Safeguarding Society with Actionable Space Weather Information

SWPC's Interface with the R2O2R Pipeline

Practicalities of Progress

Eric Adamson

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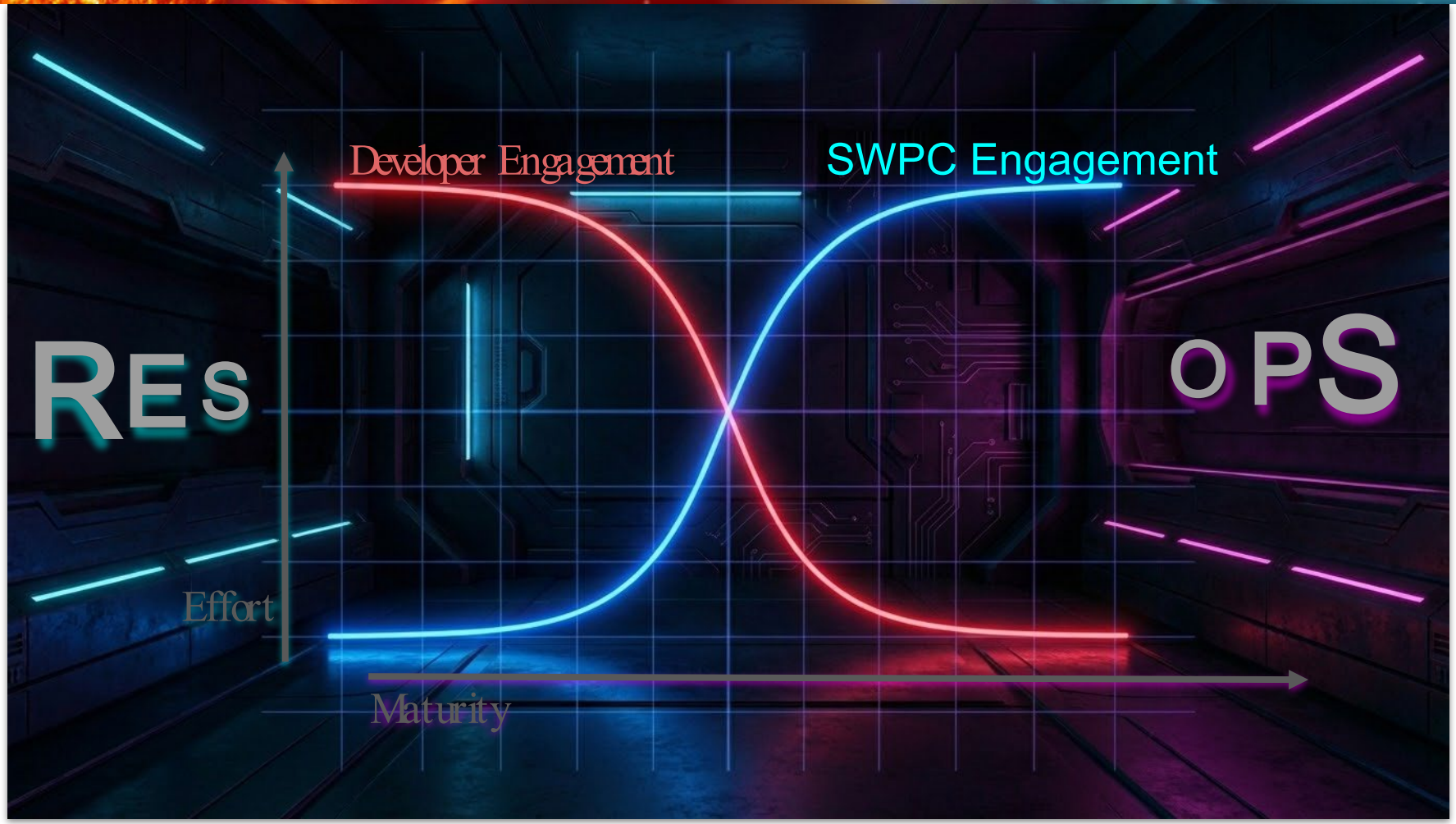
Overview

- SWPC's role in R2O2R
- Governance of the Framework Process
- What Does a Transition to SWPC look like?
- Practical Considerations
- Sticking Points

SWPC's Place in the R2O2R Process

- Serves as the operational civilian SWx forecasting center (DAF serves as the military complement)
- Provides guidance on priority needs in advancing SWx forecasting capabilties
- Supports maturing capabilities toward optimal impact
- Operates and Maintains capabilities 24x7

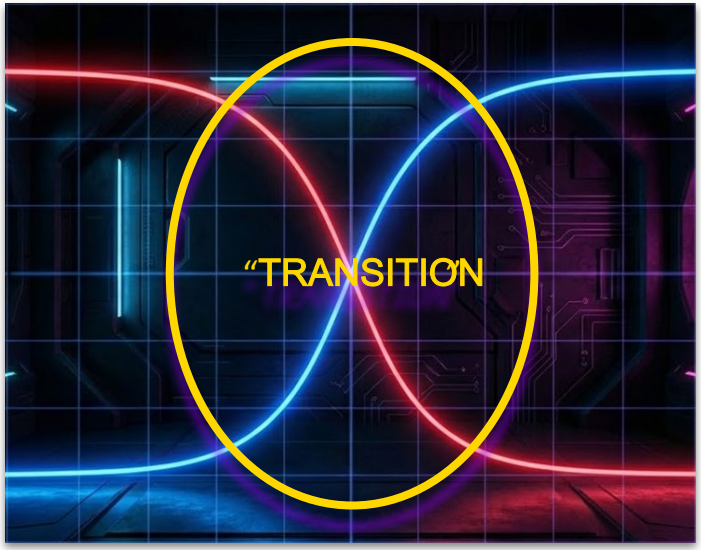

Developer Engagement
SWPC Engagement
RES
OPS
Effort
Maturity

Governance of the R2O2R Process

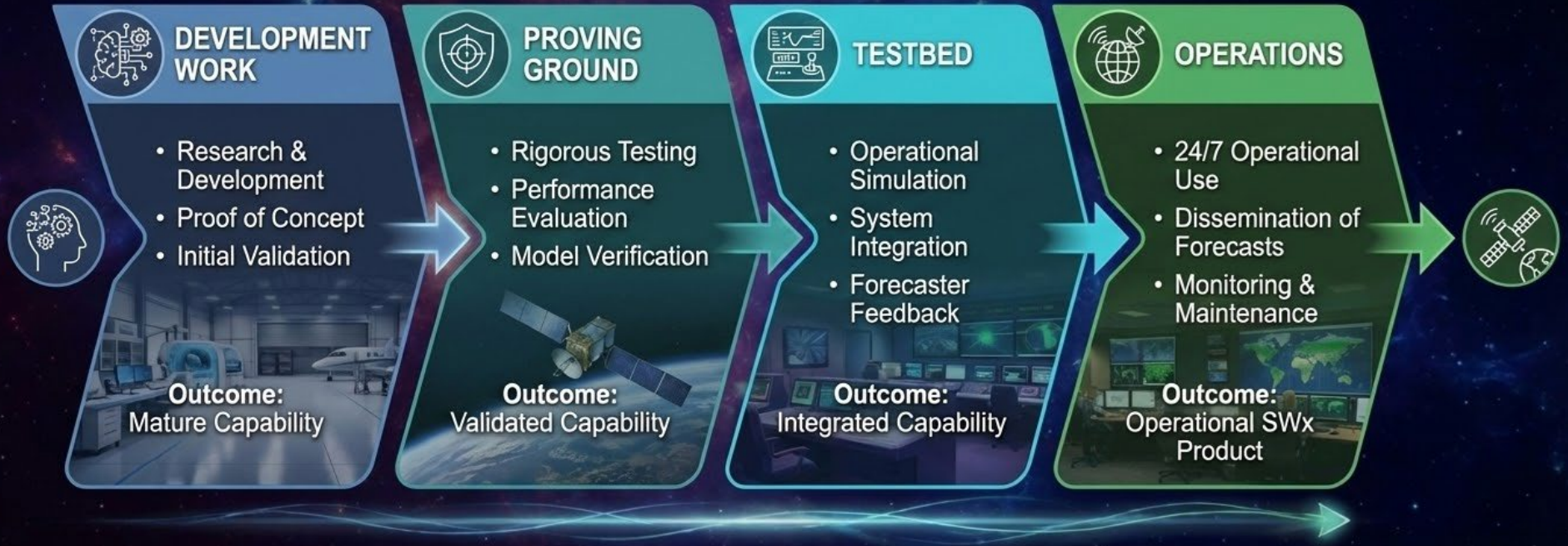
- Flow of R2O must be regulated - *cannot be a free-for-all, vying for limited resources*
- The Framework (and the 2023 MOA) established the R2O2R Steering Committee & Executive Board, delegating them the requisite oversight authority
  - Cost-vs-Benefit considerations are pivotal
  - Resource limitations demand culling of capabilities throughout the cycle to control the flow of R2O at manageable levels
  - Limited funding must be directed toward high potential projects

“Transitioning” to SWPC

- Early and frequent engagement to ensure alignment with realities of operational environment and needs (*co- design/development*)
- Transition efforts:
  - Highly **collaborative** (not a handoff or single step process)
  - Process initiated after selection by governing bodies, based on potential as evidenced by **validation**
  - Require forward planning (transition plans/business case/licensing)



R2O2R Pipeline: Development to Operations



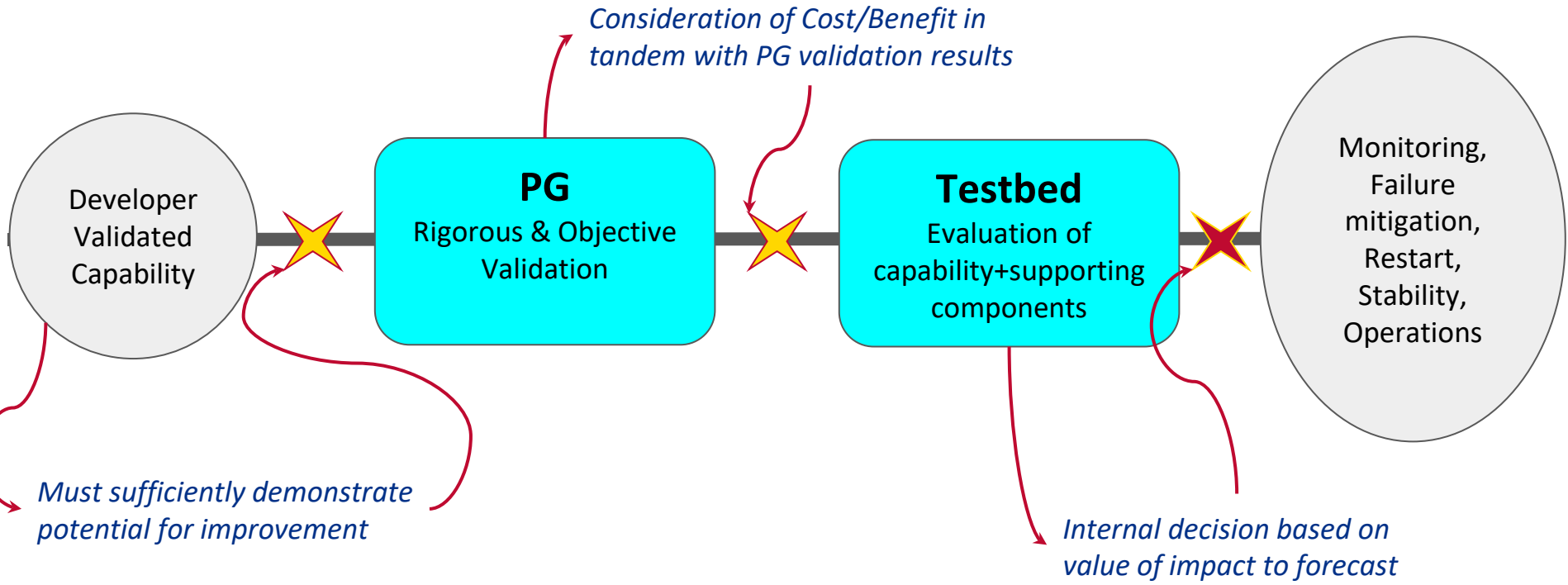
Practical Considerations

- Internally developed capabilities
  - Wang-Sheeley-Arge
  - Enlil
  - WAM-IPE
  - Geoelectric
- Community challenge
  - SWMF - Geospace model
- Externally developed
  - CARI-7
  - Ovation

Regardless of provenance, pathway to ops has varied significantly

➔ *These all predate the 2022 Framework*

Practical Considerations



Sticking Points

- Early engagement is essential toward ensuring alignment with needs and practical constraints of real time use.
- Resource estimations must be revised as capabilities mature.
- Required planning docs are built-in to the process, anticipating potential blockers.
- Heed the distinctions of real time vs science quality datastreams.
- **Validation is critical!** This serves as justification for continued investment and access to PG & Testbed.