



Trust management by means of AN agreements

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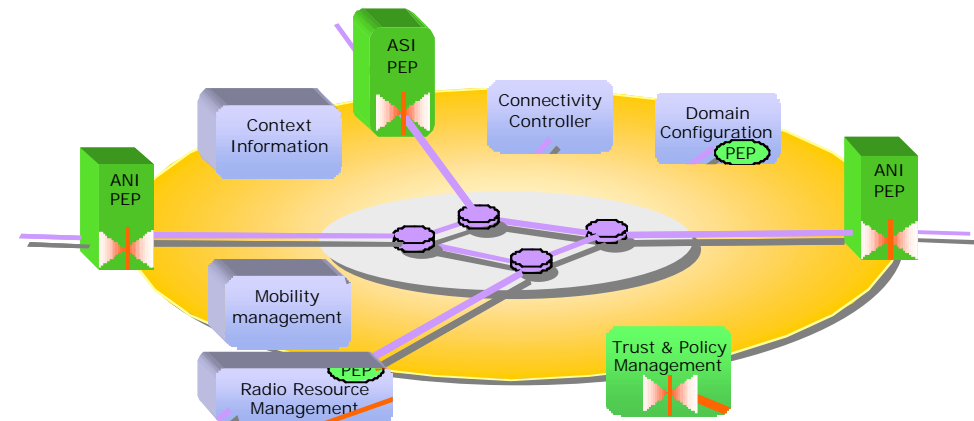
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- ❖ Future mobile communications systems in a **multi-operator / service-provider environment** and with dynamic and rapidly changing interactions in conjunction with dependencies on economic, regulatory, social and safety conditions needs fundamentally to be supported by a comprehensive security framework covering information, services and infrastructure
- ❖ Appropriate security solutions to these problems shall be an intrinsic part of the AN Architecture Framework (ANAF) and of all relevant system components

This is achieved by means of

- a **comprehensive and uniform security architecture** integrated into the AN architecture
- a **scalable security and trust establishment infrastructure** and
- integration of **standardised security mechanisms** where possible or **design of new security mechanisms** where necessary



PEP = Policy Enforcement Point

A grayscale image of a hand pointing towards the text.

❖ Trust establishment, compensation, agreements

- Trust model framework
- Dynamic agreements & security domains
- General compensation principles
- Dynamic roaming agreements
- Non-subscription based access

❖ Access security

- Secure network attachment
- Link layer security
- Multi-hop in infrastructure & co-operative mode

❖ Security for mobility & multi-homing

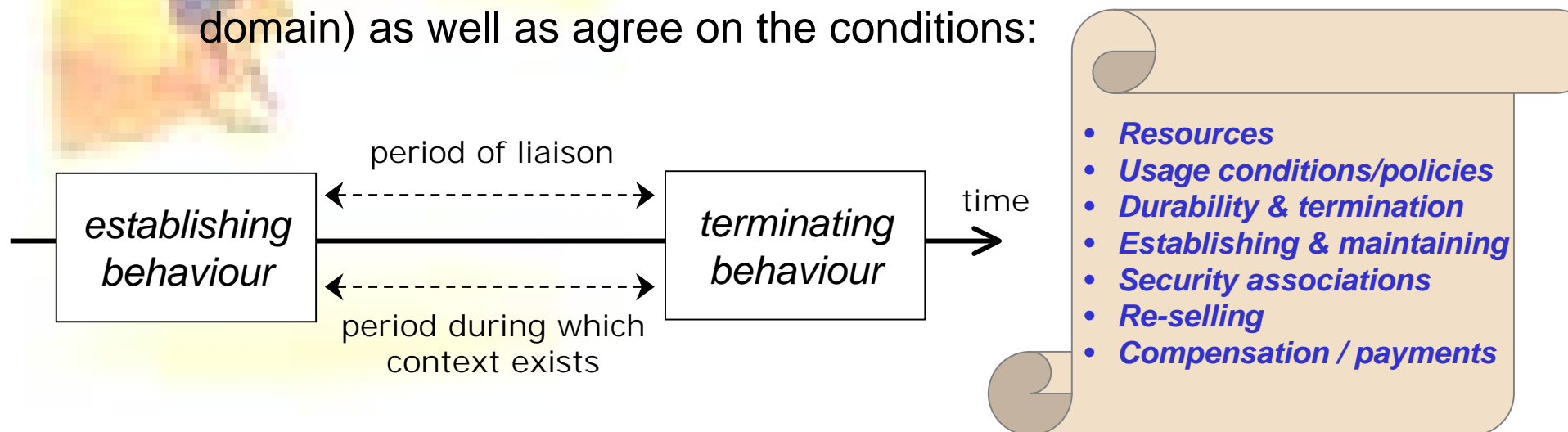
- Opportunistic multi-addressing
- Moving networks
- Security context transfer
- Moving application session
- Middlebox signalling & identifier/locator split

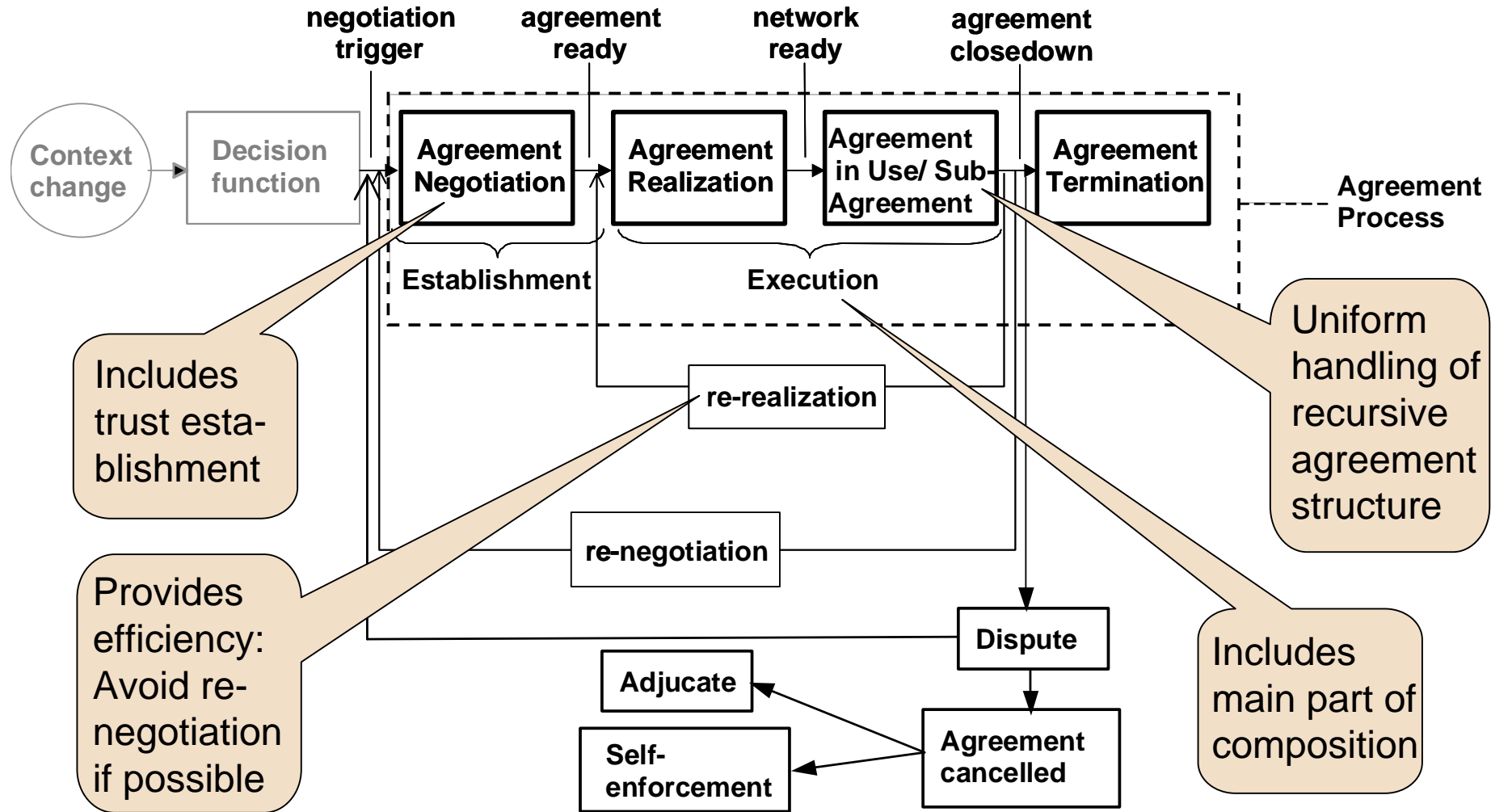
❖ Special topics

- Group security
- Attack resistance

❖ WWI IP Cross Issue Security & Trust

- ❖ Agreements studied here are essentially **contracts** on usage of resources and possibly payment / compensation (symmetric /asymmetric) in a legal context
- ❖ ANs in multi-operator / service-provider environment imply on demand (**dynamic**) **interactions** between **many business entities** and possibly **without previous trust relations**
- ❖ The aim to conclude an agreement is to **establish or maintain trust** between contractual parties (authorities of their own domain) as well as agree on the conditions:







Agreement process; Text version



- ❖ Negotiation Trigger
 - A context change lead to a decision to start a negotiation
- ❖ Agreement Establishment
 - Negotiation procedure including trust establishment and business conditions, resources, payment etc. to agree upon
- ❖ Agreement Execution
 - Agreement realization phase containing configuration of networks
 - Agreement-in-use phase where the conditions of contract are fulfilled
- ❖ Agreement Termination
 - Expiration of agreement or other condition for termination
- ❖ Re-negotiation
 - New contract with same party, bootstrap on existing trust relations
- ❖ Re-realization
 - New configuration or use of existing contract
- ❖ Dispute resolution
 - Settling of conflicts, customer complaints etc.

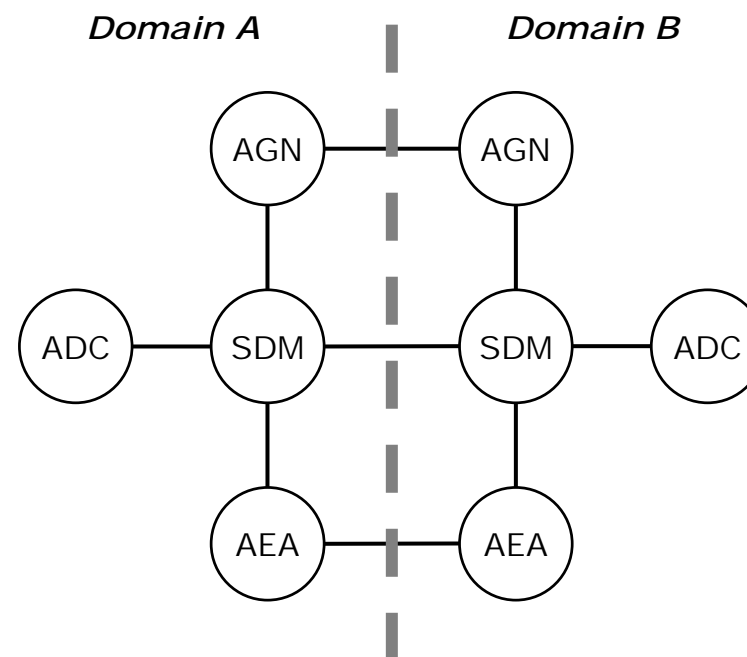
❖ Security domain

defined by an authority, specifying the security policies that apply to some aspects of the behaviour of the objects in the domain.

❖ Inter-working between security domains will not change their autonomy

- ADC assigns SDM to manage the enforcement of local security policies
- On negotiation trigger SDM assigns AGN to conclude negotiation with another domain
- If successful, SDM instructs AEA to ensure security policy enforcement

❖ Challenge: Dynamic configuration of security domains based on the policies that constitute a dynamic agreement



ADC: Administrative Domain Controller
 AEA: Agreement Execution Agent
 AGN: Agreement Negotiator
 SDM: Security Domain Manager



Summary and Future Work



❖ AN dynamic agreement concept

- Supplementing manually written business agreements/contracts
- Established on behalf of authorities of administrative domains.
- Efficiency: Re-realization avoids heavy negotiation
- Scalability: Several entities in one domain can realize and use one agreement

❖ Future work

- Validation against existing trust establishment technologies
- Default policies to simplify agreement negotiation
- Dynamic changes of security domain policies
- Analysis of relation between initial phases agreement establishment and existing technology