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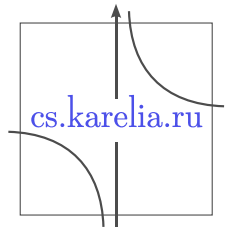

Alexander V. Borodin, Yulia V. Zavyalova, Alexander Yu. Meigal

Towards a Mobile System for Hypertensive Outpatients' Treatment Adherence Improvement

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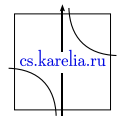
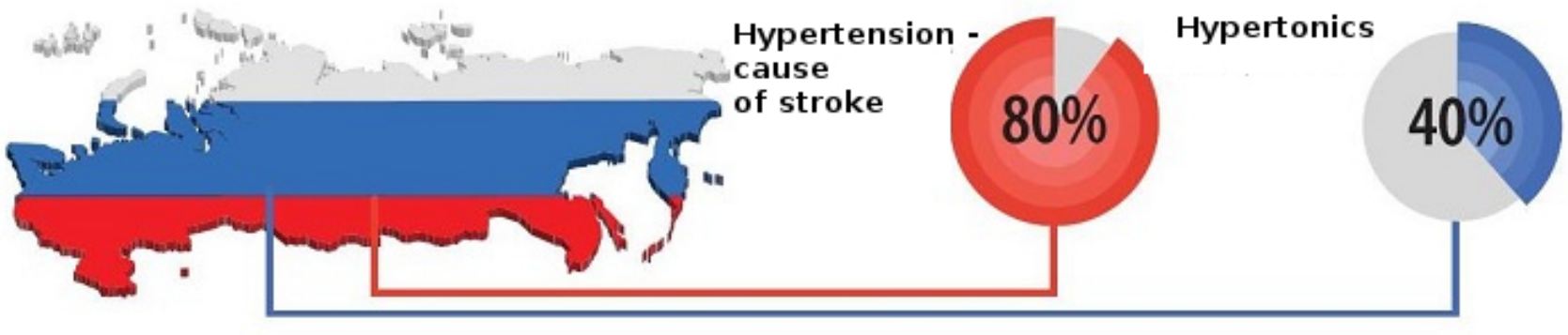


21th FRUCT conference

November 7–10, Helsinki, Finland

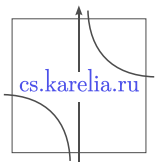
Arterial hypertension

- significant multifactorial disease with a long period of treatment
- specific drug therapy
- modification of a lifestyle and a diet
- requires patient's self-discipline



Arterial hypertension treatment adherence

1. Lowering blood pressure;
2. Weight loss;
3. Regulation of admission to drug treatment;
4. Regulation of physical activity;
5. Regulation of diet and consumption of alcohol;
6. Refusal from bad habits (smoking);
7. Regulation of sleep quality;
8. Prevention of heart attack / stroke / death;
9. Protection of target organs;
10. Regulation of emotional states;
11. Decrease the influence of meteorological sensitivity;
12. Making a decision on emergency hospitalization.

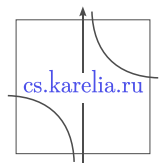


Digital behaviour changes interventions

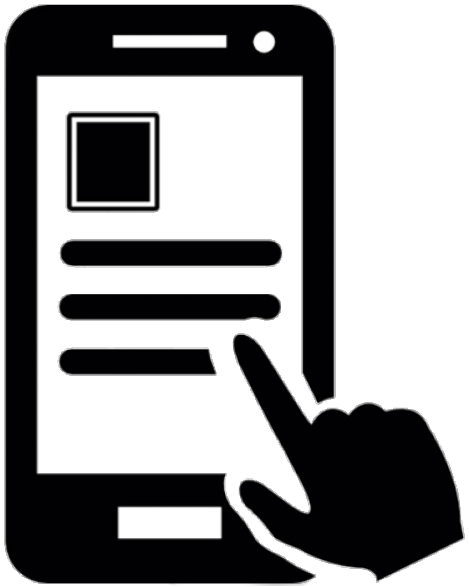
Digital behaviour changes interventions (DBCIs) is defined as digital technology-enabled services to promote behaviour changes.

Mobile DBCIs (mDBCIs) and are useful and necessary within healthcare and wellbeing.

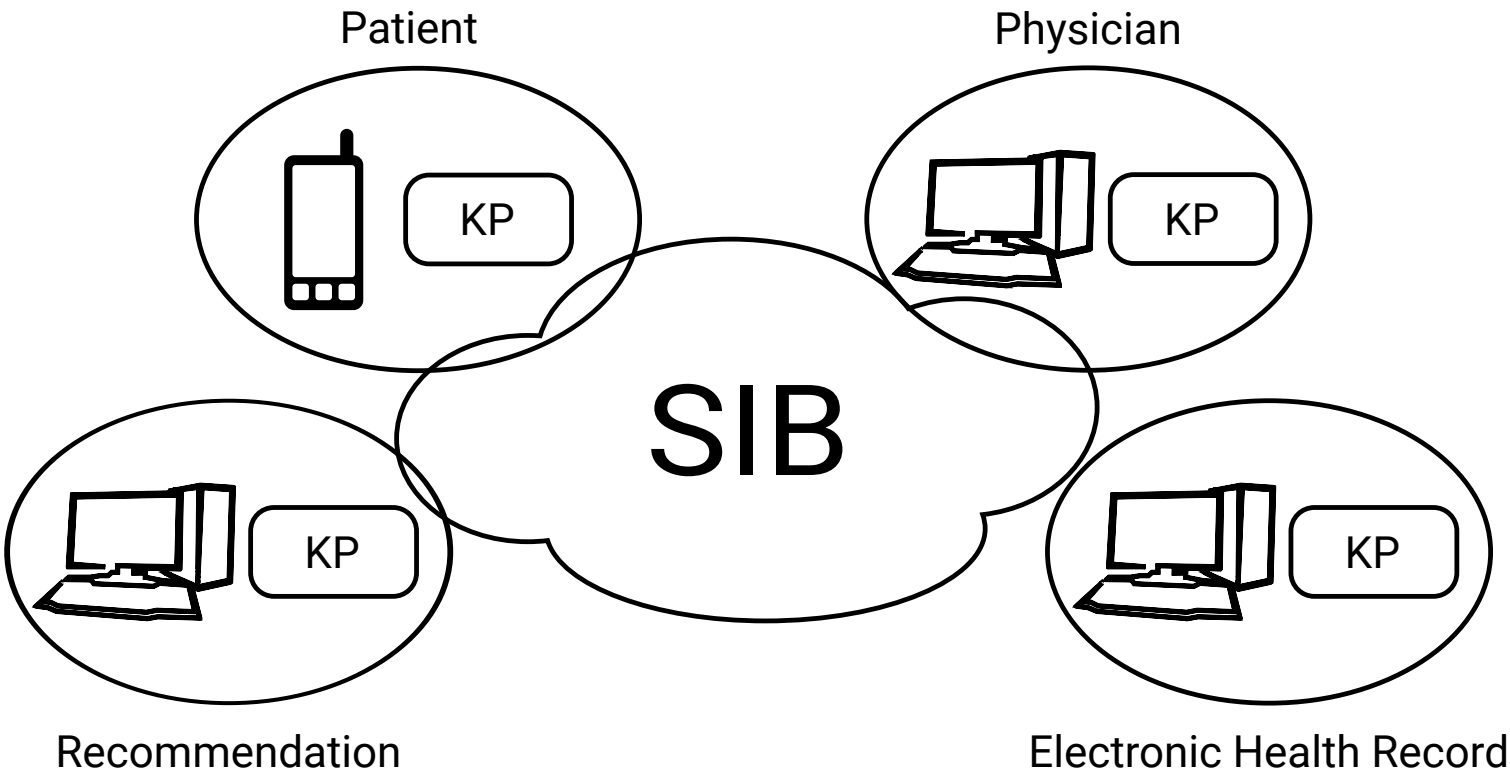
Semantic representation of health-related data with behaviour-related entities and relations enables to programming of the broader class of services for hypertensive patients.



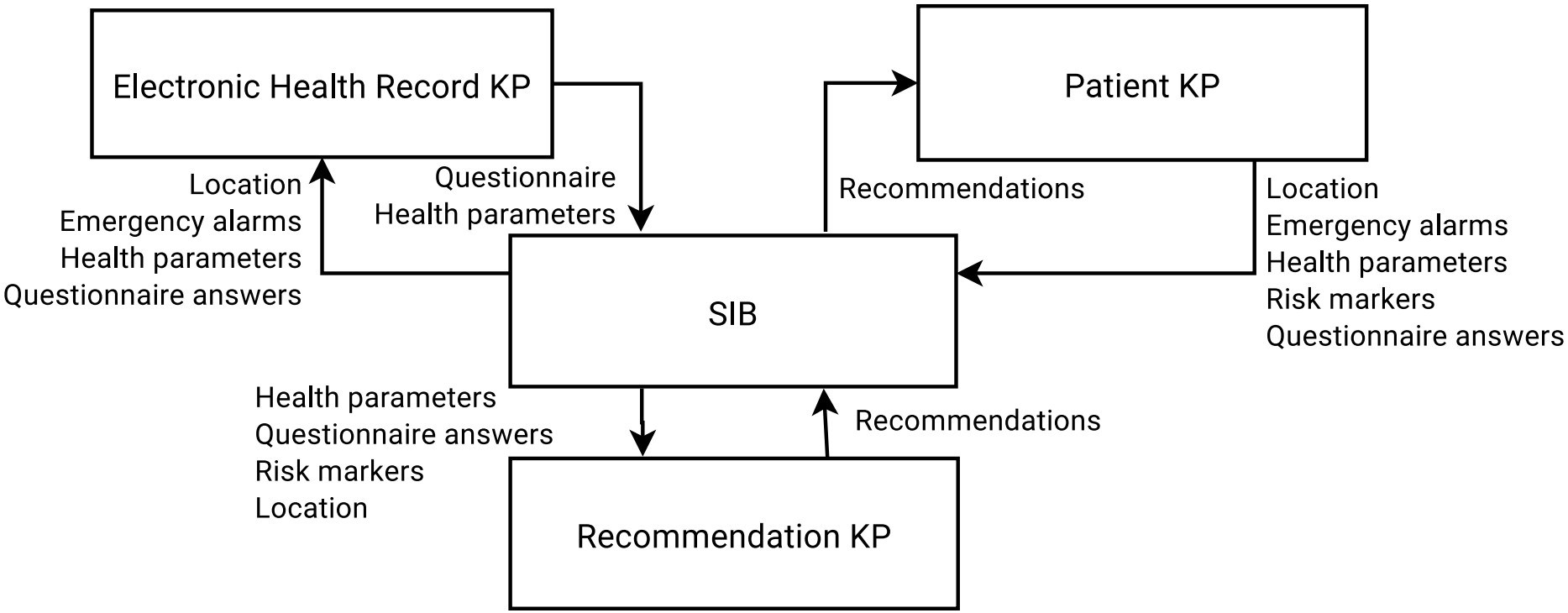
Subjective and Objective Measurements



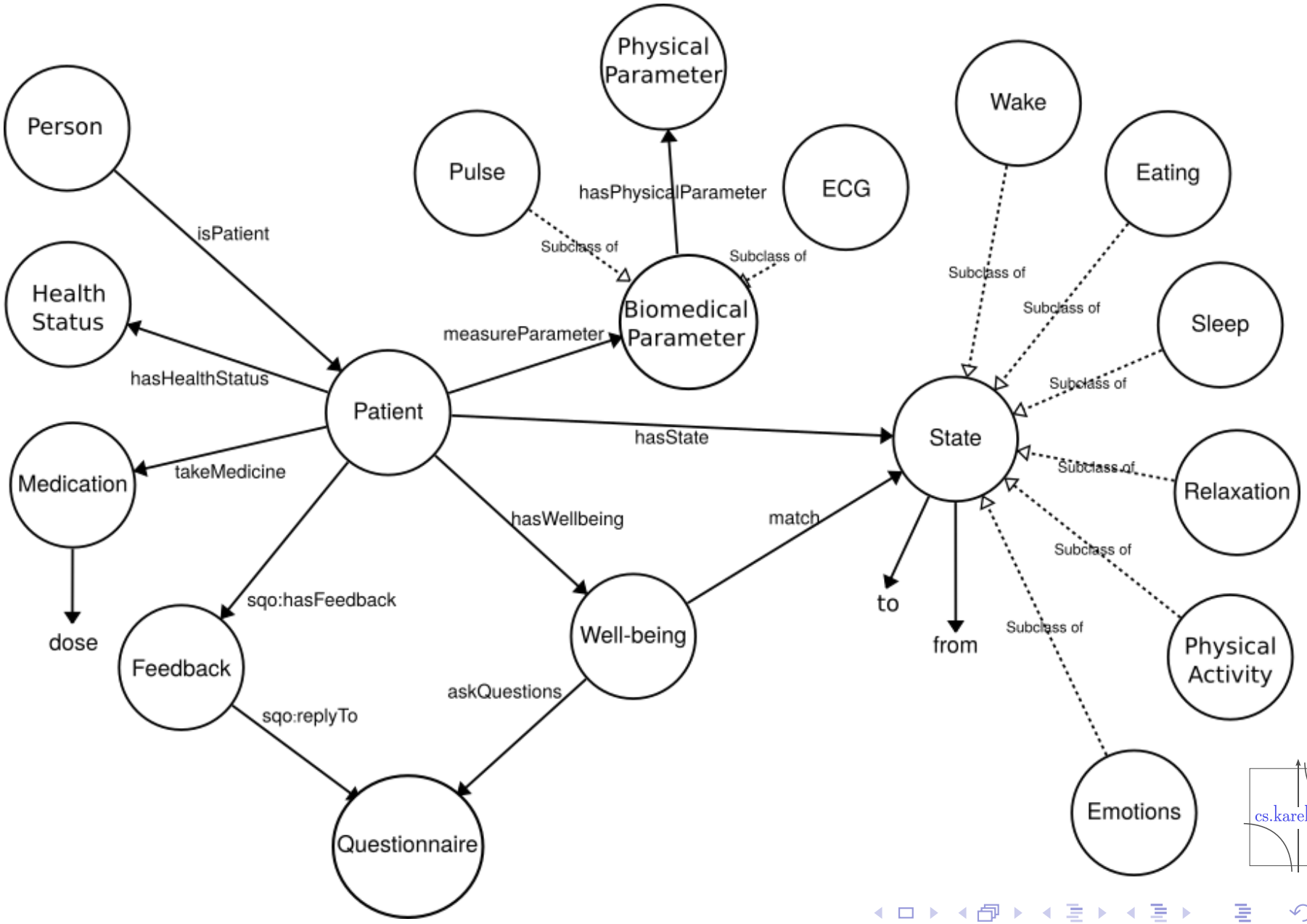
Hypertension management system



Personalized recommendation service



Ontology


Person
isPatient
Health Status
hasHealthStatus
Medication
takeMedicine
dose
Patient
measureParameter
Physical Parameter
Pulse
hasPhysicalParameter
ECG
Subclass of
Subclass of
Biomedical Parameter
hasState
hasWellbeing
sqo:hasFeedback
Feedback
sqo:replyTo
askQuestions
Well-being
Questionnaire
match
State
to
from
Wake
Eating
Sleep
Relaxation
Physical Activity
Emotions
Subclass of
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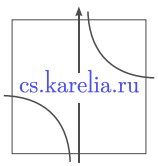
Adherence assessment

We propose the adherence assessment method based on integration of several adherence-related data sources.

- As in medicine, the adherence to the treatment is evaluated be means of standardized questionnaire-based surveys.
- Results of objective and subjective health measurements are processed and compared to the target values.
- Mobile analytics-based metrics are used for engagement measurement along the juxtaposition of the contact with the intervention-specific outcomes (not just counts of interaction!).
- To make the behaviour modification more enticing, we adopt gamification. The system of achievements, or in-game non-material rewards, plays not only the role of virtual goals that increase enjoyment, but also represents an engagement level estimation.



Conclusion

Within the project, the mobile smart space-based system for the decreasing of hypertension-related risk and addressing the problem of the low adherence to the treatment among ambulatory hypertensive is under development.

1. Wide capabilities of health and lifestyle-related data gathering
2. Continuous BP and ECG measurement, etc., and subjective health measurements by questionnaires or in a free form
3. Up to 20 risk markers of the cardiovascular complications in hypertensive patients
4. Outpatient assistance by means of digital behaviour changes interventions

Thank you!

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