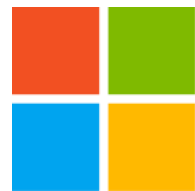


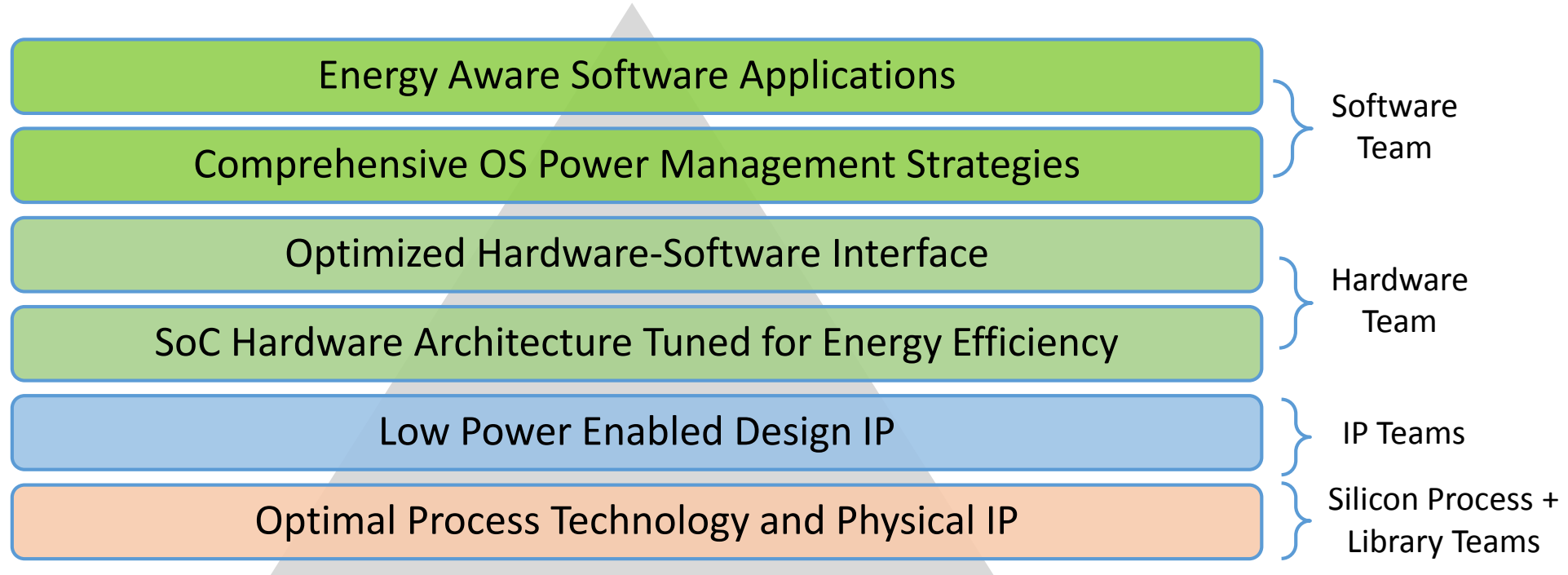
System Level Power – User Perspective

Vita Vishnyakov, Microsoft
DAC 2015



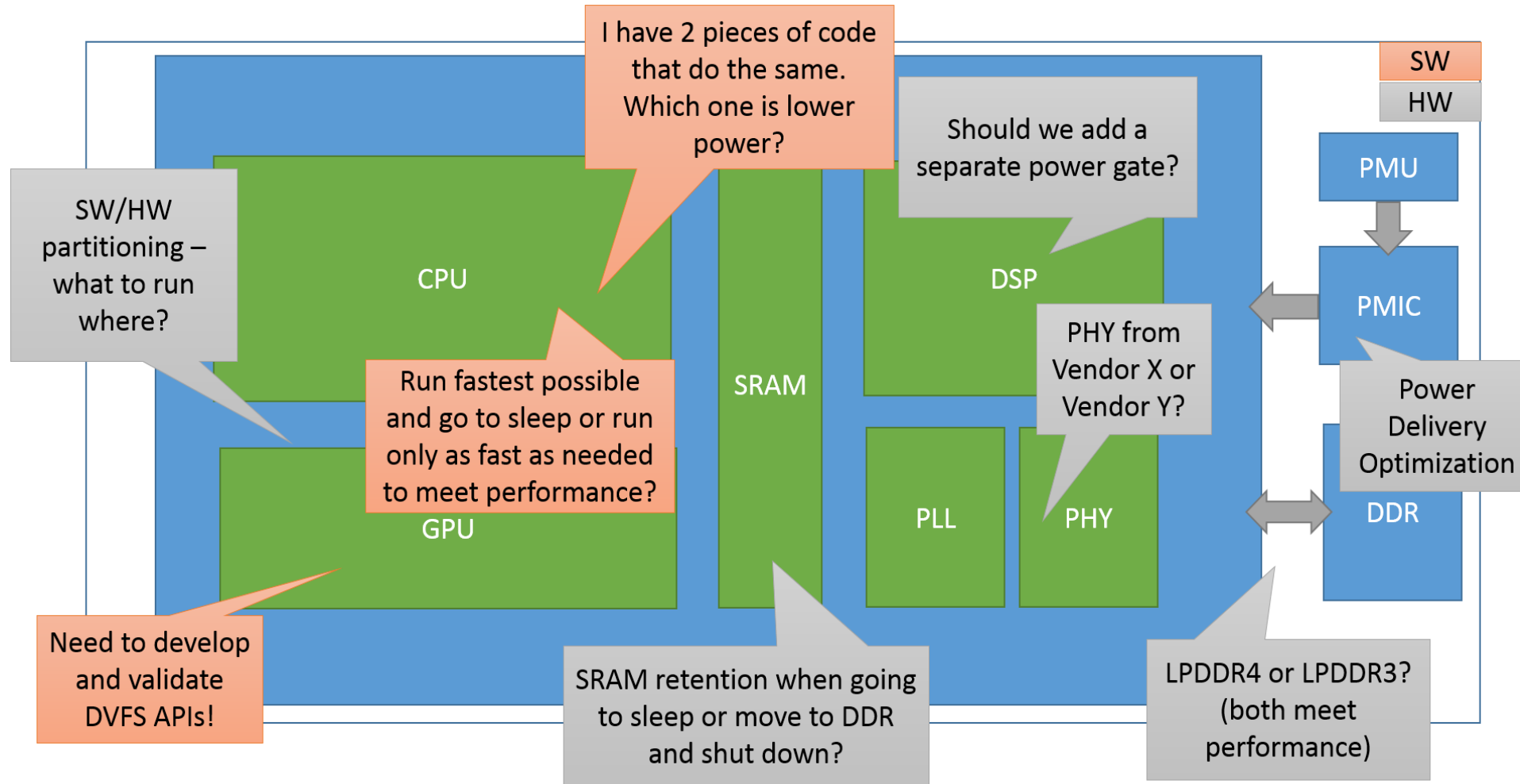
Microsoft

Energy Aware System Design

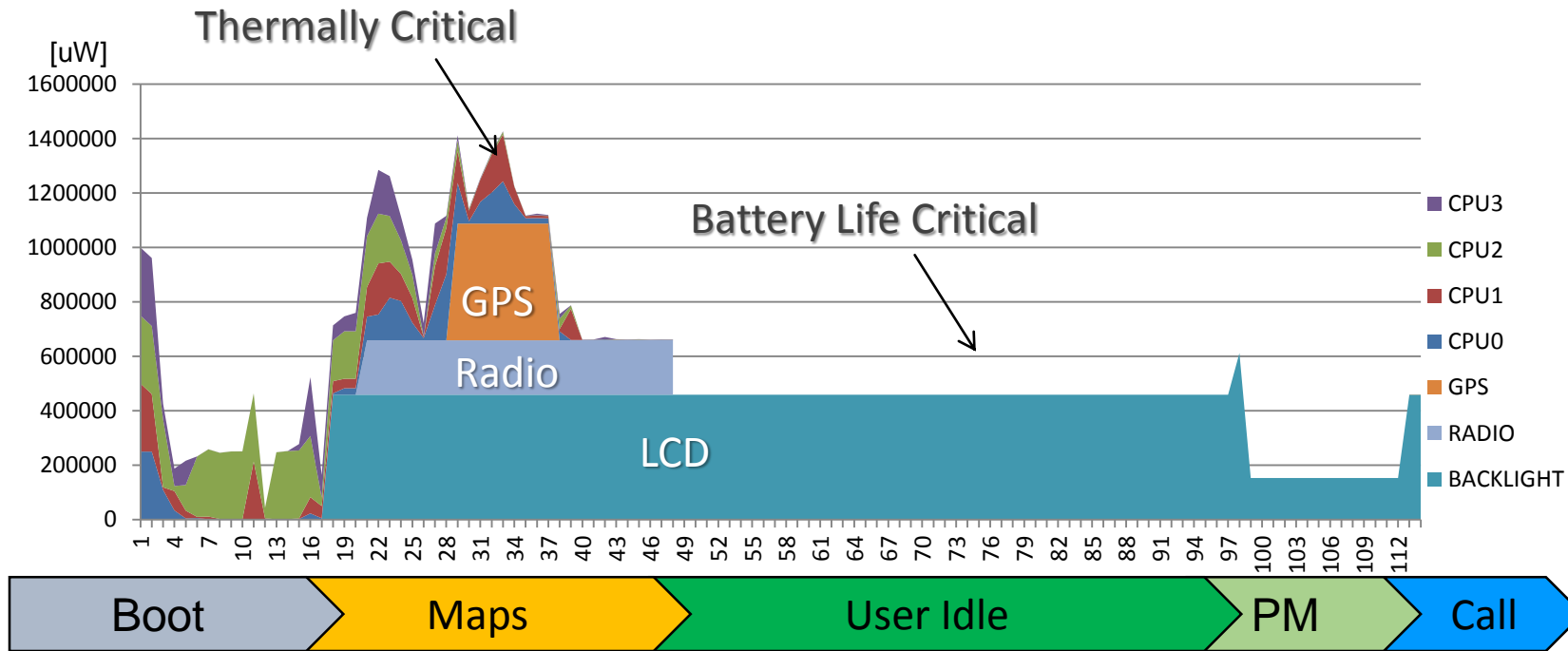


- Energy aware system design is a multi-disciplined task
 - Engineers from all disciplines *must participate* to enable the architecture and design of energy efficient platforms
 - Require a complete, holistic approach to energy efficient system design

System Power Optimization

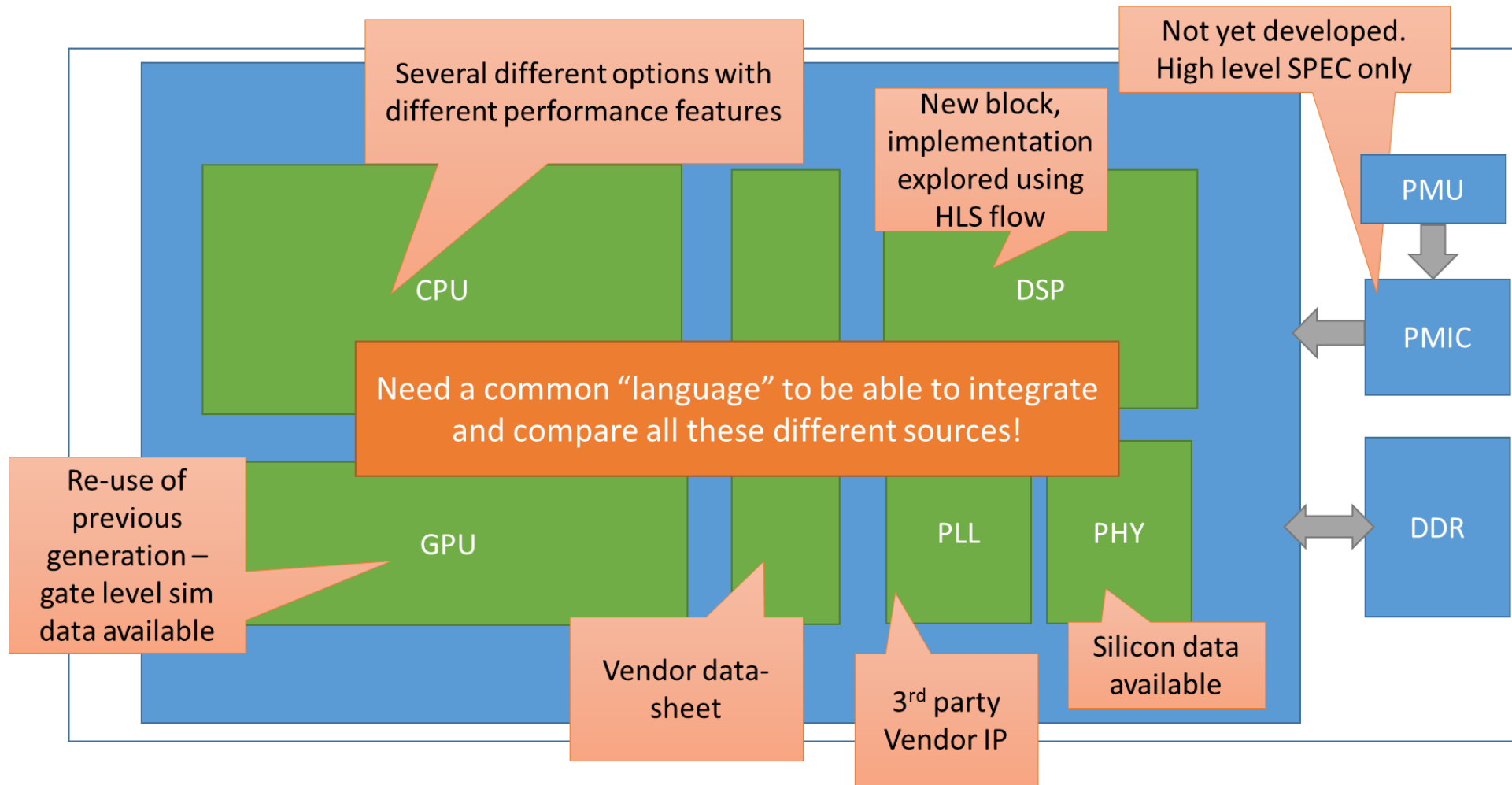


Scenario Based Energy Analysis



- The power scenarios is key to power optimization and modeling
- Abstract yet accurate power models are needed to understand the power profile over μs , seconds, minutes, hours
- Analysis in a wide range of PVT corners is required

Creating a System Level Power Model



System Power Models: Existing Approaches

Method	Spreadsheet	Home Grown Power/Perf Models	Prototyping Tools
Pros	Easy bring-up High accuracy possible	Power/Perf trade-offs at the same environment	“Real” hardware/SW integration Power/Perf trade-offs at the same environment
Cons	Disconnected from performance models Limited workloads representation	High bring-up and maintenance costs	Specialized, dependent on performance prototype availability
Best for	Projections, tracking	HW exploration	HW/SW optimization

“Standardization” of the power models can significantly simplify each of the approaches
However, this standardization needs to address multiple levels of abstraction and usage models

Power Models and IEEE Low Power Standards

