Social Behaviour in the “Infodemic vs. Panicdemic vs. Pandemic” COVID-19 System

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Current trends

- Due to the rapid development of information technologies, a new association has emerged, which is to use computer systems and networks more deeply in innovative activities: artificial intelligence systems, cloud technic, databases, big data processing and emotional intelligence.

- The trend of such penetration is growing and expanding, so there is a need for a new organization of innovative behaviors with broad involvement of information technology and management of complex system like “Infodemic vs. Panicdemic vs. Pandemic COVID-19”.

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Social behavior into complex system with high level of uncertainty

- Pandemic - information about the existence of a danger in society, i.e. great risk in society.
- Information - activates the mind in a person and on the basis of which a decision is made.
- Infodemia - forms public opinion about the existence of risk, about its level and consequences. Individual knowledge is formed for everyone. There is an exchange of knowledge between people and “Information Shell”, the so-called infodemia, is formed in society.
- Panic - Disables the individual's immune system. "Infodemia" forms a “Panikdemia” in the society.
- Public Immune System are the combining all human immunities into one.

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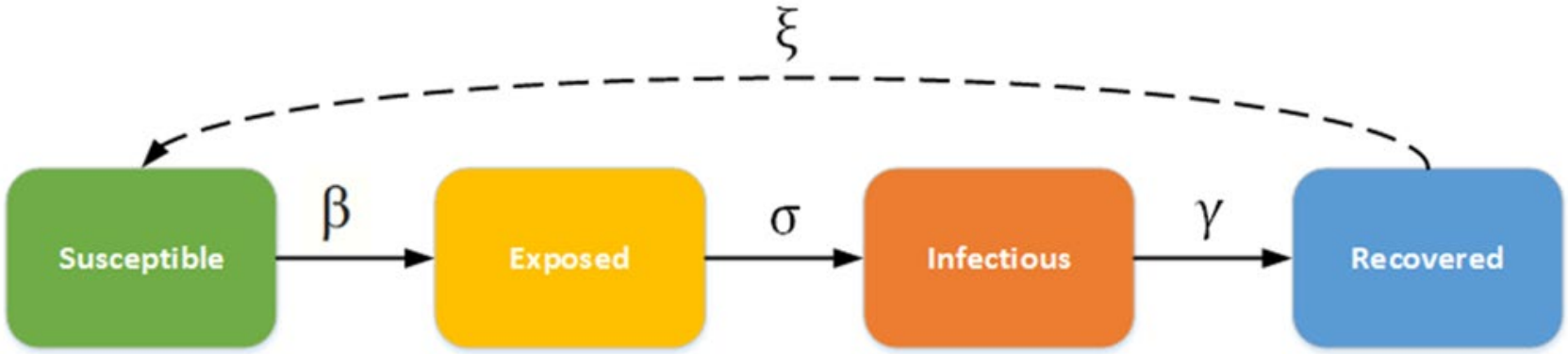
SEIRS model and Social Team



$$\frac{dS}{dt} = -\frac{\beta SI}{N} + \omega_\theta(t) + p_\theta(t)$$

$$\frac{dE}{dt} = \frac{\beta SI}{N} - \sigma E + \omega_e(t) + p_e(t),$$

$$\frac{dI}{dt} = \sigma E - \gamma I + \omega_i(t) + p_i(t),$$

$$\frac{dR}{dt} = \gamma I + \omega_r(t) + p_r(t).$$

Where $\omega_\theta(t)$ is the impact of Infodemic processes to susceptible population, based on the "panic";

$\omega_e(t)$ - is the impact of Infodemic processes to expose of infection, based on the decreased immunity

according to the emotional status of the population;
$\omega_i(t)$ - is the impact of Infodemic processes on infection, based on the decreased immunity according

to the emotional status of the population;
$\omega_r.(t)$ - is the impact of Infodemic processes to recovered population, based on the decreased immunity

according to the emotional status.

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Creating Social Emotional Resonance

In the study of the emotional behaviors of the processes of managing complex projects recognition was created by the psychophysiology PV Simonov [5] formula, in a short symbolic form represents a set of factors that affect the emergence and nature of the effects of emotions.

$$E(t) = f(P(t) * (In(t) - Is(t))), \quad (5)$$

where $\mathbf{E(t)}$ – emotion, its degree, quality and impact;

$\mathbf{P(t)}$ – the power and influence of the actual need;

$\mathbf{(In(t) - Is(t))}$ – assessment of the possibility of meeting the need based on innate and ontogenetic

experience;

$\mathbf{In(t)}$ – information on cost, meeting the need;

$\mathbf{Is(t)}$ – information about existing assets that the manager owns.

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Modelling of Social infection in COVID-19 "pandemia+panicdemia+infodemia" system

The more reliable (R), timely (T) and complete (C) information among the people (in society), the less panic. The absence of one of these three RTC-parameters leads to an inferior formation of “Infodemia”. In such cases, the result is an Infodemia with the “Black Hole”.

$$InfD(I) = \sum_{i=1}^{I} R_i T_i C_i \tag{6}$$

$$InfD(I) \Rightarrow PncD(I) \Rightarrow PnD(I) \tag{7}$$

$$\min(InfD) \rightarrow \max(PncD) = \max(Pnd) \tag{8}$$

$$\max(InfD) \rightarrow \min(PncD) = \min(Pnd)$$

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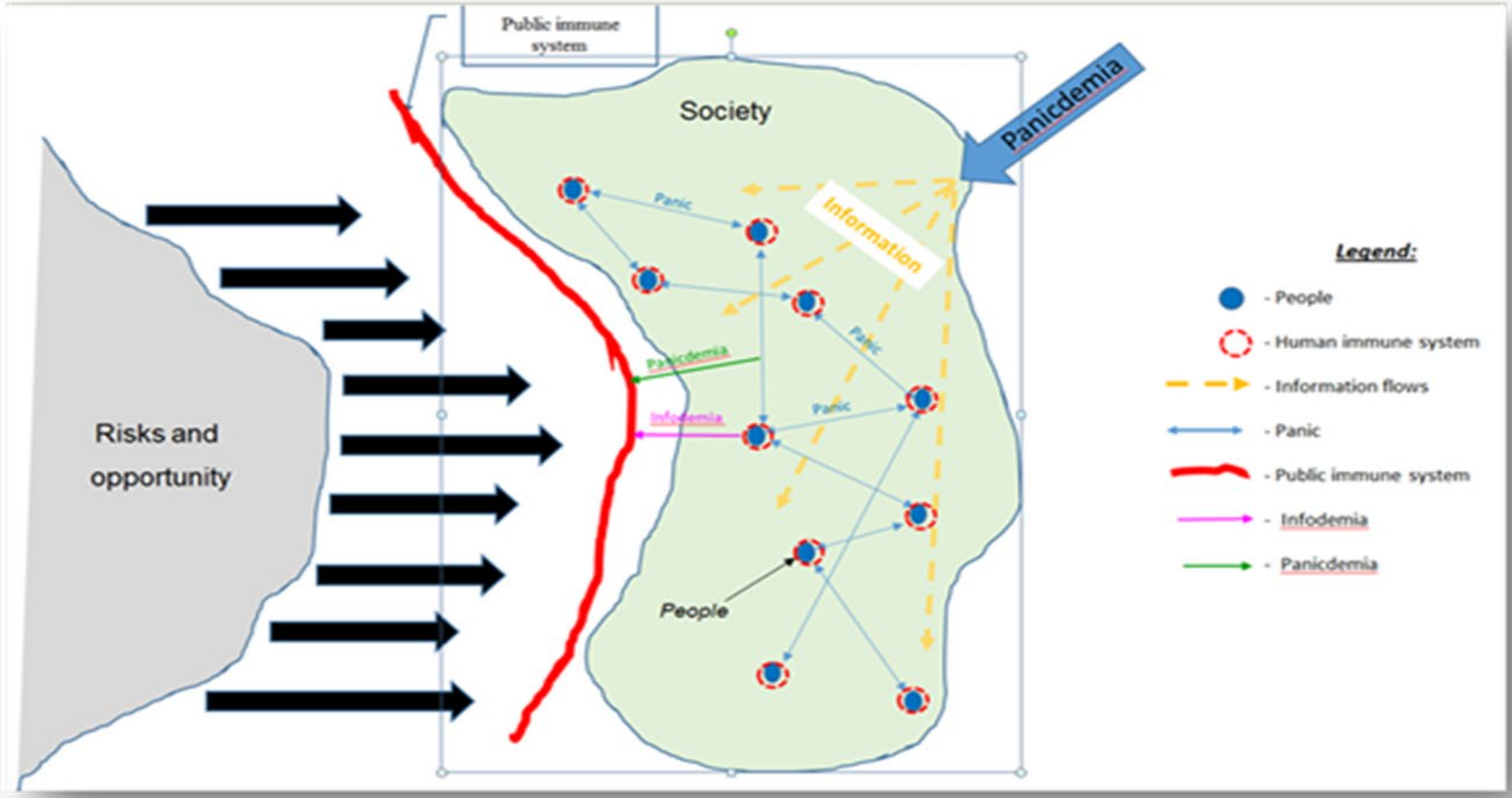
Conceptual model reaction of social immune system



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Connection of “Infodemic vs. Panicdemic vs. Pandemic” model COVID-19

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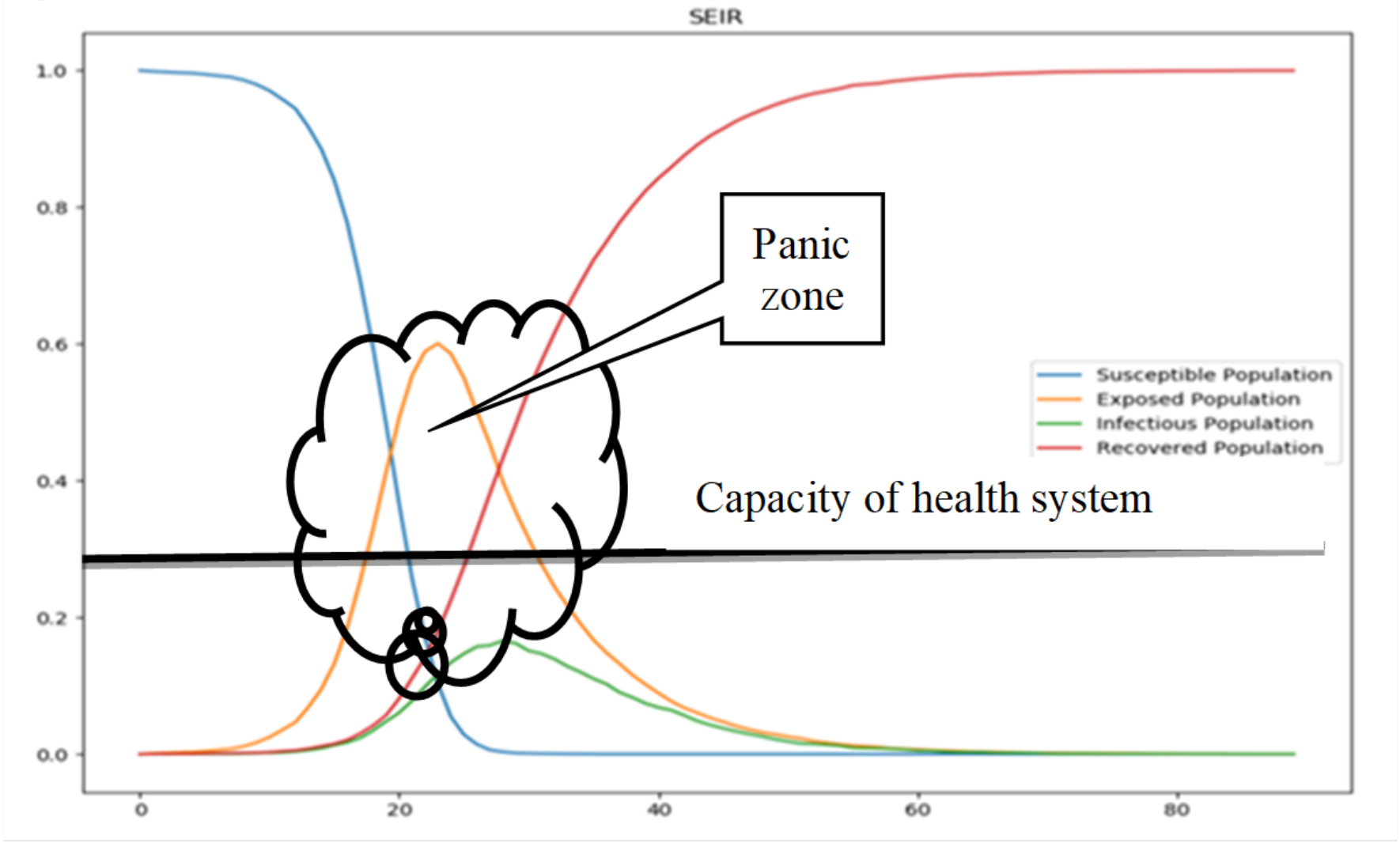
Uncertainty zone and Panic of “Infodemic vs. Panicdemic vs. Pandemic” model COVID-19



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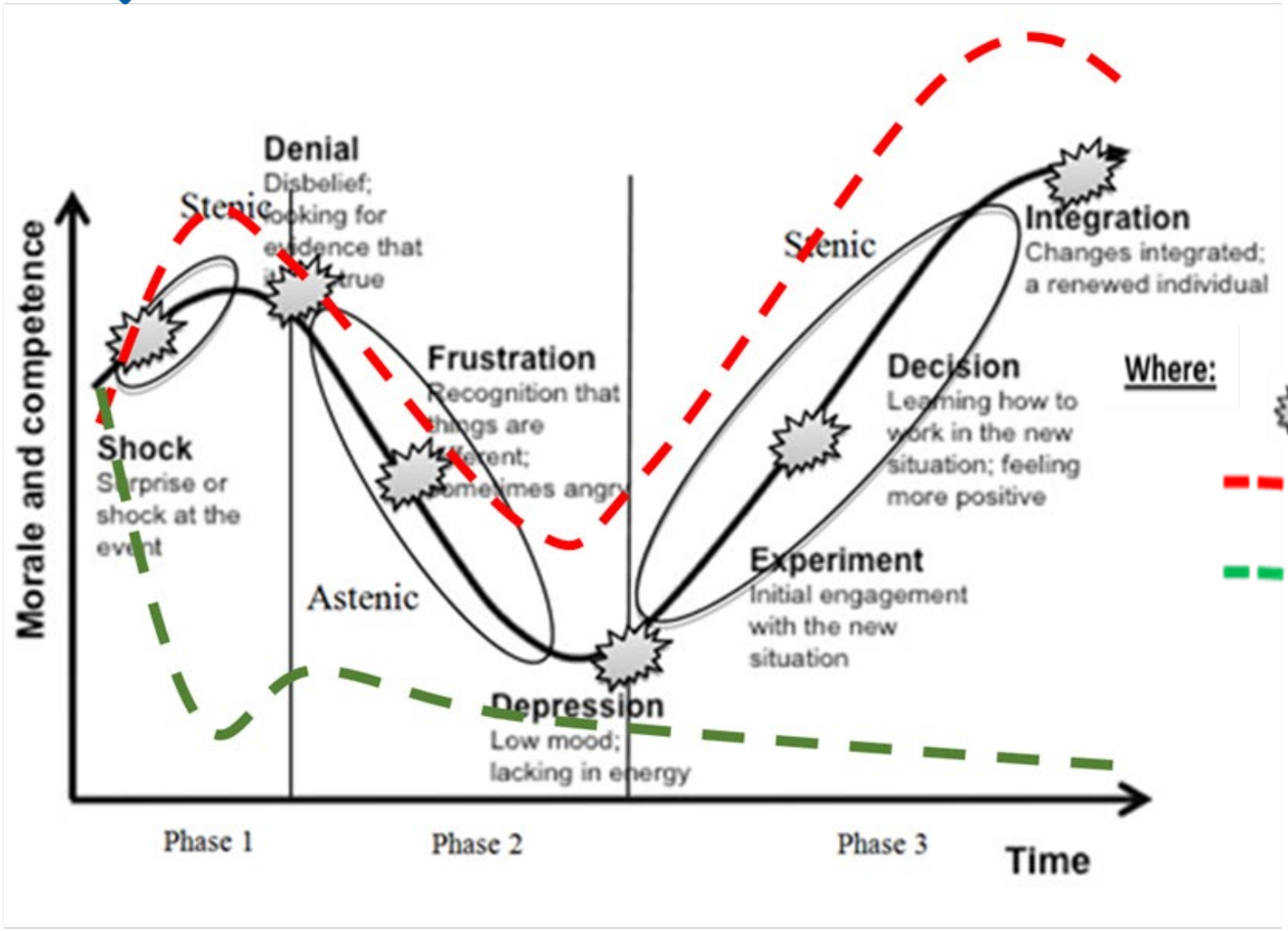
The Kuber-Ross model of Social Behaviors "Infodemic vs. Panicdemic vs. Pandemic" COVID-19



Where:

- Infodemic critical points.
- Pandemic if Panicdemic is maximum, Max(PncD)
- Panicdemic if Panicdemic is minimum, Min(PncD)

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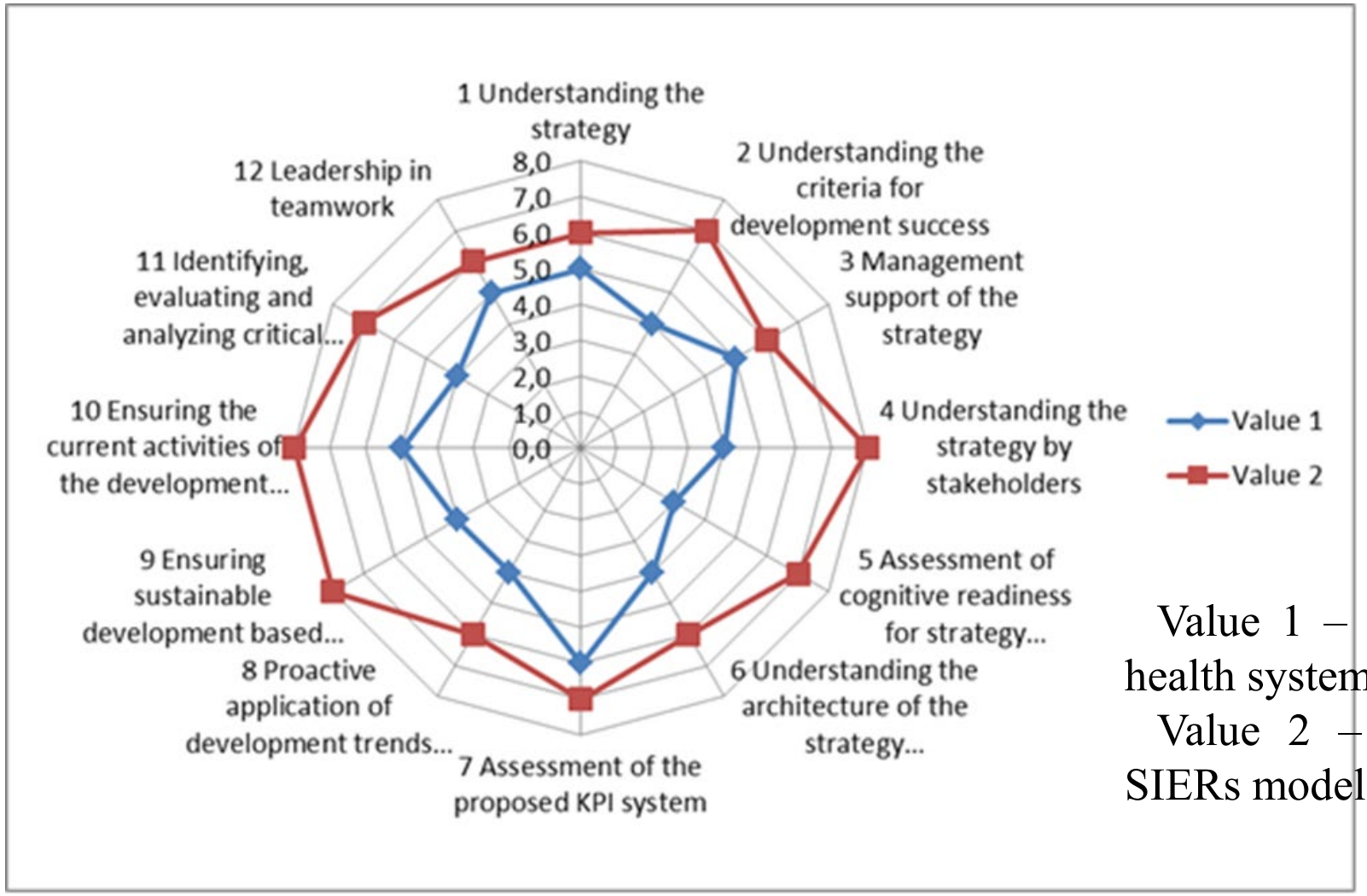
Spider diagram for strategic trust of “Infodemic vs. Panicdemic vs. Pandemic” model COVID-19



Value 1 – Panic situation in the Social health system.

Value 2 – Regular strategy according SIERs model

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Conclusion

- The conceptual model assumes the interaction of public immunity in the framework of the mutual influence of Pandemic, Infodemic and Panicdemic in a turbulent environment.
- The proposed approach to modelling the system “Infodemic vs. Panicdemic vs. Pandemic” COVID-19 involves taking into account the key factors influencing the model. This increases the adequacy of the simulation results.
- The experiment conducted with the competencies of strategic trust in the situation in the country and the actions of the government showed a sharp decline in trust as a result of the Panicdemic.

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