



**Funding Request for a Legal
Identity Bracelet Poor People Can
Use to Prove They've Had Their
Covid Vaccination, Prove Their
Education Credentials, etc.**

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The Problem

- Billions of people on the planet don't have access to much tech resulting in them struggling to prove things like they've had a Covid vaccination, prove they're who they claim to be, prove their education credentials, etc.
- It also affects people like my 91-year-old mother, who's losing her mental cognitive abilities, and can't easily prove her legal identity, covid vaccination status, etc.
- That's the problem this deck addresses...

Legal Identity Biometric Bracelet Tied to the Person

- Give people an ID bracelet they can wear, which is biometrically tied to them
- This prevents malicious criminals from taking the bracelet, wearing it and masquerading as the person
- On the bracelet is an NFC sensor, which can broadcast out, with the person's consent, pieces of their legal identity information
- Let's use Jane Doe who received a Covid vaccination, or a booster update over the years, showing how all this could work...

Jane Gets Vaccinated

- When Jane's vaccinated, the local health authority would write to the bracelet, using a special file (Toda file), which contains her vaccination information
- The local health authority digitally signs the vaccination entry on the Toda file – thus proving she's been vaccinated by the authority
- They'd also take a face image of Jane, digitally sign it, and also write to the bracelet
- With Jane's consent, the local health authority would set the bracelet to legally, anonymously broadcast out her vaccination confirmation, plus her face image (with no name, legal identity revealed, etc.)
- Jane walks out of the vaccination area wearing her new bracelet

Jane Wants To Prove She's Been Covid Vaccinated

- Jane might be wanting to enter a public area, get on a bus, etc.
- She simply taps her wristband against a local sensor
- The NFC chip transmits the vaccination information, Jane's face image and, if required, the digital signatures from the local authority
- The sensor will then read the information, and if connected to a network, might instantaneously check the digital signatures
- It then compares Jane's face image presented from the wristband to her face
- If they match, it instantly grants permission to Jane to enter the bus, etc.
- Jane hasn't revealed her legal identity, the public is safe assuring them that Jane's been vaccinated, and it all happens instantly

It Works For Children to Old People

- The bracelets are sized for each person's arms
- Thus, it works for children to old people (like my mom)
- They're colour coded
- This enables say a family living together in close quarters, to easily determine which bracelet is Jane's, and not her other brothers or sisters
- The bracelets are also designed to be dropped in human or animal shit, urine, mud or be used in rain, tropical conditions, dry conditions, etc.
- They're washable, durable, inexpensive and easy to use

It Can Be Expanded to Include Legal Identity...

- A vaccination is a timely place for local authorities to register legal identities (i.e., the more than 1 billion people on the planet who don't have a legal identity)
- By rethinking local CRVS (civil registration vital statistics) systems, the person can not only receive their covid vaccination, but also register the person, and at the same time give them proof they're who they claim to be
- Let's use Jane Doe again receiving her vaccination...

Jane's Legal Identity is Registered

- Jane provided her legal identity information to the local health person
- As well, with her consent, she also provides her fingerprints and iris information
- This information is then instantly checked against the local CRVS as well as against all other CRVS systems around the planet
- Assuming there isn't a match against someone else, Jane Doe's information is entered into the new age CRVS system, **AS WELL AS BEING WRITTEN TO A NEW SOURCE OF LEGAL IDENTITY & CREDENTIAL TRUTH (SOLICT) DATABASE, WHICH IS UNIQUE TO JANE, WHICH SHE CAN CONTROL**
- The information is also written to Jane's wristband as a Toda file
- The information also contains "Yes/No" statement if she's above or below age of consent
- Now Jane has her own "Legal Self-Sovereign Identity" (LSSI) she controls

Jane Graduates From School...

- When Jane graduates from school, the local education authority writes her graduation credential, to global standards, to Jane's SOLICT database as well as to her wristband
- Now let's put all this together, to show how Jane can leverage this, at her choosing...

Jane Lives Her Life...

- **Jane may want to enter a bar** – with her consent, she'd release her age of consent, tap her wristband against a sensor, and the same process she used to board the bus occurs. If her face matches the one on the wristband, she's granted entry
- **Jane wants to apply for a job** – With her consent, she taps her wristband against a sensor, releasing her legal identity, her Covid vaccination status, her education credentials, etc.. The same process described above occurs. The employer now has a high degree of assurance it's Jane, she's got the education credentials she claims, and she's up to date re Covid vaccination

All of Jane's Consents Are Recorded to Her SOLICT

- All of Jane's consents are recorded, leveraging a protocol called Kantara UMA (User Managed Access) to her SOLICT
- So, while Jane might not be aware of it, within her own personal SOLICT database is a legal record of every consent she's given for her legal identity, biometric or behavioral data
- At some point down the road, she might want to know what consents she's given, and if she lives in a jurisdiction allowing right to be forgotten (like EU GDPR Article 17), she can then determine this from her SOLICT and request removal
- This is privacy by design

How Does This Work For Infants or, for People Like My Mom Who Require Power of Attorney?

- Toda has a feature called “Capability Files” which are authorization rights
- These can be written to each person’s SOLICT and wristbands establishing authorization rights to manage other people’s legal identities
- Their SOLICT and LSSSI wristband files can also be cryptographically cross linked, by the local authority, showing/proving legal relationships
- Let’s use Jane Doe managing her young son John Doe’s legal identity as an example...

Jane Manages John's Legal Identity

- When John's born, the local authority writes to both Jane and John's SOLICT databases, as well as to their LSSI files on their wristbands, capability files giving Jane permission to manage John's legal identity
- Their SOLICT and LSSI wristband files are cryptographically cross-linked, by the local authority, showing Jane is John's parent/legal guardian and John is her son
- So, when Jane takes John to a local health clinic or, enrolls him in school, she'd tap both her and John's wristbands against NFC sensors, and with her consent, release John's legal identity, health or whatever information is stored on the wristband
- The health clinic, school, whatever, now have a high degree of assurance that Jane and John are legally related, and Jane can manage John's legal identity information
- When John comes of legal age, his SOLICT database and LSSI wristband files are altered, giving him complete control over his legal identity

It Works When a Person Dies...

- Hypothetically, when Jane dies, the local medical person/coroner can legally identify Jane via her fingerprints and iris, assuming they're available, scan matching them against the CRVS entry
- Thus, this person can not only legally declare Jane dead, with a high degree of assurance,
- Also, the jurisdiction can alter Jane's LSSI wristband, as well as that of her son's John Doe's, by changing the cryptographic and capability files, since he's the executor of Jane's estate
- John can now prove he's the executor of Jane's estate, by using her wristband and his when he goes to banks, etc.
- When the estate is wound up, the jurisdiction can terminate Jane's wristband

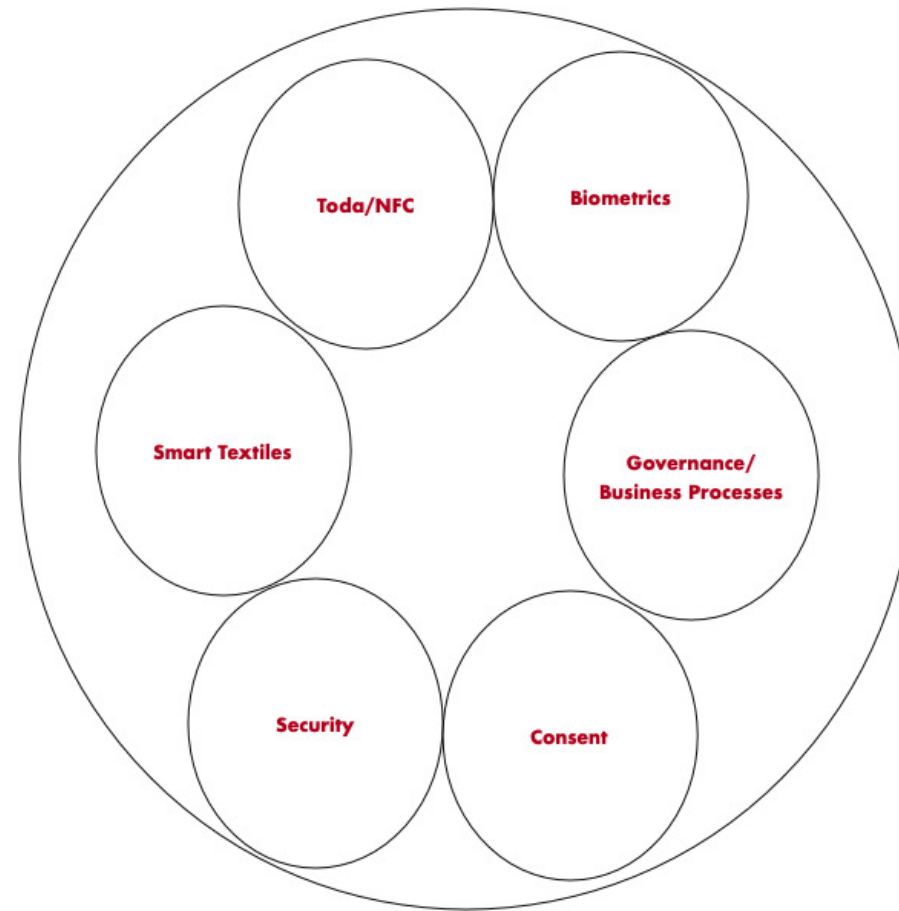
Crawl, Walk, & Then Run

- I'm a very experienced program manager and identity architect whose taken many visions into reality
- I always tell my clients to crawl, walk and then run
- Additionally, when I've rescued projects, I've found them focusing mostly on tech and not on governance, business processes and overall security
- What I've laid out in this deck is a vision, **WHICH MUST BE TAKEN AT A CRAWL, WALK AND THEN RUN**
- So, where to begin?

Crawl – First Prove Out the Biometric Wristband

- I have this mind map showing the main areas to be focused on:

Biometric ID Bracelet Mind Map



Biometrics

- It/They need to be good enough to have a relatively low ERR rate to prove the person wearing the wristband is who they claim to be
- For actual legal identification of the person, to a high degree of identity assurance, with their consent, they'll provide their fingerprints and iris which will be compared to the one's stored on their LSSI file on the wristband
- **Now what biometrics to use, I don't know i.e., I'M NOT THE EXPERT**
- However, I'm a bit dangerous, because I've been skimming many research articles on use of wrist biometrics like these:
 - **"TrueHeart: Continuous Authentication on Wrist-worn Wearables Using PPG-based Biometrics"** <https://ieeexplore.ieee.org/document/9155526>
 - **"A low cost wrist vein sensor for biometric authentication"** - <https://ieeexplore.ieee.org/document/7738223>
 - **"On-the-fly Finger-Vein-based Biometric Recognition using Deep Neural Networks"** - <https://ieeexplore.ieee.org/abstract/document/8979362>
 - **"A Wearable Wrist Band-Type System for Multimodal Biometrics Integrated with Multispectral Skin Photomatrix and Electrocardiogram Sensors"** - <https://www.mdpi.com/1424-8220/18/8/2738>

Smart Textiles

- All I can see in my head is the many villages I've been to around the planet, where there's mud, cow, human and pig shit and urine, which these types of wristbands will be dropped into
- Further, they'll have to be able to stretch to allow for growth of wrists e.g., babies
- They'll need to be different colours to allow for different family members to physically identify their wristband
- And many other things I haven't a clue about regarding washing, hot, cold, wet, dry conditions, criminals taking the fabric and disassembling it for valuable materials, etc.

Toda/NFC

- Quickly spin up a Toda environment showing how the legal identity can be stored as a Toda file
- Then prove out sending the Toda file from one endpoint (the authoritative legal authority) to the other endpoint (the wristband)
- Show how NFC will be used to interact with other sensors
- Show how different people's Toda LSSI files can be cryptographically cross-linked showing legal identity relationships
- Show how capability files can be used giving one person delegated authority to manage another's legal identity information

Consent

- The biggest challenge is determining how a person wearing the wristband will provide their consent, securely, for a piece of legal identity information contained on the bracelet to be released
- Ideas I have, which are only Guy's ideas, need to be proved out including use of voice, text displayed on the bracelet, wrist band actions, etc.
- Others might have better ideas on addressing this
- All of which have security implications as possible attack vectors

Business Processes and Governance

- This will likely equally be as complex as the underlying biometric and smart textile tech
- There will be MANY different use cases which need to be created addressing governance and an end-to-end business process life for a person and their wristbands
- I can easily see people claiming they've lost their wristbands, they don't work, etc. Some of these will be legit while others won't
- Which leads me to the next slide...

Security

- It's one thing to write about creating these types of wristbands, yet another to successfully deliver a secure wristband, writing to the wristband, secure storage on the wristband, consent mechanisms used, secure business processes et al
- **In short, I ADMIT I'M NOT THE EXPERT**
- Which is why, when I do find funding, I want to quickly establish a sophisticated red team to constantly attack all the different potential attack vectors

Team Requirements to Do The Above

- I want to find significant funding to create three teams, 8 time zones apart, to dig into this
- By leveraging the three teams composed of researchers out of universities/polytechnicals, manufacturers, governments, aid agencies and practical people on the ground in villages, I want to quickly go through rapid ideas, POC's, revamping, et al, until we think we have something of merit
- Then do small controlled pilots to see how it works and scales
- Learn from all our mistakes and then get ready to roll it out in 1-3 jurisdictions

Rough First Guesstimates on Costs

Staff:	Rate/Person:/Yr.	Number of People:	Costs:
Biometric Experts	\$150,000	12	\$1,800,000
Smart Textile Experts	\$150,000	12	\$1,800,000
Business Process Experts	\$150,000	6	\$900,000
Governance Experts	\$150,000	6	\$900,000
Data Experts	\$150,000	3	\$450,000
Security Experts	\$250,000	6	\$1,500,000
Identity Experts	\$150,000	3	\$450,000
Network Experts	\$150,000	3	\$450,000
Toda Experts	\$200,000	3	\$600,000
On-The-Ground Experts	\$100,000	3	\$300,000
Program Manger	\$300,000	1	\$300,000
Project Manager	\$150,000	6	\$900,000
Learning From Mistakes Recorders	\$100,000	3	\$300,000
HR	\$150,000	1	\$150,000
Admin assitants	\$80,000	3	\$240,000
Accounting/Finance	\$100,000	2	\$200,000
Legal experts	\$250,000	3	\$750,000
Staff Sub-Total			\$11,990,000
Manufacturing:	I've included this as a separate cost centre. I haven't a clue who these folks should be, rapid POC manufacturing et al, nor their costs		?
Total Costs			?

Let's Assume it Will Likely Cost About \$20 Million-ish

- This crawl step might result in a decision the band isn't feasible or, it might prove it out, ready for the next step i.e., walking
- This will be a funding gate
- If it does prove out, then the price points, governance, business processes and security et al must be designed to rapidly scale across 1-3 jurisdictions
- Funders will have to be found to allow for rapid growth across many millions of people in a jurisdiction

My Suggestions...

- Keep the first step very tightly focused i.e., mostly forget the legal identity “stuff” and prove out the biometrically tied wristband which can prove a person’s been Covid vaccinated
- Just proving out the wristband is a major step forward on the planet
- However, while funding the teams, have the design able to be integrated with SOLICTS/LSSI
- **This is the end game i.e., leverage the wristband to deploy in jurisdictions a rethought CRVS, consent, legal identity framework which works not only in the jurisdiction but around the planet**

So, in Guy's Head...

- I can see a SOLICT/LSSI lab environment being created which the wristband environments can be integrated with to prove out the long-term design
- Drive the teams to practically, securely deploy the wristbands in a few very different places on the planet, demonstrating hot, cold, dry, humid type conditions
- The wristbands vaccination stations will likely be required to work with satellite phone connections for parts of the planet where there's poor connectivity, as well as the ability to write to the wristband at the remote location

I'm Looking for Funding Innovators

- What I'm proposing is NOT A SLAM DUNK
- It has a risk of potential failure i.e., the decision might be made after spending 20 million-ish dollars the wristband idea might not work
- HOWEVER, IF IT WORKS, IT ALSO HAS DRAMATIC BENEFITS AROUND THE PLANET



The Biometric Legal ID Wristband can lay the foundations to drive into the planet a rethought human legal identity system, which works for those without access to tech, as well as those that do i.e., we'll leave no one behind

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- Summary of the many articles I've written on LSSI, SOLICT et al:
 - **“Snakes & Digital/Physical Legal Identity!”** - https://www.linkedin.com/pulse/snakes-digitalphysical-legal-identity-guy-huntington?trk=portfolio_article-card_title

TODA

- “Toda – A Brief Introduction” https://engineering.todaq.net/toda_brief_intro.pdf
- “Toda Primer” to understand how Todaworks https://engineering.todaq.net/TODA_Tech_Primer_v1.0.pdf
- “Toda Proof Structure” <https://engineering.todaq.net/todapop.pdf>
- “TodaQ API” <https://docs.developer.todaqfinance.net/>
- Toda Technical Documentation <https://engineering.todaq.net/>
-
- You might also be interested in these three blogs written by Ben Goertzel, Toufi and Dann:
- <https://blog.singularitynet.io/the-todality-is-here-part-one-singularitynet-toda-synergy-at-the-core-b1b84d07065c>
- <https://blog.singularitynet.io/the-todality-is-here-part-two-the-rapidly-expanding-toda-sovtech-ecosystem-c0c225ac7d37>
- <https://blog.singularitynet.io/the-todality-is-here-part-three-a-product-accelerator-for-driving-the-decentralized-ai-b1e60b13cc5c>
- I have no commercial relationship with the various companies currently deploying TODA