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The Ultimate Skill Data Handbook

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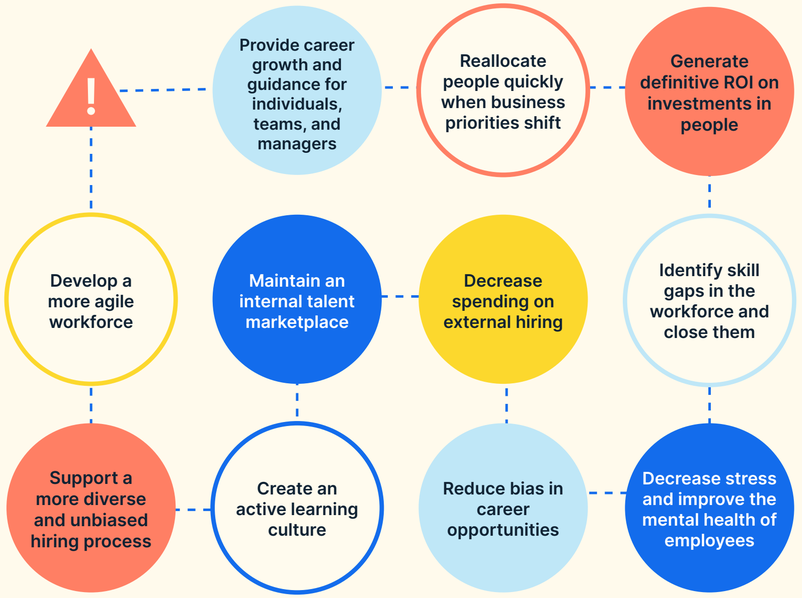
If you're like most HR, talent, and learning professionals, you're looking for new ways to be a business enabler, which means being more data-driven and strategic about people development. Organizations that prioritize data-driven decision-making are twice as likely to have significantly exceeded business goals.

Companies too often view corporate learning, talent, and HR technologies as an expense rather than an investment in growth. But that's an outdated narrative, and it's changing fast.

On top of their traditional responsibilities, people teams are now also expected to enable revenue growth and business agility throughout the employee experience. They're expected to:



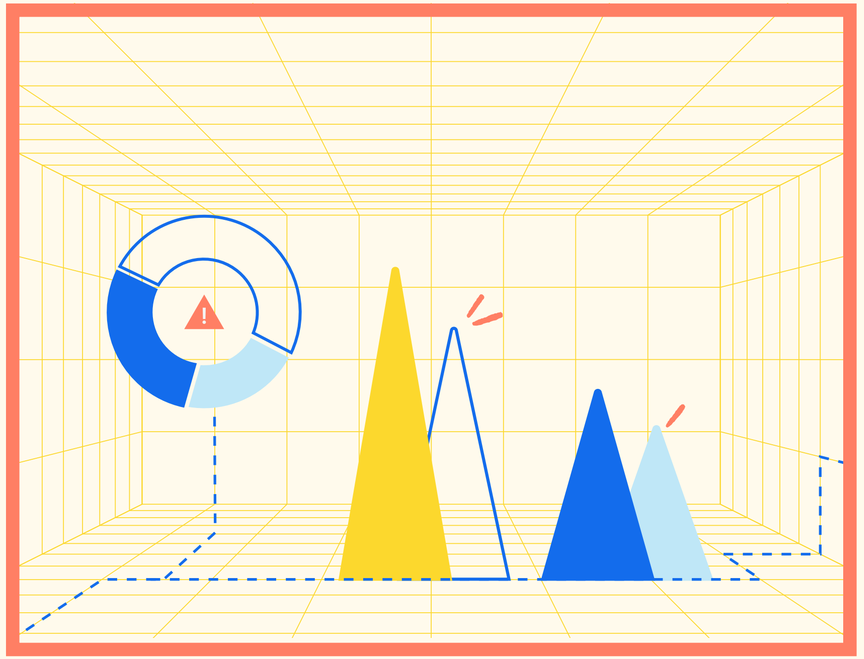
Managers are under more pressure than ever. Constant business disruptions brought on by the pandemic have executives looking to L&D and HR teams to keep their workforces agile and ahead of the competition — and to do more with less.

So how can you prepare your workforce for the future?
It starts with skill data.

Skill data can provide visibility into the supply and demand for your organization's skills. And it can help you align your workforce with your business imperatives, save money, and increase employee engagement.

But it's not simply about accessing data; it's about understanding your data sets to use them correctly, responsibly, and efficiently. So you can bridge the gap between learning and talent initiatives and organizational goals.

The field is still emerging — and evolving fast. We'd like to provide some clarity to help L&D and HR leaders make better informed investments with skill data. However, we know there are not yet common standards around this topic, so this guide also aims to provoke debate to advance the state of the art, which is not yet meeting the demands of 21st-century businesses. For those with something to add to the subject of skill data, we encourage feedback and welcome discussion.



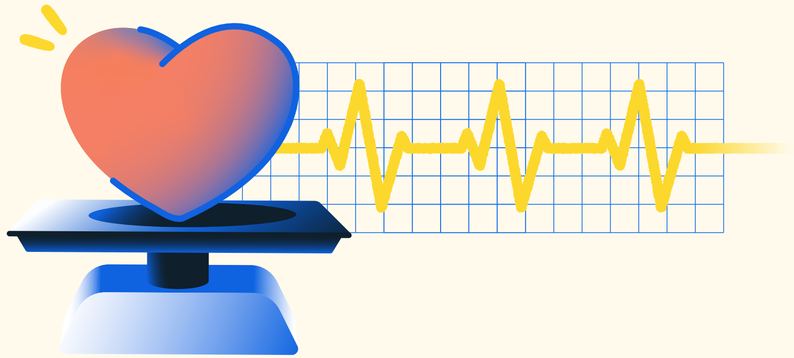
Right now, only 37% of companies consider themselves to be highly insight-driven, according to a recent study. Understanding and communicating your skill data needs will be the key to staying ahead of disruption and your competitors.

1. What is skill data?

Skill data is the measurement of what your people can do, ideally aligned with the work that your organization needs to get done.

We like to think of skill data like medical or health data. There are endless measures relevant to your physical health, from your smoking history to your injuries, cholesterol, and exercise habits. Depending on your goals, you can focus on tracking and improving different areas of your health. For example, losing weight and bodybuilding are two very different goals that will require different strategies and metrics.

Skill data can help assess the general health of your organization. It can help uncover your areas of weakness and point you towards the right steps to improve. Like health data, skill data can live in many different places, and is represented in all different ratings, scales, and variations. To put skill data to work assessing your organization holistically, you need to connect a variety of different sources.



Skill signal:

An indicator that a person has a skill, and in many cases, the skill level. Signals can include skill ratings, content consumption, results from third-party assessment tools, previous or current job descriptions, and more. These signals can help technology and administrators make inferences about all the skills you have and those you're building.

The most obvious, direct examples of skill data are skill assessments, skill ratings, and skill endorsements. However, other metrics can also be useful to identify and quantify skills. Degreed calls these skill signals and they can include:

Content data: What your people are consuming can tell you what areas they're focusing on. Are high performers all using similar content? What does the utilized content tell you about the skills being built? Maybe some content providers are extremely popular, and others are rarely used. Content data can tell you where to invest further or even which providers to cancel.

User data: This is data about the users — your people — and their work experience. It can be taken from learning profiles, resumes, third party networking sites, and applicant tracking systems (ATSs). Providing a retroactive view, it can offer visibility into people's past projects and hidden skill sets that wouldn't ordinarily surface in their daily work. Maybe one of your project managers has a graphic design background that she doesn't use in her current role but could make her an excellent fit for an upcoming campaign that needs help. User data can tell you that.

Activity data: This is mined from workers' daily behaviors, including platform logins, web searches, and content views. This data can help administrators make inferences about emerging skills that can help their business. Perhaps technical teams are learning a new programming language or the sales team is using a new tool.

Assessment data: Many systems can offer skill assessments, but the most intelligent systems will be able to help you identify which skills are changing. You'll know if a key skill is improving across your entire company or if a cluster of other skills is increasing within individual teams.

Much of this information you may currently have access to — because your people are already generating it. But to unlock the real power of this data, you'll need to collect, organize, analyze, and use it.

2. Where does skill data come from?

Here's the short answer: everywhere.

The long answer: Anywhere your people interact or input information can be a source of data on their abilities and experiences. This is both good and bad.

Let's go back to the health example. People are generating all kinds of health data every hour of every day. The challenge is aggregating all of that data and making sense of it so individuals can view their health profiles holistically, identify warning signs, and reach their goals. Skill data has the same challenge.

Many vendors and organizations start with skill data from a human capital management system (HCM). At Degreed, we think of HCMs like doctors. You might visit your doctor several times each year but certainly not every day. And while doctors measure your height, weight, family history, vital signs, and acute health issues, they don't know the specifics of your daily diet, sleep, or exercise routine. What your doctor sees is important, but it's not the entire story.

Now think of all the data created between your doctor visits. A smart watch can tell you about your sleep patterns, calories burned, heart rate, and daily steps. Your browser search history knows what recipes you're downloading. Your financial statements show what food you buy. Dieting apps capture information about your daily nutritional intake, and personal trainers know how you're training for that upcoming marathon. That's a lot of data, in a lot of different systems.

If the HCM system is like a doctor, all the other systems your people interact with are the learning version of smart watches or workout coaches. Find some examples of these systems aligned to the employee lifecycle on the next page.

No single system can supply all the necessary, accurate, and unbiased data you need to make decisions about your workforce. And in the age of APIs, you don't need to limit your company to one system. The most agile companies use all of these platforms together by synchronizing skill data for analysis.

Skill Data Collected Throughout the Employee Lifecycle

ATS

Applicants submit resumes. But only 21% of workers say their profiles are up-to-date with their skills.

HCM

HCM systems collect skill data from new hires. But only 20-25% of workers fill out their company's talent profile.

Performance Reviews

Weaknesses, achievements, guidance, and qualitative feedback. But 61% of employees don't get regular feedback on their skills.

Content Platforms

Platforms such as Coursera or Pluralsight show course completions, searches, and emerging skills.

New Growth Opportunities

Workforce technology can identify opportunities for workers to use their new skills or their old skills in new capacities. Internal gigs, mentorships, stretch assignments, or full time roles.

Onboard | **Engage** | **Upskill** | **Develop** | **Reskill** | **Accelerate** | **Extend**

Behavioral Assessments

Soft skill assessment, learning personas, etc.

LXP

Your people's focus skills, skill ratings, social sharing, and mentorships.

LMS

Learning data, content people are finding and sharing, compliance, etc.

Assessment Tools

This can include credentials, badges, skill assessments, and they can help establish a baseline of your org's skills. But 40% of workers do tasks outside their main job descriptions, and likely won't rate those skills.

The Employee Lifecycle

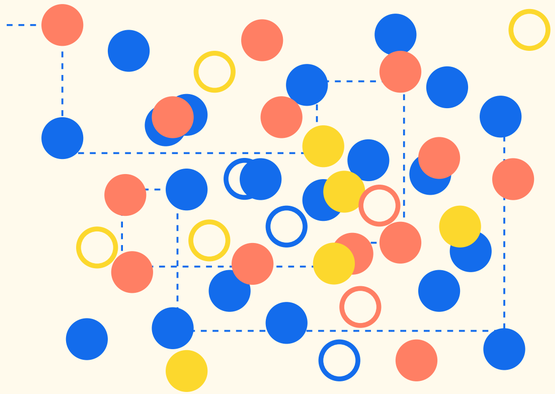
Systems That Capture and Use Skill Data

Source: Degreed, *The State of Skills 2021*

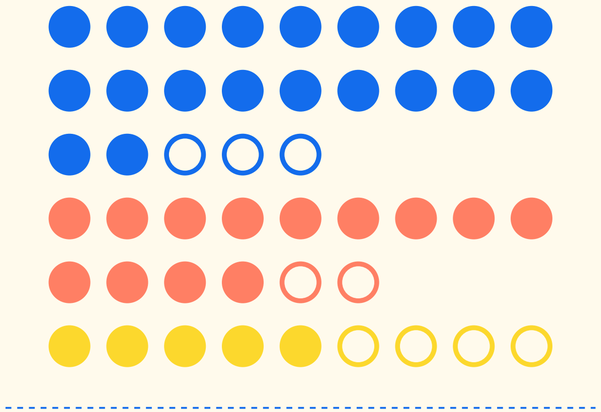
3. Good vs. bad skill data

Just like other data sets, not all skill data can be trusted equally.

While good skill data can help you make smart decisions, bad skill data can lead you to inaccurate assumptions. Reliable data starts with validity, but it can also require other attributes, like volume and freshness.



Bad data



Good data

Validity

Your data's validity is contingent on your sources and the methods used to generate it. Is your information directly verified, reviewed, or certified? Perhaps it's inferred or pulled in from other systems. Are those systems trustworthy? By asking these questions, you can begin to account for bias and trust. For each source, there are a few nuances to consider.

- **Ratings:** Ratings offer a lot of data very quickly, making them an ideal starting point. They take only seconds to complete; your people simply rate themselves numerically on a scale for each skill. Though as a self-report measure, they can include some bias.
- **Assessments:** Assessments bring a level of objectivity because they're rooted in demonstrable ability. They're more reliable but take longer to complete, like a test. With assessments, think about the tools you're using and how they speak to each other (or don't). Different types of ratings with different terminology will only muddy your data.
- **Inferences:** We can now go beyond rated or tested ability to all the data points within a professional career. Inferences are taken from skill signals and offer more insight into peripheral skills that workers might not choose to assess or rate. A new email marketer just joined the team and only chose to assess skills pertaining to her role. She didn't mention her Salesforce skills, but these can be discovered from inferences.

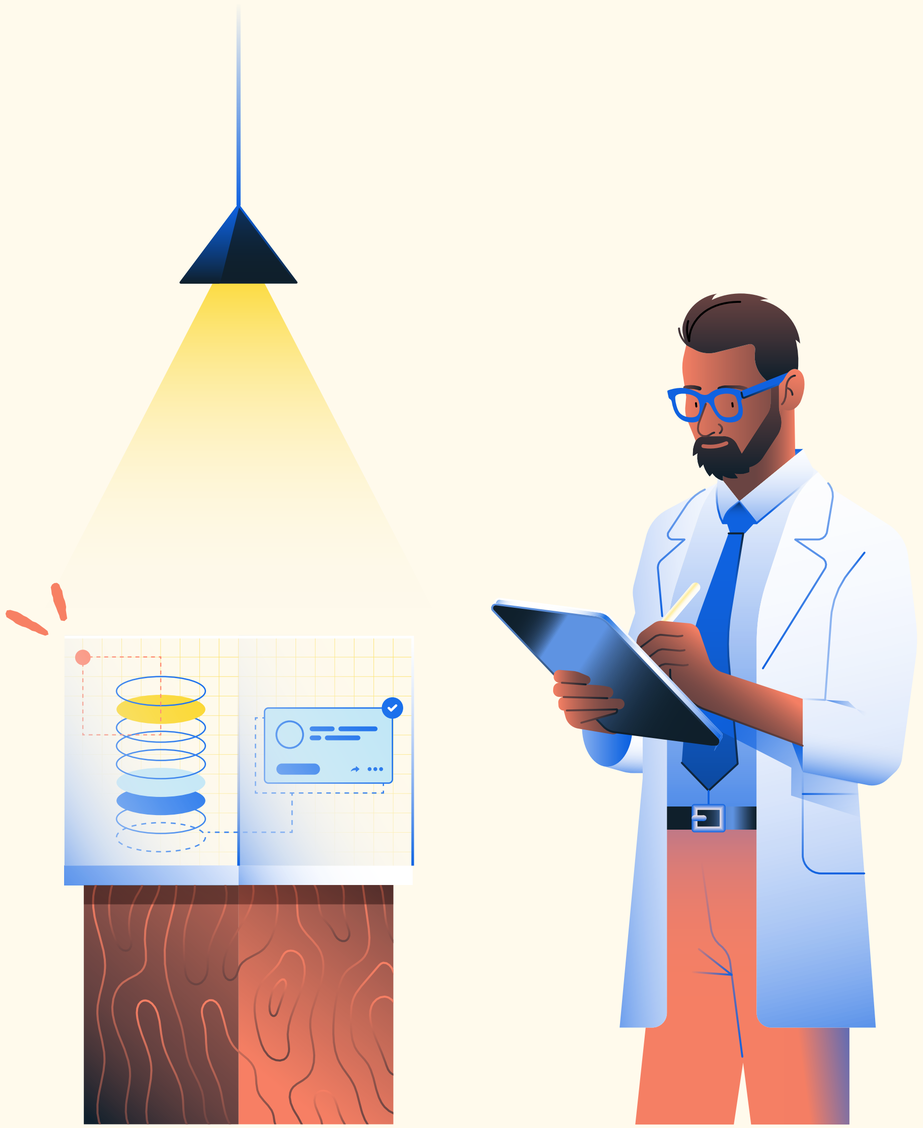
Volume

Sparse data can be misleading. For example, if your workforce has 1,900 people and you see 160 data points that show excellence in a particular area, you're likely to assume your workforce is strong in that field. But the remaining 1,740 people may have very low proficiency in that area, and your organization could be missing a crucial growth opportunity.

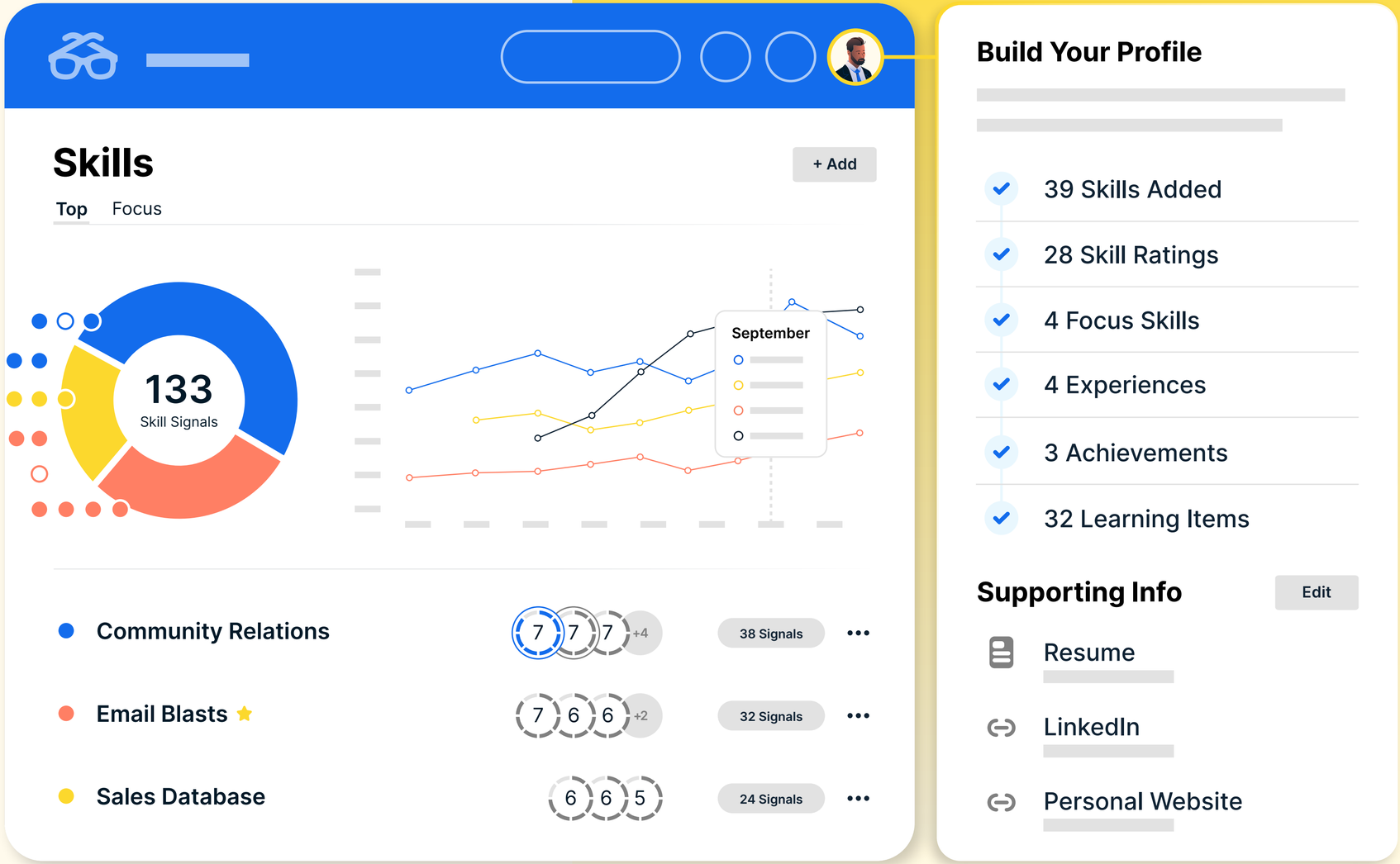
- **Diversity:** The more metrics you track, the more comprehensive your view of your organization will be. With a wide-angle lens, you can identify patterns and create early warning systems that alert you to disruption. In other words, you can detect small ripples before they become disruptive waves.

Freshness

Is your data updating as quickly as your people's skills are? Their abilities can change by the month, week, or even day. Fresh data comes from constant workforce engagement. So if you're not capturing data from systems your people use regularly, your data may be inaccurate or out of date.



At Degreed, we incorporated validity, volume, and freshness into our upskilling platform design. We collect diverse information from a range of sources to help build a real time view of workforce capabilities.



4. Where should skill data be stored?

Traditionally, organizations have used two main sources as the system of record for skills: learning management systems (LMS) and human resource information systems (HRIS) or their cousins, human capital management systems (HCM).

The LMS, of course, has long been used as the system of record for learning. With access to employee names, course titles, completion dates, assessments, and certifications, an LMS can store reliable reports. And many include a basic, static list (or taxonomy) of skills that can be used to tag content and people. However, these lists are limited in how they can impact the business.

HRIS and HCM systems are designed to manage critical administrative HR functions like payroll, benefits administration, time and attendance — and in some cases, performance management and compliance training. That means that employees are likely interacting with HRIS and HCM systems very infrequently — like doctor visits — and that limited engagement means limited data.

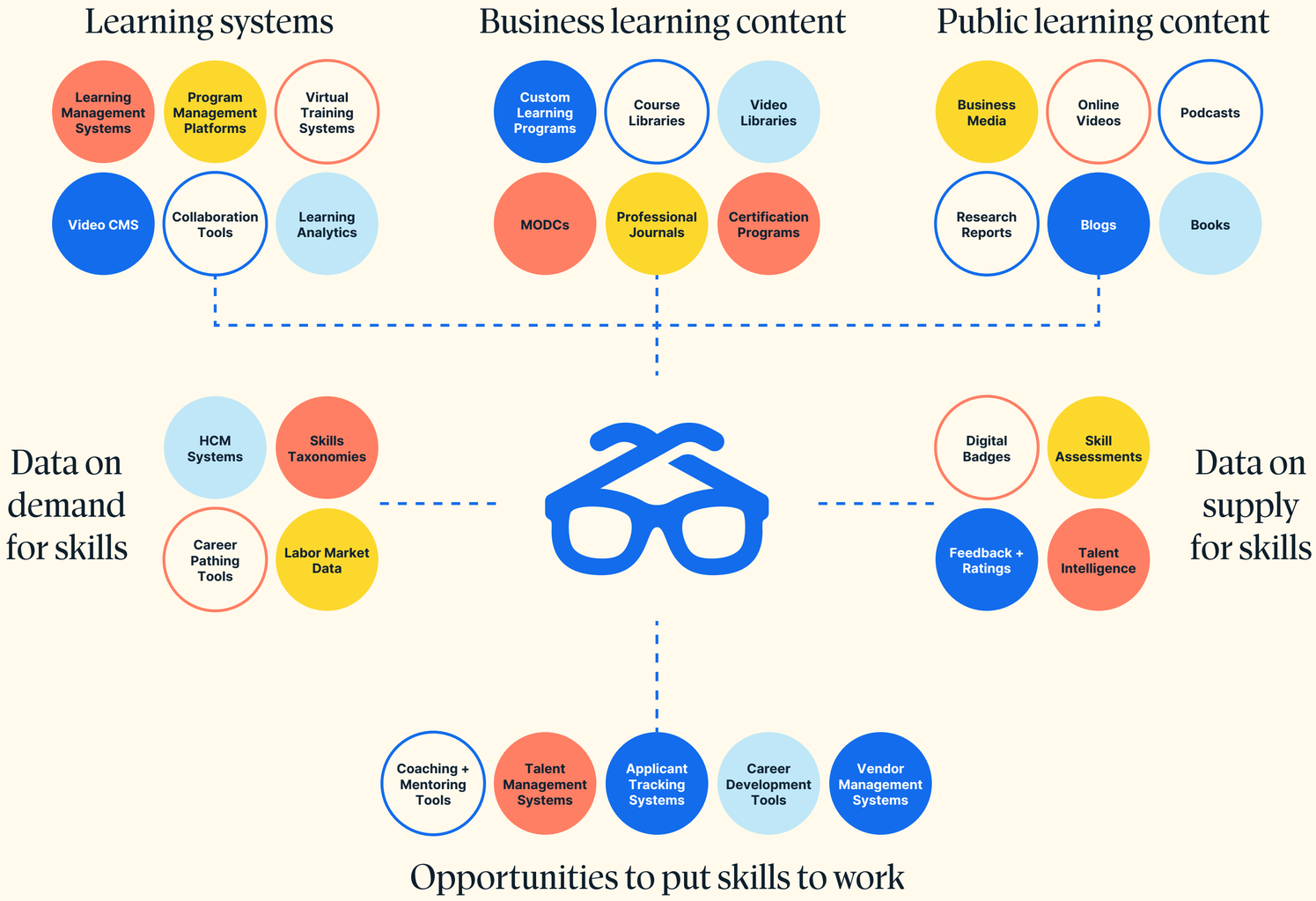
For a comprehensive view of dynamic skill data, this question of storage becomes more complicated. The answer requires constant user engagement, a diversity of data, and actionable insights. Right now, there is no universal system of record for skills. Skill data can look entirely different between and across systems, vendors, and partners; they all have their own labels and definitions for skills.

Imagine trying to integrate and manage all that disparate data in a single system. If your system of record even allows it (few do), it would be duplicative, messy, inconsistent, and noisy.

And for that reason, a single system of record for skills — one definitive system for all your skill data — wouldn't be useful. That's why it doesn't exist.

Instead, innovative organizations are beginning to use more open systems that integrate (or better yet, translate and synchronize) skill data from various systems. And in doing so, they're distilling that data into a structured, common language that's readily accessed for analysis, even in a different talent or business analytics tool. This creates a living, evolving map of the relationships between different representations of skills across platforms and systems.

What matters most, then, is not a single centralized system, but an intelligent, integrated ecosystem that can access as well as enrich any of the different systems where skill data is stored and used. Let's look at how Degreed is able to do that:



5. How can skill data be used?

You can use skill data to develop future skills, find growth opportunities, identify organizational strengths and risks, and more.

To begin using skill data, start first with your personal, team, or organizational goals. Think again about physical health goals: Are you trying to lose weight or gain muscle? Run a marathon or rehabilitate your knee? Lower your cholesterol or increase your endurance? All of these goals will require different (sometimes opposing) metrics and strategies.

When you identify your goals, you can begin finding and tracking the metrics that matter to you. And skill data is not just valuable to HR teams; it can be useful to individuals, managers, and business leaders, too.

HR teams

In a recent Gartner survey of learning and development leaders, 71% said that more than 40% of their workforce has needed to develop new skills since the start of COVID-19. These types of workforce disruptions will continue to cause massive shifts in required skills. HR teams can stay on top of disruption — and be ready to seize new business opportunities — by monitoring early signs of changes in skill data. As an HR leader, you can:

- Identify areas with changing priorities and therefore shifting skill sets
- Distill roles and projects into skills and outcomes to increase agility and collaboration
- Provide personalized upskilling based on individual interests and goals
- Create an internal talent marketplace to enable career mobility

Individuals

Individuals won't use tools voluntarily unless they gain something in return (think Instagram/social validation, Netflix/entertainment, or workout apps/feedback). And individual engagement is the key to gathering data. So what do individuals get from using, generating, and accessing their skill data? They can:

- Identify the skills they want or need to develop in the future
- Demonstrate their growth
- Discover new and relevant content
- Find mentors or subject matter experts in areas they want to grow
- Find internal opportunities like new projects, internal gigs, or even full-time roles

Managers

Managers are one of the most critical links connecting the workforce to business priorities. And yet Degreed and Harvard Business Publishing research found that 61% of workers want more guidance on aligning learning opportunities with their skill gaps, and 45% of them look to their managers for that guidance. So with skill data, managers can:

- Identify high performers and those with potential
- Connect teammates who have similar or complementary skill sets
- Help their direct reports identify growth opportunities, increasing engagement
- Assign projects to appropriate team members based on skill profiles
- Find the right internal (or external) candidates for open roles on their teams

Business leaders

Business and function leaders are usually aware of revenue goals and organizational transformation efforts. But far fewer know how those goals translate to the skills your organization has or those it needs. With visibility into the supply and demand for skills concerning the work your business needs to get done, business leaders can:

- Build innovative and creative strategic workforce plans aligned to business opportunities
- Identify the best avenues for accomplishing projects between employees, contractors, gig workers, partners and vendors, volunteers, robots, and software
- Increase organizational agility and adaptability through workforce redeployment plans
- Stay competitive by cross-referencing labor market data to spot emerging trends

6. Differentiating skill technology

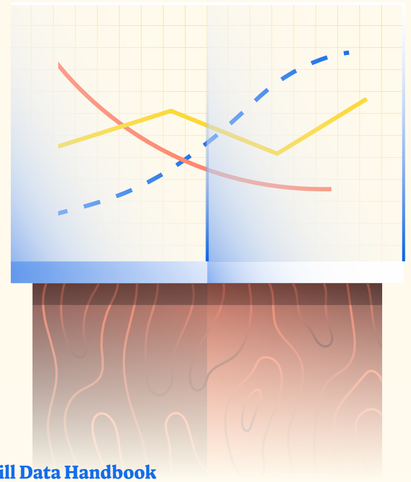
There's a lot at stake when selecting upskilling technology for your organization. The three primary functions of a dynamic skills management platform are generating, managing, and analyzing your skill data. Some platforms do these well — but others do them even better.

Generate data

Understand the skills we have and the ones we need.

Good - Using AI to infer skills based on internal and external data sets

Better - Keeping skill data up-to-date through user engagement and integrations

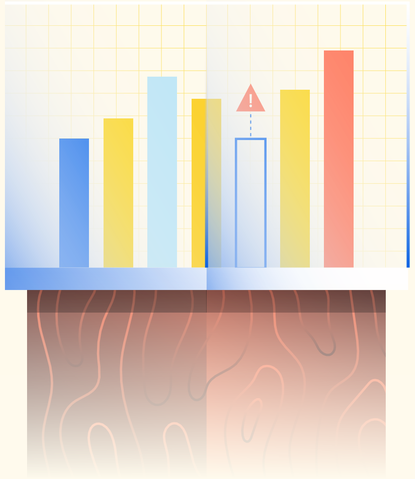


Analyze data

Inform decisions and enable action based on skills.

Good - Creating insights into the supply of existing skills to inform HR decisions

Better - Exposing demand for skills and enabling individuals, managers, and business leaders to take action

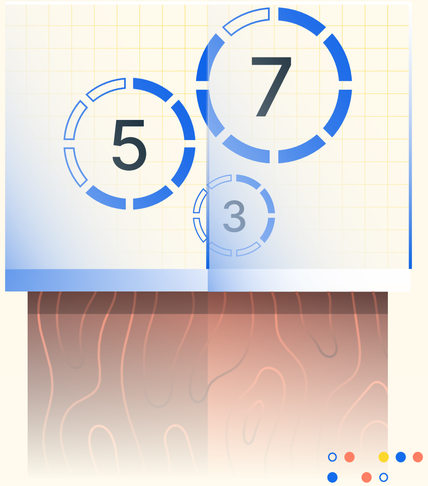


Manage data

Connect skills to work, people, content, and other skills.

Good - Organizing and connecting skill data within a single HR system

Better - Synchronizing and exchanging skill data across all relevant HR and business systems



What next?

Choosing and implementing the right upskilling technology for your organization will be the key to effectively using your workforce skill data. But according to Deloitte, creating a data-driven culture is even more important than buying the right tools or finding the best talent.

Right now, only 37% of companies rated themselves highly on “insight driven maturity”, according to a recent study. Understanding and communicating your skill data needs will be the key to staying ahead of disruption and your competitors.

Learn more about how Degreed can help you understand, build, and activate the skills your workforce needs next.

Visit us at explore.degreed.com or contact your Degreed representative today.

Skill Data Glossary

Skill Data Basics

API

Definition: An intermediary between two or more systems to communicate with one another.

Why it matters: An open upskilling platform that works with APIs can share and consume skills, skill ratings, and skill data from any other platform that also has the necessary APIs. Skill data from APIs is typically used to keep a user's profile in sync with other enterprise applications or communicate your skills across your organization.

Skill Model

Definition: A process that takes a set of inputs (data) and makes predictions about a user's future behavior based on a historical dataset of similar users.

Why it matters: Sophisticated skill models — utilizing data algorithms — can identify relevant and personalized content, recommend new skills to learn, find subject matter experts to follow, and more. These models will be most helpful when they have access to large amounts of data. This means that the more engaging your upskilling platform is, the more data it will acquire and the better it will perform.

Data science

Definition: A variety of scientific methods used to find insights from large amounts of structured and unstructured data. It's dedicated to collecting, storing, and analyzing information about people, machines, and the wider world.

Why it matters: Data science is about enabling companies to make key strategic decisions based on informed analysis. It defines and trains skill models which upskilling platforms use to personalize content and experiences for users.

Artificial intelligence

Definition: Software sophisticated enough to replicate the abilities of humans. AI is how machines learn from experience, adjust to new inputs, and complete tasks.

Why it matters: Sophisticated systems can use skill models and data science to continue personalizing the learning experience through artificial intelligence. It can do things such as auto-populate learning plans or suggest internal candidates for open positions or projects.

Machine learning

Definition: Machine learning is a subset of artificial intelligence. It can leverage data to identify patterns and make decisions with little or no human intervention.

Why it matters: An upskilling solution that uses machine learning will be able to provide better content recommendations but also help identify emerging skill sets your workforce needs, find skill gaps, and indicate weaknesses to focus on.

Skill Data

Definition: A data point that relates to the capability, demonstration, or definition of a skill. In short, skill data is the measurement of what your people can do.

Why it matters: Skill data has many different facets that can be used to make informed business decisions. It can include a skill, its definition, assessments measuring the skill, ratings of the skill, or the relationships between these data points. This can inform business, hiring, performance, and talent strategies and enable more precisely targeted investments in recruiting, workforce planning, capacity management, and change management.

Organizing Skills

Skill Taxonomy

Definition: A hierarchical system of classification that can categorize and organize skills. Unlike a skills graph or skills ontology, a taxonomy is more structured and almost linear in its format and typically includes definitions.

Why it matters: This can help people understand the skills they have, how they relate to organizational needs, and what they should learn next. It can also show what skills are included in other skills.

Skill Ontology

Definition: A set of skills and relations.

Why it matters: A skill ontology allows organizations to define and measure relationships between skills. It helps create a common language and understanding of skills across a variety of different dimensions. For example, across individuals, teams, and companies, the definition and terminology used to describe a UX designer will vary. A skill ontology is able to aggregate all of that data and recognize that different systems are talking about the same entities and build relationships between them.

Skill Graph

Definition: A visual representation of a skills ontology, a skill graph highlights skills, their relationships, and distance between one another.

Why it matters: Understanding how different skills are related to one another can inform how artificial intelligence and models offer upskilling opportunities.

Skill Cloud/Skill Inventory/Skill Registry

Definition: An inventory of skills across organizations that includes all known skill terms. It's the data set that's used to evaluate skills to have in organizational skill lists, ontologies, or taxonomies.

Why it matters: A skill cloud helps organize and standardize skills across an organization, but a skill cloud alone does not make these skills actionable.

Skills I/O

Definition: Degreed's Skills I/O can manage skills during their lifecycle. You can use the Skills I/O to build taxonomies, manage multiple skills sources, and your organization's skills.

Why it matters: Whereas taxonomies, ontologies, and graphs help us understand and organize skills, our Skills I/O can put those concepts into practice.

Managing Skill Data

Skill Analytics

Definition: Deriving meaning from collected skill data.

Why it matters: Analytics can help you identify patterns, trends, strengths, weaknesses, and other significant indicators to raise awareness about the larger organization and your people.

Insights

Definition: Inference or prediction of what comes next based on the analysis of data.

Why it matters: Data itself cannot tell you how to make improvements to your existing processes. It's the way you interpret your data, apply it to your business, and allow those patterns and indicators to preempt new challenges, opportunities, and needs in your workforce.

Reporting

Definition: The process of gathering and presenting an accurate analysis of the data collected.

Why it matters: Gathering, analyzing, and pulling insights from data will not make it actionable. Learning to report and present your findings in accessible ways will allow you to communicate the importance of the changes you wish to establish.

Skill Data integration

Definition: The communication of tools that produce or store skill data, including HCM systems and skill assessment tools.

Why it matters: Skill data integration will allow for a more comprehensive and accurate view of individual and organizational skill levels by pulling skill data from systems in the flow of work. It will also enable "skill signals" for a user, offering a richer picture of their skill level.

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