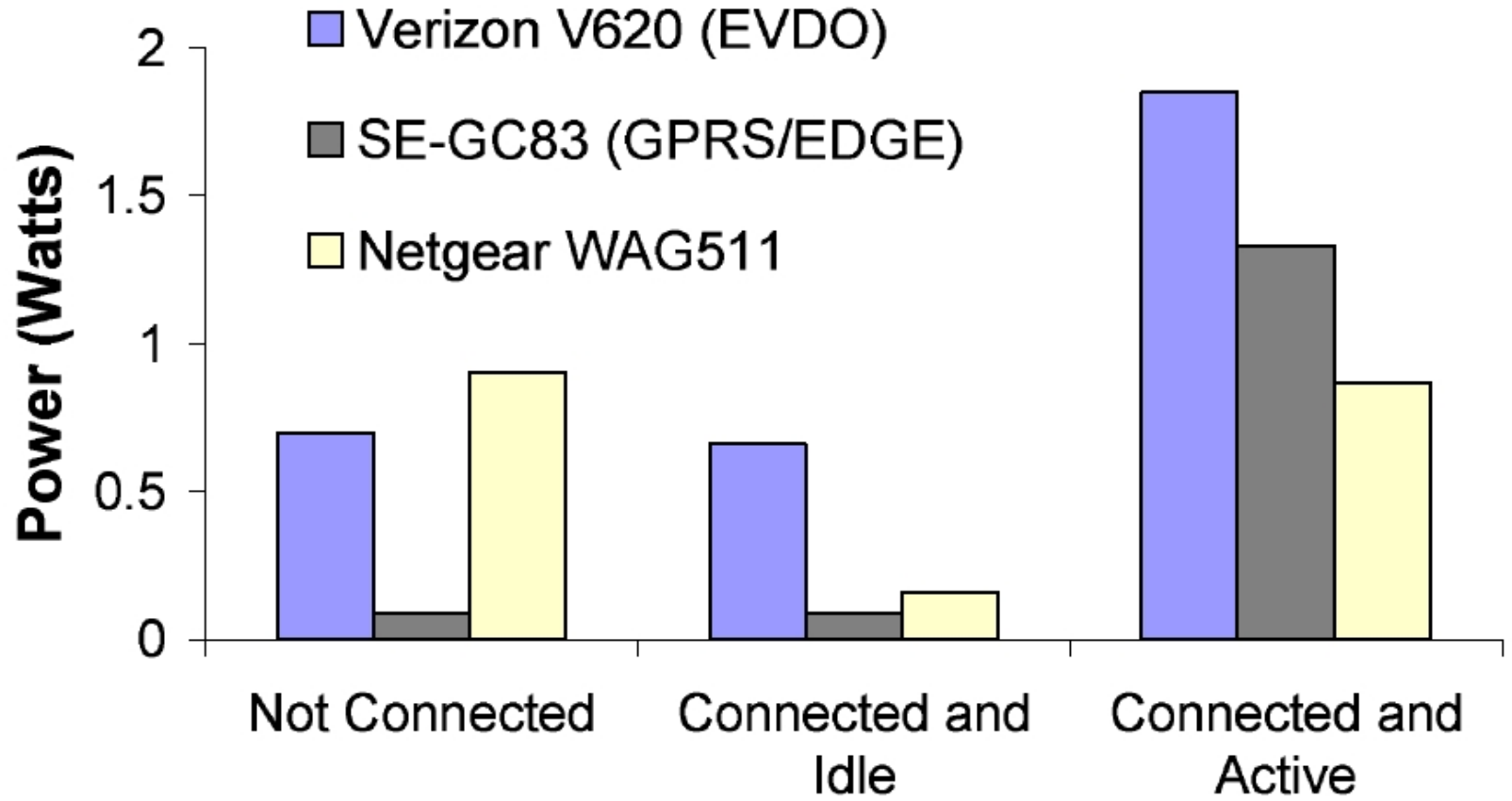# MobiSys 2007

Selected papers

Hossein Falaki

Papers

- Context-for-Wireless: Context-Sensitive Energy-Efficient Wireless Data Transfer
- Wireless Wakeups Revisited: Energy Management for VoIP Over Wi-Fi Smartphones
- Triage: Balancing Energy and Quality of Service in a Microserver

Introduction

Context-for-Wireless vs Cell2Notify

- **Context-for-Wireless**
  - Wi-Fi coverage is not perfect
  - There is always data to send

- **Cell2Notify**
  - Wi-Fi coverage is perfect
  - Sometimes there is Data to send/receive

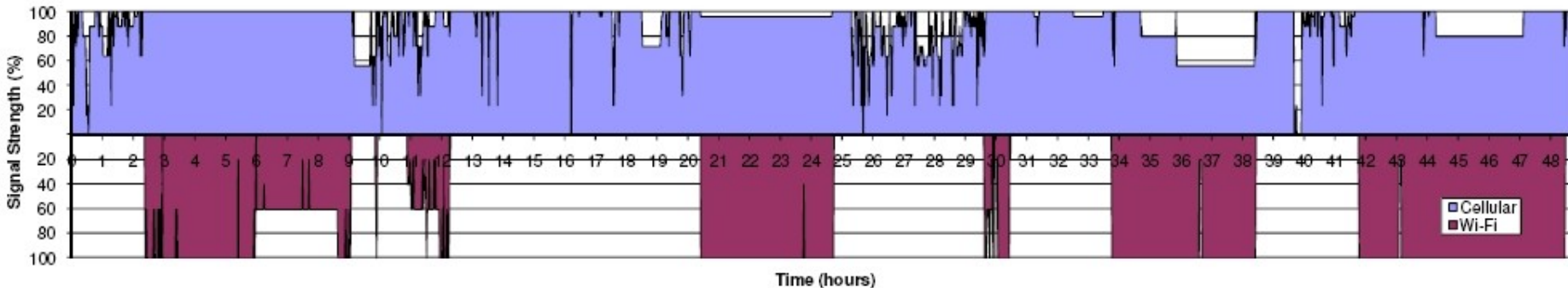# Context-for-Wireless

Ahmad Rahmati and Lin Zhong

Context-for-Wireless
Problem Definition

- Network availability is decent, but ...

- Energy costs pose a great challenge for ubiquitous mobile connectivity.
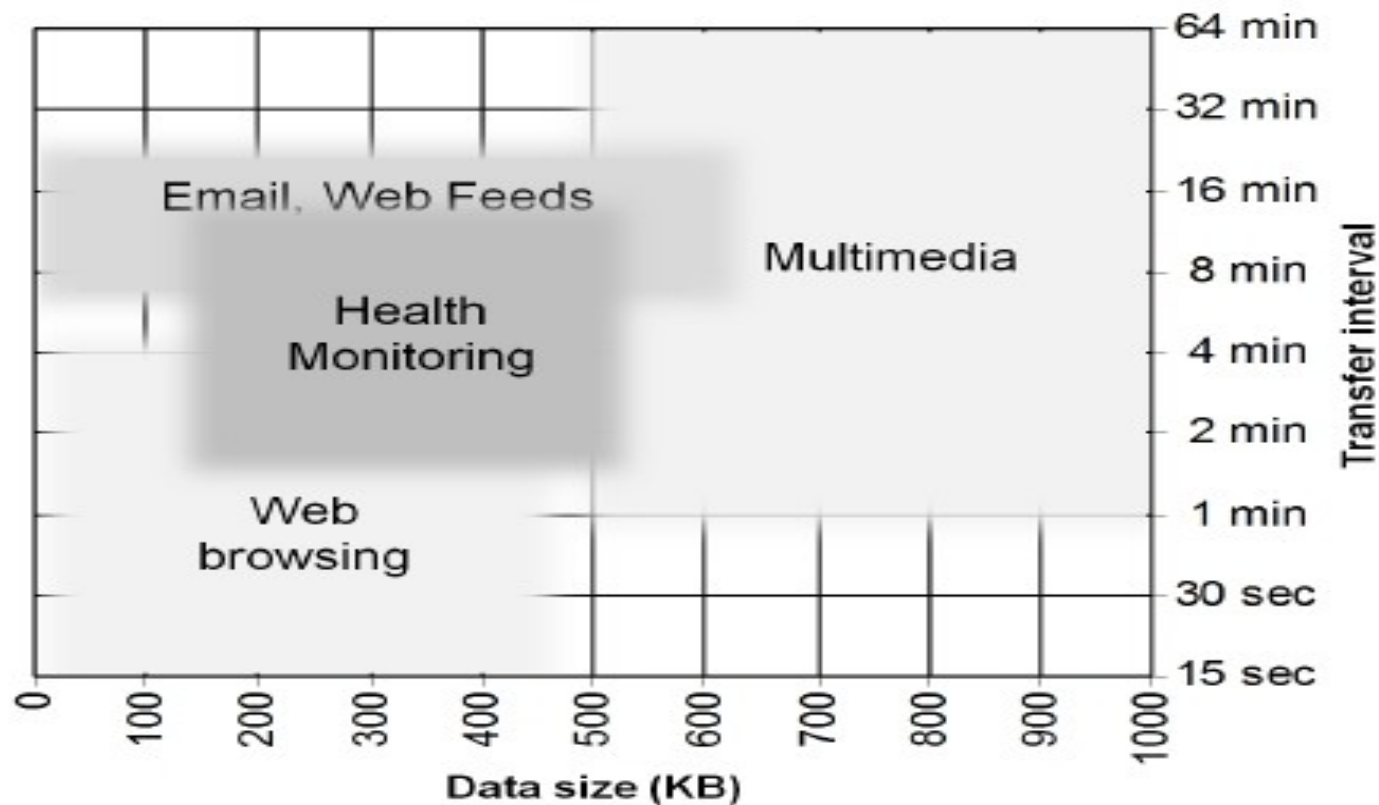
- How to tackle this problem?

Context-for-Wireless
Reality Check

- Best cellular and Wi-Fi signal strength in 48 hours observed by a participant
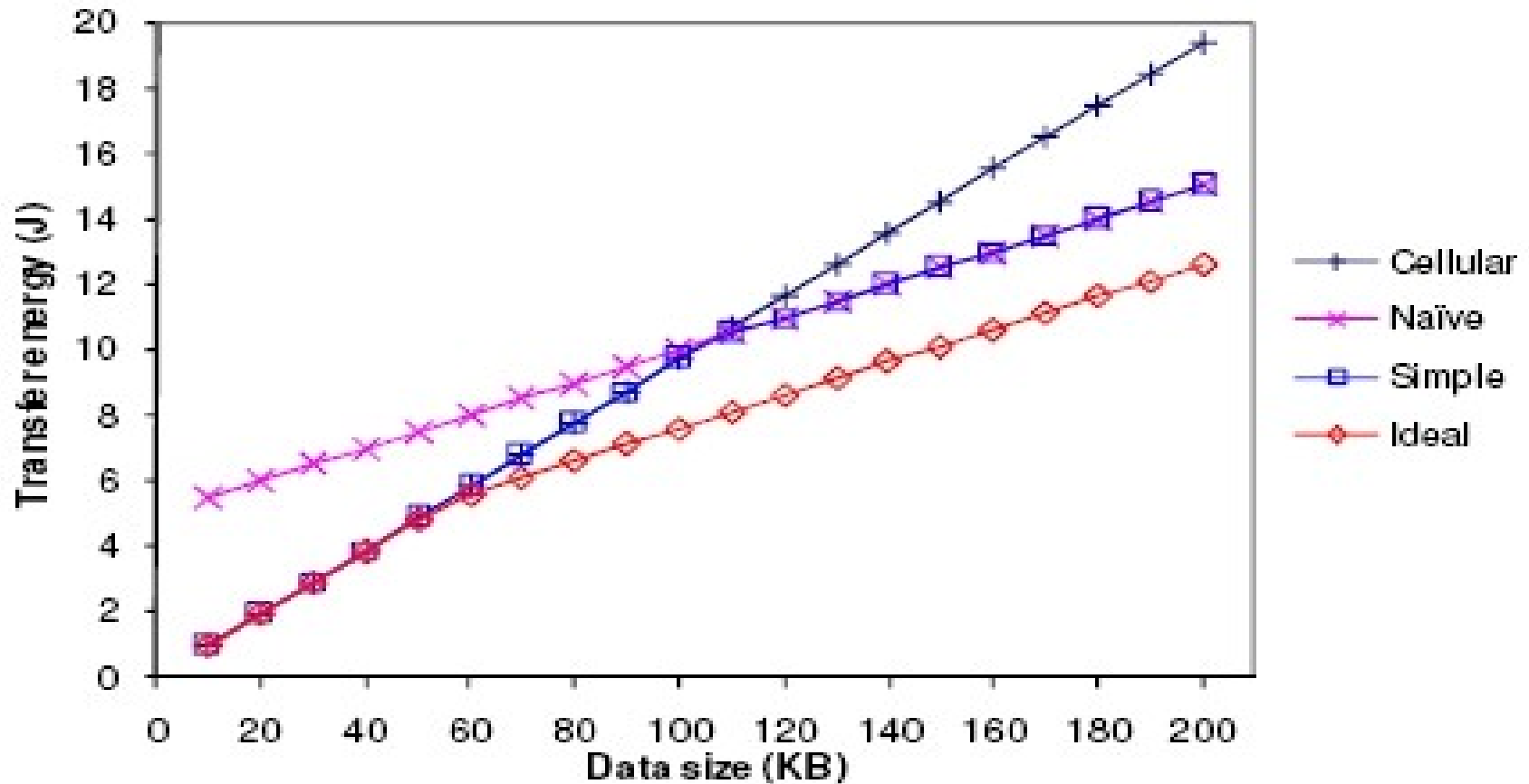
Context-for-Wireless
Reality Check

- Application requirements

Context-for-Wireless
Idea

- Turn the Wi-Fi interface off by default
- Try to use Wi-Fi only in places where there is Wi-Fi covarage
- The problem is reduced to "predicting" coverage
  - Naïve and Simple Solution
  - Hysteretic Estimation
  - History and Cell ID Estimation

Context-for-Wireless
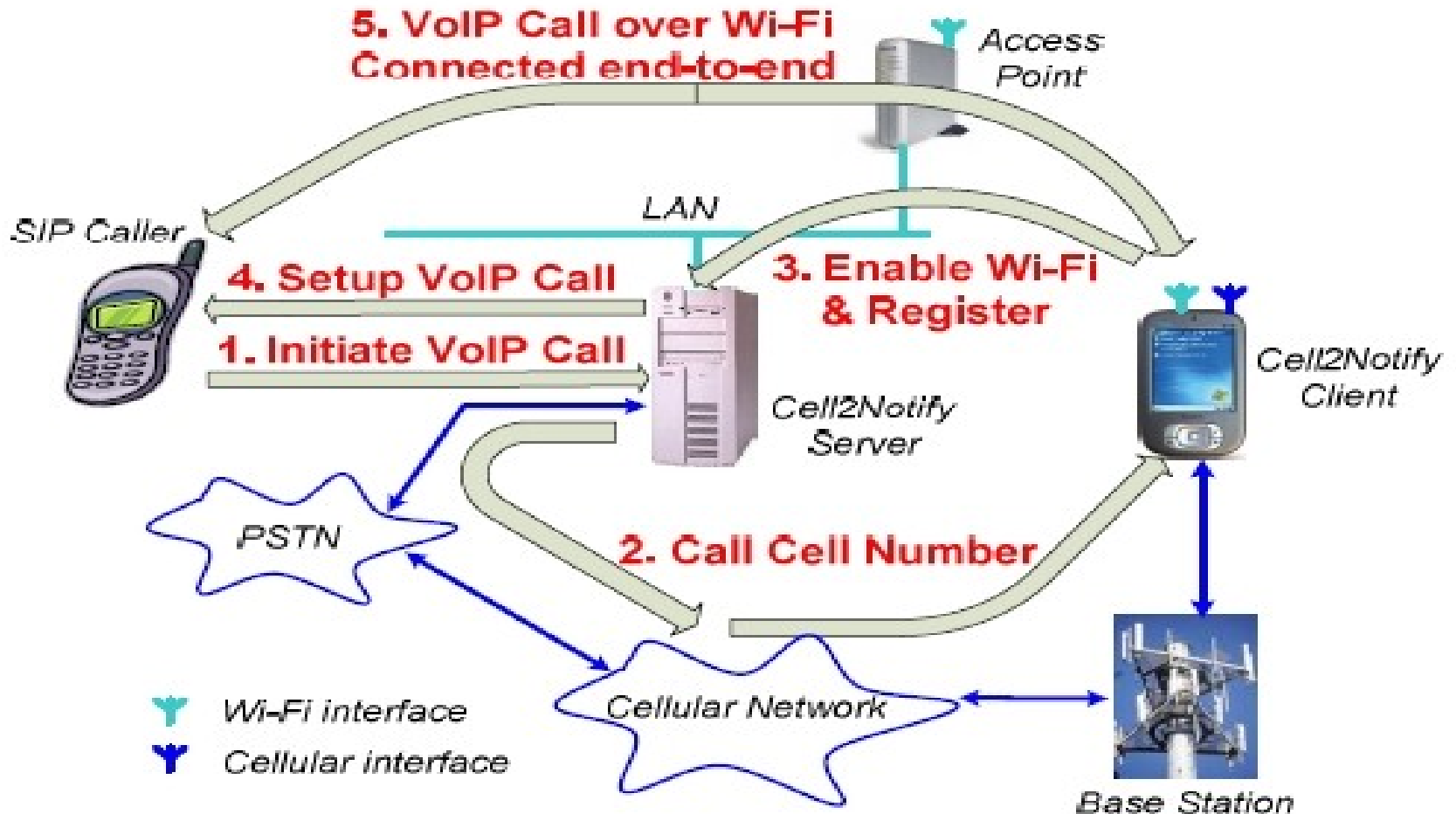## Evaluation

Wireless Wakeups Revisited (Cell2Notify)

Yuvraj Agarwal, Ranveer Chandra, Alec Wolman, Paramvir Bahl, Kevin Chin, Rajesh Gupta
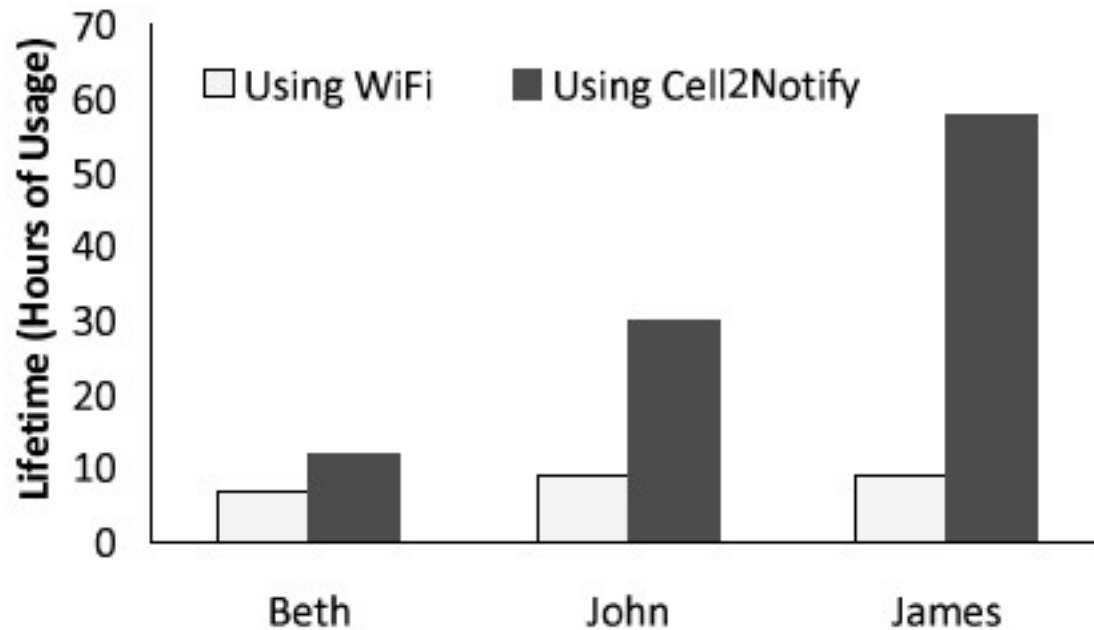
Cell2Notify
Problem Definition

- High energy consumption of Wi-Fi interfaces is a significant barrier to VoIP over Wi-Fi.

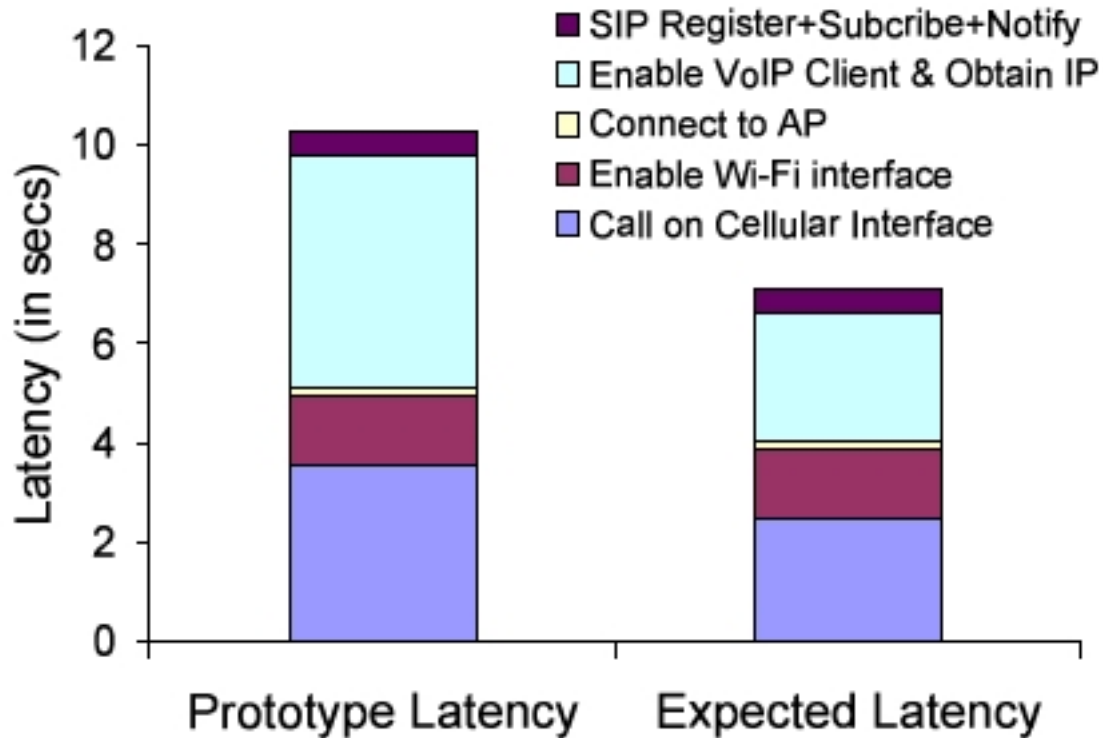- What is a "deployable" solution to the problem?

Cell2Notify
Architecture

Cell2Notify
Evaluation (Battery Life)

Cell2Notify
Evaluation (Delay)

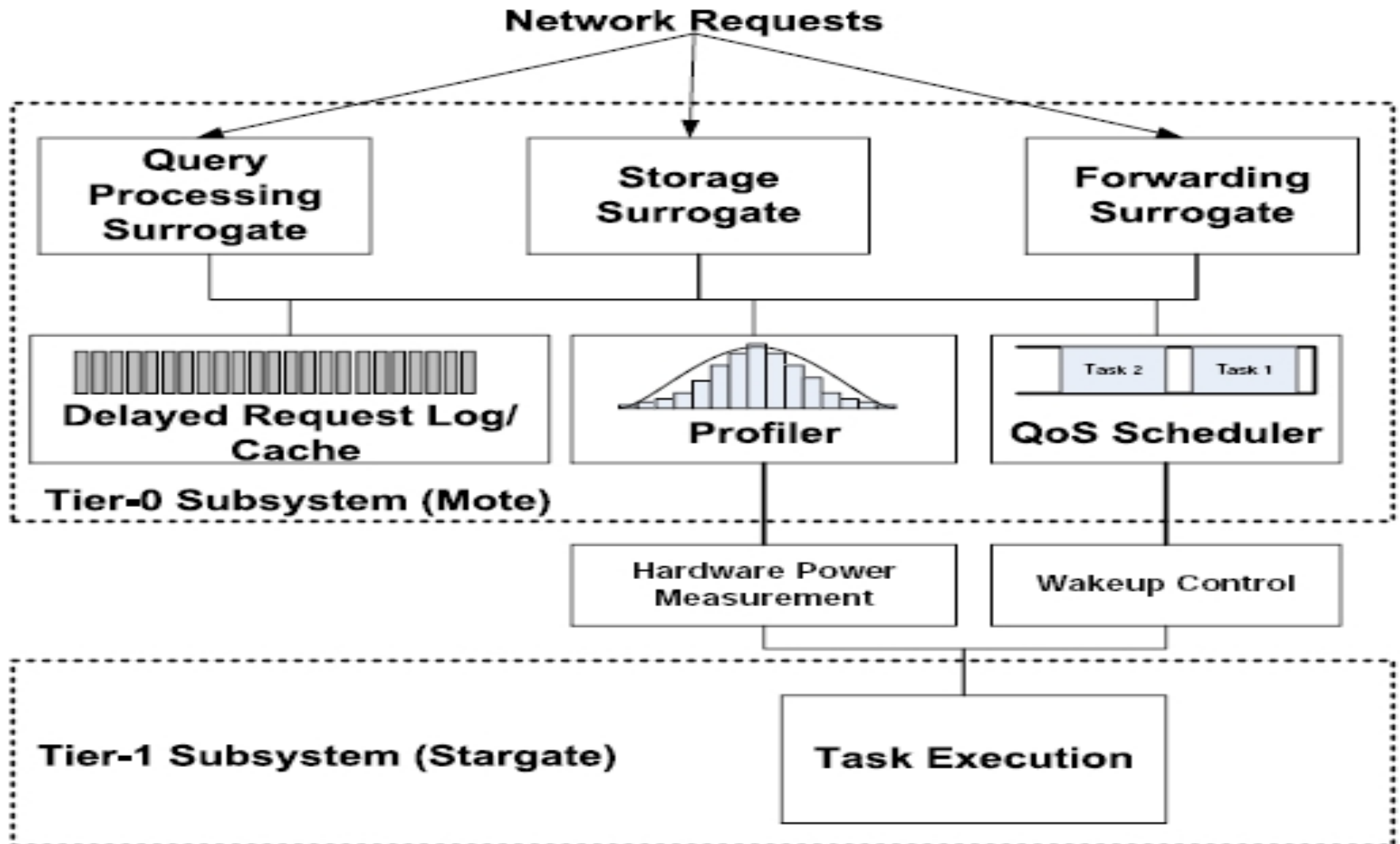# Triage: Balancing Energy and Quality of Service in a Microserver

Nilanjan Banerjee, Jacob Sorber, Mark D. Corner, Sami Rollins, Deepak Ganesan
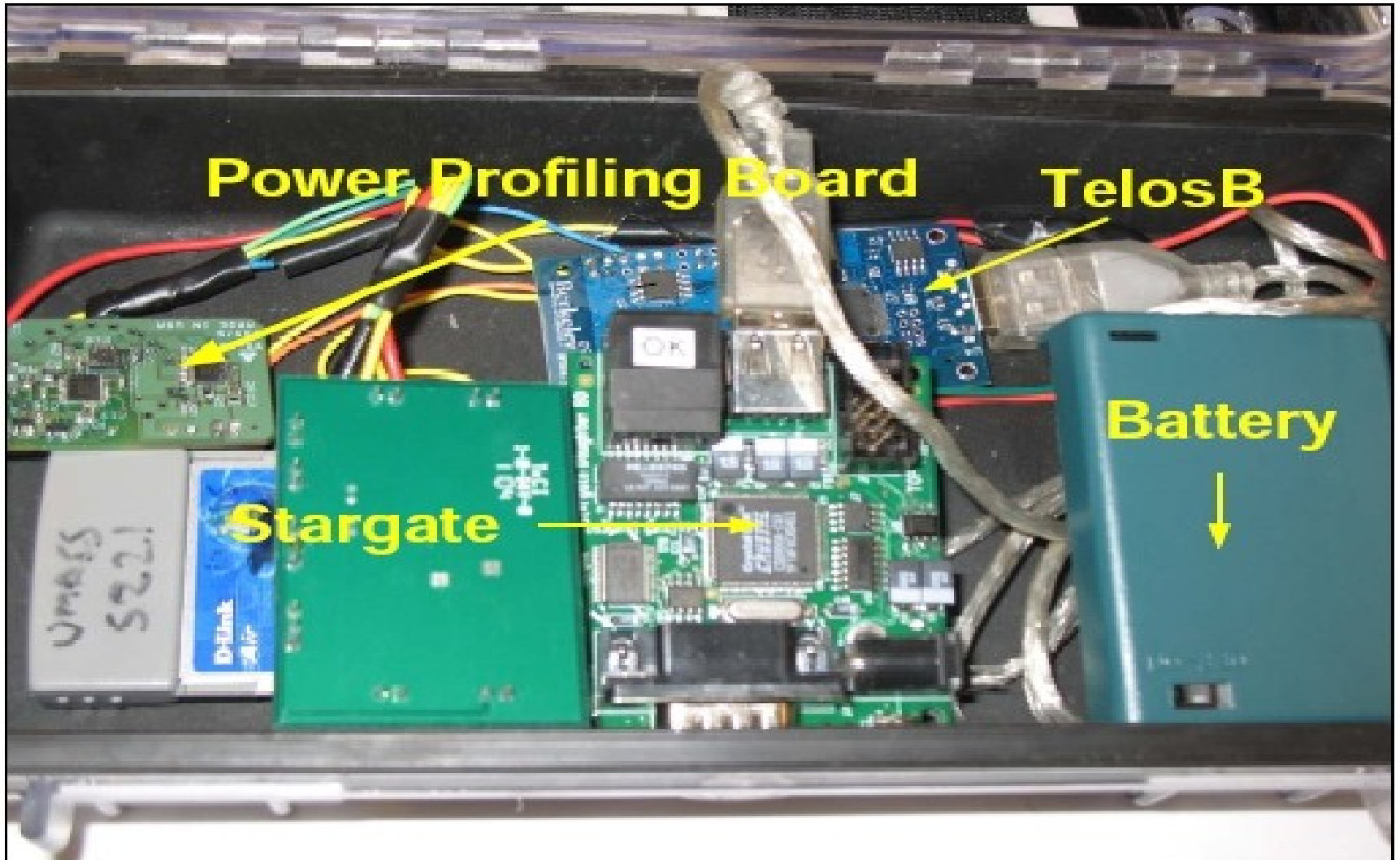
Triage
Problem Definition

- Microservers are battery-powered in-network nodes that serve as aggregation points and gateways

- Providing QoS guarantees for these services can be extremely energy intensive

Triage
Architecture

Network Requests

Query Processing Surrogate

Storage Surrogate

Forwarding Surrogate

Delayed Request Log/ Cache

Profiler

Task 2   Task 1

QoS Scheduler

Tier-0 Subsystem (Mote)

Hardware Power Measurement

Wakeup Control

Tier-1 Subsystem (Stargate)

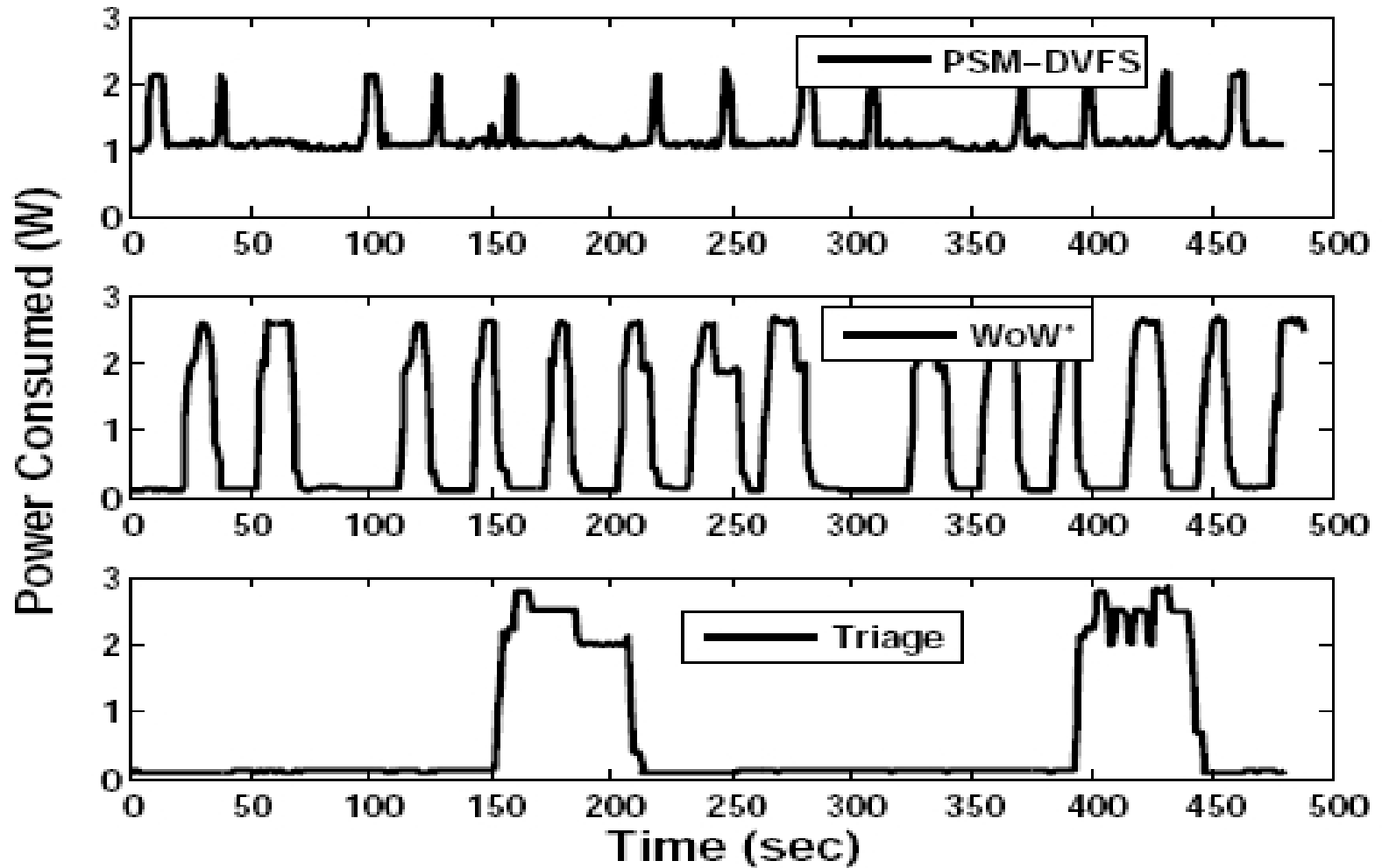Task Execution

Triage
Prototype

Triage
Evaluation

- **PSM-DVFS**: single-tiered dual radio system using WiFi PSM and DVFS (dynamic voltage frequency scaling)
- **WoW***: Wake-on-Wireless
- **Triage:** Two tier architecture with profiling and scheduling

Triage
Evaluation (Power)

Triage
Evaluation (QoS)