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CFSIs in perspective and the nuclear industry's response

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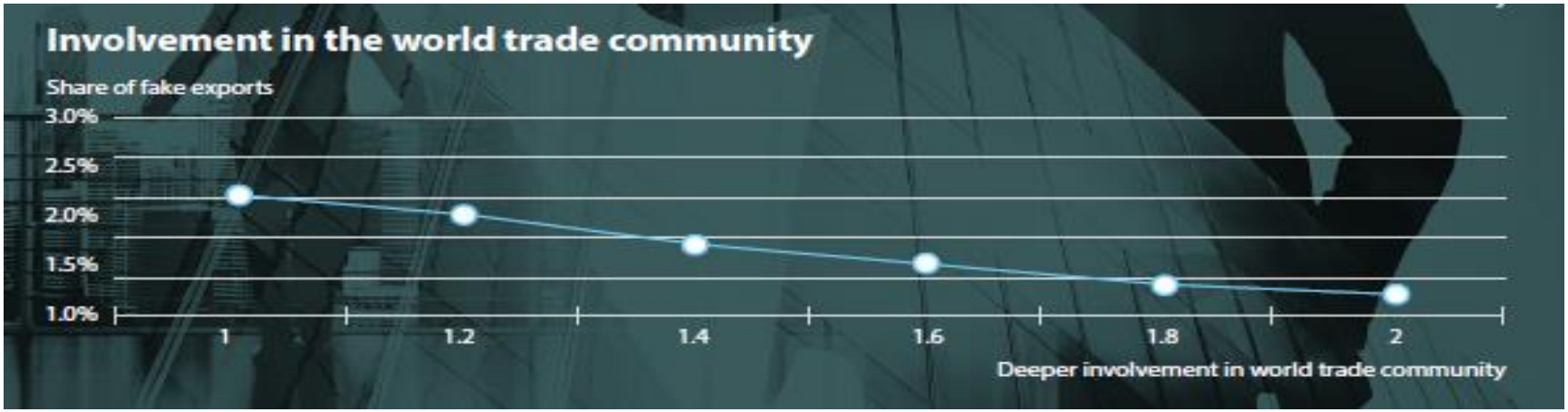
Outline of presentation

1. CFS items - definition
2. Evidence of CFS items in the nuclear supply chain
3. Trade in counterfeits
4. Survey



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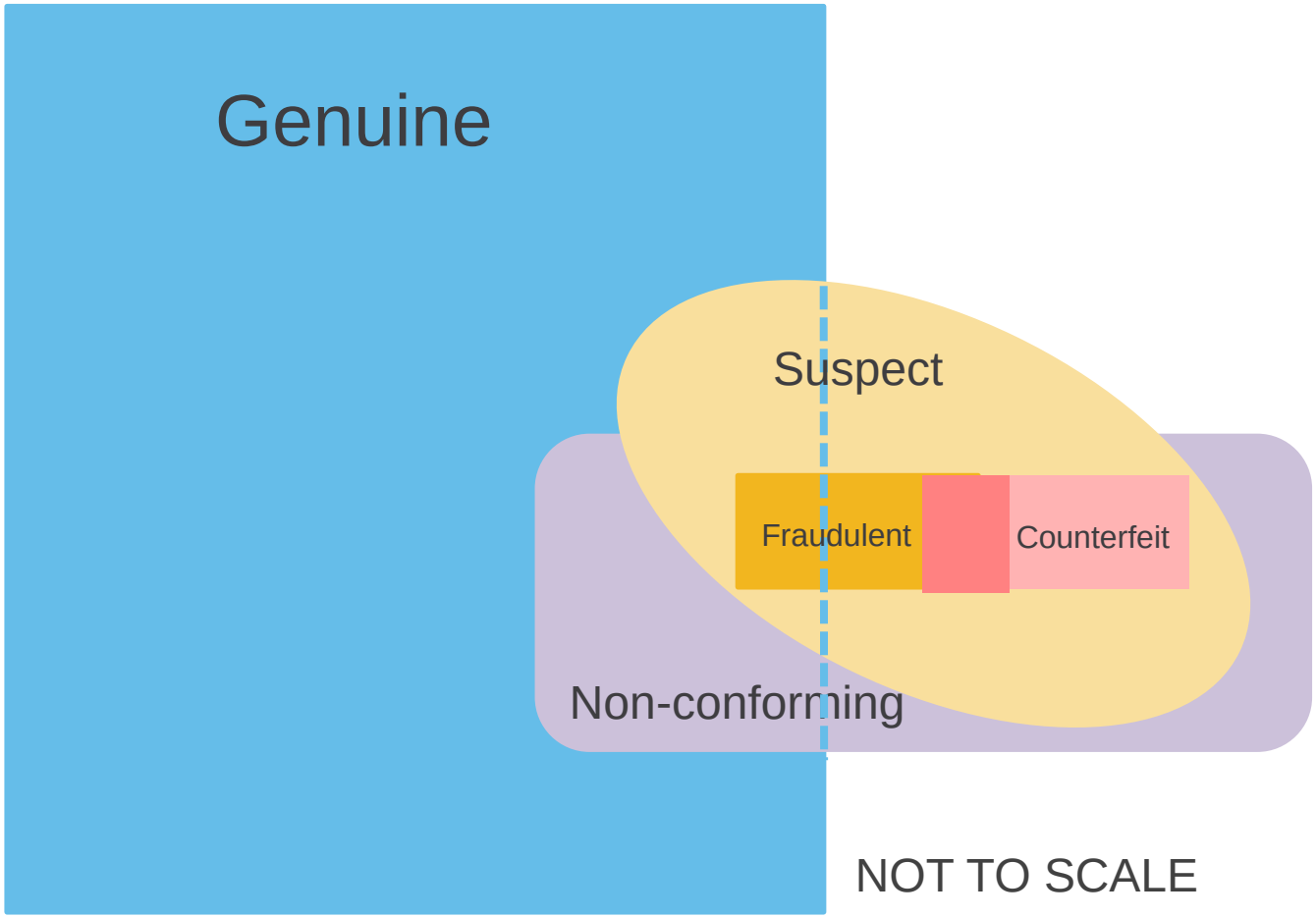
1. Counterfeit, Fraudulent and Suspect (CFS) items: Classification



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2. Evidence of CFS items in the nuclear supply chain

- A small increase in confirmed cases of CFS items in the commercial nuclear power industry
- An indication of an increase in the incidence of CFS items in the construction industry more generally.
- Detected CFS items in nuclear applications included:
  - Structural (plates, forgings, struts);
  - Mechanical (pipes, fasteners, filters, gaskets, seals, valves, rotating equipment);
  - Electrical (cables, circuit breakers, fuses, resistors, transformers);
  - Electronic (80-90% of counterfeit electronic items have been recycled from legitimate products).
  - Inspection, testing and certification services.

IAEA, 2016, Procurement Engineering and Supply Chain Guidelines in Support of Operation and Maintenance of Nuclear Facilities, NP-T-3.21: pp. 128, 132 and 133-153.

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Major cases of falsification

- Framatome: Tests had not been performed or recorded correctly and there had been quality assurance failures on components manufactured at the Le Creusot Forge in France since 1965, when the facility was owned by Schneider. Irregular practices had continued after 2006 when AREVA/ Framatome had purchased the facility and were not identified until 2015.

- Kobe Steel admitted in 2017 that 605 (most non-nuclear) customers had been misled as a result of falsification of quality inspection data for aluminium and copper products over the past 50 years. Customers said that the falsified data did not pose safety issues.

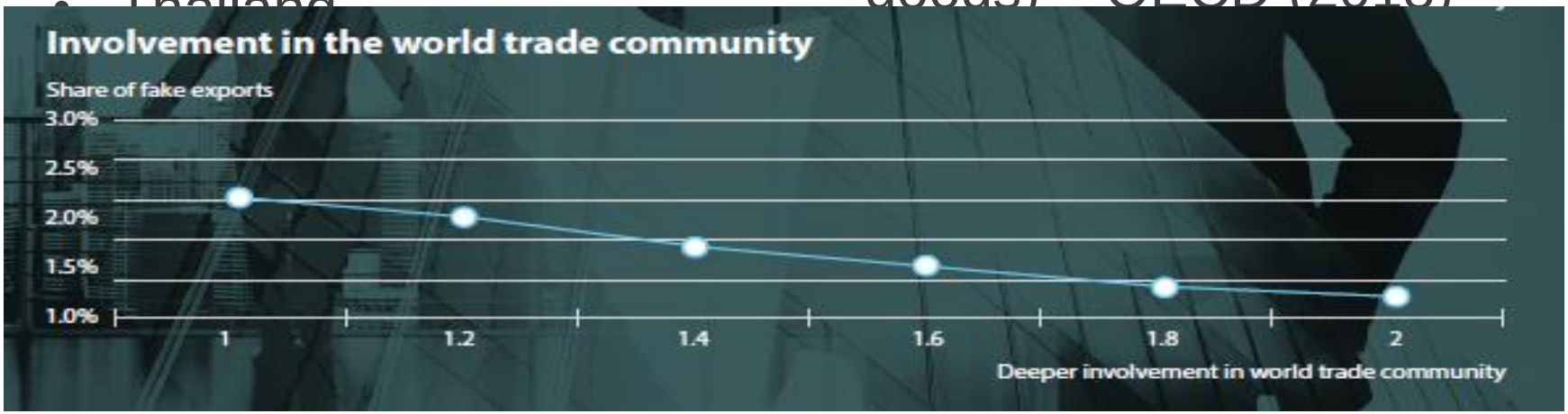
- In South Korea in 2012, eight companies were accused on supplying 60 forged quality control certificates covering 7,682 mostly non-safety critical components to the Korea Hydro and Nuclear Power company since 2002. The affected equipment comprised mainly fuses, switches and cooling fans. Another case discovered in 2013 involved false test certificates for cabling.

3. Trade in counterfeit goods

Top ten suppliers of internationally traded counterfeit good (in alphabetical order):

- China*
- Indonesia
- Malaysia
- Pakistan
- Philippines
- Thailand

Value of counterfeit and pirated goods is estimated at $465 billion in 2013 (<2.5% of international trade in goods) – OECD (2018)



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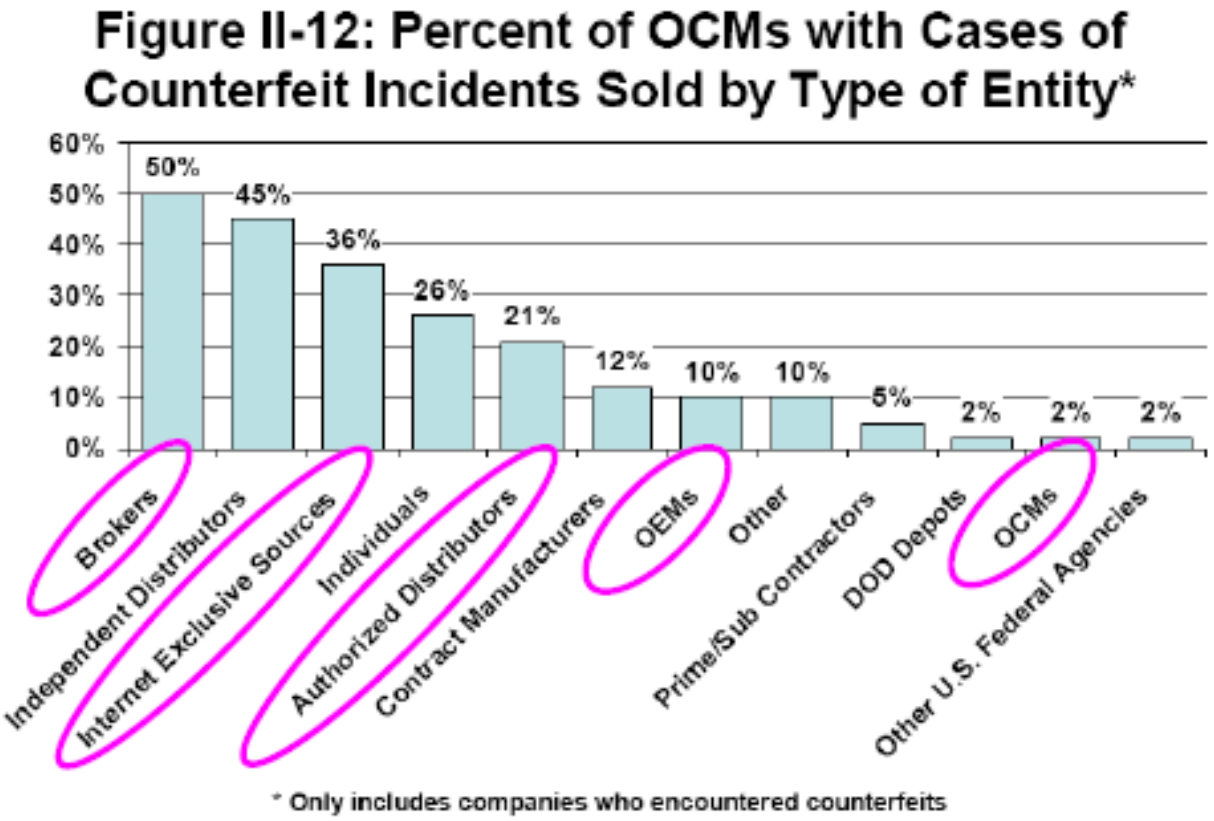
Intermediation in supply chains is a significant part of the problem



OCM: Original component manufacturer

OEM: Original equipment manufacturer

Source: U.S. Department of Commerce Bureau of Industry and Security Office of Technology Evaluation Defense Industrial Base Assessment: Counterfeit Electronics, January 2010

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4. Survey of WNA Members

1. What actions has your organization taken to counter CFSI infiltration in the last 5 years?
    - Attended a briefing by a regulator or licensed nuclear facility operator on CFSIs?
    - Attended a seminar or conference organized by your customer on CFSIs?
    - Provided training to your staff on identifying CFSIs?
    - Provided advice to your suppliers on preventing CFSIs?
    - Modified your procurement practices in the light of the risk from CFSIs?
    - Incorporated additional conditions of contract on CFSIs into your purchase orders?
    - Altered your Quality Manual or QA procedures to deal with CFSIs?
    - Made use of an industry association database of CFSI incidents?
    - Made use of a government or regulatory database of CFSI incidents?

2. Has your organization had cause to report any CFSI incidents to your customer or to the nuclear safety regulator?

3. Has your organization experienced an increase or a decrease in the number of CFSI incidents detected?

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Survey results

1. What actions has your organization taken to counter CFSI infiltration in the last 5 years?

- Attended a briefing by a regulator or licensed nuclear facility operator on CFSIs? YES: 100%
- Attended a seminar or conference organized by your customer on CFSIs? YES: 100%
- Provided training to your staff on identifying CFSIs? YES: 100%
- Provided advice to your suppliers on preventing CFSIs? YES: 33%
- Modified your procurement practices in the light of the risk from CFSIs? YES: 33%
- Incorporated additional conditions of contract on CFSIs into your purchase orders? YES: 33%
- Altered your Quality Manual or QA procedures to deal with CFSIs? YES: 100%
- Made use of an industry association database of CFSI incidents? YES: 33%
- Made use of a government or regulatory database of CFSI incidents? YES: 33%

Limited response so far. Sample included a nuclear power plant operator, a reactor vendor and a producer from Europe and Asia.

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Survey results

2. Has your organization had cause to report any CFSI incidents to your customer or to the nuclear safety regulator? YES: 67%

Some incidents detected (2 or 3 incidents a year)

3. Has your organization experienced an increase or a decrease in the number of CFSI incidents detected? NO: 100%

Small sample size (<10 respondents) means that limited confidence should be placed on these early results.

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5. Strategies for preventing the infiltration of CFS items

- Design and specification
  - Single source suppliers present a risk but also provides assurance
- Procurement
  - Understand the risk factors and triggers
  - Know your suppliers (verification of supplier's bona fides)
  - Keep it simple (limit use of brokers)
- Quality assurance
  - Supplier qualification and audits
  - Oversight of critical processes
  - Inspection and witness testing
  - Acceptance checks
- Custody
  - Trans-shipment vulnerabilities
- Intelligence
  - Notification of detected cases
  - Investigation of suspect items' origination

In-company culture & cross-cutting frameworks to prevent:

- Corruption of processes (e.g. backhanders from suppliers)
- Obfuscation of paper trails (e.g. missing or forged documents)
- Loss of institutional knowledge
- Theft of intellectual property

Empowering personnel to report suspicions

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Thank you:

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