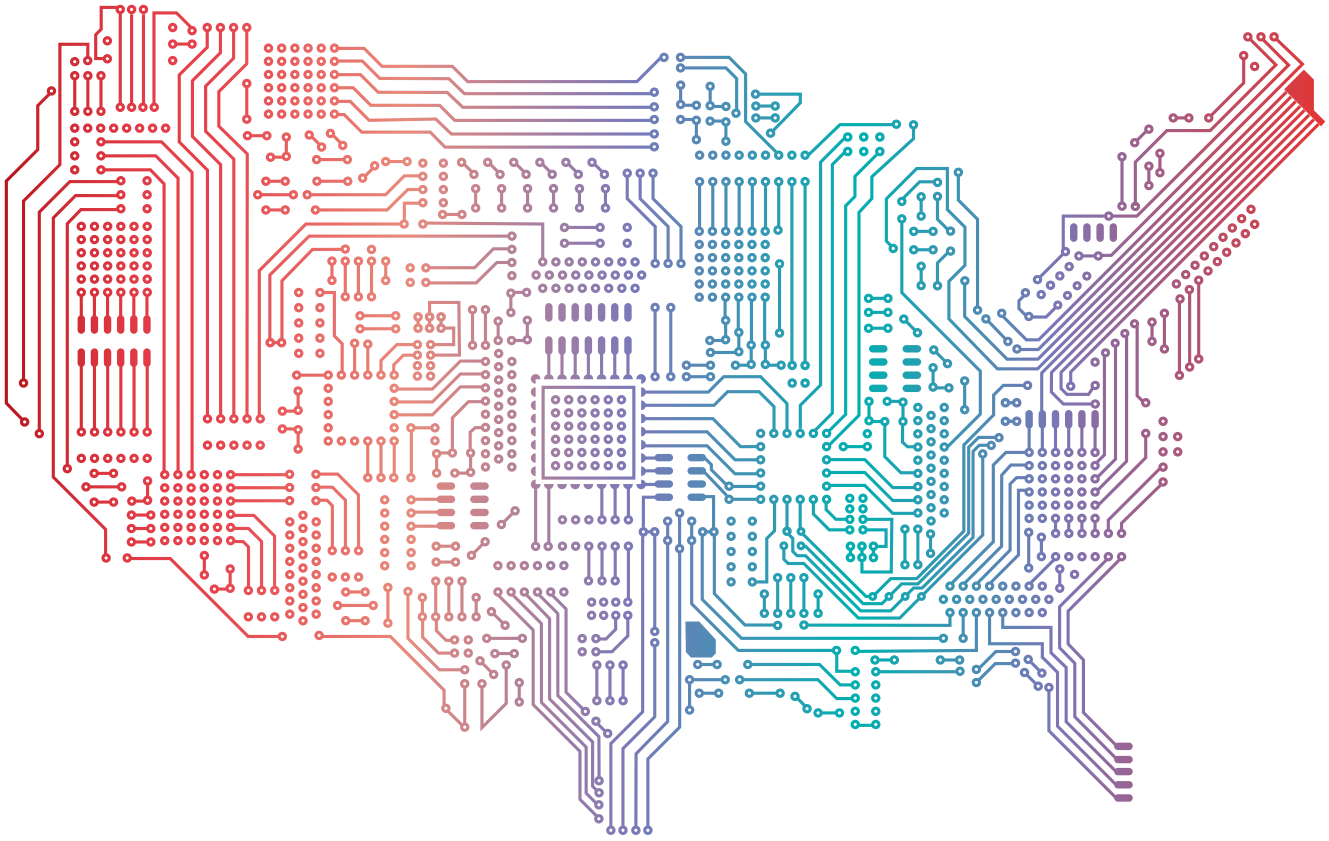
March 2023

Navigating the Metaverse:

Potential Applications and Implications for State Government



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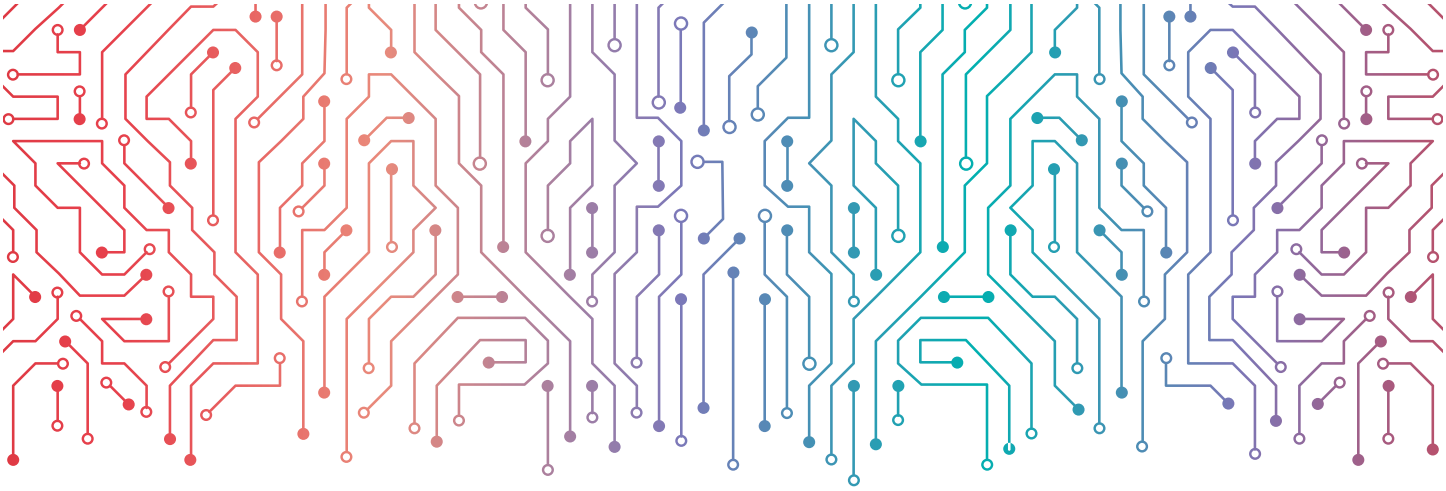
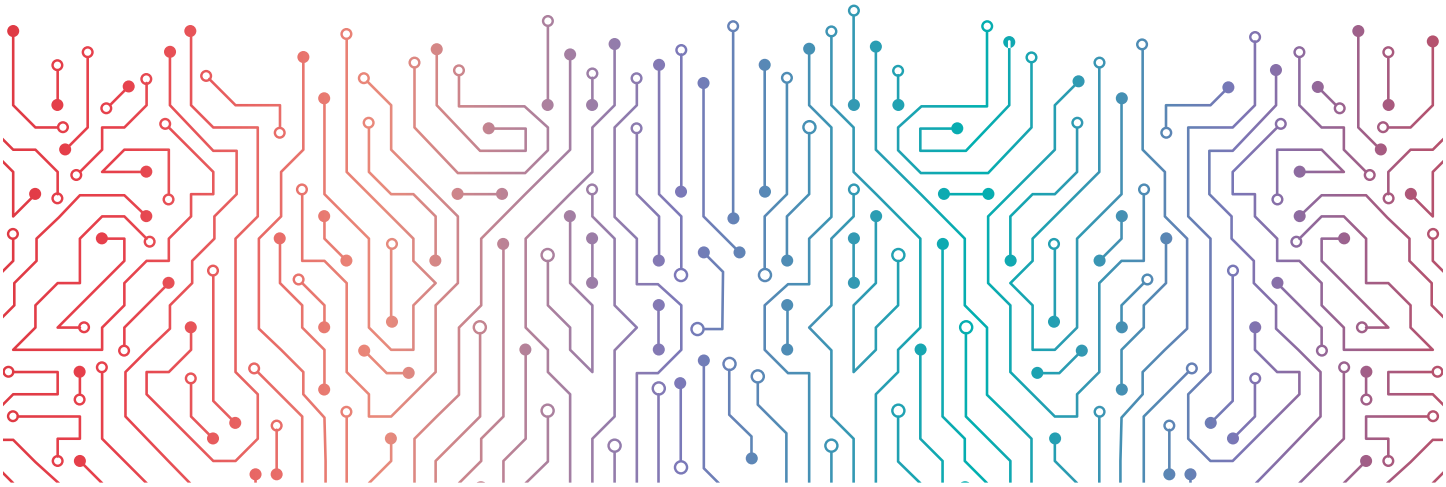


Today, more than ever before, citizens are able to remotely access state government services. With an increasing emphasis on digital government services in the wake of the COVID-19 pandemic, states are providing more opportunities for citizens to conduct government business without standing in line or searching for parking. With the click of a mouse or tap on a smart phone we can renew our driver's license, apply for benefits or request a birth certificate. While convenient, these activities lack human interaction and can become frustrating when you have a unique situation and can't find an answer. But what if we could bring back the positive side of the human interaction that we have lost, but still do all of this from home or the office? Enter the metaverse in state government.

Obviously, as part of our every day lives, the metaverse (or metaverses), a virtual world where people will work, live and play, still sounds a bit like science fiction when you imagine using it for anything other than gaming. It will be a while until we know if one metaverse becomes "the Metaverse," or if an avatar can move easily between different metaverses. It's hard to imagine when we might get to the point that wearing smart glasses is as normal as using a smart phone. It's hard to believe that most people will have VR (virtual reality) goggles at home to visit the virtual DMV. However, reality checks aside, today major tech companies are investing a lot of money into the metaverse, and as citizens become more comfortable with virtual entertainment, commerce and socializing, governments will likely follow.

This paper, which includes research and input from state government and private sector leaders in the subject, is a brief look at some early considerations for state government with respect to the metaverse and related technologies.



Virtual and Augmented Reality

Today, we are starting to see governments dabble in VR and augmented reality (AR) for limited purposes. Job training is one such use that has shown promise both in the private and public sector.

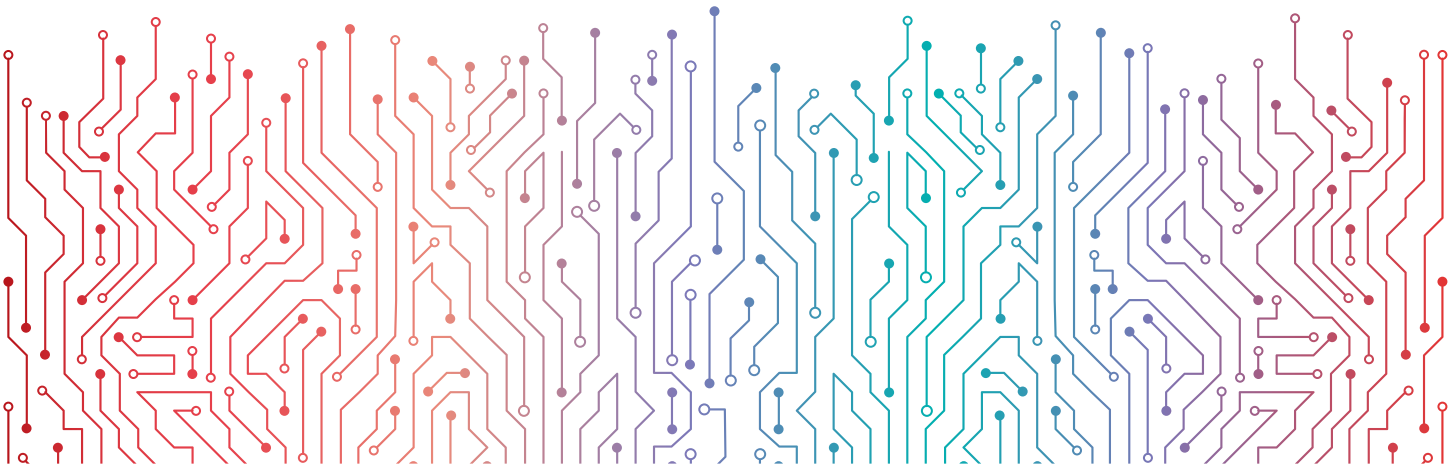
Indiana's Department of Child Services was experiencing a 50 percent turnover rate for case workers, and, when conducting exit interviews, they heard repeatedly that the job was much different than the employees thought it would be. So, **they turned to VR to show applicants a simulation of what the job is like**. By giving job candidates a better idea of the reality of the job, they were able to reduce the turnover rate by 18 percent.

VR can be a useful tool in corrections as well. The Pennsylvania Department of Corrections is running **a pilot program using virtual reality** to improve communication between children and their incarcerated parents as they prepare to re-enter society. They are also using VR for virtual visitations which can create a more child-friendly environment than visiting a prison.

Police departments have also started using VR to train for situations that can be hard to prepare for without experience. The **Mobile, Alabama Police Department has been using VR** to train officers on how to best interact with citizens experiencing a mental health crisis. This sort of training allows officers to learn best practices and rehearse their response before a real-world event.

The state of Florida is looking into using VR and AR to prepare for natural and man-made disasters, recreate incidents and create simulations. The possibilities of creating more realistic simulations with VR, as opposed to role-playing are promising.

We've all participated in or watched role-playing during a work training. Most participants end up laughing, at best, or feeling awkward and feeling underprepared at worst. Instead of relying on the acting skills of co-workers, employees can use technology to work through an immersive and believable situation, preparing them to face the real thing. In today's more common hybrid or remote work environments, this is also a better way to conduct training for interpersonal situations. As one CIO said in an interview, "The practice should be harder than the game."



Metaverse vs Virtual Reality

If the metaverse is a virtual world, then what is the difference between the metaverse and virtual reality? While they may seem like one and the same on the surface, there are actually several widely accepted differences.

There are a lot of different definitions of the metaverse, but one thing is clear—virtual reality is the technology that creates 3D virtual spaces for exploration. In the metaverse, virtual reality is only one aspect of it. Other technologies that make up the metaverse include AR, internet of things (IoT), blockchain, cryptocurrency and connectivity technologies. Users of the metaverse can interact across-platforms, unlike with virtual reality technology.

In a virtual reality application, users can explore and possibly manipulate objects or structures owned by the virtual reality company within the environment. In the metaverse however, users can create, purchase and own digital assets, items or goods.

Another differentiating factor is the persistence of the metaverse compared to VR. In a VR world, experiences you have in that world end when you turn off the system. The metaverse is a shared and persistent world where your avatar continues to engage and interact even if you leave the metaverse.

A VR system is best experienced using virtual reality goggles, however that's not necessary in the metaverse. The metaverse can be accessed with VR goggles as well as with a laptop or smartphone.

Virtual Reality vs Metaverse

VIRTUAL REALITY (VR)	METAVERSE
The computer-generated simulation of a three-dimensional image or environment that can be interacted with in a seemingly real or physical way by a person using special electronic equipment.	A virtual-reality space in which users can interact with a computer-generated environment and other users.
One of the technologies that is used in the metaverse.	Technologies such as virtual reality, augmented reality, IoT, blockchain, cryptocurrency and connectivity technologies are used.
Users can explore and manipulate objects or structures owned by the VR company.	Users can create, purchase and own digital assets, items or goods.
VR experiences end when the user turns off the system.	A shared and persistent world where a user's avatar continues to engage and interact even when the user leaves the system.
Users can interact only in one platform.	Users can interact across platforms.
Best experienced using VR goggles.	The metaverse can be accessed via computer or smart phone.

Connecting in the Metaverse

While states are finding use cases for these metaverse adjacent technologies, is anyone expecting to connect it all into one metaverse? How about a specific state metaverse? It's not out of the question to think of a CIO organization offering several different virtual training services that are connected at an enterprise level. While the idea of citizens conducting state services with avatars and virtual reality goggles seems very futuristic at this point, using an online platform to interact through a computer or smart phone in a new way is not.

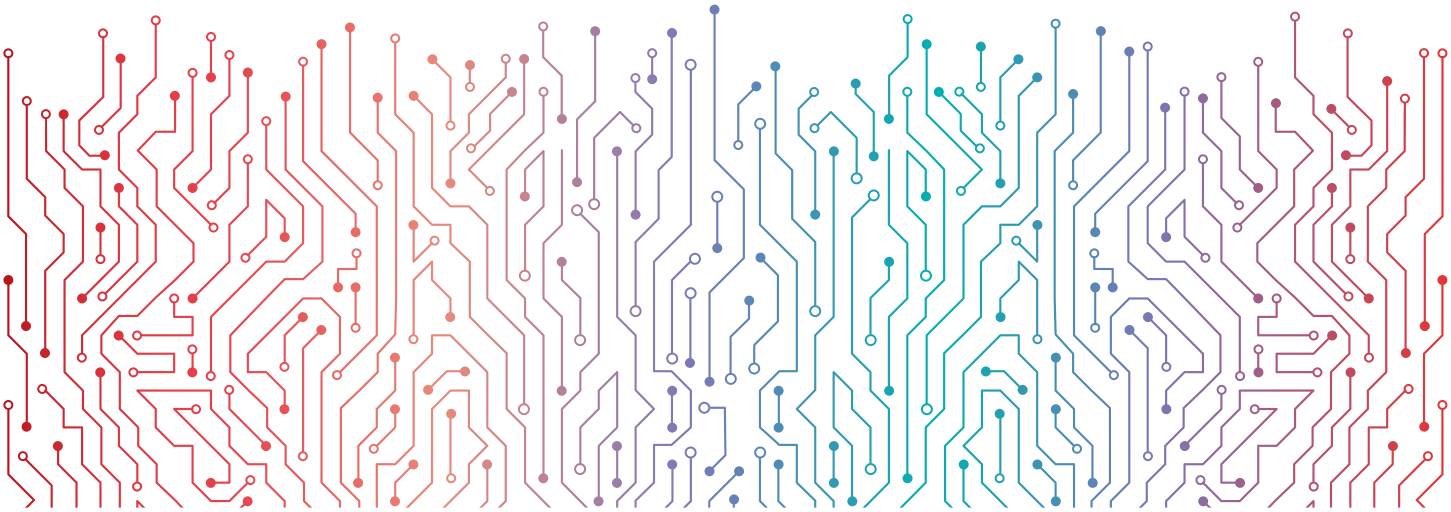
As one private sector partner working with states explained, "The metaverse is more than one thing. It's a continuum of things. Training in virtual reality is metaverse. Simulations are metaverse. Digital twins are metaverse. Like "cloud" it's not just this one thing but an expanding continuum of things."

Large federal government agencies such as the U.S. Army, U.S. Space Force, and NASA are planning metaverse projects for training and collaboration internally as well. State governments and the federal government are understandably testing out this technology internally for now before expanding it to citizen-facing applications. However, in the future, states might find many uses for metaverse technology:

- In addition to training and simulations, states could use it to improve economic development, giving businesses thinking of investing in the state a more immersive experience or tour of the state.

- States may also use it to encourage tourism. If prospective tourists can see landmarks and special places virtually, it may encourage them to come see things in real life. Some states are already offering 3D tours of parks and landmarks.

- State universities could use the metaverse for a virtual learning experience that is almost like being there in real life. This could be the next step to online learning.

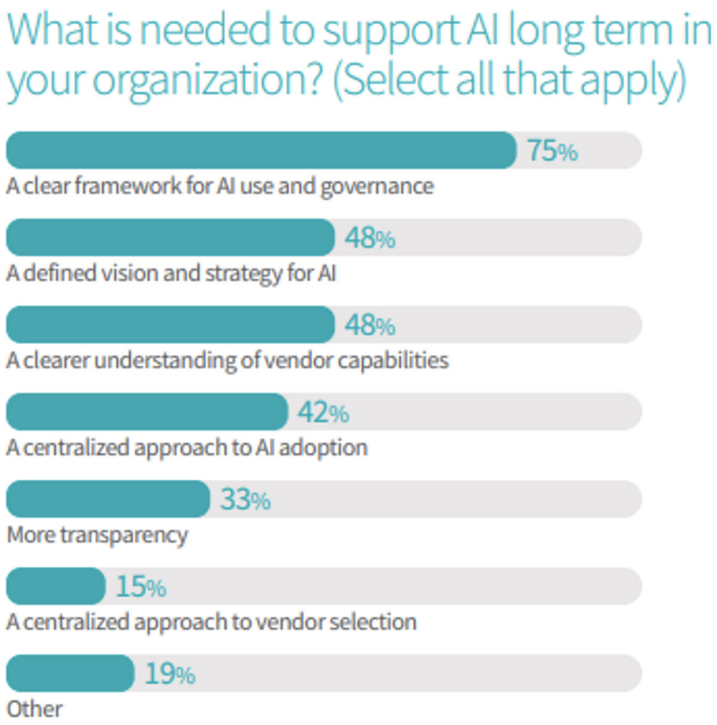


Considerations and Cautions

Given that states are in the early stages of using and testing metaverse technology, the time is now to set up governance and architecture to ensure that it's being used safely and responsibly. The following are some areas to consider.

As with all emerging technology, states should cautiously determine if agencies **have a business case** for entering the metaverse before diving headfirst into it. If there is a problem that can best be solved by the metaverse or metaverse-related technologies, then it can be explored. It's best not to go looking for a problem to solve with the latest technology.

If it's determined that the metaverse will be part of state government IT, start by creating a **metaverse roadmap** or some other document to state clearly how the technology will be part of the IT enterprise architecture and governance. In the NASCIO, IBM and Center for Digital Government Publication ***AI Meets the Moment***, when it comes to artificial intelligence, states have said that more than anything else, they need a clear framework and governance as well as a defined vision and strategy (see graph below). We expect the same will be true of the metaverse.



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Gather your stakeholders to help create the roadmap and get input from leaders including the state chief information officer, state chief information security officer, state chief privacy officer, chief customer officer, business relationship managers, chief experience officer, state chief archivists, state chief procurement officer, accessibility experts, diversity and equity experts and other appropriate experts in your state.

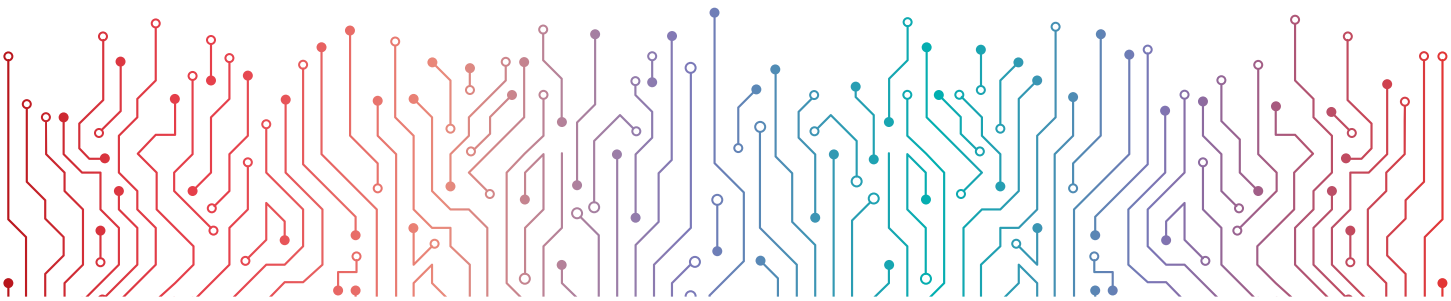
The **security** of metaverse technologies must be top of mind for any state that will be considering its use. In a situation where people are modifying their identities using avatars, states really must get identity and access management right for users to ensure bad actors aren't impersonating real or fake people. The COVID-19 pandemic highlighted the reality of substantial fraud as unemployment offices found themselves battling fraudulent claims at an unprecedented level. In addition, states may need to be set up to use crypto currency to accept payments for transactions. This brings another layer of complexity into the security equation.

Privacy is a concern in the metaverse where no regulations exist. A truly personalized and immersive experience requires an abundance of data that users may not wish to share. Unlike with the European Union's GDPR (General Data Protection Regulation) or state-level privacy laws that are dependent on location or citizenship of the user, the metaverse has no borders and thus creates new complexities not yet fully addressed by current laws. The International Association of Privacy Professionals has an article laying out many of the privacy-related complexities of the metaverse on their website.

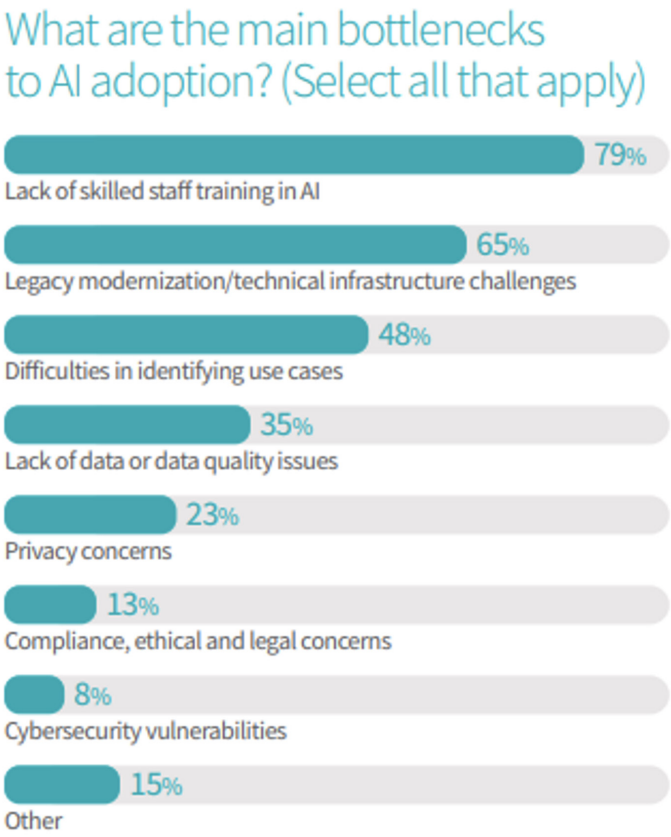
Safety is an important aspect of the metaverse as well. Harassment and bullying are part of the online world already, but in a more immersive environment these attacks can feel more real, causing them to be more upsetting and mentally damaging to participants. Harassment can mean unwanted "physical" contact or even virtual assault in a metaverse world where laws are not set up to address these harms.

Social media giants and artificial intelligence companies have been at the center of complaints about racial and gender **bias and discrimination**. As we move into the metaverse, these are issues that need to be addressed on the front end so that marginalized communities aren't treated unfairly.

In a more visually rich and immersive 3D and 4D environment, the metaverse provides unique **accessibility** challenges for those who are visually impaired. For those who are deaf or hard of hearing, it's less obvious how closed captioning would work if someone is looking around in a life-like manner. In addition, there are aspects of the metaverse that require hand use like grabbing, pinching and throwing that wouldn't work the same for those with motor and dexterity impairments. Neurodivergent users also must be able to adjust settings like loudness, color and brightness. Will the additional equipment or software needed to access the internet be affordable or create a new kind of digital divide?



For states, one of the current problems IT agencies face when it comes to deploying emerging technologies, digital government services and cybersecurity is **lack of skilled staff** trained in this area. In ***AI Meets the Moment***, CIOs reported that lack of skilled staff training in AI is the main bottleneck to AI adoption. Like AI, the metaverse will pose problems for state IT agencies facing workforce constraints as well, requiring a higher reliance on vendor partners. We are likely to see more companies offering metaverse-as-a-service and staff will need to have some level of understanding.



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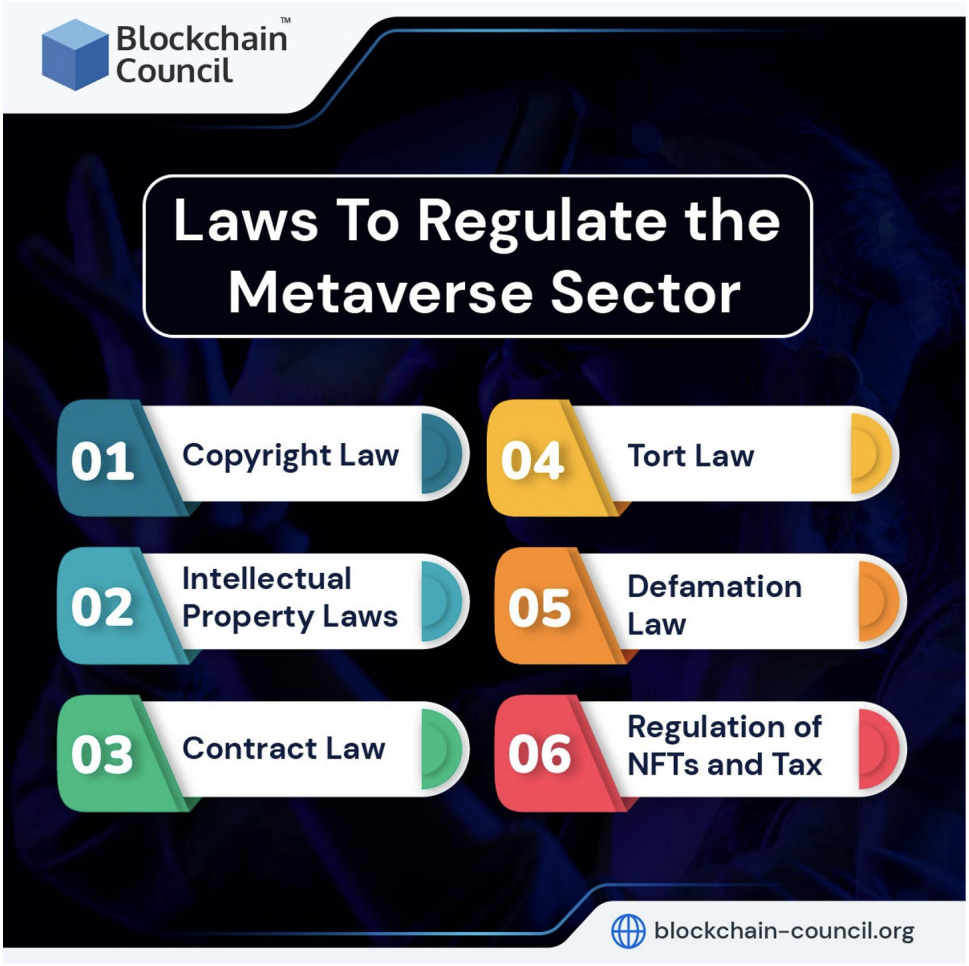
States that decide to use the metaverse will need the assistance of **legal counsel familiar with the different laws that may apply to the metaverse**. These may include copyright law to protect the work of creators and artists, intellectual property law to protect inventions and other creations, contract law to govern sales or other agreements, tort law to address property and personal damages, defamation law to protect users from false accusations and regulations around non-fungible tokens and tax. The Blockchain Council has a good resource laying out all of the types of tax expertise that will be necessary when dealing with the metaverse.



Source from Blockchain Council

Conclusion

The metaverse is still new and there is much we still don't know or understand about how it will work. There are likely to be unintentional consequences along with the positive uses that we haven't yet considered. One thing is certain: states should be thinking about providing services in a new way made possible by the metaverse and its technologies--not recreating the government as it is, in a virtual world. Nobody wants to stand in line in real life or in a virtual world. Instead, we should be exploring how to reinvent the citizen experience in the most user-centric and forward-thinking ways with this new technology on the horizon.

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