PRIMER · UNDERSTAND THE LANDSCAPE FIRST

Understanding smart glasses

A neutral map of the devices, with no recommendations · Techno Brave Asia, XR team · June 2026

How to read this primer

This guide has **no conclusions and no recommendations**. Its only job is to give you a clear mental model, so you can look at any smart glass and reason about it yourself.

Three ideas do all the work: the **four families** of devices (page 2), the **six things** that differ between them (page 3), and the **key terms** behind those (page 4). Page 5 maps your three features to what they need, and ends with a short method for reading any new device.

The big idea

A smart glass is a small computer you wear on your face. Makers trade off the same handful of things: how it shows images, whether it has a camera, whether it understands the room in 3D, whether it runs on its own, and how open its software is. Once you can name those trade-offs, every device becomes easy to place. That is the whole skill, and the rest of this primer builds it.

The four families of devices

Almost every device is one of these four. The family alone tells you most of what a device can and cannot do.

1. Industrial assisted-reality glasses

What it is: A small screen in front of one eye, a good camera, voice control, and a rugged body. Worn hands-free on a factory floor.

What it shows: Flat information. A remote expert's video, simple text, arrows, or a checklist. Not rich 3D.

Examples: Vuzix M400, RealWear Navigator 520, Moziware Cimo.

2. Consumer AI glasses

What it is: Light frames that look close to normal glasses, with an AI assistant, live translation, and a camera. Built for everyday people.

What it shows: A small heads-up panel for captions, translation, and prompts, or sometimes no screen at all.

Examples: RayNeo X3 Pro, Rokid Glasses, Meta Ray-Ban.

3. Tethered display glasses

What it is: Glasses that are mostly a screen, joined by a cable to a phone or a small puck that does the computing.

What it shows: Big virtual screens for video and work, and some can anchor 3D objects in the room.

Examples: XREAL Air 2 Ultra, Rokid AR Lite with Station 2.

4. Mixed-reality headsets (HMD)

What it is: Full goggles worn over the eyes, with cameras that see and map the room and a strong computer inside.

What it shows: Rich 3D blended with the real world, and they can measure. But they are bulky and heavier.

Examples: Meta Quest 3, Apple Vision Pro, SiNGRAY G2.

The six things that differ between devices

This is the vocabulary for comparing any two devices. When you read a spec sheet, you are really reading these six things.

Dimension	What it means, and why it matters
1. Display	One eye or both. A small heads-up panel, or true see-through AR that draws onto the real world. How wide the view is. This sets what the worker can actually see.
2. Camera	Is there a real forward camera, and how clear is it. This is exactly what a remote expert sees, so it decides the quality of "see what I see."
3. Tracking and depth	Does it only know your head turning (3DoF), or also where you move in the room (6DoF). Can it sense depth. Depth and 6DoF are what measuring and fixing a 3D object in place need.
4. Compute	Does it run on its own (standalone), or does it need a cable to a phone, a puck, or a PC (tethered). Standalone is simpler to wear and move with.
5. Software openness	Open Android that can install normal apps like Zoom, or a closed maker operating system that only runs the maker's own apps. This decides whether you can add the app you want.
6. Form and ruggedness	Light glasses or heavy goggles. Dust and drop proof for a factory, or built for an office or living room. This decides if a worker can wear it all shift.

A useful pattern

The families on page 2 are really just common bundles of these six choices. Industrial glasses bundle a small display, a good camera, open Android, and ruggedness, but skip depth. Headsets bundle depth and 6DoF and power, but skip lightness. There is no single best bundle, only different ones for different jobs.

Key terms, in plain words

These are the words that show up on every spec sheet. Learn these seven and the rest reads easily.

3DoF and 6DoF (degrees of freedom). 3DoF means the device knows which way your head turns, up, down, left, right. 6DoF also knows where you move in the room, forward, sideways, up. A 3D object only stays fixed in place if the device has 6DoF.

SLAM. The device builds a live map of the room from its cameras while you move, so it always knows where it is. SLAM is how 6DoF tracking works.

Depth sensing and LiDAR. A sensor that measures the distance to surfaces. It is what lets a device measure a real part or place an object on a real table. LiDAR, found on the iPhone Pro, is one accurate kind of depth sensor.

See-through AR versus a heads-up panel. See-through AR draws images onto the real world you look through, so a label can sit on a real machine. A heads-up panel just floats a small flat screen in the corner of your view, like a watch face.

Field of view (FOV). How big the image looks, measured in degrees across. A bigger field of view feels more immersive. A small one feels like looking at a distant screen.

Standalone versus tethered. Standalone means the device has its own computer and battery and needs nothing else. Tethered means it must stay connected by cable to a phone, a puck, or a PC that does the work.

Open versus closed operating system. An open system (usually Android) lets you install normal apps such as Zoom or Teams. A closed system only runs the maker's own apps, so you are limited to what they provide.

Tying it to your three features

Here is what each of your features actually needs, in terms of the six dimensions. This is description, not a recommendation.

Feature	What it needs	Which family can give it
1. Share camera + voice	A real forward camera, plus the ability to run a video app	Industrial glasses; consumer AI glasses if their software is open
2. Translate JP/TH/EN	Built-in translation that names those languages, or a phone app	Any device, via a phone app; some consumer AI glasses build it in
3. Place 3D + measure	Depth sensing or 6DoF tracking	A phone with LiDAR or ARCore, or a mixed-reality headset. A plain glass cannot

Where each device sits

Family	Devices
Industrial assisted-reality glasses	Vuzix M400, RealWear Navigator 520, Moziware Cimo
Consumer AI glasses	RayNeo X3 Pro, Rokid Glasses
Tethered display glasses	XREAL Air 2 Ultra, Rokid AR Lite
Mixed-reality headsets	Meta Quest 3, Apple Vision Pro, SiNGRAY G2
Measurement companions (phones)	iPhone 16 Pro (LiDAR), ARCore Android phone

How to read any new device yourself

When you meet a device you have not seen, ask these in order. Six answers and you understand it.

1. Which family is it?
2. Does it have a real forward camera?
3. Does it name Japanese, Thai, English, or will a phone app cover it?
4. Does it have depth or 6DoF, or will a phone measure?
5. Is the software open enough to add a video app?
6. Standalone or tethered, and rugged enough?