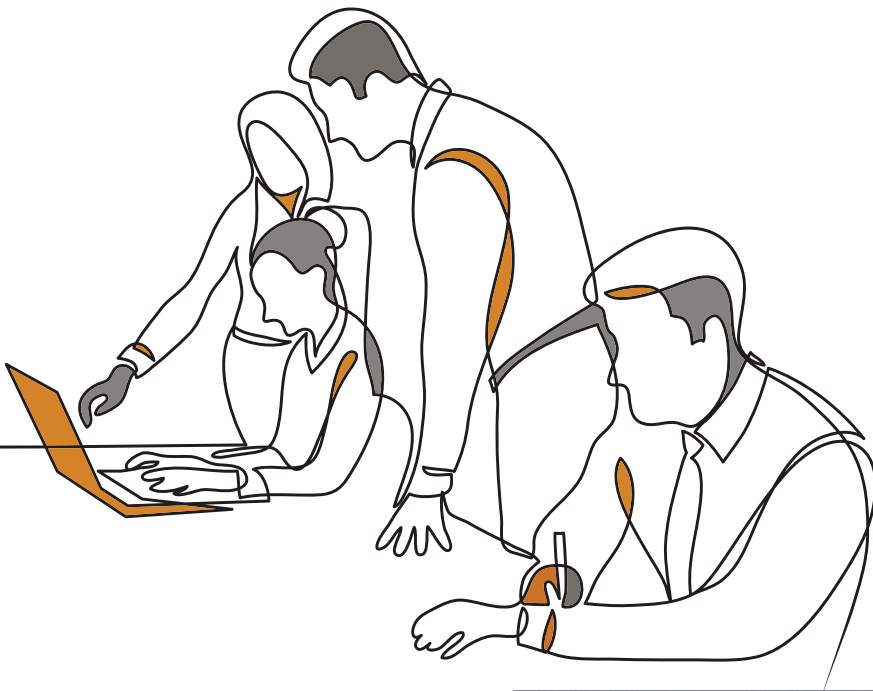APPROACH TO

Proctored

Independent

Authorised

Assessments

Draft version

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CONTENTS

LIST OF TABLES AND FIGURES

ABBREVIATIONS AND ACRONYMS

AA	Assessment agency
AI	Artificial intelligence
CAT	Computerised Adaptive Testing
CBPS	Competency building products
COD	Competency-owning departments
CTIs	Central training institutes
DoPT	Department of Personnel and Training
FRAC	Framework of Roles, Activities and Competencies
iGOT	Integrated Government Online Training
MDO	Ministries, departments and organisations
OPQ	Operational Personality Questionnaire
PIAA	Proctored, independent, authorised assessments
SLA	Service level agreement
SPOC	Single point of contact
SPV	Special Purpose Vehicle
SSB	Service Selection Board
STIs	State training institutes
UPSC	Union Public Service Commission

EXECUTIVE SUMMARY

The purpose of this paper is to provide a holistic, albeit detailed point of view on assessments and how robust assessment processes are a key driving factor in the success of Mission Karmayogi. Assessments don't just build credibility but also help gauge if intended objectives were achieved and provide a roadmap to corrective actions, if any. This is best achieved when a process/ agency ensures that assessments are proctored and independent.

The first section of this paper elaborates on the role of assessments on the iGOT Karmayogi platform, and the interplay of different mechanisms of scoring with the stakeholders (learners, CBP providers, MDOs etc) who will be part of the process. We then introduce proctored, independent, authorised assessments (PIAA), with a deep dive into what each term means.

The next section lays out some of the different instruments available to conduct assessments, based on the types of competencies. Within behavioural competencies for instance, questionnaires based on self-assessment as well as 360-degree feedback can come into play. For functional and domain competency assessments, multiple choice questions, case studies, interviews and portfolio review can be effective instruments.

Given the potential challenges, including legal, that an assessments-based approach to results can have, there's a need to have an independent, process-driven authorisation process on the iGOT Karmayogi platform. Here we are introduced to the concept of a PIAA agency, a group of experts tasked with undertaking the creation, authorisation and availability of assessments on the iGOT Karmayogi platform.

The subsequent section establishes an exhaustive list of objectives for the PIAA agency, from conducting research on the efficacy of assessment instruments to developing data and publishing analytics. The agency would work under the supervision of the DoPT and its key responsibilities would include the management and co-ordination of all assessments on iGOT, coordinating with different assessment agencies (firms etc), conducting quality assurance, and creating a platform or application to weave together the different components of PIAA.

The paper concludes by depicting the steps needed to operationalise PIAA on the iGOT Karmayogi platform, and moves to a brief overview of technology-associated risks that need to be accounted fo when embarking on an assessments-led approach.

INTRODUCTION

1.1   Why are assessments important?

Assessments build credibility. The credibility is as good as the process of the assessment. A robust process would entail assessment at every stage conducted by a person/organisation that is not concerned with the results of the assessments and that these assessments are conducted transparently. When such assessments are aggregated (through the process and the end of the process on reaching the goal/milestone), there is an assessment of the assessments itself, thus creating a self-correcting mechanism. In Mission Karmayogi's endeavour to improve the state's capacity to deliver, the government official is right at the centre. All efforts to improve the capacity of the individual official is likely to ensure that the entire governmental capacity to deliver improves.

The iGOT platform aims to accomplish one part of this task. It brings forth all the tools that will help the official discharge their responsibilities to the expectations set for them. The platform, with the Framework of Roles, Activities and Competencies (FRAC) on one side and learning content on the other side, brings forth what is required (or the Means) to achieve these objectives. The assessments provide a picture of the end results, that is, whether these stated results have been achieved and to what extent. These assessments also provide what the platform itself is not scoped to achieve on its own: data and analytics. The data captured and analysed thereof will provide a clear picture of what has been done right and what has not. In addition, it also points to what corrective actions can be taken. Thus, without these assessments, over a period of time, there will be no data available that can indicate the success (or lack of it) of the learning content or the capacity building programme. This is likely to erode the reliability of the system and cause its eventual failure.

Assessment is required to achieve a wide range of purposes: it has to measure competence and progress; test skills and knowledge; indicate level and proficiency; support teaching and learning; provide information about learners, coaches and teachers; act as a selection and certification agency; and act as an accountability procedure. When defined within an educational setting, assessment, evaluation, and testing are all used to measure how well learners are learning the materials, and how well they are meeting the stated goals and objectives.

Education professionals make distinctions between assessment, evaluation, and testing. Here is how the Penn State University distinguishes between tests, evaluation and assessments:

"
*A **test** is used to examine someone's knowledge of something to determine what he or she knows or has learned. Testing measures the level of skill or knowledge that a person has attained."*

*"**Evaluation** is the process of making judgments based on criteria and evidence."*

*"**Assessment** is the process of documenting knowledge, skills, attitudes and beliefs, usually in measurable terms. The goal of assessment is to make improvements, as opposed to simply being judged. In an educational context, assessment is the process of describing, collecting, recording, scoring, and interpreting information about learning."*
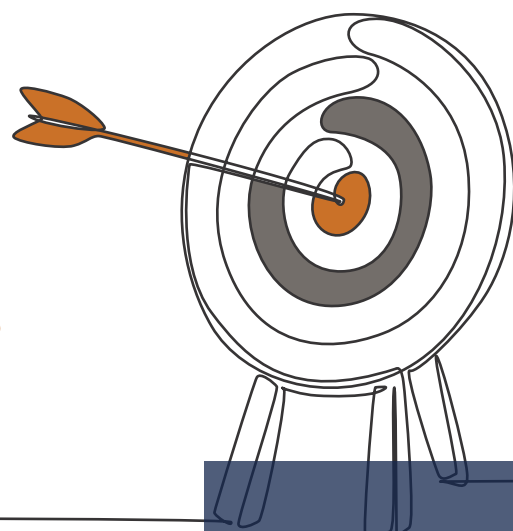
To simplify things, we will use the term "assessment" throughout to refer to the process of measuring what one knows and can do, while the plural "assessments" will be used to refer to the instrument of assessment

Assessments need to vary as per what they are measuring and the purpose of the measurement. There are three categories of competencies: behavioural competencies, domain competencies and functional competencies. Each of these could have different assessment methods or combinations of the same.

1.2 Role of assessments on the iGOT platform

iGOT is envisaged as an intelligent, dynamic platform enabling unrestricted user-led interaction of officers, their coaches, supervisors, and providers of competency building products (CBPs). Assessing the efficiency and impact of these interactions thereby becomes imperative as by having this inbuilt capability, the platform can enhance the effectiveness of the competency building and assessment processes.
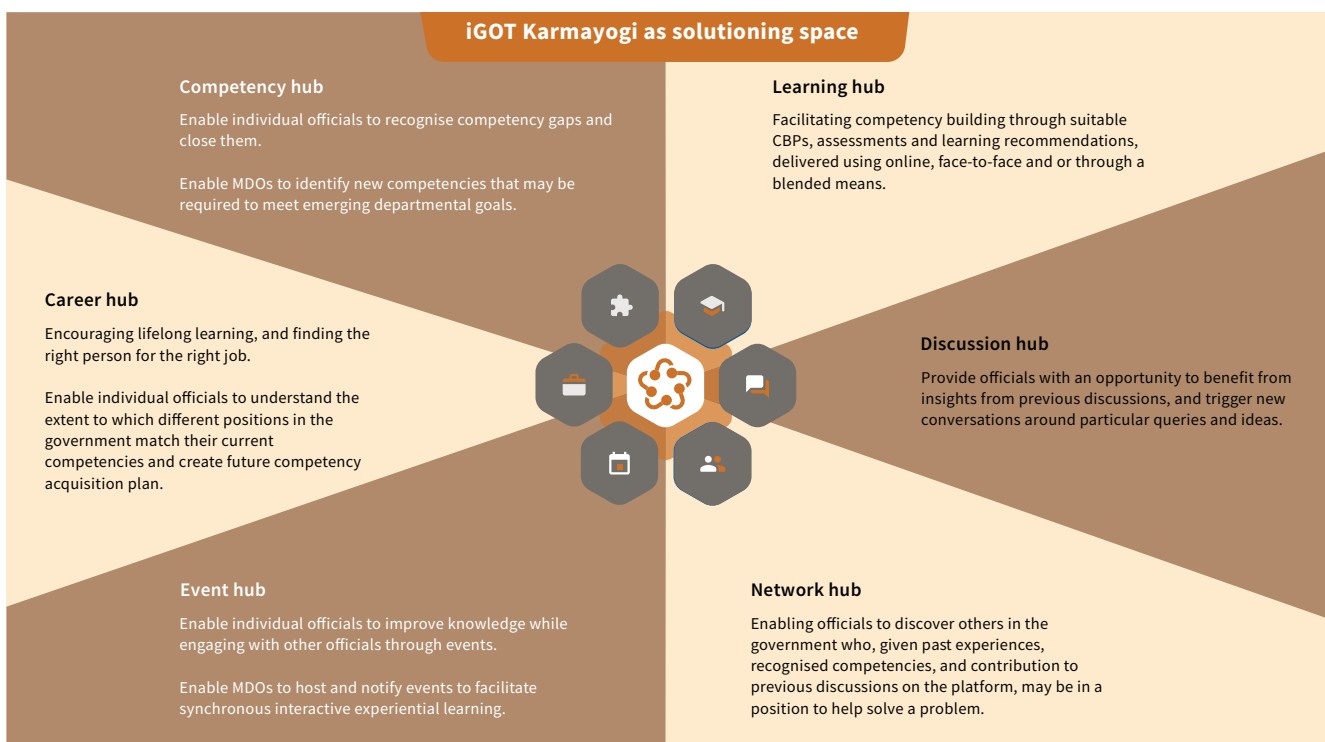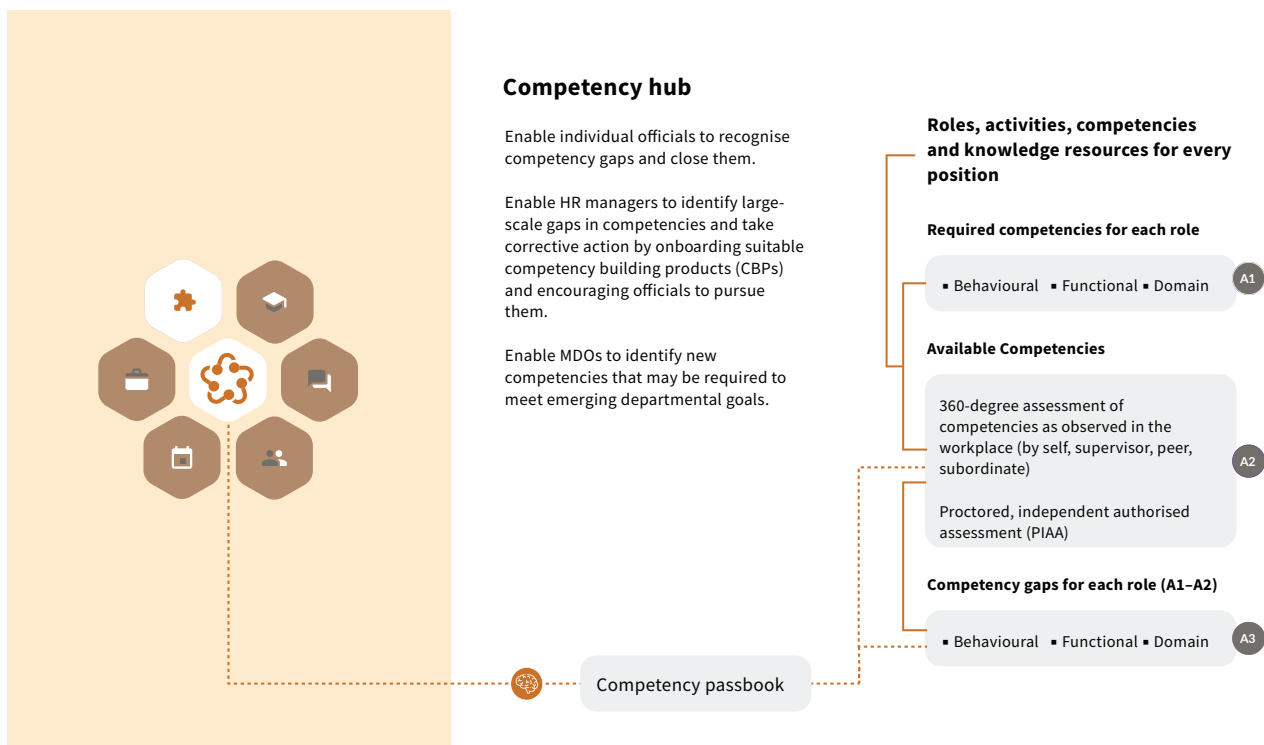
With in-built assessment capability of various actions, iGOT will develop as an intelligent self-adaptive and enhancing platform, providing improvement recommendations to constituents interacting on the platform.

As a solutioning space with six hubs (competency, learning, career, discussion, network, events – see **Figure 1** below for the six hubs and a closer look at the competency hub), the iGOT platform helped with robust assessments will accomplish with greater diligence and effectiveness one of its roles as a marketplace for CBP providers (i.e. the learning hub). A detailed and robust exercise in documenting roles, activities, competencies and knowledge resources for each position will be the starting point for Mission Karmayogi. Assessments and dynamic supportive analytics are imperatives to sustain and grow the raison d'être of the platform – thereby preventing it from regressing to being a static LMS.

Figure 1. Solutioning space

iGOT Karmayogi as solutioning space

Competency hub

Enable individual officials to recognise competency gaps and close them.

Enable MDOs to identify new competencies that may be required to meet emerging departmental goals.

Learning hub

Facilitating competency building through suitable CBPs, assessments and learning recommendations, delivered using online, face-to-face and or through a blended means.

Career hub

Encouraging lifelong learning, and finding the right person for the right job.

Enable individual officials to understand the extent to which different positions in the government match their current competencies and create future competency acquisition plan.

Discussion hub

Provide officials with an opportunity to benefit from insights from previous discussions, and trigger new conversations around particular queries and ideas.

Event hub

Enable individual officials to improve knowledge while engaging with other officials through events.

Enable MDOs to host and notify events to facilitate synchronous interactive experiential learning.

Network hub

Enabling officials to discover others in the government who, given past experiences, recognised competencies, and contribution to previous discussions on the platform, may be in a position to help solve a problem.

Competency hub

Enable individual officials to recognise competency gaps and close them.

Enable HR managers to identify large-scale gaps in competencies and take corrective action by onboarding suitable competency building products (CBPs) and encouraging officials to pursue them.

Enable MDOs to identify new competencies that may be required to meet emerging departmental goals.

Roles, activities, competencies and knowledge resources for every position

Required competencies for each role

| ▪ Behavioural   ▪ Functional   ▪ Domain | A1 |

Available Competencies

| 360-degree assessment of competencies as observed in the workplace (by self, supervisor, peer, subordinate) | A2 |

Proctored, independent authorised assessment (PIAA)

Competency gaps for each role (A1–A2)

| ▪ Behavioural   ▪ Functional   ▪ Domain | A3 |

Competency passbook

1.3. Different types of evaluations planned

The primary interaction planned on the iGOT platform is the consumption of the various CBPs by users (on the learning hub) and the provision of the same by different providers. Some of these are likely to be academic institutions, central and state training institutes, assessment and education companies, institutions, expert groups and even individual experts. Users will also interact with one another through the other hubs.

The quality of interaction on the iGOT platform is what will set it apart from any ordinary solutioning space. Such quality can be produced only when these interactions and the results thereof are evaluated constantly and feedback factored in over a period of time.

These evaluations will be conducted on/through the platform. While some of these can be generated by the interplay of the data from the platform, others may need to be provided for by expert agencies. A few of these assessments are listed below in **Table 1**.

Table 1. Scoring on iGOT

	SCORE	DEFINITION
1	CBP Competency Score (C-CS)	This score will be given to a learner on the completion of a CBP and its corresponding assessments. It is based on the learner's performance on these assessments and contributes to the TCS (thereby the overall competency score of an individual).
2	Competency Score	Maintained in the Competency Passbook (CP), the competency score is calculated against the competencies a learner has been tested for. It comprises: the workplace competency assessment score (WPCAS) and the testing competency score (TCS). The aggregate score will contribute to calculating the competency gap.

	SCORE	DEFINITION
3	Content Quality Score (CQS)	The CQS is a combination of two scores: the first is provided through self-certification by the CBP provider; and the second is the score as assigned by a learner and auditor (as appointed by the SPV) of the CBP. When the two CQS are very close to each other, the trust score of the CBP becomes high.
4	Impact Score	This score shows the impact of a CBP on the observed competency-based behaviours of an official in the workplace. It is calculated by aggregating improvements in the competency scores of officials who have been certified on completion of a CBP.
5	Karma Points	Karma points reflect how a user interacts with the iGOT platform and four out of five of its hubs – i.e. how a learner engages on the discussion hub, network hub, as well as the competency and learning hubs. It also quantifies how meaningful and impactful contributions are – are you helping others in a meaningful and effective way?
6	Engagement Score	The engagement score measures the user's engagement with the platform. It directly correlates with platform acceptability and subsequent interaction with the platform. The score is calculated by measuring the behaviours users exhibit on the platform through their relationship with self, others and the content.
7	Organisation Score of MDOs	The organisation score is a composite score of every MDO, drawing upon many of the above- and aforementioned scores in addition to a score from the SPV from the quality audits. Every MDO will have an organisational score on the PM dashboard.
8	Proctored, Independent, Authorised Assessment (PIAA) score	This score will be given to a learner taking the PIAA by the PIAA provider. It comprises two components: 1) the level at which the competency has been assessed (1-5); and 2) the proficiency within that level (e.g. within these levels, an individual is excellent, good, average, poor). Every official will have to complete the PIAA testing both within the first three months of joining a new position for all competencies the position requires (if they have not already been tested for that competency in the last 5 years), and again every time the official completes a CBP funded by the government.
9	Special purpose vehicle (SPV) score	The SPV score will be the average of all MDOs' organisational scores. The SPV exists to ensure the success of everyone else. The success of iGOT, therefore, is the success of its services (i.e. the SPV). This is the success of all the MDOs which, in turn, is the success of all the officials – when their competency gaps are narrowed, officials' trust scores are increasing, the trust score of the CBP and PIAA providers increase, the impact scores of the CBPs increase, and so on. When all these scores are impacted, the organisational score increases – and thus, the SPV score also increases.

	SCORE	DEFINITION
10	Testing competency score (TCS)	The TCS is an algorithmically derived score that combines C-CS and PIAA score, and is informed by the trust scores of the PIAA and CBP. Combined with the WPCAS, it contributes to the competency score.
11	Trust score	The trust score is calculated on the basis of the accuracy of a stakeholder's claim using an accuracy meter. It is the extent to which claims made by a stakeholder are found to be accurate and are verified by the processes put into place by the iGOT platform. Trust scores will be calculated for an array of stakeholders: individual learners, HR managers, auditors, CBP providers, PIAA providers, etc.
12	Workplace competency assessment score (WPCAS)	The WPCAS is an algorithmically derived score that combines the crowdsourced 360-degree assessment (self, manager, peer, subordinate) and is informed by the trust scores of those providing assessment. Combined with the TCS, it contributes to the competency score.

The evaluations and assessments as mentioned in **Table 1** above assess all the main actors who will play a critical role on the iGOT platform.

1. The User (or Learner);

2. The CBP provider;

3. Those interacting with the Learner (or User);

4. The MDO (ministries, departments and organisations, as well as the SPV).

However, the assessment of the learners and CBP providers are the only independent input; the rest of the assessments are derived from these and are hence dependent on them. It is therefore important that these be of high quality so that any algorithm that derives the other scores are of high quality too. This can be summed up in **Table 2** (next page). Moreover, the entire effort is to make the individual government official more capable with all other systems as enablers. The best way that these enabling processes are assessed is by evaluating the impact that they have on the primary actor – i.e. the individual government official – the learner on the iGOT platform.

It is thus important that the assessment of the individual is done in the most credible manner. It emerges, therefore, that the assessment of the learner using an independent source is critical[1] – this is where the proctored, independent, authorised assessments (PIAA) come in.

Given these dependencies on the results of these assessments, it becomes important that the quality of the assessments and the entire process of assessment is impeccable. Maintaining fairness, equity, inclusivity and transparency will need to be the cornerstones of this entire process.

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[1] The assessment of the CBP provider is outside the scope of this document.

Table 2. Scoring matrix

	SCORE	SUBJECT OF ASSESSMENT	BASIS FOR ASSESSMENT	CONDUCTED BY	PURPOSE	TYPE
1	CBP Competency Score (C-CS)	Learner	Competencies covered	CBP provider	Assess learner performance	Independent
2	Competency Score	Learner	Competency progress shown by learner	iGOT system	User development scorecard	Derived
3	Content Quality Score (CQS)	CBP provider	Content quality	Aggregation of scoring by multiple players	Quality of the content	Independent
4	Impact Score	CBP provider	Competency progress shown by all users	iGOT system	Contribution of CBP on improvement	Derived
5	Karma Points	Learner	Quality of participation	iGOT system	Effectiveness of user's engagement on four of the five hubs (barring career hub)	Derived
6	Engagement Score	Learner	User engagement score	iGOT system	User's engagement with the platform	Independent
7	Organisation Score of MDOs	Learner	All learners	iGOT system	MDO's own talent development score	Derived
8	Proctored, Independent, Authorised Assessment (PIAA) Score	Learner	Competencies covered	PIAA	User's competency assessment by independent 3rd party	Independent
9	Proctored, Independent, Authorised Assessment (PIAA) Score	iGOT	All MDOs	iGOT system	Σ (with weights) of all scores and effectiveness of the SPV running the iGOT	Derived

	SCORE	SUBJECT OF ASSESSMENT	BASIS FOR ASSESSMENT	CONDUCTED BY	PURPOSE	TYPE
10	Testing competency score (TCS)	Learner	Competencies covered	Aggregate of PIAA and C-CS scores, informed by their trust scores	Learner's competency improvement score	Derived
11	Trust score	All users	Average of scores given by self/ median score of all other scorers against a set category*	iGOT system	All users	Derived
12	Workplace competency assessment score (WP-CAS)	Learner	360-degree (self, manager, peer, subordinate)	PIAA	Assessment of learner from workplace context	Independent

There can be multiple trust scores against each category – e.g. different trust scores when evaluating peer/ subordinate/ superior/ CBP providers etc.

1.4.   What is PIAA?

Proctored, independent, authorised assessments or PIAA are a critical part of the entire iGOT platform. PIAA is the instrument that provides the qualitative edge to the platform. This exercise of assessments of the users allows for the fine-tuning of both the competencies on one side and the CBPs on the other. It can also help in updating the competency dictionary (behavioural, domain and functional) which is one of the critical outcomes of the FRACing process.

As shown in the competency hub of **Figure 1** above, A2 is that part of the platform that deals with the assessment of competencies of individual officials. The iGOT platform would like to provide an environment where there is a place for continuous assessment in a fair manner while maintaining transparency at all levels.

The FRAC document states, with regards to A2, these assessments are sought to be accomplished in two ways. The first is through the cumulation of assessments made by those who observe each other's competencies and one's own self-assessment (360-degree). The second is the independent assessor arrangements that the owner department for each competency will put in place and notify on iGOT.

The objectives of the PIAA is to:

1. To establish the current standing of the learners against the benchmark of competencies required for the given position

2. To establish whether, after completing a CBP, the learner has actually learnt and moved higher up in competency levels

3. To establish the effectiveness of a particular CBP in helping learners acquire higher levels of competency (eventually help establish the 'trust score' of the certification process of the CBP provider)

4. To validate benchmark for all competencies required of learners for a given position as set during FRACing process

PROCTORING

Proctoring means invigilating – maintaining the integrity of an assessment or testing process by ensuring that the test-takers are not resorting to unauthorised means. However, proctoring needs to be deployed only when needed, much like traditional invigilation during tests and exams. Appropriate proctoring mechanisms are an important component of assessments and are deployed based on the need/criticality of any assessment and its outcome. Proctoring could be both physical or automated and could be done remotely or at an exam centre depending on the requirement.

Modern technology and the development of innovative eLearning tools have brought about rapid changes in the way learners obtain knowledge and acquire skills. Learners are now able to enjoy a virtually seamless experience when acquiring new skills, earning degrees, and continuing professional development. A need for transparency and accountability has evolved with the increasing popularity of eLearning. Thus, online proctoring has become an important consideration for institutions and corporations that heavily utilise eLearning.

With unmonitored eLearning[2] , there is the chance that a learner may use non-permitted tools on the same computer screen to aid them through an exam. To keep learners honest, a growing number of eLearning administrators are incorporating online proctoring into their eLearning strategy. With online proctoring, learners are monitored by a proctor or AI assisted tools that keeps an eye out for suspicious or unauthorised activity. The proctors/software can see and hear the learner via webcam and can monitor the learner's activity on the screen. Besides authentication tools which help in ensuring the credentials of any test-taker, online proctoring can be of following types:

1. **Live proctoring: requires a human invigilator to monitor assessment through webcam and microphone live when the assessment is taking place.**

2. **Recorded proctoring: involves recording of browser activity and webcam feed of the student and reviewing the same by a human invigilator after the assessment has ended.**

3. **Automated proctoring: AI assisted live proctoring based on controlled browsers and monitoring of test-takers screen and microphone feed.**

Outlined below are certain factors to be considered while making a choice of proctoring options.

2.1. Costs of assessments

One factor is the high cost of physical proctoring at dedicated online assessment centres. A proctored online exam is not only a less expensive option but these exams can be conducted at a student's convenience, at their home or place of choice, with the ability to monitor the learner through webcam or screen share and AI assisted tools.

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[2] Note that not all eLearning is unmonitored. Nowadays, eLearning sites are also somewhat proctored with some features of proctoring activated.

2.2. Infrastructure

Although there are a plethora of exam centres that provide proctors for hire, it can be difficult to find a well-structured and reliable exam centre with qualified proctors who can properly examine learners during a test at a specific time. This is especially true in a government setting. With many offices being remote, creating a room with qualified proctors for invigilating is very difficult. Online proctoring, especially fully-automated online proctoring, makes it incredibly easy to ensure that your learners are being properly monitored. However, on the flip side is also the availability of certain basic requirements for conducting any online proctoring which includes: a suitable device (computer, tablet or mobile phone), working webcam and microphone, stable internet connection and a compatible browser. Looking at the scale, a widely spread target population and limitations of even basic IT infra at some remote locations, alternatives in the form of offline options might also have to be looked into.

2.3. Deployment

Proctoring will be a part of all third-party assessments. However, the iGOT platform would need to prescribe proctoring features that need to be provided, as well as ensure records of audit trails that can ensure the integrity of the assessment processes. Where unavailable with the provider, some of these prescribed services may have to be availed from certified and available proctoring agencies.

It is also likely that the MDO may like to organise the availability of PCs, laptops etc. that allow the learning and proctoring to take place. These will be open for audit to establish the integrity of the process. In all such cases, it will be the responsibility of the MDO to ensure that the individual government official is provided with the infrastructure needed to both learn and take the assessment in prescribed manner.

INDEPENDENT

PIAA assessments will be designed, conducted and scored by agencies that are independent of the CBP providers. This allows individuals to test the learners without any bias i.e. no bias to maintain pass percentages.

These assessment instruments can be designed by any agency or individual who considers themselves competent to design such instruments. Entities who are desirous of designing such assessments need to be-

1. Competent within the area they are assessing, and

2. Certified to design and deploy such instruments.

The iGOT platform will have to set eligibility, standards and screening mechanisms for entry gating of such desirous agencies/persons. Assessment providers will have to match prescribed eligibility requirements and standards, as well as undergo screening of their respective instruments on the iGOT platform at their costs. At some stage, iGOT may also decide to provide an online course on Assessment Instrument Design and Test Item Creation.

This initiative allows the iGOT platform to tap into the vast resources and expertise available within the various arms of the government and outside. At a later stage when the platform becomes sufficiently popular at a global scale, it is likely to attract such talent from across the globe. This will have a large impact on the overall quality of the platform. However, to maintain the integrity of the process it is important that above two conditions are fulfilled by the assessment providers.
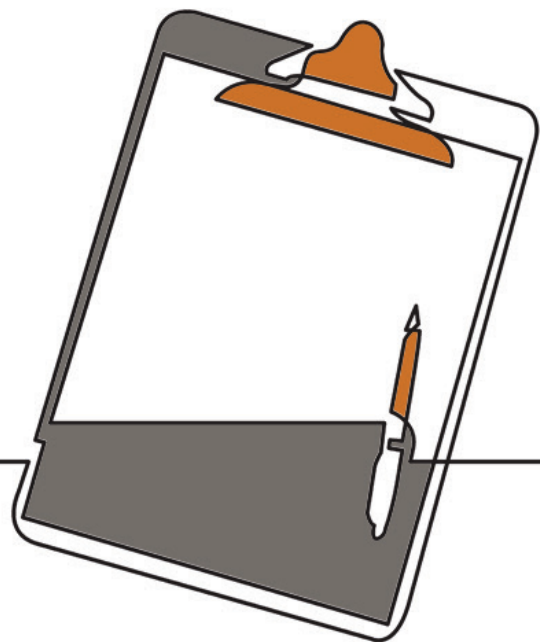
AUTHORISATION OF ASSESSMENTS

Online platforms of all kinds attract a large number of contributors. One can see this phenomenon across all the popular digital platforms. In fact, the success of these digital platforms is measured in terms of how many contributors are present and the cadence the platform is able to generate among all its users.

However, this also presents a problem – one of contributors' whose quality of contribution is suspect. Ensuring the quality of contributors and their contribution creates trust among all its users. The CBP providers have quality specifications that they need to prescribe to (as outlined in the Content Framework and Quality Assurance framework), while the FRACing process ensures the quality of the competency standards being defined. Similarly, for PIAA it is important to ensure that both the assessment instruments being deployed and their designers are authorised. This process will bring trust into the system which is one of the most important parts of this entire process.

4.1. Assessing the assessor

Designing assessment instruments is not an easy task; it is not simply collecting a set of questions and creating options of answers to choose from. The assessment instruments must assess learners on the competencies (combination of knowledge and skills), their respective levels and proficiency standards. While some of them can be assessed by tests with multiple options to choose answers from, there may be many competencies (particularly those that describe judgment and opinions, and, where ability, to undertake certain work based tasks) in which other assessment instruments like case studies, interviews, simulation, role plays etc. may be more appropriate.

It is therefore important that designers of assessment instruments are themselves assessed. This assessment needs to be conducted on two counts:

1. Their understanding/knowledge in the area/competencies/domain that they intend to design the instruments for; and

2. Their understanding and ability to apply the principles of assessments – i.e. the ability to choose the right instrument for the competency that they are aiming to assess.

4.2. Assessing the instruments

Assessment of the instruments is necessary to establish both the validity and reliability of these instruments.

Reliability is the extent to which the assessment would produce the same or similar results or score on two or more occasions or if given by two or more assessors. It is the accuracy and consistency with which it measures.

Validity is the extent to which an assessment measures what it purports to measure.

Each instrument category (i.e. multiple options' test, case studies, interviews etc.) has its own standards of measurement; these will need to be defined. The protocols of testing will need to be outlined and published widely and these standards made available easily; so that anyone who would like to design the tests can access these rapidly and make their instruments available on the platform. Subsequently, every instrument that intends to be up for use by the iGOT platform users needs to be tested to ensure that these standards are being met.

ASSESSMENTS

Competency assessments need to measure both skills and knowledge; the focus has to be on testing the ability to 'do' things rather than just 'know'. That is why ability to undertake work based tasks and collection of evidence for the same are critical in competency assessments. Keeping this in mind, assessments need to be more innovative and focus on automation. However, given the possible infrastructure limitations, it will also be important to have offline testing options but the records and evidence need to be brought online. Multiple assessment instruments like case studies, interviews, simulation, role plays, in-basket exercises, presentations etc. will have to be explored.

The assessments will be based on all the three competency types: behavioural, functional and domain. The assessment instrument owners (providers) will be provided with the competency dictionaries to enable them to design the instruments for each competency and level accordingly.

5.1. Behavioural assessment instruments

There are several existing instruments available to conduct behavioural assessments. Most of these instruments use their own competency or job profile models that are proprietary. However, there are many reasons why job profile-based psychometric instruments may not be suitable for the specific purpose on the iGOT platform:

1. The entire premise of benchmarking success on the platform is based on competencies and not on an ideal job profile.

2. Competencies or criterion-based assessments are flexible and can be improved over time.

3. They are not based on normative data i.e. an objective analysis of where the respondent is against the set benchmark – in this case, the proficiency level (though normative data can be used to inform oneself where one stands but this is a derived feature).

4. Job profile-based assessments require research in setting normative data in the first place, and hence are not amenable to begin with. There are not many readily available, well-researched job profiles in the government context that are available and recent.
   • Over a period of time, MDOs or the UPSC can use data that comes from these assessments and derive normative data for various job profiles – for example, traits of District Managers or a Superintendent of Police or a Tax Commissioner and so on.

It is important that only those instruments that prove their validity and reliability based on the DoPT Competency Dictionary (2014) or its approved revisions are onboarded. This will ensure that this dictionary is used and updated from time to time. Moreover, if we use multiple dictionaries provided by different consultants/vendors, then interoperability becomes an issue. This will impact any future use across MDOs, for example for transfers, promotions etc.

5.1.1. Competency-based questionnaire

i. Self-assessed

Self-assessed questionnaires are created keeping competency behaviours in mind, looking at either specific competencies or the entire dictionary. These are focused on the behaviours that are expected to be seen at different proficiency levels.

While there are many competency models, over the last few decades with the spread of the usage of competency modelling, some firms have developed universal competency models. These models are usually tested across multiple organisations and in many countries, and hence have developed a 'universality' about them. Some of the top firms that have developed such dictionaries are:

1. DECISION DYNAMICS: This is a Sweden-based firm that was founded by researchers from Yale and Princeton about 50 years ago.

3. KORN FERRY INTERNATIONAL: An Executive Search (top positions recruitment) firm that is listed on the NYSE (NYSE KFY). It acquired the Hay Group in 2015 (the Hay Group is a pioneer in the area of competencies and in fact originated the term competencies and the discourse around it).

4. SHL: SHL was founded in 1977 and was founder of the now famous OPQ (Operational Personality Questionnaire) – a trait-based psychometric that became a very popular screening tool. Over a period of time, they have built a global business and have authored a Universal Competency Dictionary.

While many firms may claim to have a universal competency dictionary, it is important to understand the universality of the dictionary – its usage in multiple countries, wide range of industries and consequently job profiles. Usage in a government scenario is preferred. However, before its application and usage on the iGOT platform, the scale needs to be established in government usage and based on the DoPT Competency Dictionary (2014).

The consequences of not using the same would mean that questions on behavioural attributes may not be culturally sensitive (meaning they may speak the language of the business – profits; markets; choice of customer segments may appear which may render the exercise ineffective). It is a small investment that these (and other) firms can be asked to make to ensure that they are enlisted for a business opportunity.

ii. 360-degree competency feedback

This is different from the commonly understood 360-degree feedback. This is similar in construction to the competency-based questionnaire as above, except that assessment here is sought by people who interact frequently with the learner. This gives a 360-degree view of the learner's competencies and normally carries higher weight. However, not all competencies are amenable to the 360-degree, These competencies require feedback from people with a much higher level of interaction with the learner and consequently may be limited to a 180-degree feedback – from superiors and subordinates (peers are at a higher level of interaction).

5.1.2. Assessment centres

Assessment centres are the gold class of competency assessments. These consist of a battery of different tools that are used to assess competencies. They normally include expert interviews (of domain and functional competencies also), case studies, role plays (observed by trained experts), and work simulation exercises. These centres are run by trained and certified experts who observe (or assess) the learners, and create a combined view of every competency backed by evidence. Depending upon the purpose of the assessment, they could run for anywhere from 1 to 7 days. The Service Selection Board (SSB) conducted by the UPSC for the selection of cadet officers for admission into the National Defence Academy is one example of an assessment centre.

Assessment centres are expensive as they are resource- and time-intensive; they are hence reserved for some critical decisions to be taken like cadre selection, promotion to critical level (like top management), etc.

5.1.3. Gamified Assessments

Gamified assessments are now gaining ground as they are tech-based and can be conducted remotely. They are like playing a role in certain situations that are gamified – like playing the role of a stock broker in a mock stock exchange with reams of data being streamed in. These games try to simulate real-life scenarios, check your reactions to such contexts and make assessments thereof. These games can also be multiplayer and thus look for group-interaction based parameters. Some of these games can also be used for assessment of functional and domain competencies.

5.2. Functional and domain competency assessment

These instruments cover a large number of competencies. Like behavioural competencies, functional and domain competencies are also broken into competency areas. Competency areas are similar to a subject (for example risk management). These competency areas consist of individual competencies (for example, security governance, risk analytics, fraud management, risk audit etc.). Each such competency will consist of levels. These levels will have observable descriptors which will make it easy to create an instrument or a rubric that will help its measurement.

Functional competency assessments can be carried out using several types of instruments. Some of these may be as follows.

5.2.1. Tests (multiple choice or Q&A type)

These are the commonly seen assessments that are administered to test the knowledge of a competency or skill being covered. Many of the tests can be intelligent and can be administered in a manner such that the assessment can be made increasingly difficult or tuned to assess an area of interest in greater depth. Such Computerised Adaptive Testing (CAT) or tailored testing is now finding increasing usage. However, they need to be pilot tested and normed before they are administered.

5.2.2. Case-study based

As the name suggests, the learner is asked to apply her learnings from the course in a situation that is played out in front of her and responses are assessed against the most appropriate decision/ result or action taken.

5.2.3. Interview mode (using one of the above methods in a face-to-face mode)

Interview mode will simply be an interview conducted by a qualified subject matter expert with assessment on a standardised rubric.

5.2.4. Peer reviewed assessment of portfolio of accomplishments

In certain cases and professions, it is possible to keep a record of personal achievements – like a portfolio of achievements or accomplishments. Such cases or artefacts are reviewed by peers and assessments are pronounced accordingly.

PIAA AGENCY

There are many dependencies on the results of these assessments. It is important that the quality of the assessments is transparent and credible. It is quite possible that people (or parties) unhappy with the results based on assessments could lead to litigation. Therefore, it is important that an independent, process-driven authorisation (and 'de-authorisation') of assessment is enabled on the iGOT platform to protect it from litigation.

The authorisation process needs to be comprehensive and must cover all the instrument types that purport to assess all the competencies. There are two ways in which this authorisation of assessments can be achieved. One way is to create a network of 'Competency Owning' MDOs (CoDs) who are tasked to ensure that the assessments are created, authorised and made available on the iGOT platform for all.

The second way is to create a 3rd party expert agency (let's call it a PIAA agency) that is tasked with establishing these capabilities within a period of three years. A three-year time frame has been chosen because, by this time, the FRACing process is likely to be established, the CBP providers will be reasonably established with at least two cycles of consumption, and at least two cycles of assessment instruments would have taken place. Once this term is over, the capabilities can be further assessed and then 'ownership' of competencies and their assessments can be distributed.

It is recommended to use the second approach for the following reasons:

1. **The capabilities required to set up and run PIAAs are specialised services and not easily available. Allowing a distributed process will mean that these capabilities should be available with all such MDOs. This is a tall order and in all likelihood will not be the case, hence these capabilities will have to be built over a period of time.**

2. **The assessment methodology and its interplay with technology is an emerging discipline. By centralising such capabilities, it is more likely to keep pace with rapidly shifting standards and requirements. Once the system is established then it can be decentralised and taken over by the CoDs.**

6.1. Establishing the PIAA agency

It is proposed that a cell or an agency be established to serve this purpose. Just like how it is envisaged that the FRACing Centre for Excellence is to establish standards for the FRACing process, similarly a PIAA Agency can also be established. This agency, too, needs to work under the supervision of DoPT and can be housed within the SPV of the iGOT platform. The final responsibility will ultimately lie with CoDs designated by DoPT – however, till the time they are ready to take up the responsibility, the PIAA agency will pitch in.

The PIAA agency would be responsible for management, technology and quality assurance for all assessments undertaken under its aegis. The agency would have minimal staff as its entire workflow will be automated and technology-driven. The main interface for the PIAA agency could be a PIAA application which can be hosted on the iGOT platform. For all practical purposes for learners and other users, the PIAA app would not be distinguishable from the iGOT platform. However, it is important to keep assessment-related interactions (involving learners and assessment agencies) separately for ease of work and accountability. All the primary interactions related to assessments of learners and assessment agencies will happen through this PIAA app housed within the iGOT platform. Figure 2 below shows how the system and interface will work:

Figure 2. Systems and interface of the PIAA App

Assessment Agency 1   Assessment Agency 2   Assessment Agency 3   Assessment Agency 4

iGOT Platform

Payment gateway   PIAA App   Assessments Inventory   Database & Dashboards

User 1   User 2   User 3   User 4

Users

The process flow for assessments will work as depicted in **Table 3** (next page).

Table 3. The assessment process

STEPS	ACTIVITY	DESCRIPTION	ENTITY
1	User logs in to iGOT		User
2	User accesses her dashboard	Current/upcoming position, Competencies and levels required, Assessments taken/ pending, Current status against required competencies and levels	iGOT
3	User selects the competency and level for assessment	Based on where assessment is pending/ result deficient	iGOT
4	List of all available assessments for the chosen competency and level are made visible to the User	Amazon like interface listing all options with details like Price, Vendor, Validity score, Reliability score, Reviews etc	PIAA App
5	User selects the assessment she would like to take	Selection restricted based on pre-approved MDO criteria (if any)	PIAA App
6	Payment by MDO/ User	The payment is deducted from the MDO allotted wallet if selection falls within approved criteria of MDO. User pays directly for any other selection	iGOT payment gateway
7	Payment by iGOT to Assessment Agency (AA)	Payment/ purchase order to Assessment Agency after deducting service/ facilitation charges by iGOT (for itself and PIAA Agency)	iGOT
8	Assessment schedule	Assessment is started/ scheduled for the User based on selection. Based on PIAA Agency pre-approved mode and platform, assessment could happen on iGOT platform, AA platform, authorised test centre or MDO (mainly offline)	iGOT
9	User undertakes assessment	As per schedule. Based on PIAA Agency pre-approved mode and platform, assessment could happen on iGOT platform, AA platform, authorised test centre or MDO (mainly offline)	iGOT, AA platform, authorised test centre or MDO
10	Assessment results on User dashboard on iGOT	Irrespective of mode and platform for assessment, all assessment results will be fed and accessible only on iGOT dashboards	iGOT, AA platform, authorised test centre or MDO
11	Updated User information and dashboard	User, MDO and other respective dashboards are updated based on the assessment outcome	iGOT

The PIAA Agency must address the following objectives:

1. Establish a minimum standard of reliability and validity of each of the instrument categories that are proposed to be used. The emphasis is on category or class of instrument (e.g. multiple option tests, case studies, essay type, etc.). It is not necessary to create separate standards for multiple option tests for behavioural, domain and functional competencies at this stage.

2. Publish courses which can be availed by any subject matter expert (person or organisation) who intends to develop one or more assessment instruments:
   • Create assessment instruments and run them so that the above set of users (or even others) can be certified to create assessment instruments.

3. Establish a process of authorisation that is based on a minimum standard of reliability (accuracy of its measures) and validity (measures what it promises to measure) for each category of assessment instruments:
   • The agency can decide if they would like to accept the research conducted by the respective vendors for their own instruments.

4. Publish results of each of these instruments submitted by the vendor and open the same for review.

5. Select some reputed agencies that have been operating instruments that cover similar competencies to start the seeding of the assessments:
   • Such agencies will necessarily need to submit their research papers to the agency, upon the basis of which the agency may give a provisional authorisation.
   • Upon minimum usage and research thereof, the testing agency will be required to modify their instruments, if needed; if it meets the stated requirements, then it may be granted complete authorisation.
   • Until full authorisation is not obtained the instrument, if used, may give only provisional results or categorised as experimental and may not be linked to any formal personnel decisions. These results will automatically become valid once the respective instruments are declared reliable and valid.

6. Conduct own research or appoint agencies to conduct research on the efficacy of the assessment instruments as per the established process:
   • This service is likely to be availed by individual experts who would like to put forth their instruments for testing and acceptance. This will allow for a larger participation, keep the platform engaging and provide benefits to the government in many ways.

7. Publish the validity of the competency scales based on user assessments and help in keeping the competency scales valid.

8. Develop normative data for performance and other assessment purposes.

9. Publish analytics that will be helpful for all the stakeholders involved.

10. Provide conditional access to the user database to enable test developers to test their assessment instruments.

6.2. How will this agency work?

1. The PIAA agency will primarily act as a placeholder and main quality assurer till the time the CoDs designated by DoPT are ready to take up the entire responsibility of competencies allotted to them along with required assessments.

2. The PIAA agency/ iGOT platform will ensure that the identity of the test taker is masked and therefore unrecognisable. An agreement between the PIAA Agency and the assessment agencies will need to be arrived at on the provision of data that balances the need for research and the privacy of the person taking the test.

3. Assessment agencies will undertake reliability and validity tests of their respective instruments by the PIAA agency at their costs.

4. The PIAA agency can appoint any willing partner or experts (CTIs, STIs, institutions, organisations, panel of experts etc.) to conduct the validity and reliability tests so long as those conducting tests meet the generally acceptable criteria on neutrality and capability:
    *   These basic norms of who can test will need to be developed by the agency.
    *   External specialist agencies/experts will be required especially in case of competencies which are niche and not very prevalent.

5. The platform will have the capability to grade the level of expertise of different types of users (learners, mentors, trainers etc.). The PIAA agency can help those seeking to test their instruments connect with appropriate levels of expertise as needed.

6. Everyone on the platform is allowed to raise a flag on any assessment instrument with sufficient evidence and in a prescribed form. The agency will need to have an established workflow to deal with them.

7. All assessment instruments will also carry the norms used for content flagging that are applicable elsewhere on the site.

8. Users will be graded on specific competencies and each user can enhance their 'trust' score by participating in certain community activities. Some of these community activities could be:
    *   Editing the information submitted by the assessment agencies.
    *   Participating in test studies conducted and using their demographic data (provided any such test results are used only for academic purposes and not for any personnel decisions).

6.3. PIAA agency: Key components and their roles

▪ 6.3.1. Management and coordination

Onboard and manage all assessment agencies/individuals and their assessments:

1. Administration, management and coordination of all the PIAA related functions, stakeholders and their interactions – information requirement, exchange and defining Service Level Agreements (SLAs) on the iGOT platform

2. Holding and managing the entry gating and onboarding process of all assessment agencies on the iGOT platform:
   - Process for application and fees collection
   - Background and documents verification of assessment agencies
   - Establishing communication channels/means for information exchange and clarifications
   - Final decision and follow-up

3. Provide common services for onboarded/interested assessment agencies (especially individual experts) like automation, proctoring, validity/reliability checks, group for pilot etc.

4. Continuous exploration and updates on new developments in the area of competency assessments including:
   - New/improved assessment instruments, tools and technology
   - New assessment agencies with new assessment solutions
   - Coverage of all domains

5. Finalising pricing policy and payment terms/ mechanism for assessments offered on the platform, especially in those cases where for any competency/level not more than three assessment options are available. In cases where more options are already available, market forces could be left to decide the pricing

6. Managing the entire process of grievance redressal including prescribing punitive grid and corresponding action, escalation matrix etc

6.3.2. Quality Assurance

Ensure all assessments fulfil criteria of validity, reliability, comparability and minimise bias by setting standards and guidelines. This is detailed as follows:

1. Set standards and guidelines for quality assurance of assessment agencies to ensure accountability and improvement

2. Create and manage CoDs with corresponding panels of CTIs/STIs, educational institutions and experts (for subject matter expertise) to check and confirm validity and reliability of different assessment instruments. CoDs along with the experts' panel will be responsible for providing at least 1-2 options for assessments where appropriate organisations and market has not yet developed

3. Define eligibility conditions and documents for evidence for entry gating of assessment agencies on the iGOT platform

4. Put in systems and mechanisms to check assessment agencies for:
   - Internal quality assurance policy and process
   - Internal design and approval process of assessments
   - Systems for refreshing and updating question banks
   - Information management
   - Internal monitoring

5. Set process for external quality assurance (expert reviews, peer reviews, moderation etc.)
   - Define parameters to be checked and standards to clear

- Periodicity of checks
- Parties/agencies for external QA and their onboarding process
- Gap resolution

6. Monitoring and audit of assessments ecosystem and stakeholders:
   - Define processes and parameters
   - Set periodicity of checks and audits
   - Gap resolution

7. Conduct research and disseminate reports:
   - Conduct/commission focussed efficacy studies
   - Set and periodically visit systems for ongoing data analysis and reporting
   - Open system to raise flags and point out snags/shortcomings
   - Coordination, monitor, interplay and outcomes of different scores generated by user's interaction on the iGOT platform

8. Set system and process for training and certification of assessors to ensure uniformity in understanding and minimum outcomes from assessment agencies/ individuals:
   - Define parameters and standards
   - Designate agency to conduct training, assessment and certification
   - Design training programme
   - Conduct training programme – online/offline
   - Assessment
   - Certification

6.3.3. Technology

Create and maintain a platform/application (with automated workflow) to bring together all components of PIAA for provision of assessment services on the iGOT platform:

1. PIAA app to be developed as a feature or application which should be able to plug-in to iGOT and should be able to connect with multiple platforms (assessment agencies) through API

2. Platform to have end to end technology based workflow to automate majority of functions of different PIAA components

3. Provide appropriate proctoring services/requirements where required

4. Identify, define and standardise data needs of different platforms and appropriate data emit points

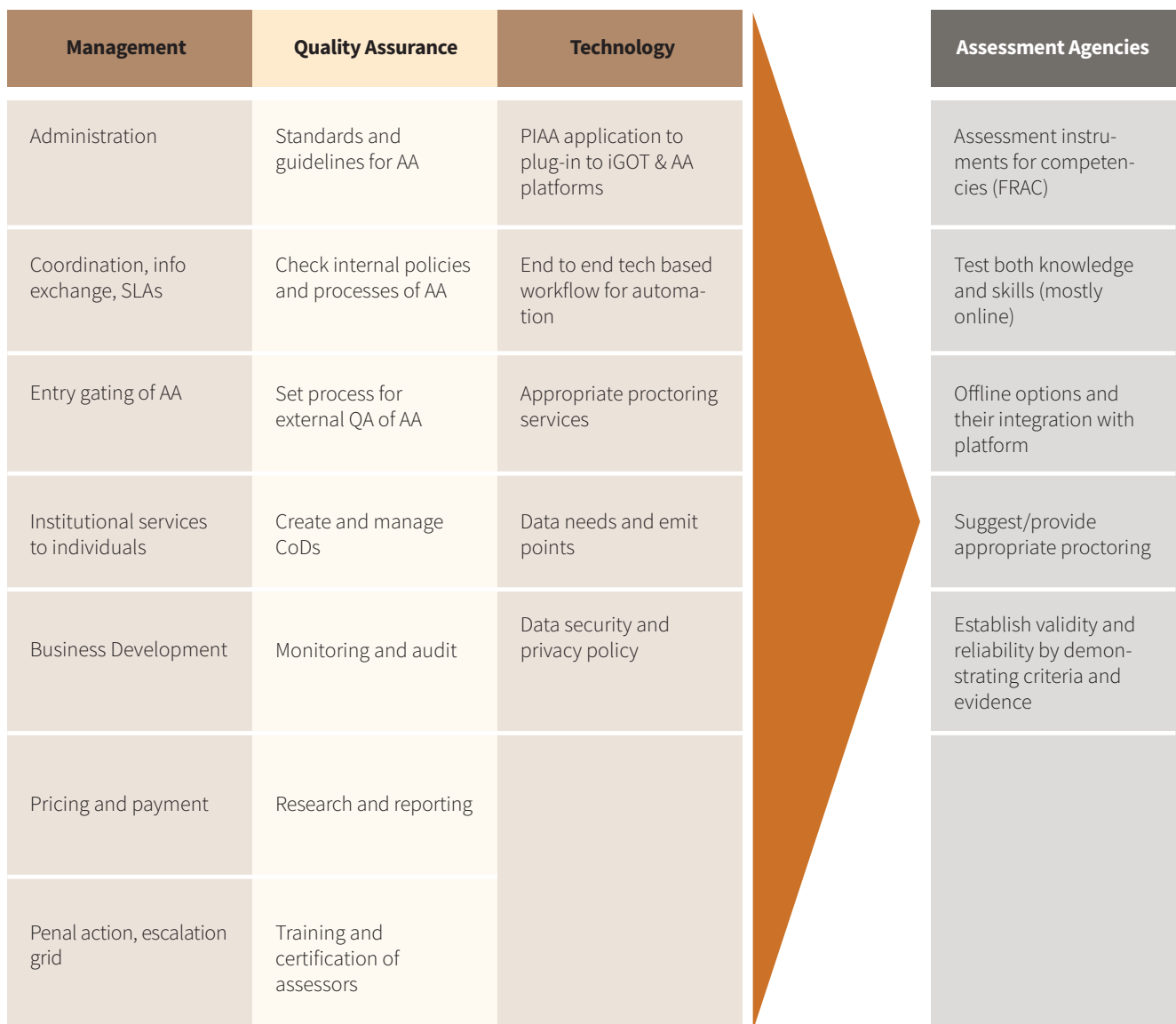5. Implement and manage data security and privacy policy for PIAA

The PIAA agency along with the above three main components will act as a single point stop for all PIAA related interactions and stakeholders. The agency will contract the assessment agencies/individuals and be the single point of contact (SPOC) between the SPV/iGOT platform, its users and these assessment agencies.

1. Provision of assessment instruments for all competencies and levels as defined by FRACing

2. Focus on instruments to test both knowledge and skills especially through online and remote means

3. Provide offline options and integration of outcomes and evidence collected with the platform

4. Suggest/provide appropriate proctoring services/requirements

5. Help establish validity and reliability of assessment instruments by demonstrating criteria and evidence

Figure 3 below shows how different components of the PIAA agency will come together and manage the assessment agencies.

Figure 3. Components of the PIAA agency

Management	Quality Assurance	Technology		Assessment Agencies
Administration	Standards and guidelines for AA	PIAA application to plug-in to iGOT & AA platforms		Assessment instruments for competencies (FRAC)
Coordination, info exchange, SLAs	Check internal policies and processes of AA	End to end tech based workflow for automation		Test both knowledge and skills (mostly online)
Entry gating of AA	Set process for external QA of AA	Appropriate proctoring services		Offline options and their integration with platform
Institutional services to individuals	Create and manage CoDs	Data needs and emit points		Suggest/provide appropriate proctoring
Business Development	Monitoring and audit	Data security and privacy policy		Establish validity and reliability by demonstrating criteria and evidence
Pricing and payment	Research and reporting			
Penal action, escalation grid	Training and certification of assessors			

Figure 4 below shows the workflow planned to put PIAA Agency in place and operationalising PIAA on iGOT platform:

Figure 4. Workflow of PIAA agency
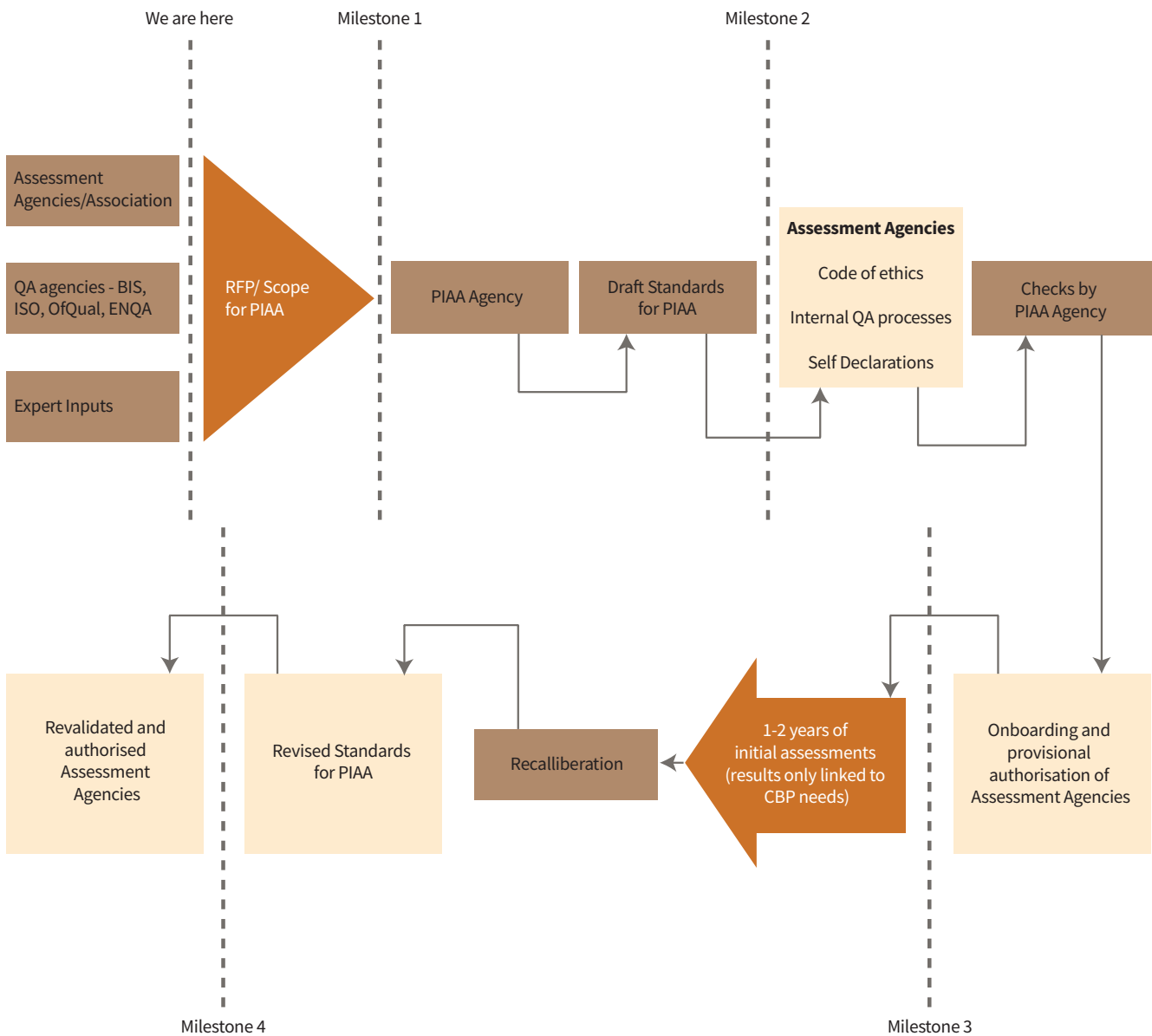
In order to cover all competencies in due course of time, the PIAA agency could work on a phasing plan of competencies by prioritising and making work packages as follows:

1. Grouping together of similar competencies (especially domain and functional competencies)

2. Identification of priority groups of competencies (most popular/critical ones first)

3. Phasing plan for getting assessments onboarded

4. Formation of work packages (mix of easy and difficult to assess competencies)

5. Simultaneously work on options for most difficult/least used competencies (the other end)

It is likely that by the time the FRAC completes its first cycle covering a majority of the central government MDOs, almost 1000 different competencies may be defined covering behavioural, functional and domain competencies.

The mandate and the broad objectives of the agency is given in earlier sections. The iGOT platform may need to partner with the best possible combination of organisation/s (perhaps a consortium) and help this take shape. This would entail identifying organisation/s that are willing to invest in such an endeavour.

The following two issues may be considered during the procurement process for the PIAA agency:

1. Managing conflict of interest among organisations that bid to run the PIAA agency and offering their own assessment instruments.

2. Organisations that may be prohibited from offering assessment instruments in other countries bidding for running the PIAA.

CONCLUSION

IMPACT OF TECHNOLOGY AND ASSOCIATED RISKS

Assessments are undergoing a big shift. Like most other processes, assessments too are impacted by technology and availability of data, and an increasing capacity to digest this data into meaningful intelligence. The types of assessments have increased manifold today. A complete 360-degree view of a person is now easily available in any given environment, subject to privacy rules.

Today, high-profile and high-risk assessments also include profile and activities on social media. In fact, data from social media is increasingly being used by corporations. Various providers scrape the internet for publicly available data to build a profile of an individual. The validity of such profiles is not known and may be subject to privacy laws. The fact that they exist cannot be ignored. Similarly, algorithmic assessments based on data points from varied sources, like a credit ranking report, police reports, etc., also form part of the dossier. One has to develop a clear set of rules that guide these so as to avoid any privacy issues and other legalities that may arise in future.

In conclusion, one can say that while assessments provide the entire platform with a clear advantage and sets it apart from any other attempt of a similar kind – and while the entire effort may seem herculean in the beginning – it has several advantages. In the short term, the advantages that accrue are in terms of cost, creating a talent inventory for rapid deployment – while in the longer term it will help in de-siloization of the bureaucracy, creating a learning culture and an ability to deal with any kind of talent issues. This will also help the non-governmental industry move towards a competency-based education, assessment and employment environment.

ANNEXURE-1

Top Assessment and Proctoring Companies

1. Aon :   assessment.aon.com
2. Aspiring Minds :   aspiringminds.com
3. BTS :   bts.com
4. Examity :   examity.com
5. Interview Mocha :   imocha.io
6. Korn Ferry/ HayGroup :   kornferry.com
7. Mercer/Mettl :   mettl.com
8. MeritTrac :   merittrac.com
9. MHS Assessments :   mhs.com
10. Pearson :   pearson.com
11. Pearson VUE :   pearsonvue.com
12. Proctorio :   proctorio.com
13. ProctorTrack :   proctortrack.com
14. ProctorU :   proctoru.com
15. PSI :   psionline.com
16. Talent Sprint :   talentsprint.com
17. Talview :   talview.com
18. TCS iON :   tcsion.com
19. Tracom Group :   tracom.com
20. Wheebox :   wheebox.com