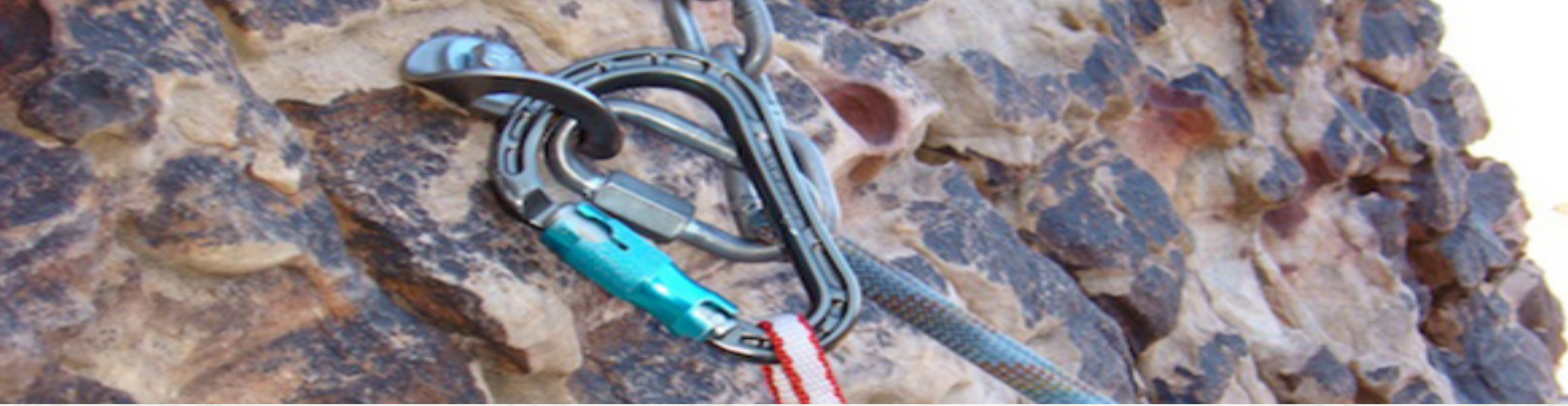

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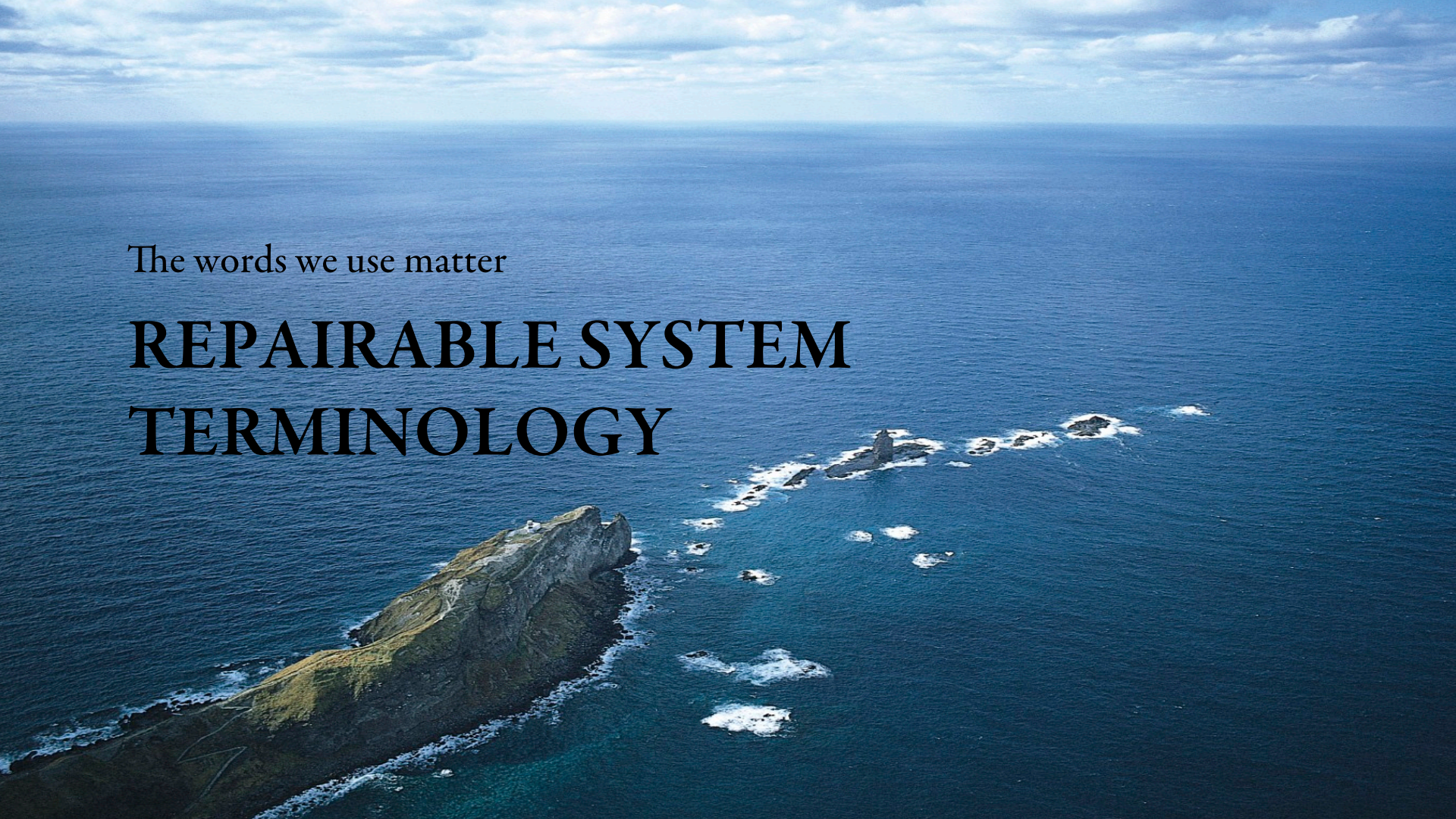
Lesson II. A. 4. b.

Poisson Process Models

Repair System Terminology



The words we use matter

REPAIRABLE SYSTEM TERMINOLOGY

Part: An item not subject to disassembly or repair that is discarded once it fails.

Socket: A position in a circuit or in a unit of equipment that must hold a particular type of part in order to function.

System: A collection of two or more sockets and their associated parts, connected to perform some function(s).

Nonrepairable System: A system that is completely replaced and discarded once it stops performing satisfactorily.

Repairable System: A system that, after failing to perform at least one of its required functions, can be restored to performing all its required functions satisfactorily by some method other than replacement of the entire system.

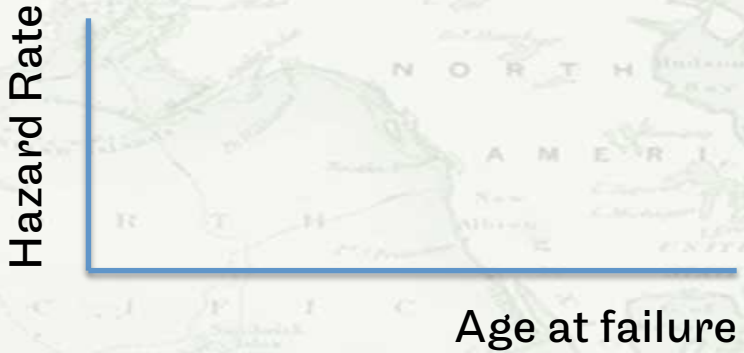
Rate of Occurrence of Failures ROCOF or Peril Rate m(t)

- **Expected number of failures up to time, t**

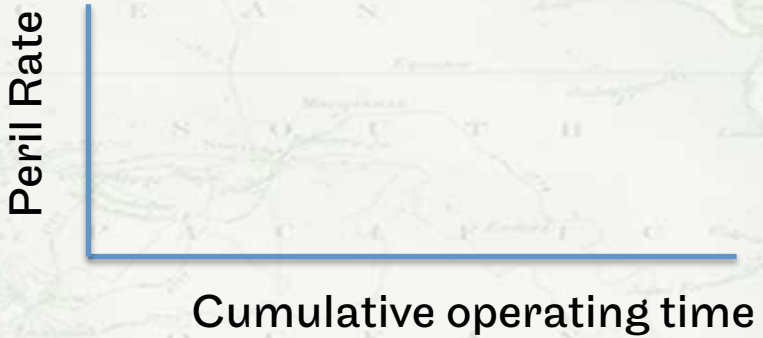
$$m(t) = \frac{d\left(E\left[N(t)\right]\right)}{dt}$$

Hazard Rate v Peril Rate

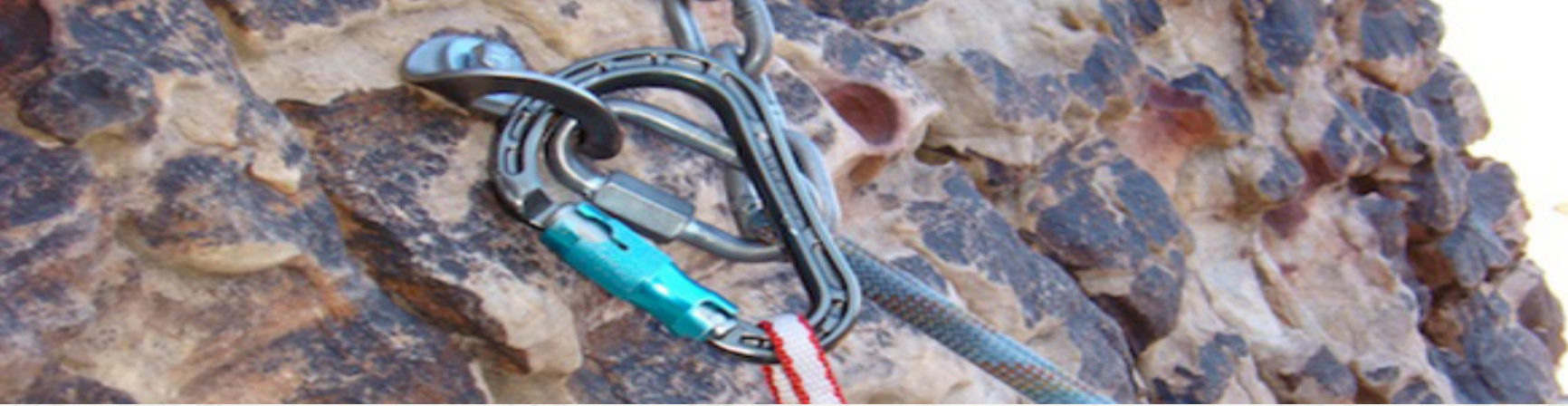
- **Hazard Rate over time shows risk of failure (non repairable systems)**



- **Peril Rate over times shows risk of repair events (repairable systems)**



What are traits of exponentially distributed times to failure



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Poisson Process Models

Non-Homogeneous Poisson Process