Reducing the Trusted Computing Base

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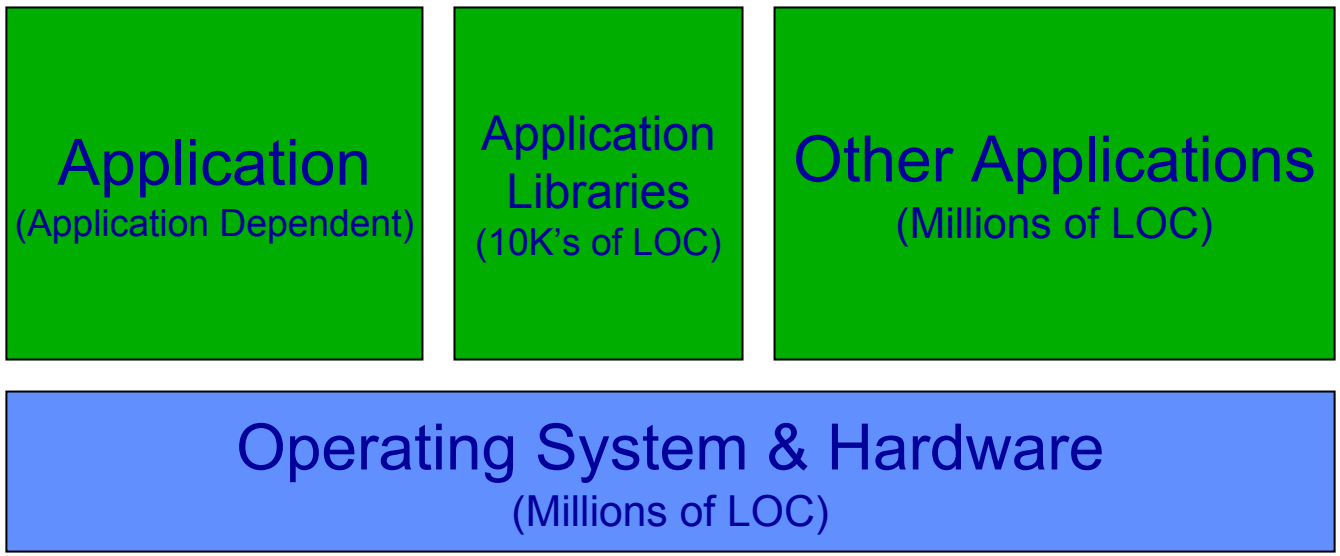
TCB's are Complex

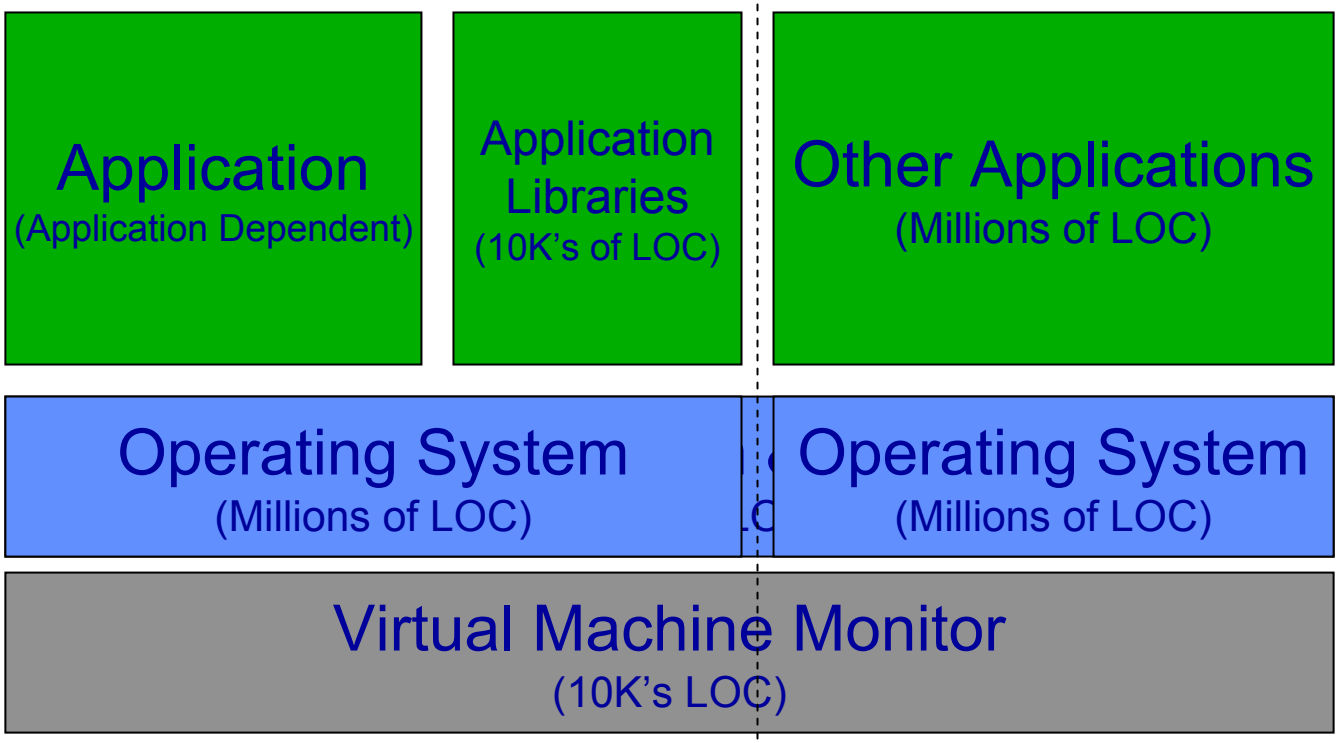
- Trusted Computing Base: The components of a system that an application must trust to function correctly



- Total Exposure for an application is in the millions to 10's of millions of LOC at least!

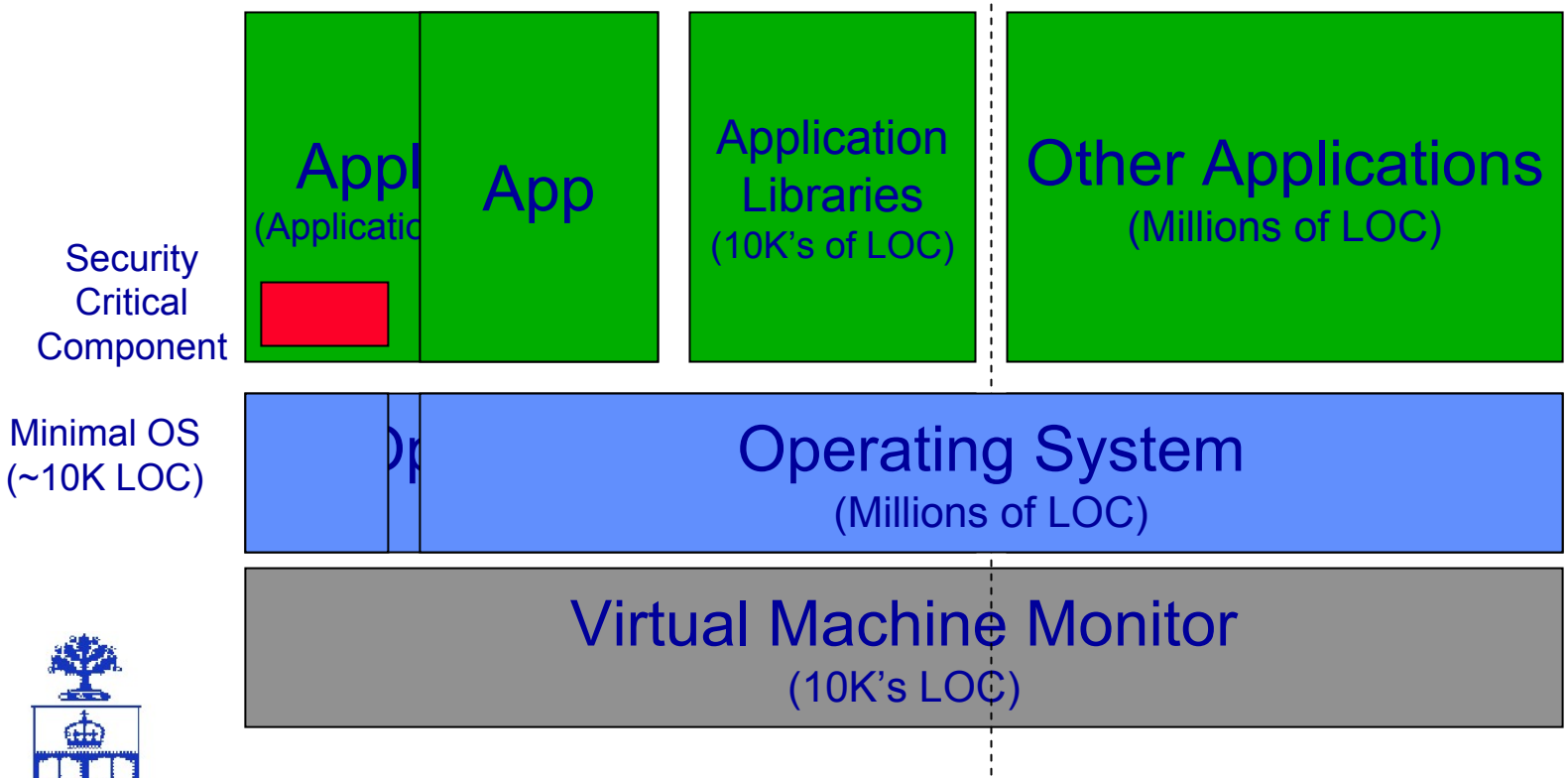
Isolate Application in a Separate VMM

- One approach is to isolate the application in a separate VMM [Terra]
  - VMM is added to the TCB, but TCB is still reduced because unrelated applications are removed



Reducing the TCB

- However, the isolated application still has a TCB of millions of LOC:
  - Can we do better?



Total TCB Reduction

- Millions of LOC → 10K's LOC ~ 100x reduction
  - OS is customizable for each component, only has functionality the component needs

- Small TCB can be made more secure:
  - Easier for code audit
  - Many tools (static and dynamic) scale exponentially with the size of code
  - Less effort/cost to harden smaller code base
  - Can be protected by implementing in safer language