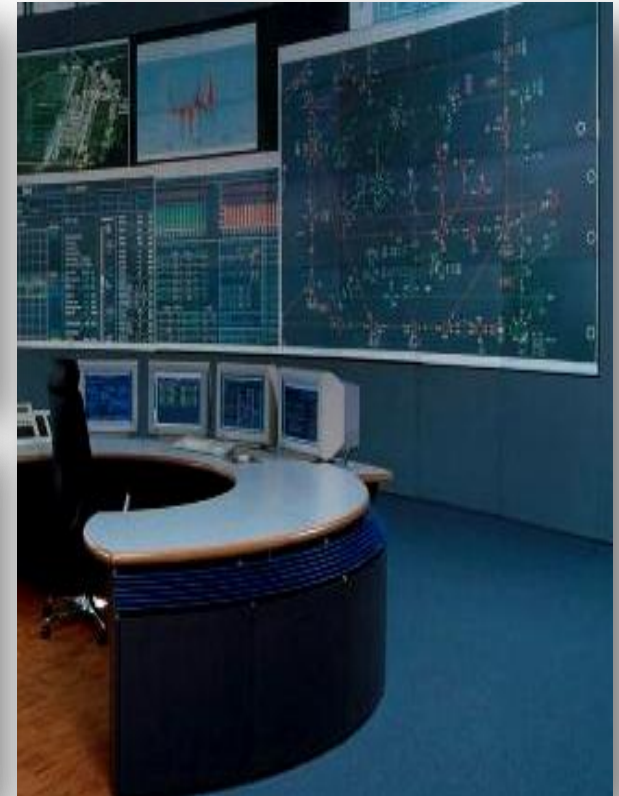


The role of the human operator and of the Information and Communication Infrastructure under emergencies



Mathaios Panteli

25-05-2011

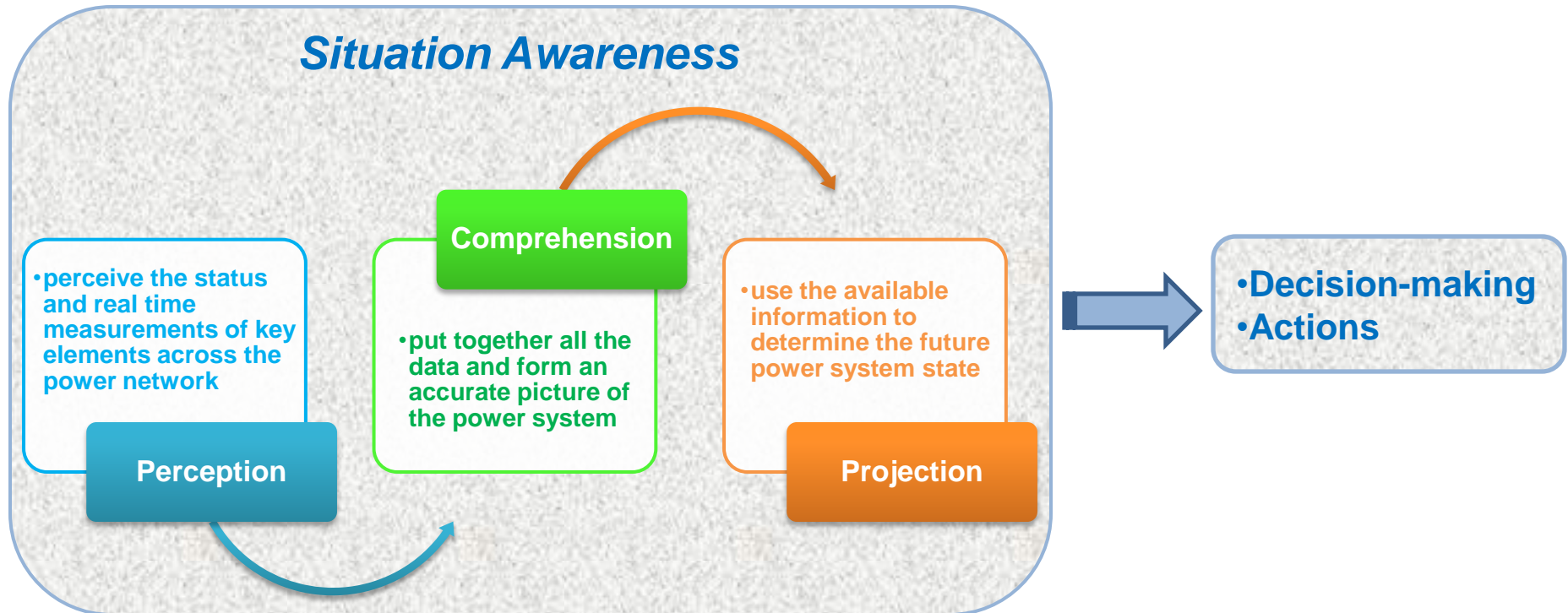
Fundamental questions...

- What is Situation Awareness (SA)?
- Are there any factors affecting SA formation and operator's performance?
- How do failures and limitations in the ICT infrastructure affect operator's decision making?
- Does the operator remain an integral part of the system?
- What role does the human operator have in a electric power control centre?
- How does this role change depending on the power system conditions?

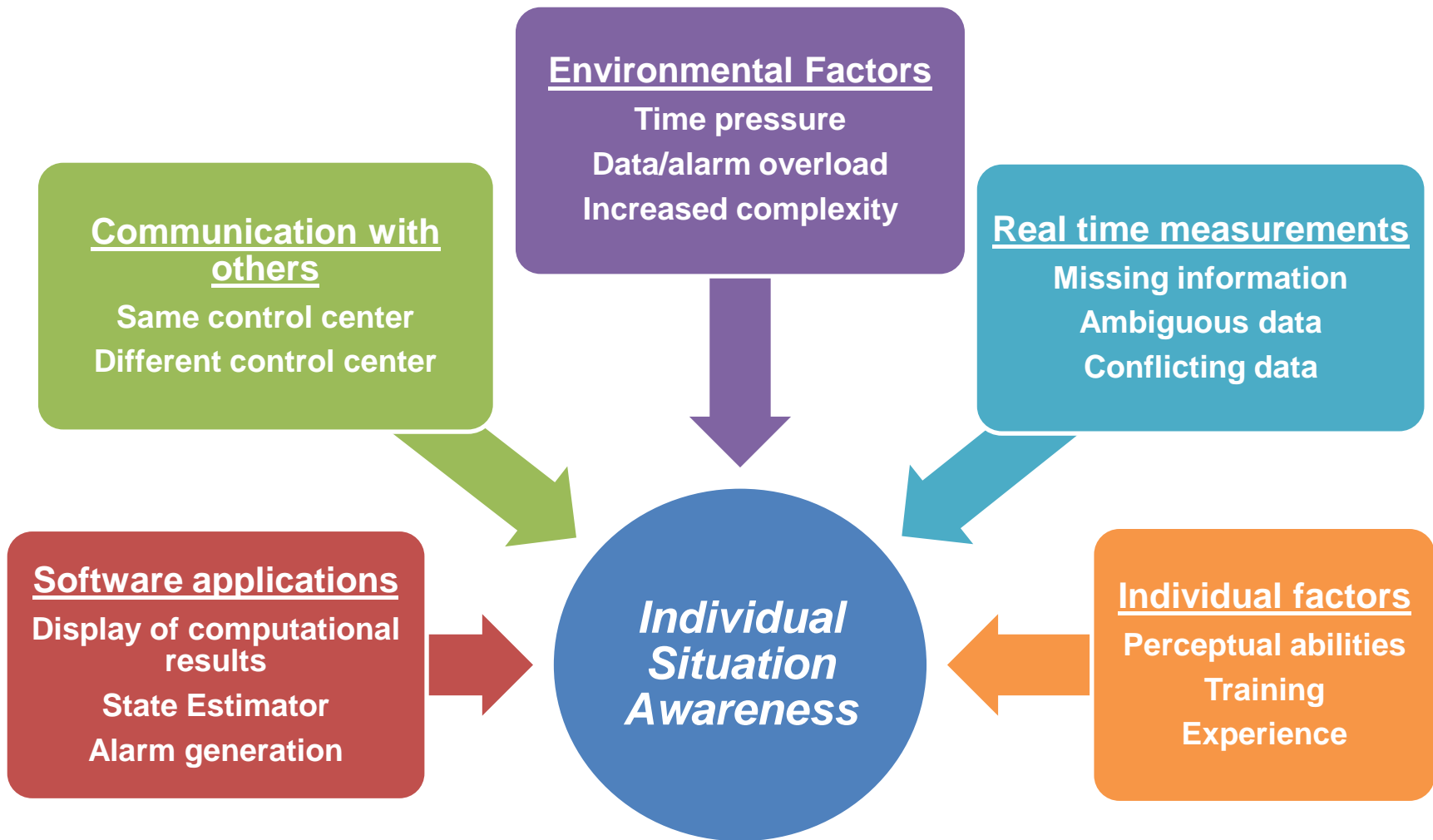
Situation Awareness

What is Situation Awareness (SA)?

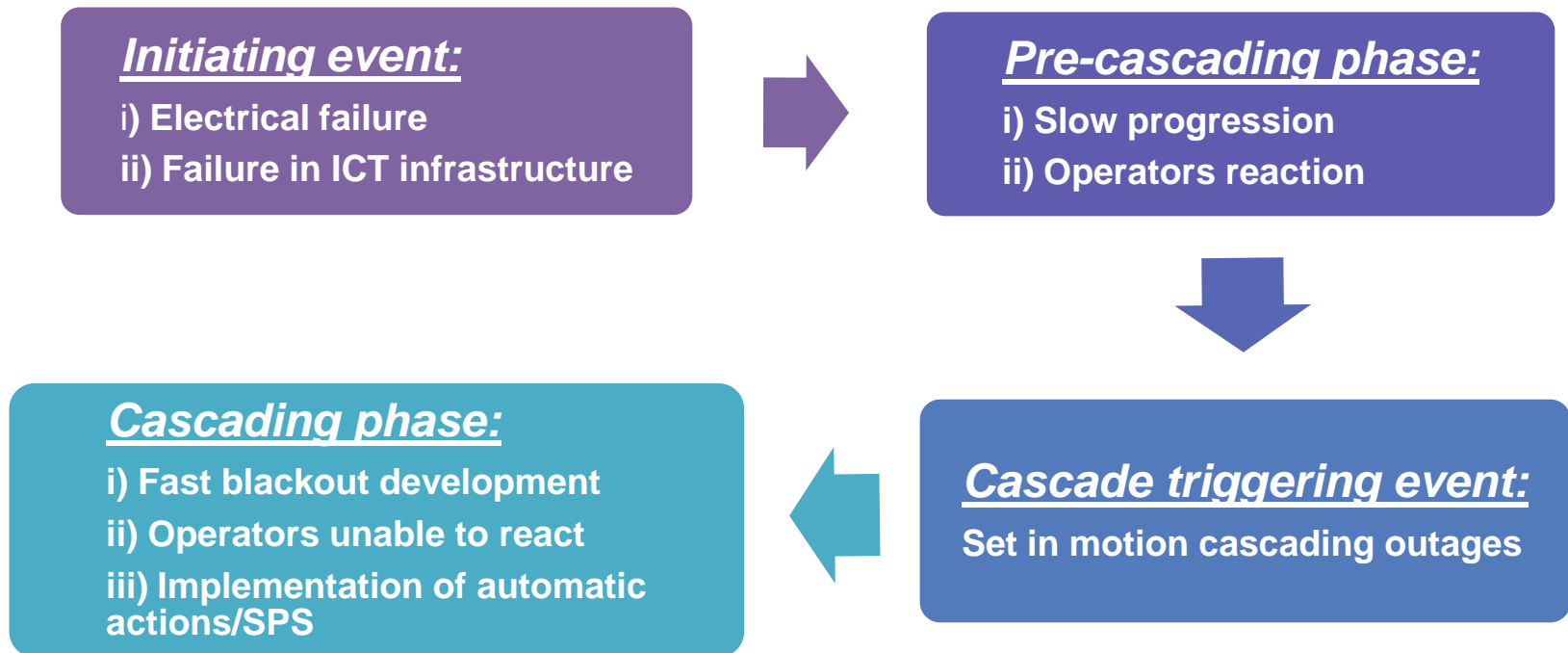
“The perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future”.



Factors affecting SA formation

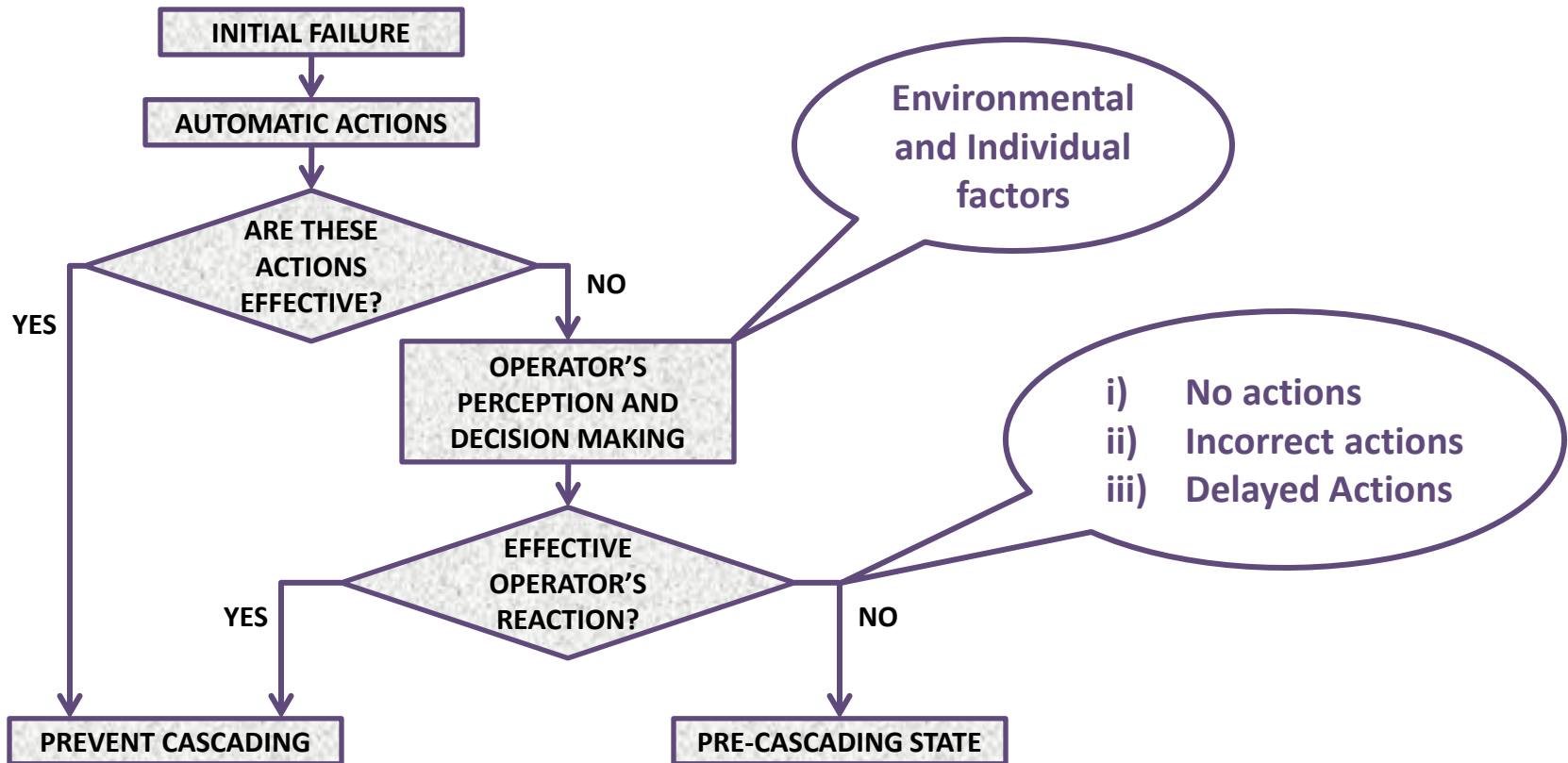


Blackout stages

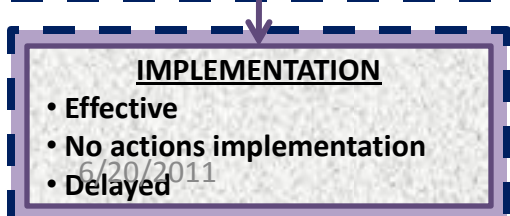
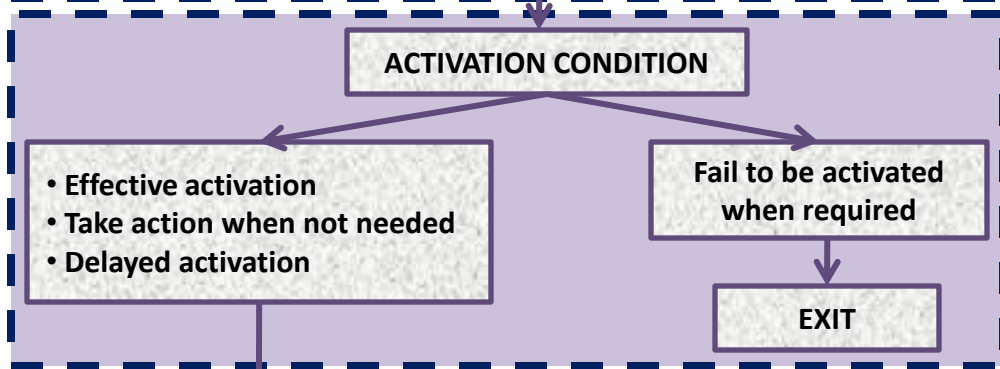
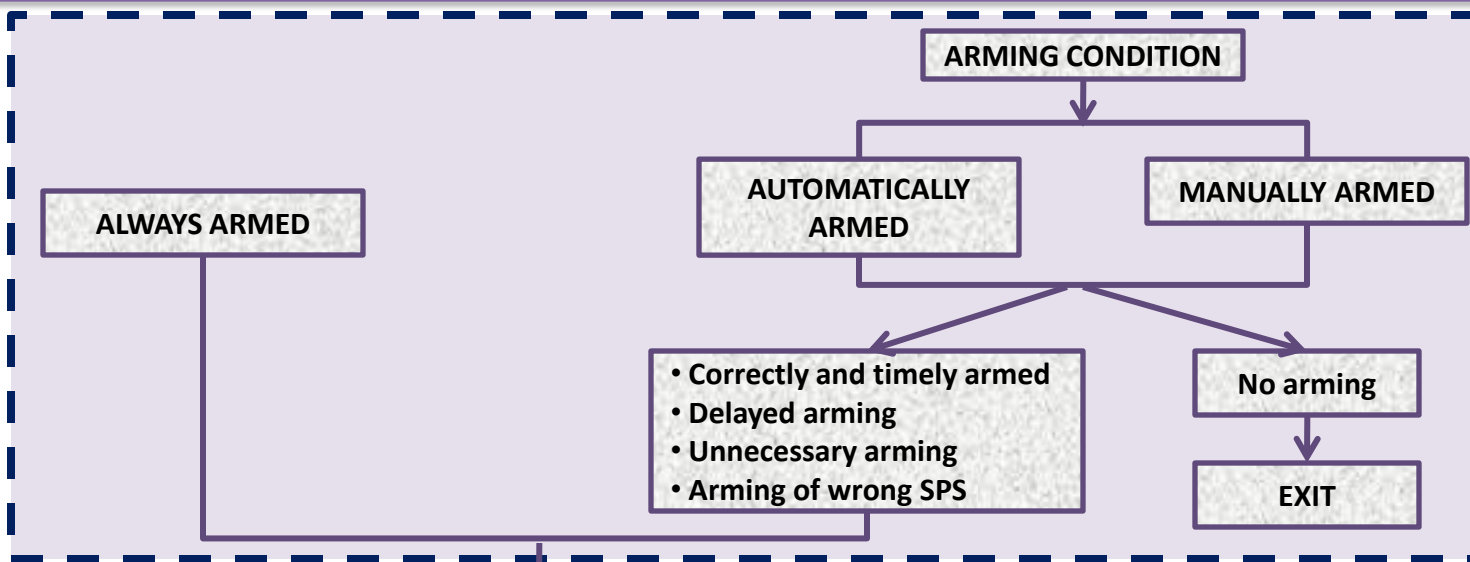


Pre-cascading phase

Informationally secure state:



Cascading phase



- Main causes:**
- i) **Human Errors:** operating, design, maintenance
 - i) **ICT failures:** software, hardware, communications

Conclusions

- **The role of the operator is very important in the pre-cascading phase**
 - ➡ a better understanding of the mechanisms of this phase
 - ➡ model the factors that can compromise operators situation awareness and performance

- **Develop tools for enhancing operators situation awareness**
 - ➡ allow operators to react in an effective and timely manner to an electrical disturbance

- Define a “**degree of alertness required**” for a given situation:
 - Maximum time allowed to perform a certain action
 - Minimum amount of actions to save the system

***Thank you for your
attention!***

