Abnormal Battery Drain in Smartphone

- Yesterday, my phone lasted 20 hours, today it dies within 4 hours without heavy usage
- 213 sampled battery issues from Android forums
  - Only 7.6% are caused by normal, heavier usage of the phone.
  - Bugs and misconfiguration are dominant root causes
  - Many users don’t remember what they did

(a) Battery Issues Root Cause
(b) Battery Issues Triggering Event

Common Tips on Fixing ABD Issues
- Restart
- Keep plugged in
- Carry 3 batteries
- Uninstall one by one
- Energy Profiler
  - Rank fluctuating
  - Jargons for average users
  - May tell “what”, but not “why”

Observation
- ABD happens usually when system/app enters unseen phase/state
  - Resource usage approximates states for smartphone software
  - Smartphone apps have limited resource usage scenarios
- Phase signature: Resource Type Vector (RTV), Resource Usage Vector (RUV)