Linux Sicherheit

Kerngestützte Sicherheit mit RSBAC

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http://lugdd.schlittermann.de/

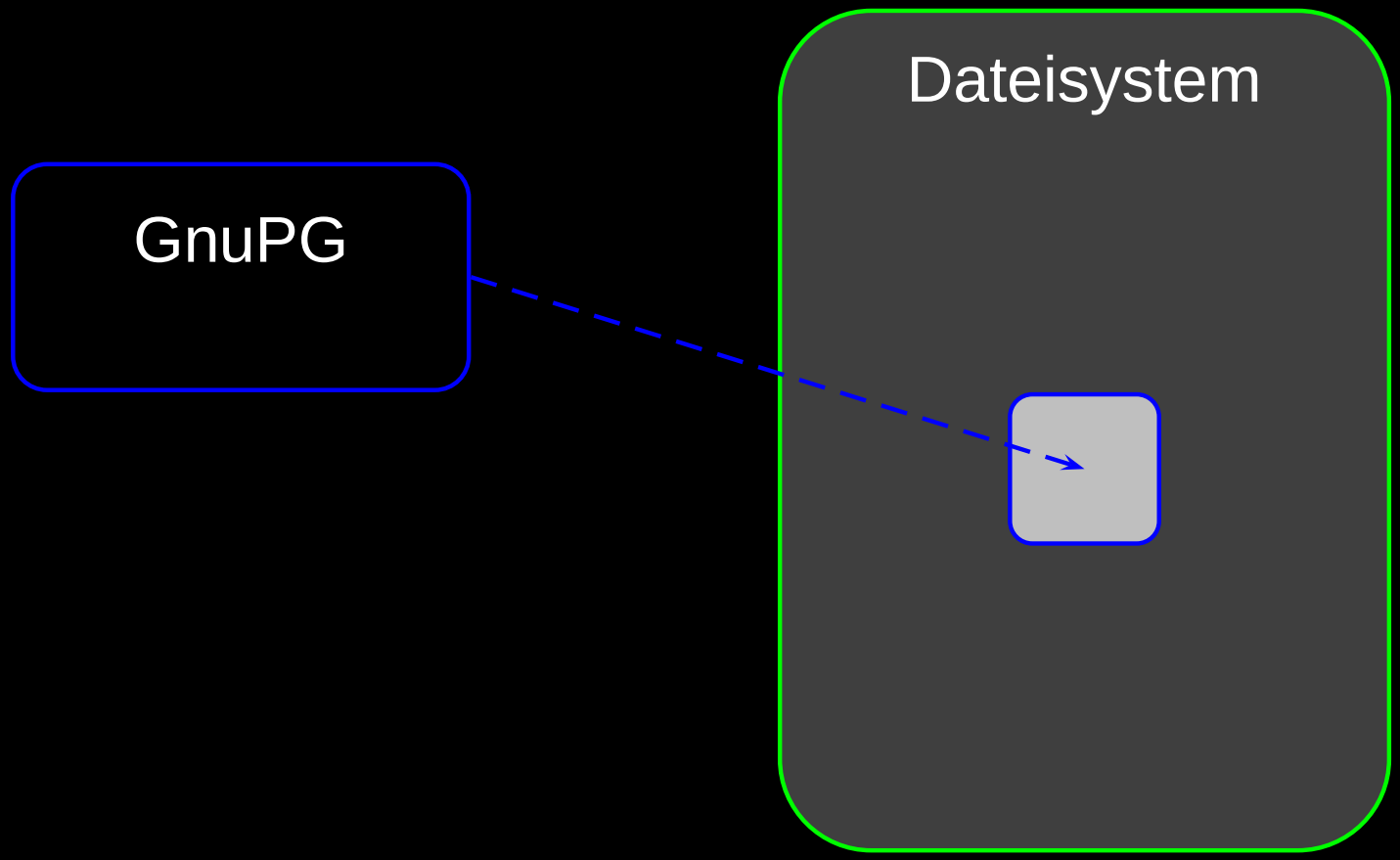
Was soll besprochen werden?

- Einführung von *normalen* Sicherheits-mechanismen in Endsysteme.

Was soll *nicht* besprochen werden?

- Netzsicherheit, insbesondere
- Firewalls und deren Konfiguration,
- Konzelationsverfahren jeglicher Art,
- Ausfallsicherheit.

Motivation



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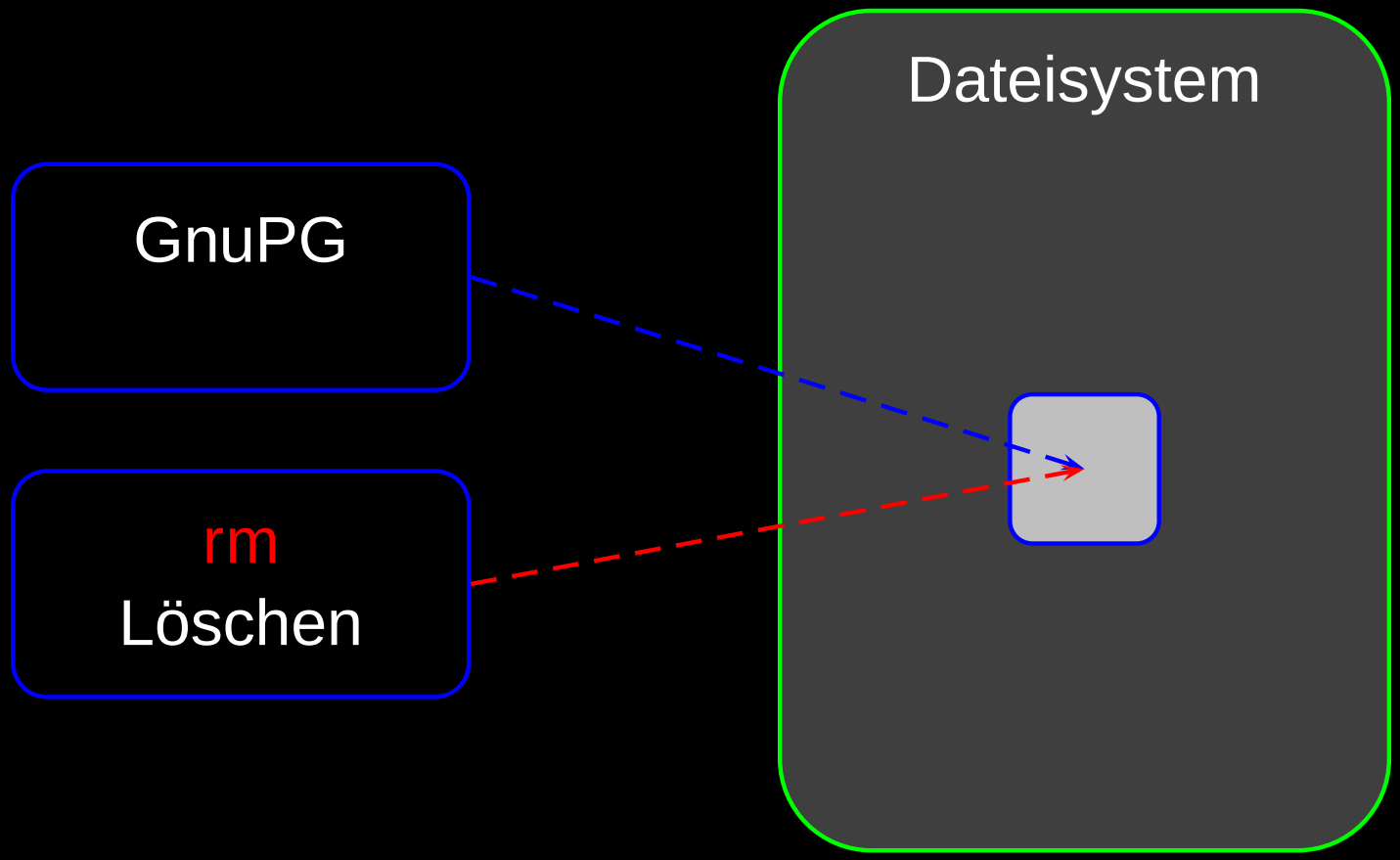

Charakterisierung eines Angriffs

- Der Angreifer erringt Kontrolle über ein laufendes Programm.
- Der Programm-Code wird durch einen Angreifer unbemerkt modifiziert.
- Ein Programm läuft amog.

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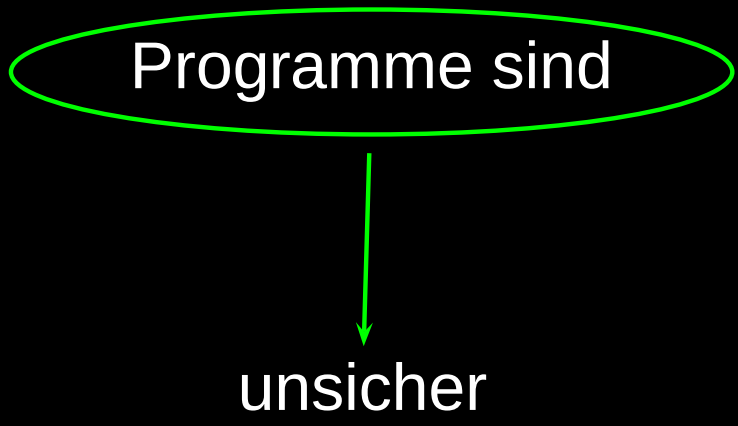
Schuld sind meistens Programme!

Bekannte Ursachen



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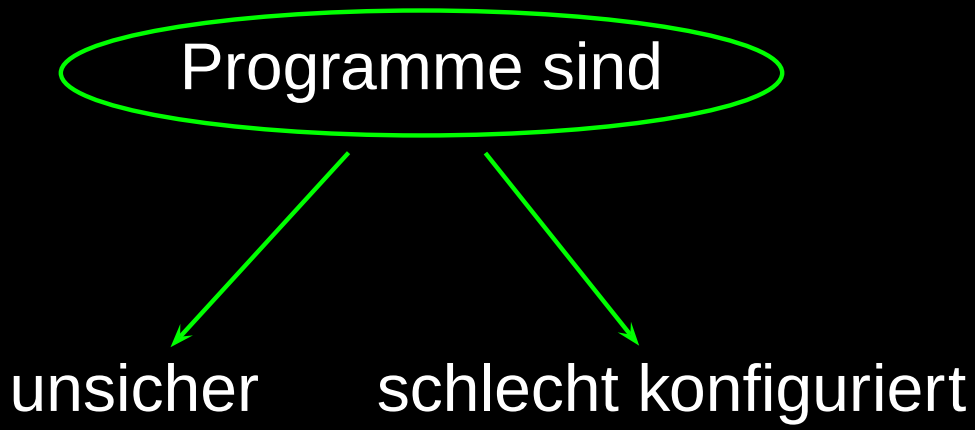

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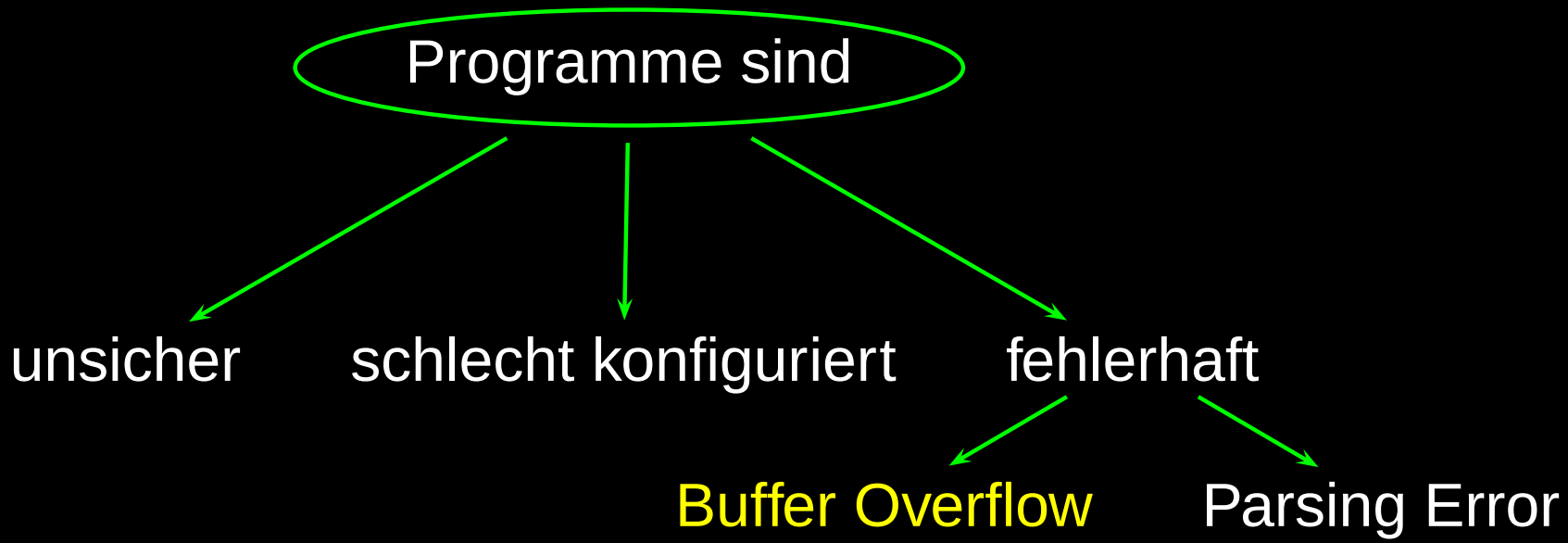
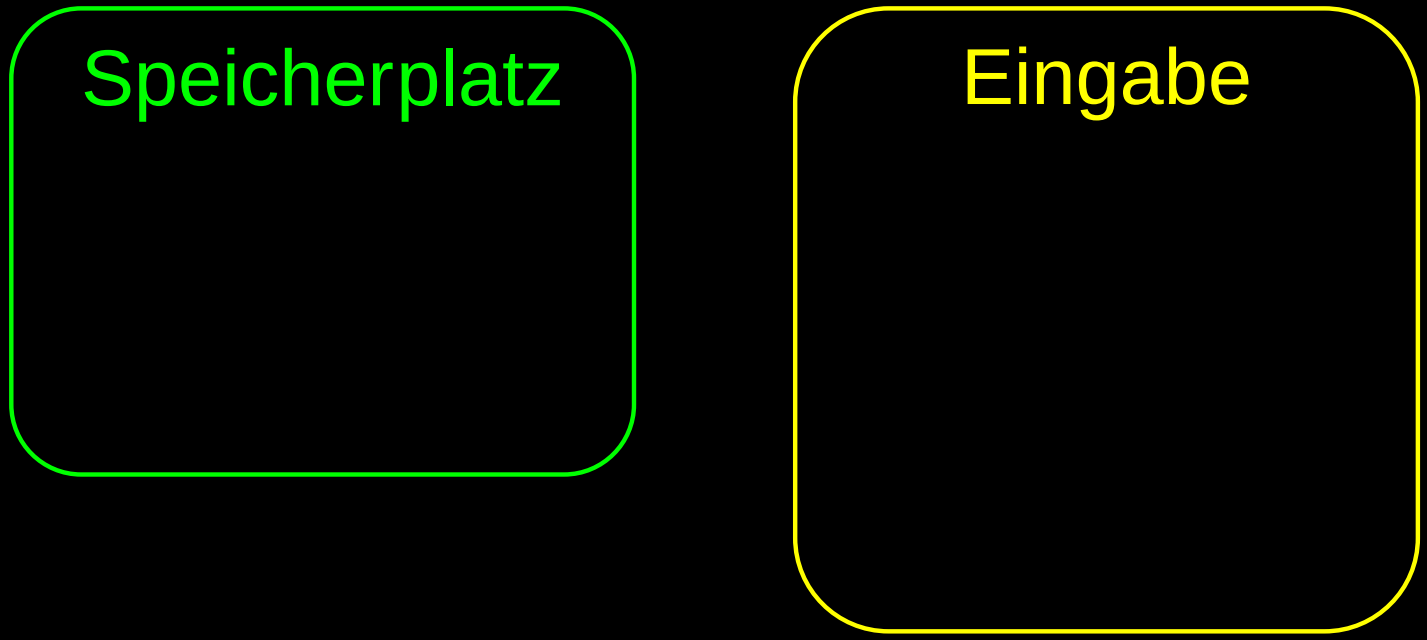


Buffer Overflow



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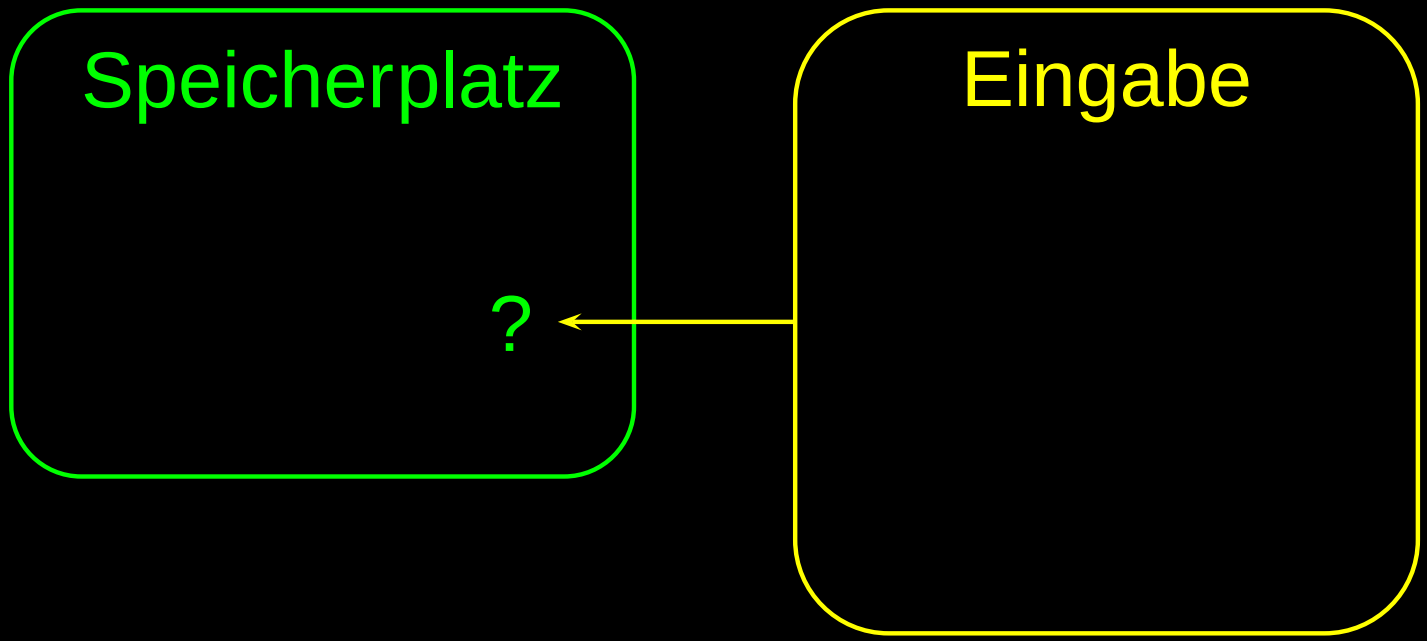

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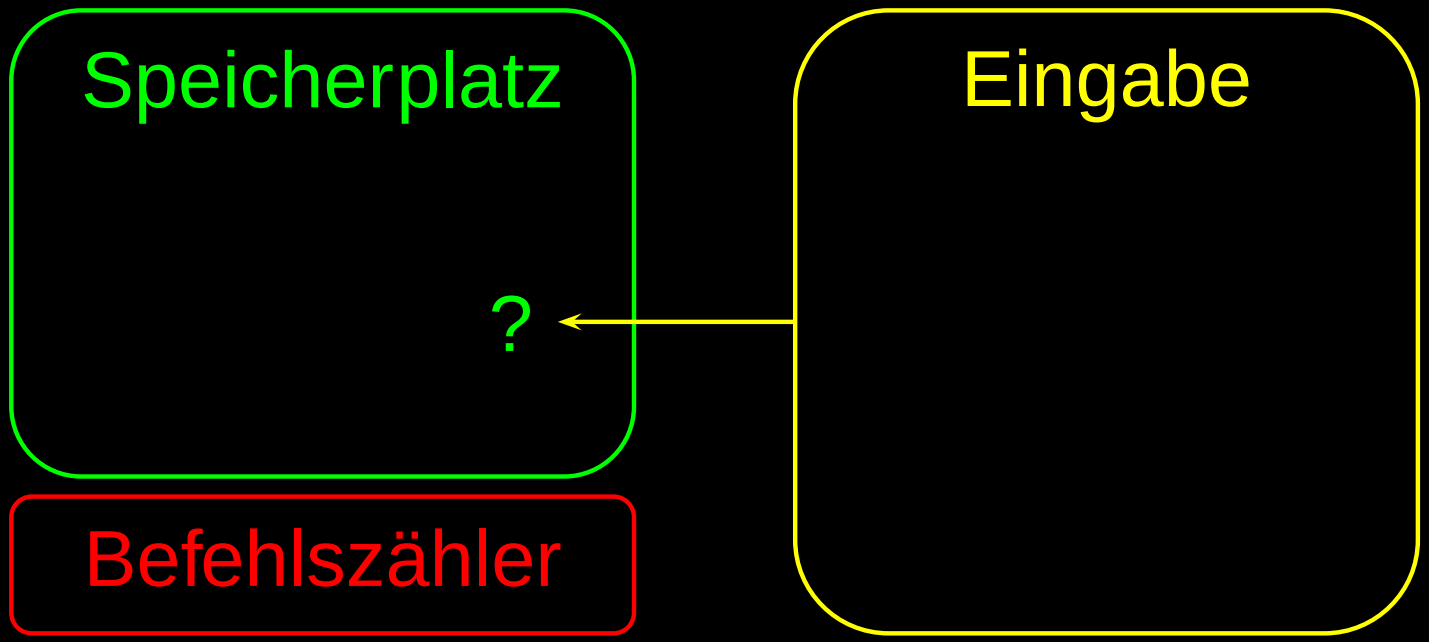
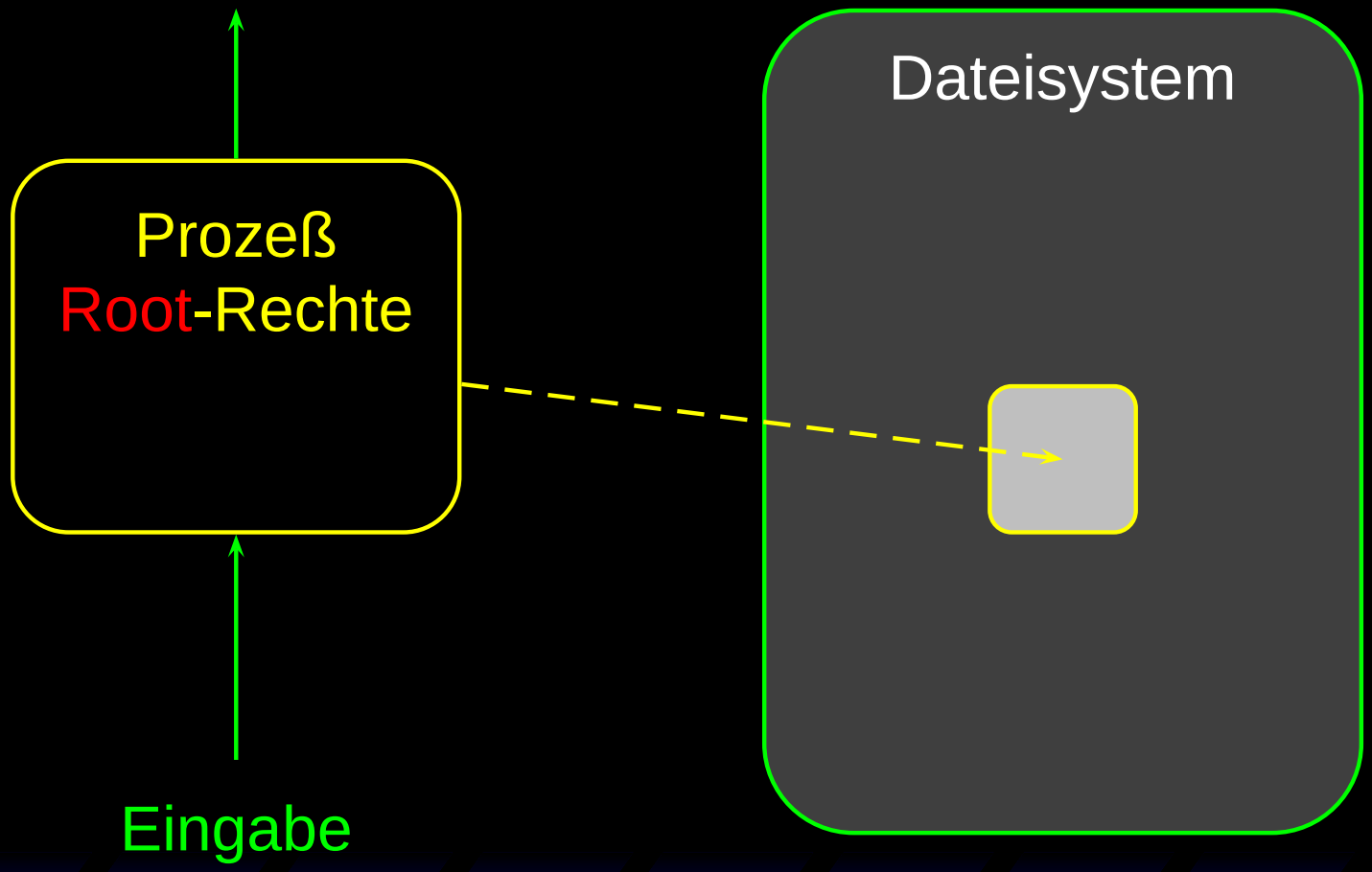


Parsing Error



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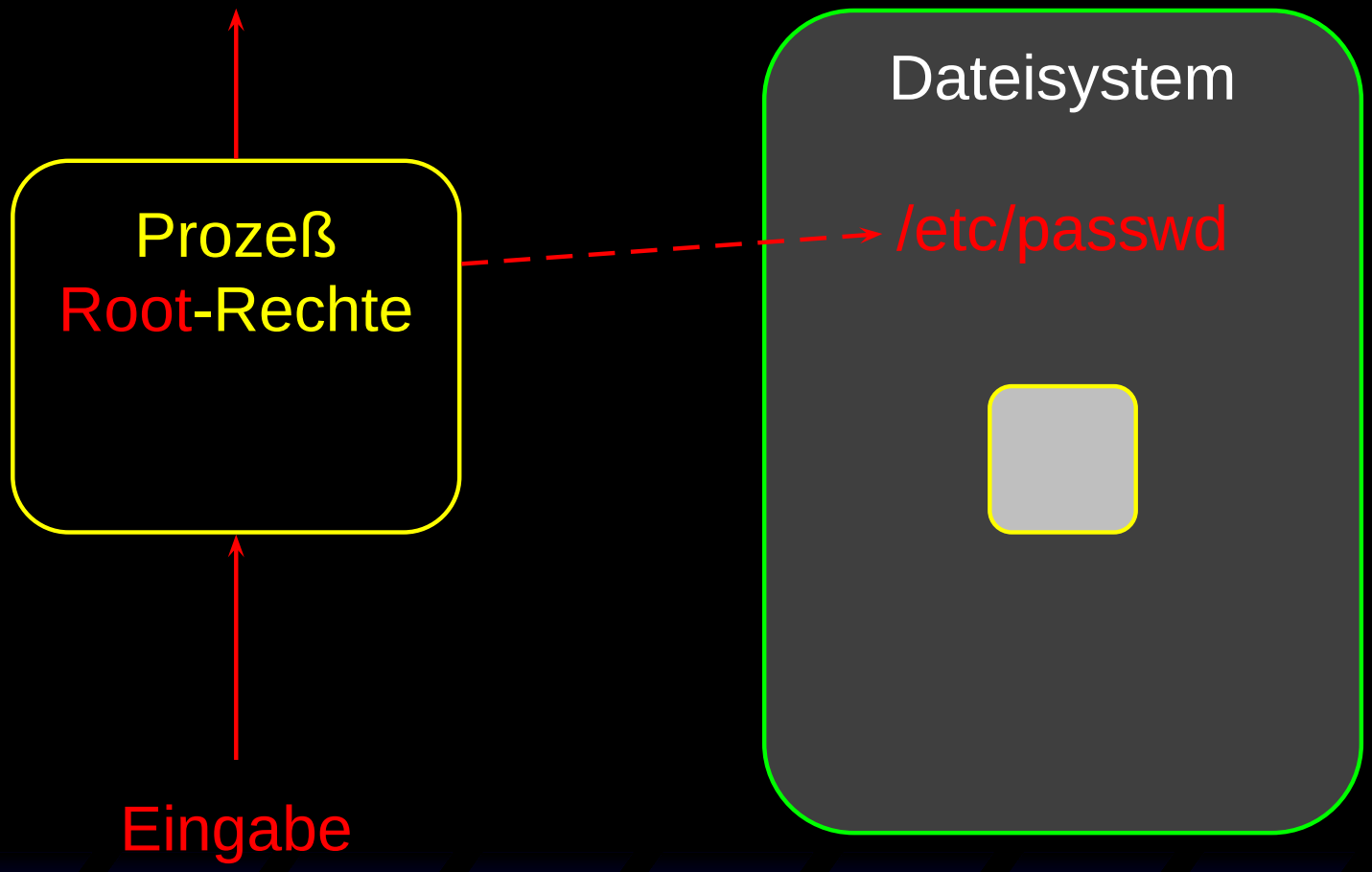


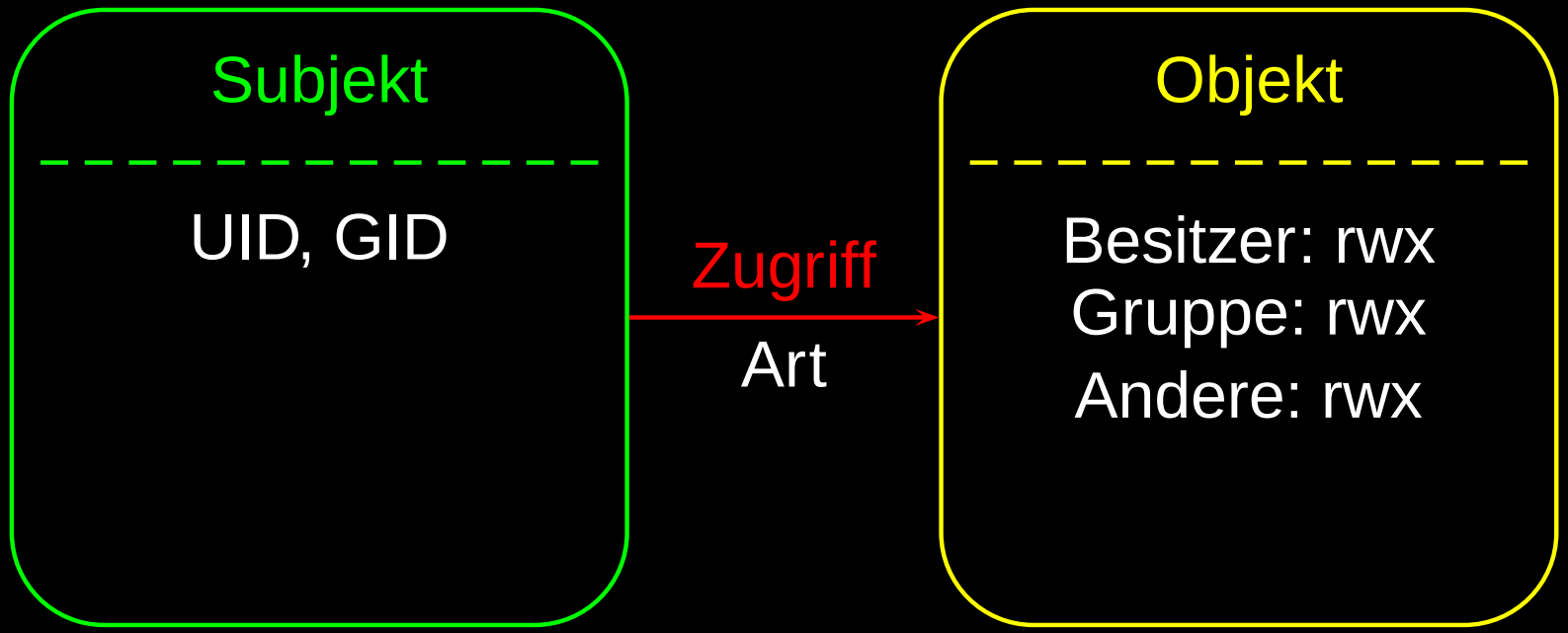
Was ist als kritisch zu betrachten?

Der Standard-Kern bietet. . .

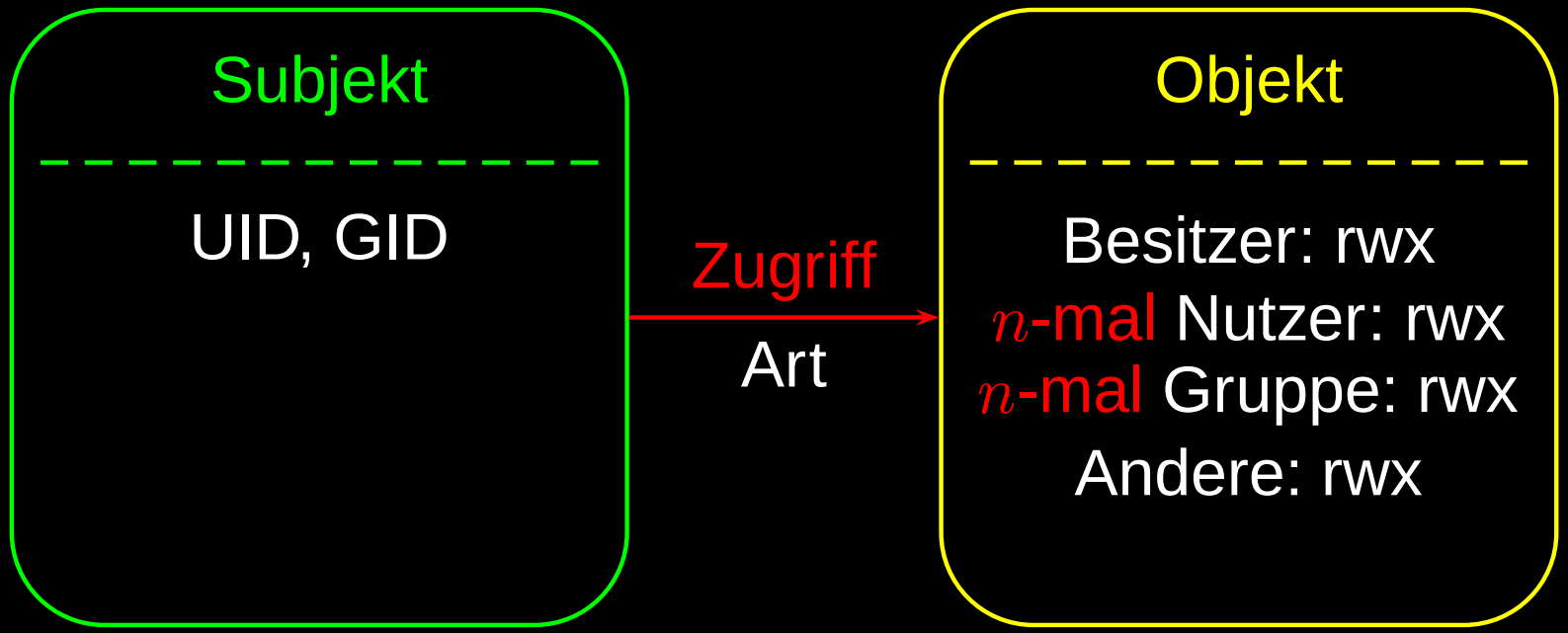
- zu geringe Ganularität,
- Discretionary Access Control (DAC),
- einen allmächtigen Administrator-Account mit festgelegter UID (root, 0).

Kontrollierter Zugang

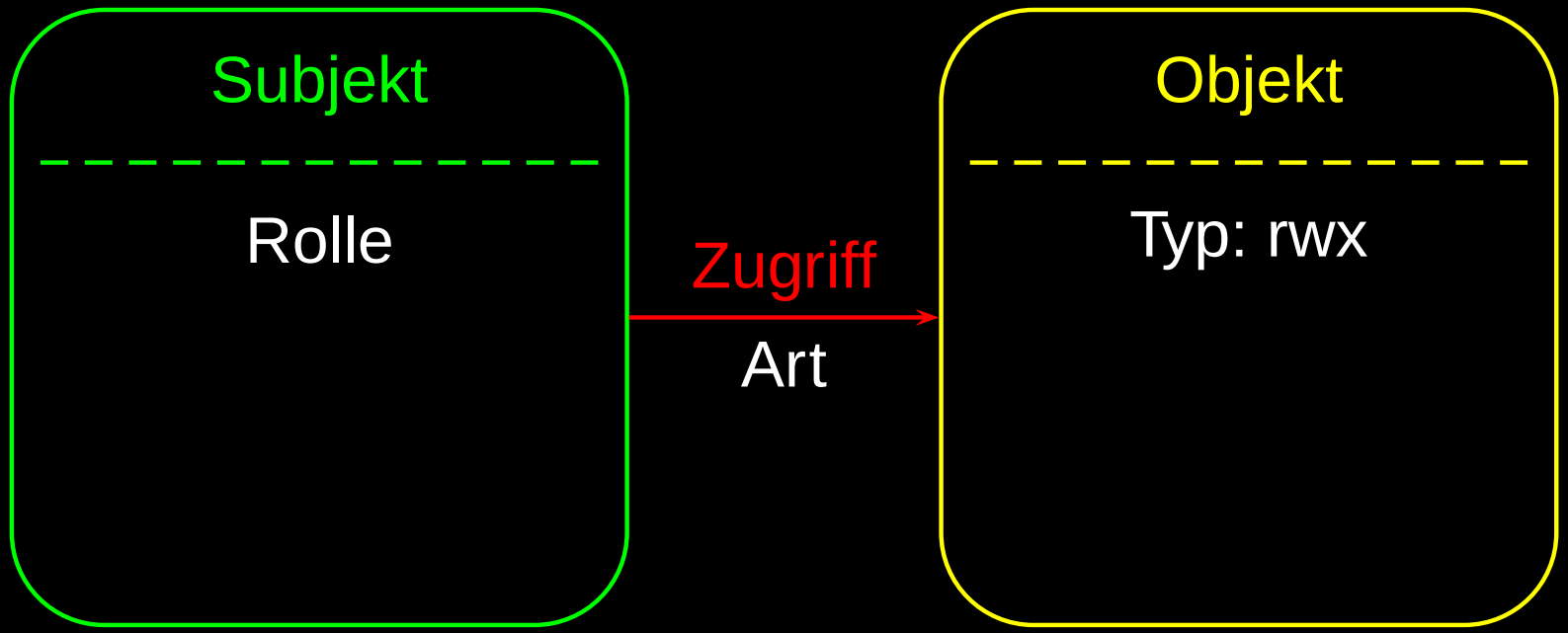
Standard-Kern



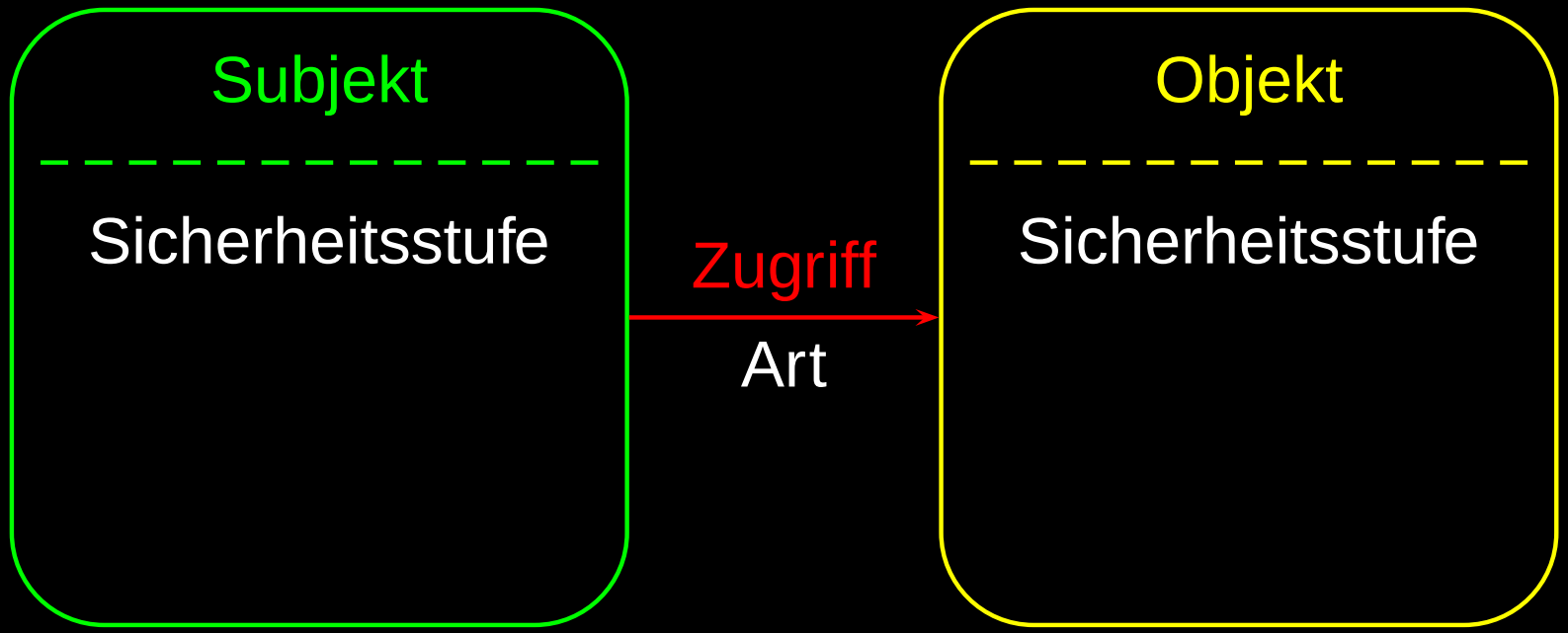
Access Control List



Role based Access Control



Bell-La Padula
Mandatory Access Control



Konkrete Implementationen

Linux Security Modules (LSM)

- Rahmenwerk für ein Modul
- Untermodule vom übergeordneten abhängig
- Performanz statt Sicherheit
- pot. Schnittstelle für neue Viren und Würmer
- integraler Bestandteil der 2.6er Kern-Reihe

Linux Intrusion Detection System (LIDS)

- unterstützt LSM
- „Access Control Lists“ für Dateisystem
- Prozesse als Handlungsträger (Subjekt)
- entmachtet den Administrator
- Aufgabendelegation nicht oder schwer möglich

GrSecurity

- Bündel aus Sicherheits-Patches (PaX, Openwall,. . .)
- Rollen-basierte Zugangskontrolle (RBAC)
- Aufgabendelegation mit Rollen möglich
- „Access Control Lists“ für Dateisystem
- entmachtet den Administrator
- keine Unterstützung von LSM

Rule Set Based Access Control

- Rahmenwerk wie LSM
- Sicherheitsmodelle: ACL, RC, AUTH, MAC
- Einführung neuer Subjekttypen: Sokets. . .
- Aufgabendelegation mit div. Sicherheitsmodellen möglich
- entmachtet den Administrator
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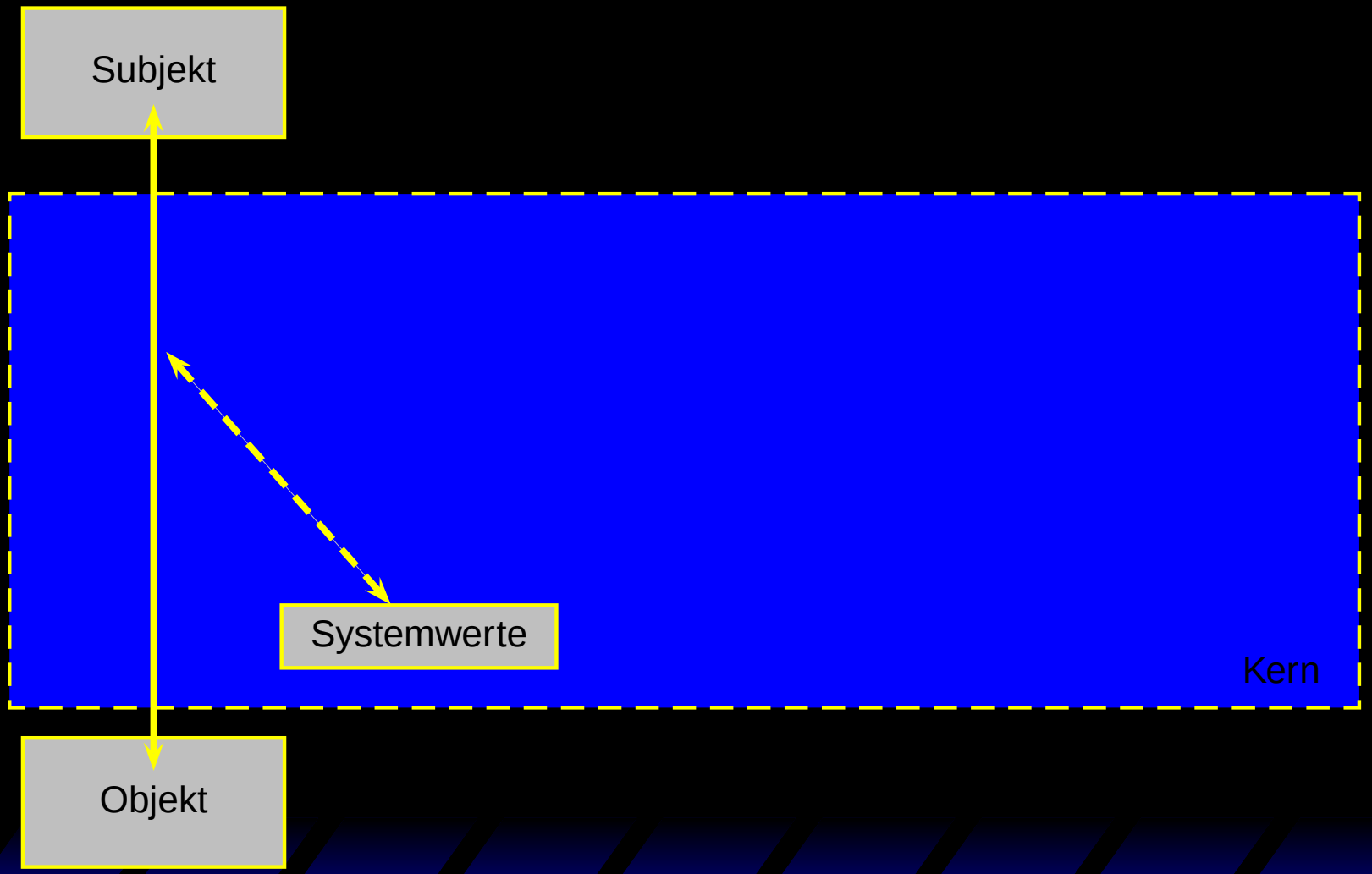
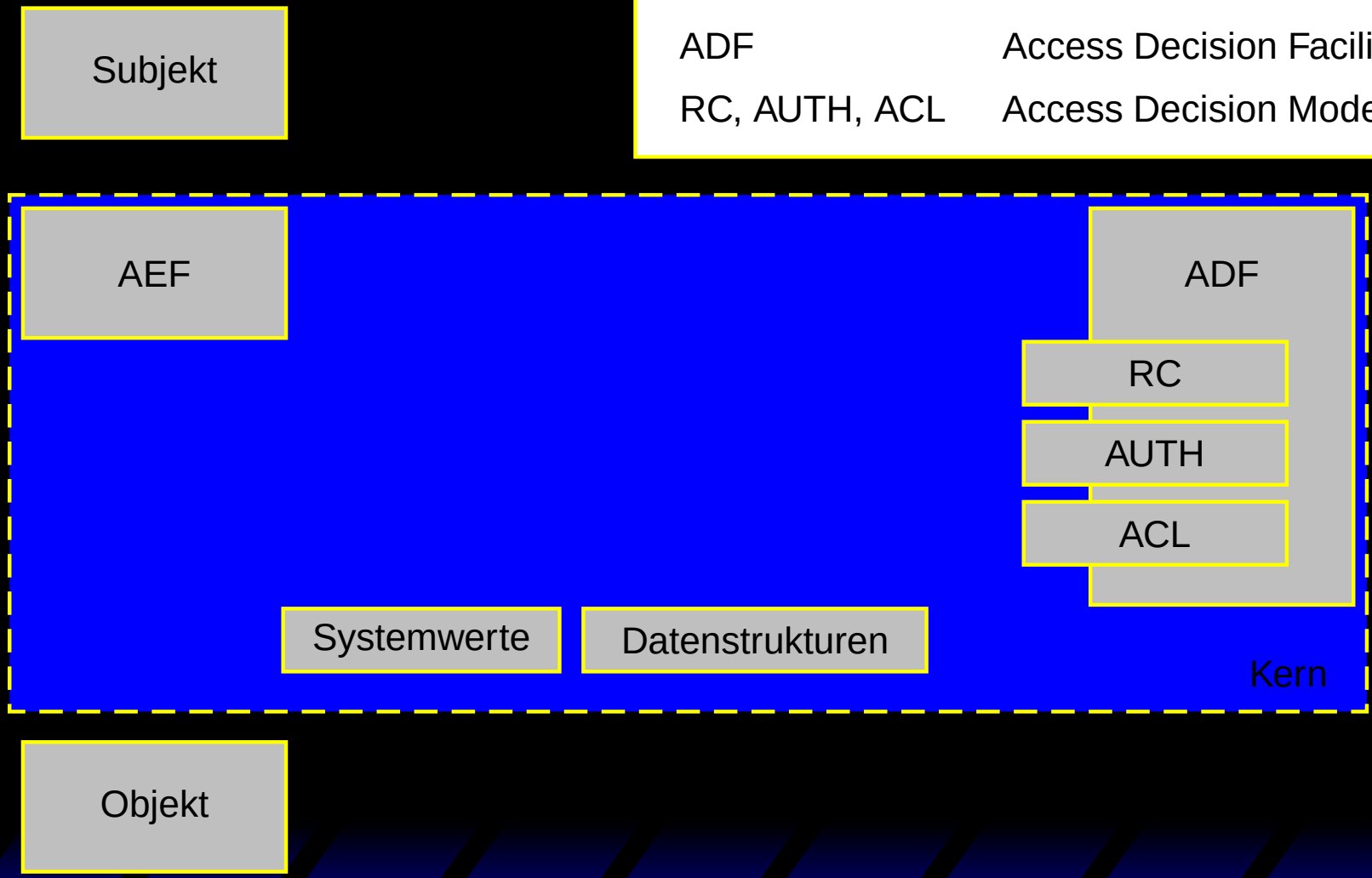
Annäherung an RSBAC

Verfahrensweise im Kern (AEF)



Verfahrensweise im Kern (AEF)

AEF	Access Enforcement Facility
ADF	Access Decision Facility
RC, AUTH, ACL	Access Decision Models



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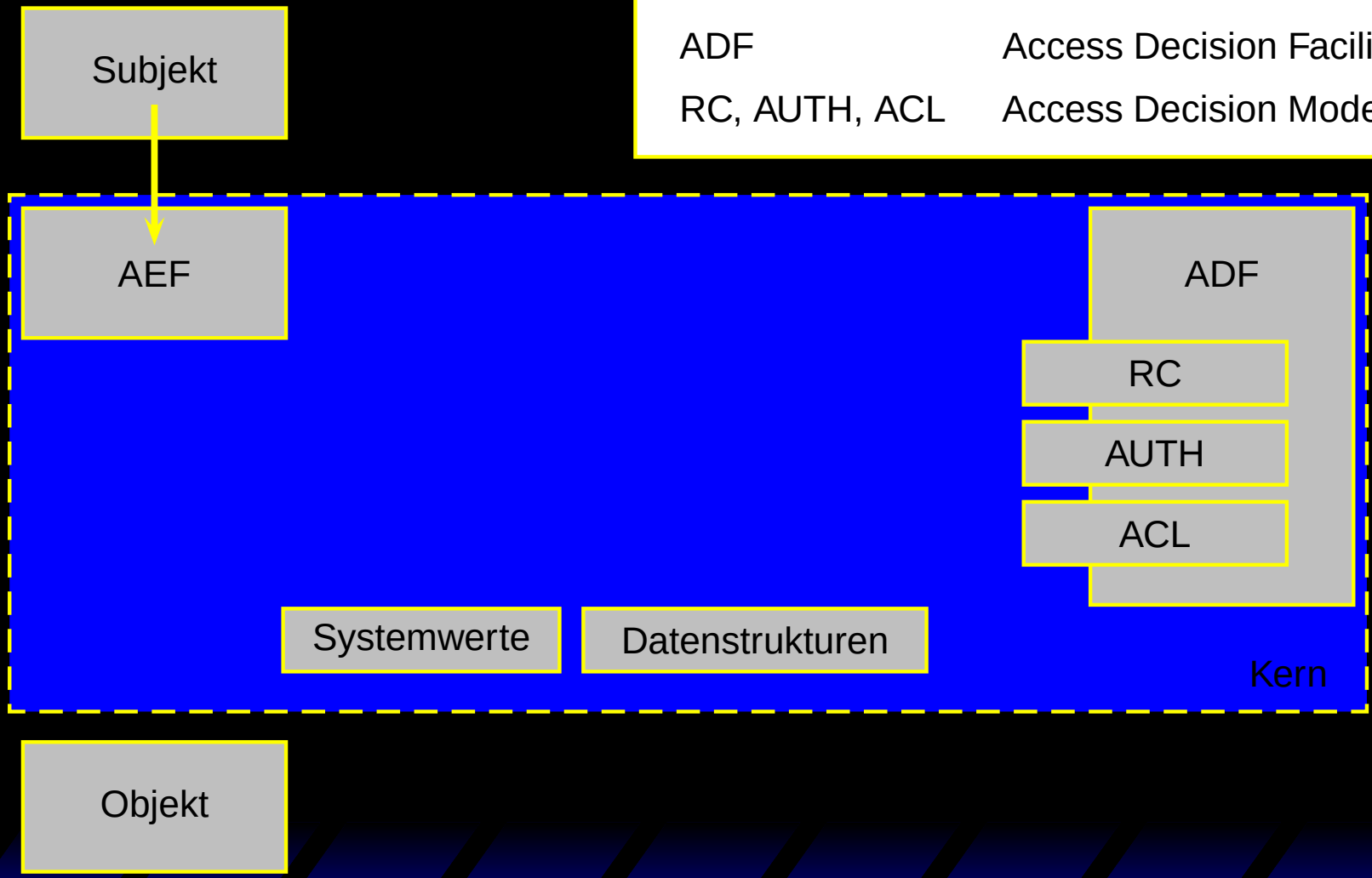

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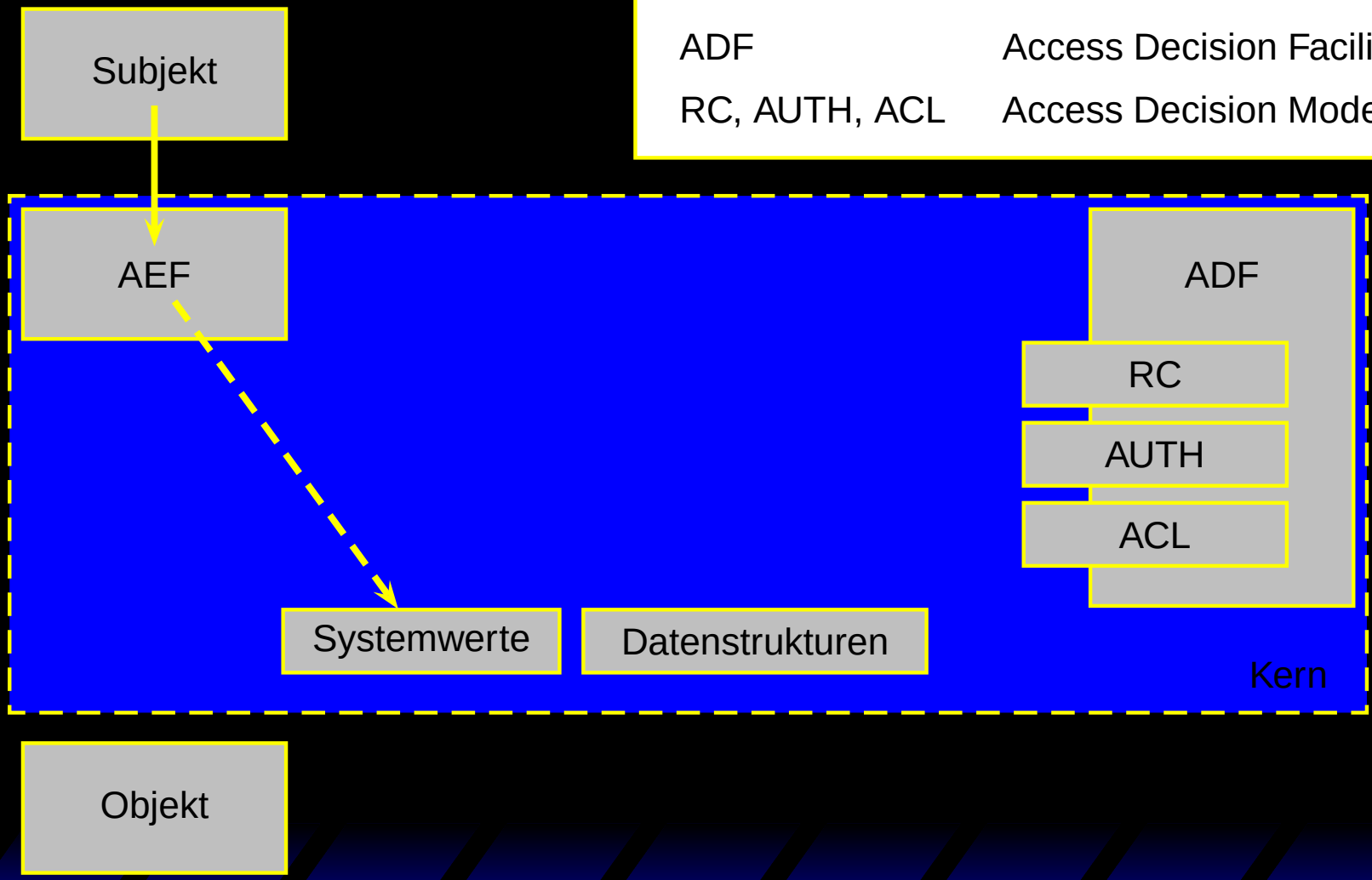

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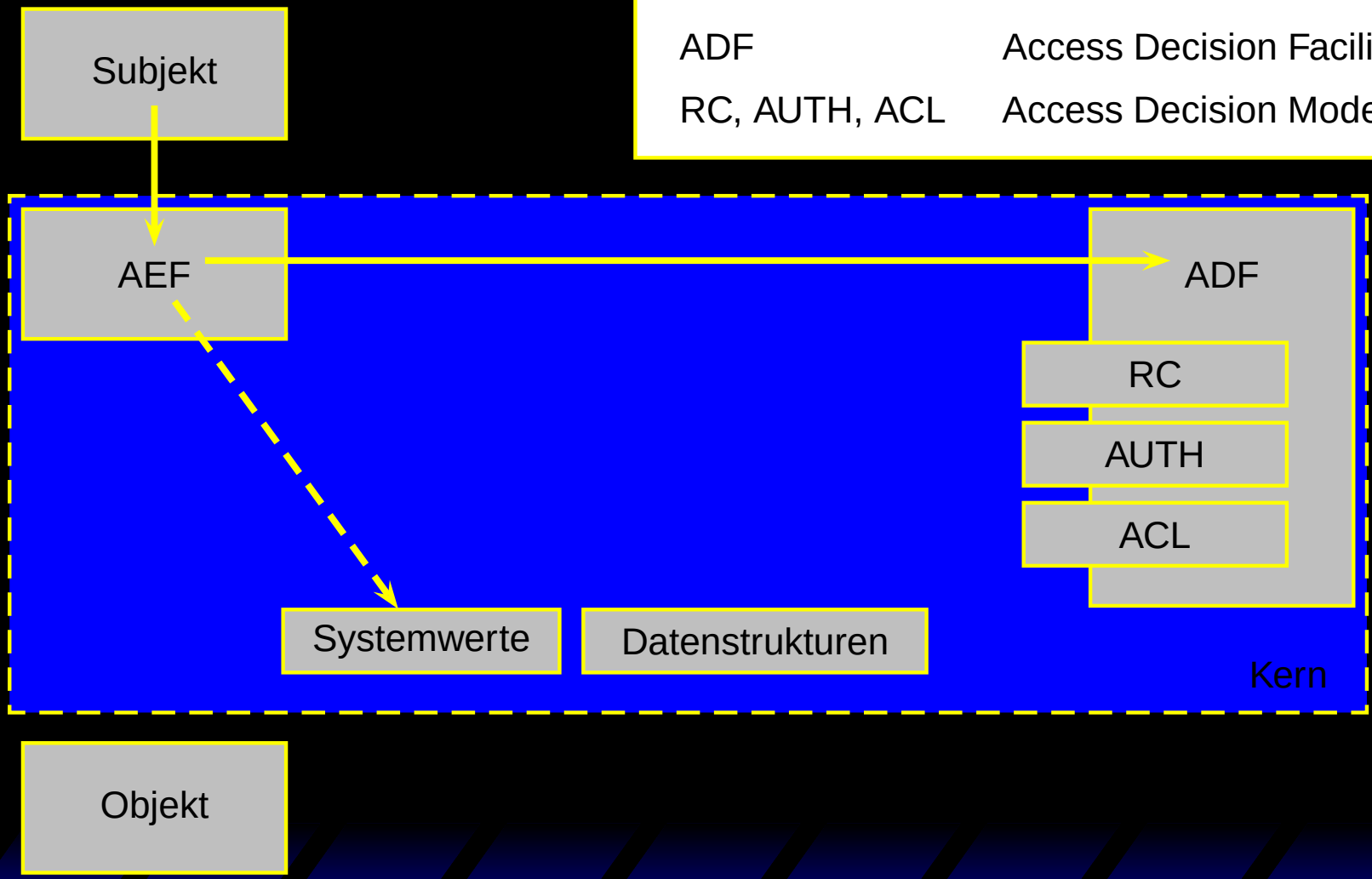

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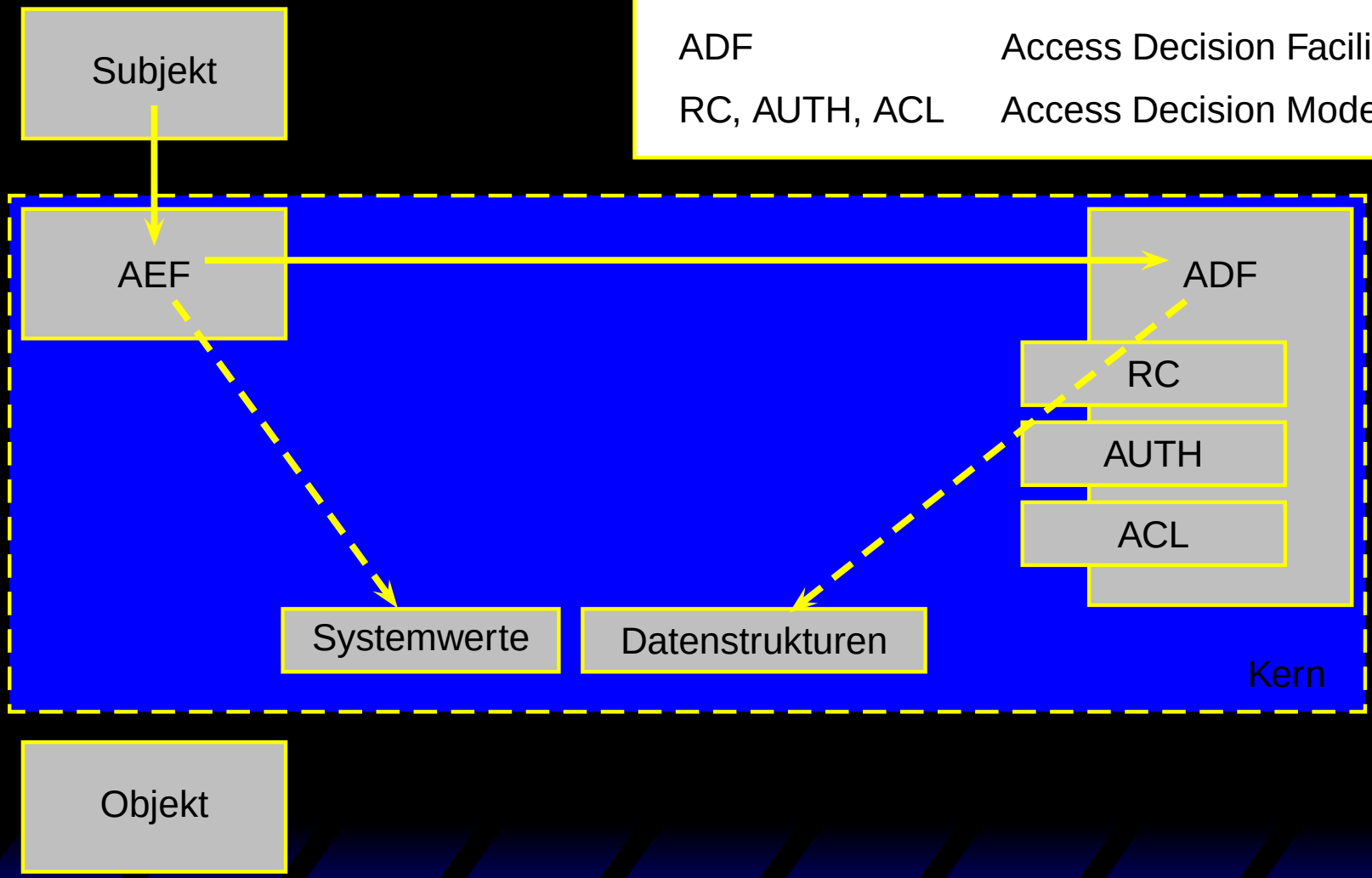

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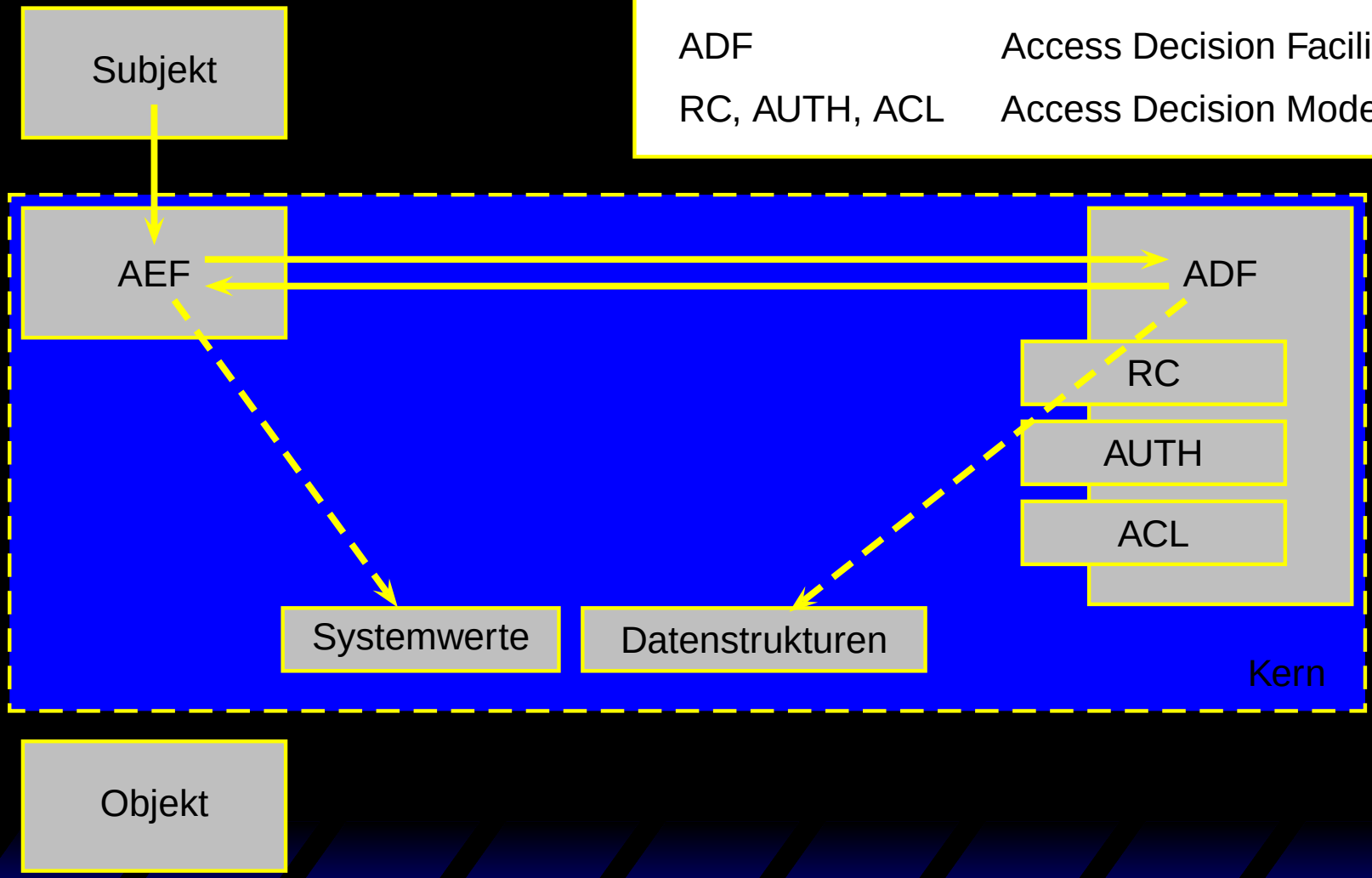

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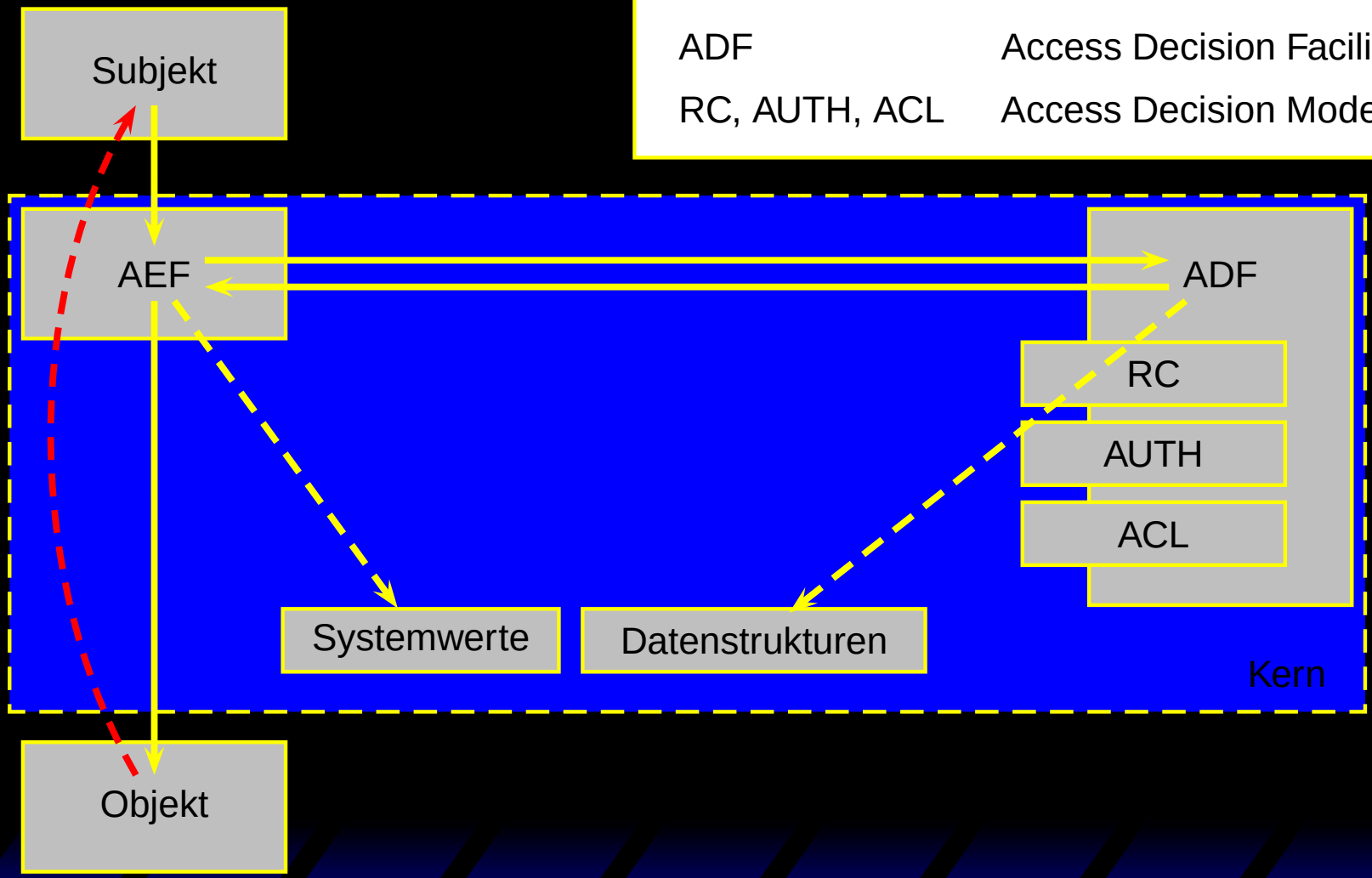

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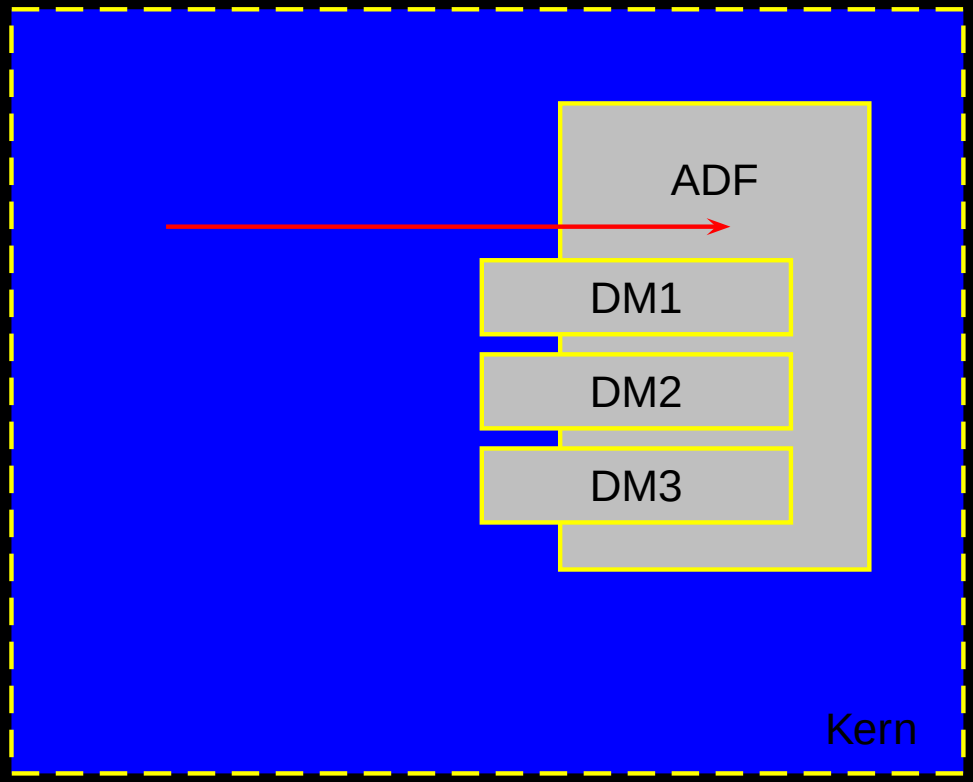

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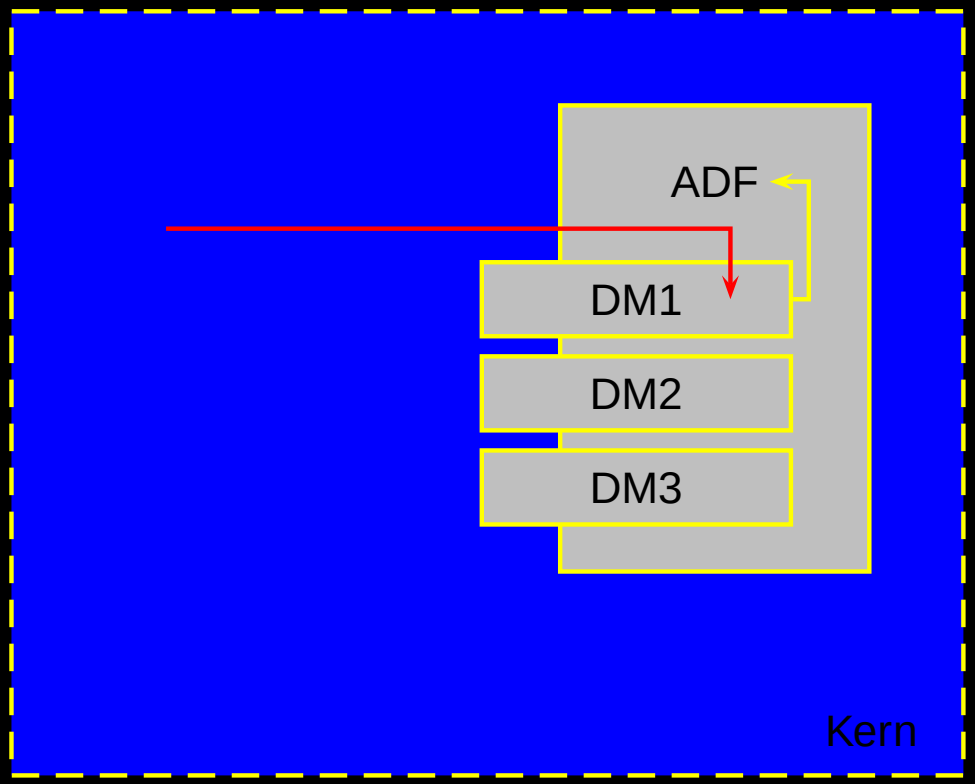

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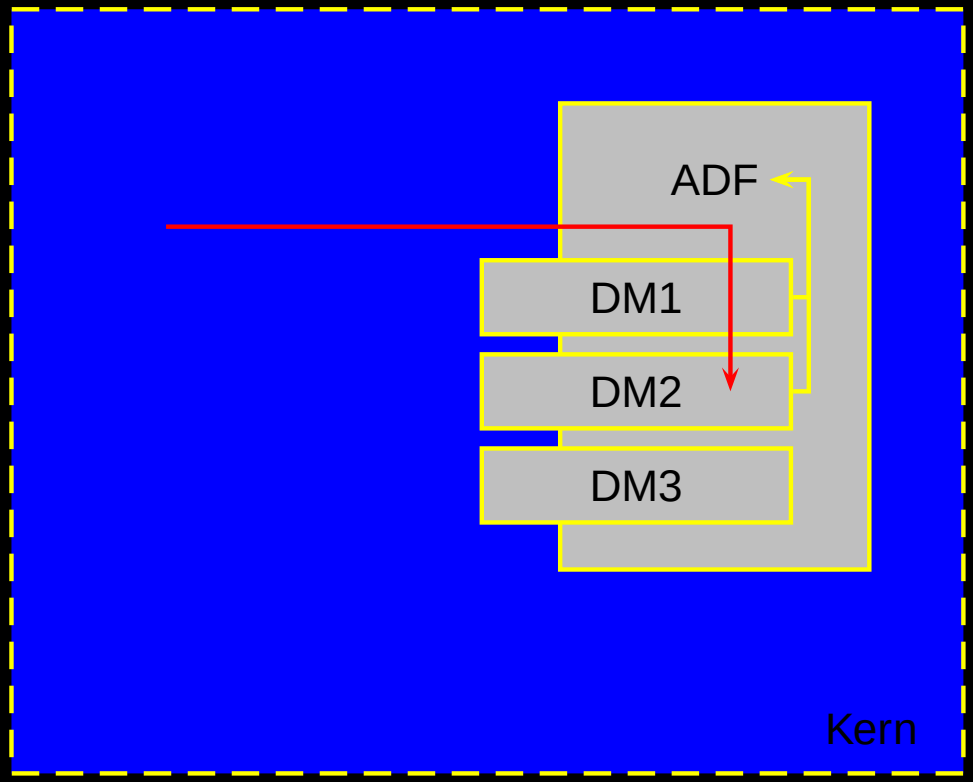

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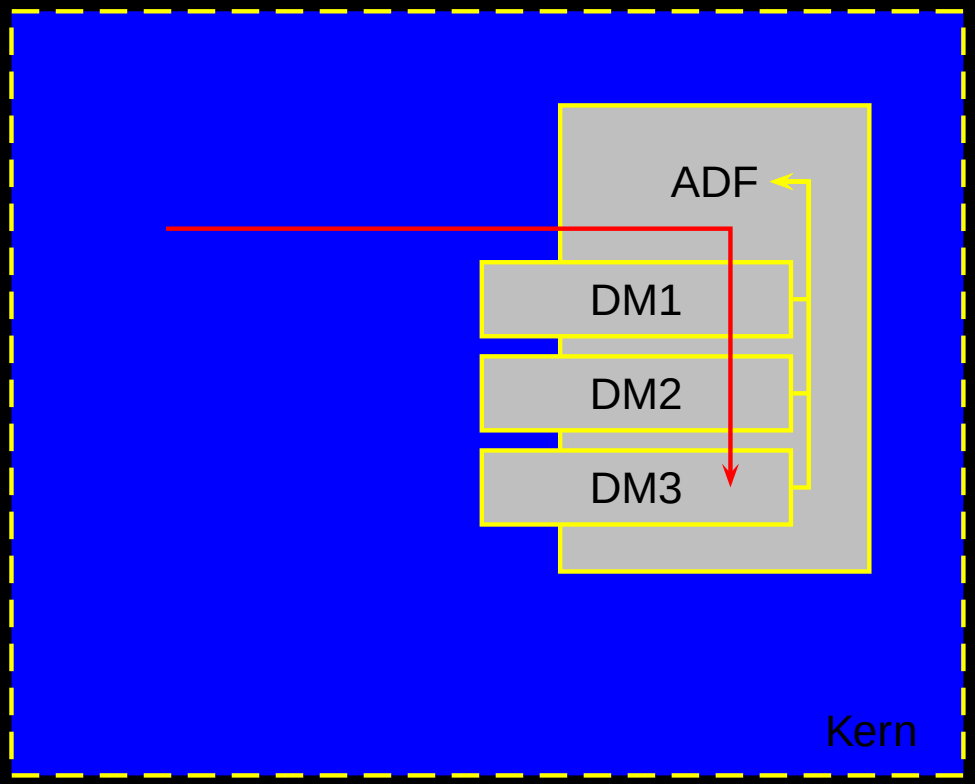

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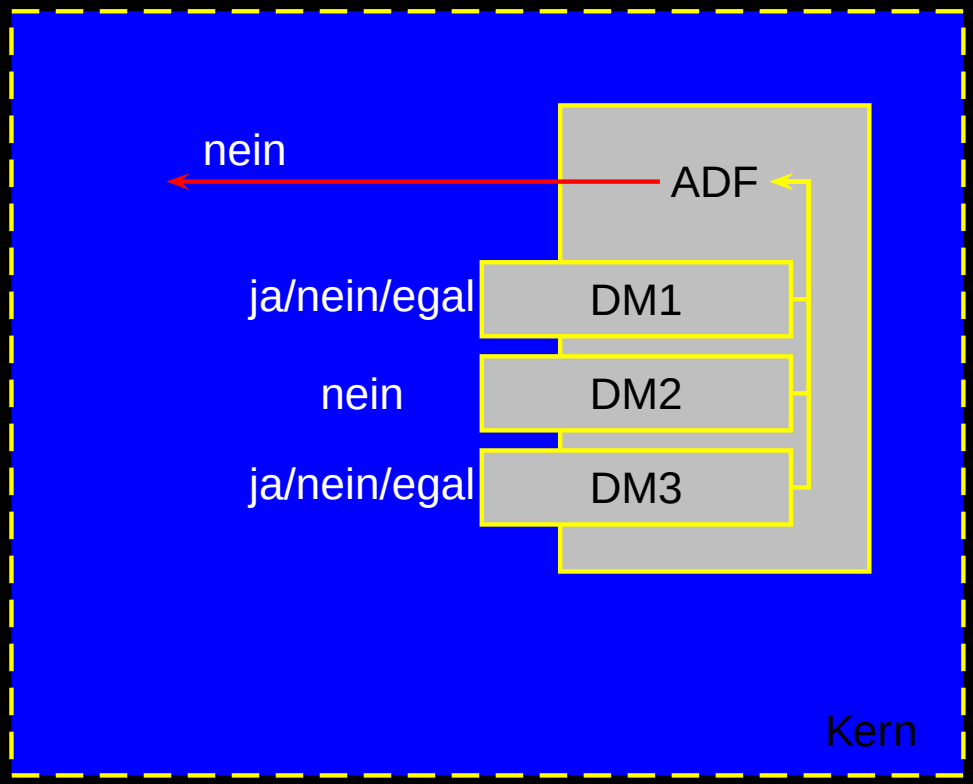

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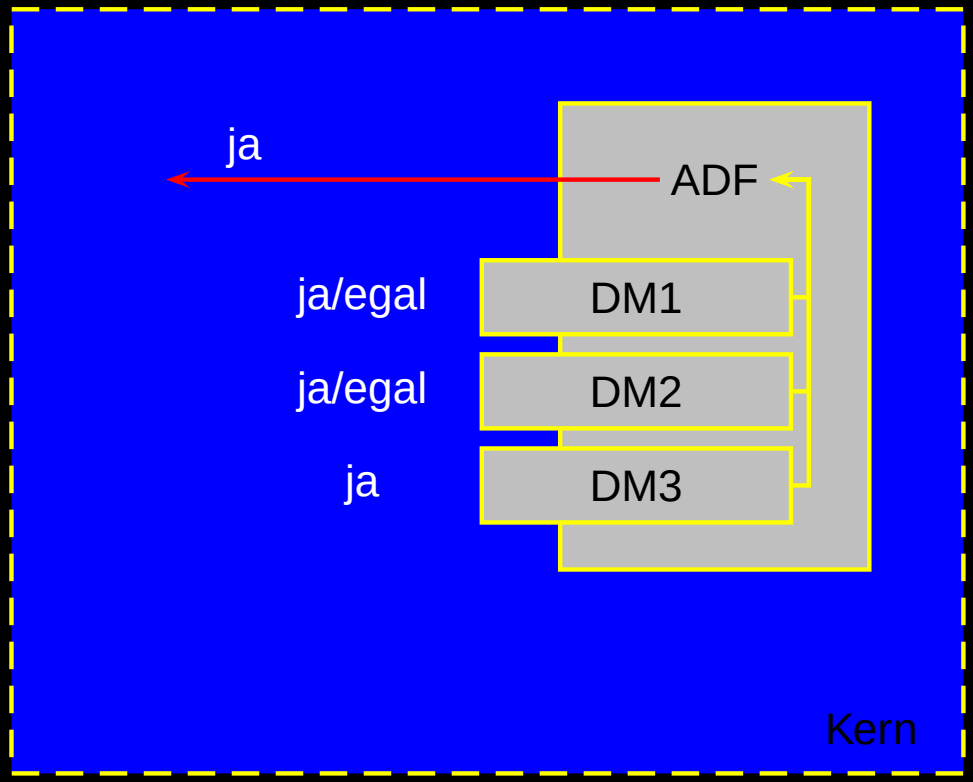

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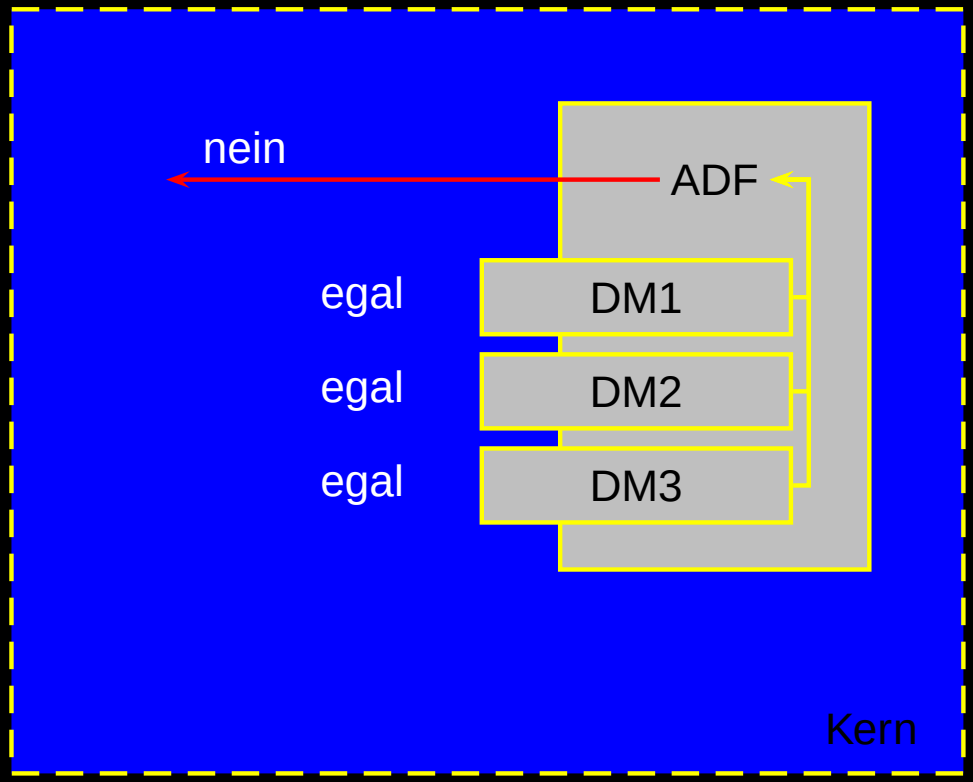

Zusammenfassend

- Vortrag sollte nur Geschmack anregen. . .
- Sicherheitsprobleme fangen am Endsystem an, nicht erst im Netz!
- Es gibt fertige Lösungen. . .
  - RSBAC: `http://www.rsbac.org/`
  - Adamantix: `http://www.adamantix.org/`
- Fragen: `http://lug-dd.schlittermann.de/`