Technical Transfer of Stabilizer Construction Method

Construction of Sustainable and Resilient Road

Mar.5 2025

SAKAI HEAVY INDUSTRIES, LTD.

SAKAI HEAVY INDUSTRIES, LTD.

Founded in
1918

Annual sales amount / fiscal 2023
33,000 million JPY

Distributors in
47 countries

Shipped to
Over 130 countries

(Reclimer/Stabilizer)

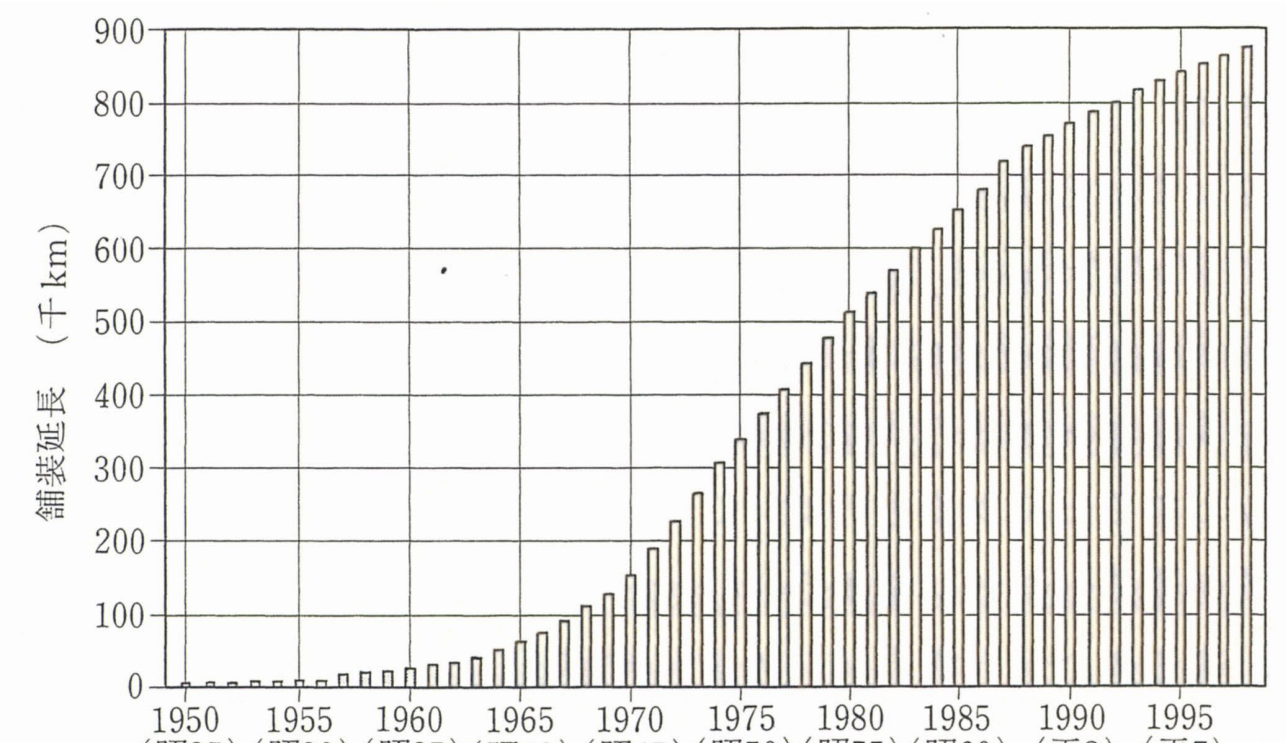
History of Japanese Pavement

Around 1950

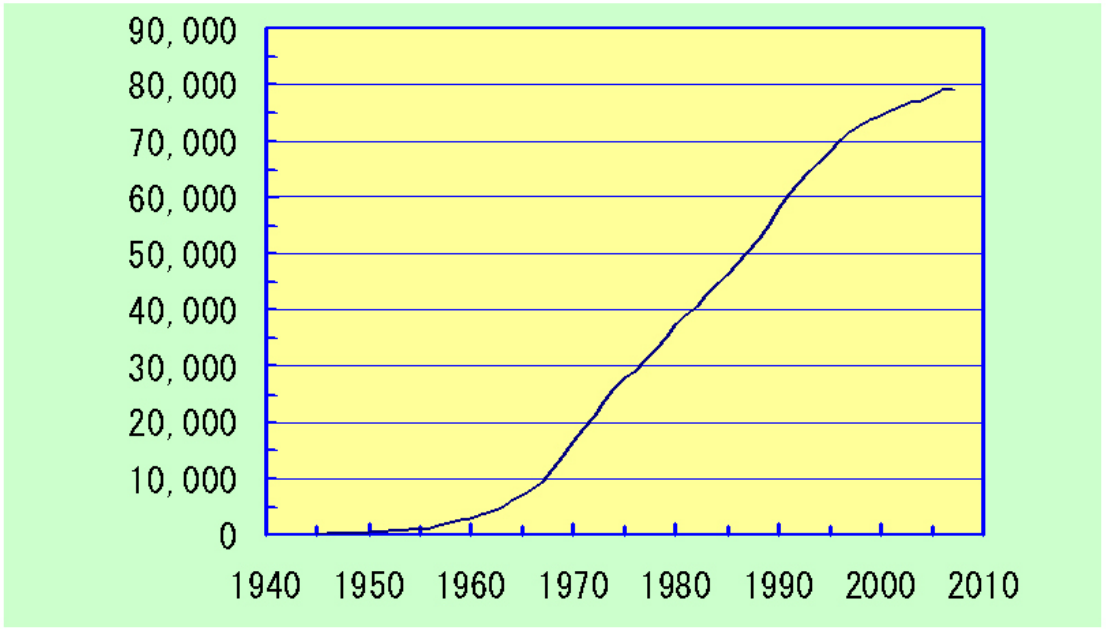
Most of Japanese Roads were soil road or gravel road

In 1956 Ralf J Watkins from U.S.A reported about Japanese road to Ministry of Construction of Japan.

"The roads of Japan are incredibly bad. No other industrial nation has so completely neglected its highway system."



Development of total length of paved roads in Japan, including low-cost pavements

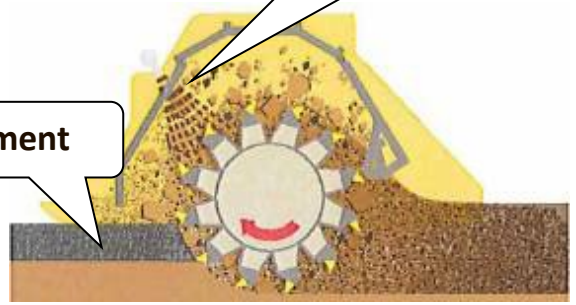


Changes in Japan's Total Motor Vehicle Fleet

Similar Shape of Curb

- Japan developed Roads steady as traffic increase.
- But in many countries the traffic(cargo transport) volume has been increasing more rapidly than the road extension.
- There is concern that the traffic volume will increase and damage will be increased accordingly.
- The biggest problem is using budget effectively for maintenance and new construction

What is Road Stabilizer ?



Asphalt Emulsion

Cement

Conical bits

SAKAI started producing this machine in Indonesia

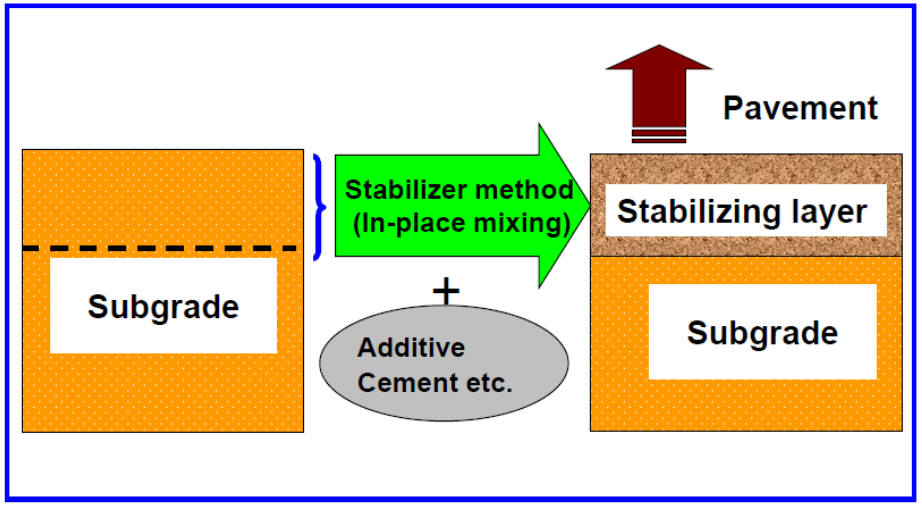
SAKAI Stabilizer is specialized to use cement and Asphalt emulsion as additives.
This stabilizer method is called "Cement and Asphalt Emulsion (CAE)"Method in Japan.

What is the long-life pavements?

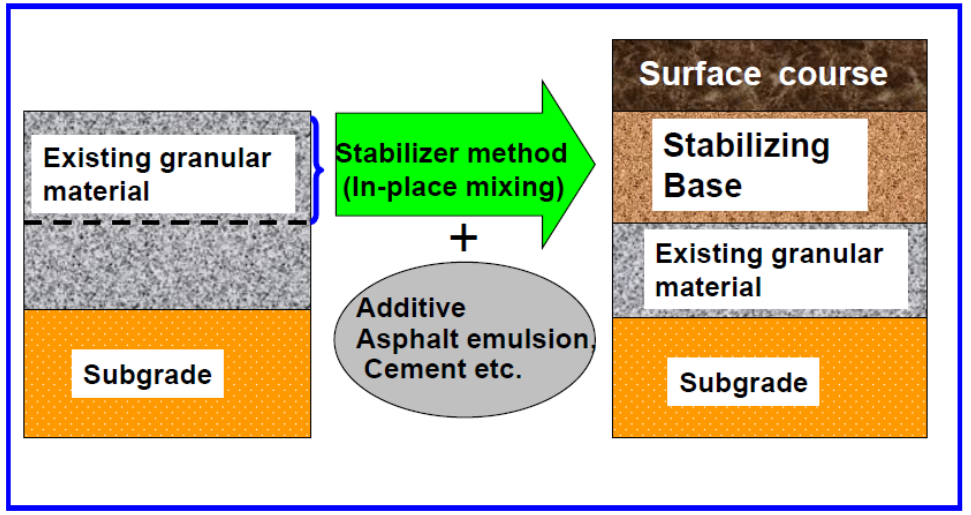
- It means the under-layer of pavements (subgrade, subbase and base course) is maintenance free structure and only surface course (or binder course) will be repaired.
- The consideration of long-life pavement (it is called perpetual pavement in U.S.A) is necessary at the process of pavement design and construction for the effective infrastructure development.
- Road stabilization method is useful technology to make the pavement durable.

There are 3 types of stabilizing method

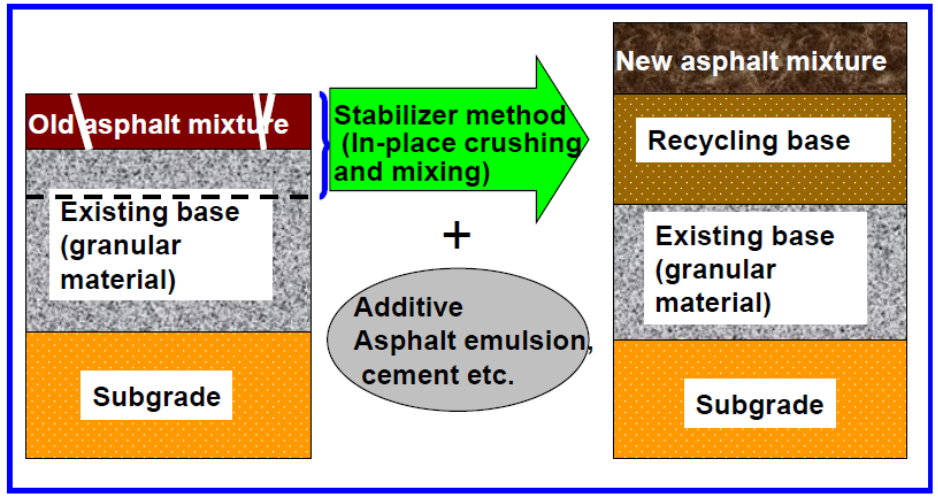
CASE1 Improvement of Subgrade(Soil Road)



CASE2 Improvement of Base Course(Gravel Road)

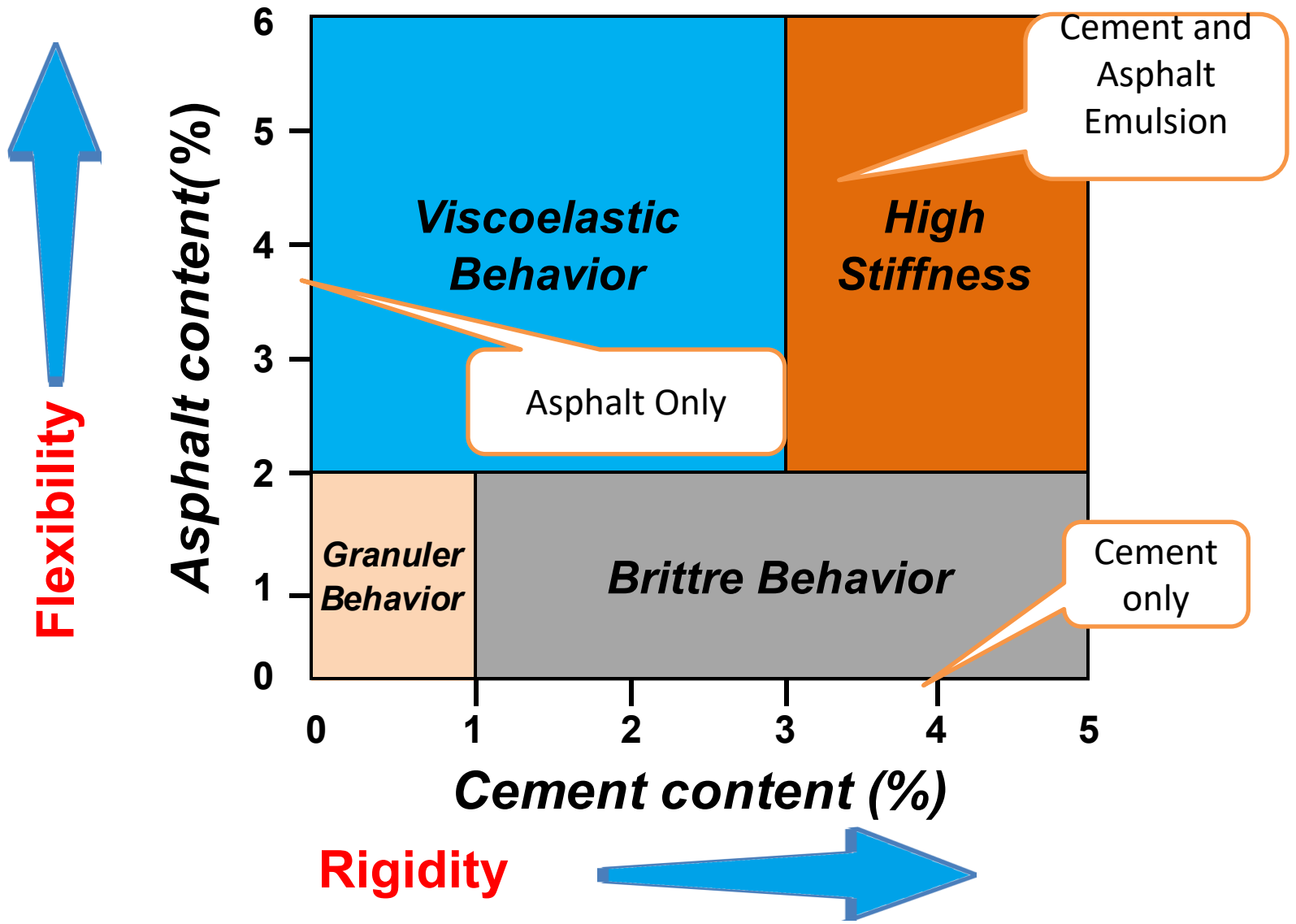


CASE3 In-place Recycling Base Course

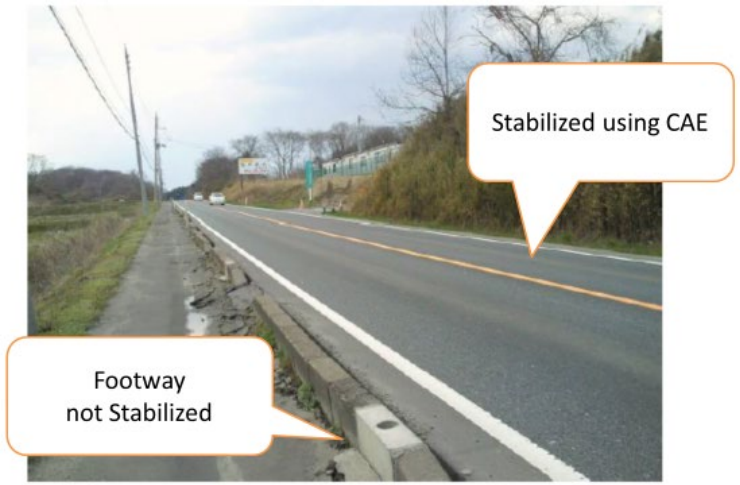


All the stabilization method can make the stabilized layer durable and water-tight.
Cement stabilization provide rigidity to the material and asphalt emulsion provide flexibility. They can decrease the pavement structure thickness, so make the pavement construction (rehabilitation) cost lower.

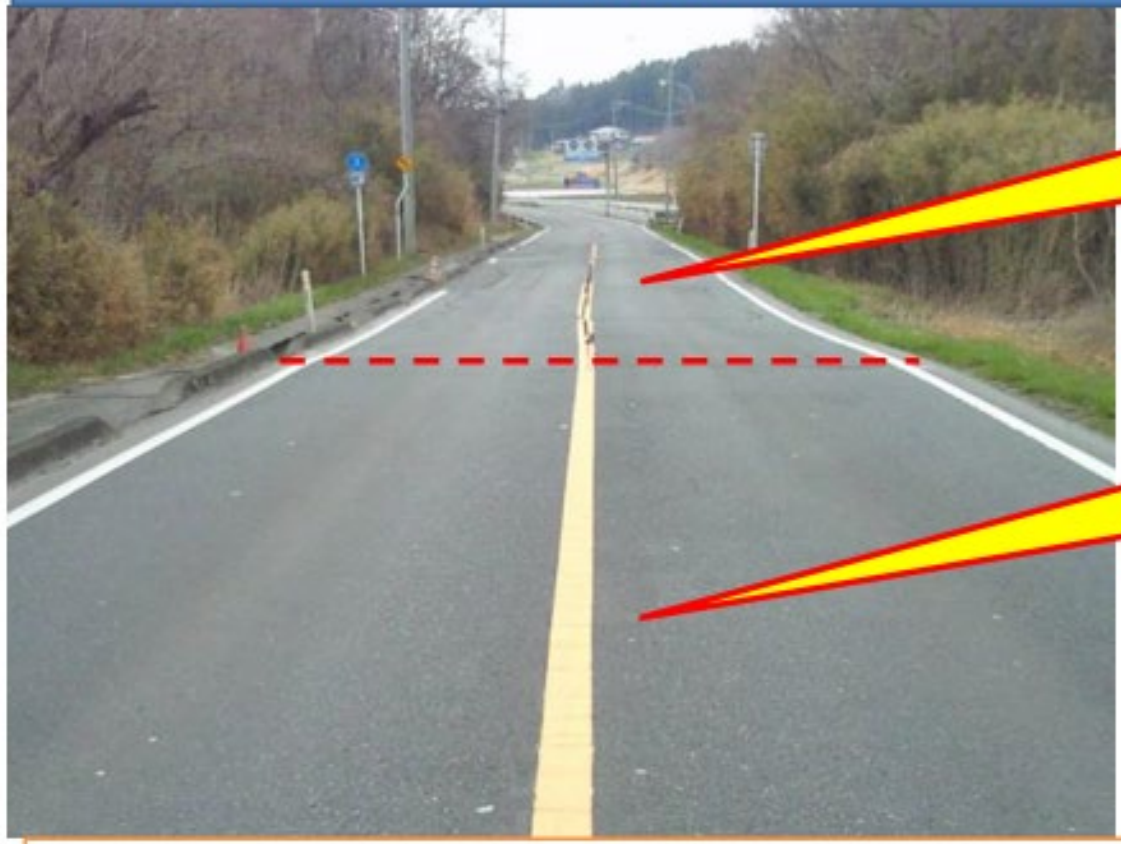
The Effect with Stabilizing Additives



Great East Japan Earthquake (11 Mar 2011)



Comparison of deterioration after the earthquake



Cracking occurred at the Cement Treated Base Course Section, but Cement and Asphalt Emulsion Treated Section was sound because of flexibility. (PWRI report)

Technical Transfer from SAKAI

Construction Procedure

Training of Engineer, Operator

Mix design

Testing method
Design procedure

Structural design

Based on the country's design method

This Technical Transfer were already done for some participants country through ODA project or commercial sales.

Site Training

Recent Important Key Word

- **Resilient**
  resirience against natural disasters
  long life
- **Sustainable**
  Use of recycling materials
  Pavement preservation
- **Decarbonate**
  Carbon Neutral

Stabilizing Method For Robust and Sustainable Infrastructure

- Saving time and materials
- Lower Costs and Easier maintenance
- Environmental Conservation (recycling existing roads)
- Durability
- Quick Recovery from natural disasters
- Up-grading of existing roads

Thank you for your attention

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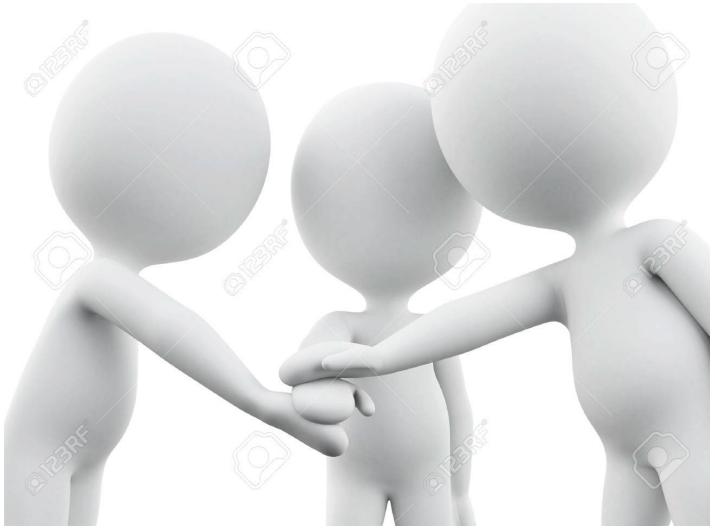

Go ahead together!!

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