Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

1. Education and Training of Students & Clinical Trainees

ISL used to improve the education and training of Stanford students (undergraduate, medical and graduate) and the Medical Center's trainees (residents, clinical fellows and postdoctoral scholars).

Strengths
- Leaders of national and international reputation already at SUMC
- Good linkages are in place to SFDC, Anatomy Visualization Project, BioEngineering
- Stanford ISL faculty have a worldwide network of collaborations and collaborators
- Interest and support for ISL by The Dean
- ISL programs in place for housestaff in some domains
- New ISL programs for medical students are being developed
- Several facilities exist (VA, CAPE, GSC)
- Major new facility (LKSC) opening Fall '10

Weaknesses
- Unclear funding and organizational models for delivery of education
- Inadequate capital support for facilities and equipment purchase & upgrade
- Funding for continued support is in jeopardy

Opportunities
- Latent/expressed interests in developing new programs in some new areas
- Utilize ISL training experts to teach new faculty and staff
- Integration across disciplines – represented in CISL
- A vision of new programs for clinical trainees and students
- Curriculum for clinical years of medical students offers new opportunities for ISL – students and trainees seek more ISL activities
- Major organizations are encouraging ISL (LCME, ACGME, JCAHO, etc)

Threats
- Increasing pressures on faculty time for more clinical work
- Some ambivalence about the role of ISL by leadership of SoM
- Though Stanford is still a leader, we are falling behind other centers around the world in some arenas
- Fitting ISL within residents' 80-hour work week
- Other academic interests compete for available time of faculty
- Current budget climate makes it very difficult for new initiatives to be funded.

Undergraduate Medical Education (UGME)

1.1: Develop a comprehensive program that incorporates simulation training into the MD curriculum that leverages the LKSC Immersive Learning Center's opening in Fall 2010

    1.1.1: Create a program that supports the development of knowledge, skills, and attitudes in the curriculum.

    1.1.2: Embed a "simulationist" into the PoM and HHD curriculum meetings and the quarterly review meetings to encourage appropriate uses of simulation as a teaching methodology.

Undergraduate Medical Education (UGME) and Graduate Medical Education (GME)

1.2: In conjunction with the responsible senior school and hospital leadership, develop on-going mechanisms to incorporate ISL into the curriculum and training programs, and to ensure its continuous alignment with the School's education and training needs

    1.2.1: Identify/Analyze elements of curriculum and training programs most in need of and amenable to ILS techniques and learning

    1.2.2: Create and pilot new ISL applications where they appear to fill gaps in training; perform preliminary evaluation of feasibility, acceptance, and how well they seem to address the gaps

    1.2.3: Deploy ISL applications that have been successful based on the preliminary evaluations in pilot testing; further evaluate acceptance, cost, filling of gaps, and transfer of knowledge, skills, and attitudes (KSAs)

    1.2.4: Determine best integration of ISL applications themselves, and with the rest of curriculum or training program for the target domain

    1.2.5: Where feasible, attempt to evaluate transfer of KSAs to real patient care, and/or the effect of training on patient **outcome**

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

2. Healthcare Systems Improvement **To improve care delivery and operational outcomes of the Stanford Hospital and Clinics, the Lucile Packard Children's Hospital, VA Palo Alto, and the SHC/LPCH Insurance Company (SUMIT), by improving the individual and teamwork skills of healthcare personnel.**	Strengths • ISL programs have been utilized for housestaff in some domains (in situ risk management drills, Radiology Simulation, opening of new Redwood City Surgery Center).
	
	Weaknesses • Competing priorities for simulation vs. other activities in the hospitals
		Opportunities • Growing support from Hospitals for ISL's role in systems improvement and risk management • Major organizations are encouraging (and may soon require) ISL activities (e.g. JCAHO, ACGME, FDA, Professional Societies) • Portable simulators make in situ training (simulation in actual work unit) possible. • Wealth of online material to support this goal
		
		Threats • Increasing pressures on faculty time for more clinical work • Other academic interests compete for available time of faculty • Some ambivalence about the role of ISL by leadership, faculty and staff of Hospitals • Fitting ISL within residents' 80-hour work week or within union rules of unionized personnel
			2.1: Develop ISL patient-safety partnerships with SHC/LPCH and VA Palo Alto risk management, medical staff/credentialing offices, and leadership
			2.2: Deploy ISL applications within Stanford & affiliated hospitals where there is an interest or perceived need, and resources
			    2.2.1: Identify/Analyze elements of clinical work most in need of and amenable to ILS techniques and learning
			    2.2.2: Create and pilot new ISL applications where they appear to fill gaps in training; perform preliminary evaluation of feasibility, acceptance, and how well they address the gaps
			    2.2.3: Deploy ISL applications that have been successful based on the preliminary evaluations in pilot testing; further evaluate acceptance, cost, filling of gaps, and transfer of knowledge, skills, and attitudes (KSAs)
			    2.2.4: Determine best integration of ISL applications themselves, and with the rest of curriculum or training program for the target domain
			    2.2.5: Where feasible, attempt to evaluate transfer of KSAs to real patient care, and/or the effect of training on patient or risk management outcome

Distributed March 2012
Revised Dec 2010

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

3. Assessment/testing **To use ISL techniques for explicit assessment/testing of skills, knowledge, and performance of students, trainees, and experienced personnel (as distinct from assessments that are embedded in sessions conducted for "training")**	Strengths • Several existing Stanford ISL groups have significant experience with performance assessment methods using ISL • Assessment using ISL has certain intrinsic advantages over traditional techniques providing an unique window on performance for assessment Weaknesses • Current requirement by external agencies for performance assessment are relatively weak • Assessment by ISL is labor-intensive and expensive • Establishing full validity of ISL-based performance assessment is difficult	Opportunities • Medical students seem interested in having new modes of assessment available • Faculty realize that existing modes of assessment have major limitations • External agencies are becoming interested in possibility of ISL-based performance assessment (e.g. LCME, ACGME, ABMS, CMSS) • Some research dollars are becoming available for performance assessment research Threats • Faculty time to devote to assessment is limited • Time of students and housestaff to devote to assessment is limited • Some/many experienced clinical personnel resist imposition of performance assessment requirements, and do not volunteer for voluntary testing	3.1: In conjunction with the responsible senior school and hospital leadership, develop on-going mechanisms to use ISL for formative and summative assessments for the School's and Hospitals' needs 3.1.1: <u>Identify/Analyze</u> target populations, and KSAs most in need of assessment/ testing 3.1.2: <u>Create and pilot</u> new ISL assessment/testing applications where they appear to fill gaps in current assessment; perform preliminary evaluation of feasibility, acceptance, and how well they address the existing gaps 3.1.3: <u>Deploy</u> ISL assessment/testing applications that have been successful based on the evaluation of pilot testing; further evaluate acceptance, cost, filling existing gaps, and validity/precision of assessment of KSAs 3.1.4: <u>Determine</u> best integration of ISL assessment/testing applications with the rest of the assessment/ testing program for the target domain 3.1.5: Where feasible, evaluate predictive validity ISL assessment/testing results relative to assessments of performance in real patient care, or to patient outcome 3.2: Conduct generalizable research on metrics and assessment techniques in terms of reliability and validity, applicability (such research may be grafted onto pilot programs and trial deployments of ISL testing techniques, or may be conducted in separate research testing sessions)

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

4. Research

To promote, support and conduct fundamental research and evaluation about ISL and to use ISL techniques as a research tool.

Strengths
- GSC received ACS Level I Accreditation in '08
- Several well-established ISL investigators and research groups
- Strong investigators in related areas, (e.g. anatomic visualization, surgical case planning, cardiovascular modeling)
- Strong links to other ISL, human factors, psychology, and other research groups around the world (e.g Jack Boulet)
- CISL collective initiatives may carry more weight than individual initiatives
- The existing ISL facilities have infrastructure and capacity to allow funded research
- Most types of ISL studies have been approved by Stanford IRB
- Increasing nursing research around simulation
- MiniGrants have provided funding for innovative ideas around ISL
- Increased interdisciplinary activities (radiology, etc)

Weaknesses
- Poorly funded area compared to traditional biomedical research
- Freezing Innovations Unit in Ed TEch, not able to pursue gaming
- There is little applied psychology or human factors research at SU main campus
- Current ISL researchers are oversubscribed already
- Poorly integrated statistical support (ISL stats not well understood)
- Not yet strong support in hospital for studies where hospital is unit of analysis.

Opportunities
- Many research questions remain to be answered
- National initiatives (e.g. AIMS, patient safety) might create new federal investment in ISL research
- Links to simulation industry and to medical device and pharmaceutical industry (eg. EMR prototyping)
- Simulation can be a component of translational research, allowing optimal preparation of clinical personnel and teams to utilize novel and dangerous therapies or areas where risk management is particularly interested.
- Recruitment of anatomy chair may enhance the research work in anatomic visualization
- Possible GME research with medical scholars
- Legislation introduced that would provide funding for simulation activities (HR 855 and S 616)
- Strong infrastructure to undertake externally funded research

Threats
- Competition from other simulation centers in research increasing both nationally (e.g. Boston CMS, etc.) and regionally
- Industrial contracts with industry to use simulation are already being executed by other sim centers (e.g. Boston CMS, Europe, etc.) – we have limits to our relationships with industry outside research.
- Other centers are already research leaders in surgical simulation and also are ACS accredited and VR/gaming (Duke).
- Economic collapse has decrease dollars available.

4.1 Conduct pedagogical research about ISL techniques and applications for learning and performance assessment.

4.1 Conduct research to develop or evaluate new technologies and devices for ISL: Independently, or in concert with industry (R&D contracts)

4.2 Conduct research using ISL techniques as a tool, such as studies of individual and team performance or human factors of medical equipment

4.3: Develop mechanisms to encourage research at SUSoM on or using ISL
- 4.3.1 Conduct internal strategic retreat about ISL research at SU
- 4.3.2 Facilitate sponsored project submissions from CISL sites: e.g. Help in identifying funders and in writing grants (grant writer, etc), targeted biostatistics help
- 4.3.3 Organize periodic Stanford-sponsored conferences on simulation research (CISl Symposium)
- 4.3.4 Delineate opportunities for joint research across the different SU simulation centers, and types of simulation

4.4 Create strategic research alliance with internal and external groups and institutions

Stanford groups (e.g. , Commun, Engineering; MediaX, Center for Outcomes and Effectiveness, Spectrm)

Industry (e.g. sim companies, med device companies, pharma)

Local research centers (e.g. CAPE (Phillips), Naval Postgraduate School)

4.5 Reach out, develop and mentor new and future ISL researchers via fellowships, post-docs, student research opportunities; in particular, special interest in:
- 4.5.1 Sponsored Post-docs & fellows in LKSC (BioX, Surg, cape researcher, India Research Alliance), seek non-clinical personnel such as psychologists, industrial engineers, etc

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

			4.5.2 Med Ed Scholarly Activity (summer 1st and 2nd yr) – possible minigrant or course funding for students. Medical Education ISL Track (Note: SF and CI work on)
			4.6 Use internet, Internet2 and other distance learning modalities for research
			4.6.1 Research about distance learning and telementoring applications
			4.6.2 Use telecommunications to facilitate national/ international research collaboration

Distributed March 2012
Revised Dec 2010

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

5. Provide ISL Learning to External Experienced Clinicians

Through ISL, to improve the clinical skills (both "technical" and "non-technical") of healthcare personnel as individuals and in teams.

Strengths
- Leaders of national and international reputation already at SUMC
- Extensive suite of existing programs for housestaff and experienced practitioners; all can be expanded for external target populations
- Infrastructure and capacity exist to do external courses
- The "Stanford name" is a prominent "brand"
- Several facilities exist (VA, CAPE, GSC, SP suite)
- LKSC opening Fall '10
- New CME office and Associate Dean
- Relationship with BASC (nursing)
- ACS Accreditation and ASA Endorsement

Weaknesses
- Currently limited qualified instructor pool and long learning period to qualify new instructors
- ISL activities are labor-intensive and expensive
- Limited cost:benefit validation to-date
- Minimal requirement imposed by State for CME/CE. CME/CE credit is hours-based and not dependent on intensity of activity
- Difficulty accessing target population for CME without taking them away from revenue producing work.
- No relationship with a School of Nursing to contribute to nursing oriented continuing education academic programs
- Existing nurse educators are over subscribed and just getting familiar with ISL
- Existing CME accreditation process is slow, complex and expensive.

Opportunities
- Major organizations are encouraging (and may soon require) ISL activities (e.g. JCAHO, ACGME, FDA, Professional Societies).
- Growing interest by hospital administrators and risk managers
- Growing interest in establishing a process of competency-based credentialing (ASA, ACS, etc)
- Relationship with nursing graduate programs (SFSU and SHC/LPCH) with more attention to ISL.
- Capacity exists to offer courses when LKSC opens

Threats
- ACCME Requirements
- Lack of clear incentives for instructor participation in ISL CME activities
- Limited ability to obtain funding from industry
- Entrenched purveyors of traditional CME/CE may be obstructive to ISL
- High cost of ISL CME/CE per credit make it hard to compete with traditional modalities
- Union/contract/hospital policy limitations on staff participation during regular work shifts

5.1: Extend ISL applications to outside professionals and groups (CME/CEU Courses)

Partner with SoM CME office to develop marketing strategy and outreach tools

Partner with SoM CME office and hospitals' education offices to create course offerings for target populations

Develop demonstration programs targeted to influential/decision-makers at provider sites (internal and external) and public health and safety organizations (ACRM is prototype for ACS, ACOG, NRP_

Use CISL website component for course offerings, registrations, etc

5.2: Develop novel ISL programs for new (to Stanford) external target populations, such as

Emergency response and disaster training

Hospital management, executives, trustees, etc

5.3 Use distance learning techniques to facilitate or supplement ISL-based education and training for Stanford-based and external clinicians

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

Community Service **6. To develop and conduct outreach programs to expose local community and lay groups, as well as public safety and public health organizations, and healthcare providers to the benefits and potential of ISL.**	Strengths • Strong support from SU and SoM Office of Federal Government Affairs Weaknesses • No central coordination or clearing house for disparate activities • No infrastructure to support provision of services • No clear/immediate return on investment of time and resources • No current allocation of resources for community outreach • Community outreach activities of faculty are not highly valued compared to other activities	Opportunities • Country public health officers and EMT organizations are interested in more advanced emergency management training Threats • Potential for backlash from lay community if expectations not met • Outside organizations like BASC may have more community impact.	6.1: Develop a consistent CISL message and communication for medical and community target populations 6.2: Identify interested community groups and collaborate with them in the development of programs 6.3: Develop, pilot, deploy, and evaluate CISL community outreach programs

Distributed March 2012
Revised Dec 2010

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

| Leadership and Advocacy
7. To provide leadership in advocating the future vision of immersive and simulation-based learning in health care for the nation and the world | Strengths
• Faculty already represented within organizations that are active in advocacy (AAP, ACOG, ASA, NRP, etc)
• Rising curve of ISL advocacy within healthcare arena; building momentum
• Alliance with BASC
• CISL members involved in SSiH's Public Affairs and Govt Relations committee (PAGR)
Weaknesses
• Some key Stanford ISL leaders too busy to participate fully
• Junior personnel not fully integrated into pipeline of future leadership | Opportunities
• New organizations are forming (e.g. IMSH, AIMS, BASC, etc.) giving early leaders a prominent role

Threats
• Participation requires faculty time and travel and institutional funds
• Competition from other institutions and personnel wanting to be leaders | 7.1: Maintain Stanford's world-wide leadership role as a pioneer, innovator, and user of ISL to improve health care
7.2: Foster a strong CISL role in ISL-related organizations & forums
  7.2.1 Continue senior representation on key national and international ISL-related organizations and committees
  7.2.2 Facilitate junior faculty becoming active in these organizations
  7.2.3 Develop resources to support continued CISL involvement in national/international organizations
7.3: Collaborate with ISL organizations, university consortia, and other partnerships on ISL-related projects and advocacy.
7.4: Explore Niche opportunities –
  7.4.1 CME courses
  7.4.2 Specialty focused opportunities |

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

Faculty Development			

Faculty Development
8. To recruit, train and sustain faculty to become effective ISL educators.

Strengths
- World leaders of ISL are already on the faculty
- Faculty expertise in ISL now exists in more than 6 departments
  - Identified depts with ISL expertise: Anesthesia, OB, ICU, Peds, Surgery, Maternal Fetal, Emergency Medicine, CV Surgery, Vascular Surgery, General Surgery
- Some ISL faculty have a strong and long-lasting record of mentorship of new ISL faculty
  - Use mentors to develop more teachers who can then become mentors
- ISL facilities are available and have spare capacity to support innovations by interested faculty
  - Innovations should be imbedded into the matrix of our pedagogy

Weaknesses
- Basic Science not engaged in ISL learning (Physiology/Pharmacology)
- Variable support by department chairs and senior faculty
  - Unclear how TecU funds are distributed and/or used for ISL
  - No clear mechanism for academic recognition from dept chairs
- Unclear funding models for faculty time & effort to develop and run courses
- Lack of rewards system ($, release time or academic recognition) for faculty time spent in teaching – ISL is even more time/labor intensive
- Clinician educators unable to be PIs on sponsored projects

Opportunities
- Emerging requirements for simulator training or performance assessment (e.g. from FDA, JCAHO, Prof. Societies) will create interest by and drive the need for in ISL activities
  - FLS required for all graduating surgery residents
  - Minimally Invasive Surgery
- Developing connections with other SU programs
  - Communication, Education, Engineering, etc.. to interest new faculty
  - Information about ILS activities should be sent to Dean Pizzo
  - Increased meetings with Chairs
- The promise of a new facility (ILC in the LKC) will attract new faculty
- Work with various "institutes" to get funding for ISL activities
- Curriculum reform for clinical training (e.g. clerkships) will interest new faculty
  - Educators for Care
  - Hiring new MIS surgeon
- Existing, non-ISL faculty training programs are well-respected (e.g. SFDC)
  - Reaching out to Kelly Skeff to discuss collaboration

Threats
- Some faculty may be resistant to ISL approach for teaching
- Non-clinical time is becoming more limited
- New curriculum is already making more demands on faculty time
- Resistance to change, "reform fatigue" from previous rounds of curriculum change

8.1: Provide general education to faculty <u>about</u> ISL: e.g. CISL seminars, Simulation in Medical Education (SiME) Lecture series, websites, etc
- Provide regular updates about creative ISL activities to Dean Pizzo
- Participate in Medical Research activities and look at ways to use ISL in research on pedagogy

8.2: Provide <u>specific</u> training on medical education and ISL for those faculty and staff particularly interested in these applications, e.g. apprenticeships, mentoring, etc

8.3: CISL to provide Seed Grants to faculty to develop pilot programs of ISL applications
- Focus on case base learning
- FY '09 CISL Scholarship focused on case based learning

8.4: Develop programs to assist faculty in applying for grants on ISL applications

8.5: Promote ISL activities as scholarly and innovative to Deans, Executive Committee, A&P committees, etc. as a mechanism for promotion and appointments.
- Determine a method for recognition of ISL activities for promotion and appointments
- Develop criteria for instructor levels and identify metrics for outcomes
- Meet with Dept Chairs to support protected time for ISL activities
- Audit various lectures/rounds to determine ISL techniques that would be appropriate

8.6: Tap into courses to seek out additional ISL faculty (Communication, Media X, School of Education – LDT program).

Distributed March 2012
Revised Dec 2010

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

Sustainability **9. To provide financial and program planning and analysis of ISL programs, and to support OMD fundraising to ensure long-term financial viability of ISL activities.**	Strengths / Weaknesses	Opportunities / Threats	Objectives

Sustainability

9. To provide financial and program planning and analysis of ISL programs, and to support OMD fundraising to ensure long-term financial viability of ISL activities.

Strengths
- Existing ISL groups have experience with innovation and course conduct "working on a shoestring"

Weaknesses
- Current structures of funds-flow are not optimum for ISL activities
- Raising money for education has not been a traditional priority for OMD
- OMD is focused on fundraising to support LKSC vs. ISL program enhancement

Opportunities
- New leadership in OMD
- ILC is becoming more recognized publically and thus may have opportunities for more funding.

Threats
- Other regional and national competing institutions are also building educational buildings with advanced ISL spaces, and have experienced ISL

9.1: LKSC to provide infrastucture/support for various ILC activities.

9.2 Support OMD, hospitals, and others in raising funds for ISL programs and activities before and after opening of the ILC in the LKC

9.2.1 Pursue endowed professorships in ISL

9.2.2 Create a central capital fund for acquisition, maintenance, support, and replacement of ISL equipment in simulation facilities

9.3 Ensure opening of LKSC is well planned and successful.

Mission Statement for CISL: We improve patient safety, patient care, education, and research through innovations in immersive and simulation-based learning techniques and tools and through embedding them throughout Stanford Medical Center's education and training programs.

Management	Strengths	Opportunities	
10. To create management infrastructures and procedures that effectively coordinates and integrate the Center's priorities, activities and resources among its constituent units and within the School and University.	• Management structures of existing centers have been satisfactory to-date • Associate Dean is highly experienced in the ISL field, and has strong support of existing ISL groups Weaknesses • Major internal sponsors have different goals that may conflict with CISL • No formal mandate for integration of ISL into the teaching paradigm of SMC	• ISL groups and facilities are very willing to cooperate and coordinate • CISL will provide structure for integration and coordination: such as CISL working with SSH, CME, etc. • Can assist /provide a forum to integrate ISL policies and procedures that benefit the whole of CISL (e.g. Photo release, video storage) Threats • Scarcity of funds could lead to undesirable internal competition	10.1: CISL Executive Committee to oversee key operational activities, set goals and priorities, evaluate progress, and coordinate shared resources 10.2: Form application-oriented multi-domain workgroups, such as: Perinatal team training work group, Surgical simulation work group, Endovascular intervention work group; anatomic visualization work group (including journal club)

Distributed March 2012
Revised Dec 2010