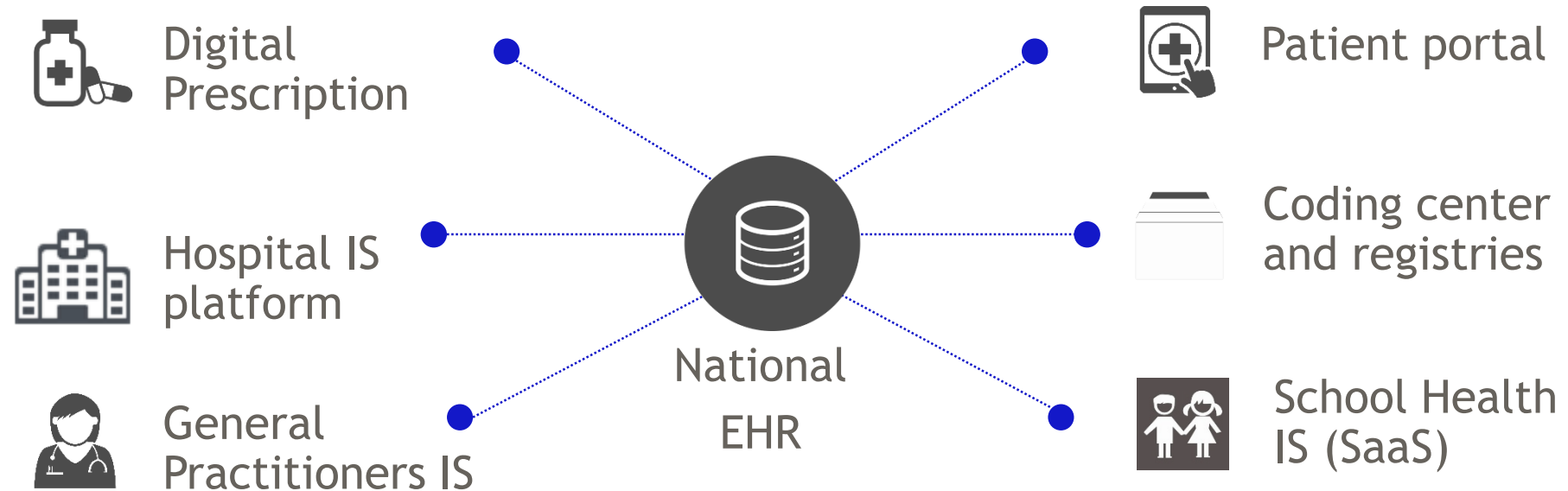


Healthcare innovation

Helmes

A decade of healthcare innovation



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eHealth services in Estonia

Collecting health service reimbursement invoices	Data and statistics
Health insurance information	Cross Border Data Exchange
Digital picture archiving	Medical certificate
EHR services for patient and physician	eAmbulance
Digital registration	Services for dental care
ePrescription	
eConsultation	
Services for Social Insurance Board	

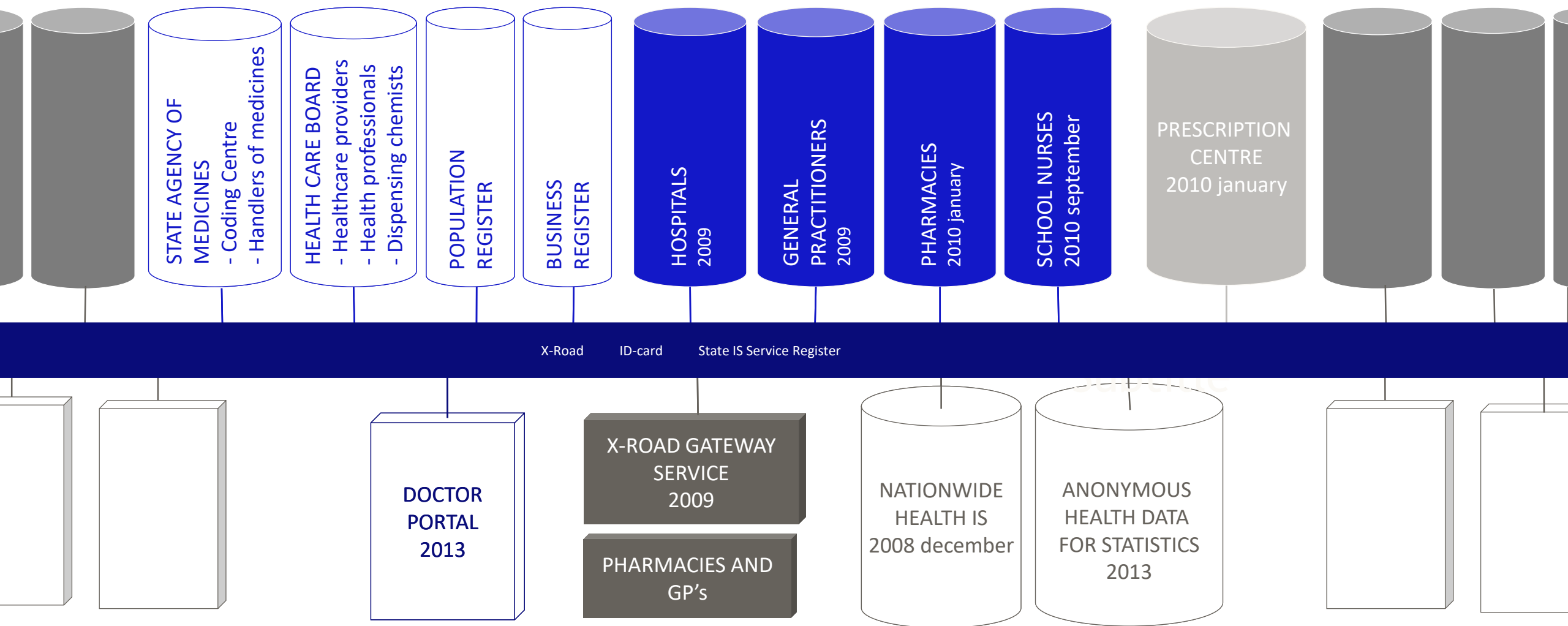
Supporting services
Subservices

Infrastructure services
External services

- **95% of data** by hospitals and family doctors **digital**
- 97% of prescriptions digital
- 100% insurance claims digital - **precise state oversight and planning**
- 97% of patients have countrywide digital record - **exponential demand for new services**
- 60% of limited workability assessments based on HIS documents only



Estonian eHealth architecture



ePrescription

The scope: **Core System Development** and Central Online Interface for doctors and pharmacies

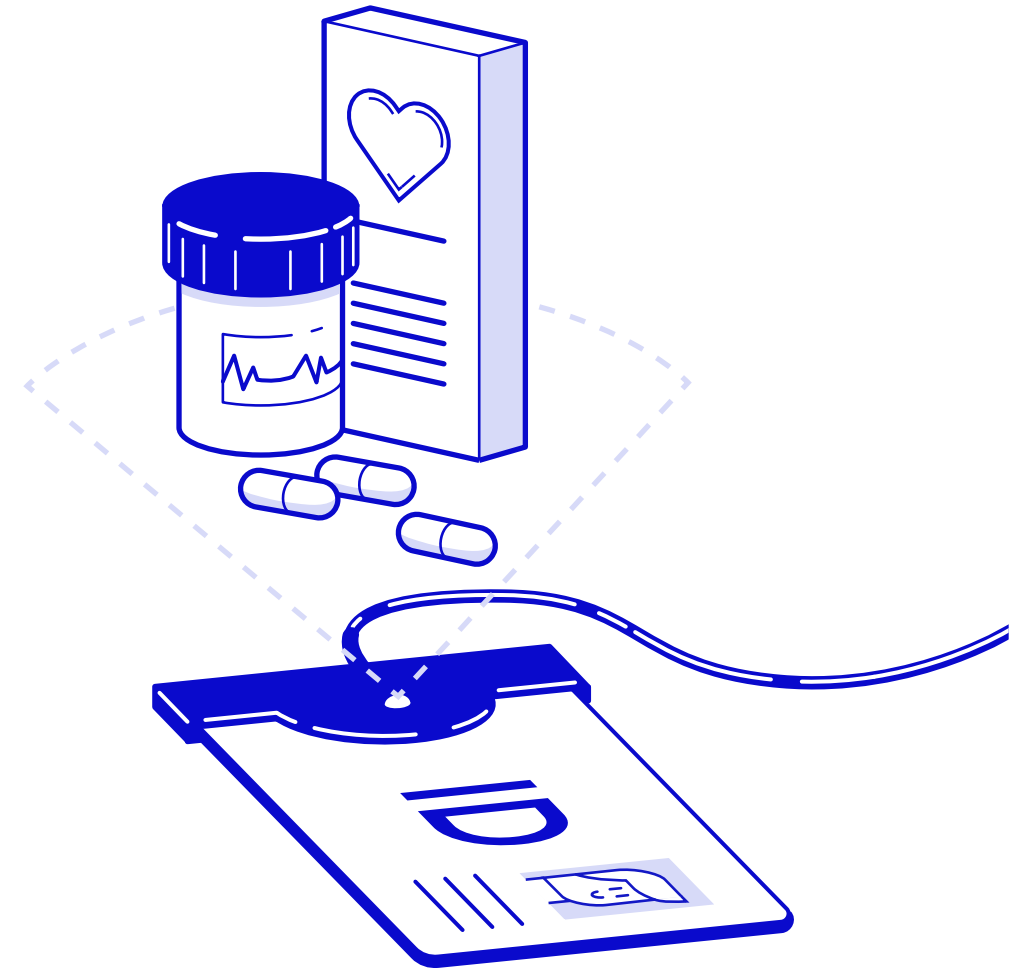
Development budget: ca **300 000 EUR**

Idea to implementation: **3 years**

Results: in 9 months **80%** of prescriptions digital, **97%** of users **highly satisfied**

Quality Innovation Award 2011

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Digital Prescription in Estonia

- Project start in 2007
- Golive in January 2010
- System uptime is 99.9%
- 73% of prescriptions were issued digitally by the end of 1st year (vs 45% assumption)
- Currently of all prescriptions 99% are e-prescriptions
- 95% of patients satisfaction by the end of 2nd year (vs 75% assumed)
- 12 168 432 documents (prescriptions) created in 2017
- 10 593 195 prescriptions sold in 2017
- 867 pharmacies and 1 833 Health Care Providers
- 33 781 doctors/nurses and 4 162 pharmacists

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eSchoolHealth

The scope: **Service design, Core System Development** (SaaS service operated by Helmes)

Development budget: ca **140 000** EUR

Users: **most** of Estonian schools

Benefits for **all** parties:

School doctors and nurses

Parents and young patients

General Practitioners

State



Hospital IS platform

SOA services platform (ready-made components)

Content free process model

Smart Selection Tools (trademark of NEMC)

20+ client systems (RIS, LIS, ... etc)

AVG cost of 1 client system: ca 180 000 eur

AVG dev time per 1 client system: 6-9 month

NEMC team: small agile dedicated team of 4 professionals

Business benefits/effects:

efficient resource usage (ex. 66+% more CT studies)



About

North Estonian Medical Centre (NEMC)

- Tertiary care hospital
- Service area 900 000 citizens
- 1250 beds
- ~4000 employees
- 48 000 inpatients (AVG length of stay 6.2 days)
- AVG ~1250 consultations in outpatient clinics per working day (AVG ca 240 in emergency department every 24h)
- 28128 (NCSP1.6) surgical operations in 21 operating rooms (5717 in day surgery unit)

10+ years of close cooperation



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The challenge

Increase quality and capacity while driving down cost

Aging population forces hospitals to *promote novel approaches to process improvement through technology*. Medical caregivers are under increasing stress of delivering more with the same amount of resource.



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The philosophy

Making clinical impact the central objective

Always looking for data and evidence to create the business case.

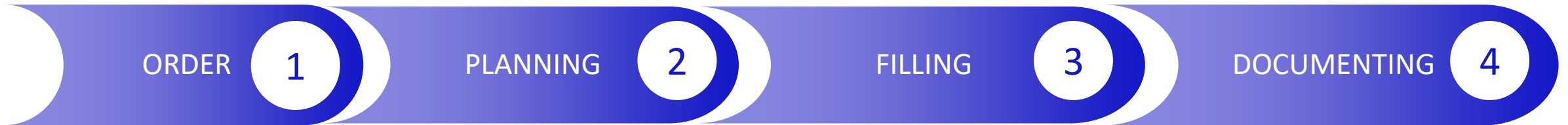
Always looking for ways to improve the workflows by smart automation as opposed to just digitalizing processes as-is.



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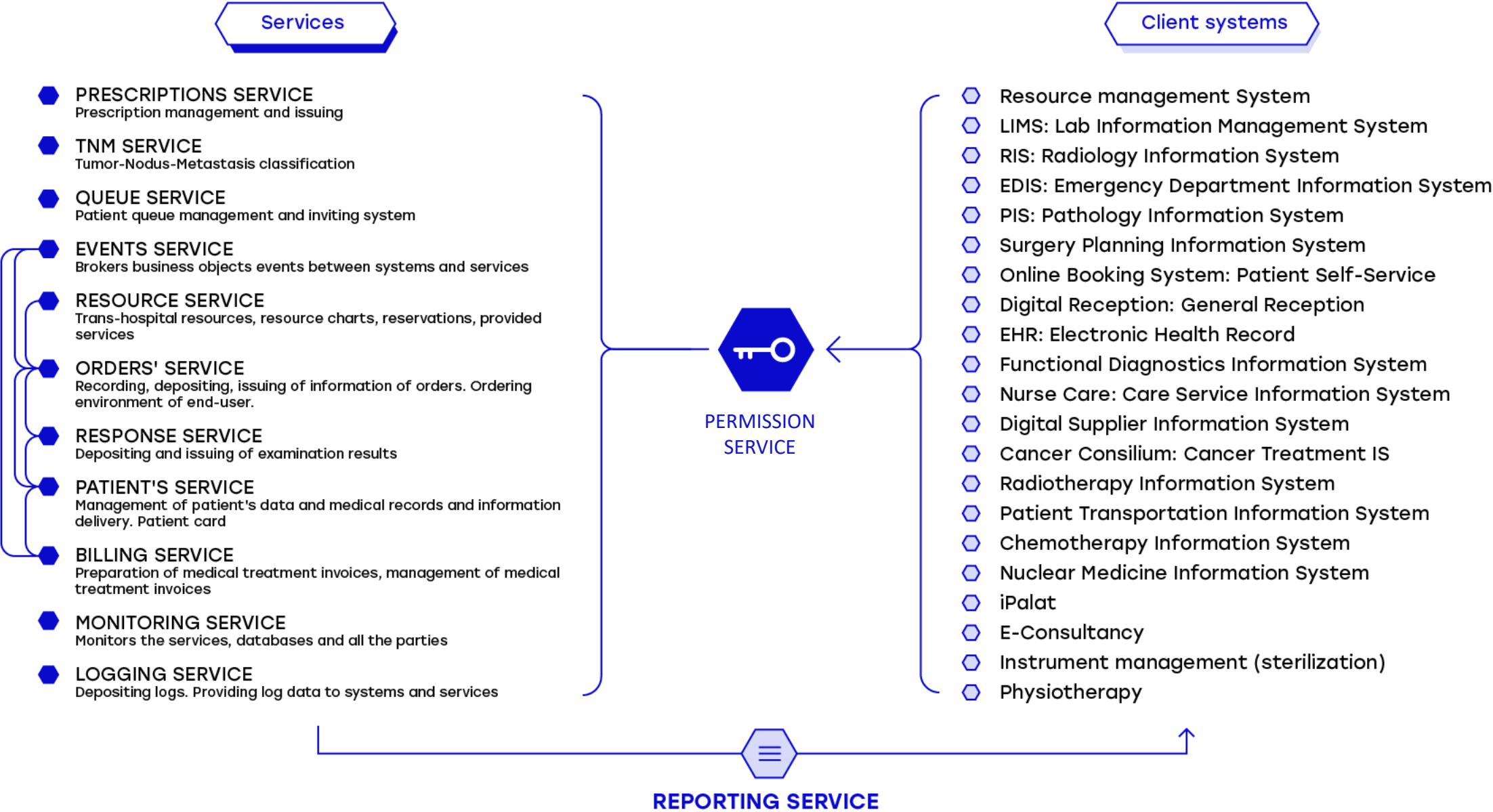
Content free process model

In the core, every hospital workflow follows the exact same process



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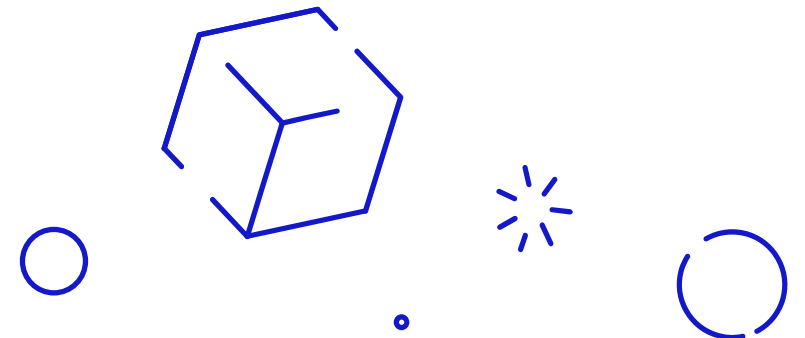
Smart SOA architecture



Benefits of the approach

- Adapting trends is very quick and cost effective
- Ready-made components make building new solutions very fast
- We are able to integrate systems in various levels
- We are independent on the end-user device

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Smart Selection tools

Highlights information relevant to specialty based on treatment guidelines

Today the problem is no longer the lack of data. Decision-making is slowing down because of the need to navigate through growing masses of data in search for the relevant information.

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The impact

Better utilization of resource is clearly evident

	MRT		CT		Radiography		Ultrasonography	
	<i># of studies</i>	<i># of patients</i>	<i># of studies</i>	<i># of patients</i>	<i># of studies</i>	<i># of patients</i>	<i># of studies</i>	<i># of patients</i>
2010	12 330	6 993	241 346	23 236	102 673	81 851	48 659	27 266
2014	14 932	9 024	402 492	32 960	125 979	94 301	54 649	31 886
Growth %	21%	29%	67%	42%	23%	15%	12%	17%

The results achieved on the same resource base as a result of the implementation of Radiology IS



Thank you!

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