

## Cloud Credits Model for the Commons Breakout Session BD2K AHM Friday, November 13th 2015

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- **Attendees:** no roll call was taken, there were about 25 attendees representing NIH grantees, NIH personnel, and cloud services providers
- **Overview:** Creating a credit model that allows investigators to dollar denominated vouchers to pay to approved providers (clouds that satisfy conformance requirements)
  - This method will allow investigators to choose the best provider to suit their needs
  - A provider is anyone who provides cloud services to an investigator.
  - There is currently only one set of rules for all providers, but the purpose of the discussion is whether or not it is necessary to have more specific rules for specific types of providers.
  - Some objectives of this credit model is that it is separate from an investigator's grants and will not take out of an investigator's budget, while NIH can also better determine what are the precise costs of using the cloud.
    - When we say separate, NIH means that the grant money and duration will be separate from the number of available credits
- This cloud option is one option to provide computation to investigators
  - Another option is for NIH to pay providers directly for services to be used by investigators
  - The current model to providing computation is to pay investigators for them to spend money on compute. NIH believes there are more efficient solutions.
- In terms of the mechanism to use the vouchers, NIH is looking at something similar to a pre-paid debit account, where investigators use the account just for providers
  - Another mechanism could be having the coordinating center set up a contract with the providers, and then direct the investigators to the providers
  - Or a group representing a bunch of related researchers could apply to get credits and distribute this to the researchers.
- The very first phase of this plan is to determine what is the skeleton of our mechanism for this model, and is it usable for the computational community. Once we refine the mechanism, we will then figure out how the mechanism will be incorporated in the grant process.
  - Within the grant process, NIH does not want investigators to submit another grant just to get credits, you just need to submit a short request and justification for the amount of credits you are asking for.
- There may be a benefit making compute power and credit allocations into bite-sizes.
  - For young investigators (or those not used to using cloud services), having smaller allocations of compute power for smaller datasets, paid by smaller vouchers. They can then upgrade as investigators get use to the cloud.

- From an NIH perspective, the credits also need to support an increasing need to satisfy compute requests for larger datasets in a cost-effective manner.
- Currently, we are in Phase 2 of the pilot involving 20-40 investigators to make sure everything works. Phase 4 will be scaling up the project to be accessible for everyone.
  - Currently have a 'small pool' of \$5000-\$10,000 denominations, and a 'large award pool' with a cap of \$50,000
  - Application process is a quick 2-5 pages application
- While NIH could consider evaluating how investigators spend their compute money, NIH really wants to foster a competitive environment for providers to provide unique solutions and services that can compete with the larger companies.
  - NIH also does not want to restrict the investigator in terms of computational methods. We do not want to be a match-maker, but we are willing inform investigators of different types of providers
  - NIH will be able to use the information on how many credits are being requested to get baseline information on the costs of the cloud
  - Currently only NIH investigators can participate in the pilot. This will change in the future.
- We have established a “meta-experiment” to see what is the reaction of the investigators, the reaction of the providers, and is the result beneficial.
  - Throughout the process, we will no doubt encounter problems we did not foresee in the planning phase, and would only reveal itself once the plan is executed.
- It is theoretically possible for investigators to abuse the model and hoard credits. It is a question that will be addressed down the line.
- Another question to answer is how are we able to allow compute power across all the providers for the same dataset
  - This problem becomes difficult as large providers are also storing data as an incentive for investigators to directly compute in.
  - NCI does have a central place to store datasets that is accessible by the providers and investigators so investigators can compute the data on any participating provider.
- The Pilot will attempt to distribute \$2 Million per year, hopefully expand to \$6 Million per year
- The concern is that NIH is losing valuable information from not recording use cases
  - Use cases can help determine what investigators are looking for in a provider, but NIH is worried this oversight will introduce biases that may impact the investigators
  - NIH should at least publish and update a best-practices paper for investigators to be informed about the credits and the best way to apply for credits.
- What if we incorporate credit allocation to the grant? This may provide a possible control against abuse.
  - But you may encounter problems to how credits money is distributed by the individual institutes.

## 1. A more detailed look at the Commons Credit Model

- a. Question 1: What types of services would investigators consider useful and want providers to make available?

There was a lot of discussion about what types of providers, and what types of services, could be funded under the initiative. For example, there is a thriving market for SaaS providers (e.g., Seven Bridges, DNAnexus, Globus Genomics) who make their services available in a third party IaaS environment (most commonly, Amazon EC2, but also others). Could credits be used to pay them? How is this different from using grant money to pay for commercial software? The scope and fairness of the proposed “tent” under which NIH would rally and facilitate contacts between providers and customers needs to be clarified.

- b. Question 2: How should NIH make decisions about which credit requests to fund?

It was agreed that in the pilot phase the only criterion should be that the proposed cloud-enabled activities should be consistent with the goals of an existing grant from NIH.

- c. Question 3: How should NIH make investigator derived capabilities available through providers?

This was discussed only briefly. There seems to be a consensus that both developers of new cloud-based capabilities and users eager to use them should be funded.

## 2. **Conformance requirements**

- a. Question 4: What changes/additions would ensure that providers meet your needs?

NIH needs to make sure that it uses consistent and fair criteria to include providers in its list of approved vendors, authorized to redeem vouchers. The initiative should be widely publicized with potential vendors, and the rules for applying to be included made clear. This should probably include some checks on pricing policies.

## 3. **Metrics**

- a. Question 5: What metrics should NIH capture to assess the effectiveness of the Credits Model?

- The purpose of the metrics is to determine if people like this credit model, if it is accessible enough, is it a sustainable model.
- The evaluation should include an assessment of the quality and quantity of tools and environments made available in a cloud environment, as well as their uptake by the community
- Synergy with NIH-sponsored big data generating projects, in terms of increasing the utility of the data, should also be considered

## 4. **Other experiences**

- a. University of Illinois experience - RFA for cloud brokers being prepared  
Question 6: How can NIH effectively work with other groups that are obtaining cloud services for their investigators? (prices, services, volume discounts)