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SIMULATION OF A FUNCTIONALLY  
DISTRIBUTED COMPUTING FACILITY

by

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MASTER OF SCIENCE

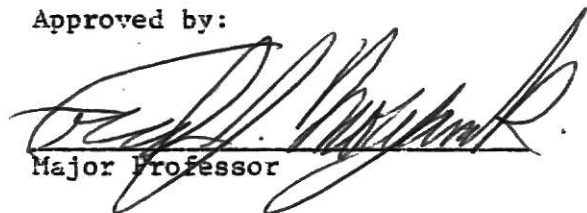
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## Chapter 1

### INTRODUCTION

#### 1.1 PROBLEM STATEMENT AND MOTIVATION

The research facility of the School of Aerospace Medicine consists of many laboratories which are located in several buildings [3], some of which contain more than one computer; see Table 1. The function of the laboratory machines is to collect experimental data. There is also off-campus hardware support for data collection and reduction. The off-campus resources are an IBM 360/65 and a Univac 1108. The IBM machine has almost reached its maximum utilization at the present; therefore, no time-sharing support can be provided because of unavailability of resources. The other off-campus resource, Univac 1108, could be discontinued at any time.

All of the data received in the laboratories must be put into machine-readable form. This is a very slow process since it involves human interaction. The machine-readable form must be transferred onto a magnetic tape or some storage media, and then the information is sent to the central site computer, PDP 11/70, to be analyzed.

In order to improve the present situation, a computer network is proposed, to connect each laboratory machine to the central point. This will maximize the local user computing resource. There are two possible computer network alternatives, star and hierarchical configura-

Building #	Division/Name	Present Hardware	Usage
150	BR/Engelken	PDP 12/30	Digitizing System
150	BR/Balusek	PDP 8M	Graphic Digitizer, Num. Control
150	BR/Nixon	IBM System 3	Remote Job Entry (SADSC)
150	BR/Albanese	WANG 2200	Alert Calculations
150	BR/Engelken	PDP 12/40	Utility Machine
110	NG/Keiser	DC 1200	Treadmill, Multiuser Basic
125	NG/Wolfe	Nicolet	Vestibular Studies
150	NG/Keiser	DG S-200	ECG Record Scanner, Multiuser
125	RZ/Farrer	Nova 800	UT El Paso Application
175	RZ/Tastch	PDP 11/05	Whole Body Counter
176	RZ/Allen	PDP 11/34	VECP
186	RZ/Lof	PDP 12/30	PEP
110	VN/Storm	PDP 12/30	Link Trainers/Tracking Tasks
110	VN/Storm	PDP 8M	(Portable) Tracking Task
160	VN/Storm	DC 210	(Zelesky) Acquisition System
160	VN/Stribley	PDP 11/05	Manikin
160	VN/Stribley	WANG 2200	IFDAS
170	VN/Ikels	DG 1200	Analytic Inst.
170	VN/Conkle	HP 2100S(3)	Analytic Inst.

Table 1

On Campus Facilities