



Integrated biomedical information for better health

Multi-agent network model for decision-making support in public healthcare management of the region

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Main goal:

Improvement of medical services' quality, of medical services' purposefulness , lowering of sickness rate, improvement of citizens' life quality by means of introduction of contemporary management, medical and information technologies, increase of prophylaxis' part, control and quality management.

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**New
management
principles**

**Multi-agent
technology**

**Medical technology: clinical protocols,
prophylaxis, general practitioners;
technology, which replace hospitals.**

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Project aims

- ✓ New concept of region's healthcare management' reformation on the basis of holistic approach, the contemporary medical, management and information technology
- ✓ Multi-agent model for decision making support in the region's public healthcare management system
- ✓ Knowledge base (international standards of medical and management knowledge), introduction the base into each doctor's daily practice



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Project conception

- ✓ The central element of the region's healthcare system will be general practitioners.
- ✓ General practitioners constitute polyclinic as new “business-integrity”, which has an ability to make special medical centers with other organizations, which is constructed on the basis of self-organization principles.



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The computer model allows

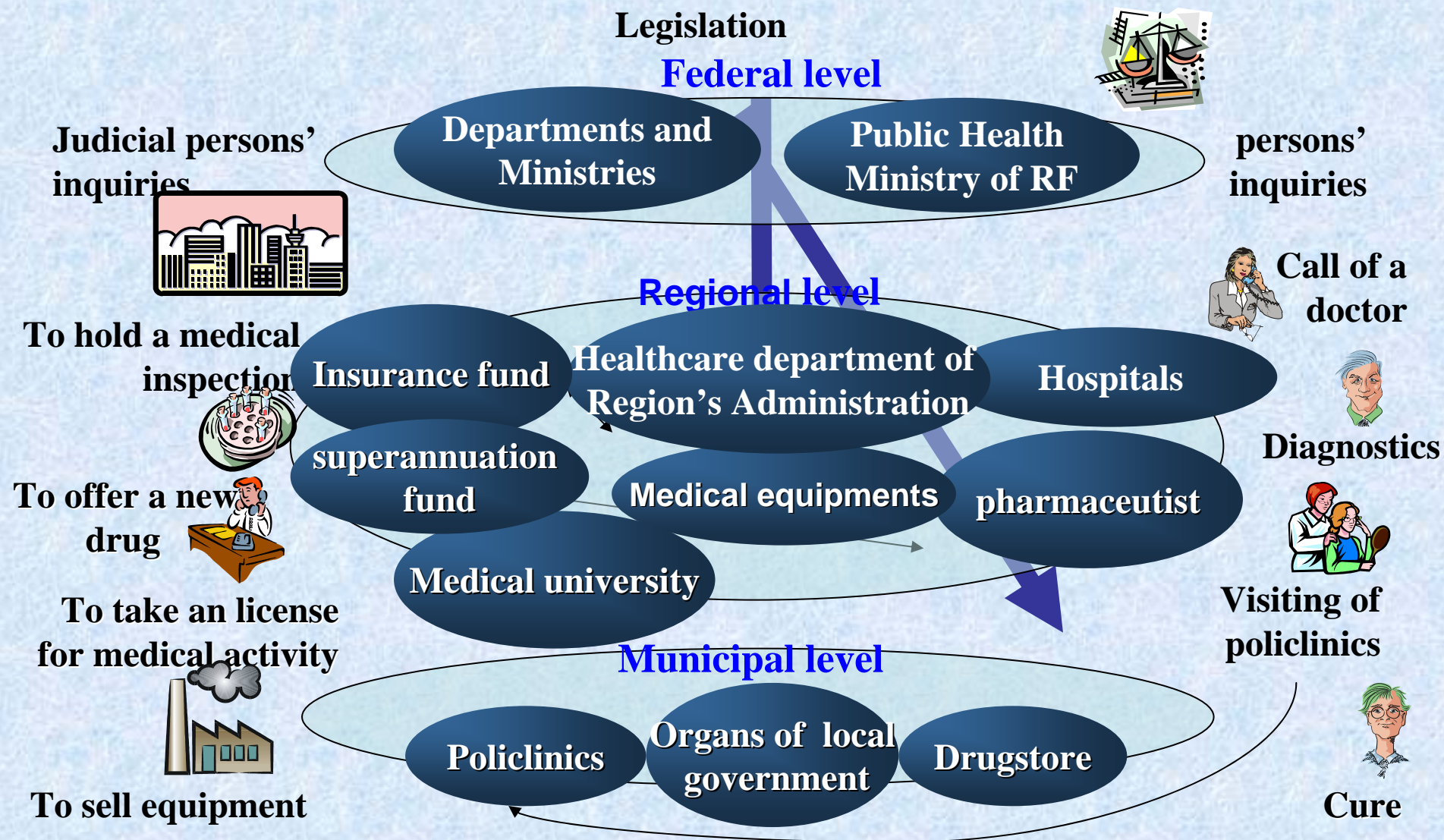
- ✓ to work with the new principles of region's healthcare system
- ✓ to make a special healthcare knowledge base
- ✓ to develop tools for realization of new management principles

The multi-agent model gives the ability for

- ✓ evaluation of each organization's activity effectiveness
- ✓ development of the “general practitioners” concept
- ✓ introduction of cure international standards
- ✓ accumulation, systematization, circulation and use of professional knowledge
- ✓ raising of medical prophylaxis's role

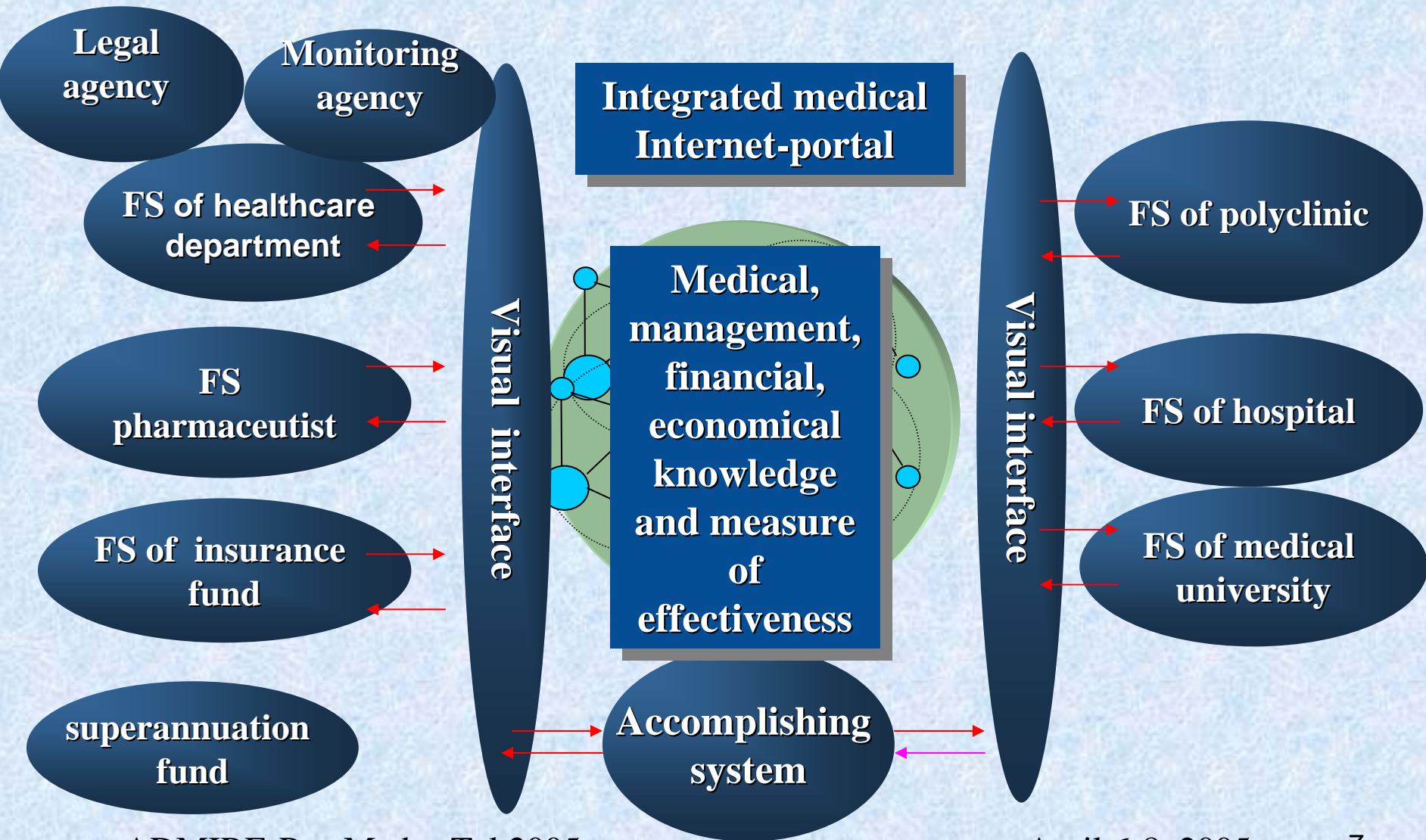


Interaction processes of the Samara Region's healthcare system

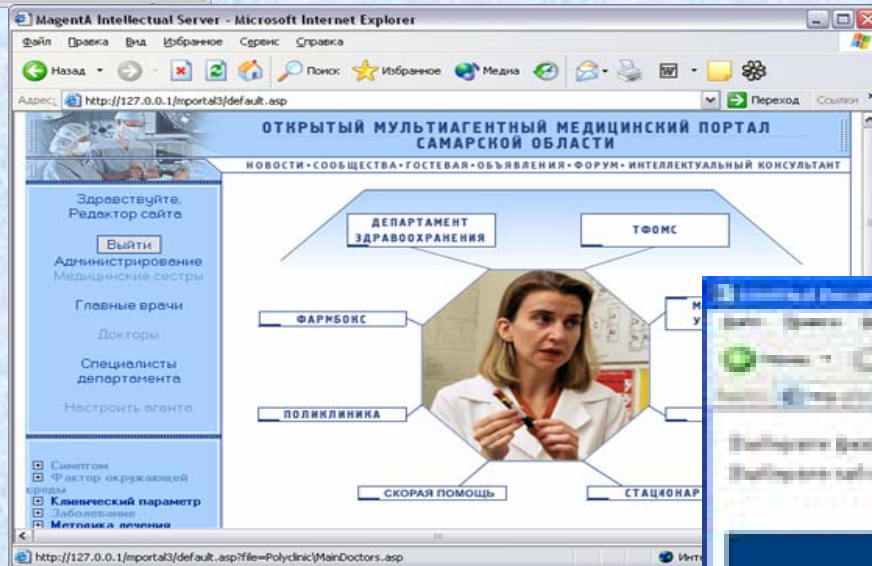




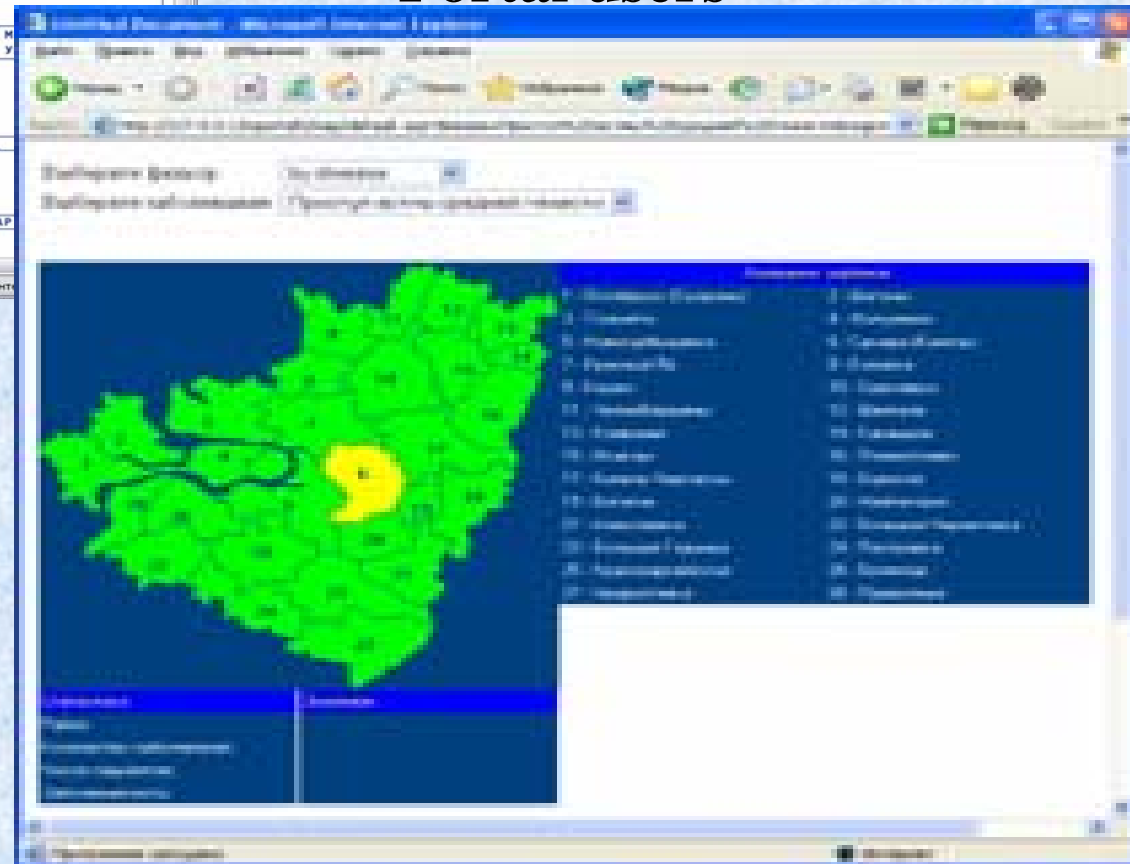
Structure of a computer model of region's healthcare system



Multi-agent medical internet portal



Portal users



Portal's elements:

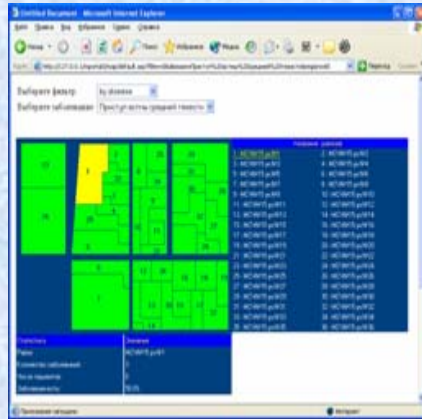
- Information resources
- FS department manager
- FS main doctor
- FS practitioners
- FS of pharmacist
- FS engineer of ontology



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Ability of activities' planning

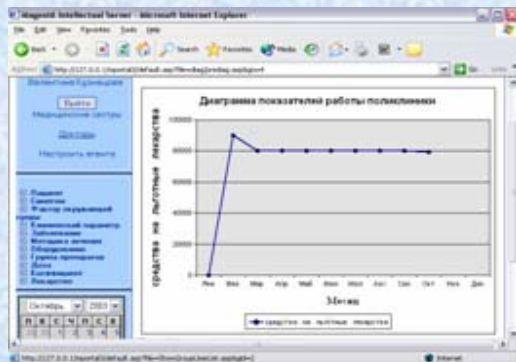
FS of Ministry's manager



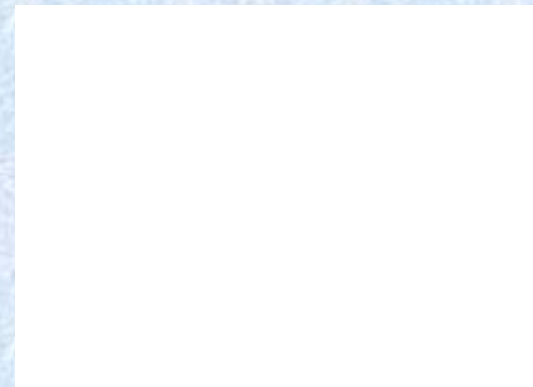
FS of doctor

Параметр	Текущий месяц	Предыдущий месяц	Динамика
Случаев, потерянных в этом месяце	10	16	Детализация
Случаев, переходивших с прошлого месяца	3	5	Детализация
Случаев, закрытых в этом месяце	7	6	Детализация
Среднее количество средств на льготное лечение на начало месяца	79110	80250	Детализация
Текущие средства на льготное лечение	66790		
Средств на начало месяца	98212	91230	Детализация
Текущие средства	10000		

Indicators of polyclinic's work

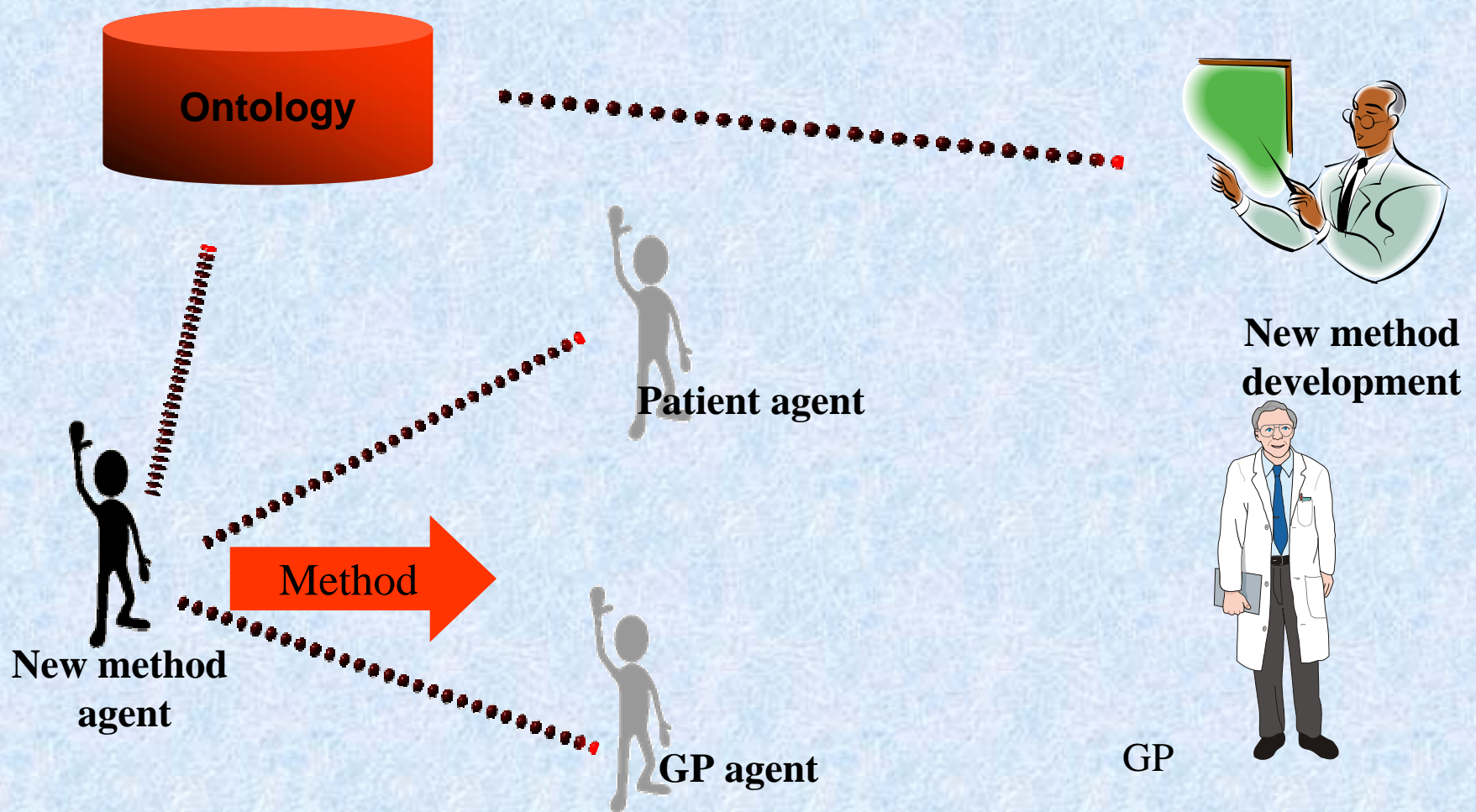


Card of polyclinic's indicator work



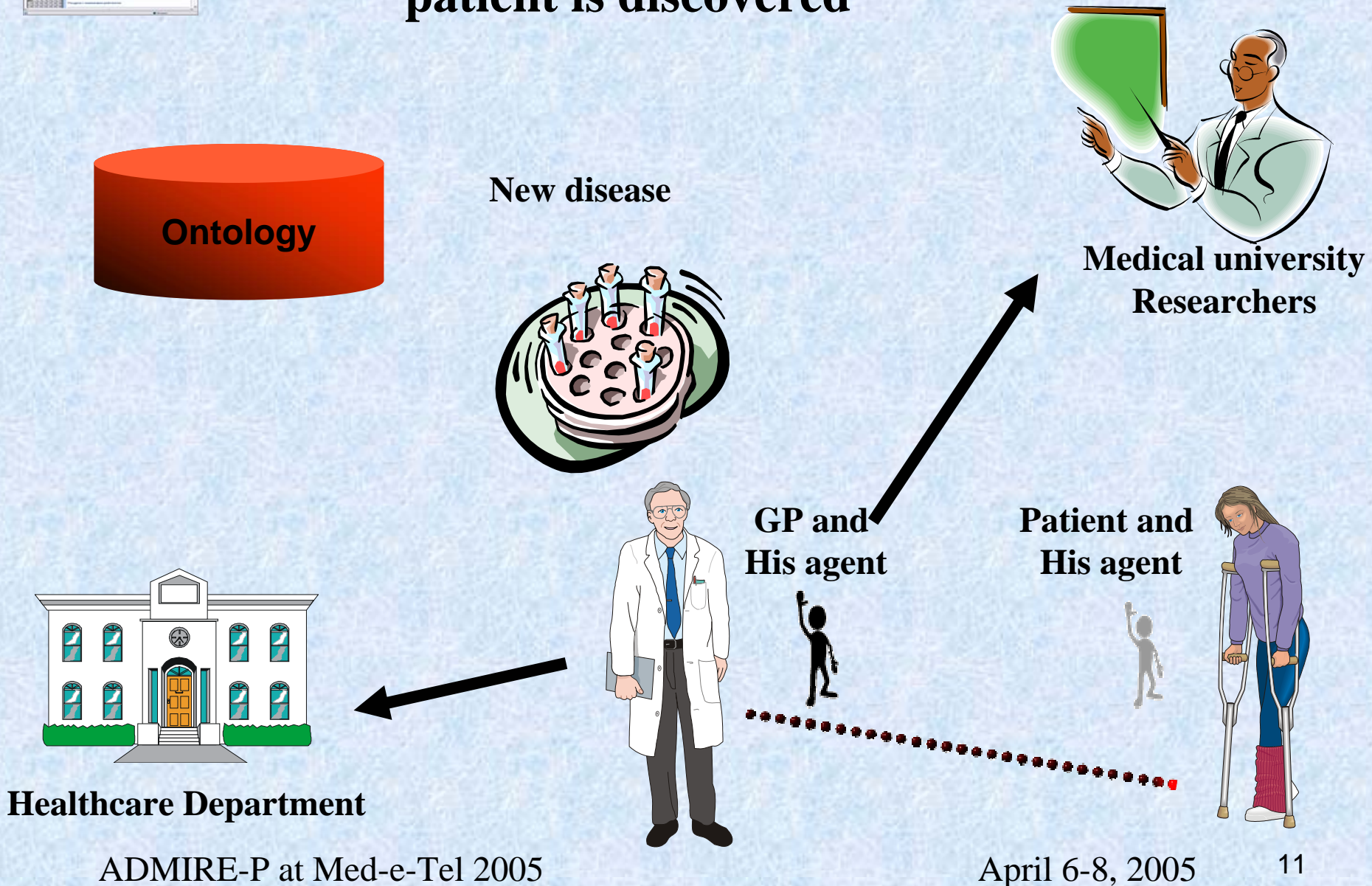


New medical treatment method or preventive measures method



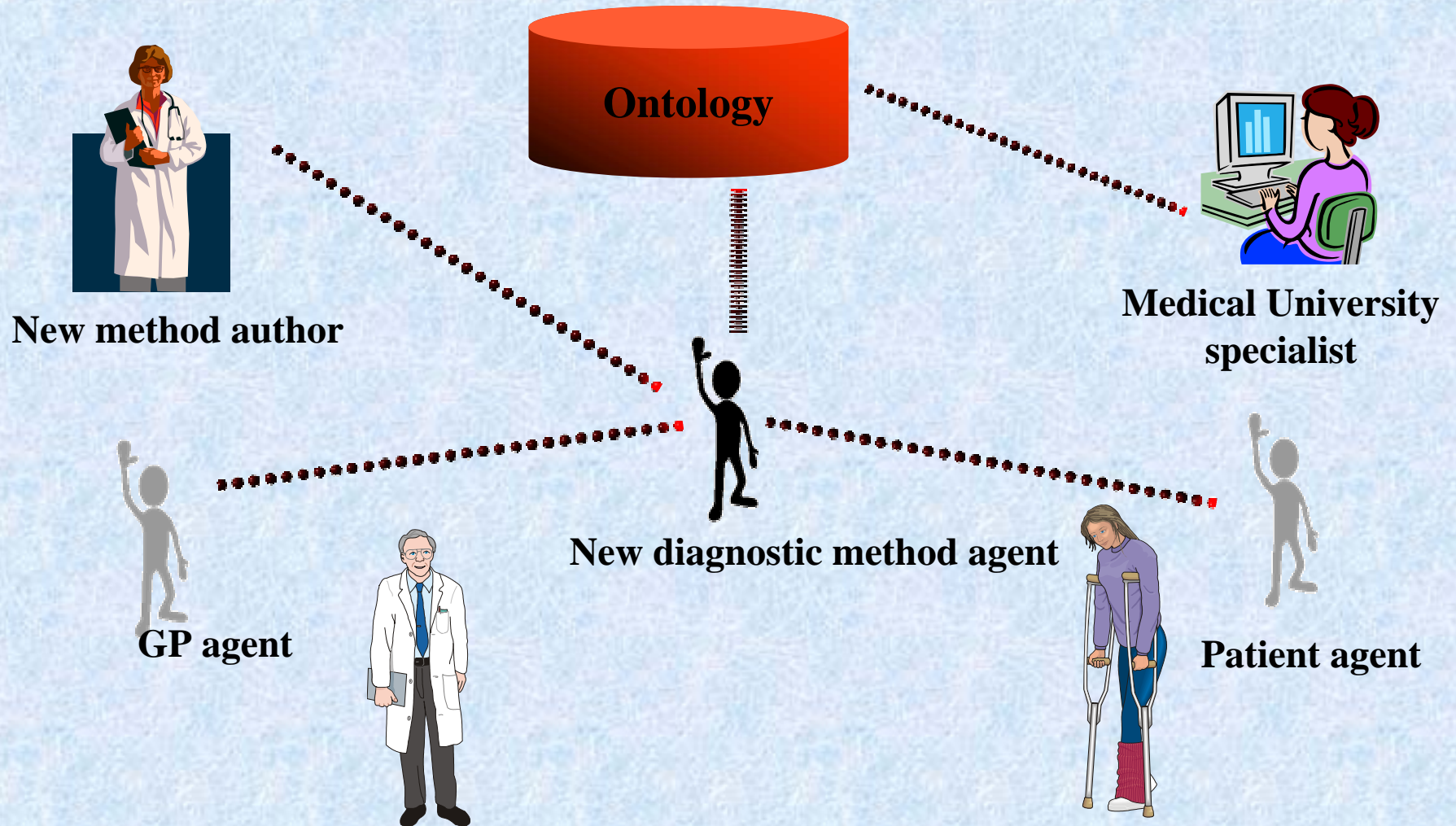


New disease or new seriously ill patient is discovered





New diagnostic device or method





Project idea

At the moment only the model for decision-making support in public healthcare management of the region is developed. The plans are to develop the model to the level of a complete system, which could provide the region with a real management of the public healthcare system. There plans are also to develop such types of multi-agent models in other European countries, which could only be implemented in collaboration with the European partners.



Partner expertise required

- ✓ **Wide experience in the field of medical practice, multi-agent technology, control of complex systems, international medical practice standards.**
- ✓ **We would like to have more information about innovation of medical practice, experience in the field of clinical protocols' use, new ideas about the use of IT in the field of European medical services.**



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Expected results of the system's application

- ✓ increase in the quantity of people on 70 % covered by preventive measures and well-timed revealing of risk factor of sickness
- ✓ reduction of the queues in hospitals by 50%
- ✓ reduction of the number of urgent summons and hospitalizations due to the improvement of prophylactic at the primary level
- ✓ individual approach to each patient
- ✓ simple analysis of current situation and ability to provide the users with the best decisions according to existing information



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