STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305
Area Code 415 497-3567

OFFICE OF
TECHNOLOGY LICENSING
ENCINA 6-930

January 14, 1976

Mr. Peter Samson
Systems Concepts
524 Second Street
San Francisco, California 94107

Dear Peter:

Enclosed are two signed copies of the Option Agreement between Systems Concepts and Stanford.

Please note that two "blanks" need filling in: (1) effective date, and (2) a minimum sales price for the software (paragraph 4.2). The effective date should probably be keyed to the date of the purchase order. In paragraph 4.2, we are attempting to provide generally for whatever packaging and pricing arrangement Systems Concepts decides to pursue. In any case, the purpose of this Section 4 is to enumerate our agreement-in-principle for a license agreement (at such time as the software is ready to license), and we can define the royalty terms in more detail at that time.

Please call me if you have any questions.

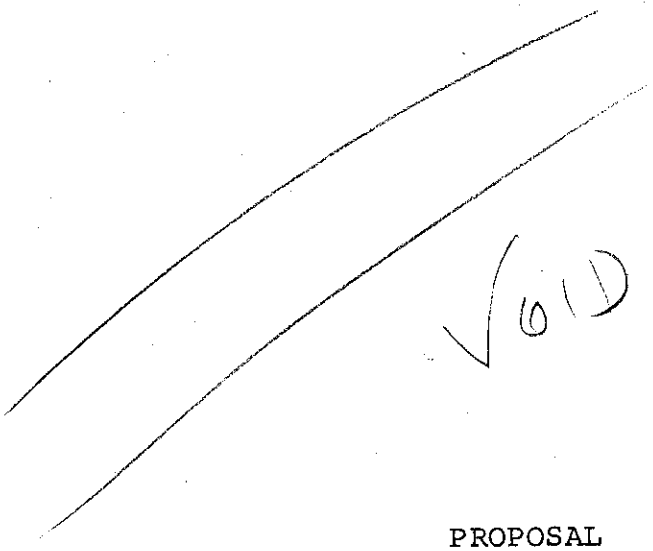
Very truly yours,

John K. Poitras
Associate, Technology Licensing

cc: R. Highfield
J. Chowning
Enclosures: 2
JKP:sh

SYSTEMS CONCEPTS

524 SECOND STREET SAN FRANCISCO, CALIFORNIA 94107



PROPOSAL

TO

STANFORD UNIVERSITY

MUSIC DEPARTMENT

FOR A

DIGITAL SYNTHESIZER

November 4, 1975

TELEPHONE: 415-433-5400 TWX: 910-372-6062

Introduction

The Systems Concepts Digital Synthesizer is a high-speed sampled-data system to generate and process signals such as represent the sounds of music and speech. It acts as a peripheral to a general-purpose computer, taking commands and data from computer memory and sending resultant data either back to the memory or to a set of analog output channels. The logic is built entirely of TTL integrated circuits, and the interface to the PDP-10 memory and I/O buses uses standard Systems Concepts TTL-to-DEC converter cards.

Operation

The Digital Synthesizer is composed of a large number of processing units: up to 256 generators, 128 modifiers, and 32 delay units, communicating with as many as 16 analog outputs. The operating modes, interconnections, and numerical parameters that characterize the actions of each unit are all controlled by a stream of commands taken from PDP-10 memory. In addition, direct memory access can also be used to read and write data corresponding to individual samples of a signal. A 28-word command buffer is provided in the Digital Synthesizer to permit performance of a burst of commands at a rate not limited by memory bandwidth. Extensive diagnostic hardware permits a checkout program to verify proper operation of the data paths and computation logic, and to localize faults should they occur.

Interface Specifications and Performance

The "Systems Concepts Digital Synthesizer Programming Specification" and the "Systems Concepts Digital Synthesizer Analog Output Specification" attached hereto give detailed descriptions of performance and interface characteristics. These documents are preliminary in nature; changes will be subject to mutual agreement.

Software

The Digital Synthesizer is provided with programs to exercise the data paths and to diagnose failures. It is agreed that Systems Concepts will have the exclusive right to distribute, either free or for a charge, any and all software developed by Buyer for use with the Digital Synthesizer, and that this software will include: a symbolic music language processor; a symbolic music language debugging package; a run-time system with real-time interactive capability; a time-sharing interface routine for non-real-time applications; and programs for analysis and re-synthesis of natural sounds with graphical editing features for timbre modification. It is further agreed that Systems Concepts will have a non-exclusive right to distribute any other software developed by Buyer, or by Buyer's personnel if used by Buyer.

Accessories

The Digital Synthesizer comes complete with all necessary cabinetry and power supplies; and one set of PDP-10 I/O and memory bus cables (to the first memory only). Cable length may be up to 25 feet. A power control is included which sequences the power supplies such that no spurious signals are ever placed on either bus.

Environmental Requirements

The Digital Synthesizer requires 30 amperes of 110-volt, 60-hertz single-phase power. At least 100 cfm of cooling air through the floor must be provided.

Documentation and Design Rights

Systems Concepts will provide documentation for Buyer's use including complete schematic drawings, theory-of-operation manual, and programming specifications. Systems Concepts owns the designs of the Digital Synthesizer and considers all documentation relating thereto to be proprietary. This documentation shall not be divulged or distributed without receiving written approval from Systems Concepts, nor shall the information contained therein be used in the manufacture of any product.

Warranty

Systems Concepts unconditionally warrants the Digital Synthesizer for ninety (90) days following its acceptance by Buyer. Systems Concepts will repair any defect discovered during this period at its own expense. Systems Concepts warrants the design for one year and will repair any defects in the design during this period at its own expense.

Installation and Checkout

Installation and checkout will require one shift of stand-alone PDP-10 time for three weeks, with the actual hours to be used specified by the Buyer.

Training

Five days of training in use and maintenance of the Digital Synthesizer will be given at the Buyer's installation.

Delivery

Delivery of the prototype can be accomplished within 110 days after receipt of order or March 1, 1976, whichever comes later. Delivery of a non-prototype unit takes 210 days after receipt of order.

Price

Digital Synthesizer, with PDP-10 interface, 4 analog outputs, delay memory controller and 48K words of delay memory; installation, checkout, training and warranty.	$87,500.00
Allowance for taking prototype unit	(2,500.00)
Allowance for software distribution rights	(15,000.00)
TOTAL	$70,000.00
Additional 16K words of delay memory (optional)	3,500.00
Additional analog outputs, each (optional)	1,625.00

Maintenance

On-call maintenance after the warranty period can be contracted on a yearly basis, at a rate of $425.00 per month for coverage 40 hours a week.

Cancellation

Buyer shall have the right to cancel the order, at no liability to either party, should the prototype Digital Synthesizer not be shipped by March 15, 1976, or 125 days after receipt of order, whichever comes later.

Terms

The terms of this proposal are firm for ninety (90) days from this date. Prices given are exclusive of any applicable taxes or duties.