SONY

White paper

April 2017

Xperia™ XZs

G8232

Purpose of this document

Sony product white paper are intended to give an overview of a product and provide details in relevant areas of technology.

NOTE: The illustration that appears on the title page is for reference only. All screen images and elements are subject to change without prior notice.

Document history

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Sony Mobile Developer World

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4-12-3 Higashi-Shinagawa, Shinagawa-ku,
Tokyo, 140-0002 Japan

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Product overview

Highlights

- 19 MP Motion Eye camera
- Super slow motion video at 960 frames per second
- 13 MP wide angle front camera
- IP65/68* water resistant body with ALKALEIDO™** metal back
- Smart Stamina
- Xperia Actions that intelligently learns and adapts to your usage.

19 MP Motion Eye camera

Motion Eye camera is the latest camera system developed with Sony Digital Imaging know-how to capture motion beyond human eye capability, powered by the world's first memory stacked image sensor in a smartphone***

- **Super slow motion****

The new Xperia™ XZs is the first smartphone with 960fps video capture****. This means you can capture the action 32x slower than normal video

- **Predictive capture**

When action happens, Motion Eye camera starts buffering to automatically capture up to 4 photos before pressing the shutter, to ensure you capture those unexpected moments.

- **A breakthrough in clarity and quality**

1. Superior image quality powered by a brand new 19 MP memory stacked sensor and a redesigned Sony G Lens.
2. With 19% bigger pixels, the new sensor can capture more light and detail.
3. For fast moving objects, Anti-distortion shutter reduces the image misshape.

Unified design brings together technology, style, and your way of life

Merging sleek looks with an intelligent interface, the Xperia™ XZs design creates a natural relationship between you and your phone. Its loop surface is a pleasure to hold, with our exclusive ALKALEIDO™** metal back adding luxurious colour and shine.

**Xperia™ XZs is IP65/68 water resistant and protected against dust, so don't worry if you get caught in the rain or want to wash off dirt under a tap water, but remember all ports and attached covers should be firmly closed. You should not put the device completely underwater; or expose it to seawater, salt water, chlorinated water or liquids such as drinks. Abuse and improper use of device will invalidate warranty. The device has been tested under Ingress Protection rating IP65/68. Note that the Xperia™ XZs has a capless USB port to connect and charge. The USB port needs to be completely dry before charging.*

The phone that gets smarter every day

The Xperia™ XZs learns and adapts to your preferences every day, making your life that little bit easier.

- **Smart Stamina**

Xperia™ XZs learns your usage behavior to give you accurate battery life estimation and suggest to switch Stamina mode when you need it.

- **Xperia Actions**

The Xperia™ XZs pays attention to the little things you do, like turning on silent mode when needed. It then starts adjusting its settings automatically, so you always get an easy and convenient experience from your phone.

***ALKALEIDO™ is a registered trademark of Kobe Steel, Ltd.*

****Xperia™ XZs & Xperia™ XZ feature a memory stacked image sensor capable of directly capturing slow motion video at 960 frames per second in High Definition (720p) using device hardware. Verified by Strategy Analytics' SpecTRAX Service against the published camera sensor specifications for over 9800 smartphones. Correct as of the 16th December 2016*

*****Super slow motion video at 960 frames per second is recorded in High Definition (720p).*

Facts – dimensions, weight, performance and networks

Operating system	Google™ Android™ 7.1 (Nougat)
Processor	2.2 GHz / 1.6 GHz Qualcomm MSM8996 Quad Core
GPU	Adreno 530
Size	146 x 72 x 8.1 mm
Weight	161 grams
Available colours	Black, Warm Silver, Ice Blue
SIM card	Dual nano SIM
Main screen	
Size (diagonal)	5.2 inches
Colours	16,777,216 colour TFT
Resolution	Full HD 1080p 1080x1920 pixels
Display	Corning® Gorilla® Glass
Input mechanisms	
Text input	On-screen QWERTY keyboard
Touch screen	Capacitive
Touch gesture	Yes – multi-touch, up to 10 fingers supported
Memory	
RAM	4 GB
Flash memory	Up to 64 GB*
Expansion slot	microSD™ card, microSDHC, microSDXC supported**
Memory card speed class	Up to Class 10***
Memory card UHS speed class	Class 1***
Camera	
Effective pixels	19 MP main camera with Sony Exmor RS™ for mobile sensor
Triple sensing technology	Yes
Digital zoom	8x
Clear image zoom	3x
Video recording	4K

ISO (Main Camera)	ISO 3200 maximum in Manual mode
	ISO 12800 maximum in Superior auto mode for photos
	ISO 2000 maximum in Night scene mode for video
F number	F2.0
Minimum focus distance	120 mm
Front Camera	13 MP front camera with Sony Exmor RS™ for mobile sensor (Full HD, 1080p)
Sensors	
Accelerometer	Yes
Ambient light sensor	Yes
Barometer sensor	Yes
eCompass™	Yes
Game rotation vector	Yes
Geomagnetic rotation vector	Yes
Gyroscope	Yes
Magnetometer	Yes
Step counter	Yes
Step detector	Yes
Significant motion detector	Yes
Proximity sensor	Yes
Networks	
G8232	UMTS HSPA+ 800 (Band VI), 800 (Band XIX), 850 (Band V), 900 (Band VIII), 1700 (Band IV), 1900 (Band II), 2100 (Band I) MHz GSM GPRS/EDGE 850, 900, 1800, 1900 MHz LTE (Bands 1,2,3,4,5,7,8,12,13,17,19,20,26,28,29,32,38,39,40,41) WLAN, 2.4 GHz/5 GHz, NFC
Data transfer speeds	
GSM GPRS	Up to 107 kbps
GSM EDGE	Up to 296 kbps
HSUPA (upload)	Cat 6, up to 5.76 Mbps
HSDPA (download)	Cat 24, up to 42.2 Mbps
LTE (4G)	Cat 9 (downlink/uplink)
	Cat 11****(downlink) and Cat 5****(uplink)

Battery performance	
Talk time (GSM)	12 hours 50 min. *****
Standby time (GSM)	620 hours. *****
Talk time (UMTS)	17 hours 30 min. *****
Standby time (UMTS)	610 hours. *****
Standby time (LTE)	590 hours. *****
Music listening time	84 hours. *****
Video playback time	11 hours 30 min. *****
Battery (Embedded)	2900 mAh minimum

** Memory comprises approximately 15.6 GB of firmware, plus 48.4 GB of "Internal storage" for music, pictures and movies, and downloaded applications and their data. For more details about memory, see "Memory in Android™ devices" on page 19.*

*** SDXC theoretically can support up to 2TB card. However, 256 GB is the largest capacity of microSD card available in the market as of January 2016.*

**** This device meets the minimum hardware requirements to support Class 10 / UHS Speed Class 1 Flash memory. Flash memory performance is dependent on the application and task being performed on the device. If you would like to know about your memory card, refer to the technical specifications that came with the card.*

***** This service is not available in all variants or markets.*

****** Values are according to GSM Association Battery Life Measurement Technique as performed in controlled laboratory conditions. Actual time may vary.*

NOTE: The battery performance may vary depending on network conditions and configurations, and device usage.

NOTE: The performance metrics are all measured under laboratory conditions.

Categorised feature list

Call
Noise suppression
Smart call handling

Messaging
Email
Multimedia messaging (MMS)
Text messaging (SMS)

Applications
Amazon Shopping*
Facebook™ application*
Introduction to Xperia™
Lifelog
News suite*
Weather application
What's new
Xperia™ Companion
Xperia™ Lounge*
Xperia™ Tips

Entertainment
Movie creator
PlayStation® App*
PS4™ Remote Play
Kobo Reader*
Sketch
Xperia™ Themes

Organiser
ActiveSync®
Airplane mode
Alarm clock
AVG Protection
Battery Care
Calculator
Contacts
Queue background data
Setup guide
Smart actions
Smart cleaner
STAMINA mode
Stopwatch
Timer
Ultra STAMINA mode
World clock

Google
Gmail™*
Google Calendar
Google Chrome™*
Google Duo™*
Google Drive
Google Docs, Sheets and Slides
Google Messenger
Google Photos
Google Play Movies
Google Play Music
Google Play Store™*
Google™ search*
Google Voice™ Search*
Google voice typing
Google Maps™*
Smart Lock
YouTube™*

Camera

- Photo

25 mm wide-angle****
Anti-Distortion shutter
Color & Brightness
Flash/Pulsed LED****
Flash/Photo light****
Hand shutter***
HDR
Geo tagging
Image stabiliser
Object tracking****
Predictive capture
Predictive Hybrid Auto focus****
Quick Launch****
Red-eye reduction****
Superior Auto
Save location
Self-timer
Smile Shutter™
Scene recognition
Touch capture
White balance

- Video

Auto focus
Color & Brightness
Geo tagging
HDR
Object tracking****
Quick launch****
Save location
Scene recognition
Smile Shutter™
SteadyShot™ with Intelligent Active
Super slow motion
Touch capture

- Add-on applications

4k video
AR Effect
Creative effect
Sound Photo
Panorama

Music

3D Surround Sound (VPT)
Album art
Automatic headset compensation
Bluetooth® stereo (aptX®, A2DP, LDAC)
ClearAudio+
Clear Bass™
DSEE HX**
Dynamic normalizer
Hi-Res Audio (LPCM, FLAC, ALAC, DSD)
Hi-Res Audio via 3.5 mm audio jack and USB
Low power audio playback**
Music application
S-Force Front Surround
Spotify*
Stereo speakers

Connectivity

aGNSS
Bluetooth® 4.2 wireless technology
Cast
Device Connection
DLNA Certified™
HDCP
Media Transfer Protocol support
NFC
Quick Charge 3.0 support
Screen mirroring
USB charging
USB Connection mode
USB High speed 2.0 support
USB Host
USB Type-C™
Wi-Fi®
Wi-Fi® Hotspot functionality
Wi-Fi CERTIFIED Miracast™

Text Input

Gesture input*
On-screen QWERTY keyboard*
SwiftKey™
Predictive text input

Display

Auto rotation
Dynamic Contrast Enhancement
Glove mode
Multi-window
Screen zoom
Screenshot capturing
Smart backlight control
Super-vivid mode
TRILUMINOS™ Display for mobile
X-Reality™ for mobile

Hardware

3.5 mm audio jack Digital Noise Cancelling (DNC)
Fingerprint sensor*****
IP65/68******
Live Color LED
RGBC-IR sensor
ToF (Laser AF) sensor

** This service is not available in all markets.*

*** This feature is only available when you play music using the Music application.*

**** This feature is only supported by the front camera.*

***** This feature is not supported by the front camera.*

****** This feature is not available in the US market.*

******* The Xperia™ XZs is water resistant and protected against dust, so don't worry if you get caught in the rain or want to wash off dirt under a tap water, but remember all ports and attached covers should be firmly closed. You should not put the device completely underwater; or expose it to seawater, salt water, chlorinated water or liquids such as drinks. Abuse and improper use of device will invalidate warranty. The device has been tested under Ingress Protection rating IP65/68. Note the Xperia™ XZs has a capless USB port to connect and charge. The USB port needs to be completely dry before charging.*

Technologies in detail

The information presented in this section is a general overview of the technology incorporated into the product. However, hardware and software levels of compliance to standards and specifications vary between products and markets. For more information, contact Sony Mobile Developer World or the relevant Sony representative.

Accessibility and Usability

Accessibility shortcut*	Yes
Auto-rotation*	Yes
Captions*	Yes
Color correction*	Yes
Color inversion*	Yes
Display size*	Yes
Hearing Aid Compatibility (HAC)	Yes
Large mouse pointer*	Yes
High contrast text*	Yes
Font size*	Yes
Magnifications gestures*	Yes
Mono audio*	Yes
Play sound when battery is full*	Yes
Power button ends call*	Yes
Speak passwords*	Yes
Switch access*	Yes
Talkback*	Yes
Teletypewriter (TTY)**	Yes
Text-to-speech output*	Yes
Touch & hold delay*	Yes

** Android feature. Subject to possible change in future releases of Google™ Android™.*

*** The TTY feature is for deaf or hearing-impaired users.*

Device-to-device communications (local)

Bluetooth® wireless technology

Bluetooth® profiles supported	Advanced Audio Distribution Profile v1.2 Audio/Video Remote Control Profile v1.6 Device Identification Profile v1.3 Generic Access Profile Generic Attribute Profile Client/Server over LE General Audio/Video Distribution Profile v1.2 Handsfree Profile v1.7 (Wide band speech) Headset Profile v1.2 HID over GATT Profile v1.0 Human Interface Device Profile, Host role v1.0 Messaging Access Profile v1.2 Object Push Profile v1.2 Personal Area Networking Profile v1.0 Phonebook Access Profile v1.2.1 Serial Port Profile v1.2
Core version and supported core features	Version 4.2 Bluetooth Low Energy
Other supported features	aptX® CD quality audio streaming over Bluetooth® LDAC High sound quality audio streaming over Bluetooth®
Connectable devices	Products that support at least one of the Bluetooth® profiles listed above. Bluetooth® 4.2 accessories generally require the installation of a supporting application.

More information:

www.sonymobile.com/developer

www.bluetooth.com

Wi-Fi®

Supported standards	IEEE 802.11a/b/g/n/ac MIMO and Wi-Fi® Wi-Fi Direct®, Wi-Fi Protected Setup™, Wi-Fi CERTIFIED Passpoint™, Wi-Fi CERTIFIED Miracast™
Connectable devices	Wi-Fi® compatible devices Wi-Fi® access points Wi-Fi Direct™ compatible devices
Frequency band	2.4 GHz/5 GHz
Data transfer rate	Up to 867 Mbit/s
Security	Open Authentication Shared Authentication EAP-SIM EAP-AKA EAP-AKA' EAP-TLS EAP-TTLS/MSCHAPv2 PEAPv0/EAP-MSCHAPv2 PEAPv1/EAP-GTC WPA Personal and WPA2 Personal WPA Enterprise and WPA2 Enterprise
Encryption	WEP 64 bit, WEP 128 bit, TKIP and CCMP (AES)
Power save	WMM®-UAPSD
QoS	WMM®, WMM® Power Save

DLNA Certified™ (Digital Living Network Alliance)

Supported Device Classes	***M-DMS – Mobile Digital Media Server*** Media Types: image, video and music Summary: The digital media server exposes the media files in you device to a Wi-Fi® network. The files can then be access from other DLNA Certified clients or Sony devices which support home networks. ***M-DMP – Mobile Digital Media Player*** Media Types: image, video and music Summary: Play content stored on another device, for example, a server or a PC, directly on your device. ***M-DMC – Mobile Digital Media Controller*** Media Types: image, video and music Summary: A remote controller that searches for content on another device and plays them on your device. ***+PU+*** Media Types: image, video and music Summary: Play media in your device on another device, such as a TV or a PC using 2 box push technology. +PU+ is integrated in the Album and Music applications.
Supported Bearers	Wi-Fi® Wi-Fi Direct®
DRM Support	The DLNA Certified™ implementation does not support DRM-protected content.

Messaging

MMS (Multimedia Messaging Service)

According to OMA Multimedia Messaging Service v1.0 + SMIL

Email

Bearer type (IP)	GPRS, EGPRS, UMTS, LTE, Wi-Fi®
Character sets	BIG5 Traditional Chinese GB18030 ISO-2022-JP Japanese ISO-8859-1 ISO-8859-2 Eastern Europe ISO-8859-5 Cyrillic ISO-8859-7 Greek ISO-8859-9 Turkish ISO 8859-11 KOI8-R Cyrillic Shift_JIS Japanese US-ASCII UTF-16 UTF-8 Windows® 874 Windows® 1251 Cyrillic Windows® 1252 Windows® 1254 Turkish Windows® 1258 Vietnamese
Protocols	POP3 and IMAP4
Push email	Microsoft® Exchange ActiveSync® (EAS) IMAP4 IDLE (RFC2177)
Secure email	SSL/TLS, both port methods (POPS/IMAPS) and STARTTLS
HTML mail	Yes (read only)

More information:

www.sonymobile.com/developer

www.openmobilealliance.org

Positioning – location based services

Supported standards:

- OMA Secure User Plane Location (SUPL) v1.0 and v2.0
- 3GPP™ Control Plane location (incl. Emergency location)
- Qualcomm® GPSOneXtra™

Supported satellite systems:

- GPS
- GLONASS
- BeiDou*

NOTE1: When needed, the device automatically uses a combination of all available satellite system to accurately provide location information

** BeiDou satellites are not used for providing location information in U.S. territory.*

Provisioning (OMA CP)

OMA CP version 1.1

Multimedia (audio, image and video)

Audio Playback	**Decoder format**	**Supported in file format**
	AAC-LC	MP4(.mp4), M4V(.m4v), 3GPP(.3gp, .3gpp), MPEG-2 TS(.ts), AVI(.avi), ADTS(.aac), M4A(.m4a)
	AAC+	MP4(.mp4), 3GPP(.3gp, .3gpp), MPEG-2 TS(.ts), AVI(.avi), ADTS(.aac)
	eAAC+	MP4(.mp4), 3GPP(.3gp, .3gpp), MPEG-2 TS(.ts), AVI(.avi), ADTS(.aac)
	AAC-ELD	MP4(.mp4), 3GPP(.3gp, .3gpp)
	ALAC	MP4 (.m4a)
	AMR-NB	3GPP(.3gp, .3gpp), AMR(.amr)
	AMR-WB	3GPP(.3gp, .3gpp), AWB(.awb)
	DSD	DSF (.dsf), DSDIFF (.dff)
	FLAC	FLAC(.flac)
	MIDI	SMF(.mid), XMF(.xmf), Mobile XMF(.mxmf), RTTTL(.rtttl), RTX(.rtx), OTA(.ota), iMelody(.imy)
	MP3	MP3 (.mp3)
	PCM	AVI(.avi), WAVE(.wav), AIFF(.aiff, .aif, .aifc)
	Opus	Matroska(.mkv), MatroskaAudio(.mka), Ogg(.ogg), WebM(.webm)
	Vorbis	Matroska(.mkv), WebM(.webm), MatroskaAudio(.mka), Ogg(.ogg)
	WMA	ASF (.wma)
Audio Recording	**Encoder format**	**Supported in file format**
	AAC-LC	MP4(.mp4), ADTS(.aac)
	AAC+	MP4(.mp4)
	AAC-ELD	MP4(.mp4)
	AMR-NB	3GPP(.3gp), AMR(.amr)
	AMR-WB	3GPP(.3gp), AWB(.awb)

Image Playback	**Decoder format**	**Supported in file format**
	BMP	BMP (.bmp)
	GIF	GIF (.gif)
	JPEG	JPEG (.jpg, .jpeg)
	PNG	PNG (.png)
	WebP	WebP (.webp)
Image Capture	**Encoder format**	**Supported in file format**
	JPEG	JPEG (.jpg)
	PNG	PNG (.png)
	WebP	WebP (.webp)
Video Playback	**Decoder format**	**Supported in file format**
	MPEG-4 Video	MP4(.mp4), M4V(.m4v), 3GPP(.3gp, .3gpp)
	H.263	MP4(.mp4), 3GPP(.3gp, .3gpp)
	H.264	MP4(.mp4), M4V(.m4v), 3GPP(.3gp, .3gpp), MPEG-2 TS(.ts), AVI(.avi), Matroska(.mkv)
	H.265	MP4(.mp4), Matroska(.mkv)
	VP8	Matroska(.mkv), WebM(.webm)
	VP9	Matroska(.mkv), WebM(.webm)
	Xvid	AVI (.avi)
Video Recording	**Encoder format**	**Supported in file format**
	MPEG-4 Video	MP4 (.mp4), 3GPP (.3gp)
	H.263	MP4 (.mp4), 3GPP (.3gp)
	H.264	MP4 (.mp4), 3GPP (.3gp)
	H.265	MP4 (.mp4)
	VP8	WebM (.webm)
Audio/Video Streaming	Streaming transport	HLS HTTP progressive streaming RTSP
DRM	DRM (Digital Rights Management) – features the rights and copy protection of downloaded content	OMA OMA DRM v1.0 Widevine Level 1 PlayReady DRM (available in specific regions)

Synchronisation (OMA DS, EAS, Google Sync™)

OMA Data Formats: vCard 2.1, vCalendar 1.0

Microsoft® Exchange ActiveSync® protocol version 2.5

Microsoft® Exchange ActiveSync® protocol version 12

Microsoft® Exchange ActiveSync® protocol version 12.1

Microsoft® Exchange ActiveSync® protocol version 14

Microsoft® Exchange ActiveSync® protocol version 14.1

Google Sync™

Related information:

www.sonymobile.com/developer

Web browser

Google Chrome™ for Android™ is pre-installed in markets/regions where no restrictions apply.

Related information:

https://play.google.com/store/apps/details?id=com.android.chrome

Memory in Android™ devices

To use Android devices efficiently, users should be aware of the different types of device memory. This knowledge is important in order to understand, for example, where data such as music, photos and videos is saved; how many apps can be downloaded from Google Play™; and how photos can be copied to a PC.

Information regarding memory presented in this section may be useful to developers when optimising applications for mobile devices.

Generally, all Android devices share the same basic memory setup. What differs is how much memory is available to you via the different types of memory, and whether your device uses an external SD card or an internal memory chip. Any information specific to the particular device model described in this White Paper is noted as such.

Types of memory

The types of memory described and numbered below are consistent with the terminology used in Sony mobile device menus and in other content relating to 2017 Xperia™ devices:

1. **Dynamic Memory** (also known as RAM) is used by applications that run when the device is turned on. The amount of Dynamic Memory influences how many applications and operating system services can run at the same time. The Android operating system automatically closes applications and services that are not being used.

   However, such automatic functionality has limits. For example, if a lower amount of free RAM is available to applications after a new release of the operating system (due to increased capabilities in the system), device speed will eventually be impacted. This is the main reason that a device cannot be indefinitely upgraded to newer releases of Android™.

   If you experience problems with RAM, for example, if the device runs slower than usual or if the Home application restarts frequently when you leave an application, you should minimise the use of apps that run all the time. Social networking apps that connect and update their data online and animated backgrounds are examples of apps that are always running and affect RAM performance. To minimise RAM issues, you could also consider using a static wallpaper instead of a live wallpaper.

   To see which apps and services are currently active, go to **Settings > Storage & memory**. You should have at least 50 MB, and ideally 100 MB or more, of free RAM to avoid slowdowns and application restarts.

   You should also be aware that if you update the device to a later Android release, the load on the built-in Dynamic Memory will increase due to the addition of more features. As a result, the device may run slower after an update.

   The Xperia™ XZs has 4 GB of RAM available to the Android OS and any installed applications. 200 MB of the total RAM is in use during normal operation when the user starts using the device out of the box.

2. **System Memory** (also known as “System partition” or “/system”) is used for the Android OS and for most applications that are pre-loaded from the factory. This type of memory is normally locked, and can only be changed through a firmware upgrade. There is usually some free space available in this section of memory. However, since it is locked, you cannot save apps, photos or any other content to this memory. System Memory is reserved for future firmware upgrades, which almost always need more memory than the original firmware. You cannot see or influence the use of this memory.

3. **Internal Storage is referred to as "working" memory.** It can be compared to the C: drive on a PC or to the startup disk on a Mac.

   This type of memory is used to store all application downloaded from the Google Play™ Store (and other sources) as well as their settings and data (such as emails, messages and calendar events, for example). All applications have an allocated area for application data. Memory dedicated to an application is inaccessible to other applications.

   Some game applications also store content such as game music and game level information outside their own designated area. In most cases, an application can choose to save its data in a location of its own choosing (outside the protected application settings area). Generally, such content is not deleted when an application is uninstalled; it must be removed manually by connecting the device to a computer with a USB cable, or by using a file manager application.

   Internal storage is also used for all added user content. For example, photos taken using the device's camera, media files downloaded from the Internet and file transfers are stored in this area. Typical user content includes:
   - photos
   - movies
   - music
   - Email attachments

   Internal Storage will tend to fill up as a result of normal usage. Devices with a large initial Internal Storage can handle more applications and store more user content.

   If the Internal Storage starts to get full, the device slows down, and in some cases it might no longer be possible to install more apps. You should always ensure that you have at least 100 MB of free Internal Storage. If not, you should consider removing some apps that you seldom use, or move content that you do not frequently access to external storage.

   You can see approximately how much Internal Storage is free in **Settings** > **Storage & memory**. You can also view more details about how much memory is used by applications under **Settings** > **Apps**. In the Xperia™ XZs, about 50 GB of Internal Storage is available out of the box.

   Please note that in Sony Mobile 2017 products, “Internal Storage” is now the combination of what was previously known as “Device Memory” or “Phone Memory” (for applications and their data – also previously known as “/data”) and “Internal Storage” (for user’s content – also previously known as “/sdcard”). The changes in Internal Storage were made so that memory usage could be more flexible and to allow encryption of user content.

Memory card slot

Some products include both a large internal memory and a built-in memory card reader. Android manages devices with a built-in memory card reader and internal memory differently from a device that includes only a built-in memory card reader.

Since most applications expect only a single location for storage, such applications will not generally allow you to SAVE anything to the memory card (i.e., they do not offer the option to choose a storage location). However, some applications (for instance, the Sony Mobile “Camera” application) may actually allow you to do so. Other applications, for example, backup applications such as the Sony Mobile “Memory” application, will by definition be configured to copy content from the Internal Storage to the external SD card.

On the other hand, when it comes to reading from an external SD Card, you will be able to access content (for example, videos, photos and music) on a memory card inserted in this slot without any special consideration since the Android system searches all available memory for content. Therefore, such products may be regarded as supporting a fourth type of memory, called “External Card” or “SD Card”.

4. **SD Card** (known as “/ext_card” from a programmer’s point of view, or by other names in other Android products) is the name for the removable SD memory card in all 2017 Sony Mobile products. As described in the previous section, this External Card memory is generally more limited in that any application can read from it, but many applications cannot save to this card. Only a few applications, including backup applications and file manger applications, have the capability to save to this card.

Backing up data to different memory types
Generally, you should not save photos, videos and other personal content solely on the internal memory of a device. If something should happen with the hardware, or if the device is lost or stolen, the data stored on the device’s internal memory is gone forever.

In a device where an SD card reader is the main memory, it is relatively easy to take the card out and copy all content to a PC or Mac, or to an entertainment device with a memory card slot. In a product featuring Internal Storage as the main memory, it is not possible to physically remove the memory. Instead, any critical or high-value content must either be copied to an external SD card by a special backup application, transferred to remote storage over a network (mobile or Wi-Fi), or to a computer via a USB cable.

To facilitate the transfer of data via a cable, the Xperia™ XZs supports Media Transfer Protocol (MTP), which makes it possible to easily transfer content back and forth between your device and a Windows® PC or an Apple™ Mac® computer. This application is called Xperia™ Companion and it can be downloaded from the Xperia™ XZs support page.

Note that you do not need to back up or make a copy of applications that you have downloaded from the Google Play™ Store. They can normally be downloaded again after you have set up your Google account to work in a new device (or in a device where the memory has been completely erased).

Note 1:
Some Android devices, including Sony Mobile devices from 2012 and Sony Ericsson devices from 2011 and earlier, do not use a single “Internal Storage” for both applications (and their data) and user content. Instead, these devices use either an external SD card for user content, or a corresponding area of internal memory to reproduce the functionality of an SD card. In such devices, there is a fixed limit between the application area (“/data”) and the user content area (“/sdcard”), with the result that user content can build up and reach this limit. When the user content reaches this limit, no additional data can be added using any application. For example, the camera application would no longer be able to capture additional photos even if a considerable amount of free space was available in the application area. This limit also applies to the application area. Downloading and installing new applications would not be possible even if there was enough free memory in the user content area.

Note 2:
Some devices with integrated storage have abandoned the distinction between the application area and the content area when it comes to a Factory Data Reset. As a result, there is no option in such devices to perform a Factory Data Reset and preserve content. In such devices, all content is completely deleted from the device when a reset is performed.

In contrast, Sony Mobile’s memory integration solution makes it possible to preserve user content in this situation. Therefore, when performing a Factory Data Reset, the default action will still be to only remove applications and their data, and an option box must be checked if all content is to be removed as well (as might be desirable when selling the device second-hand).

Note 3:
For a developer, it is important to note that from a programming point of view the location names used to refer to the different memory areas described in Note 1 are still valid, i.e., the area used for applications (“/data”) is still present, as is the area used for content (“/sdcard”).

In reality, “sdcard” is a “symbolic link” to “/storage/self/primary”. However, from inside an Android application, “/sdcard” can still be used. For example, you can use “sdcard/DCIM/100Android” to find all camera images. The continued use of “/sdcard” to access the content area ensures compatibility across different products and Android releases in this regard.

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