**Slide 2 – Introduction & Needs Assessment**

**The Problem**  
Deaf and non-verbal Australians often lack affordable, real-time ways to communicate without an interpreter. Auslan support in existing devices is nearly absent.

**Limitations of Current Solutions**

* Expensive (e.g. Brightsign glove ≈ $6,800 AUD)
* Mostly support ASL, not Auslan
* Require phones/internet, lack context awareness

**User Needs**

* Real-time Auslan-to-speech
* Portable, offline, affordable
* Emotion/context inference
* Intuitive, day-long use

**🔷 Slide 3 – Market Analysis**

**User Validation (21 Respondents)**

* 67% currently use aids
* Avg usefulness: 6.1/10
* Openness to new devices: 8.2/10
* 62% interested in AUSIGN

**Market Opportunity**

* 16,000 Auslan users (2021 Census)
* 3.6M Australians with hearing loss → 7.8M by 2060
* Interpreter costs ≈ $127.50/hr
* Existing solutions out of stock, ASL-only

**Target**: Auslan users aged 25–59 needing daily, affordable communication tools

**🔷 Slide 4 – Key Requirements**

* ≤ 50g per glove
* ≥ 12 hours battery life
* ≥ 90% translation accuracy
* ≤ 2 seconds latency
* Offline functionality
* Under $100 manufacturing cost
* Customizable settings (volume, dialect)
* Emergency signal support

**🔷 Slide 5 – Product and Design Concepts**

**Product Concept**  
AUSIGN is a wearable glove that captures Auslan gestures and translates them to spoken English via onboard or phone-based audio.

**Design Highlights**

* Flex sensors + IMU = accurate gesture detection
* Heartbeat sensor = emotional context
* ESP32 = processing + Bluetooth for personalization
* Onboard speaker + optional LCD feedback
* Custom mapping of signs
* Emergency button (e.g., “Help”)

**🔷 Slide 6 – Unique Selling Points**

1. **Auslan-specific** – Not ASL-focused like competitors
2. **Context-aware** – Heart rate input for emotion detection
3. **Gesture + Motion Fusion** – Flex + IMU improves accuracy
4. **Lightweight & Comfortable** – Under 50g
5. **Bluetooth-Enabled** – Mobile app for personalization
6. **Offline Support** – Usable without internet
7. **Custom Sign Training** – Adaptable to regions/users
8. **Affordable** – Sub-$100 vs $6,800 competition

**🔷 Slide 7 – High-Level Block Diagram**

Use your Week 3 block diagramshowing:

**Subsystems:**

* Input: Flex sensors, IMU, Heartbeat, Button
* Processing: ESP32
* Output: Speaker, LCD
* Power: LiPo battery, TP4056, Boost Converter
* Communication: Bluetooth to App

Label clearly: arrows showing data flow, highlight modularity and context handling.

**🔷 Slide 8 – Technical Components**

| **Subsystem** | **Component** | **Notes** |
| --- | --- | --- |
| MCU | ESP32-WROOM-32 | I2C, UART, ADC, Bluetooth |
| Finger Sensor | 3” Flex Sensors | 25k–100kΩ resistance range |
| Motion Sensor | MPU6050 IMU | 6-axis detection |
| Biometric Sensor | MAX30102 | Heart rate & oximeter |
| Output | 3W Speaker, 20×4 LCD | Compact + intuitive UI |
| Power | TP4056 + LiPo + MT3608 | USB charging + 5V boost |
| Input | Tactile Push Button | Emergency signal |

**🔷 Slide 9 – Financial Plan**

**Per Unit Manufacturing Estimate**

* ESP32: $8
* Flex Sensors ×5: $20
* MPU6050: $5
* MAX30102: $6
* Speaker + Amp: $4
* LCD: $7
* Power Circuit (TP4056 + MT3608): $3
* Misc (PCB, Glove Material, Button): $15  
  **→ Total: ~$68 AUD**

**Selling Price:** $150–200 AUD  
**NPV:** Viable pricing based on competitor comparison  
**Profit Margin:** ≥ 100%, with accessibility focus

**🔷 Slide 10 – Development Plan (Wk 6–10)**

**Week 6–7**

* Hardware Integration (Flex + IMU + HR + Speaker)
* Sensor Calibration

**Week 8**

* Real-time Auslan-to-Speech Mapping
* Bluetooth App UI + Emergency Button Logic

**Week 9**

* Context Awareness Logic (Heart rate threshold)
* Output testing with user trials

**Week 10**

* Final Testing + Demo
* User Feedback + Iteration
* Presentation and Documentation

**Team Allocation:**

* Hardware: [Name]
* Firmware + ML Model: [Name]
* App + UI: [Name]
* Integration & Testing: All