Supply Chain Analytics – Keeping it Private and Safe
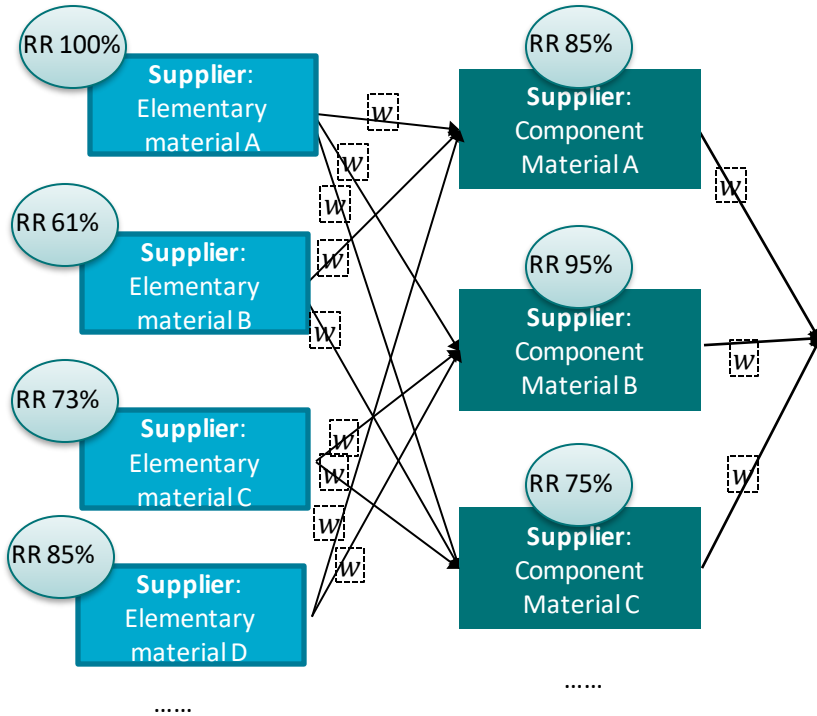
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CSIRO's Data61

Scientific Questions

- Recycled content rate verification and validation

- Supply chain data protecting with Graph

Recycling content rate validation and verification

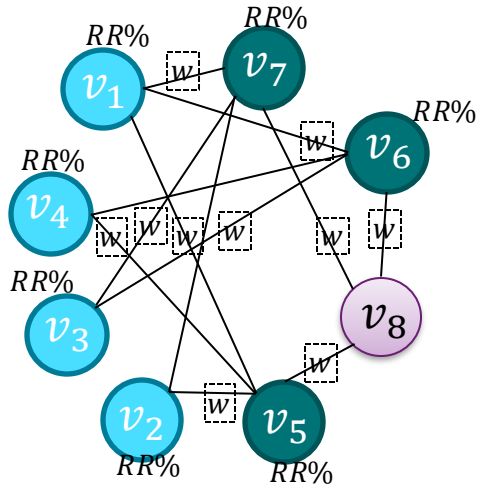**Estimating recycled content rate of the end-user product:**

$$\widetilde{RCR} = \frac{\sum_{i=1}^{l} w_i * RR_i}{\sum_{i=1}^{l} w_i} * 100$$

Comparing the declared recycling rate:

$$RR = \frac{\text{average weight of recycled material per product}}{\text{average weight per product}} * 100$$

$$Acc = \frac{\widetilde{RCR}}{RR} * 100$$

Supply chain data protecting with Graph

Example: How is the privacy leaked?

Assume: Data analysts ask each supplier to report the upstream and downstream business relationships

v_1	v_2	v_3	v_4	v_5	v_6	v_7	v_8
5,6,7	5,7	6,7	5,6	1,2,4,8	1,3,4,8	1,2,3,8	5,6,7

Solutions for Protecting Graph Data

- k-Anonymous

- l-Diversity

- t-Closeness

- Differential Privacy

THANK YOU

Any Question

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