

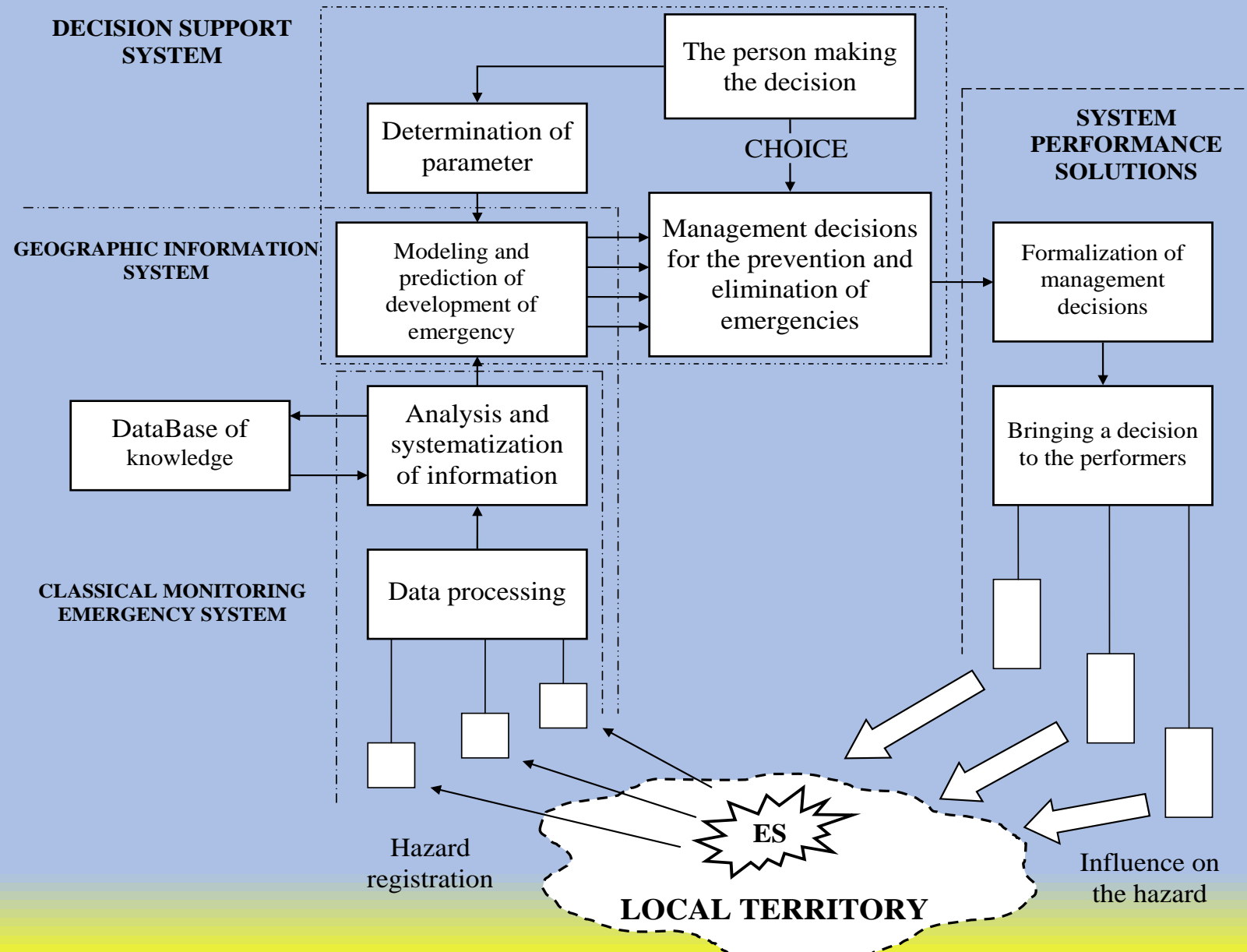
CRISIS MANAGEMENT DECISION-MAKING IN EPIDEMIC-PRONE SETTINGS

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- ❑ The wide range of problems that arise in the current conditions of biomedical emergencies that are dangerous for the territory of Ukraine and lead to disruptions in the normal conditions of society's life, characterised by significant socio-economic consequences, indicates the need to develop effective measures for optimal management of the processes of timely identification of potential sources of biomedical hazards and minimisation of the consequences of various epidemics
- ❑ A promising direction for the development of such measures is the creation of a geographic information system for the security of the territory and population of the state from medical and biological disasters, the functions of which are implemented on the principle of the classical control circuit

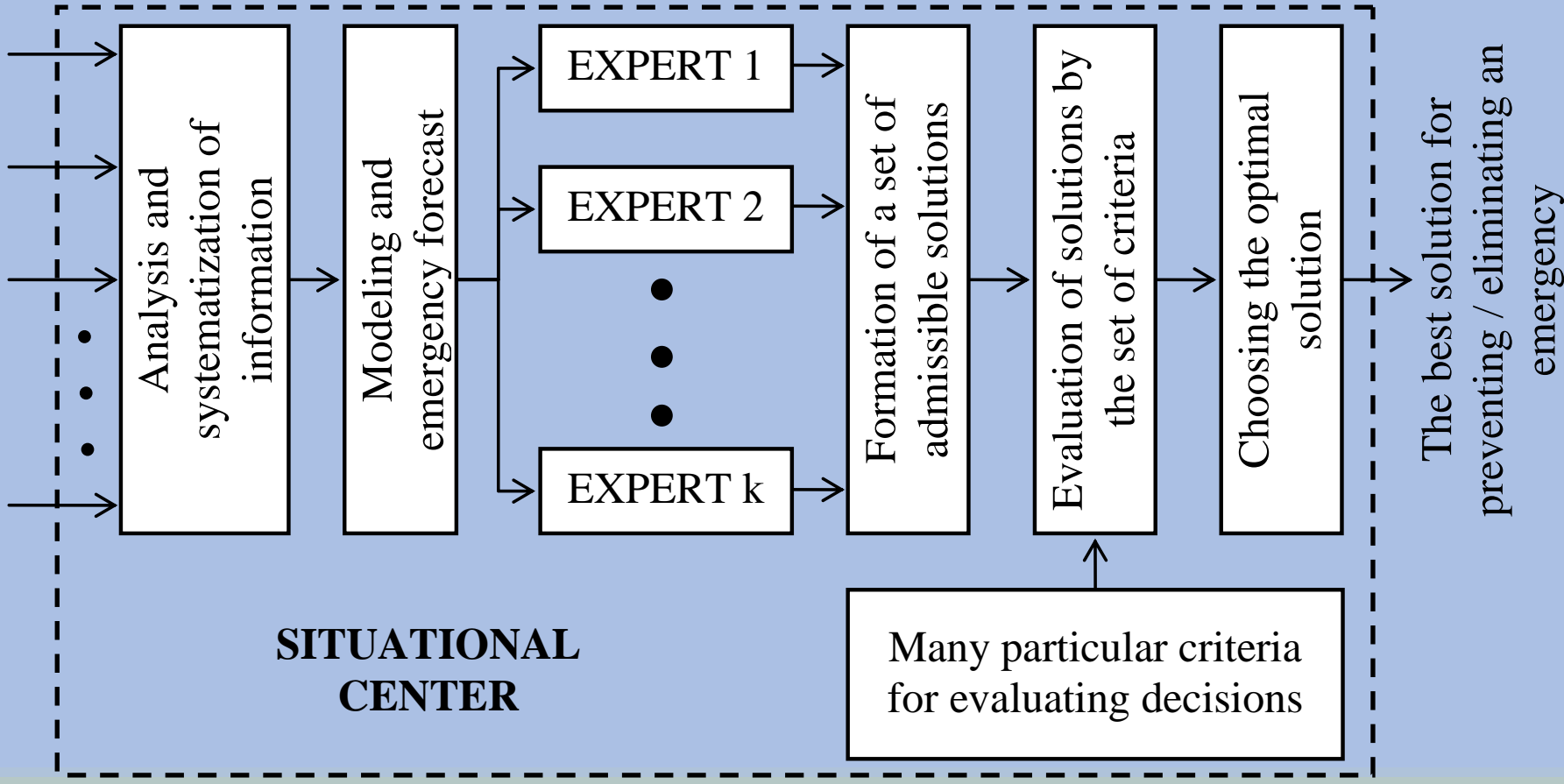
Diagram of the structure of the geographic information system of security against biomedical emergencies as a management tool

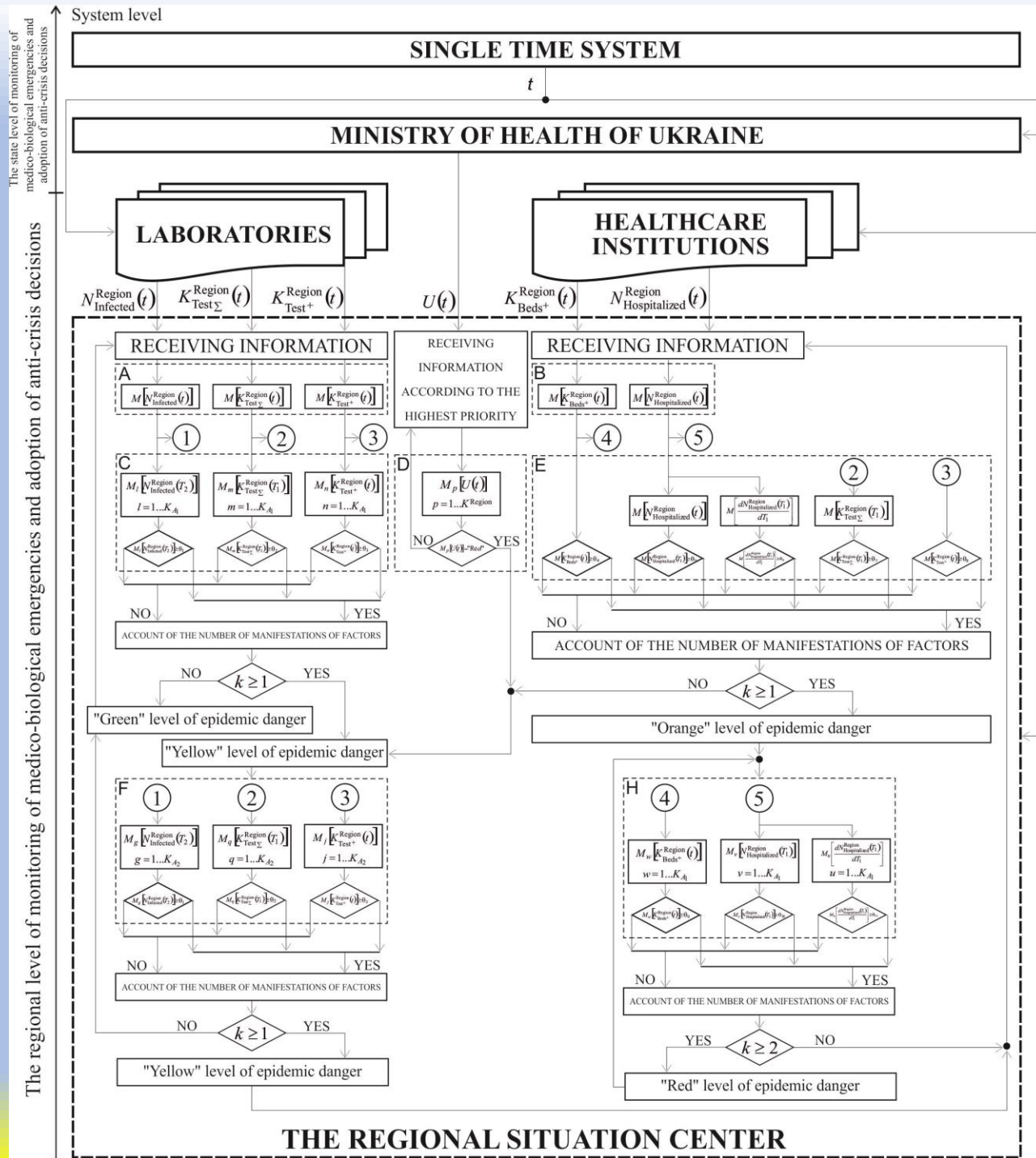


The Situation Centre, when operating within the Unified State System of Civil Protection, should ensure:

- analysis of the information received from the monitoring subsystem
- modelling of disaster development on the territory of a city, region, state
- development and adoption of management decisions on disaster prevention and response, as well as minimisation of their consequences

Functional diagram of justification of optimal anti-crisis solutions to ensure an appropriate level of life safety in emergency situations of various kinds, under conditions of uncertainty of input information for experts of the system of situation centres





Scheme of implementation of the procedure for the operation of the Situation Centre to support anti-crisis decision-making on establishing the appropriate level of epidemic risk of COVID-19 at the regional level of government

The "*green*", "*yellow*" and "*orange*" levels of epidemic danger are determined in the unified time system (t) based on the results of daily assessment (where $K_{A_1} = 3$ days and $K_{A_2} = 7$ days are the number of days for the procedure of the first and second stages of analysis, $T_{M_1} = 7$ days and $T_{M_2} = 14$ days are the first and second observation periods) of the relevant signs of epidemic danger both in a separate territory and in the whole country

- ❑ If the yellow level of epidemic danger is established on the territory of the state, the regional situation centre takes measures aimed at re-examining the epidemic situation in the region and assessing the possibility of the system's transition to another level of epidemic danger.
- ❑ This approach was implemented through the following information and technical procedures in the regional situation centre:
 - 1) formation in the block "F" of data arrays of requests for the results of laboratory
 - 2) detection of facts of exceeding the values of hazard factors of threshold levels
 - 3) counting the number of manifestations of hazard factors
 - 4) formulation, depending on the results obtained, of justified anti-crisis decisions for the State Commission on Technogenic and Environmental Safety and Emergencies on the transition of the system to the "green" level of epidemic hazard or maintaining the system at the "yellow" level of epidemic hazard

- ❑ If the "yellow" level of epidemic danger persists on the territory of the state, the regional situation centre takes measures aimed at assessing the situation regarding the transition of the region to the warning "orange" level of epidemic danger, which requires the introduction of enhanced restrictive anti-epidemic measures.
- ❑ The approach to establishing the "orange" level of epidemic danger was implemented through the following information and technical procedures in the regional situation centre:
 - 1) obtaining real-time information from healthcare facilities
 - 2) formation in block "B" of dynamic data arrays for monitoring the activities of healthcare facilities
 - 3) formation in block "E" of data arrays for queries of the results of activities of healthcare facilities in the relevant observation periods
 - 4) detection of facts of exceeding the values of hazard factors of threshold levels
 - 5) counting the number of manifestations of hazard factors
 - 6) development, depending on the results obtained, of substantiated anti-crisis decisions

- If the orange level of epidemic danger is established in the region, the regional situation centre takes measures aimed at assessing the situation regarding the transition of the region to the red level of epidemic danger.
- The approach to establishing the "red" level of epidemic danger was implemented through the following information and technical procedures in the regional situation centre:
 - 1) formation in the block "H" of data arrays of queries of the results of the activities of health care facilities in the relevant periods of observation
 - 2) detection of facts of exceeding the values of hazard factors of threshold levels
 - 3) counting the number of manifestations of hazard factors
 - 4) formulation, depending on the results obtained, of justified anti-crisis decisions