



What to Do About MTBF Use?

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Why use
MTBF?





When is
MTBF
useful?

Does
everyone
understand
MTBF?



Is there a better way
to talk about
reliability?

What is MTBF?



Meaning



Estimation



Intent

What does MTBF mean?



Literally 'mean time between failure' is pretty clear, right?

'the time when the failure rate is low'

'a failure free period'

'the time till half are expected to fail'

'inverse of the failure rate'

'used for repairable systems'

'it's the same as reliability, right?'

How to Estimate MTBF?



Take the average of some data

does your organization only count failure from the 'flat part of the curve'

total time divided by number of failures

inverse of the tally of failure rates

'we use 50k because everyone else does'

What is the Intent?



What does a requester of MTBF really want to know?

probability of failure

spare or repairing expectations

to use in system model

to use in safety compliance effort

to make a decision

What does a
50,000 hour MTBF
mean?

Setting an MTBF Goal



Meaning

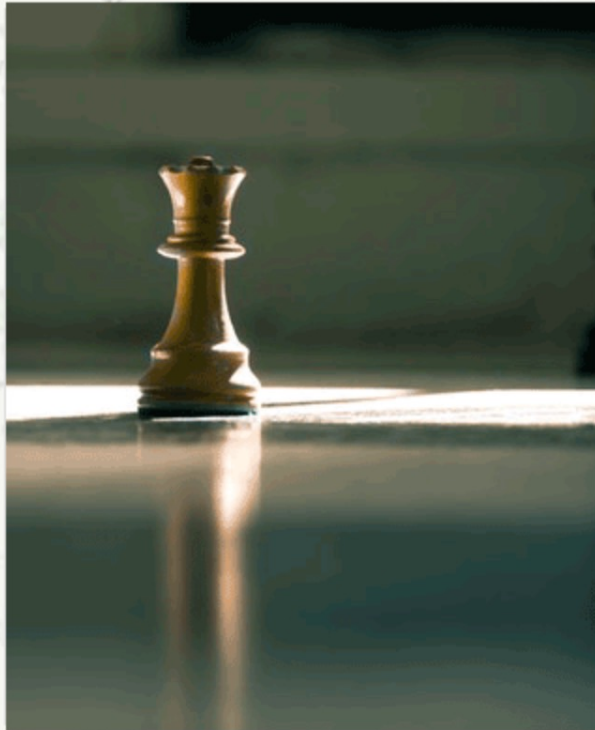


Testing



Intent

What Does a Goal Mean?



It's a target or objective or requirement

How many ways can you achieve a 50k hour MTBF goal?

goals should be measurable
(in a meaningful manner)

Testing and MTBF



Faulty assumptions abound

Is it possible to demonstrate via testing meeting an MTBF requirement using the knowledge that the item wears out?

Do you have to assume a constant hazard rate to demonstrate MTBF?

What is the Intent?



Are we meeting requests or
providing information

Are we trying to convey durability or
reliability over some duration?

When is it
appropriate to use

a constant hazard
rate assumption?

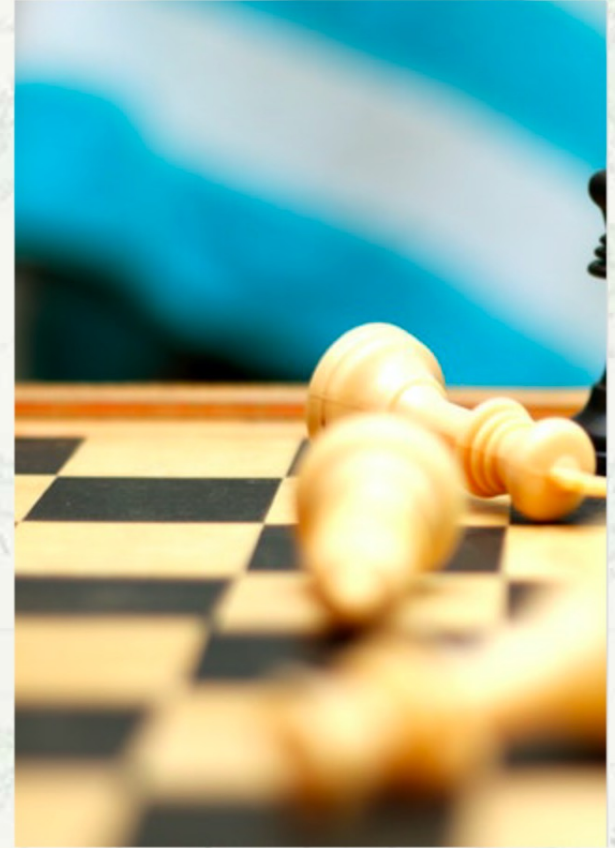
Improper Responses



Laughter



Ridicule



Provide

Just start laughing



while enjoyable it may upset
some

It seems even very smart people will simply ask for MTBF when they really mean something else entirely.

Mock & Ridicule



Restain yourself - this really
doesn't work

Remember to not blame the individual,
focus on improving the system

Provide MTBF



last resort - and it is actually pretty mean, when you think about it

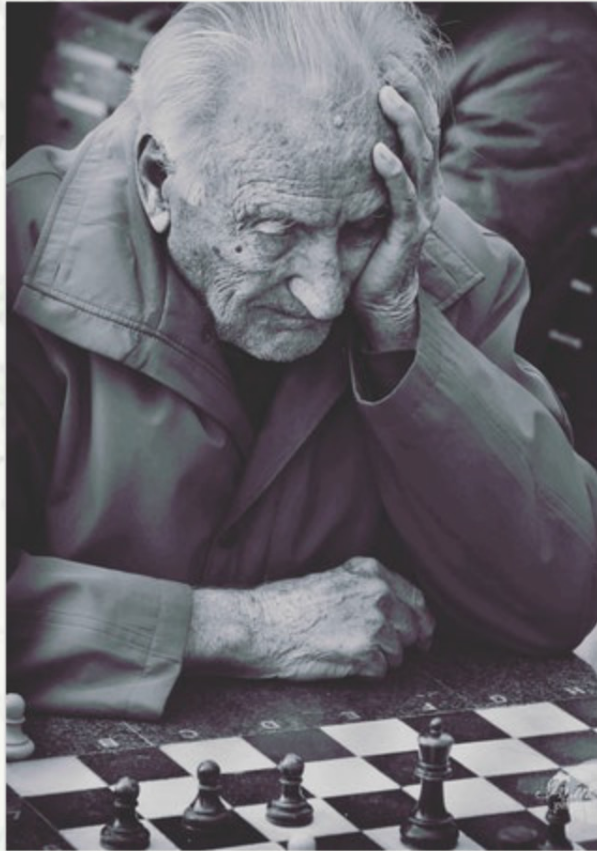
Always also provide relevant and useful information like reliability (probability of success over specific durations)

Just because you provide MTBF doesn't mean you have to use it

How can you use a
given MTBF

for a cooling fan?

Proper Responses



Discussion



Understanding



Value

Discuss what is really wanted?



ask 'what do you want when you ask for mtbf?'

How do they define MTBF?

How are they going to use this information?

What decision is part of?

'is this similar to the probability of successfully operating for 2 years?'

Create Understanding



Always best if you provide the reliability information they need to move forward and that they understand how to use.

You have to take charge of the topic. Show the way.

Reliability Value



What you do makes a difference

With any use of MTBF someone is possibly trying to understand some aspect of the reliability of the item or system.

By providing only MTBF you are not helping them in any way to do anything useful or meaningful

What if MTBF is

required or
in the standard?

In Summary

Deliver something
of value



MTBF
Requested



Take Time
to Educate



Understand
What they want



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