1 Introduction

1.1 The AVS/Express Visualization Edition course

The AVS/Express Visualization Edition course has been developed by the International AVS Centre (Manchester) and is based on the *Introduction to AVS* course produced previously by the Manchester and North Training and Education Centre (MAN T&EC) based in the Computer Graphics Unit at The University of Manchester.

1.1.1 What is AVS/Express?

AVS/Express is an object-oriented, visual development tool that enables you to build reusable application components and sophisticated applications. The AVS/Express Visualization Edition provides hundreds of application components for visualizing, analysing, manipulating and displaying data.

1.1.2 Who is this workbook aimed at?

This workbook is aimed at those who have a need to visualize both 2D and 3D data. Techniques covered include: reading data, creating 2D & 3D images, isosurface plots, arrow plots etc.

1.1.3 Are there any prerequisites?

The course is designed for the user with no prior experience of AVS/Express Visualization Edition. The course also assumes no prior experience of AVS5. No programming skills are required but basic experience of working in a workstation environment, i.e. UNIX and X windows, is needed.

1.2 About the workbook

1.2.1 The visualization process

The data visualization process is carried out using a **network**.

A network consists of **modules** and **connections**. Modules carry out certain tasks such as: reading fields, mapping, filtering and data viewing.

The networks are built in the **Network Editor**.

Modules are chosen from the module library and connected in order to carry out a specific application.

Before data can be read into a network a **field file** must be created in order to describe the data to the network. The data is read into the network via the field file, the network carries out its specified function and presents the data visually.

Interaction with the visual data is carried out until the desired analysis has been achieved.

Networks can be saved as **Applications** and reused to analyse similar data sets.

1.2.2 Structure of the exercises

Each chapter of this book works through a series of structured exercises in order to familiarise you with the AVS/Express environment.

- Chapter 2 deals with using the Network Editor: building network, making connections, reading data, saving, loading and deleting applications.
- Chapter 3 and Chapter 4 deal with creating field files to describe 2D & 3D data respectively. Also dealt with are visualization techniques for 2D & 3D data.
- Chapter 5 deals with visualization of Unstructured Cell Data (UCD).
- Finally Chapter 6 deals with the AVS/Express example demonstrations.

1.2.3 Datafiles and solutions

Each chapter of exercises uses simple examples of data in order to demonstrate a particular function of AVS/Express. Some data files for these exercises are not part of the standard AVS/Express release. This course assumes they have been made available under the directory

```
/usr/express/auxdata
```

Copies of these data files can be obtained via anonymous FTP from The University of Manchester at

```
ftp.iavsc.org (130.88.100.80)
```

in file

```
pub/course_data/express/intro.tar.Z
```

The answers to the exercises in Chapter 3 and Chapter 4 can be found in Appendix II of this workbook.