Module 4.2
Attribute-Based Access Control (ABAC)

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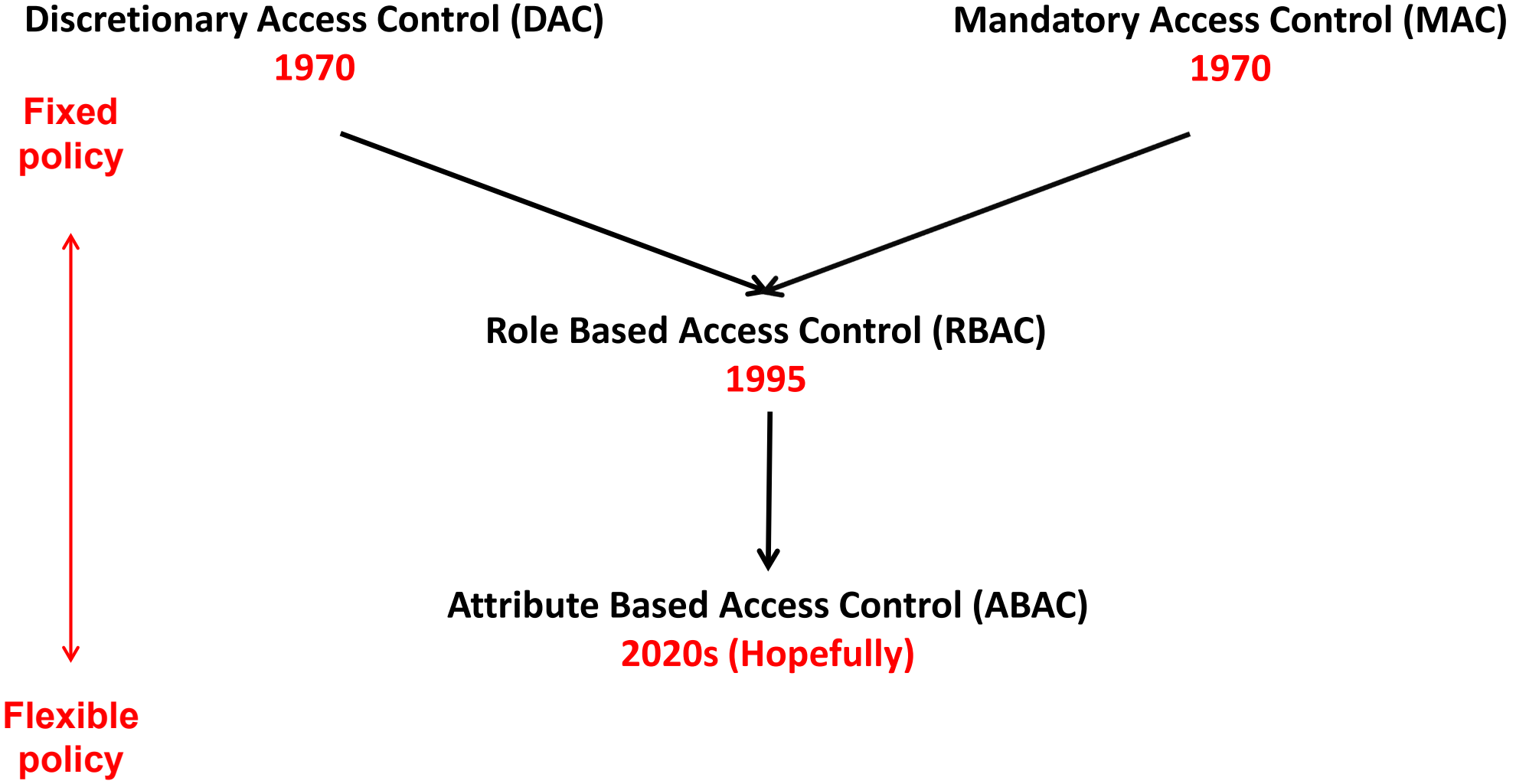
Access Control Models



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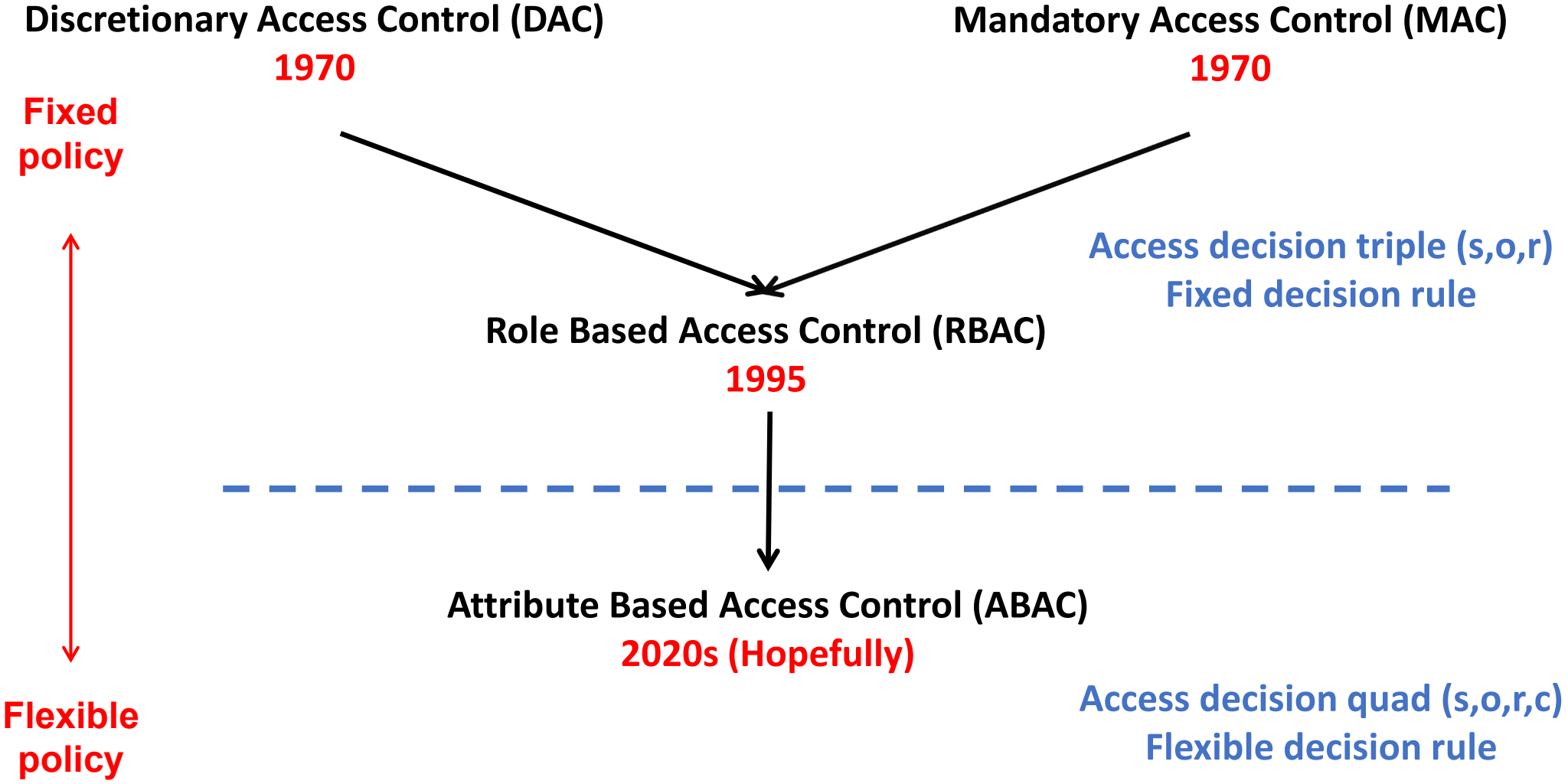

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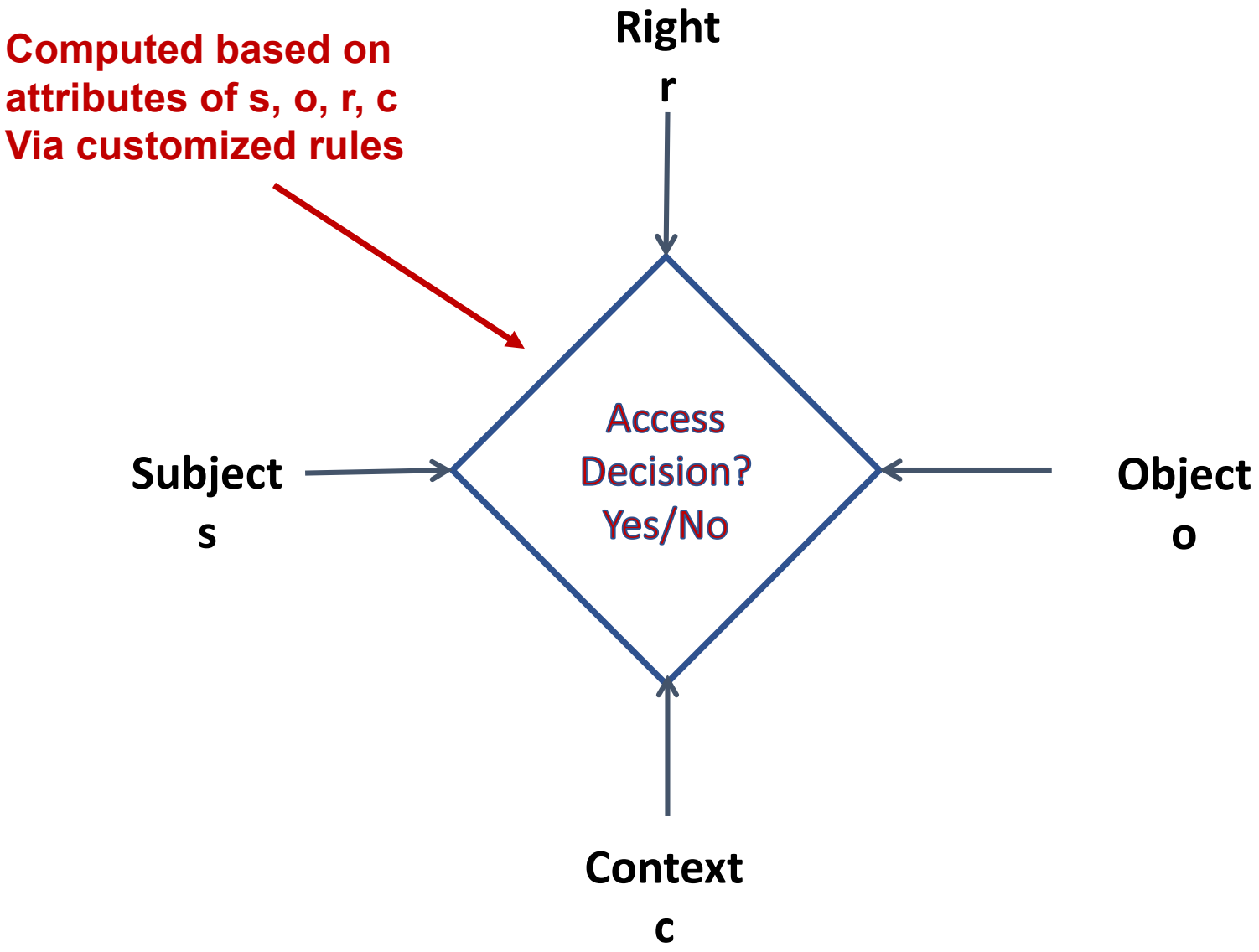
ABAC Decision Quad (s,o,r,c)



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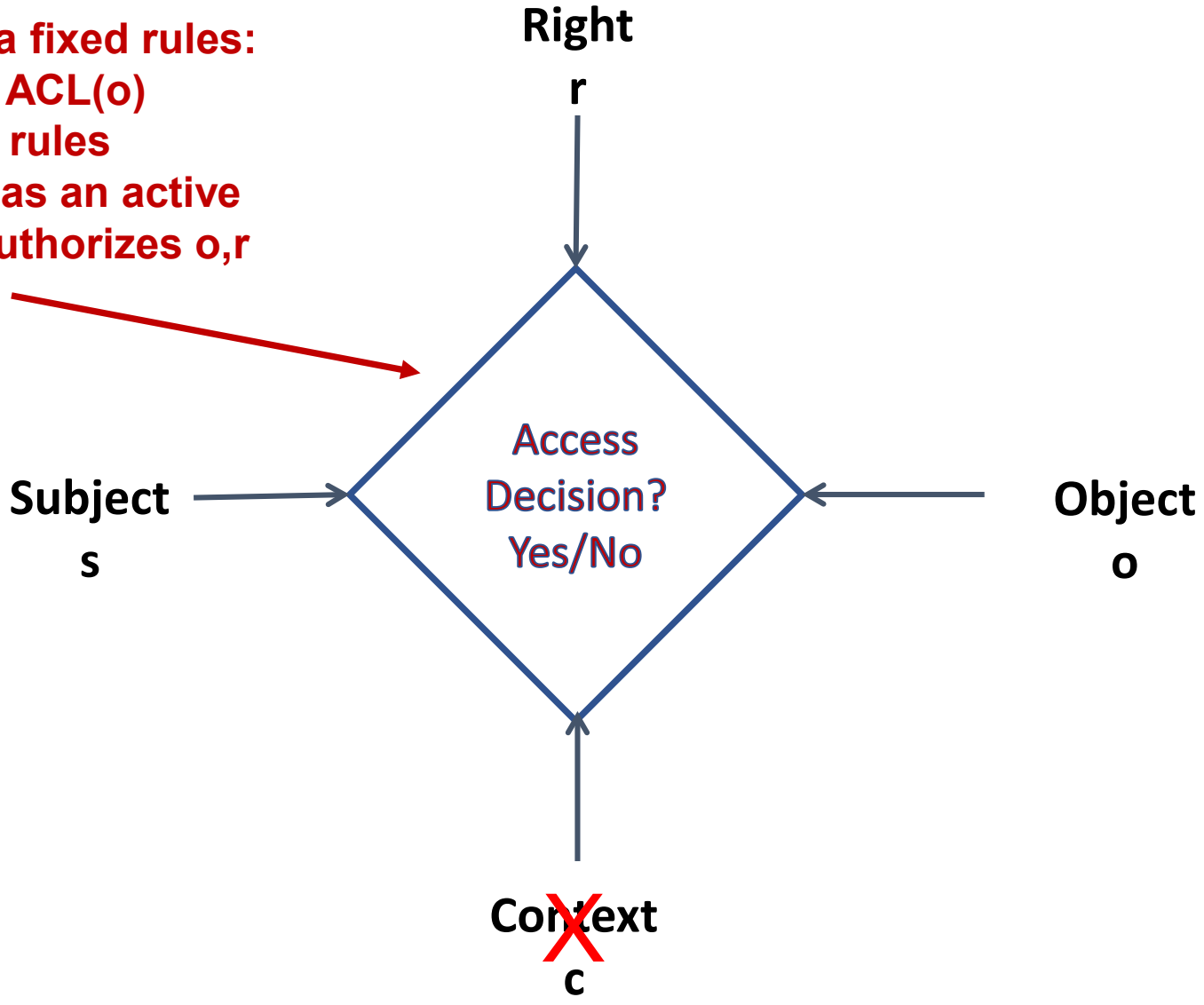
Compare DAC, MAC, RBAC triple (s,o,r)

Computed via fixed rules:

- **DAC: s:r ϵ ACL(o)**
- **MAC: BLP rules**
- **RBAC: s has an active role that authorizes o,r**



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Attribute-Based Access Control (ABAC)

- Core concept:
  - Attributes determine everything
  - No fixed access decision rule
- Core drawback:
  - Flexibility at the cost of complexity
- Sophistication:
  - Chained attributes
  - Group attributes
  - Distributed decision rules
  - Automation
  - Adaptation

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ABAC

- Operational model

  Our ABAC focus

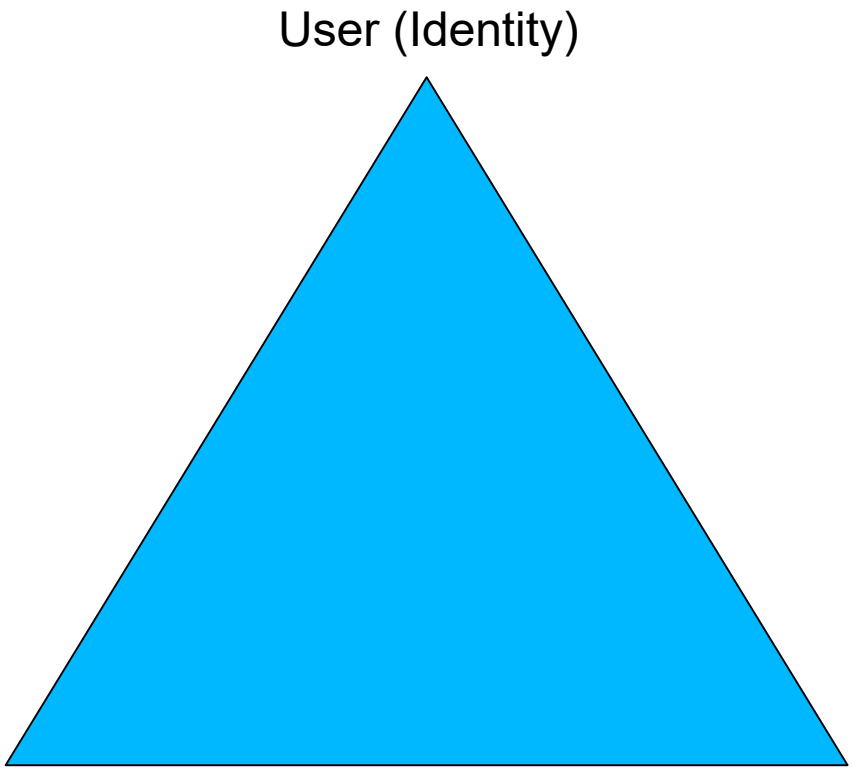
  - specify the decision function for the access decision triple or quad

- Administrative

  DAC, RBAC, ABAC …

  - specify the model's dynamics
  - dynamics change the system state and modify the outcome of some access decision triple or quads

ABAC is not New



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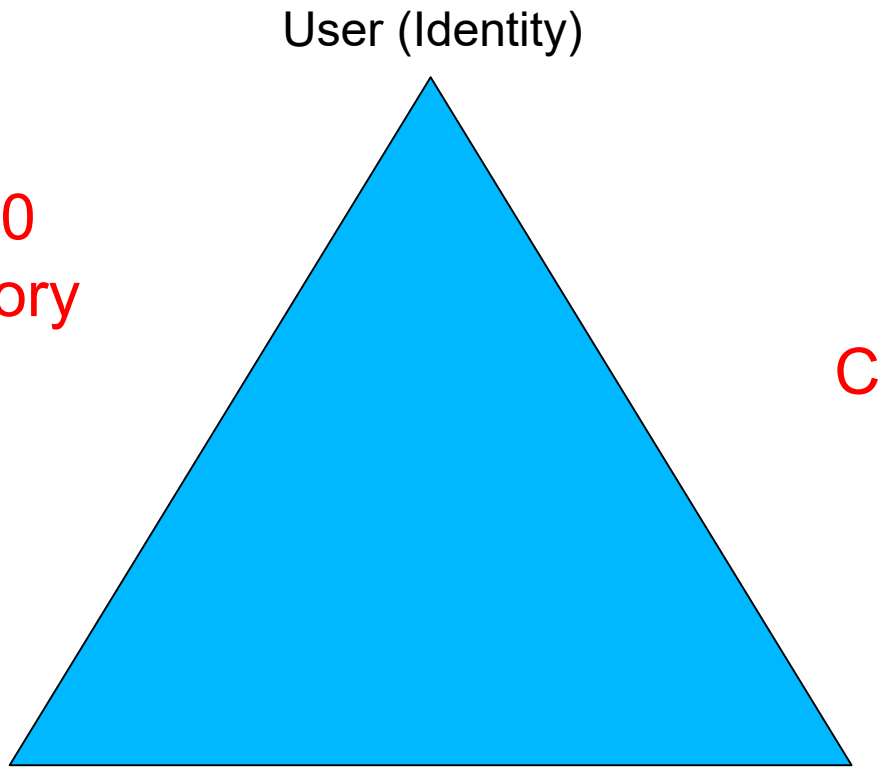
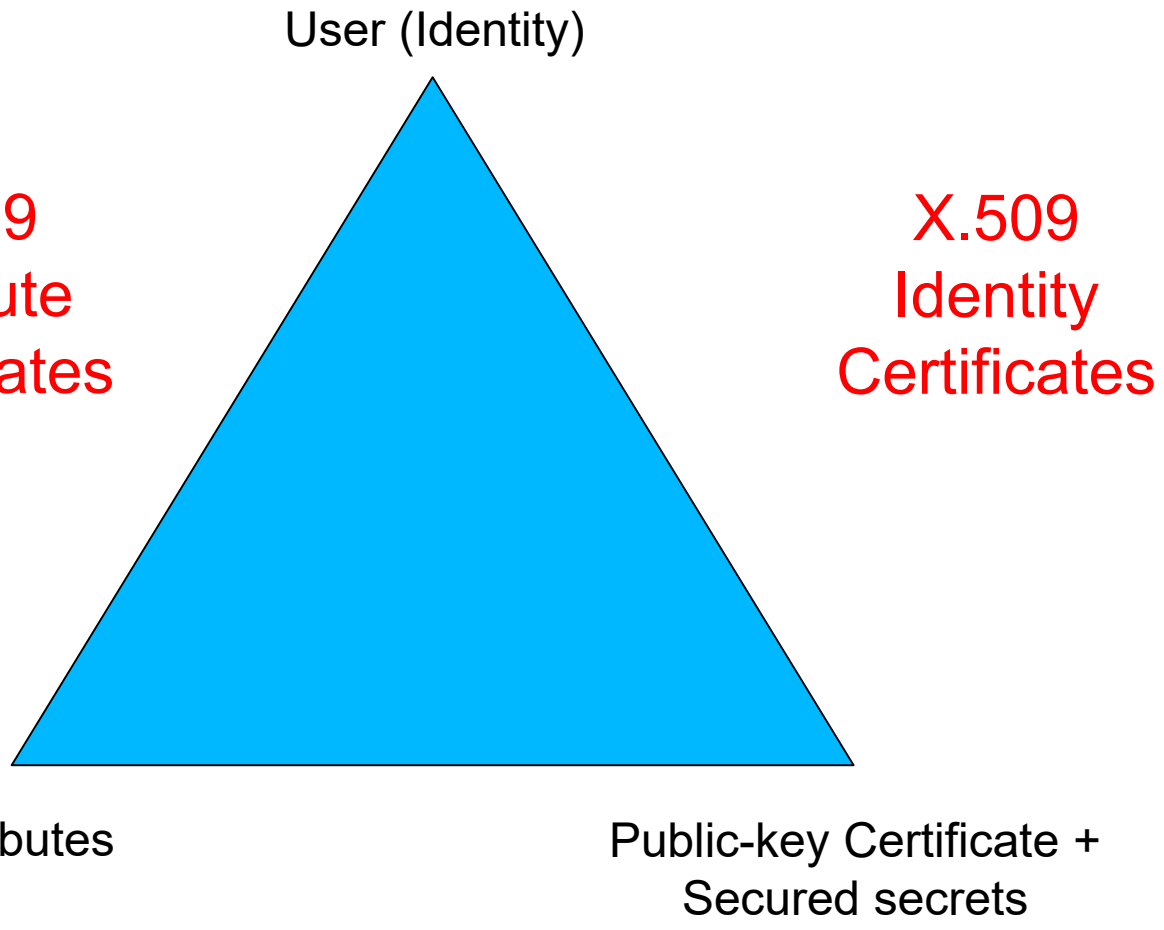


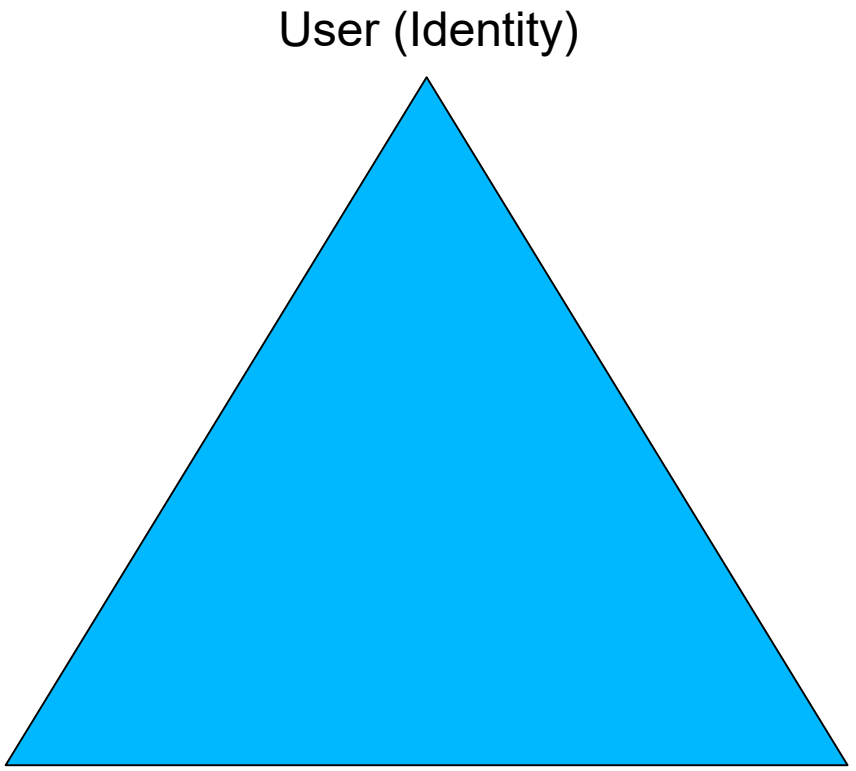
Pre Internet, early 1990s

ABAC is not New



Post Internet, late 1990s

ABAC is not New



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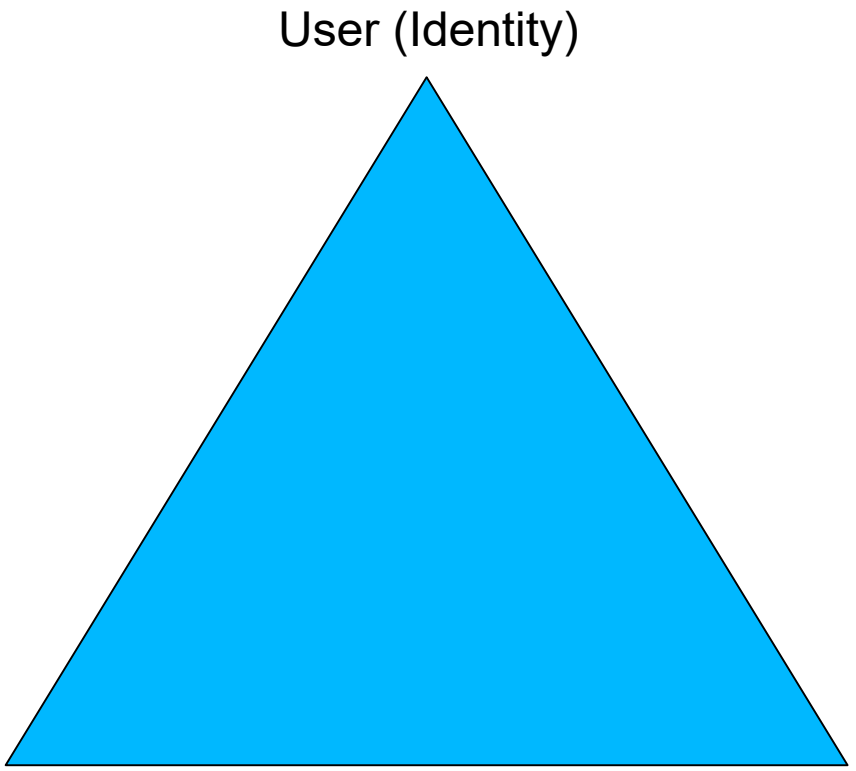
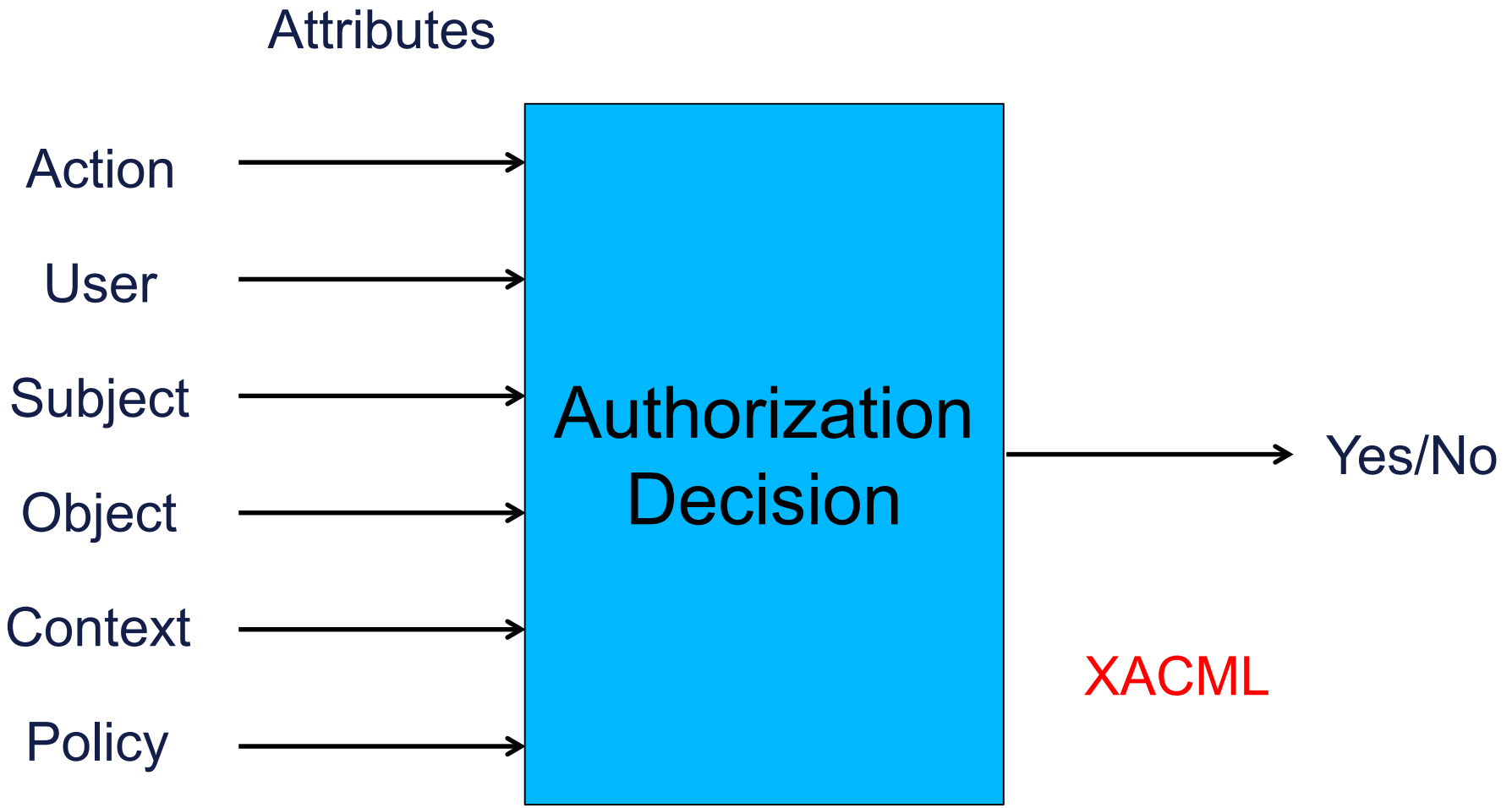


Mature Internet, 2000s

ABAC is not New



Mature Internet, 2000s

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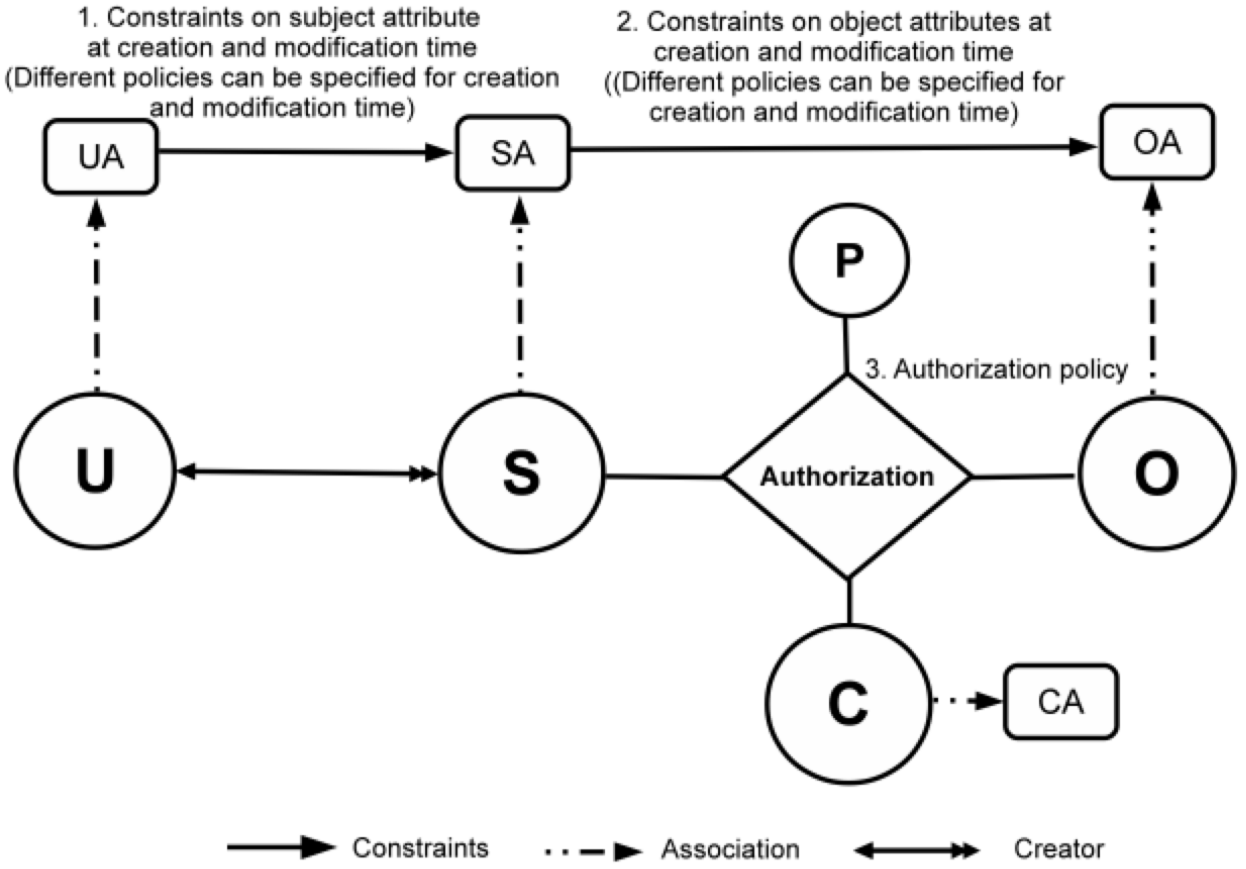
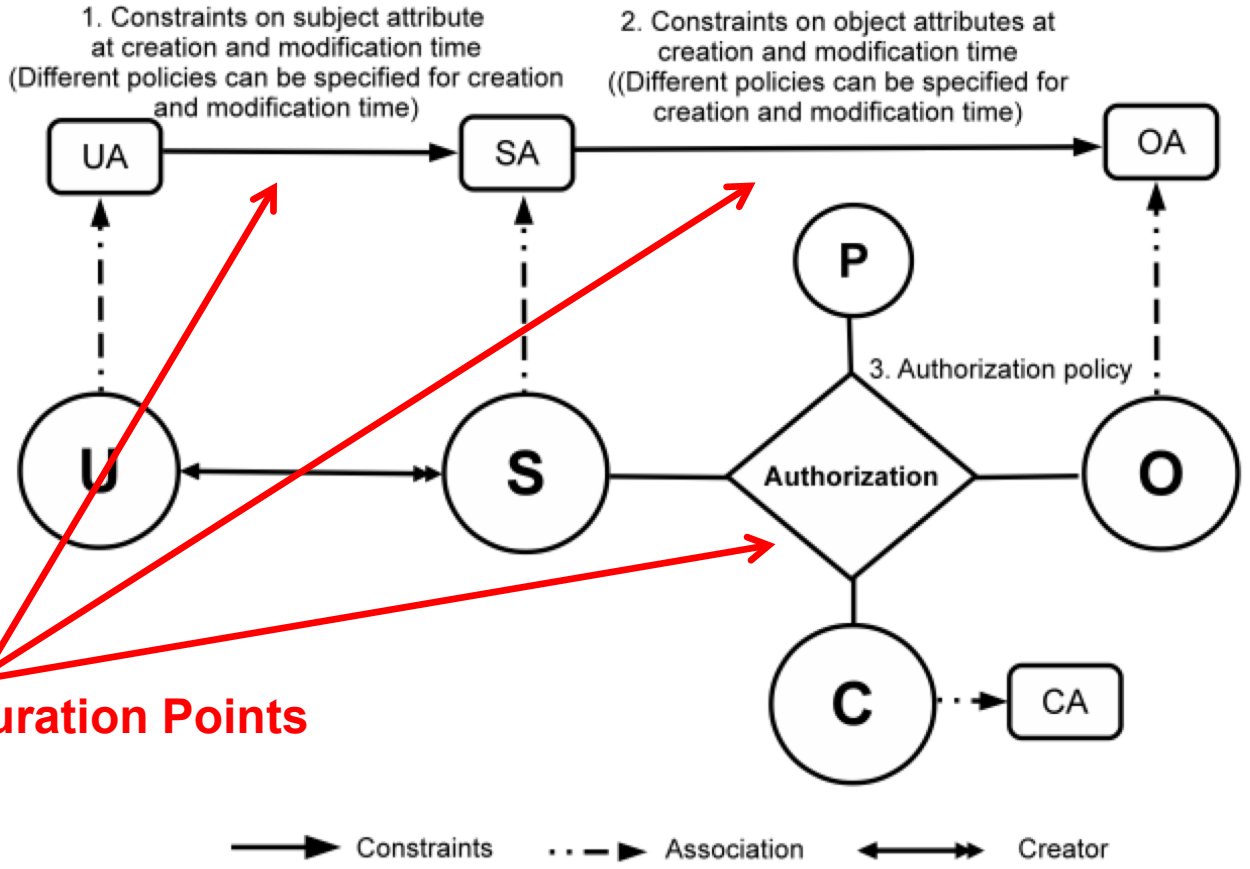
ABAC Policy Configuration



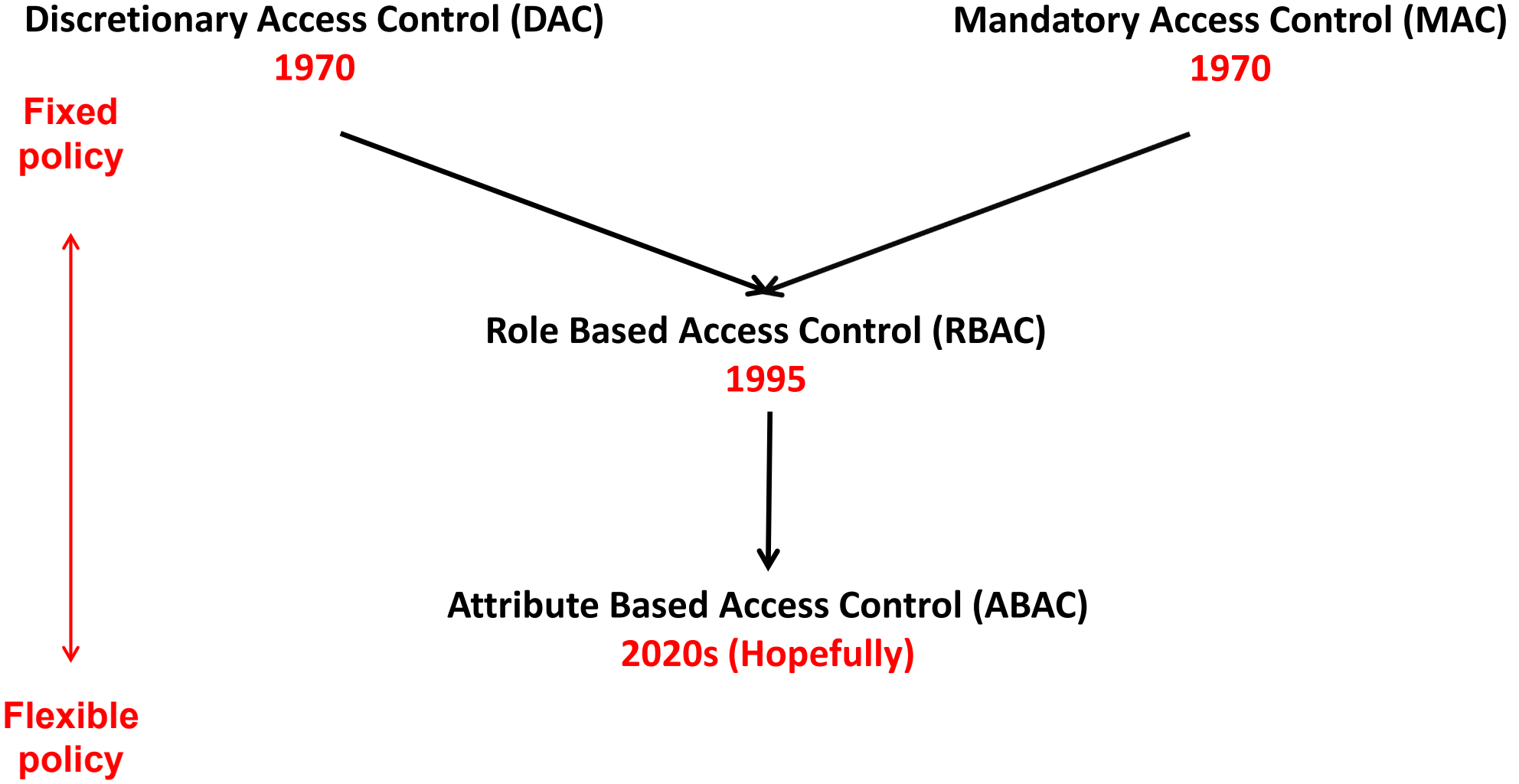
ABAC Policy Configuration



Policy Configuration Points

Can be configured to do many variations of DAC, MAC, RBAC

Access Control Models



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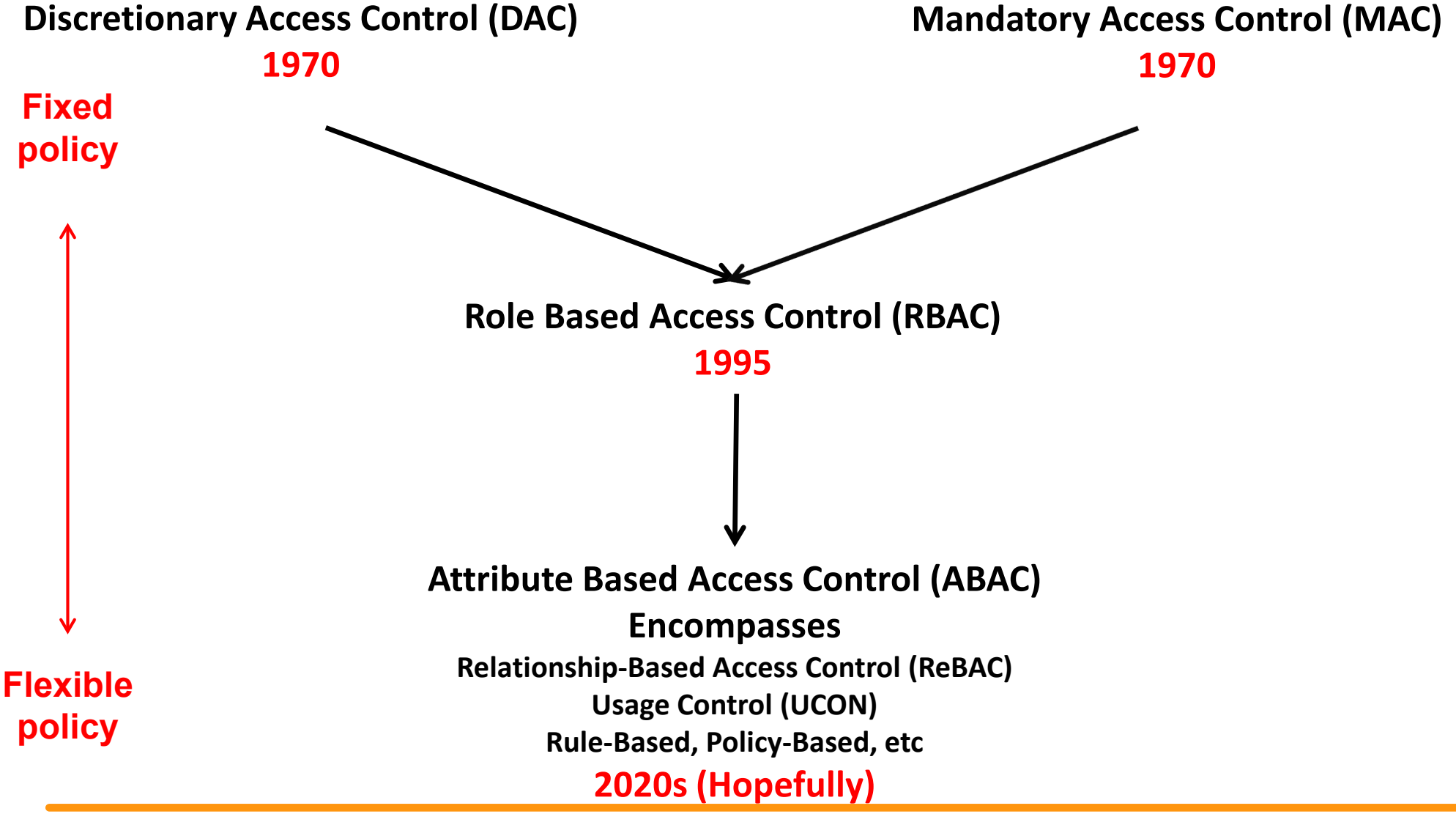

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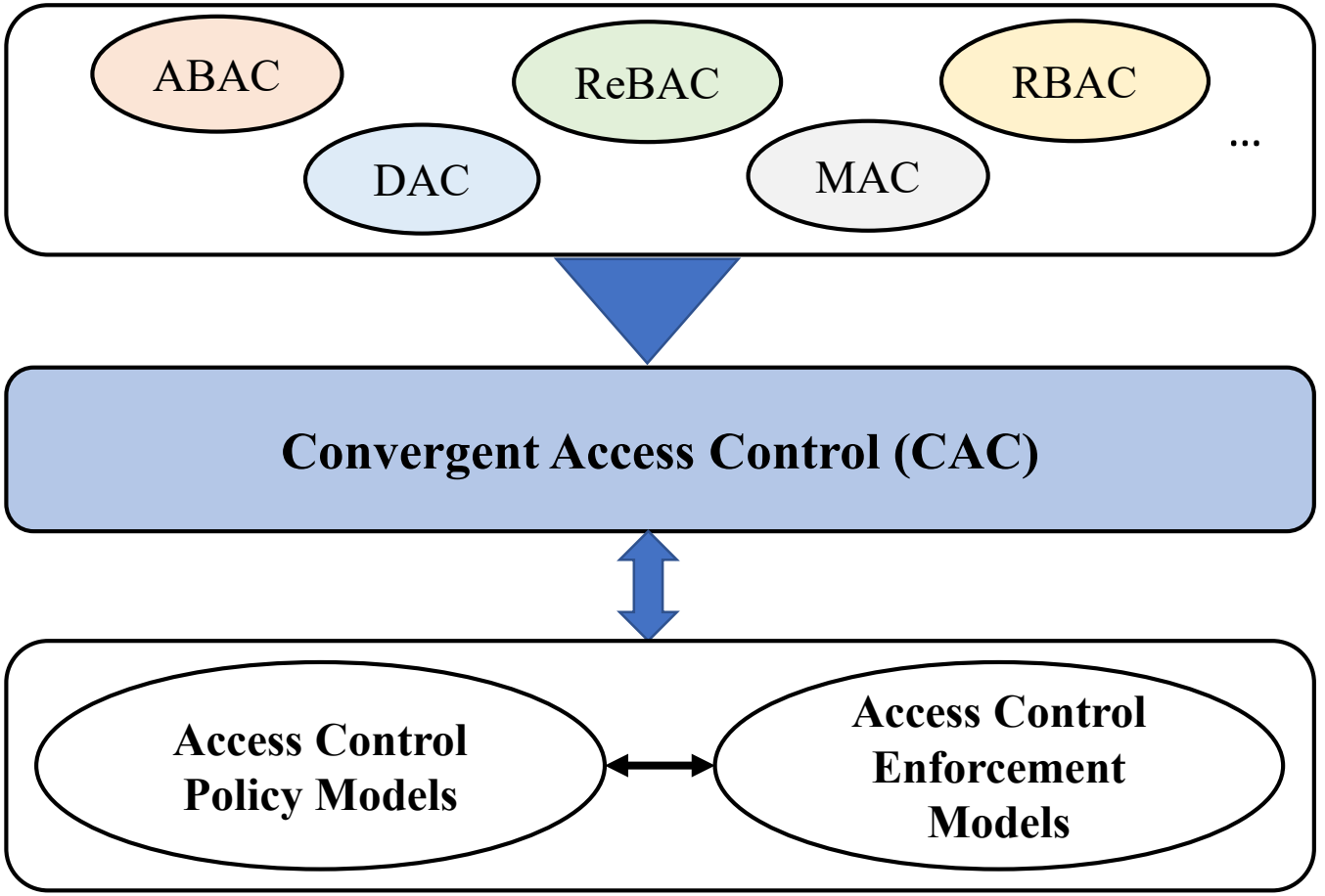
Access Control Convergence



Application Context

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