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Reliability and Maintenance

A collection of various tools and hardware, including wrenches, sockets, screws, and a drill bit, arranged on a dark background. The word "Downtime" is overlaid in orange text. The tools are made of brass or a similar golden metal. There are two open-end wrenches, several sockets of different sizes, a drill bit, a screwdriver, and various screws and bolts. The arrangement is scattered across the frame, with some tools overlapping. The lighting is dramatic, highlighting the metallic surfaces against the dark background. The word "Downtime" is positioned in the lower right quadrant of the image.



Reliability
of failures



Maintenance
repair time

What is the right
balance?

Availability



Definition(s)

Availability

The ratio of uptime over total time
how do you define availability?



Perfect Reliability

Availability

Let's say we have a system with perfect reliability...

would we need maintenance?



Perfect Maintenance Availability

Let's say we have a system with
perfect maintenance

Would we need a reliable system?



How does design

impact reliability?

System Design & Reliability



Function focus

System design and reliability

Design something that provides value

This includes a lot of trade-offs



Time to failure

System design and reliability

Part of the design process is:

thinking about when and how
something will fail



Failure mechanisms

System design and reliability

In order to resolve how a system fails, the design team needs some understanding of the mechanisms



How does design

impact maintainability?

System Design & Maintenance



Uptime focus

System design & maintenance

‘get the system running’

Take steps to minimize downtime



Time to repair

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A common metric

and one governed to some extent by
the system's design



Replace/Repair Units

System design & maintenance

Instead of mechanisms

what is not working and let's
replace/repair that element



What does design need

to get the balance right?

Design for maintenance
is a two way process.

Thanks

see more at AccendoReliability.com