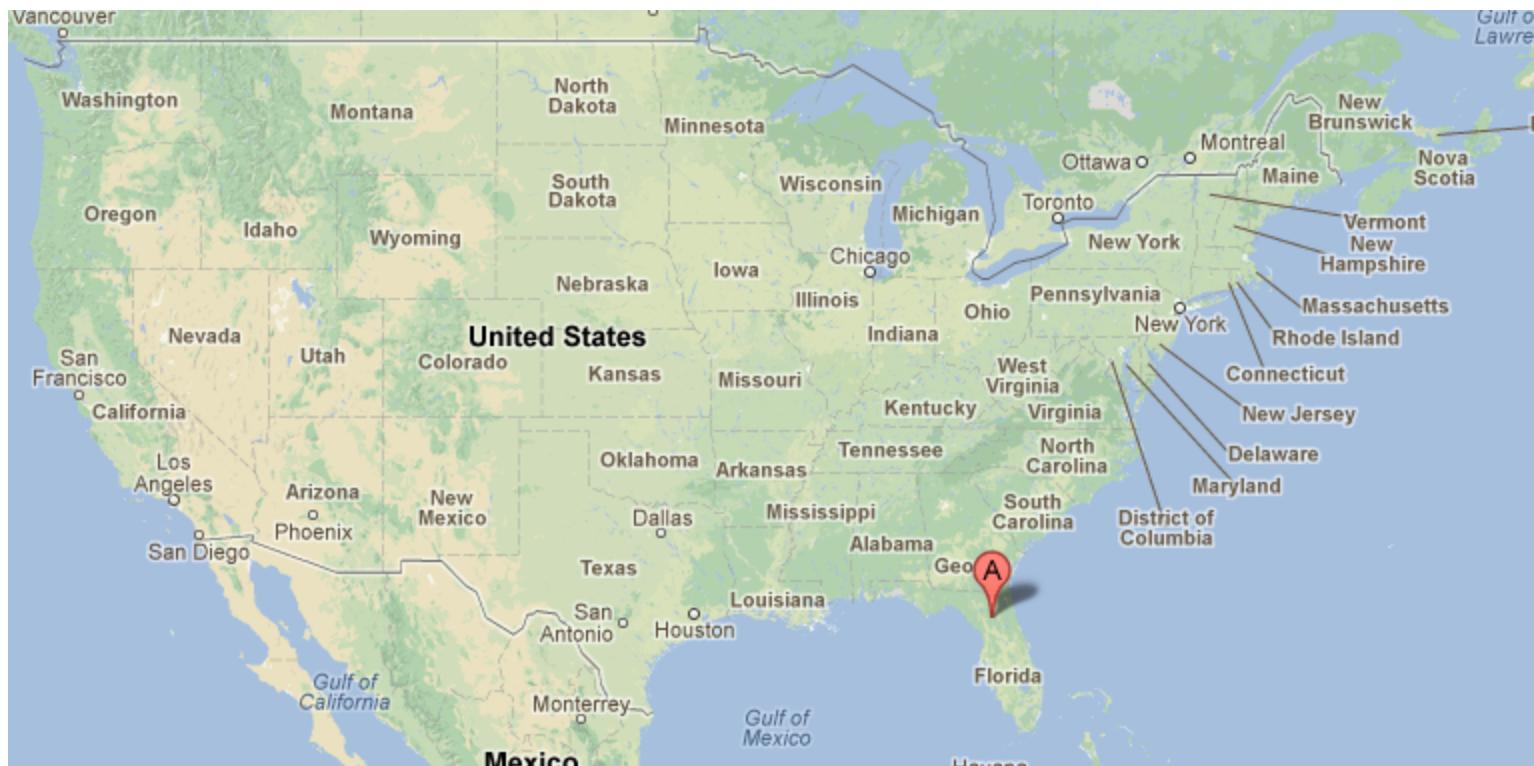


The case for ACIS @ UF in PRAGMA

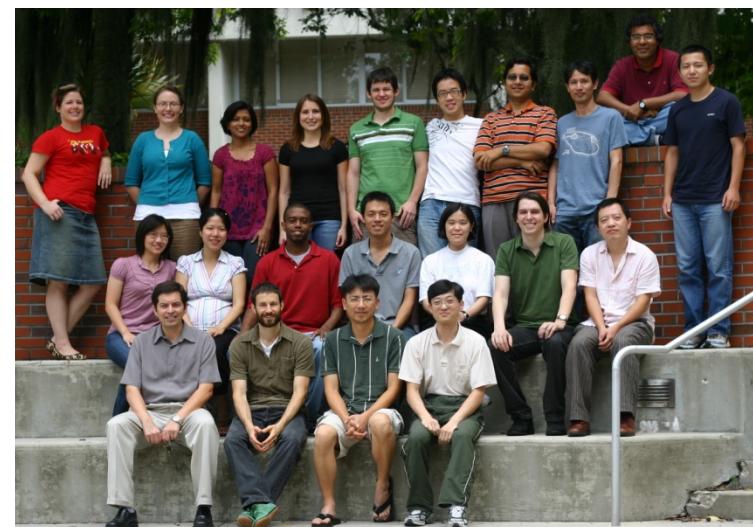
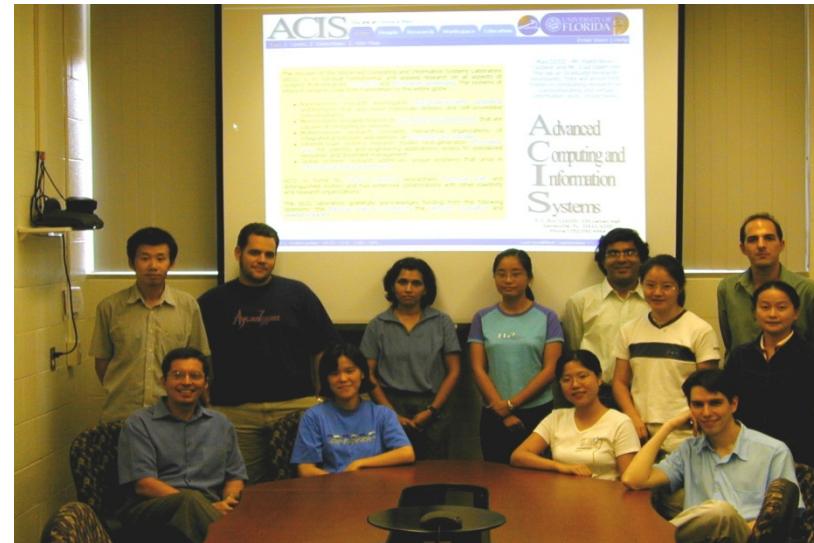


***Jose Fortes
(also on behalf of
Renato Figueiredo and Reed
Beaman)***



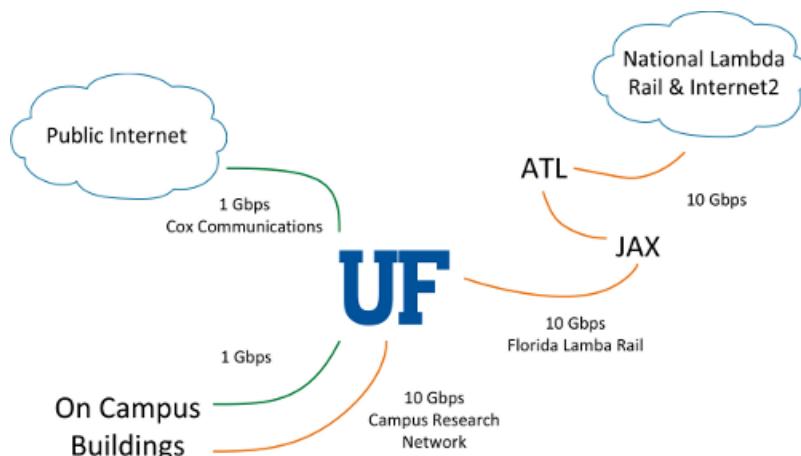
ACIS in numbers

- Founded in 2001
- 2 + 2 faculty members
- 3 research scientists
- 2 IT experts
- 1 Assistant, 1 secretary
- 20 PhD students
- 3 PhD graduates/year
- Visitors from Japan, Korea, China, France, Thailand ...
- More than 15 papers/year
- 1+ keynote speech/year
- Chair one⁺ meeting per year
- \$1 to \$1.5 M/year expenditures



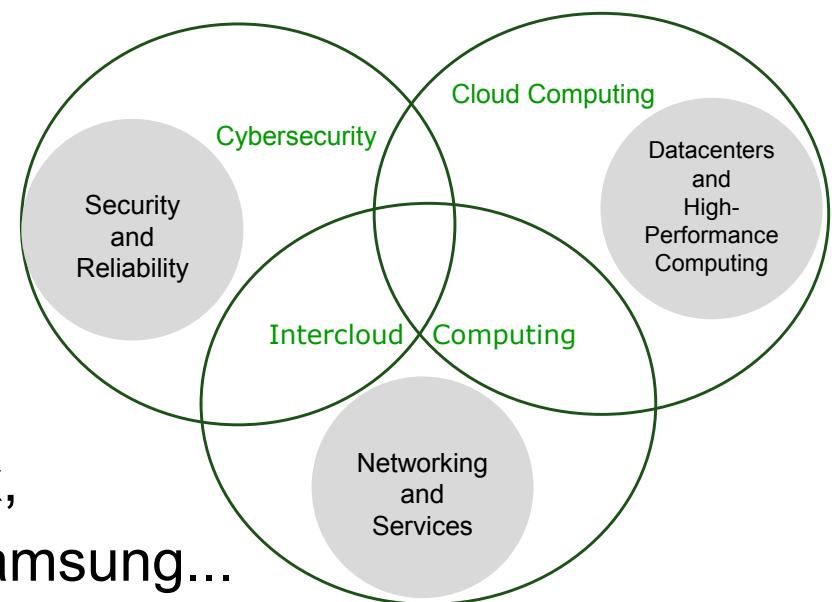
ACIS FACILITIES

- State-of-the-art computing, storage and networking facilities
- Unique environment for experimental research and design of distributed systems that use virtualization software developed by commercial and open-source projects
- ~200 servers, ~1250 cores, ~4.8TB memory, ~260TB storage
 - FutureGrid cluster: IBM iDataPlex connected to Florida Lambda Rail.
 - NUMAcloud: up to 64 cores+512MB of memory in a single image
 - Autonomic Testbed: autonomics for datacenter management
 - VM and cloud: rich set of VMMs and cloud software
 - Storage: centralized (IBM DS4800) and cloud-based (OpenStack)



Center for Cloud and Autonomic Computing

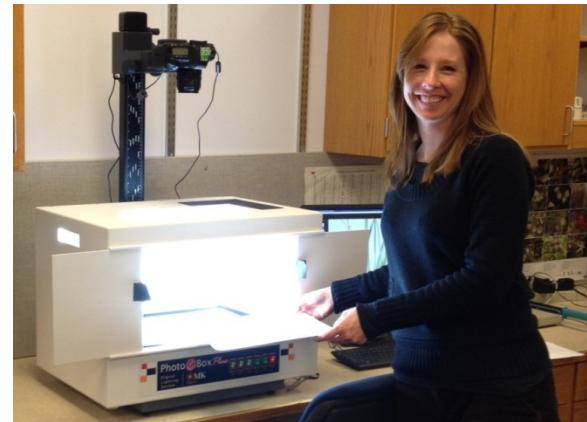
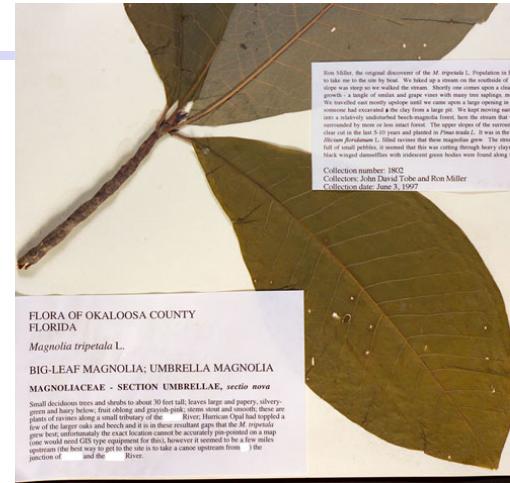
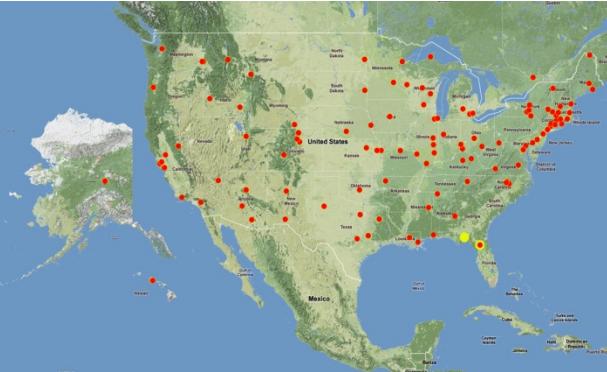
- Started 1/2008, NSF award
- Four universities
- Application domains
 - Defense & Gov
 - Health IT
 - Science
 - Critical infrastructure
- Industry members
 - Defense & Gov
 - Platform & Software
 - IT Services
- ~ 15 industrial members
 - Raytheon, Intel, Xerox, Citrix, Microsoft, ERDC, Avirtec, Samsung...





iDigBio

Integrated Digitized Biocollections



UNIVERSITY OF
FLORIDA

FLORIDA MUSEUM
OF NATURAL HISTORY



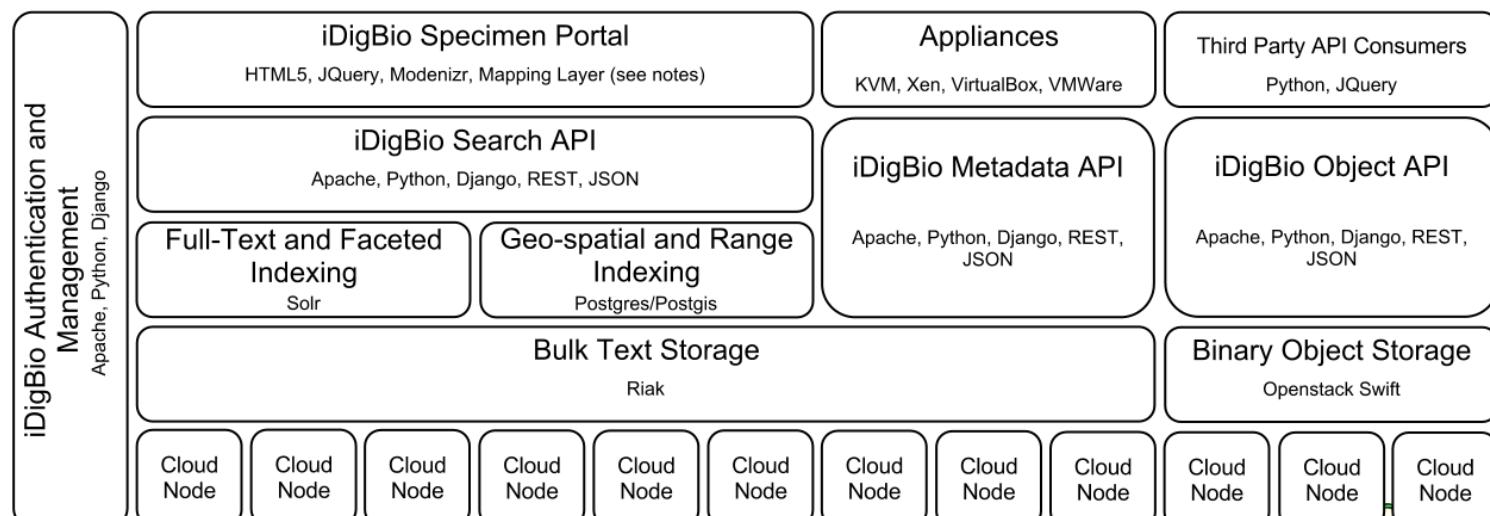
THE FLORIDA STATE UNIVERSITY



PIs: L. Page, J. Fortes, P. Soltis, B. McFadden, and G. Riccardi

iDigBio IT Vision

- Cyberinfrastructure to enable
 - the collaborative creation, integration and management of digitized biocollections, and
 - their use in scientific research, education and outreach.
- Visible as a collection of persistent Internet-accessible services, data and resources (i.e. a cloud) for
 - biocollection “producers”, “consumers” and “service providers”
 - cyberinfrastructure providers
 - national/global data aggregators



iDigBio data portal v0: search

Browse and Search Specimen Records

Current Selection

[remove all](#)
 dwc_scientificname_t:carex
 text:alaska

Displaying 1 to 10 of 6626

[Go To Page#](#)

1

[Prev](#) [1](#) [2](#) [3](#) ... [662](#) [663](#) [Next](#)

Carex brunnescens



- iDigBio ID: e9a69134-4d94-403e-a644-cfda095b2e7b
- Locality: Alaska, McGrath Quad upper Kuskokwim R. basin, Farewell Lake, morainic till near Farewell Lake
- Recorded By: William Holland Drury, Jr.

Carex brunnescens Alaska, McGrath Quad upper Kuskokwim R. basin, Farewell Lake, morainic till near Farewell Lake William Holland Drury, Jr.

Carex maritima



- iDigBio ID: a38f5d15-16fe-4561-991c-e6a465e51536
- Locality: Alaska, Killik River Quad, Gates of the Arctic National Park and Preserve Killik R. valley, vic. mouth of Ivisak Cr. on E bank of river
- Recorded By: Carolyn L. Parker, Bruce Bennett, Nikki Guldager

Carex maritima Alaska, Killik River Quad, Gates of the Arctic National Park and Preserve Killik R. valley, vic. mouth of Ivisak Cr. on E bank of river Carolyn L. Parker, Bruce Bennett, Nikki Guldager

Press ESC to close auto-complete suggestions. If no auto-completions match your desired search, close auto-complete and try it anyways. You may still get results from the full-text search of the records.

[Change Autocomplete Terms](#)

iDigBio data portal v0: record info

iDigBio ID: a38f5d15-16fe-4561-991c-e6a465e51536

dwc:kingdom	Plantae
dwc:recordedBy	Carolyn L. Parker, Bruce Bennett, Nikki Guldager
dwc:coordinatePrecision	3615
dwc:scientificNameAuthorship	Gunn.
dwc:lifeStage	Undetermined
dcterms:language	en
id	http://www.morphbank.net/180113
dwc:eventDate	2002-07-24 00:00:00.0
dwc:country	UNITED STATES
dwc:collectionCode	UAM Botany, ALA
dwc:verbatimLatitude	68.3000030517578
dwc:locationID	http://www.morphbank.net/148841
dwc:basisOfRecord	Specimen
dwc:continent	NORTH AMERICA
dwc:preparations	Pressed and dried

Georeference Data

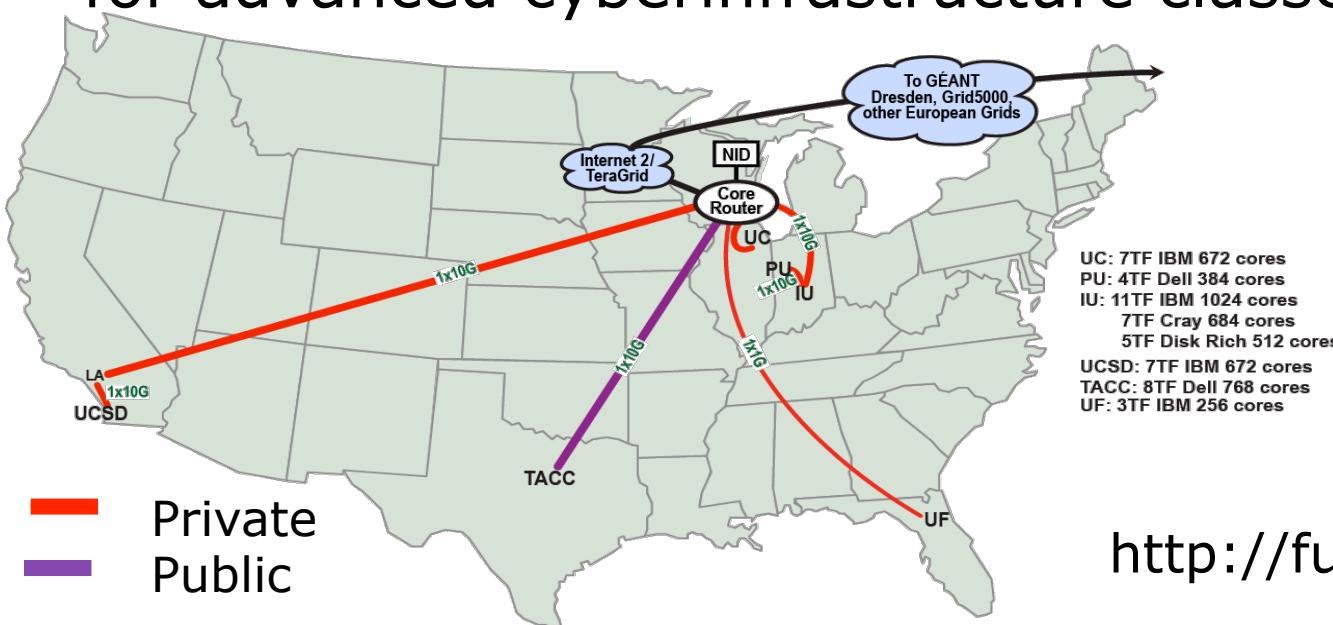


The blue marker indicates the location of the current record, the red points are locations of similar specimens in the idigbio system.

Record Image



- FutureGrid is an international testbed that supports computer science and computational science research in cloud, grid and parallel computing (HPC)
- Provides a flexible development and testing platform for middleware and application users looking at interoperability, functionality, performance or evaluation, and a rich education and teaching platform for advanced cyberinfrastructure classes



PIs: Geoffrey Fox, Shava Smallen, Philip Papadopoulos, Katarzyna Keahey, Richard Wolski, José Fortes, Ewa Deelman, Jack Dongarra, Piotr Luszczek, Warren Smith, John Boisseau, and Andrew Grimshaw

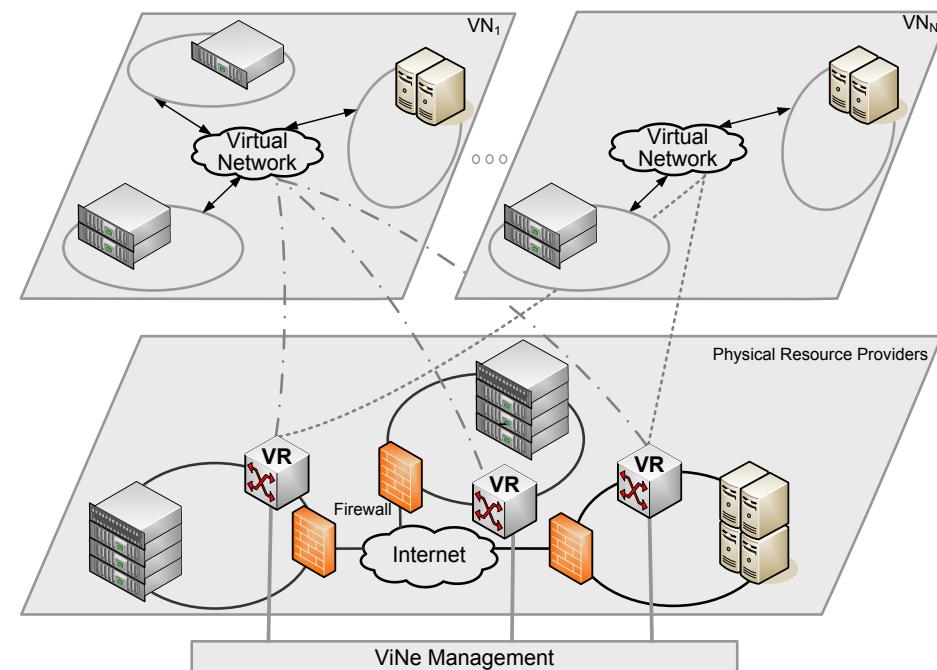
<http://futuregrid.org>

UF ROLES IN FUTUREGRID

- Middleware, teaching, education and outreach with emphasis on overlay networks and virtual appliances.
- Lead operations, and education and outreach teams
- UF FutureGrid hardware: IBM iDataPlex – 256 cores, 768GB of RAM, 20TB of storage

VIRTUAL NETWORK (ViNe) PROJECT

- **Need:** Enable communication among clouds overcoming limitations by firewalls
- **Objective:** Develop an easy to manage intercloud communication infrastructure
- **Case Study:** Interconnect VMs deployed on different FutureGrid clouds.

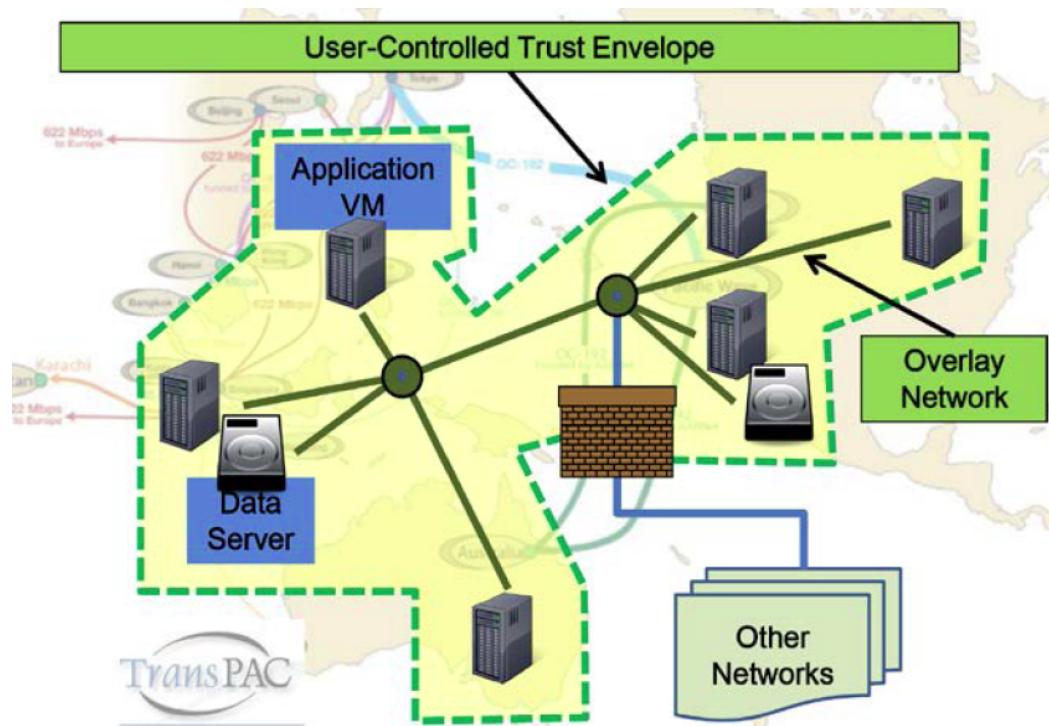


International collaborations

- IT Virtualization for Disaster Mitigation and Recovery (ACIS/US + AIST/Japan)
 - NSF/JST-Funded Project from 2012 to 2013
- Enabling continued operation of IT services and infrastructures during floods and other disasters (ACIS/US+TU/Thailand)
 - NSF/ Thailand Research Fund -Funded Project from 2012 to 2013
- Enabling Scientific Expeditions and Infrastructure Experimentation for Pacific Rim Institutions and Researchers (PRAGMA)
 - NSF 2012-2017 + Multiple country research agencies
- Model-based Autonomic Cloud Computing Software (UF&NWU/US + PKU&NU&FU/China)
 - NSF +NSFC (2013-2014)

Grassroots international CI

- VM Migration, images and clusters
- Overlay network experiments
- Data cloud
- Observing systems
- Virtual expedition
 - Adaption in extreme environments (Mount Kinabalu)



- Importance of Trust Envelop**
- Infrastructure that initially limits access to data
- Traverse firewalls and *simplify network re-configuration of application VMs*

Summary

- Quick overview of main research activities at ACIS
- Strong systems orientation
 - Novel concepts/theory, first-time prototypes, domain-specific production systems
 - Students do it all!
- Many opportunities for international collaboration
 - CAC has international members
 - iDigBio plans to integrate/provide data from/to international collections
 - FutureGrid accepts international requests for projects
 - Separate projects
- PRAGMA workshops, projects and members
 - Expand and magnify ACIS work

PRAGMA and ACIS@UF

- A win-win partnership

