

Systems Interventions E-Waste

India Kermode - Faculty of Media Arts and Production

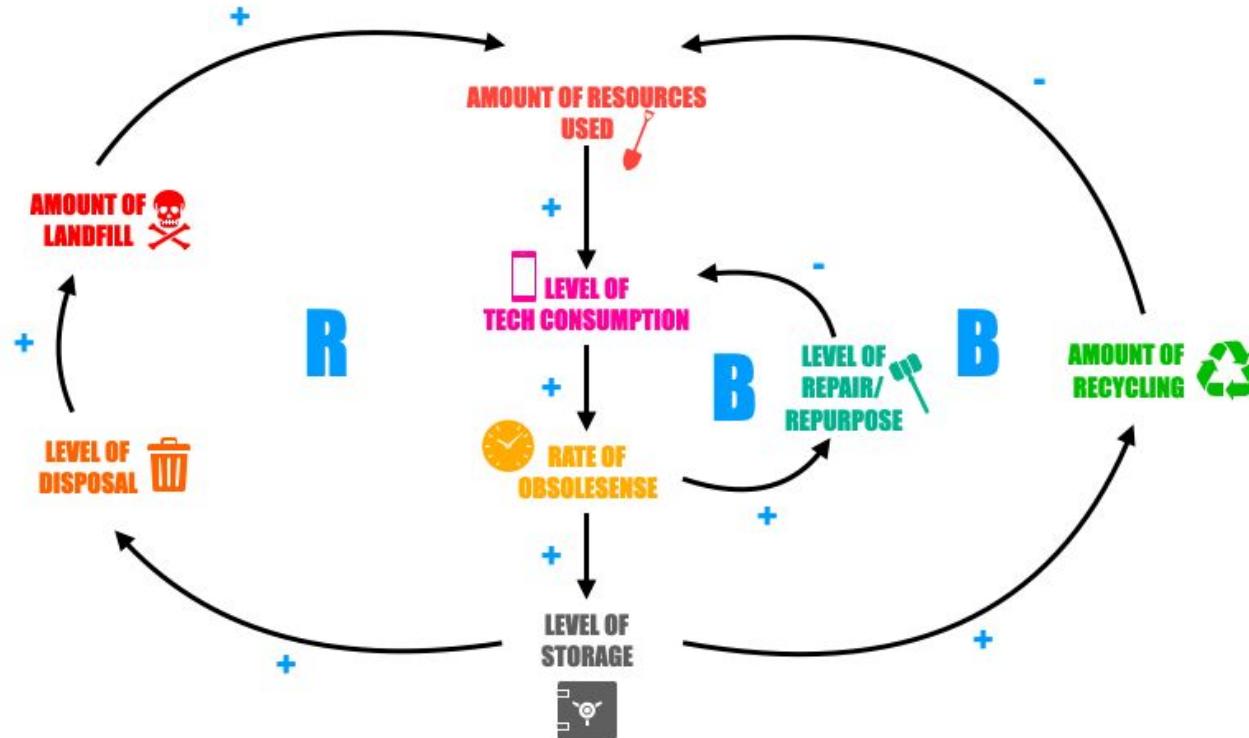
Tom Field - Faculty of Business

Callum Chow - Faculty of Business

Jasper Wright - Faculty of Information Technology

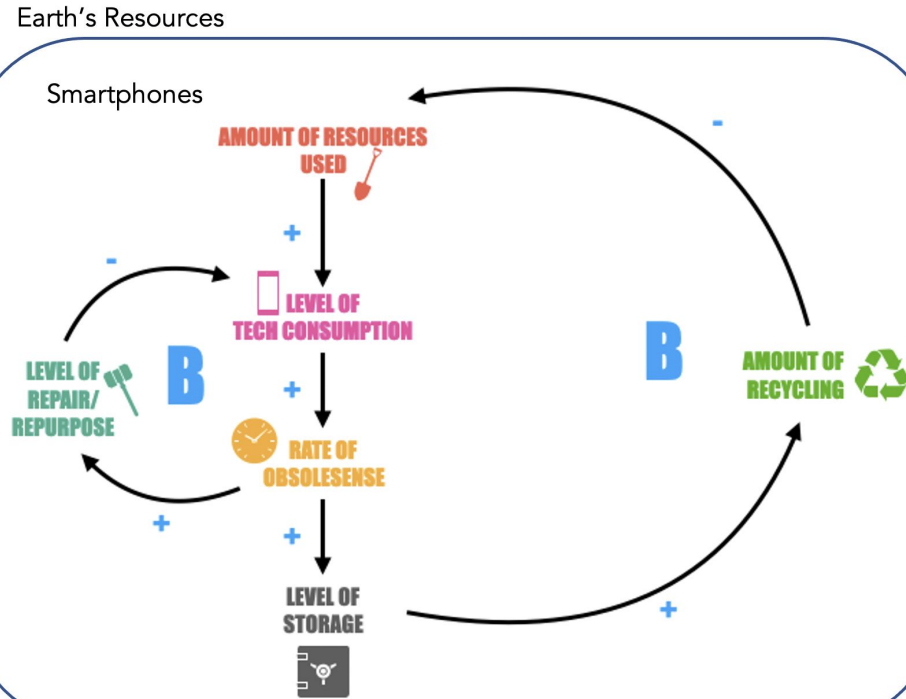
Leo Metzker - Faculty of Communication

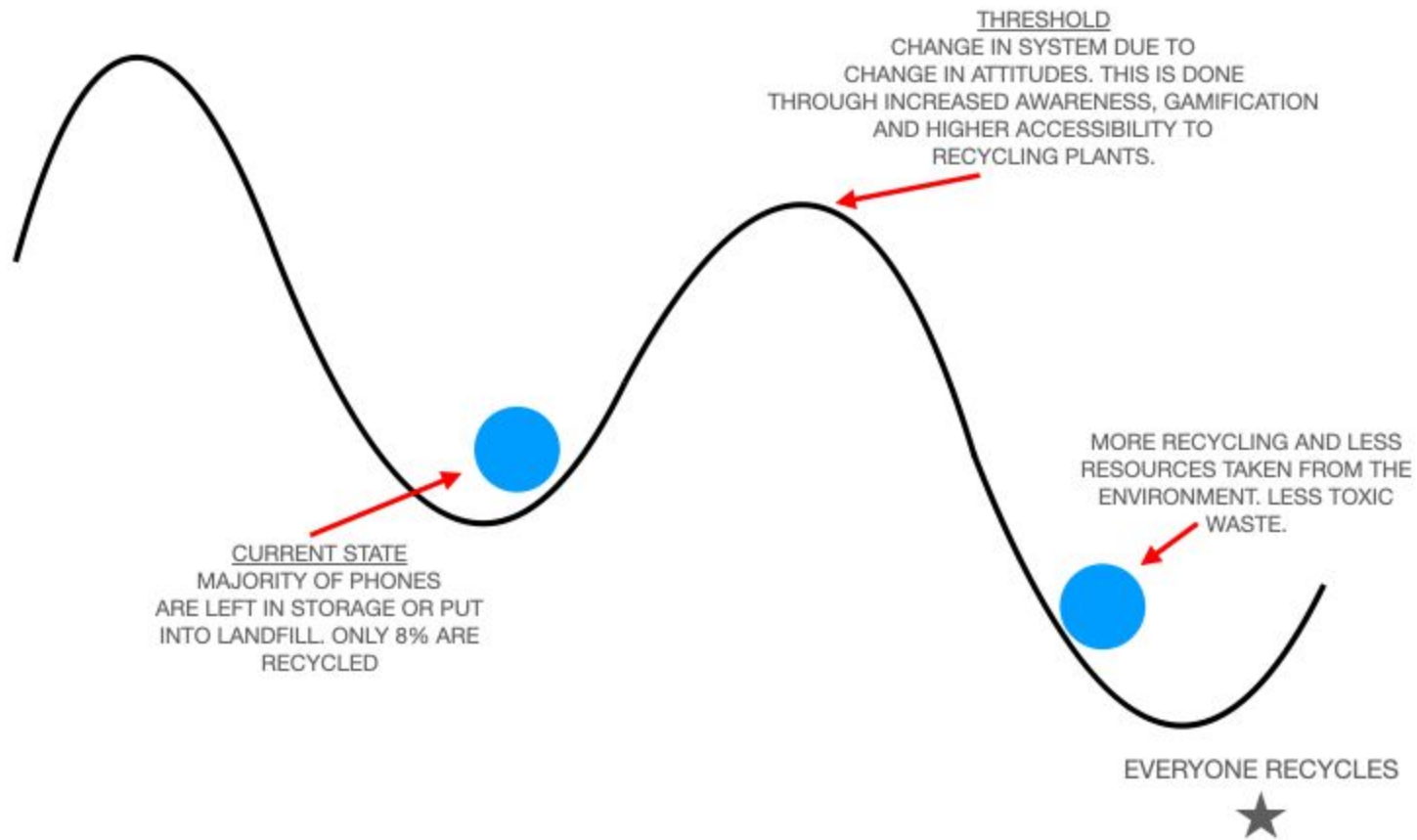
Existing System State



Problem Statement

How might we promote care within the e-waste system in order to reduce the resource burden of our technology demand?

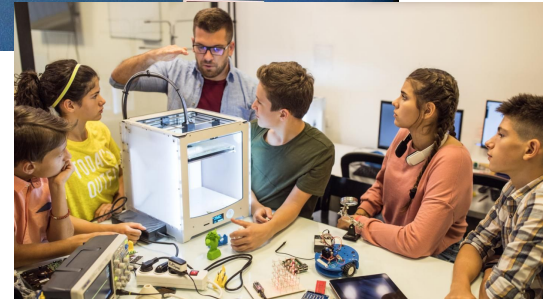
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Interventions

Intervention 1 - Increasing Recycling Levels

- **Problem:** 8% recycle phones, 80% don't know how to and 60% didn't know e-waste is recyclable
- **Aim:** increase consumer care, engagement and awareness in regards to e-waste
- **Intervention:** E-waste microfactories in urban centres which also support school learning and recycling programs
- **Success markers:** recycling short-medium term 30% & >85% long term
- **Potential consequences:** low population density areas not serviced due to high capital costs and e-waste left unresolved



Experiment - UTS e-waste recycling



Building 7 - batteries only



Building 1 - batteries only



Building 11 - batteries and one watch

Observations:

- Limited usage
- Poorly advertised
- Often unseen/unknown
- Mainly batteries, 1 watch, no phones

STUDENT SURVEY

- Out of 49 students surveyed, only 4 knew where one e-waste bin was.
- 0 students could name more than one.
- 92% of students were unaware they existed.
- 45/49 stated they would actively try to recycle e-waste if they were more aware of the issue.

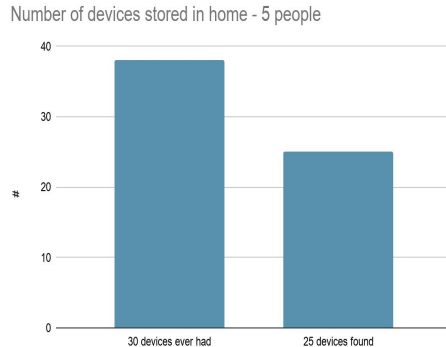
LIVE EXPERIMENT

https://www.youtube.com/watch?v=jzWyLDQvKng&ab_channel=VocaProductions

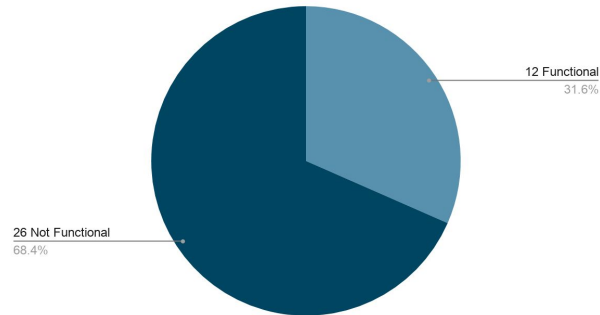
Intervention 2 - Level of Storage

- Aims to motivate the consumer decision making process at the storage stage - shift the balance from landfill disposal to recycling and repurpose.
- Create resilience by pushing untapped storage resources into the balancing recycling loop.
- Integrate phone donation with recycling to reduce psychological resistance to giving up something 'valuable'.
- Side effect of improving global technology equality.

How many of the phones we've ever had are in storage?



% of Phones that are Still Functional



How many of these are still functional?

Intervention 2 - Level of Storage:

Benefits of Donation

Boosts income by:

Facilitating trade

Providing access to online education

Providing access to market information

Helps nation by:

Fostering innovation through collaboration and access to leading ideas

Facilitating political lobbying and activism by allowing networking and connection

Helps humanity by:

Promoting social connection, empathy and equity

Improving understanding of other cultures

Intervention 3 - Level of Resource Use

- Creating a recycled resources target (RRT) of **35% by 2025**.
- Push manufacturers away from unsustainable practice.
- This is going to increase demand for recycled materials, Phone companies playing an active role in recycling.



Experiment - Recycled resources in current phones

- 98% of a phone can be recycled
- The iPhone 12 recycled components
 - 100% rare earth minerals
 - 99% of tungsten
 - 100% of tin
 - 35% of plastics in 14 components



Individual questioning



Individual Questioning - India

Why aren't any major media companies working on documentaries or advertising?

Individual Questioning - Leo

In a desired e-waste system state of complete resource sustainability, would the phone repair industry become overburdened? If so, would phone manufacturing companies need to shift partly into the repair market rather than entirely new device production?

Individual Questioning - Callum

Does the circular economy model have implications for economic growth potential due to the inability for low-cost resource injections into the economy and what implications does this have for policy making?

Individual Questioning - Tom

Could recycling plants and closed economies ever be independently profitable?

Individual Questioning - Jasper

What are the risks of enforcing a caring system through legislation?
Will this be something that is sustainable or will the idea of forced compliance to the system steer individuals and companies in away from our ideal system state and towards another option that presents more perverse outcomes.