

Dominoes special session in EEM 19 Fri 20th of September at 14 – 15.30



Chairman
Samuli Honkapuro
LUT University

Samuli.Honkapuro@lut.fi



H2020 Grant Agreement Number: 771066
Copyright DOMINOES consortium





Dominoes special session in EEM 19 Fri 20th of September at 14 – 15.30



SPEAKERS



**MR SAMULI
HONKAPURO**

LUT University,
Finland



**MR JAN
SEGERSTAM**

EMPOWER



**MR ILARI
ALAPERÄ**

FORTUM



**MR STANISLAS
D'HERBEMONT**

REScoop.eu



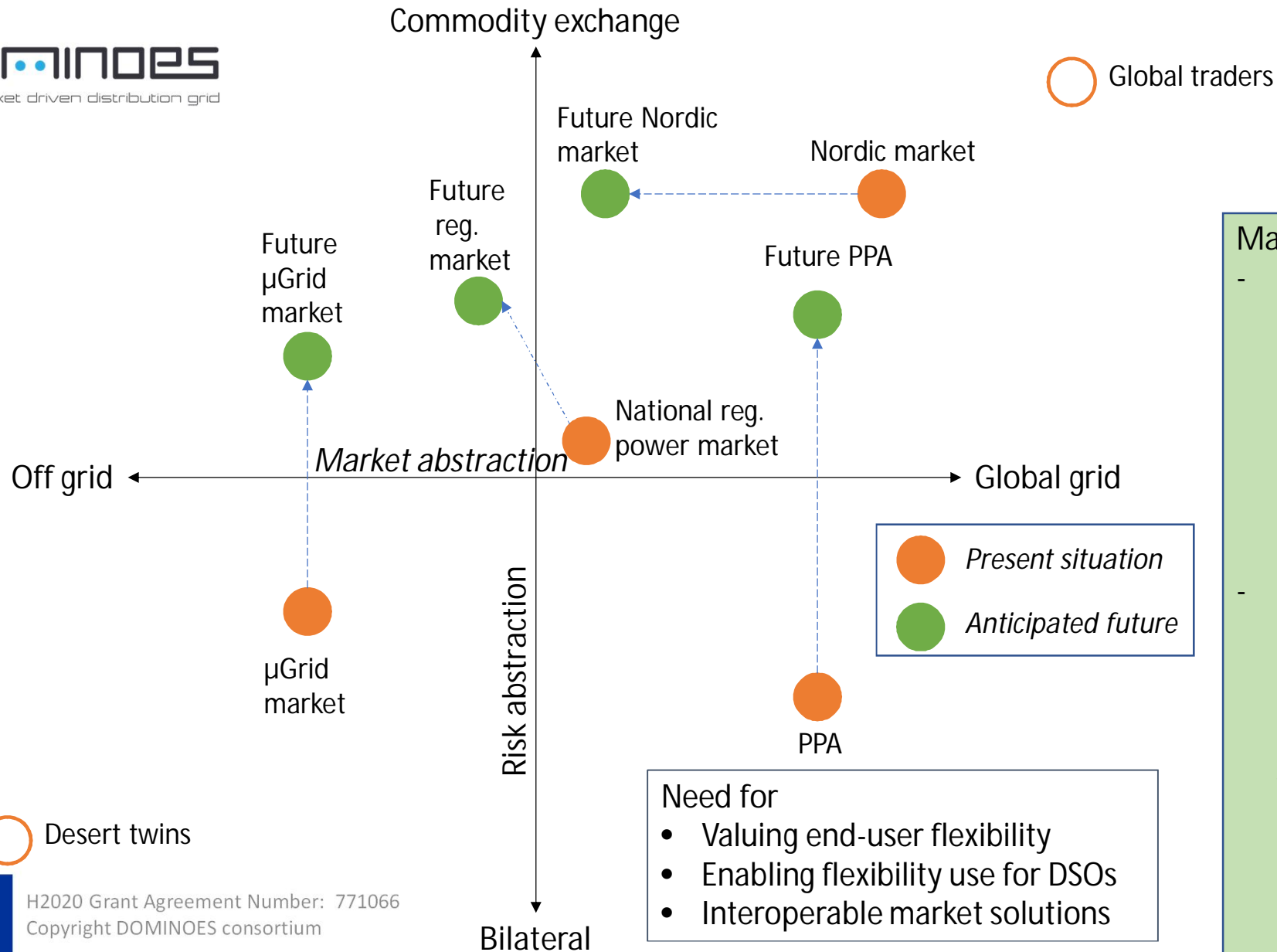
H2020 Grant Agreement Number: 771066
Copyright DOMINOES consortium



Background

- Climate change
- Increasing share of renewables
 - new requirements for DSO operation
 - Need for flexibility in multiple levels of energy system
- Energy systems will become distributed and role of consumers & prosumers will increase

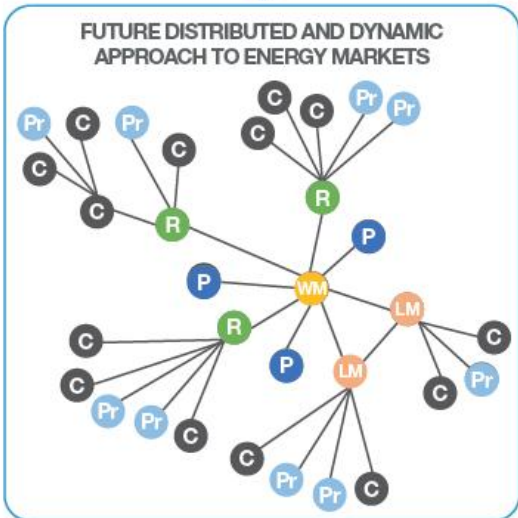
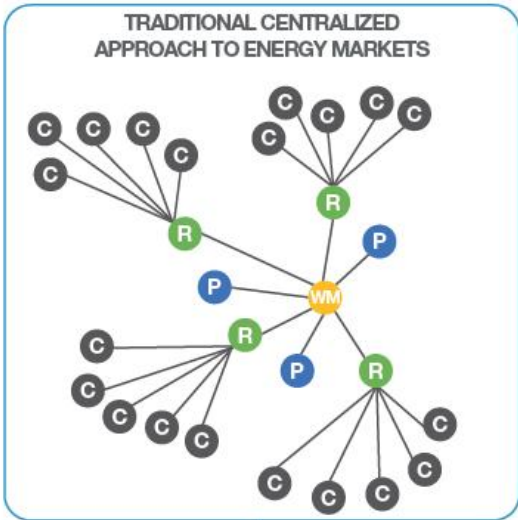




Market scenarios

- Two extremes: desert twins (no connection to even regional networks/markets) <-> global traders (one common exchange, opportunity to trade any product globally)
- Need to get from "current" (i.e. inexistent) microgrid market to a future microgrid market where trade compatibility and system access guarantee liquidity





The DOMINOES concept is making the combination of a local energy market structure and supporting aggregation & demand response services transparent and effective so that it will be possible to:

- enable local sharing and optimization of renewable resources in MV and LV grids
- create relevant and liquid flexibility for innovative distribution management
- empower prosumers and demand response service provision

WM = Wholesale market
 LM = Local market
 R = Retailer
 P = Producer
 Pr = Prosumer
 C = Consumer



Project scope

- A different kind of market development project, interoperability instead of local optimization
 - Without proper market design, value will be lost and resources wasted
- From centralized markets to internetnetworked communities
 - The energy system is in flux
 - Local markets are appearing
- How DSO can actively manage grid balance in emerging future

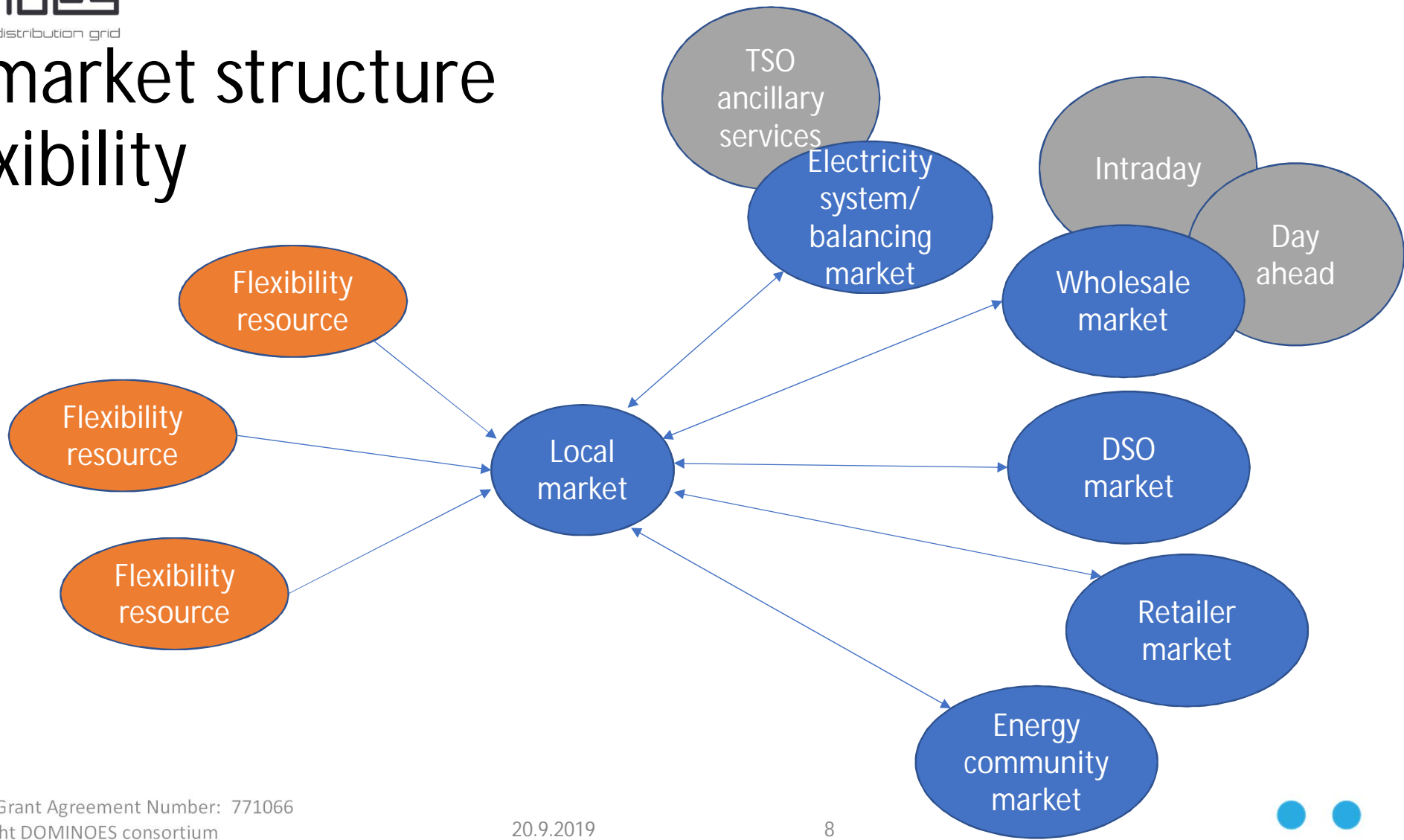


DOMINOES project objectives

- Design and develop a local market concept
- Develop and demonstrate ICT components that will enable local market concept
- Develop and demonstrate balancing and demand response services
- Design and validate local market enabled business models
- Analyse and develop solutions for secure data handling related local market enabled transactions



Local market structure for flexibility



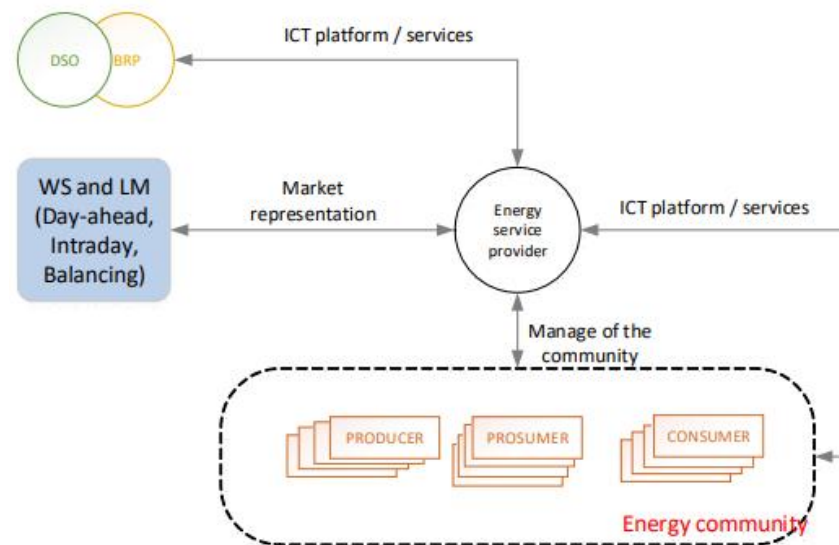
Use cases

- UC1: Local market flexibility and energy asset management for grid value
- UC2: Local Market Data Hub Manager and technical validation and flexibility tool
- UC3: Local community market with flexibility and energy asset management for energy community value
- UC4: Local community flexibility and energy asset management for retailer value
- UC5 Local community flexibility and energy asset management for wholesale and energy system market value



Business models

- Aggregation of small-scale flexible loads as a universal virtual power plant
- Aggregator flexibility provision to DSO for network management
- Using transactive energy for network congestion management
- Sharing the exceeding PV generation in the scope of energy communities
- Retailer as user of the local market
- Energy service provider in enabling / assistive role for local markets and providing ECSP capability for retailers, communities or other service providers

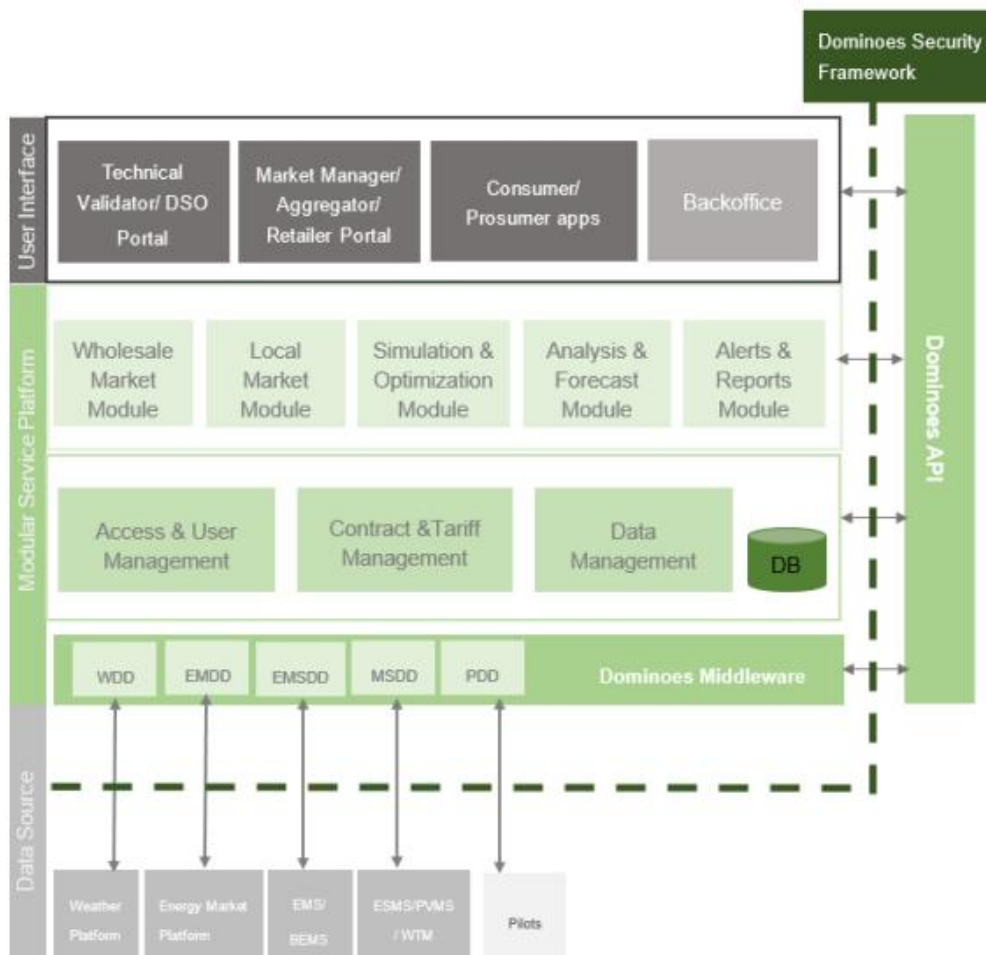


Example of BM6



Architecture Diagram

- Data sources
- Modular service platform
 - Service modules
 - Data Management
 - DOMINOES Middleware
- User Interfaces
- Secure data handling
- DOMINOES API



Expected results

- DOMINOES enables local markets to evolve so that all resources can access all levels of value sharing
- DOMINOES will discover the ways to make our common market from the ground up, making the best use of available assets from grids to technologies
- Project results will be validated in demonstration sites



Validation sites

- DSO site in Portugal
 - Test site including residential and commercial clients, with storage and production
- VPP site in Portugal
 - LV and MV connected public and commercial buildings
- Microgrid in Finland
 - LUT Green Campus: laboratory environment with microgrid functionalities



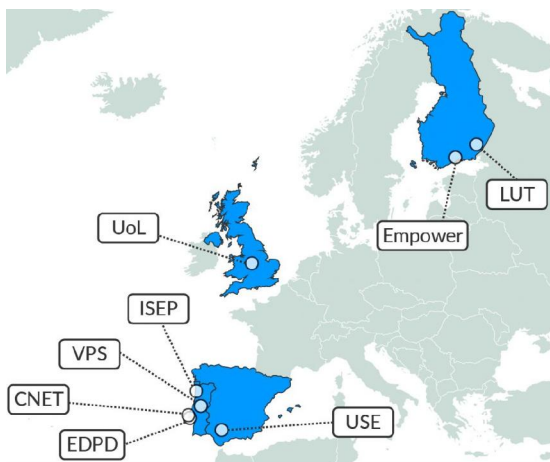
Impact of the project

- Concept of local market will bring:
 - More competitive, secure and sustainable energy system
 - More active role of citizens
 - Increase renewable energy accessibility
 - Make better use of local grids by DSOs, prosumers/consumers, retailers, other shareholders..
 - New demand response, aggregation, energy storage and grid management services
 - Competitive products and services



DOMINOES project basic information

- DOMINOES Smart Distribution Grid: a market driven approach for the next generation of advanced operation models and services
- Timeline 1.10.2017-31.3.2021
- Budget: 4 M€
- Project participants:





Program of special session

Title	Presenter
Opening of the session and introduction to Dominoes project	Samuli Honkapuro, LUT (chairman of the session)
Citizen collective actions and local markets	Stanislas d'Herbemont, REScoop
Business case of flexibility service - Battery system as a service for a DSO	Ilari Alaperä, Fortum
Development of local energy market design – possibilities and challenges	Jan Segerstam, Empower

- There is time allocated for Q&A after each presentations
- There is also a web-based tool (Reddit) for interaction
- Be active!





Online interaction by Reddit

- Go to <https://tinyurl.com/y3eztxj>



- Login to Reddit, if you do not have Reddit account, it is very easy to create one.
- Write and submit your questions or comments

