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Use of Technology and Tools

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Acknowledgements

About the Authors

Ben Berres is an independent consultant based in San Francisco with almost 20 years working in the social sector across public, private, academic, and philanthropic settings. Today, his work focuses on designing solutions that leverage modern technologies that improve the impact of human services programs and policies. He has wide ranging technical experiences having designed, built, and bought technologies for human services settings over the course of his career. He is dedicated to making sure that the organizations doing the hard work in the social sector get to reap the benefits of modern tools, tech, and skills. Before his current work as an independent consultant, he helped launch Project Evident, worked at UC Berkeley, Accenture, and the University of Washington. He holds master's degrees in Public Administration and Social Work from the University of Washington in Seattle.

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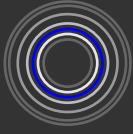
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Canada

About Blueprint

Blueprint was founded on the simple idea that evidence is a powerful tool for change. We work with policymakers and practitioners to create and use evidence to solve complex policy and program challenges. Our vision is a social policy ecosystem where evidence is used to improve lives, build better systems and policies and drive social change. Our team brings together a multidisciplinary group of professionals with diverse capabilities in policy research, data analysis, design, evaluation, evaluation, implementation and knowledge mobilization. As a consortium partner of the Future Skills Centre, Blueprint works with partners and stakeholders to collaboratively generate and use evidence to help solve pressing future skills challenges.

About The Future Skills Centre

The Future Skills Centre is a forward-looking organization that prototypes, tests and measures new and innovative approaches to skills development and training. It is passionate about building a resilient learning nation, backed by an agile and responsive skills ecosystem that equips everyone with the skills they need to thrive in a rapidly changing economy and share in Canada's prosperity.

As a Pan-Canadian organization, FSC works with partners across the country to understand how global trends affect the economy, and to identify what skills working-age adults need to thrive within an ever-evolving environment. FSC is funded by the Government of Canada's Future Skills Program and was founded as a partnership between Ryerson University, Blueprint and the Conference Board of Canada.
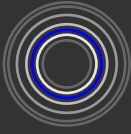
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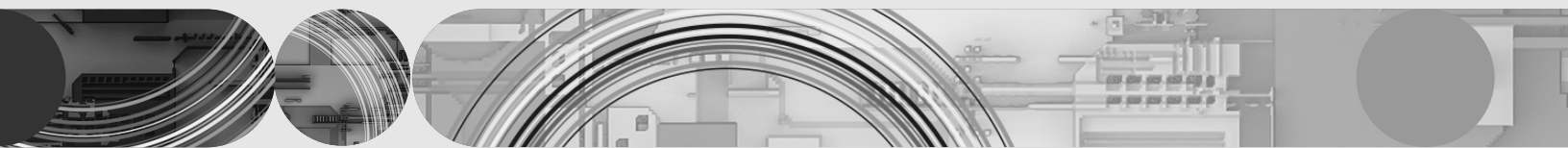
Executive Summary

The role and use of technologies that assist job seekers and career practitioners (referred to in this paper as "RCP tech") is rapidly evolving. RCP tech provides diverse support, from capturing educational and employment histories to making recommendations for relevant training and job opportunities, and it has great potential for advancing responsive career pathways. There are still a variety of challenges, however, for the widespread adoption and growth of RCP tech.

As part of the Future Skills Centre's (FSC) Responsive Career Pathways initiative, this paper provides an abbreviated market scan of the technologies that specifically support responsive career pathways[1] in Canada and globally. It describes the context in which these technologies are evolving, considers barriers that are driving adoption and growth, and provides examples of current state use cases. The paper concludes with options for the FSC and other system actors to consider for potential ways to promote responsive career pathways enabled by technology.

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1 Hyperlinked terms throughout the paper connect to the Glossary.

| Key Findings

The RCP tech market is young and undeveloped.	There are a handful of existing RCP tech products within Canada and internationally, but the market as a whole is far from saturated, with significant gaps between offerings. Many of the current products have only been available for a few years, and many are designed only for information-gathering and are limited in the capabilities that would enable more user customization.
The underlying tech that supports the advancement of new tools in RCP tech (and adjacent sectors) is an area of growth.	More and more, aggregators of critical information and technology developers are making their assets easily available. For new RCP tech developers, it is getting easier to use these assets in the creation of new tools and resources.
Most tools that support job seekers, employers or institutions are structured as transactional.	Few tools focus on nuanced career pathways or offering career guidance navigation and support. Most are oriented to the job search and the transaction of sorting and placing an individual into a new occupation. Existing tools designed to engage workers are frequently implemented within the context of HR or job placement.
Most established tools in the career field focus on supporting large enterprises or institutional clients.	Large entities have greater capacity to afford the expense of new technologies, which skews demand, influences the overall intent of newer technology design and reinforces the development of tools that do not necessarily prioritize job seeker or career practitioner needs. This is especially true of technologies that attain capital investment.
Early-stage RCP tech products or smaller vendors face high barriers to meeting demand at scale.	Growing a product to scale requires resources, planning, timing and luck. Investors in RCP tech must exercise caution before supporting a new enterprise (regardless of the merit of the work), given the high failure rate among startups.
For supporters of the nascent technology field, investing in emerging technology can be complex and precarious.	In the early days of any technology field or product segment, it is uncertain which entities are most likely to succeed. Caution and an abundance of preparation and diligence in evaluating funding decisions are merited.
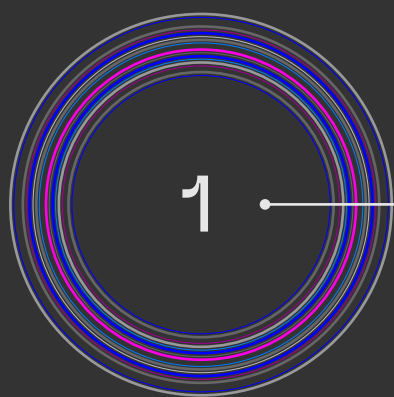
1 $\longrightarrow$ Introduction

Introduction

The role and use of technologies that support job seekers and career practitioners is rapidly evolving. This paper provides an abbreviated market scan of the technologies that specifically support responsive career pathways, both in Canada and globally, to consider how potential supporters can help advance the field.

We devised the term <u>RCP tech</u> as a helpful shorthand to categorize technologies that specifically seek to support responsive career pathways. We use it in this paper to refer to a class of applications that support job seekers, career practitioners and institutions during career exploration, planning and transitions.

RCP tech applications generally offer some combination of the following elements: capturing educational and employment histories; performing skills assessments; comparing and providing customized benchmark and comparison data for the user; and making recommendations for training and job opportunities that help the user advance toward their occupational goals.

While many of the applications that exist are designed with the express purpose of supporting underserved populations or those seeking publicly funded services, this is not always the case, as some applications have been designed to support users employed by large enterprises. RCP tech applications are generally built by companies and then offered to job seekers or career practitioners by a range of entities, including governments, agencies and public workforce systems; providers of public education and private training; intermediaries such as non-profit agencies, think tanks and private employers; and even by the RCP tech developers themselves. **The technologies we consider to be RCP tech fall within the broader category of Job tech (also sometimes referred to as Career tech), and given that there is substantial overlap in the players, technologies and business models, it is difficult to fully extricate and independently assess the growth of RCP tech without considering the broader trajectory of the Job tech market.**

However, Job tech is primarily focused on matching individuals with employment opportunities, often times oriented around singular points within individuals' career searches. In contrast, RCP tech takes a more holistic approach, considering individuals' backgrounds, the skills and experiences they hold and broader trends in the labour market to provide more tailored recommendations on jobs or training opportunities that may lead to desired career outcomes.

This paper starts **with an overview of early RCP tech use cases, before outlining the context in which they are evolving. There is a great deal of variation among the current players and products, and there are a number of RCP tech products appearing that offer functionality that is unique and necessary to address challenges in the creation of responsive career pathways.** There are similarly diverse challenges for the adoption and growth of RCP tech, which the paper goes on to discuss. Many of these challenges are connected to the complexity of the sector or its general newness. The paper concludes with options for the Future Skills Centre (FSC) and other system actors to consider for potential ways to promote responsive career pathways enabled by technology.
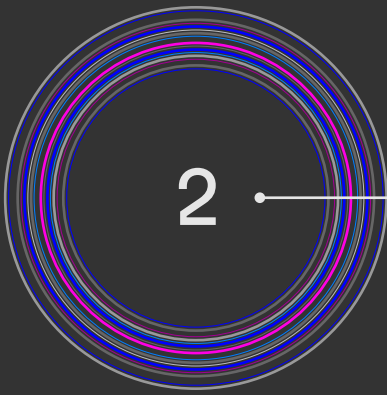
2 → Early RCP Tech
Use Cases

Early RCP Tech Use Cases

There are a small handful of promising models and innovative ideas appearing today in the RCP tech space. In order to make RCP tech more concrete for the reader, we want to present a handful of different use cases to demonstrate the current state of the market. Even though there are only a few examples, we can examine these use cases to gain visibility into where the market is headed. Each of the cases presented below aims to provide a clearer depiction of how an individual's unique skillsets relate to their own career path. Some tools even provide information on where that particular career path is headed relative to broader economic and technological trends.

FutureFit AI   HQ: Toronto, ON, CA

FutureFit AI (FFAI) is a startup based in Toronto, Canada and offers perhaps the broadest, most robust use case of RCP tech. FFAI allows a user to enter their background, career history, educational experience, skills and employment preferences. It then leverages over 10 external data sets including labour market information (LMI) to provide customized recommendations on potential career paths and opportunities (jobs and learning) that most closely align to the user's background. The tool also identifies the skills gap between what skills an individual currently has, and the skills they may need to acquire to secure their desired career path / opportunity. There are also multiple user types that can use FFAI, including career practitioners who can leverage FFAI as a tool to complement one-on-one conversations with job seekers. The image below portrays a publicly available version of FFAI that was commissioned by the Royal Bank of Canada and is called RBC Upskill.

Bayes Impact – Bob Emploi   HQ: Paris, France / San Francisco, CA, USA

Bayes Impact is a non-profit technology company founded in 2014 with footprints in both the US and France. Over their history, they have developed a range of products supporting different industries. *Bob Emploi* [2] is one of their more recent releases and is an "AI-based career coaching tool that enables employment service providers to deliver personalized digital coaching at scale." "Bob [its nickname], guides job seekers to be more strategic in how they spend their time and energy on their career management by identifying their main roadblocks to career advancement and recommending the right resources to help them overcome their unique challenges." The tool is somewhat distinct from all the other use cases we've featured because the tool is designed as if the user is speaking directly with a career practitioner instead of interacting with a website. At the same time, it is similar to other tools in that it also leverages users' data and other LMI to identify job seekers' main barriers to advancing in their career.

One unique characteristic of Bob is that Bayes Impact publicly offers some data on its success in supporting job seekers. While the data they offer is limited, it is more than what is available for most other use cases. The four data points they offer are:

- Coached 250,000+ job seekers;
- 88% were satisfied with the relevance of Bob's advice;
- 80% reported that Bob's advice was equally or more personalized compared to in-person coaching;
- 41% report that Bob's coaching was a key factor in their job recovery.

Fuel50 – FuelPathing™   HQ: Laguna Niguel, CA, USA

Fuel50 is a Series B startup with $36 million raised that offers a range of career support tools direct to enterprise. One of the tools in their product portfolio is called FuelPathing™. They claim that it "generates real-time roles and gap analysis to focus development activity & career planning; presents best-fit aspirational roles based on the individual's strengths and interests; shows career frameworks in a dynamic & engaging way; bookmark[s] target roles and [allows the user to] be notified when they become vacant; [depicts] a fast-path career journey from [the user's] current role to an aspirational role, seeing all the steps in between." This tool has been designed for enterprise, and it would seem that it works best for large organizations with a wide assortment of available career paths for their existing employees.

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2 This tool operates natively in French.

SkyHive.io
HQ: Vancouver, BC, Canada

SkyHive.io is a Series A start-up that was founded in 2017 with eight million dollars raised. They offer a range of products primarily aimed at enterprises. The tools that are most relevant to RCP tech are their enterprise application: an "end-to-end reskilling platform that automates skills detection, identifies future talent needs, and fills skill gaps through targeted learning recommendations"; and their Quantum Labour Analytics platform which claims to "continuously [collect] and [analyze] millions of labour market data points, serving as the most advanced real-time knowledge graph of jobs, skills, training, and labour market intelligence in the world."

Career Cruising
HQ: Toronto, ON, Canada

Career Cruising was founded in 1997 and is based in Toronto, Canada. They offer a suite of career guidance products aimed at K-12, youth and adult audiences. Their product that is most relevant to the RCP tech class is their Career Development tool, which offers assessments, career exploration, resume building and advice. Career Cruising has six primary areas that users can access: Explore Assessments, Explore Careers, Explore Education, Explore Financial Aid, Employment and the My Plan tool. Career Cruising claims that their application is "designed for individual, self-directed use" and will "satisfy five key career guidance needs: self-assessment, career exploration, post-secondary education planning, work search, and portfolio development."

McKinsey & Company / Rework America Alliance
USA-based: Multiple locations

In the spring of 2021, McKinsey & Company developed a publicly available tool on behalf of the Rework America Alliance (a Markle project). The goal of the tool is to "to spark progress for job seekers who have skills and experience but lack a traditional four-year degree, toward more resilient, in-demand occupations with wages above the national median." This particular tool is explicitly aimed at supporting career coaches or navigators in their professional role of supporting job seekers. It leverages data from leading providers, including Burning Glass (barriers and requirements), Emsi (transitions, skills and income), McKinsey Global Institute (risk), Oxford Economics (demand) and the US Bureau of Labor Statistics (unemployment); connects the user's recommendations to available job listings via LinkedIn, Indeed and Google Jobs; and allows the user to link to Emsi's Resume Builder / Optimizer tool.

If the user also seeks to better understand the prospects for a specific occupation, the tool provides occupation-specific data including mid- and long-term demand, salary information, fit (availability to individuals with criminal records, open to English language learners, or offers flexible hours) and more.

Planext

Planext is a career information tool that was built with support from Google.org and MaRS. The developers state that "the tool was designed to help Canadians explore how technology might impact their careers in the future, and what they can do now to prepare." Like other products outlined in this section, it leverages relevant data and research to provide partially customized recommendations for users. This particular tool, in contrast to others, is clearly intended to help users leverage information to ward off the potentially negative effects of industry disruption.

OpportuNext

OpportuNext was developed by The Conference Board of Canada, in partnership with the FSC. Functionally, it is similar to other tools presented in this section that primarily focus on the provision of information to the end-user, as opposed to more tailored recommendations. This tool allows the user to enter their current or desired occupation to view salary statistics as well as mid- and long-term growth prospects. It then offers a selection of the top skills required for that role and a slate of similar career options.

## LinkedIn – Career Explorer

The LinkedIn Career Explorer is best described as an information-gathering tool. It allows a user to select a particular job title and enter a geographic region, then the tool presents information including the skills that are most related to that role, similar job titles, skills overlap between the user's current role and their desired role, skills to improve and a popularity score that quantifies how many other individuals in the job market are attempting to make that same transition. It also allows the individual to leverage LinkedIn's networking capabilities by providing recommended connections and related job listings. It is worth noting that this tool is a product of the Economic Graph team at LinkedIn, which is a research and economic analysis team that supports organizational R&D.

Indeed – Explore Career Paths

Indeed, which happens to be LinkedIn's biggest competitor, offers another career path exploration tool. Similar to LinkedIn, it can also be characterized as an information-gathering tool. It allows a user to enter a desired career type and the tool produces a report that offers helpful information on what that job does, salary information, job requirements such as education, training, certifications, etc., critical skills, recommendations on how to move into that desired role and a list of related jobs. Of the use cases outlined in this report, this tool is the least customizable and interactive, but the narrative format of the information offers more nuance than some of the other tools. Some job seekers or career practitioners may find the reports helpful as they are gathering information about a prospective career change for themselves or a client. That said, this tool offers few tangible next steps or opportunities like the other tools do.
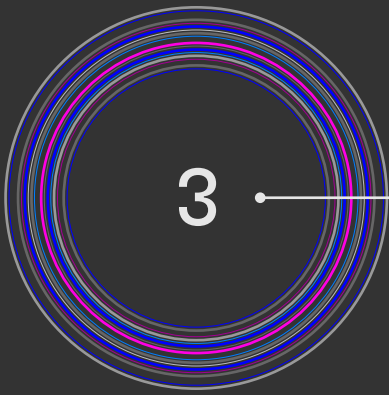
3 → Market Context

Market Context

The first step in understanding the current state of the RCP tech market is documenting and characterizing the context in which the market is evolving. Our assumption in this analysis is that the process and manner in which technology is developed is functionally identical regardless of the industry the developer aims to support, and thus RCP tech is not technically or operationally distinct from other types of technologies in related and unrelated industries. Furthermore, we work on the assumption that the contextual factors that frame the RCP market's evolution are functionally similar to those of other markets, and that learnings derived from more advanced markets can reasonably be generalized to seemingly unrelated ones. Given these premises, we explored some of the typical markers that distinguish one technology product from another, such as the primary user type, technology model, business model, etc.

l Variance of the Primary User Type

One of the first ways that a technology product or tool can be distinguished from other similarly construed products is in who the tool was designed to support. In this analysis, **we use the term "primary user type" to refer to the main type of individual and / or entity that will be using the RCP tech**. It is also important to note that many tools are designed for multiple user types, often two or more, and in some circumstances, it is possible for there to be even three or more.

Our first observation is that RCP tech is currently developed for numerous and varied combinations of user groups, including job seekers, employers, educational institutions, service providers, capacity-building organizations, system administrators, technology developers, investors / funders / payors, etc. Among the early RCP tech use cases, there appears to be a slight preference, though, to develop products specifically for job seekers or employees — people specifically seeking to improve or affect their career trajectory — or career practitioners. This is unsurprising since many of the current career guidance models that support individuals in navigating career pathways occur within the context of the job seeker and career practitioner dyad.

While there is no current uniform approach to the adaptation of RCP tech to specific user type(s), based on the early use cases, there are two primary approaches for how this appears to be playing out:

- ◎ **As a single view product** in which the information is accessed and provided to the user in one way. This format is designed to be used on one's own, or in one-on-one conversations between job seekers and career practitioners. Often, the career practitioner serves as the driver of the experience and walks the job seeker through the data / product. Regardless of which user type they are, the experience the technology provides is identical.

- ◎ **As a multi view product** that is carefully designed to tailor to the unique needs of job seekers or career practitioners. For example, a job seeker might enter data into one side of the product where the language and experience are tailored to their needs. Then, the career practitioner they are supported by accesses this information from another side of the product and is provided

synthesized views of this job seeker's data / assessments, and possibly aggregated data from across the career practitioner's entire caseload. This multi-view structure becomes increasingly valuable the more the tool becomes integrated into the workflows of career practitioners who support large numbers of job seekers and need to maintain unique records to track each of their cases. **While it would be ideal to consider a primary user type to be functionally homogenous, the reality is that user types tend to be heterogenous, particularly job seekers. Therefore, it isn't necessarily possible to lump all individuals within a user group together since they tend to hold a wide assortment of motivations and capabilities.**

Most technology and tool developers understand this and voluntarily apply additional characteristics to their primary user(s) in order to establish a narrower population for their technology product to support. This occurs either through design choice, to create a stronger match between the tool and precise needs of a specific population, or because of resources constraints: it can be more efficient to build a product for a smaller, more narrow, characteristically similar group.

So, what can we discern from this? The range of relevant user types for RCP tech is highly complex, multi-faceted and layered and includes individuals, companies and institutions. Yet, scaling products and / or technologies tends to be most successful when there are large populations of similar individuals / entities. **What this means for RCP tech is it may be more difficult to develop products at scale due to the complicated user environments it must support**. For example, a product that is designed for newcomers and immigrants to work in the tourism and hospitality sector may be easier to design than a tool that can broadly understand the contexts and backgrounds of adult job seekers who have a more generalized interest in changing occupations. **By narrowing to a more specific population, the number of variables that need to be considered during the design process are reduced.**

Since the reality of the market for RCP tech is that it is still young and the primary user types tend to be heterogeneous, there are a few things worth noting:

- Product developers will intentionally build products that can't be used across entire populations in order to manage the scope of their product development.

- There will continue to be gaps in RCP tech availability until the market of offerings has grown or existing offerings have matured.

- Groups of individuals that are harder to support, such as those with different languages, different technical capabilities, etc. may ultimately be left behind by the early RCP tech entrants because the cost and complexity of extending new products to broader populations is non-trivial.

| Variance of Technology Models

A second key dimension in which a technology product can be distinguished from other similar products is the technical approach that a company adopts to address a specific need / problem. An approach is not a single decision, but rather a series of technical and design decisions that, in combination, form a unique solution aimed at addressing a specific problem(s).

We have observed several ways in which current RCP tech use cases differ.[3] For this analysis, we will discuss three of the primary ways that we currently see product differentiation:

- ◎ **Transactional- versus process-oriented.** One way that product differentiation can play out is in whether the product primarily aims to support a singular transaction, such as the completion of a specific task, or whether it attempts to complete a more robust process aimed at helping a user navigate through a more extended set of tasks, such as the combination of completing an assessment, provision of learning opportunities and then matching to potential occupations or jobs. Transactional approaches tend to reign supreme amongst the broader Job tech market because those are often easiest to quantify and quickest to monetize, such as the hiring of new staff. Process-based approaches, in contrast, can be unwieldy and more difficult to adapt to the business processes of established organizations. Adopting a new process-oriented technology might require a company to revise an entire business process, which for many is too significant a barrier for adoption. Unfortunately, responsive career guidance by nature tends to be a little more complex since it involves gaining an understanding of the individual/job seeker, inferring a set of skills from their experience, plotting their interests against current labour market data and matching those individuals to learning and / or occupational opportunities that best match their needs and interests.

- ◎ **The touchpoints supported.** When an RCP tech company attempts to model an existing business process into technology, they will sequentially plot out each of the touchpoints (the steps of a process) that a job seeker or career practitioner must follow to complete a task. Then, the company will decide which set of touchpoints they will attempt to model in technology. Some companies, for example, may elect to simply provide support for the information-gathering stage of a job seeker's journey. Other companies, conversely, might build an entire vertically integrated application / tool that includes assessment, information gathering, matching, opportunity search and ongoing case management/guidance. While most journeys for job seekers or career practitioners have similar features, not every company will make the same decision about which parts of the journey they'll support. This, in effect, can create situations where two similarly oriented companies might support the same primary user types, but via different touchpoints: they'd be no more similar than apples and oranges.

- ◎ **Technology stack.** One last way that technology products can be distinguished from one another has to do with the choices that companies make regarding the underlying technology they use to build their software. Not all technology pairs well with other technologies and sometimes the technologies that undergird one product may effectively prohibit it from being used with others already in use. Many professional career practitioners already have existing portfolios of tools they are required to use, and if those tools don't pair well due to their underlying technologies, or they don't offer simple integrations, technologies may not be adoptable.

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3 These aren't the only ways in which technology products can differ, but they represent some of the dimensions that have come into play among existing providers.

Given the range of technical and design decisions that a single company must make, there are almost an infinite number of technology model permutations. Since the market for RCP tech products is relatively new, there are significant gaps in the technologies available to meet the unique needs of individual communities and user types.

| Variance of Business Models

Another key dimension that creates differentiation among existing players is the business model the developer adopts, which is a composite determination based on who their primary user is and how their product and / or service is paid for or financed.[4]

In our exploration of existing tools, and in related technology spaces such as Job tech, numerous business models were observed, including:

- ◎ **B2C (Business to Consumer).** This is a technology product generally managed by a single entity and directly marketed to job seekers or career practitioners; it includes products like LinkedIn, Indeed, and Zippia.

- ◎ **B2B (Business to Business).** This is where a technology company seeks to support the needs of job seekers or career practitioners but aims to do that by providing services or infrastructural support directly to businesses or other technology companies. This business model is often focused on providing solutions such as access to critical aggregated data or enterprise needs. Examples of these companies include Vicinity Jobs, Burning Glass, Emsi, LMiC.

- ◎ **B2B2C (Business to Business to Consumer).** This is when a technology company develops a product that is then sold or licensed to other businesses, and then is deployed to consumers or employees. Sometimes these are white-labeled products, such as learning management systems or other assessment tools. Use cases of these tools include FutureFit AI, Fuel50 FuelPathing, SkyHive.io, LandIt.

- ◎ **Consumer Business / Marketplace / Social Network.** This is where a technology company develops an offering that establishes a marketplace or social network that facilitates the exchange of goods, services or connections. Outside of LinkedIn, there are several other products designed for more narrow segments of job seekers or learners, such as PeopleGrove, Paragon One and My Job Glasses. These use cases, however, aren't directly providing disciplined career services, and are more focused on mentorship or network building.

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4 Many products have more than one offering and that they can straddle these categories.

| Markets Served

A third dimension that is relevant to the exploration of RCP tech offerings (or even Job tech) is that not all offerings are available in every geography. For some products, particularly those in their first several years of existence, their general availability might be confined to a specific region or country.

There are a number of reasons why this may be the case: products often initially become available in the vicinity where the company has established business connections; the data that is used in the product may only contain information specific to an individual country, and therefore may not be relevant everywhere; or the company may make a concerted attempt to support a particular geography / sector before they expand to other segments. **Product expansion often requires additional capital / resources, and by limiting the number of markets served, a company can mitigate the risks of scaling a product too quickly.**

Much in the same way that we see differentiation in the user types served or the business models leveraged, when products fan out to support different geographies, similar products offering identical functionality can grow to become very different, sometimes to the extent that a product may become inoperable in another jurisdiction. So, while a new product might come on the market in India or the US, its ability to be transposed to the Canadian market may be limited.

| Underlying Infrastructure

The general availability of the underlying technical components that enable RCP tech to function has improved over recent years. Now more than ever before, modern technology companies leverage this infrastructure[5] to fashion the next generation of RCP tech.

One indication of the growth of this industry, whose members tend to operate as B2B entities, is evidenced through the proliferation of LMI data vendors, such as Emsi, Burning Glass, Vicinity Jobs, the US Bureau of Labor Statistics and many others.

There are numerous potential implications of this growth, but the primary one is that the accessibility of the components that enable RCP tech will likely usher in a growing number of companies and products. So, while it is currently reasonable to conclude that the RCP tech market is nascent, we should expect that this will change, and at a reasonably quick pace.

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5 For the purposes of this section, 'underlying infrastructure' refers to any technical application or service that provides critical foundational capabilities or data services that can be used by technology developers to build new applications or enhance existing ones. For RCP tech, not only does this include the component elements that form the overall technology stack, but also API accessible real-time local and national LMI, skills opportunities, job opportunities, learning opportunities / courses etc.

| Summary: Early Use Cases are Appearing

The first thing that our exploration into the RCP tech space uncovered was that there is tremendous heterogeneity among the current players and products and that they vary across several key dimensions. Yet in spite of this complexity, there are a number of RCP tech products appearing that leverage the existing platforms and successes of the Job tech market, but that also offer functionality that is unique and necessary to address RCP problems. Examples include FutureFit AI, LinkedIn's Career Explorer and Indeed's Career Path tool (discussed earlier in the Early RCP Tech Use Cases section). This clearly demonstrates that there is growth in the space.

At the same time, we must keep in mind that there are still very few RCP tech entrants, and of those who exist, their reach is limited and dispersed. In terms of tools that offer curated career search experiences, our use cases suggest there are probably between five to ten primary use cases in which there is considerable diversity.

This stands in stark contrast to the broader Job tech market, which is substantially larger and more mature. Craig & Khan (2021) report that today the Job tech market is roughly valued at 40 billion USD. Even though this related space is primarily focused on solving other problems, particularly those of enterprise, such as job search, job placement, talent management, human resources and talent discovery, the size of the industry offers a glimpse at what the future of the RCP tech space could grow into. **If the RCP tech space tends to follow the direction of Job tech, we may see growth; however, we may also see a tendency for these use cases to gravitate toward solving problems for other, more lucrative client groups / market segments — post-secondary institutions, large employers and governments — rather than career development practitioners, individual Employment Service Providers (ESPs) or job seekers.**

Ultimately, the market may need another several years of gestation before there is a richer cadre of RCP tech entrants and before we have a better collective indication of where the market is headed.
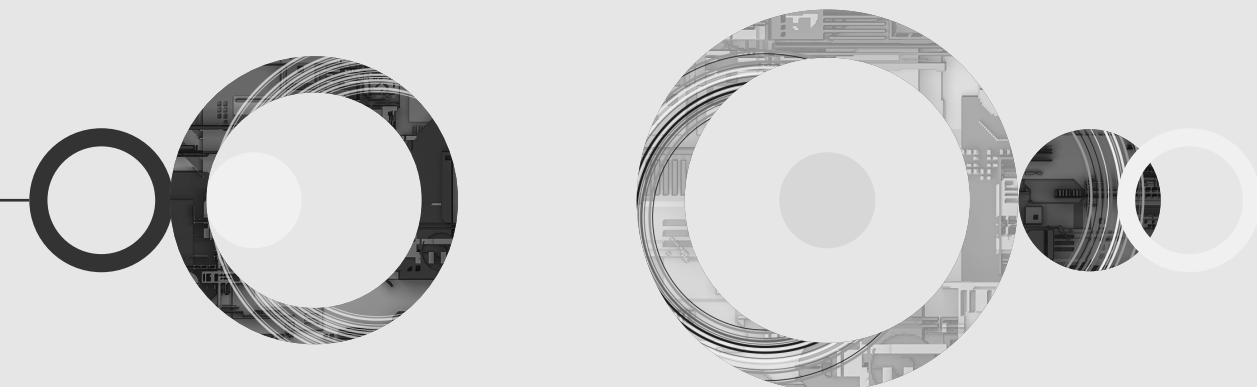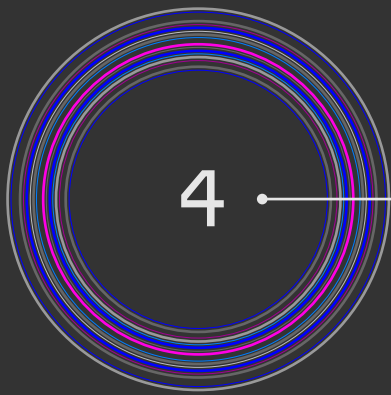
4 → Gaps and Challenges

Gaps and Challenges

The advancement and adoption of RCP tech at scale is likely an eventuality, but today, it still faces many hurdles. Many of those challenges stem from the complexity embedded in the overall network of players or the general newness of the sector. In this analysis, we've documented several themes that we anticipate will prevent more rapid development and uptake of RCP tech and tools.

| Technological Fluency and Comfort

The scale and speed at which a technology is adopted by its desired primary users often hinges on the fluency and comfort that population has with technology to begin with. **Among professional career practitioners and job seekers, particularly those individuals that work in sectors that don't rely heavily on technology, there is frequently limited fluency and comfort with modern technology tools.**

Generally, the intended users of RCP tech are not technology first-adopters. For career practitioners that support job seekers, their primary methods, used for decades, have relied to a great extent on human-to-human interaction. Insinuating a new technology into this existing approach may not be met with uniform enthusiasm. **Further, there is also likely to be some hesitancy among career practitioners to use modern tools because they sometimes feel that their own intuition and understanding of markets is sufficient (or even superior) to what technology can provide in the support of responsive career pathways.**

In other ways, though, certain technologies have permeated the routines of career practitioners. For example, practitioners that work with individuals who are eligible for support from public employment agencies / ministries often are required to use client information management systems to comply with data entry requirements. Rarely, though, are these technologies state of the art, intuitive or engaging. So inadvertently, through the use of these mandated systems, public agencies create an indelible impression about what practitioners should expect when it comes to using technology within the context of their day-to-day work. Many RCP tech products, though, such as those featured in the Early RCP Tech Use Cases section, have considerable improved usability over mandated systems. **So even though RCP tech applications would largely be used for different purposes than mandated information management systems, it still may require some strong marketing and education efforts to override existing sentiments and hesitancies.**

Among job seekers, there may not be the trust to use new technologies. There is widespread concern and suspicion that technology is often used by gate-keeping systems to prevent people from accessing services and at the same time, tracking private matters related to an individual's career exploration.

To counteract the slow adoption speeds of RCP tech, there is a need for robust and targeted change management and marketing strategies to drive uptake of tools. Private agencies that provide career services, though, may not be equipped to provide those supports themselves. Technology developers should anticipate this, and expect to extend additional support through marketing, communications and customer success teams in order to break through issues related to fluency, comfort and hesitancy to aid uptake.

It may be even more valuable to gather data concerning the attitudes and interests of intended RCP tech users to better align adoption strategies with current attitudes. It may not be enough for systems, funders and agencies to pronounce that they see the value in the use of RCP tech. **Rather, we may collectively need to gain greater clarity into the on-the-ground truths and operating realities of career practitioners and the attitudes and needs of job seekers in order to successfully break through to truly marry existing practices with modern tools.**

| Unclear Incentives for End-Users to Adopt RCP Tech

The incentives for job seekers and career practitioners to use RCP tech are not clear. While incentives for users to leverage Job tech focus on immediate tangibles such as finding employment, gaining connections and other more rapid transactional exchanges, RCP tech, to a great extent, focuses on providing information or guidance to individuals. For many, this may be of less perceived value than something more immediate and tangible.

Without tangible incentives for key user groups, adoption of RCP tech will be limited. Innovators of RCP tech may want to consider behavioural tools such as financial incentives, customized informational reports or access to one-on-one supports that provide potential users with immediate-term incentives to use RCP tech.

For example, in a pilot of a stand-alone RCP tech product with job seekers, the promise of receiving a meeting with a professional career practitioner proved to be of such high value among the test subjects that they persisted through a relatively lengthy guided assessment process much longer than they would have without the offer of human support. In that same pilot, career practitioners were interviewed about what would incentivize them to use the RCP tech product. Some practitioners shared that if the tool helped to speed up their front-end data collection processes and / or reduce or eliminate time-intensive data entry requirements, they would be considerably more incentivized to use the product.

Ultimately, job seekers and career practitioners are busy but thoughtful consumers. It would be advisable to consider their attitudes and needs so that adoption is as fluid and quick as possible.

| Misaligned Incentives Between Parties

Many technologies in Job tech tend to be structured as two-sided marketplaces that facilitate the connections and / or transactions between two parties. Common transactions include the hiring of an individual for a job or internship, the provision of an instructional course or learning opportunity or the pairing of individuals with supporting mentoring relationships.

RCP tech, however, sometimes introduces a third (or even a fourth) party where not all entities necessarily share the same objective. In these situations, we might have a job seeker, career practitioner, publicly funded employment agency / ministry, private funder or even sector-specific employment service provider. When this occurs, harmonizing incentives across parties doesn't always occur. For

example, in RCP tech, we might witness a situation where a job seeker may want to secure a job or a higher salary; a career practitioner may want to provide a service to a job seeker; the payor of the platform may be wanting to shift individuals from employment in one sector to employment in another; and a provincial or municipal body (that may also be a payor) may want to incentivize training. In this situation, the actors that pay for services or the tool itself have outsized power to influence decisions. This potentially creates a system where the value of the tool for a career practitioner or job seeker can be overridden due to the goals of these third parties. **When all parties share in a common objective, such as helping a job seeker make the quickest choice to secure a new occupation, the platform is more likely to succeed. When the number of incentives grow and potentially diverge across each of the parties, finding common ground becomes more difficult. Aligning incentives across parties on a platform should be the primary objective when implementing new tools.**

| Scaling Challenges for New Technology/Innovation Developers

Since RCP tech is a relatively new niche within the Job tech space, today there are relatively few companies developing solutions, especially if we focus only on those companies that are developing solutions that will be used by either job seekers or career practitioners.

Unsurprisingly, newer entrants face steep hurdles in creating viable products / tools capable of growing and meeting the demands of a diverse marketplace. Building the product, scaling the team, identifying sustainable revenue and achieving market share are nontrivial challenges that must be solved in order for a product to scale. Scaling challenges present substantial barriers and significant risk for new developers to introduce and scale a product.

So why aren't existing companies, particularly the larger ones, doing more to develop RCP tech products right now? In the Early RCP Tech Use Cases section, we highlighted how two of the larger companies in the Job tech space, LinkedIn and Indeed, are demonstrating their capabilities in RCP tech. Even though both of the tools they offer, the Career Explorer tool and the Explore Career Paths tool, aren't especially robust, they demonstrate to external audiences that as companies they are cognizant and capable of developing strong positions or products for responsive career pathways. For some entities, this may be more about bolstering their thought leadership, enhancing their reputation and jockeying for position than anything else. It's possible that for these companies, RCP tech might present greater risk to participate since the market is undeveloped and it may take longer for R&D investments to be recouped. Further, they have to evaluate how R&D investments into RCP tech products would financially compare against investments they could make in other products, for example, sales tech. Lastly, many larger companies can afford to be "fast-followers," choosing to enter a market only after the first entrants have established a foundational market. Many of these companies can rapidly pool resources and talent to quickly develop competitive products and then leverage their existing sales relationships to grow a customer base, often faster than new startups can.

If an entity seeks to grow the RCP tech space via supporting an individual tool, they should consider how that entity is planning on managing the growth of their product and their company. Conventional wisdom suggests that 90% of startups fail within the first five years of operation, so it is especially important to work with organizations that can navigate this peril by balancing the need to be bold, strategic and cautious all at the same time.

It is important when supporting an organization developing a tool to be clear on the objective from the outset. If the objective is to innovate, pilot and test, then smaller, younger organizations may have greater flexibility. If the goal is to scale a tested solution, then a supporter / investor may want to prioritize entities that have demonstrated track records of success. For example, companies that have already seen successive rounds of investment or have gone public likely have more robust and longer-term plans for product growth.

| Reporting Obligations for Professional Career Practitioners

Most RCP tech today cannot be easily integrated with most data collection and reporting systems used by professional career practitioners. This is a profound problem, and not just for RCP tech: it is a feature present in the landscape for every major publicly funded social service domain.

Entities that professionally support job seekers as they navigate career pathways generally have data collection and reporting obligations. These obligations tend to be tied to grants or public contracts to perform specific services, and those contracts often mandate that the service provider enter data into a specific system. In Ontario, for example, employment service providers are required to enter data into the Employment Ontario Information System – Case Management System (EOIS-CaMS). For most public systems, there is a functional analog. Many of these tools are paid for and managed by a public agency / ministry who isn't necessarily thinking about the technology portfolio needs of employment service providers. Therefore, many of the existing public systems like EOIS-CaMS aren't easy to integrate with non-mandated technology systems. In some circumstances, the agencies or the tools themselves expressly forbid it.

Given these circumstances, many employment service providers and career practitioners are dissuaded from adding new systems to their technology portfolio, especially if it's not required and if they can't be integrated with their primary tool mandated by contracts and / or grants. **Ultimately, a lack of consideration in RCP tech toward the reporting obligations of potential user groups might hinder uptake among professionalized user groups. RCP tech developers should seek to understand how their tools can be used to support the workflows and reporting obligations of professional career practitioners. If they are able to address this issue, it will go a long way to minimizing the objections to using the tool by critical constituencies.**

At the same time, public and / or private funders that impose data entry requirements should consider how and where it would be appropriate for their grantees and service providers to integrate these systems with other tools to simplify practitioner workflows and minimize data entry workloads.

| Accessibility of RCP Tech to Diverse Populations

For individuals that hold the capability, experience, resources and privilege to independently define and navigate their own career pathway, RCP tech may be of mixed value, particularly because there are so many existing tools that allow those individuals to pursue opportunities on their own. The promise of RCP tech for individuals who may need additional navigational support is considerably higher.

Unfortunately, RCP tech is not universally accessible to the range of job seekers who could reap their benefits. **For example, RCP tech is generally available in only the most prevalent languages, and would therefore be inaccessible to large proportions of the job seeker population. Also, RCP tech can sometimes be complex to use.** Many job seekers are not conversant with the jargon and framing that some products use, so they may not be inclined to use a tool and may instead prefer to work with a human.

In spite of these barriers, there are several benefits to using RCP tech that would be comparatively harder to accomplish via traditional career guidance methodologies. **First, RCP tech may expose individuals to occupational and learning opportunities that they may be unfamiliar with, but for which they would be well suited.** This may benefit both job seekers and career practitioners because there are some circumstances in which career practitioners focus only on specific populations or sectors and have insight only into those areas with which they're familiar. Leveraging RCP tech might highlight opportunities that would have otherwise gone overlooked. Some RCP tech companies are thoughtful about this dynamic and intentionally provide broad sets of results to users that offer occupations both near and far, from a sectoral and geographic perspective, but still a match from a skills perspective.

Second, RCP tech may expose individuals to high quality career guidance despite their physical location or mobility restrictions. RCP tech isn't confined to specific localities in the way that traditional career practitioners tend to be. It should be noted that this dynamic has lessened somewhat due to the need to provide services remotely during COVID-19.

Third, RCP tech has greater capacity to scale. It isn't constrained by the limitations that exist when humans are required to render services. Without the restriction of having to see a human career practitioner, more people can be supported more quickly.

In summary, accessibility issues will likely hinder broader adoption of RCP tech, and may disproportionately affect certain groups of job seekers, even though it does address previous hurdles related to geographic barriers or service volume limitations. **Therefore, RCP tech developers should make concerted attempts to plan for accessibility from the outset, and not approach accessibility as an afterthought. Alternatively, RCP tech could at least support accessibility considerations by ensuring products can be coupled with in-person guidance to help those that struggle with access and navigation.**

| Artificial Markets

RCP tech is not something with a clear direct-to-consumer business model, and while its business-to-business-to-consumer model is growing, markets are not yet established. This is reflected in the Canadian market by the existence of OpportuNext and Planext, which were developed via public resources or other third-party funding, and which will continue to require these supports for maintenance and operation. Until the time when a business model can become more broadly prevalent, artificial markets can sometimes occur in their place. Meaning, it is not uncommon for compelling product ideas, those that may lack a straightforward business model or sustainable revenue streams, to be initially propped up by philanthropic or governmental support.

Even though entities such as the FSC exist and operate under a mandate to make available critical resources, the resources potentially required to maintain ongoing operations for each of these sites may ultimately siphon increasingly large, nontrivial portions of an organization's annual funding capacity.

In these situations, companies may make effective arguments for why something new needs to exist and then be successful in attracting funding to support the efforts. Sometimes these ideas are actually initiated and incubated by the funders themselves. However, these ideas are not always truly driven by demand. Foundations, for instance, have a notoriously patchy record of identifying and investing in products or ideas, many of which ultimately go nowhere.

If RCP tech is, in fact, currently operating in an artificial market, companies and products may run the risk of developing technology that meets funders' needs but misses the needs of job seekers or other critical user types. Funders should mitigate the risk of failing to meet end-user needs by requiring robust and repeated user testing and piloting minimum viable products as early as possible to pressure test overall demand.
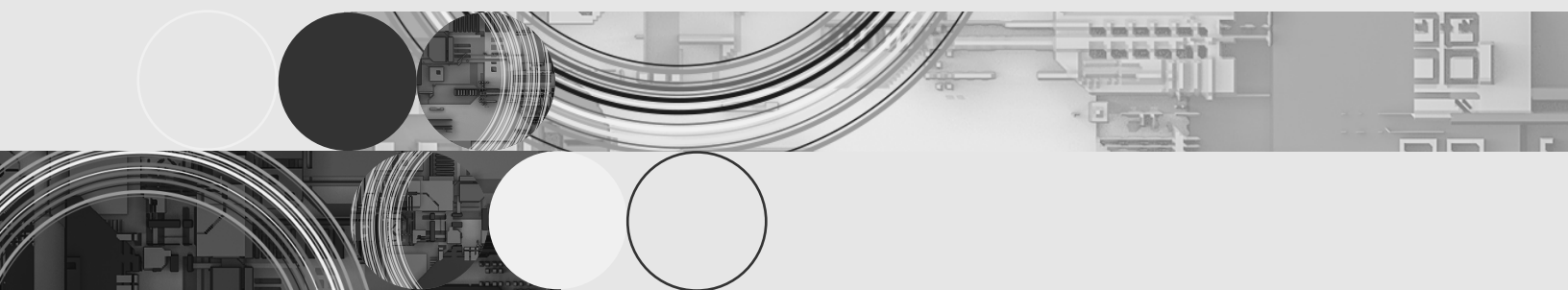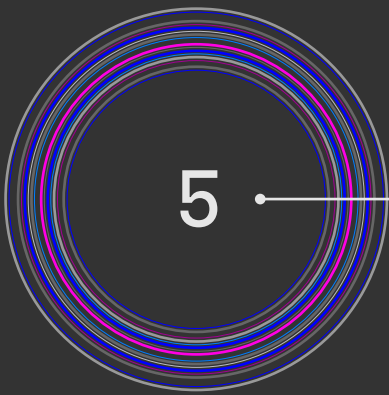
5 → Areas for
Further Research

Areas for Further Research

Little is known about the impacts and value of modern RCP tech. Given that, there are two areas where further research would be appropriate: (1) documenting the evidence of impact of existing products / tools; and (2) working to better understand what the larger technology players aim to accomplish.

| Demonstration of Impact

Technology-based interventions have not traditionally been held to the same evidence thresholds that are more commonly expected of social interventions.[6] For example, many human -led social interventions aim to establish a strong base of evidence via increasingly rigorous evaluations that would allow them to be placed on agency-approved procurement lists of tested interventions. Technology, conversely, has never been viewed through the same lens, and so few products have ever been required to meet specific evidence thresholds. **Without imposing evidence threshold requirements on products during the purchasers' procurement process, it is possible for products to see increasingly broad usage despite never demonstrating and documenting that their approach is more valuable than the alternative.**

Given this, few technology companies prioritize or finance the pursuit of evidence that demonstrates that their model produces positive outcomes for users and, instead, they gather intelligence that reinforces adoption, usability and / or sales generation.

This set of circumstances shouldn't be taken to mean that neither the developers nor purchasers of RCP tech are interested in evidence; rather, it is to say that without any expectations to produce evidence in order to sell or buy a product, it won't ultimately be prioritized. Further, with limited ability for for-profit technology developers to pursue grants to finance costly evaluations in the same way that social intervention developers often do, particularly those in academia, evidence generation may never occur.

Over the next decade, as social interventions and technology increasingly converge, there may be a need for a broader reconceptualization of what technology really is, and what types of evidence the sector will want to build in order to improve outcomes for individuals and communities. It may reasonably be warranted that if any funder, public or philanthropic, elects to invest in technology-driven interventions, it should also expect and / or require evaluation and demonstration of impact.

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6   There are mixed views about the merits of the traditional evidence-building approaches used to evaluate social interventions. While there are many valid criticisms regarding the bulkiness and appropriateness of the methods, there is still a general presumption that if someone wants to develop a new intervention, it should proceed through some steps toward evidence-building, as opposed to none.

I Deeper Investigation into Plans for Major Players

Often, the evolution of technology is shaped by the decisions and investments of major technology and governmental players. Technology developers like LinkedIn and Indeed or data vendors like Burning Glass and Emsi will have outsized influence over the long-term strategic direction of RCP tech.

A case study from a related technology domain demonstrates why it is important to consider the roles of the bigger players. Since 2000, there have been dozens of smaller companies that have developed case management tools (client information management systems, client relationship management systems) for nongovernmental human and social service providers. Some of these providers even attracted a relatively large base of business, for example Social Solutions, Bowman Systems and BitFocus. Yet, even with all of these options, general consensus among purchasers was that there were few robust technology options that were well-loved and truly met client needs, particularly the more sophisticated, complicated social service providers. Even though most providers never became very large, many were able to attract sustainable revenues. Few, though, were ever able to develop a product that could be easily maintained and updated. As the market grew, and more entrants began to crowd the market, Salesforce began to enter the space. They started slowly by working with vendors who specialized in supporting non-profit clients build customized salesforce applications. Then over time, they developed tools that could be directly accessed by the same market segment that previously were supported by the non-profit specialists. Over the last several years, the growth of their Salesforce.org division has grown so much, it has begun to consume vast swaths of the market previously held by the smaller vendors. As this has occurred, they have also invested significant resources to support this market segment with tools to improve not just their handling of data, but their programs more broadly. This demonstrates the influencing power that larger providers can wield, and the slow manner in which they can enter a market, but the speed at which their products can reach impressive levels of scale.

This example suggests that gaining greater insight into how the major players plan to support RCP tech will be helpful. It will provide intelligence into what functionality will be emphasized and what may be omitted. It also highlights the benefits of integration with other products and services (such as Google) that smaller players — those with one-off solutions — will struggle to compete with.
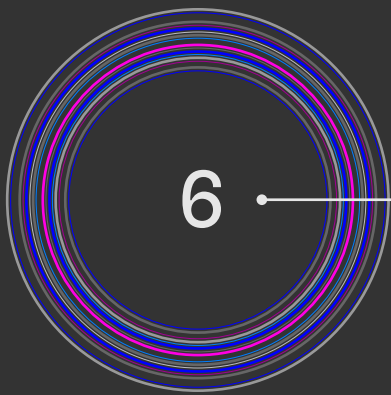
6 → Promising Opportunities and Considerations

Promising Opportunities and Considerations

Technology development can be a multifaceted and costly endeavor, particularly when building tools for an ecosystem embedded with innate complexity. At best, foundations and governmental funders historically have only achieved a patchy record of making technology investments. For many funders, it is not uncommon to have made more missteps than successful investments. The FSC and any other supporters should thus exercise caution before supporting technology-based projects and they could even consider bringing on one or two social sector technology experts to assess the viability of both a company and an approach beforehand. There are several considerations for possible next steps that have emerged from our review of RCP tech:

Establish a framework for how to support overlooked populations

Many technologies unintentionally leave certain populations behind. If responsive career pathways for Canadians are to be supported through our publicly funded systems, and if technology is to play an important role in that, it is imperative to understand which populations are served through existing tools and which go underserved or are entirely omitted. This analysis should then be used as a filter for future investments.

Pursuing the questions above will engender a richer perspective on what segments of the Canadian population are underserved by current strategies and solutions. There is an opportunity for FSC to promote responsive career pathways enabled by technology through supporting evidence generation that highlights existing gaps in RCP tech market strategies, and prioritizing an investment strategy that focuses on ensuring that gaps in existing strategies are not overlooked. This approach could take a variety of forms including direct investment and knowledge sharing / exchange across partners. Strategies may not necessarily require technology-based solutions; they may involve complementing existing offerings or providing new alternatives that feature more hands-on and / or in-person approaches.

Explore plans of major players and establish partnerships where appropriate

Major technology companies have the power to shift the direction of the RCP tech market on their own without significant support from philanthropy and / or government. For instance, it was announced on June 14, 2021, that major LMI providers Burning Glass and Emsi were merging, thereby creating one of the largest, most sophisticated vendors in the space. Together, their overall market share will increase their overall clout and will cause gravitational effects on the direction of other LMI providers.

One avenue of opportunity for FSC is to work to better understand the strategic direction of these entities to identify where complementary support may be directed. To the extent that existing players are developing approaches that would be valuable for broader proliferation or expansion, FSC may want to consider how and where partnerships may be appropriate. Technology developers tend to value the brand recognition of "for-good" partnerships and may be willing to expand existing efforts.

One option to extract greater data and to benefit from competition amongst innovators might be through hosting a convention where technology companies can come together

with academics and service providers to discuss their products and approaches. This might help forge a greater common understanding of the issues and the approaches, and increase momentum in the space. A convention such as this could potentially be organized as one forum within a broader convening of relevant stakeholders, such as academics, practitioners, service providers and employers.

It is also important to keep in mind that product development efforts of the major players are often focused on supporting larger markets like the US. Many companies, though, have country or regional leads who can be involved in these efforts and may have the ability to influence where products are rolled out or piloted. They may even be able to sway product development decisions to address the unique needs of the Canadian market.

Hold trial runs to build evidence for tech-based RCP technology tools

In the Areas for Further Research section, we noted that there were few demonstrations of impact regarding *modern* RCP tech. One possible option for FSC would be to incentivize existing technology developers to partner with evaluation firms and conduct evaluations on these products to assess how they compare to traditional interventions. Questions to consider might include comparisons of cost, broadness of reach, ease of use, etc. This data might provide valuable insights into which types of RCP tech are more conducive to promoting responsive career pathways.

The data collected could potentially be used to author a good practice framework to guide practitioners or buyers of RCP tech toward tools that have addressed known product shortfalls, like usability, ease of integration, quality of recommendations and generalizability to broad populations. Please see the potential considerations outlined in Côté, Olsen & Hirsh-Allen (2021).

Consider supporting a cohort of two to five RCP tech products to invest in, pilot and evaluate the results

One possible option for FSC to consider would be supporting a cohort of technology developers to work with different service providers in different sectors. Depending on how the cohort is formed, different technologies and approaches could be piloted and evaluated; both more robust tools like FutureFit AI or Skyhive.io and more limited tools such as McKinsey & Company's Job Progressions tool. This would require the capability to intelligibly manage and support the process, but it might help guide the sector during these more malleable early moments.

Be clear on which projects to avoid

Based on our assessment of the current state of the market, it is hard to make clear assertions about which companies / products will ultimately be successful at bringing critical RCP technologies to scale. Given that, it may be wise for FSC to seriously consider developing a position on what types of investments to avoid. Potential projects to avoid may include early-stage efforts; efforts that lack a clear pathway to scale; efforts that lack a clear pathway to sustainability; and efforts that seek to replicate existing high-quality, commercial, off-the-shelf technologies. These project varieties are highly contingent.
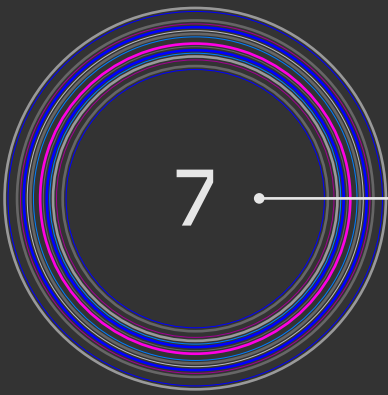
7 → Conclusion

Conclusion

RCP tech has much to offer Canadian job seekers, especially individuals who face high barriers to accessing career guidance or who may need additional navigational support. However, the RCP tech market is rapidly evolving and faces several challenges for adoption and growth that will serve the needs of job seekers, career practitioners and other stakeholders. Many of those challenges stem from the complexity embedded in the overall network of players or the general newness of the sector.

This paper provided a scan of the RCP tech market and the context in which it is evolving, and identified options for the FSC and other system actors to consider for potential ways to promote responsive career pathways enabled by technology.

| References

Bayes Impact. (2021). *Bob Emploi.* https://www.bob-emploi.fr/intro

Career Cruising. (2021). *Career Cruising for youth and adults.*
https://public.careercruising.com/en/our-solutions/adult-transitions/

Côté, A., Olsen, D. & Hirsch-Allen, J. (2021). *Navigating Canada's messy education and training marketplace for career-focused learning.* Blueprint.

Craig, R. & Khan, A. (2021, April 10). *Job tech market map.* Achieve Partners.
https://gapletter.com/images/2021_04_10_JobTech_Market_Map.pdf

Fuel50. (n.d). *FuelPathing.* https://www.fuel50.com/platform/pathing/

FutureFit AI. (2021). *The GPS to help workers navigate career transitions.* https://www.futurefit.ai/

Indeed. (2021). *Explore potential career paths.* https://www.indeed.com/career-advice/careers

LinkedIn. (2020). *Career Explorer.* https://linkedin.github.io/career-explorer/

McKinsey & Company & Rework America Alliance. (n.d) *Job progression tool (beta version).*
https://jobprogressions.mckinsey.digital/

OpportuNext. (n.d). *Career search.* http://opportunext.ca/

Planext. (2021). *Path builder.* https://myplanext.com/pathways/

Skyhive (2021). *Skyhive Enterprise.* https://b2c.skyhive.io/en-ca/enterprise