

# Cyber-Physical Systems (glossary)

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adaptability > cyber-physical systems

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(1) *Cyber-Physical Systems (CPS) are integrations of computation with physical processes. Embedded computers and networks monitor and control the physical processes, usually with feedback loops where physical processes affect computations and vice versa. (Lee 2008, 363)*

(2) *... in the past the science of computation has systematically abstracted away the physical world and vice versa. It is time to construct a Hybrid Systems Science that is simultaneously computational and physical, providing us with a unified framework for robust design flow with multi-scale dynamics and with integrated wired and wireless networking for managing the flows of mass, energy, and information in a coherent way. (Sha et al.)*

(3) *Cyber-physical systems (CPS) are physical and engineered systems whose operations are monitored, coordinated, controlled and integrated by a computing and communication core. (Rajkumar et al. 2010)*

## Source

(1) Lee, Edward A. "Cyber physical systems: Design challenges". *Object Oriented Real-Time Distributed*

*Computing (ISORC)*, 2008 11th IEEE International Symposium on. 363-369. 2008.

(2) L. Sha, S. Gopalakrishnan, X. Liu and Q. Wang. "Cyber-Physical Systems: A New Frontier" *Sensor Networks, Ubiquitous and Trustworthy Computing*, 2008. SUTC '08. IEEE International Conference on, Taichung, 2008.

(3) Ragunathan (Raj) Rajkumar, Insup Lee, Lui Sha, and John Stankovic. "Cyber-physical systems: the next computing revolution". In *Proceedings of the 47th Design Automation Conference (DAC '10)*. ACM, New York, NY, USA, 731-736. 2010.

## Discussion

Cyber-Physical Systems is still an emerging topic with no precise and universal agreed definition. Listed above are three descriptions of Cyber-Physical Systems from frequently referenced publications.

**SEBoK v. 2.10, released 06 May 2024**

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**This page was last edited on 2 May 2024, at 21:54.**