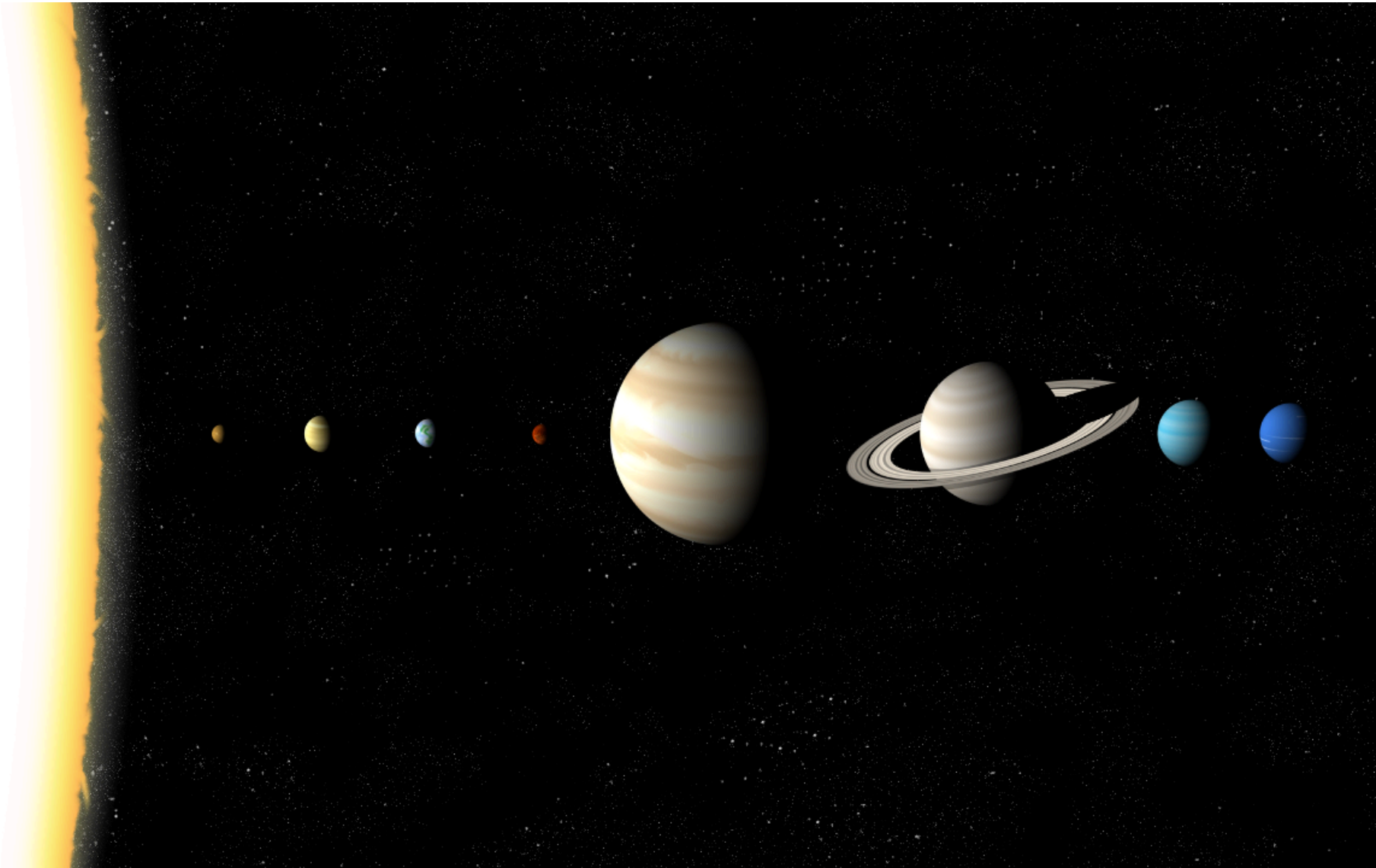


Alignment of issues



Half and Half important!



Eat your own Dog Food



IMPORTANT



Automate Test – network IS SI



SDN Futures: What's missing today that we need to fix - Group 2

SDN Workshop LBNL 14-16 July, 2015

Summary

- New Functionality
 - Abstractions
 - Crisp standards
 - Multi-domain
 - Multi-tenancy
- Manageability
 - Troubleshooting
 - Verification
 - Instrumentation
 - Common definitions
- Skills
 - Workforce development (devOps culture...)

Abstractions

- Vertical abstractions
 - Inter-layer like App-Cntrl, Net-Net, Cntrl – Net
- Horizontal abstractions (can span multi-domain)
 - Service
 - Resource
 - Topology

Standards are Squishy, e.g. OF

- How do we test interoperability between....
 - vendors, within SDN islands
 - SDN islands directly connected
 - SDN island and legacy network
- System level view – switch behavior
- Black box tests
- Best practices for hardware vendors
 - Based on use-cases, like TTPs but system view
- Behavior consistency tests
- Metrics for OF hardware

Multi-domain SDN

- End-to-end services
 - Abstraction and description of services
- Model based
 - Resources
- Security and Trust model
 - Hard!
- Need to deploy!
 - Existing NSI model or a new way?

Multi-tenancy

- Cater to multiple applications with likely conflicting priorities
 - Flow governance
 - From abstractions to implementation of prioritized flow entries.
 - Conflict resolution
 - Policy driven

Troubleshooting

- Debug required at all levels: Service, Network, Device
 - Protocol coherence and correctness
 - End-to-end service coherence and correctness
- Fundamental tool development required for SDN
 - Best Practices (O)
 - Implementation (S, V)
 - Must work for multi-domain SDN

Verification

- Sanity check, state consistency
- Verification of
 - Flow policy
 - Flow state
 - Abstraction → Instantiation
- Requires models to verify against

Instrumentation

- Flow instrumentation covered in OF specification
- Missing
 - Instrumentation of the controller
 - What standard things need to be measured, and how?
 - Instrumentation of the NBI
 - What service characteristics needs to be measured, and how?
 - Instrumentation of the switch
 - In addition to flow statistics, what standard instrumentation is baseline for a SDN hardware device?

Definitions

- We differ on common understanding of 'end-to-end', 'SDN', etc.
 - Ontology needed

Workforce Development