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SOME CURRENT GMOC OPERATIONAL SUPPORT

- ✓ Monitor and triage problem resolution on the GENI Integrate OpenFlow Core network (Mesoscale)
- ✓ Emergency Stop
- ✓ GENI Experimenter Support
- ✓ Manage network/systems alarms, outages, maintenances, Mesoscale provisioning, maintenance freezes, demo reservations and disruptive experiment reservations (and post-mortem)
- ✓ Notifications, Escalation and Reporting
- ✓ Engineering configuration (Internet2, MOXI, Indiana) and new Aggregate site, regional and GENI rack turn-up
- ✓ GMOC Measurement API for GENI Aggregates
- ✓ Develop new tools for network monitoring and measurement

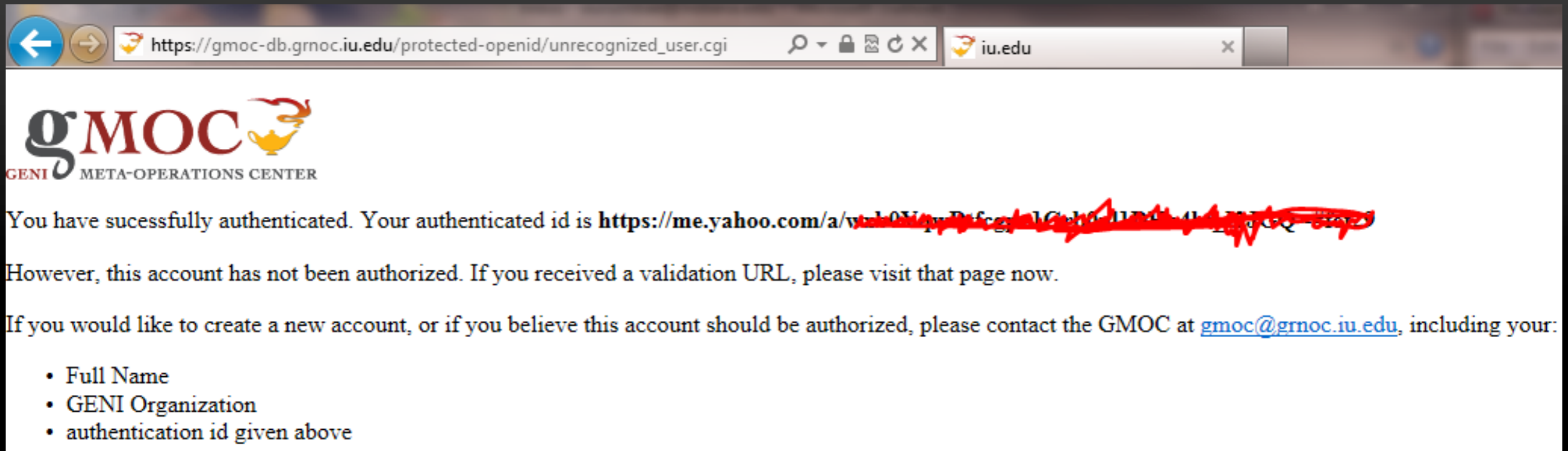
GMOC UPDATES SINCE GEC17

- ✓ GMOC Development Project Updates
- ✓ Emergency Stop Overview
- ✓ Post-event review for Outages/Disruptive Experiments
- ✓ GENI Aggregates Turn-up Process
- ✓ LLR Overview and Recent Table-top Exercise

GMOC DEVELOPMENT PROJECT UPDATES

- ✓ UI improvements for Emergency Stop and LLR Requests
 - Search by IP, MAC Address
 - Ability to lookup Project Owner data from Clearing House/ Slice Authorities
 - Make sure all Campuses are sending IP data to GMOC
- ✓ Privacy issues addressed in the Protected WebUI on GMOC-DB
- ✓ A couple of storyboards:

GMOC-DB PII Privacy Changes



https://gmoc-db.grnoc.iu.edu/protected-openid/unrecognized_user.cgi

gmoc
GENI META-OPERATIONS CENTER

You have successfully authenticated. Your authenticated id is <https://me.yahoo.com/a/...>

However, this account has not been authorized. If you received a validation URL, please visit that page now.

If you would like to create a new account, or if you believe this account should be authorized, please contact the GMOC at gmoc@grnoc.iu.edu, including your:

- Full Name
- GENI Organization
- authentication id given above


Contact GMOC

Web: <http://gmoc.grnoc.iu.edu>

Email: gmoc@grnoc.iu.edu

Phone: 317-274-7783

GMOC-DB PII – EXPERIMENTER (NO CONTACT)



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Slice URN	Contact	Last Updated	Sliver Count	Resource Count
urn:publicid:IDN+ch.geni.net:ahscaletest+slice+ahctest [Details]		2013-07-19 11:25:03	13	2
urn:publicid:IDN+ch.geni.net:ahscaletest+slice+ln-ig-utah-ig-gpo [Details]		2013-07-19 11:25:03	0	0
urn:publicid:IDN+ch.geni.net:ahscaletest+slice+ln-utah-ig-gpo [Details]		2013-07-19 11:25:03	1	1
urn:publicid:IDN+ch.geni.net:ahscaletest+slice+ln-utah-ig-gpo2 [Details]		2013-07-19 11:25:03	6	3
urn:publicid:IDN+ch.geni.net:BBN-RH-DRC+slice+3x3-grid [Details]		2013-07-19 11:25:03	0	0
urn:publicid:IDN+ch.geni.net:BBN-RH-DRC+slice+cpqdTesting [Details]		2013-07-19 11:25:03	0	0
urn:publicid:IDN+ch.geni.net:BBN-RH-DRC+slice+gec17-grid [Details]		2013-07-19 11:25:03	0	0
urn:publicid:IDN+ch.geni.net:BBN-RH-DRC+slice+rei-debug [Details]		2013-07-19 11:25:03	0	0
urn:publicid:IDN+ch.geni.net:EmilyProject+slice+eptestexe [Details]		2013-07-19 11:25:03	0	0
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urn:publicid:IDN+ch.geni.net:Foreign

urn:publicid:IDN+ch.geni.net:GEC1

urn:publicid:IDN+ch.geni.net:GEC1

urn:publicid:IDN+ch.geni.net:GEC1


urn:publicid:IDN+ch.geni.net:GEMIN

urn:publicid:IDN+ch.geni.net:GEMIN

urn:publicid:IDN+ch.geni.net:GEMIN

urn:publicid:IDN+ch.geni.net:GEMIN

urn:publicid:IDN+ch.geni.net:GEMIN



Details for urn:publicid:IDN+pgeni.gpolab.bbn.com+slice+chaos-montreuve-macaddr

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Details | [Slivers](#) | [Resources](#)

Slice Details

Operator Organization: [urn:publicid:IDN+gmoc.geni.net+organization+BBN](#)

Principal Email:

UUID: ff6d2b12-f10e-11e0-bf86-000c29f89f7b

Creator:

Created: 1970-01-01 00:00:00

Expires: 2013-08-15 00:00:00

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GMOC-DB PII – OPERATOR (SEE CONTACTS)

gMOC GENI META-OPERATIONS CENTER

chaos

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[sas](#)
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[resources](#)
[circuits](#)

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Slice URN	Contact	Last Updated	Sliver Count	Resource Count
urn:publicid:IDN+pgeni.gpolab.bbn.com+slice+chaos-montreve-macaddr [Details]	urn:publicid:IDN+pgeni.gpolab.bbn.com+user+chaos [Details]	2013-07-19 11:40:02	0	0
urn:publicid:IDN+pgeni.gpolab.bbn.com+slice+chaos-poblano1101-datapath [Details]	urn:publicid:IDN+pgeni.gpolab.bbn.com+user+chaos [Details]	2013-07-19 11:40:02	0	0

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Details for [urn:publicid:IDN+pgeni.gpolab.bbn.com+slice+chaos-montreve-macaddr](#)

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Slice Details

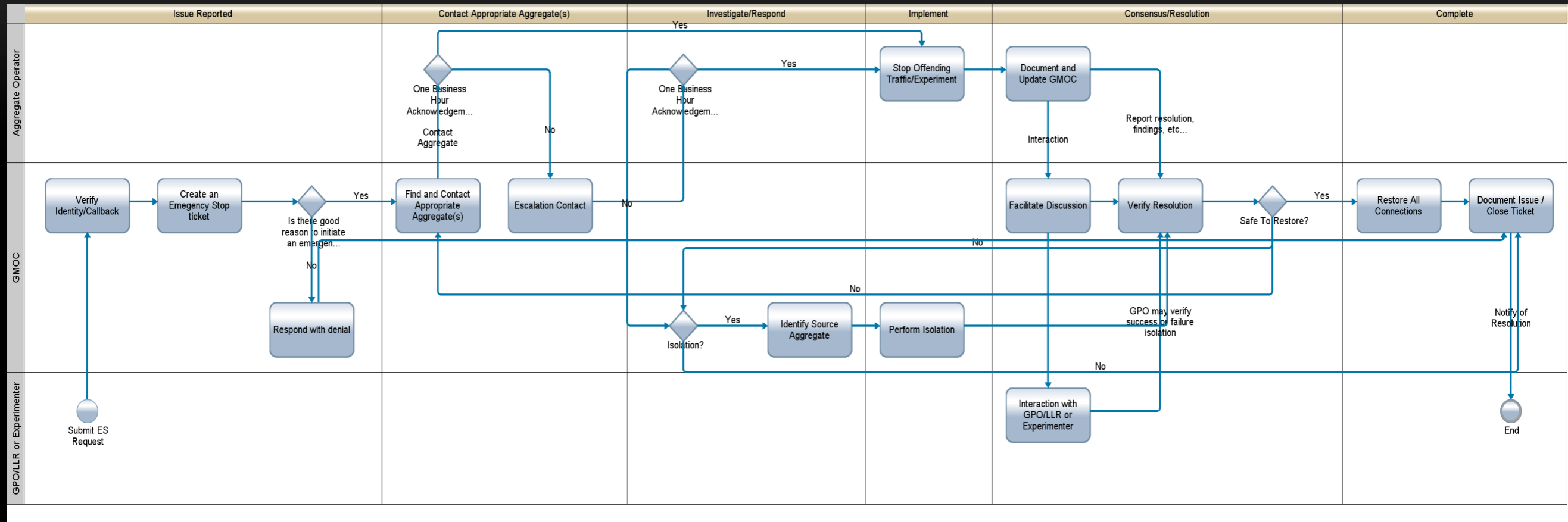
Operator Organization	urn:publicid:IDN+gmoc.geni.net+organization+BBN
Principal Email	chaos@bbn.com
UUID	ff6d2b12-f10e-11e0-bf86-000c29f89f7b
Creator	urn:publicid:IDN+pgeni.gpolab.bbn.com+user+chaos
Created	1970-01-01 00:00:00
Expires	2013-08-15 00:00:00

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GMOC-DB – PII PRIVACY (OPERATORS)

1. GMOC-DB relational data contains Personally Identifiable Information (PII) about GENI experimenters (including contact information, name, and username/URN).
2. GMOC-DB measurement data currently does not contain any PII as it's currently defined - it's only tagged with resource names, aggregate names, and sliver names, all of which are public. The gmoc.py API doesn't include any measurements which are tagged by contact.
3. Personally Identifiable Information should not be shared with non-operators or the general public.
4. Operators who use and/or download experimenter information from gmoc.py should not redistribute the information, and should be careful that any automated tools which repackage downloaded GMOC data (e.g. local monitoring or reporting interfaces) exclude experimenter PI information before reporting or posting on public Web pages.

GENI EMERGENCY STOP PROCESS



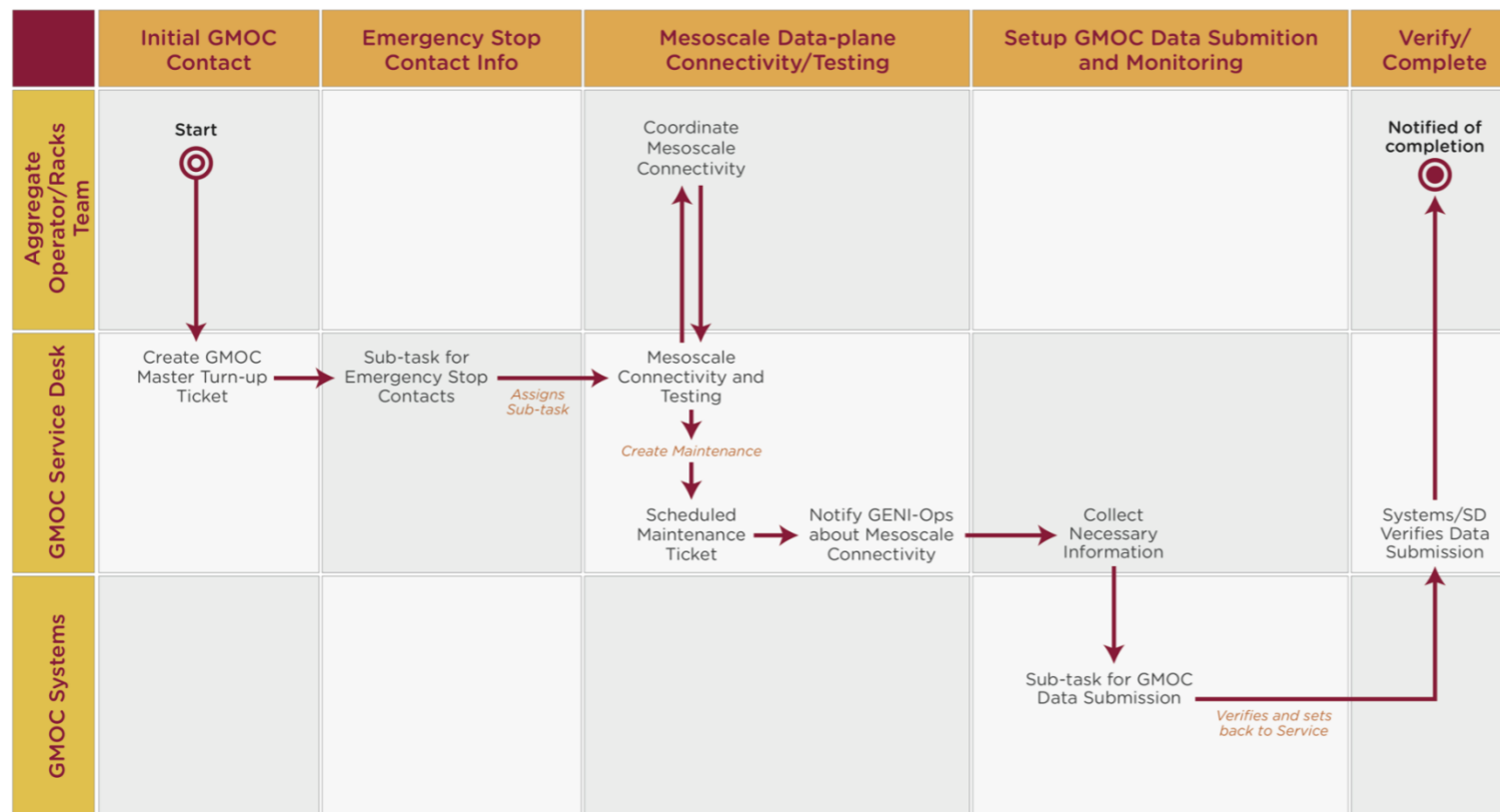
<http://gmoc.grnoc.iu.edu/gmoc/documents.html>

EMERGENCY STOP (CAMPUS PERSPECTIVE)

- Tests with Regionals?
- Campus isolation – involve/test with Site Admins
- Science DMZ?
- Emergency Stop based on LLR Request?
- Need for training? OpenFlow and GENI Tutorials

<http://gmoc.grnoc.iu.edu/gmoc/documents.html>

GENI AGGREGATES TURN-UP VIA GMOC



GENI Aggregate GMOC Turn-up Process

The GENI Meta-Operations Center (GMOC) uses this process for creating a new GENI Aggregate to accomplish tasks such as:

1. Collecting Emergency Stop contacts for each GENI Aggregate.
2. Coordinating and notifying the GENI community of Mesoscale data-plane connectivity and testing when an Aggregate is ready to connect to Internet2 and/or National LambdaRail.
3. Helping an Aggregate set up measurement, monitoring, and metadata submission to GMOC via GMOC APIs.
4. Ensuring site is ready for GMOC outage/ maintenance notifications and reporting.

Contact GMOC

Web: <http://gmoc.grnoc.iu.edu>

Email: gmoc@grnoc.iu.edu

Phone: (317) 274-7783

Subscribe to Ops Calendars (Web, iCal, RSS)



GENI Aggregate Turn-up Process



GENI REGIONALS REPORTING GMOC

- CENIC (COTN – California OpenFlow Testbed Network)
- UEN (Utah Education Network)
- SOX (Southern Crossroads)
- MOXI-CIC and MOXI-Indiana GigaPoP
- GpENI – Great Plains Environment for Network Innovation
- NYSERNet (New York)
- MAX GigaPoP – New InstaGENI Rack*

GENI RACKS COMPLETED GMOC TURN-UP

InstaGENI (18)

- ✓ BBN – GPO Lab Rack
- ✓ Utah
- ✓ Kentucky
- ✓ Northwestern
- ✓ Georgia Tech
- ✓ Clemson
- ✓ Kettering
- ✓ Princeton
- ✓ Kansas
- ✓ MAX*
- ✓ NYU*
- ✓ NYSERNet*
- ✓ Missouri*
- ✓ Illinois*

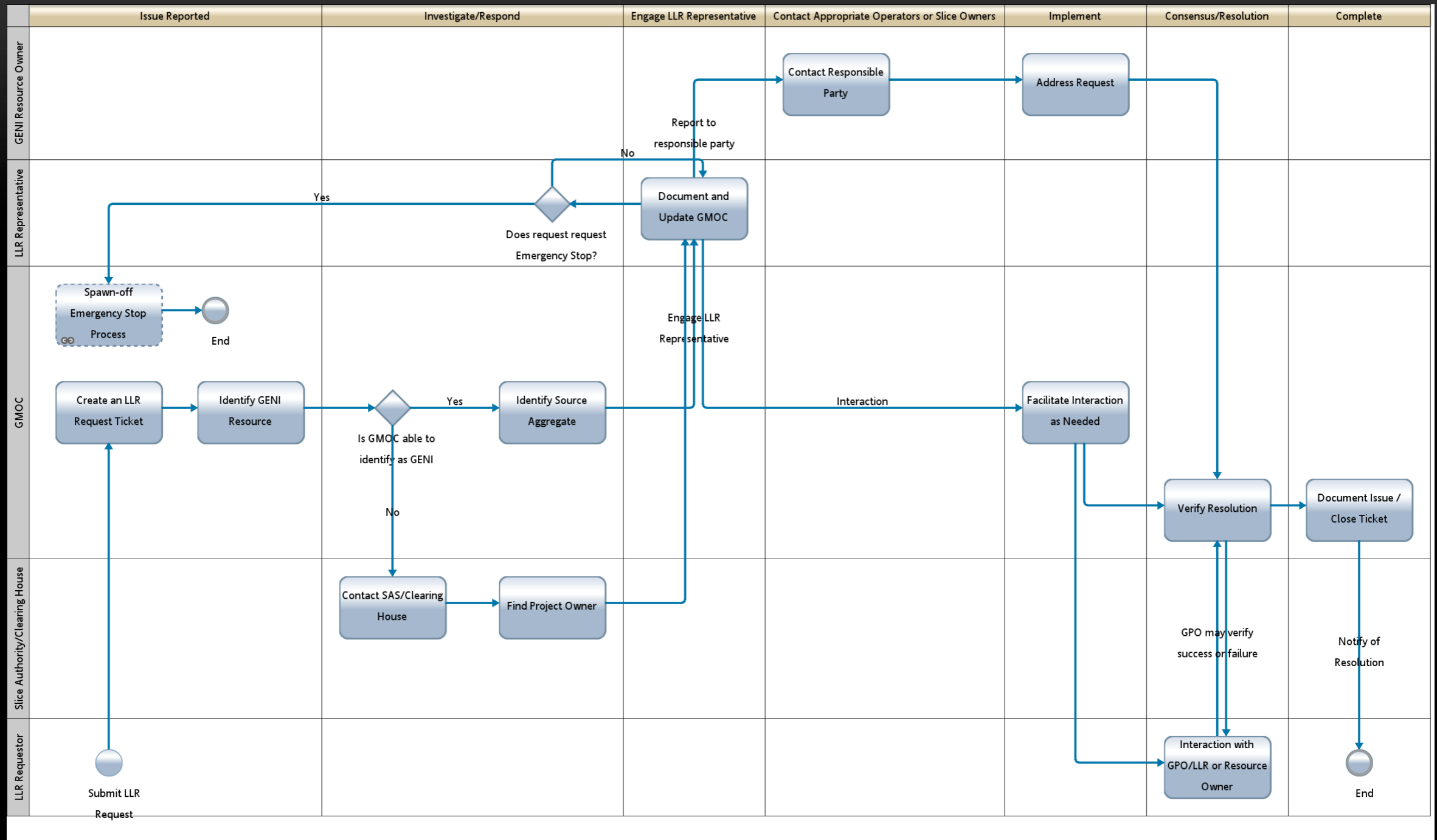
- ✓ Wisconsin*
- ✓ SOX
- ✓ Rutgers

ExoGENI

- ✓ BBN – GPO Lab Rack
- ✓ RENCi
- ✓ FIU-SCIS - Florida International University School of Computer and Information Sciences *
- ✓ UH - University of Houston *

* New racks since last GEC

GENI LLR REQUESTS PROCESS



GENI LLR Procedure Workflow

GENI LLR TABLE-TOP EXERCISE

GENI LLR Procedure Workflow

Some Results/Thoughts:

- ✓ Over-all Process works
- ✓ Need better tools/data
- ✓ Need for historical data – i.e. Search for by timestamp and IP/MAC

Next steps?

- ✓ More tests
- ✓ Actual infrastructure exercise
- ✓ Discuss needs with with GMOC-Dev, GPO and Rack Teams
- ✓ International GENI Resources? (SAs/Clearing House)

SEARCH GENI RESOURCES BY IP/MAC ADDRESS



- [main](#)
- [organizations](#)
- [contacts](#)
- [pops](#)
- [sas](#)
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Resource Name	Type	Operator	POP Name	Last Updated
urn:publicid:IDN+instageni.gpolab.bbn.com+node+pc4 [Details]	host	urn:publicid:IDN+gmoc.geni.net+organization+InstaGENI	urn:publicid:IDN+gmoc.geni.net+pop+gpolab [Details]	2013-10-28 10:04:25
urn:publicid:IDN+instageni.gpolab.bbn.com+node+pc5 [Details]	vmserver	urn:publicid:IDN+gmoc.geni.net+organization+InstaGENI	urn:publicid:IDN+gmoc.geni.net+pop+gpolab [Details]	2013-10-28 10:04:25
urn:publicid:IDN+instageni.gpolab.bbn.com+node+pc1 [Details]	vmserver	urn:publicid:IDN+gmoc.geni.net+organization+InstaGENI	urn:publicid:IDN+gmoc.geni.net+pop+gpolab [Details]	2013-10-28 10:04:25
urn:publicid:IDN+instageni.gpolab.bbn.com+node+pc2 [Details]	vmserver	urn:publicid:IDN+gmoc.geni.net+organization+InstaGENI	urn:publicid:IDN+gmoc.geni.net+pop+gpolab [Details]	2013-10-28 10:04:25
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06:b5:00:12:...

06:b5:00:12:...

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OPS CALENDARS (WEB, ICAL, RSS)

July 2013						
GMOC - Field Service Request, GMOC - Scheduled Maintenance, GMOC - Unscheduled Outage Calendar						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	1	2	3 ● 2:00 489 GENI Portal Maintenance ...	4	5 ● 12:00 520 GENI Internet2 FOAM Soft... ● 1:00 519 GENI ExoGENI Racks Maint... ● 2:19 521 GENI Internet2 FlowVisor...	6
7	8 ● 7:01 512 GENI NLR OpenFlow Core N... ● 11:00 507 GENI Tutorials at ICDCS ... ● 12:00 498 GENI GEC17 Maintenance F...	9 ● 12:00 498 GENI GEC17 Maintenance F... ● 4:01 518 GENI Internet2 OpenFlow ...	10 ● 12:00 498 GENI GEC17 Maintenance F... ● 2:00 490 GENI Portal Maintenance ...	11 ● 12:00 498 GENI GEC17 Maintenance F...	12 ● 12:00 498 GENI GEC17 Maintenance F... ● 6:02 522 GENI OpenFlow Backbone C...	13 ● 12:00 498 GENI GEC17 Maintenance F...
14 ● 12:00 498 GENI GEC17 Maintenance F...	15 ● 12:00 498 GENI GEC17 Maintenance F...	16 ● 12:00 498 GENI GEC17 Maintenance F... ● 7:05 523 GENI OpenFlow Backbone C...	17 ● 12:00 498 GENI GEC17 Maintenance F... ● 4:54 531 GENI Various Control Pla...	18 ● 12:00 498 GENI GEC17 Maintenance F...	19 ● 12:00 498 GENI GEC17 Maintenance F... ● 1:00 535 GENI ExoGENI Racks FIU a...	20 ● 12:00 498 GENI GEC17 Maintenance F...
21 ● 12:00 498 GENI GEC17 Maintenance F... ● 12:00 534 GENI GEC17 Tutorials Res...	22 ● 12:00 498 GENI GEC17 Maintenance F... ● 12:00 534 GENI GEC17 Tutorials Res...	23 ● 12:00 498 GENI GEC17 Maintenance F... ● 12:00 534 GENI GEC17 Tutorials Res...	24 ● 4:00 532 GENI Internet2 OpenFlow ... ● 4:00 528 GENI Internet2 OpenFlow ... ● 4:00 530 GENI Internet2 OpenFlow ... ● 5:00 527 GENI Internet2 OpenFlow ... ● 7:00 529 GENI Internet2 OpenFlow ... ● 7:00 533 GENI NLR OpenFlow Core N... ● 2:00 513 GENI Portal Maintenance	25	26	27
28	29	30	31 ● 2:00 514 GENI Portal Maintenance	1	2	3

<http://gmoc.grnoc.iu.edu/gmoc/index/support/gmoc-operations-calendars.html>

FUTURE GENI OPERATIONS SUPPORT NEEDS, CHALLENGES, IDEAS?

- ✓ Targeted Notifications
- ✓ Topology (for Emergency Stop and other needs)
- ✓ Circuits and Nodes in GMOC-DB
- ✓ Pro-active monitoring/alerting
- ✓ Disruptive Experiments Post-event review
- ✓ Post-event review for other OpenFlow specific operational issues
- ✓ Tracking outages at Regionals and other dynamic VLAN service providers (ION, AL2S)?
- ✓ Maintenance Freeze (Scale?)

THANK YOU QUESTIONS ?

Contact Us

- ✓ gmoc@grnoc.iu.edu
- ✓ <http://gmoc.grnoc.iu.edu>
- ✓ 317-274-7783

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