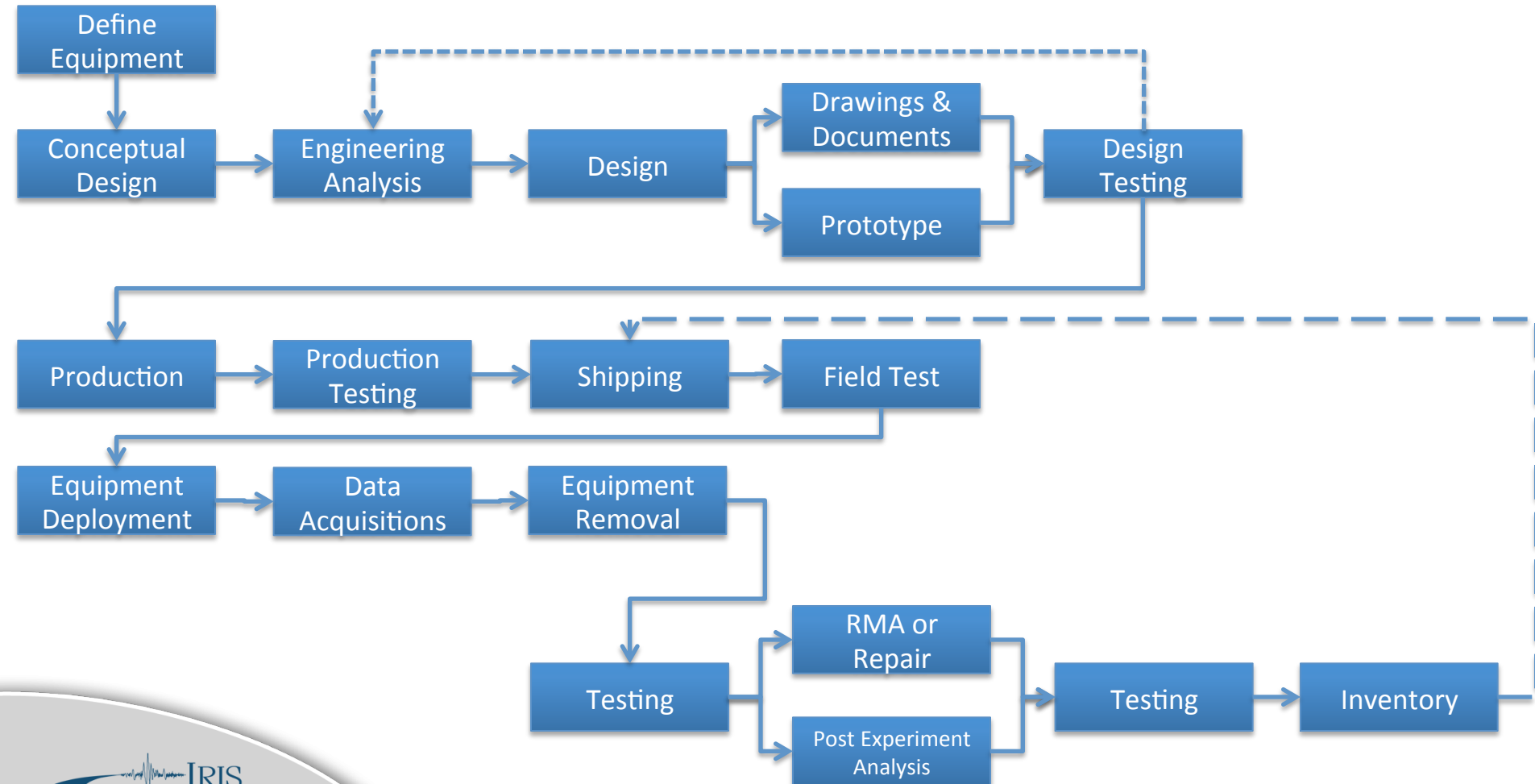


PASSCAL Engineering Methodology

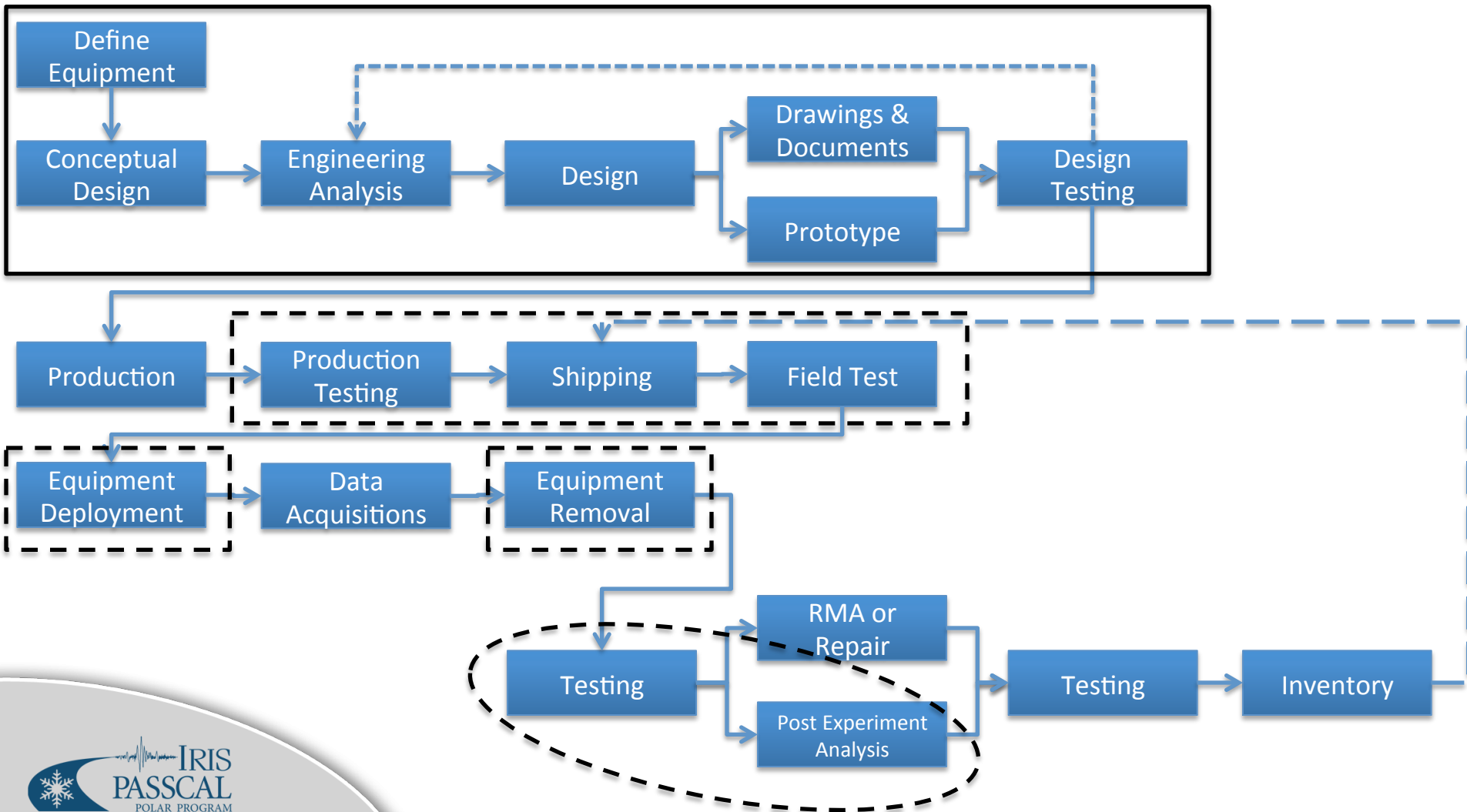
Paul Carpenter

4/28/2015

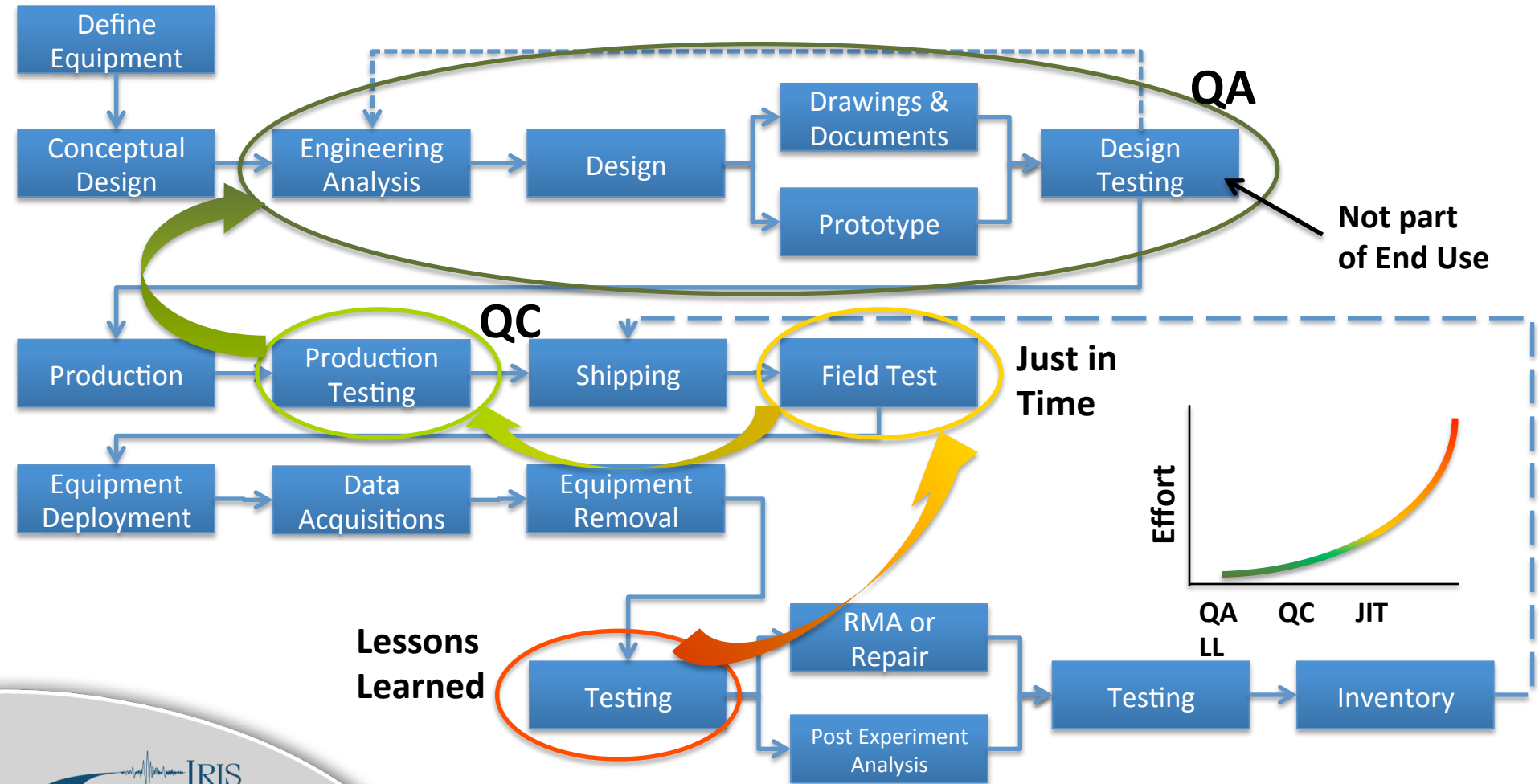
Equipment Life Cycle



Engineering Focus



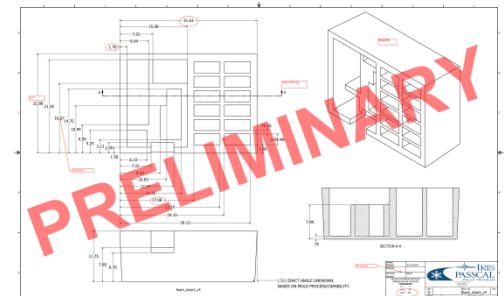
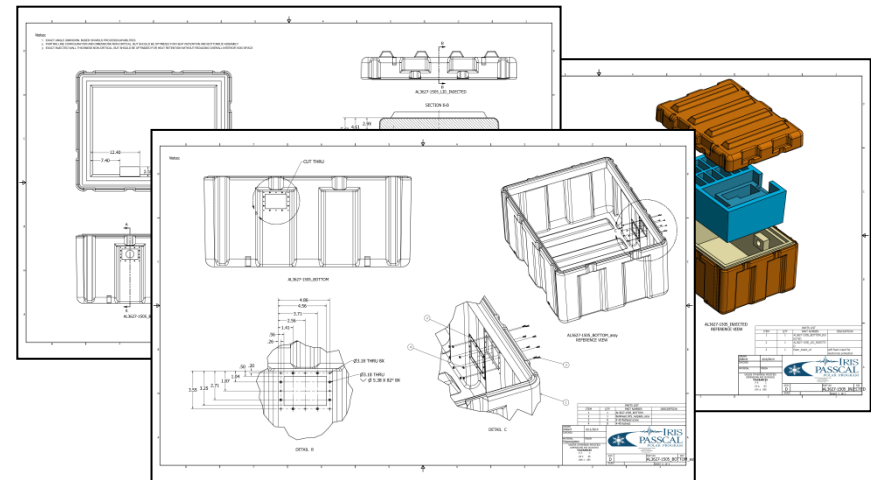
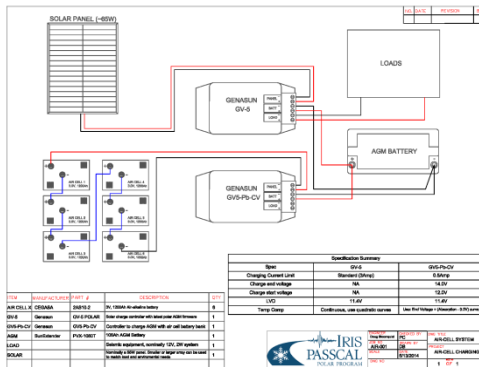
Shifting Emphasis



How Engineering = QA

Through design process

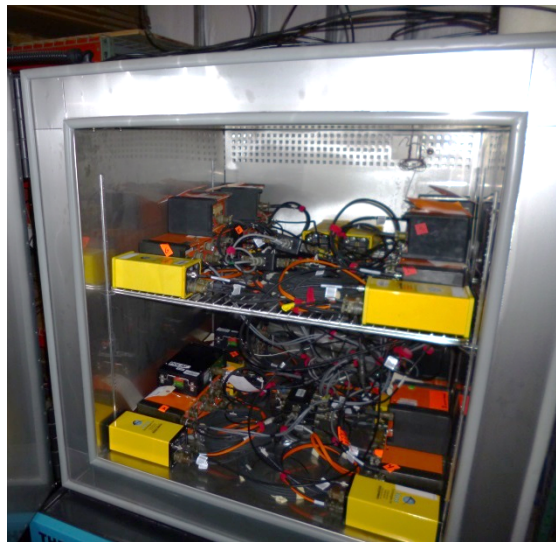
- Change tracking
- Quality drawings



How Engineering = QA Cont.

Through design process

- Analysis and calculations
- Testing and revision



Alaska PV Study



Purpose of the study:

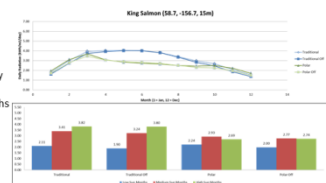
- Determine the optimal solar panel orientation for Alaska

Procedure:

- Use weather and solar radiation data to study available PV power at 5 different latitude bands
- Latitudes ranged from 58°N to 71°N
- Calculate the optimal solar panel orientation
 - Defined as the orientation that minimized the required battery capacity

Results:

- A polar style solar mount (panels mounted vertically and facing due South) is optimal for ALL of Alaska
- Maximizes energy harvesting during low light months
 - Reduces number of batteries needed for the station to run through the winter



Current Systems & Design Philosophy

- Current systems well built and designed
- High data return
- Further refinement
 - Easy to install or service

