“Envisioning Program-Adaptable Care Facilities™: The CareCyte Endeavor”

5 November 2007
Our Mission:

SSF Creates & Nurtures Social Networks of Experts to solve major challenges in science and medicine
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A Key “Lens” through which SSF perceives the future....
CareCyte

- Long-term objective: improve access to healthcare for patients with a wide variety of specific needs.

- Achieve this by developing and testing a new strategy for providing *Program-Adaptable Care Facilities™* much faster and at much lower costs than have historically been thought possible.

- Currently: planning the business, completing designs, working out relationships with initial customers, and raising money.
Chris Raftery, CareCyte Founder and CEO, has managed some of the most complex construction projects in the Pacific Northwest including The Experience Music Project and the $1.3 billion Fujitsu semi-conductor manufacturing plant in Gresham, Oregon. He is a founding member of the Virtual Builder’s Roundtable and is generally known as one of the most creative and innovative leaders in the construction business today. With degrees in both engineering and construction management, and a working background as a major project superintendent, he has been instrumental in the delivery of a number of hospitals, research laboratories, and biotech facilities during his career.

David Chambers, CareCyte Founder and Chief Architect, has for many years designed healthcare service delivery facilities with effective coordination among patients and caregivers as a primary objective. His work as a healthcare and hospital architect has led to dramatic innovations, as his optimized workflow designs have shaped his spatial designs, rather than the converse – space considerations forcing workflow – which is the tradition in today’s healthcare environment. His design concepts have led to distinctive integrated intervention services units programmed for maximum throughput, single-stop patient intake centers, and decentralized bedside care configurations. In each design, the architecture of his facilities has led to more efficient use of staff and material resources, reduced care cycle times, and higher patient satisfaction. Chambers was named one of the “Twenty who are making a difference” in 2007 by the Center for Health Design.

Chauncey Bell, CareCyte Chief Operating Officer, has repeatedly led successful design and development programs that have produced radical changes in not one but many industries. Better-known examples include Cemex’s capacity to deliver concrete on time in Mexico City and Guadalajara, Mexico; the invention of an innovative and important new bank, Intelligent Finance, in the United Kingdom; delivered in 10 months, dramatically shortened delivery times for power plants built in India and China; and equivalent innovations in chemical, telecommunications, and computer industries.
Where to Enter the Question of Access?

• Bringing patients and healthcare professionals together effectively and efficiently is challenging for many reasons.
  – Cost
  – Availability of service programs
  – Scheduling
  – Adequate numbers of qualified personnel
  – Coordination with a patient’s family members
  – Facilities and transportation
  – Supplies, maintenance, and security
  – Sanitation, etc., etc.
How and Why SSF Developed CareCyte

- We noticed that there are just not enough healthcare professionals, and no way to provide adequate access to care without changing our service delivery models.

- We speculated that facilities could be a point of leverage. Services in many economic sectors are being moved “closer to the customer.”

- We began talking to construction engineers and architects, looking for a way to build facilities that could improve access.

- In collaboration with a group of concerned physicians, we convened a study group to address this question.
Facilities as a Point of Leverage?

- Facilities are an important component.
  - From determination of need to beginning operations, the design and construction process for a major facility takes four to ten years.
  - Simpler and smaller care facilities take two to four years.
  - Healthcare facilities’ configurations are perpetuating expensive, wasteful practices.
  - Construction costs for specialized facilities are growing 20-25% annually.
  - Carrying costs of works-in-progress have become a major healthcare cost.
  - Ongoing improvements require continuous reconfiguration of facilities.
- Many of these costs originate with our centralized and departmentalized care model.
- We began to explore the possibilities of a model in which a network of service receptors, bringing healthcare access closer to “the customer,” sat in the center of our thinking.
The study group reported that radical improvements were possible, if we used current technologies in new ways. They described a kind of facility that could be provided:

- At much lower costs and much more rapidly,
- In which healthcare is delivered much more efficiently,
- That is far more flexible and adaptable than what is currently available,
- Constituted as nodes in a network of care, with extensive collaboration among physicians all over the world and local healthcare professionals, to provide much improved levels of care.

In conversation with the study group, we agreed that if such facilities were available, they could trigger other positive changes in the functioning of healthcare systems.
CareCyte Plans

- CareCyte will use *Value-Streaming Patient Flows* and advanced computer technology to design, prototype, optimize, and prefabricate for delivery and rapid assembly *Program-Adaptable Care Facilities™ (PACFs™)*—
  - of the highest quality available anywhere;
  - at costs significantly lower than is normal for such facilities.

- The CareCyte team believes that a very large market will open for effective solutions to the pervasive challenges of building high quality healthcare facilities.

- The company expects to generate a significant addition to Washington State economics and employment, working through both for-profit and not-for-profit entities as they design, manufacture, support, service, and arrange staffing for *PACFs™*. 
SSF LSDF Grant Application

- Manage discussion among the State’s healthcare institutions to define effective locations for prototype installations and evaluation metrics;

- Manage discussion among executives, technologists, manufacturing experts and others regarding the development of scalable, green, sustainable methods for fabrication and integration of all components of a CareCyte PACF™;

- Manage discussion among policy makers, manufacturing experts, logistics experts, educators and investors regarding issues related to the deployment not only of a CareCyte PACF™ but also development of the facilities required to produce, logistically support and train PACF™ healthcare personnel.

- Leverage our powerful broadband connectivity, unique medical skills, and network operating center platform to test and evaluate telemedicine protocols used to link decision-making physicians to personnel staffing, PACF™;
Operational Benefits:
- reduces steps and cycle times
- eliminates handoffs
- increases predictability of workflow
- enhances ‘lean’ commitments processes
- decreases staffing requirements
- improves quality of outcomes

Facility Impacts:
- less space required
- fewer dedicated spaces
- dissolution of departmental fragmentation
The three exhibits following are artist’s renderings of a Seattle Science Foundation/ CareCyte Program-Adaptable Care Facility™ designed for the purpose of providing neighborhood clinical services.
Neighborhood Clinic in Perspective

Rapidly assembled units offer a variety of architectural themes to complement the neighborhoods they serve. Landscaped areas, though not shown here, are important features.
Interior spaces are virtually column-free. Efficient work flows and patient comfort become the paramount design considerations, instead of the normal structural restrictions that affect design criteria and increase cost.

Interior spaces can be customized with no increase in the marginal cost of the facility.

Over time, interior layout changes can be accommodated without the normal constraints of column bay length, width, etc.
Services to the facility (air, water, power, mechanical units, etc.) are mounted on the roof, hidden from general view. Services are available wherever needed. Utility locations are not a design constraint.

This strategy is efficient and provides full access for maintenance without disrupting patient care.
Comparison of Conventional and SSF/CareCyte Configurations

The final two exhibits compare the characteristics of the same set of pre-admission testing services as delivered in:

1. A superior conventional health care facility of about 60,000 square feet; and
2. A Seattle Science Foundation/CareCyte facility of half that size (under 30,000 square feet).
Patient Flow for Preadmission Testing in a Superior Conventional Facility

<table>
<thead>
<tr>
<th>room type</th>
<th>capacity</th>
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<tbody>
<tr>
<td>operating rooms</td>
<td>2</td>
</tr>
<tr>
<td>diagnostic modalities</td>
<td>4</td>
</tr>
<tr>
<td>exam/observ (incl. emergency/OR/clinic)</td>
<td>15</td>
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<tr>
<td>beds</td>
<td>24</td>
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<tr>
<td>total area (sf)</td>
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<th>services</th>
<th>metrics</th>
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<tbody>
<tr>
<td>admission</td>
<td>1step</td>
</tr>
<tr>
<td>lab/ECG/PFT/x-ray</td>
<td>12 steps</td>
</tr>
<tr>
<td>consult</td>
<td>2 steps</td>
</tr>
<tr>
<td>total steps</td>
<td>15 steps</td>
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<tr>
<td>total distance traveled</td>
<td>680 feet</td>
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<tr>
<td>total time</td>
<td>200 minutes</td>
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Preadmission Testing in an SSF/CareCyte Facility
with *Value-Streaming Patient Flow™*

<table>
<thead>
<tr>
<th>room type</th>
<th>capacity</th>
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</thead>
<tbody>
<tr>
<td>operating rooms</td>
<td>3</td>
</tr>
<tr>
<td>diagnostic modalities (not incl. portable modalities)</td>
<td>2</td>
</tr>
<tr>
<td>exam/observ (incl. emergency/OR/clinic)</td>
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<tr>
<td>beds</td>
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<tr>
<td>total area (sf)</td>
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<tr>
<td>services</td>
<td>metrics</td>
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<tr>
<td>admission</td>
<td>1 step</td>
</tr>
<tr>
<td>lab/ECG/PFT/x-ray</td>
<td>3 steps</td>
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<tr>
<td>consult</td>
<td>2 steps</td>
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<tr>
<td>total steps</td>
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<td>total distance traveled</td>
<td>170 feet</td>
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<tr>
<td>total time</td>
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</tbody>
</table>

30 BED Acuity Adaptable Unit
- single bed rms (shown)

Or

42 BED Inpatient Unit
- Incl. 6 single bed rms and 12 three bed rms

Clinic/ER/Dx

Seattle Science Foundation
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Let’s Continue the Conversation
&
Thank you for your time.

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