Robots - The 3rd Gen of personal devices

Daniel Camilleri
CEO of Cybersome
TECH PREDICTIONS THROUGHOUT THE YEARS - 1ST GEN PERSONAL DEVICES

**Personal Computers a.k.a Desktop Computers**

“I think there is a world market for maybe 5 computers”

*Chairman of IBM, 1943*

“There is no reason anyone would want a computer in their home"

*President of Digital Equipment, 1977*

**Laptop Computers**

“... the computer industry has assumed that everyone wants a keyboard as an extension of their fingers"

*The New York Times, 1985*

“Laptop computers will remain in specialised niche markets no matter how inexpensive they become"

*The New York Times, 1985*
“cellular telephony would be a niche market with less than a million users in the US by 2000” - 109M users by 2000

McKinsey & Company, 1980 commissioned by AT&T to predict mobile phone usage

“there's no chance that the iPhone is going to get any significant market share”

CEO of Microsoft, 2007
TECH PREDICTIONS TODAY - ROBOTS

Too expensive

Doesn't have what I need

Who wants a robot in their house?

Replacing jobs
ROBOTS WILL DISPLACE 20 MILLION JOBS BY 2030

How Robots Change the World, Oxford Economics, 2030
HOW DO WE EFFECTIVELY TRAIN THOSE 20 MILLION DISPLACED EMPLOYEES TO SUPPLEMENT THE REQUIRED WORKFORCE BEING FORECAST BY THE ROBOTICS INDUSTRY?
CAR AUTOMATION INDUSTRY BETWEEN 2010 AND 2015

- USA: +283%
- Germany: +564%
- How do we incentivise students of today and of the future to learn robotics?

- How can we facilitate the growth of the robotics industry in order to sustain the re-employment of all the displaced workers?
OUR VISION - TO REALISE THE TRUE POTENTIAL OF ROBOTICS
ROADBLOCKS IN ROBOTICS

Robot Users
Robots lack useful apps

Robot Developers
Different robots programmed differently

Robot Manufacturers
Full stack development is expensive
Our Solution:

ANIMUS

A UNIVERSAL PROGRAMMING LANGUAGE FOR ROBOTICS
OUR MISSION - A UNIVERSAL LANGUAGE FOR ROBOTICS

Robot Users
Provide users with easy to use, off-the-shelf software that works on any robot

Robot Developers
Enable developers to easily create robot-agnostic software and empower them to sell their apps

Robot Manufacturers
Enable manufacturers to focus on hardware while we deliver software, communication and user interfacing; reducing cost and time to market

Animus

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WHAT MAKES ANIMUS UNIQUE?

- UP TO 4X FASTER FOR NEAR REAL-TIME CONTROL
- END TO END ENCRYPTED FOR MAXIMUM SECURITY

5 Programming Languages and more in progress

All Major Platforms
ANIMUS-COMPATIBLE ROBOTS

Robots Already Working with Animus
ANIMUS CAPABILITIES

Internet-Enabled
Instantly internet enable your robots with the ability to remotely launch apps on your robot from anywhere. We take care of secure connectivity so you don’t have to.

Simplify Development
Prospective developers can easily develop and run Animus apps from any operating system (desktop or mobile) and any programming language.

Lightweight and Portable
A 30MB software library that does not interfere with your robot’s on-board software but works alongside it.

Cyberselves Apps
All of our apps are instantly available to run on your robot providing the functionality that end users are looking for.
How do we make Animus robot-agnostic?
A robot nervous system: a universal layer between brains and bodies

Solution: Grouping robot I/O into sensory modalities
SENSORY MODALITIES

- Group perceptions, stimuli and actions into named categories
- Are directional: Output or Input
- Have a direction relative to a brain e.g. Vision = input, Motor = output
ROBOT TO HUMAN MAPPING

- Cameras -> Vision Modality
- Microphones -> Audition Modality
- Speakers -> Speech and Voice Modalities
- Motors -> Motor Modality
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ANATOMY OF AN ANIMUS APPLICATION

An Animus Application follows this programming pattern:

1. User Login
2. Get Robots
3. Connect to 1 or more available robots
4. Call OpenModality for the set of required modalities
5. App Logic using
   - GetModality(modalityName) to receive data /
   - Set Modality(modalityName, sample) to send data
6. Disconnect from 1 or more connected robots
7. CloseClientInterface to disconnect all robots and close the app

Private SSL Websocket Connection

Animus App

Animus Client SDK

Animus App Code

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OUR FIRST ANIMUS APPLICATION

TELEPORT

TELEPRESENCE APPLICATION BUILT USING ANIMUS

Multi-Robot and Multi-Sensory

Full-Body Immersive Telepresence
OFFICIAL ANA AVATAR XPRIZE TEAM

- $10M Prize, 4 Year Competition
- 900 starting competitors - 38 left
- Semifinals in September
REMOTE TOURISM - MALTA

Pepper overlooking the Grand Harbour in Malta

Fleet of ROVs remotely exploring the Mediterranean
OUR COLLABORATORS

Robot Users

Animus

Robot Developers

Robot Manufacturers

HEALTHCARE

UK

Italy

Canada

UK

DEFENSE

Defence and Security Accelerator

UK

Germany

Italy

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OUR SERVICES

- Yearly subscription to a robot driver per robot
- Support packages to manage robots

**Robot Users**

**Animus**
- Free for development and non-commercial use
- 5% royalty for commercial use

**Robot Developers**

**Robot Manufacturers**
- Per seat license for development

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Cyberselves
Realising the True Potential of Robotics

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