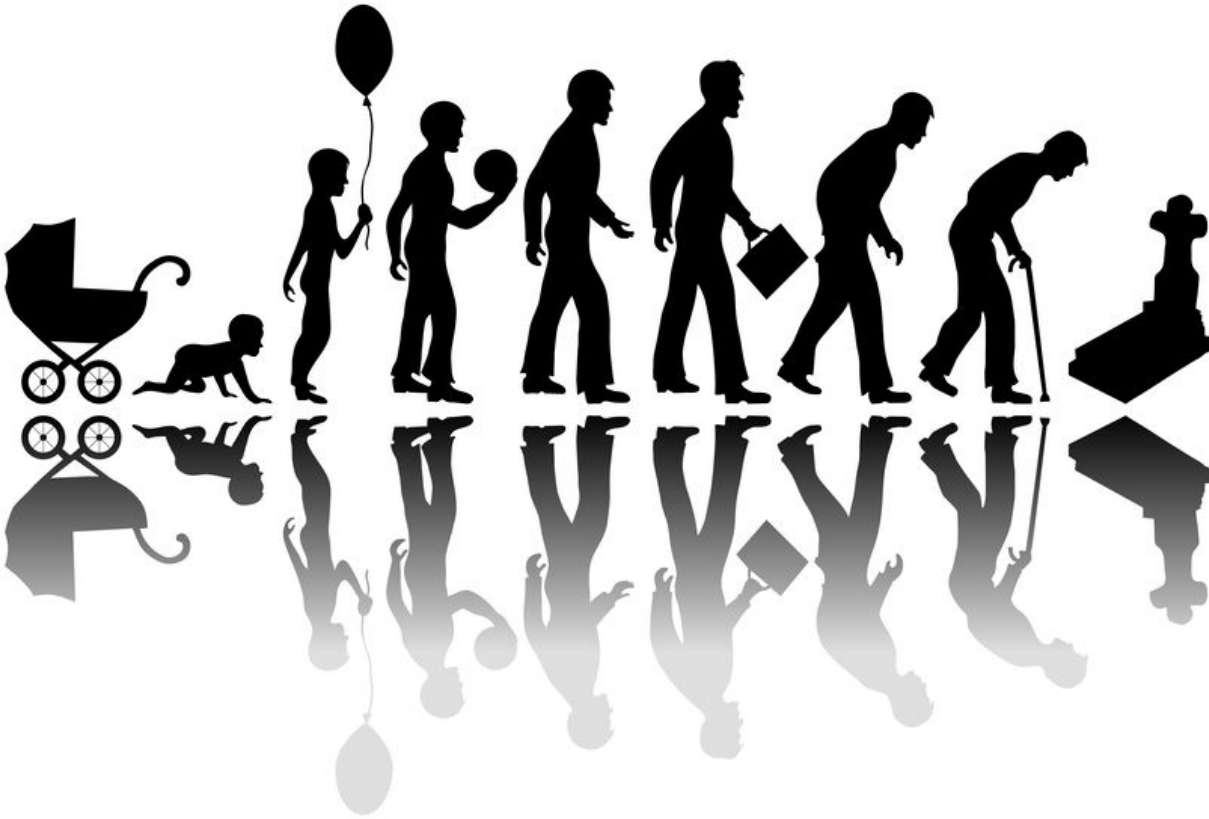


Why The New Age Requires Rethinking Civil Registration Systems



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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”](#)

- 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>

Executive Summary:

This paper begins by describing the technological tsunami approaching our planetary shores:

- Artificial Intelligence (AI)
- Augmented Reality (AR)
- Virtual Reality (VR)
- Robotics (both virtual and physical)
- Genetic engineering
- Nanotechnology
- Wireless

It describes why our old ways of legal identification no longer work:

- Breeder documents
- Robots (virtual and physical) requiring legal identification
- Human cloning
- AI, AR, VR environments

The paper describes the components of a new age legal identity framework:

- Humans
 - Biometrically tied birth registration
 - Legal digital identity plus an anonymous legal identity
 - Ability to delegate digital identity
 - Linking parent/legal guardian status to the child's birth registration
 - Obtaining a birth registration in challenging locations
 - Issuing secure cards where parents/legal guardians don't have technology access
 - Acquiring an iris biometric during the first year of school
 - Issuing a digital certificate at legal age enabling them to digitally sign documents
 - Provide biometrics for any civil registration with the exception of death if the deceased doesn't have a biometric to provide
 - For high identity assurance the citizen must provide biometrics in a controlled, secure environment
 - For any civil service registration and/or if the person claims to not have any identity documents, by law, they'll be required to provide their biometrics which will be instantly checked with all other jurisdictions' new age civil registration service
- Robots
 - Upon their creation, they will be registered in the new age civil registration service
 - The service must be able to instantly check with all other new age civil registration services to ensure the identity doesn't exist
 - They will be rapidly registered
 - Owners will be granted control of the robots legal identity plus their anonymous digital identity proving they are a robot
 - Ownership changes will be sent from the legal authoritative source to the new age civil registration service
 - Termination of the robots will be to prescribed laws and regulations

- Legal Structure
 - The paper outlines numerous requirements including the ability of the service to;
 - Act legally and technically on its own
 - ONLY do identity verification
 - Not be linked to other government/third party services able to track the identity
 - Protect minors' and citizens identity in a non-private world
- Operationally
 - The paper outlines the operational requirements for the new age civil registration system
- Have the Ability to be Quickly Changed
- Global Identity Requires Global Enforcement
 - All jurisdictions require the same laws pertaining to identity with the ability to enforce the laws across jurisdictions

The paper ends with the statement:

We are entering a new age. Our old ways of legally identifying a person no longer work.

To create a new age legal identity toolkit requires all jurisdictions to collaboratively create the same laws pertaining to identity, data and consent, AND to enforce them. Without this, people and robots will live in a non-private world, with no privacy, and no ability to ensure they are protected.

Why the New Age Requires Rethinking Civil Registration Systems

Introduction

We are facing a technological tsunami approaching our planetary shores composed of:

- Artificial Intelligence (AI)
- Augmented Reality (AR)
- Virtual Reality (VR)
- Robotics (both virtual and physical)
- Genetic engineering
- Nanotechnology
- Wireless

The result? A rethink in how we live, work and play. What was once thought of as science fiction, e.g. robots and cloning is now upon us.

Examples include:

- [Oben](#), who's one of many companies, currently producing "Personal Artificial Intelligence (AI), which are already much "smarter than us"
- [Robots building robots](#)
- [Boyalife](#), a company currently cloning 100,000 cows a year working towards 1 million, who's [CEO s publicly stated in 2015 they could clone humans but weren't](#)

This creates new challenges with identification. Before getting to the challenges, let's first look at the underlying legal identification system, i.e. civil registrations.

Old Civil Registration Systems

Our existing civil registration systems arise from Europe in the middle ages on. Gathering of birth, marriage and death information began in churches, with governments eventually taking them over.

In the 1800's paper-based birth certificates were issued. This technology worked well for its time. Since most people couldn't easily and cheaply produce paper, the fact a person had a birth certificate in their possession meant it was highly likely they were the person they were claiming to be.

It led to birth certificates being used by laws to identify someone. Today, most laws around the planet use the birth certificate as one of the foundational identity documents. With this, a person can obtain other identity documents like driver's licenses, passports, etc.

However, identity fraud was increasing...

Breeder Documents

I was the identity architect for a North American jurisdiction's citizen digital identity and authentication project. My team met with their security auditors. They told us they were the first jurisdiction in North America to introduce facial recognition in driver's licenses and, it was now no longer working. Why? Use of fake birth certificates and the use of face masks.

The price point to produce fake birth certificates is now very low due to inexpensive printer technology. This results in people creating fake birth certificates to obtain other documents higher up the identity food chain, e.g. driver's licenses, passports, etc. It results in security people labelling birth certificates as "[breeder documents](#)".

Now consider what was once thought of as science fiction today...

New Age Identity Challenges

Robots

Physical robots are now moving off the factory floor and moving out into society. Couple this with the ability to rapidly create one or many different "virtual self-robots" or, AI generated ones. (Refer to the paper "[I'm Not a Robot](#)" for more details on this).

It results in new legal challenges with robots. For the last few years, [a growing discussion has been occurring about if robots are a "legal person"](#). Refer to my paper "[Legal Person: Humans, Clones, Virtual and Physical AI Robotics – New Identity Principles](#)".

Regardless of this discussion, the fact of robots interacting with humans, each other and enterprises like governments and corporations, often acting on human's behalf, requires them to be legally identified. It becomes very important in a court of law when civil or criminal proceedings involve virtual or physical robots.

Cloning

In effect, the cloning genie is out of the bottle. Today, [one can clone one's pet for a price](#). In 2005, the United Nations (UN) produced a "[United Nations Declaration on Human Cloning](#)". However, "[In the 191-nation assembly, there were 84 votes in favor of a nonbinding statement, 34 against and 37 abstentions](#)". The result, many countries continued on with their cloning research.

The result? There is [growing discussion on human cloning law](#). Regardless of how it bears out, the reality is governments now need to prepare to legally identify human clones.

AI/Virtua/Augmented Reality Environments

AI virtual environments have come a long way from the early gaming ones. Today, a person can wear augmented reality glasses and interact virtually or even have virtual sex. Read the paper [“Privacy Gone – AI, AR, VR, Robotics and Personal Data”](#) to see where the technology is today. AR/VR environment needs to be able to identify:

- People
- Robots (both virtual and real)

Further, as the paper [“Virtual Sex, Identity, Data & Consent”](#) illustrates, it also needs to be able to identify people who aren't age of consent and prevent them from entering such environments. Thus, legal identification is required.

New Age Legal Identity Framework

As shown above, the old age civil registration system won't work. What's required is a new age civil registration system offering new legal tools to identify humans, robots and clones. We need a system able to serve us for the next 100 years. So, what's involved?

Humans:

Birth

- Legal Physical Identity
 - Biometrically tying the identity from birth to the identity registered
 - DNA is possible BUT many people don't like the idea of a central DNA database on everyone
 - Fingerprints are possible
 - In many papers, I have called for more longitudinal research to be done on the work of [Dr. Anil Jain of Michigan State University](#) on fingerprinting babies
 - Hypothetically, assuming this bears out, the laws must be written such a baby's fingerprints are obtained at birth
 - Iris is possible
 - I have proposed when a child enters their first year of school, an iris scan is obtained and entered against their birth record
 - Thus, from the get-go, i.e. birth, a citizen has a high degree of identity assurance, i.e. biometrics tied to their identity
 - Use of biometrics to differentiate clone 1 from clone 2 from the rest of the population
 - In [“Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper”](#) I suggest research be done to see if fingerprints and irises are sufficient to different clones from the rest of the population
 - If so, there is no need to obtain DNA from the citizen

- Legal Digital Identity
 - In “[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)”, I suggest at birth, a person be issued a legal digital identity
 - I’ve also suggested the use of Sovrin/Blockchain for this
 - However, the technology isn’t perfect since it requires use of a private key which the crypto-currency marketplace has shown to be relatively easy to obtain
 - Thus, if this technology is used, it either needs to be strengthened or, an alternate one used or, it can only be used for low to medium risk legal identification
- Ability to Legally Delegate the Digital Identity
 - In “[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)”, I state the legal identification requires the ability to be delegated, providing numerous examples
 - It may or may not require changes to Sovrin/Blockchain if selected
 - It also requires a new age legal consent managed service framework
 - Read “[Consent Principles in the New Age – Including Sex](#)” for details about this
- Legal Anonymous Human Identification
 - In “[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)” I state the person, at birth, should be granted a legal anonymous human identification providing examples of this
 - It will be used to not only identify a person as a human but also to identify them as being of age of consent or not
 - This new age legal tool can be leveraged to protect under age youth wanting to enter a virtual sex environment
 - Read “[Virtual Sex, Identity, Data & Consent](#)” to see how this might work
- Parent/Legal Guardian Status Linked to the Birth Registration
 - The authoritative legal source for a child’s guardianship should automatically notify the new age civil registration service of any changed
 - It becomes very important for when a parent/legal guardian wants to act on the child’s behalf with their legal digital identification and their anonymous one

- Obtaining Birth Registration in “Challenging Locations”
 - In the paper “[Where Shit Happens” Deploying AI, AR, VR, Robotics, Identity, Data & Consent in Challenging Parts of the Planet](#)” I state the requirements for a registration unit to be used in remote locations
 - A person must be able to be registered regardless of where they live on the planet
- Card Will Be Issued Where Parents/Legal Guardians Don’t Have Access to the Technology
 - In the paper “[Where Shit Happens” Deploying AI, AR, VR, Robotics, Identity, Data & Consent in Challenging Parts of the Planet](#)” I state the requirements for secure physical card to be issued to parents/legal guardians where they don’t have access to the technology

First Year of School

- Iris Obtained and Added to the Birth Registration
 - In “[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)” I suggest the iris be used as the second biometric to legally identify a person
 - It’s subject to research to confirm an iris and fingerprints are enough to differentiate human clones

When A Person Comes of Legal Age

- They will be given the following:
 - Control over their legal digital identity
 - Control over their legal anonymous identity
 - Digital certificate allowing them to legally sign documents

Name Change, Gender Change and Marriage Registrations

- All registrations will require the citizen to present their biometrics, in a controlled condition, to prove who they are

Death Registration

- If one of the registered biometric is available at death, it will be used to confirm the identity of the deceased

High Identity Assurance Requires Biometrics to be Provided

- Legal identity assurance documents will state, for high identity assurance, the requirement a person provided their biometrics, under controlled conditions, to verify their legal identity

When A Person Claim to Not Have Their Identity Documents, or For Any Civil Service Registration

- They will legally be required to provide their biometrics, under secure conditions, to legally identify them
- The legal jurisdiction where this is occurring must have the ability to check the biometrics provided against all other new age civil registration systems around the planet

Robots

Creation

- When a robot is created, it will be registered with the new age civil registration service
 - Each robot will have, in its code, a secure “Robot Identification Unit’ or RIU
 - This must be to government laws/regulations standards
 - Refer to the paper “[Legally Identifying Robots \(Robot Identification\)](#)” for more details
 - The robot’s creator will submit a unique identity for the robot
 - The new age civil registration service will instantly be able to check with all other new age registration services around the planet to determine if the identity already exists or not
 - Assuming it doesn’t exist, the new age civil registration service will issue a legal unique identity for the robot
 - This will be placed in the robot’s RIU repository
 - The entire registration process MUST be highly automated allowing for rapid robot creation and registration
 - Refer to the paper “[Rapidly Scaling Robot Identification?](#)” for more details
- The robot’s owner will be granted a digital:
 - Legal identification for the robot
 - Anonymous legal identification for the robot proving it’s a robot
- These legal identifications can be delegated by the owner

Robot Ownership Changes

- The legal authoritative source for a robot’s ownership, must notify the new age civil registration service when ownership changes
 - It’s important in the ability of the owners to delegate the robot’s digital identities
- When an owner is no longer mentally able to manage their activities, by law, the person or enterprise managing their activities on their behalf, will be granted legal abilities to manage robots identities, the person managed before, on their behalf

Termination

- When a robot is terminated, a legal process MUST be defined for the new age civil registration service to be notified
 - Read the paper “[Legal Person: Humans, Clones, Virtual and Physical AI Robotics – New Identity Principles](#)” for a discussion on this

Legal Structure

- The new age civil registration system MUST:
 - Be separately managed from other government services
 - i.e. it's separate from any other government and/or industry identity verification and/or authentication systems and databases
 - IT MUST NOT BECOME THE MOTHER OF ALL IDENTITY DATABASES
 - Be only used to verify identities and not for any other purpose
 - i.e. it's only used to verify an individual
 - It MUST not contain personal contact information to track the identity
 - Be only a “one way in” system
 - i.e. no biometrics or robots' identification ever leave the database and go out
 - Be on its own separate network
 - Must be able to withstand sun Geomagnetic Disturbances (GMD) or High-Altitude Electromagnetic Pulse (HEMP) events
 - Read the paper [“When Our Legal Identity Trust Goes “Poof!”](#) for more details
 - Be highly available
 - i.e. 99.999% uptime
 - Globally accessible by other new age civil registration systems
 - Offer secure, controlled environments to obtain a person's biometrics for high risk identity assurance
 - Give citizens':
 - Control over their legal digital identity except where otherwise prescribed by laws/regulations
 - E.g. a person is jailed, etc.
 - Enable the citizen or robot to act anonymously except where otherwise prescribed by laws/regulations
 - Read [“Privacy Gone – AI, AR, VR, Robotics and Personal Data”](#) for a hypothetical example of this leveraging citizen selected “zones of trust”
 - Protect the legal minor's identity
 - Read [“Kids' Privacy in a Non-Private World” – Why Even Super Hero's Won't Work](#) for more details
 - Publicly publish any creation or change to an identity
 - Blockchain is likely a tool to use for this
 - Require by law, the new age civil registration service to:
 - Report on any changes to existing registrations by an administrator
 - Report annually on its activities
 - Ensure its auditing activities meets regulations

Operationally

- Have strong internal controls on accessing any registration data
 - The risk of an insider attack is great
 - To mitigate this risk requires numerous internal controls to protect the data
- Protect the endpoints on the new age civil registration network
 - The endpoints must be protected to thwart attacks such as denial of service and masquerading
- Use TLS 1.3 or later versions to protect the data in transit with the vital stats service
 - It will mitigate risks of man in the middle attacks
- The security for the civil registration system should be published such it can be tested out, similar to the concept of open source software
 - The security MUST NOT be secret, since, over time, it leads to potential security breaches as new technology appears
- Have well tested business processes able to withstand attacks
 - Malicious people/enterprises will search for the weakest point in a process and exploit it
 - Thus, the business processes used need to be continuously tested to see if they are still secure

Have the Ability to be Relatively Quickly Changed

- With increasing pace of technology change, the new age civil registration system MUST have the ability to have laws/regulations changed when technology renders existing ways of doing things obsolete
- It should include developments in:
 - Behavioral/biometrics and their readers
 - Algorithms used for:
 - Encryption
 - Hashing
 - Digital signatures
 - TLS.

Global Identity Requires Global Enforcement

As the paper “[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper](#)” points out, in the section “Global Principles Requires Global Implementation” the new age requires the ability to globally enforce identity laws and regulations.

The national jurisdictions laws pertaining to the new age identity, data and consent framework have to be:

- The same
- Enforceable across jurisdictions

Without this, the new age laws and regulations aren't worth the paper or electrons stating them.

Summary

The incoming technological tsunami wave requires the planet to completely rethink civil registration laws, regulations and processes. This paper and the other 20 papers I written, highlight why:

- Old ways don't work
 - i.e. breeder documents
- New technology requires dramatic changes
 - Robots – virtual and physical
 - Cloning
 - AI/AR/VR environments
- Legal minors require:
 - Digital:
 - Legal identification
 - Legal anonymous identification
 - Identity protection
 - Outdoors, indoors and when participating in AI, AR, VR environments
 - Owning and/or controlling virtual and/or physical robots
- People require:
 - Ability to have their privacy in a non-private world
- Robots require:
 - Legal identification
 - Rapid registration processes
 - Ability to show they are a robot

This paper lays out the requirements to achieve it.

We are entering a new age. Our old ways of legally identifying a person no longer work.

To create a new age legal identity toolkit requires all jurisdictions to collaboratively create the same laws pertaining to identity, data and consent, AND to enforce them. Without this, people and robots will live in a non-private world, with no privacy, and no ability to ensure they are protected.

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."

