Understanding Architecture Styles
(and When to Use Them)

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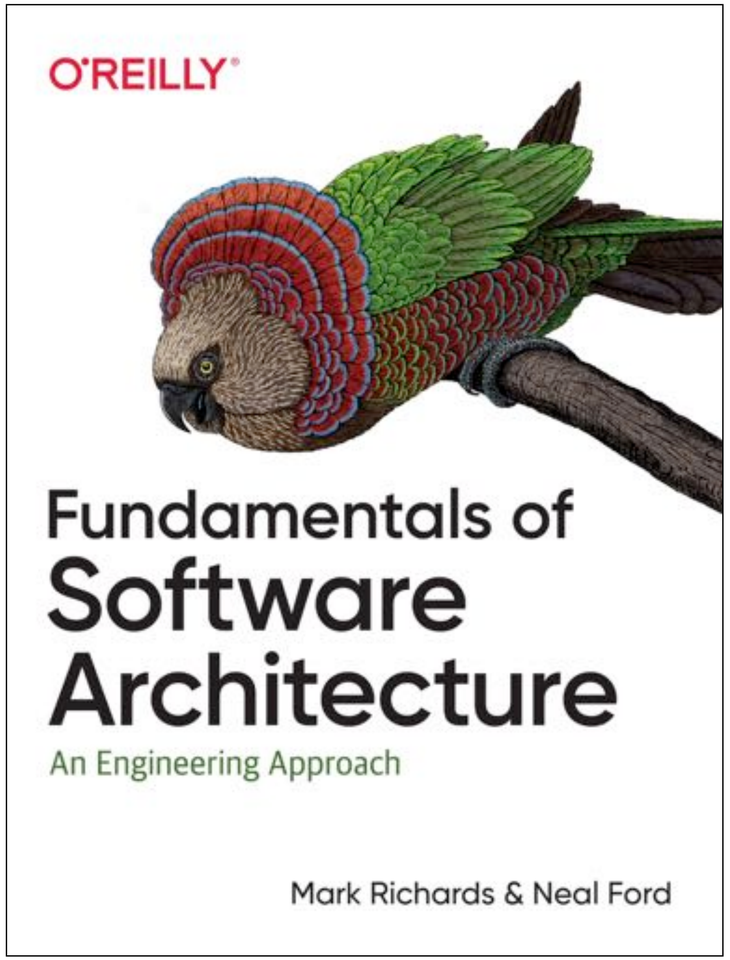
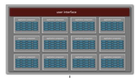
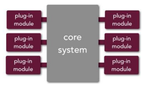
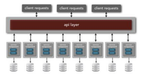
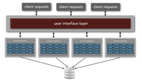
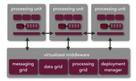
Fundamentals of Software Architecture

https://learning.oreilly.com/library/view/fundamentals-of-software/9781492043447/

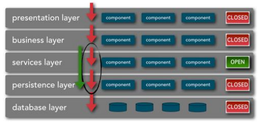


capabilities comparison

	 layered	 modular monolith	 microkernel	 microservices	 service-based	 service-oriented	 event-driven	 space-based
agility	★	★★	★★★	★★★★★	★★★★	★	★★★	★★
abstraction	★	★	★★★	★	★	★★★★★	★★★★	★
configurability	★	★	★★★★	★★★	★★	★	★★	★★
cost	★★★★★	★★★★★	★★★★★	★	★★★★	★	★★★	★★
deployability	★	★★	★★★	★★★★★	★★★★	★	★★★	★★★
domain part.	★	★★★★★	★★★★★	★★★★★	★★★★★	★	★	★★★★★
elasticity	★	★	★	★★★★★	★★	★★★	★★★★	★★★★★
evolvability	★	★	★★★	★★★★★	★★★	★	★★★★★	★★★
fault-tolerance	★	★	★	★★★★★	★★★★	★★★	★★★★★	★★★
integration	★	★	★★★	★★★	★★	★★★★★	★★★	★★
interoperability	★	★	★★★	★★★	★★	★★★★★	★★★	★★
performance	★★	★★★	★★★	★★	★★★	★★	★★★★★	★★★★★
scalability	★	★	★	★★★★★	★★★	★★★	★★★★★	★★★★★
simplicity	★★★★★	★★★★★	★★★★	★	★★★	★	★	★
testability	★★	★★	★★★	★★★★★	★★★★	★	★★	★
workflow	★	★	★★	★	★	★★★★★	★★★★★	★

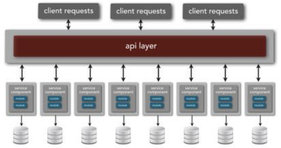
architecture classification

monolithic



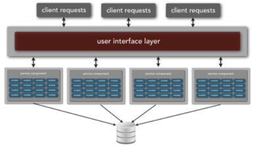
layered architecture

modular monolith

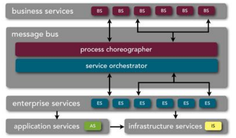


microservices architecture

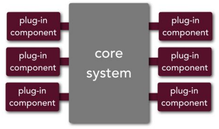
distributed



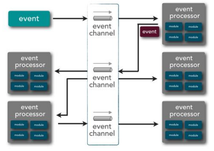
service-based architecture



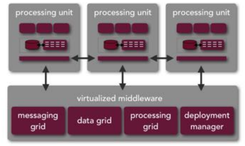
service-oriented architecture



microkernel architecture

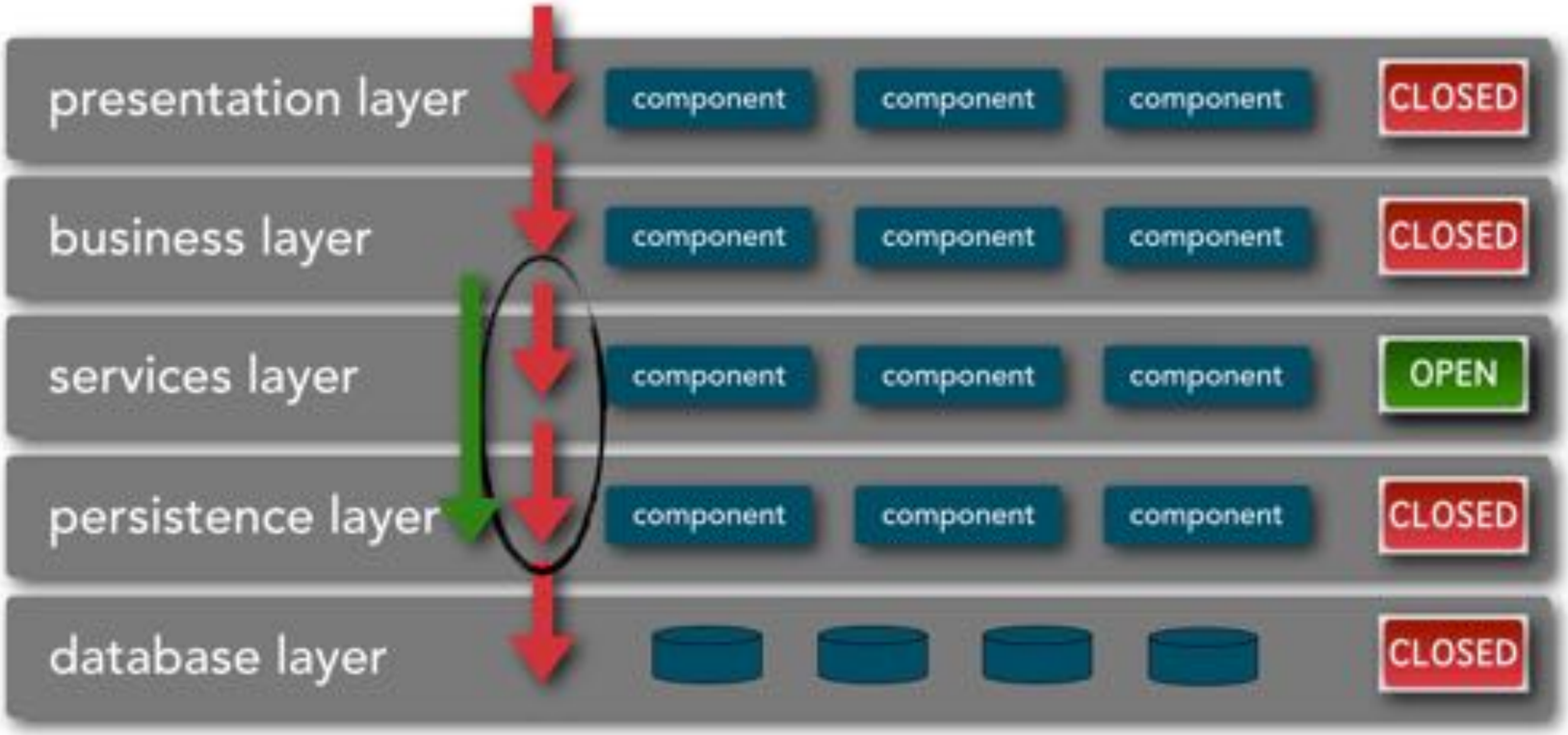


event-driven architecture

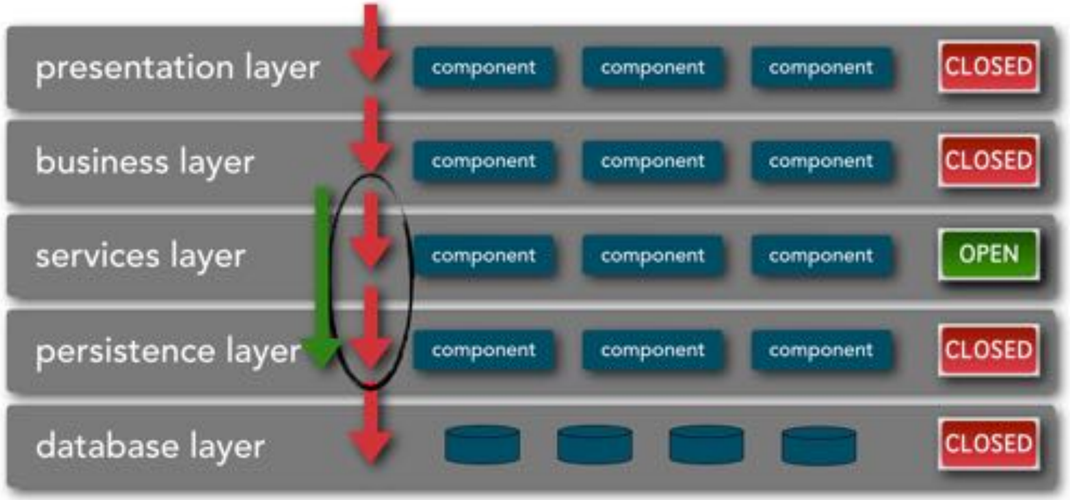


space-based architecture

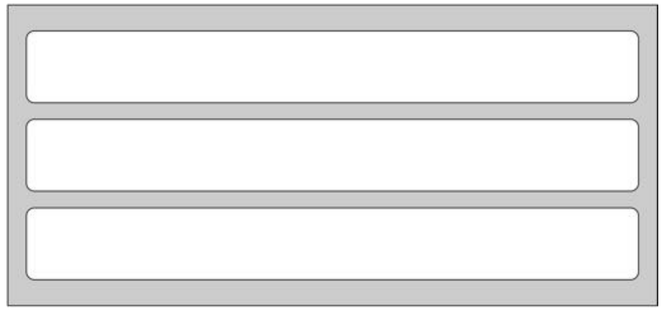
layered architecture



layered architecture

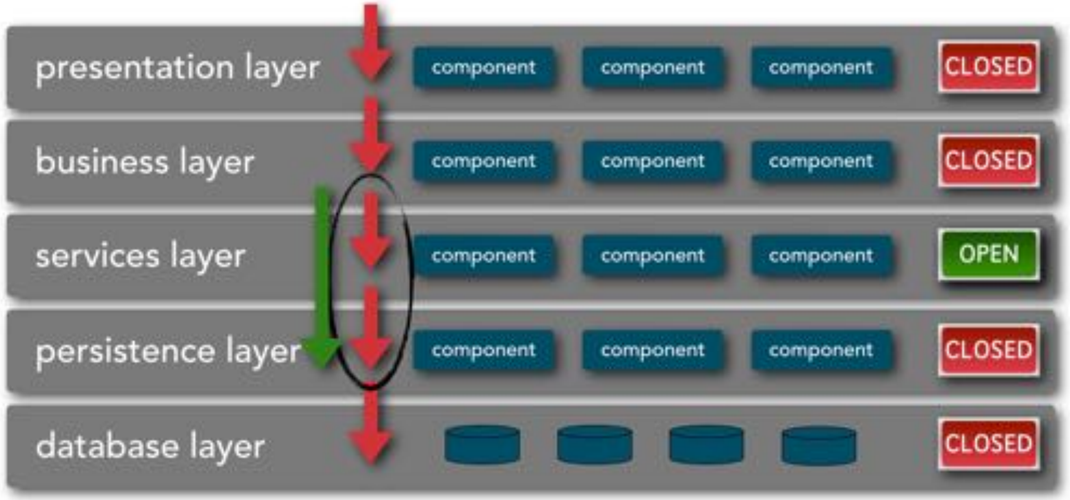


single deployment with functionality grouped by technical categories



agility	★
abstraction	★
configurability	★
cost	★★★★★
deployability	★
domain part.	★
elasticity	★
evolvability	★
fault-tolerance	★
integration	★
interoperability	★
performance	★★★
scalability	★
simplicity	★★★★★
testability	★★
workflow	★

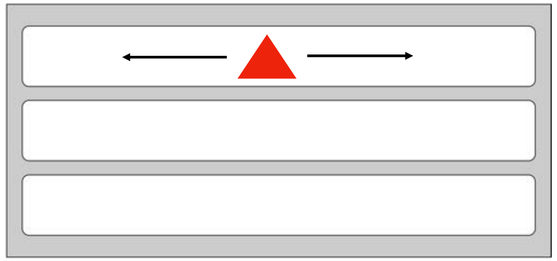
layered architecture

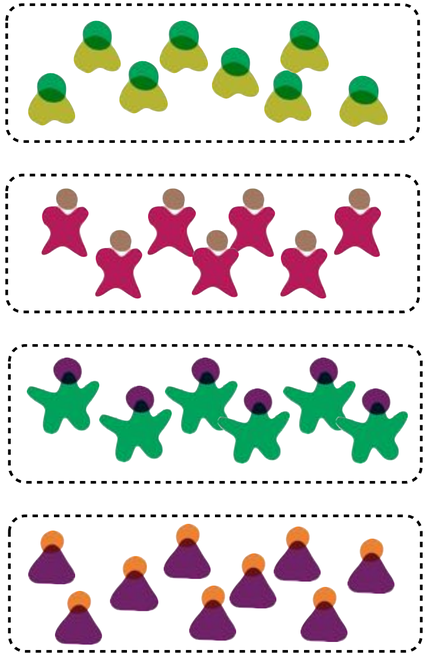


cost ★★★★★

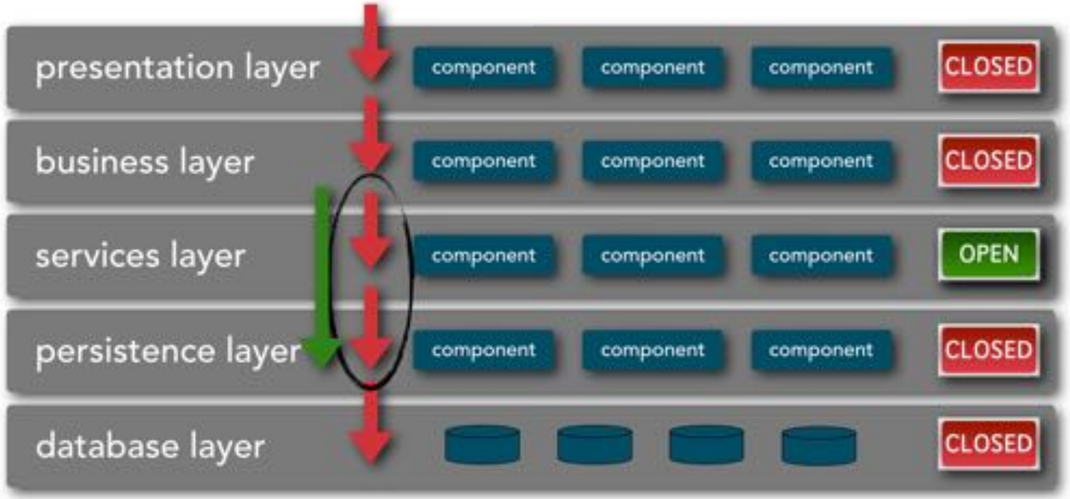
simplicity ★★★★★

when to use...



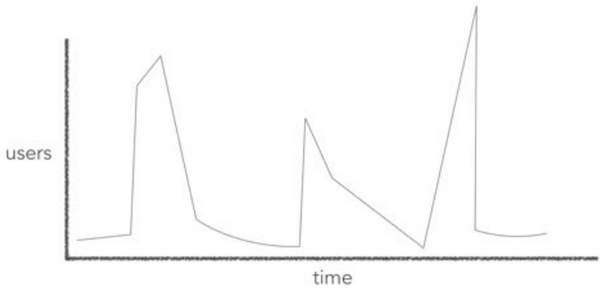


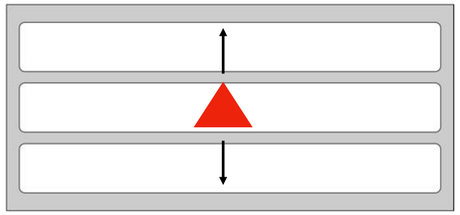
layered architecture

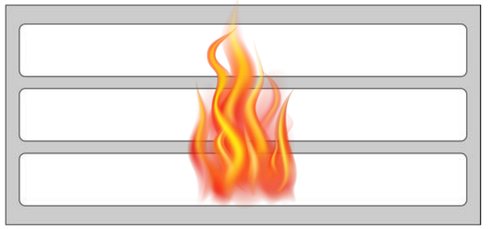


agility
testability
deployability
elasticity
scalability
fault-tolerance
evolvability

when not to use...





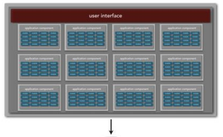


architecture classification

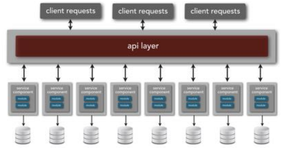
monolithic

distributed

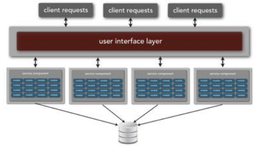
layered architecture



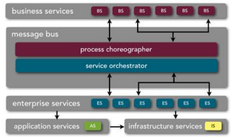
modular monolith



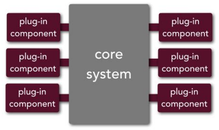
microservices architecture



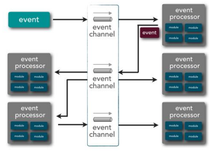
service-based architecture



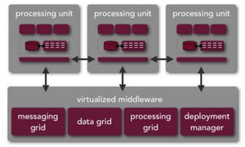
service-oriented architecture



microkernel architecture



event-driven architecture

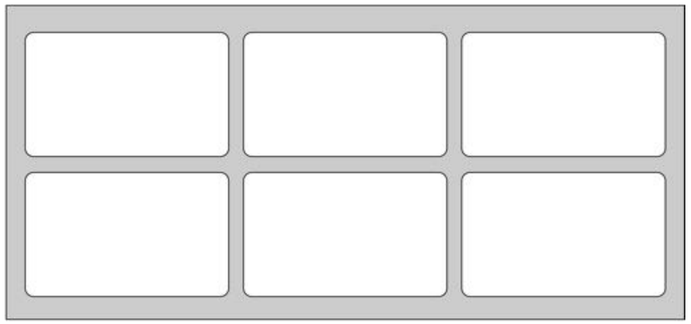


space-based architecture

modular monolith

modular monolith

single deployment with functionality grouped by domain area



agility	★★
abstraction	★
configurability	★
cost	★★★★★
deployability	★★
domain part.	★★★★★
elasticity	★
evolvability	★
fault-tolerance	★
integration	★
interoperability	★
performance	★★★
scalability	★
simplicity	★★★★★
testability	★★
workflow	★

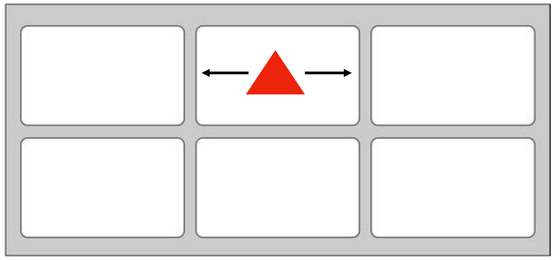
modular monolith

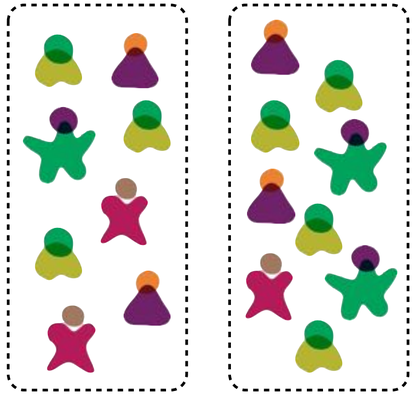
cost ★★★★★

domain part. ★★★★★

simplicity ★★★★★

when to use...





modular monolith

fault-tolerance ★

scalability ★

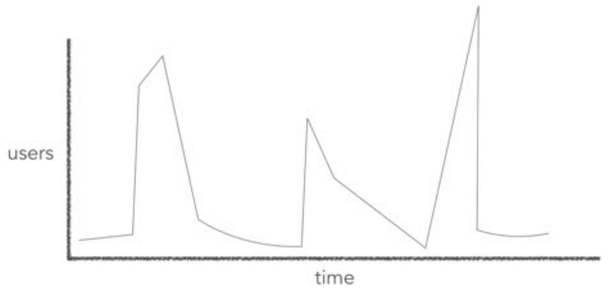
elasticity ★

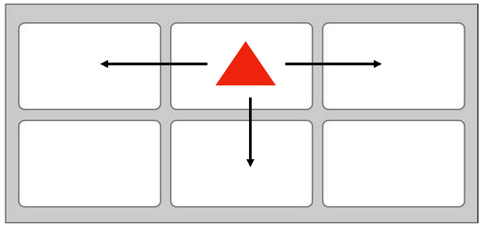
agility ★★

deployability ★★

testability ★★

when not to use...



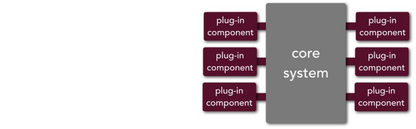


architecture classification

monolithic

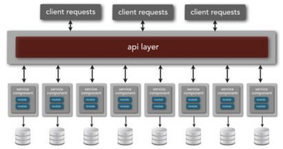
layered architecture

modular monolith

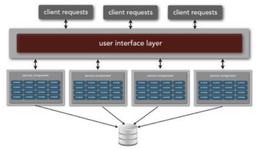


microkernel architecture

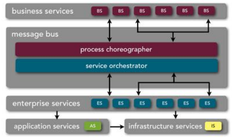
distributed



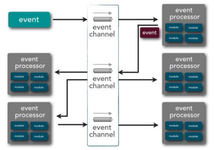
microservices architecture



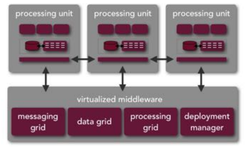
service-based architecture



service-oriented architecture

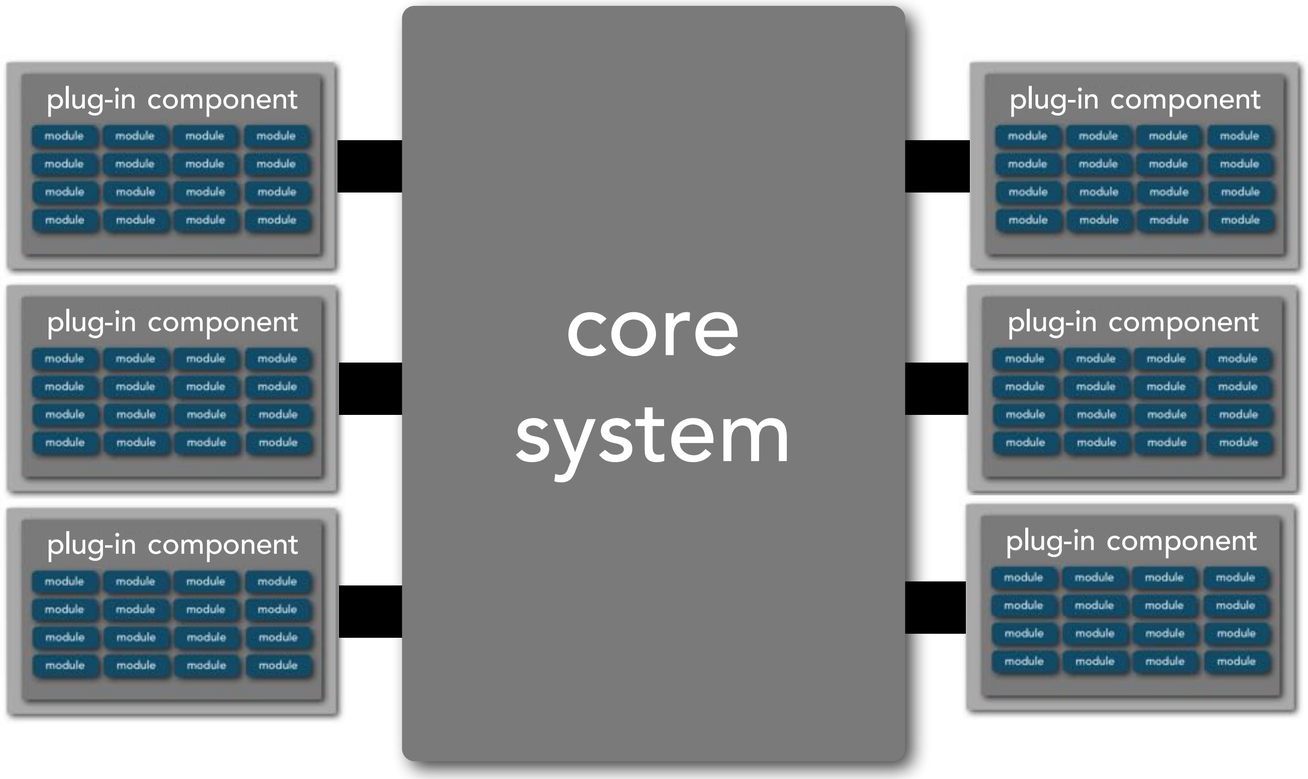


event-driven architecture

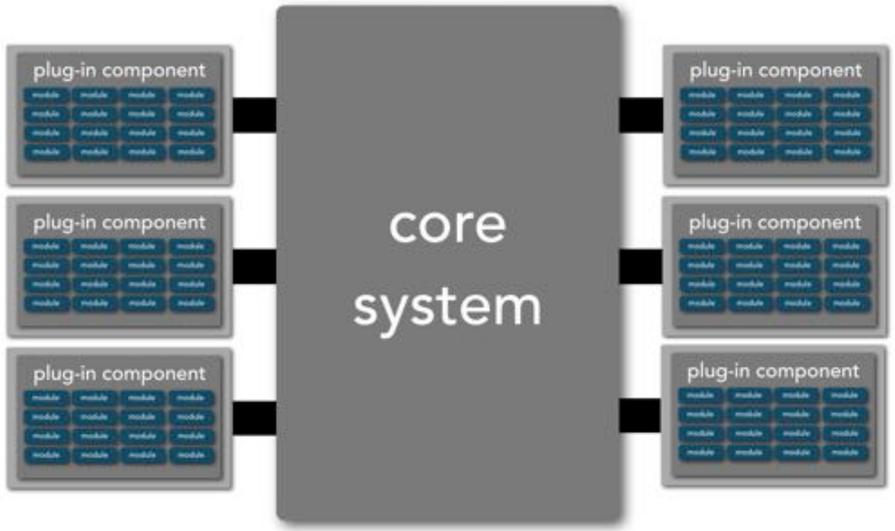


space-based architecture

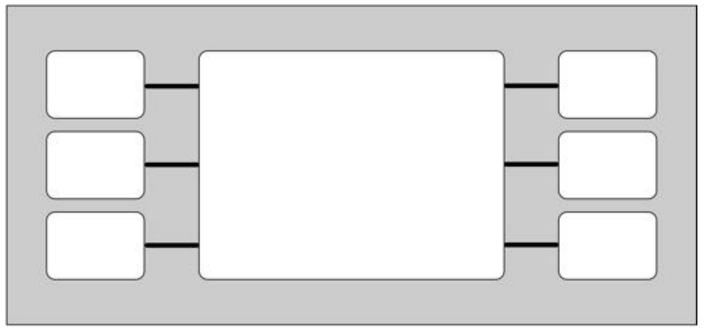
microkernel architecture



microkernel architecture

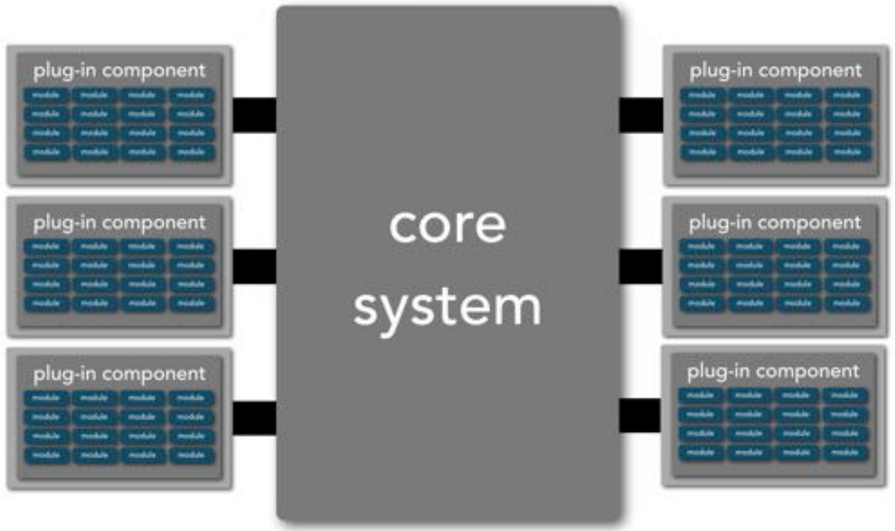


single deployment with modular, independent add-on functionality



agility	★★★
abstraction	★★★
configurability	★★★★
cost	★★★★★
deployability	★★★
domain part.	★★★★★
elasticity	★
evolvability	★★★
fault-tolerance	★
integration	★★★
interoperability	★★★
performance	★★★
scalability	★
simplicity	★★★★
testability	★★★
workflow	★★

microkernel architecture



configurability ★★★★

cost ★★★★★

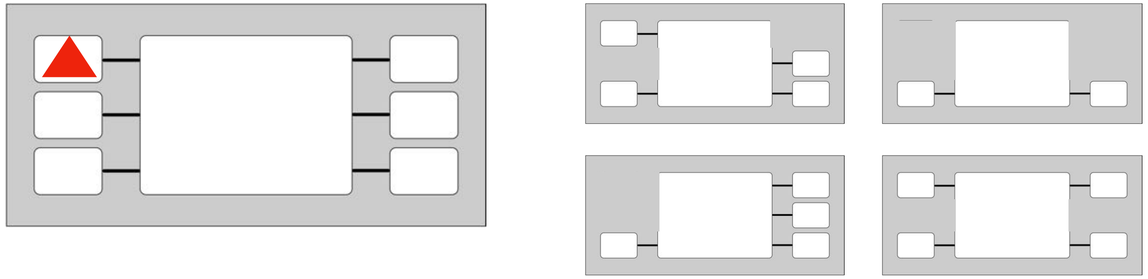
domain part. ★★★★★

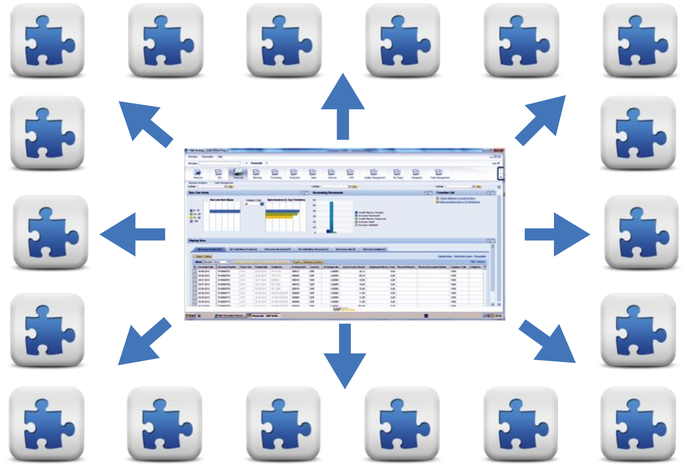
evolvability ★★★

integration ★★★

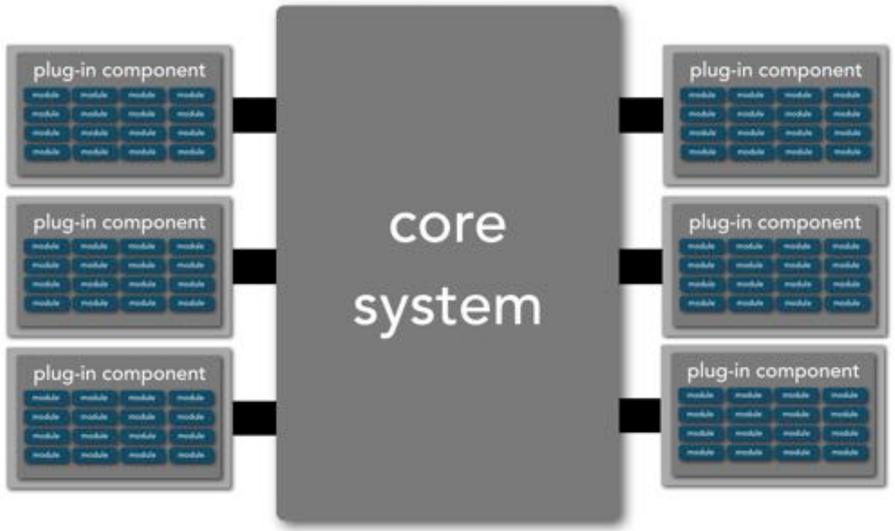
simplicity ★★★★

when to use...





microkernel architecture

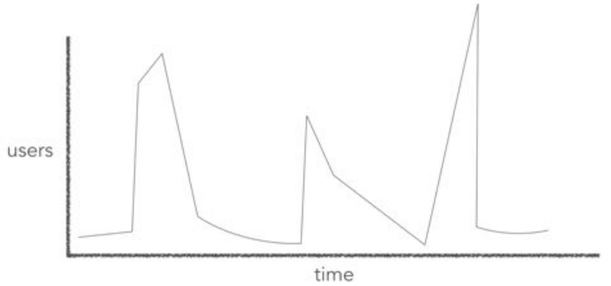


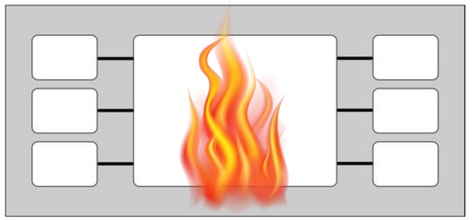
scalability ★

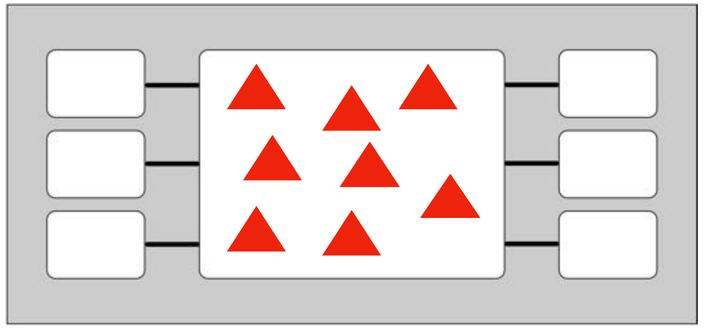
elasticity ★

fault-tolerance ★

when not to use...







architecture classification

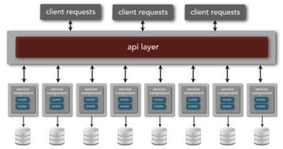
monolithic

distributed

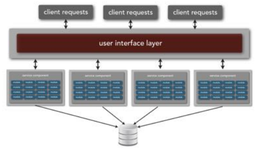
layered architecture

modular monolith

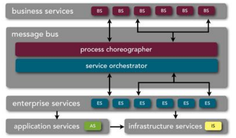
microkernel architecture



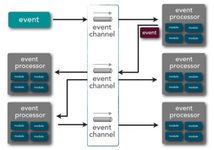
microservices architecture



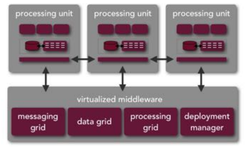
service-based architecture



service-oriented architecture

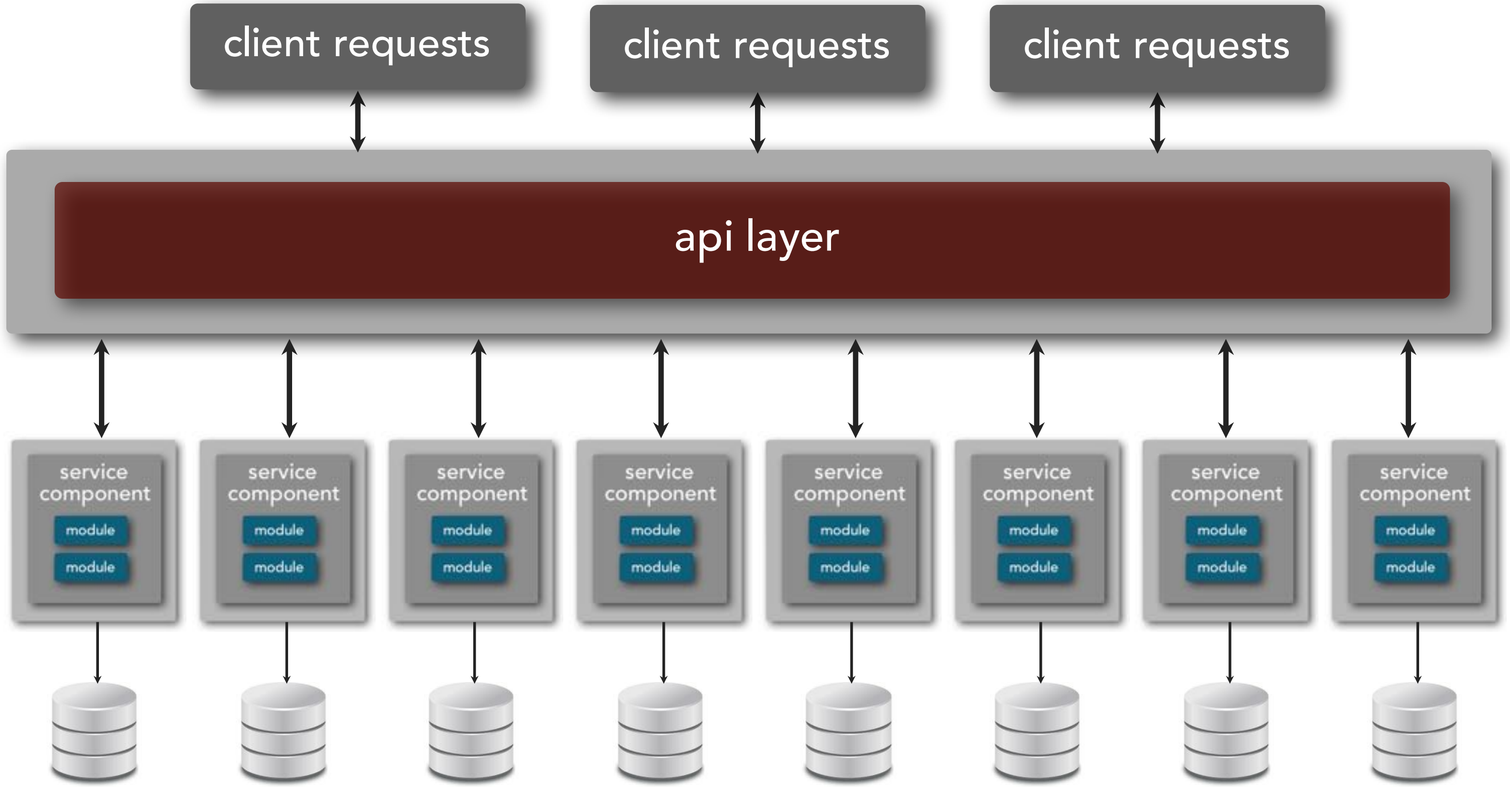


event-driven architecture

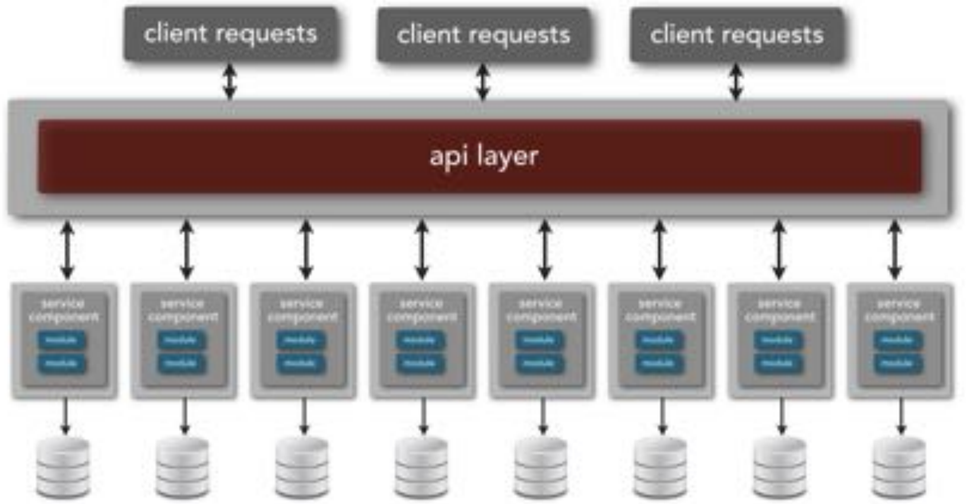


space-based architecture

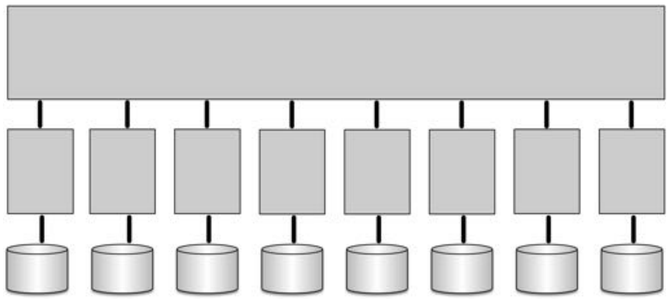
microservices architecture



microservices architecture

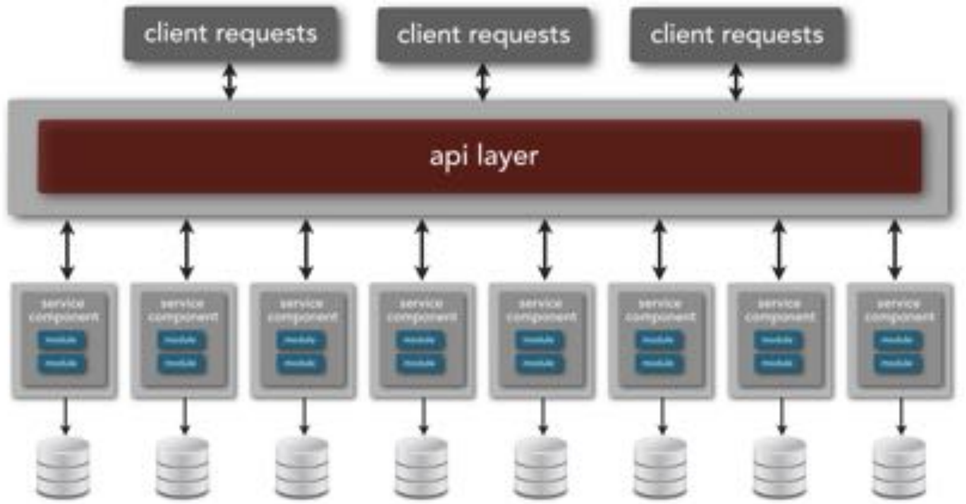


single purpose functions
deployed as separate units



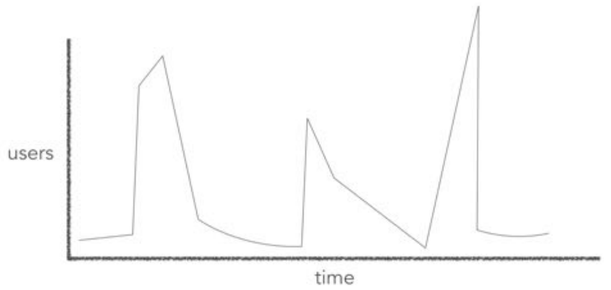
agility	★★★★★
abstraction	★
configurability	★★★
cost	★
deployability	★★★★★
domain part.	★★★★★
elasticity	★★★★★
evolvability	★★★★★
fault-tolerance	★★★★★
integration	★★★
interoperability	★★★
performance	★★
scalability	★★★★★
simplicity	★
testability	★★★★★
workflow	★

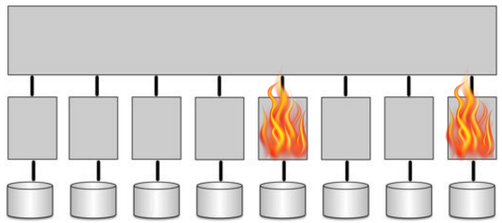
microservices architecture



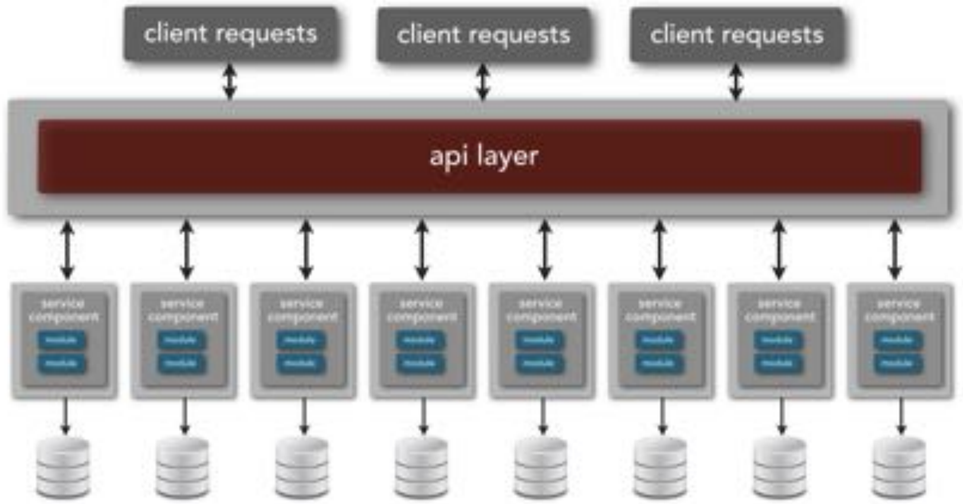
agility ★★★★★
deployability ★★★★★
elasticity ★★★★★
evolvability ★★★★★
fault-tolerance ★★★★★
scalability ★★★★★
testability ★★★★★

when to use...





microservices architecture



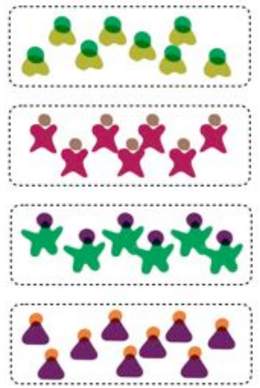
cost ★

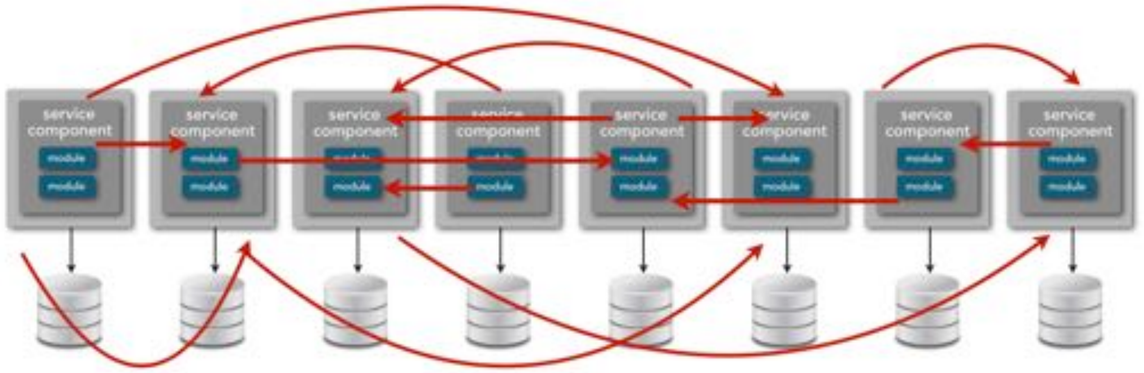
simplicity ★

workflow ★

performance ★ ★

when not to use...





architecture classification

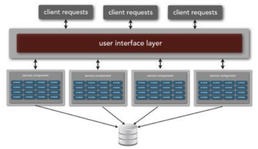
monolithic

distributed

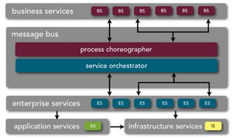
layered architecture

modular monolith

microservices architecture

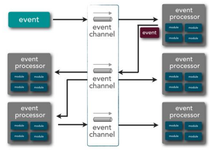


service-based architecture

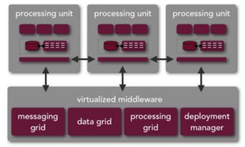


service-oriented architecture

microkernel architecture

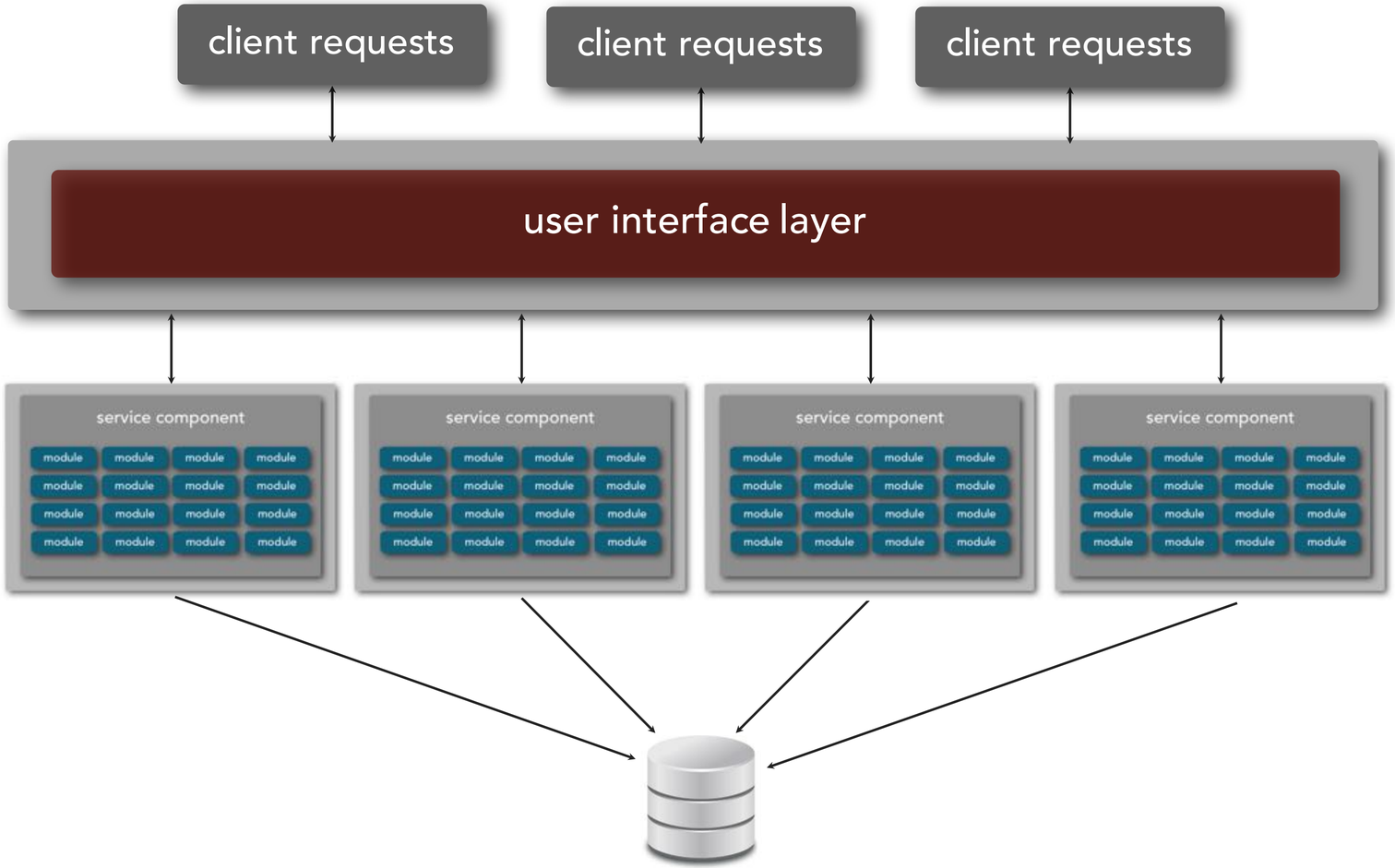


event-driven architecture

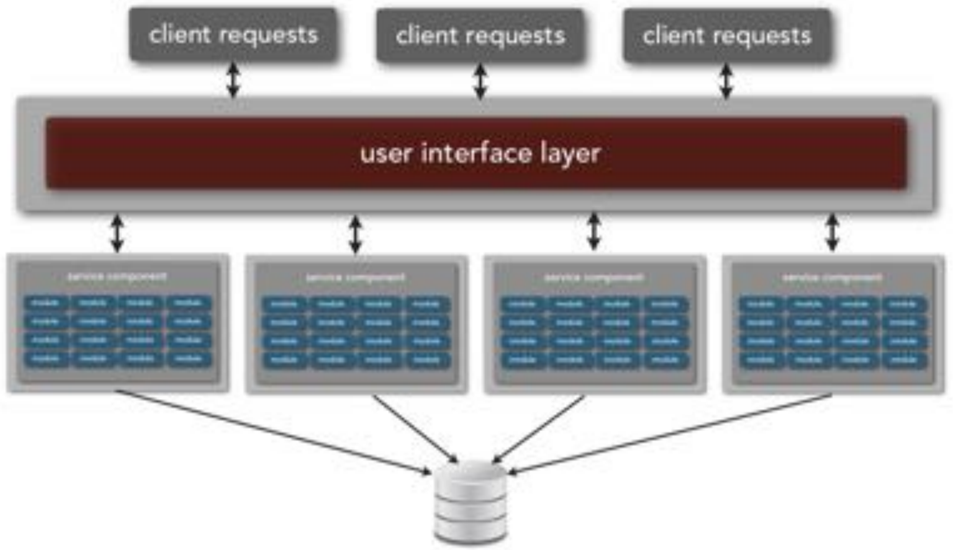


space-based architecture

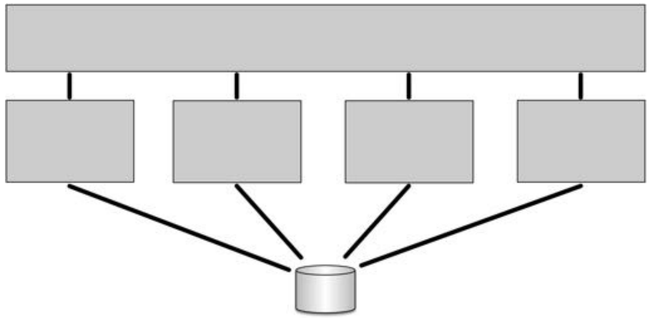
service-based architecture



service-based architecture

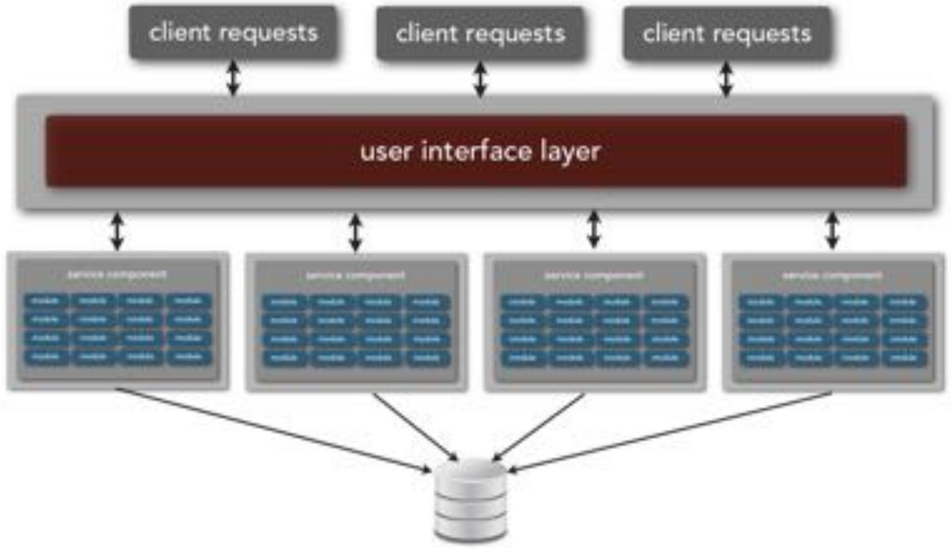


well-defined domains
deployed as separate units



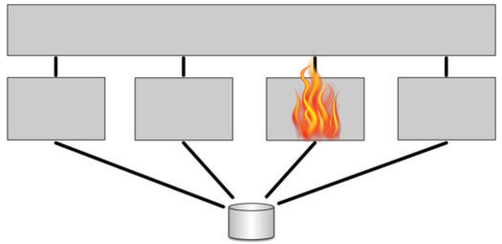
agility	★★★★
abstraction	★
configurability	★★
cost	★★★★
deployability	★★★★
domain part.	★★★★★
elasticity	★★
evolvability	★★★
fault-tolerance	★★★★
integration	★★
interoperability	★★
performance	★★★
scalability	★★★
simplicity	★★★
testability	★★★★
workflow	★

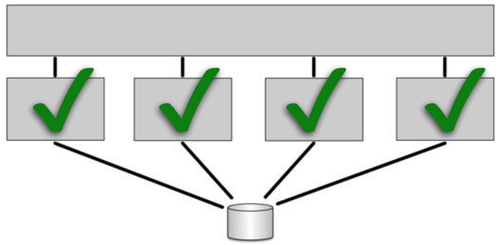
service-based architecture



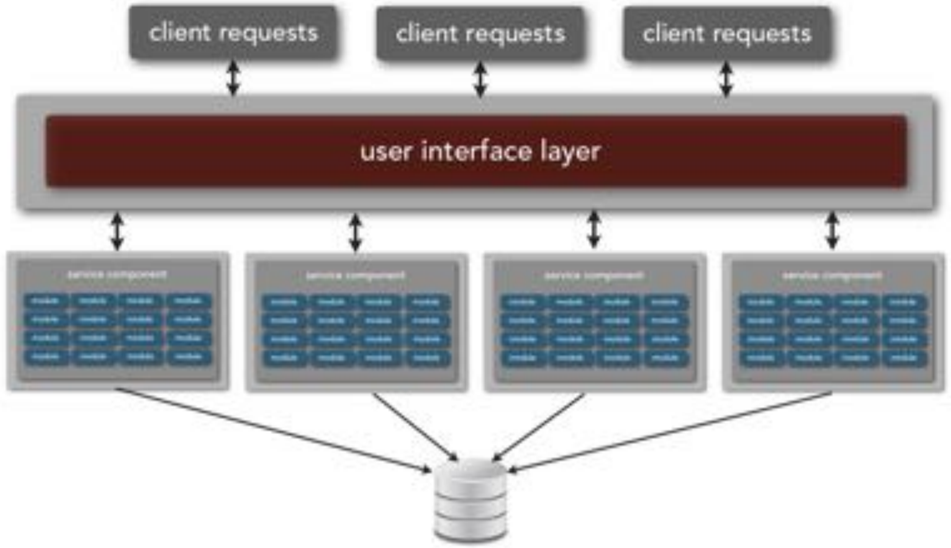
agility	★★★★
cost	★★★★
deployability	★★★★
fault-tolerance	★★★★
testability	★★★★

when to use...





service-based architecture

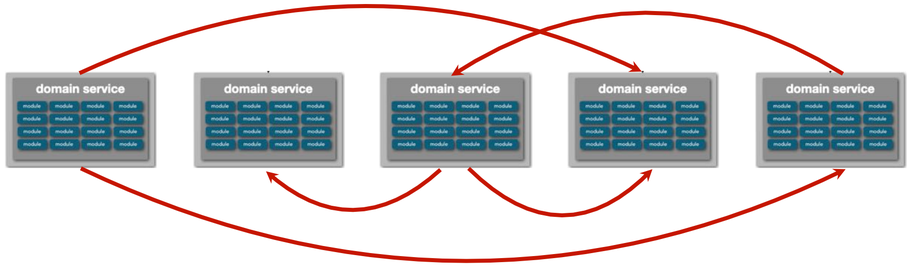


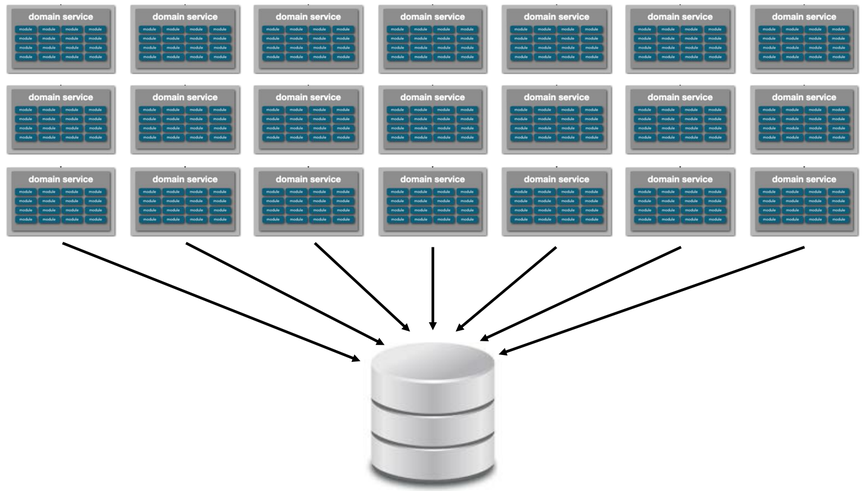
elasticity ★★

integration ★★

workflow ★

when not to use...





architecture classification

monolithic

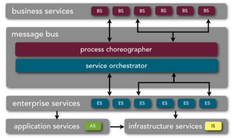
distributed

layered architecture

modular monolith

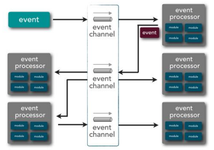
microservices architecture

service-based architecture

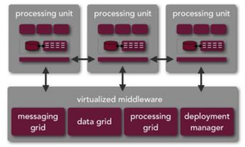


service-oriented architecture

microkernel architecture

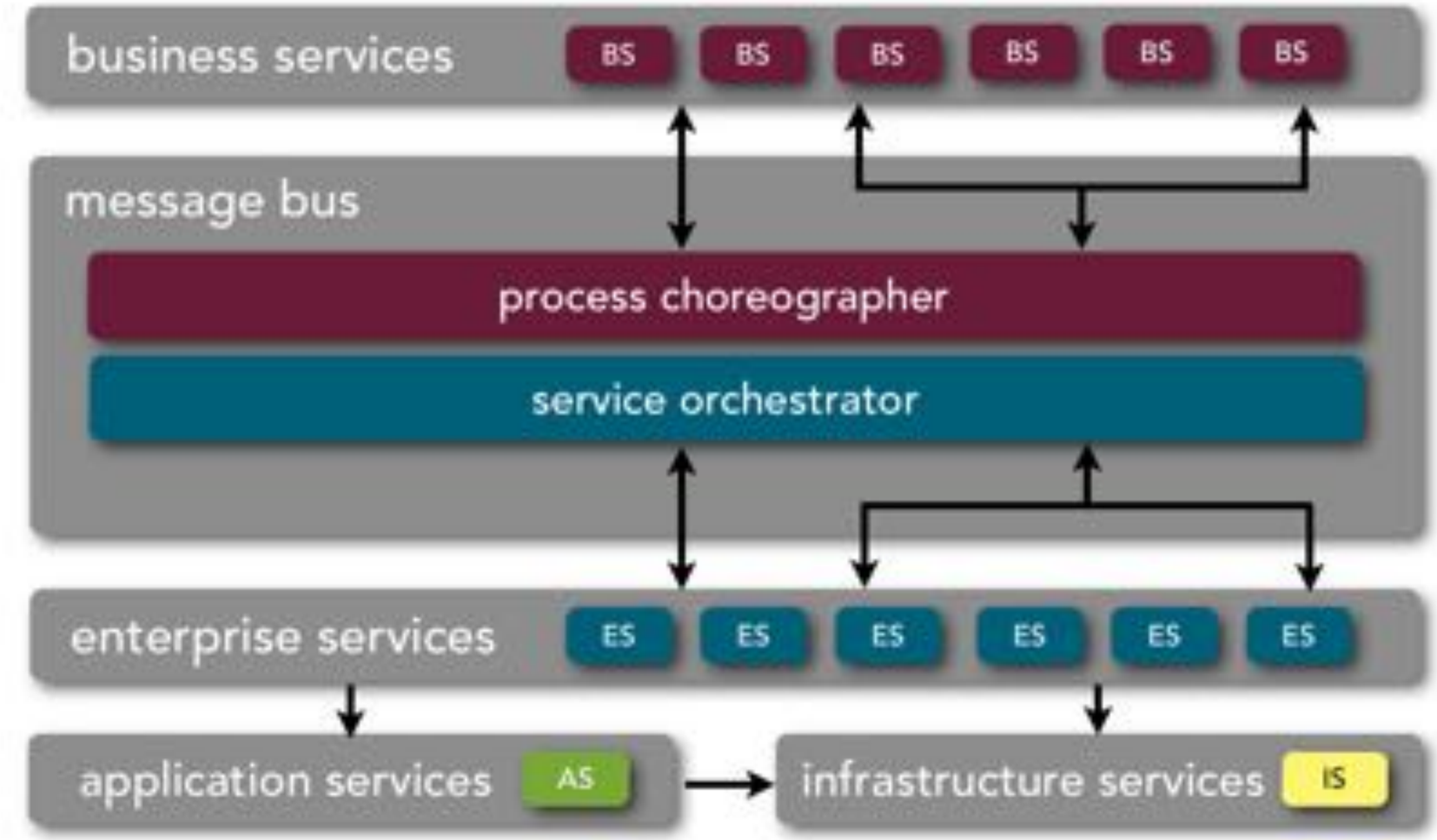


event-driven architecture

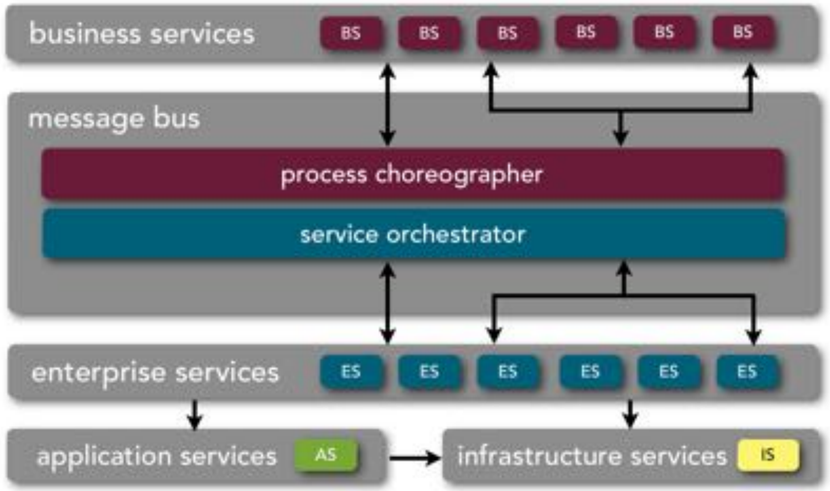


space-based architecture

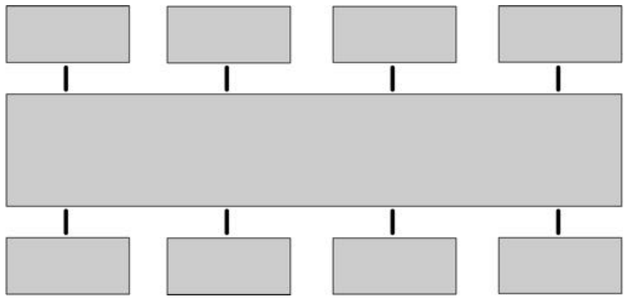
service-oriented architecture



service-oriented architecture

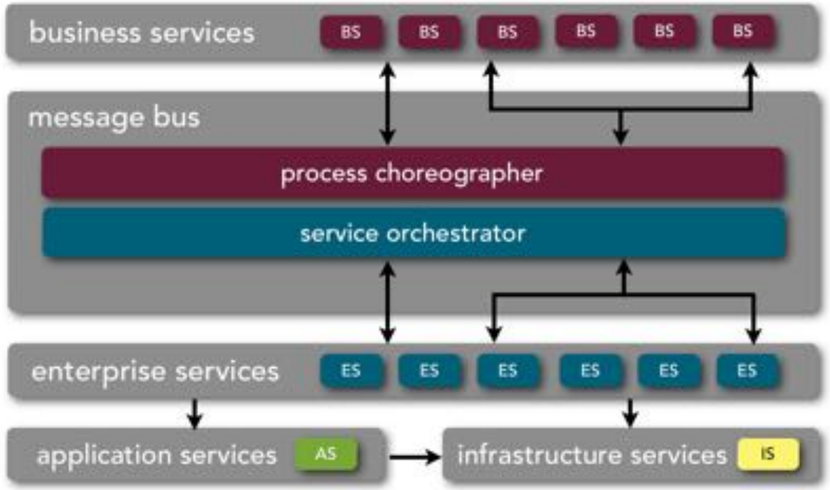


core functionality is shared across multiple enterprise systems



agility	★
abstraction	★★★★★
configurability	★
cost	★
deployability	★
domain part.	★
elasticity	★★★
evolvability	★
fault-tolerance	★★★
integration	★★★★★
interoperability	★★★★★
performance	★★
scalability	★★★
simplicity	★
testability	★
workflow	★★★★★

service-oriented architecture



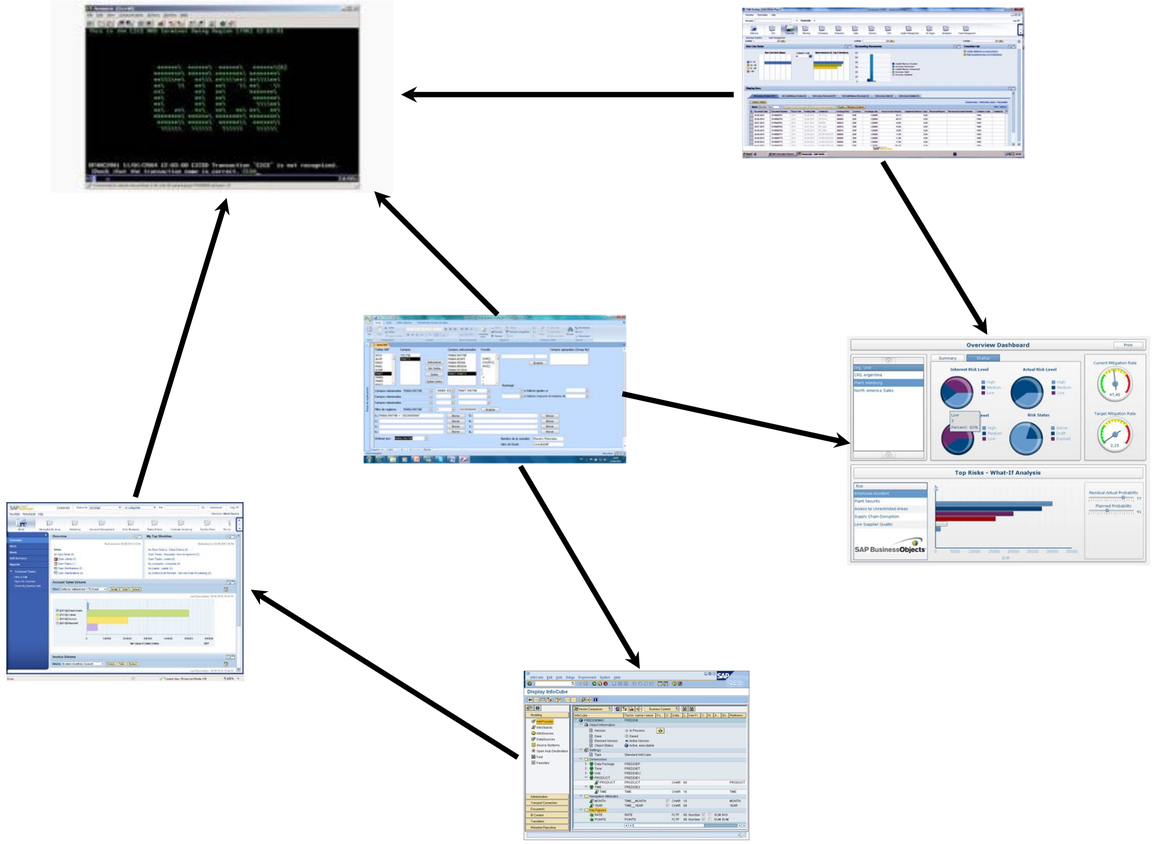
abstraction ★★★★★

integration ★★★★★

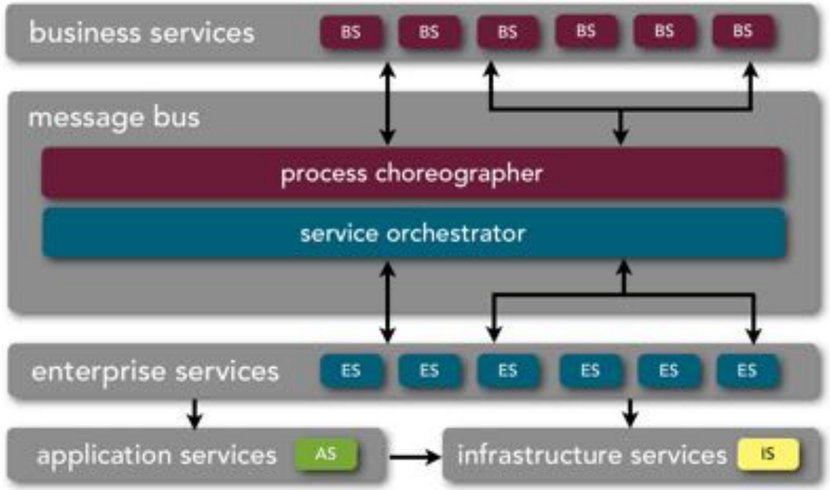
interoperability ★★★★★

workflow ★★★★★

when to use...



service-oriented architecture



when not to use...

agility ★
cost ★
deployability ★
evolvability ★
performance ★ ★
simplicity ★
testability ★

architecture classification

monolithic

distributed

layered architecture

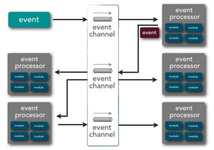
modular monolith

microservices architecture

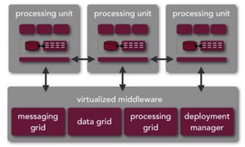
service-based architecture

service-oriented architecture

microkernel architecture

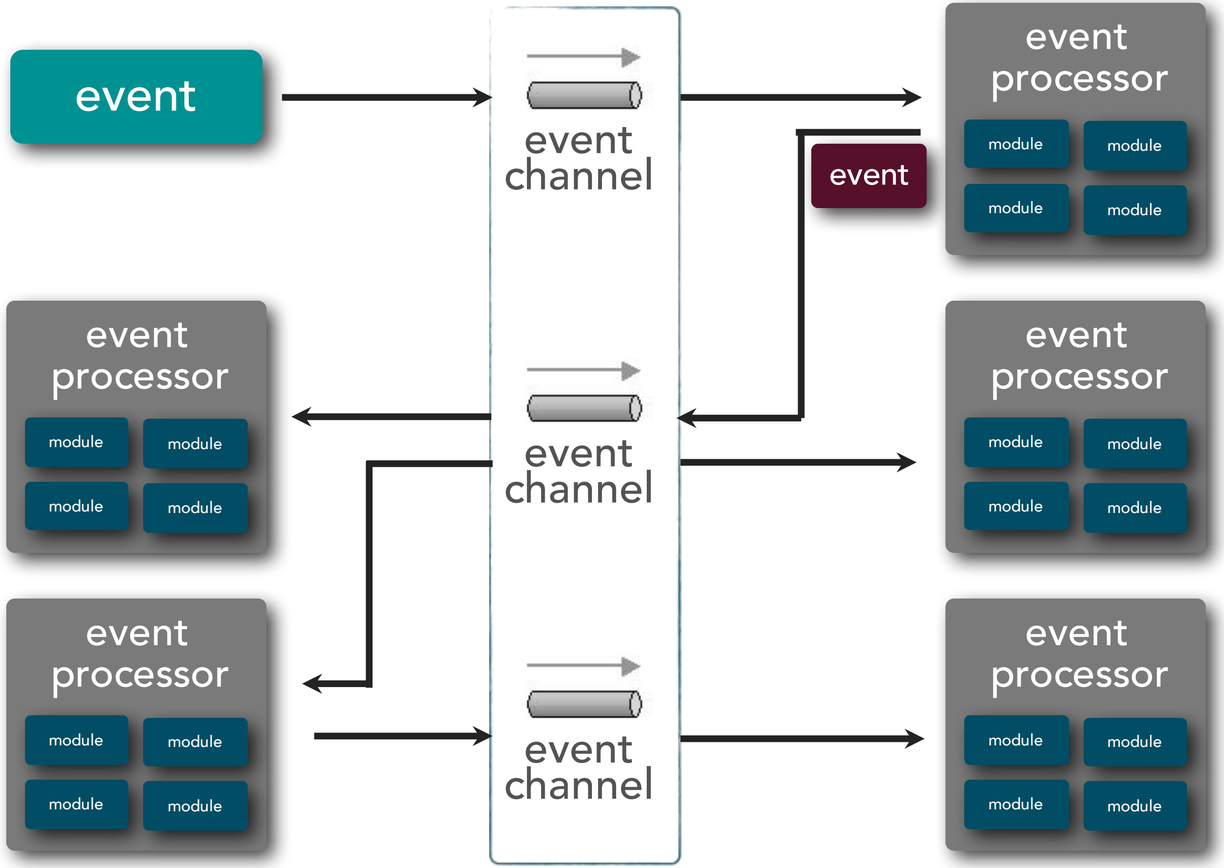


event-driven architecture

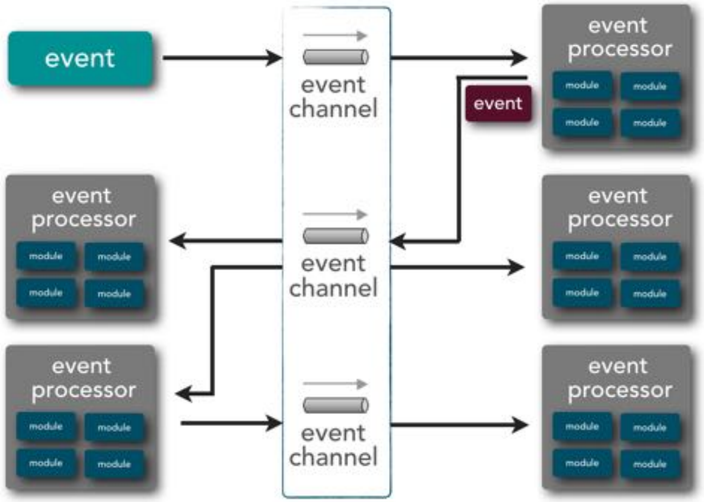


space-based architecture

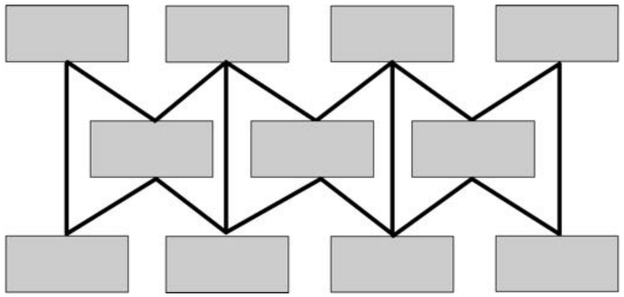
event-driven architecture



event-driven architecture

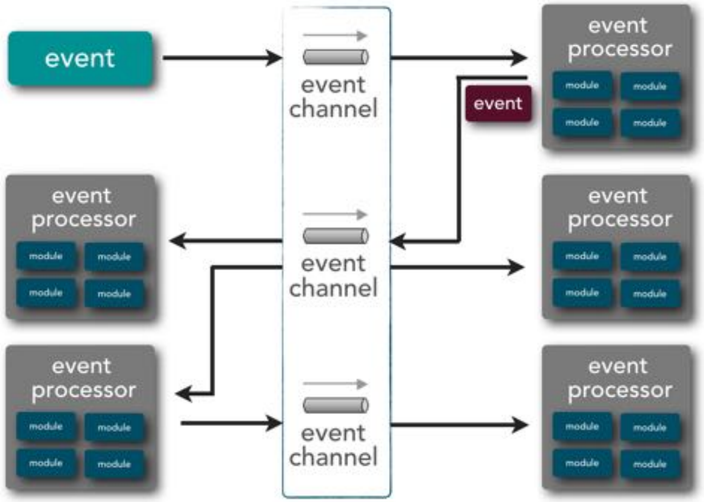


reacts to events that happen in the system



agility	★★★
abstraction	★★★★
configurability	★★
cost	★★★
deployability	★★★
domain part.	★
elasticity	★★★★
evolvability	★★★★★
fault-tolerance	★★★★★
integration	★★★
interoperability	★★★
performance	★★★★★
scalability	★★★★★
simplicity	★
testability	★★
workflow	★★★★★

event-driven architecture



abstraction ★★★★

elasticity ★★★★

evolvability ★★★★★

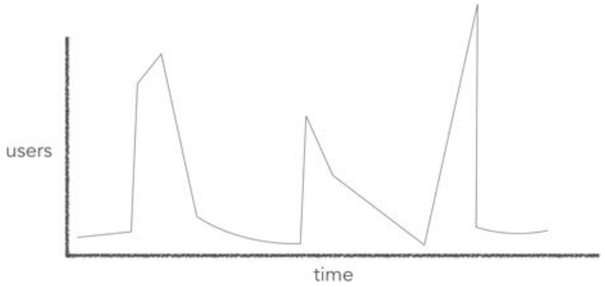
fault-tolerance ★★★★★

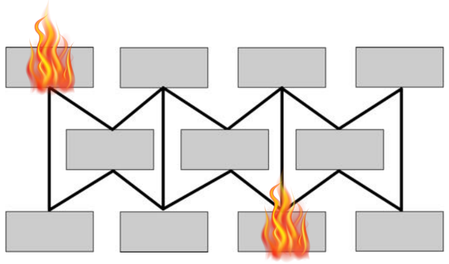
performance ★★★★★

scalability ★★★★★

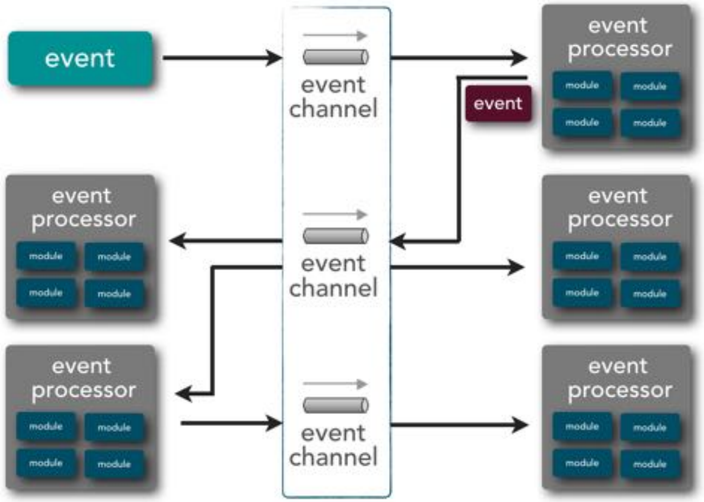
workflow ★★★★★

when to use...





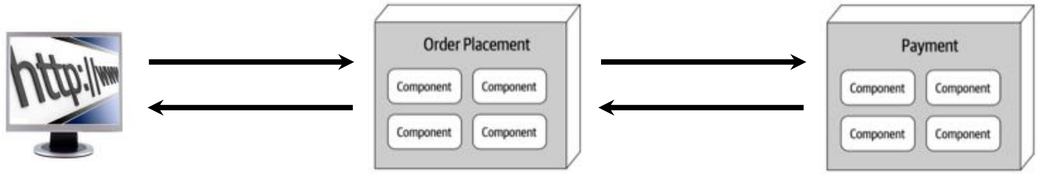
event-driven architecture

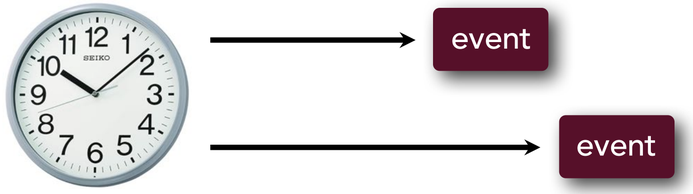


simplicity ★

testability ★★

when not to use...





architecture classification

monolithic

distributed

layered architecture

modular monolith

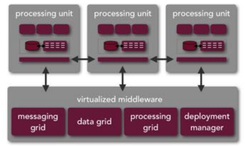
microservices architecture

service-based architecture

service-oriented architecture

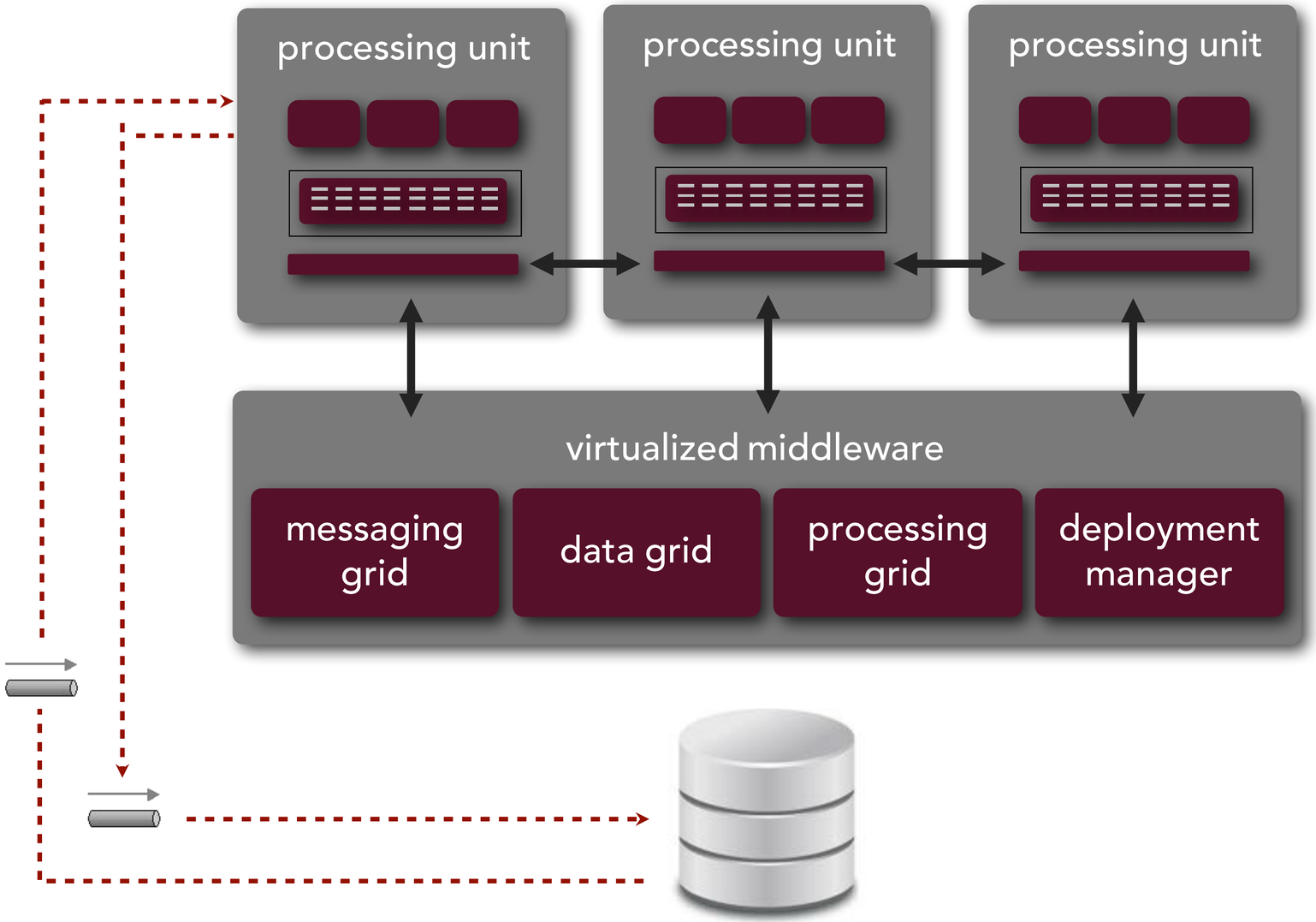
microkernel architecture

event-driven architecture

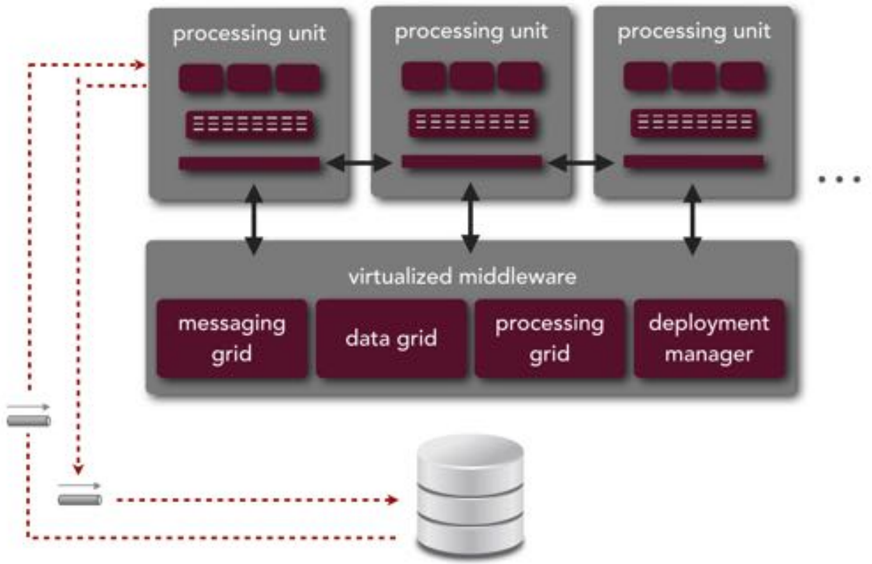


space-based architecture

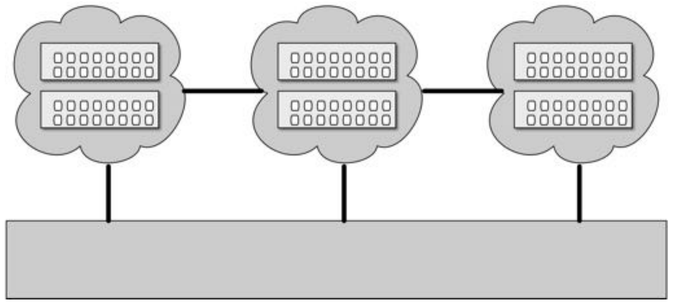
space-based architecture



space-based architecture

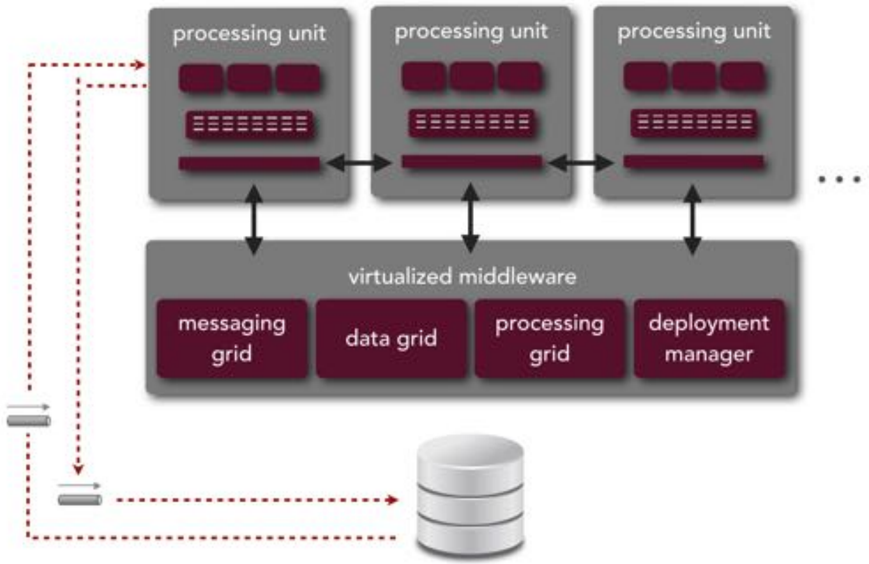


all transactional data is cached in memory

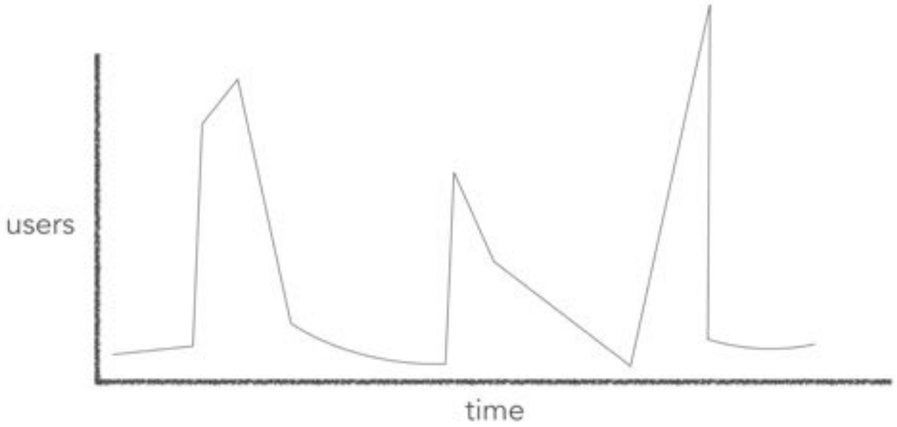


agility	★★
abstraction	★
configurability	★★
cost	★★
deployability	★★★
domain part.	★★★★★
elasticity	★★★★★
evolvability	★★★
fault-tolerance	★★★
integration	★★
interoperability	★★
performance	★★★★★
scalability	★★★★★
simplicity	★
testability	★
workflow	★

space-based architecture



when to use...

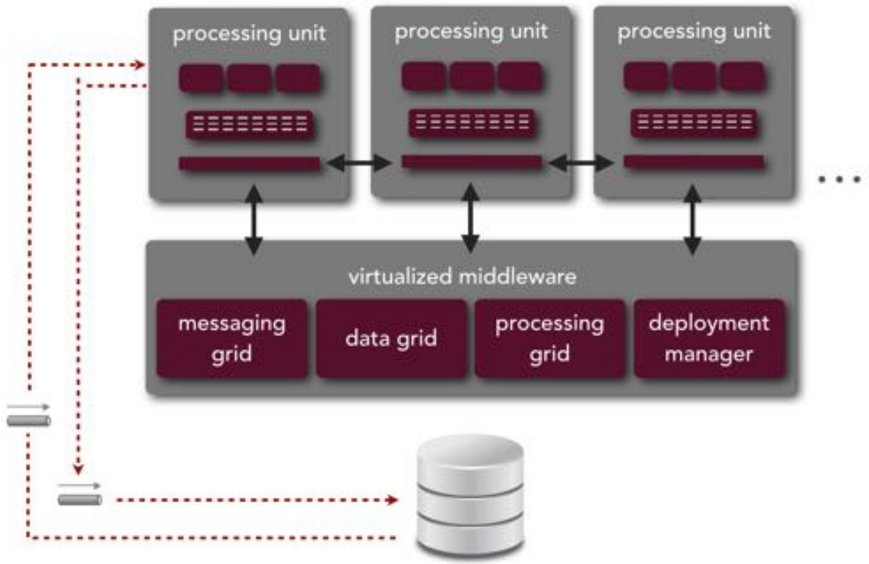


elasticity ★★★★★

performance ★★★★★

scalability ★★★★★

space-based architecture



agility ★★

cost ★★

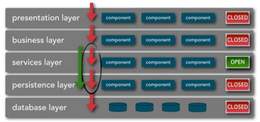
simplicity ★

testability ★

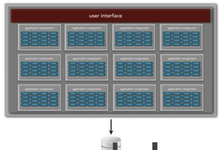
when not to use...

architecture classification

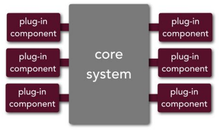
monolithic



layered architecture

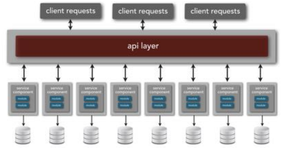


modular monolith

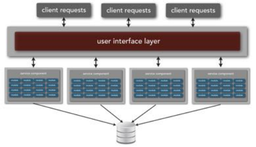


microkernel architecture

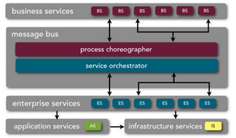
distributed



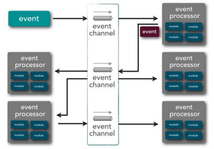
microservices architecture



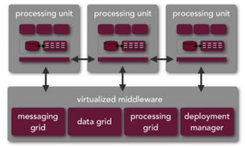
service-based architecture



service-oriented architecture



event-driven architecture



space-based architecture

Understanding Architecture Styles
(and When to Use Them)

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