READY, LEARNER ONE?

THE L&D INNOVATOR'S GATEWAY TO IMMERSIVE LEARNING AND THE METAVERSE

BROUGHT TO YOU by SWEETRUSH®

INTRODUCTION

Welcome, learning innovator!

Much has changed in the world of immersive learning since we last got together—and not only because of our new normal. While so many of us were switching up our Zoom backgrounds, others were enjoying the sights, sounds, and atmosphere of a completely different world.

I'm not talking about interplanetary travel—yet. I'm talking about the metaverse.

From gaming to concerts, commerce, and even a multimillion-dollar real estate market, the metaverse has become a major source of headlines (and inspiration!) for artists, brands, and entrepreneurs. It's not just a pandemic-era fad, either: People have been imagining and designing proto-metaverse experiences for well over a century.[1] In the past 15 years, it's become a source of person-to-person connection, a maker's space, and even a virtual vacation destination.

At this point you might be wondering, **"What's in it for L&D?"**

Or maybe you're already well-versed in the metaverse—and ready to share your vision with stakeholders. You might be wondering, "How can I start that conversation?"

Whether you need a full tutorial or a few talking points, this eBook is for you!

It's a level-set for learning leaders, practitioners, and stakeholders looking to understand **what** the metaverse is and **whether, how,** and **when** to leverage it.

> **"You can't step into the same river twice."**
> —Heraclitus, Ionian philosopher and wordsmith

My own search for an entry point into this conversation inspired me to link up with my friends on SweetRush's XR team (see below) to learn about the language, logic, and learning potential of the metaverse. Our conversations left me feeling optimistic about the disruption ahead for L&D[2]—and more curious than ever.

Exploring the metaverse with a learning mindset makes for an exciting and rewarding journey—and I'm so glad you're joining me for it. To paraphrase our pre-Socratic friend Heraclitus, we're stepping into a whole new digital river.

1. Bernard Marr, "A Short History of the Metaverse," Forbes, March 21, 2022, https://www.forbes.com/sites/bernardmarr/2022/03/21/a-short-history-of-the-metaverse/?sh=eaa95af59688.

2. "XR Industry Insider 2021 XR Survey: Industry Insights into the Future of Immersive Technology," Perkins Coie, published July 2021, https://www.perkinscoie.com/content/designinteractive/xr2021/.

Warmly,
Tiffany Vojnovski
SweetRush Learning Evangelist

XR TEAM

Adrian Soto
Director of Immersive Technologies
Interests: Technology and creativity

Danielle Silver
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Interests: Creation and implementation of interconnected virtual worlds

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Learning Architect
Interests: Immersive projection and dome-based learning

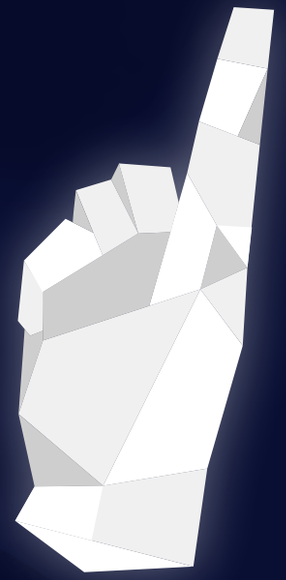
READY LEARNER ONE?

CONTENTS

The metaverse is an immersive space of discovery and exploration, and we've set up this book to mirror that experience as much as possible.

Think of the following sections as virtual "rooms" whose contents can be explored in any order you like.

Jump between rooms or return to this menu by clicking the docking station at the bottom of any page.



1

TUTORIAL: WHAT'S THE METAVERSE?

WHAT IS IT, AND WHAT'S IN IT FOR ME?

WHAT'S THE METAVERSE?

In short, it's a "shared, computer-generated world in which people socialize, work, and play"[3]—and, we'd add, learn.

In other words, it's "the internet, but also a spatial (and often 3D), [usually] game engine-driven collection of virtual environments."[4]

Ready to get more technical?

These virtual environments "can be experienced **synchronously** and **persistently** by an effectively unlimited number of users with an **individual sense of presence.**"[5]

Though you might be most familiar with Metaverse (capital "M") by the artists formerly known as Facebook, there are other metaverses (small "m"), including Fortnite, Roblox, Horizon, and even a few corporate metaverses. **Going forward, I'll use metaverse (small "m," singular) to refer to these immersive worlds in general.**

A metaverse can use elements of **augmented reality, virtual reality, or both.**

How do I get there?

- The classic VR headset
- Your smartphone
- Your desktop or laptop computer, using your keyboard and mouse to navigate

3. David J. Chalmers, *Reality +: Virtual Worlds and the Problems of Philosophy* (New York: W. W. Norton & Company, 2022).

4. Aaron D. Frank, "How to Explain the Metaverse to Your Grandparents," Medium, January 9, 2022, https://medium.com/@aaronDfrank/how-to-explain-the-metaverse-to-your-grandparents-b6f6acae17ed.

5. Matthew Ball, "Framework for the Metaverse," The Metaverse Primer, MatthewBall.vc, June 29, 2021, https://www.matthewball.vc/all/forwardtothemetaverseprimer.

THE FIVE Rs:

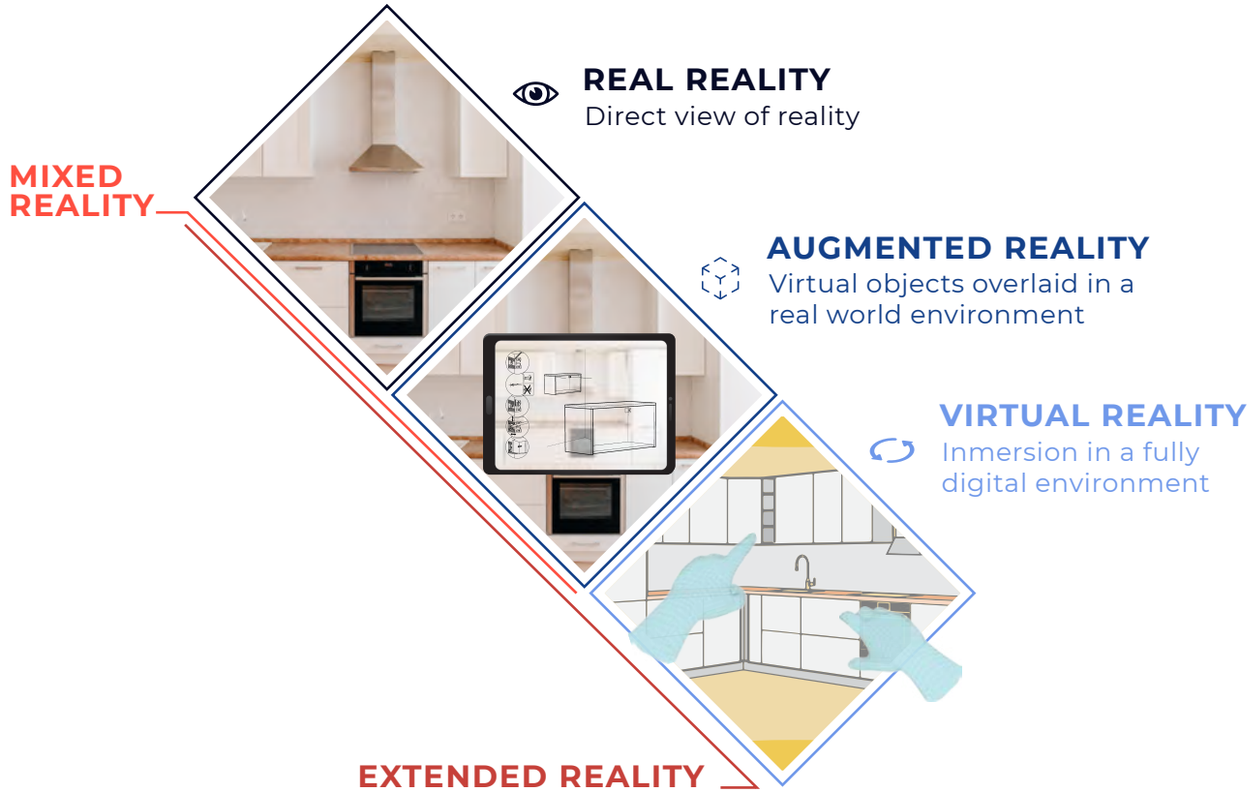
RR, AR, VR, MR, & XR

Immersion isn't all or nothing; it's a continuum. Here's where the five Rs fall.

Real reality (RR): Nope, that's not a typo! RR is the non-digital world we experience directly, without smartphones or headsets.

Augmented reality (AR): A filter that displays digital objects in our real-life surroundings. AR experiences include Wayfair's View Furniture in Room, Warby Parker's Virtual Try-on, Instagram photo and video filters and, of course, Pokemon Go. We often access AR experiences through our smartphones.

Virtual reality (VR): An immersive, 360° experience completely created with spatial audio and computer-generated imagery (CGI), 360° video footage, or still images. We access a VR space through a headset and perceive it instead of our real-life surroundings. We might interact with it hands-free or use controllers. (For safety, many headsets ask users to define a "playspace"!) The games Beat Saber, Eve, and RecRoom are examples of VR experiences, as are the meeting spaces Horizon Workrooms and SweetRush's TreeHouse.



Source: Google, as cited by Fast Company[6]

Mixed reality (MR): An experience that lays digital objects over our real-life surroundings and allows us to interact with them—through a headset that usually leaves our hands free. In MR, we can drop that new couch into our living room and layer new colors and textures onto our walls and floors. These same "covers" can even turn furniture and fixtures into scenery for a 360° gaming experience.[7]

Extended reality (XR): Any of the above, except for RR! The umbrella term XR covers every possible mixture of digital environments: AR, MR, and VR.

6. Mark Wilson, "Google Has a Favorite New Phrase—Here's What It Means," Fast Company & Inc, May 19, 2017, https://www.fastcompany.com/90125996/google-has-a-favorite-new-phrase-heres-what-it-means.

7. "Types of Mixed Reality Apps," Microsoft technical documentation, Microsoft Corporation, January 26, 2022, https://docs.microsoft.com/en-us/windows/mixed-reality/discover/types-of-mixed-reality-apps.

WHO'S VISITING,

AND WHAT ARE THEY DOING THERE?

Lots of Gen Z gamers—and users of all ages who want to:

- Play games
- Work out
- Meet up with friends and family
- Attend a concert or other live event
- Experience hard-to-reach environments all over the universe
- Meet new people with common interests
- Shop in a truly epic mall
- Start a business
- Make and sell art
- Build and sell virtual real estate
- Learn a new craft and skills
- Meditate

It's not all fun and games, either: **A recent study by Microsoft found that more than 50% of workers of all generations are "open to using digital immersive spaces in the metaverse for meetings or team activities."[8]**

8. "Great Expectations: Making Hybrid Work Work," Microsoft WorkLab, Microsoft Corporation, March 16, 2022, https://www.microsoft.com/en-us/worklab/work-trend-index/great-expectations-making-hybrid-work-work.

CORE FEATURES OF THE METAVERSE

Persistence:

- Objects stick around even when there's no user to experience them.[9]
- Digital attractions can be mapped to a real-world space (like a public park) **and** remain there after you leave.

Synchronicity:

- Users can interact in real time, in unlimited numbers.
- A fully functioning economy: Blockchain technology facilitates in-world purchases and sales of experiences, art, and even premium real estate.[10]
- User-created content: Users can create digital art, experiences, buildings, and services—and earn real currency if they put these items on the market.

Digital twins:

- Users have a consistent avatar that serves as a means of interacting with the environment and other users—and provides consistent in-world identity and presence.
- Organizations have a consistent digital space that duplicates or enhances their physical presence.

Continuity:

- You're the same person from one day to the next, with the same digital possessions, accomplishments, and relationships. That means your party invites, impulse purchases, and the virtual mansion you built from scratch are indelible parts of your history.[11]
- Continuity creates **good data** that yield information that L&D folks can apply to assess progress toward business and learner needs.

9. Sydney Butler, "Persistent AR Explained: Why It's the Key to the Metaverse," How-To Geek, LifeSavvy Media, April 3, 2022, https://www.howtogeek.com/788486/persistent-ar-explained-why-its-the-key-to-the-metaverse/.

10. Kylie Logan, "Snoop Dogg Is Developing a Snoopverse, and Someone Just Bought a Property in His Virtual World for Almost $500,000," FORTUNE, Fortune Media IP Limited, December 9, 2020, https://fortune.com/2021/12/09/snoop-dogg-rapper-metaverse-snoopverse/.

11. Matthew Ball, "Framework for the Metaverse," The Metaverse Primer, MatthewBall.vc, June 29, 2021, https://www.matthewball.vc/all/forwardtothemetaverseprimer.

Metaverse Mythbusting

With Adrian Soto,
Immersive Technology Mythbuster-in-Chief

MYTH

The term "metaverse" applies to any online collaborative environment, including email and chat.

FACT

There are two absolute requirements for a metaverse:

- A digital self, or digital twin, who represents the user and interacts with others (see "Core features" above)
- A live social component

It's this digital self and "human-ness" that qualify immersive environments like Fortnite and Roblox as metaverses. Chat and email alone can't offer those qualities.

MYTH

The metaverse is a brand-new thing.

FACT

Not at all![12] Science fiction authors have been imagining metaverse-like digital environments since 1935, and innovators began developing proto-immersive digital experiences in the mid-1950s. Metaverse development has been rapidly accelerating since the 2010s, thanks to advances in technology and new immersive games and experiences.[13]

MYTH

Virtual reality (VR) and augmented reality (AR) are the metaverse.

FACT

VR and AR can play an important role in a metaverse. I say "a" metaverse because another misconception is that there is just one single metaverse; again, not true. There are, and can be, an infinite number of metaverses. In the end, one or a few will likely emerge as the most popular ones, but they won't be the only ones.

12. " L&D Challenges, Life-Centered Solutions: Transforming Business and Unlocking Human Potential," https://www.sweetrush.com/pdf/SweetRush_Learning_and_Development_Trends_Report_2022.pdf

13. Bernard Marr, "A Short History of the Metaverse," Forbes, March 21, 2022, https://www.forbes.com/sites/bernardmarr/2022/03/21/a-short-history-of-the-metaverse/?sh=eaa95af59688

WIMFM?

WHAT'S IN THE METAVERSE FOR ME?

Like any learning solution, that depends on your business and learner needs—and your timeline.

Even if you're not quite ready to meet your learners in the metaverse, you can still create effective and engaging immersive learning experiences. Here's a preview of how your organization's needs might look, sound, and feel if you've got a use case for immersive learning.

Use Case 1: Interpersonal Skills

Your learners need to practice nuanced, spontaneous interpersonal skills without harming real humans.

Words are important, and so are the tone, stance, gestures, and gaze that support (or undermine!) our message. But it's hard to practice when relationships—and real emotions—are on the line.

Discover how L&D pioneers are helping learners be their best selves as they practice:

- Empathy and relationship building
- Overcoming unconscious biases
- Conflict resolution and de-escalation

Use Case 2: Hands-On and High-Stakes

Your learners need hands-on practice to master high-stakes procedures—without risking damage to people or property.

It's the classic dilemma: You need experience to get experience. But how can learners develop new skills when there's no room for error?

See how other innovators are creating safe spaces to practice:

- Emergency responses
- Surgery and other medical procedures
- Handling hazardous materials and equipment

Use Case 3: Live Collaboration and Learning

You want to re-engage your screen-fatigued team members in a "third space" for live collaboration and learning.

We're just beginning to process what we lost in the Great Virtual Pivot of 2020. Can metaverse technology bring back the ability to connect live?

[See some creative ways fellow learning leaders are answering that question.]

Use Case 4: A Next-Gen LMS/LXP

You need a home for experiential, interpersonal, and otherwise outside-the-LMS learning experiences and events.

Learning is all over the place these days—and that's a good thing. But the traditional LMS can't keep up with the spontaneous, social, informal, and community-based learning experiences our learners thrive on.

[Listen in on the conversations our in-house experts are having with L&D influencers.]

WHAT'S IN IT FOR LEARNERS?

There's no question that immersive learning is cool. But can it help us learn?

In a word, yes! Here are just a few of its unique benefits:

- **Transference:** Your learners are immersed in a digital twin of their actual work site. As complex situations unfold around them, they have only a split second to choose the right tool for the job. Whether those tools are cognitive, emotional, or mechanical—or a mix of all three—they think, act, and make decisions just as they would in their daily work.

- **Retention:** Every L&D leader is familiar with the forgetting curve: the plummeting of skills and content recall with time. Solving complex problems in a digital twin of their worksite helps learners develop the cognitive and muscle memory they need to retain their skills long-term.

- **Abundance:** From limited editions to members-only events, we've all heard of manufacturing scarcity. Learning in XR helps us open access to hazardous, hard-to-reach, hard-to-replicate, or otherwise scarce experiences for more people.[14]

- **Minimal distractions:** Whether your learners are remote, on-site, or hybrid, distractions are a fact of life—and a major obstacle to learning. Skilling in the metaverse and XR environments separates learners from their ordinary world, which helps them filter out distractions and concentrate on the skills and content being presented.[15]

720
Average yearly work hours lost to distraction, per person

23 minutes, 15 seconds
Average time it takes to recover from a distraction

200%
Increased likelihood of error after a distraction[16]

- **Joy:** Unlike traditional eLearning or instructor-led learning experiences, immersive learning is built for—and upon—connection, game play, exploration, and storytelling. With ample space, resources, and opportunities, learners can literally follow their curiosity. It's the ultimate "pull" learning experience and a major win for employee engagement.[17]

14. Azeem Azhar, "The Meaning of Life in the Metaverse (with David Chalmers). HBR Presents: Azeem's Exponential View," Podcast audio, March 23, 2022 https://hbr.org/podcast/2022/03/the-meaning-of-life-in-the-metaverse-with-david-chalmers

15. Jacquelyn F. Morie, "The Promises and Challenges of Immersive Education," *Handbook of Research on the Global Impacts and Roles of Immersive Media* (Hershey, PA: IGI Global, 2020), pp. 349–370.

16. "Workplace Distractions Statistics: Problems and Solutions in 2022," Teamstage, Accessed June 2022, https://teamstage.io/workplace-distractions-statistics/

17. Tiffany Vojnovski, "Be Our Guest: A Service Design Approach to Learner Experience," eLearning Industry, October 18, 2021, https://elearningindustry.com/be-our-guest-service-design-approach-to-lear ner-experience.

We believe that organizations have a unique ability—and responsibility—to create abundance for our people.[18] As L&D leaders, we contribute to that abundance by offering skilling solutions that help our people elevate their craft and prepare for the future of work.

Immersive learning offers a unique opportunity to help learners spend their limited time, attention, and energy meaningfully—by gaining the skills and confidence that help them work productively and rewardingly.

SHOW ME HOW!

18. "It's All About Your People," SweetRush, accessed June 23, 2022, https://www.sweetrush.com/pdf/Human_Centered_Business_and_Learning_Culture.pdf

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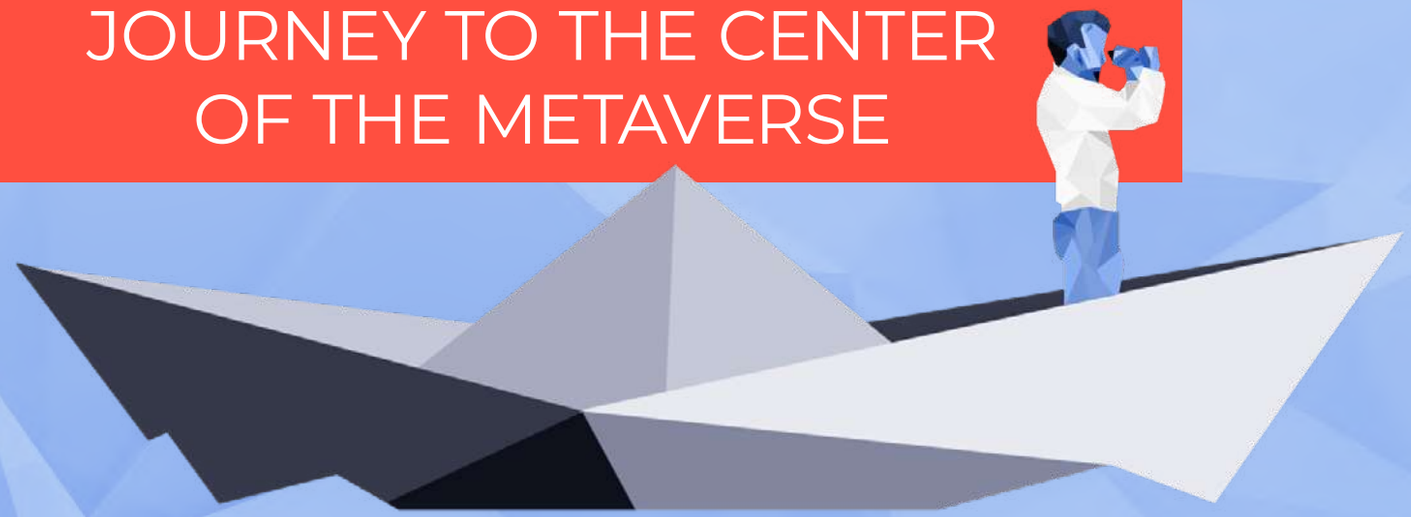
HOW DO I GET STARTED?

JOURNEY TO THE CENTER OF THE METAVERSE



HOW DO I GET STARTED WITH IMMERSIVE LEARNING—IN THE METAVERSE & BEYOND?

RULE #1

Don't Follow the Shiny Object!

With exciting technologies and features emerging every day, we know that's easier said than done. But the journey into the metaverse begins with a step every learning leader knows well: needs analysis.

Needs Analysis for the Metaverse

The metaverse isn't all talk, but you'll need to have some deep conversations with your leaders and stakeholders before building your presence—or even approaching a partner. (And when you are finally ready to meet that perfect-match partner, they'll ask about the results of this vital first step!) The steps below will help you get started.

◆ Step 1

Get a read on your **current and future business needs** and what your people will need to be able to do to meet those needs. Your business partners and stakeholders will be more than happy to share their wish lists![19]

19. Emma Klosson, "The Value of Conducting a Needs Analysis—Part 2: Plan for the Future," SweetRush, September 15, 2021, https://www.sweetrush.com/how-to-perform-needs-analysis-part-2/.

Step 2

Together, define the **performance gap**: what learners do now vs. what they should be doing. The answer will help you arrive at the learning and performance objectives you want to meet.

Familiar territory, right? You've got this!

Just for fun, choose the best guiding question to move your inquiry forward:

A How do I build a learning program in the metaverse that meets these learning and performance objectives?

B What is the best learning experience, technology, and modality to meet our learning and performance objectives—even if these don't end up including the metaverse?

If you chose **Question B**, you're absolutely right! Your learning and performance objectives, not cool new technology, should determine your way forward.

If you chose **Question A**, we love your excitement—and we promise you'll get there! The following steps will help you find your way.

Step 3

Pause and make sure your **learning strategy** is defined and aligned with your organizational mission. If your L&D program is still working on securing learner or stakeholder buy-in, work on that issue first—don't bring it into the metaverse!

Step 4

Choose a **single performance objective** to address in the metaverse. Try to choose one that could potentially yield the maximum impact on your business.

Step 5

Create a **pilot program** to address it.

Note: You've probably noticed that we've compressed several steps here: **finding a partner,** talking through your needs, and the wild and wonderful process of creation and revision—to name a few. We'll share more details in the following sections, we promise!

Step 6

Invite your stakeholders and learners to try your pilot program—and **gather their feedback**. Bonus: Meet them in a metaverse and observe their reactions in real time. What do they love? Where do they lose interest or get stuck?

Step 7

If your pilot program shows promise, apply learner and stakeholder feedback to **improve it further**. Then: deploy, rinse, and repeat.

Feeling ready? Explore the hardware, technology, and strategy questions your organization needs to consider before jumping into the metaverse. For these discussions, you'll need your in-house IT, user experience and user interface (UX and UI), and design experts, as well as your leaders and stakeholders. Any gamers on your team who already spend their leisure time in a metaverse or two can also add valuable perspective.

If this is already feeling like a lot and you'd like a trusted partner to guide these conversations, **jump to Section 5** to learn how to meet The One.

Finding that your organization isn't ready for all this just yet? No worries! **Jump to Section 3** to learn how to transform your people and your business with immersive learning **outside the metaverse.**

L&D IS NOT A LONE WOLF

Taking L&D to the metaverse is just one part of a much larger strategic conversation. Here are just a few of the questions you'll need to consider with your leadership team and stakeholders.

- What needs can **the entire organization** meet in a metaverse?
- Which other areas could share L&D's metaverse assets?
- Where can you combine budgets?

Prevent Digital Silos

Bring in your partner! They're not just there to build; they can help you, your leadership team, and your stakeholders to look strategically at your entire business.

Your partner's perspective can help you see across silos and consider how L&D might share metaverse assets with the operations, product development, customer engagement, talent acquisition, and legal departments.

For example, a hotel chain's **L&D department** might use a digital twin of a property to train housekeeping and events staff to create unforgettable guest experiences.

The **marketing department** might leverage those same assets to entice guests in for a tour—and show them how an epic technology conference or fairy-tale wedding could look on site.

The **HR department** might use the space at recruiting events to share a day in the life at one of their properties and build excitement about joining the team.

JOURNEY TO THE CENTER OF THE METAVERSE

There are multiple levels of the metaverse, and—apologies to Jules Verne—**the journey begins at the center.**[20] SweetRush's XR team created this guide to the right help you gauge your organization's readiness to set off on this epic quest.

INFRASTRUCTURE

The core of the metaverse is founded on all things IT: your organization's bandwidth, tools, sharing, and security.

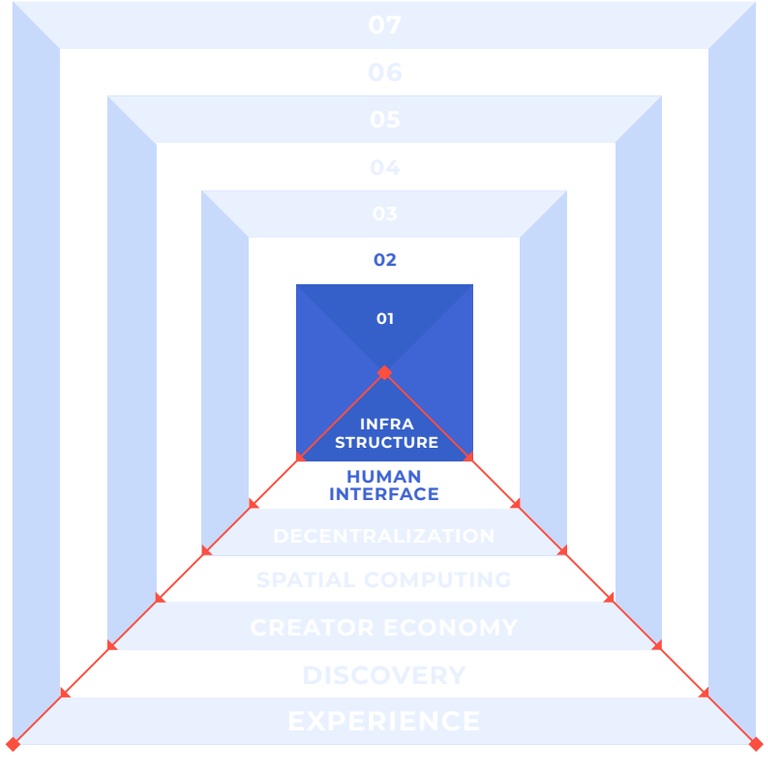
Guiding questions: *How will we connect everyone to the metaverse—or, if everyone's connected already, how are they connected? What do we need to support user access and secure our assets?*

HUMAN INTERFACE

This practical layer depends on the devices your people will use to connect to the metaverse, e.g. laptops, smartphones, VR headsets, etc.

Guiding questions: *Which devices, and how many, do we need to budget for? How will we distribute them?*

LAYERS OF THE MULTIVERSE



Source: Building the Metaverse by Jon Radoff

20. Derek Strickland, "Unity's John Riccitiello is a Strong Believer in the Metaverse," TweakTown, August 16, 2021, https://www.tweaktown.com/news/81142/unitys-john-riccitiello-is-strong-believer-in-the-metaverse/index.html.

DECENTRALIZATION

The metaverse will not be regulated or run by a single corporation or individual (unless you build a corporate metaverse like Accenture's One Accenture Park[21]). It's a true democracy: Users create and enforce the laws of the land.

Guiding questions: *Do we want to build in an existing metaverse or create our own? If we choose an existing metaverse, are we comfortable establishing a digital presence in a collectively owned space?[22] How might our presence in a given metaverse affect the way our organization is perceived?*

SPATIAL COMPUTING

This layer is all about the technologies you'll use to build your metaverse presence. If you choose the DIY route, these include VR, 3D web applications, 3D creation engines, and/or game engines.

Other metaverses, such as Roblox, and Horizons, offer tools to help you build your presence and experiences.

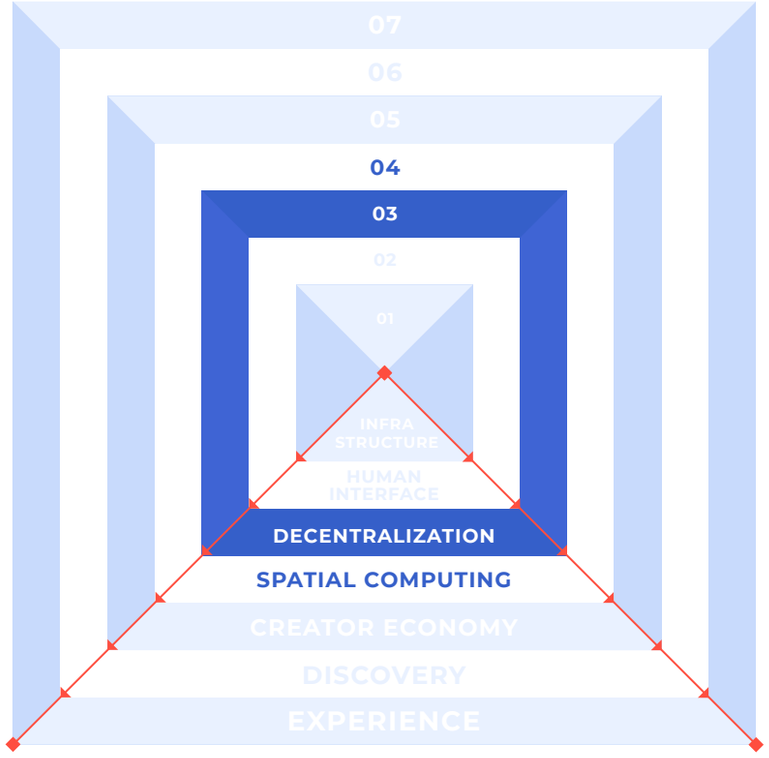
Whichever route you choose, you'll want to commit to it for the long term: Changing technologies can be costly and difficult.

Guiding questions: *What kind of technology do we want to create our presence? Can we commit to it for the long term?*

21. Jason Warnke, "Going Beyond with Extended Reality," Accenture, March 16, 2022, https://www.accenture.com/us-en/about/going-beyond-extended-reality.

22. Norton Rose Fulbright, "The Metaverse: The Evolution of a Universal Digital Platform," July 2021, https://www.nortonrosefulbright.com/en/knowledge/publications/5cd471a1/the-metaverse-the-evolution-of-a-universal-digital-platform.

LAYERS OF THE MULTIVERSE



Source: Building the Metaverse by Jon Radoff

CREATOR ECONOMY

Content creation isn't top-down in the metaverse, and that's a great thing! This layer is where your people can exchange their creations, skills, and hacks with others.

Guiding questions: *How will we reward our creators and innovators? What kind of a token economy would be meaningful to them and sustainable for us?*

DISCOVERY

Here's where internal marketing comes in! This layer is all about building excitement and sharing the who, why, and WIMFM of your metaverse experience with your people.

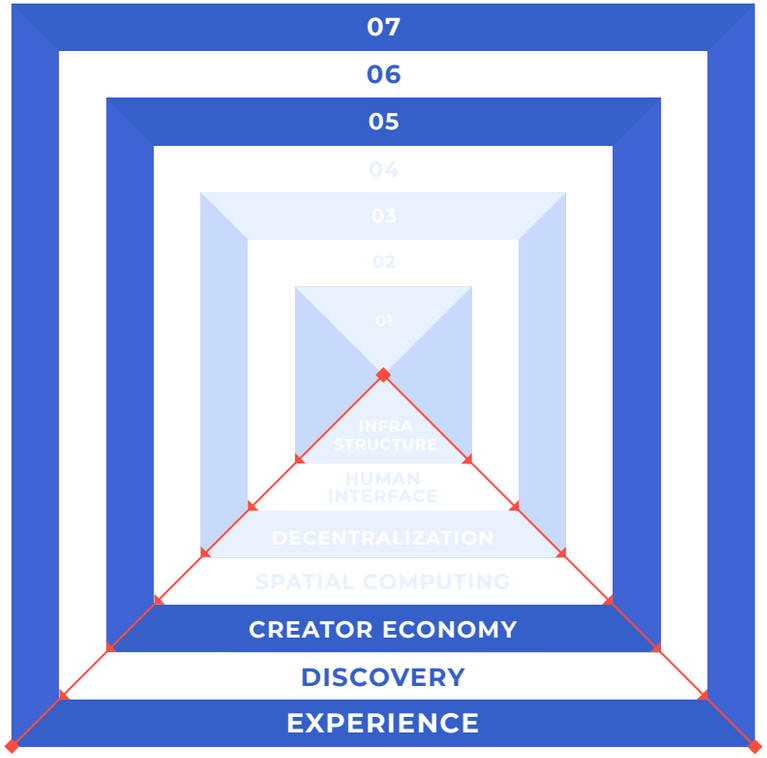
Guiding questions: *Who are our audiences, and what's in the metaverse for them? How can we build anticipation and interest? Who might serve as internal evangelists or influencers for the experiences we've created?*

EXPERIENCE

This layer is where you ensure that the world you've built is easy, fun, and intuitive to visit. (User testing is your friend here!) For immersion to work, it needs to be seamless—without fumbling or confusion that takes your people out of the moment.

Guiding questions: *How have we addressed and tested all 10 of Jakob Nielsen's usability heuristics?[23] What's our plan for continued testing as we sustain and expand our presence in the metaverse?*

LAYERS OF THE MULTIVERSE



Source: Building the Metaverse by Jon Radoff

23. Alita Joyce, "10 Usability Heuristics Applied to a Virtual Reality, Nielsen Norman Group, July 11, 2021, https://www.nngroup.com/articles/usability-heuristics-virtual-reality/.

MAINTENANCE IN THE METAVERSE

Breaking digital ground in the metaverse is only the beginning.

Sustaining and growing your metaverse presence will require unwavering leader and stakeholder commitment over the weeks, months, and years ahead. That means allocating not only a budget, but a clear process for designing, vetting, and approving new content—and weekly hours to complete each step.

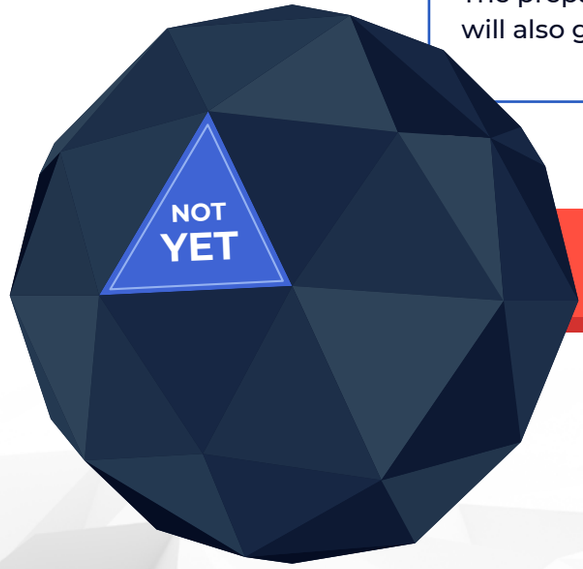
Your team might not have the budget or bandwidth—yet. And that's OK!

If your organization isn't quite ready to immerse in the metaverse, we'd encourage you to keep metaverse technologies, developments, and news on your personal and professional radar—and to keep sharing your discoveries with your leaders and stakeholders.

In the meantime, you can offer your people engaging, effective, **immersive learning experiences** outside the metaverse. See Section 3 for a closer look at impactful XR solutions that meet (okay, exceed!) learning and performance objectives.

BONUS

The preparation you'll do to move your learning into XR will also get you a few steps closer to the metaverse.



SHOW ME SOLUTIONS

  SWEETRUSH

3

TAKE ME TO YOUR L&D USE CASES

EXAMPLES AND EFFECTIVENESS OF IMMERSIVE LEARNING SOLUTIONS

USE CASES FOR IMMERSIVE LEARNING

> **"Embodiment is a powerful construct that affects us much like physical reality because our brains are evolutionarily wired to believe the inputs of our sensory mechanisms."**
> —Jacquelyn F. Morie, author, scientist, and educator[24]

The Learner

As workplaces, job roles, and team dynamics have evolved, so have learners' needs, from recalling rules and procedures to relationship-building, decision-making, and responding to complex situations. Learning leaders are increasingly embracing XR solutions to help learners develop these skills in a nuanced and authentic practice environment. Here are just some of the benefits they're finding:

Metacognition

An awareness of how different approaches contribute to different results

Embodied cognition

Muscle memory of what it "feels like" to successfully perform a task—and what it feels like to fail

Situational awareness

360° awareness of safety and risks in the environment

Situated cognition

Practice in the target environment—a digital twin of the workspace—which increases learning transfer

Social constructivism

Learning by collaborating with and observing others

24. Jacquelyn F. Morie, "The Promises and Challenges of Immersive Education," Handbook of Research on the Global Impacts and Roles of Immersive Media (Hershey, PA: IGI Global, 2020), pp. 349—370.

USE CASE 1:
INTERPERSONAL SKILLS

Your learners need to practice nuanced, spontaneous interpersonal skills like empathy and de-escalation without harming real humans.

The Skills:

Metacognition

Embodied cognition

FASTER, BETTER EMPATHY?

Learners trained in VR develop soft skills 4x faster than learners trained in the classroom and feel 40% more confident in applying what they learned.[25]

Hilton + SWEETRUSH

Hilton hires thousands of new corporate team members every year, few of whom have hands-on experience working in hotels. Hilton's leaders wanted these new hires to gain empathy for the hotel team members whose lives are touched by the corporate rules and policies these new team members will create.

"Our goal was to make our corporate team members virtually sweat. We want them to understand the physicality and complexity of hotel operations so they can better feel what it's like to be in the shoes of a room service attendant."

—Blaire Bhojwani,
Hilton's Senior Director of Learning Innovation

25. "How Virtual Reality Is Redefining Soft Skills Training," PwC, June 4, 2021, https://www.pwc.com/us/en/tech-effect/emerging-tech/virtual-reality-study.html.

Hilton collaborated with SweetRush's XR team to create Hilton Business Immersion, a VR training experience that includes a hotel tour and three hands-on operational tasks: setting up room service trays, checking in guests, and cleaning guestrooms.

Learner Feedback

94%

said that Hotel Business Immersion increased their empathy for hotel team members.

75%

reported that the experience improved their problem-solving and customer service skills.[26]

Overcoming Unconscious Biases

Despite our best intentions, our gaze, gestures, and other nonverbal cues can undermine our ability to connect with our diverse teams. See how Virtual BodyWorks leverages VR in DEIB training that helps learners understand their responses to others.[27]

26. Virtual Reality for Our New Reality: Your Guide to VR Training Programs, https://insights.sweetrush.com/vr-training-programs-guide-ebook.

27. Virtual Bodyworks, accessed June 2022, https://www.virtualbodyworks.com/.

Conflict Resolution and De-escalation

CHRISTUS Health + SWEETRUSH

73%
of the nearly 25,000 workplace assaults reported annually take place in health care facilities.[28]

25%
of nurses report being physically assaulted by a patient or a patient's family member.[29]

CHRISTUS Health wanted to protect its family of 45,000 health care providers by training them to identify and deescalate dangerous patient situations—without actually placing them in danger.

> **"We are focused on providing the most relevant and realistic learning experience possible for our Associates."**
> —Tobias Washington, Director of Learning Experience, Creative Design, and Talent Technology at CHRISTUS Health

CHRISTUS Health joined forces with SweetRush to create a VR experience based in the familiar hospital setting. Learners follow the sound of shouting to a patient's room—and are greeted with abusive language when they enter.

28. Liberty Mutual Insurance, "Rising Violence in Health Care: How Employers Can Take Control," Liberty Mutual Insurance, June 20, 2022, https://business.libertymutual.com/insights/rising-violence-in-health-care-how-employers-can-take-control/.

29. Joint Commission, "Sentinel Event Alert 59: Physical and Verbal Violence Against Health Care Workers," Issue 59, April 17, 2018 (Revised June 18, 2021), https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/sea-59-workplace-violence-final2.pdf.

Learners must defuse the situation using their words, tone of voice, and gestures. If they're successful, the patient calms down; if not, the patient escalates their aggression. Voice recognition and body movement tracking data help learners review and learn from missteps.

Why Traditional Role-Plays Don't Work

Without backstory or context (or professional actors!), it's impossible to replicate certain situations or suspend disbelief.[30] For a use case like CHRISTUS Health's, learners need emotional immediacy, immersion, and a safe, authentic space to practice their emerging skills.

> **"It makes sense to use immersion if the lesson has an interactive or kinesthetic component such as learning how to handle hazardous equipment or how to perform a specific surgery. These lessons are difficult to teach via basic book learning or other symbolic methods. Being within the environment … is a much more intuitive human situation."**
>
> —Jacquelyn F. Morie, scientist, author, and educator[31]

30. Virtual Reality for Our New Reality: Your Guide to VR Training Programs, https://insights.sweetrush.com/vr-training-programs-guide-ebook.

31. Jacquelyn F. Morie, "The Promises and Challenges of Immersive Education," *Handbook of Research on the Global Impacts and Roles of Immersive Media* (Hershey, PA: IGI Global, 2020), pp. 349—370.

USE CASE 2:

HANDS-ON & HIGH-STAKES

Your learners need hands-on practice to master high-stakes procedures such as surgery, equipment repair, or emergency responses—without risking damage to people or property.

The Skills:

- Metacognition
- Embodied cognition
- Situational awareness
- Situated cognition

Emergency Responses

A leading automotive company wanted sales associates to experience how its new tire technology can literally save lives. They partnered with SweetRush to create a VR experience that places learners on the open road. Trucks rush toward them on a rainy highway—and stop on a dime, thanks to the powerful features of the tires. The heart-pounding experience gives learners a story to tell and keeps product benefits at top of mind.

Surgery and Other Medical Procedures

Hospitals are increasingly leveraging XR to train staff in the use of lifesaving equipment and procedures.[32] During the COVID-19 pandemic, Sheba Medical center used a wearable AR solution to train staff to use ventilators.[33] This hardware also helped doctors assist remotely in inpatient care.

32. John Gaudiosi, "Here's Why Hospitals Are Using Virtual Reality to Train Staff," Fortune, August 17, 2015, https://fortune.com/2015/08/17/virtual-reality-hospitals/.

33. Sheba Tel HaShomer Global Patient Services, "Wearable Augmented Reality Technology Used at Sheba for Teaching Medical Staff," Sheba TelShaHomer Global Patient Services, n.d., https://www.shebaonline.org/wearable-augmented-reality-technology/.

The Imperial College of London used a VR solution to train surgeons—and discovered that **83%** of learners were ready to perform procedures with little guidance after training—compared with a staggering **0%** using traditional methods.[34]

Miami Children's Hospital found that medical staff who learned new procedures in an immersive environment had an **80%** retention rate **one year later**—compared to **20% one week later** using traditional methods.[35]

Handling Hazardous Materials and Equipment

A leading transportation company wanted to recreate a rigorous garage safety class in its new manager training program as a gamified VR experience. They joined forces with SweetRush's XR team to build a 3D garage full of safety risks. Learners must work against the clock to identify and prioritize the hazards. The results? All learners developed a keen eye for safety risks.

Ever feel that you live in your car? Hyundai is working to enrich your experience with a 3D presence that can (safely) transform your vehicle into a digital destination. On the manufacturing side, Hyundai combines VR and robotics to provide plant managers and technicians remote access to assembly lines.[36]

34. Dean Takahashi, "Johnson & Johnson Wants to Bring VR to Doctors-in-Training Worldwide," Venture Beat, September 25, 2019, https://venturebeat.com/2019/09/2 5/johnson-johnson-we-want-vr-surgery-training-to-be-available-worldwide/.

35. Katie Dvorak, "Virtual Reality for Medical Training: How it Benefits Hospitals," Fierce Health Care, August 19. 2015, https://www.fiercehealthcare.com/it/virtual-reality-for-medical-training-how-it-benefits-hospitals.

36. Miguel Cortina, "Hyundai's Metaverse Merges the Real And Digital Worlds in One," MotorTrend, January 4, 2022, https://www.motortrend.com/events/hyundai-metaverse-merges-real-digital-worlds-one-robotics/.

USE CASE 3:

LIVE COLLABORATION & LEARNING

You want to re-engage your screen-fatigued team members in a "third space" for live collaboration and learning.

The Skills:

- Embodied cognition
- Social constructivism

SweetRushians John Cleave, Senior Learning Engineer, and Emily Dale, Learning Architect, explain why traditional video meetings can feel exhausting: When we have more than about five people in a meeting, speaking turns into a lecture—and breakout rooms usually aren't spontaneous or conducive to mingling.[37]

37. Gretchen McCulloch, "A Mission to Make Virtual Parties Actually Fun," Wired, November 30, 2020, https://www.wired.com/story/zoom-parties-proximity-chat/.

Multiuser environments like **SweetRush's Treehouse (VR)** or Microsoft Mesh[38] (AR and/or VR) can restore the "many-on-many" sense of being together in real time.[39] Inside these XR "third spaces," we can whiteboard, brainstorm, prototype, and workshop—and enjoy a break from our everyday workspace.

Best of all, these environments allow us to enjoy the simultaneous one-on-one or small group interactions that are critical to face-to-face collaboration. Immersive experiences allow us to mingle naturally with others and even tinker with objects in our environment. As we do so, we see more of each other's unique personalities (dare we say quirks?), whether it's CEO Andrei Hedstrom using objects in the space to make art or SweetRush team members bouncing off the walls of the Treehouse.

Discover how game platform Roblox brightened up online education for K–12 classes during the pandemic.[40]

XR third spaces aren't just for goofing off: They also allow us to get curious about what our peers are doing, tag along, and learn from them. See "Virtual Reality Instructor-Led Training (VR-ILT)" on the next page for one of our favorite forms of VR training.

38. Microsoft Mechanics, "Microsoft Mesh Hands-On Demo | New Platform to Deliver Collaborative Mixed Reality Experiences, YouTube, March 2, 2021, https://www.youtube.com/watch?v=IhKn9mjy_QM.

39. Jon Radoff, "The Metaverse Value-Chain," Medium, April 7, 2021, https://medium.com/building-the-metaverse/the-metaverse-value-chain-afcf9e09e3a7.

40. "Teaching Remotely with Roblox Studio," Roblox, 2021, https://education.roblox.com/en-us/resources/roblox-remote.

Virtual Reality Instructor-Led Training (VR-ILT)

Can you imagine cleaning up a chemical spill, de-escalating an angry customer, or putting out fires... at an instructor-led training? It's all possible—with VR.

VR-ILT not only brings us together for the live learning experiences we've been missing, it also provides immediate opportunities to practice new skills. In VR-ILT, the instructor has the ability to control variables in the environment and use real-time data to differentiate instruction for every learner. These data also show when learners have reached proficiency and when they need reinforcement and remediation.

Sound exciting? Adrian Soto, SweetRush Director of Immersive Technologies, shares, *"Current technology provides a space for instructors and learners to connect remotely and in real time within the same virtual environment. We know VR-ILT will benefit L&D and provide an additional tool to create engaging learning experiences."* Got a use case of your own? **Let's talk!**

Discover how Accenture leverages live immersive learning in their custom-created metaverse, One Accenture Park.[41]

41. "Meeting the New Reality: Immersive Learning," Accenture, September 14, 2021, https://www.accenture.com/us-en/insights/technology/immersive-learning.

Accenture Technology, "Welcome to the Nth Floor—Accenture's Virtual Office," YouTube, November 16, 2020, https://www.youtube.com/watch?v=lZttHYDgV64.

USE CASE 4:

A NEXT-GEN LMS/LXP

You need a home for experiential, interpersonal, and otherwise outside-the-LMS learning experiences and events.

If you're anything like our friends and client-partners, you might be finding that your LMS—or even LXP—can't keep up with the kinds of learning your people are doing. No platform can account for the "a-ha" moments that come from spontaneous conversations with colleagues, thoughtful book discussions, or uninterrupted maker's time.

With screen fatigue at an all-time high, learners have little appetite for the assigned learning paths and limited offerings an LMS offers. And despite the choices and curation in an LXP, learners crave live learning and practice—not more content to keep up with.

These limitations led Adrian Soto, SweetRush Director of Immersive Technologies, to a thought-provoking question: **Could the metaverse be the next evolution of the LXP?**

Spoiler: It's possible! Imagine an event space rather than a container for content. Learners meet for community-based, social learning events via their digital twins. They interact, exchange ideas, job-shadow, attend VR-ILTs, and practice skills together in that virtual venue.

In the metaverse, learners will be able to explore different skills, industries, and roles—and even engage in internships and job-shadowing. **(See Danielle Silver's discussion of skilling in the metaverse for more on how this might work.)** As they gain authentic experience and practice, their skills can be more easily assessed and tracked. The data learners generate in the process could contribute to a skills passport, or collection of competencies that learners generate throughout their lifetimes.[42]

Universal skills passports aren't a reality yet, but they could help us achieve our evolving goals over a decades-long career trajectory—and transition seamlessly among organizations and experiences.[43] Unlike LMS- or LXP-issued credentials that get left behind when we move on, our **skills passports** would follow us everywhere we go.

It's an active debate at SweetRush whether or not learning in the metaverse gets us closer to establishing and maintaining universal skills passports. Adrian is optimistic, whereas Senior Learning Engineer John Cleave sees the metaverse as just one learning and skilling source among many that might contribute to a skills passport. What they agree on is the potential of the metaverse to offer realistic, hands-on learning experiences; measure competencies authentically; and generate rich data that help us maintain a lifelong record of our curiosity, competence, and growth.

42. Adi Gaskell, "How Can Corporate Upskilling Be Reimagined?," Forbes, April 1, 2021, https://www.forbes.com/sites/adigaskell/2021/04/01/how-can-corporate-upskilling-be-reimagined/?sh=724aa4131277.

43. "It's All About Your People," SweetRush, accessed June 23, 2022, https://insights.sweetrush.com/human-centered-business-learning-culture-ebook.

IMMERSIVE LEARNING

WE'RE ALREADY (ALMOST) THERE!

Does learning in XR still feel like a plunge into the unknown?

We'd encourage you to think of it as the next evolution of the L&D practices you're already getting right, for example:

- **Spaced repetition**, or presenting learning content over increasingly long time intervals, and presenting challenging content more often to help learners develop proficiency
- **Microlearning**, or learning in hyper-effective short bursts that respect the learner's schedule and maximize retention
- **Gamification**, or learning experiences in the form of exciting individual or group challenges that reward learners as they apply and hone target skills
- **Storytelling**, or learning in narrative form that invites learners to apply target skills as they choose their own adventure and follow the ups and downs of their decisions

We'd also encourage you not to worry about the technology! Like any learning technology, you can get as detailed as you need (or want!), depending on whether your role is strategic or hands-on. And you've got a village to lean on: Your vendor-partner, stakeholders, and leaders are all in it with you as you explore opportunities to skill, connect, and collaborate in XR.

Jump to Section 5 for tips on finding a trusted partner.

We've said it before: It's all about your people—and the organization that brings you together around a craft you care about. XR technology should make it easier for your team to be human together. To paraphrase the great usability expert Don Norman, technology should serve your people— not the other way around.[44]

And the more people you serve with immersive learning, the greater the return on your training investment: **A recent study by PwC found that VR training is more cost-effective at scale than traditional classroom or eLearning experiences.**

At 375 learners,
VR training achieved cost parity with classroom learning.

At 1950 learners,
VR training achieved cost parity with eLearning.

At 3000 learners,
VR training became 52% more cost-effective than classroom learning.[45]

See what's ahead for immersive technologies—and how they can help us boost our collective competence, wisdom, and care.

SHOW ME WHAT'S AHEAD

44. Donald A. Noman, *Things That Make Us Smart: Defending Human Attributes in the Age of the Machine*, 1993, Reading, Mass: Addison-Wesley Pub. Co.

45. PwC, "How Virtual Reality Is Redefining Soft Skills Training," PwC, June 4, 2021, https://www.pwc.com/us/en/tech-effect/emerging-tech/virtual-reality-study.html.

4

FORECAST THE FUTURE

WHAT'S AHEAD FOR XR TECHNOLOGY AND IMMERSIVE LEARNING

WHAT'S AHEAD FOR XR TECHNOLOGY

AND HOW CAN IT HELP ME CREATE MORE ENGAGING, ENJOYABLE LEARNING EXPERIENCES?

By the time we learn about new technologies—much less adopt them—the next generation of products, features, and capabilities is rushing to replace them.

In an attempt to keep up with these digital rapids, I asked my friends on the SweetRush XR team what up-and-coming XR and metaverse technologies they're most excited about and **how these innovations can help L&D leaders create more engaging, enjoyable learning experiences.**

Here's what they had to say.

HUMAN NEEDS

Felipe Umaña
UI/UX Designer

The way we meet our needs is constantly evolving, and XR can help accelerate that process. Digital tools have been developed to address every level of Maslow's hierarchy,[46] from the simplest needs—improving how we cook our food, build our homes, and even sleep—to self-actualization-related needs like growing our craft, reducing distance between humans, and creating more efficient spaces for brainstorming, self-expression, and hobbies.[47]

I am excited to learn from these advances and co-create experiences that help to advance the development of society and human learning.

"Maslow's Hierarchy of Needs"

46. Saul McLeod, "Maslow's Hierarchy of Needs," Simply Psychology, Mar 21, 2018, https://canadacollege.edu/dreamers/docs/Maslows-Hierarchy-of-Needs.pdf.

47. Don Allen III, "Tapping into Primal & Modern Human Needs (with Chris Pelk)," Rethink Reality, podcast audio, December 5, 2020, https://podcasts.apple.com/us/podcast/tapping-into-primal-modern-human-needs/id1526086131?i=1000501453257.

SKILLING IN THE METAVERSE

Danielle Silver
Solution Architect

In the metaverse, workplace learning isn't just for employees, but for anyone interested in experiencing what it's like to work in an industry, organization, or role. **Learners can explore an organization's virtual space, curate their own learning journey, and select the skills that they want to collect.**

That helps candidates and emerging professionals develop a unique set of skills while taking charge of their career paths; it also helps organizations hire people who already have the target skills.

Currently, many of us still use the traditional concept of interviewing. We ask candidates, "Can you do this?" and of course, they say yes. Within the metaverse, candidates can show us that they have the skill because they've had opportunities to practice before even starting the hiring conversation.[48]

As the metaverse expands to include K–12 education, it will offer opportunities to begin building those **skills passports** from a much earlier age—creating a more accessible path to securing internships and preparing learners for the future world of work.

48. Mark Purdy, "How the Metaverse Could Change Work," Harvard Business Review, April 4, 2022, https://hbr.org/2022/04/how-the-metaverse-could-change-work.

ACTIVE LEARNING

Josue Soto
XR Developer

The metaverse presents a whole new universe of possibilities for learning. Immersive technology helps learners explore and participate actively in learning experiences instead of passively imagining, listening, or reading. They have the opportunity to interact in real time with the learning or performance objectives and try, fail, and try again.

Whether their learning is self-directed or collaborative, multi-user online interaction offers learners a great opportunity to help, be helped, and grow with others.

READING THE ROOM

Emily Dale
Learning Architect

AR and VR headsets are integrating the capabilities of what used to be separate wearable devices to measure biometric and neurometric data like the user's heart rate, gaze, emotions, and attention span. These data can help us increase our human performance awareness and metacognitive awareness—i.e., being aware of one's own thinking and behavior.

Biometric and performance data can also help us increase our awareness of our team members' experience. If everyone is in a headset, we can read their cognitive load[49] and emotional state and gain an understanding of their performance, engagement, and enjoyment. This helps us monitor and moderate the appropriate quantity and quality of experience, which is ideal for VR-ILTs, cohort-based activities, workshops, and other social learning and multi-learner experiences.

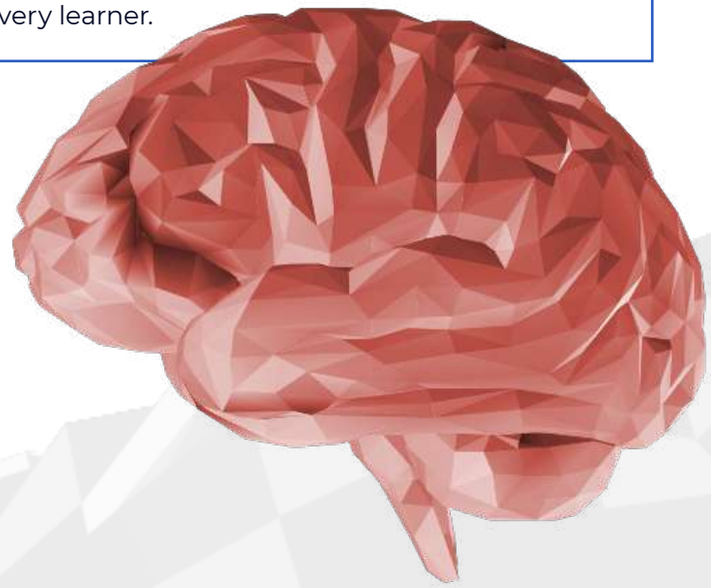
49. "HP Labs: Cognitive Load," HP Developer Program, accessed June 27, 2022, https://developers.hp.com/omnicept/blog/hp-labs-cognitive-load.

ADAPTIVE LEARNING AND COGNITIVE LOAD

Adrian Soto
Director of
Immersive Technologies

Research on handling learner cognitive load in virtual environments will yield useful guidelines for L&D teams looking to design and create learning content in XR. Headsets like HP's Reverb G2 with HP's Omnicept platform[50] promise to help us find every learner's "Goldilocks" zone and present adaptive content that responds to their needs in the moment—whether those involve more or less challenging content, a longer or shorter learning session, a break, or a moment of reflection.

Check out our webinar to learn more about adaptive learning and how cognitive load tracking helps us customize an experience for every learner.



50. "HP Labs: Cognitive Load," HP Developer Program, accessed June 27, 2022, https://developers.hp.com/omnicept/blog/hp-labs-cognitive-load.

XR AND INCLUSION

Felipe Umaña
UI/UX Designer

Immersive learning is evolving along with society toward inclusion—a space in which all people, with our different physical and cognitive abilities, have a presence. **If we start with accessibility[51] in interactions and content, the immersive experiences we develop will be more impactful and engaging.** That means getting to know our users and creating the tools they need to participate fully in the experience.

HOMUNCULAR FLEXIBILITY

Emily Dale
Learning Architect

Homunculus: The map of our bodies and movements that exists in our mind

Homuncular flexibility: The ability to change our mental map of our bodies to "novel bodies," e.g., human bodies with different abilities, animals, and even imaginary creatures

I'm fascinated by the work the Stanford Research Laboratory in Virtual Reality has done on homuncular flexibility.[52] They've explored how VR movement tracking technology can be mapped onto an avatar to give users the experience of having wings, an extra limb—even an entirely nonhuman form, like a lobster—in situations where controlling multiple arms would be more effective than just two. **Homuncular flexibility has potential applications in physical therapy, empathy training, and also remote maintenance of machines.**

51. "Designing Accessible VR," Meta, Oculus for Developers, accessed June 27, 2022, https://developer.oculus.com/resources/design-accessible-vr/.

52. Andrea Stevenson Won, Jeremy N. Bailenson, and Jaron Lanier, "Homuncular Flexibility: The Human Ability to Inhabit Nonhuman Avatars." *Emerging trends in the social and behavioral sciences: an interdisciplinary, searchable, and linkable resource*, edited by Scott, Robert A., Stephen Michael Kosslyn, and Marlis Buchmann, John Wiley & Sons, Inc, 2015.

NETWORK INFRASTRUCTURE OF THE FUTURE

Andres Villalobos
Lead Software Engineer

One thing that excites me about the metaverse is all of the new network technology that needs to be created to make it work.

A metaverse should be open and accessible to everyone. You should be able to jump from one virtual world to the next with your friends to enjoy real-time experiences, and that should scale to millions, if not billions of users and businesses, on a different variety of technologies.

Considering the speed of current networks and concepts like latency, symmetrical bandwidth, immersive video streaming, video compression, edge computing, and real-time rendering, the current technology is not advanced enough. The exciting part is that we need to find alternatives: It's a call to explore, prototype, and experiment with new ideas and architectures. **It's time to reimagine the network infrastructure that will support a new era of communication.**

CLOUD VR

Adrian Soto
Director of
Immersive Technologies

I'm excited about Cloud VR because it will allow more high-fidelity VR applications to be run in smaller, more streamlined VR devices.

One of the biggest constraints of VR headsets right now is their graphics and processing power. In the past, when they were attached to a computer, the computer handled the processing, so we saw higher-quality graphics in VR apps.

But people naturally prefer the freedom of being untethered and moving without wires, and the tradeoff is lower-quality graphics because processing takes place in the headsets and consumes a lot of battery power.

This processing overhead also constrains design and creation. For example, it means that 3D assets and environments need to have lower polygon counts, resulting in jagged, less realistic graphics.

With Cloud VR, the processing power happens on a server computer located elsewhere, and the information is streamed via the internet or a local wireless network to the headset, so we can go back to more visually stunning VR apps.

Small polygon count

Medium polygon count

Large polygon count

Cloud VR frees up the headset to work as a visualizer and controller instead of a processor. It also means headsets will get smaller and less expensive. Google[53] and NVIDIA[54] already offer similar platforms, and NVIDIA has a solution dedicated exclusively to Cloud XR—which, of course, includes VR. 5G will add additional speed and flexibility.

53. Google Store, Stadia information page, accessed June 27, 2022, https://store.google.com/us/product/stadia?hl=en-US.

54. NVIDIA, "NVIDIA CLOUDXR," accessed June 27, 2022, https://www.nvidia.com/en-us/design-visualization/solutions/cloud-xr/.

HARDWARE AND 3D VISUALS

Diego Paut
3D Art Director

I'm looking forward to the new, more portable devices that will allow us to have more realistic interactions with virtual environments. These will give us the ability to use more interactive and immersive graphic styles. **For example, images will not simply be rendered (static); they'll be responsive to user interactions in real time, which makes for a more engaging simulation.**[55]

As Adrian said, current device constraints limit the polygon count of our 3D visuals. Technologies like Nanite[56] will help us create complex 3D environments and models with less resource control and file weight. Recreating physical spaces using photogrammetry and 3D scanning techniques brings us much more lifelike and immersive virtual worlds.

55. Kirill Tokarev, "Billy Lundevall: Creating Content for Megascans," *80 Level*, October 11, 2016, https://80.lv/articles/billy-lundevall-creating-content-for-megascans/.

56. Theodore McKenzie, "A Guide on Nanite by the Unreal Engine Team," *80 Level*, August 5, 2021, https://80.lv/articles/a-guide-on-nanite-by-the-unreal-engine-team/.

SEAMLESS MIXED REALITY

Danielle Silver
Solution Architect

As people jump from real to virtual worlds and back, the transition needs to be frictionless. For example, we don't want learners to have to log in or print out a QR code to scan in order to launch a VR or AR experience. **We need to map out an infrastructure strategy up front that allows learners to experience the metaverse without barriers.**

I see mixed reality (MR) as the XR environment of the future because it provides that seamless experience. Someone working on a task can view digital overlays of instructions, prompts, and videos through MR glasses while keeping their hands free—true point-of-need learning! As the technology becomes more accessible, I predict that MR use will explode and transform the way we learn and work.

WEBXR

JOSUE SOTO
XR Developer

Of all the XR tools, none is more exciting for me than WebXR.[57] **It allows us to access XR experiences through a web browser, offering portability and the promise of multiple platforms on one deployment with no app installations needed.**

Thanks to the power of WebGL, experiences can be easily accessed on desktop, handheld, and standalone devices through links or QR codes. Some WebXR features are still in development and not yet compatible with all web browsers, but there are plenty of use cases and possibilities on the horizon.

57. "Web XR," accessed June 27, 2022, https://immersiveweb.dev/.

TECHNOLOGIES TO ENRICH PRESENCE

Emily Dale
Learning Architect

Structure sensors allow us to "metaverse-ize" people, spaces, and things—that is, to bring them into a virtual world as creative or learning objects. They work by projecting an infrared pattern of dots onto the object/s in front of them as the camera uses that pattern to visualize the shape and distance of objects. While structure sensor hardware currently costs several hundred dollars, there are comparable equivalents in the app world. For instance, photogrammetry apps can use multiple photos taken from different angles to create a 3D digital image as the software stitches the photos together to create a 3D point cloud.

Volumetric video uses numerous cameras and sensors to bring moving objects and characters into a virtual world. For example, I might scan my friend as she's talking in my living room and bring her into the metaverse.

Olfactory stimuli are immediate, visceral, and memorable. Experiences leveraging "scent cues" date back centuries, but XR technology provides a new opportunity to add olfactory components to immersive learning, for example, in training "for high-stress jobs that contain highly unpleasant odors."[58] Adding scent cues will help us enjoy a greater sense of presence in a virtual world.

Wondering how folks with such a wide variety of interests, ideas, perspectives, and roles come together and consult with client-partners?

To paraphrase Stoic philosopher and emperor Marcus Aurelius, this variety doesn't stand in the way of a thriving L&D partnership: It becomes the way.

Jump to Section 5 to learn how the way looks, sounds, and feels—and how to choose the right partner to guide your journey.

SHOW ME HOW!

58. Saskia Wilson-Brown, "Smell Is All Around Us: History, Meaning, and (Immersive!) Applications for Scent," Handbook Of Research On The Global Impacts And Roles Of Immersive Media (Hershey, PA: IGI Global, 2020), pp. 109–122.

5

HELP ME FIND THE ONE

A CHECKLIST FOR CHOOSING AN XR AND IMMERSIVE LEARNING PARTNER

FINDING THE ONE

We're so glad you're feeling inspired by the learning opportunities in the metaverse and beyond.

Maybe you've discovered that your organization's learner and business needs point toward an immersive learning solution. Or maybe you've discovered that you're not quite ready to step into that digital river. Either way, congratulations on following your needs—and not the shiny object!

When you are ready to find your perfect-match immersive learning partner, there are a few key qualities to look for. We've created this checklist to help you recognize The One.

Continue on for the details!

- CONSULTS ON STRATEGY
- L&D FIRST
- TECHNOLOGY AGNOSTIC
- TEAM OF SPECIALISTS
- FOCUSES ON RESEARCH
- CARBON OFFSET

CAN CONSULT ON BROADER L&D AND BUSINESS STRATEGY

A partner isn't just for building cool stuff: They should be able to advise you on everything from hardware to change management to your learner and business needs.

One of your first meetings should include a level-set on all things XR (you'll recognize plenty of concepts from previous sections of this book!): the spectrum of immersion, available hardware, and video vs. CGI, to name a few. Bonus points for showing and telling: What better way to learn about avatars or **polygon counts** than to experience them live?

Your partner should be equally curious about you. Understanding your specific needs, use cases, learners, and work environments helps your partner guide you toward the optimal immersive learning experience for your needs. It also helps you imagine together how different teams **across your organization**—from legal to sales to building maintenance—might share and leverage 3D assets.

This beginning-to-end consulting is called **strategy mapping**, and it's the reason so many L&D leaders choose to work with a custom immersive learning provider. Think of it as an exchange of expertise—fueled by mutual trust, respect, and care.

Showing and telling in an immersive space like the SweetRush Treehouse is a great way to get acquainted with a prospective XR partner!

IS A LEARNING PARTNER FIRST

Immersive learning is exciting—and it's no surprise that everyone wants to jump in!

This enthusiasm means that plenty of companies focused solely on XR and content are expanding into the learning space and eager to partner with L&D leaders. But without a strong understanding of instructional design, learner experience, learning needs analysis, and your organization's learning strategy (See Consults on Strategy!), even the most talented XR partner is building on shaky ground.

Like any learning solution, immersive learning experiences should be built to meet the learning and performance objectives you identified in the needs analysis stage. Everything else—bells, whistles, cool features, Easter eggs—should grow from that foundation. It's great to have an XR partner who's excited to build an amazing experience with you—but they should also have the skills to survey your organization's existing learning landscape and sketch out its future.

How can they do all that? See Team of Specialists!

IS TECHNOLOGY AGNOSTIC

If your prospective partner is a hammer purveyor, they're bound to see your immersive learning need as a nail. That's not necessarily a bad thing: It might truly be a nail!

But your partner's immediate response to your needs shouldn't be "I have a great hammer for that!" It should be, "Let's figure out the tools you need—together."

A tale of two partners

Suppose you want to create a gamified experience in a metaverse.

Partner A is technology agnostic and uses a game engine, or software, to customize experiences for whichever metaverse best fits the clients' needs. In general, your 3D assets exist independently and can be leveraged outside the world of the metaverse.

Partner B uses a locked, proprietary content-creation tool to customize experiences for its own metaverse. Your 3D assets exist only inside the world of the metaverse and can't be leveraged or moved.

Partner A isn't tied to any specific technology or tool, so Partner A can offer more **value** and consistency. When you need to update your experience, it won't need to be rebuilt from the ground up: Partner A can update existing 3D assets to add new levels, sequels, and whole new experiences that have the same look and feel—and live in the same place.

Partner B *might* be able to do the same. If you're looking for more than a one-and-done experience, we recommend asking about their long-term plan. Will Partner B be able to support additions, updates, and new levels, sequels, or experiences? If you're not sure about their longevity, you risk developing disconnected, disjointed assets as you continue to build your portfolio and metaverse presence.

HAS A RANGE OF PROFESSIONALS AND CAPABILITIES ON THEIR TEAM

You've heard the not-so-kind saying about folks of all trades. We prefer to reframe it more generously: None of us can do our best work when we're spread too thin.

That's why we have differentiated roles within our organizations and teams—and your XR partner should have the same. This specialization gives them the flexibility to be learning developers whose art form happens to be XR rather than an XR vendor who ventures into every trade.

A prospective XR partner should bring the following specialists to the table:

- **Project and product managers** to manage the many moving parts that make up an immersive learning solution

The Vitally Important Project Manager (VIPM)

Whether this is your first immersive learning solution or your 50th, it's vital that you understand the development process. Your vendor-partner's project manager should share a detailed road map so that you feel confident in their organization, understand every step of the process, and know exactly how and when your team needs to participate.

- **Developers** to program and build experiences
- **3D technical artists** to create vivid, engaging visuals in your polygon level of choice
- **Instructional designers** to ensure that every facet of the immersive learning experience speaks to the learning need
- **A UI/UX professional** to ensure that the experience is usable, enjoyable, and accessible for all learners
- **A psychometrician**[59] if you're planning to conduct any assessments before, during, or after your immersive learning experience
- **QA reviewers** to ensure that every aspect of your immersive learning experience functions smoothly and meets the highest standards

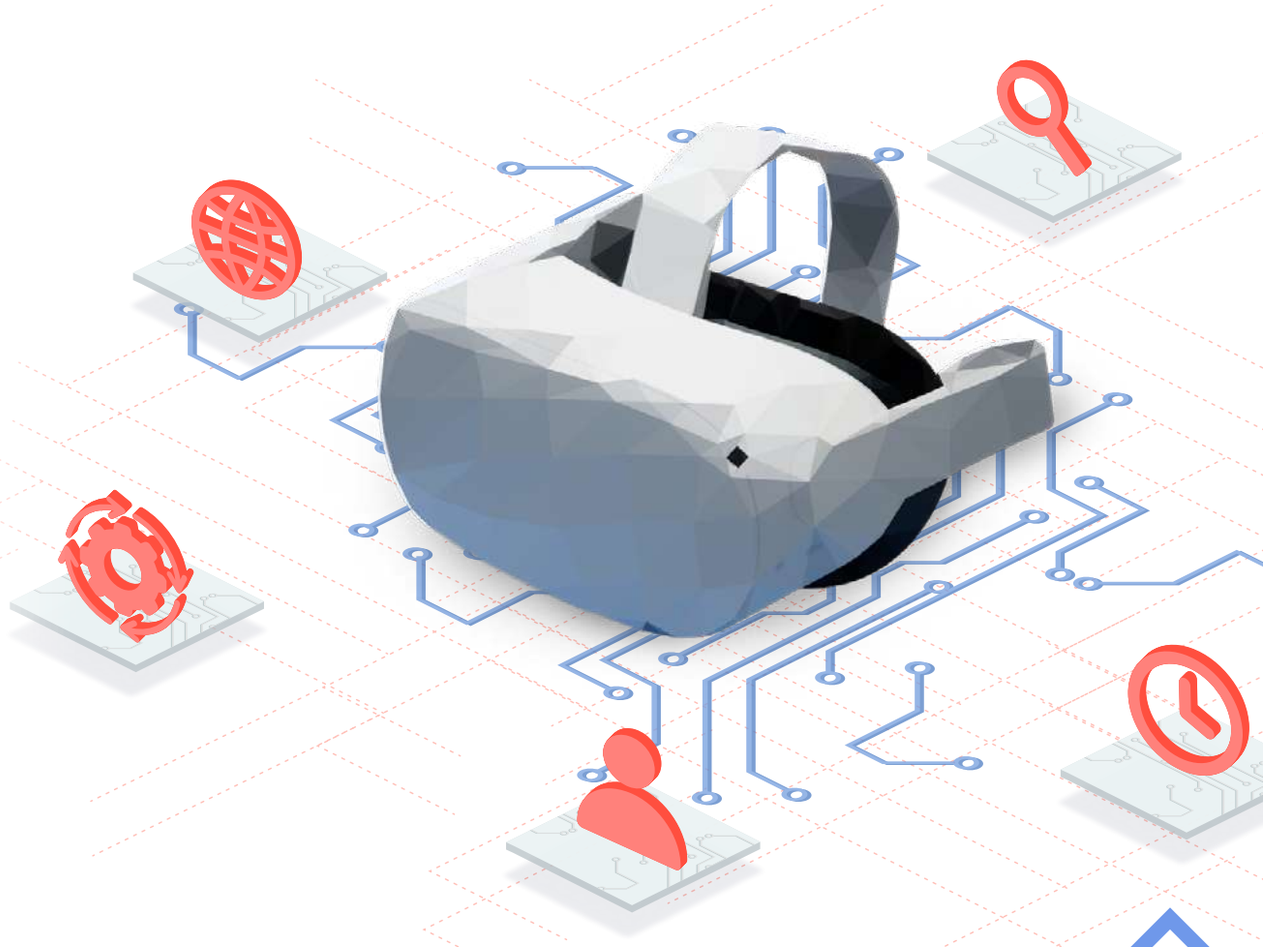
59. Tiffany Vojnovski, "Ask a Psychometrician, Part I: What's a Psychometrician?," SweetRush, April 19, 2022, https://www.sweetrush.com/ask-a-psychometrician-part-1/.

You may have found The One if the team's methodologies—needs analysis, design thinking, empathy interviewing, learner testing, and research—feel familiar. Immersive learning is exciting and different, but it starts with the tried-and-true practices that work for any blended learning program.

FOCUSES ON RESEARCH, DEVELOPMENT, AND THE FUTURE

Immersive technologies, tools, and functionality evolve quickly, and a prospective XR partner should have a sense of what's ahead—and a road map for the next five years. Once they share theirs with you, look for overlap with your L&D strategy.

Because they're a learning partner first and foremost, your XR superstar should also be curious about the effectiveness of the solutions they co-create. And because immersive environments are such a rich source of learner data, research and development should play a significant part in their vision. Bonus points if they conduct systematic, controlled tests of their immersive learning solutions.



OFFSETS THE CARBON FOOTPRINT OF THEIR PROJECTS

Immersive learning solutions can help cut costs on materials, venue space, travel, and plenty of other training-related costs.

As you've probably guessed, rendering those vibrant, realistic virtual spaces and bringing everyone together within them takes a lot of computing power—up to 1000 times the processing power of our current usage.[60]

Without an XR partner who thinks strategically about the global impact of their immersive learning solutions, it's easy to rack up energy-hungry features that take a toll on the planet.[61] **At our current level of climate urgency, a partner who knows how to build simply isn't enough—you need a partner who knows how to build sustainably.**

> **"Now is the time to build sustainability into the front end of virtual worlds rather than try to retrofit them after exponential growth."**
> —Nicola Morini Bianzino,
> EY Global Chief Technology Officer[62]

The sustainability conversation should begin with your first (virtual) handshake and account for the entire project journey. Every video call, email, attached file, text message, and user test leaves a footprint; the right partner will help you offset that footprint—and even leave the world better off.

Leaders such as Amazon, Microsoft, and Google have already started their journey toward carbon neutrality or negativity. But leaving renewal and regeneration in your wake doesn't take a giant: Our small but mighty team and community have been offsetting the carbon footprint of every project since April 2021. To date, the SweetRush team and our client-partners have joined forces to plant more than 900 trees in La Maestra, an ecological and educational haven in the Limón province of Costa Rica.[63]

60. Raja Koduri, "Powering the Metaverse," Intel, December 14, 2021, https://www.intel.com/content/www/us/en/newsroom/opinion/powering-metaverse.html.

61. Chaim Gartenberg, "Intel Thinks the Metaverse Will Need a Thousand-Fold Increase in Computing Capability," *The Verge*, December 15, 2021, https://www.theverge.com/2021/12/15/22836401/intel-metaverse-computing-capability-cpu-gpu-algorithms.

62. Nicola Morini Bianzino, "Metaverse: Could Creating a Virtual World Build a More Sustainable One?," EY, April 7, 2022, https://www.ey.com/en_fi/digital/metaverse-could-creating-a-virtual-world-build-a-more-sustainable-one.

63. Tiffany Vojnovski, "SweetRush Pioneers La Maestra, a Carbon-Neutral Reforestation Initiative," SweetRush, May 13, 2021, https://www.sweetrush.com/la-maestra-costa-rica-reforestation-initiative/.

The Giving Trees

Reforestation is our way of giving back, but La Maestra gives us even more. Meet the trees that bring food, shelter, shade, and knowledge to hundreds of amazing species—including humans.

Great learning experiences touch lives and create connections. The best learning experiences leave a legacy. We encourage you to find a partner who shares your passion for literally building a better world.

Whether you're exploring on your own, sharing information with stakeholders, or venturing forth to find your perfect vendor-partner, we hope you've enjoyed this journey. It's a reflection of the way we work at SweetRush: Meet as friends, work consultatively, frame the process and decisions that lie ahead and, above all, keep humans at the center.

We've loved having you with us on this whirlwind journey into the metaverse and beyond—and we hope you'll stay in touch! We'd love to continue the conversation about how to build immersive solutions that incorporate the connection, care, and collaboration every human needs.

As always, stay kind, stay curious, and stay in touch.

Warmly,

Tiffany Vojnovski

SweetRush Learning Evangelist

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Emily Dale

Learning Architect

SWEETRUSH | XR

LET US BE YOUR GUIDE TO THE FUTURE OF LEARNING

You're excited about the infinite possibilities for immersive learning—and **you're not exactly sure where to start**. We get it!

We love helping learning innovators like you **make an impact and introduce new, exciting, and effective ways to learn.**

Reach out anytime. Let's start creating the future of learning together.

Danielle Silver
Solution Architect
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Virtual Reality

Learning Design Strategy

Web-Based Virtual Reality

Immersive Technology Strategy and Consulting

Augmented Reality

Learning Game Design

Blended Solutions

Multi-Learner Capabilities

Multiplatform Development

Virtual Reality Instructor-Led Training

IN OUR CLIENTS' WORDS:

IMMERSIVE LEARNING SOLUTIONS

Amazing how SweetRush can quickly understand our business. *Right from the start the SweetRush team (yes, I said team) worked with us to develop an exciting Virtual Reality experience. Their ability to wrench on the creativity nerve was amazing. SweetRush's customer-centric approach is second to none, while flexibility and innovation exceeds expectations.* ***The result is a handsomely designed, impactful Virtual Reality solution. More projects to come.***

—Leading transportation and logistics company

They stay on top of the latest trends in their field, hire diverse talents, are very responsive to client needs/feedback, and they have the courage also to stand up for what they believe in. *It was a true joy to work with them as we would go through the ups and downs of our projects with a 'glass half full' attitude, making sure it was fun to do the work at the same time as we were really focused on a high-quality outcome. I would say I think SweetRush are* ***the best in their field****!*

—Fortune 500 consumer goods manufacturer

SweetRush's creativity, knowledge of instructional design, and capable team of experts are what make them an industry leader. ***Working with SweetRush*** *has taught me about creating innovative learning and it has been an enjoyable experience working with their dynamic and supportive teams. SweetRush are truly dedicated to understanding learners' needs, which has made a lasting impression on our organization.* ***SweetRush has exceeded my expectations in all areas of service,*** *instructional design, and technical capacity.*

—High-impact global foundation

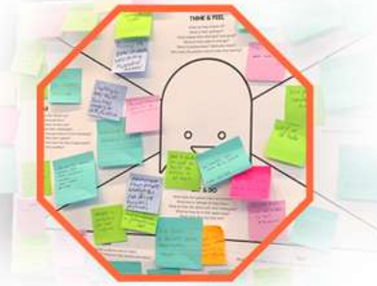
Empower Your People. Improve Performance. Make a Positive Impact.

WITH A COLLABORATIVE, INNOVATIVE PARTNER YOU CAN TRUST

SWEETRUSH®

CUSTOM LEARNING

Bespoke solutions designed to motivate, build skills, and change behavior. Give us the opportunity to show you why we're judged the best.



CODESIGN℠

High-impact, complex challenge? Talk to us about CoDesign, our design thinking process. (It's disruptive.)

GOOD THINGS

Nonprofits, we stand in awe of what you do. Let us show you how learning and communication can amplify your impact.

XR

VR, AR, immersive learning. A new world of opportunity. Curious? Confused? Let us be your guide and show you how these technologies can work for you.

TRANSFORMING LEADERS & CULTURE

Investing in our culture has been the secret to our success. Discover how we can help you create high-performing leaders and teams.

TALENT SOLUTIONS

Need temporary talent? We understand your needs and can quickly match you with the right L&D professional—because we do this work, too.

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It would make our day to hear from you.

GET IN TOUCH


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22 Gold!
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