

# Tackling Sustainable Water Supply & Public Wastewater Treatment in South Africa Expert Round Table

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# The Catch-22 of Municipal Water Infrastructure

## Water Loss/Non-Revenue Water

- 50-60% Losses
- Large Metro up to R2 Billion per annum

## Revenue Collection Challenges:

- Poor billing systems and water losses reduce revenue.
- Without revenue, municipalities can't recruit or retain skilled technical personnel.
- R23 Billion owed to Water Boards

## Budget Constraints:

- Limited budgets for infrastructure maintenance and skill development.

## Infrastructure Deterioration:

- Aging infrastructure leads to failures, worsening financial and operational challenges.

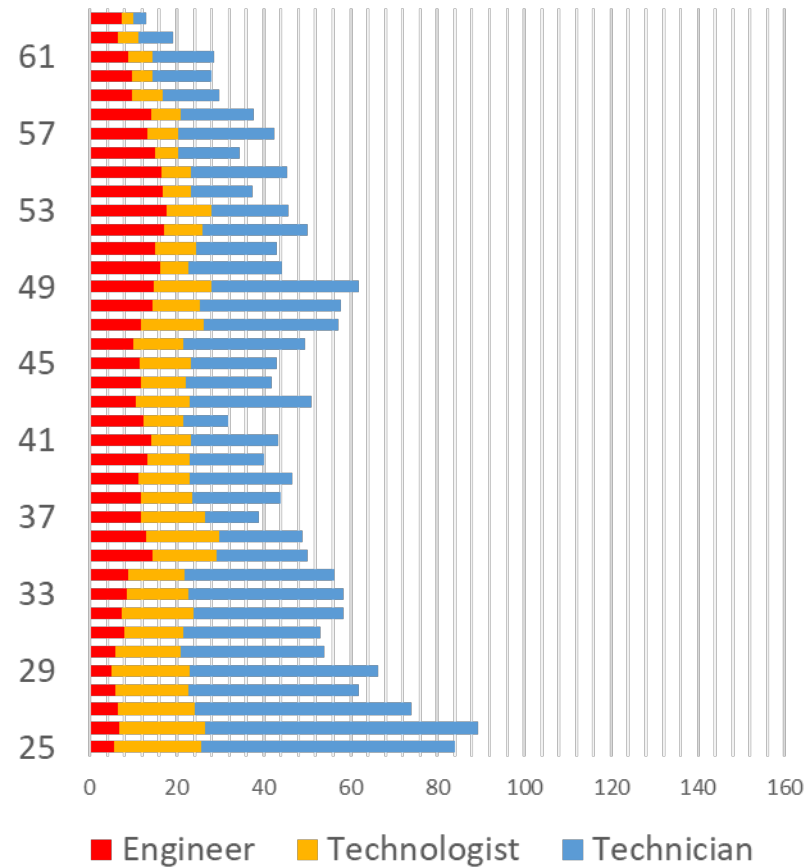


# Civil engineering practitioners in Local Government

2005

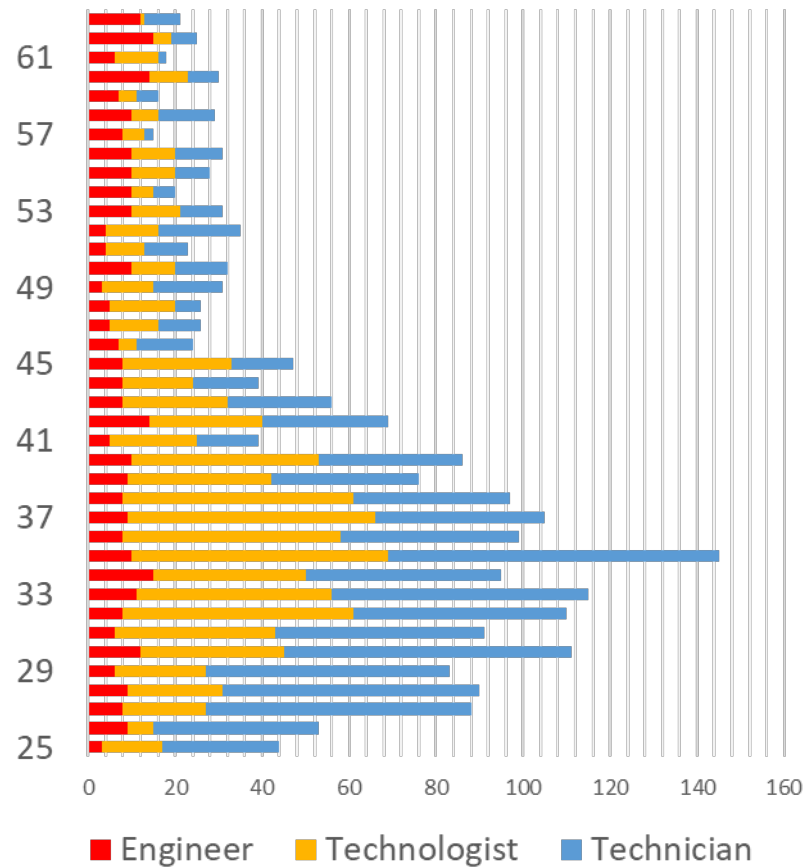
2015

2020



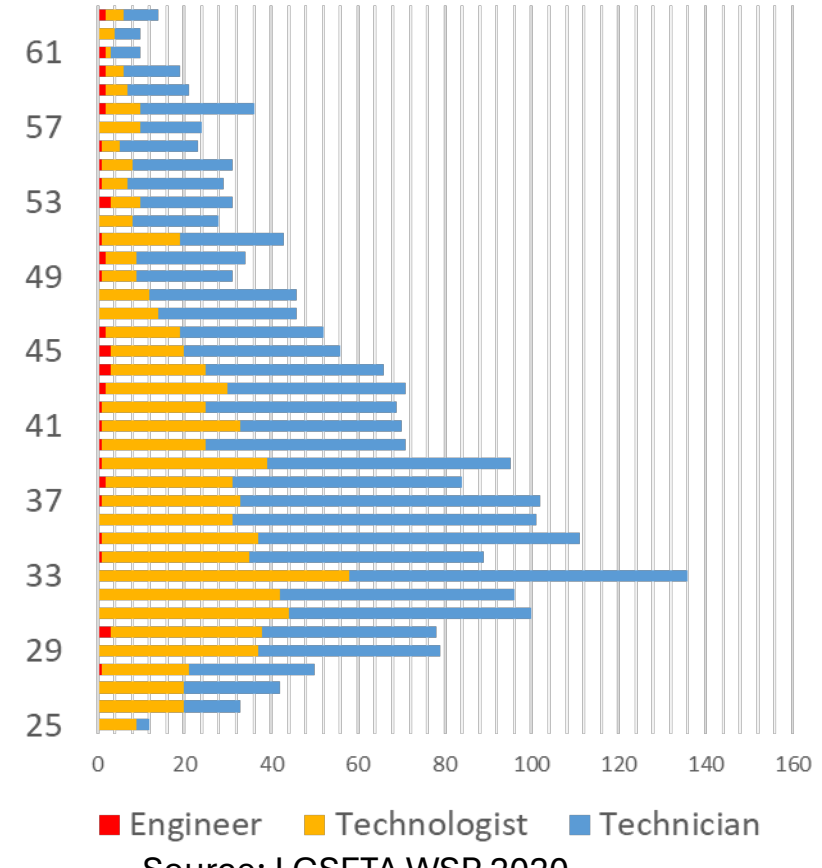
Engineer Technologist Technician

Source: Numbers and Needs Census 2005



Engineer Technologist Technician

Source: Numbers and Needs Census 2015



Engineer Technologist Technician

Source: LGSETA WSP 2020



# Engineering Skills Shortage in Local Government

**Number of municipalities serving populations >200,000**

- Doubled in the past decade.

**Municipalities with no civil engineers: Increased from 126 to 202.**

**28 municipalities have no civil engineering staff at all.**

**Of the remaining 174 municipalities:**

- 81 have only technicians,
- 17 have technologists,
- 76 have a mixture of technicians and technologists.

# Technical Hierarchy and Roles



**Engineers: Innovators for complex tasks, using advanced engineering principles.**



**Technologists: Implementers of proven techniques for broadly defined tasks.**



**Technicians: Backbone of infrastructure support, managing operations and maintenance.**



**Certificated Engineers: Responsible for large installations (e.g., power stations, treatment works).**



**Importance: A complete hierarchy is needed to plan, develop, operate, and maintain services.**



# Workforce Dynamics in Civil Engineering

**Professionally  
Registered Staff:**

- Decreased from **455 to 294.**

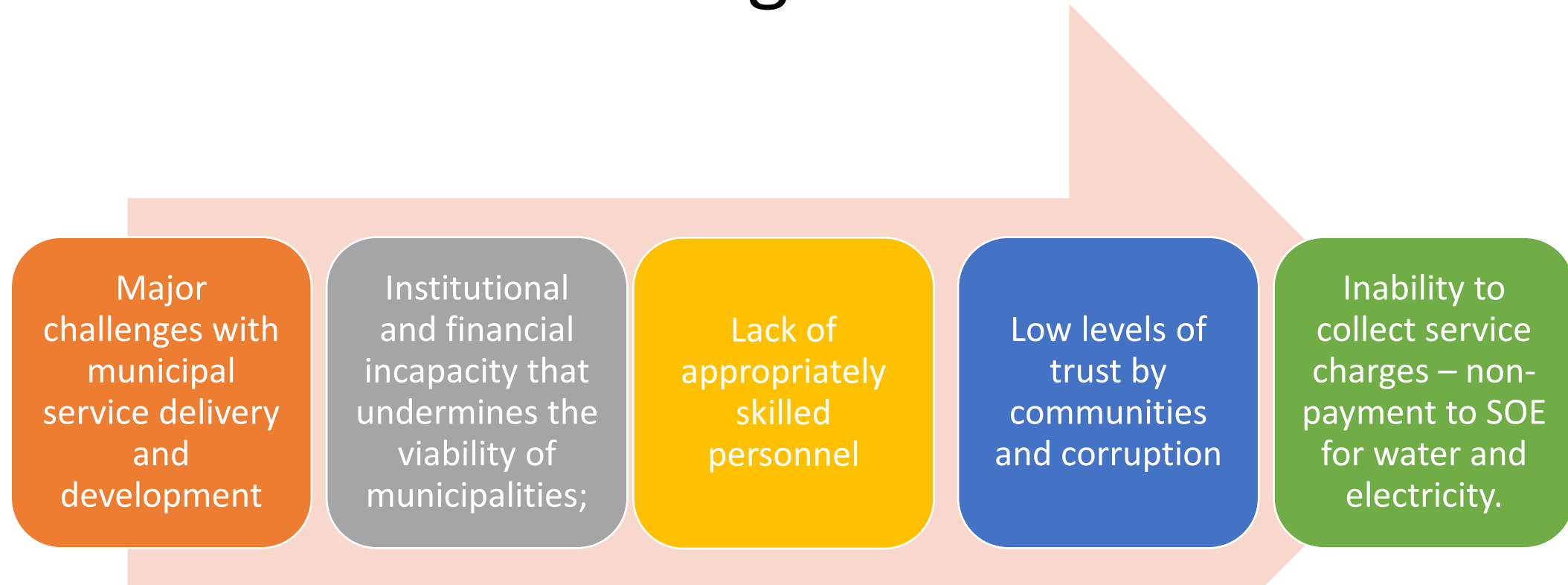
**Non-registered  
Staff:**

- Increased from **1,420 to 2,094.**

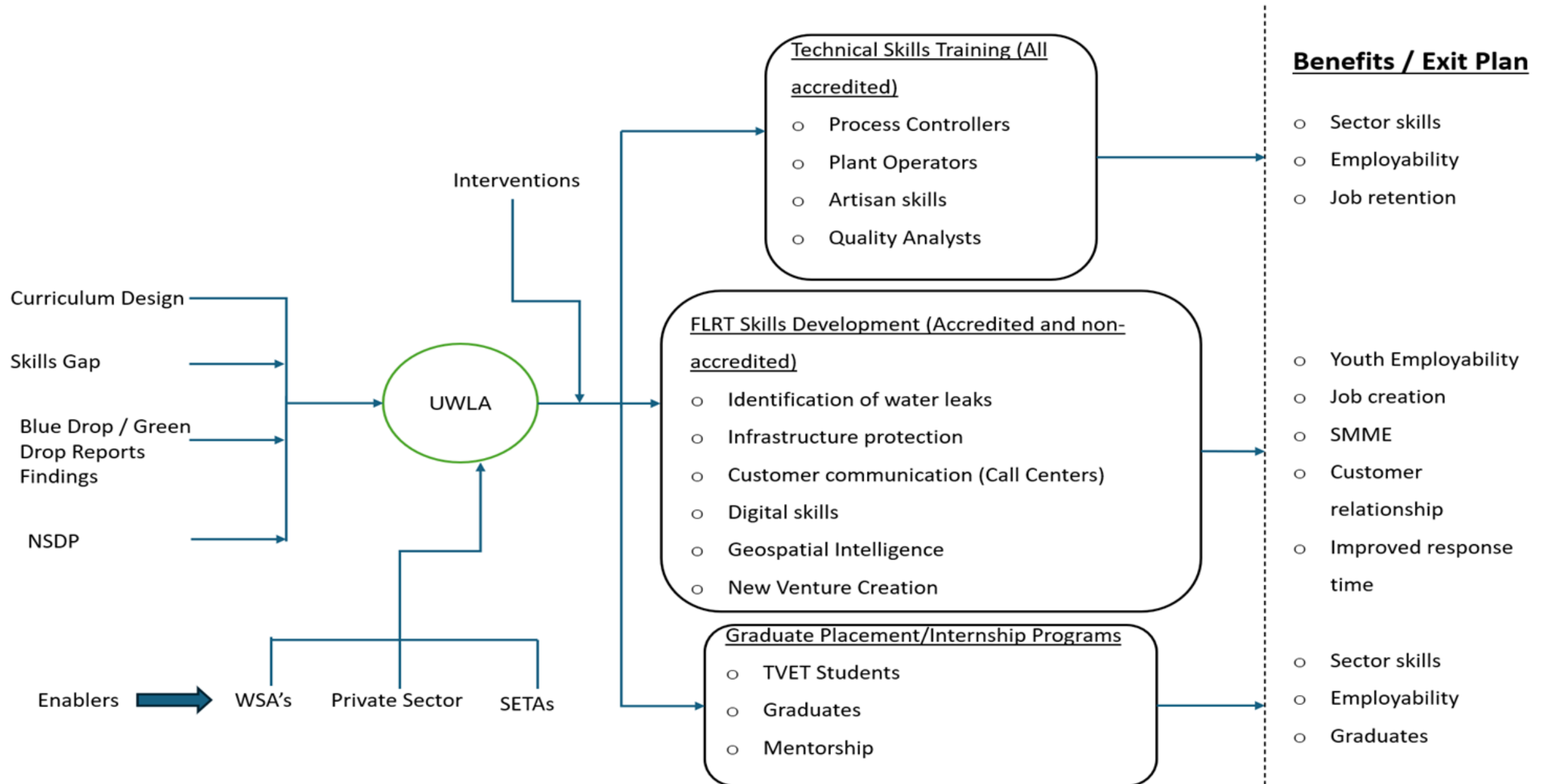
**Average Age of Civil  
Engineering Staff:**

- Dropped from **46 to 38.**

# Risks to Water uMngeni-uThukela Water



# First Line Response Team (FLiRT) for Municipalities





# How Umngeni Water Services is Addressing These Challenges



## **Billing and Revenue Collection Improvement:**

Assisting municipalities in upgrading systems for better financial sustainability.



## **Addressing Water Losses & Non-Revenue Water (NRW):**

Implementing training and capacity-building programs.



## **Water, Wastewater, and Energy Institute of Learning:**

Developing future-ready professionals through specialized training.



## **Capacitating TVET Lecturers:**

Centres of Specialisation in Water/Waste Water  
Enhancing water and wastewater education.



## **Mentorship & Coaching:**

Building a pipeline of skilled engineers and technicians for municipalities.



# Strategic Recommendations



**Develop modernized and flexible curricula** for technical education.



**Invest in digital infrastructure** for scalable e-learning and smart water solutions.



**Build strong public-private partnerships** with Water Utilities such as UWS



**Strengthen engagement with municipalities and industries** for effective skill transfer.



**Introduce structured Work-Integrated Learning (WIL) and mentorship programs.**



# THANK YOU

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