A Decentralized Model for Information Flow Control Andrew C. Myers and Barbara Liskov, 1997

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Definition

The result of this paper is a model for controlling information flow: Decentralized Label Model (DLM).



It is not:

Decentralized Label Model

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It is not:

► Access Control (inter-application communication)



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It is not:

- Access Control (inter-application communication)
- ► Authentication, Authorization, Confidentiality, etc.



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It is not:

- ► Access Control (inter-application communication)
- ► Authentication, Authorization, Confidentiality, etc.

This means that DLM will not ensure:



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Definition:

It is not:

- ► Access Control (inter-application communication)
- ► Authentication, Authorization, Confidentiality, etc.

This means that DLM will not ensure:

secure communication between applications



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Definition

It is not:

- ► Access Control (inter-application communication)
- ► Authentication, Authorization, Confidentiality, etc.

This means that DLM will not ensure:

- secure communication between applications
- ► limited application access to data once released



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► Information Flow Control



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It is:

- ► Information Flow Control
 - Decentralized



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lt is:

- ► Information Flow Control
- Decentralized

This means that DLM will help ensuring:



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lt is:

- ► Information Flow Control
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This means that DLM will help ensuring:

not releasing sensitive data



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3 It is:

- ► Information Flow Control
- Decentralized

This means that DLM will help ensuring:

- not releasing sensitive data
- ► not implicitly releasing sensitive data



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Definition:

It is:

- ► Information Flow Control
- Decentralized

This means that DLM will help ensuring:

- not releasing sensitive data
- ▶ not implicitly releasing sensitive data
- not giving away hints of inner workings



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DLM differs from previous solutions as it is:



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DLM differs from previous solutions as it is:

decentralized



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Definition:

DLM differs from previous solutions as it is:

- decentralized
- ► less restrictive of allowed computations



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Definitions

Principals represent users and other authoritative entities.



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Definition:

Principals represent users and other authoritative entities. Values are entities computations can manipulate.



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Principals represent users and other authoritative entities.

Values are entities computations can manipulate.

Slots are value-holders (e.g. variables, objects, and other storage locations).



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Principals represent users and other authoritative entities.

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Input channels are read-only sources that allow information to enter the system.



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Definition

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Input channels are read-only sources that allow information to enter the system.

Output channels are information sinks that transmit information outside the system.



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Principals represent users and other authoritative entities.

Values are entities computations can manipulate.

Slots are value-holders (e.g. variables, objects, and other storage locations).

Input channels are read-only sources that allow information to enter the system.

Output channels are information sinks that transmit information outside the system.

Labels are attached to values, slots or channels (more to follow).



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Questions?

