

Based on your general experience and on reading chapters 1 and 2 in Anderson, discuss the two cases below. Short answers: two pages or less per case study. Be prepared to discuss them in class.

1) Public transport system with fare collection based on cash/tokens or smart cards.

In a system that primarily accepts cash and tokens at gates and fareboxes:

- a) Describe how cash and tokens received for payment should be handled securely.
- b) What are the major risks to the transit agency?
- c) What are the major risks to passengers?
- d) What are the risks in getting collected funds to a transit agency bank account?

Core in cash and token systems: Core is the accounting function at bus depots and rail terminals that accepts cash and tokens from fareboxes and turnstiles, counts them, associates them with stations or buses (and staff who collected the cash and tokens).

Internal risks in cash and token systems: Theft by employees, either those collecting the money, the supervisors in the field, or the employees and supervisors at the depots and terminals.

Risks to passengers. Passengers unlikely to be at financial risk in cash transactions; no credit cards, no identity issues. Transit system is financially at risk from its employees, but the passengers are not.

Risk in funds to bank: Mechanical systems to empty turnstiles and fareboxes into containers; transportation of containers to counting facility; systems to identify and resolve differences between machine counts and financial system; match against patterns of revenue to detect skimming. Risks are dishonest employees.

In a system that primarily uses smartcards at gates and fareboxes, including ticket machines at stations to vend smartcards:

- a) Describe how cash and tokens received for payment should be handled securely.
- b) What are the major risks to the transit agency?
- c) What are the major risks to passengers?
- d) What are the risks in getting collected funds to a transit agency bank account?

Core in smart card systems: Core is the bookkeeping function in headquarters that tracks smartcards sold by machine, Web, and all other sales channels, and matches it to smartcard use at gates and fareboxes.

Internal risks in smartcard systems: Accounting irregularities in headquarters staff who account for sales and move funds between accounts; they have the authority to make adjustments, and that can be abused. White collar vs blue collar risks.

Risks to passengers. Risk of credit card theft or fraud, ability to associate sales with purchaser, and possibility of abusing that information. The transit system is less at risk financially from its field employees, but customers are financially more at risk from the new system.

Risk in funds to bank: Electronic systems to transfer funds from credit card-based purchases of smart cards to transit agency accounts; same as other merchants. If smart card machines at stations accept cash, the same issues hold as for cash system, but for a much smaller fraction of total revenues. Employee risk is much smaller. Higher risk is white collar crime, either at transit agency or outside, to manipulate electronic transactions.

Note that moving more transactions to electronic means shifts the risk from blue collar to white collar crime, and it shifts risks from the agency (or supplier) to its customers (or channel partners). It also centralizes the risk at servers and headquarters, where the risk had been distributed over stations and bus depots in a cash system.

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1.264J / ESD.264J Database, Internet, and Systems Integration Technologies
Fall 2013

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