

Under the Patronage of His Excellency **Eng. Abdulrahman bin Abdulmohsen AlFadley**  
Minister of Environment, Water & Agriculture

**منتدى المياه السعودي**  
saudi water forum **SWF 2024**



## The Best Practice for Using Technology on Training and Development In Water Sector



29 April – 01 May 2024



Hilton Riyadh Hotel & Residences  
Riyadh, Saudi Arabia

Organized by

**وزارة البيئة والمياه والزراعة**  
Ministry of Environment Water & Agriculture



المؤسسة العامة لتحلية المياه المالحة  
Saline Water Conversion Corporation (SWCC)



شركة المياه الوطنية  
National Water Company



الشركة السعودية لشراكات المياه  
Saudi Water Partnership Company



المؤسسة العامة للمياه  
Saudi Water Partnership Company



منظم المياه  
Water Regulator



المركز الوطني لكفاءة وترشيد المياه  
NATIONAL WATER EFFICIENCY AND CONSERVATION CENTER  
MAEE



Organizing Partners

# 1- Introduction

## Introduction - Defining competencies



Competency is a combination of knowledge, skills, and behaviors necessary to perform a job role effectively and with distinction.

# 1- Introduction

## Introduction - Types of competencies

Competencies are generally divided into three main types: behavioral competencies for each organizational level (leaders, managers, employees), technical competencies assigned to each employee according to his job family, tasks and responsibilities, and HSE competencies for all employee

### Technical competencies

A set of knowledge, abilities and skills specific to a specific job and necessary for outstanding performance in the specific job groups/families

### Behavioral competencies

A set of motives, traits, and behaviors that are desired and required to achieve outstanding performance at all levels and functions (leaders, managers, and employees).

### HSE competencies

A set of knowledge, skills, and abilities required to effectively manage health, safety, and environmental risks in a workplace

# 1- Introduction

## Introduction - Mastery Levels

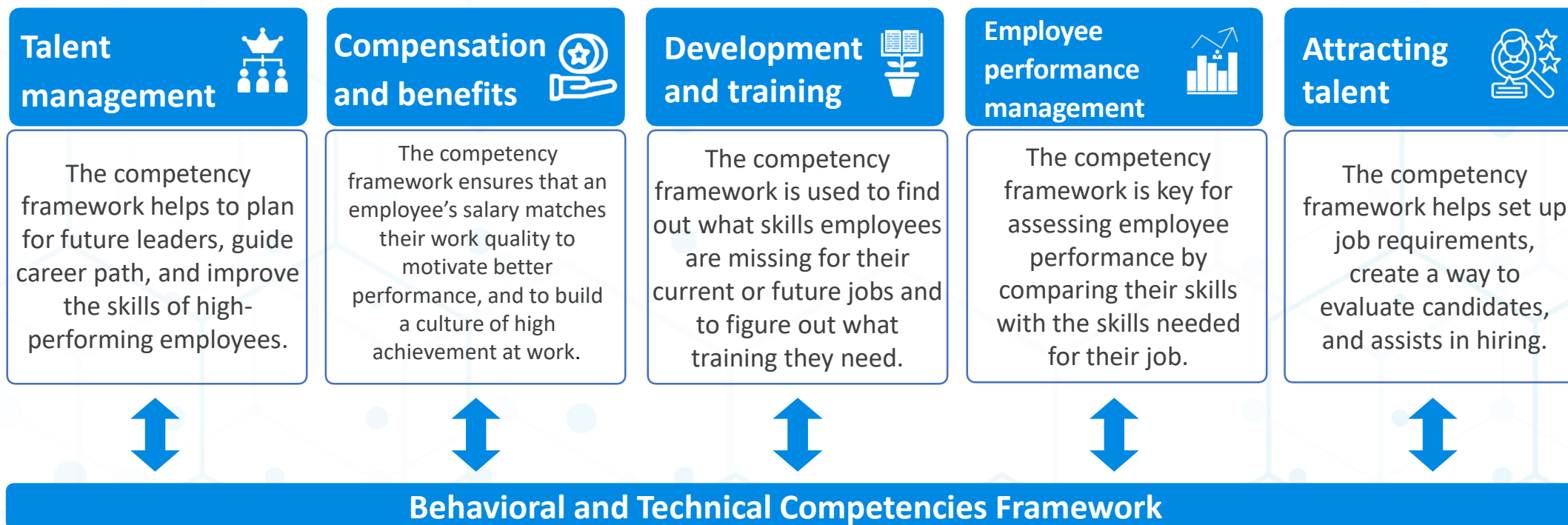
Four levels of mastery have been developed for the proposed behavioral and technical competencies

Mastery level	Level Description
<p><b>Junior</b></p> <p>☆ ☆ ☆ ☆</p>	<ul style="list-style-type: none"> <li>▪ Demonstrate the ability to have a basic understanding of competency</li> <li>▪ Application of competency at an initial level and limited to daily/routine work</li> <li>▪ Requires a great deal of supervision and direction to apply competence</li> </ul>
<p><b>Average</b></p> <p>☆ ☆ ☆ ☆</p>	<ul style="list-style-type: none"> <li>▪ Understand efficiency with little knowledge of its impact</li> <li>▪ Applying competency at an average level within a range of general job roles and tasks</li> <li>▪ Requires minimal supervision to ensure effectiveness and skill in applying competency</li> </ul>
<p><b>Advanced</b></p> <p>☆ ☆ ☆ ☆</p>	<ul style="list-style-type: none"> <li>▪ Demonstrate full knowledge and understanding of all aspects of competency</li> <li>▪ Apply advanced level competency without supervision across a wide range of complex tasks</li> <li>▪ Advising others on the correct application of the competency, improving knowledge or skills related to the competency and providing training to others if required</li> </ul>
<p><b>Expert</b></p> <p>☆ ☆ ☆ ☆</p>	<ul style="list-style-type: none"> <li>▪ Demonstrate a high level of understanding of the competency used in the workplace</li> <li>▪ The application of competency professionally and continuously and in different situations, and is a reference in the application of competency</li> <li>▪ Lead and develop others, and support colleagues to improve their skills and competency abilities</li> </ul>

# 1- Introduction

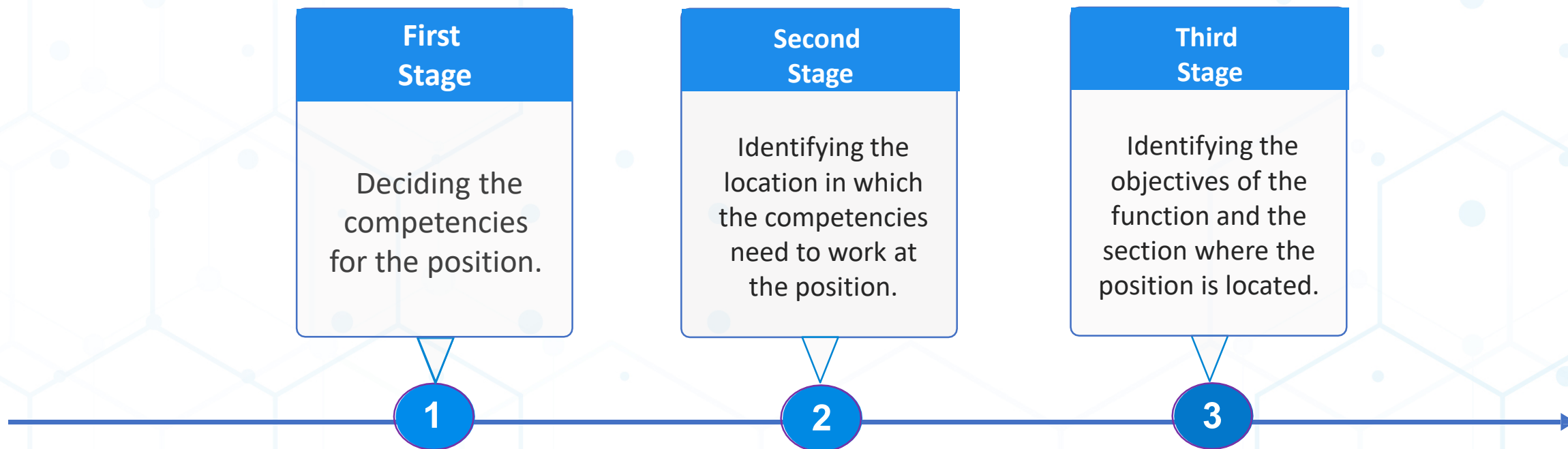
## Introduction - Using Competencies Framework

The framework of behavioral and technical competencies is the basis for the application of many human resources systems in order to achieve the desired goals of the organization by building the culture of the organization and improving the skills and capabilities of employees.



## 2- SWA Competency Mapping

### Competency Mapping Process



## 2- SWA Competency Mapping

### Methods of Competency Mapping

<b>Assessment Centre</b>	It is a certain function of identifying the skill & the potential for growth
<b>Critical Incidents technique</b>	A process of systematically identifying the behaviors that contribute to the success or failure of the competencies in specific situations
<b>Questionnaire</b>	A certain technique that is followed by the organization that prepares a list of questions that the users would fill in a return.
<b>Interview Techniques</b>	Every organization has different techniques of interviewing the competencies
<b>Psychometric Tests</b>	The sole focus of psychometric assessment is that many organizations use as this part of the selection process

## 2- SWA Competency Mapping for Water Sector

Water Production	Water Transmission	Water Treatment
Local Operator CCR Operator Electrical Tech/Eng. Mechanical Tech/Eng. Instrument Tech/Eng.	Local Operator CCR Operator Electrical Tech/Eng. Mechanical Tech/Eng. Instrument Tech/Eng.	Local Operator CCR Operator Electrical Tech/Eng. Mechanical Tech/Eng. Instrument Tech/Eng.

### SWA Courses linked to competences

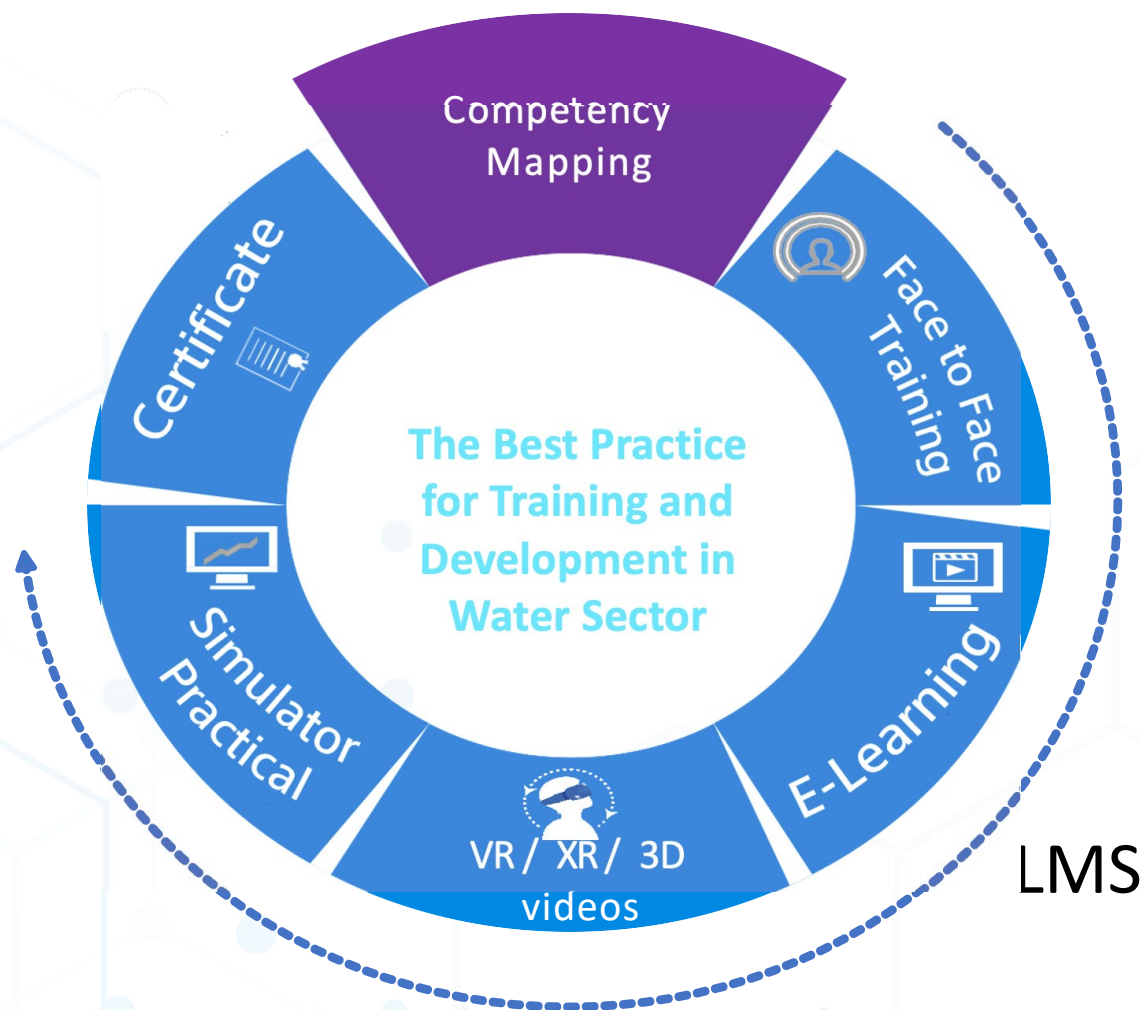
الترتيب	المستوى	مجال التخصص	المجال الوظيفي	المجال التعليمي	المجال البحثي	المجال الإداري	المجال الفني	المجال التشغيلي	المجال التعليمي	المجال البحثي	المجال الإداري	المجال الفني	المجال التشغيلي
1	مبتدئ	التقنيات	إدارة العمليات والمعدات	التقنيات									
2	مبتدئ	التقنيات	إدارة العمليات التشغيلية	التقنيات									
3	مبتدئ	التقنيات	إدارة العمليات التشغيلية	التقنيات									
4	مبتدئ	معرفة عميقة	التدريب على الخدمة من المرافق والمؤسسات الخيرية	معرفة عميقة									
5	مبتدئ	معرفة عميقة	استخدامات إدارة الصيانة أو النظم على النظام	معرفة عميقة									
6	مبتدئ	معرفة عميقة	إدارة التربة والغطاء الأرضية	معرفة عميقة									
7	مبتدئ	معرفة عميقة	إدارة العمليات التشغيلية	معرفة عميقة									
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29	مبتدئ	معرفة عميقة	إدارة العمليات التشغيلية	معرفة عميقة									

production services	Functional family	Pretreatment of reverse osmosis unit	Competence	
<b>mastery level</b>				
<b>Engineer Operator</b>				
<ul style="list-style-type: none"> <li>It shows the ability to study and choose the best and most appropriate primary treatments during the various operations of the reverse osmosis plants, with a view of the latest technologies for their implementation.</li> <li>Estimate the quantities and types of deposits and deposits on the membranes and determine the most appropriate techniques to prevent them and reduce them to the lowest levels.</li> <li>Possesses the ability to study and select filtration processes and the most appropriate and best types of filters in primary treatment operations in reverse osmosis plants</li> <li>Can design the best and most appropriate waste water system for all stages in reverse osmosis plants</li> <li>Possesses the ability to efficiently study and analyze the causes of filtration problems and to establish and develop necessary recovery procedures during the implementation of filter backwashing</li> </ul>	<b>Control Room Operator</b>		<b>Local Operator</b>	
<ul style="list-style-type: none"> <li>Possesses comprehensive knowledge of the importance of primary treatment during operation of reverse osmosis plants</li> <li>Shows mastery in knowing the types of accumulations and deposits on membranes and prevention techniques</li> <li>He can explain the filtration process and the types of filters used in the operations of reverse osmosis plant</li> <li>Demonstrates a deep understanding of the concept and definitions of waste water systems for reverse osmosis plants</li> <li>Possesses the ability to efficiently carry out the identification of filtration problems and necessary recovery procedures during the implementation of filter backwash</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrates a basic and general understanding of the importance of Pretreatment treatment during the operation of a reverse osmosis plant</li> <li>He is familiar with the concept and types of deposits on membranes and techniques for their prevention</li> <li>The filtration process describes the types of filters used in the operations of reverse osmosis plants</li> <li>Shows a basic and general understanding of the concept and definitions of waste water systems for reverse osmosis plants</li> <li>Possesses the ability to efficiently carry out filter backwashing steps and initially identify the problems of the filtration process</li> </ul>			
<b>Learning Solution</b>				
13207, 13405, 11228, W231102, 13305	11206, 13207, 13208, 13305	13207, 11228, 13305, 11221		

Learning Solution	Code	Learning Solution	Code
Saline Water Desalination Technologies	11206	Mechanical Equipment	11223
Reverse Osmosis Technology	13207	Operation Skills In Process Measurement	11221
Reverse Osmosis Plants Process Control and Troubleshooting	13208	Industrial Drawing for Operation Engineers	11455
Revers Osmosis Desalination Plant Design Principle	13405	Operation Skills In Process Control	11461
Wastewater Treatment Technologies	11228	Post Treatment Process	14209
Wastewater Treatment Plant Design	W231101	Hydraulic Systems	15203
Water Resources	W231102	Chemistry Of Desalination Plants and Industrial Facilities	11301
Revers Osmosis Desalination Plant Process, Monitoring & Control	13217	Reverse Osmosis Membranes and Nano Filtration	W231103
Pre-treatment System In Reverse Osmosis Plants	13305	Fouling and Chemical Cleaning In Reverse Osmosis Plants	13407

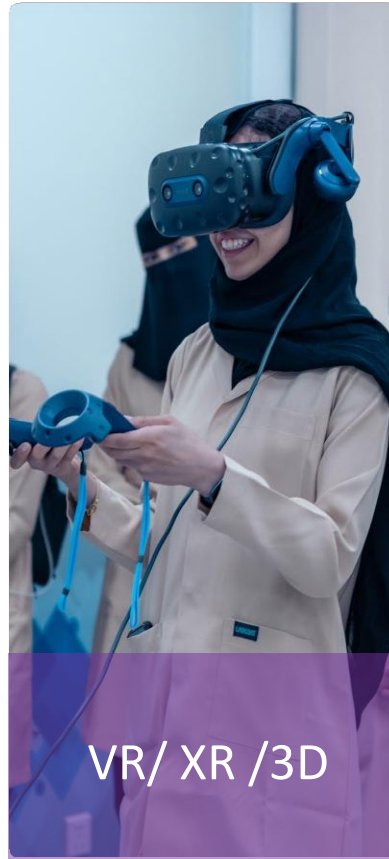
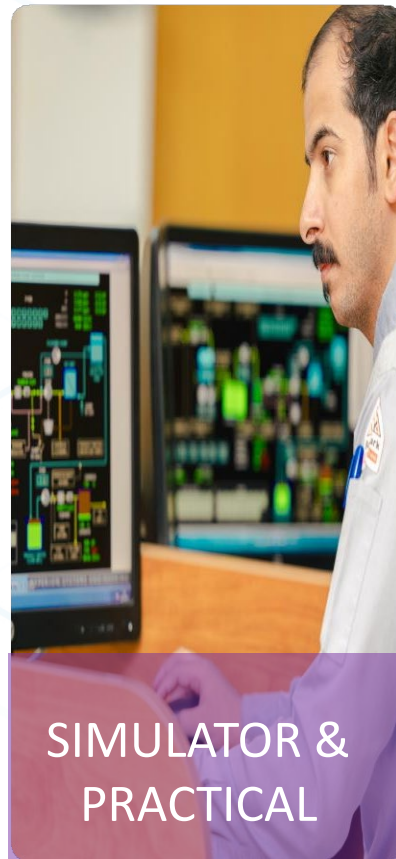


### 3- Performance Driven Competency framework



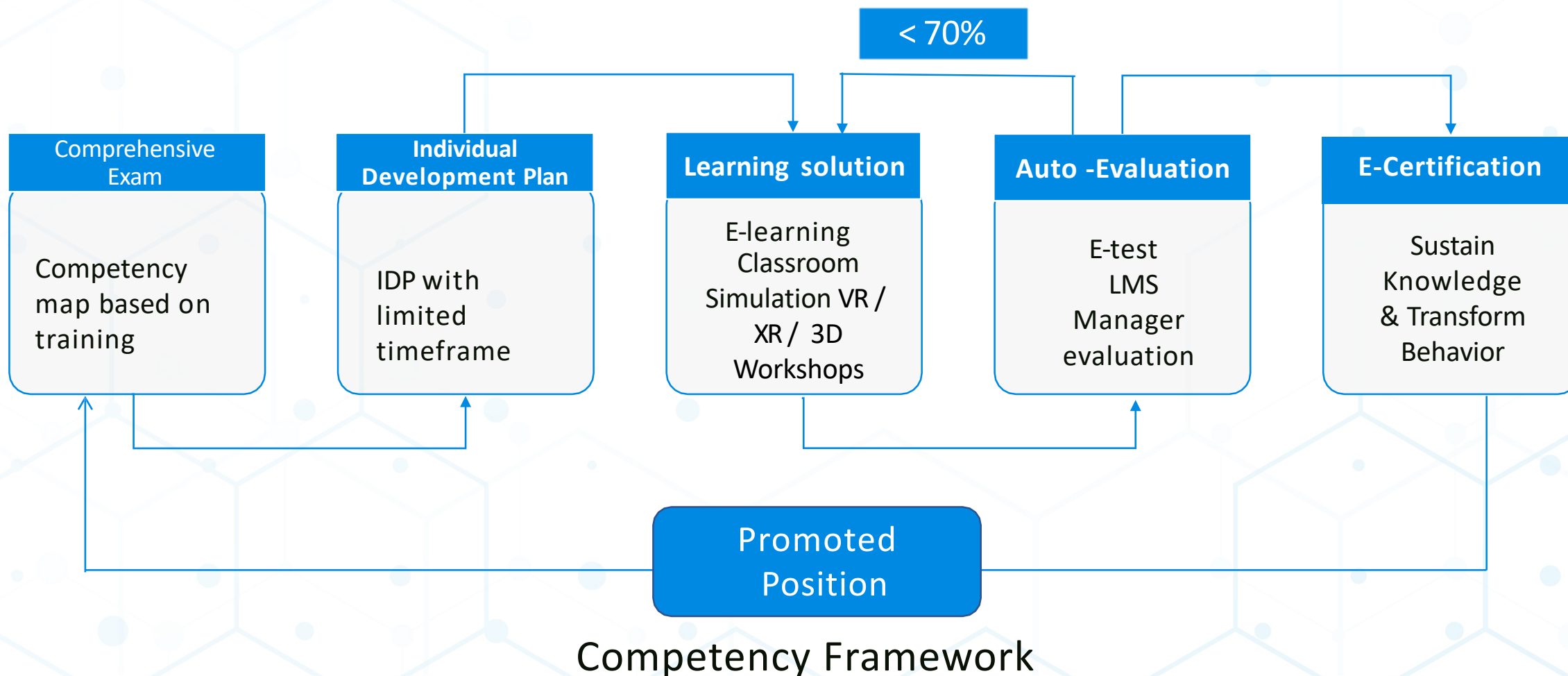
## 3- Performance Driven Competency framework

The Best Practice for Training and Development In Water Sector



## 4- Cloud E-Learning Platform and Competency Mapping

Cloud e-Learning platform approach & Methodology solution





## 5- SWA Certification and Qualification

### SWA Qualified Certification

SWA provides certificates and qualifications to employees in the water sector



Certifying for the technical workforce in the water sector



Certify and provide professional and technical qualifications to all employees working in water plants



Provide continuous training and learning modules on innovation and future technologies

## 5- SWA Certification and Qualification

SWA certification is expected to provide benefits to all stakeholders

The proposed certification program...

Type of certificates\*

- mechanical technician / professional field, control, and engineer operators
- electrical technician / professional
- maintenance technician / professional



Target Market

Employees in the water sector



Impact

- Increases the efficiency
- Ensures availability of qualified & skilled workers
- Reduces human errors that lead to financial loss

...provides benefits to all stakeholders



KSA

- Prescribes enhanced standards for industry compliance



SWA

- Leverage on the experience of highly qualified instructors and state of the art workshops and simulators



Industry

- Increases skills in the job market and provides a credible source for recruitment



Workforce

- Upskill workforce and provides motivation to employees

\*It is proposed to have 10 specific knowledge categories under each certificate

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