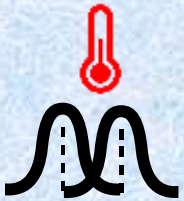
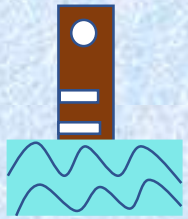
The use of low-cost sensors for monitoring coastal climate hazards and developing early warning support against extreme events

Unequivocal change in the climate variables



Climate-induced changes in the atmospheric and ocean (met ocean) variables

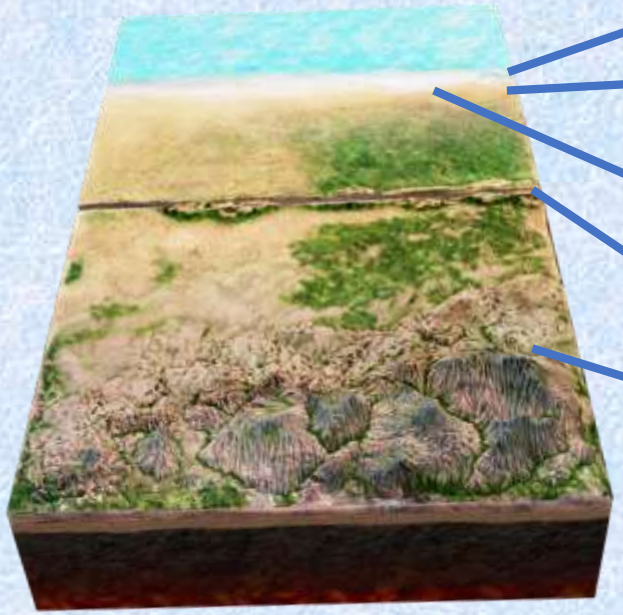
- Sea level rise
- Extreme sea levels

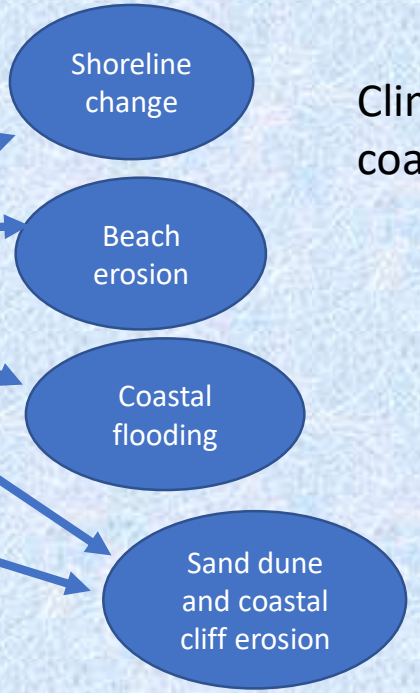


- Increase in the intensity and frequency of storms

- Increased precipitation

Low-cost sensing techniques to monitor the coastal hazards and their forcing agents for climate resilience of coastal cities.





Climate-induced coastal hazards

Tasneem Ahmed[1], Leo Creedon[1], Iulia Anton[1] and Salem Gharbia[1]

1 Atlantic Technological University, Sligo, Ireland.(Formerly Institute of Technology, Sligo)

Latest low-cost sensors identified from peer-reviewed literature in scientific databases through a systematic literature review approach for the period 2010-2021

Entered string of keywords

Scopus | ScienceDirect (ELSEVIER) | Clarivate Analytics WEB OF SCIENCE™

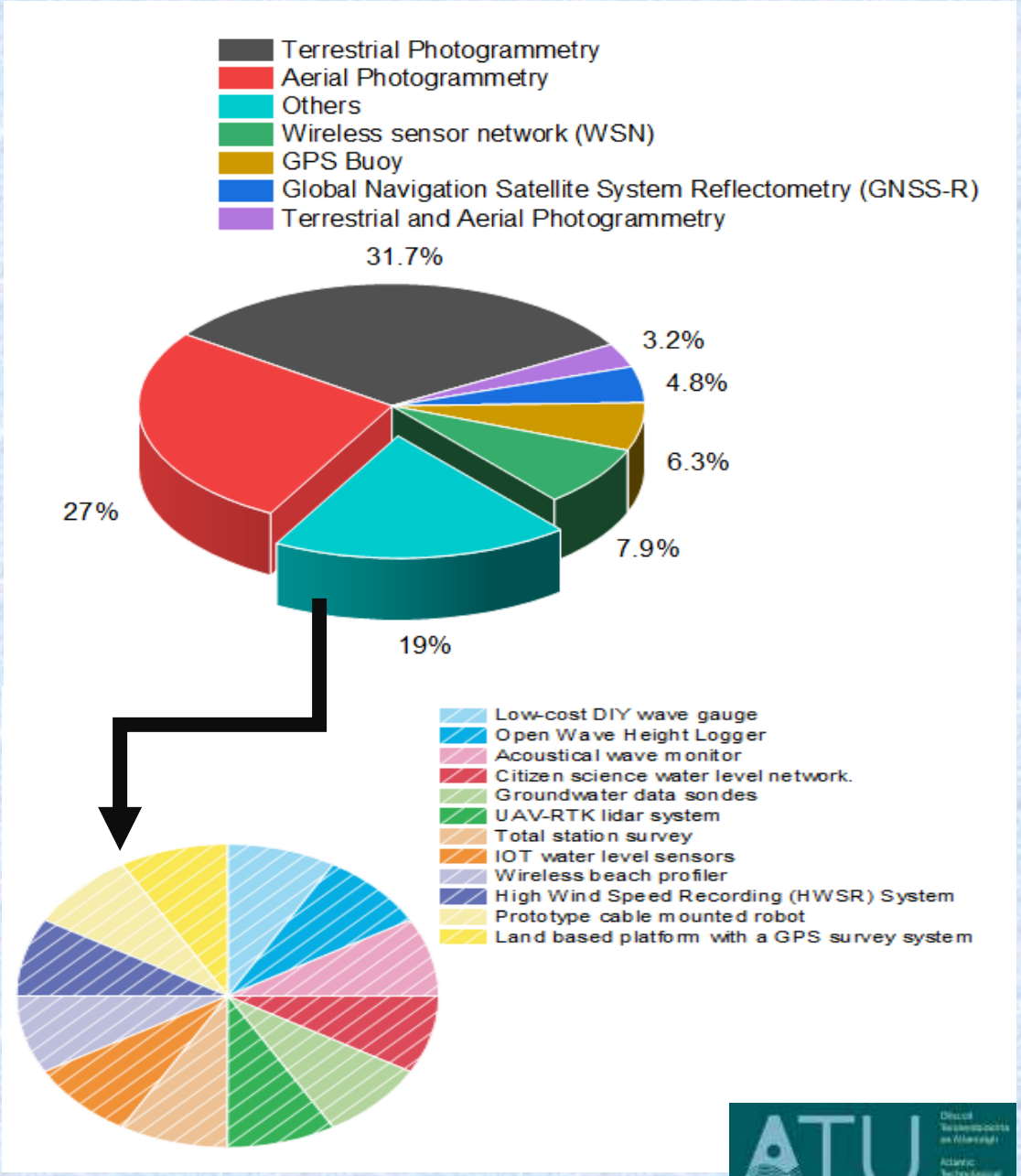
n>3000

n=no. of papers

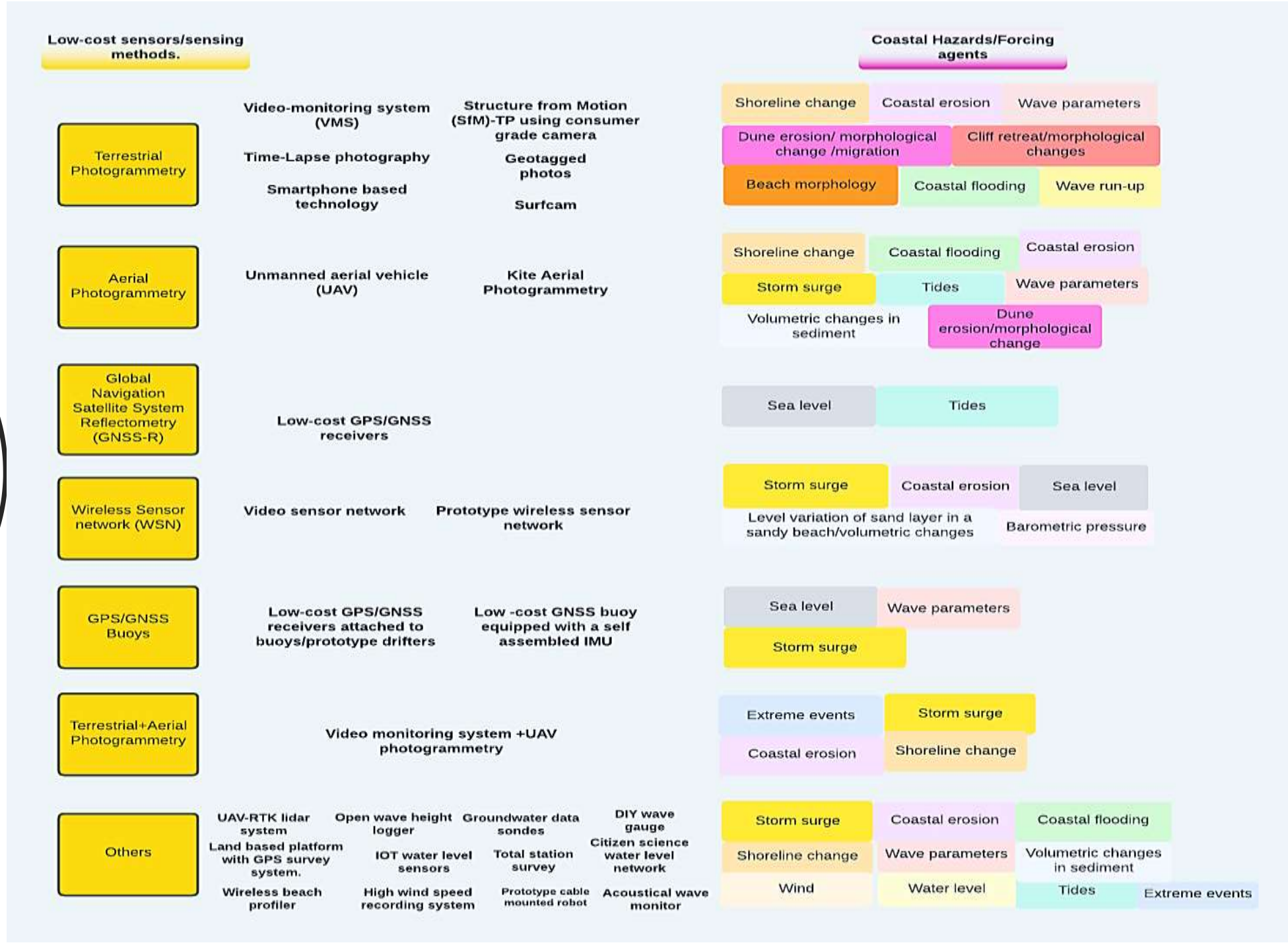
Filter

- Remove duplicates
- Screening by titles and abstract adhering to the inclusion/exclusion criteria
- Full text screening

60<n<70



Coastal hazards/forcing agents monitored by the low-cost sensing technologies



https://score-eu-project.eu/

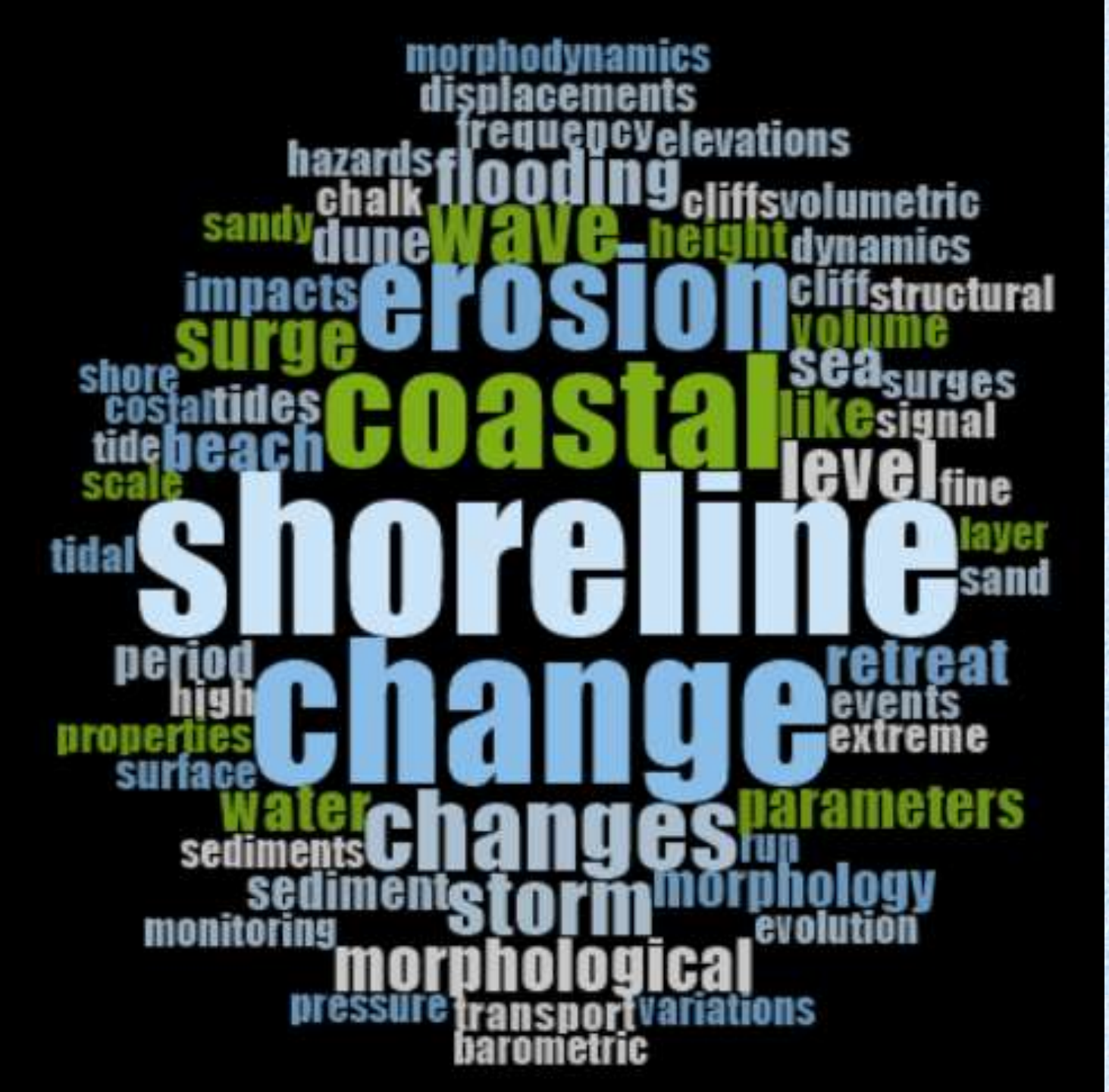
This work has been carried out as part of work package 4 (WP4) of the European Union Horizon 2020 (EU H2020) project called SCORE (Smart Control of the Climate Resilience in European Coastal Cities).

Main objectives of the Task 4 within WP4 :

- Complement and integrate by fillings gaps of sparse networks of institutional sensors with a denser network of low-cost citizen science sensors to monitoring a set of critical parameters of interest for each Coastal City Living Lab (CCLL) https://score-eu-project.eu/coastal-city-living-labs/

- These low-cost and up-to-date technologies are to be identified through a search of peer-reviewed and grey literature.

- These low-cost sensing technologies will be chosen by citizens, associations and other stakeholders in each CCLL with the help of the SCORE technological partners to better fit the needs of each local community



- The low-cost sensors from peer-reviewed literature for monitoring coastal hazards have been validated with standard instruments showing good performance
- Terrestrial and Aerial Photogrammetry are the most used methods for monitoring a wide range of Coastal hazards
- These could be potentially utilised for early warning support
- Some of these sensors could be utilised for citizen science activities.

Example of a citizen science project to monitor coastline evolution through out the world.

- **CoastSnap**

- https://www.coastsnap.com/

Sharing is encouraged

Thank you for listening!

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