



# Skills-First: Opportunities for Collective Action

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# Preface

Globally, advanced economies and developing economies are grappling with issues related to economic sustainability and competitiveness amidst externalities and domestic challenges. As a corollary, human capital development and future-skilling have come to the fore on the policy agenda. Often, however, issues such as skills mismatch of the economically active and enterprises' inertia to transform their businesses pose challenges to advancing these policy objectives. For the most part, stakeholders have begun to realise that more needs to be done to close the gap between the supply and demand of skills for the economy. This has resulted in numerous efforts across the globe focusing on skills-based and skills-first conceptions, practices and debates.

Singapore is one of the economies that is enthusiastic about building a skills-first economy. The Centre for Skills-First Practices, at the Singapore University of Social Sciences-Institute for Adult Learning, has convened global and local experts to kickstart the Skills-First Working Paper Series. The aim is to elicit discussion and identify progressive organisations and individuals to lead change and forge enduring skills-first practices. In particular, the Skills-First Working Paper Series emphasises an ecosystem approach to tackle interconnected structural inefficiencies. The line-up of the series is as follows:

- #1 Skills-First: Are We There Yet? (Published on 19 May 2025)
- #2 Skills-First: What Does It Mean for Me? (Published on 21 July 2025)
- #3 Skills-First: What Does It Mean for My Organisation? (Published on 19 Aug 2025)
- #4 Skills-First: Policy and Impact (Published on 6 Jan 2026)
- #5 Skills-First: Opportunities for Collective Action
- #6 Skills-First: A Framework for Action

The fifth paper, "Skills-First: Opportunities for Collective Action", argues that the next bound of SkillsFuture Movement should focus on sharpening the intervention and focusing on coordinating collective actions between ecosystem partners: Employers, education and training providers, NTUC, intermediaries and policymakers, so that Skills-First practices become routinised and demonstrably linked to enterprise competitiveness and individual career resilience.

CSFP will be organising engagement sessions with ecosystem partners to review the proposals in order to derive at a suite of collective actions for Singapore.

We aim for the Skills-First Working Paper Series to serve as an important conversation starter to align thoughts on how to approach skills-first from an ecosystem perspective, as well as a springboard for experimentation of needle-moving solutions. We would like to express our gratitude to the co-authors who made time to pen the papers.



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# Abstract

Singapore has invested extensively in a comprehensive skills ecosystem spanning national skills frameworks, a robust Continuing Education and Training (CET) infrastructure, enterprise transformation programmes, training subsidies, career services and digital systems. Yet the adoption of skills-first practices remains uneven and often nascent, particularly among Small and Medium-sized Enterprises (SMEs) and individuals. The issue is not a lack of initiatives, but that the absence of coherent integration across them. As a result, skills-first is endorsed in principle but not consistently embedded as a driver of business competitiveness or individual career resilience.

This paper argues that the binding constraint is ‘ecosystem coordination and closing the nexus between skills development, employment and enterprise transformation’. Desired skills-first behaviours in hiring, work design, deployment, training investment and career transitions cannot become routinised without aligned incentives, standards and workflows across stakeholders.

Four coordination challenges characterise the current landscape. First, while CET participation is substantial, training decisions are not consistently anchored to enterprise transformation priorities, and workplace deployment of newly acquired skills is uneven. Second, skills developed through work and formal learning are not consistently recognised across employers, while career guidance, training and placement services remain fragmented across touchpoints. Third, within firms, workforce considerations are not routinely embedded upstream in business planning, and work redesign does not consistently accompany product innovation or technology adoption. Fourth, at system level, behavioural adoption and outcomes of skills-first are not tracked in a coherent manner, limiting visibility on skills utilisation, mobility and performance impact, thereby constraining ecosystem learning.

To address these gaps, the paper proposes four ecosystem-level collective actions. First, make training count towards business outcomes by shifting CET from participation-led to outcome-oriented capability models and strengthening applied learning and skills validation. Second, build career resilience for individuals by strengthening portable skills signalling, aligning guidance and placement around adjacent career pathways, and rewiring incentives towards progression. Third, integrate business strategy with people strategy by normalising skills-first as a default way of organising work and reinforcing skills utilisation beyond hiring decisions. Fourth, develop collective outcome measures for enterprises and individuals to track behavioural change and enable credible feedback loops.

Together, these collective actions aim to shift Singapore from infrastructure readiness to system-wide routinised skills-first practices, making the skills-first approach low-friction, high-payoff and demonstrably linked to enterprise competitiveness and individual career health.

# 1. Introduction

Evidence from the Skills-First Readiness and Adoption Index (OECD & IAL, 2025) underscores gaps in skills-first adoption. Global patterns show similar diagnosis. The World Economic Forum (2024) notes that despite rising concern over global skills gaps, progress is hampered by entrenched credentialism, fragmented pathways, and inconsistent validation mechanisms. The OECD Skills Outlook 2025 (OECD, 2025) similarly warns that socioeconomic barriers, uneven access to lifelong learning, and systemic fragmentation limit the effectiveness of isolated interventions. Internationally and locally, the message is the same: without coordinated governance and strong ecosystem alignment, progress remains pilot bound rather than transformative.

Working Paper 1 identified five systemic ecosystem gaps—signalling failures, risk asymmetry, measurement gaps, cultural resistance, and coordination deficits (Gog et al., 2025). While each of these gaps matters, the coordination gap is the key systemic constraint because it determines whether improvements in other areas can scale. Enhancements in signalling, risk mitigation, or measurement remain fragmented when incentives, standards, and workflows are not aligned across stakeholders.

Drawing from Working Papers 1 to 4 (Gog et al., 2025; Tay et al., 2025, Ong et al., 2005, Ho et al., 2026) this paper reframes Singapore’s skills-first challenge around two commitments:

- 1 Making skills-first matter to enterprises’ transformation and competitiveness.** Skills-first must function as a business advantage—enabling faster strategy-to-workforce translation, widening talent pools, strengthening performance, and supporting redesigned work and skills utilisation, not just increasing training volumes.
- 2 Making skills-first matter to individuals’ multiple career-life-learning transitions.** Skills-first must enhance career health—supporting portable skills signalling, lower risk for cross-sector mobility, sustained wage progression, and routine rather than episodic guidance.

Enterprises and individuals cannot realise these benefits alone. Adoption requires collective actions that align incentives, standards, and routines across stakeholders so that skills-first becomes low-friction and high-payoff. These collective actions are not new programmes but coordinated mechanisms that join existing efforts—shifting Singapore from infrastructure readiness to systemwide routinised practices. A consolidated governance table (Table 1) summarises the four collective actions, the system shifts they target, and the respective Primary Lever-Holders, core partners and proposed system anchors.

# 2. Why Skills-First Must Matter



## 2.1 Why Skills-First Must Matter For Organisations

Business leaders today face a recurring strategic gap. While transformation initiatives may stall or delay for various reasons—such as budget constraints or market uncertainty—one key contributing factor is the misalignment between workforce capability and strategic shifts. New products, operating models and market pivots require new combinations of tasks and skills—yet workforce decisions lag behind.

The cost of this misalignment is measurable:



**Hiring mismatches:** Incorrect role fit and prolonged time-to-productivity



**Skills underutilisation:** Paying for capabilities that are not effectively deployed



**Slower execution:** Strategic initiatives delayed while firms search externally for talent that may already exist internally



**Failed redeployment:** Inability to move existing workers into evolving roles

For SMEs, this gap is even more pronounced. Most lack dedicated Human Resource (HR) analytics or workforce planning capabilities. Without shared tools or sector-level coordination, transformation can appear costly and risky. As a result, workforce decisions tend to remain reactive rather than strategic.

## The Delta Benefits for **Employers Across Business Transformation Cycles**



When organisations adopt skills-first practices and embed them into organisational routines, they enable:

- **Higher productivity through better skills utilisation** by deploying existing capabilities where they create the greatest value
- **Efficiency gains through reduced mismatch and underutilisation** with education in costs associated with poor hiring decisions
- **Faster strategy-to-workforce translation** with the capabilities to execute transformation at the speed of business change
- **Lower hiring and redeployment risk** through assessing candidates based on demonstrated capabilities and redeploying workers based on adjacent skills
- **Wider and more resilient talent pools** through sourcing from non-traditional pathways and reducing reliance on scarce credentials

Table 1: *From Current Practices to Skills-First Practices for Employers*

Current Practices	Skills-First Practices
Define roles by job descriptions	Articulate roles in terms of tasks and required skills
Hire purely based on qualifications and prior titles	Assess candidates based on demonstrable capabilities
Select training based on available funded courses	Start with business problems and performance gaps, then diagnose the required skills before training
Evaluate training through participation metrics	Link learning investments and skills application to business performance outcomes
Redeploy workers based on hierarchy and job roles	Guide redeployment using skills adjacency



## Desired Skills-First Behaviours of Employers

Skills-first for employers requires shifting from ad hoc hiring and training decisions to routinised, skills-anchored decision-making across recruitment, work design, and skills utilisation.

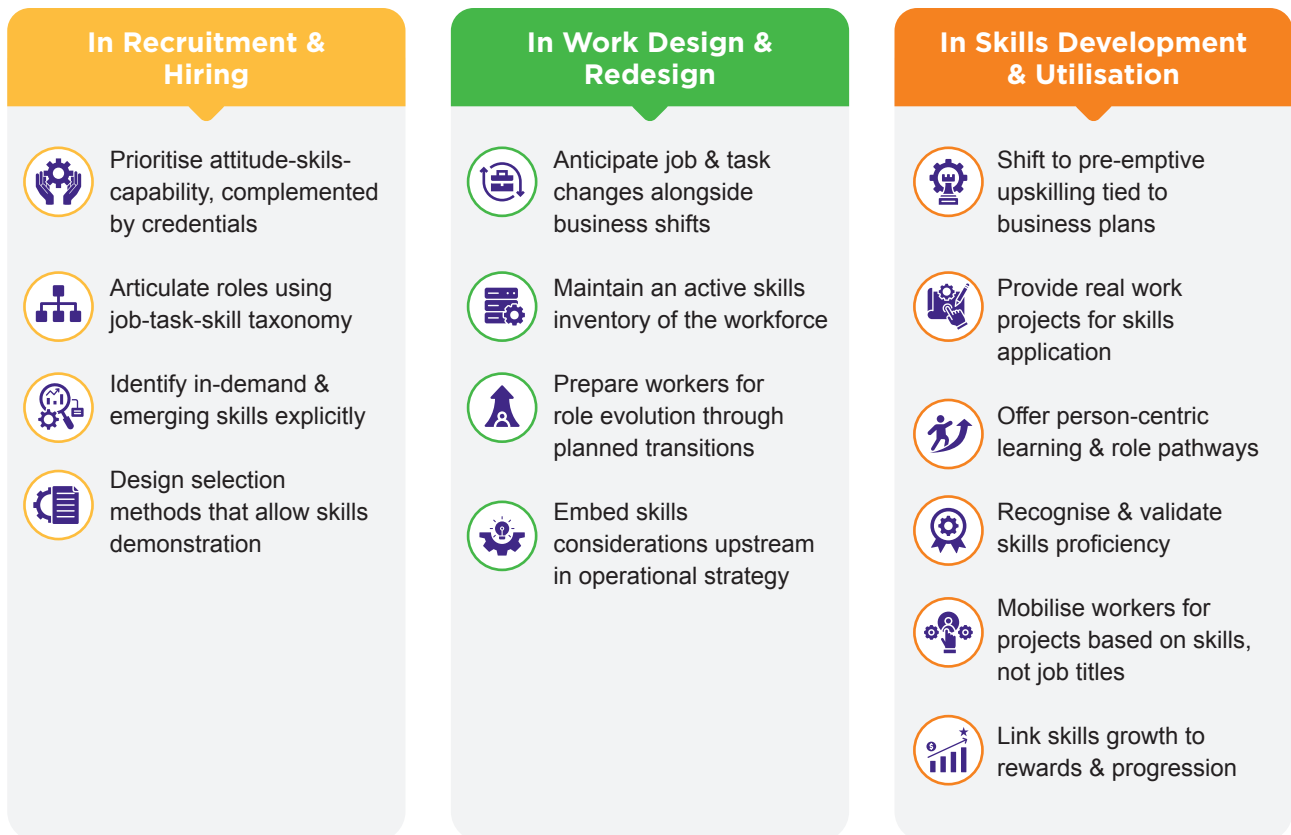


Figure 1: *Desired Skills-First Behaviours of Employers*



## 2.2 Why Skills-First Must Matter For Individuals

Today's workers face three compounding challenges: technical skills can become obsolete in under five years, careers no longer follow linear organisational ladders, and skills acquired through work and informal learning remains inconsistently recognised in the labour market.

Without skills-first principles embedded in the ecosystem, individuals potentially face higher transition risk, weaker wage progression across career moves, and lower returns on training investments. Career navigation becomes episodic and reactive rather than strategic and cumulative.

### The Delta Benefits for **Individuals Across Career-Life-Learning Transitions**



When skills-first principles are embedded into labour market institutions and individual routines, they enable:

- **Portable and trusted skills signalling** that travels across employers, sectors and career stages
- **More targeted reskilling** by identifying adjacent capabilities before enrolling in training
- **Stronger career health** supported by clearer navigation tools and guidance
- **Fairer access** to opportunities where advancement is based on demonstrated capability rather than qualification alone

Skills-first for individuals is not merely about access to more training. It is about how individuals interpret labour market signals, plan development pathways, and present their capabilities—and how these behaviours interact with employer and intermediary practices.

Today, many entrenched practices are credential-anchored and episodic.

Table 2: From Current Practices to Skills-First Practices for Individuals

Current Practices	Skills-First Practices
Anchor career identity to qualifications and job roles	Interpret opportunities in terms of required skills and tasks
Leave learning decisions to employer	Engage employers and coaches in structured development conversations
Present work history as job titles and duties	Translate experience into demonstrable skills and portfolios
Experience transitions as discrete events	Identify adjacent skills that enable lateral or upward mobility

### Desired Skills-First Behaviours of Individuals

Skills-first for individuals requires deliberate shifts across three domains: skills awareness, skills development, and skills demonstration.

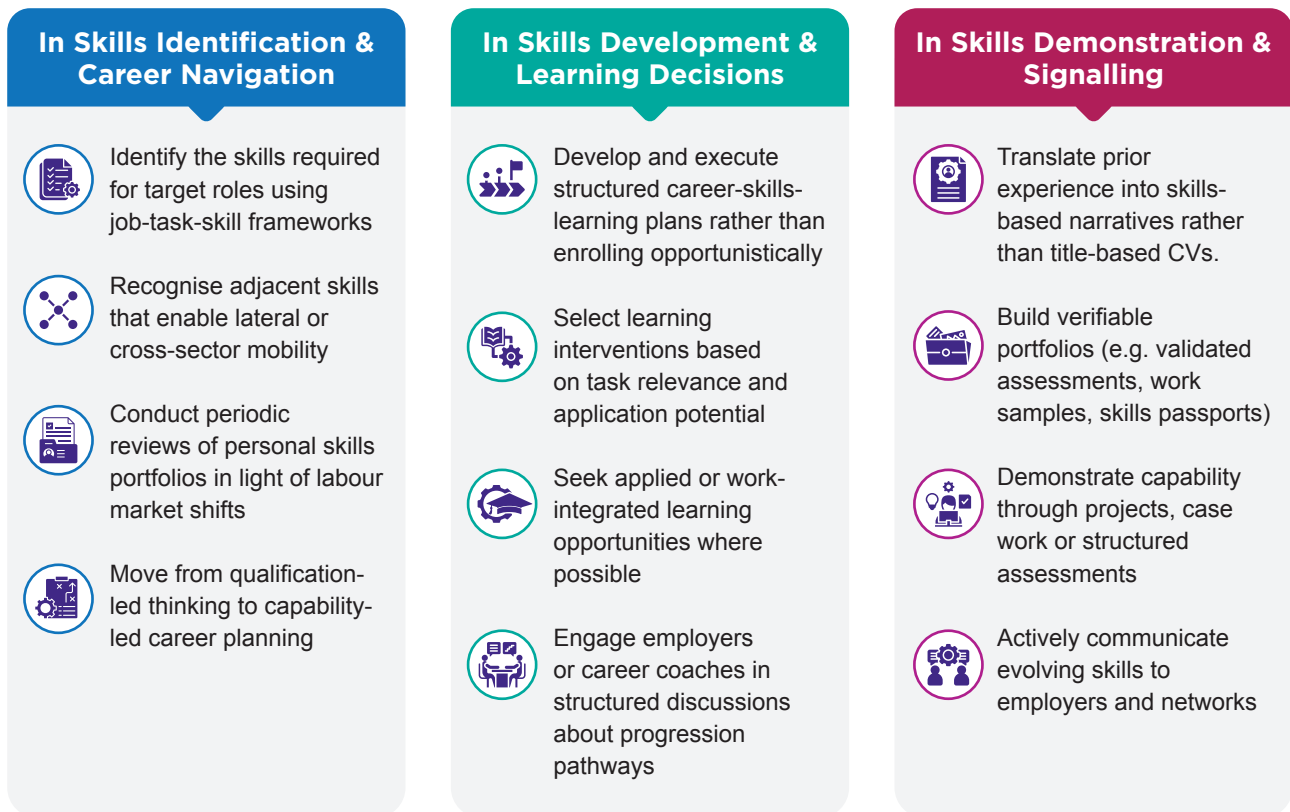
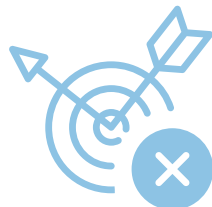


Figure 2: Desired Skills-First Behaviours of Individuals

# 3. From Desired Behaviours To Collective Actions

Skills-first succeeds only when the desired behaviours described earlier become routinised within organisations and individuals. However, organisations and individuals cannot adopt these behaviours easily as there exist systemic weaknesses that discourage their adoption:

**Training does not consistently translate into business outcomes**



Courses may be completed, but skills are not always deployed or linked to measurable performance improvements at workplace

**Skills developed are not recognised and not optimised at work and for further learning**



Skills acquired through work or training do not always travel across employers, leading to duplicated learning or weak career progression

**Business strategy and people strategy remain weakly integrated**



Product innovation, technology adoption and process redesign are not systematically linked to work redesign and skills planning

**Skills-first adoption and outcome monitoring are not yet established**



Without shared measures of skills utilisation, mobility and performance impact, feedback loops remain weak

These systemic weaknesses cannot be resolved by any single stakeholder on their own. Collective action across the ecosystem is needed.



## Collective Action 1: Working Together To Make Training Count Towards Business Outcomes

### ! What Is The Challenge Today?

Singapore has built a strong CET ecosystem. The core challenge is not access to courses, but whether training translates into tangible business and career outcomes. Symptoms of poor translation of training into business outcomes include:

- **Training is often weakly linked to business strategy.** Enterprises may invest in courses without systematically connecting them to product innovation, process redesign, technology deployment or market repositioning. Work and task redesign frequently occurs without explicit articulation of skills required. As a result, training sits downstream of business change rather than being integrated into it.
- **Course catalogues are organised around providers or qualifications, rather than business needs.** Training offerings are frequently structured by course providers or certification types rather than business activities, job roles or operational challenges. This makes it difficult for employers, especially SMEs and individuals, to identify fit-for-purpose interventions aligned with specific operational needs or career pathways.
- **Skills validation focuses heavily on completion, not demonstrated capability or workplace application.** Certificates often signal course attendance or assessment performance, but not necessarily proficiency in real work contexts or ability to apply skills effectively in the workplace.
- **Feedback loops between workplace performance and training design are weak or absent.** Productivity gains, skills utilisation and career progression are not systematically tracked and fed back into course refinement. Without these loops, learning remains disconnected from business performance.



## What Could be Done?

Training must count towards business outcomes. Doing so requires three interlocking shifts to be made:

### 1 Prioritise Government-Funded CET Towards Enterprise and Career Outcomes

CET interventions must be tied explicitly to:

- **Business performance improvements for enterprises**, such as productivity gains, innovation capacity, service quality or process efficiency.
- **Employability, mobility and career progression for individuals**, especially across adjacent roles and sectors.

This requires reshaping incentive structures. Funding, recognition and performance metrics should increasingly reward programmes that demonstrate workplace application and measurable outcomes, not just enrolment or completion numbers.

Enterprises must articulate clear business and operational objectives before making training investments. Training providers and Institutes for Higher Learning (IHLs) must design programmes beginning with performance outcomes rather than syllabus coverage and skills mapping alone. Employment agencies and intermediaries must reinforce outcome-oriented pathways by aligning training to real vacancies and mobility opportunities.

When outcome expectations are explicit, training becomes a competitiveness lever rather than a compliance activity.





## 2 Make Applied Learning and Skills Validation the Default

Applied learning, work-based projects and performance-based assessments must become baseline expectations for publicly supported training.

### Learning interventions must:

- Start from business activities and real work scenarios;
- Embed simulations, workplace projects or problem-solving assignments;
- Incorporate structured skills validation tied to task performance; and
- Require evidence of skills application where feasible.

Shared standards for micro-credentials can strengthen this shift. Micro-credentials are expanding across training providers and professional bodies, but without common standards for proficiency levels, evidence requirements and assessment quality, their credibility remains uneven. To function as reliable skills signals, micro-credentials should emphasise demonstrated performance, such as workplace projects, simulations or task-based assessments.

Employers play a critical role by providing real business problems, data and project opportunities. Training providers and IHLs translate these into structured learning and assessment design. Policymakers reinforce the shift by embedding applied components and validation standards into funding and quality assurance frameworks.

IHL transcripts still emphasise subjects and grades rather than clearly validated skills, so policy and standards should require IHLs and professional bodies to embed validated, consistently interpreted skills within transcripts and certifications. IHL career services should support students and alumni to translate these validated skills into credible portfolios, job-matching signals and mobility narratives over the life course.

When application and validation are built in, capability activation replaces abstract knowledge transfer.

### 3 Strengthen Needs Articulation and Post-Training Deployment

The shift from supply-led to demand-led CET requires addressing two persistent coordination gaps: weak articulation of business needs before training, and weak deployment and recognition of skills after training.

#### Clarify Needs and Improve Fit-for-Purpose Selection

Enterprises, particularly SMEs, often struggle to articulate operational problems in skills terms. Sector agencies, trade associations and chambers (TACs) and workplace learning consultants can aggregate demand signals and guide fit-for-purpose selection.

Course catalogues and training search systems should increasingly be organised around:

- Business activities and operational challenges,
- Job roles and task clusters,
- Career pathways and adjacent skills.

Sector-level instruments such as Job Transformation Maps (JTM)s can support this articulation process. By identifying how tasks are reconfigured through technology adoption, particularly AI, JTMs make visible emerging skill adjacencies within and across occupations. Given the rapid pace of technological and business change, JTMs will need to be refreshed more frequently and organised around emerging capability themes, helping enterprises anticipate skills shifts rather than react only when vacancies arise.

This reduces navigation burden and aligns course selection with real operational needs.

#### Strengthen Post-Training Deployment and Recognition

Training impact weakens when newly acquired skills are not intentionally deployed, recognised or reinforced in the workplace. Without clear plans for utilisation, even well-designed applied learning may not translate into sustained performance gains.

**Employers should articulate upfront how newly acquired skills will be used, recognised and rewarded. Training providers and IHLs must incorporate post-programme follow-ups or workplace integration support to reinforce application. Employment intermediaries must strengthen recognition of validated skills in hiring and redeployment decisions.**

When post-training deployment and recognition are deliberate, skills are not merely acquired but embedded into work processes, performance systems and career progression pathways.



## Primary Lever-Holders: Training Providers and IHLs

Training providers and IHLs play a pivotal role in ensuring that skills are imparted meaningfully to enterprises and individuals through effective learning design and evaluation. If they continue to operate primarily with course-led structures, completion-based validation and satisfaction-driven metrics, training will remain weakly linked to business outcomes, even when employers are able to articulate their needs. Conversely, if providers redesign their operating models, they can catalyse a system-wide shift from participation to performance.

### Training providers and IHLs therefore must:

- Design programmes around business activities and performance outcomes.
- Embed applied learning and work-based projects as default components.
- Incorporate skills demonstration and validation beyond attendance.
- Customise programmes for enterprise and sector contexts, especially SMEs.
- Track post-training utilisation and feed outcomes back into programme design.

For example, outcome-oriented validation can include a structured 30–60-day post-training deployment report co-signed by employer and learner, or a work-based project assessed against predefined task performance standards.

Employers hold the complementary power to trigger routinisation at the deployment stage, and this is reflected in the value chain roles described below.



## Interdependencies Across the Value Chain

For outcome-oriented CET to become routine practice, actors across the value chain must perform complementary roles that reinforce one another. Many foundational elements are already in place: employers articulate business needs, sector agencies aggregate demand signals, IHLs and training providers deliver programmes, and intermediaries support deployment. These functions are necessary and must be strengthened, not replaced.

However, what is not yet fully embedded is systematic translation of operational needs into skills terms, structured coordination across stages, and consistent feedback loops linking training to workplace outcomes. The required shift is therefore not to create new actors, but to move from fragmented, ad hoc coordination to structured, system-wide practice across upstream demand articulation, midstream learning design, and downstream deployment and recognition.

## Upstream

### Demand Articulation and System Signals

Employers, especially anchor firms and Queen Bees, already articulate real business requirements, task requirements and performance expectations. Sector agencies and TACs aggregate some of these signals across firms, reducing fragmentation.

However, articulation is often broad or expressed in operational terms rather than clearly translated into task- and skills-level implications for training. To strengthen this stage, employers need to make business “why” statements and capability implications more explicit before training investments are made, while sector agencies and TACs should aggregate demand more systematically in skills terms.

Policymakers must strengthen this stage by structuring funding rules and public course catalogues around business activities, job roles and operational challenges, rather than around training providers or qualifications. This encourages employers to begin with a clear business need or performance gap, before identifying the relevant skills and training solutions. By organising the system around enterprise demand instead of course supply, policymakers help make outcome-oriented training the default rather than the exception.

## Midstream

### Translation and Learning Design

Training providers and IHLs must translate aggregated demand into applied, work-relevant programmes with embedded skills validation, spanning CET as well as diploma and degree pathways.

Policymakers must reinforce this shift by embedding applied learning and skills validation as baseline expectations, while aligning funding and performance metrics with workplace application rather than participation alone.

## Downstream

### Deployment, Recognition and Feedback

Enterprises must deploy newly acquired skills in redesigned roles and recognise demonstrated proficiency. Intermediaries (e.g. SME Centres, NTUC Company Training Committees) must support SMEs in integrating skills use into operations. Workforce representatives must support worker participation and progression.

IHLs and training providers must contribute to downstream recognition by issuing skills rich, validated records (including enhanced transcripts and portfolios) that employers can readily interpret, and by collecting feedback on utilisation and progression to improve programme design.

Policymakers must enable feedback loops by encouraging tracking of skills utilisation and progression outcomes, ensuring that insights inform future programme design and sector priorities.

## Collective Action 2: Working Together To Build Career Resilience For Individuals

### What Is The Challenge Today?

Singapore has expanded career services, training pathways and digital tools to strengthen workforce resilience. The core challenge is not the availability of support, but whether skills reliably translate into better mobility and wage outcomes for individuals. Symptoms of poor mobility and outcomes include:

- **Skills acquired through work and training do not travel reliably across employers or sectors.** While Singapore has developed national skills taxonomies, these frameworks are not yet consistently embedded in hiring, deployment and progression decisions across firms. As a result, employers often rely on credentials or prior job titles as proxies for capability. This makes it difficult for both employers and workers to recognise adjacent skills and therefore limits opportunities for career mobility across roles and sectors.
- **Career guidance, training and placement services operate in silos.** Individuals often navigate separate touchpoints for counselling, course enrolment and job matching. Support is episodic rather than continuous, making transitions fragmented and high-friction.
- **Employment intermediaries prioritise speed and placement volume over match quality and progression.** KPIs often reward short-term placement outcomes rather than skills utilisation, retention or wage growth.
- **Career transitions are high-risk events with uncertain returns.** Without trusted skills signals and coordinated pathways, individuals may duplicate training, accept suboptimal matches, or experience wage stagnation despite upskilling.





## What Could Be Done?

We need to work together to build career resilience for individuals. Doing so requires three interlocking shifts to be made:

### 1 Build Career-Learning-Skilling Literacy

Individuals must be supported to review, plan and act on their skills trajectories in a structured way. Skills literacy is not an end in itself. It is about setting clear sight on desired mobility and progression outcomes, and aligning learning decisions accordingly.

Importantly, support should begin early, not only at the point of job loss or crisis. When jobseekers approach career coaches in moments of urgency, they are often focused on immediate placement and may not be in the right state of mind to engage in capability planning. Encouraging individuals to step forward earlier, while employed or before transitions become acute, creates the space for more deliberate career-learning-skills planning.

#### **Career support must enable individuals to:**

- Understand required skills for target roles using job-task-skill frameworks.
- Identify adjacent skills that enable lateral or upward mobility.
- Develop structured career-skills-learning plans rather than enrol opportunistically.

Career guidance professionals and intermediaries must move beyond vacancy matching to include capability planning. Over time, this builds individual agency and reduces retraining waste.

### 2 Strengthen Skills Signalling and Validation

For career resilience to be realised, skills must travel. This requires strengthening interoperable skills signalling infrastructure so that:

- Skills acquired through work, training or assessment are visible and verifiable.
- Employers can interpret skills profiles consistently.
- Individuals can build portable skills records rather than rely solely on job titles in CVs.

Skills assessments, digital passports and validation frameworks must be integrated into hiring and progression workflows, not treated as parallel add-ons. When signalling is trusted, adjacent mobility becomes lower-risk for both employers and individuals.

Career resilience support must be organised around real labour market pathways. Training providers, intermediaries and career services must coordinate around:

- Adjacent-skills maps linking declining roles to growing occupations.
- “Train-and-place” and “place-and-train” models tied to identified vacancies.
- Reduced duplication of learning through targeted interventions.

Integrating assessments, skills passports and placement services into a coherent workflow reduces friction and creates a virtuous cycle: clearer signals improve matching; better matches reinforce employer confidence; stronger outcomes build individual trust.



### **Primary Lever-Holder: Policymakers and Employment Intermediaries**

Policymakers and employment intermediaries are the primary lever-holders for driving skills-based mobility outcomes. Policymakers shape system incentives and performance metrics, while intermediaries operationalise these signals in day-to-day matching and placement decisions.

Today, many employment and placement KPIs prioritise speed and volume. While these metrics have enabled efficiency at scale, they do not consistently reward match quality, skills utilisation or progression outcomes. As a result, even where skills signals exist, they are not systematically translated into better mobility and wage outcomes.

Policymakers therefore play a critical role in resetting KPIs and funding models to prioritise progression, retention and effective skills utilisation. What is measured and funded ultimately shapes behaviour across the ecosystem.

Employment intermediaries, in turn, are the operational lever for change because they facilitate the conversion of skills signals into hiring and mobility decisions. While transitional adjustments to workflows and profiling practices will be required, intermediaries that move early can strengthen their strategic positioning in a changing labour market.

Employers may not yet explicitly demand skills-based shortlisting. However, as labour markets tighten and capability requirements become more granular, intermediaries that can surface candidates with adjacent skills, demonstrate progression potential and improve matching will be better placed to add value.

By taking the lead within a system of aligned incentives, forward-looking intermediaries can shape employer expectations, deepen advisory relationships and expand their role beyond transactional placement towards capability-oriented talent solutions.

To translate skills into meaningful career outcomes, policymakers must first reset system incentives, and intermediaries must translate these into operational practice:

- **Redefine candidate profiling around skills, not titles.**  
CV screening, shortlisting and candidate presentation must foreground validated skills and adjacent capabilities rather than prior qualifications alone
- **Shift KPIs internally toward match quality and progression.**  
Agencies should incorporate broader indicators such as retention, skills utilisation and wage progression, alongside traditional placement metrics. What gets measured becomes routinised. As employers progressively strengthen their ability to identify and articulate skills requirements, the use of such indicators will become increasingly feasible.
- **Integrate skills passports and assessments into workflows by default.**  
Skills records must be embedded in candidate sourcing, employer presentation and interview preparation processes, not treated as optional add-ons.

These changes alter everyday decision rules. Once intermediaries adopt them, employers encounter skills-based candidate shortlists as the norm, not the exception, accelerating behavioural diffusion across firms.

### **Interdependencies Across the Value Chain**

For career resilience to be reflected in mobility and progression outcomes, complementary actors across the value chain must shift their default behaviours in ways that reinforce one another.

Many core elements are already present: employers set hiring criteria, intermediaries match candidates to vacancies, training providers offer reskilling pathways, and policymakers support signalling infrastructure. These foundations are valuable and must be built upon.

However, what remains uneven is the recognition of skills across employers, systematic translation of adjacent capabilities into viable mobility pathways, and alignment of incentives towards progression rather than placement alone. The required shift is therefore not to replace existing functions, but to strengthen their coherence.



## Upstream

### Demand Legitimacy and Hiring Norms

Employers ultimately determine whether skills travel. They define job requirements, set hiring criteria and decide whether validated skills signals are recognised in recruitment and progression decisions. Their critical shift is to:

- Define roles in skills terms rather than qualification proxies.
- Accept adjacent capabilities in candidate screening.
- Recognise validated skills in promotion and pay decisions.

When employers treat skills signals as credible currency, mobility becomes lower-risk and more scalable.

Policymakers must reinforce this stage by shaping expectations for skills-based job definitions and modelling such practices in public sector hiring, thereby normalising skills-first mobility norms.

## Midstream

### Matching, Translation and Pathway Navigation

Employment intermediaries and career guidance professionals sit at the conversion point between skills signals and job outcomes. They must translate adjacent skills into viable career moves and shape employer perceptions of candidate capability.

Job platforms and HR tech providers must operationalise this at scale by embedding skills-based matching algorithms, interoperable passports and structured skills profiles into recruitment workflows.

Policymakers such as Workforce and Skills Singapore must strengthen this stage by rewiring KPIs to match quality and progression, not placement speed alone. When incentives shift, matching practices shift.

## Downstream

### Reskilling Alignment and Progression Realisation

Training providers must align reskilling interventions to real vacancies and adjacent-skills pathways, supporting train-and-place and place-and-train models that reduce duplicated learning.

Employers then deploy individuals into roles where validated skills are utilised and progression is possible.

Policymakers must support interoperable skills signalling infrastructure to ensure portability across sectors, reducing transaction costs and reinforcing trust in the system.

When credible demand, skills-based matching, aligned reskilling and real deployment align, skills-first mobility becomes self-reinforcing: clearer signals improve matches, better matches improve retention and wage outcomes, and stronger outcomes increase trust in skills as the currency of advancement.



## Collective Action 3: Working Together To Integrate Business Strategy With People Strategy

### What Is The Challenge Today?

Businesses are attempting to seize opportunities in an increasingly uncertain environment. The key challenge is transformation capability within firms, specifically in the area of harnessing human capital and skills to fully realise strategic opportunities. Symptoms of weak integration between business and people strategy include:

- **Strategic initiatives proceed without parallel workforce redesign.**  
Product innovation, technology adoption and process transformation are often launched without systematic articulation of task implications, work redesign or forward skills planning.
- **Qualification proxies dominate hiring and deployment decisions.**  
Recruitment, promotion and redeployment continue to rely heavily on formal credentials and prior job titles, indicating that skills recognition and validation mechanisms have not been mainstreamed into routine decision-making.
- **Acquired skills are under-recognised and under-utilised.**  
Skills developed through work or formal learning do not consistently translate into expanded responsibilities, deployment opportunities or career progression outcomes.
- **Skills-first practices remain episodic rather than embedded.**  
Without supportive managerial capability and institutional mechanisms, skills-first approaches are applied selectively rather than integrated into everyday operating models.



## What Could Be Done?

We need to work together to integrate business strategy with people strategy. Doing so will require three interlocking shifts to be made:

### 1 Make Strategy-to-Skills Translation Routine

**Enterprises must routinely translate strategic shifts into task-level and skills-level implications. This means:**

- Embedding workforce and skills considerations upstream in business planning.
- Linking innovation and technology adoption to job redesign and capability deployment.
- Reviewing roles periodically to ensure skills requirements evolves alongside strategy.

When strategy-to-skills translation becomes routine, workforce capability moves in step with business change. Skills then function as a competitiveness lever rather than a downstream afterthought.

### 2 Move from Isolated Experimentation to Coordinated Adoption

For enterprises, adopting new hiring and work design practices carries uncertainty. The shift required is from fragmented, firm-by-firm experimentation to coordinated adoption supported by shared infrastructure and sector platforms.

**Employer and business organisations must support this shift by:**

- Developing practical capabilities and tools to facilitate skills-based job design.
- Developing shared templates for skills-based hiring and role definition.
- Facilitating training of HR professionals, line managers in skills-first practices as well as enable peer learning and benchmarking across firms.
- Disseminating case examples demonstrating productivity gains.
- Pooling resources through centrally coordinated services and access to skills frameworks.
- Prototyping skills validation tools with service providers and linking tools to national jobs-skills system.

By learning collectively rather than individually, firms reduce experimentation costs and accelerate diffusion.

### 3 Reinforce Skills Beyond Hiring

Skills-first must extend beyond recruitment into deployment, and evaluation and reward systems.

Enterprises must ensure that:

- Skills inform project allocation and task assignment.
- Demonstrated capability influences promotion decisions.
- Skills growth is linked to pay and career progression.

When skills influence real organisational outcomes, incentives align and behavioural change becomes sustainable.

However, enterprises—particularly SMEs—often experience transformation support as fragmented assistance. Business solutions, technology solutions and skills solutions are sourced separately, with limited integration across providers. This increases coordination burden and weakens the linkage between strategy, technology adoption and workforce capability development. An integrated system that enables enterprises to identify and engage transformation partners offering aligned business, technology and skills solutions would reduce this fragmentation. By structuring transformation support around coordinated solutions rather than isolated interventions, firms are better positioned to link work redesign, technology deployment and skills planning in a coherent manner.

#### **Primary Lever-Holder: Employers, Employer and Business Organisations and HR Professional Bodies**

Employers are the key implementers of this collective action because they control hiring and deployment decisions.

If firms continue to default to traditional qualifications proxies, skills-first will not routinise, regardless of improvements in training or intermediation. Conversely, when employers change how they define roles, evaluate performance and reward capability, system-wide demand norms shift.



Employer and business organisations are well placed to champion skills-first as a competitiveness priority among CEOs and business leaders, while professional HR bodies advances professional standards and capability development within the HR community.

However, integration requires more than parallel engagement. It requires structured alignment between those who set business direction and those who operationalise workforce design. This deliberate “handshake” is essential. Practically, this handshake can take the form of a joint business-HR planning session embedded in the annual strategy cycle, where CEOs and HR leaders translate strategic shifts into task and skills implications, or a sector-level workforce planning template co-developed by employer, industry and HR partner to use in their own planning.

**Employers, employer and business organisations and HR professional bodies must support this alignment by:**

- Convening firms to co-develop practical skills-first templates.
- Facilitating sector- and size-specific adoption, especially for SMEs.
- Curating business case evidence demonstrating productivity gains.
- Providing trusted platforms for firms to surface implementation challenges.
- Working with professional bodies to embed skills-first principles into HR standards and managerial practice.

Through peer-driven diffusion, skills-first shifts from isolated champions to sector norm.

### Interdependencies Across the Value Chain

For employer decision-making to change at scale, complementary actors must reinforce new norms.

Institutional roles are already defined. Standards exist. Hiring workflows are established. Regulatory frameworks provide legitimacy. These foundations are not absent.

What remains incomplete is consistent integration across these layers. Norm-setting, market practice and enterprise routines do not yet operate with a shared skills-based logic. As a result, skills-first practices remain discretionary rather than embedded.

The required shift is to align professional standards, intermediary practices and internal enterprise systems so that they reinforce skills-based decision-making. When these reinforcing mechanisms operate in concert, skills become integrated into how firms define roles, deploy talent and reward demonstrated capability. Business and people strategies can then move in step rather than in parallel.

## Upstream

### Norm Setting and Professional Standards

Professional bodies must translate skills-first principles into competency standards, certification requirements and management toolkits. When embedded into professional practice, skills-based approaches become expected rather than optional.

Policymakers must provide legitimacy and regulatory clarity by aligning skills-first practices with workplace fairness norms and employment standards. Clear signalling reduces uncertainty for firms considering change.

Public sector agencies must reinforce these norms through practice. As a major employer in Singapore, the public sector must model skills-based job design, hiring and progression at scale, demonstrating operational viability and signalling institutional commitment.

## Midstream

### Hiring and Market Alignment

Employment intermediaries must align candidate screening and employer shortlisting with skills-based frameworks. When intermediaries present candidates through structured skills profiles rather than qualification proxies, employers are nudged toward consistent interpretation and use of skills signals.

## Downstream

### Deployment and Reinforcement

Enterprises must embed skills-based deployment and reward practices within their internal systems. Workers experience tangible recognition of capability, reinforcing trust in skills-first pathways.

When these actors align—employer leadership, professional standards, intermediary practices and regulatory clarity—skills become integrated into business decision-making.

Business and people strategies cease to operate in parallel lanes. Instead, skills-first becomes embedded in how firms compete, deploy talent and reward performance—delivering sustained gains in productivity, organisational resilience and workforce progression.

## Collective Action 4: Working Together to Develop Collective Outcome Measures for Enterprises and Individuals



### What Is The Challenge Today?

In the 2025 Skills-First Readiness and Adoption Index (OECD & IAL, 2025), Singapore ranked 12th out of 30 countries. As an inaugural attempt to assess readiness and adoption of skills-first practices at scale, the Index provides a baseline for comparison. The next challenge, however, is to measure the extent of routinisation of skills-first behaviours and the resultant impact over time. Challenges today include:

- **Limited visibility on behavioural change.** It is unclear whether employers are consistently integrating skills into hiring, deployment and reward decisions, or whether individuals are adopting skills-based approaches to career navigation.
- **Weak measurement of outcomes.** Skills utilisation, adjacent mobility, wage progression and business performance gains are not systematically tracked in ways that link back to skills-first practices.
- **Lack of a credible feedback loop.** Without shared metrics and longitudinal data, ecosystem learning is fragmented. Policies may evolve, but there is no consistent mechanism to assess what works, for whom, and at scale.

As a result, the system risks remaining pilot-driven. Desired behaviours may be articulated, but their routinisation cannot be verified or reinforced.





## What Could Be Done?

We need to work together to develop collective outcome measures for enterprises and individuals. Doing so will require four interlocking shifts to be made:

### 1 Track Behavioural Change

Measurement should focus on whether skills-first behaviours are becoming routine:

- Are employers defining roles in skills terms?
- Are applied learning and validation becoming default features of CET?
- Are intermediaries using skills-based matching as standard practice?
- Are individuals building and using portable skills records?

Tracking behavioural adoption provides early signals of ecosystem changes.

### 2 Define Outcome Indicators for Enterprises and Individuals

Beyond behaviour, outcomes must be monitored.

For enterprises, this may include:

- Skills utilisation rates,
- Productivity or innovation gains associated with workforce redesign,
- Wage growth associated with skills deployment.

For individuals, this may include:

- Adjacent mobility rates,
- Retention and career progression outcomes,
- Wage trajectories across different life stages.

Collective outcome metrics anchor skills-first initiatives to real economic value.



### 3 Conduct Applied Research and Scaling Experiments

Applied Research and Development projects should test and refine

- Skills-based job design templates,
- Mobility pathway models,
- Skills validation frameworks,
- SME adoption toolkits.

Evidence from pilots must inform broader scaling decisions, ensuring that diffusion is grounded in demonstrated impact rather than anecdotal success.

### 4 Use Evidence to Inform Policy and Ecosystem Adjustment

Measurement must feed back into funding signals, programme design, standards and incentives. Where behavioural adoption is weak, targeted interventions can be introduced. Where impact is strong, scaling mechanisms can be activated.

Evidence-based adjustment ensures that collective actions remain adaptive and credible.



#### **Primary Lever-Holder: Centre for Skills-First Practices (CSFP)**

CSFP is well positioned to lead system-level monitoring and learning because it sits at a neutral vantage point across sectors and institutions. Working in partnership with policymakers and research institutions, its role is to develop measurement tools, generate ecosystem insights and coordinate applied experimentation that informs policy and practice.

#### **Its core responsibilities should include:**

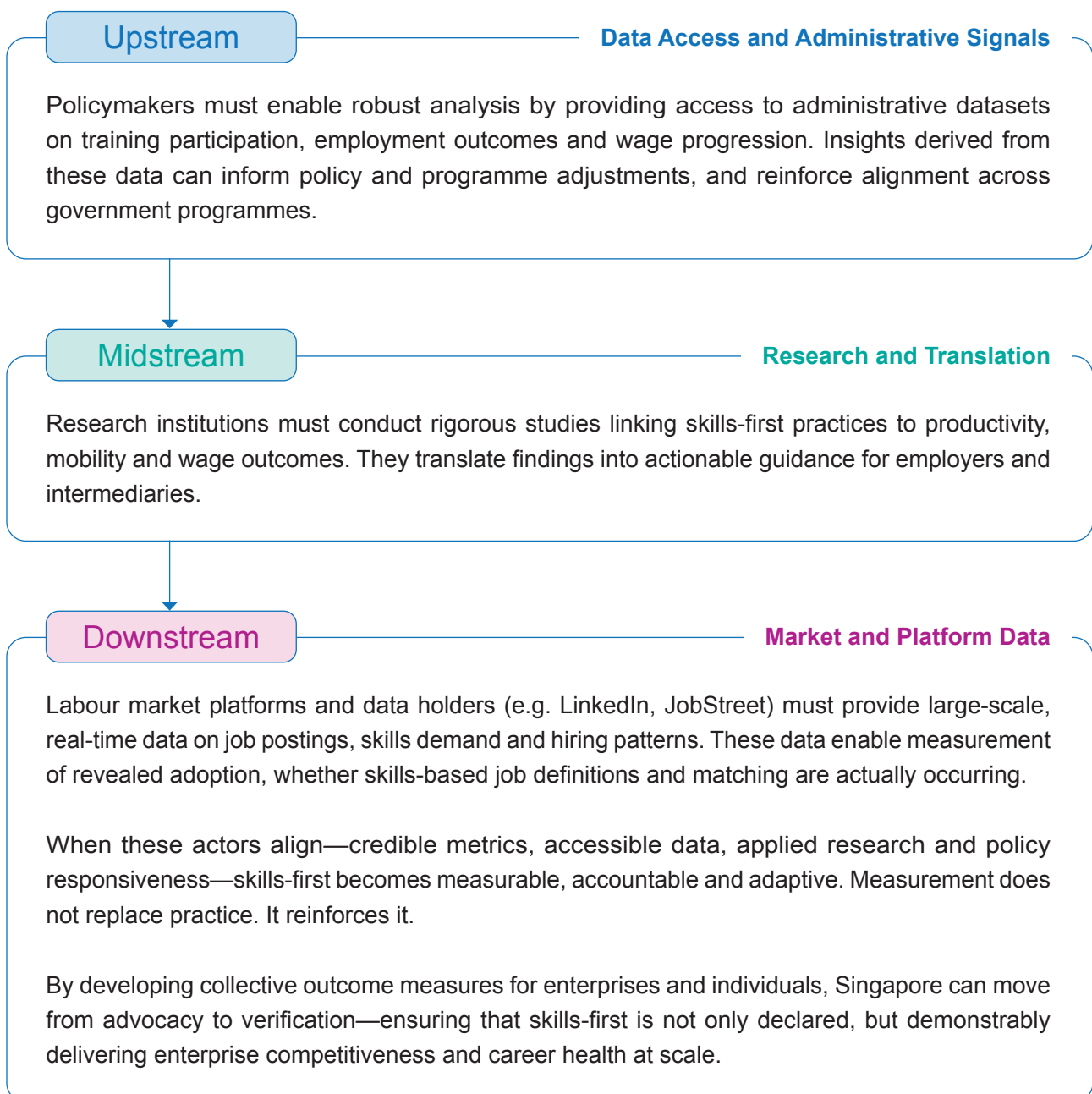
- Develop a national skills-first adoption scorecard.
- Track behavioural and outcome indicators longitudinally.
- Publish periodic ecosystem insights to inform stakeholders.
- Collaborate with enterprises to prototype skills-first implementation models.
- Coordinate applied pilots and synthesising lessons for scaling.

Without a trusted measurement anchor, skills-first risks remaining aspirational rather than evidence-based.

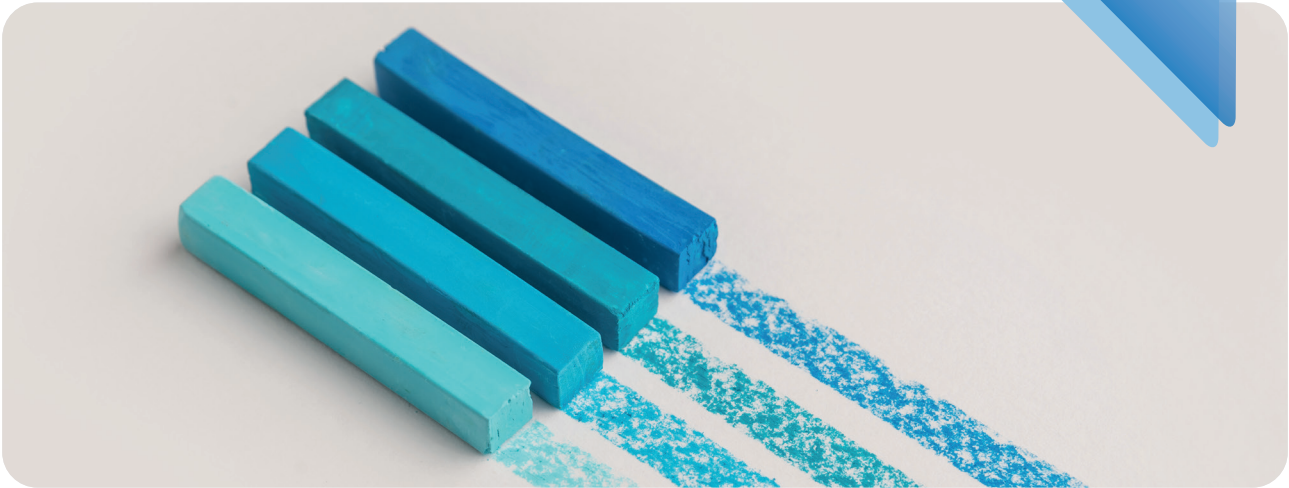
## Interdependencies Across the Value Chain

For collective measurement to be credible and useful, complementary actors must contribute data and insight.

Significant data and research capabilities already exist across government, academia and market platforms. These foundations are strong. What remains uneven is integration. Data streams are not consistently linked, and insights do not always feed back into funding, standards and enterprise practice. The required shift is therefore to connect these capabilities into a sustained feedback architecture, so that measurement strengthens accountability and informs continuous adjustment.



# 4. Sequencing and Mutual Activation



The four Collective Actions are designed to proceed in parallel rather than sequentially.

**No single intervention can produce system-wide change on its own. Sustainable shifts occur when complementary actors move together.**

A minimum viable activation requires early progress across several domains simultaneously:

- employers translating strategy into skills requirements;
- training providers embedding applied learning and validation;
- intermediaries adopting skills-based profiling and matching; and
- system-level measurement of behavioural adoption.

Early movers create signalling effects across the ecosystem, but routinisation occurs only when complementary actors reinforce the shift.

The four collective actions require more than programme adjustments; they require a deliberate governance architecture that clarifies institutional roles, aligns incentives and sustains coordination across the ecosystem. The table provides an overview of the system shifts envisioned, the primary lever-holders whose behavioural changes catalyse system-wide adoption, the interdependent partners whose actions reinforce and enable this shift. Illustrative coordination mechanisms that operationalise these shifts are provided in the Annex.

Table 3: Governance Architecture for Collective Actions

Current Action	System Shift	Primary Lever-Holder(s)	What Primary Lever-Holder(s) Must Do	Interdependent Partners	What Partners Must Do
<p>Collective Action 1:</p> <p><b>Working Together to Make Training Count Towards Business Outcomes</b></p>	<p>Shift from a <b>participation-oriented CET model to an outcome-oriented capability model across CET and pre-employment pathways</b></p>	<p><b>Training Providers and IHLs</b></p>	<ul style="list-style-type: none"> <li>• Design programmes beginning with performance outcomes rather than syllabus coverage.</li> <li>• Translate aggregated demand into applied, work-relevant programmes with embedded validation across CET, diploma and degree pathways.</li> <li>• Embed workplace projects, structured skills validation and performance-based micro-credentials tied to task performance.</li> <li>• Customise for enterprise contexts and track post-training utilisation, feeding outcomes back into programme design.</li> <li>• Issue skills-rich, validated records that are consistently interpretable by employers.</li> </ul>	<ul style="list-style-type: none"> <li>• Employers</li> <li>• Policymakers</li> <li>• Sector agencies and TACs</li> <li>• Employment intermediaries</li> </ul>	<ul style="list-style-type: none"> <li>• Articulate clearer business and operational “why” statements before training investments.</li> <li>• Provide real business problems and project opportunities.</li> <li>• Plan deployment, recognition and reward of newly acquired skills.</li> <li>• Aggregate demand signals and align training to real vacancies and mobility opportunities.</li> <li>• Shape funding signals and embed applied learning and validation as baseline expectations.</li> </ul>
<p>Collective Action 2:</p> <p><b>Working Together to Make Career Mobility Count for Individuals</b></p>	<p>Shift from <b>episodic placement support to an integrated, skills-first mobility system aligned around progression and career health</b></p>	<p><b>Policymakers and Employment Intermediaries</b></p>	<ul style="list-style-type: none"> <li>• Redefine candidate profiling around skills, not titles.</li> <li>• Foreground validated skills and adjacent capabilities in screening and shortlisting.</li> <li>• Broaden KPIs towards match quality and progression; track retention, skills utilisation and wage progression.</li> <li>• Integrate skills passports and assessments into workflow by default.</li> </ul>	<ul style="list-style-type: none"> <li>• Employers</li> <li>• Training providers</li> <li>• Policymakers</li> <li>• Job platforms and HR tech providers</li> </ul>	<ul style="list-style-type: none"> <li>• Define roles in skills terms and accept adjacent capabilities.</li> <li>• Recognise validated skills in promotion and pay decisions.</li> <li>• Align reskilling to real vacancies and adjacent-skills pathways.</li> <li>• Rewire KPIs to match quality and progression.</li> <li>• Embed skills-based matching algorithms and interoperable passports into recruitment workflows.</li> </ul>

Table 3: Governance Architecture for Collective Actions (cont.)

Current Action	System Shift	Primary Lever-Holder(s)	What Primary Lever-Holder(s) Must Do	Interdependent Partners	What Partners Must Do
<p>Collective Action 3:</p> <p><b>Working Together to Integrate Business Strategy with People Strategy</b></p>	<p><b>Normalising skills-first as a default way of organising work and making workforce decisions</b></p>	<p><b>Employers, Employer and business organisations, HR Professional Bodies</b></p>	<ul style="list-style-type: none"> <li>• Routinely translate strategic shifts into task-level and skills-level implications.</li> <li>• Embed workforce and skills considerations upstream in business planning.</li> <li>• Link innovation and technology adoption to job redesign and capability deployment.</li> <li>• Ensure skills guide project allocation, promotion, pay and career progression.</li> <li>• Convene firms to co-develop templates, facilitate training of HR and line managers, peer learning and disseminate case examples.</li> </ul>	<ul style="list-style-type: none"> <li>• Professional bodies</li> <li>• Employment intermediaries</li> <li>• Policymakers</li> </ul>	<ul style="list-style-type: none"> <li>• Translate skills-first principles into competency standards and management toolkits.</li> <li>• Align candidate screening and shortlisting with skills-based frameworks.</li> <li>• Provide legitimacy and regulatory clarity aligned with employment standards.</li> <li>• Model skills-first job design and hiring practices within the public sector to signal legitimacy and set market benchmarks.</li> </ul>
<p>Collective Action 4:</p> <p><b>Working Together to Develop Collective Outcome Measures for Enterprises and Individuals</b></p>	<p>Build a <b>measurement and learning infrastructure to track behavioural change and outcomes at enterprise and individual levels</b></p>	<p><b>Centre for Skills-First Practices</b></p>	<ul style="list-style-type: none"> <li>• Develop a national skills-first adoption scorecard.</li> <li>• Track behavioural and outcome indicators longitudinally.</li> <li>• Publish ecosystem insights.</li> <li>• Coordinate applied pilots and synthesise lessons for scale.</li> </ul>	<ul style="list-style-type: none"> <li>• Policymakers</li> <li>• Research institutions</li> <li>• Labour market platforms and data holders</li> </ul>	<ul style="list-style-type: none"> <li>• Provide access to administrative datasets on training participation, employment outcomes and wage progression.</li> <li>• Act on insights through policy and programme adjustment.</li> <li>• Conduct rigorous studies linking skills-first practices to productivity, mobility and wage outcomes.</li> <li>• Provide large-scale, real-time data on job postings, skills demand and hiring patterns.</li> </ul>

# Annex: Illustrative Coordination Mechanisms in Practice

The following examples illustrate emerging coordination mechanisms that translate skills-first principles into operational practice. They are structured approaches that align demand articulation, training provision, validation and enterprise deployment across different parts of the ecosystem. While varied in scope and sector, each example demonstrates how coordination reduces fragmentation, lowers adoption friction for SMEs and individuals, and strengthens the link between skills development and business or career outcomes.

## **Sector-Based Skills and Work Councils: Coordinated Demand Translation**

The Skills Pathway for Cybersecurity Committee, led by the Singapore Computer Society and supported by SkillsFuture Singapore and IMDA, illustrates structured demand translation. A taskforce of industry leaders developed a shared career roadmap identifying priority skills and certifications, with training delivered under SkillsFuture funding. By aligning sector demand, training provision and certification standards, this model reduces fragmentation, clarifies expectations for SMEs and strengthens consistency between skills articulation and employer needs.

## **Demand Aggregation for SMEs within Value Chains**

Grab's collaboration with Ngee Ann Polytechnic to provide training for SME merchants on its platform demonstrates value-chain level demand aggregation. By pooling capability needs across participating firms, the initiative makes training economically viable and aligned to shared operational priorities.

This model shows how anchor firms can reduce coordination burdens for SMEs, raise skills standards across ecosystems and embed skills upgrading into commercial relationships.

## **Skills Assessment and Validation**

The Centralised Skills Assessment and Validation Institute, led by SkillsFuture Singapore and SIT, provides assessments benchmarked to the Skills Framework. By validating capabilities against shared standards and linking assessment outcomes to targeted training recommendations, the model strengthens portability and reduces duplicated learning.

Centralised validation mechanisms enhance trust in skills signals and create actionable development pathways, reinforcing both enterprise deployment and individual mobility.

# Annex: Illustrative Coordination Mechanisms in Practice (cont.)

## **Portable Career Currency**

In the United States, workers acquire skills across education, work, military service and community roles. Learning and Employment Records (LERs) and digital skills wallets help translate these experiences into portable skills profiles. For example, one initiative converted military Joint Services Transcripts from 486 veterans into 1,826 manufacturing-relevant skill badges, making their capabilities visible to employers.

## **Employment Agencies as Skills-First Intermediaries**

The Adecco Group illustrates how employment agencies can advance skills-first practices across recruitment, training and career transition services. Through initiatives such as General Assembly's information technology bootcamps, which embed industry-recognised certifications including CompTIAA+ and Network+, and programmes by Akkodis and LHH that support reskilling and career reinvention, employment intermediaries can integrate training, skills validation and job placement to support workforce transitions.

Akkodis AI Academy's leadership-focused AI programmes illustrate how training can be anchored to strategic capability shifts rather than generic digital exposure. By linking learning design to business strategy, such models demonstrate how training becomes a lever for enterprise transformation rather than a standalone activity.

## **Skills Diagnostics and Career Navigation**

NTUC's AI Career Coach (AICC) is a digital career guidance tool that supports workers in translating their work experience into identifiable skills and exploring potential career pathways. By analysing users' employment history and profiles, the platform identifies existing capabilities, highlights adjacent skills relevant to other occupations, and recommends targeted training options to support career transitions.

# Glossary

**Adjacent career mobility:** Movement across occupations, sectors or roles that leverages overlapping or closely related skills (CGP Singapore, 2023; Feldman & Ng, 2007).

**Queen Bees:** Large focal firms often act as ‘anchor firms’ whose adoption of new workforce and skills practices generates spillover effects across supply chains and value chains, shaping supplier capabilities and peer behaviour (GoBusiness Singapore, n.d.).

**Applied learning:** Learning anchored in real or simulated workplace tasks that requires demonstration of performance in authentic contexts, strengthening transfer from training to performance outcomes (Singapore Institute of Technology, n.d.).

**Career health:** An ongoing development of individuals’ capacity to manage career transitions, maintain employability, and engage in up- and reskilling, thereby enhancing both personal resilience and organisational talent outcomes (Chua, 2025; Workforce Singapore, n.d.).

**Credentialism:** The reliance on formal educational qualifications as proxies for competence in hiring, deployment and progression decisions, often limiting recognition of a person’s actual skills, capabilities or abilities (EBSCO, 2021).

**Employment intermediaries:** Public or private actors that facilitate matching between workers and employers, including public employment services, job platforms and recruitment agencies (Gov.UK, 2015).

**Portable skills signalling:** Interoperable mechanisms that allow validated skills to be recognised across employers, sectors and career stages, including digital credentials, skills passports and standardised taxonomies (CEDEFOP, 2021; European Union, 2026; OECD, 2025).

**Routinised Practice:** A behaviour is considered routinised when it becomes embedded as a default step in organisational processes or individual decision-making routines, rather than occurring occasionally or only through special initiatives (Pentland & Haerem, 2015; Wolthuis et al., 2021).

**Skills-first approach:** A skills-first approach prioritises the identification (or articulation), acquisition, demonstration, use, and recognition of skills as the central aims of workforce development, including recruitment, job design, learning and career advancement (Gog et al, 2025).

**Skills utilisation:** The extent to which skills are effectively applied in the workplace to maximise employer and individual performance (OECD & ILO, 2017).

**Skills validation:** Formal processes that verify skills acquired through formal, non-formal or informal learning against transparent standards, often through assessment or recognition-of-prior-learning mechanisms (Competency-Based Education Network, n.d.; Singapore Institute of Technology, n.d.).

**Train-and-place / place-and-train models:** Integrated workforce interventions that align training provision with job vacancies or employer demand, sequencing employment and training to reduce transition risk (Singapore Institute of Technology, n.d.; Workforce Singapore, n.d.).

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