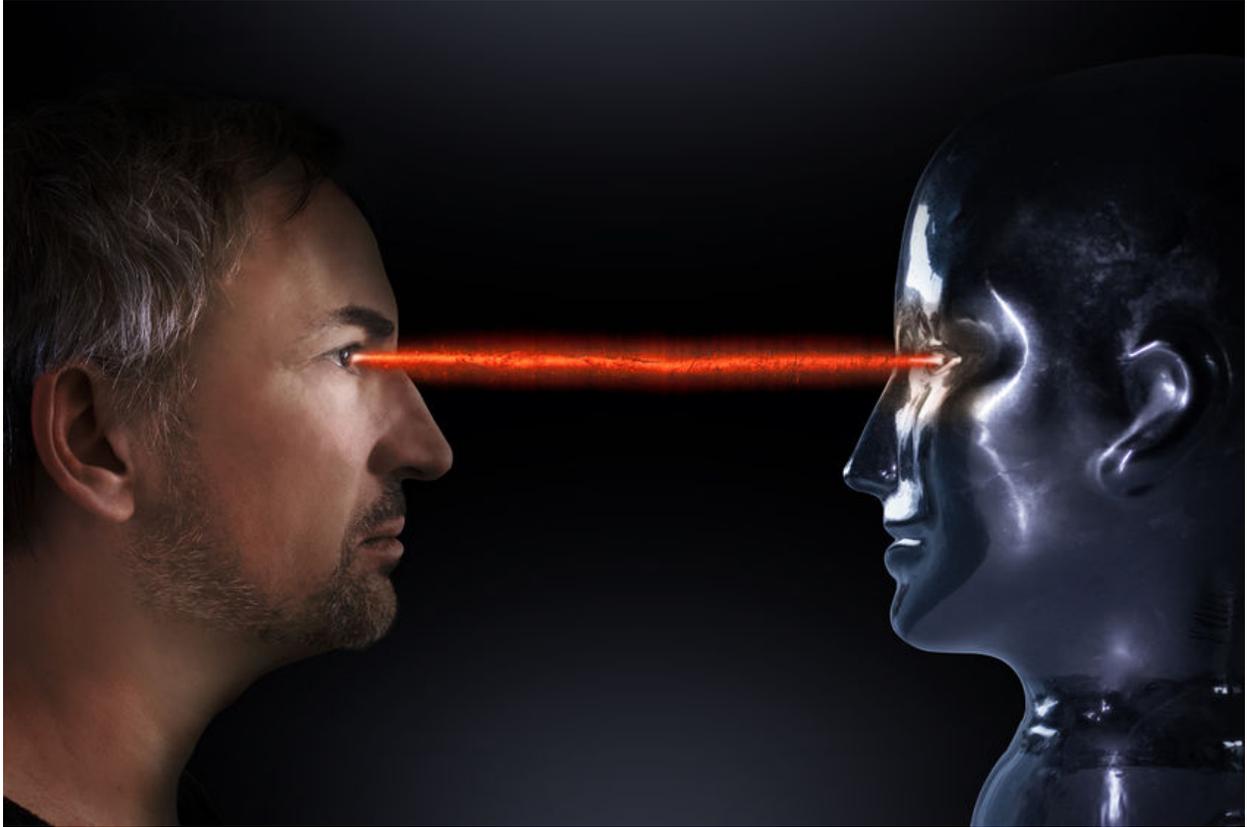


Legally Identifying Robots (Robot Identification)



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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 and a bit, I have written 32 papers, including two proposals, on the impacts from the technological tsunami. Here’s a listing of them, by subject area, with links to each one:

- Thought Papers
 - Artificial Intelligence & Legal Identification – A Thought Paper
 - [Artificial Intelligence & Legal Identification](#)
 - Human Migration, Physical and Digital Legal Identity – A Thought Paper
 - [Human Migration, Physical and Digital Legal Identity](#)
 - Digital Twins/Virtual Selves, Identity, Security and Death – A Thought Paper
 - [Digital Twins/Virtual Selves, Identity, Security and Death](#)
- Proposals and Discussion Paper:
 - Bot Legal Identity Proposal
 - [Proposals for Identification of Bots \(Physical and Virtual Robots\)](#)
 - Human Legal Identity Proposal
 - [Proposals Paper – Incremental Approach to Implementing New Age Legal Identity](#)
 - Background Information on Legal Identity, Data, Consent and Federation
 - [Background Information on Legal Identity, Data, Consent and Federation](#)
- 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](#)
- Legal Privacy Framework for the Tsunami Age
 - [Legal Privacy Framework for the Tsunami Age](#)
- One-page summary
 - [One Pager - The Age of AI, AR, VR, Robotics and Human Cloning](#)
- Technological Tsunami and IAM
 - [Technological Tsunami & Future of IAM](#)

- New age identity, data, and consent
 - [Privacy Gone – AI, AR, VR, Robotics and Personal Data](#)
 - [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](#)
- Kids and Parents Privacy
 - [Young Children Data Privacy Challenges in the Tsunami Age](#)
 - [Kids Privacy in Non-Private World - Why Even Super Hero’s Won’t Work](#)
 - [Children & Parent Privacy in the Tsunami Age](#)
- 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>.

Note to Reader II:

This thought paper deals with my ideas on legally identifying robots.

Legally Identifying Robots (Robot Identification)

It's a lot more complicated than you might think...

We're in the early stages of a revolution where we're able to produce avatars, virtual assistants/virtual selves and physical robots. Some of them may be AI generated, e.g. in a AR/VR game. Others might be generated by us to do tasks or work on our behalf. This could be in a VR, AR or physical setting. So, the first point is don't think the word "robots" pertains to just a physical one.

As in our "real life", there are different degrees of identity verification. In the "old days", one could apply for say a coffee loyalty card with any name you'd like to use and no identification. They don't really care who you are, legally speaking. Instead, they want to track what you order, offering you incentives "enhancing" your experience, while ensuring that your money is good.

Then there's being charged in a court of law. Now the risk of identity verification is high. The court wants to ascertain your identity. In some criminal cases, this is done via biometrics e.g. fingerprints.

Use Cases

Given this, come with me on a "identity journey" into the world we are rapidly creating with virtual and physical robots. I'll use three sample use cases to illustrate this:

- **Ordering a coffee:** Jane Doe orders a coffee from her coffee retailer via her virtual assistant and then has her physical robot go pick it up
- **Virtual Sex:** Jane Doe enters a AR/VR pornographic reality. She's actually underage but wants to experience what her friends are talking about, i.e. having virtual sex with both AI generated selves as well as virtual selves of other people.
- **Medical operation:** Dr. Jane Doe is going to operate on a person in another location anywhere in the world. She's going to use a virtual self plus a physical robot to do this.

All three examples above have different levels of identity risk:

- Ordering a coffee - as in our old "real life", the coffee retailer will likely only want to know that Jane's money is good and that the entity placing and picking up the order on Jane's behalf are with Jane's consent.

- Virtual Sex - In the paper “[Virtual Sex, Identity, Data and Consent](#)”, I state the VR environment Jane is entering needs to know:
 - She’s of legal age
 - It needs to determine that she is a person
 - It also needs to protect her anonymity unless she otherwise chooses to release her identity
 - Her sexual AI partners need to be able to be identified as such as do her human partners
 - The other human partners need to have their legal age status confirmed
 - All human partners, including Jane, need to provide their informed consent
 - Both Jane and the other human partners virtual selves may or may not be required to provide their legal identity
- Medical operation - The physical identities of both Dr. Doe and her patient need to be legally identified. The same applies to Dr. Doe's virtual self. It also applies to the physical robot doing the operation with Dr. Doe.

Robotic Manufacturers

Let's put ourselves in the position of a robotic manufacturer be they virtual and/or physical. In some instances, they aren't going to know how the robot will be used. In others, e.g. one used for controlling the medical robots, they will. Further, the manufacturers will want to limit their legal liability and risk.

Someone Who's Been Wronged

Now, put yourself in the position of someone who's been "wronged" through the actions of either a virtual or physical robot. If it goes to a court of law, the parties in the "event" will have to be legally identified.

Legally Acting Anonymously

Then, put yourself in the position of a person who wants to interact in a AR/VR/physical world but do so anonymously. As in the pornographic example, most will want to do so anonymously. How can they do so in a legal manner, i.e. proving they are above legal age?

What's the Solution?

A new age legal identity framework.

Robotic Identification Unit (RIU)

As in a court of law, it rests upon the ability to legally identify the person AND the robots, be they virtual or physical. Thus, this requires what I call a "robotic identification unit" or "RIU" for each robot produced.

This is a secure area in the robots code that can't be tampered with. I'm suggesting that the robotics industry, together with governments, establish standards for RIU code repositories that mitigate the risk of someone being able to tamper with it. The creator of the robot assigns a unique piece of identification. It could be code, a digital signature or a number. For this example, let's say it's 12345.

The manufacturer or coder creating the robot, now can say they gave the robot a unique piece of identification. In many instances, the manufacturer will then effectively legally "wash their hands", via the contract, of how the robot can be used between them and the person using the robot.

Many people would take the robots and use them to do things like ordering coffee. There is no need to legally identify them.

New Age Civil Registration System

Where the risk warrants it, it requires legal identification. Let's say that Dr. Doe wants to create a virtual self to be used in medical situations.

She would take the virtual self and then register it with the new age civil registration service. Here's what I see happening....

Jane Doe supplies the RIU for her robot, 12345. The registration service then does a calculation on it. It combines the number with a large random number plus, the data and time, plus digitally signs it, plus hashes it and then finally encrypts it. It now has a unique legal value for Jane Doe's robot (let's use abcd for the value). It would then enter this into the new age civil registration service plus publish it on Blockchain.

The service would do three things:

- Create a linkage in the registration database between the robot and Dr. Doe
- Create a Sovrin/Blockchain self-sovereign identity and issue it to Dr. Doe. She can then use this with her virtual self to prove who she is in a limited legal identity verification extent (since it rests upon a secret key that a malicious person could hypothetically obtain)
- Send back to Dr. Doe the encrypted value, abcd, which is now placed in the robot's RIU code repository

Readers should note that in the 19 papers I've written on a new age civil registration legal framework(read "[Who Am I](#)" for links to all of them), I have:

- Jane Doe being biometrically identified at birth (fingerprints) and during her first year of school (iris). If a person doesn't have these biometrics, then others would be used as agreed upon in new laws. This does NOT use DNA which could be used to profile a person.
- Being issued a Sovrin/blockchain attestation she can use to legally prove who she is in many circumstances (with the caveat about risk as noted above)
- At age of majority, being issued with an anonymous attestation proving she's of legal age

Let's go back to the example of Jane Doe and see how all this would work...

- **Ordering a coffee** - The identity verification used is up to the coffee retailer and Jane Doe to agree upon. They may or may decide to use the Sovrin/Blockchain identifications.
- **Virtual Sex** – In the paper "[Virtual Sex, Identity, Data and Consent](#)", I state the following:
 - I suspect the manufacturers of the goggles, lenses, sensory devices et al used, as well as the pornography entity producing the sex environment, are all potentially legally liable if Jane can get into the sex environment without being of legal age. I also suspect there will be interest from the manufacturers of the hardware and software used to mitigate against their potential lawsuits and criminal charges arising from this
 - Thus, I feel they would like to participate in:
 - Creation of the underlying principles
 - Working with the new age identity, data and consent legal framework to develop technology which will:
 - Prevent legal minors from entering virtual sex environments
 - Identify virtual sex participants as either human or AI generated
- **Medical operation** - there are several layers of identity verification required here:
 - When Dr. Doe graduates from medical school, she would likely have had to securely present her biometrics to the medical school. These are then securely sent to the new age civil registration service to confirm her identity. The "yes" sent back from the civil registration service would then be entered into her digital attestation, signed by the medical authorities, granting Dr. Doe the right to practice medicine.
 - Her virtual assistant or assistants she uses to practice medicine, would all have to be registered with the new age civil registration service and then linked to Dr. Doe in both the registration service as well as the medical authorities registration system, e.g. abcd.
 - The physical robot doing the operation would be registered into the new age civil registration service. The owner might be an entity such as Acme Hospitals. The new age civil registration service would then link to an external registry for

enterprises and commercial. Acme Hospitals has a uniquely legally identified robot working for it.

- Acme Hospitals would then assign authorization rights to Dr. Doe and her virtual assistant to control the robot
- The person being operated on, would have provided their consent to have their identity released and would have given Acme Hospitals their Sovrin/Blockchain legal identity. Depending on the risk, Acme might have accepted this or, required the person to also securely provide their biometrics to confirm their identity with the new age civil registration service

If any of the above lands in a court of law, then the identities involved can be legally confirmed. There are all sorts of additional scenarios not covered above, including where someone creates a crime using the virtual robot and then deletes it, etc.

We need to talk about legal identification and how it applies to AI, AR, VR and physical realities. While one can disagree with some of the points above and/or offer better alternatives, it is the beginning of a new age legal discussion. I discuss this further in the paper "[Policy Principles for AI, AR, VR, Robotics & Cloning - A Thought Paper.](#)"

If you agree with the thrust of this article, please pass it around to others who you think might be interested.

Many thanks,

Guy Huntington

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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."

Guy consults globally on the incoming technological tsunami wave of change.

