Contribution of Physical Internet Containers to mitigate the risk of cargo theft

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Context: Cargo Theft

Definition: Criminal taking of any cargo including, but not limited to, goods, chattels, money, or baggage that constitutes, in whole or in part of a commercial shipment of freight moving in commerce” (FBI).

Existing solutions (Burges 2012):
1) Enhance physical security, i.e., using hard protective cover trailers.
2) Enhance information security, i.e., using sensors and alarm system.
3) Insurances and law enforcement.

How innovative pooled goods encapsulation solutions mitigate cargo theft risks?
Physical Internet Containers (PICs) as an example

Major differences of using PICs
1. Modularity and Physical Protection
2. Mix of products in each shipment

Results Analysis & Conclusions

5 main levers for PICs

- More secured distribution
  - Interlocking property of modular boxes.
  - Mixed and unknown cargoes reduce the effectiveness of illicit resale channel.
  - Enhanced traceability with sensors
  - Electronic seals

- Improved cube utilization
  - Via:
    - Better space utilization by modularity
    - Stackability
    - Capability of containing different products

- Efficient reverse logistics
  - Via:
    - Reduced transportation costs by standardization of boxes

- High handling productivity
  - Via:
    - Less non-value-adding operations
    - Efficient automatic picking system
    - Shelf-ready delivery

- Lower environmental footprint
  - Via:
    - Reduced raw material consumption
    - Less CO2 emission by reduced transportation cost