


A Phase Model for E-Commerce Business Models and its Application to Security Assessment

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Motivation

- + Simple customer-vendor model has been augmented with intermediaries
 - higher complexity & intrinsic security issues
 - 2-party security cannot be generalized to n parties (new and more security threats)
 - collusions among parties
 - intangible goods
- + Analysis and assessment of business model security requires a systematic approach


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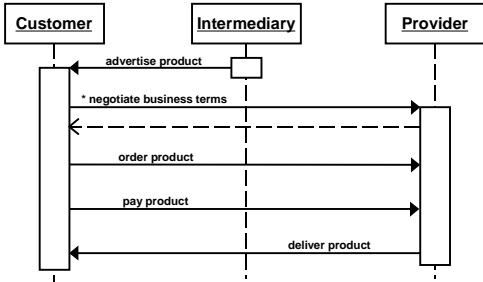
The Phase Model

- + 3 parties: Customer, Intermediary, Provider
- + 5 Phases: Advertising, Negotiation, Ordering, Payment, Delivery
- + Business model:
 - Map phases onto the parties that interact in a certain phase and the sequence in which the phases occur
 - Provider gradually delegates phases to the intermediary
 - Incremental model simplifies assessment and presentations of security concerns but does not violate general applicability

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The A Model

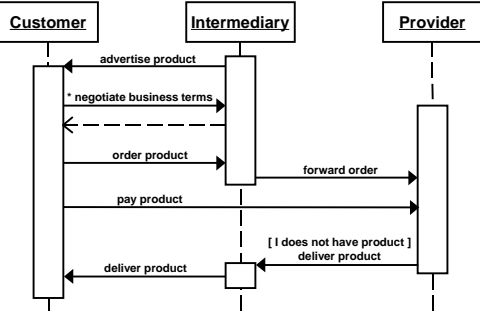


Business models: Associated partner (Amazon), portal

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The ANOD Model



Business models: (Value-adding) reseller, (content) syndicator


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Security Threats

- + Prerequisite for analysis: trust model
 - What to secure against whom?
 - Inside vs. outside the business relation
 - Collusion of parties
 - Prevention and detection (evidence)
- + Privacy infringement
 - Contracts: some information must be available to the business partners
- + Fraud
 - Masquerading, message manipulation, repudiation, theft (=> intangible goods)

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Security of the A Model

- + Associated partner model of Amazon
- + Intermediary advertises for the provider
 - $P \Rightarrow I : sig_P(cat, I, t_1, t_2) \quad I \Rightarrow P : sig_I(cat, P, t_1, t_2)$
 - I can prove that the catalog is valid for a certain period
 - I cannot advertise expired offers
- + Revenue for intermediary
 - Fixed amount (attractive for I) vs. commission (attractive for P)
- + Assignment of commission
 - I must sign everything sent to C and C must forward the identity of I to P
 - Problems: C does not forward, C colludes with P, etc.
- + Intermediary must trust the provider
- + Intermediary cannot collect data about customer

- Motivation
- Phase Model
- The A Model
- ANOD Model
- Sec - Threats
- Sec (A Model)
- Sec (ANOD)
- Conclusions

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Security of the ANOD Model

- + Intermediary needs *catalog (cat)* and *pricing and discount model (pdm)* and all communication is encrypted and signed (contracts)
- => Parties do not have to trust each other:
 - I has evidence to get its commission
 - C and P cannot collude
- + "Less" possibility for fraud but less privacy
 - I knows C's interests and how much C is willing to pay
 - I knows P's *cat* and *pdm*
- + Problem: Intangible goods (copyright infringement)
 - No security possible but evidences can be generated
 - Asymmetric fingerprinting (multimedia), timestamps (other)

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Conclusions

- + Success of business models depends on security => systematic approach is necessary
- + 5-phases/3-party model allows a designer to classify and assess business model security
- + Objectively achievable level of security depends on assignment of phases to parties
- + The A model cannot be secured objectively
- + Copyright is still a problem (intangible goods)

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