

Man vs Machine

Optimized Development Processes with Artificial Intelligence

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Why AI?

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more power

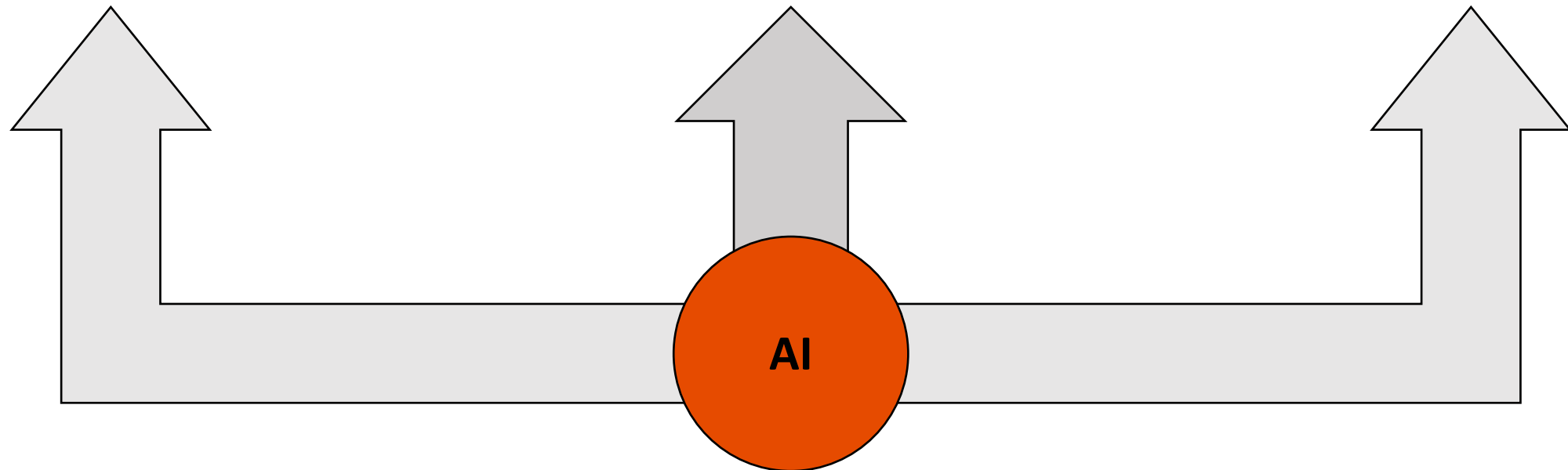
- harder problems
- complex automatization

more flexibility

- wider range
- quicker reactions

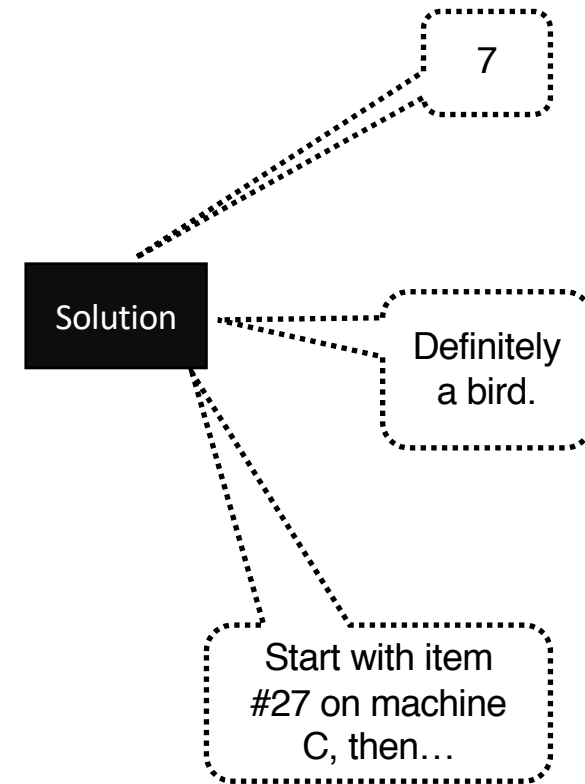
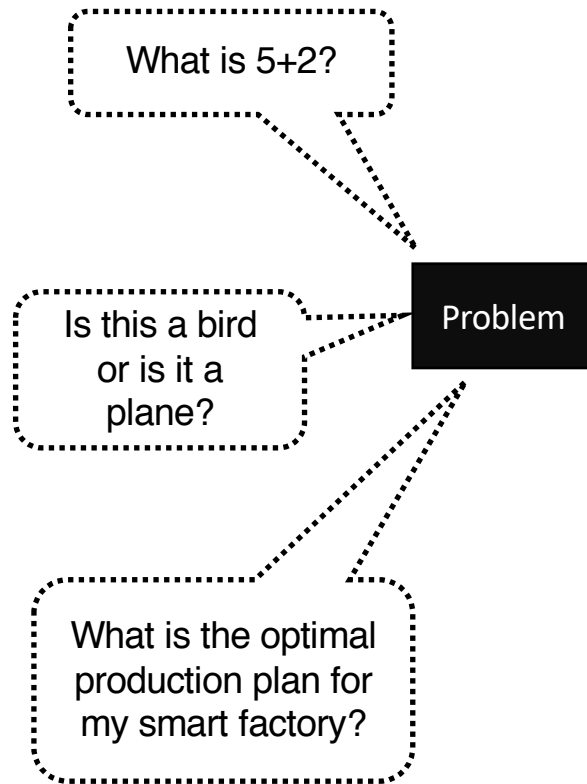
more efficiency

- computational resources
- future advances...
Quantum Machine Learning?



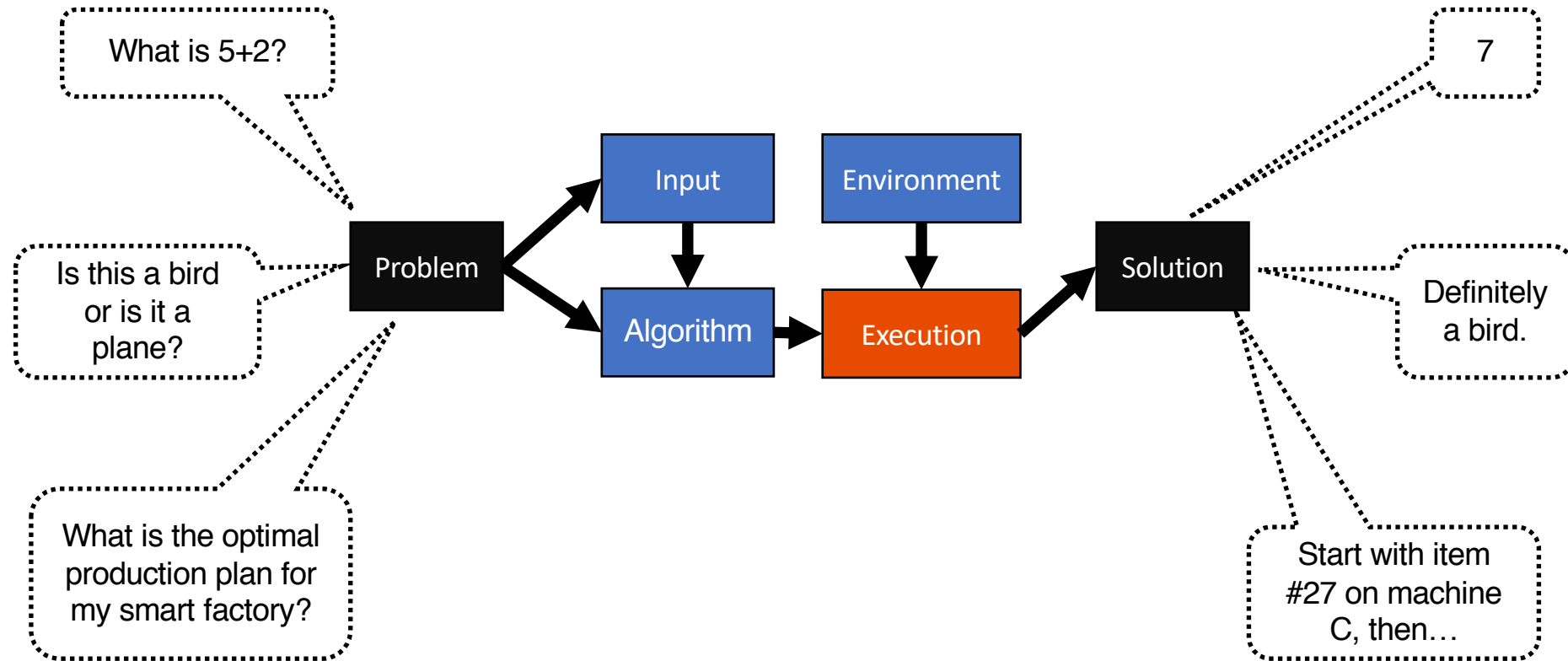
What does AI do?

3



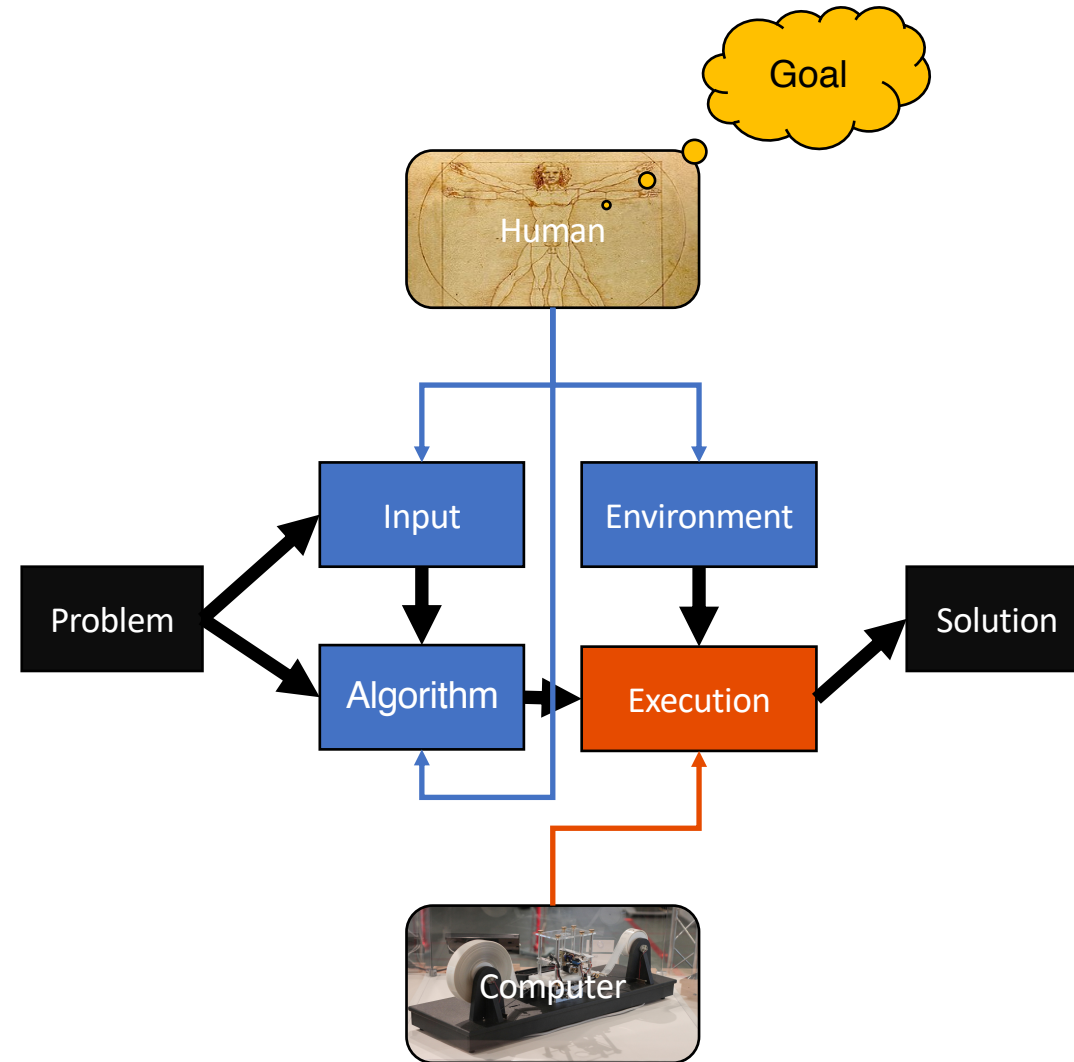
What does AI do?

4



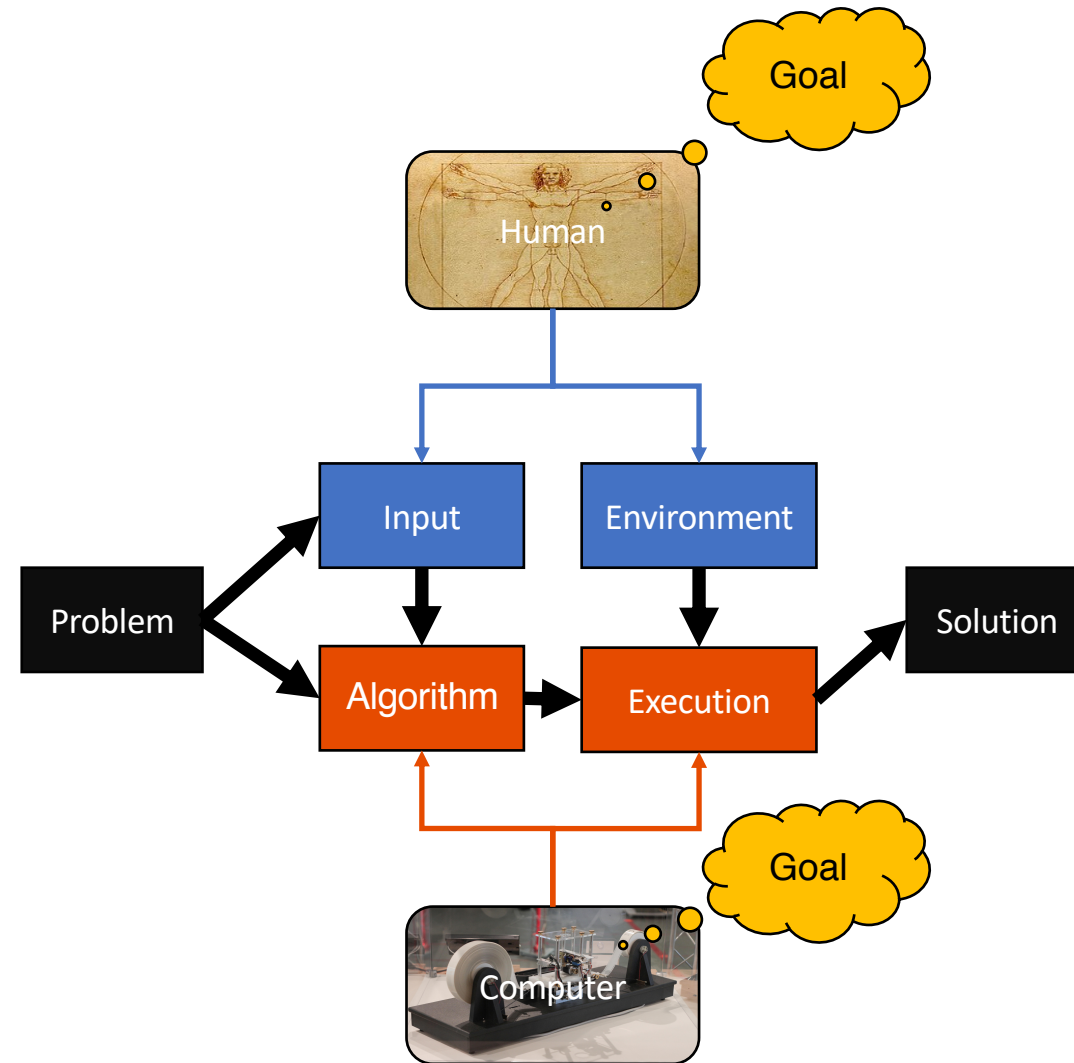
What does AI do?

5



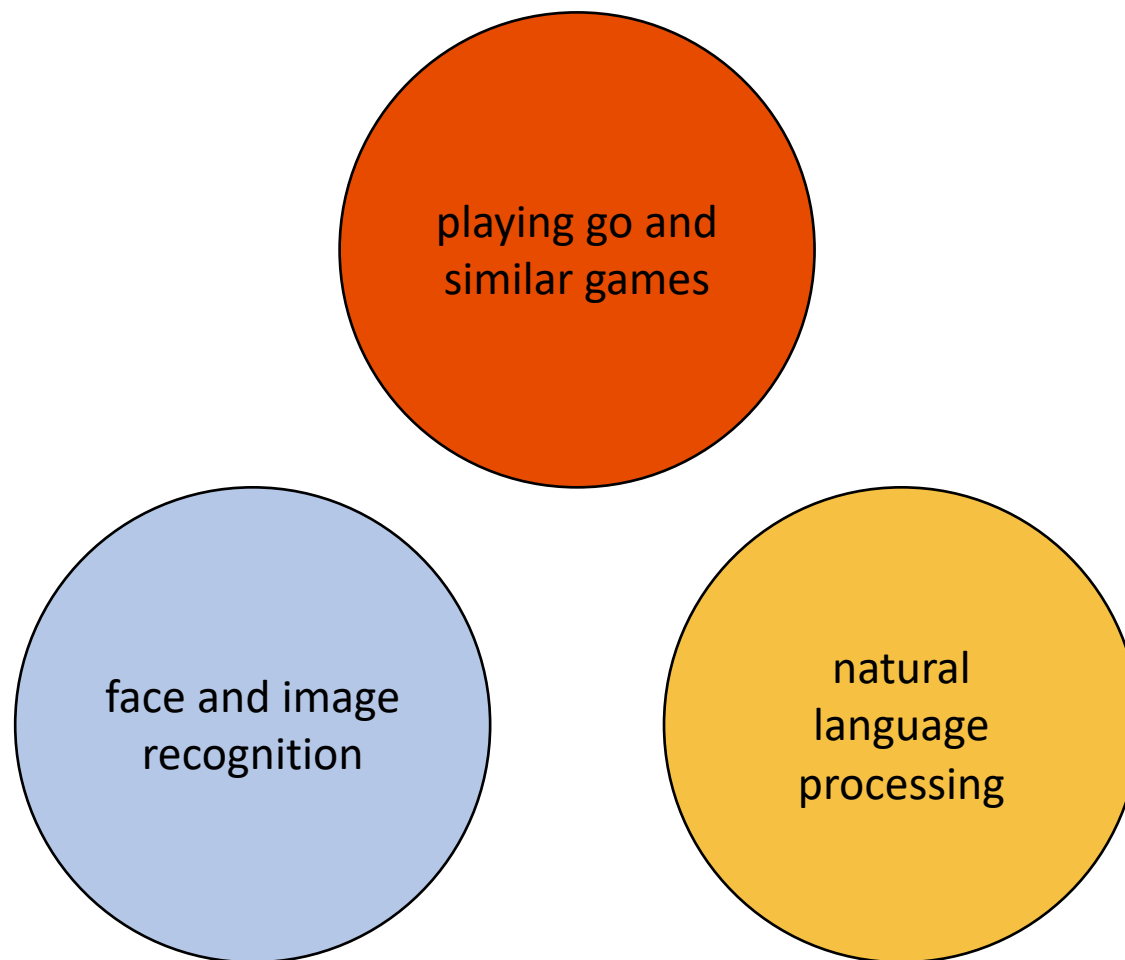
What does AI do?

6



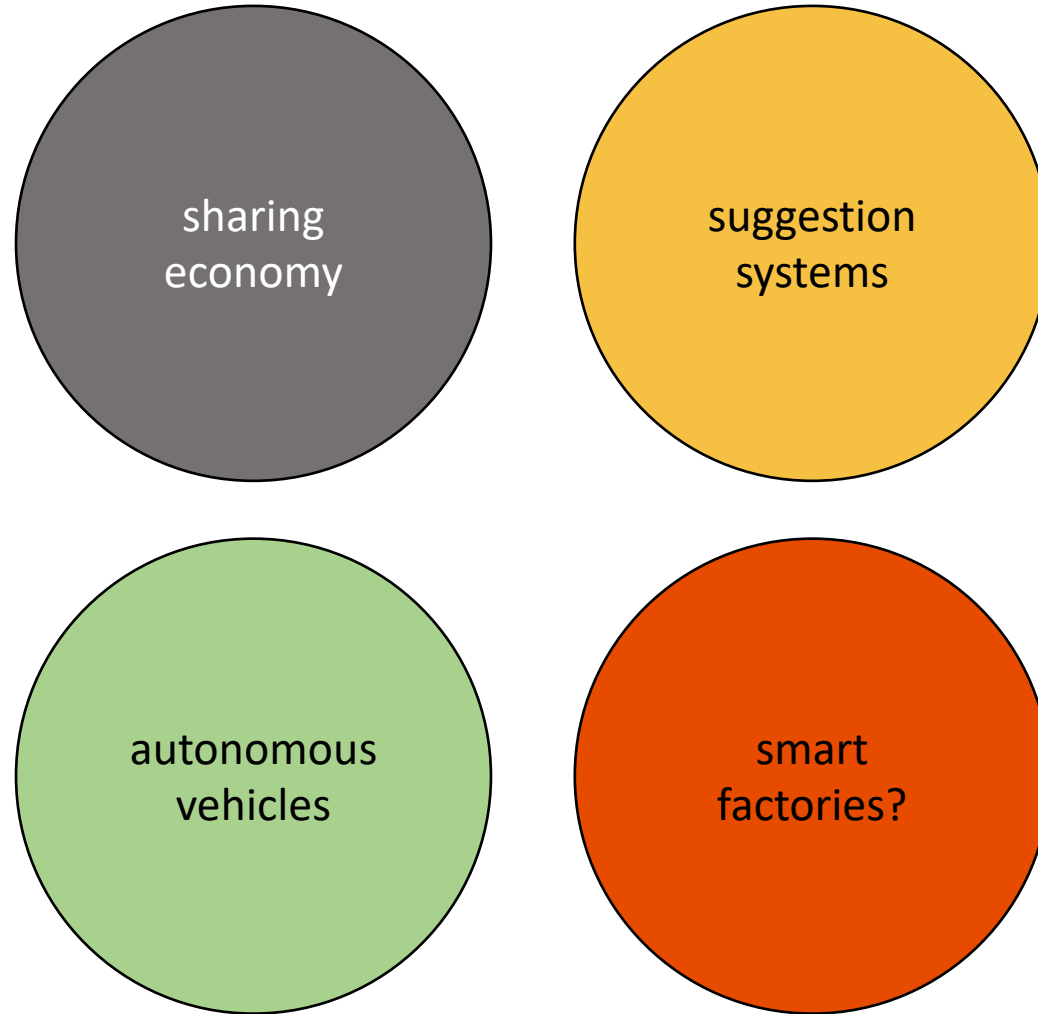
Success Stories

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New Businesses

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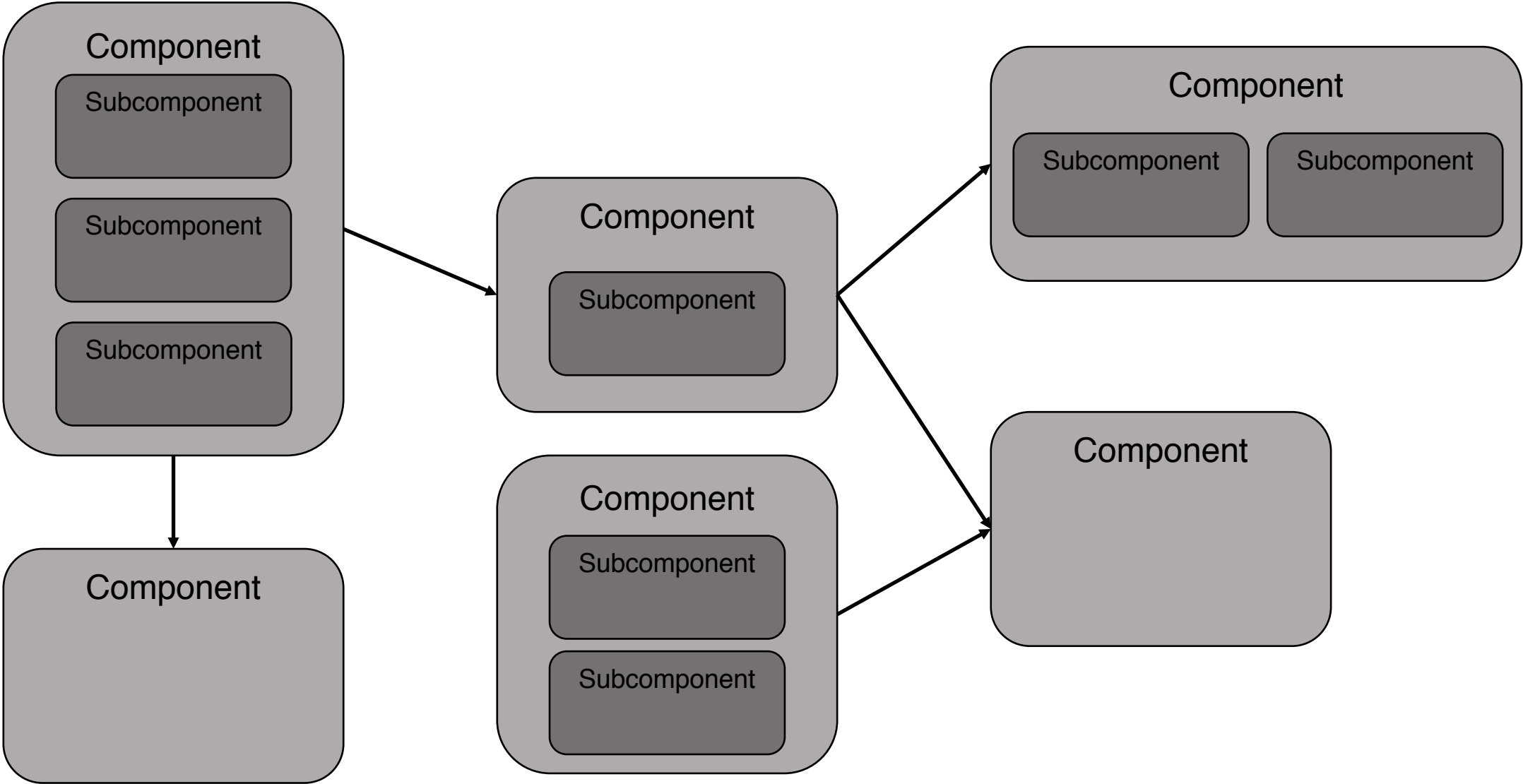


The Major Challenges

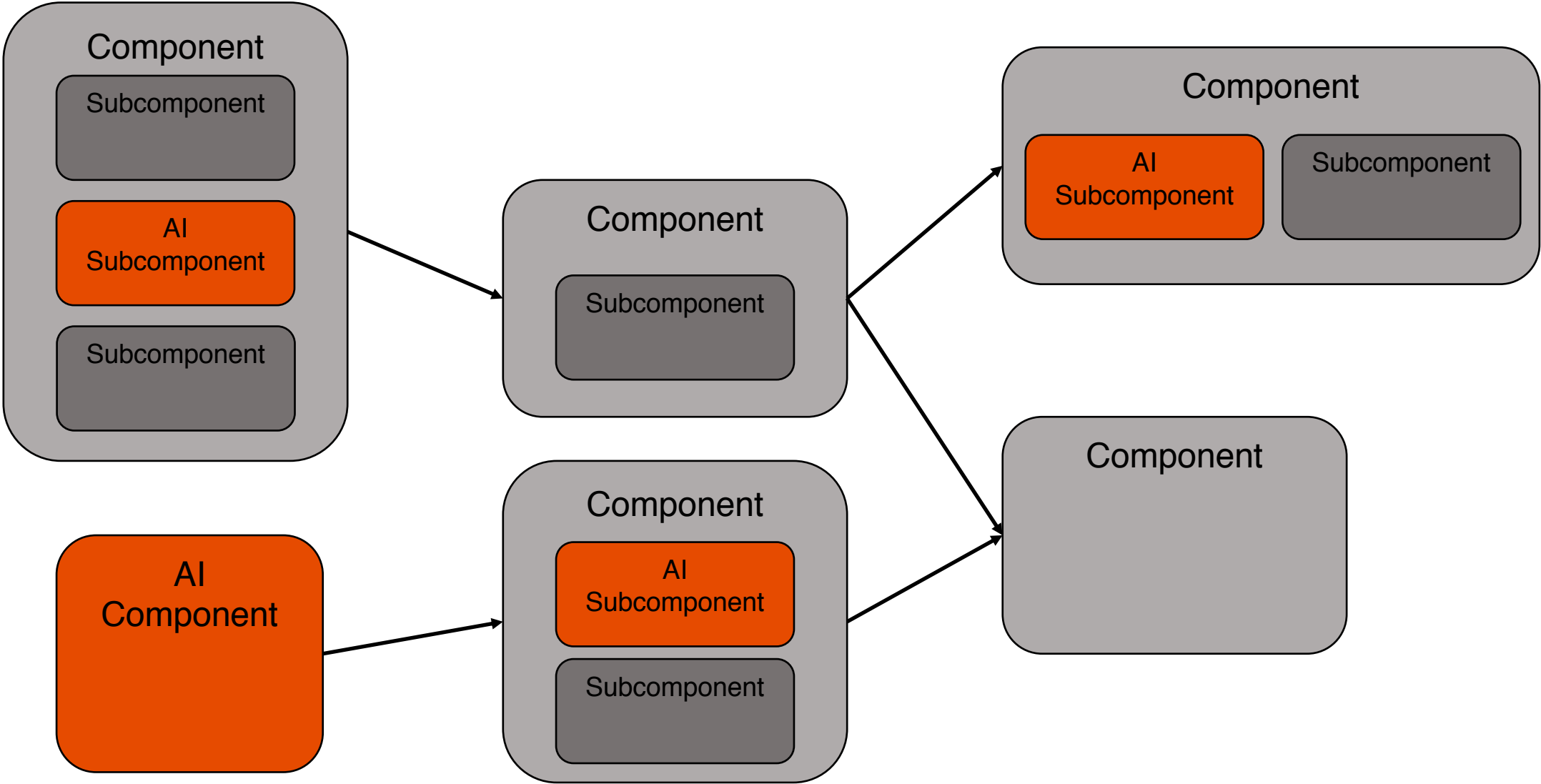
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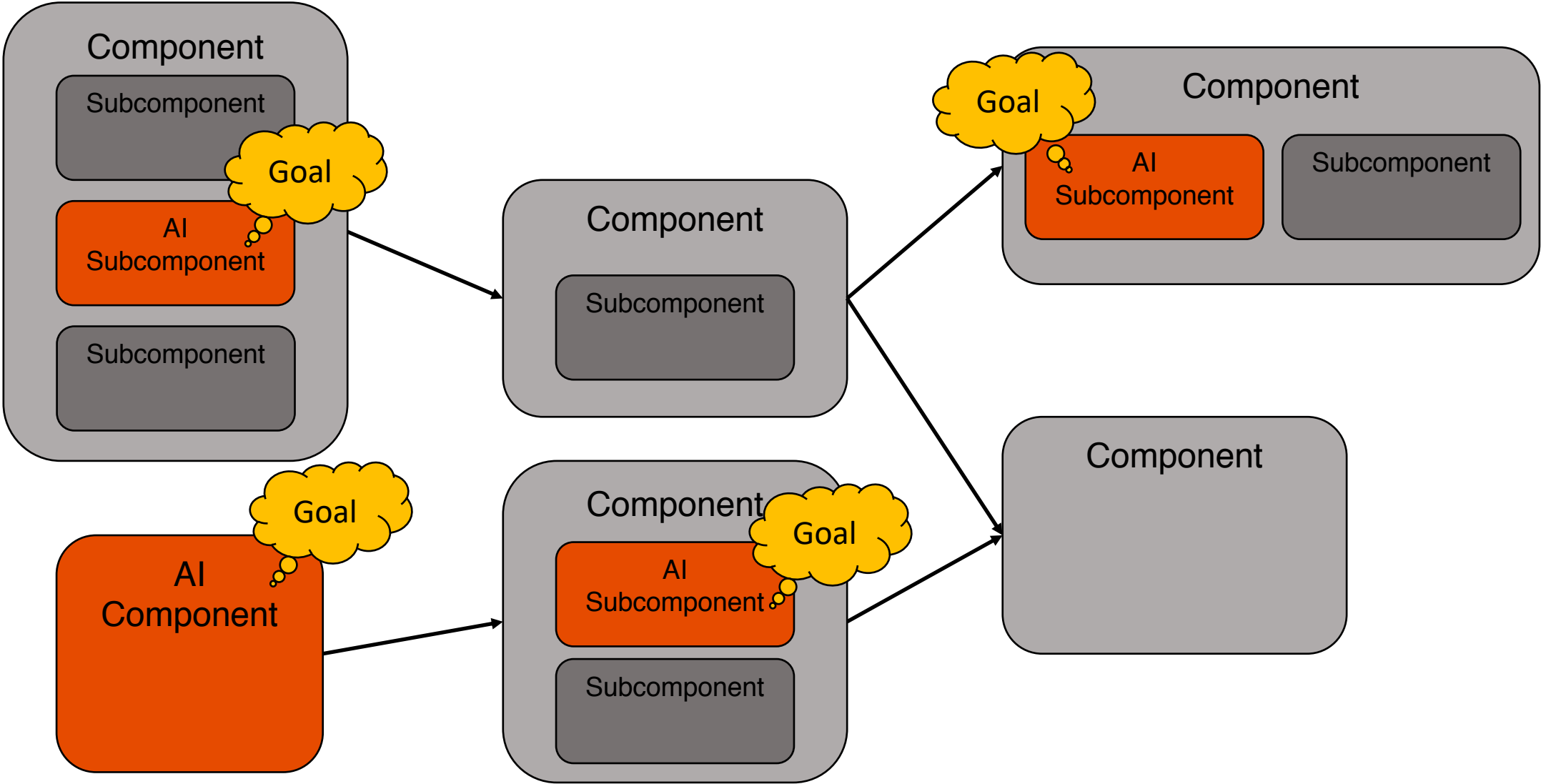
- Multi-Agent Coordination
- Mission Criticality
- Migration and Change

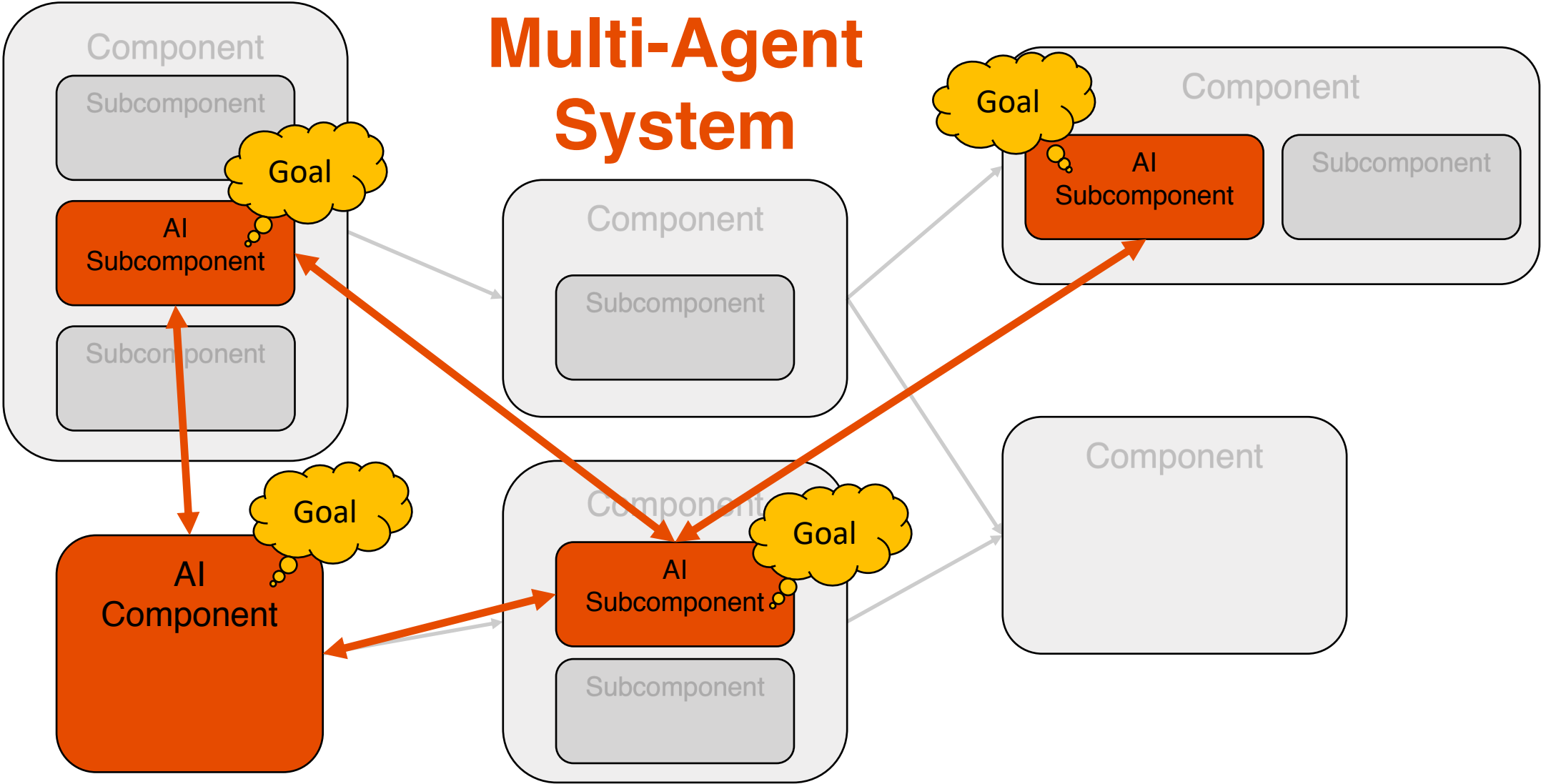
Multi-Agent Coordination



Multi-Agent Coordination







Problems

communication
complexity

conflicting goals

emergent
behavior

Approaches

dynamic groups

reward
assignment

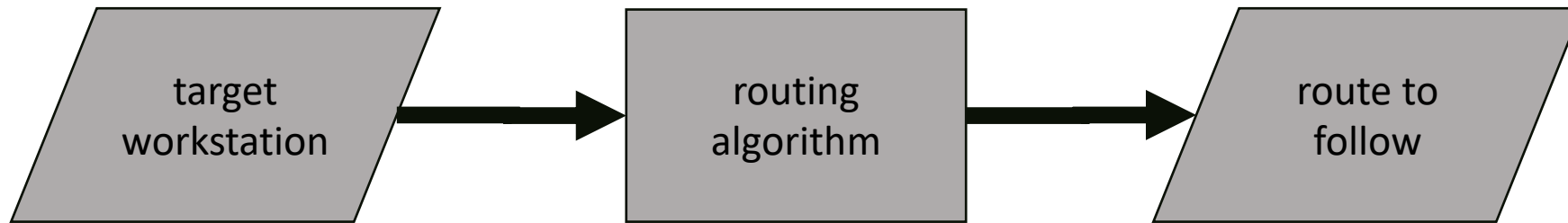
teacher/student

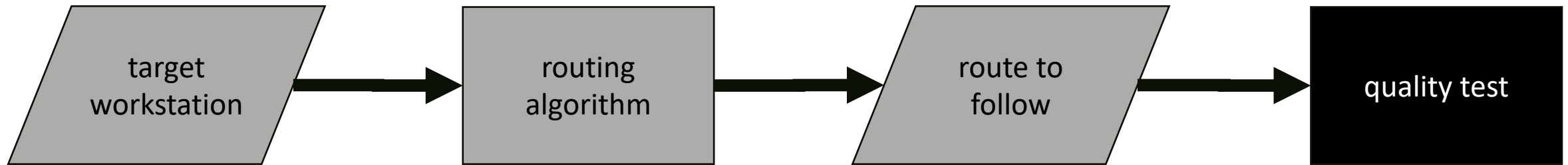
Guideline

Systems are open, not closed.

Mission Criticality

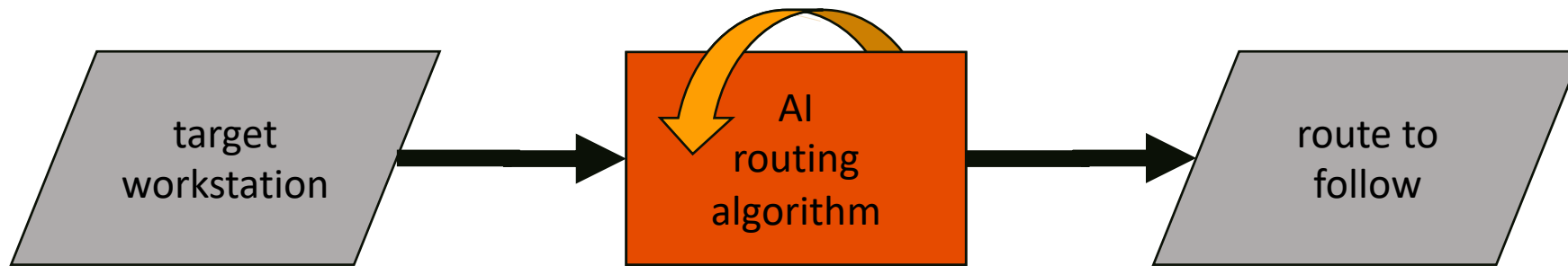
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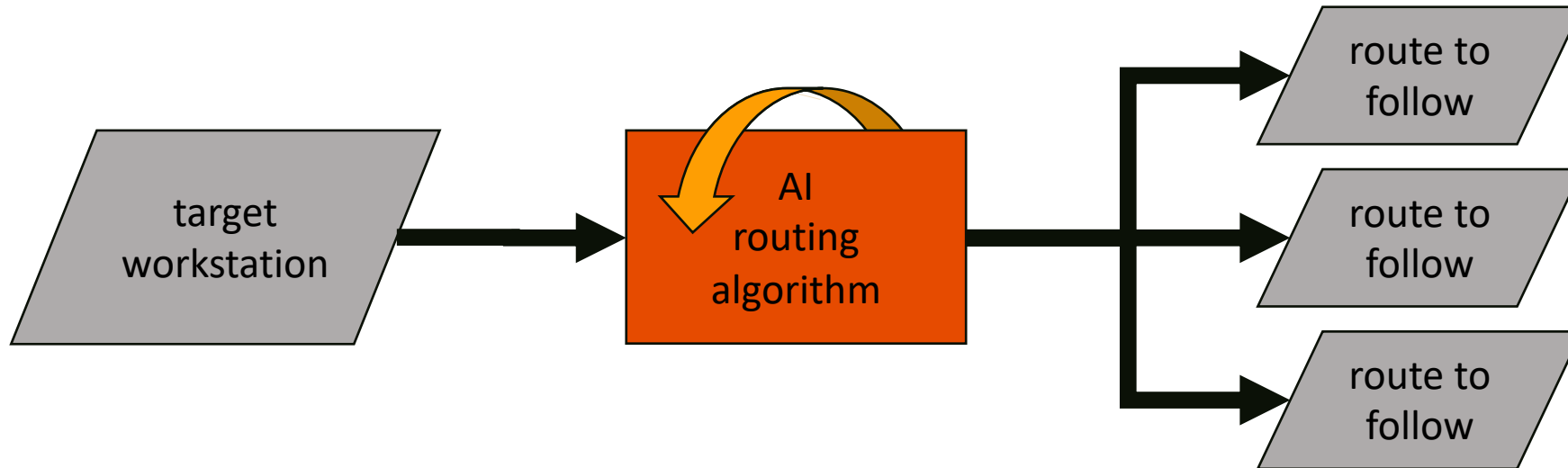
Mission Criticality

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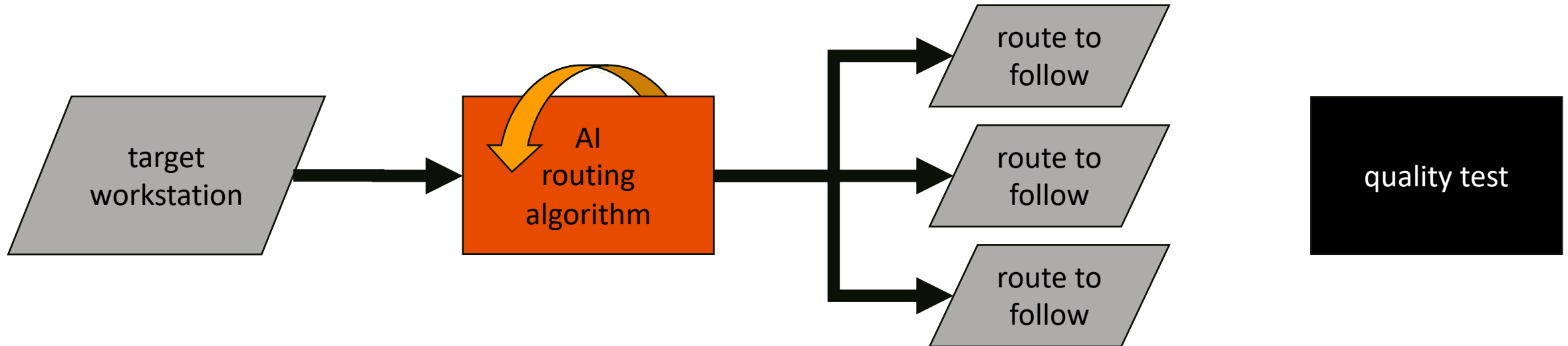
Mission Criticality

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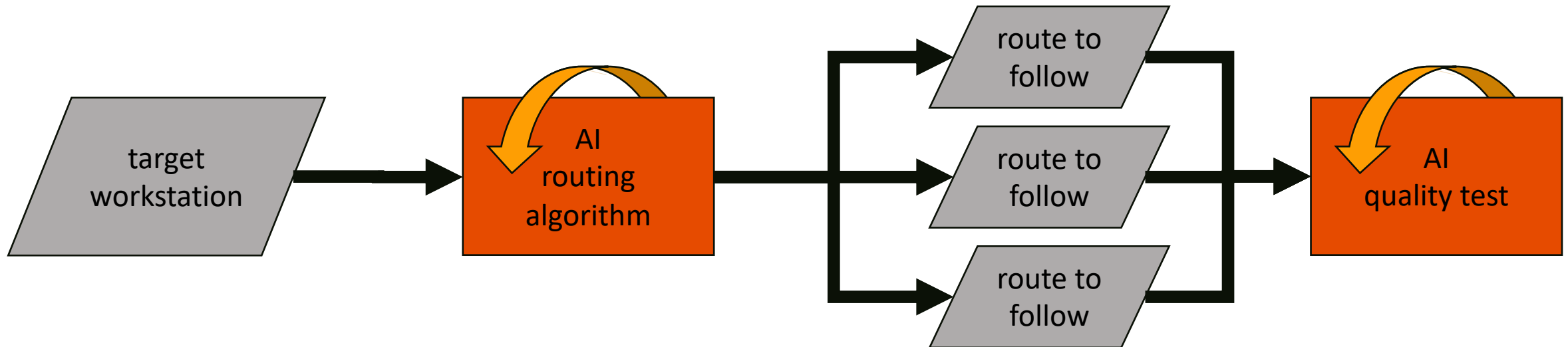
Mission Criticality

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Mission Criticality

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Problems

test complexity

dynamic
behavior

Approaches

intelligent testing

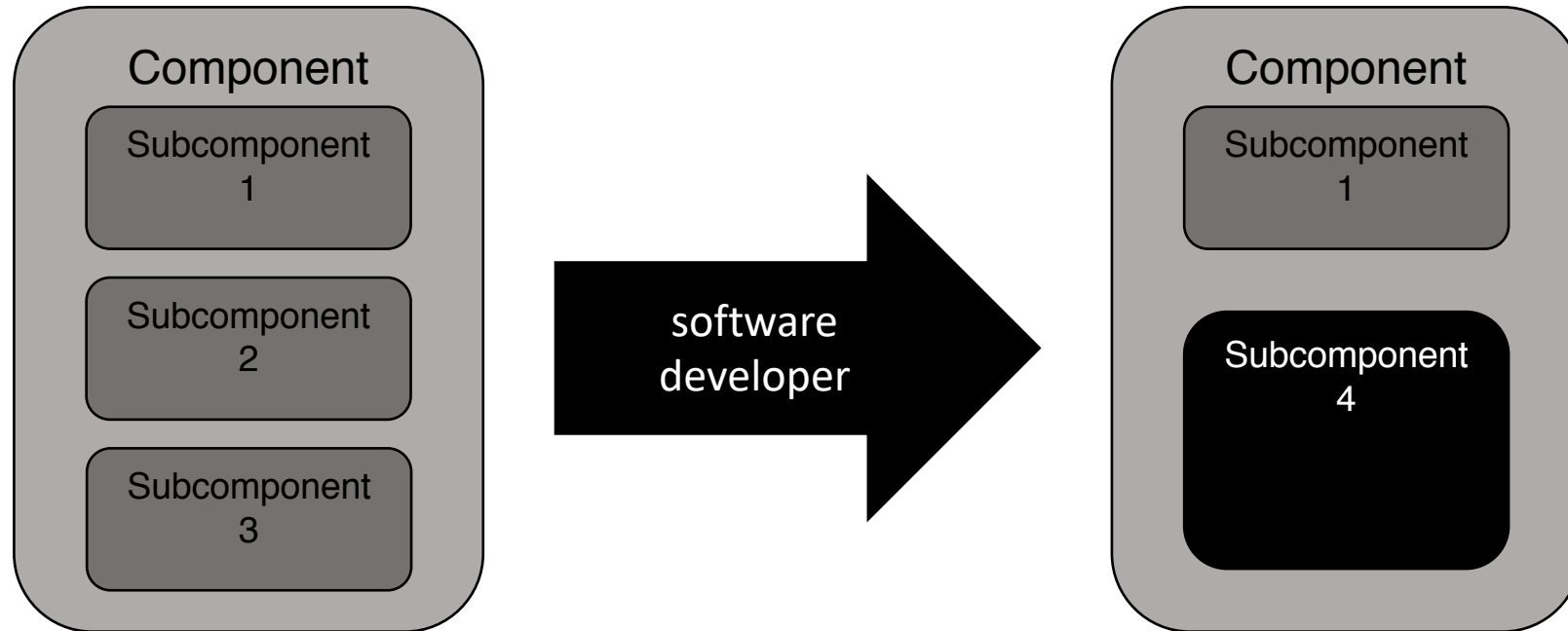
scenario
coevolution

Guideline

Systems are made out of processes, not results.

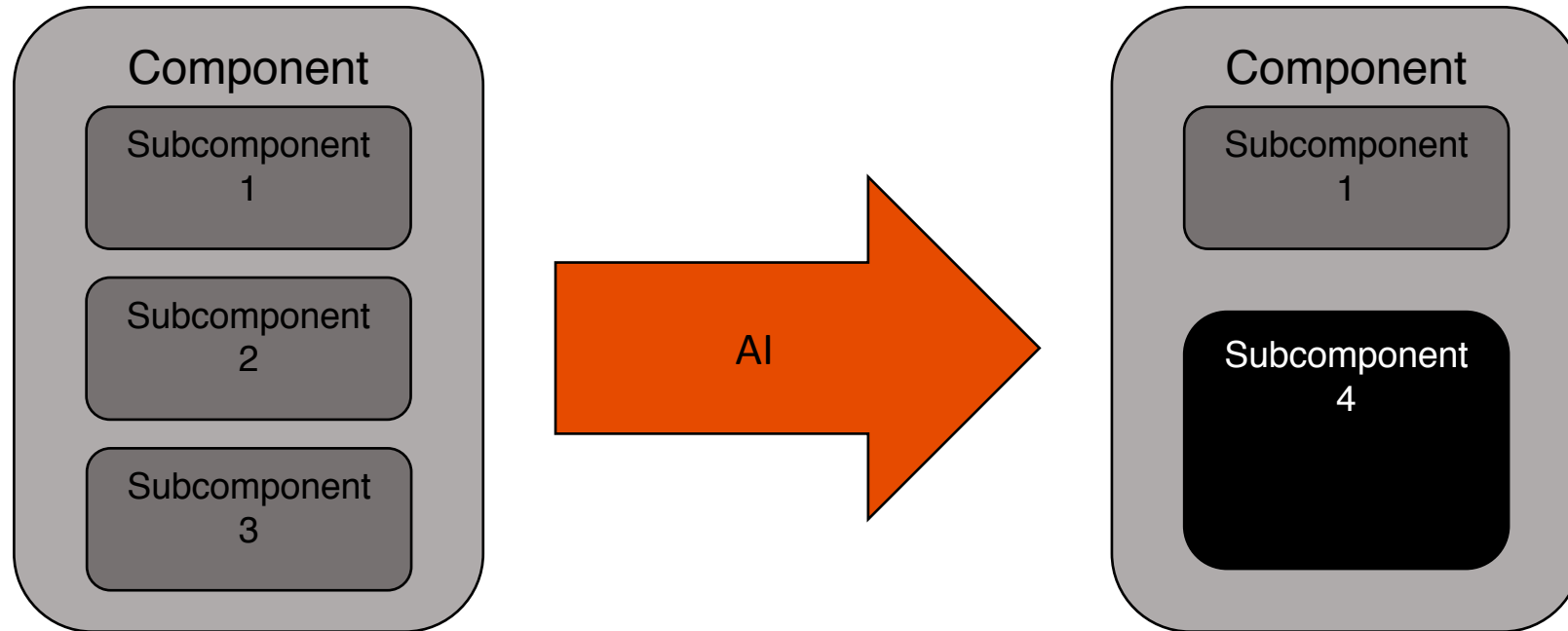
Migration and Change

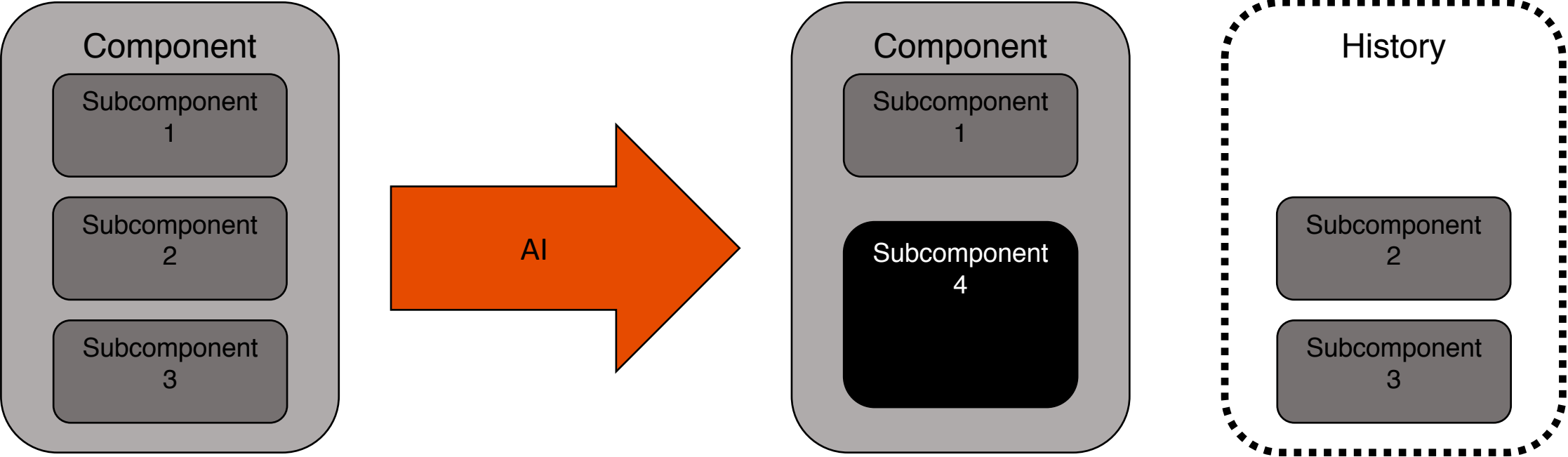
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Migration and Change

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Problems

tracing back
changes

gradual updates

Approaches

transparent AI

transfer learning

Guideline

System development is eternal, never finished.

The Major Challenges

26

- Multi-Agent Coordination

Systems are open, not closed.

- Mission Criticality

Systems are made out of processes, not results.

- Migration and Change

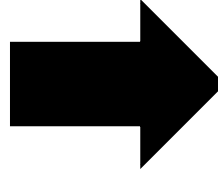
System development is eternal, never finished.

Paradigm Shift

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▸ Multi-Agent Coordination

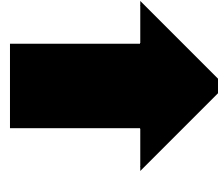
Systems are open, not closed.



AI needs to be communicative.

▸ Mission Criticality

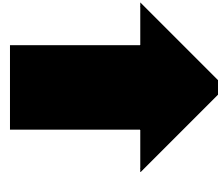
Systems are made out of processes, not results.



Use AI to check AI.

▸ Migration and Change

System development is eternal, never finished.



Distill reasoning from AI decisions.

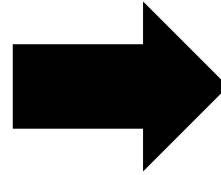
Paradigm Shift

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Software Architecture



The interactions between humans and AI need to change fundamentally.



Software Gardening?



The concepts are there but we need the tools!

Thank You!

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