Onderwerp:	Specifying quality (AQL) and other data | MakerNet quality evolution
Van:	Daniel James Paterson (danieljpaterson@yahoo.co.uk)
Aan:	ben.britton@fieldready.org; andrew.lamb@fieldready.org;
Cc:	anna@nnvnx.com;
Datum:	dinsdag 24 oktober 12:29 2017

Hey folks,

This is a second 'technical-thinking evolution' email - this time also written with my MakerNet CTO (cowboy) hat on. Read it quietly in the corner with a nice cup of coffee, and let me know your thoughts.

The distributed manufacturing supplier contract we discussed on the call a couple of months ago didn't include quality specification. That's required for the simulation - in fact it's at the very heart of it and also the success of MakerNet in general - so we should use this opportunity to evolve how we specify and assess quality.

There's other data we require to be specified for the simulation too. The wrist brace Ben proposed looks perfect. **Ben:** I'm not a 3D-printing expert and understand that the volumes in the simulation will not be high, but could you have a go at specifying the below please:

1) AQL major and minor fault definition for the supplier contract. Whilst it can never be 100% thorough, a production contract should attempt to specify 'acceptable quality level'. That means:

- A description of the faults which will be considered major (not acceptable for shipping to customer) and minor (acceptable for shipping to customer if there aren't too many of them). Think in terms of a fault type progression, for example: safety < liability < functionality < tolerances < aesthetics < cosmetic damage < colour variation, etc. It's too costly and not feasible to achieve perfect quality, so the answer is not 'no faults' ;)

- Three numbers: the amount of products to be quality-controlled from the total production quantity, the number of major faults that are acceptable for the whole batch to pass, and the number of minor faults that are acceptable for the whole batch to pass.

2) Values to be input onto the blockchain at the start of the test from the supplier contract (they can be different for each supplier - but let's keep them identical for each in this simulation).

1. Delivery date (e.g. three weeks after order confirmation).
2. Price per item.
3. Production quantity (for one supplier).
4. Quality control test amount (from AQL definition).
5. Acceptable quantity of major faults (from AQL definition).
6. Acceptable quantity of minor faults (from AQL definition).
7. Upfront payment amount (after the contract is signed, before the first-off is made) e.g. 5%.
8. Upfront batch payment amount (after the quality of the first-off is approved, before the remaining products are made) e.g. 45%.
9. Final payment amount e.g. 50%.
10. Date of final payment (e.g. two weeks after customer approves quality of main batch)

If you aren't familiar with AQLs, here is some information below. We should keep it very simple for the test; what's important is to make a step into structural quality management, not least to give the first-off quality controller a steer and objective starting point. Note that AQL refers to the main batch. The first-off has to be perfect in my opinion.

- https://qualityinspection.org/what-is-the-aql
- https://en.wikipedia.org/wiki/Acceptable_quality_limit

Hi-ho silver away,
Daniel

Daniel James Paterson MEng
Pico-solar | Digital Tech | Blockchain | Developing Countries

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Van: Ben Britton <ben.britton@fieldready.org>
Aan: Daniel James Paterson <danieljpaterson@yahoo.co.uk>
Cc: Andrew Lamb <andrew.lamb@fieldready.org>; Anna Lowe <anna@nnvnx.com>
Verzonden: dinsdag 24 oktober 10:38 2017
Onderwerp: Re: Sketching out the distributed manufacturing virtual simulation

Hi Daniel,
Sorry for the late response, missed this at the time somehow.
Let's do it with a 3DP thermoformable PLA wrist brace. It is super simple but a fun design and useful to boot.
See photos attached.
Ben

Van: Daniel James Paterson <danieljpaterson@yahoo.co.uk>
Aan: Ben Britton <ben.britton@fieldready.org>; Andrew Lamb <andrew.lamb@fieldready.org>
Cc: Anna Lowe <anna@nnvnx.com>

Verzonden: donderdag 19 oktober 11:35 2017
Onderwerp: Re: Sketching out the distributed manufacturing virtual simulation

Hi both,

Thanks. Assuming that we will start the simulation in a couple of weeks time, Ben can you obtain a design and let me see it please?

It's important that it's a *really* simple design with little chance of anything going wrong - there should be absolutely no noise / confusion / distraction coming from the actual 3D-printing during the test.

The test is of the administration of the payment, contracting and quality control aspects of distributed manufacturing and this will already be bumpy enough due to its newness and the unfamiliarity of the group with Ethereum wallets, etc.

Daniel

Daniel James Paterson, MEng
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Van: Ben Britton <ben.britton@fieldready.org>
Aan: Andrew Lamb <andrew.lamb@fieldready.org>
Cc: Daniel James Paterson <danieljpaterson@yahoo.co.uk>; Anna Lowe <anna@nnvnx.com>
Verzonden: maandag 16 oktober 10:48 2017
Onderwerp: Re: Sketching out the distributed manufacturing virtual simulation

Great.
Sounds like a plan Andrew. Everyone's on board and I know that the DFID FTL people will be really pleased to see this moving forward in Nepal. Gareth and Lea especially.
The people we are talking about are all able to participate. I feel that maybe we could include Kieran as a supplier and have Marjolein as quality control/or vice versa.
Andrew and Daniel, please do let me know how you need me to support the next steps.
Ben

On Mon, Oct 16, 2017 at 9:27 AM, Andrew Lamb <andrew.lamb@fieldready.org> wrote:

> Hi Daniel,
>
> Thank you. I'm in London today and for the next two weeks if you're around.
>
> My thought is:
> - Who will take part? Members of the Nepal Innovation Lab, including Zener technologies.
> - Is it just this group? No. You and Ben would be the only ones from this group.

- Is it a wider team from Field Ready? No.
- Is it external partners? Yes, at the Nepal Innovation Lab. I'm sure Ben can rustle up a couple of extra volunteers – Kuldeep comes to mind, and Bahar's maker people could be invited from Communitere. Let's make it a 3D modelling task – of a house. I want photos/videos of the event please Ben! Customer is Ben. Suppliers are Ram, Kuldeep and Communitere. Quality control is Kieran. You'd need to be on call Dan.

How does that sound Ben?

Why this? As Zener and Communitere are part of the DFID funded project that Dan's pay is coming out of. And Kuldeep has participated in MakerNet meetings. And I want photos of stuff happening in Nepal to show DFID.

Ta,
A

From: Daniel James Paterson [mailto:danieljpaterson@yahoo. co.uk]
Sent: 15 October 2017 03:28
To: Ben Britton <ben.britton@fieldready.org>; Andrew Lamb <andrew.lamb@fieldready.org>
Cc: Anna Lowe <anna@nnvnx.com>
Subject: Sketching out the distributed manufacturing virtual simulation

Hello folks, (yes, I am still alive),

Work on the smart contract is progressing. Solidity is a more immature language than I thought and as a result many simple functions that would be native to other languages have to be written from first principles.

So while I handle that:

We should begin to sketch out what the distributed manufacturing virtual simulation will look like. The fundamental question is: who will take part? Is it just this group? Is it a wider team from Field Ready? Is it external partners?

I think a careful balance has to be struck between the desire to promote our work to help gain funding and being thorough so as to learn as much as possible... versus the reality that bits of the test will go wrong, bits will be really clunky, and that it is a basic MVP, far from a final product. Far from a beta product too.

To aid the decision, here is a picture of some of the elements of the test:

- There are in essence five roles: one customer, three suppliers and one quality controller.

- The 'distributed manufacturing' will be a virtual task that can be both performed and quality-controlled very easily e.g. drawing a house in MS Paint to meet a certain specification eg "orange roof, red door, three windows, 5 pieces, 10000 rupees per piece, delivery date: start plus 7 days".

- One supplier will be assigned who will fail the first quality control eg the drawing has a red roof and orange door.

- For context, I'll write a list of the main differences between the virtual simulation and our long-term target end product.

- I'll create all of the ethereum.org wallets, fill 'em up with test Ether and deploy the smart contract to Ropsten beforehand so as to remove these superfluous technical complications.

Long email short: what are you thoughts on who should take part in the virtual simulation? and why?

DJP

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