



# intelligent implants

**SmartFuse<sup>®</sup> wireless technology**  
at the intersection of digital medicine and orthopedics



Wednesday, June 14 @ 11:00 am - 11:45 am

Smart Implants: Developing Battery-Powered and Self-Sensing Devices to Monitor Patient Recovery

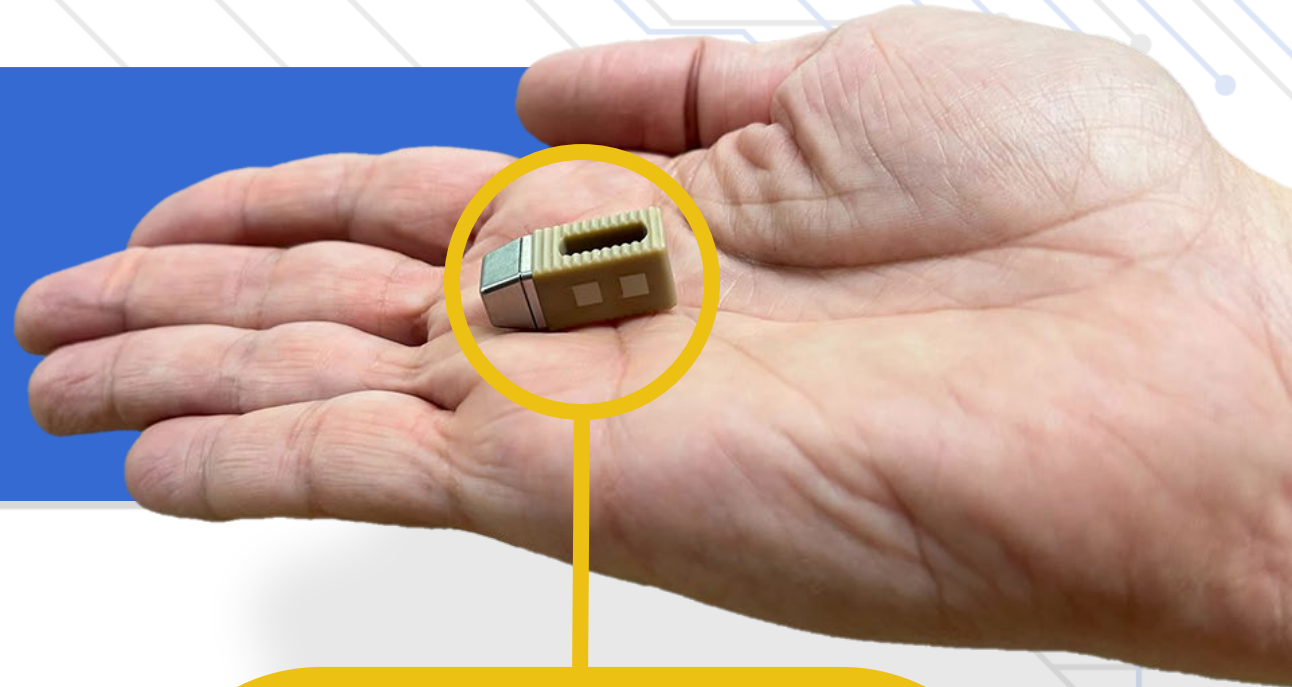
# SmartFuse® // An introduction

1

intelligent  
implants

## SmartFuse

is a wirelessly enabled, active implant technology that uses electrical signals to accelerate, control and measure bone healing



- 1 accelerate
- 2 control
- 3 measure

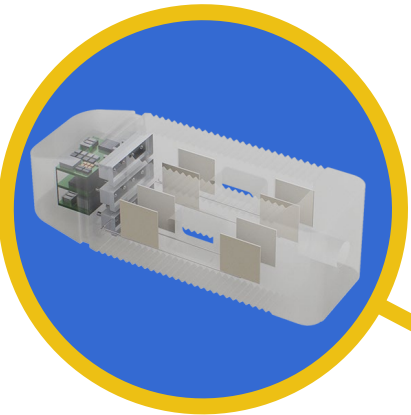
bone  
healing

**First Product:** SmartFuse CAGE  
designed to address the unacceptably  
high rate of non-unions in  
**lumbar spinal fusion** surgery

# Solution // The SmartFuse System for Spinal Fusion

2

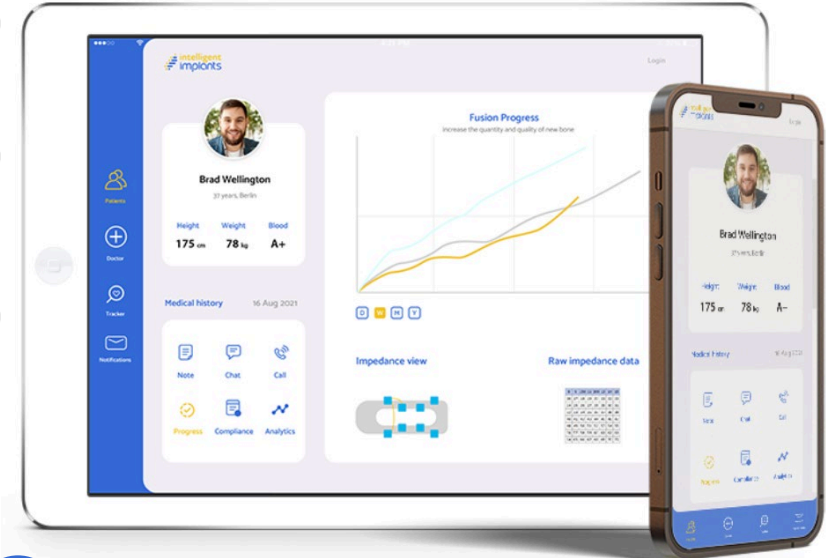
// SmartFuse consists of three integrated components, which together, create a first-of-its-kind intelligent system for improving patient outcomes in spinal fusion



1 The SmartFuse **CAGE** uses electrical signals and an array of electrodes to **accelerate, control, and measure bone growth**



2 The SmartFuse **ECaP** is a medical "wearable" that wirelessly powers and communicates with the implant

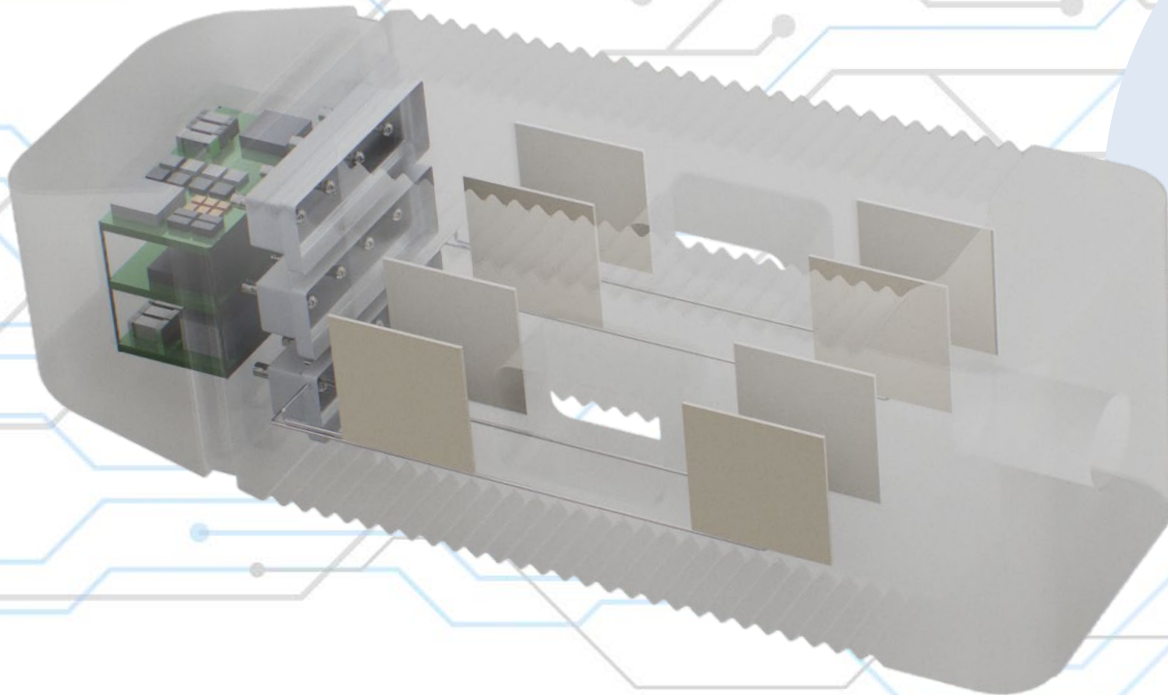


3 The SmartFuse **CLOUD** links the patient and physician to the SmartFuse system with information to support patient compliance and real-time clinical monitoring / decision making.

# Solution // The SmartFuse Technology

// Embedded electronics and a multi-electrode stimulation & sensing array provides precise directional control over the formation of new bone and spatially resolved sensing of new bone

The SmartFuse **CAGE**: a first-of-kind active intervertebral spacer with embedded SmartFuse technology



- Hermetically sealed
- No battery
- Wireless power and comms
- Independently activated electrodes
- Stimulation
- Impedance measurements

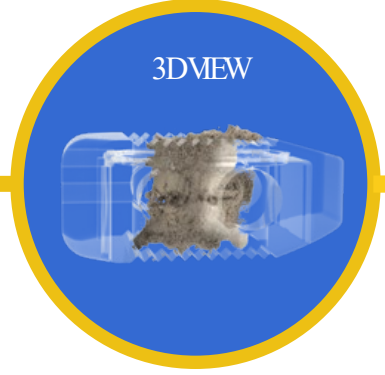
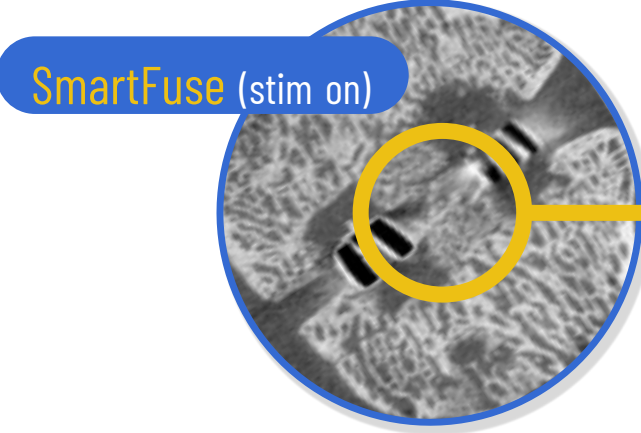
16

issued patents  
across 9 families

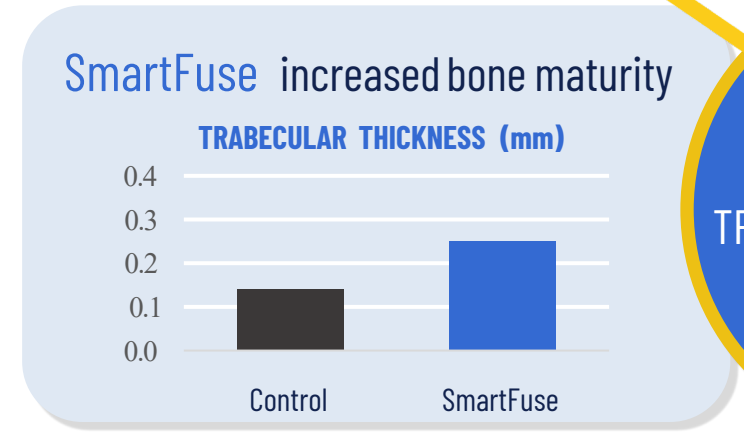
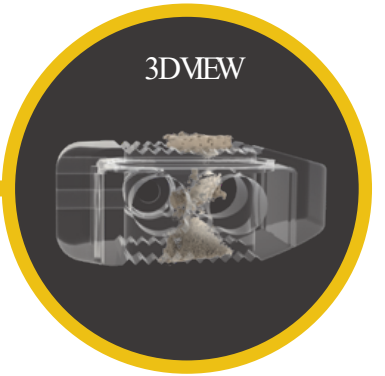
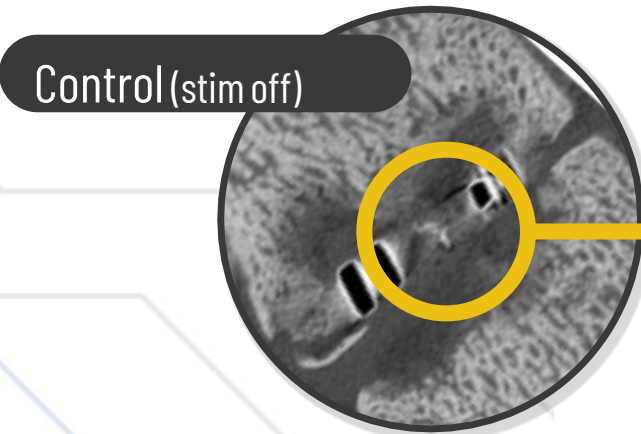
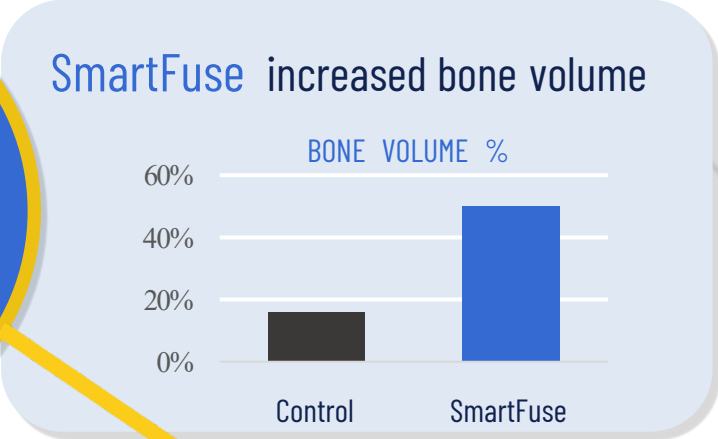


# Accelerate and Control: Stimulation Exactly Where it's Needed

// Large-animal studies have demonstrated that SmartFuse active stimulation can increase the quantity and quality of new bone (vs non stimulated fusions)



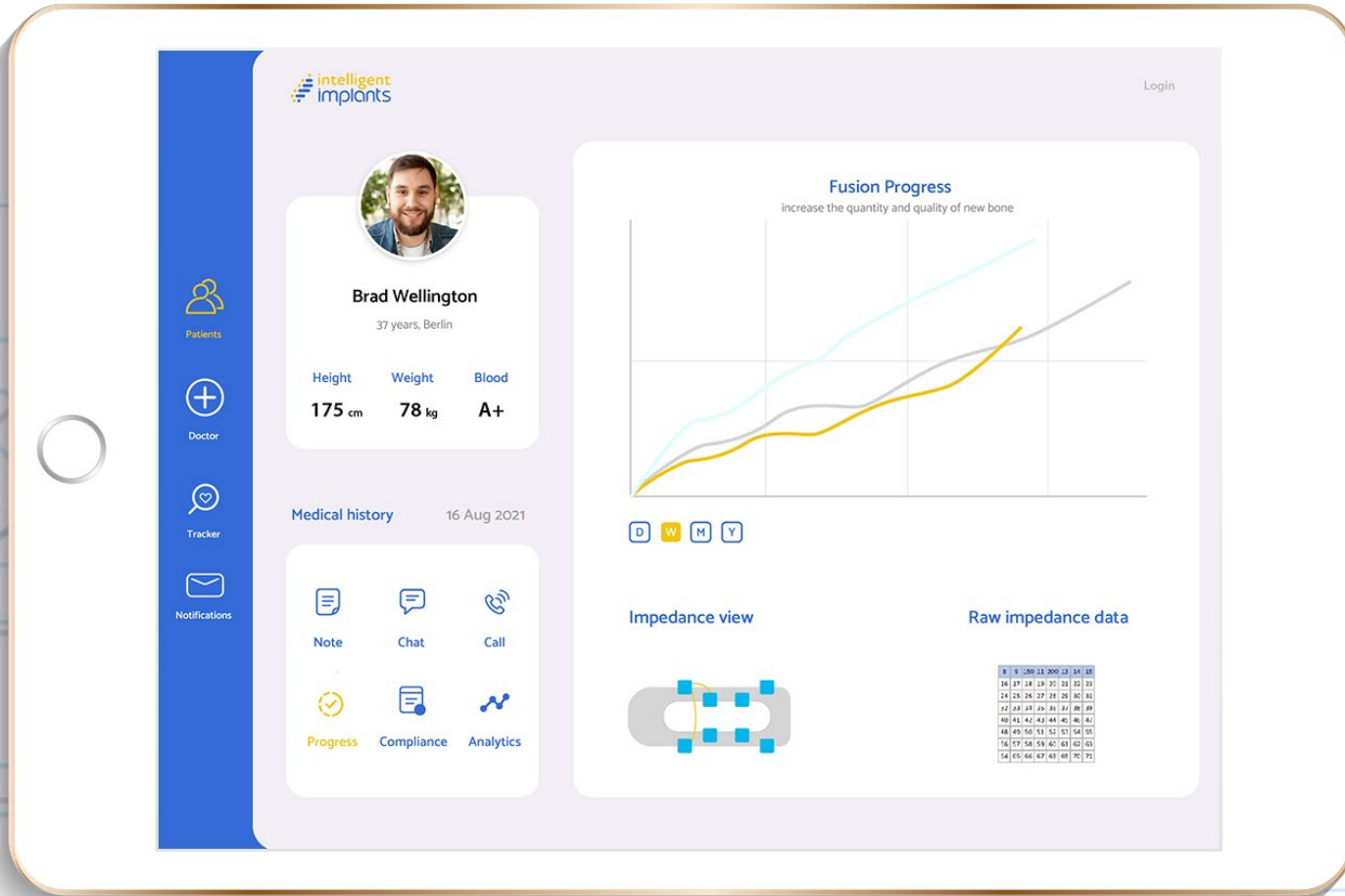
BONE VOLUME INCREASED BY **~3X**



TRABECULAR THICKNESS INCREASED BY **~70%**

# Real-Time Clinical Data is a Game Changer

// The SmartFuse CLOUD Physician Portal will provide **real-time clinical information and control** of the SmartFuse implant (and support reimbursement for remote monitoring)



// Remote Monitoring:  
The physician will have access to real-time data:

- System Status
- Fusion Progress
- Patient Compliance Tracking & Alerts
- Dosing Parameters (i.e. control of dosing and "steering")

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// FOR MORE INFORMATION



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[www.intelligentimplants.co](http://www.intelligentimplants.co)