



# Business Opportunity

Bringing personalized medicine to radiation oncology

## THE PROBLEM

Today, radiation oncology treatment planning is **reactive**. Doctors generate plans using their memory, personal experience, and input from professional guidelines. But a **wealth of data** exists in medical records of patients from the past. However, these records are scattered in **disparate** databases in **unstructured** formats, making them functionally **inaccessible** to clinicians.

## THE VALUE PROPOSITION

Unify these disparate data in a beautiful, interactive, HIPAA compliant web application. Enable **data-driven personalized radiotherapy** with best-in-class machine learning techniques and evidence-based predictive analytics. Better care, lower cost.

# The Product

*Oncora* uses machine-learning algorithms to assemble disparate data sources into a relevant patient-specific medical context

## INNOVATION

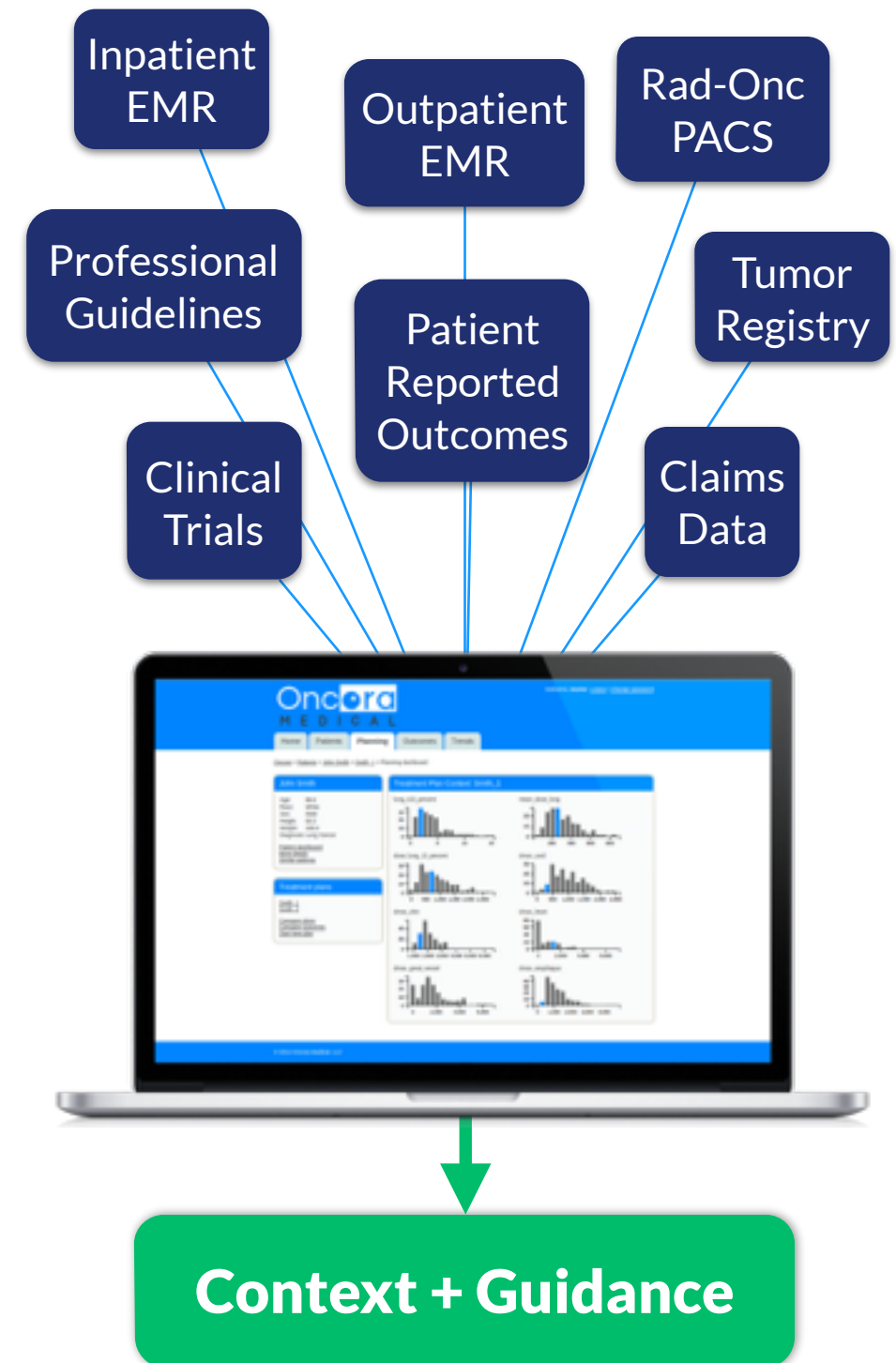
*Oncora* brings personalized medicine to radiation oncology through data integration and predictive analytics. Plug and play with existing hospital software.

## FEASIBILITY

The *Oncora* prototype is functional. Already, it has ingested and analyzed the data of approximately 10,000 oncology patients.

## ALGORITHM

*Oncora* leverages state-of-the-art algorithms from the machine learning research community to help oncologists provide better care for cancer patients.



# Market Overview

Radiation oncologists first, with major opportunities for future growth and expansion

## EXPANSION PLAN

- cancer is often diagnosed and managed by primary care doctors
- half of all cancer patients see a radiation oncologist
- \$5,000 per 10 doctors per month

\$32M

**RADIATION  
ONCOLOGISTS**  
5.000 Doctors

\$200M

**CANCER  
SPECIALISTS**  
35.000 Doctors

\$5.6B

**ALL U.S.  
PHYSICIANS**  
900.000 Doctors

## COMPETITION

Other players in the “Big Data” and Radiation Oncology spaces exist, but none pose a direct risk to Oncora’s main market and specialization.

**Varian Medical Systems:** Specializes in RadOnc hardware, typically acquire software companies

**Elekta AB:** Also specialized in hardware, weak on software

**Siris Medical:** Use medical images and patient anatomy to generate new plans (no clinical data)

**Flatiron Health:** Uses “big data” analytics approach on primarily medical oncology (focus on pharma)

# Development Plan

Pilot at academic medical centers as a launching pad to other hospitals

## TECH DEVELOPMENT

Current: Alpha prototype capable of analyzing real patient data has been already been built.

3 months: deployed app that can handle 50,000 deidentified patient records and 5 clinical centers

6 months: a HIPAA compliant application that can handle 100,000 patients and perform at scale

Budget (6 month): Hosting: \$5,000 ■ contract developers: \$10,000 ■ Sales and Travel \$5,000

## MILESTONES TO DATE

**September 2014:** Proof of concept with 200 stage I lung cancer patients

**October 2014:** Accepted to Wharton's Venture Initiation Program

**November 2014:** IRB approval to access data from 10,000 cancer patients at Penn Medicine

**December 2014:** \$20K investment from First Round Capital's Dorm Room Fund; NSF SBIR grant submitted in Smart Health category

**February 2015:** \$5K from Wharton Innovation Fund

## TRACTION: NOW AND FUTURE

Proof of concept with Penn Medicine

Sept 2014

Unpaid pilots with 3 prestigious academic institutions to build critical mass of data

June 2015

Paid pilots with 10 academic and community hospitals

Dec 2015

# Team

## FOUNDERS



**Chris Berlind**  
**CTO**

CompSci at Caltech, PhD student at Georgia Tech ■ 5 years research with field-leading experts in DNA computing and machine learning ■ Published in top machine learning conferences



**David Lindsay**  
**CEO**

MD/PhD student in BioEngineering at Penn ■ 7 years experience working in hospitals with surgeons and oncologists ■ Technical Consultant for SpeSo Health, a DreamIT Health portfolio company

## THE CREW



**Anastasia D'Orazio**

**Finance, Sales**

Wharton MBA candidate  
■ Experienced in B2B sales and opportunity pipeline management.



**Matt McGuire**

**Strategy, Operations**

Wharton MBA candidate  
■ Previous experience in Military Information Support Operations.



**Mary Guo**

**Market Research**

Penn MS in Biotechnology candidate ■ Experience in healthcare and biotech consulting.



**Nina Lu**

**Platform Development**

Penn dual degree candidate for Finance and CompSci ■ Experience in business ops and software development.



**Andrew Campagnolo**

**Marketing, Communications**

Penn MD candidate ■ BA in Biophysics ■ Background in medical devices and healthcare reimbursement.

## ADVISORS



**Stephen Hahn, MD, FASTRO**  
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