STEPS TOWARD A TECHNICAL ORGANIZATION

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PREAMBLE

Personally, I do almost all productive personal work at home. This includes writing, designing, mathematics, class planning, thinking.

At the lab, I do meetings, coordination, talking, management, teaching, guidance, liaison, and transcribing.

So two observations:

* The current lab is not conducive to intellectual work.

* We spend too much time socializing and coordinating.

Both functions (social and intellectual) are necessary, it's a shame that we have to work two jobs to get them done.

BUILDING OUR HAMILTONIAN

Programs associate resources with goals, providing assurance that shared objectives can be achieved. Programs also make policies explicit. What follows is an outline of current and near-term future programs, an estimate of required resources, and indications of interrelationships, weaknesses, and hype (programs without commitments).

This is a working document, intended as a framework for others to extend.

For the technically inclined: This document is an attempt to create the lab's Intentional Hamiltonian, the position and momentum matrix of our parts, the trajectory of each participant and project through space-time. In a deterministic universe, the Hamiltonian is all that is needed to predict the entire future. The lab (generalized) Hamiltonian specifies a classical dynamics of our organization in activity-resource space. Intention adds a quantum dynamical interpretation. The participant vector of activity per expended resource (intentional velocity) specifies where we can focus changes to achieve objectives. The semantic map:

space	possible activities of lab participants
time	resources (time is money)
position	current state of activities
translation	changing activities (choosing what we do)
orientation	changing objectives (heading toward desired activities)
distance	measure of achievability of activities (from current to desired)
velocity	change in activity per expended resource in direction of choice (tactics, intentions)
acceleration	change in tactics per expended resource (strategies)
mass	commitments, state in deliverables space
momentum	commitments * intentions
*	the composition operator (multiply), determines alignment
force	influence = commitments * strategies
energy	effort = commitments * intentions * intentions

In activity-resource space, the rules are looser than in physical space. Instead of F=ma, we have "If we don't commit to X, then we can't achieve Y."

Re making this in a VR: The hard part will be finding a visual representation of activity-resource space. I also don't yet know how to interpret the square of intention. Seems like a virtual lab will require the active participation of everyone in the lab. Please record vetoes if you don't like the idea.

STRUCTURE

1. LABORATORY INFRASTRUCTURE and EQUIPMENT
   - 1.1 Computational Hardware
   - 1.2 Staff Support Equipment
   - 1.3 Staff Support Software
   - 1.4 Lab Network
   - 1.5 Electronics Lab
   - 1.6 Optics Lab
   - 1.7 Machining Lab

2. BEHAVIOR TRANSDUCER DEVELOPMENT
   - 2.1 Position Tracking
   - 2.2 Head-mounted Display
   - 2.3 Retinal Scanner
   - 2.4 Gloves
   - 2.5 Voice
   - 2.6 Other local transducers

3. VIRTUAL ENVIRONMENT OPERATING SYSTEM DEVELOPMENT
   - 3.1 Database
   - 3.2 Communications
   - 3.3 Rendering
   - 3.4 Tools

4. VIRTUAL WORLD TOOLS
   - 4.1 Wand
   - 4.2 Virtual Body
   - 4.3 Simulation Statistics
   - 4.4 Experiential Toolbox

5. VIRTUAL WORLD MODELS
6. SOUND DEVELOPMENT
7. EDUCATIONAL APPLICATION
8. VISUALIZATION APPLICATION
9. TELEVIRTUALITY APPLICATION
10. VIRTUAL PROTOTYPING APPLICATION
11. PROTHESIS APPLICATION
12. EXPERIENTIAL MATHEMATICS APPLICATION
13. CIVIL ENGINEERING APPLICATION
14. KNOWLEDGE BASE
15. TEACHING, VR CURRICULUM
16. PSYCHOLOGICAL AND COGNITIVE MEASUREMENT
17. PARALLEL PROCESSING
18. BIOMEDICAL APPLICATIONS
19. ADMINISTRATION
20. CONSORTIUM
99. MISSING

PERSONNEL ALLOCATIONS AND ACTIVITIES

William

ACTUAL		GOAL
.2	teach IE class	(.2)
.2	coordinate students	(.2)
.1	HITL research agenda, prospective employees	(.05)
.1	prospective graduate students, summer program	(.05)
.2	professional liaison	(.2)
.1	technical information and reports	(0)
.15	PI for Protospace Project	(.1)
.2	acquire computer hardware and software	(0)
.1	lab clients and contracts	(0)
.1	presentations, demos, and symposia	(0)
.1	write proposals and technical reports	(.2)
.05	research with other departments	(.1)
.1	meetings	(.1)
.1	basic research	(.3)
[1.8]		[1.5]