Recommendations and Guidance to Develop a More Inclusive Talent Marketplace Through U.S. Chamber of Commerce Foundation Initiatives

A Companion Paper to *Building a More Inclusive Talent Marketplace: Increasing Opportunity Through Community and Business-Led Initiatives*

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Introduction

The U.S. Chamber of Commerce Foundation's (Chamber Foundation) Center for Education and Workforce works to tackle the most pressing education and workforce issues facing America and mobilizes the business community to be more engaged partners, challenge the status quo, and move education and workforce initiatives forward to fuel economic success. The Chamber Foundation is invested in improving outcomes for all learners and workers and ensuring that America has a skilled workforce that aligns and keeps pace with the evolving needs of the talent marketplace. This companion paper accompanies a report published in September 2020, "Building a More Inclusive Talent Marketplace: Increasing Opportunity Through Community and Business-Led Initiatives"[1] (the report), which introduces Chamber Foundation initiatives and how they might reach opportunity populations and the community-based organizations and nonprofits that serve them. The report discusses barriers to education, employment, and career advancement that opportunity populations face and presents a design approach for addressing these barriers, supplemented by use cases and recommendations across technology, partnership, processes, and governance. The proposed conceptual groundwork, if adopted, should turn ecosystem openness toward collaboration. The approach emphasizes a more user- and outcomes-focused holistic attitude toward technology. The framework is intended to foster buy-in, create new exemplars, and promote a more equitable, skills-based future.

The recommendations and guidance outlined in this paper are intended exclusively for the audience of the Chamber Foundation and the Annie E. Casey Foundation as well as consultants working on the T3 Innovation Network (T3 Network) and Job Data Exchange (JDX) initiatives. Additionally, the "TPM Resource Guide: Connecting Opportunity Population Talent to Better Career Pathways" could be used in conjunction with this paper's recommendation. The recommendations and guidance in this report dives deeper into avenues to orient the Chamber Foundation's initiatives toward opportunity population outcomes. The information in this paper is intended for a more technical audience with a deeper knowledge of the Chamber Foundation's workforce initiatives. This report outlines three cross-initiative ideas: increase opportunity population representation in the initiatives, concentrate on testing value propositions and usability, and encourage outcomes measurement. These can be actualized while creating community and guidance around JDX and continuing into the T3 Innovation Network's third phase of work (a network of networks) with an eye to impact across the focus areas, including a study of learning and employment record (LER) adoption and implications. These recommendations should be treated as hypotheses to be tested in practice. We hope these developments will inspire fresh features, updates, guidance, resources, and/or tools for the broader community and the talent marketplace.

1 U.S. Chamber of Commerce Foundation, "Building a More Inclusive Talent Marketplace: Increasing Opportunity Through Community and Business-Led Initiatives," September 2020, https://www.uschamberfoundation.org/reports/building-more-inclusive-talent-marketplace-increasing-opportunity-through-community-and.

Increase Opportunity Population Representation in the Initiatives

The Chamber Foundation's current approach for JDX and the T3 Network is technology-centric in order to stir innovation and provide crucial tools and infrastructure. The Chamber Foundation's initiatives have achieved much success, including but not limited to: unprecedented progress on standards mapping; a deep exploration of the state of competency storage, ownership, and interchange; an improved way of documenting and utilizing employment and earnings data; and developing a public specification for a digital wallet for self-sovereign management of LERs for other organizations, to review, pilot, and adopt as needed. While the work is ongoing, many infrastructure barriers have been alleviated to focus on prioritizing the perspective of learners and workers. It is crucial that end users and their representatives have a seat at the table in order to transition beyond the loud voices of an institutionally-heavy group. Learners and workers have the quietest voice in the talent marketplace that is mirrored, not remedied, in the JDX and T3 Network initiatives. As described in the main report, limited representation of opportunity populations is a compounding impediment.

Future JDX and T3 Network governance should include end user representation in the decision-making process, design process, and in orienting scopes of work around outcomes as opposed to technology-specific milestones. We would strongly encourage representatives from organizations serving opportunity populations to be present, consulted, and properly weighted in consideration of what adoption is necessary to improve the education and workforce ecosystem. Organizations and nonprofits serving opportunity populations could constitute a work group along with work groups for employers; education, training and credentialing providers; and workforce agencies and intermediaries. The interviewees for the report demonstrated the kind of commitment and incentive alignment necessary to advocate for the predominantly unheard concerns of the end users. Increased representation of opportunity populations can also provide invaluable support for the creation of collateral for end users, provide quality assurance and user testing support, and supply a consistent sounding board on the value proposition intended for learners and workers. These changes would represent a significant shift towards accountability, value, and impact for opportunity populations.

Test Value Proposition and Use

With both JDX and the T3 Network innovations, identifying key stakeholder pain points, creating proofs of concept around stakeholder pain points, and delivering value to the end user through a rapid iteration process is likely to improve stakeholder engagement through a value hook that pulls stakeholders into the broader vision and creates champions—especially for community-based organizations serving opportunity populations. Participants across initiatives that were interviewed for the report noted that the resources and presentations are often too technical, abstract, or not quite relatable, even though they understand there is value therein. Building on the tenets of agile practices, we recommend that the Chamber Foundation and consultants identify active pain points of key stakeholders, develop minimally viable use cases with lower initial investments required, and confirm the value proposition and usability aspects as early as possible. To clarify, some of the proofs of concept may not implement technology. Proofs of concept should act as cheap tests, be quickly created, and not likely to scale as-implemented but allow for several ideas to be tested, altered, and re-tested. Then more robust, scalable implementations of the technical innovations available can follow with less risk of missing the mark.

What follows are recommendations and guidance for the JDX and T3 Network initiatives that conclude with the third cross-initiative idea of encouraging outcomes measurement of workforce initiatives, which include opportunity populations.

Create Community and Guidance Around the Job Data Exchange

Create Community

The JDX JobSchema+ open data standard helps create and/or modify job postings to include data elements that provide more structured data about jobs, such as the job location, work hours, skills requirements, and citizenship requirements, among other data elements. By engaging stakeholder organizations in the development of a job data standard and conducting ongoing user testing, the JDX JobSchema+ could benefit opportunity populations by providing better, more detailed information about job openings that would be amenable to employers and their human resources (HR) departments/vendors to adopt and implement in their hiring processes. Interviewees for the report noted that community-based organizations serving opportunity populations were eager to engage with employers and educational institutions to develop competency-based job requirements that include practical, tactical details about what it would take to succeed in the position. However, the interviewees also expressed uncertainty about employers' willingness and incentives to be forthcoming about job details that may seem less appealing, or on-brand, but remain relevant for job seekers. The employers that participated in the JDX pilot expressed a desire to improve their ability to attract applicants, find more qualified applicants, accelerate their time to hire, accelerate time to productivity, and retain employees—which align with the findings of the "Hiring in the Modern Talent Marketplace"[2] report. Only employers already collaborating with multiple partners through employer collaboratives, as part of the Talent Pipeline Management (TPM) initiative, recognized how JDX's value to improve employer signaling for in-demand jobs was connected to improved employer hiring processes. While a majority of JDX employer partners produced an improved job description during the pilot and were keen to use JDX, they found the initiative's vision and value unclear.[3]

It would therefore be useful to establish a community of practice to accentuate JDX's utility. Resources on a future JDX Resource Hub should include at least four major components: 1) an engaging, quickly-digestible brief on the JDX value proposition for various stakeholders; 2) guidance for employers and HRIS/ATS vendors to integrate JDX tools and resources in their existing workflows; 3) guidance for community-based organizations and nonprofits serving opportunity populations in catalyzing and supporting JDX implementations; and 4) guidance for jobseekers encountering JDX job postings. This information is necessary to creating a JDX community and additional user research should inform how a future JDX Resource Hub should be organized and delivered to stakeholders.

2 U.S. Chamber of Commerce Foundation, "Hiring in the Modern Talent Marketplace," U.S. Chamber of Commerce, February 4, 2020, https://www.uschamberfoundation.org/reports/hiring-modern-talent-marketplace.

3 U.S. Chamber of Commerce Foundation, "JDX Executive Summary," February 2020, https://www.uschamberfoundation.org/sites/default/files/JDX_Evaluation_February%202020.pdf.

The creation of a JDX value proposition brief is self-explanatory and is essential to get buy-in from employers and decision makers. As for the second component, guidance for JDX system integration would need to entail interdepartmental, multiple-leadership-level coordination—including early conversations with HRIS/ATS vendors—to transform current and future job postings and descriptions using JDX resources and tools. Treating JDX as an isolated technology upgrade is unlikely to produce impactful results. Employers piloting JDX indicated that the process sparked new conversations and process shifts. Time, flexibility, and thoughtful review are thus essential when determining the organization and data aspects of a job posting for an open position.

Additionally, guidance on JDX system integration would need to outline all the modular elements of hiring processes: types of HRIS'/ATS', skills and input analysis tools and algorithms, sources of skills data (i.e., skills libraries and the Open Competency Framework Collaborative), connections to distribution channels for finished job descriptions, and connections to data collaboratives or other repositories for finished job descriptions in a structured JDX format. This guidance should also address the meaning of each data property and recommendations for the user interface to help provide users of JDX with cues to insert information most useful to the jobseekers (e.g., opportunity populations) based on research findings. Interviewees for the report noted the need to avoid vague postings, focus on right-sizing skills and credentials, and include pertinent information for job seekers such as work schedules and transportation options.

Employers can partner with community-based organizations, recruiters, and talent-sourcing providers to understand where target candidates look for work, what their strengths and needs are, and how they engage with hiring processes. Employers can use this information to expand hiring more candidates within these groups. Guidance for community-based organizations, educators, mentors, job coaches, and job seekers (components 3 and 4) should include more information on the utilization of JDX data properties and how those properties relate to improved skill-based learning and hiring. To obtain more transparent and up-to-date skill-based hiring requirements, community-based organizations and education, training, and credentialing providers can encourage JDX adoption through their partnerships (i.e., employers, job boards) and interoperability across data systems (i.e., LMS, CMS, HRIS, and ATS). One way to publicly support the JDX effort and with various partners is to add a small JDX logo to an organizations job description that links to JDX resources, tools, and guidance.

Expand JDX JobSchema+ and Provide Property-Level Guidance

Using JDX, job descriptions and postings can be developed as machine-actionable data that can be easily consumed, shared, and used across the web. This ease of access can also improve search engine and filtering results. Interviewees for the report were shown the JDX draft schema in development[4] along with an example of a JDX-created job posting and seemed genuinely intrigued. Many noted that "more information is better" with respect to job postings and pointed out that public-facing terminology should be as clear as possible. Applicants with limited English proficiency may not fully understand the details of a job description or the overview of an educational opportunity. Because applicants often apply to hundreds of postings and do not necessarily read each position's requirements in detail, English language learners are at a particular disadvantage when reviewing vital information about a position's benefits and costs. JDX JobSchema+ can minimize this drawback for job seekers.

4 U.S. Chamber of Commerce Foundation, "JDX Job Schema for Pilot Testing" https://www.uschamberfoundation.org/sites/default/files/U.S.%20Chamber%20Foundation_JDXJobSchema%2B_ForPublicComment.pdf.

In addition, many interviewees mentioned the importance of providing an option for "other" for most, if not all, controlled vocabularies to crowdsource options and prevent information loss. Such improvements could provide value to organizations serving opportunity populations in surfacing improvements in properties to increase job seekers' opportunities.

Interoperability will be pivotal to JDX. We recommend that close attention be paid to the capability of JDX JobSchema+ to improve data liquidity (i.e., how the data that the tool gathers can be reused). Job descriptions can then infiltrate new channels to target opportunity populations more directly, such as by posting to population- or organization-specific job boards. Opportunity populations who primarily interact with job postings on mobile devices may benefit from mobile-friendly channels. JDX JobSchema+ should also map well to Google's Job Posting schema[5] as the jobs Google hosts under this schema will appear as searchable pop-out boxes of localized results when a person enters a search term such as "entry-level jobs" into Google via a mobile device. Other mobile-friendly distribution channel integrations should be pursued to increase the number of postings that can be easily searched and compared. Job postings buried on complex company or government websites are the antithesis of this approach; JDX job postings could include an option to link back to a company website where job seekers can obtain additional information if needed.

Please see Appendix A for recommendations regarding JDX JobSchema+ attributes based on feedback from interviewees for the report, interviews with employers that participated in the JDX pilot, and participation in relevant work groups such as the W3C Talent Marketplace Signaling group.

5 Google Search, "Add structured data to job postings," https://developers.google.com/search/docs/data-types/job-posting.

Recommendations for T3 Network Phase 3

The T3 Network pilot projects are organized into three specific areas of focus – Open Data Standards, Competency-Based Learning and Hiring, and Empowering Learners and Workers. These workstreams can be most impactful for opportunity populations by increasing inclusivity and encouraging educational and labor market participation. Additionally, the development of technology should include opportunity populations, and other end users and their representative organizations, as a unified foundational design principle and moral imperative. Additional next steps for each of the workstreams complement this impetus.

Open Data Standards

- **Map and Harmonize Data Standards**
  - We recommend that this workstream continue to move forward on the road to harmonization and include more data standards organizations in the process. Deep interoperability opens doors for more systems to connect through open standards, from HRIS and ATS to LMS.
- **Employment and Earnings Record Standards**
  - Progress that improves the services offered through government and workforce agencies is priority for opportunity populations who may rely on them. Opportunity population organizations should review the new employment and earning record standard.
- **Comprehensive Learner/Worker/Military Record Standards**
  - This information will be covered in recommendations for LERs below.
- **Public-Private Adoption of Open Data Standards**
  - As the T3 Network begins its early work of establishing a Public-Private Standards Collaborative, among other collaborative groups, organizations serving opportunity populations should be invited to participate in the work to ensure they have a seat at the table to include their stakeholders' needs and use cases in the conversation. The T3 Network may also want to consider creating onboarding materials that articulate the benefits of participating in a Standards Collaborative as well as other collaboratives.

Competency-Based Learning and Hiring

- **Competency Data Collaborative**
  - Competency frameworks are not commonly utilized by learners and workers. Yet they play an important role in describing the requirements for a specific objective (i.e., an occupation, a degree, or a course). Deconstructed into their component skills, such as by using the Competency Frame-

work Extraction Module, competency statements can be reassembled into an infinite number of potential career pathways for individuals. Full-text search of competency frameworks, which a version two of the Open Competency Framework Collaborative is expected to offer, is key for applications to access the skills from competency frameworks with the correct protocols for use. The more skills data are available and machine-actionable, the better the applications using them can be.

- **Competency Translation & Analysis**
  - The significance of translation and analysis is in matching. Opportunity populations often have fewer resources and more barriers for educational decisions, obtaining employment, and achieving person-job fit. Algorithmic matching of people to opportunities can complement in-person advising and scale career counseling beyond where resources for in-person advising run dry. Interviewees for the report noted: a market failure to latch onto young people's enthusiasm; career applications should offer opportunities to incorporate current interests into career pursuits; and use of algorithms can leverage innovations like gamification. The T3 Network should consider providing guidance on Career Pathway Applications as a unifying use of all data described in the report. The T3 Network may be interested in extending plans for an open application marketplace to enable navigation applications to be built on top of shared data resources. Worker and learner representatives can also engage with application developers to design tools that are responsive to their needs.
  - While algorithms are positioned to be highly useful, they must require governance over them. The T3 Network should consider providing guidance on: goals for de-biasing; how to govern the data that algorithms rely on in an inclusive manner; ways to examine the representativeness and meaning of the data that is included and excluded from samples; transparency around algorithms and their impacts to stakeholders; and ways to hold leaders accountable to continuously evaluate the datasets, algorithms, and their effects on the talent marketplace.

Empowering Learners and Workers

- **Individual-Level Data Collaboratives**
  - When applicable and practical, the individuals whose personal data is being shared and analyzed within a data collaborative should be represented in some manner. T3 Network participants have noted that this goal remains aspirational for many (if not most) data collaboratives, in part due to the challenges of identifying and engaging appropriate representatives." Opportunity populations, who often constitute socially, politically, and economically underrepresented groups, may face greater risks of data misuse as a result of this underrepresentation. Concerted efforts to promote representation within data collaboratives can magnify their interests.
  - Guidance can be provided to data collaboratives around the tradeoffs and ethical issues raised in work streams related to citizen participation, individual data rights, sunset clauses, and codes of conduct.

- **Management and Use of Individual-Level Data Records**
  - The project report[6] enumerated risks present in LER use. Use of LERs should follow the advice of the LER Resource Hub to "'further test the principles, technologies, and community guidance in low-risk, isolated environments and share their findings and best practices with the community." For example:
    - If LERs are adopted primarily by sophisticated, highly technical users, then this technology could exacerbate inequality as use by already advantaged workers could create premature employer expectations for applicants' handling of LERs. Competent workers without the background and resources needed to deploy LERs quickly may be less prepared to meet this expectation.
    - Substantial investments should be made to educate users about their agency, abilities, and rights. Data phishing tests for malicious extraction of LER data can be conducted with consenting users to test vulnerabilities.
    - Research on the actual use of LERs should inform policies and practices related to protection and best use.

Study Learning and Employment Record Adoption and Implications

The T3 Network is supporting the scalable, pilot testing of learning and employment records (LERs) with the development and implementation of an LER Resource Hub (LER Hub). The LER Hub is a free resource available to all stakeholders that creates a community for learning and sharing best practices and resources to support the organizations working to implement LERs.

Implementing LERs at scale is not a product problem, but an infrastructure problem. The T3 Network is ideally positioned to support LER pilots because its approach is use-case driven, standards-based, and vendor neutral. The emerging data and technology infrastructure that the T3 Network is seeding is able to support a diverse and vibrant ecosystem of LER sharing across multiple vendor products, platforms, and stakeholders.

Emerging LER Pilots and LER Use Case Development

Community-based organizations and talent-sourcing providers serving opportunity populations can play key roles in helping opportunity populations document, communicate, and showcase skills to employers. Use Case 4—in the report—listed pain points cited by interviewees, such as organizations struggling to scale their operations and realize desired outcomes for job seekers. Pain points like those may be helpful to identify for achieving sustained adoption of LER pilots. Also consider specific use cases which provide value before network effects manifest from prolific use of interoperable records, in order to help combat the cold-start problem of adoption. The "Technology-Independent Requirements" section in the "Applying SSI Principles to ILRs"[7] report recommends excellent and established approaches to teasing out helpful findings, which aligns well with the human-centered design approach.

6 U.S. Chamber of Commerce Foundation, "Applying SSI Principles to ILRs", June 2020, https://www.uschamberfoundation.org/sites/default/files/media-uploads/Applying%20SSI%20Principles%20to%20ILRs%20Report.pdf.

7 U.S. Chamber of Commerce Foundation, "Applying SSI Principles to ILRs", June 2020, https://www.uschamberfoundation.org/sites/default/files/media-uploads/Applying%20SSI%20Principles%20to%20ILRs%20Report.pdf.

LER pilots including opportunity populations can demonstrate proof of concepts that other LER collaborations could replicate. These organizations can also play major roles in LER pilot design, such as by selecting LER vendors or technologies positioned to meet clients' needs and by supporting user testing of digital wallets by opportunity populations. Community-based organizations can support opportunity populations as they populate LERs with nontraditional learning and employment experiences to provide a vivid picture of individual-level skills while assessing the user experience with LER and wallet interfaces. Sharing these findings with the broader LER community and documenting lessons learned from the LER Hub will be essential to inspiring other community-based organizations to experiment with LERs.

While LERs have a role in improving the talent marketplace that will serve opportunity populations, a particular area of interest is de-biasing. Employers and education providers seeking to combat discriminatory or unfair practices in candidate selection may be interested in "blind audition" models in which the decision maker remains blind to certain applicant information. The Harvard Business Review and the Society for Human Resource Management (SHRM) each recommend this approach as a hiring best practice to minimize discrimination associated with ageism, sexism, heteronormativism, ableism, and racism.[8] This practice could be enhanced through selective and progressive disclosure. A pilot looking to improve diversity, equity, and inclusion outcomes may be interested in testing out this technology in practice.

Multiple Uses for Verifiable Credentials

The scope of thinking about LERs and wallets to-date is facilitating interoperability of learning-related data about education and work. A matter for consideration is for wallets to store non-learning records which are helpful for applications in order to enable a more streamlined application process as a value proposition for using wallets in the first place. If we expect it could be possible for an applicant to share everything they need for an opportunity through a single wallet, wallets, in this capacity, could also hold other proofs.

Individuals who are incarcerated, formerly incarcerated, or otherwise justice-system involved face additional barriers to work related to criminal records. A hypothetical use case for LERs involves improving an applicant's ability to share criminal records or justice-involvement information that employers often request as part of the hiring process, such as during a background check. Interviewees pointed out that criminal records often frame a crime as more severe than it was in reality, effectively deterring the employer from hiring a candidate. Hypothetically, a job seeker could consent to their criminal record being shared with a credible third party who interprets it, creates a plain language statement explaining it, and issues the job seeker a verifiable credential containing that statement. The third party would then stand behind the statement pertaining to the applicant's background check, similar to a credit bureau issuing a credit report. Therefore, the employer would not need to access the background check directly. Background checks and reviews of criminal records would also fit into progressive or selective disclosure. This and other potential uses for selective and progressive disclosure of criminal records and verifiable credentials should be discussed and advised upon by the community. Finally, LERs can also facilitate the Lifelong Learning Accounts useful for the public, private, distributed, and decentralized future of talent financing. See recommendation 15 in "Talent Finance."[9]

8 Jack Soll, Katherine Milkman, and John Payne, "Outsmart Your Own Biases," Harvard Business Review, May 2015, https://hbr.org/2015/05/outsmart-your-own-biases https://www.shrm.org/resourcesandtools/hr-topics/talent-acquisition/pages/7-practical-ways-to-reduce-bias-in-your-hiring-process.aspx.

9 U.S. Chamber of Commerce Foundation, "Talent Finance: A New Consensus and Return-To-Investment," September, 21, 2020, https://www.uschamberfoundation.org/sites/default/files/CEW%20Talent%20Finance%20Report-web.pdf.

Using LER Data

Research into selective mass consent and informed consent networks merit attention. Applications such as wallets and career navigation tools that draw upon individual-level data should make consent language readily understandable, particularly in outlining how such data will be used. Permissions should be described in plain, concise language that can link or otherwise provide access to legal language. Application developers should be mindful of what data they require and at what step in the process they require that information during their design phase. Developers should also consider whether more options can be provided for how data is shared with other applications and any number of collaboratives. There is an opportunity for the community to take a more active role in streamlining individuals' participation in multiple collaboratives from an infrastructure and user interface perspective.

Encourage Measurement of Outcomes

The potential for the above initiatives to realize changes in the labor market that do not perpetuate inequalities rely on an ability to benchmark and measure progress. Employers have the opportunity to take stock of their hiring trends throughout their talent pipeline and compare it with implementations of JDX. Learners and workers could elect to share anonymized LER data with research groups along with their demographic information. A future milestone to test would be to see if the innovations developed by employers (and other stakeholders) correlate with differences in outcomes for learners and workers, and to what extent. Not all implementations can be expected to result in increased inclusivity or more equitable outcomes. It must be understood that the above innovations could affect a small slice of the process of obtaining education and work, and many other variables contribute to outcomes. An opportunity is present for anonymized, well-documented implementation and outcome data to be shared with researchers to help identify effective interventions. While the increased inclusion of demographic information in, or linked with, records presents additional risk, the precedent of efforts such as the Home Mortgage Disclosure Act show such data can be used for public benefit. This risk can also be mitigated by a protocol for asking learners and workers to share their demographics with a research collaborative at the time of sharing their LER so that demographics are only linked to the LER within the collaborative and are not present within the LER data. This could help prevent learners and workers from accidentally sharing demographic information with employers or institutions when they do not intend to.

Conclusion

The above recommendations form a complementary approach to the strategies from “Building a More Inclusive Talent Marketplace: Increasing Opportunity Through Community and Business-Led Initiatives,” by focusing on making user-centric changes, prioritizing design for opportunity populations, and augmenting the inclusion of disadvantaged voices within the Chamber Foundation initiatives in order to better serve opportunity populations. These initiatives provide the infrastructure to accelerate skills-based hiring; improve agency of individuals over their data; improve matching between individuals and opportunities; and create open, structured data by each major stakeholder. Treating these initiatives as hypotheses for implementations that may have positive effect on opportunity populations enables testing of expectations against results, pivoting to new hypotheses, and ultimately treating workforce with more science than art. This can form the basis of a principled, accountable, responsive approach to prioritizing inclusive outcomes.

Appendix A:

JDX JobSchema+ Property Recommendations to Better Serve Opportunity Populations

The information in the chart below includes feedback from interviewees for the report, interviews with employers that participated in the JDX pilot, and participation in relevant work groups such as the W3C Talent Marketplace Signaling group.

Property Name(s)	**Recommendation**	**Type of Change**
Job location	The controlled vocabulary of this property can be broken out more cleanly through combinations of remote, in-person, multiple locations, travel, and so on. For example, a position may be half remote, half in-person at a single office, but requiring travel 10% of the time. As mentioned in the first use case on opportunity populations obtaining crucial decision-making information, the contents of this property may have strong implications for individuals in terms of transportation or required accommodations (e.g., if access to a car is required). This property could be combined with job location type to reach this greater level of specificity than the two properties used independently.	Expand
Schedule-related properties	Interviewed organizations stressed that opportunity populations can benefit from detailed information on work scheduling, as predictable scheduling helps individuals manage competing priorities (e.g., arranging childcare and transportation). This property can allow for specific schedule information and group schedule-related properties to provide a holistic picture of work-related time commitments, such that one could read the information and understand roughly how it would fit on a calendar. These properties also allow organizations to be forthcoming if a schedule is truly unknown or variable (and to specify how it varies).	Expand
Eligibility to work requirement	Organizations shared that citizenship requirements can help opportunity populations evaluate opportunities. Employers should indicate whether citizenship, visa, and/or other documentation is required, and in which country. This property should enhance the international applicability of the standard. This updates a change proposed by the W3C Talent Marketplace Signal group in March 2020. The use of this property should be monitored to see if it is clear enough in practice or if additional structure could be helpful.	Expand
Formatted job description	This property should include guidance for employers to insert into this field the entire job description or posting they possess. This would help create contextual data to train algorithms to: 1) extract competencies and skills; and 2) recommend information to employers filling out the JDX JobSchema+ in their workflow. If no prior job description exists, then the system should allow users to list any additional information in this field.	Add guidance

Property Name(s)	Recommendation	Type of Change
Career ladder information	This property should outline positions directly above the current position (i.e., possible positions to which an employee in this role could advance). This information may help applicants evaluate their potential career pathway, if applicable.	New property
Special commitments	Organizations interviewed for this report provided the most feedback on the "special commitments" property. At least four interviewees found this property confusing and believed it could deter applicants not belonging to a special commitment population. Employers can take a multi-pronged approach to call out opportunity populations in their job postings. As part of a broader opportunity population hiring strategy, employers should first carefully consider who they wish to target. Then, they can select from a controlled vocabulary based on their intentions to note whether a special commitment is a qualifier, preference, equal treatment, or accommodation. Some applicants will not wish to identify as part of an opportunity population even if a welcoming message appears in the job description. Guidance should also be provided about legal considerations, such as "you cannot use employment policies or practices that have a negative effect on applicants or employees of a particular race, color, religion, sex or national origin or applicants or employees with disabilities unless the policies or practices are related to the job and necessary for the operation of your business."[10] Additionally, employers can advertise via multiple channels and/or pursue talent pipelines that elicit more opportunity population applicants. Finally, employers can signal their commitment to opportunity populations in nearly every other part of the job posting per our other recommendations.	Expand
Employer overview	This field presents a valuable opportunity to convey the company culture, benefits of working at the company, and details on the company's stance on diversity, equity, and inclusion. This property can also offer a company primer. Guidance for this field can be acquired through further development with organizations serving opportunity populations.	Add guidance
Resources required/ provided	In this field, employers can clearly identify whether an applicant needs their own laptop, mobile phone, transportation, or uniform. The employer can also use this property to outline employer-provided work resources.	New properties
Physical and sensory properties	This property provides guidance to employers in listing the absolute minimum requirements for a job, which may entail creative thinking. This field may be especially informative for applicants with disabilities.	Add guidance

10 U.S. Equal Employment Opportunity Commission, "Federal Laws Prohibiting Job Discrimination Questions and Answers," last modified November 21, 2009, https://www.eeoc.gov/fact-sheet/federal-laws-prohibiting-job-discrimination-questions-and-answers.

Property Name(s)	Recommendation	Type of Change
Competency	Each skill/competency used in a JDX job description can have metadata including attached contextual data. Research is needed to determine how contextual information should be presented, such as when indicating whether a certain skill/competency is required or preferred and delineating its corresponding level (e.g., basic, intermediate, advanced). This property will enable employers to identify which items are preferred and which are required to minimize potential ambiguity. Employers could also signal whether an item is required in several ways. Currently, the employer marks each competency as either a minimum requirement, requirement, preferred requirement, or alternative requirement; alternatively, the employer can describe a third-party proof they would like the applicant to include as evidence of each competency. Neither approach is ideal. For employers targeting opportunity populations, linking skills to context that may help job seekers acquire each skill warrants exploration. For instance, if the job seeker clicks on a skill in a job posting, they could then be directed to resources for obtaining it.	Expand

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