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STEM SUPPORT PROGRAMME MISSION

ERB ENGINEERS Newsletter

THE ERB'S MISSION ON STEM EDUCATION IN TANZANIA

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1. 0 Introduction

1.1 Engineers Registration Board (ERB)

ERB is a Statutory body established by the Engineers Registration Act. Cap. 63. ERB has a responsibility of regulating professional practice and conduct of engineering practitioners.

1.2. Functions

- Registration of Engineering Practitioners (Academic Qualifications, Experience and Attitude)
- Professional Development (Lifetime learning)
- Regulation of professional Conduct and Ethics
- Recognition of Courses, in collaboration with TCU and NACTIVET

1.3. Vision

To achieve sound professionalism among Engineering Practitioners in the Regions and beyond

1.4. Mission

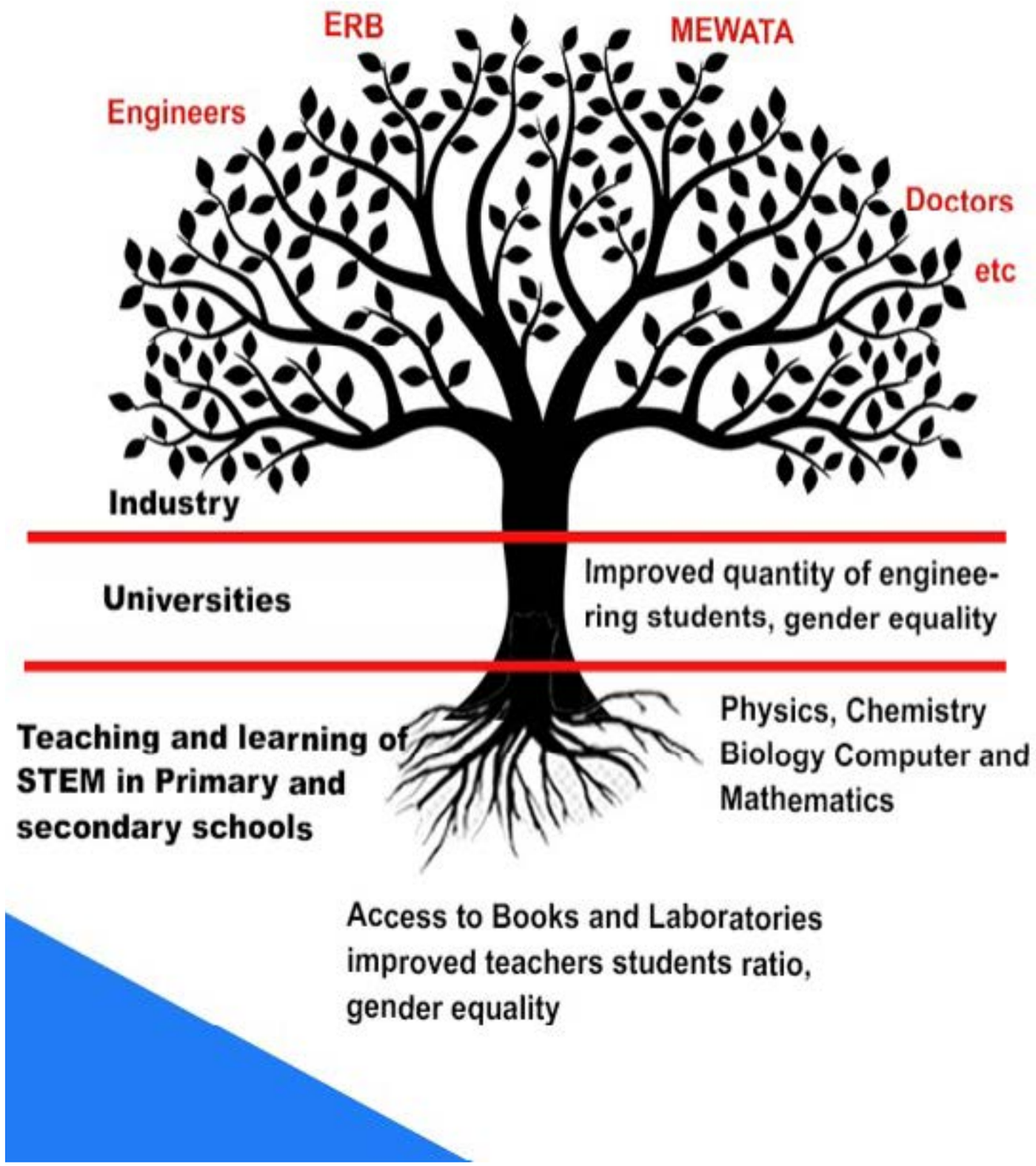
To Regulate Engineering Professional Practice in Tanzania through excellence promotion of Engineering Practitioners with a view to enhance their competency and professionalism.

2. STEM SUPPORT PROGRAMME

2.1. STEM

STEM is a Short form of words Science, Technology, Engineering (at T-VET level) and Mathematics.

STEM forms the bedrock upon which the many science professions including Engineering is constructed. In other words STEM is a seed from which the Engineering Tree grows.



2.2 RAPID EXPANSION OF PRIMARY AND SECONDARY SCHOOL ENROLLMENTS

In the past 3 years, the country has witness a rapid expansion of education infrastructure in primary and secondary schools as a result of Government investment and through projects like SEQUIP, SEDP, BOOST etc…… etc. have literally touched every primary and secondary school in Tanzania.

In addition more than 800 primary and Secondary Schools have been constructed, including the 26 Science Girls secondary schools constructed in every Region, popularily known as Mama Samia Schools, in fact most of them are variations of Her Excellencies names.

This investment supplemented by incentives like free education has significantly increased enrollment in primary and secondary schools, exerting pressure on teacher: student ratios and textbook and laboratory access.

2.3 STEM SUPPORT PROGRAMME(SSP)

ERB has always been interested in STEM education, specifically so for girls as they are rare in the profession, most girls opt out of science subject at form two when it ceases to be mandatory and by doing so they cannot become Engineers. This is the root cause for the current, and unacceptable girls boys ration in the Engineering profession.

For the past four Years, ERB in collaboration with the IET women chapter launched a campaign dubbed planting a seed for future engineers which was carrying out school visits to promote interest in STEM.

In carrying out the campaign ERB established data on resources for learning and teaching of STEM, it turned out demand exceed supply by far. SSP was borne out of a realization that, a concerted effort is the only way to cope with the outcomes of government investment and incentives, as the saying goes It takes a village to educate a child.

STEM Support Program was therefore launched in July 2024 with higher objective of planting a seed for future engineers (and doctors etc) while correcting the gender disparity inherent in the scientists communities, 1:7 girls: boys ratio in engineering profession. The initial financing for the pilot was generously supported by the Royal Norwegian Embassy in Dar Es Salaam.

2.4 SSP Interventions

To achieve the objectives SSP will have the following interventions

2.4.1 Sponsoring Qualified STEM Teachers

The SSP Program offers financial support to qualified STEM teachers through stipends and health insurance. Currently, the pilot phase includes 20 volunteer teachers who are recruited in the project.

2.4.2 Equipping Schools with E-Libraries

SSP aims to equip schools with essential textbooks and digital resources through E-Libraries. The program is proposing the use of RACHEL technology, which allows schools to access educational content offline, ensuring that students have access to learning materials even in areas with limited or no electricity or internet connectivity.

2.4.3 Laboratory Equipment for Schools

To enhance practical learning, SSP is working on equipping schools with laboratory equipment.

In addition to traditional tools, the program is exploring the use of simulations, offering schools to virtual labs that support hands-on STEM learning experiences, as a cost effective alternative to traditional labs. It must be noted that virtual labs are meant to supplement, not to replace tradional labs. Students will perfect concepts and procedures in a simulator in this way save wastage inherent in the initial learning process.

2.4.4 Fostering a Passion for STEM

SSP will have activities designed to foster a passion for STEM among students, with a particular focus on encouraging girls to pursue STEM subjects. While emphasizing the importance of gender inclusion, the program ensures that boys are also supported, aiming for a balanced and inclusive approach to STEM education.

2.4.5 Advocacy for Stakeholder Participation

The SSP advocates for greater participation from stakeholders, including private sector partners and communities, to supplement government investment in STEM education. By engaging a broad range of stakeholders, the program aims to strengthen the educational ecosystem and ensure sustained support for STEM initiatives.

2.5 SSP Strategy

SSP strategy is early intervention, catching girls and boys in primary and lower secondary

schools, through outreach to primary and secondary schools, by creating interest and provide inputs for teaching and learning of STEM. SSP aims to mobilize resources that will improve teacher student ratio, increase access to learning materials (books and laboratories), leveraging technological advances.

SSP will be rolled out in schools across the country, with particular emphasis on areas where girls are underrepresented in STEM subjects. In addition to academic support, the initiative will also incorporate leadership training and career guidance, preparing students for the challenges they may face in their professional lives.

As the programme gains momentum, the ERB hopes to see a new wave of young girls inspired to enter the world of engineering, contributing their perspectives and skills to an industry that is in dire need of diverse talent.

3 SSP GOVERNANCE

3.1 Steering Committee

The SSP program is run by a steering committee, appointed by the ERB Registrar, drawing Members from key and strategic stakeholders including the parent Ministry of Works (Mow), Ministry of Education, President's Office - Regional Administration and Local Government (PORLAG), Tanzania Institute of Education (TIE) and other stakeholders including Medical Women Association of Tanzania (MEWATA) and e3empower.

The Steering Committee is responsible for higher objectives of SSP including overseeing program implementation and Ensuring compliance with all relevant policies, regulations, standards and guidelines set by education Authorities. ERB will play a coordination role and Secretariat SSP.

3.2 Secretariat

SSP is secretariated by ERB, the Secretary to the Steering Committee and most of the operatives are currently based in the School of professional Engineering (SoPE), which is in Morogoro.

SSP Pilot in Kagera Region

SSP was piloted since July 2024, 20 qualified volunteer teachers are sponsored and posted to 3 Schools in Kagera Region, These schools are Kagera River Girls Science Secondary School (6 teachers), Luteni General Mayunga Secondary School (6 teachers), and Kyerwa Secondary School (8 teachers).

The recruitment and management of the volunteers was done in accordance to Guideline issued in June 2024 by The Ministry of Education in collaboration with the President's Office - Regional Administration and Local Government (PORLAG).

Experiences and lessons learned during this pilot phase will help shape the full-scale implementation of the program. It goes without saying, the pilot has moved SSP from venture state to start up and therefore attracted supporters and has eased approval of the program by Education Authorities.

4 PROMOTION OF SSP

4.1 ERB Run for STEM

On 8th September 2024, ERB organized ERB RUN FOR STEM Marathon. The Minister for Education, Science and Technology Hon. Prof. Adolf Mkenda officiated the run.

The marathon attracted a wide range of supporters including MEWATA, ORICA Tanzania Limited, Tanzania National Parks Authority (TANAPA), SUMA JKT, HEBO Consult, and ee3empower a social company with Remote Area Community Hotspot for Education and Learning (RACHEL) technology. The Royal Norwegian Embassy in Dar Es Salaam is also a partner for the pilot.

The marathon was a significant step in building momentum for the SSP and highlights the importance of collaborative efforts in supporting STEM education. ERB is grateful to all partners and participants for their contributions and looks forward to continuing this important work in the future.

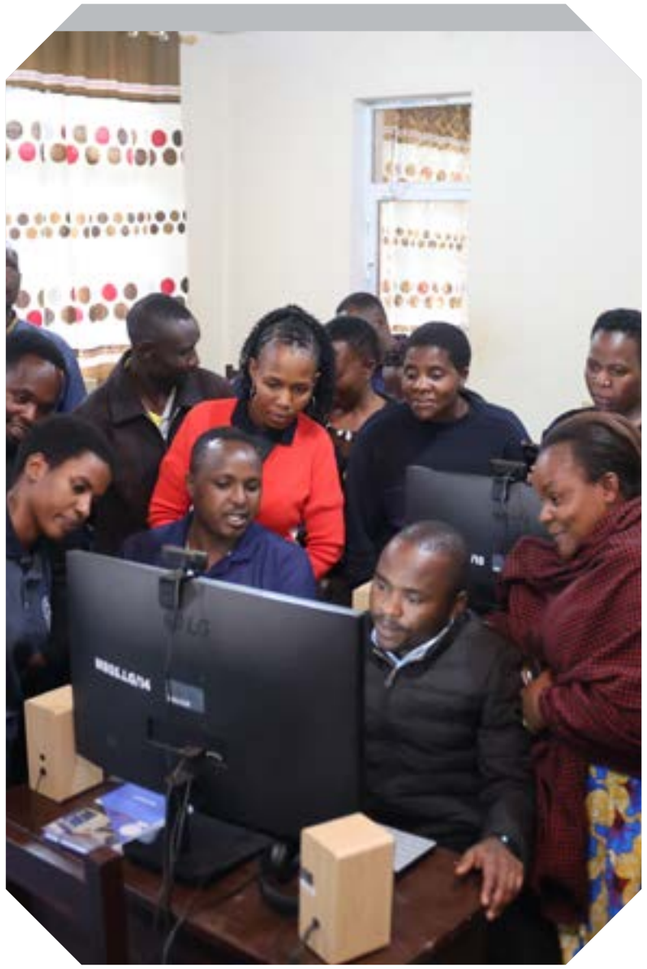
ERB Run for STEM will be an annual Event.

4.2 Other Outreach Methods

Various efforts are made in getting the word across and mobilizing support.

- ERB is currently building an SSP Website, it is already on air www.marathon.erb.go.tz
- SSP is participating in public events with a view of attracting local self help
- School outreachs
- Etc.

Introducing RACHEL Technology: A Solution for Education in Remote Areas



5 E- LIBRARIES POWERED BY RACHEL

6 RACHEL Technology

RACHEL, which is a short from of Remote Area Community Hotspot for Education and Learning. The technology has a great potential to address the books access issues. RACHEL will cost effectively and efficiently deliver the Tanzania Institute of Education (TIE) e-Library to users, even to off grid places with no or unstable internet connection.

RACHEL technology offers an effective and cost-efficient solution for delivering educational content, including the TIE e-Library, to users even in off-grid locations with unstable or no internet connection. This makes it an ideal tool for schools, particularly in rural or remote-less areas, which learning resources is often limited.

RACHEL is a portable, battery-powered device designed to provide offline access to educational content. It comes with a single device for inspection and content delivery, making it easy to transport and set up in remote locations. The device contains copies of educational websites in offline format, including those that may be blocked or removed from the internet, ensuring uninterrupted access to valuable learning resources.

It does not require purchase of Data plans. Rachel is Simple to Deploy and its content is customizable, ie, it is easy to load our own content including soft books, videos, audio files, PDFs, or HTML content. It also accepts own created modules.

Additionally, RACHEL is customizable, offering space to add personalized content, allowing it to be tailored to meet the specific needs of each school or community.

These features make RACHEL versatile and can be deployed anywhere in Tanzania, it can wirelessly deliver free digital education content to nearby devices such as tablets, laptops, smartphones, table top computers etc.

7 NEXT STEPS

7.1 Phase 2 Rollout; 47 secondary schools were

To roll out phase 2, about 47 secondary schools were visited in Kilimanjaro, Arusha, Manyara, Dodoma, Tabora and Njombe Regions, creating awareness, mobilizing support and establishing needs and priorities.

During these visits, the team collected valuable data that are useful for further intervention activities. Prioritization factors will be, schools with disused/ underutilized ICT hardware, 3 pilot schools with our teachers working and of course Girls Schools.

7.2 Mama Samia Schools

We have our sites 26 Dr. Samia Girls Science Schools that have been built in every region of Tanzania. These schools were created with the specific aim of encouraging more girls to pursue careers in science, technology, engineering, and mathematics.

Most of these schools have enrolled girls at A-Level, a sizable number (200+) for each intake. These are low hanging fruits, any intervention will increase the number of girls qualifying for tertiary education in STEM Careers and will within a short period of time help achieve the gender equality in Engineering.

8 SSP STAKEHOLDERS AND PARTNERS

8.1 Strategic Stakeholders

For Sustainability of SSP, mapping and engagement of stakeholders is crucial, the Guidelines issued by the Ministry of Education, has listed the number of indispensable stakeholders. SSP has therefore the following strategic stakeholders.

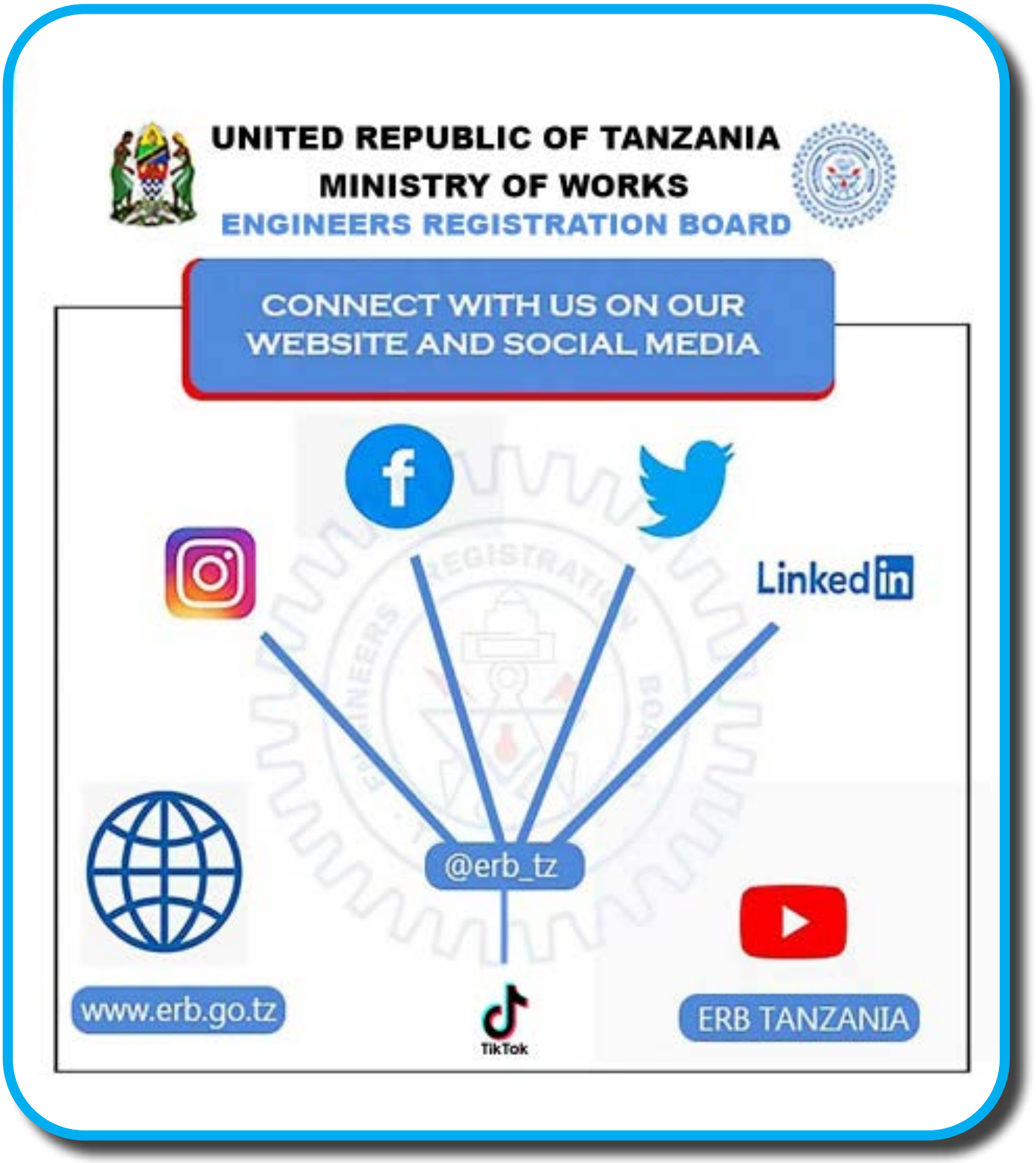
i. Our own parent Ministry, The Ministry of Works
ii. Ministry of Education
iii. Presidents' office Regional Administration and Local Government (PO-RALG)
iv. Regional Secretariats
v. School Committee/Boards
vi. School Inspectors
vii. Ward Offices
viii. Ward Education Officers
ix. Heads of Schools
x. School Committees
xi. Parents/Guardians
xii. Village Governments
xiii. Teachers' Services Commission
xiv. Volunteering Teachers
xv. Development Partners

8.2 Partners

Royal Norwegian Embassy, MEWATA, E3EMPOWER, HEBO and SUMA JKT.

OUR PARTNERS

FOLLOW US.....!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