The (Medium Term) Future of Evolutionary Architecture

Rebecca Parsons
Chief technology officeremerita
Journalist wanted a 10-year out prediction!!
My crystal ball is still broken, you know. :-}
What is an evolutionary architecture?

Evolutionary architecture supports guided, incremental change across multiple dimensions.
Key ideas and questions

• Why evolutionary and not agile, or adaptive, or emergent?

• How does guiding work?

• How do we operationalize it?
-ilities

accessibility  accountability  accuracy  adaptability  administrability  affordability  agility  auditability  autonomy  availability  compatibility  composability  configurability  correctness  credibility  customizability  debugability  degradability  determinability  demonstrability  dependability  deployability  discoverability  distributability  durability  effectiveness  efficiency  reliability  extensibility  failure  transparency  fault-tolerance  fidelity  flexibility  inspectability  installability  integrity  interchangeability  interoperability  learnability  maintainability  manageability  mobility  modifiability  modularity  operability  orthogonality  portability  predictability  process  capabilities  producibility  provability  recoverability  relevance  repeatability  reproducibility  resilience  responsiveness  reusability  robustness  safety  scalability  seamlessness  self-sustainability  serviceability  supportability  securability  simplicity  stability  standards  compliance  survivability  sustainability  tailorability  testability  timeliness  traceability  transparency  ubiquity  understandability  upgradability  usability  

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@rebeccaparsons
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accessibility accessibility
accountability accountability
accuracy accuracy
adaptability adaptability
administrability administrability
affordability affordability
agility agility
auditability auditability
autonomy autonomy
availability availability
compatibility compatibility
composability composability
configurability configurability
correctness correctness
credibility credibility
customizability customizability
debuggability debuggability
degradability degradability
determinability determinability
demonstrability demonstrability
dependability dependability
deployability deployability
discoverability discoverability
distributability distributability
durability durability
effectiveness effectiveness
efficiency efficiency
reliability reliability
extensibility extensibility
failure failure
transparency transparency
fault-tolerance fault-tolerance
fidelity fidelity
flexibility flexibility
inspectability inspectability
installability installability
integrity integrity
interchangeability interchangeability
interoperability interoperability
learnability learnability
maintainability maintainability
manageability manageability
mobility mobility
modifiability modifiability
modularity modularity
operability operability
orthogonality orthogonality
portability portability
precision precision
predictability predictability
process process
capabilities capabilities
productivity productivity
provability provability
recoverability recoverability
relevance relevance
repeatability repeatability
reproducibility reproducibility
resilience resilience
responsiveness responsiveness
reusability reusability
robustness robustness
safety safety
scalability scalability
self-sustainability self-sustainability
serviceability serviceability
supportability supportability
securability securability
simplicity simplicity
stability stability
standards standards
compliance compliance
survivability survivability
sustainability sustainability
tailorability tailorability
testability testability
timeliness timeliness
traceability traceability
transparency transparency
ubiquity ubiquity
understandability understandability
upgradability upgradability
usability usability

evolvability
Evolutionary architecture principles of today
Principles of Evolutionary Architecture

- Last responsible moment
- Architect and develop for evolvability
- Postel’s Law
- Architect for testability
- Conway’s Law
So are the 2025 principles different?
Postel’s Law and Last Responsible Moment

• I don’t imagine much change here

• New modes of communication might bring a different spin on Postel’s Law
Architect for Evolvability

- New innovations in architecture and increased application of existing alternative architectures
- Architecture for mixed physical and digital systems (digital twins, AV)
- Evolution of platforms
- Evolution of AR/VR systems
Develop for Evolvability

- What is the role for AI assisted software development?
- Impact of evolvability on low-code or no-code platforms
- Fitness functions for compliance in new languages/application areas
- Better metrics for code quality, perhaps?
Architect for Testability

- Increased reliance on testing in production, observability, and dynamic fitness functions

- Broadening of the suite of fitness functions and approaches to creating fitness functions

- Increased use of AI and artificial immune systems to guard against threats to create more robust systems

- New testing techniques for ML models, AI systems and RL models
Conway’s Law

- What are the implications for teams and architectures under remote and hybrid team structures?
Evolutionary architecture practices of today
Practices of Evolutionary Architecture

- Evolutionary database design
- Contract testing
- Choreography
- Continuous delivery
So are the 2025 practices different?
Practices will evolve but not radically change

- Possibly new persistence mechanisms, but the principles of evolutionary databases remain the same
- AI-assisted tools might provide additional support to contract testing
- Innovation in tools might make choreography less complex
- New ideas around automating different aspects of deployment
There might be some new -ilities as well.
Evolutionary architecture will evolve...
... but it’s unlikely to be a revolution.
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Thank you

Rebecca Parsons
@rebeccaparsons

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