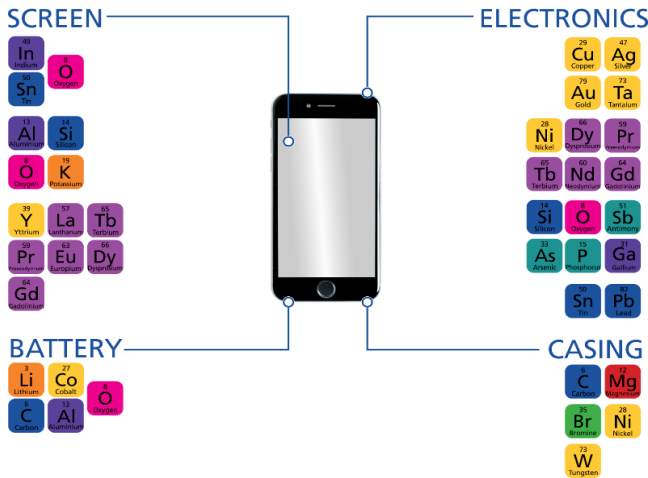


02 – VALUABLE ELEMENTS, ADIR DEMONSTRATOR



ELEMENTS USED IN MOBILE PHONES



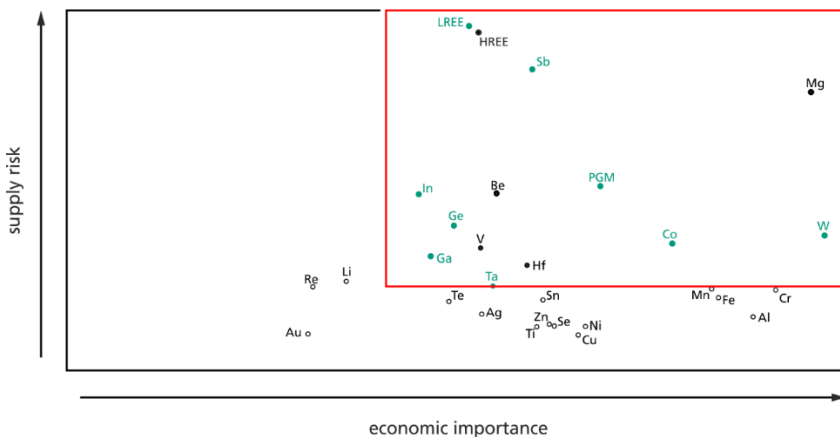
- valuable materials are used for electronic and mechanical components for modern electronic appliances

- examples

| | |
|-----------------------|-----------------|
| capacitors, | tantalum |
| SAW filters | tungsten |
| vibration alert | neodymium |
| loudspeaker | lithium, cobalt |
| battery | gold, copper |
| printed circuit board | |

SAW surface acoustic wave

RAW MATERIALS AND THEIR CRITICALITY

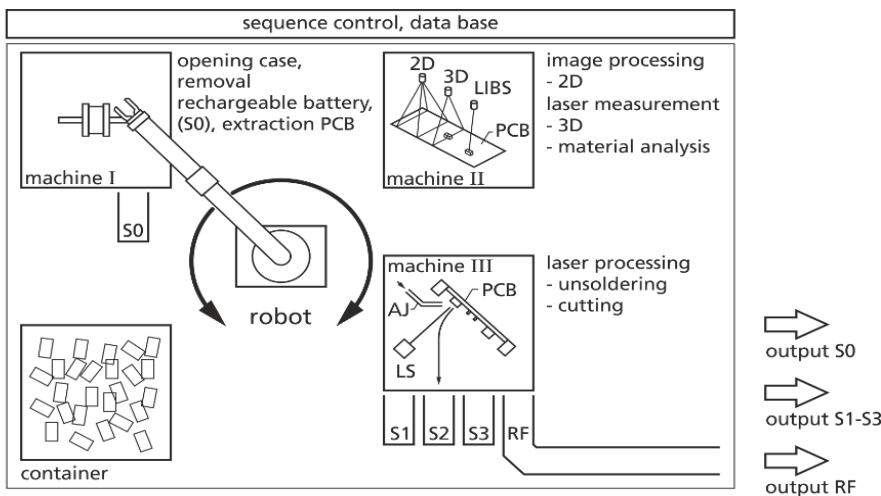


- report on critical raw materials for the EU, European Commission, 2017

- import reliance for tantalum for the EU is 100 %; EU-supply: Nigeria (81 %), recycling input at present: 1 %

LREE light rare earth elements (Nd), HREE heavy rare earth elements, PGM platinum group metals (Pd)

ADIR DEMONSTRATOR



- concept of *inverse* production: physical disassembly by use of methods and technologies originating from production technology
- measuring of physical and chemical data of end-of-life printed circuit boards (PCB)
- selective laser desoldering of electronic components and sorting

RF residual fraction