

PROJETO DE ARQUIVOS (PRA)

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Fita magnética (UNIVAC I
1951)



Fita magnética



Fita magnética



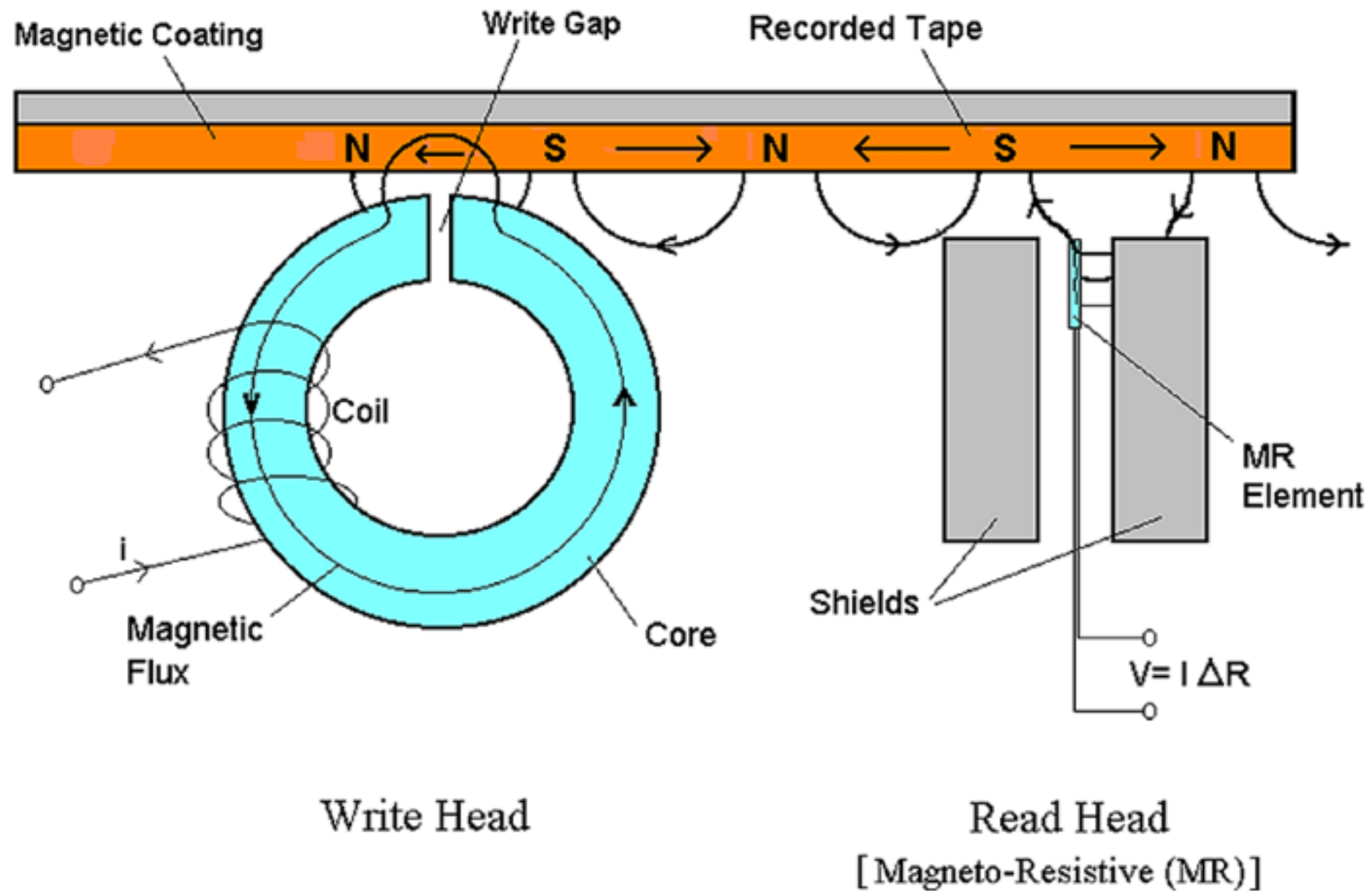
Fita magnética



Fita magnética



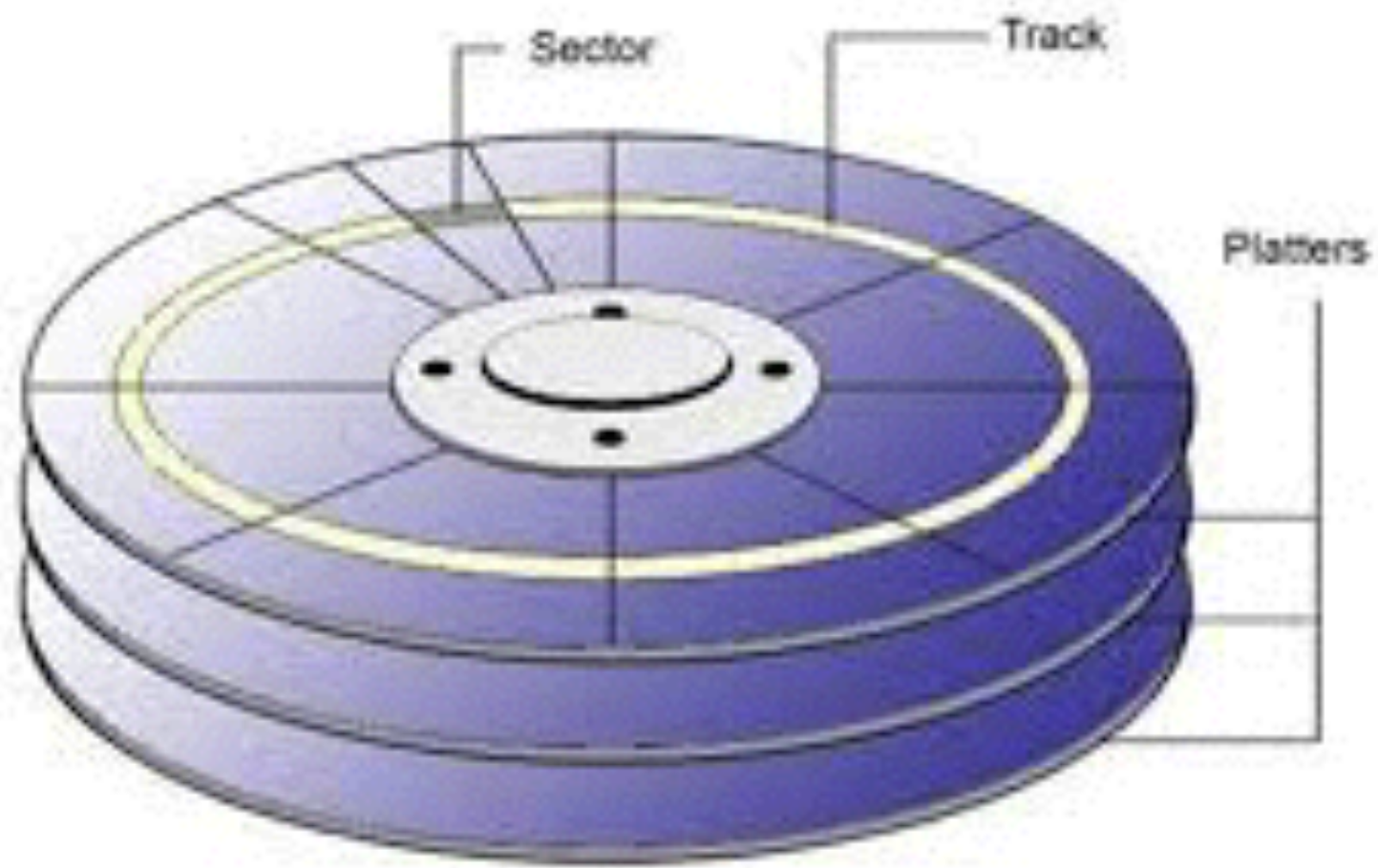
Fita magnética



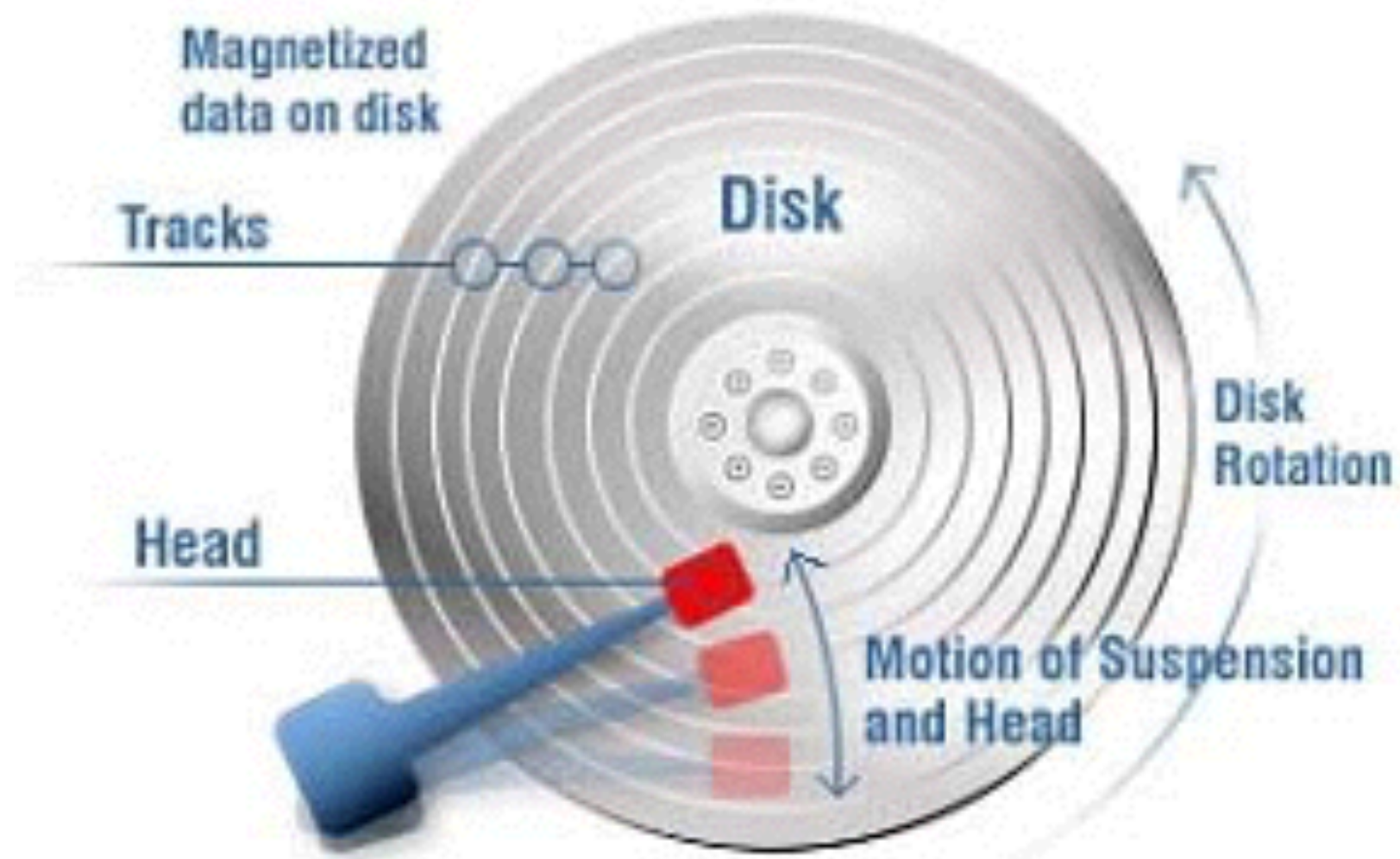
Fita magnética

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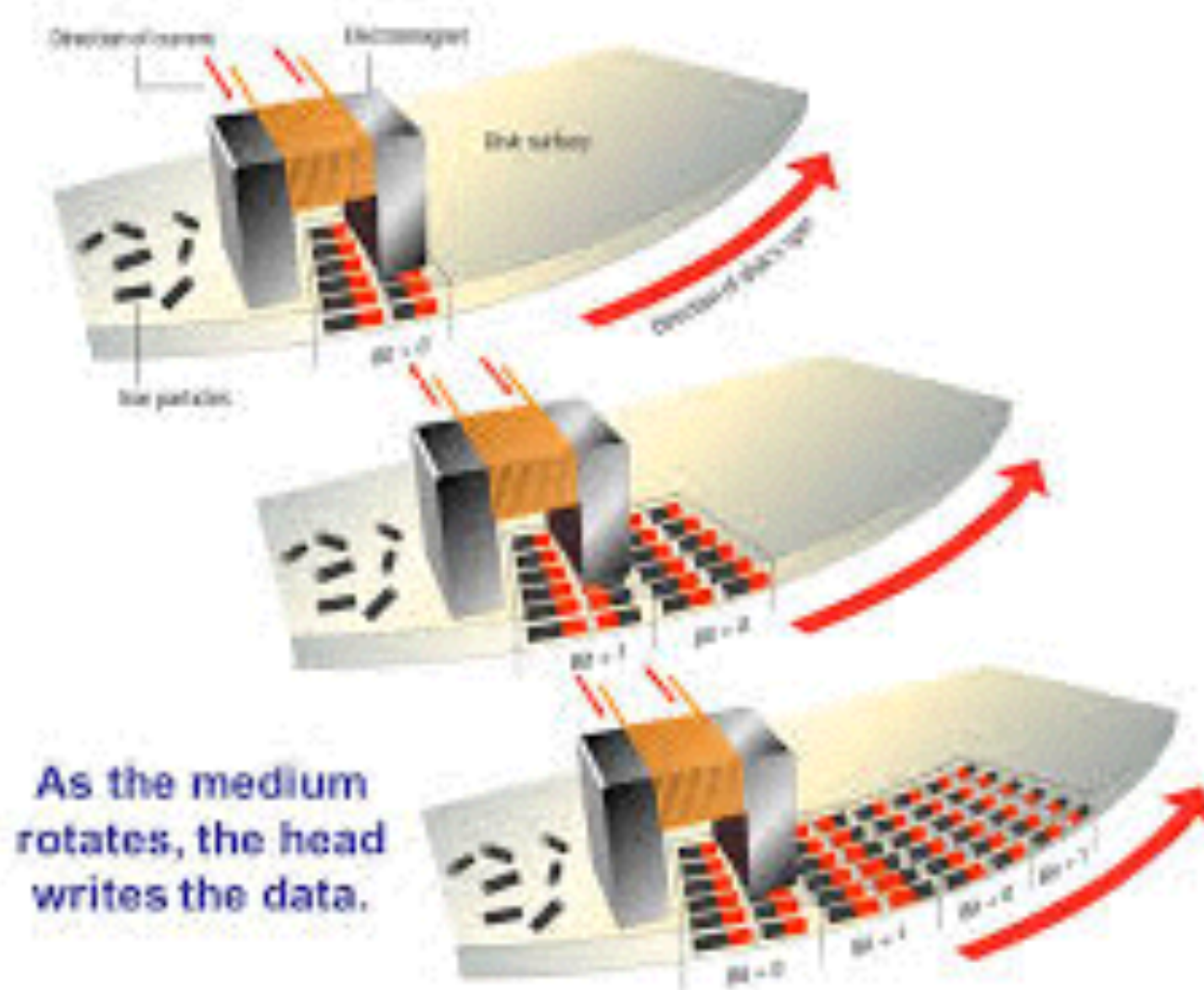
- Acesso sequencial aos dados
- Sony anunciou em 2014 uma fita com, 148 Gbit/in² (23 Gbit/cm²), ou seja, 185 TB



HD



HD



HD

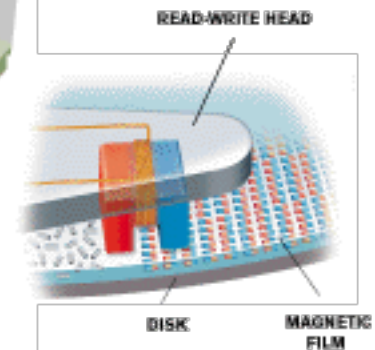
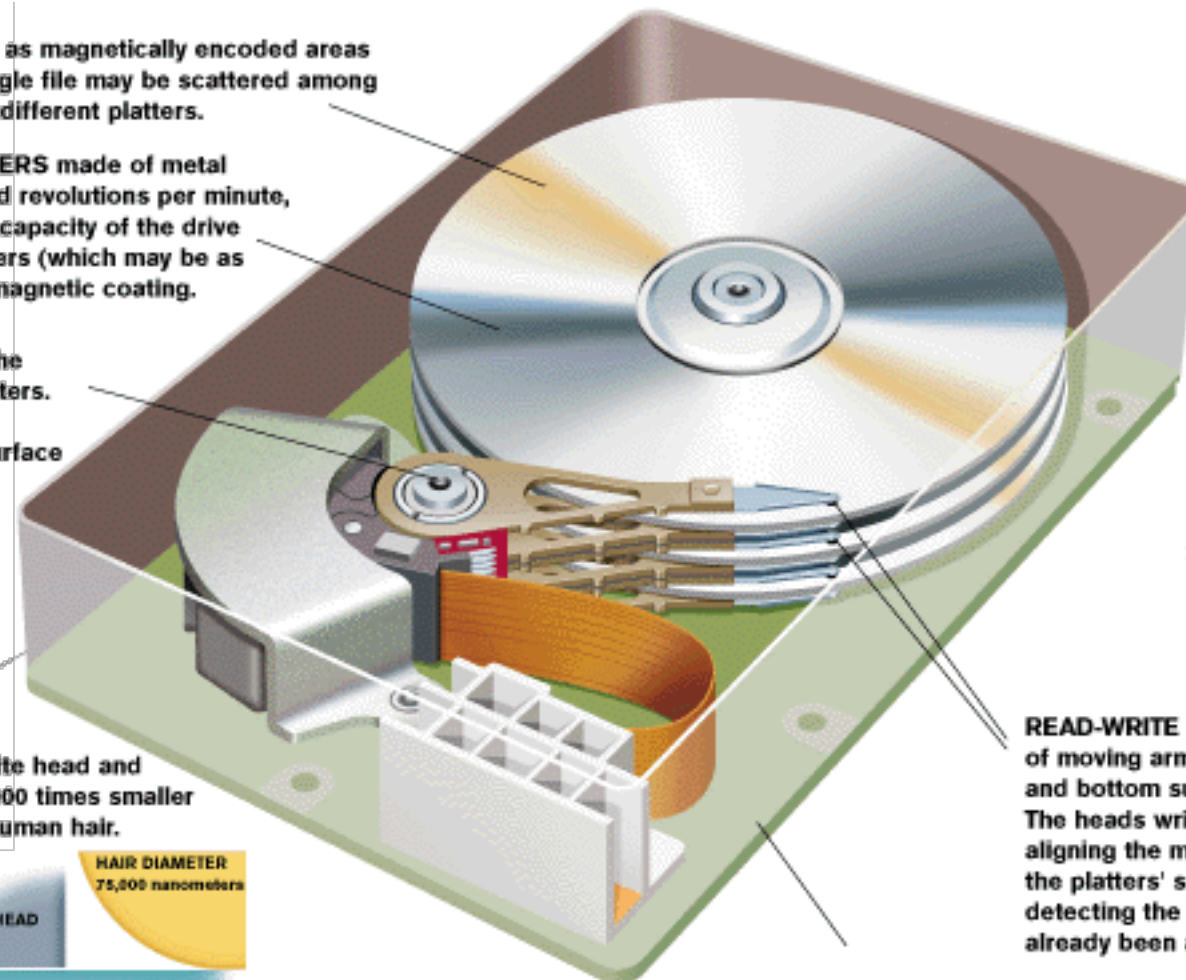
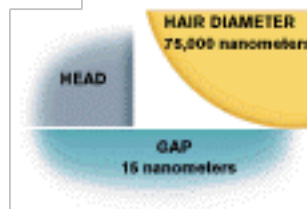
FILES are stored as magnetically encoded areas on platters. A single file may be scattered among several areas on different platters.

MAGNETICALLY COATED PLATTERS made of metal or glass spin at several thousand revolutions per minute, driven by an electric motor. The capacity of the drive depends on the number of platters (which may be as many as eight) and the type of magnetic coating.

HEAD ACTUATOR pushes and pulls the read-write head arms across the platters. It precisely aligns the heads with the concentric circles of tracks on the surface of the platters.

PROTECTIVE HOUSING

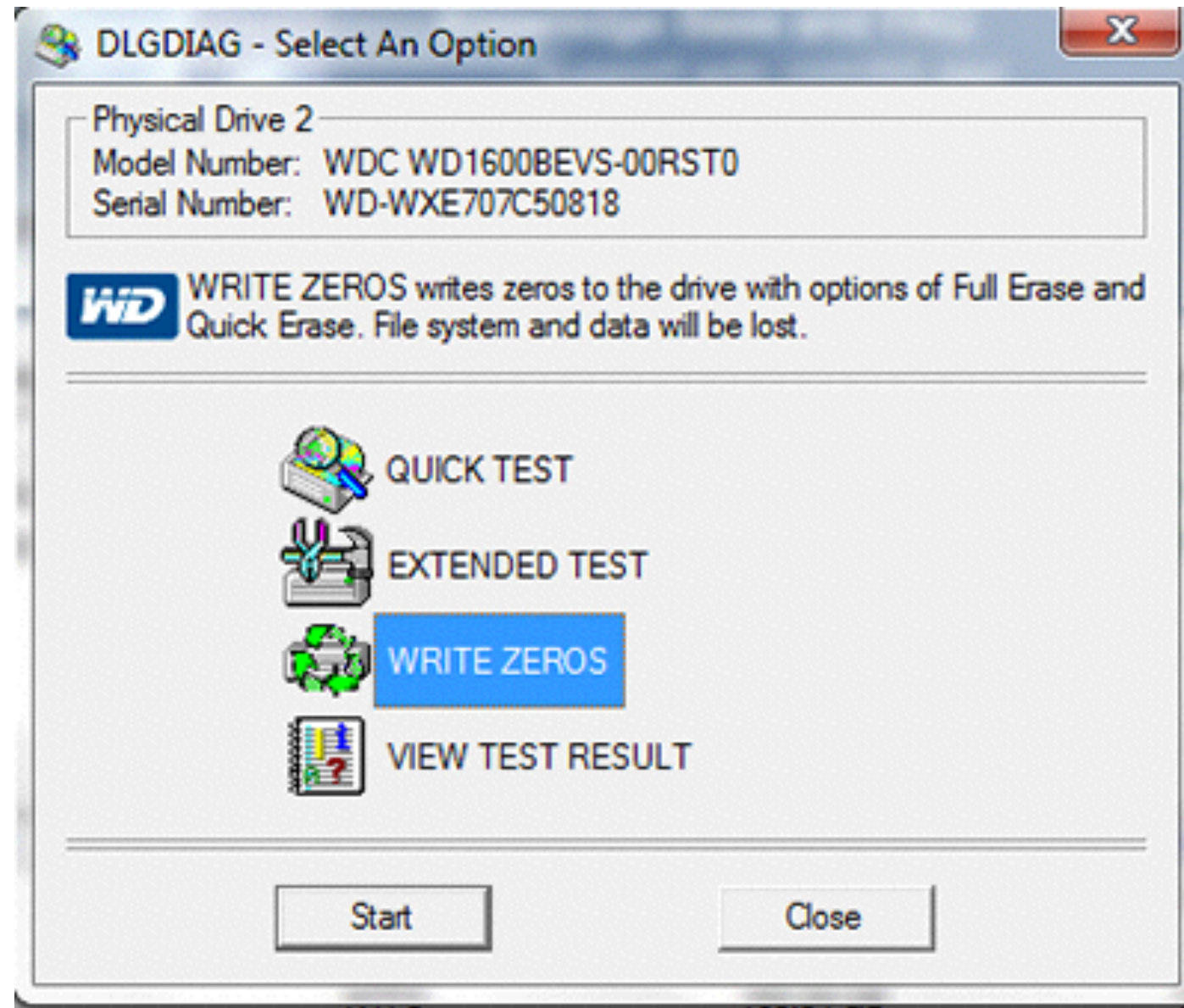
GAP between a read-write head and the platter surface is 5,000 times smaller than the diameter of a human hair.



READ-WRITE HEADS, attached to the ends of moving arms, slide across both the top and bottom surfaces of the spinning platters. The heads write the data to the platters by aligning the magnetic fields of particles on the platters' surfaces; they read data by detecting the polarities of particles that have already been aligned.

PRINTED CIRCUIT BOARD receives commands from the drive's controller. The controller is managed by the operating system and the basic input-output system, low-level software that links the operating system to the hardware. The circuit board translates the commands into voltage fluctuations, which force the head actuator to move the read-write heads across the surfaces of the platters. The board also controls the spindle that turns the platters at a constant speed and tells the drive heads when to read from and when to write to the disk.

HD



ZERANDO Western
Digital

Além do zero filling DoD 5220.22-M
<http://goo.gl/ejwkXu>

Como zerar um HD

- ISAM:
 - Indexed sequential access method
 - Já foi o método mais usado
 - Contínua em uso
 - Suportado por COBOL e PL/1
 - Originário de alta plataforma (IBM 4341 e linha 370)
 - Portado para baixa plataforma

Arquivos indexados
sequenciais

- ISAM:
 - Criado pela IBM
 - Acesso feito através de uma API
 - Adequado para fitas
 - Usa índices (algoritmo B-Tree normalmente nos mais novos)

Arquivos indexados
sequenciais

- ISAM:
 - Ordenado por chave primária
 - Tabela de índices é usada para acessar o arquivo
 - A tabela normalmente fica no início do arquivo
 - Em alguns casos fica em arquivo separado
 - Tabela de índices pode ter vários níveis (hierarquico)

Arquivos indexados sequenciais

- ISAM:
 - Registros de tamanho fixo

Arquivos indexados
sequenciais

- ISAM:
 - Inserir é realizado na área de overflow (também indexada)
 - Eliminar é apenas marcado
 - Atualizar realizado por cópia de arquivo

Arquivos indexados
sequenciais

ÍNDICES

Um índice é uma estrutura de dados usada para recuperar registros eficientemente.

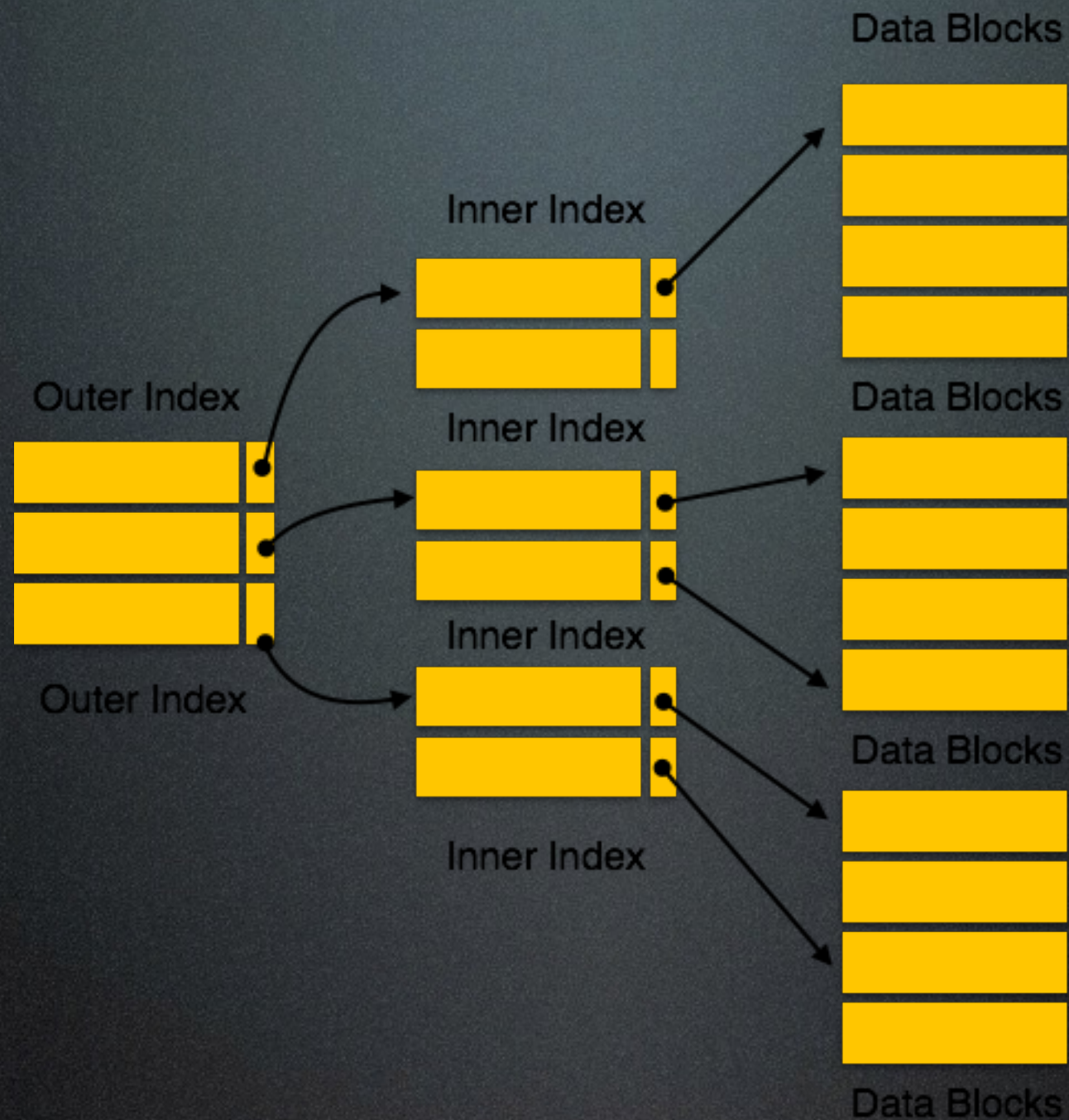
ÍNDICES

China	●	→	China	Beijing	3,705,386
Canada	●	→	Canada	Ottawa	3,855,081
Russia	●	→	Russia	Moscow	6,592,735
USA	●	→	USA	Washington	3,718,691

DENSE INDEX

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DENSE INDEX



Multi-level INDEX

- blocking factor é o número de registros por bloco
- O valor do blocking factor for record é denominado fan-out ou of
- A busca requer $\log_{fo} bi$

Multi-level ÍNDICES



Glauco Vinicius Scheffel

Por que PRA?

O que é uma
árvore?



"... simplemente decidimos ir." Filme Apolo 13