

# *“A Biomedical Company Developing Products for the Well-Being of Preterm Infants”*

# KU<sup>Δ</sup>ARTISMED

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ODTÜ  
**TEKNOKENT**  
TEKNOLOJİ GELİŞTİRME BÖLGESİ



European  
Commission

Horizon 2020  
European Union funding  
for Research & Innovation

# Preterm and Premature Births<sup>†</sup> (PTB)

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- ▶ Births before 37<sup>th</sup> gestational week
- ▶ 15 Million births/year acc. WHO
  - ▶ USA @ 12.7%, TR @ 11%<sup>‡</sup>
- ▶ Economic Burden
  - ▶ **\$26.2 billion/year in only USA**
- ▶ Even Higher Social Burden
  - ▶ Preterm Death Rate<sup>2</sup>: 13.24% in TR and 14 % in USA

<sup>†</sup> Wen SW, et al.. Epidemiology of preterm birth and neonatal outcome. Semin Fetal Neonatal Med. 2004

<sup>‡</sup> Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü, Türkiye Nüfus ve Sağlık Araştırması., 2009

<sup>1</sup> TÜİK Doğum İstatistikleri, 2010

<sup>2</sup> Türk Neonatoloji Derneği Bülteni. Türkiye'de yenidoğan yoğun bakım ünitelerinde mortalite 2005. 2006; 4: 10-14.

# Many PTB Related Problems

- ▶ One Such Problem is underdeveloped **Feeding Ability**
  - ▶ **Resp**-sucking-swallowing and their coordination
  - ▶ We call It ***Feeding Maturity***

# Lack of Feeding Maturity

- ▶ Serious Short-Term Complications
  - ▶ Poor Growth
  - ▶ Accidental deposits of food to the lungs,
  - ▶ Respiratory Illnesses (Pneumonia, Infections etc.)
  - ▶ Brain hypoxia,
  - ▶ Respiratory arrest and even *death*

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- ▶ Long Term Complications
  - ▶ Recurring Readmissions
  - ▶ Systemic Illnesses
  - ▶ Growth retardations & Neurological Disorders

# Lack of Feeding Maturity

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- ▶ **15.8%** of early preterms that are readmitted within 28 days of discharge due to feeding problems.

# Codename: PREMADES

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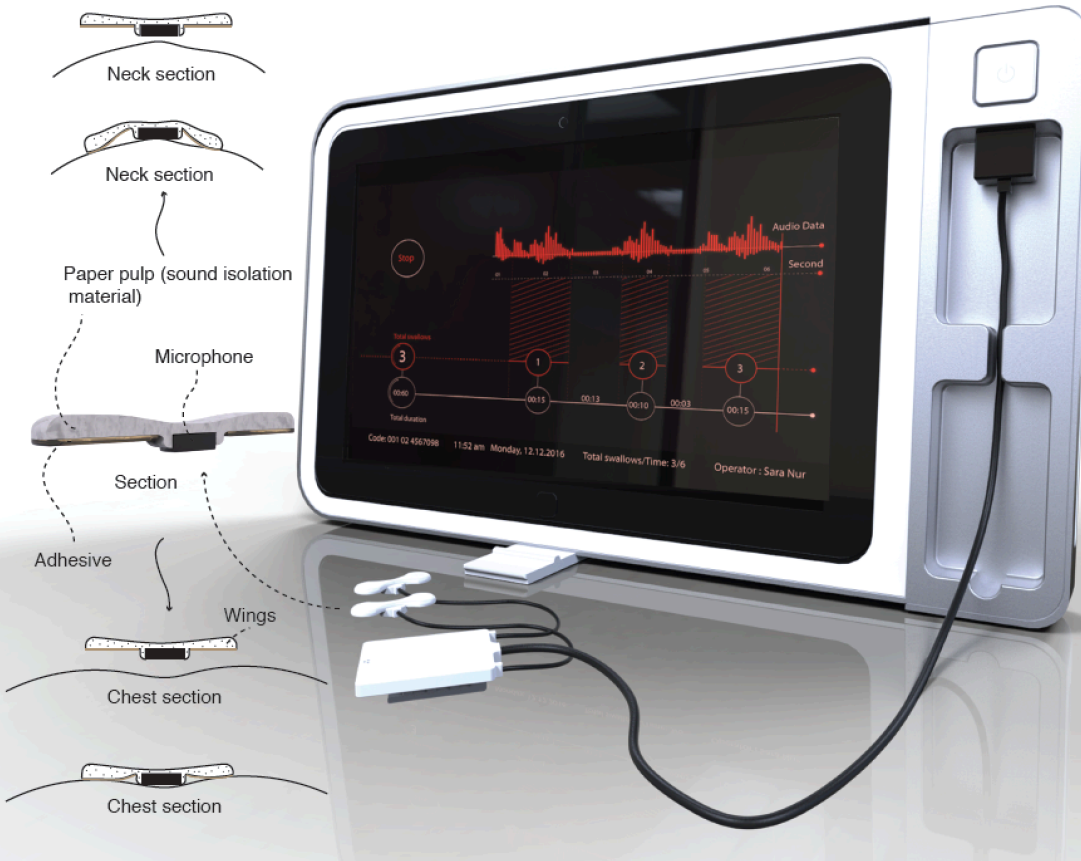
- ▶ Critical and Vital to *assess feeding maturity of PTBs **objectively!***
  - ▶ Informed Clinical Decision, Feeding Method and Schedule
  - ▶ NICU and Treatment Period
  - ▶ Safe Discharge Decision,
- ▶ A **non-invasive** biomedical *diagnostic device*
  - ▶ During NICU stay
  - ▶ 2.5 min per trial/day
  - ▶ Objective Assessment

# Codename: PREMADES

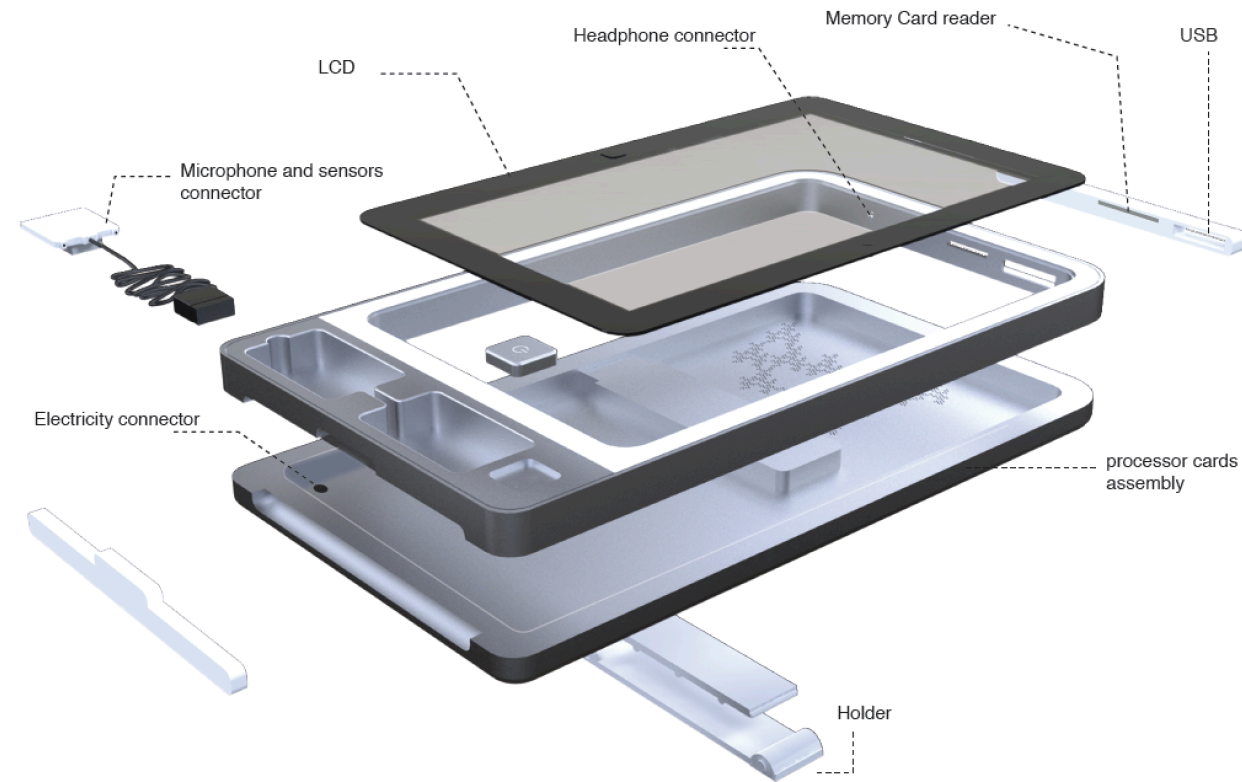
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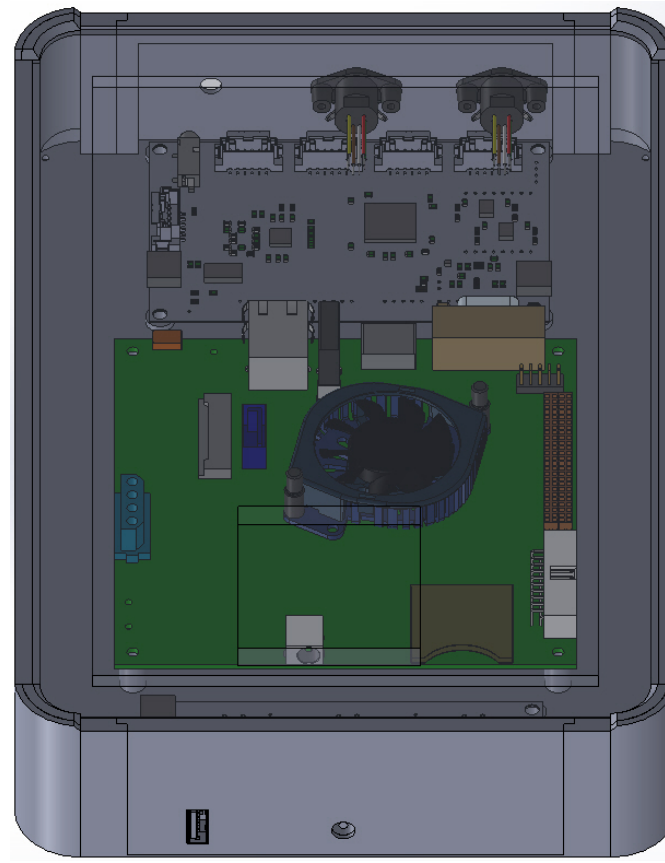
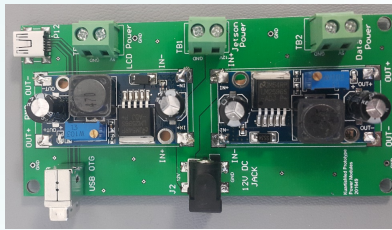


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# So Far



**PREMADES Kick-off**  
(Project Funded by  
Teknogirisim)  
7/12

**Successful Completion of Teknogirisim Fund**  
7/13

**H2020 SME Phase-1 Kick-off**  
10/14

**Successful Completion of H2020 SME**  
**Phase-1**  
3/15

**New Acquisition HW (TEYDEB 1512)**  
1/16

**New Prototype Design (TEYDEB 1512)**  
3/16

**H2020 SME Phase-2 Application**  
6/16

**New Algo. Implementation**  
(TEYDEB 1512)  
7/16

**Pre-Clinical Research Kick-Off**  
3/1/2018

**International**  
**Clinical Trials**  
**Kick-Off**  
9/1/2018

**MEDICA Launch!!!!**  
11/14/2018

2012

2012

2013

2014

2015

2016

2017

2018

2019

2019

11/13  
**PCT Application**

6/14  
**H2020 SME Phase-1 Application**

5/14  
**Acta Paediatr. Jrnl.**  
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7/15  
**TEYDEB 1512 Project Kick-off**

**Today**

8/30/2017  
**1st Batch Manufacturing Starts**

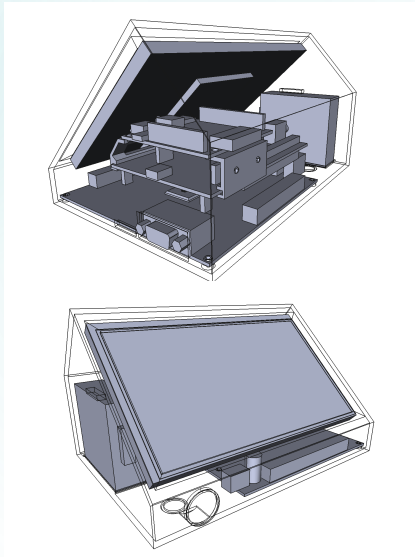
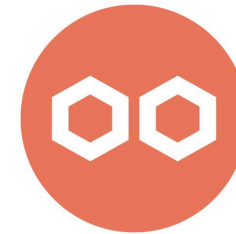
3/17  
**H2020 SME Phase-2**  
**Kick-off**

3/16  
**New Probe Design (TEYDEB 1512)**

12/16  
**Successful Completion of TEYDEB 1512**

6/1/2018  
**2nd Batch Manufacturing Starts**

3/31/2019  
**CE Application**



# Market

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- ▶ Neonatal Intensive Care Units (Initially)
  - ▶ Hospitals, Med Schools, Insurance Companies
- ▶ 3 Components
  - ▶ Processing Unit
  - ▶ Non-Invasive “Disposable” Probe
  - ▶ Software

	TR	USA
NICU	> 156 ca. 2011	839 ca. 2004
Beds	5811 ca. 2011	17109 ca. 2004

<sup>†</sup>The Ministry of Health of Turkey, Health Statistics Yearbook 2011

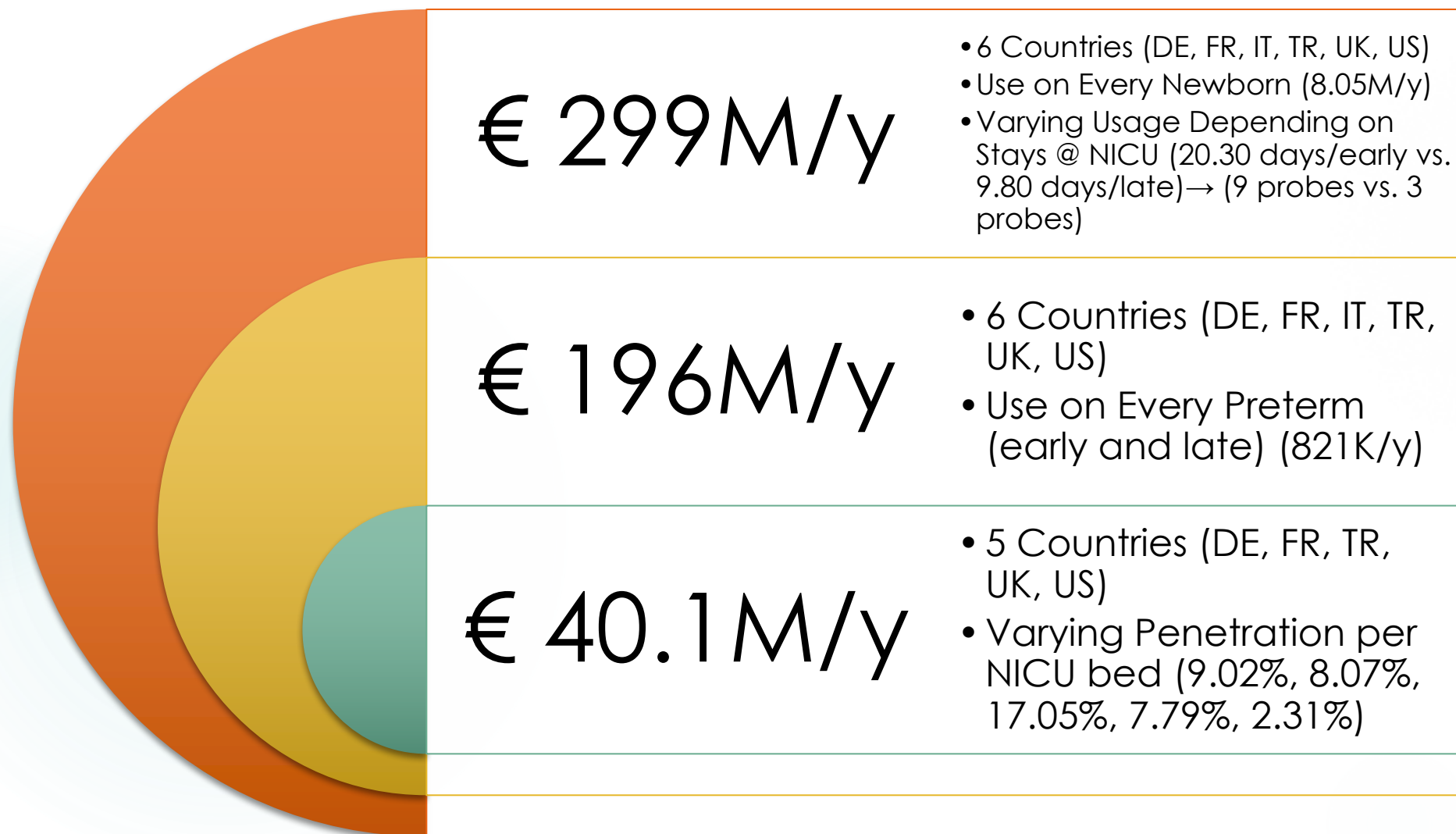
<sup>‡</sup><http://arsiv.ntvmsnbc.com/news/456527.asp>

American Hospital Association Annual Survey, Health Forum, LLC, 2004.

# Market

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# Team

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- ▶ Medical Team of 2
  - ▶ Assoc. Prof. Dr. Ayşe Nur Ecevit & Prof. Dr. Aylin Tarcan
  - ▶ Med School of Başkent University – Neonatology Dept.
  - ▶ Hacettepe Uni., University of Florida, Children's National Medical Center, The George Washington Uni.

# Team

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- ▶ Ercan Kapucu, AU – Lead Hardware Engineer
  - ▶ Ex-Kardiosis
- ▶ Öykü Çobanoğlu, METU EE – Senior Hardware Engineer
  - ▶ Ex-Kardiosis
- ▶ Eren Güpgüpoğlu, Bilkent – Director of Marketing
  - ▶ 15+ Years of Med. Experience
- ▶ Onur Koyuncu, METU EE – Software Engineer
  - ▶ Machine Learning
- ▶ Okan Altingövde, METU EE + CENG – Software Engineer
  - ▶ Machine Learning

# Team

- ▶ Quality and Risk Manager
- ▶ Software Engineer
- ▶ Industrial Designer
  - ▶ Freelancer
- ▶ Lead Biomedical Engineer