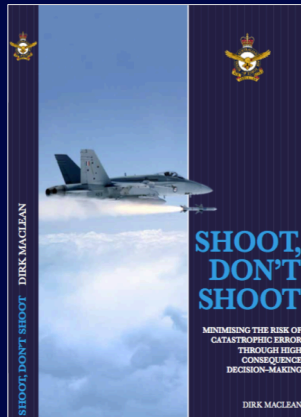
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the case studies give an insight into operations **as they really are**
this is not necessarily how we think they are or intend them to be



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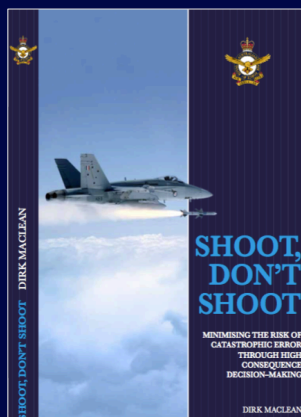
we are dealing with **complexity**
complex problems require complex
solutions, or at least an understanding
of the complexity involved

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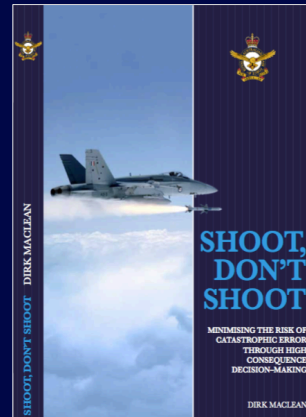
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if the book is difficult, its because the **subject matter** is difficult
but its also worth the effort



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I hope you enjoy the book and find it useful

thank you for your attention

QUESTIONS ?



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