

GSEOS Recorder File Format Description

Revision 1.0

IDA-GSEOS-0006

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1 Scope

1.1 Purpose of this Document

Purpose of this document is to describe the file format generated by the GSEOS recorder.

1.2 Change Record

Table 1 Change Record

Date	Revision	Author	Affected Sections
6/8/1999	1.0	Stoeckner	All sections

1.3 Reference Documentation

All GSEOS related documents are listed in the GSEOS Document Index IDA-GSEOS-0000.

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2 Introduction

The GSEOS is able to record and playback data. The data are written block-based into several files. There is a threshold for the file size. If the threshold is reached the GSEOS creates a new file. In the Control Panel of the GSEOS the user may adjust the size of the recorder files.

The data in the recorder file are in INTEL format.

All recorder files have a number as extension beginning with ***.001**. The number is the creation order of the recorder files. The files are located in the directory **\Recorder**. The user may change the directory in the GSEOS Control Panel.

Every recorder file contains (in the given order) the sections below:

- one Header,
- one or more Block Descriptions,
- any count of Item Descriptions,
- any count of Recorded Data,
- one End Signature.

Every section is described in the following chapters.

3 Time

Several sections of the recorder file are time tagged. The time is stored in UTC (Universal Time Coordinated) format.

```

struct SYSTEMTIME
{
  WORD wYear;           // 2
  WORD wMonth;          // 2
  WORD wDayOfWeek;     // 2
  WORD wDay;            // 2
  WORD wHour;           // 2
  WORD wMinute;         // 2
  WORD wSecond;         // 2
  WORD wMilliseconds;  // 2
};
// --
// 16 bytes

```

Table 2 Structure SYSTEMTIME

Structure Member	Description
wYear	Specifies the current year (e.g. 1999).
wMonth	Specifies the current month: January = 1, February = 2, and so on.
wDayOfWeek	Specifies the current day of the week: Sunday = 0, Monday = 1, and so on.
wDay	Specifies the current day of the month (1 – 31).
wHour	Specifies the current hour (0 – 23).
wMinute	Specifies the current minute (0 – 59).
wSecond	Specifies the current second (0 – 59).
wMilliseconds	Specifies the current millisecond (0 – 999).

4 Header

Every recorder file contains one header at the very beginning. In the header of the recorder file can be found:

- the start and end time of the recorder file,
- pointer to the other sections of the recorder file,
- internal information (signature string, version number).

```

struct RecorderFileHeader
{
  UCHAR      szSignature[32];           // 32
  SYSTEMTIME sStartTime;               // 16
  SYSTEMTIME sEndTime;                // 16
  ULONG      ulVersion;                // 4
  ULONG      ulOffsetBlockDescription; // 4
  ULONG      ulNumberBlockDescription; // 4
  ULONG      ulOffsetItemDescription;  // 4
  ULONG      ulNumberItemDescription;  // 4
  ULONG      ulOffsetData;             // 4
  UCHAR      ucSpare[40];              // 40
};                                       // ---
// 128 bytes

```

Table 3 Structure RecorderFileHeader

Structure Member	Description
szSignature	Specifies the signature string “GSEOS Recorder File” (zero-terminated).
sStartTime	Specifies the start time of the recorder file.
sEndTime	Specifies the end time of the recorder file.
ulVersion	Specifies the version of the recorder file (currently 0x00000000).
ulOffsetBlockDescription	Specifies the file offset of the Block Description Table.
ulNumberBlockDescription	Specifies the number of entries in the Block Description Table.
ulOffsetItemDescription	Specifies the file offset of the Item Description Table.
ulNumberItemDescription	Specifies the number of entries in the Item Description Table.
ulOffsetData	Specifies the file offset to begin of the recorded data.
ucSpare	spare

5 Block Description

Directly after the Header the section Block Description can be found in the recorder file. The section describes all block types recorded in the file.

The pointer to the beginning of this section is in the field **ulOffsetBlockDescription** in the Header. The field **ulNumberBlockDescription** of the Header gives the count of entries in the table.

```

struct RecorderFileBlockDescription
{
  UCHAR  szName[32];           // 32
  ULONG  ulBitLength;         // 4
  ULONG  ulSpare[3];          // 12
};                               // --
                                   // 48 bytes
  
```

Table 4 Structure RecorderFileBlockDescription

Structure Member	Description
szName	Specifies the name of the block (zero-terminated).
ulBitLength	Specifies the length in bits of the block.
ulSpare	spare

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6 Item Description

Directly after the Block Description the section Item Description can be found in the recorder file. The section describes all items inside the blocks of the section Block Description.

The pointer to the beginning of this section is in the field **ulOffsetItemDescription** in the Header. The field **ulNumberItemDescription** of the Header gives the count of entries in the table.

The purpose of the Item Description section is to replay old recorder files with different items inside the blocks. The GSEOS may use the information to rearrange the items.

This part of the recorder is not yet implemented. The details are tbd.

7 Recorded Data

Directly after the Item Description the section Recorded Data can be found in the recorder file. The section contains data and time of all recorded blocks.

The pointer to the beginning of this section is in the field **ulOffsetData** in the Header. There is no count of entries. The section ends with a special block File End Signature described in the next chapter.

```

struct RecorderFileData
{
    ULONG      ulRecordBlockId;    // 4
    SYSTEMTIME sTime;              // 16
    ULONG      ulLengthPrev;       // 4
    ULONG      ulLength;           // 4
    UCHAR      ucData[];          // ulLength bytes
};
  
```

Table 5 Structure RecorderFileData

Structure Member	Description
ulRecordBlockId	Specifies the block identifier. The block identifier is the index in the Block Description table. Valid identifier are from 0 to ulNumberBlockDescription-1 . The value 0xFFFFFFFF is the File End Signature.
sTime	Specifies the time of the block. The time tag was set when the block comes into the very first GSEOS queue.
ulLengthPrev	Specifies the length of the ucData field of the previous block in bytes. The GSEOS needs the value for backward playback.
ulLength	Specifies the length of the ucData field in bytes.
ucData	The field contains the block data. The length gives the field ulLength .

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8 File End Signature

At the end of in the recorder file is the File End Signature. The block is a special data block. The field **ulRecordBlockId** is set to 0xFFFFFFFF. The length **ulLength** is zero and there are no **ucData** field.
