

The Identity Lifecycle of Jane Doe



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Note to Reader:

I have been writing about rethinking civil registration systems since 2006

- [“The Challenges with Identity Verification”](#)

Over the last year, I have written 22 papers. Here’s a listing of them, by subject area, with links to each one:

- Example story of an identity’s lifecycle
 - [The Identity Lifecycle of Jane Doe](#)
- Technological Tsunami Wave of Change
 - [Harnessing the Technological Tsunami Wave of Change](#)
- One-page summary
 - [One Pager - The Age of AI, AR, VR, Robotics and Human Cloning](#)
- New age identity, data and consent
 - [Privacy Gone – AI, AR, VR, Robotics and Personal Data](#)
 - [Kids Privacy in Non-Private World - Why Even Super Hero’s Won’t Work](#)
 - [I Know Who You Are & What You’re Feeling - Achieving Privacy in a Non-Private World](#)
 - [Consent Principles in the New Age – Including Sex](#)
 - [Policy Principles for AI, AR, VR, Robotics and Cloning – A Thought Paper](#)
 - [Legal Person: Humans, Clones, Virtual and Physical AI Robotics – New Identity Principles](#)
- Robotics, clones and identity
 - [Legally Identifying Robots?](#)
 - [Rapidly Scaling Robot Identification?](#)
 - [Virtual Sex, Identity, Data & Consent](#)
 - [I’m Not a Robot](#)
- New age civil registration legal identity framework
 - [“Why the New Age Requires Rethinking Civil Registration Systems”](#)
 - [“What New Age Civil Registration Won’t Do”](#)
- New Age Assurance
 - [“New Age Assurance – Rethinking Identity, Data, Consent & Credential”](#)
- Deploying AI, AR, VR, robotics, identity, data and consent in challenging locations
 - [“Where Shit Happens”](#)
- Protecting the civil registration/vital stats infrastructure
 - [“When Our Legal Identity System Goes “Poof!”](#)
- New age architecture principles summary
 - [“New Age Architecture Principles Summary”](#)
- Leveraging Blockchain and Sovrin
 - [“A Modern Identity Solution: New Age Vital Stats/Civil Registries, Self-Sovereign Identity, Blockchain, Kantara User Managed Access & EMP Resistant Data Centres”](#)

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- Creating Estonia Version 2.0
 - [“Creating Estonia Version 2.0 – Adjusting for Changes From 1999 to 2018”](#)
- New age civil registration/vital stats design, implementation & Maintenance Vision
 - [“Guy’s New Age Civil Registration/Vital Stats Design, Implementation & Maintenance Vision”](#)

All papers are available off my website at <https://www.hvl.net/papers.htm>

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Executive Summary:

This paper is a story about a woman, Jane Doe, living in the not so distant future. I've written it to illustrate the effects of the technological tsunami approaching our shores, i.e. the convergence of:

- Artificial intelligence (AI)
- Augmented reality (AR)
- Virtual reality (VR)
- Robotics (both virtual and physical)
- Genetic engineering
- Nanotechnology
- Wireless communication

The result is what Wired Magazine recently called “Mirrorworld” (<https://www.wired.com/story/mirrorworld-ar-next-big-tech-platform/>). It's a world where the lines between virtual and physical blur.

You'll find in the story:

- Notes about legal, business and technical issues that require addressing in order to create a new age identity civil registration service
- Links within the story to relevant papers I have written

The Identity Lifecycle of Jane Doe

Birth

Jane Doe is born in a remote location on the planet. A medical aid/government approved civil registration person arrives in her village. In their small medic bag, they have a biometric reader/data entry/telecommunication device that uses satellite communication. They use it to obtain her parents fingerprints and iris scan to confirm who they are and then obtain Jane's fingerprints. Instantly, Jane is now automatically registered in the new age civil registration process. Please refer to the paper "[Where Shit Happens – Rethinking Civil Registrations in Remote Locations](#)".

Her parents don't worry about giving their fingerprints and iris scan. They realize that there are new laws protecting their biometrics. Please refer to the paper "[I Know Who You Are & What You're Feeling – Achieving Privacy in a Non-Private World](#)".

They also like the fact that their DNA is not being stored in a government database that could potentially profile them. They've also heard that there are new laws protecting their data in the new age civil registration service. Please refer to the paper "[Why The New Age Requires Rethinking Civil Registration Systems](#)".

Her parents or legal guardians are now given a choice. If they have a phone, they can obtain a digital version of Jane's birth certificate that is digitally signed by the civil registration service and/or, they can be given a physical card with this on it. Both use Blockchain and Sovrin to securely publish the data. They must create their own secret pin to manage their private key or, possibly use a biometric. Please refer to the paper "[A Modern Identity Solution: New Age Vital Stats/Civil Registries, Self-Sovereign Identity, Blockchain, Kantara User Managed Access & EMP Resistant Data Centres](#)".

Jane's parents have heard that the country is modernizing its electrical grid infrastructure to withstand an electromagnetic pulse event from the sun. They've also heard that the data centres are also being updated to protect their legal identity data. Please refer to the paper "[When Our Legal Identity Trust System Goes Poof!](#)".

Health

When Jane's identity is created, a notification is automatically sent from the civil registration service to the government's health care service. This automatically creates a health care account for Jane.

Jane's parents can now use Jane's digital birth certificate and/or the card to enroll Jane in whatever service or enterprise they choose. They are in control of Jane's legal identity. Their

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consent must be obtained for any service or enterprise they enroll Jane into. Please refer to the paper “[Consent Principles in the New Age – Including Sex](#)”.

Legal Guardian

Sadly, a few years later, Jane’s parents die. When they do, their fingerprints, if available, are checked to confirm it’s them using the same device used to register Jane’s birth. When the medical person inputs the data that they are dead, the civil registration service then automatically checks to see if they have any dependents and find Jane. A notification is automatically sent to the judicial system asking for her legal guardian. The judicial system then uses whatever processes they determine is best and then appoint new legal guardians.

As part of this process, the legal guardians’ fingerprints and iris scan as well as Jane’s fingerprints must be given to the civil registration service to prove who they are. Once confirmed, the civil registration service then receives a notice from the judicial system who her legal guardians are. The birth registry is now updated with her legal guardians. Her legal guardians then receive a new Sovrin/Blockchain signed birth certificate and/or a printed card.

Education

It’s Jane first year at school. Her legal guardians must enroll her in the school system. They present their fingerprints/iris scan to confirm who they are. This is sent to the civil registration service. Jane’s fingerprints are then obtained to confirm who she is. She’s then enrolled. During her first year, civil registration workers visit the school and obtain her iris scan. This is then added to her birth registration.

Virtual Selves/Robots Acting on Jane’s Behalf Before She Reaches Legal Age of Adulthood

If Jane creates virtual selves of herself before she reaches legal age of adulthood, the virtual selves are limited, by law, as to what they can and cannot do. Any task or activity requiring legal approval, requires her parent’s or legal guardian’s legal consent. The same also applies to robots acting on her behalf that may or may not resemble her.

Legal Age of Adulthood

Jane’s now reached legal age of adulthood. She visits the civil registration service or, a worker comes to her village. She provides her fingerprints and iris to confirm who she is. They then take a photo of her. This is digitally signed by the civil registration service. Jane is then given the following for her to use as and when she sees fit:

- A digital attestation, using Blockchain and Sovrin, that she is of legal age. It only has her picture on it and nothing else. She can also, if she wants, be given a physical card for this. This allows her to act anonymously.
- A digital birth identity attestation, using Blockchain and Sovrin, that she now controls.
- A digital certificate, using Blockchain and Sovrin that Jane can use to digitally sign documents. She then creates her own secret pin to use this.

Acting Anonymously

Jane walks into a bar. She either presents her digitally signed photo or her card with the photo on it. The bar then electronically checks to see if the digital signatures are valid. The bar then checks the photo to see if it matches Jane. Jane is then granted entrance. She's glad she was able to act anonymously and thinks back to stories her friends told her of how in the old days she would have had to use her driver's license that shows her name and address on it to prove her age. Please refer to the paper "[New Age Identity Assurance: "Turning it on its Head"](#)".

Virtual Sex

Jane wants to do what her friends are talking about, i.e. having virtual sex. She has access to the VR/AR goggles, glasses and/or lens as well as other devices used to simulate touch, smell, etc.

If Jane is of legal age, she would provide the proof of legal age via her anonymous digital legal identity. The apparatus she uses requires her to possess a legal digital identity as well as authenticate using biometrically/behavioral data. In the AR/VR/physical environment she would be identified as a human but not reveal her name unless she grants permission. She would be able to see what her partners are, i.e. AI VR's or VR's of humans.

If Jane is a legal minor, she tries to enter a VR sex application she is prevented access. She needs to present her anonymous legal digital identity signifying she's of legal age PLUS the devices she uses would authenticate her via her biometrics/behavioral data.

Please refer to the papers, "[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)" and "[Virtual Sex – Identity, Data and Consent](#)"

Virtual Selves and Robots

Jane can now create legal versions of her virtual self. These are now registered in the civil registration service. Note: the method of identifying each virtual robot needs to be agreed upon as does various ways of authenticating the virtual selves. Also note that the civil registration service only does identity verification for virtual selves. Authentication services are separate.

If Jane wants to create physical robots that look just like her or, have other robots acting legally on her behalf, these too are registered in the civil registration service. Please refer to the papers:

- "[Legally Identifying Robots?](#)"
- "[Rapidly Scaling Robot Registration](#)"
- "[Legal Person: Humans, Clones, Virtual and Physical AI Robotics – New Identity Principles](#)"
- "[I'm not a robot](#)"

Jane Walks Down a Street Towards Acme Store Inc.

Jane is wearing AR/VR glasses/lenses, wearing a communication wristband/biometric reader and walks down a street containing thousands of miniature 360-degree cameras towards Acme Store Inc. She has several choices to make before she steps outside:

- She could choose to act anonymously.
 - She would configure the devices to send out her anonymous legal digital identifier. As she walks down the street the thousands of applications she comes into contact with would then, by law, not be allowed to recognize her
- She could choose to reveal her identity and give only limited data access consent
 - She would configure the devices to reveal her name as well as preselect what entities she'll reveal her identity to. This could be by type of entity, e.g. food, retail, etc. or, it could be very granular, e.g. Acme Store Inc.
 - As she walks down the street, her identity is revealed as well as her data to the preconfigured entities. Acme Store Inc. now can “see her coming”. It can determine her emotions, compare it to all the other times she's walked by and/or into the store. It then displays advertising customized for Jane to draw her into the store. If she walks in, she'll be greeted by a AI generated store assistant knowing LOTS about Jane.
- She could choose to reveal her identity and give consent for her data to be released
 - She would configure the devices to reveal her identity as well as automatically grant consent for her data to be used
 - As she walks down the street, she looks for a few seconds at a new car and likes it. The devices she wears know how long she looked at the car, determine she likes it and then displays to Jane a new car advertising message customized for her

Please refer to the paper, [“Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper”](#).

Ability to Live Off the Grid

Jane may determine that she wants to live off the grid. She can choose to call herself whatever - this is her choice. However, if she wants to interact with any government service, she will then have to register with them. She will have control over her legal digital identification as well as ownership of any robots she owns, which are also legally registered.

Other Government Identity and Authentication Services

As part of this registration process, Jane will present her fingerprints and iris scans once, to the central identity and authentication service, to confirm who she is. The central registration source then checks to confirm her identity from the civil registration service. It may then obtain other biometrics to then authenticate her.

Note that the central registration source is legally separate from the civil registration service. Jane is using this central identity and authentication service by her own choice.

Opening A Bank Account

Jane wants to open a bank account. She walks into a bank and presents her fingerprints and iris scan. The bank uses the most up to date biometric readers, specified by the civil registration service, to mitigate against the risk of fraud. These are securely sent to the civil registration service. Jane then digitally signs the contract. Now the bank has a high level of trust that it's Jane.

Signing Legal Contracts

Jane wants to sign legal contracts. Depending on risk, the parties may accept her digitally signing the documents using her secret 4-digit pin. If the risk is higher, they may want her to provide her birth certificate and/or biometrics. Please refer to the paper "[New Age Identity Assurance - Turning it On its Head](#)".

Jane Clones Herself

Jane decides to clone herself. She chooses physical clones that resemble her. Each clone, when born, is differentiated by their fingerprints and iris scan. Jane's heard that this has been proven by research done to validate that these two biometrics are enough to differentiate clones from clones and clones from the rest of the population. Each person clone is entered into the civil registration service. Please refer to the paper "[Why The New Age Requires Rethinking Civil Registration Systems](#)".

Marriage

Jane decides to get married. As part of the marriage registration process, she and her partner must provide their biometrics to the new age civil registration service to confirm their identities and their marital status. She finds out that her partner is already married and hasn't told her! He or she had been using a different name/identity and haven't had a divorce from their existing marriage.

Changing Her Gender/Name Change

Jane then decides to change her gender. As part of this process, she provides her biometrics to the new age civil registration service. Once her identity is confirmed, her gender is legally changed. Jane then decides to change her name to John Doe. This change is then made in the civil registration system. A digital gender/name change notice is created. Other third-party enterprises, like banks, insurance companies and telcos, then realize the legal identity changes and then take appropriate action.

The existing virtual copies of Jane, will need to have their legal status changed, i.e. a virtual Jane Doe might or might not be allowed to legally act on behalf of a John Doe. Note: The legal system needs to determine what happens when this occurs. Any new virtual selves created to act on behalf of John Doe, which will legally act on his behalf, need to be registered in the new age civil registration system.

Robots either resembling John or if not, legally acting on behalf of him, also need to be registered with the new age civil registration service.

Power of Attorney

John becomes old and requires someone to act on his behalf using Power of Attorney. The person or people acting on her behalf must present themselves at a judicial office of the government with John. As part of the process, their biometrics are obtained to prove who they are and confirmed by the civil registration service.

Once approved by the judicial system, using whatever processes deemed appropriate, the judicial system sends a notification to the civil registration service. The people who hold John's power of attorney are now given a new digitally signed attestation, using Blockchain and Sovrin, allowing them to act on John's behalf.

Note: As part of the Power of Attorney process, legal thought needs to be given to John's existing robots, both virtual and real that have been acting on his behalf. Given John's mental condition, new processes likely need to be created determining what the legal relationship will be for John's existing robots with John.

Death

John dies. If available his fingerprints and iris scan are obtained to confirm it's him. The medical worker then enters his death into the civil registration service. The service then sends out a death notification digitally to the health service and any other government service the laws deem appropriate to notify. A digital death notice is created. Other third-party enterprises, like banks, insurance companies and telcos, then realize John's dead and take appropriate action.

As part of the death notification process, virtual selves and any physical robots of John are then changed in the civil registration system such that they now cannot legally act on behalf of John. The issue of if Jane or John's virtual selves are still allowed to exist, legally speaking, needs to be determined. The same applies to robots that physically resemble Jane or John or, those robots that serve them.

Termination of Robots Both Virtual and Physical

Thought needs to be given to how existing robots of John, both virtual and physical, are terminated and their identity status changed. This will likely be complicated for the following reasons:

- The lifespan of virtual and physical robots will likely be much longer than the lifespan of John
- Can John's virtual robots exist perpetually?
- If repairs are made to robots, allowing them to live perpetually, then how does this affect the identities of John's robots?
- If one of John's robots is terminated, yet he has several others that are linked to it, then how are their identities affected?
- When do John's robots cease being his robots?
- What if John's robots create copies of themselves either virtually or physically?
- What if John's robots create new robots either virtual or physical that aren't John?

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Summary:

This paper is a sample illustration of how the new age civil registration service works from the end user's perspective. It meets these privacy principles:

- A person can live and act anonymously
- Ability to live off the grid without being monitored
- Legal differentiation of people, clones, and robots from the moment of their creation through their identity lifecycle
- One physical identity per citizen when they choose to interact with governments and/or financial enterprises
- Control over their biometric/behavioral data
- All people are registered regardless of where they live

I don't pretend to have all the answers. What I am good at is acting as a catalyst to bring disparate people together to create identity systems that meet the needs and sustain themselves. We need to assemble teams composed of legal, business process and technical people that can, collectively, create a new legal framework for identity, data and consent,

As I've stated in other papers and LinkedIn posts, this framework must expand beyond a single country's borders. People, robots and electrons easily move across today's physical and electronic borders. Therefore, a new age identity paradigm must have common laws and regulations spanning the planet.

Finally, the framework needs to be adjustable. As science and technology advance, today's ways of identification will be rendered useless. The framework must be designed to allow for rapid changes to adjust for new identity attack vectors made possible by the science and technology.

Please refer to the paper, "[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)".

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About the Author

Guy Huntington is a veteran identity architect, program and project manager who's lead as well as rescued many large identity projects with many of them involving identity federation. His past clients include Boeing, Capital One, Kaiser Permanente, WestJet, Government of Alberta's Digital Citizen Identity and Authentication Program and Alberta Blue Cross. As one of his past clients said "He is a great find, because he is able to do high quality strategic work, but is also well-versed in project management and technical details, so he can traverse easily from wide to deep. With Guy, you get skills that would typically be encompassed in a small team of people."

