

Operating Systems: are we finally ready to move forward after 30 years of stagnation?

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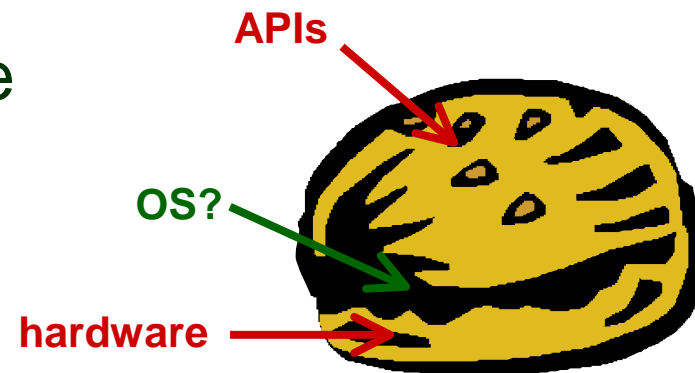
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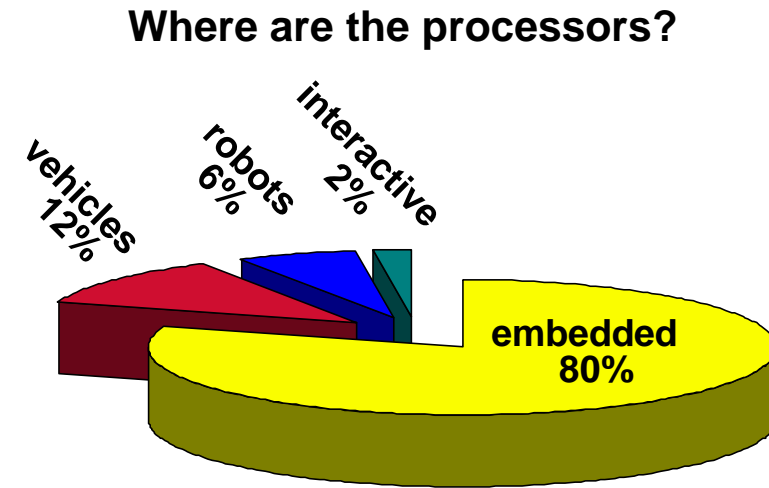
Problem I: Operating Systems

- Ordinary operating systems
 - Conservative designs
 - THE, MULTICS, UNIX, ???
 - Interactive, graphic, networked workstations
 - Constrained by standards
 - Hardware and APIs
 - Pike: system software research is irrelevant!



Problem II: Applications

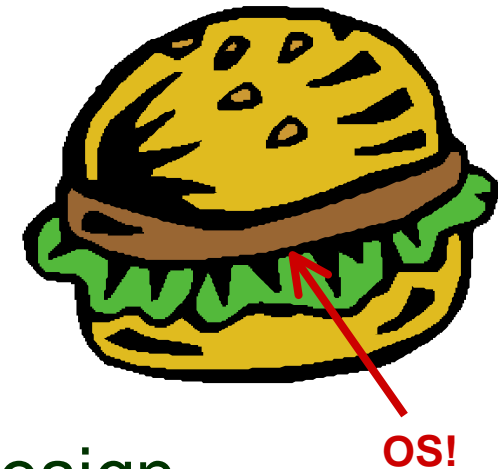
- Tennenhouse:
 - 98% of the processors run dedicated applications
- Dedicated applications
 - Don't need all those standards
 - Don't have adequate operating system support



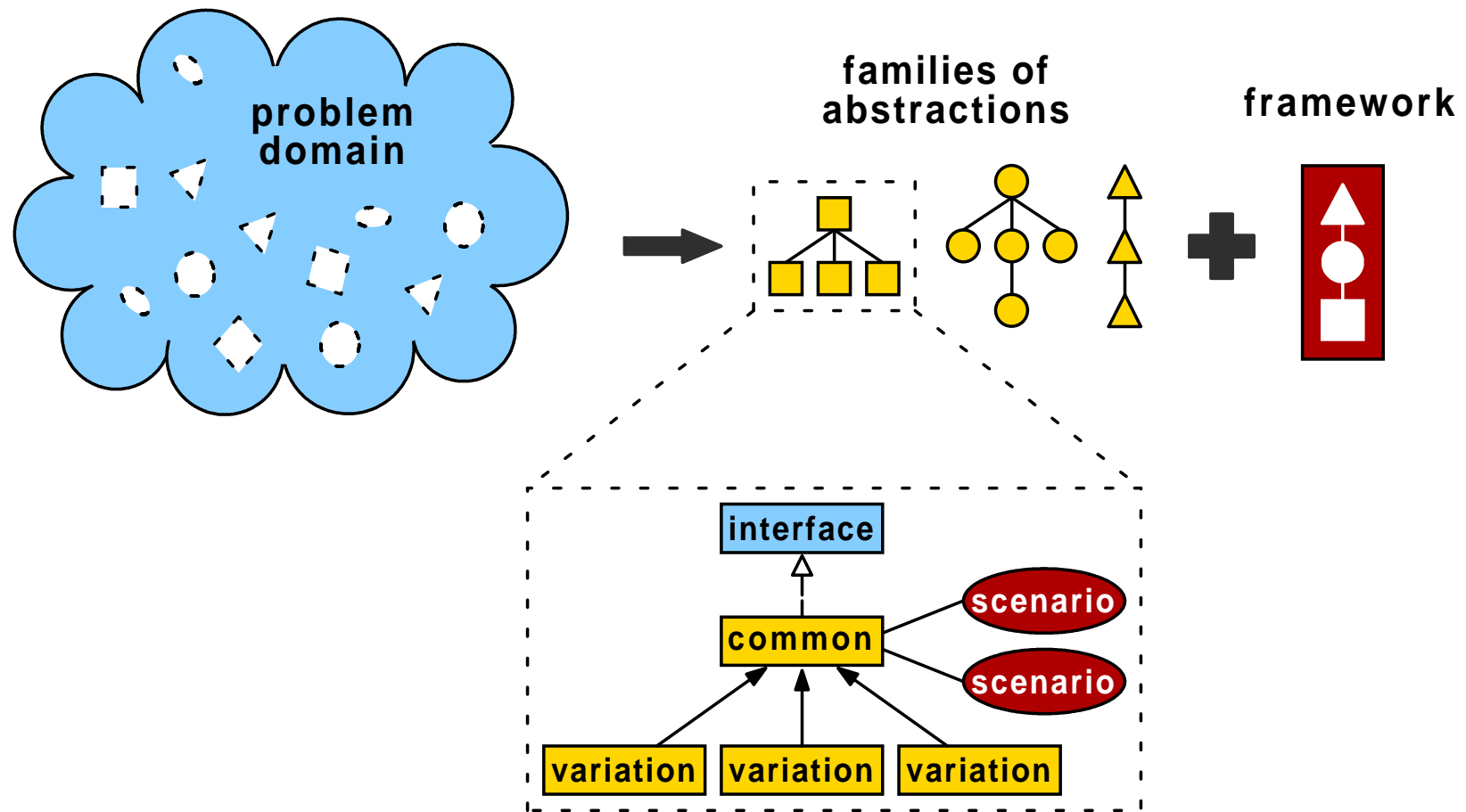
from CACM 43(5):44

Solution: Software Engineering

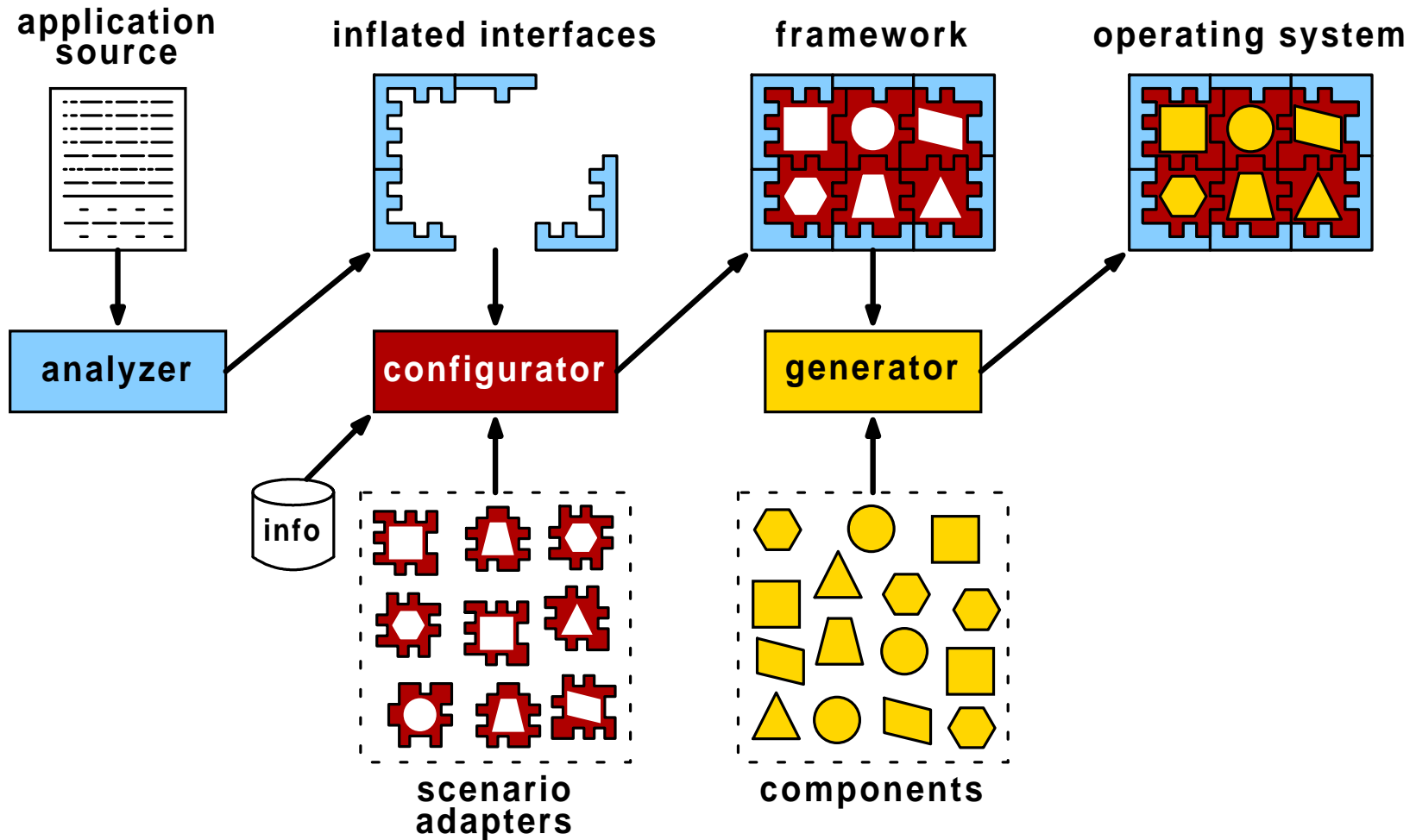
- Give each dedicated application the operating system it needs!
- Advance on operating system design by deploying modern software engineering techniques
 - Family-Based Design
 - Object-Oriented Design
 - Collaboration-Based Design
 - Aspect-Oriented Programming
 - Generative Programming
- Application-Oriented System Design



Application-Oriented System Design



EPOS



Conclusion

- The clash between dedicated applications and operating systems has a solution!
- Application-oriented system design can guide the development of operating systems that fulfill the requirements of particular applications, setting them free from the constraints of unnecessary standard interfaces

