* * * Beginning of Sheet 1 * * *

ADDENDUM NO. 1
to the prospective bidders for the Request for Proposal-
RESIDENT IDENTITY USING DISTRIBUTED LEDGER TECHNOLOGY
Due Date: ~~September 7, 2018~~ September 14, 2018

TO PROSPECTIVE BIDDERS: The following changes shall be made part of the request for proposals for this project:

 REQUEST FOR INFORMATION – The following questions were posed to the City.

1. Q: **Does the City have a not to exceed budget in place for this project?**

   A: Part of the purpose of this solicitation is to test the market to determine the costs of this type of technology. So we do not intend to provide an anticipated budget or range. However, we would not be surprised to receive submissions on the level of an Enterprise software implementation, or to receive bids at very low cost or even no cost. We expect this solution to be one of the only functioning distributed ledger applications being run by a municipality in the State of Ohio. We expect to promote the solution widely, using our reputation as a center of innovation to aid the winner in showcasing the solution far and wide. We encourage bidders to consider this as well as the proof of concept scope limitation, in their costing

2. **Q: In reference to the following features:**
   a. Validated representatives should be able to view recorded choices without being able to view individual identities.
   b. Validated representatives should be able to view the status of a user with regard to their vote without being able to view their choice

   Our proposal includes a solution that satisfies these two requirements. However, it is technically possible (albeit difficult) to identify what an individual person voted for if multiple systems (with server-administrator-level access) colluded with one another; would this be acceptable?

   A: This is acceptable.

3. **Q: "Is there an explicit requirement for mining or using crypto-currencies? Or is any public or private blockchain that solves the problem, with or without mining, acceptable?"**

   A: There is not an explicit requirement for mining or using cryptocurrencies. Any public or private blockchain that solves the problem with or without mining is acceptable.

4. **Q: "Is the solution expected to be built on a private blockchain? By public do you mean the blockchain should be open and not permissioned in future? Or by public, does it mean that in the future the blockchain will support a large number of users/general public and use cases and not be restricted to a pilot set of users that were involved during the initial proof."**

   A: Given the limited scope of the use cases, it is assumed that the shortest path to a solution would be on a private blockchain. However, we do not want to restrict consultants from presenting a viable solution that uses a public blockchain in some way we did not think of. The solution does not need to be functional on a public blockchain, however, if it could function on a public blockchain, a description of how this could work would be valuable and of interest, though not required. Either of your choices for what is meant by "Public" are acceptable. We generally want to move toward more open, decentralized structure, to the extent possible to meet the requirements as well as the spirit of this decentralized technology.

5. **Q: "Who is an authorized representative? Does the authorized representative have the same kind of decentralized identity that a user has (implemented in IDENTITY use case)? how is this person represented/differentiated in the system?"**

   A: By "authorized representative" we intend to refer to a City Worker, or City Staff Person. We will identify and designate a set of individuals who should be granted special authority within the application, as distinct from regular users. This user type is conceived as necessary to certify the facts of identify. If the consultant can develop a solution in which a user's identity can be confirmed without any secondary human intervention, this can also be an acceptable solution. We request that the solution design a method to differentiate a standard user from a human representative of the City. Please note that the solution should use distributed ledger technology and rely on it, but may also use other types of software to meet the business processes required to address the use cases.

6. **Q: "The use cases also mention a "validated representative". How does a representative become validated?"**

   A: This can be considered as the same as "Authorized Representative". It was intended to reference a City worker with privileged views of the data. This requirement may be addressed by maintaining a log or other mechanism to show the functioning of the solution. If the solution were to be used in production, this capability would not exist without explicit use permission. We are seeking a solution that collects that permission and grants it to a City worker user type. The user would be designated offline and provided to the consultant.

7. **Q: "Our interpretation of token is that it's a reward for some service performed by a user and it is redeemable (to that extent we compare it to some**

amount of Ethers or some crypto-currency which can be exchanged between parties). What is an enclosed system of credits and debits? How does a token transfer affect the state of this system of credits and debits?"

A: This was an attempt to describe something like a crypto-currency without calling it a crypto-currency. We are not in a position to create and maintain a true new crypto-currency or even advocate for its use. So we are trying to describe some sort of points or credits system, that for all intents and purposes could also be a crypto-currency. This is an attempt to describe a token of value that the City can grant to a user. An example might be that a resident volunteers to help clean up a park or stream. The City gives the volunteer a coupon they can redeem for a free ice cream cone at an area business. We are interested in an application where the City does this, but instead of a paper coupon, assigns the value of that coupon to the person via the application. The person would then be able to go to the ice cream store and redeem the value via a QR code or some such mechanism. To prove this use case, a City worker would act as the grantor of the token, and another City worker would pretend to be a local business, simply to prove the function of the use case. The act of redeeming the granted value should decrement the available value from the grantee. We are open to creative options where this basic scenario is concerned, and we cannot officially create a new crypto-currency.

8. **Q: "Should voting and surveys always be anonymous or should the system support anonymous and named options?"**

   A: We would be interested in both anonymous and named options for voting. It is acceptable to address each use case with multiple options if the consultant wishes to.

9. Q: "**What is the deadline for Q&A submission?"**

   A: Noon on September 7th, 2018. Bidders may submit questions throughout the RFP period until noon on the day of the proposal submission deadline. We do recommend you also consider joining the conference call planned for questions and answers.

10. **Q: "Can you share a indicative start date and duration for the project?"**

    A: The start date and duration are anticipated to depend on the nature of the winning submission. Provided the City has adequate funds available to fund the winning project, the project should be able to start within two to three weeks of award, pending the signature of the City's standard agreements. The duration depends upon the nature of the proposal. The City is not placing restrictions or expectations on the duration. Proposals will not be penalized for longer durations, but may be rewarded for lower costs.

11. Q": "**Is the city looking for a Proof of Concept implementation that will be released to a small set of users followed by a full-fledged implementation? Or is this solicitation to develop the full-fledged implementation?**"

A: *The City is looking for a proof of concept implementation that will be released to a small set of users. The City is NOT looking for a full fledged implementation. The City anticipates socializing the results of the solution, educating the public on the potential of the technology, and demonstrating it widely. We expect to learn from the process and build upon the foundation of this solution with larger, more complex, and more realistic use cases. Scalability of the solution will be valuable. The City is likely to follow this proof of concept with additional projects with additional use cases. The use case of IDENTITY is highlighted in the title of this solicitation because subsequent future use cases will rely on a functioning scalable identity function.*

12. Q: "**Can the city share an indicative budget or budget range for this solicitation?**"

A: *Part of the purpose of this solicitation is to test the market to determine the costs of this type of technology. So we do not intend to provide an anticipated budget or range. However, we would not be surprised to receive submissions on the level of an Enterprise software implementation, or to receive bids at very low cost or even no cost. We expect this solution to be one of the only functioning distributed ledger applications being run by a municipality in the State of Ohio. We expect to promote the solution widely, using our reputation as a center of innovation to aid the winner in showcasing the solution far and wide. We encourage bidders to consider this as well as the proof of concept scope limitation, in their costing.*

13. Q: **There is no mention of internationalization, does the application need to be able support users that have different language preferences (or only support US english)? If so, what languages are to be supported?**

A: *Internationalization is not a requirement of the RFP. English (American) is the only expected language.*

14. Q: **Does the application have to have a mechanism to account for the typical "proof of work" (or what is referred to as "mining" in cryptocurrencies) in order for a "token" or block to be added to the overall chain?**

A: *The application does not require a "proof of work" mechanism, and such a mechanism is also not prohibited. There may be multiple ways to accomplish the objectives of the solution. The City is interested in creative solutions by the consultant and would be open to both "mining" and non-mining solutions if it is technically possible.*

15. Q: **Most public blockchains are open to anyone that can generate a public/private keypair to sign blocks after providing "proof of work". So:**

    Should tokens only be generated/issued to Dublin residents? If so, what would be responsible for validating that and guaranteeing that they are actually Dublin residents? I.e. if the being a
    Dublin resident is "proof of work" for getting a block in the chain, what is the system going to use to actually prove that they are residents and prevent just anyone from applying to create a block on the chain? If open to anyone, will it work like most other public blockchains where any individual can generate a key pair (public/private key) and send the public key up to have a "token" issued for it?

    A: *As we believe this is one of few implementations of Blockchain in a local government context, it is difficult to describe what our intent here is. Please note also, that this should be considered an experiment and we do not know how government, as a source of authority and authenticity, will ultimately interact with this technology, which is intended to bypass or eliminate forms of centralized authority or "trust". We consider this work to be an intermediate step to an eventually more decentralized process. We ask for you to suspend a strict interpretation of decentralization as we attempt to make a transitional step to an entirely different way of interacting with users and data.*

16. Q: **The scope of intent is on residents of the City of Dublin. This is moreso to limit the user pool for easier testing and proofs. You should consider Dublin in this context, an imaginary community, where assumptions and limitations can be place. There will one day be a "real world" application with all of the messy realities. This is not that day. The consultant may articulate their assumptions if necessary.**

    A: *In that future "real works", the scope of the application will not be limited to residents of the imaginary City of Dublin, but will include any potential user. Ideally, we will come up with a technical method for confirming whether the identity of a user is a current resident of the real City of Dublin, without relying on any human intervention at all. The market has means of doing this that could involve connecting facts from multiple non-city data sources, such as a utility provider AND a telecom carrier AND a public school registration database, for example. Those connections will require the participation of those data sources, and we do not have them today, so our proof of concept will need to stay within its limited scope of intent for the time being, acknowledging that the context is imperfect and unrealistic.*
    In place of this decentralized programmatic method of confirming identity and residency we hope to insert the temporary process step of having a human validate and verify the identity of a user the old fashioned way; by having them present themselves as a resident to a human and having that human "so declare" such residency. City staff are already capable of doing this, and as the test group of individual users will likely be in the hundreds and not thousands, we are prepared to insert this step for this stage of our development. We acknowledge this is an inelegant method of solving a technical problem, but we are unlikely to be able to build the coalition of decentralized distributed ledger partners without first proving this functionality. Our apologies for the long answer but this human step seems to have been confounding some and it is important to acknowledge the assumptions and the

expectation of an imaginary City, and not the true City of Dublin, which may help design the desired solution.

17.Q: **The Preferences section states that it is similar to a "survey".**

A: *Is there only one set of preferences that a user will ever have? Or does there need to be the ability to push a new "survey" down to a user?*
It is the intent of the City to have the eventual ability to survey this user base at will, on an ongoing basis. The requirement will be met by proving the City can push out a survey and get results back. However, proposals which address the ability to launch multiple surveys will come closer to the desired outcomes of the City.

18.**Can a user only have one active "survey" at a time?**

A: *Users can have multiple active surveys at a time. For example, the City may wish to survey residents on a current policy or plan of the City. The City may also wish to survey residents on their level of satisfaction with one or more current services.*

19.Q: **Does a survey need to be completed once started or does the survey require that a user can start and basically leave the survey and have its state saved and pick back up at a later point in time?**

A: *We do not have a strict requirement where this is concerned. The consultant may propose a solution and recommendation in this area.*

20.Q: **What happens if a user has an incomplete survey (including, one not even started) when a new survey is created? (i.e. can a user only have one active survey, or does a "list" of all surveys that they can complete need to be maintained)?**

A: *We would expect there to be no restriction on the number of surveys one could have access to. Surveys should also be voluntary. We would expect surveys to expire, but not likely that they would be required to be finished. There is no requirement that a survey be incentivized at this time. But in observing the use case for granting some form of value to users, we can imagine asking users to complete a survey within a certain amount of time in order to be granted credits of some sort. We do not have a reason to require only one survey at a time. We also do not prohibit this. Therefore the consultant may propose a "one at a time" process, or a list of available surveys. In this case we are more interested in the immutability of survey answers.*

21.Q: **Does there need to be an application created that will allow city personnel to be able to create these surveys in order for them to get to the individual users?**

A: *Yes.*

22.**Q: Do all surveys need to be saved/maintained in a centralized database that only city personal/management can view?**

A*: The consultant may design the application in this way, and this would be acceptable. We would prefer a solution that would allow only City personnel/management to view results in a way more dependent upon the distributed ledger. Our question is, can this be accomplished cryptographically? In other words, can City personnel have a key that grants access to certain elements of the Survey as a transaction? So for example, can City staff see that an individual has completed a particular survey, but not see what their choices were? Can City staff see the results of a survey, but not see who voted for what? We feel this would get us closer to a ledger model of information gathering from individuals where the data resides on the ledger, not in a centralized database, and can be accessed by whomever is granted the cryptographic keys to do so. There is likely to need to be a visualization or report to show those results, but we don't believe they should have to be stored centrally. If our understanding of the capabilities of the ledger are flawed, we would appreciate the responder to communicate this and help us meet our intent.*

23.Q: Discrete Choice states that a registered user (or someone that has been issued a "token" within the system) can only answer the survey once.

A: Is there only one survey that is going to be built into the system or does there need to be functionality for administrators to create surveys, push them to the users device (or notify them)?
The intent is for administrators to be able to push multiple unlimited surveys to users, or make them available. There are examples above, but the intent is for administrators to be able to ask a question of a community and receive an answer. They can then ask additional questions or as many as they would like. Users should have confidence that their choice is incapable of being changed, altered, or deleted.

24.**Q: Does there need to be functionality that can record when they've answered and save progress in case they don't complete everything at once?**

A: This is not strictly a requirement of the solution. It sounds like a good idea, and its inclusion would be welcome.

25.**Q: Does there need to be functionality to record the results in a centralized database to be viewed by city employees/management?**

A: This was addressed above, but to reiterate, there definitely needs to be functionality for city employees/management to be able to view results. However, we are hopeful that there may be a way to view results by directly querying the distributed ledger itself and presenting it in some report or visualization. It is acceptable to place the data into a centralized database for ease of programming and using certain tools. However, the intent of the RFP is to interact directly with the distributed ledger whenever possible. Ultimately, we desire a network in which this kind of data, generated by users, does not reside in a central government database. Ideally we would not collect or store it at all. It should reside on the

blockchain itself, and we (the local government) should access only those portions of it we need at the time we need for the purposes we need it. The user should control which data points we have access to and under what circumstances.

So for further example, ultimately, when being asked to complete a survey, the user is agreeing to answer one or more questions and to provide that data back to the requester. At the end of the survey, the requester should be able to pull from the blockchain, data about that transaction. They need not store this data, as it is perpetually available to them whenever they want or need it. They need not secure this data, because it is on the blockchain and can be accessed only by the cryptographic keys they have. More could be said about this, but we hope the picture is clear that we are seeking a blockchain application for a new setting, and not a centralized application, for which a Blockchain would not be necessary.

26. **Q: Are there to be any type of aggregation of data in reports that is to be run on the data if it's saved in a centralized database?**

    A: We hope to avoid a centralized database. Building reports based on the data that is on the blockchain is not strictly a requirement of this RFP. The consultant is encouraged to propose or build a few reports that will help the City prove the use cases effectively.

27. **Q: Should users be allowed to create a new "token" for their identity within the system if they were to lose the private key associated with the public key for their original token?**

    A: At this stage of our maturity (described above as reflecting a more imaginary perfect environment than a real world one) we believe it is better for individual users to NOT be allowed to create a new identity token without direct steps taken by a City staff person. We hope a future iteration may allow direct self-service identity management.

28. **Q: Assuming if so, what would be the process for validating they are who they say they are?**

    A: If they can generate a new token, assuming the desire would be to have all of the existing data (preferences/discrete choices) linked back to that new token while deprecating the old one?
    The consultant is asked to make a recommendation in this regard. We can see a couple of options.
    > *1. The City administrator has a "back door" ability to recover a user's identity and "re-attach" it to a new identity created if the user loses their identity. This is obviously not ideal and violates many of the purposes for using the blockchain in the first place, but the consultant may propose this if our environment is just not mature enough to support anything else.*
    > *2. If lost, the data itself is lost to that user. They must re-establish Identity from scratch. In this case, we separate the function of identity from the other use cases. Administrators could continue to access things like survey results from the ledger, but the user could not.*
    As in each of these concepts, the City is open to the proposal of the consultants in addressing this question if our intent is infeasible.

29. *Q:* **Is the intent to only have this be on a mobile device or support any computing platform (more complex and more expensive)? If so, what platforms are required to be supported?**

A: We assume this will be delivered via a mobile device as the most convenient delivery platform. However, we can imagine a future in which this blockchain is interacted with using a number of devices or platforms. The consultant may meet the requirements simply with HTML5 ported to a wide distribution of device opportunities. We imagine it being accessible via iPhone and Android devices, as well as through a desktop based browser.

30. **Q: Will the city supply the infrastructure on which to run blockchain nodes? Or will the consulting company be required to setup/maintain/administer the infrastructure that city's blockchain nodes would run on?**

A: The City anticipates running nodes, subject to the architecture and design of the consultant. The City can procure hardware, software, and/or services to maintain the nodes if the consultant specifies them. The consultant may offer this infrastructure "as a Service" as well, but we are likely to favor an infrastructure we own and can run ourselves.

31. **Q: Do you have an identified budget that you are targeting for this initiative?**

A: Because of the wide interpretations possible for this project and our desire to see what the market has available, we are not identifying a budget for this initiative.

<u>TEXT REVISIONS</u>

1. The language in Section 5.6 on Page 6 of 7 is revised from:

    The Proposal should be submitted to the following address no later than **4:00 PM on September 7, 2018**. Proposals received after this deadline will NOT be considered.

    to read:

    The Proposal should be submitted to the following address no later than **4:00 PM on September 14, 2018**. Proposals received after this deadline will NOT be considered.

Terminus for Addendum No. 1, August 20, 2018

* * * End of Addendum 1 * * *