

Information Requirements

Hard Disk Drive
Document Set

TravelStar 5K-100



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**DOCUMENT INFORMATION REQUIREMENTS
TRAVELSTAR 5K 100 DISK DRIVE**



Table of Contents

1. Introduction..... 3

2. Market Background..... 3

 2.1. Laptop Market Background..... 3

 2.2. Hard Drive Market Background..... 4

3. Customer Background..... 4

 3.1. General Customer Requirements 4

 3.1.1. OEM..... 4

 3.1.2. Upgraders, Repair Depots, Independent Technicians 4

 3.2. Documentation Connect or Disconnect?..... 4

 3.2.1. Document Failure Risks..... 5

4. The Documentation End User 6

 4.1. Documentation Format 6

5. Conclusion – SWOT 7

6. Appendix..... 8

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



1. Introduction

This brief document information requirements report outlines the market that Hitachi must work in when promoting and creating document sets for the 5K 100 2.5" disk drive family.

Facets addressed are the Market Background, Customer Background, and End User Background. The Conclusion section summarizes the Strength, Weaknesses, Opportunities and Threats (SWOT) to Hitachi's 2.5" TravelStar 5K 100 Disk Drive market and how the documentation set can work with and address them.

This report does not address the Desktop, PDA, Portable device hard drive market.

2. Market Background

The market for the 2.5" TravelStar 5K 100 Disk Drive is every laptop computer being manufactured, plus every laptop upgrade that involves a larger capacity hard drive, and a small, but growing, blade server market. The Hard Disk Drive Market not independent. It relies on both the laptop market and dynamics of the Hard Disk Market itself.

Major 2.5" Hard Drive manufacturers include Hitachi, Fujitsu, Seagate, Western Digital and Samsung with a potential player being Matsushita.

The average life of a Laptop computer is three years with perhaps one hard drive upgrade – usually to a larger capacity, so the hard drive market can be said to run on a two to three-year cycle.

Market segments include Original Equipment Manufacturers (OEM) such as Dell, IBM, Gateway, Toshiba, and Fujitsu. White box manufacturers are a smaller but significant segment. Systems integrators, repair depots and upgraders round off the 2.5" hard drive market.

In most cases, the actual end user of the hard drive, the laptop purchaser, is unaware of the full characteristics of or even the brand name of the hard drive in their machine. However, corporate procurement people may have specific requirements based on their own experience or research.

As the hard drive is invisible to the laptop user, its benefits are invisible – until a failure occurs. In some cases, years of data are irrevocably lost. So, reliability is Hitachi's strongest point in selling laptop hard drives. Reliability should almost become part of Hitachi's branding on each piece of supporting documentation.

2.1. Laptop Market Background

The laptop market is beginning to mature and shift as well. Once the preserve of corporations, 2003 and 2004 sales indicate an even split between the corporate market and the consumer market. This is a significant and potentially lucrative period for Hitachi as both corporations and consumers have entered an upgrade cycle that was delayed by the 2001 crash.

RocSearch in their 2003 *Worldwide Laptop Potential and Acceptability* offers some tantalizing statistics and forecasts. Third Quarter 2003 saw the Europe market purchase 3.1 million laptops. The largest markets will be China and India with Europe, North America, Africa (including the Middle East) substantial, but trailing.

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



2.2. Hard Drive Market Background

Each laptop sold equals one hard drive, so the following numbers can be interchangeable.

Trend Focus' Mark Geenen, *Shake Rattle and Roll: The HDD Industry's Next Phase* at the THIC Meeting 9-10 March 2004 stated 44 million laptops were sold in 2003.

Trend Focus confirms a shifting ratio of Desktop PCs to Laptops from 5:1 to 3:1, estimating that 70 million laptops will be sold in 2005

Caveat – a predicted 2004 8.5% drop in 2004 laptop prices could squeeze profit margins and pose a challenge to provide a premium product as OEMs try to minimize costs and maximize profits.

3. Customer Background

A laptop hard drive is a component that is invisible to the end user, but is extremely important to the laptop manufacturer or OEM or the repair depot or technician who supplies the end user with a complete ready-to-use product. The consequences of product failure are indirect, but crucial. The laptop end user associates any laptop component failure not with the company who manufactured the component, but with the laptop manufacturer who sold the laptop itself.

3.1. General Customer Requirements

3.1.1. OEM

The OEM requires a hard drive family that is:

- reliable to minimize failures, customer data loss and maintain manufacturer quality reputation
- available in different sizes to meet their customer needs and pricing envelopes
- quiet.

3.1.2. Upgraders, Repair Depots, Independent Technicians

Laptop upgraders, technicians, repair depots require a hard drive family that is:

- reliable to minimize returns and maximize customer satisfaction
- compatible with laptops made by different manufacturers over a three to five year period
- available in different sizes to meet customer needs and pricing envelopes.

3.2. Documentation Connect or Disconnect?

Laptop Hard Drive Document sets have to meet a relatively small range of readers or users, most of which are technically educated and savvy about the hard drive and its connections to the laptop.

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



A document set includes the following list adapted from the 5K 80 HDD document set:

- Warranty information and diagnostic procedures
- Travelstar 5K80 Agency Approval Letter Agency
- Travelstar 5K80 Compatibility Summary v1.1
- Travelstar 5K80 Datasheet 05/14/03
- Travelstar 5K80 Quick Installation Guide v1.0
- Travelstar 5K80 Photos Photo 10/14/04
- Travelstar 5K80 Product Summary v1.0
- Travelstar 5K80 Specification v2.1 Specification - for OEM
- Adaptive Formatting White Paper 09/18/03
- IBM Legacy: Fluid Dynamic Bearing Spindle Motors White Paper -
- Partitioning and Formatting Reference Guide v1.1.

Documentation users include OEM engineers and designers, OEM client support, independent repair depots and their technicians, system integrators, and very occasionally an end user who performs their own maintenance and upgrade activities on their laptop.

A survey of current Hitachi documentation indicates a mature well-established and adequate document set that addresses hardware, firmware and software aspects required to install, maintain, and integrate the hard drive into the laptop computer.

The language Hitachi uses is common with the language used by the computer industry in general and by OEMs and repair technicians who use this common vocabulary to communicate hard drive problems, conditions and repair-replacement options regarding the laptop computer and its components.

As each new product family is introduced, language does need to be reviewed to ensure that it remains current with new technology developments and trends in the computer industry.

Reliability and warranty obligation fulfillment are the strongest marketing points that Hitachi can include in every member of the document set.

If possible, the OEMs should be encouraged to include Hitachi brand information about the hard drive in their MARCOM collateral. Satisfied end users could then request Hitachi drives in future laptop purchases from OEMs. Addressing the end user in this way could preserve and perhaps increase Hitachi's laptop market share.

3.2.1. Document Failure Risks

The catastrophic risks to the hard drive that could be posed by inadequate documentation include the following:

- mechanical damage from being dropped, or having interface screws being over-torqued.

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



- connector damage from improper alignment or orientation of the hard drive to the laptop connections
- electrical damage from inadequate grounding and inadequate static electricity precautions during handling of the hard drive.

Secondary, but correctable risks to the hard disk drive that could be caused by inadequate or incorrect documentation include functioning problems from incorrect drivers being installed on the laptop or improper diagnostic program features being applied.

As each laptop manufacturer has their own way of installing the hard drive, Hitachi documentation must be general enough to allow the laptop manufacturer to adapt it to their own manufacturing and servicing procedures.

Perhaps Hitachi could with laptop manufacturer input, prepare documentation specific to that manufacturer's laptop family.

4. The Documentation End User

The documentation end user is the laptop OEM engineering and manufacturing/assembly departments, repair depot technicians, individual repair shop technicians and owners, and the very occasional laptop user who performs their own repair, maintenance and upgrade services. Personnel competency and turnover in this particular aspect of the industry is not a significant factor.

While the information found in Hitachi's document set might be subject to expert review and revision, re-purposed and re-packaged by the OEM for internal use, the independent repair depots will be especially dependent on both Hitachi documentation and the OEM information to perform their tasks correctly. Therefore, Hitachi's documentation information must be as comprehensive as possible with checklists, user guides and detailed product manuals and compatibility lists.

In most cases, the audience level is expert. They are fluent in the technology. They have detailed knowledge of the laptop and the hard drive, as well as supporting firmware and software drivers. They are capable of installation and removal activities, performing fitness tests and verifying the correct versions of firmware and software for a specific hard drive and laptop combination.

Many consequences of the errors in handling and installing the laptop hard drive are catastrophic and are listed in Section 3.2.1. Most hard drive installation and removal and testing activities take place in a workshop or manufacturing setting with adequate lighting, electrical grounding and with the correct tools available.

4.1. Documentation Format

The documentation should be available in hard copy for easy shop reference as well as on line for those who lose their copy, need extra copies, or need updated copies. As this is a technically expert audience, on-line help is not appropriate, but e-mail support and a knowledgeable call center staff function can solidify technical audience support and confidence in Hitachi's brand.

Documentation users should be encouraged to visit the Hitachi website periodically to review change notices to the documentation and to the product. The documentation users

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



should also be encouraged to send Hitachi suggestions for improvement or notify Hitachi of any omissions. Major OEM clients should be on a distribution list for documentation changes.

5. Conclusion – SWOT

This section summarizes the document set requirements and analysis discussed earlier.

Strength

The current documentation model found on the corporate website <http://www.hitachigst.com> in November 2004 is very comprehensive, consistent and easy to work with in comparison to Hitachi's competitors.

Weakness

Hitachi has made improvements over the past two years in improving the ease of retrieval of information in their printed and online material. More needs to be done. The compatibility lists need to be continuously updated to reflect current and legacy applications. Diagnostic tools need to be continually updated to visibly reflect additions to the Hitachi TravelStar Hard Disk Drive family. This will provide confidence to the upgrader and repair depot market segment to recommend Hitachi products in the course of their business.

Within limits, review and revise legacy hard drive – especially those still in production – documentation sets to ensure they are current.

Opportunity

Hitachi can continue to consolidate and grow its lead in the laptop hard disk market by encouraging OEMs to include Hitachi hard drive branding information in and on the laptop as Intel does with Pentium and Microsoft does with its Windows operating systems.

Up-to-date document sets provide OEMs, repair depots and upgraders, and technical product reviewers in the technical media confidence that Hitachi provides a best of breed product with best of breed documentation and support

Threats

Incomplete or unrevised document sets will erode confidence in Hitachi's laptop products.

The product introduction cycle seems to be growing shorter. This shorter cycle can be a documentation weakness.

Hitachi must continually upgrade product. Within one quarter of the 2004 5K 100 launch, all of Hitachi's major competitors released a version of a 100Gigabyte laptop hard drive. Reliability, rotational speed, aural densities are on a relentless march upwards, while error rates continually slide down.

The Future

The future hard drive market is secure for the next several years – until solid-state 'disk' drive technology improves and the prices per megabyte falls. Hitachi must have plans to address this new Rubicon.

DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



6. Appendix

5K80 & 5K100 Document Sets

Starred items missing for 5K100

- Travelstar 5K80 & 5K100 Agency Approval Letter Agency
- *Travelstar 5K80 Compatibility Summary v1.1
- Travelstar 5K80 & 5K100 Datasheet 05/14/03
- Travelstar 5K80 & 5K100 Quick Installation Guide v1.0
- Travelstar 5K80 & 5K100Photos Photo 10/14/04
- *Travelstar 5K80 Product Summary v1.0
- Travelstar 5K80 & 5K100 Specification v2.1 Specification - for OEM
- *Adaptive Formatting White Paper 09/18/03
- *IBM Legacy: Fluid Dynamic Bearing Spindle Motors White Paper
- *Partitioning and Formatting Reference Guide v1.1
- *Warranty info & Diagnostic tests needs updating for 5K100.

Attached Reference Documents in Accompanying CD

Unless otherwise stated, all documents are live pdf. The links will open a browser window when the reader's computer is connected to the Internet.

- 5K100 technical document list
- HGST_Travelstar_5K100_9-14_DataSht.pdf
- T5K100_ig-quick-install.pdf
- T5K100_spec-book.pdf
- 7nov-hitachi-PressRelease-2nov04-China-Mfg-Site.pdf

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The information and analysis in this report are valid as of the report date only.

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DOCUMENT INFORMATION REQUIREMENTS

TRAVELSTAR 5K 100 DISK DRIVE



Mike edited chapters from the 2003 *Wireless Unified and Instant Messaging – A Study for Sun Microsystems* for Toronto based TeleAnalytics.

Mike edited the *FY2001 Compaq Telecom Market Analysis Report*, researched the CRM players section, and compiled the glossary. Mike edited *The 2002 Hughes Network Systems e-Learning Project*, and researched and wrote Appendix D, Detailed Private Sector Profiles and compiled and clarified the EU Funding Mechanism. The Marcus Evans Market Analysis Group issued these reports.

Mike also designs and maintains websites, their graphics and their content for technical and for entertainment applications.

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