Forty years of Korea's Health Insurance
Review & Assessment and Its Future

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Contents

01 Achievements of 40 years of review and assessment

01 Achievements of 40 years of review and assessment

❖ Mission of review and assessment to achieve the goal of health insurance

- Review and assessment is to ensure quality and efficiency of health services provided by national health insurance
- To help the public enjoy quality care at affordable price,
  - ✓ Manage accuracy of review and reimbursement
  - ✓ Manage health care service quality

<Review and assessment>

Sound health expenditure
Service quality management and improvement

<Achieve goal>

Appropriateness of benefit
Quality of benefit

<Value realization>

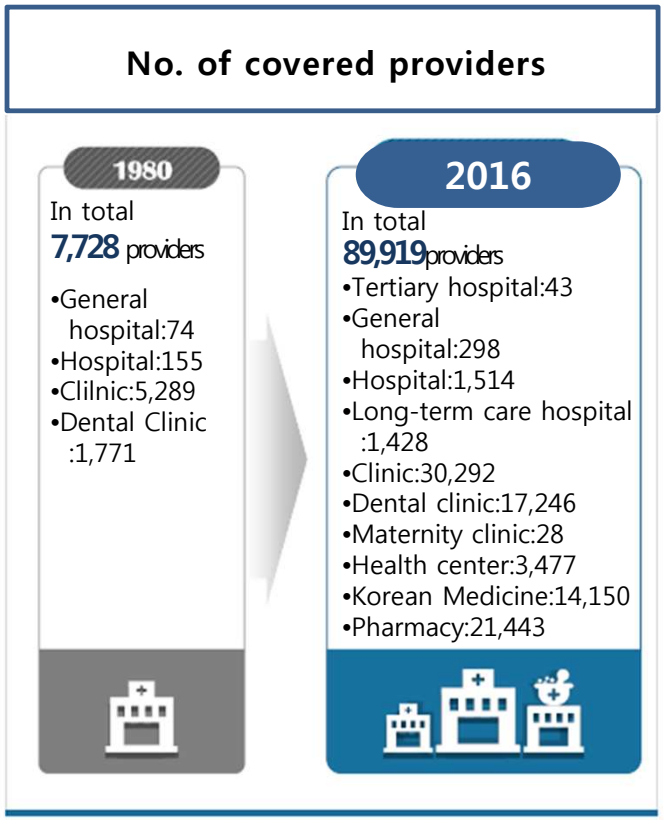
Value realization of health insurance system

Culture of Health and Safety in Healthcare

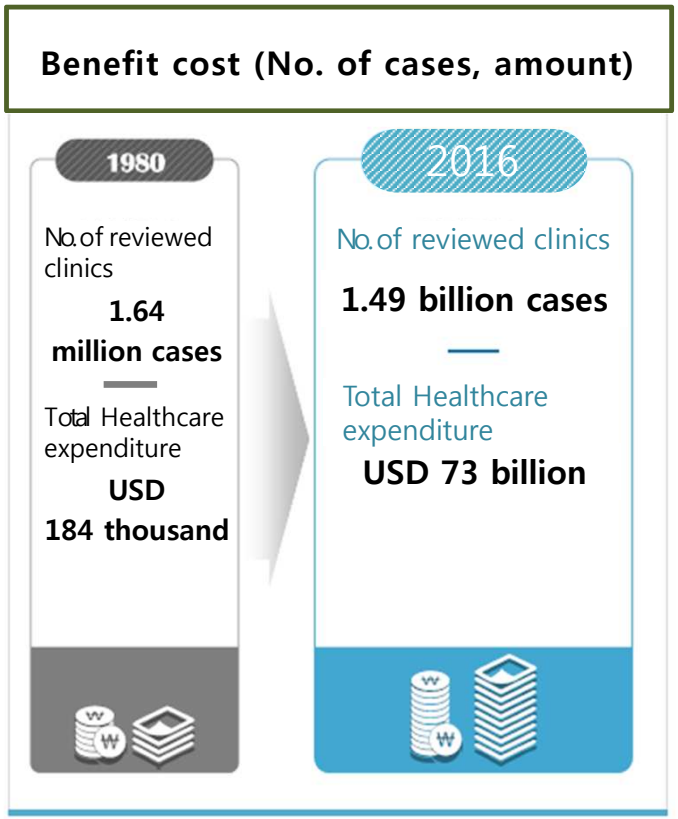
01 Achievements of 40 years of review and assessment

❖ Achieving appropriateness in cost: Achievement of benefit cost review

- **Efficient process of 1.49 billion claims in a year from 89,919 providers (Worth USD 73 billion)**



- No. of providers increased by 11.6 times



- No. of cases increased by 912 times, cost by 400 times

01 Achievements of 40 years of review and assessment

❖ **Achieving appropriateness in cost: making the review process more scientific, efficient, and specialized; autonomy and prevention**

- **Scientific and efficient review based on ICT → Improving accuracy and speed of review**
  - ✓ Efficient review system by adopting e-review and error pre-check system
  - ✓ Improved efficiency in benefit management (Evaluation period was shortened in adoption of new medical technology, medical material, and drugs etc.)
- **Specialization → Improving acceptability of review results**
  - ✓ Setting benefit criteria based on evidence
  - ✓ Greater participation of clinical experts, etc.
- **Autonomy and prevention → Prevent inappropriate treatment by leading voluntary improvement**
  - ✓ Stable operation of Indicator Linkage Management System and Selected Intensive Review
  - ✓ Open review criteria to providers

*Reference; Kim Changyeob, Development method study for Health Insurance Review and Assessment Service, 2017

01 Achievements of 40 years of review and assessment

❖ Achieving appropriateness in cost: Achievement of On-site Investigation

- **Investigate 725 providers annually. 679 providers (93.7%) are found to be at fault. Refund USD 32.3 million of unjust profit, and imposed fine (2015)**

✓ Campaign to prevent improper claims

① Indicator Management System and Voluntary Correction System were combined into "indicator linkage management system"

② Hold hearings about on-site investigations for pharmaceutical groups, upload fraud and improper claim cases on website.

✓ Support on-site investigation, fraud amount calculation and administrative measures

① Efficient selection of providers subject to on-site investigation using the Fraudulent Claim Detection System

② Regular and special on-site investigation (Investigate fraud and improper claims)

③ Strengthen post management of on-site investigation to improve speed and accuracy of administrative measures

✓ Prevent recurrence of fraudulent claims

① Criminal prosecution, list release, administrative measures, enforcement check

< On-site Investigation Results > (Unit: no. of providers, %, USD 100 thousand)

Year		Providers found to be at falut					Rate of providers at fault	Amount of unjust profit
		Total	Suspension	Fine	Refund of unjust profit	Under measures		
2013	770	660	235	137	237	49	85.7	130
2014	679	630	99	87	124	317	92.8	192
2015	725	679	10	1	3	664	93.7	323

※Details may be subject to change throughout the dispute.

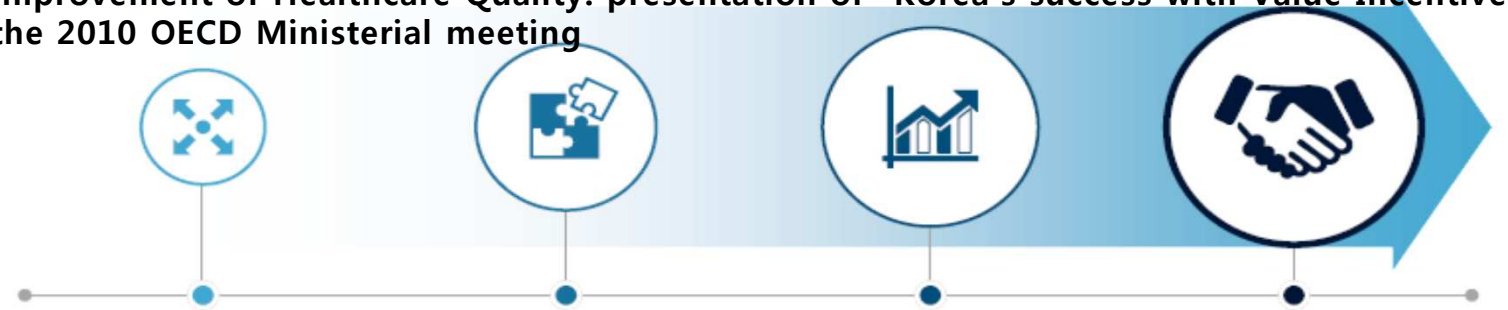
*Source; HIRA, White Paper of Health Insurance Review and Assessment, 2015

01 Achievements of 40 years of review and assessment

❖ Achieving appropriateness in quality: Achievement in benefit quality assessment

- **Development of Quality Assessment, including assessment area expansion**

✓ **Improvement of Healthcare Quality: presentation of "Korea's success with Value Incentive Program " at the 2010 OECD Ministerial meeting**



*Source; HIRA, Benefit Quality Assessment, 2016

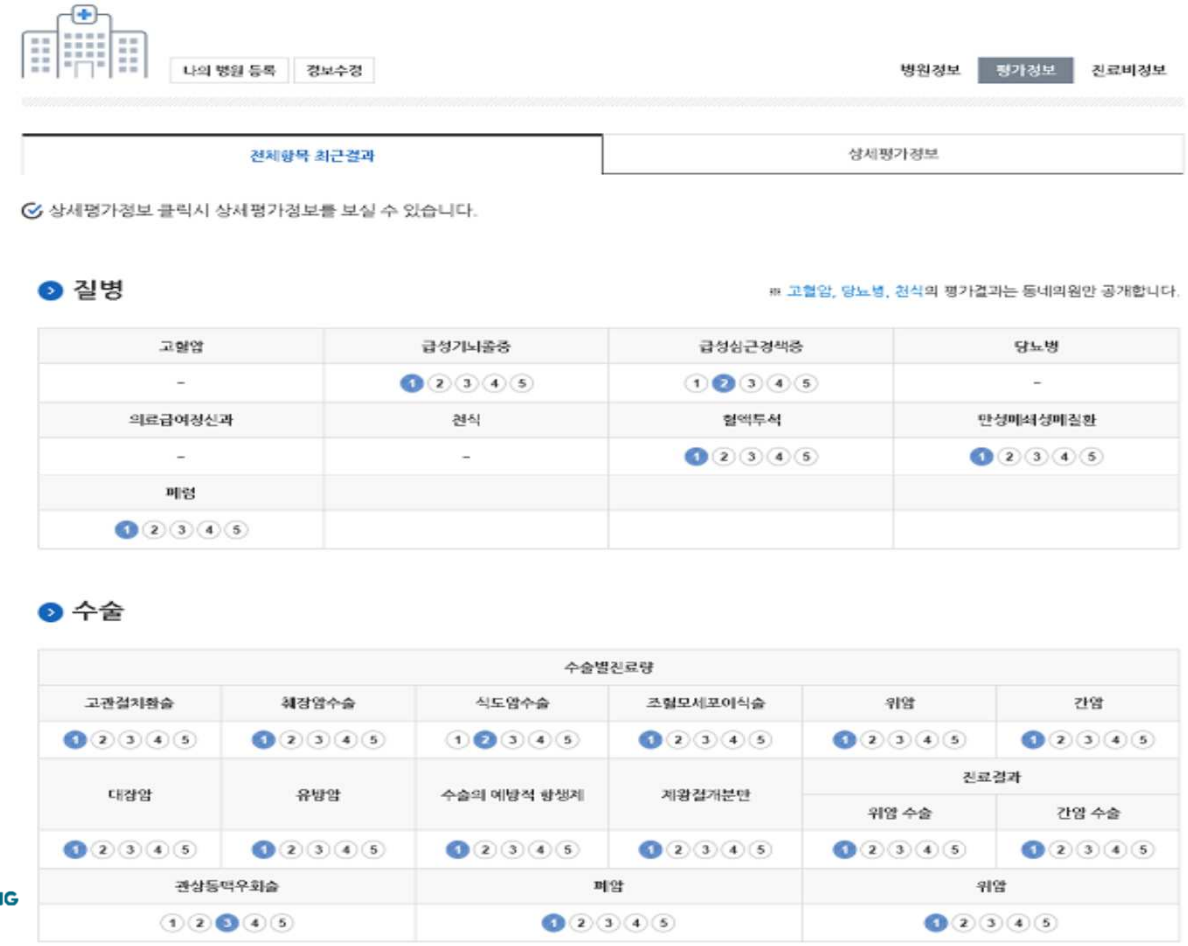
2000~2006	2007~2010	2011~2015	2016~
Assessment system establishment	**Clinical quality assessment**	**Chronic disease, serious disease assessment**	**Patient-centered, Patient safety assessment**
• Building grounds for assessment • Assessment data provision (Since 2001) • Release assessment result (Since 2005)	• Assessment area expansion • Usage assessment → Clinical quality assessment • P4P adoption (2007. July ~)	• Continued to expand assessment areas (cancer, chronic disease, etc.) • Strengthened quality improvement • P4P expansion	• Patient-centered areas (patient experience) (satisfaction level of service, treatment process, hospital environment, etc.) • Patient safety (Use of antibiotics, mortality rate, etc.)

※ Assessment in 2017; 10 areas, 32 items. Assessment of 55 specific items

01 Achievements of 40 years of review and assessment

❖ Achieving appropriateness in quality : Achievement in benefit quality assessment

▪ Assessment outcome release for the public; Right to know and right to choose



나의 병원 등록 | 정보수정

병원정보 | 평가정보 | 진료비정보

전체항목 최근결과 | 상세평가정보

상세평가정보 클릭시 상세평가정보를 보실 수 있습니다.

질병

※ 고혈압, 당뇨병, 천식의 평가결과는 동네의원만 공개합니다.

고혈압	급성기뇌졸중	급성심근경색증	당뇨병
-	1 2 3 4 5	1 2 3 4 5	-
의료급여정신과	천식	혈액투석	만성폐쇄성폐질환
-	-	1 2 3 4 5	1 2 3 4 5
폐렴			
1 2 3 4 5			

수술

수술별진료량					
고관절치환술	췌장암수술	식도암수술	조혈모세포이식술	위암	간암
1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
대장암	유방암	수술의 예방적 항생제	제왕절개분만	진료결과	
				위암 수술	간암 수술
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관상동맥우회술		폐암		위암	
1 2 3 4 5		1 2 3 4 5		1 2 3 4 5	

Choosing a provider in the dark

Assessment Result available

Consumer empowerment

Informed Choice
- Choose provider based on information

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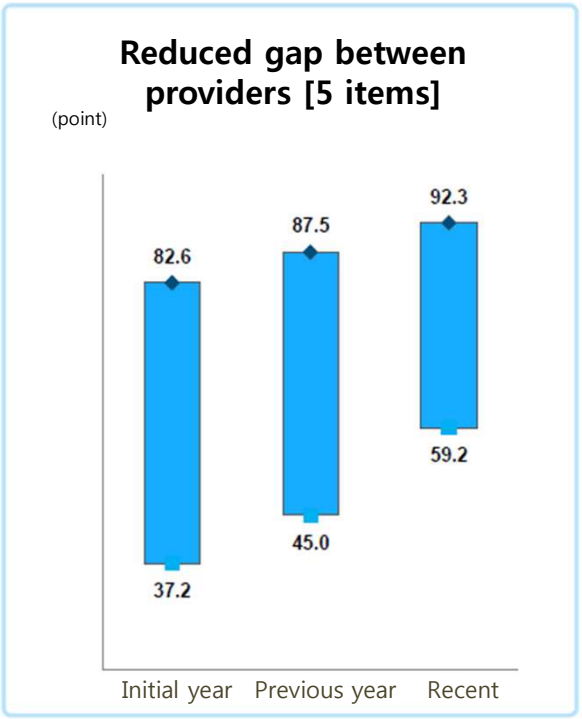
01 Achievements of 40 years of review and assessment

❖ Achieving appropriateness in quality : Achievement in benefit quality assessment

- **Quality information provision, assessment result release, outcome of P4P (Feedback, Public reporting, P4P)**



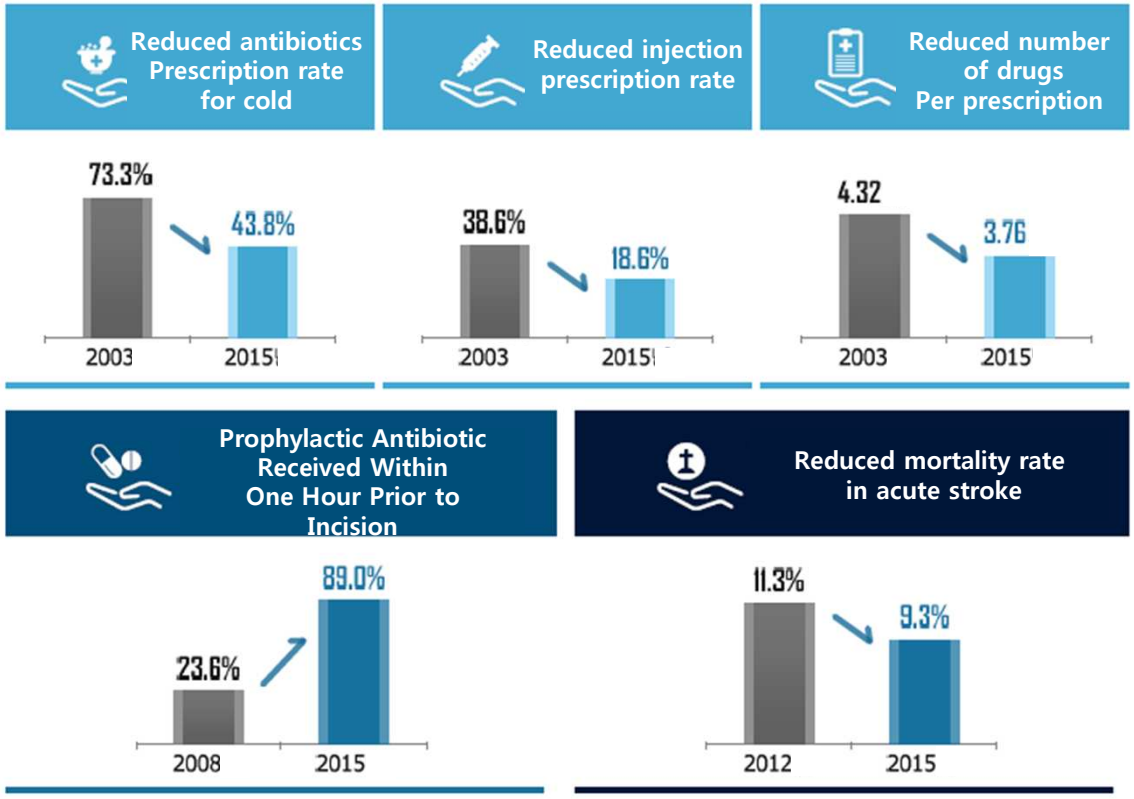
✓ **Assessment item**

: AMI, CABG, acute stroke, use of prophylactic antibiotics for surgery, colorectal cancer

✓ **Content**

: Calculate average score by standardizing composite score of each item

: Compare score of initial year, previous year, and recent outcome



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*Source; HIRA, Benefit Quality Assessment, 2017

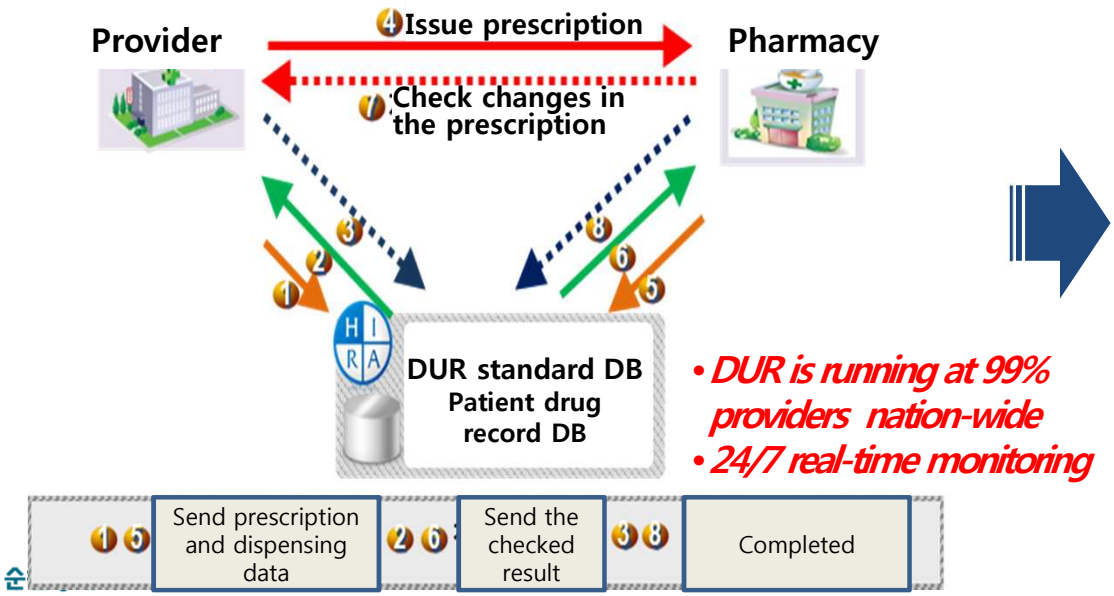
01 Achievements of 40 years of review and assessment

❖ **Contribution to national healthcare system: DUR system operation**

Drug Utilization Review

- **Realtime info provision about drug safety (therapeutic duplication , age or pregnancy precaution)**
  (Check unsafe use of drug at the stage of prescription and dispensing)

"Workflow"



- *DUR is running at 99% providers nation-wide*
- *24/7 real-time monitoring*

<Drug safety improvement outcome>

- Duplicated prescription rate between prescriptions 0.9746‰ → 0.7944‰ (statistically significant reduction (Kim Dongsuk, 2015)
- Admission occurrence, frequency, and cost reduction when benzodiazepine and enzyme inhibitor are prescribed together (Kim Dongsu,, 2015)
- Contributed to prevention of blood donation from banned drug takers for safer blood transfusion (HIRA webzine Health Narae, 2017)
- Realtime data provision of MERS patient and contact, visitors from the Middle East to stop MERS spread (2015)
- HIRA-MSIP, established Big Data-based early detection system (Medical times, 2016)

"Won 2016 'the 5th Korea knowledge contest, Presidential prize'"

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*Source; HIRA, Data status and utilization, 2015

01 Achievements of 40 years of review and assessment

❖ Contribution to national healthcare system: Facilitate and support patient-centered care

▪ Adoption of patient experience assessment

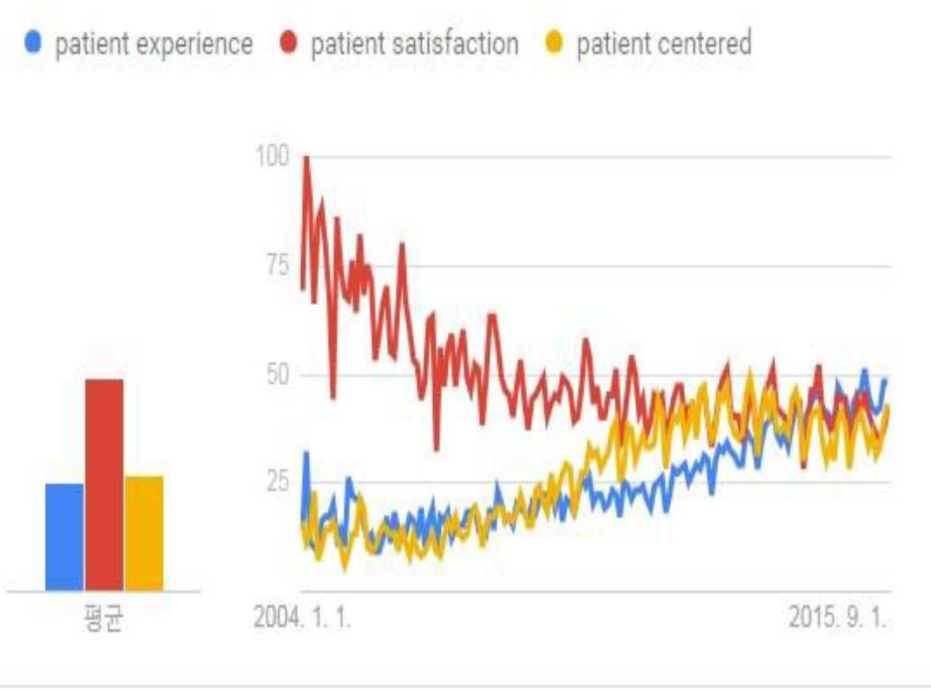
Background

- Since 2000, Patient Centeredness became important in health care system
- Improving patients' experience contributes to clinical effectiveness and patient safety
- Respond to social needs for better care
  - ✓ 2012 OECD health quality report, Audit and National Assembly, etc.

Assessment plan

Target	• Tertiary and general hospitals with over 500 beds - As of March 2017, permitted(reported) beds(scheduled to be expanded)
Period	• From mid July 2017, call survey (expected to take 3~4 months)
Method	• Call survey using structured questionnaire (entrust to dedicated agency)

Level of attention change; Patient satisfaction vs Patient-centered, patient centeredness/patient experience



All over the world Jan. 2004 ~ Sep. 2015

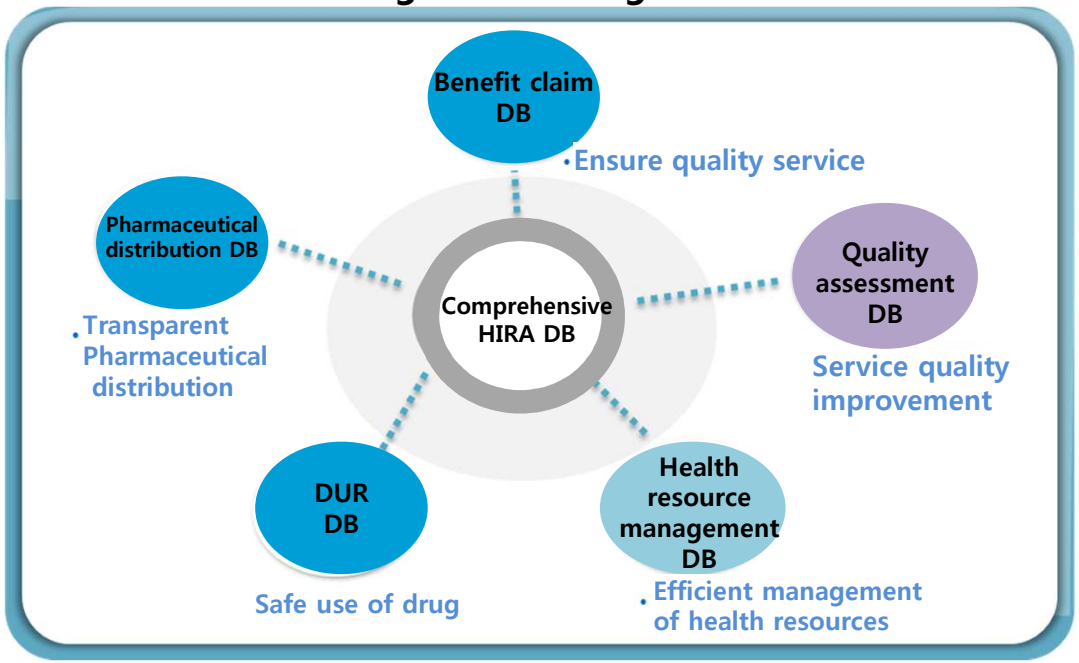
*Source; HIRA, Understanding Patient-centered assessment, 2017 / Bae Seongyun, Challenges in patient experience assessment system, 2016

01 Achievements of 40 years of review and assessment

❖ **Contribution to national healthcare system; Production and utilization system establishment of Healthcare Big Data**

- **World-class information system, Big Data-based statistics, evidence-based policy development, policy monitoring and performance analysis, refund**

<Building HIRA's integrated DB>



<Health insurance Big Data>

- Easy to standardize as a basic data of all Koreans and all providers
- Claim data is established based on FFS, and includes detailed treatment items including prescription drugs
- Collect general information of rare disease, complications, adverse effects, and rare services
- Use actual healthcare environment and system, which allows observation and study based on current situation and trend
- As e-data is already collected and established, data collection and establishment does not take much time and cost

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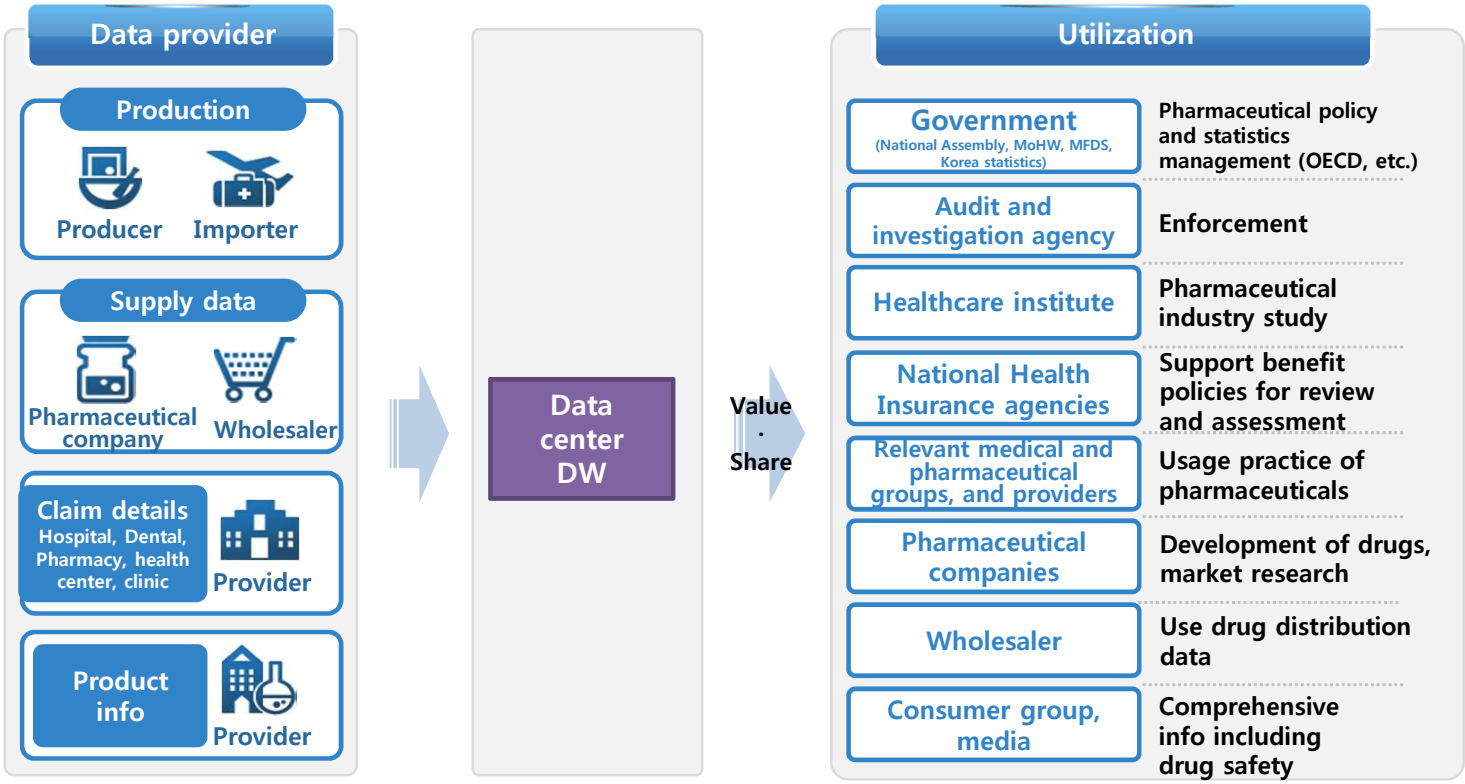
*Source; HIRA, Data status and utilization, 2015

01 Achievements of 40 years of review and assessment

❖ Contribution to national healthcare system; Establishment and utilization of the Korea Pharmaceutical Information Service

- **Pharmaceutical distribution data management: fair and transparent drug distribution environment by standardization and improvement of process**

"Workflow"

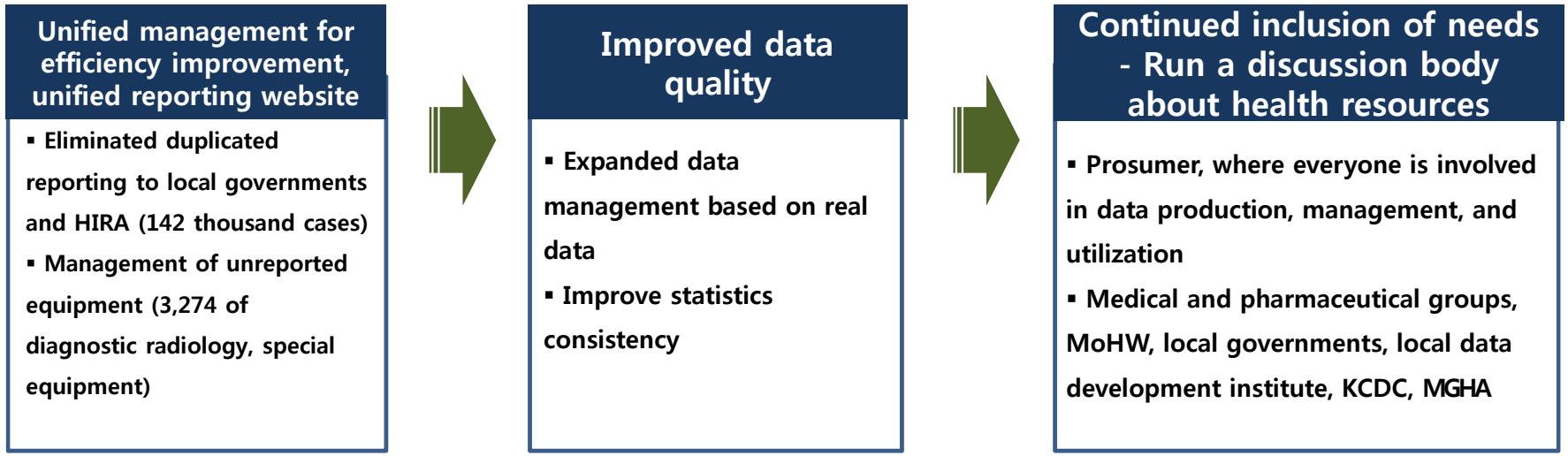


*Source; HIRA, Data status and utilization, 2015

01 Achievements of 40 years of review and assessment

❖ Contribution to national healthcare system; Unification of healthcare resource management

- Opening and closing of providers should be reported to both local government and HIRA. The dual registration system caused inconveniences and inefficiency
- 「Unified healthcare resource reporting system」 was built to prevent duplicated reporting (to HIRA and local government) and social waste and data discrepancy



*Source; Lee Soyeong, 4th industrial revolution, health quality improvement strategy, 2017

02 Challenges of review and assessment

03 Challenges of review and assessment

❖ Responsible for an axis of national health insurance, accumulated challenges in policy management and operation

- **Specialization and subdivision of medical services, leading to increased no. of item – Management of fee schedule**

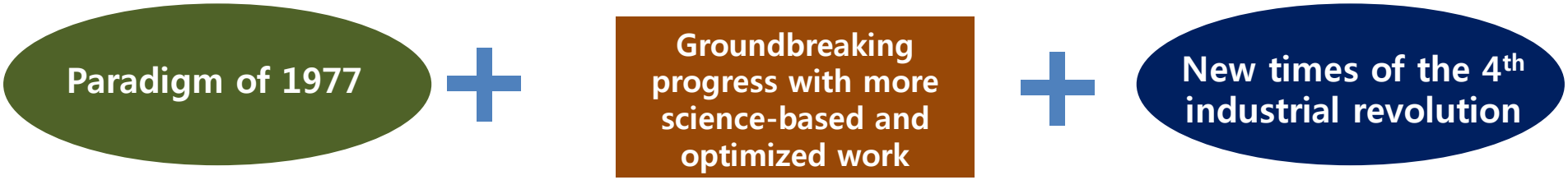
  - No. of treatment 9,219 items in 5 areas (2017), 113,020 items in 8 areas, medical material 26,479 items in 2016, drugs 17,115 items (2015)

- **Continued volume increase in service sue(1.45 billion review cases in 2015), technology development leading to heightened intensity in medicine, development of new medical technology**

  - Limitations in responding to the explosion in claims review workload with ICT system-based review optimization alone

- **Reward is focused on invested resources – Profit more when the service volume increases, no connection with quality improvement**
- **Connecting services between providers is important, but that perspective lacks**
- **Due to fast development of new medical technology, the gap between the scene and policy is widened**

⇒ Limitations to optimizing the system and improving the quality of healthcare due to separate management of expenditure and quality



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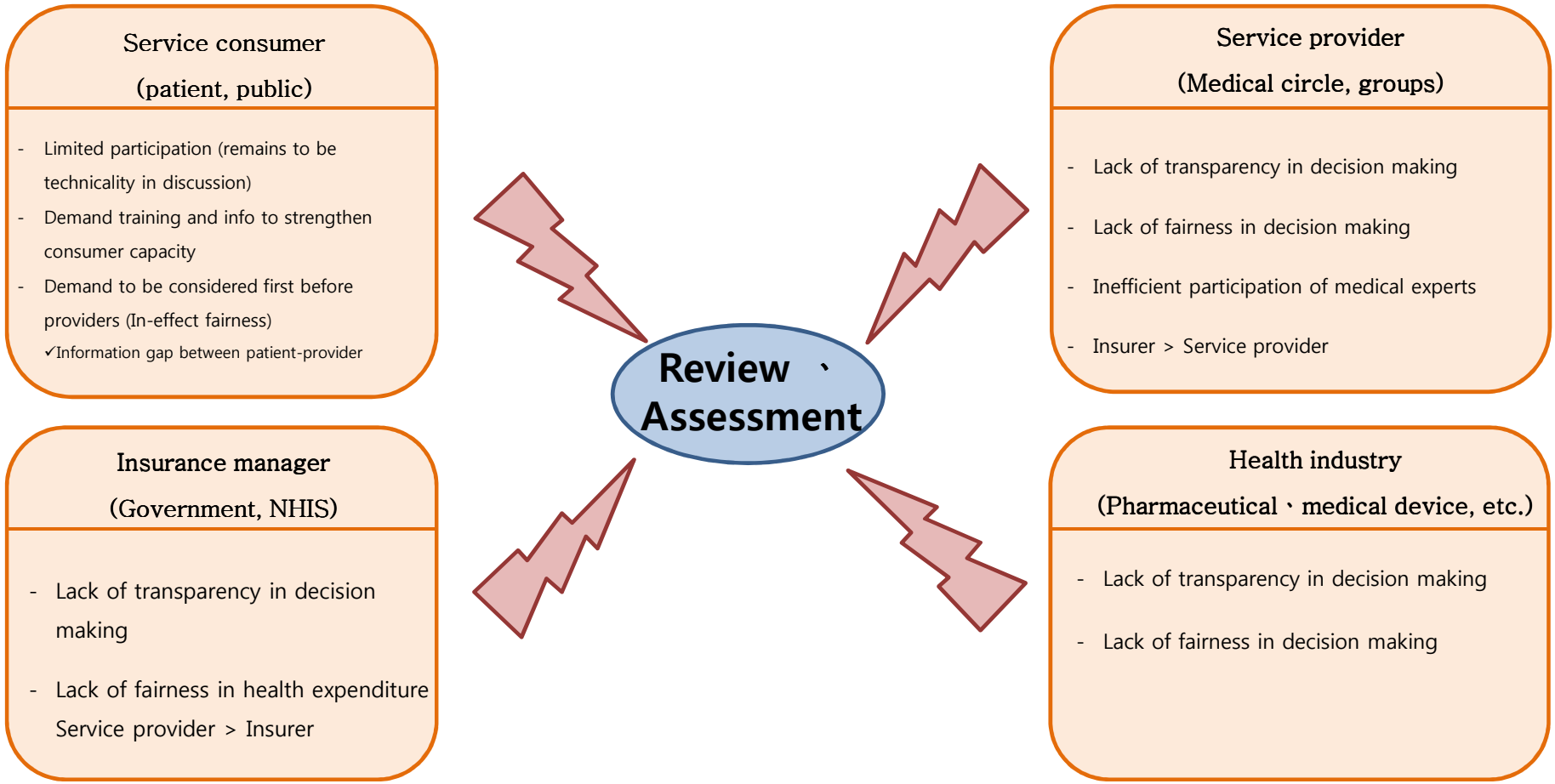
*Source; Oh Juyeon, Future paradigm for value-based review and assessment, 2017

03 Challenges of review and assessment

❖ Critical thinking by outside stakeholders; challenges in transparency and fairness



*Reference; Kim Changyeob, Development method study for Health Insurance Review and Assessment Service, 2017

03 Forecast of environmental change in review and assessment

02 Forecast of environmental change in review and assessment

❖ The fourth Industrial revolution (AI, Big Data); Forecasting changes in health services and review and assessment

The fourth Industrial revolution (AI, Big Data)

↓

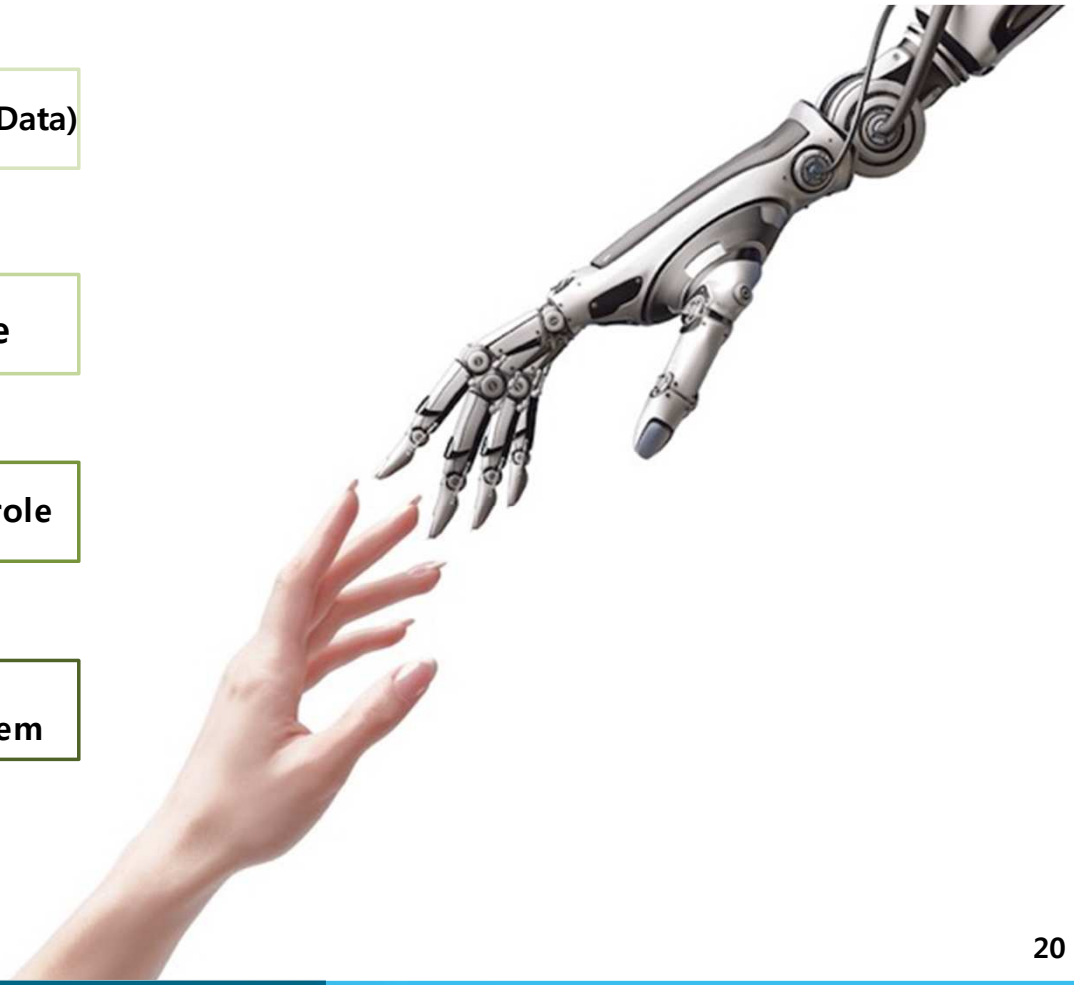
Innovative change in healthcare

↓

Changes in providers' function and role

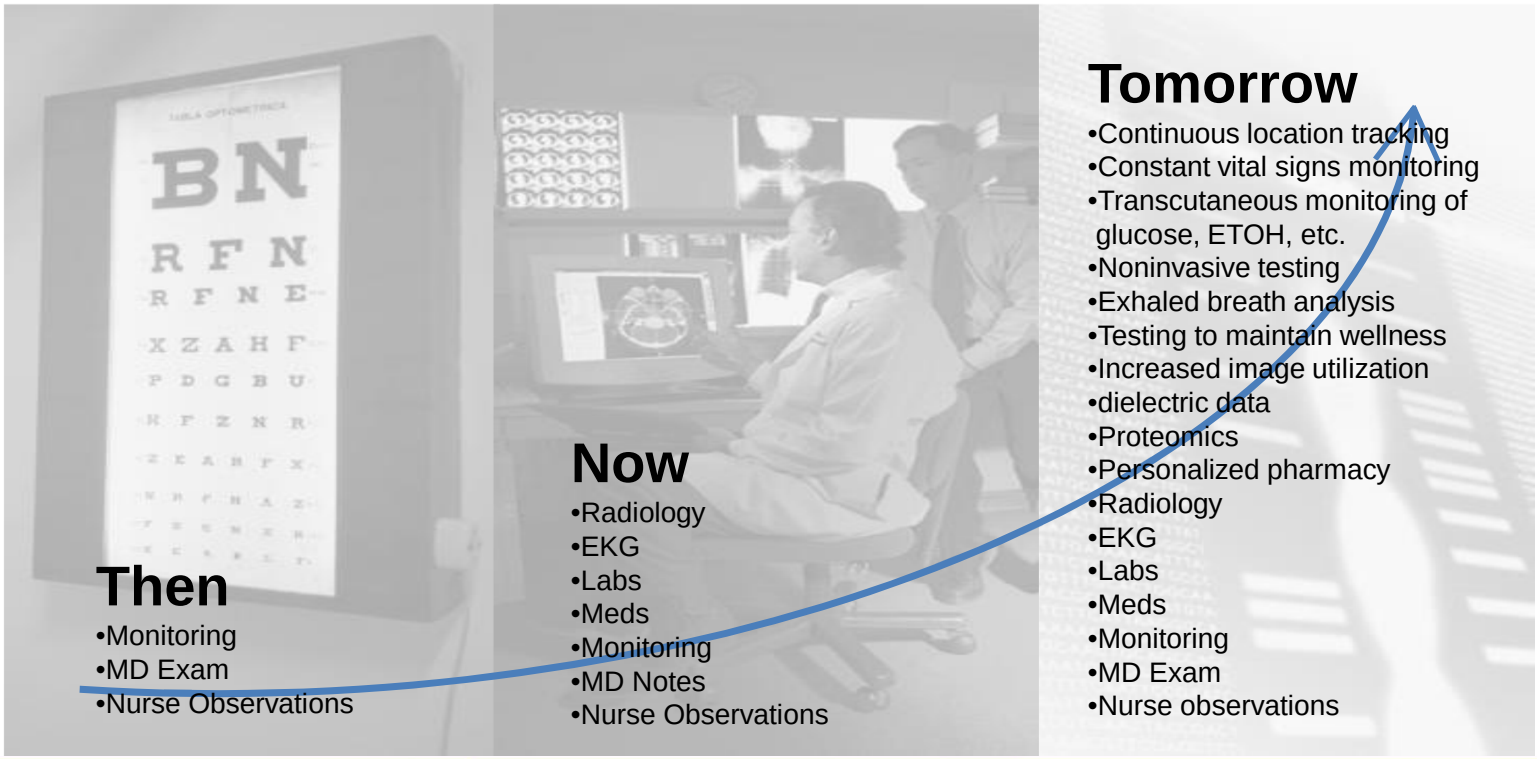
↓

Changes in benefit policy, and
review and assessment service system



02 Forecast of environmental change in review and assessment

❖ **The fourth Industrial revolution (AI, Big Data); breakthroughs in medicine related data production**



*Source; Lee Eon, AI and medicine, and doctors, 2017

02 Forecast of environmental change in review and assessment

❖ **The fourth Industrial revolution (AI, Big Data); How AI will innovate future medicine?**

- **Use of AI in medicine**
  - ✓ Complicated data analysis and recommendations
  - ✓ Analysis and decode of diagnostic radiolog and pathology data
  - ✓ Monitoring and prediction of sequence data
- **New issues**
  - ✓ Can doctors be replaced
  - ✓ Who will be held accountable
  - ✓ Needs and difficulties in evidence production

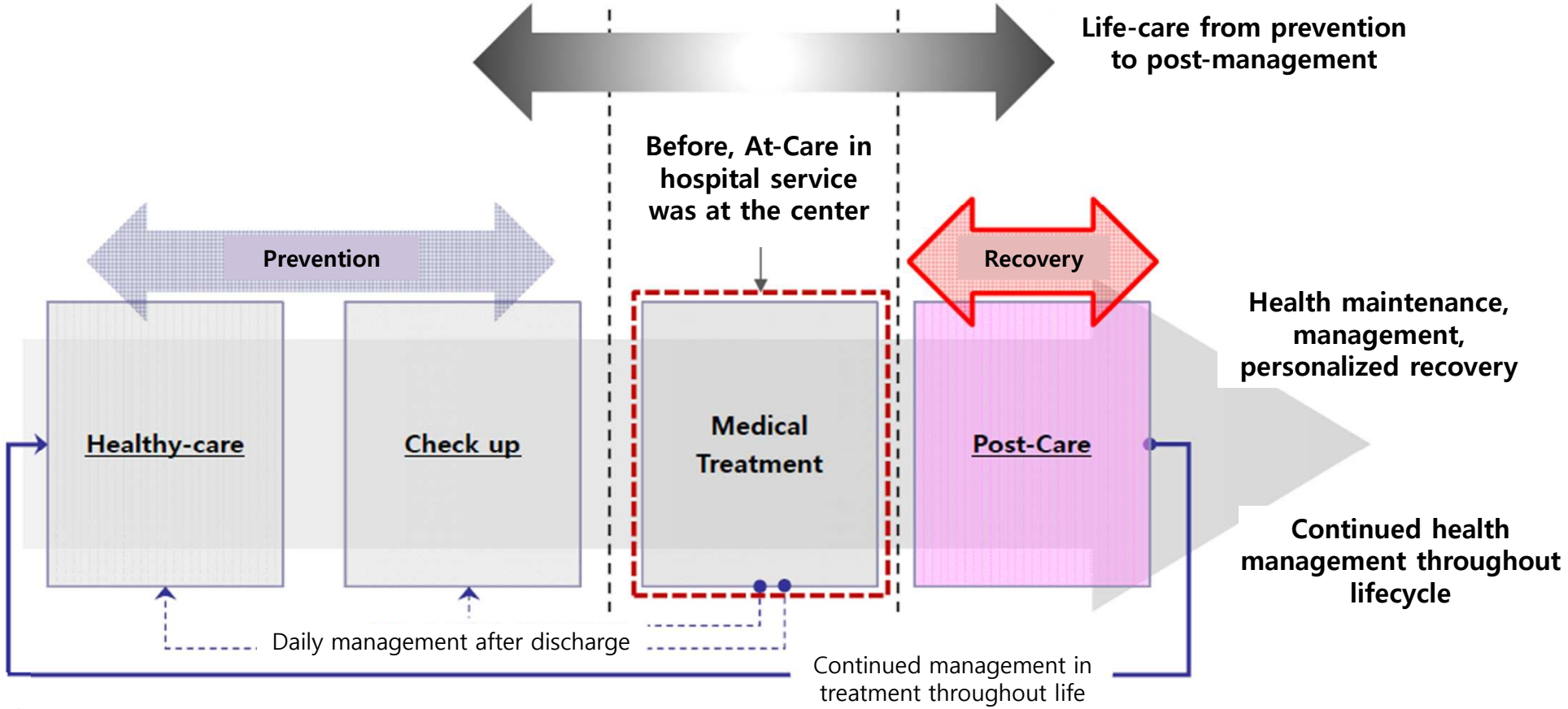
<Battleground of AI-guided Medicine; Diagnostic medicine>

- ➢ Diagnostic medicine: only reading data without interacting with patients in areas such as radiology, pathology, nuclear medicine, etc.
- ➢ 『Diagnostic medicine』 is the area that has most relevance to the state-of-the art medical device industry, nearing globalization and monopolization based on AI and Big Data.

*Source; Choi Yunseob, How will AI innovate future healthcare?

02 Forecast of environmental change in review and assessment

❖ **Healthcare value chain expansion; Changes in the function and role of providers**

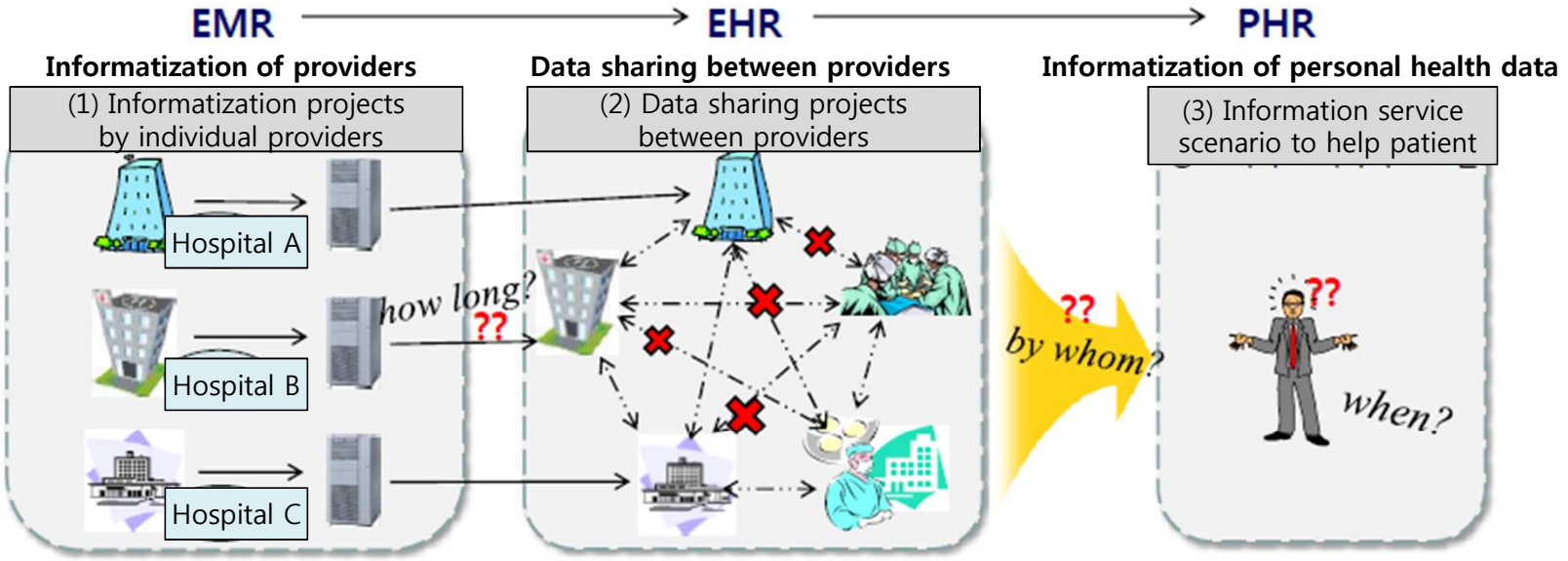


*Source; Lee Sanggyu, Understanding of strategic business, 2017

02 Forecast of environmental change in review and assessment

❖ Innovation in medicine; Changes in the function and role of providers

▪ (Present) Provider-centered perspective



- Information integration **limited to hospitals**
- Competition and dispute between relevant agencies
- Disputes caused by discrepancy in investor and beneficiary
- (Overall hospital information system) **Excessive standardization attempt**
  -> Impossible to standardize
  -> **At a standstill for 15 years**

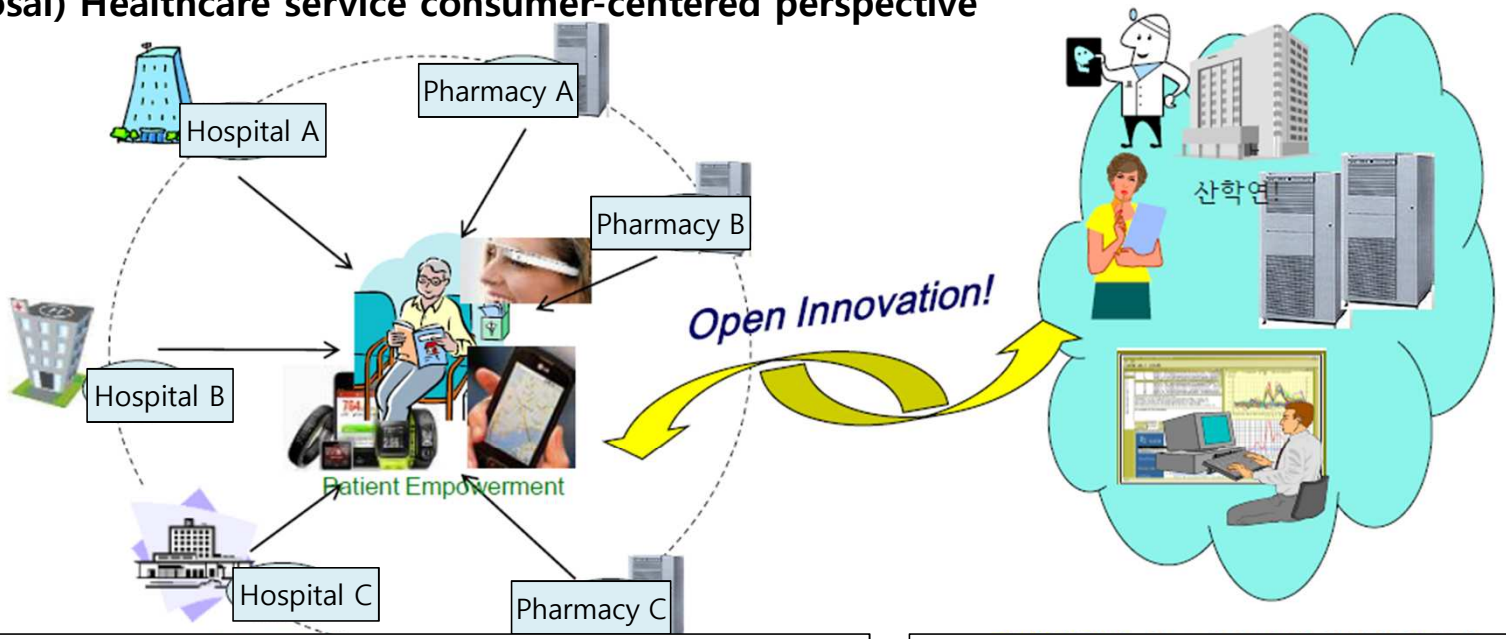
- **Closed service**
  - Service provider is limited to be health service providers
- **Passive health service consumer**

* Source; Kim Juhan, AI and future of medicine, 2016

02 Forecast of environmental change in review and assessment

❖ Innovation in medicine; Changes in the function and role of providers

▪ (Proposal) Healthcare service consumer-centered perspective



- Information integration focused on service consumer
- Information integration based on **minimal standard** (only patient info)
- **Immediate benefit** to prevent duplicated prescription, duplicated test, and medical error.
- **Public's HQ improvement** -> **Proactive participation**
  PHR + Data sharing between consumer and organization
  -> Facilitate information integration between health organizations with short period and low cost

- **Open revolution**: Medicine-ICT convergence, facilitate new industry
- New industry of medical consumer helper
- Pharmaceutical data/logistics service
- Reading medicine, high-tech medical device, global network
- AI health management error prevention system
- Personal heredity info interpretation service

* Source; Kim Juhan, AI and future of medicine 2016

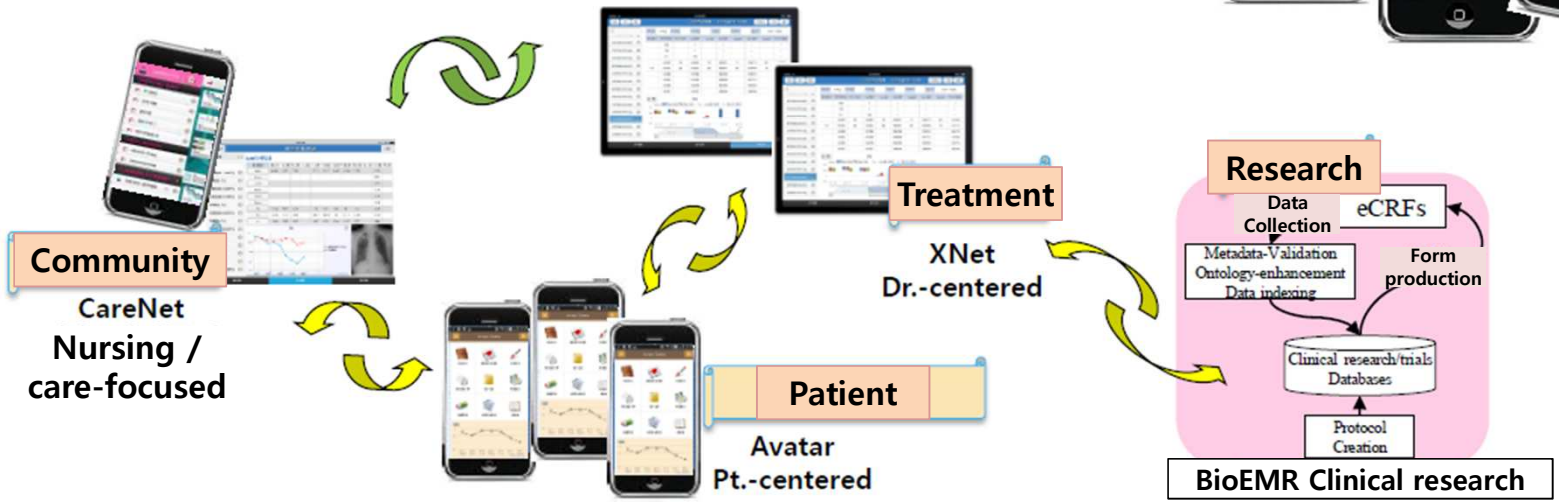
02 Forecast of environmental change in review and assessment

❖ **Innovation in medicine; Changes in the function and role of providers**

- **Consumer-driven smart medicine**

Health Avatar (Relevant research, Ministry of Science, ICT, and Future Planning NCRC (2010~2017))

PHR + Genome + LifeLog



* Source; Kim Juhan, AI and future of medicine, 2016

04 Future tasks

04 Future tasks : Responding to current challenges

❖ **Looking for solutions and alternatives**

Despite to continued efforts for change and improvement in review and assessment

There are endless challenges and issues that are complex and difficult to deal with

→ "Back to basics" to identify fundamental problems and reasons and search for solutions

04 Future tasks : Responding to current challenges

❖ Rebuilding concepts and principles of review and assessment

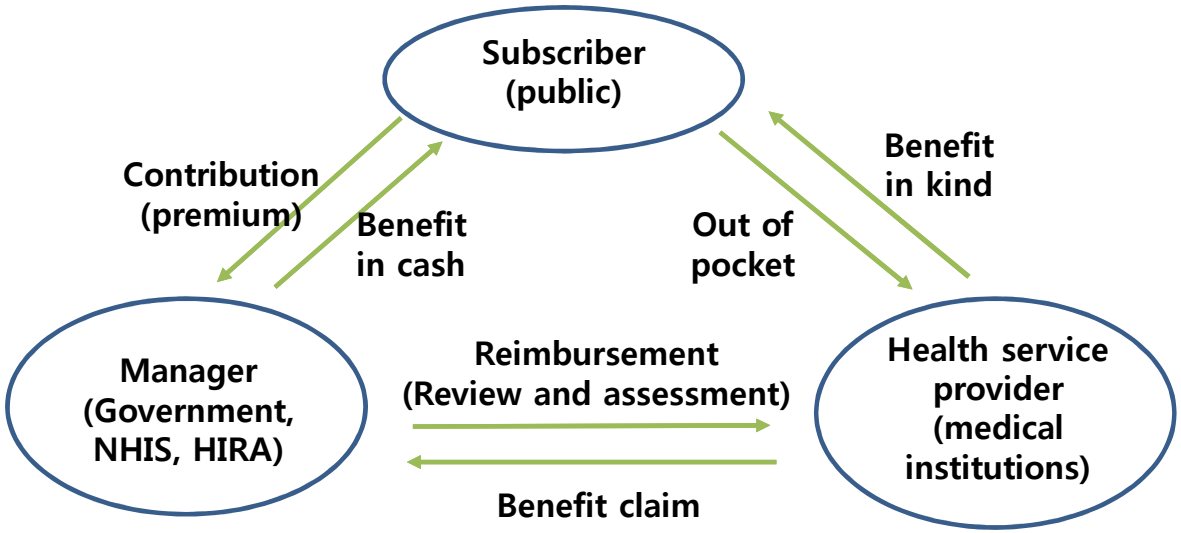
▪ Concept and function of health insurance system

✓ **Function of health insurance system**

- To protect the public from health and financial risk

→ To improve health level of individuals and the society, and to protect individuals and households financially

✓ **Role of providers in health security system**



" Healthcare Providers"

Indispensable group that makes it possible to provide benefits-in-kind (medical services) in the health system

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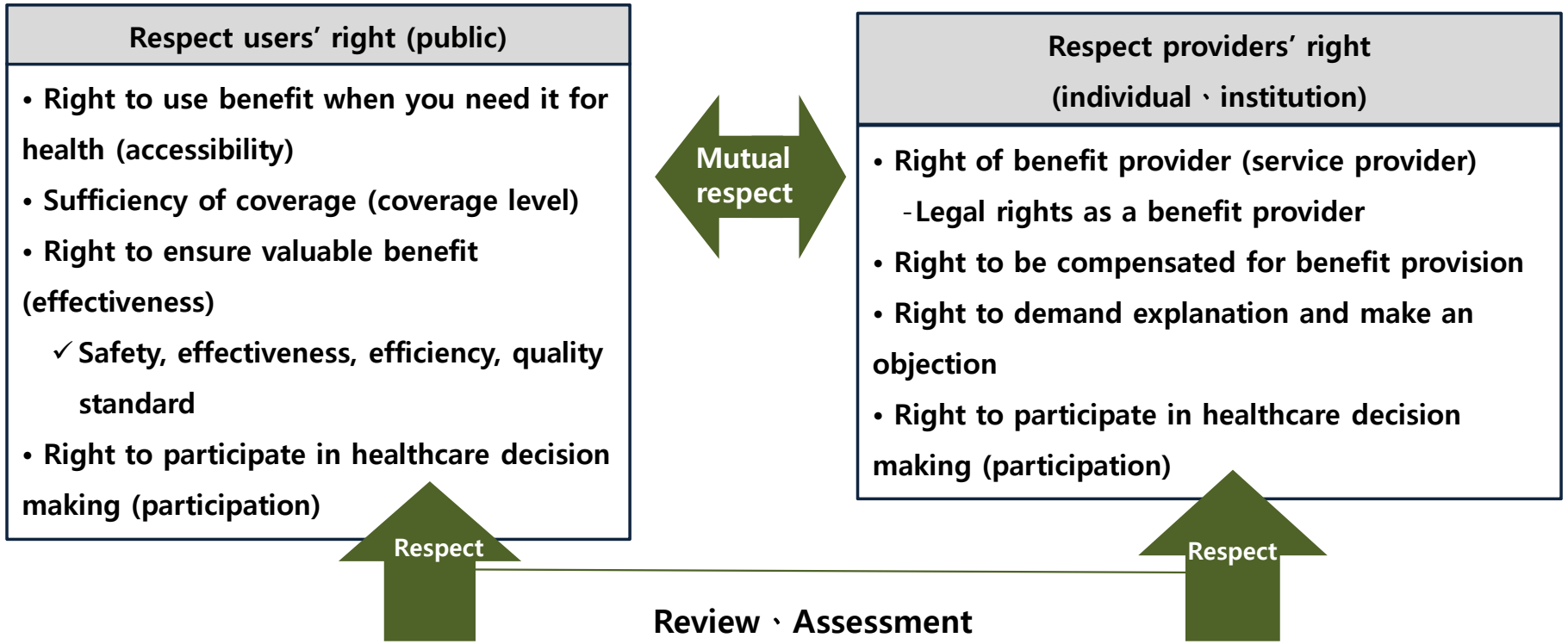
*Reference; Kim Changyeob, Theory of health insurance, 2009

04 Future tasks : Responding to current challenges

❖ Rebuilding concepts and principles of review and assessment

'Health insurance system was originated in order to protect and improve human rights and right to health'

- **Review and assessment service; starts from respecting subscriber (public) and provider (hospital).**

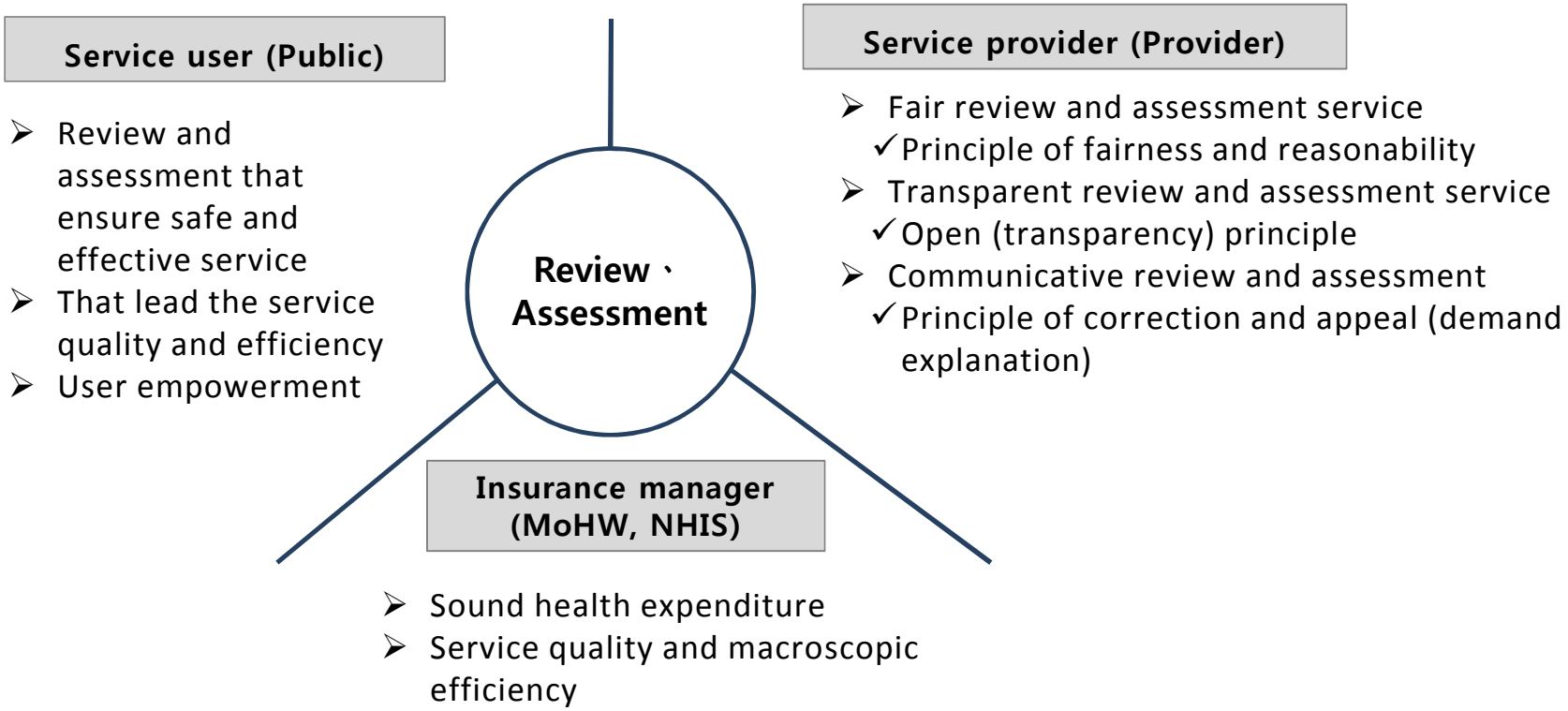


* Reference; Kim Changyeob, Theory of health insurance, 2009

04 Future tasks : Responding to current challenges

❖ **Rebuilding concepts and principles of review and assessment**

- **Review and assessment that respect the public and providers (What kind of review and assessment respect the public and providers)**



* Reference; Kim Changyeob, Theory of health insurance, 2009

04 Future tasks : Responding to current challenges

❖ Rebuilding concepts and principles of review and assessment

▪ Underlying principles for review and assessment

<Service user (public)>

✓ **Safety, effectiveness**

- Benefit of the service is larger than the risk, thus ensuring safety of patient
- The value of the service is approved technically and scientifically, thus ensuring effectiveness
- Above standards are based on「EBM、EBH」, which are objective universal

✓ **Service quality and efficiency**

- Service quality and efficiency are ensured
- Through patient-centered medicine, provide satisfactory patient experience

✓ **Strengthen the role of consumer**

- Provide information on service quality and cost to reduce information imbalance, to protect consumers' right to know and right to choose
- Strengthen user participation and consumers' role in standard determination

* Reference; Kim Changyeob, Theory of health insurance, 2009

04 Future tasks : Responding to current challenges

❖ Rebuilding concepts and principles of review and assessment

▪ Underlying principles for review and assessment

<Healthcare service provider (Medical institution)>

✓ **Fairness (suitability)**

- Review standards are based on fair and suitable grounds, logic, and principles

- **Openness (transparency)**

- Stakeholders and general public (review standards) have access to decisions and grounds

- Work process innovation is required to disclose all review criteria

✓ **Communication and information sharing (Correction and objection)**

- Standards should be open for re-review based on new evidence and discussion,

- Review outcome should be open to demand of explanation and objection

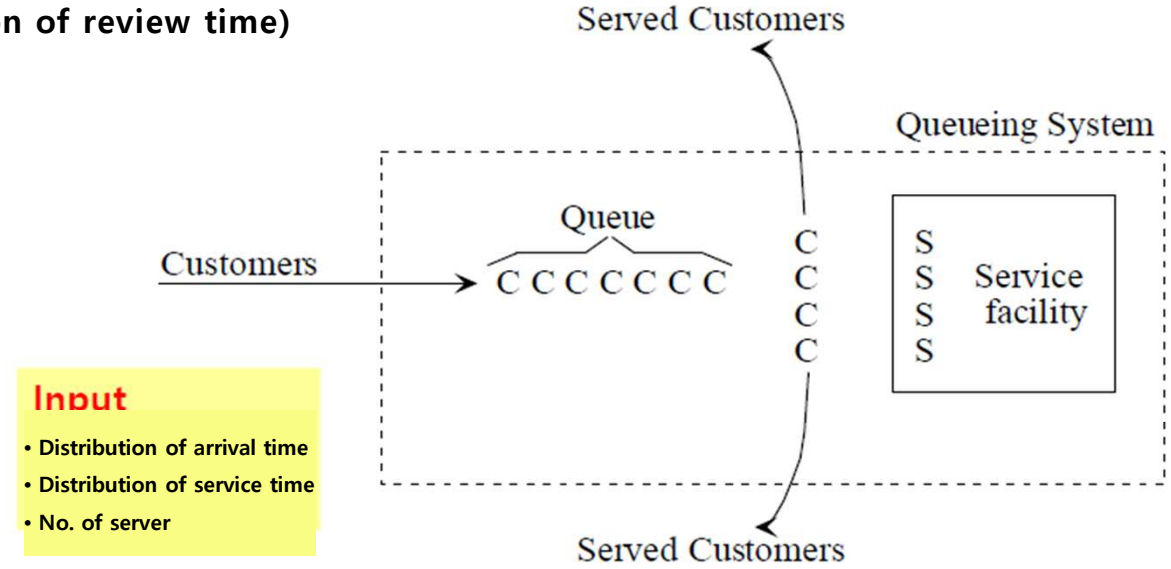
- Work process innovation is required to give more detailed and clear notification of review adjustments.

* Source; Daniels & Seibin, 2002

04 Future tasks : Responding to current challenges

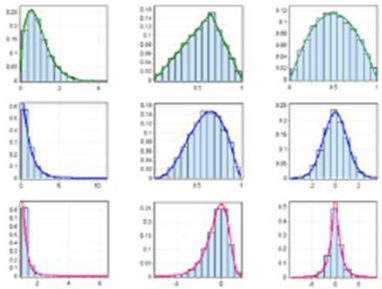
❖ **Challenge of efficiency and speed; seek an efficient way to process the rising volume of claims review (initial review and appeals review)**

- **Using Queueing Theory, Designing appropriate queueing system (good amount of staff distribution, reduction of review time)**



Input
- Distribution of arrival time
- Distribution of service time
- No. of server

Output
- Waiting time
- No. of awaiter



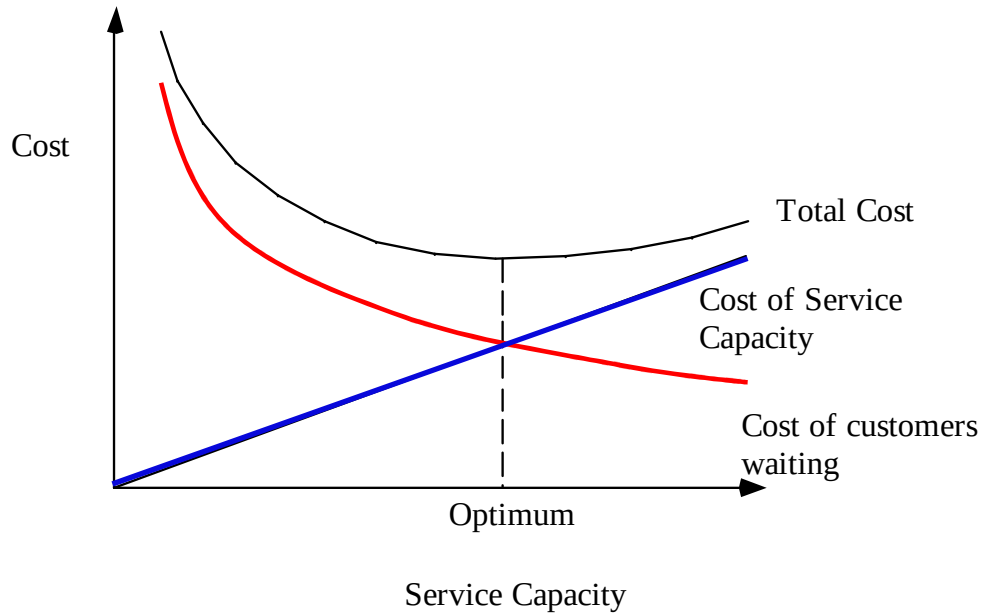
*Source; Kim Seongmun, Scientific management and process designing applied to hospital operation, 2017

04 Future tasks : Responding to current challenges

❖ Challenge of efficiency and speed; Minimization of review-related costs using the Queuing System

▪ Queueing Theory

Goal : minimize total cost = cost of servers + cost of waiting



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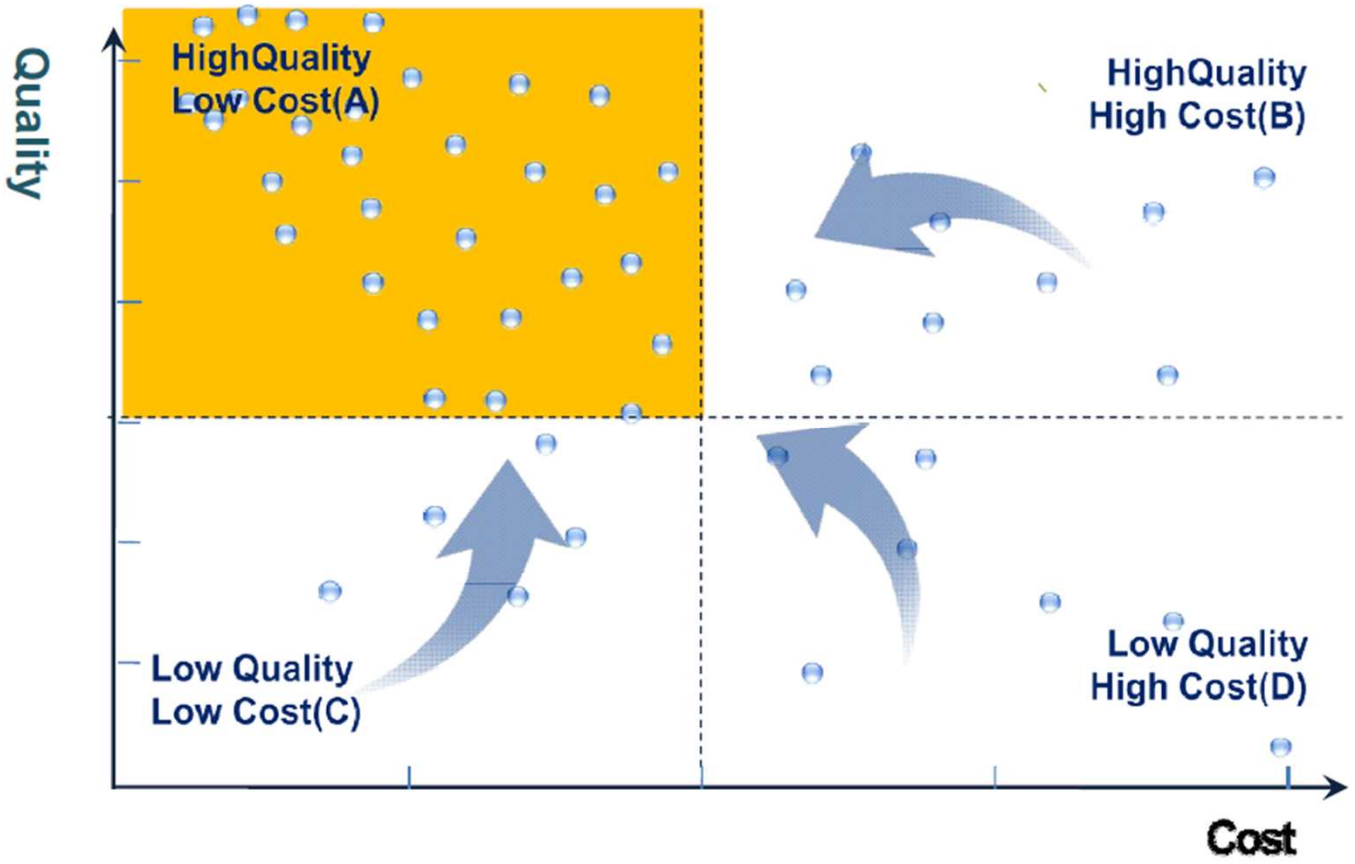
* Source; Kim Seongmun, Scientific management and process designing applied to hospital operation, 2017

04 Future tasks: Responding to future tasks under the environmental changes

❖ **Framework for value-based review and assessment**



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*Source; Park Chunseon, Quality and cost management through value-based review and assessment service, 2017

04 Future tasks: Responding to future tasks under the environmental changes

❖ New Paradigm for review and assessment

▪ Paradigm shift and service quality improvement through intelligence technology

✓ Self-regulation 、 comprehensive management 、 data innovation to improve acceptancy, efficiency, and quality

[High quality 、 safe service provision
Improve efficiency in overall healthcare system]

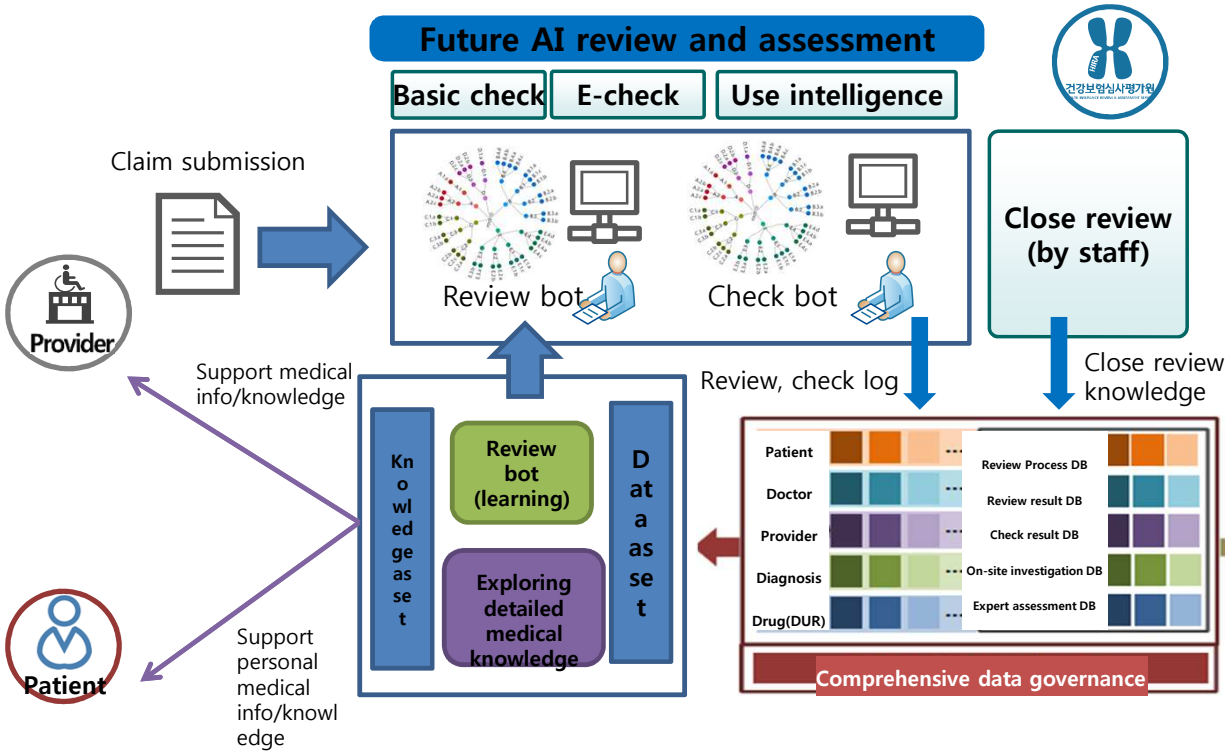
Environment for voluntarily responsible service	Value-based cost and quality management	Data and tech innovation - Based on transparent data
Administrative regulation → Self regulation	Compensate invested resource → compensation based on performance	Claim (EDI) era → legal EMR exchange
• Make standards together • Strengthen pre-check • Virtuous cycle of standard-prevention-review-post management	• AI system to manage cost and quality → Review efficiency, assessment result application • Efficiency improvement using intelligence information technology • Building refund system based on quality assessment result	• Reliable data and intelligence, technology utilization • EMR linkage, utilization system • Real-time decision making supporting system

*Source ; Oh Juyeon, Future paradigm for value-based review and assessment, 2017

04 Future tasks: Responding to future tasks under the environmental changes

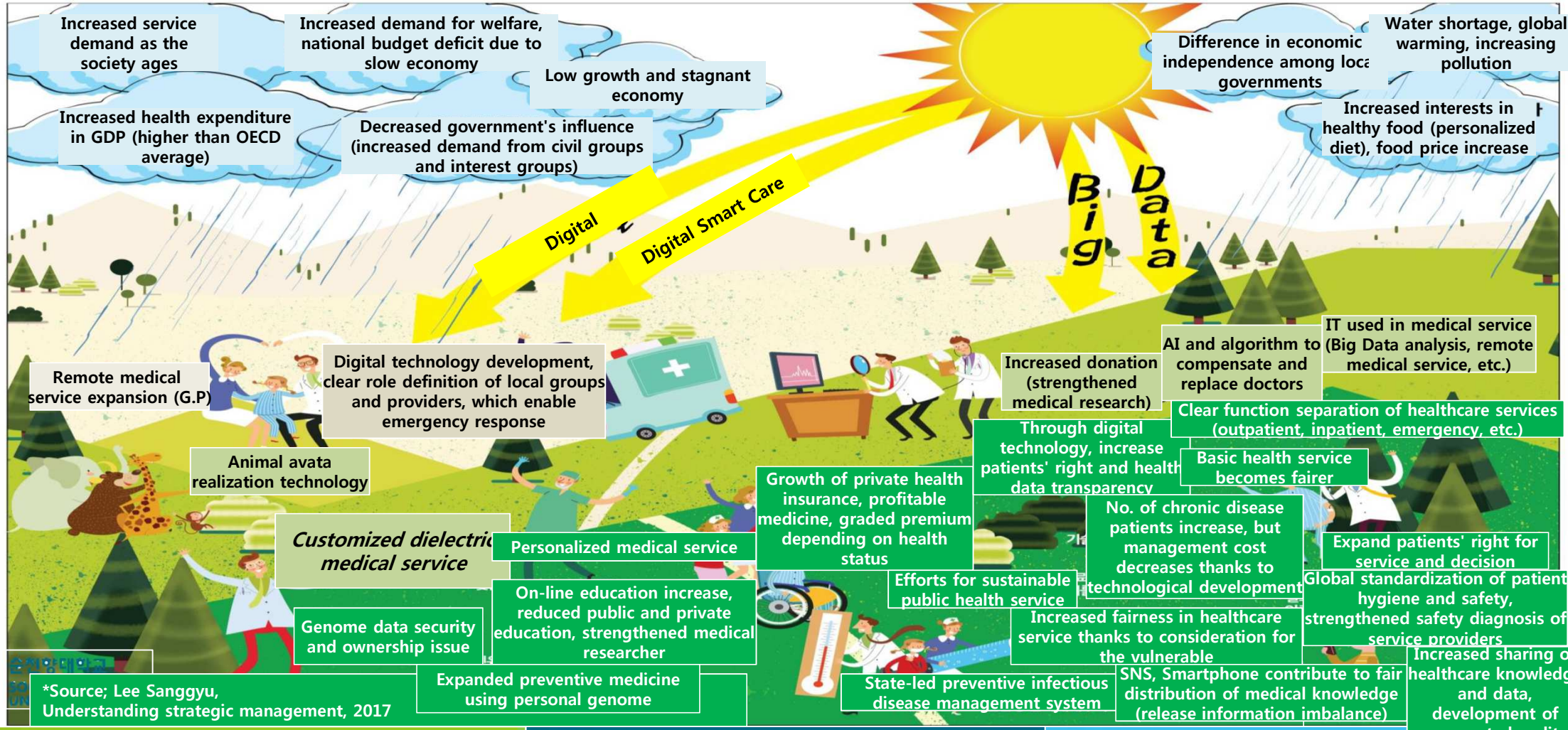
❖ Utilization of intelligence technology for better efficiency and sophistication

- For higher level review and automation (review bot, check bot), develop models, DB intelligence building, selection of close review targets, pattern analysis, etc. (pilot model development 2016~17)



04 Future tasks: Responding to future tasks under the environmental changes

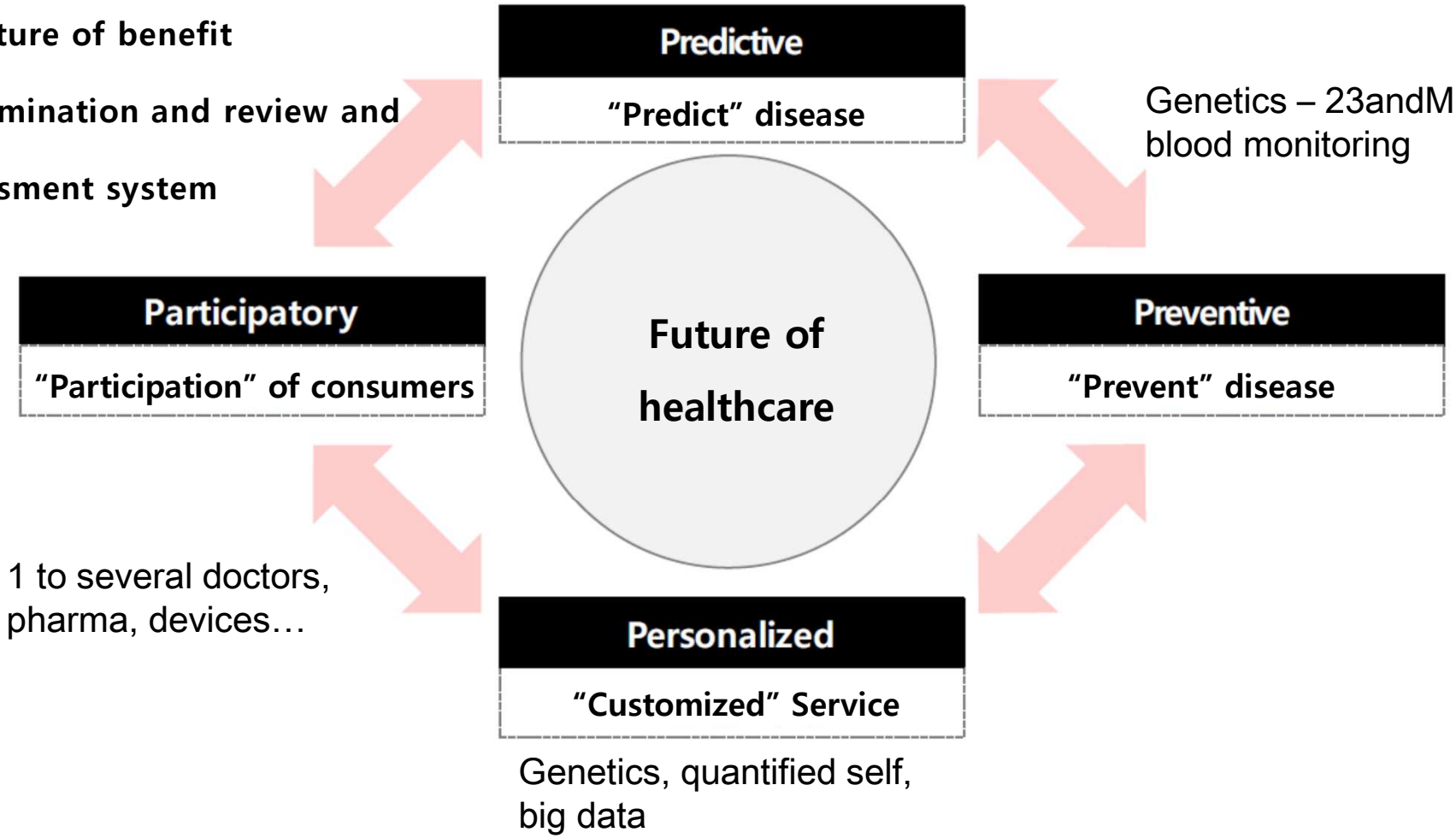
❖ Changes of review and assessment in respond to medical innovation : Healthcare of future (imagination vs reality)



04 Future tasks: Responding to future tasks under the environmental changes

❖ **Response of review and assessment for future P4 Medicine**

- **Structure of benefit determination and review and assessment system**

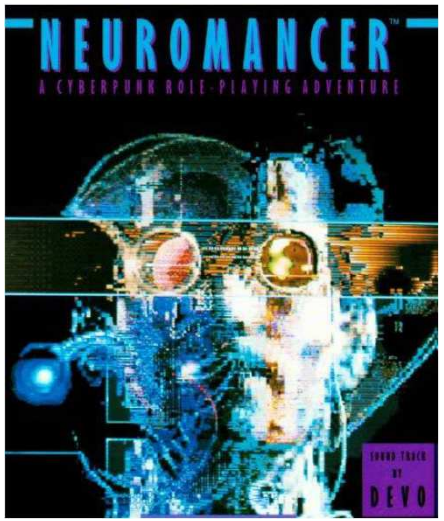


*Source; Lee Sanggyu, Understanding strategic management, 2017

04 Future tasks: Responding to future tasks under the environmental changes

The future has already arrived.
It's just not evenly distributed yet.

By William Gibson



*Source ; Lee Sanggyu, Understanding strategic management, 2017

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