Toward Smart Healthcare

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<table>
<thead>
<tr>
<th>HEALTH CARE</th>
<th>BIOSCIENCES</th>
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<tr>
<td><strong>Ecologies</strong></td>
<td><strong>Tissues</strong></td>
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<td><strong>Societies/Populations</strong></td>
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<td><strong>Individuals</strong></td>
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<td><strong>Protein and gene networks</strong></td>
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<td><strong>Protein interaction networks</strong></td>
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<td><strong>Protein</strong></td>
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<td><strong>mRNA</strong></td>
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From Genomics to Phenotypes

"Genomics"
"Transcriptomics"
"Proteomics"
"Metabolomics"
"Cellomics"

Organism behavior
Cell and tissue behavior

DNA
RNA
Proteins
Products
Metabolites

Lucasio
Advances Making Future Health Vision Attainable

- Internet-based Software
- Speed and Storage
- Networking Communications and Imaging
- mPCD

Human Genome Project
- Pharmaceuticals and Nutraceuticals
- Medical Devices

Evidence-Based Healthcare
- Disease Management
- Continuum of Care

Advances in Healthcare Technology

Advances in Computing, Imaging, and Information Technology

Courtesy: Jack Corley
Smart Healthcare

- **Smart** Devices
- **Smart** Networks
- **Smart** Processes
- **Smart** EMRs
- **Smart** Medicine
- **Smart** Organizations
- **Smart** Collaborations
- **Smart** Society
- **Smart** Planet
21st Century Medical Care will require significant scaling of Clinical Technology lifecycle management skillsets and services.

### ENTERPRISE STRATEGY

**Plan**
- System lifecycle
- Tech assessment
- Design consultation
- Standards consultation
- Contract consultation
- Systems integration

**Build**
- Facility upgrades
- Equipment planning
- Deployment, staging
- Testing, safety
- Asset management

**Run**
- Planned maintenance
- On-call, Dispatch services
- Break/fix
- Hazard alerts, recalls
- Patches, upgrades
- Asset retirement

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**NEW HEALTHCARE MODELS**

**NEW INFRASTRUCTURES, CLINICAL PROCESSES**

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**21st Century Medicine: Net-New Lifecycle Requirements**

- HealthConnect integration
- Simulations, prototyping
- System/device testing, certification
- New allied provider sites
- ITIL compliance
- ICE – Integrated Clinical Environments
- Meaningful Use compliance
- Major upgrades, conversions: IPv6, ICD-10, HL7 v3
- Home care technologies, services
- Self-monitoring, behavioral support
- Family support technologies
- PHRs
- Telehealth
- Telemedicine
- Nanotechnologies
- Genomics
- Distributed sites of member care
  - mobile clinics
  - ambulance
  - gym
  - retail
  - travel
  - worksite pods
  - skilled nursing facilities
  - assisted living
- New Hospitals
- Robotics
- OR of the future
- Interoperable clinical systems
- Clinical decision-support
- Clinical process re-engineering

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20th Century Medicine: Stand-alone Devices