



The Council of State Governments
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2011 Innovations Awards Application

DEADLINE EXTENDED TO APRIL 15, 2011

ID # (assigned by CSG): 2011- _____

Please provide the following information, adding space as necessary:

State: State of Michigan (SOM)

Assign Program Category: *Government Operations and Technology* - Information Systems

1. Program Name

- MiCloud – The State of Michigan’s Cloud Computing Program

2. Administering Agency

- The Department of Technology, Management and Budget (DTMB)

3. Contact Person (Name and Title)

- Bob McDonough, Lead Cloud Architect

4. Address

- Constitution Hall, 1st floor NW
Lansing, MI 48913

5. Telephone Number

- 517-719-1884

6. FAX Number

- None

7. E-mail Address

- mcdonoughb@michigan.gov

8. Web site Address

www.michigan.gov/dtmb

9. Please provide a two-sentence description of the program.

- MiCloud combines Michigan’s prior investments in virtualization with innovative service delivery automation capabilities to rapidly deliver low-cost, self-service IT resources to Michigan Agencies in a true pay-as-you-go cloud computing model. MiCloud services provide commodity options that are better aligned with agency business value and allow IT staff to focus on the delivery of more challenging, specialized and rewarding IT services.

10. How long has this program been operational (month and year)? Note: the program must be between 9 months and 5 years old on March 28, 2011 to be considered.

- Since March, 2009

11. Why was the program created? What problem[s] or issue[s] was it designed to address?

- Prior to MiCloud, all of Michigan's IT service requests, from the simplest to the most complex, were fulfilled through a single, manually intensive service channel. IT service delivery was slow and deliberative, creating superior "Gold, Silver and Bronze" services that are highly available, redundant, specialized, performant and expensive. Michigan lacked the "Aluminum and Tin" IT service options – services that are good-enough, low-cost and available immediately through an automated service channel.
- Michigan needed to rapidly capture the advantages of the cloud computing delivery model to drive organizational agility up and costs down, without sacrificing security or governance. The MiCloud program was needed to ensure that the benefits of cloud computing, including green IT impacts, would be achieved rapidly while avoiding vendor lock-in.

12. Describe the specific activities and operations of the program in chronological order.

- Delivered the first published state government cloud computing strategy in the nation: http://www.michigan.gov/documents/itstrategicplan/Appendix_K_Mi_Cloud_327701_7.pdf#2
- Developed the MiCloud approach to creating and operating cloud services over their lifecycle.
- Delivered the MiCloud Storage Service (production October 1, 2010) that creates self-service, pay-as-you-go data storage sites within 10 minutes. The MiCloud Storage Service is 85% cheaper than the prior lowest-cost data storage option and service requests (such as changing user permissions) are fulfilled 99% faster.
- Delivered the MiCloud Hosting Service (production in May 1, 2011) that creates self-service, pay-as-you-go virtual servers within 30 minutes. The MiCloud Hosting Service is 75% cheaper than the prior lowest-cost server hosting option and service requests (such as server rebuilds) are fulfilled 99% faster. Server images can be stored as reusable templates. Servers can be deactivated when not in use, dropping the operating cost to 97% less than the prior lowest-cost server hosting option.

13. Why is the program a new and creative approach or method?

- MiCloud is completely vendor agnostic. No new software or infrastructure was purchased, in keeping with our published strategy. MiCloud allows IT services to be sourced internally, as a hybrid with vendor partner or multi-sourced with several vendor partners. Providers can be swapped as business opportunities present themselves, transparently to the users.
- MiCloud Storage resources are currently hosted internally, in the SOM's enterprise datacenters, at an industry competitive \$0.01167/GB/day (\$0.35/GB/month).
- MiCloud Hosting servers are currently hosted internally, in the SOM's enterprise datacenters, at an industry competitive \$8/server/day (including O/S). MiCloud Hosting users enjoy exceptional service performance over the SOM's secure intranet, without exposing their data to internet-based threats.
- Today, MiCloud users enjoy exceptional service performance over the SOM's secure intranet, without exposing their data to internet-based threats. SOM agencies enjoy the immediate benefits of the cloud-computing service model, without encountering the uncertainties of the still maturing commercial cloud services market.

14. What were the program's start-up costs? (Provide details about specific purchases for this program, staffing needs and other financial expenditures, as well as existing materials, technology and staff already in place.)

- There was no capital start-up cost for the MiCloud program:
 - No consulting services were procured for the program.

- The SOM's mature and robust enterprise IT infrastructure was leveraged for initial provider resources, including our EMC storage area network and our VMware virtual server infrastructure.
 - The MiCloud storage pilot received donated commodity disk drives from EMC, at no cost to the SOM.
 - The MiCloud hosting pilot solutions operated using only existing free-pool resources and evaluation licenses, at no cost to the SOM.
- The on-line self-service interface was created by the program manager, using our pre-existing SharePoint environment. MiCloud innovations saved the SharePoint team more in cost than the MiCloud program has consumed in resources, thus there was actually a net savings to the SOM.
- The simple automation and provisioning scripts were created by the program manager, using PowerShell (included with Windows O/S) on pre-existing servers, at no added cost to the SOM.
- Staff resources were limited to a full-time program manager and a matrix-team of SOM IT staff.
 - Phase I (FY 2009) - total matrix-team hours: 536, total matrix-team costs: \$32,635.28
 - Phase II (FY 2010) - total matrix-team hours: 380, total matrix-team costs: \$27,669.28

15. What are the program's annual operational costs?

- The program's annual operational costs are limited to the full-time program manager, approximately \$120,000 per year.
- Once a MiCloud service is launched and in production, the MiCloud service is self-funding through collected service rates. As such, the operational expenses of production MiCloud services are not accounted for as part of the MiCloud program's operational costs.

16. How is the program funded?

- The MiCloud program manager and all matrix-team member hours are funded through the DTMB budget.
- The funding for the DTMB budget comes from IT services rates paid by SOM agencies for IT services rendered.

17. Did this program require the passage of legislation, executive order or regulations? If YES, please indicate the citation number.

- No

18. What equipment, technology and software are used to operate and administer this program?

- Microsoft SharePoint. For other related technologies, see answer #14.

19. To the best of your knowledge, did this program originate in your state? If YES, please indicate the innovator's name, present address, telephone number and e-mail address.

- Yes

20. Are you aware of similar programs in other states? If YES, which ones and how does this program differ?

- No. The program is in frequent contact with cloud computing SMEs in other states. However, MiCloud is completely unique, in that MiCloud provides a single service interface for consuming vendor-agnostic cloud services. MiCloud provides a single organizational touch-point and layer of abstraction between cloud service consumers and cloud service providers. This means that SOM has only a single interface to govern and secure. It also means that providers can be added, removed or swapped at a single interface point, greatly easing or eliminating integration challenges.

21. Has the program been fully implemented? If NO, what actions remain to be taken?

- The initial, targeted services have been fully implemented and are in production as of May 1, 2011. Further projects are being prioritized by the steering committee on April 27, 2011.

22. Briefly evaluate (pro and con) the program's effectiveness in addressing the defined problem[s] or issue[s]. Provide tangible examples.

- MiCloud was charged with delivering the cost and self-service benefits of commercial cloud computing solutions, while addressing the many complex issues surrounding cloud security, data ownership and audit compliance in the state government environment.
- The MiCloud program has exceeded all objectives and expectations in an extremely short timeframe. As stated above, the program:
 - Delivered the MiCloud Storage Service (production October 1, 2010) that creates self-service, pay-as-you-go data storage sites within 10 minutes. The MiCloud Storage Service is 85% cheaper than the prior lowest-cost data storage option and service requests (such as changing user permissions) are fulfilled 99% faster.
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- The program's recommended 5-year project portfolio and roadmap (to be approved on April 27, 2011) remains extremely aggressive. It will be necessary to continue to transform and innovate to achieve the next slate of objectives.
- Our initial success could also become a detriment if our program subject matter experts become too focused on past success instead of ongoing opportunities for improvement; this is an extremely dynamic environment and we must continue to innovate to meet the next wave of challenges.

23. How has the program grown and/or changed since its inception?

- The program has served as an incubator for innovative, low-cost IT service automation techniques. As a result, program SMEs have contributed to dramatically accelerating non-cloud-computing projects through a process of technology cross-pollination.
- Program SMEs are often asked to respond to inquiries from other states and provinces, local governments, federal cloud computing strategists and vendor executives on matters of cloud strategy and successful tactical approaches for achieving specific cloud objectives.

24. What limitations or obstacles might other states expect to encounter if they attempt to adopt this program?

- It can be very challenging to persuade agency executives to support a very simple, low-cost approach. Vendors constantly bombard executives with enticing promises that have very large price tags.
 - Cloud computing is not something you *BUY*. Cloud computing is something you *DO*.

- The MiCloud technical solution, though extremely simple, is also completely unique. It may be challenging for other states to reproduce independently.
 - The MiCloud program manager has recommended transitioning our internal, vendor-agnostic MiCloud service interface to an open-source support model. By inviting cross-boundary collaboration on a national level, the SOM hopes to share support and enhancement efforts.
 - Providing the MiCloud technical solution as an open source platform will eliminate this technical barrier to replicating the MiCloud program’s success in other states.
 - This is expected to be approved by the steering committee on April 27, 2011.
- A cultural shift within state government must occur in conjunction with a disruptive innovation such as MiCloud. Managing this “people” impact is as important to achieving success as is the technical solution

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2011 Innovations Awards Application Program Categories and Subcategories

Use these as guidelines to determine the appropriate *Program Category* for your state's submission and list that program category on page one of this application. Choose only one.

Infrastructure and Economic Development

- Business/Commerce
- Economic Development
- Transportation

Government Operations and Technology

- Administration
- Elections
- Information Systems
- Public Information
- Revenue
- Telecommunications

Health & Human Services

- Aging
- Children & Families
- Health Services
- Housing
- Human Services

Human Resources/Education

- Education
- Labor

- Management
- Personnel
- Training and Development
- Workforce Development

Natural Resources

- Agriculture
- Energy
- Environment
- Environmental Protection
- Natural Resources
- Parks & Recreation
- Water Resources

Public Safety/Corrections

- Corrections
- Courts
- Criminal Justice
- Drugs
- Emergency Management
- Public Safety

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This application is also available at www.csg.org.