



**Rethinking** – *Design Thinking* – **Health Care**

# The Health Plan Role

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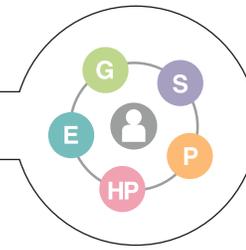
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# Preface

## ***The Problem***

Health Care is a major priority for Americans. For decades, it has been a matter of national concern; it now demands attention. As health care costs have climbed, concerns about financial failure have joined concerns about quality and access. In 2004, health care nationally accounted for 15.2% of the GDP, far in excess of amounts spent by any other developed country. For this, the life expectancy of Americans born in 2004 was 78 years. In 2007, life expectancy in the U.S. actually declined by .3%, placing the country 44th among industrialized nations. The mediocre level of quality we have purchased we have paid for with far more of our treasure than that spent by any other nation.

The cost of health care in this country must be brought down. Now nearly 2 trillion dollars annually and climbing, health care costs threaten to destabilize the national economy. But we are in no position to allow health care quality to decline; we already trail nearly all of our peers. Health care quality must improve as costs go down. The major health care sectors must find ways to provide services where quality of medical care is the competitive issue, and results are measured at the medical condition level in terms of patient outcome per unit of cost.

Harvard business strategist Michael Porter and colleague Elizabeth Teisberg have analyzed the competitive health care environment from the standpoints of the five major sectors involved: providers, payers/health-plans, suppliers, employers and the government. Their remarkable conclusions are set forth in a recent book: “Redefining

Health Care. Creating Value-Based Competition on Results”. Building on their strategic recommendations, the project described in this report examines how policy proposals might be implemented in the Payers/Health-Plan sector.

Design planning and policy planning join effectively in policy design synthesis at the point where policy requires means of implementation. This project proposes design concepts in a system context to implement strategy for Payers and health plans as part of a larger construct uniting all five sectors of the health care community.

## **The Course**

The design concepts are results from a project-based course at IIT’s Institute of Design. The semester-long Systems and Systematic Design course is a workshop in which teams of graduate students, deliberately of mixed international origins and different academic backgrounds, apply the computer-supported Structured Planning process to complex design planning problems. The goal for each project is to develop information thoroughly, propose innovative solutions that take maximum advantage of the information, and integrate those ideas into system concepts that can both be evaluated in their own right and (in a real situation) be the comprehensive project specifications for a follow-on detailed development project.



### Course Issues

- Complexity. What is the nature of “systems” concepts where policy, products, processes, services and communications are organized to act together to achieve multiple goals? What can be done to assure that a system concept is as complete as possible, covering many functions and attaining a high degree of “wholeness” and organic reliability?
- Design planning methods. What is Structured Planning and how can its tool-kit of methods be used to collect, structure and synthesize information in projects of greater complexity than can be comfortably dealt with intuitively? How can such methods be used by a team to extend the effectiveness of all?
- Teamwork. How do individuals with different cultural origins and different academic backgrounds work together successfully on teams? What roles are there to be played and what difficulties must be overcome?

### The Project Team

Twenty two graduate students from the U.S., Germany, South Korea, China, Singapore and India were assigned to five teams for study of the problems of the five health care sectors. Background experience for team members included degrees in automotive design, history, interior design, industrial design, electrical engineering, control and information technology, computer science, communication

design, chemical engineering, environmental sciences & policy, media systems design, graphic design, English, marketing, international business and biotechnology.

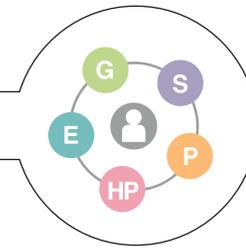
Team members for this project team, studying health care services from the Payers/health plan side, are:

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### The Planning Process: Structured Planning

Structured Planning, the systematic planning process taught, is a process for finding, structuring, using and communicating the information necessary for planning. It is a front-end process for developing concepts thoroughly and cohesively.

A number of projects have been undertaken with it and used to further its development. Among over 100 of these, an early published project for Chicago's transit authority (CTA) was Getting Around: Making the City Accessible to Its Residents (1971). In 1983, the House of the Future project won the Grand Prize in the Japan Design Foundation's First International Design Competition. In 1985, the design of a habitation module for Space Station was undertaken for NASA. In 1987, the Aquitecture project won the Grand Prize again in the Japan Design Foundation's Third International Design Competition. In 1991, Project Phoenix on global warming was honored as Environmental Category Grand Winner in Popular Science magazine's "100 Greatest Achievements in Science and Technology" for the year.

In 1993, two award winning projects, NanoPlastics and Aerotecture, were widely publicized in Europe and Japan; in 1995, the National Parks project developed plans for the future of the U.S. National Park Service. In 2001, Access to Justice, a project sponsored by the National Center for State Courts, was implemented for use in state courts across the United States, and in 2005, four projects on Home, Play, Work and Health were finalists in four of the five competition categories for Denmark's INDEX Awards, the world's richest design prizes. As the process has evolved, it has become an increasingly useful planning tool for business, institutions and government.

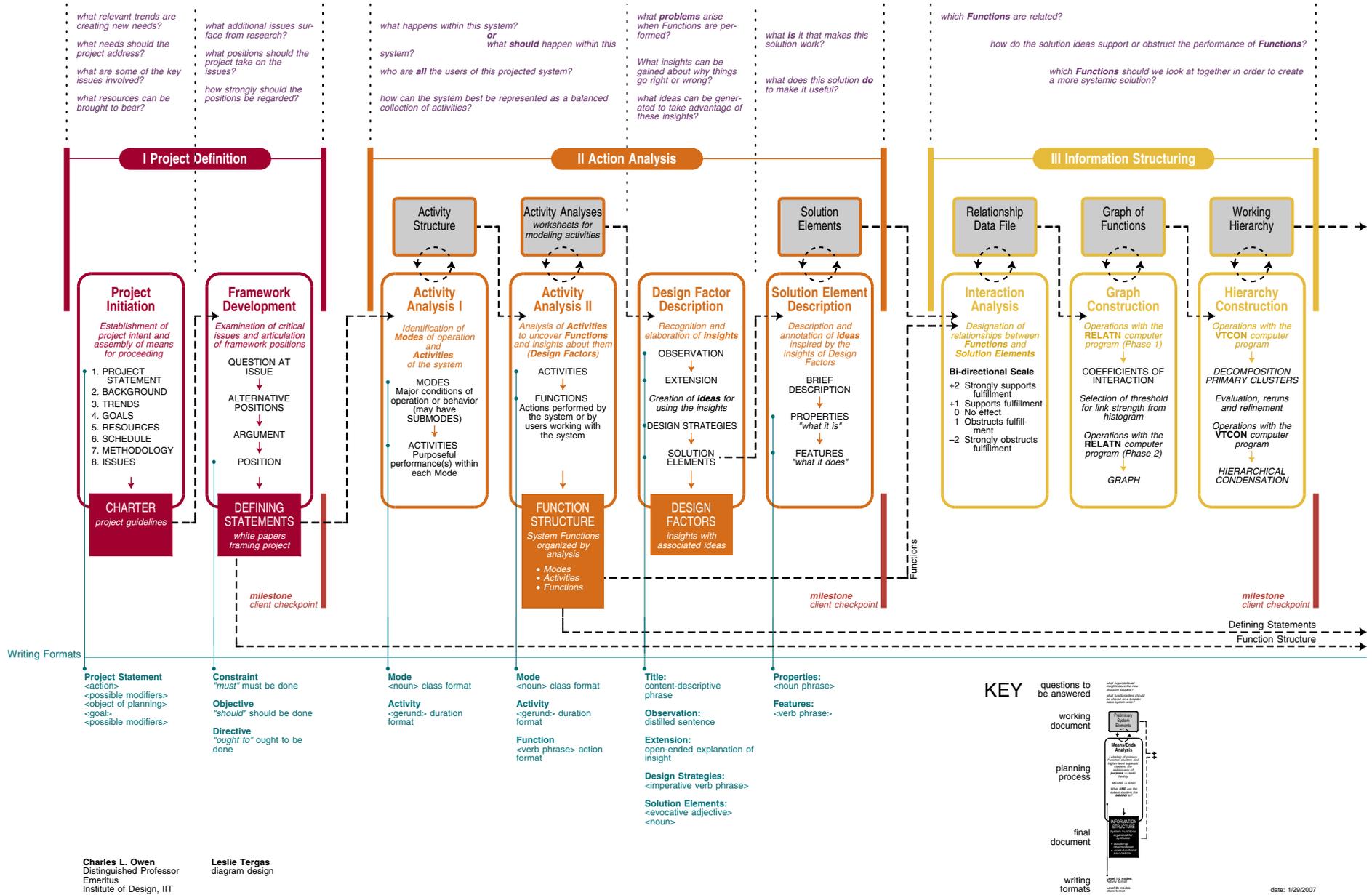
A diagram of the process, shown below in two figures, outlines the activities that make up Structured Planning and the working documents and final products that are produced along the way. The following general description follows the diagram. While products of the process are discussed here in the abstract, it is possible to see specific examples produced for this project in the appendices that accompany the report.

### I Project Definition

The Structured Planning process begins with Project Initiation and the production of a Charter. This is a "brief" that serves as an initial communication vehicle between client and planners. It contains background, context, basic goals, a project statement that cuts to the heart of the

# The Structured Planning Process (Phases I - III)

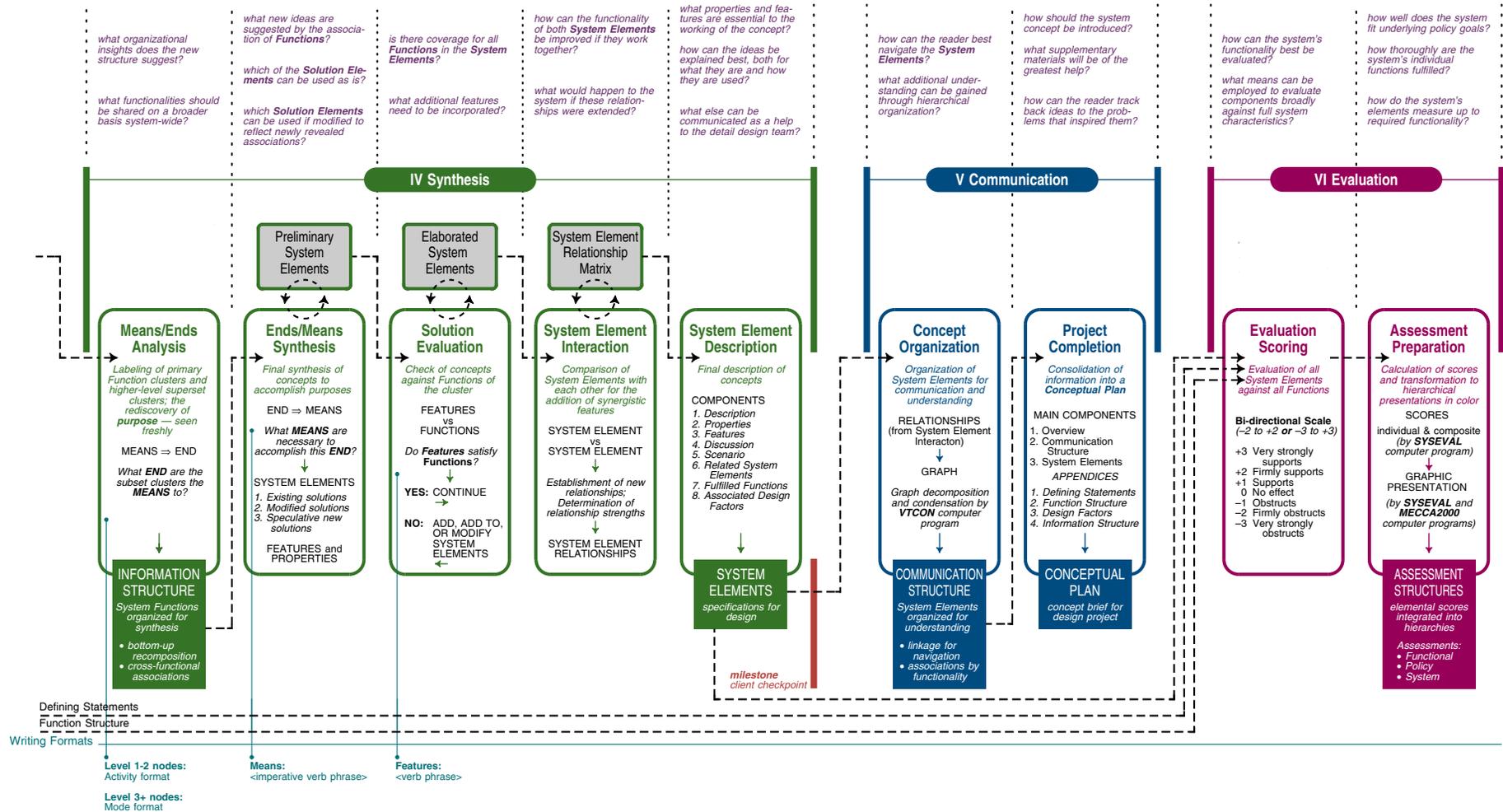
Structured Planning is a front-end, concept development process for finding, and communicating the information necessary for advanced planning



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Distinguished Professor  
Emeritus  
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Leslie Tergas  
diagram design

# (Phases IV - VI)





planning task, resources to be used, a schedule and an initial set of issues to be investigated.

Defining Statements are mini “white papers” produced in the Framework Development portion of Project Definition. They focus the project within the direction of the Charter, concentrating on the issues and arguing specific directions that the project should follow with regard to them. Together with the Charter, they define the project.

## II Action Analysis

Any system can be viewed as a complex entity working with its users in different ways appropriate to its modes of operation. To plan effectively, a planning team must recognize these Modes, identify Activities that occur within them, and isolate the Functions that the users and system perform or are intended to perform within each Activity. The result of the Activity Analyses is a Function Structure.

Half of the purpose of Action Analysis is the enumeration of Functions. The other half is the development of information about these Functions that reveals insight about what happens as they are performed. During Action Analysis, insights are sought about why things go wrong in performing some Functions, and how other Functions manage to be performed well. These insights are uncovered in the Design Factor Description procedure and developed in documents that become part of a qualitative knowledge base. Activity Analyses record information at the Activity

level; Design Factors document insights and ideas associated with Functions.

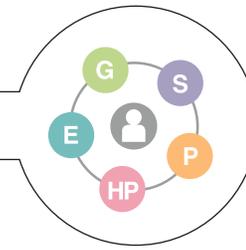
To capture as fully as possible the ideas suggested on Design Factor documents, solution ideas are written up in the Solution Element Description portion of Action Analysis. This is done on simple one-page forms designed to capture enough detail about ideas to give them substance when they are needed later. They have three important sections: “Description”—a short explanation, “Properties”—what the idea is, and Features—what it does.

The product of Action Analysis is three sets of critical information: a set of Functions (the Function Structure), a set of insights (Design Factors) and a set of preliminary ideas (Solution Elements).

## III Information Structuring

Paradoxically, as useful as the Function Structure is for establishing coverage, it is not the best form of organization for developing concepts. Reorganizing information for use in concept development is the job of two computer programs, RELATN and VTCON.

The controlling factor for whether two Functions are associated from the planning standpoint is not whether they are categorically “related” in some manner, but whether a significant number of their potential solutions are of concern to both. Which Solution Elements are of concern



to each Function is established in an Interaction Analysis procedure. The RELATN program uses this information in a Graph Construction process to establish links between Functions.

Another program, VTCON, completes the information structuring process. The graph of Functions and links established by RELATN is not easily arranged for visual comprehension. In the Hierarchy Construction activity, VTCON finds clusters of highly interlinked Functions and organizes them into a semi-lattice hierarchy, a visually understandable, very general form of hierarchy most appropriate for planning. The hierarchy is called an Information Structure. (figure caption) The Structured Planning process: phases IV through VI.

#### IV Synthesis

In its form from the VTCON program, the Information Structure is simply a hierarchical organization. Nodal points above the Function level do not have names. The task of Means/Ends Analysis is to create labels for all nodes in the hierarchy. Moving bottom-up from the known Functions in the bottom level clusters, the question is asked, “To what end are these Functions means?” The answering purpose, as a label, in turn is grouped with its siblings and viewed as means to a higher level end. The process continues to a completely labeled Information Structure.

The process is then reversed as a top-down, structured brainstorming procedure: Ends/Means Synthesis. In this process, the planning team asks of high level nodes, “what means do we need to meet this end?” As means are established, they are treated in turn as new ends for which means must be found, until the means become concrete enough to be described as final elements of the system (System Elements). Solution Elements originally conceived for the Functions involved are constantly reviewed as possible end products. Original ideas are modified or combined in the light of the means that evolve, and new ideas are added to fill unmet needs revealed by the Information Structure.

System Element Interaction compares System Element with System Element in a search for additional synergies that can contribute to systemic qualities. More than simply recognizing relationships, the planning team proactively seeks out ways for System Elements to work together— to the extent of modifying one, the other, or both. Changes and additions are incorporated in the properties and features of the individual System Elements.

The last task, System Element Description, completes the write-up of System Elements as specifications, including a succinct description, all relevant—now essential—properties and features, and extensive Discussion and Scenario sections that contain detailed expositions of the ideas in both conceptual and operational terms.



### V Communication

Because the result of the Structured Planning process is a complex system, usually with a number of System Elements, a Communication Structure is frequently included as an aid to understanding. This is created during Concept Organization by the VTCON program from an assessment of how important the System Elements are to each other's operation. Using this structure, the reader can understand the system more easily and navigate its concepts with efficiency.

The product of the Structured Planning process, assembled in the Project Completion section, is a Conceptual Plan, made up of an Overview that provides background and introduces the system, the System Elements that describe the ideas and their relationships, and Appendices that contain all relevant support information, including the Defining Statements, Design Factors, Function Structure and Information Structure.

### VI Evaluation

Structured Planning incorporates evaluation among the steps of the process, most notably during Synthesis. It also offers an optional full-system evaluation technique that can be employed to evaluate final results against policy-level and/or function-level criteria. Used for this, it provides merit values hierarchically for the system, its component parts and individual system elements. It can also create similar hierarchical evaluations for the assessment of functional performance and policy performance. Used to compare systems, it can provide system, functional and policy assessments for multiple competitive candidates measured against common function and system structure frameworks.

# Introduction

As Porter recommends, “Health plans must become health organizations, not just insurance organizations. [They] must be participants in health, not just payers” (Michael Porter and Elizabeth Teisberg, *Redefining Health Care*, 229). The health plan team has adopted this approach. We feel that health plans can leverage their core competencies to become not only payers, but full-fledged health advocates. In order to make this transformation, Porter highlights five steps:

- Enable informed patient and physician choice and patient management of health
- Measure and reward providers based on results
- Maximize the value of care over the full care cycle
- Minimize the need for administrative transactions and simplify billing
- Compete on subscriber health results (Porter, 231)

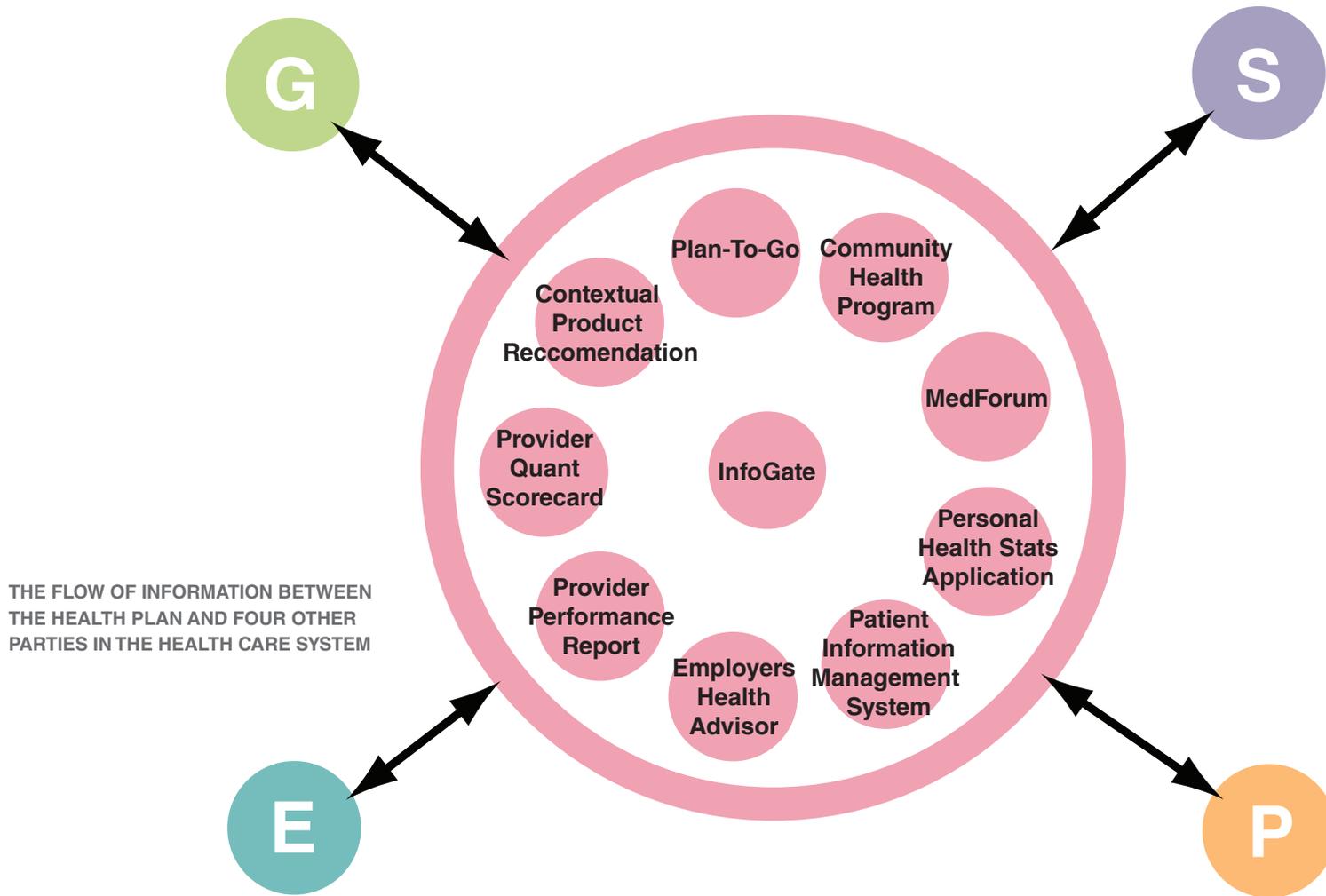
Porter’s recommendations served as the basis for our solutions. Each of our solutions are designed to exist within a system, enabling health plans to make the transition from payers to organizations. For example, the **Contextual Recommendation Engine** works in conjunction with **InfoGate**, to deliver the right information at the right time through the right channels—addressing Porter’s recommendations to enable the informed patient.

As another example of how the above five steps has guided our creative process, consider the last step, that health plans “compete on subscriber health results.” While all of our solutions enable this to varying degrees, our **Personal Health Stats Application** is specifically designed to measure subscribers’ health on a regular basis, allowing us to structure incentives based on improvements in their health.

The five steps have been guiding themes for us as we have considered what new tools, practices, and programs might better help health plans to fulfill the role of health organizations. As you read about the concepts we propose, you will see how they fit into these themes.

## Bridging Reality and Theory

Part of the challenge in creating these developments has been bridging the gap between current practices in the health care system and the system that Porter recommends. In order to best cross that chasm, our assumption is that a new health plan would use tools and practices like ours to create new value for its plan members. We would hope that a new entrant with new practices and a refreshing valuation of its member’s health might be able to compete with some of the current practices as this new entrant would be more consumer centric.





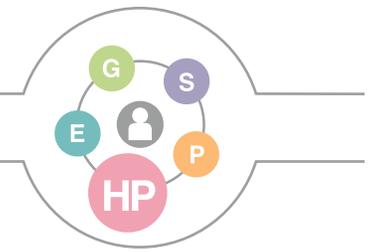
In proposing our solutions we have made several assumptions:

- Greater emphasis is placed on full cycle of care, rather than on individual treatments.
  - Health plan profitability is addressed by changing subscription periods to last longer than a year, possibly as long as five years. This change will provide health plans with incentives to help maintain the health of their members.
  - Health plans compete on the basis of their plan member health.
  - Health plans do not sign exclusive contracts with physicians. It is also assumed that physicians would bill for the real cost of their services, not the inflated prices they are forced to charge because of current circumstances.
- **Contextual Recommendation Engine**
  - **Personal Health Stats Application**
  - **Community Health Program**
  - **Plan-to-Go**
  - **Employer Health Adviser**
  - **InfoGate**
  - **MedForum**
  - **Patient Information Management System (PIMS)**
  - **Provider Business Performance Scorecard**
  - **Provider Clinical Performance Report**

We recognize that these assumptions are broad and that due to the scope of this exercise, we have not been able to consider the financial viability of our proposed solutions in depth. However, we do believe that we can further Porter's recommendations by our ten proposed solutions:

As health organizations we anticipate that health plans will be able to capitalize on their position as payers to help foster consumer driven health care. Their unique position in the health care system puts them in a position of influence in helping a consumer driven health care world become reality.





# Contextual Recommendation Engine

*An infrastructure application to deliver correct and timely information*

## Description

A timely decision-making aid that distributes health care recommendations to patients at appropriate times throughout the patient care cycle. The recommendations are sourced from aggregating and analyzing government health trends, provider advice, supplier product information, third party aggregated reviews, and plan member feedback.

## Properties

- An analysis and distribution engine that takes information from **PIMS** and distributes it contextually
- Comparative health care product ranks and evaluations from suppliers, providers, and government
- Aggregated review and product review information database (accomplished between **InfoGate** and third parties)
- Expert evaluations and consumer reviews
- Features Aggregate Reviewer Weighting to assign appropriate rank and value to evaluators
- Feedback workshops and forums (for gathering plan member opinions)

## Features

- Collects third party product and service performance evaluations
- Works with **InfoGate**/MedMap to form appropriate delivery channels
- Contextually distributes recommendations throughout care cycle
- Empowers consumers with transparent, accessible, and relevant information
- Expedites the research process for customers in need of advice and suggestions
- Informs suppliers of peer offerings
- Encourages healthy competition due to publicized comparisons

## Discussion

Although increased information access can empower customers, many will find the sheer number of newfound possibilities baffling, even overwhelming. To facilitate this decision-making process, health plans could leverage its data-collection capabilities to aggregate and distribute relevant information to its customers. Rather than simply suggest a comprehensive list of sources for research, targeted product recommendations could be made according to current customer health status and associated health needs.

## SUBSET ELEMENTS

- Product Relevancy Tracking
- Aggregate Reviewer Weighting
- Cost Comparison Report
- Consumer Workshops
- Online Review Forums

## RELATED ELEMENTS

- InfoGate
- Personal Health Stats Application
- PIMS
- Plan-to-Go
- Community Health Program
- Employer Health Adviser



**FULFILLED FUNCTIONS**

- 1 Assemble drug prescription claims
- 2 Assemble drug performance information (received from Providers)
- 4 Assemble/Communicate Class II/III equipment usage (received from Providers)
- 6 Assemble/Communicate product competitive landscape
- 8 Assess short/long term drug efficacy
- 12 Assess Class II product efficiency
- 14 Assess supplier info exchange cooperation
- 20 Communicate drug side effects & effectiveness
- 40 Communicate drug performance data
- 74 Correlate drug intake results

**ASSOCIATED DESIGN FACTORS**

- 1 Potential for correlation errors in measuring performance
- 2 Information transparency is required for proper reporting
- 4 Findings may not always be relevant
- 8 Providing resources does not imply their actual use

Much like Amazon.com’s “Recommended for You” system, health plans could automatically and unobtrusively suggest appropriate health care recommendations based on real-time updates to patient electronic medical records (EMR) and personal health records (PHR) databases. For example, if a patient was recently diagnosed with hearing loss, **InfoGate** would communicate that to the aggregation system, which would then suggest a range of reviewed and ranked hearing aids covered by their policy. This minimizes the research efforts of the patient, while still encouraging them to make responsible health care decisions.

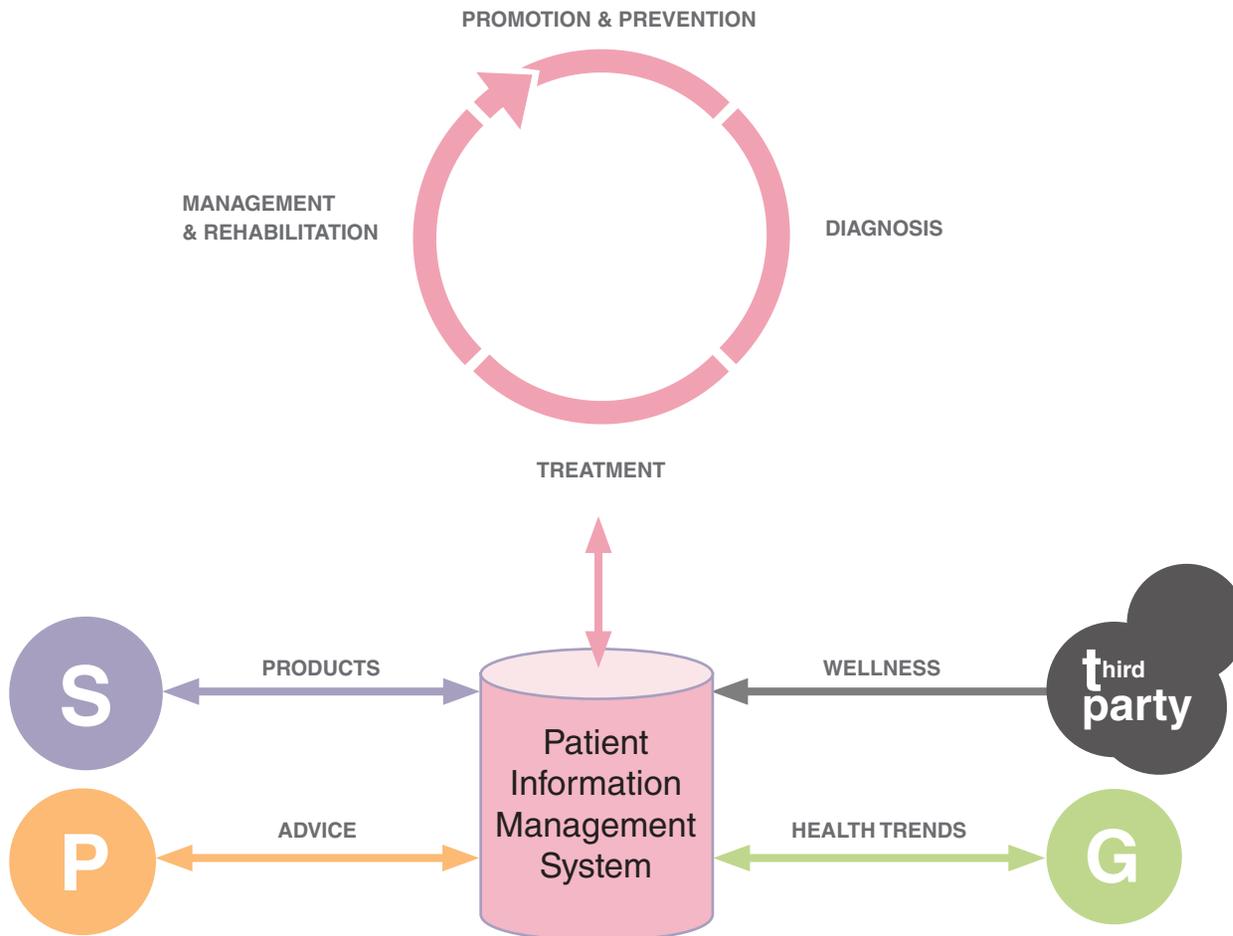
Evaluating health products and services can help increase transparency within the industry, thus encouraging healthy competition amongst all players in pursuit of maximum customer acquisition. Publishing this information and offering decision-making tools give more power to consumers and thereby elevates the importance of proper consideration. The end result empowers consumers to take responsibility for their own health, while stakeholders compete to remain desirable.

Medical products can be reviewed with a comparable degree of frequency and depth as common consumer products (such as electronics, housewares, and automobiles). Rather than having only a select few evaluators making all the decisions, the health care industry can leverage newfound connectivity offered through online social networking and crowdsourcing. By summoning the expansive efforts of the multitude,

evaluations can eliminate biases and provide more efficient results in faster times (see Amapedia: a wiki dedicated to collaborative composition of a knowledge base of product reviews). Consumer Workshops can also be conducted by **Health Advisers** to gain more elusive, qualitative points of comparison. To maintain a distinct hierarchy between novice and expert evaluators, aggregate reviewer weighting could be employed to rank the experience, prevalence, and overall value of each reviewer.

Health plans can parse their claims data to try and determine the most relevant medical equipment, drugs, and services, however a larger data set can be achieved by leveraging the many third parties already conducting product evaluations. Efforts like the Health Care Product Evaluation Center (HCPEC) and Consumer Reports: MedicalGuide.org have established their own evaluation standards and offer authoritative, collaborative, and objective product analysis, followed by complete efficacy reporting and recommendations. Health plans could form partnerships with such organizations, aggregate the results, and distill the most relevant portions to its membership.

Popularity models and case-based reasoning (CBR) could be used to determine products best suited for contextual recommendations. Another method involves examining which and when products are critical throughout the patient care cycle. Once key products and categories have been identified, they could be rated across the





entire product life cycle from manufacturing to disposal. As reviews are compiled, leaders and benchmarks are established and ranked, providing clear results for consumers and suppliers alike. Reports can be published online or distributed through customer-preferred channels, ensuring proper and maximum exposure.

### Scenario

A patient schedules an appointment with his doctor to ask him about his recent hearing degradation. The doctor determines that the patient's diabetes has gotten out of control and attributes the hearing loss to the disease. The doctor prescribes him a hearing aid and sends him on his way with information and options.

Once the prescription has been entered into the patient's personal health record (PHR), the health plan's **Contextual Recommendation Engine** sees the information and begins collecting and ranking hearing aids for the patient. It pulls data from both stakeholders and third parties to achieve a balanced set of aggregations. The information is compiled and

analyzed, then top recommendations are made and delivered immediately to the patient's PHR. These recommendations can then be accessed anywhere with a secure internet connection.

By automatically generating helpful recommendations, health plans save patients' time and effort, as well as promote just enough patient responsibility. The engine would work throughout the patient care cycle, giving contextual, relevant advice directly to the patient's preferred communication channels.

Recommendations would begin with promotion and prevention, for example, suggesting exercise and meal regimens. The diagnosis phase would offer devices to monitor your health for instance. Much like in our scenario, the treatment phase would suggest various products and service to cope with specific ailments. Finally, the management and rehabilitation phase would connect the patient to support networks and sessions to maintain health and wellness. The cycle is continuous, as are the recommendations provided.



# Personal Health Stats Application

## *An application to facilitate compilation of personal health data*

### Description

An application that compiles health data originating from third party hardware and systems. The application would accept information conforming to accepted industry standards and funnel the information into the appropriate PHRs, as specified by the patient/consumer. The application would serve to bridge the gap that is likely to occur before all third parties standardize their data outputs and that would most likely occur between developments of multiple PHR systems.

### Properties

- An application that standardizes incoming and outgoing information in order to create the most useful PHRs possible
- A computer program with an open API to allow for other software work with it (*ie.* a calendar)
- An application that runs in the background, with little interface with patient/consumer.
- A real-time internet feed with a default option to store data until upload to PHR is possible

### Features

- Receives data in multiple formats
- Uses standardized data

- Stores/transmits data to PHR
- Stores data in PHR of choice, in format useable to a multitude of data viewing software.
- Marks data according to quality of data (self administered tests may be less reliable than tests administered by experts)
- Marks data according to the instrument from which the data originates
- Marks data according to date and time

### Discussion

Sponsored by health plans to ensure that health plan patients are contributing useful data to their PHR, the **Personal Health Stats Application** is installed on a home computer, or is available in a mini computer. The health plan, as a health institution, realizes that the more information that they have about a patient's health, the better able it and the patient's provider will be to help a patient maintain a healthy lifestyle. In many cases a provider and health plan may partner to ensure that patients who need the most monitoring can have the system in their home.

The application is installed on the patient's home computer if one is available. Otherwise the application is installed on a specialized device such as a chumby. The application's primary responsibility is not to store the data for long periods of time, so a transmitting system is

### RELATED ELEMENTS

- PIMS
- InfoGate
- Contextual Recommendation Engine

### FULFILLED FUNCTIONS

- 21 Assemble patient health behavior profile
- 26 Assemble patient health history
- 37 Communicate patient health history
- 42 Communicate patient health behavior
- 49 Assemble provider quality data points
- 56 Provide resources for improving employee health
- 70 Correlate symptoms, diagnosis, location, and recovery data
- 72 Assemble results of preventive health care practices
- 77 Assemble relevant lifestyle consumptions and activities
- 83 Communicate patient recovery rates



**ASSOCIATED DESIGN FACTORS**

- 9 Health history may be incomplete
- 10 Patient may want to restrict data provided
- 15 Employees have limited knowledge of health/medicine
- 18 Difficult to track user behavior
- 31 Health data is widely spread, hard to collect, and disparate

also necessary. For many patients, this would be over the internet, otherwise, the system uses a modem and phone lines, which are traditionally free in the early mornings.

The **Personal Health Stats Application** is primarily a funnel which channels information from a multitude of sources into a specified PHR, or to their health plan’s **PIMS**. In order for information to be useful, the information must be standardized. The application is the central hub of a home health system which may include a Bluetooth enabled scale, a USB blood pressure cuff, and a manual input diet journal. It collects information from each of these inputs and standardizes the information, similar to the way that photo editing applications format an image as a jpg or a tiff. Additionally the information is tagged with metadata, similar to the way a jpg-EXIF file formats store information about the device that originally captured the data, where the image was created, etc. This metadata allows the programs that will display the data to visually display the information so that it will be relevant and transparent to the user, which is anyone who the patient allows, to see it.

The patient need not be a computer expert to deal with the **Personal Health Stats Application** as it is designed to run in the background of other system instruments. Once the application is installed the patient really should have no idea that it is running other than that the information is displayed through the one of many portals sponsored privately, through the employer, or through the health

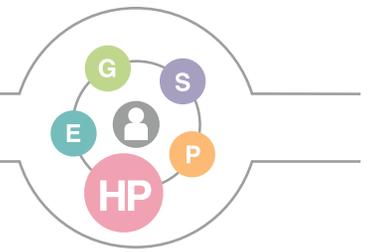
plan. In the cases where no internet is available the information can be stored to submit later.

Optimally, patients would allow primary care physicians to view the information generated about their personal health. In many cases, because the health plan would be sponsoring the installation, the health plan would also have access to patients’ health information. But most importantly, patients would have access to their own data. Once the data is collected and displayed through their portal of choice, patients can learn to understand the connection between their personal behavior and their health. This education enables patients to live in such a way that they can prevent health problems.

If the health plan is allowed to view the information, **InfoGate** uses the data gathered to help create messages tailored to the needs of the patient. It is also from this information that the clustering occurs that helps to form needs groups in the community health program.

**Scenario**

David woke up Tuesday. He rolled over and hobbled to the bathroom. David stepped onto the scale. He loved being able to track his progress to his weight loss goal. Last year he had been overweight. It was the extra weight he was carrying around that had damaged his knee. He was now down to 180 lbs. The scale told him that he had 4 more pounds to lose before he would reach his goal. His



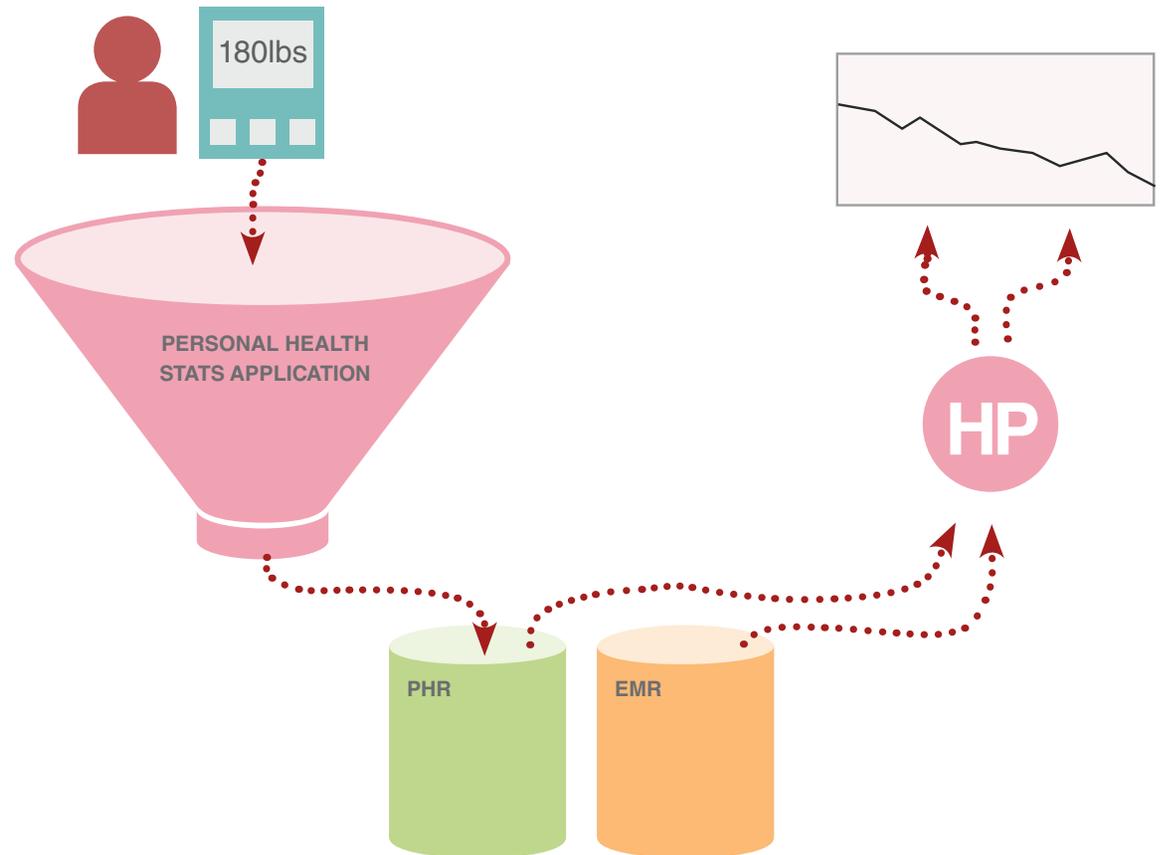
trip to his sister Marie’s house had unfortunately set him back a little bit.

But he needed to make the trip to help Marie make some decisions about her wedding. He thought back. It was the prospects of the wedding that had originally triggered the whole health improvement track he was on. As soon as she had announced the marriage he had excitedly logged the dates onto his planner. His planner had been tied to his PHR through the **Personal Health Stats Application** installed on his computer.

The date had evidently shown up on his PHR and Dr. Amaratti had invited him for a checkup. Dr. Amaratti constantly combed his patient’s records for change thresholds. Dr. Amaratti knew as soon as he saw David’s calendar that he would be a prime candidate for a health improvement program. People with an important social engagement on the calendar were always up for improvements. Dr. Amaratti just wished that more of his patients opted to allow him to see their awareness threshold indicators.

\* \* \*

Dr Amaratti checked David’s progress by logging in to his own, physician-specific portal which gave him access to all of his patients who had opted to allow him to see their PHRs. He was pleased to see that over the last week David had lost 3 more pounds. David was well on his way to his target goal that put him just above the weight





recommended by David's BMI. Dr. Amaratti was excited to see David's progress and felt a certain pride in his patient's progress.

\* \* \*

After work, David returned home. He strapped on his heart rate meter and GPS pedometer. He went for his half mile walk. It was all he could do before he his knee started giving him pains. But it was up .1 mile from a week ago.

After dinner, David sat down at his computer to log today's meals: a cup of cereal with milk, a banana, and a sandwich for lunch. The program asked him to describe the sandwich a little more. The program tallied his caloric intake. The information was then submitted through the personal health stats application to his PHR.

He logged into his personal health portal. When he did, an alert appeared, telling him that he had won a free exercise class at his local gym, which was partnered with his health plan. He loved it when he got these classes, and thus he posted his caloric intake often enough to get a class a couple of times a month. But his daily walks were enough for his usual weight maintenance.

Through the exercise portlet, he verified that he had actually walked .5 miles. The display showed that he had done the walk faster than he thought. His heart rate was just a little higher during his walk than it had been the day before, but significantly lower than a few months ago when he was packing many more pounds than now.



# Community Health Program

*A program that enables subscribers to connect with their support group*

## Description

A program that plan members with risk pools within plan and helps them connect with support groups and information networks that promote preventative care.

## Properties

- A tool to group plan members based on risk pools
- An information dissemination channel for health improvement
- A network of external health support groups based on health conditions, communities, neighborhoods and organizations
- An outreach program for various community based health initiatives
- A feedback and open communication channel between plan members and health plan

## Features

- Identifies risk pools within plan members
- Partners with external health support groups

- Directs members of risk pools to relevant support groups
- Identifies and encourages community run health programs
- Delivers information for health improvement to plan members in risk pools
- Organizes forums for meaningful interface between plan members and health plan

## Discussion

The **Community Health Program** is a multi faceted initiative. While helping health plans reduce their risk pool over time, the program also creates awareness for health improvement. The program addresses the need for individuals within the health care system to find support groups that can help them during their times of need. There are three groups that the community health program will help identify that correspond with the significant social nodes of interaction that people have today. First, a work support group is identified by the community health program. This program initially associates an individual in a company with other employees who might share similar health interests. The program would offer incentives such as reduced premiums to promote individuals to participate within this group.

## RELATED ELEMENTS

- InfoGate
- Employer Health Adviser
- Personal Health Stats Application

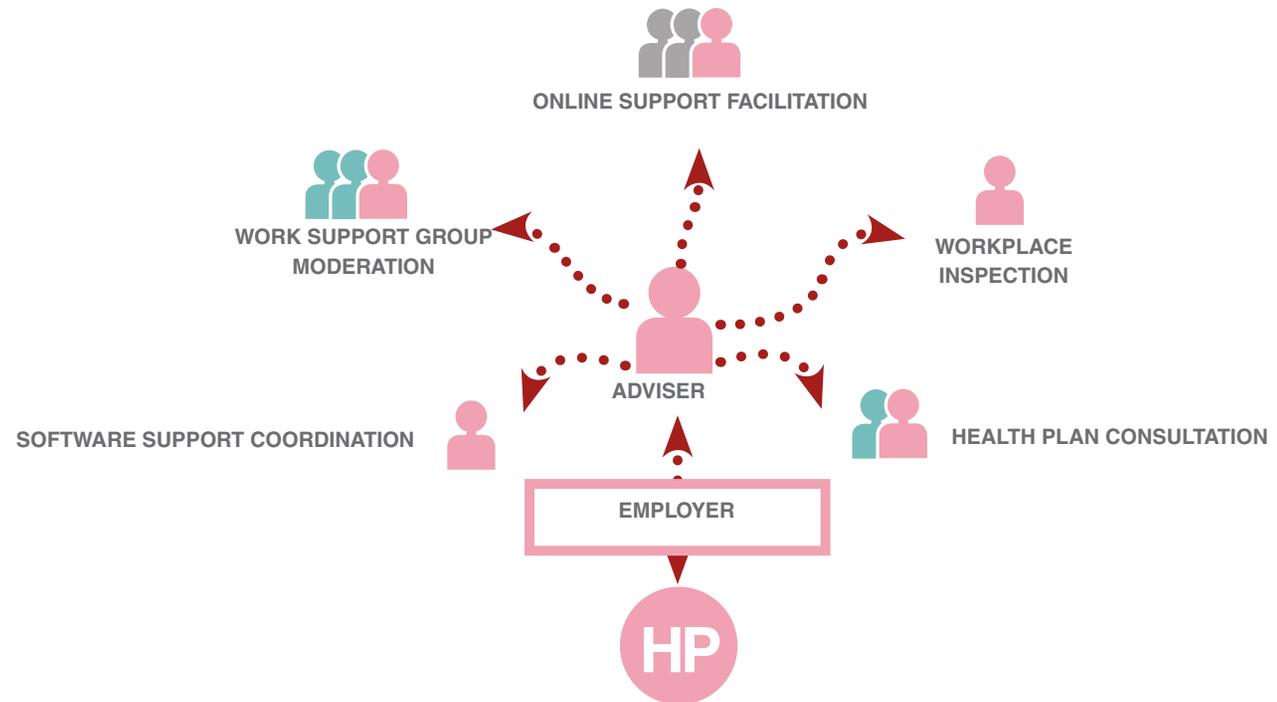
## FULFILLED FUNCTIONS

- 3 Assemble drug performance information
- 21 Assemble patient health behavior profile
- 25 Assemble patient feedback
- 42 Communicate patient health behavior
- 48 Assemble employer-specific health recommendations
- 50 Assemble risk reduction options
- 52 Assemble employee feedback
- 68 Facilitate networking of employees for social support
- 71 Identify and collect preventive health care practices
- 72 Assemble results of preventive health care practices
- 77 Assemble relevant lifestyle consumptions and activities



**ASSOCIATED DESIGN FACTORS**

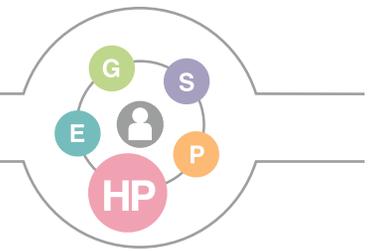
- 3 Patients may not trust health plans as feedback depositories
- 10 Patient may want to restrict data provided
- 20 Consumers do not willingly provide feedback
- 21 Internet is not always accessible to everybody
- 31 Health data is widely spread, hard to collect and disparate
- 29 Subscriber lifestyle hard to track
- 39 Difficult to get credible qualitative data on preventative care
- 40 Difficult to obtain and validate patient behavior data



The second major social groups are neighborhood groups. The program identifies social support groups that are regionally clustered around an individual and helps match the individual to specific groups that they might benefit from. There are lots of existing groups that already exist and the program can provide value by identifying those that are relevant to the individual. Resources to create new groups within plan members will also be facilitated. Incentives could reduce premiums or prices

of health products to encourage engagement with these groups.

Finally, the above modes of interaction are supplemented by a robust online support group for the tech savvy members. The program promotes outreach activities like community owned resource centers where health devices like the daily stats monitors can be shared by plan members when required. The health plan communities



also serve as an open feedback and conversation channel on drugs, provider and health plan performance.

The value for health plans to pursue this program would be manifold. First, providing the ability for individuals to participate with health social networks would be a competitive advantage. Second, by encouraging individuals to join groups, there is a greater likelihood for individuals to adopt health practices. Ultimately, these would help encourage wellness and prevention of diseases rather than the current emphasis on treatment of diseases.

### Scenario

David is a pre-diabetic, over-weight 35-year-old man in a highly stressful job. Since he spends most his time at work, he prefers to form support groups within his work environment. The health plan's **Employee Health Adviser** visits organizations and does a work-place inspection. The adviser then studies the risk pools within the workplace and identifies diabetic and pre-diabetic employees with a possible genetic predisposition to diabetes.

The workplace inspection also leads to changes in cafeteria food. David and the others in his risk pool are notified of their presence in the pool through their preferred communication channel—email. The diabetic plan members in the group are encouraged and

incentivized to speak with the other members in the group and share their experiences, moderated by the adviser if the group is sufficiently large.

David attends his first diabetic meeting and finds himself comfortable asking questions to his coworkers. He learns his pre-diabetic condition is treatable. The health plan emails David and encourages him that he still has control over whether or not his health situation worsens and recommends a diet and moderate physical exercise. The plan also directs him to biking, jogging and swimming clubs within his neighbourhood through the web forum. David logs into the forum and reads more about the clubs and their activities.

He decides to begin his own club with the other diabetics in his office and they decide to play football every weekend. David moderates the group and regularly updates the groups page in the web forum. He gets relevant information published onto it from his health plan. The **Employee Health Adviser** monitors the groups progress and keeps in touch with them.

David sometimes borrows a health stats monitor from the community resource center and helps the plan track his health in a better manner. He opts in to disclose his information gleaned by the **Personal Health Stats Application** information with other plan members. He is able to track his progress with those of others in the same health condition. This motivates David to maintain his weight and keep an eye on his diet.



# Plan-to-Go

*A program that supports subscribers during international travel*

## RELATED ELEMENTS

- InfoGate
- Contextual Recommendation Engine
- Personal Health Stats Application
- PIMS
- Provider Business Performance Report
- MedForum

## FULFILLED FUNCTIONS

- 37 Communicate patient health history
- 38 Communicate patient plan coverage details
- 43 Communicate consolidated regional health plan policies
- 57 Communicate plan benefits

## ASSOCIATED DESIGN FACTORS

- Internet is not always accessible to everybody
- Prices exist in multiple locations
- Not all data may be immediately relevant

## Description

A platform that provides international travelers with local medical information as well as translated medical records in local languages.

## Properties

- International health plan policy
- Health plan travel management advisory team
- International health market collaboration team, including an international provider network, an international health plan regional representative, and international medical bill processing
- Custom-made health plan travel info package, including a portable medical record (translated in local languages), an international provider access, and the regional representative's contact information
- Health plan translator (Language/Medical/Drug code translation)

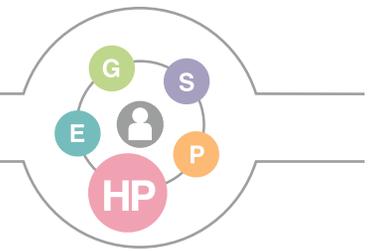
## Features

- Determines and implements international health plan policy
- Understands local health care systems, in particular, regarding non-residents treatments, billings, and legal responsibilities

- Tracks regional representatives
- Collects information regarding local drugs and provider groups
- Builds network with local providers in international countries
- Builds a platform to store, update and translate international medical language/code/drug information
- Provides information about international billing and regional representative contacts
- Provides information about accessible provider networks
- Provides information about widely-used/customer-required local drug brands, names and price ranges
- Provides customized, critical medical records translated into local languages
- Prepares/provides health plan travel packages in diverse media containing above information as well as first-aid and minor symptom guidelines
- Provides consulting for international medical trips

## Discussion

Health plans can set and implement international policies that properly serve customers traveling abroad. In order to deliver the necessary services, health plans research regional health standards, legal systems, and



regulations of international cities. International market collaboration teams play core roles in understanding and communicating related regional issues. The collaboration team will collect information on policy levels, such as the handling of outpatients from foreign countries, billing systems of hospitals, regional provider rankings, major drug consumption data, and so on. Also, it will build international regional provider networks based on evaluative information from regional reports in order to enhance administrative processes and local access for customers. The collected information will be stored, updated into the health plan's international platform, and then translated into standard English.

Another major role of the international collaboration team is to assign regional representatives. It can be done by setting actual branch offices, dispatching agents to hospitals in collaborative networks, to travel agencies, or to regional private health plan groups, or building contract regional handlers at various locations including tourist spots, major hotels and local information centers. Regional representatives can process claims and billings, and provide regional information as well as contextual emergency contacts.

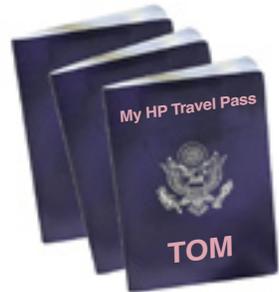
Health plans then communicate the information to customers through various media including web portals, small booklets, new devices, personal agents, and travel management advisory teams. Through web portals, customers can browse medical information in various regions with internet access. When planning

trips, customers can customize their travel packages through web portals by simple tools (such as selecting countries and periods), that are connected to each customer database. After customers provide basic travel information, the portals will publish abridged medical records (featuring critical points such as allergies) of each customer in regionally translated languages. The portal will also display provider/regional representatives access/contact information, and generally-used/individually required drug information.

Customers who are not familiar with internet or may not have internet access at various locations, can order by phone or email travel packages that include information supplied from web portals (made by health plan personnel) and translators in hard copy. A code translator is a small device or cell phone modification that serves as a medical language translator and also displays critical medical conditions of travelers in regional languages. For example, a small GPS device can work like a pen dictionary, that pulls information out of a central database and translates drug or medical codes to English by highlighting words.

For customers who have severe conditions, travel management advisory teams can work with them to provide more detailed information and risk preparations. Furthermore, the team can arrange medical trips at customers' wills by referring internationally recognized medical practices and providers, complete with cost comparisons, thus enhancing customer choices. However,





HP TRAVEL POCKETBOOK



POCKET MEDICAL TRANSLATOR

the team should always inform the customers of their responsibilities and risks, possible long term care effects, and other relevant issues.

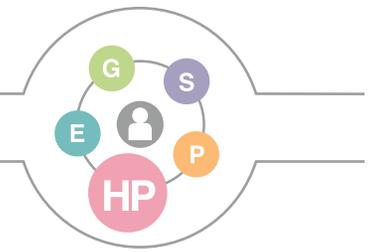
Eventually, **Plan-to-Go** will encourage value-added competition amongst providers and suppliers internationally by enabling customers with international information access.

### Scenario

Jenny was travelling in Egypt with her two kids. Her son, Tom had a stomachache, possibly caused from the new local food. Jenny did not bring her general drug sets, so she turned on health plan translator (a small pen looking device with GPS installed). She had ordered the health plan traveling information package through email

and received a small pocketbook and a translator before departure. The pocketbook contained regional health plan contact information, provider locations, emergency to-dos, and critical medical records of her and her kids in local language. The translator also came with a short manual. One menu of the translator displays key medical records of her and kids such as Tom's drug allergies and her diabetes condition. Another button pulls out information on matching local drugs.

While at the pharmacy, she enters the word, "stomachache," and the device matches local drug brands with Tom's condition in their language and additionally offers price ranges by connecting to the central database. She is given choices of drugs from the pharmacy and is now better informed to select the most appropriate one.



# Employer Health Adviser

## *Supporting and educating employers on employee health*

### Description

Health experts trained to serve as health plan consultants, environmental health facilitators, support group coordinator and advocates for employers in need of health-related counsel.

### Properties

- A trained health planning and care cycle adviser
- Health awareness advocate and educator
- Health insurance agent
- Hands-on or remote consultant
- Facilitator of consumer choice and health improvement
- Initiator and moderator of social groups based on health conditions and needs

### Features

- Assists in adapting health plan to employer and employee needs
- Evaluates current health status as benchmark for improvement
- Performs workplace inspections and awareness evaluations
- Motivates and inspires plan members in need

- Facilitates collaboration between employer decision makers and employees on health related issues
- Oversees employers health related software
- Organizes training and awareness workshops
- Maintains a open dialogue between health plan and employer plan members by regularly seeking feedback
- Performs on-site visits
- Initiates and moderates health support groups within the organization

### Discussion

**Employee Health Advisers** are trained consultants attached to specific organizations. They provide advisory services and facilitate health plan management in organizations small and large both on-site and remote. They represent the health plan to employers and encourage employee choice. The advisers facilitate dialogue between employers and employees and promote collaborative decision making within the organization.

**Health Advisers** are not medical advisers but are concerned with consumer choice and care cycle management within the health plan. They oversee employer software for health care and provide training to human resource executives to understand and manage health plan administration. Working in tandem with the **Community Health Program**, the adviser actively

### RELATED ELEMENTS

- Community Health Program
- InfoGate

### FULFILLED FUNCTIONS

- 25 Assemble patient feedback
- 37 Communicate patient health history
- 45 Reconcile patient health benefits
- 50 Assemble risk reduction options
- 52 Assemble employee feedback
- 55 Communicate risk reduction recommendations
- 56 Provide resources for improving employee health
- 60 Communicate potential cost benefits for risk reduction
- 61 Communicate job-site environment improvement suggestions
- 68 Facilitate networking of employees for social support
- 69 Facilitate education of Human Resources representatives
- 85 Communicate health plan performance



**ASSOCIATED DESIGN FACTORS**

- 8 Providing resources does not imply their actual use
- 15 employees have limited knowledge of health/medicine
- 18 Difficult to track user health behavior
- 29 Subscriber lifestyle hard to track
- 30 Demographics data hard to find
- 31 Health data is widely spread, hard to collect and disparate
- 36 Difficult to access PHI's
- 38 Difficult to mandate and track follow up treatments
- 39 Difficult to get credible qualitative data on preventative care

identifies risk pools within the organization. He/she initiates and monitors preventive care support groups to reduce risk and improve health. Work place inspections are performed and improvement suggestions are made to the employers to reduce risk.

As a representative of the health plan to employers the advisers also act as insurance agents and actively communicate health plan performance to employers. The feedback is used to make the plan work better for the organization. The adviser also functions as a counsel for employees and motivates those in need.

Customized health information delivery, events, and feedback sessions with patient employees are organized by the adviser. Adviser performance is measured against the rate of health improvement in the organization over time. This data is derived from an organization's health progress reports and employee personal health reports. The adviser is the strongest communication channel between health plans and employers. Every adviser has a portfolio of employers and attends to their needs

**Scenario**

David is a pre-diabetic, over weight 35 year old man in a highly stressful job. His previous health plan was chosen by his employer and he does not have a detailed knowledge about what it covers. But the employers are switching to a new plan and the employees are all

introduced to a friendly adviser who explains about the plan in a forum. The adviser methodically gathers employee needs and fears. He then goes on to explain about the benefits of the new plan for the employees. He outlines his role and encourages employees to use the health plan's resources and his own expertise to solve health plan related issues.

The adviser conducts a survey to profile all employees. Soon David receives multiple plan benefit structure options and he opts for one that suits him the best. After a round of iterations between employers and health plan, David receives a revised plan explaining the reasons behind the structure of benefits.

David then receives an email from the adviser informing him to take note of his pre-diabetic condition. The adviser offers help to David for creating a support group within his organization. David is linked to the health plan website and the web forum, where he understands the importance of grouping for health support and the success of the health plan in sustaining such groups. David is interested and fills an online opt-in form. David is soon allocated a group.

The adviser performs a work-place inspection and changes the cafeteria food and monitors the activities of David support group. With support group exercises and healthy cafeteria food, David is slowly reintroduced to a healthy lifestyle.



David receives personal health reports through his preferred medium of communication. The report details out his health improvement over time and plan usage. If David slips, the adviser will get in touch with him to and offer help. The health progress report of the organization shows an upward slope. The report offers an overall snapshot of how health the employees are and what efforts are being made to improve health within the organization. The cost vs benefit through risk reduction approach is validated in the report.

The adviser is accessible to David upon appointment and replies to emailed queries as soon as he can. The human resources are handing his billings without any hitches as the adviser has helped them chart out a plan to seamlessly merge with health plan administrative procedures. The adviser regularly sends out surveys and gather feedback. Quite often the feedback becomes part of the plan.



# InfoGate

*An infrastructure application that supports and enables content capture*

## SUBSET ELEMENTS

- Medmap
- Medicaese to English
- Messaging Standards
- Patient Privacy

## FULFILLED FUNCTIONS

- 37 Communicate patient health history
- 41 Communicate provider scorecard
- 42 Communicate patient health behavior
- 39 Communicate best/worst health practices & trends
- 59 Communicate provider quality
- 60 Communicate potential cost benefits for risk reduction
- 81 Communicate range of prices for services and coverage
- 85 Communicate health plan performance

## Description

A system that contains the logic behind information capture and dissemination. A sub element MedMap maps the information stored in PIMS to those who need that information and also tracks when this information would be relevant. A web portal interface allows the analysis of information being exchanged throughout the **InfoGate** system to be analyzed.

## Properties

- A platform for data capture that allows new forms of data to be pulled in as needed (for ex. From patient health stats application)
- Medmap—A database containing information regarding the types of information relevant to various parties
- Medicaese—A translation service that translates medical terminology to terminology that is commonly understood.
- A data capture application that is used by several health plan applications
- Messaging—A data delivery capability that allows **InfoGate** to know which channels are appropriate for which types of data.
- A web portal for aggregating the multiple types of data, analysis and trends.

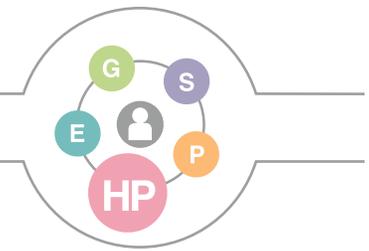
## Features

- Establishes a relationship between the various parties involved in a patient’s care cycle and the data that is relevant to them.
- Provides various methods of capturing data whether it’s online or through hard copies.
- Translates medical terminology to patient understandable terminology
- Always keeps in mind patient privacy during information exchange to make sure there are no privacy breaches.

## Discussion

**InfoGate** is an infrastructure application that allows the health plans to do more with the information they regularly collect. It allows them to understand which data is important for who, allows them to capture data from various channels in a standard format, and allows them to send information out, regardless of whether it’s a report for providers or a text message for patients, all the while ensuring that the patient’s privacy is supported.

**InfoGate** is closely tied to **MedForum**. While **MedForum** focuses on the data that is being captured, **InfoGate** takes care of how the data is captured and making sure that the data is being received and stored in a format that allows health plan analysts to spot patterns in the data.



In addition to helping capture data, **InfoGate** progressively refines its MedMap, a critical application that stores the relationship map between the various parties (including subscribers) involved in health care and the information that is relevant to them as well as the channels they prefer such as web, report, API etc. This information is important in ensuring that the various parties within the health care system all have the relevant information available to them at the right time in order to assure the best care for the plan member.

**InfoGate** connects with the **Contextual Recommendation Engine** to deliver the right information at the right time during patient care cycle. By pulling data from **Patient Information Management System**, various internal and external databases and sending them to the patient using MedMap to ensure that the right channels are being used.

**InfoGate** enables the capture and analysis of operational data, providing some of the information necessary to calculate the **Provider Business Performance Scorecard** and **Provider Clinical Performance Report**. In addition, because of MedMap, **InfoGate** is able to correctly deliver the reports to the providers using the appropriate channels.

**InfoGate** is a significant reason behind **Personal Health Stats Application's** ability to use near-real time personal medical information and deliver value added applications. **InfoGate** can capture medical information transmitted by devices who subscribe to the same

standard. This information is captured, aggregated with other information relevant to the subscriber and sent back to the personal health stats application which then displays the information in a user friendly manner.

Finally, **Employer Health Adviser** can use the **InfoGate** system as a system to generate employer specific advice and recommendations before heading to the employer. The **InfoGate** system captures the various pieces of information in the **Patient Information Management System (PIMS)** and the adviser can pull up this information using the information exchange portal that is the main access point for **InfoGate**.

### Scenario

Joe is a business developer for Well Plan. He's responsible for making sure that Well Plan continuously offers the best services and keeps ahead of the competition by making new and more valuable services available to their plan members. With a large organization like Well Plan, doing this manually would have been hard and would have required a large army of analysts but Well Plan recently invested in several decision support and infrastructure applications that have made Joe's life easier and ultimately helped him do his job better. Joe sits down in front of his computer and logs on to his **InfoGate** portal. Immediately, he notices a couple of messages that have been flagged on his alert panel that lets him know of action that he needs to take on some messages that

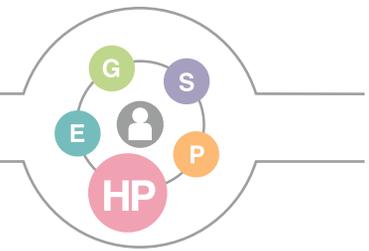


have been received. Since most of **InfoGate** is automated, Joe only has to take action when there's something that **InfoGate** can't figure out or if there are new sources of data that he needs to track. As is the case today, Joe just came back from a meeting with a supplier of personal medical devices. The device allows individuals to track information about their health and Joe needs to make sure that **InfoGate** can understand the data that the devices will be tracking. If any of his health plan members choose to buy this device as is highly likely, then he wants to be sure that the information is collected and stored for analysis.

Using **InfoGate's** easy to use data capture module he is able to quickly capture some test data. With that done, he now needs to map the data to the parties that might want it. In this case, the device is capturing health data that is sure to be of interest to the primary care physician. So

Joe tags the information as relevant to the physician. He knows of course that the patient would have to first agree for this information to be released—even to the health plan—before the data is available so Joe's not worried.

Joe also notices that one of his action items is to make sure that providers are receiving a monthly scorecard report and notices that there's a message from an analyst at Northwestern hospital in Chicago who didn't receive it last month. Joe uses **InfoGate** to resend the report to the hospital and then rechecks the report delivery settings. Sure enough, the region that Northwestern hospital is in was somehow omitted from the delivery setup and Joe reenters the information. He knows that without the **InfoGate** system, there would be a lot of miscommunication between all the stakeholders he works with.



# MedForum

***A forum to capture and disseminate information to all stakeholders***

## Description

A system that uses multiple methods of knowledge exchange such as forums, surveys, crowd sourcing to help analysts identify new practices, problem areas and opportunities. The information gained from this system is used to develop new plan features, health care advice and community advice for our plan members.

## Properties

- Peer forums for suppliers, providers and health plans
- A knowledge management application
- An online feedback gathering application
- Software that tracks topics online

## Features

- Tracks feedback and input from plan members to find opportunities
- Creates an information gathering and sharing network between providers, plan members and suppliers
- Creates an information gathering and sharing network between industry experts
- Allows analysts a structured view of the information
- Provides analytical tools to allow health plan analysts to identify opportunities.

## Discussion

**MedForum** is a tool to gather information from the relevant players in the health plan system, provide a network for them to share information with each other and serve as a channel for disseminating information.

Sub elements such as Supplier Peer Forum, Provider Peer Forum and Patient Networks provide a means for the respective parties to have discussions within their groups as well as between groups to share medical information, identify best practices and improve the level of service. This attempt to improve upon the current practice where annual conferences are the primary method by which people exchange information.

In addition, resources such as on-call experts, podcasts and support networks provide information and support for all the relevant parties in the health care system.

Finally, the information is dis-aggregated from its source and used for understanding areas of opportunities in all aspects of the health care system with the ultimate goal of improving the patient care cycle.

## Scenario

Brad is an **Employer Health Adviser** and he's about to make his monthly visit to Acme Inc. Acme has asked Brad to provide their employees with a refresher on

## SUBSET ELEMENTS

- Specialty-specific best practice podcasts
- Health partnership network
- Evaluative Crowdsourcing
- Supplier Peer Forum
- Feedback & Review forums, Provider peer forum
- MedForum's Consumer
- Expert network
- Support network

## FULFILLED FUNCTIONS

- 32 Evaluate clinical institution performance
- 34 Evaluate user health care cycle in relation to provider
- 35 Evaluate user feedback of health treatment
- 36 Evaluate provider feedback of health plan performance



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THE HEALTH PLAN ROLE IN RETHINKING – DESIGN THINKING – HEALTH CARE

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health habits and provide management with an update on the health of their employees.

Before Brad heads out, he checks into his **InfoGate** portal and logs into the **MedForum** section. **MedForum** has been collecting information from hundreds of employer sessions, expert networks sessions and peer forums and has analyzed the information to provide Brad's health plan with the latest information on trends and opportunities.

But for today, all Brad needs is to get the updated **MedForum** newsletter on workplace safety and health

which is updated monthly by analysts within his health plan who scour the information that **MedForum** gathers.

Brad uses **MedForum** to supplement the plan usage data he gets on Acme Inc. It helps him provide not just a run through of the health of Acme's patients, but also advice on how to help them practice a healthier lifestyle.

With these materials in hand, Brad heads out to his employer meeting with everything that he needs.



# Patient Information Management System (PIMS)

## *An application to manage subscriber information*

### Description

A health record database which provides a complete summary of the health and medical history of an individual as well as relevant health issues such as timely product recommendations and provider performance reports. It pulls information from multiple sources such as claims database, provider specific EMRs and PHRs to offer a single view of a plan member. It is the core database that enables other system elements such as the **Personal Health Stats Application**.

### Properties

- Data aggregator (pulls information from multiple sources through **InfoGate**)
- Access/Link to EMRs and PHRs
- User friendly single view with base menu construction
- Interface customization tool

### Features

- Pulls information from multiple sources through **InfoGate**
- Links and obtains access to multiple electronic accounts such as EMRs and PHRs
- Provides a single view of a plan members' personal health record and medical history, current health status

as reported by the Personal Health Stats Application, proper and relevant product recommendations, provider performance reports, and other health issues

- Provides a tool for selecting customized menus, features, and screen sets

### Discussion

It is hard to find one integrated and complete view of an individual health record from existing multiple information sources. Hospitals run different EMRs that are not standardized universally, and it is difficult for users (patients) to gain access and understand their own records from multiple EMRs.

**Patient Information Management System (PIMS)** is a data platform that pulls information from multiple sources to provide complete and intuitive health information to plan members through **InfoGate**. In order to do that, it requires data access from EMRs and other existing PHRs.

PIMS provides the following information in a single view; personal health record and medical history; current health status reported by the **Personal Health Stats Application**; timely product recommendations; relevant provider performance reports; and other relevant health issues such as regional health trends and preventive care information. **PIMS** do not hold plan members' health records or block members' records when they

### RELATED ELEMENTS

- Contextual Recommendation Engine
- Provider Clinical Performance Report
- Employer Health Adviser
- Personal Health Stats Application
- InfoGate
- Plan-to-Go
- Community Health Program

### FULFILLED FUNCTIONS

- 37 Communicate patient health history
- 40 Communicate drug performance data
- 42 Communicate patient health behavior
- 56 Provide resources for improving employee health
- 59 Communicate provider quality
- 82 Communicate health behavior recommendations for education



**ASSOCIATED DESIGN FACTORS**

- Customized recommendations may be difficult to achieve & implement
- Patient may want to restrict data provided
- Not all data may be immediately relevant
- Paper-based system is tedious and labor intensive
- Health data is widely spread, hard to collect and disparate
- Information security might become an issue

change health plans; the medical records are owned by individuals. However, the single integrated information storage and communication system will cause switching costs for customers (such as inconvenience to set up new tools, re-learning time to use new tools) if they want to move to other health plans. Eventually, due to its effectiveness, **PIMS** will earn competitive power among health plans.

Users can customize their views through **PIMS** including menu selections, color schemes, displayed features, and page layouts. **PIMS** also can be also linked to My Health Manager provided by employers.

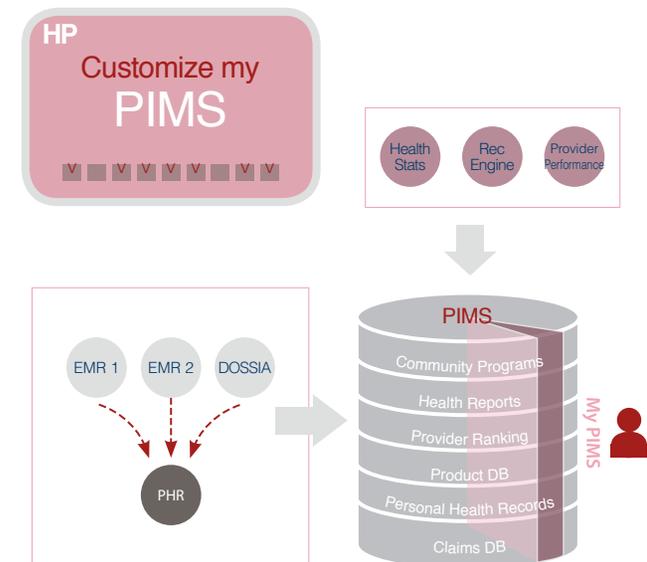
**Scenario**

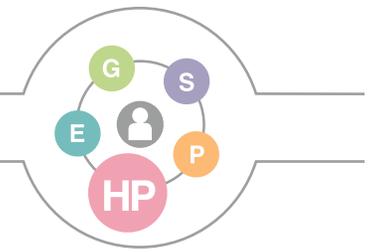
Jim runs a small business with 10 employees. Some bigger companies provide diverse employee welfare programs such as My Health Manager, but for Jim’s company, it is not very cost-efficient to implement such a program. However, Jim heard of **PIMS** from the health plan through its **Employer Health Adviser** and decided to adopt the program for his employees and himself.

Jim logged on his **PIMS**. As advised by his doctor from the previous visit, Jim installed a piece of software called **Personal Health Stats Application** provided through the plan. Because his blood sugar monitor is connected through the **Personal Health Stats Application** to the **PIMS**, the **PIMS** shows his blood sugar level and weight

as well as their progress compared to the previous data. **PIMS** displays some recommendations made by other useful tools of the health plan. This time, **PIMS** delivered a message that he should engage in regular exercise. Having his likes/dislikes data, tennis was recommended to him with the product lists recommended by **Contextual Recommendation Engine** of the plan.

Jim also received daily health and his choice of information including weather and air pollution level.





# Provider Business Performance Scorecard

## *Measuring the operational performance of providers*

### Description

Measures specific metrics on how providers work with health plans (*ie.* tracking time to submit claims, coding accuracy etc.) and provides a final ranking. The **Provider Clinical Performance Report** is sent to providers so that they know their performance as compared to other providers who work with health plans.

### Properties

- A report tracking providers' business relationship with health plan
- A comparison against other providers
- A report on the price of the full care cycle for a patient

### Features

- Reports a provider's standing in relation to the health plan
- Compares and ranks a provider against other providers providing similar services
- Provides a brief summary of best case provider/health plan relationships
- Provides a cost comparison for patient care cycle
- Shows providers their standings compared to other providers

- Gives recommendations on how to improve the business to business dealings of the health plan
- Helps improve providers' administration through competition

### Discussion

Similar to existing business to business scorecards, the **Provider Clinical Performance Report** is a measure of a provider's operational performance based on data exchange between the health plan and the provider. While administrative performance is admittedly not as important as service performance, it may be beneficial to physicians to know where they can improve in dealing with the health plan.

Some of the metrics that may be reported may be the speed in which claims are reported to the health plan, the accuracy of coding, and the extent to which physicians enable portability of patient information.

Included in this scorecard is a cost comparison with other physicians serving patients with a similar care cycle. By helping physicians to see their own costs compared to others (assuming that "real" costs are known, and are not contracted costs) physicians can see where they need to make improvements in the care cycle, in order to be competitive. Health plans are perfectly situated to provide this service to physicians; they pay for all the services used by a patient through the care cycle.

### RELATED ELEMENTS

- Provider Performance Report
- InfoGate

### FULFILLED FUNCTIONS

- 24 Assemble claims data for provider report card
- 25 Assemble patient feedback
- 28 Assemble procedural costs across providers
- 29 Verify provider claims
- 30 Verify correct and comprehensive cost
- 31 Evaluate physician performance
- 32 Evaluate clinical institution performance
- 34 Evaluate user health care cycle in relation to provider
- 36 Evaluate provider feedback of health plan performance
- 41 Communicate provider scorecard



**ASSOCIATED DESIGN FACTORS**

- Difficult to define measuring/ scoring criteria
- Physicians don't want to spare time for administrative work
- There is no defined medical costs & doctor fees
- Data variables are not defined
- Sources for data are uncertain

To encourage improvement, the scorecard provides best practice details as a benchmark for physicians needing improvement.

The scorecard is distributed with the **Provider Clinical Performance Report**. This makes it easy for providers to view their practice from multiple perspectives and make the changes most important to competitive success. The whole process is enabled/facilitated by **InfoGate**, which draws the necessary stats and costs from the database to produce the final scorecard. **InfoGate** also directs the scorecard and performance report to be sent via physician's preferred medium.

**Scenario**

Dr. Amaratti was one of those students who loved getting his report card at the end of the year. He looked forward to it, just as he did with his report card sent out from the health plan. He had made some changes in the last year to help drive up his score in the business to business portion that was created by the health plan. He had purchased new billing software that would work in conjunction to his patients' PHRs. This alone was enough to help raise his letter grade, he was sure. Now his patients' health plans knew almost as soon as the patients left the office what he had done for them.

Dr. Amaratti had opted for the paper statements, so he knew to expect them every six months. He opened the

envelope that had arrived today. He found that he had risen to an A- grade, up from the B where he had stood last year. He was pleased with his progress. He continued reading through the booklet to see what further improvements he might make this year. He wanted to be able to see an A grade next year in his report, because he knew that new patients looked at both this grade and his performance grade when deciding where to get treatment. The scores were also published to the health plan website and patients perused these ratings before choosing their physicians.

After briefly reviewing the recommendations, he skipped to the other part of the booklet that gave his performance review. Dr. Amaratti was glad that he could get both reports at once, and in the paper format. He knew he would be reviewing this as he was making plans for his practice through the upcoming year.

\* \* \*

Centerville Regional Hospital was among a handful of hospitals that directly served the valley population. But it also served further flung communities specifically through it's cancer treatment center. For the past ten years the hospital had been known for it's success rate in dealing with cancer, and the administration definitely wanted to grow the resources and abilities in cancer therapy. Dave understood this priority and did what he could to improve. His second priority as part of the hospital administrative board was to make sure that



operations were tightening up their procedures. Every few months Dave went to one of the sources of feedback available to him for this purpose. He would check the **Provider Business Performance Scorecards** that the health plans would put together for Centerville Regional to review. He checked the scorecards published by the health plans that Centerville dealt with most. Naturally, the data provided by these plans were more reliable, as the scores represented more transactions.

Today, when Dave went online to Centerville's personalized scorecard page he found that for the last six months WellPlan, the largest health plan in the area, had ranked Centerville lower than not only North and St. Martin's, but also lower than Cottonwood. While he knew that North and St. Martin's operations departments had been consistently scoring higher than Centerville's, he was surprised to see that Cottonwood, who had been trailing the pack as of a year ago, had launched itself from sixth place up to third, knocking Centerville to fourth. The two hospitals had about the same beds, and their operations departments employed roughly the same amount of staff.

He wanted to dig a little deeper. He clicked on the score breakdown tab. This page showed that Cottonwood had

improved dramatically in its coding procedures. It now boasted a 99.6% accuracy range. Centerville was still hanging down around the 99.2% range.

Dave recognized that this report was not as important as some of the performance evaluations, but he still wanted to make sure Centerville was doing what it could to make improvements in every area. He made a call to his coding supervisor. She reported that a friend of hers at Cottonwood had been going through some extra training mandated by the hospital. Dave directed her to the WellPlan scorecard site and asked her to come up with a budget for training, and to take a look at where they might be able to make improvements elsewhere.

He turned back to the scorecard site: now to check on the cancer treatment care cycle. Last year he had opted to have comparisons made in this area over a nationwide perspective. Centerville wanted to continue to strengthen its cancer treatment unit, and knowing what patients across the nation were paying over the course of their care cycles was profoundly helpful. He always read what the top hospitals were doing to manage the costs to their patients and he tried to implement their practices wherever he could.



# Provider Clinical Performance Report

## *Measuring the qualitative performance of providers*

### SUBSET ELEMENTS

- Physician Trendalyzer
- Inter-physician grading engine
- Cost Comparison Reports
- CompareMED
- Aggregate Reviewer Weighting
- Consumer Workshops
- Online Review Forums

### RELATED ELEMENTS

- Employer Health Adviser
- InfoGate
- PIMS
- Community Health Program
- Provider Business Performance Scorecard

### Description

A summary of providers' performance derived from plan member feedback, cost comparison calculations, and aggregation of existing third party ranks. The reports help promote transparency and empower consumers to make educated health care decisions. The reports will also be sent to the providers complete with consumer suggestions and recommendations.

### Properties

- Periodic, comparative reports of provider ranks and evaluations
- Provider cost comparisons
- Aggregated review and information database (accomplished between **InfoGate** and third parties)
- Evaluations compiled from both experts and consumers
- Patient feedback protocol throughout full care cycle; feedback workshops and forums (for gathering qualitative data)
- Aggregate Reviewer Weighting to assign appropriate rank and value to evaluators

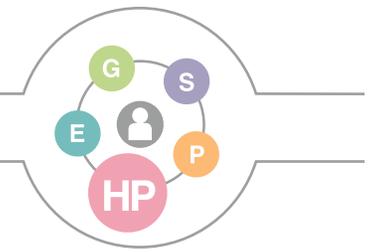
### Features

- Evaluates provider performance evaluations throughout entire care cycles
- Collects feedback from plan members
- Aggregates existing provider performance data
- Assigns rank and value to evaluators
- Works with **InfoGate** to form appropriate delivery channels
- Compares scores against past, benchmark evaluations
- Consolidates information for a single view
- Informs providers of peer offerings, services, and performance
- Encourages healthy competition due to publicized comparisons

### Discussion

Porter and Teisberg warn that some providers will resist greater health plan involvement in results measurement due to skepticism and potentially threatening data. In this new results-based relationship, collaboration and transparency are necessary in creating value competition.

There have been many past and ongoing attempts at measuring results in health care. They can be categorized



into three classic quality measures: structures, processes, and outcomes. Structural indicators, like those proposed by The Leapfrog Group, are easy to measure, but do not necessarily relate back to the key outcomes of cost and clinical results. Validated process measures, as seen in the GAP project, are salient to both providers and consumers, however cost-benefit calculations vary from hospital to hospital. Outcomes-based measures, like the NHQC, featured inexpensive surveys to improve the patient experience, but had trouble relating back to more difficult measures like mortality; more complex evaluations require sophisticated risk adjustment.

Performance evaluators choose among various data sources to compile their reports. Administrative data, though easily obtained, does not contain enough pertinent information. Chart reviews, on the other hand, are more costly to obtain, but provide excellent information in both depth and breadth. Patient and provider surveys are in between for data collection costs, but are only truly beneficial to a short list of quality measures. This can be further enhanced by encouraging pervasive feedback protocols throughout the entire patient care cycle, thus collecting a more holistic and comprehensive data set for analysis.

Studies suggest that public reporting has the greatest potential for beneficial impact. Similar to how consumer companies are rated by performance, quality, customer service, and quantitative data, providers can be measured and ranked for the industry's benefit. Participants can

see where they stand amongst their peers, and are forced to address relevant issues to remain competitive. This healthy, value-based competition is a direct result of industry transparency and the consumers' supplemented bargaining power.

Ideally, evaluative reports should be redistributed to all stakeholders assisting in the data collection. However, due to the specific and varied needs of each player, the process would be resource intensive and possibly unfeasible. Currently, providers show the most to gain from existing reports; the other players are generally unaware of them and their value or unable to get access during relevant times. However, in order to make an industry shift, all players must be equally cognizant of performance measurement and what it means to one another.

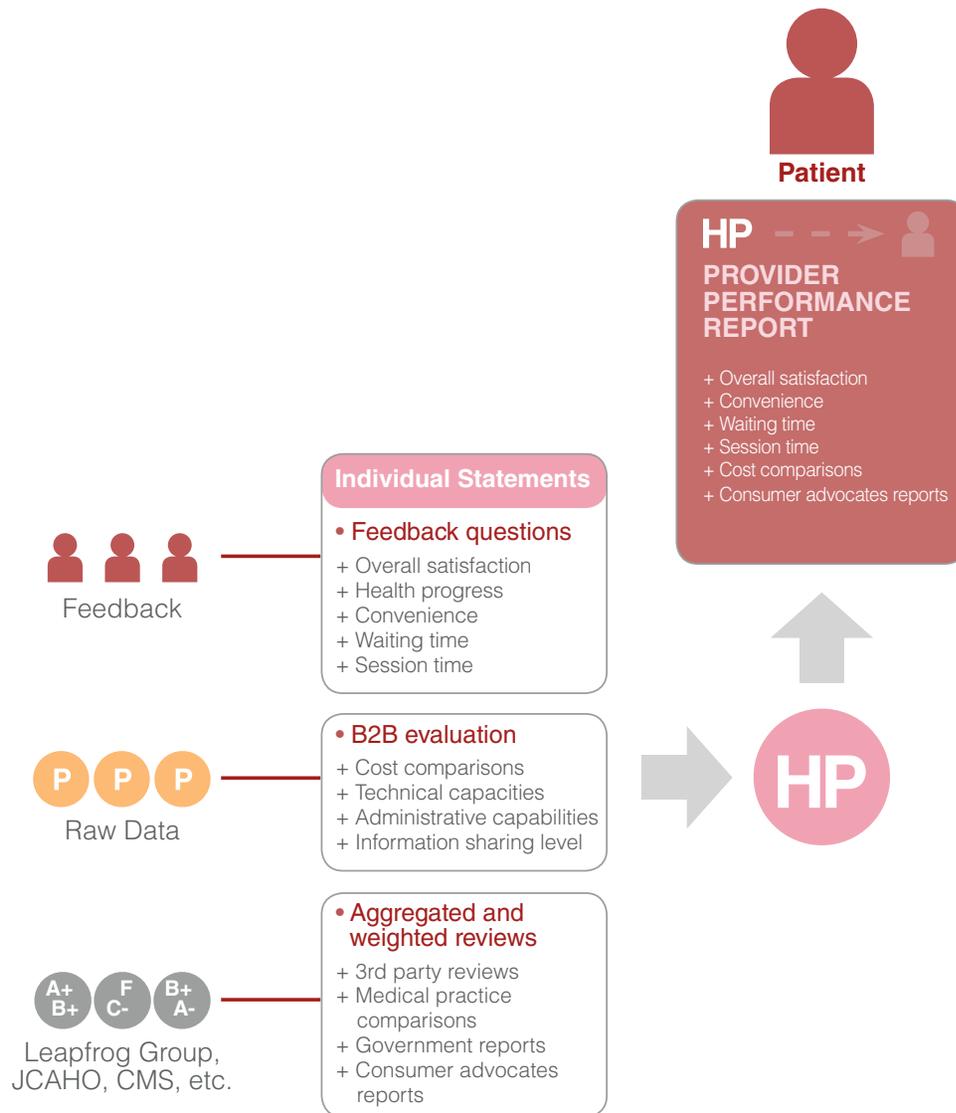
Sources support the stance that health plans need not reinvent performance evaluation, but simply borrow credibility from those already doing it. The most efficient strategy involves aggregating various credible results and repackaging them to be relevant and accessible to consumers in an effort of creating a more informed patient population. Health plans could then compete on developing processes to make said public information more accurate and engaging to their membership. Furthermore, embracing current (and future) information technologies encourage the creation of powerful, flexible platforms to compile and distribute

### FULFILLED FUNCTIONS

- 24 Assemble claims data for provider report card
- 28 Assemble procedural costs across providers
- 30 Verify correct & comprehensive cost
- 31 Evaluate physician performance
- 32 Evaluate clinical institution performance
- 33 Evaluate drug performance
- 34 Evaluate user health care cycle in relation to provider
- 35 Evaluate user feedback of health treatment
- 41 Communicate provider scorecard
- 49 Assemble provider quality data points
- 59 Communicate provider quality
- 65 Facilitate employee decisions regarding provider choice

### ASSOCIATED DESIGN FACTORS

- 1 Potential for correlation errors in measuring performance
- 2 Information transparency is required for proper reporting
- 3 Patients may not trust health plans as feedback depositories
- 8 Providing resources does not imply their actual use



these performance reports to the full spectrum of health care stakeholders.

### Scenario

A new employee at a company decides to look for a nearby physician. She begins by checking her My Health Manager (Employer-provided portal)/PHR (personal health record) for more information. Knowing about her recent move, the employer's health plan has released some reviews and ranks of providers in her area.

The reviews are depicted with clearly labeled criteria like: overall satisfaction, convenience, waiting time, session time, cost comparisons, and consumer advocates reports. Because all information is gathered, the patient can determine for themselves, exactly how they wish to define value and quality. The system can track these preferences and target its reports accordingly for the specific patient.

The **Provider Clinical Performance Report** is the consumer-centric half of the health plans' provider reviewing system. The other half, **Provider Business Performance Scorecard**, measures more operational factors like administrative capabilities and medical practice comparisons. These are reported back to providers to make them aware of their standing amongst peers.

## Conclusion

Applying systemic design thinking to Porter's ideals has been a complex yet invigorating process. Through our solutions, derived by following the structured planning process, we have strived to retain focus on creating an atmosphere of value based competition between health plans. We believe value competition can be driven by information transparency, and this will eventually result in consumer centric services. Reducing risk with the right incentives, disseminating relevant health information and promoting unbiased evaluations will help health plans provide the best options for their consumers.

In transforming to health institutions, health plans should support and empower all stakeholders with incentives that maintain excellence in the health care system. In Porter's words "An independent plan . . . will have more degrees of freedom to improve value by migrating services to excellent providers and to new, more effective treatments" (238).

Our solutions, though developed with an outsider's view of the health care system are attempts to answer important questions: Should plans develop exclusive networks? Shouldn't providers disclose actual procedure costs? Why do employers choose one-size-fits-all plans to reduce cost sharing? How can plan benefit structures be innovated? If plans cannot deny consumer coverage based on risk, then how can we reduce risk pools effectively? Why aren't plans portable? How can health records be maintained and migrated? How can the rich data aggregated by health plans be put to better use?

In asking these questions we have been fascinated with scope and diversity of responses we have received from various experts who have helped us through the project. Health reform is a controversial topic; we hope we have provided the reader some points of thought from a design perspective.