Hardware and Capabilities

Proximity Sensor detects when user is near

User expresses him/herself using **Makaton**

Camera records action performed by user

Waldo uses **Machine Learning** to translate sign

Waldo speaks translated word using **IBM Watson**

User presses pre-set **button** on Waldo

Waldo speaks pre-set phrase using **IBM Watson**

Customisable **ambient sensors, tailored** to users' needs, record environmental conditions for **analysis** by professionals

Team

IBM

Louise Cooper and Emily Larkin work in the IBM Hursley Innovation Centre, helping business partners to embed IBM technology in their solutions.

John McNamara is a Senior Inventor and works with Universities, helping them to use IBM technology for innovative projects.

Imperial College

We are Patrick John, Joshua, Marvin, Joel and Ying Hao, 5 students studying Electrical Engineering at Imperial College. With Waldo, we hope to make the world a more accessible and less daunting place for everyone.
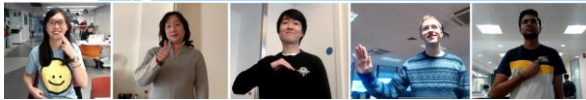
Imperial College London

IBM

WALDO

Watson Assisted Living Device

Makaton

Communication is one of the cornerstones of daily life, yet every day, many children and adults struggle to effectively express themselves.

What is Makaton?

Makaton is a language programme that uses **signs and symbols** to help people who have no speech or whose speech is unclear to communicate. Makaton is very flexible, and can be **personalised** to a level suitable to the individual. Today, over 100,000 children and adults use Makaton.

Waldo

Waldo is a:

- Cute, **endearing** device that children and adults alike would be happy to use
- Capable, low latency **Makaton interpreter** to augment the capabilities of carers
- Everyday **companion** device that helps users to quickly and effectively express themselves

Market Potential

>100k
Number of **Makaton Users**

£10.1bn
Adult Specialist Care Market Size in the UK

£31k
Average Cost Per Service User Per Year

The market for adult specialist care in the UK is large, yet faces staffing problems such as **high turnover** and **staff shortages**.

Waldo fills a gap in the adult specialist care market by providing an **affordable device** that allows carers to **understand Makaton** without time-consuming study.

Machine Learning

Camera records user at fixed FPS

30 RGB frames evaluated (112×112×3)

Convolutional Neural Network (3D CNN, Pooling)

9 Feature Vectors (1×1×384)

Recurrent Neural Network (uses Long Short-Term memory)

Activation layer (Uses Softmax activation)

Decision / Classification

Dinner   Good   Home   No   Sorry   NIL