CARD WAVE®
Trusted Memory Solutions

USER

EMBEDDED

ADVANTAGES	DISADVANTAGES
• Users don't have to research the ideal flash memory specification for their device, they just power it up and use it, and it will work to its optimum capability.	• The consumer price of a device might be higher to cover the manufacturer's costs for sourcing and integrating the flash memory.
• A user buys a complete, working product without the need to add anything to make it function as expected.	• It is impossible - or very difficult - for end users to upgrade their device's storage.
• Embedded storage can be configured by manufacturers to optimise speed and performance, which gives the end user the best performance a device can deliver.	
• Manufacturers can include 'factory reset' software into their device, allowing easy recovery to factory settings.	

REMOVABLE

ADVANTAGES	DISADVANTAGES
• Changing to a new card, for example to add more memory capacity, is easy.	
• The user can decide what additional storage to buy, including selecting a brand and a storage capacity.	
• Data is portable - the user can take their data to a new device. For example, moving a music library from an old handset to a new one.	
• A device can have a longer lifespan if users can upgrade its memory or add features via updates administered from a flash memory card.	
• Data can be secured through on-card encryption.	

MANUFACTURER

EMBEDDED

ADVANTAGES	DISADVANTAGES
• A device maker has complete control of the memory used, so they can specify the optimum balance of capability and cost.	• If the flash memory fails, the whole device may be rendered unusable.
• When a device maker knows the specification of their flash memory, they can be confident about making claims around speed and performance.	• Device failure might mean a return for repair, either under warranty or at a cost, creating pain points for both manufacturer and user.
• Embedded memory tends to be smaller than removable, which means more storage can be provided where space is at a premium, or that there is more room for other components.	• Integrating embedded storage into devices adds to development time especially if a bespoke interface is being designed.
• Device managers can treat their flash memory as a critical component, and take control of the supply chain.	• Integrating embedded storage into devices adds to development costs.
• Embedded storage gives manufacturers more control over how data is read and written to the storage: they can design their own interface and greatly improve performance.	• Integrating embedded storage into devices can create additional user support costs, which can be even greater if a bespoke interface is designed.
• It is easier for manufactures to protect their intellectual property as they can hide their code effectively.	
• Retailers might be more interested in stocking a product as they can upsell memory cards as accessories.	

REMOVABLE

ADVANTAGES	DISADVANTAGES
• The data is stored safely when the device itself is powered off.	• The device maker can't control the flash memory used. Cards that are under-specified for the device might cause slowness or malfunction, for which the device is blamed.
• New, faster and better products come to market more quickly.	• There are many grades of flash memory, and the user might find it difficult to understand the differences or work out what is ideal for their device. Using the least expensive flash might mean the device is under-served.
• Third party applications can be booted from a flash memory card, opening up new horizons for device users and making it viable to sell the device to a wider market	