



# NSF Campus Cyberinfrastructure PI and Cybersecurity Innovation for Cyberinfrastructure PI Workshop

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**Project Title: Regional Embedded Cloud for As-a-Service  
Transformation (RECAST)**



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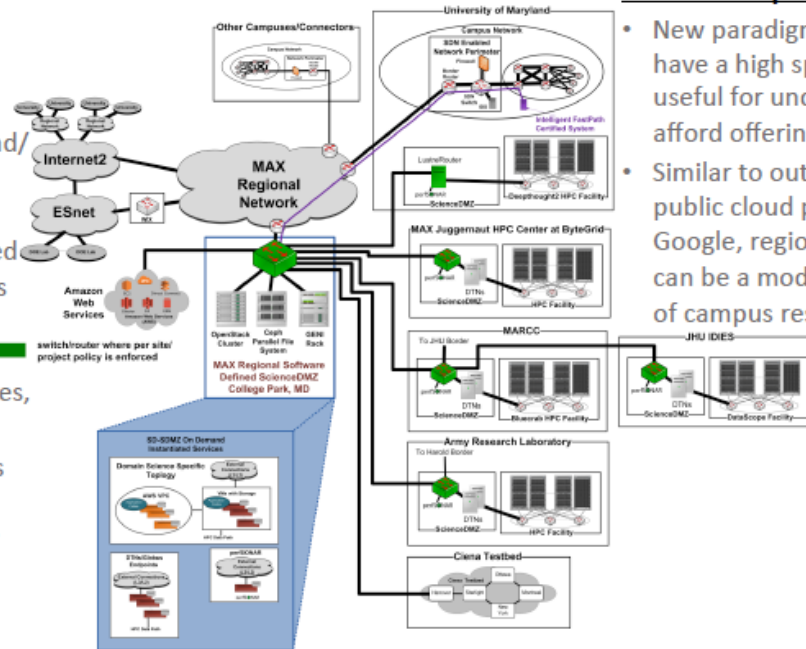
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## Regional Embedded Cloud for As-a-Service Transformation (RECAST)

### Challenge:

- Still difficult to build "disk to disk" or "scientist to scientist" connections. Most dynamic services stop at the network edge because the campus and/or ScienceDMZ resources are not dynamic.
- Researchers are increasingly interested in an emerging class of hybrid services focused on turnkey, on-demand, integration of private/public clouds, cyberinfrastructure, scientific resources, and high performance networks.
- The standard SDMZ architecture does not readily provide a mechanism to offer a flexible service set that can be provided on an "as-a-service" model, with clear service and security demarcation points.



### Broader Impacts:

- New paradigm applies to many other regions that have a high speed regional network. Especially useful for underserved campuses who cannot afford offering their own SDMZ or SD-SDMZ.
- Similar to outsourcing campus IT services to public cloud providers such as Amazon and Google, regional software defined SDMZ-a-a-S can be a model for satisfying the special CI needs of campus researchers.
- This model is an alternative to "parallel networks" and can enrich the architectural options for campuses who plan to create or upgrade their campus to SDMZ connectivity.

### Solutions:

- New paradigm for flexible edge infrastructure in the form of "Software Defined ScienceDMZ (SD-SDMZ)".
- Built upon technologies similar to those used in modern data centers this "cloudified SDMZ" will be able to provide scalable, multi-tenancy environment, where each user or user group can allocate dedicated resources and use in an isolated, independent and elastic fashion.
- By sharing SD-SDMZ as regional services, campus IT groups can offload the complex work of developing specialized services and trust it to a regional team that has pooled and dedicated expertise in providing high-performance, integrated services.

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