

MEDICAL PHYSICS ADDING VALUE IN INDUSTRY

Making an Impact and Saving Lives

Kolleen T. Kennedy, President, Varian Oncology Systems

August 2016

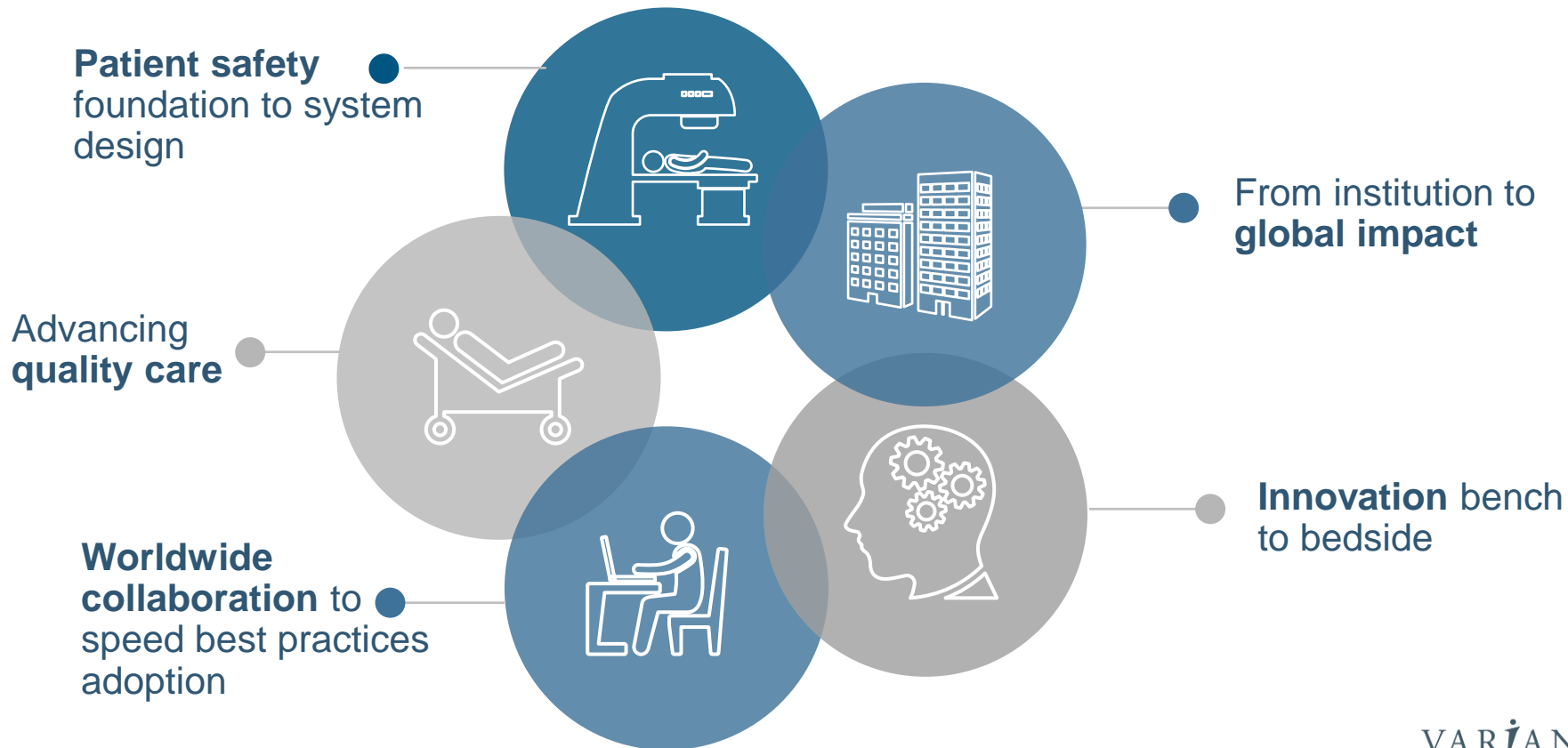


A WORLD WITHOUT FEAR OF CANCER



WE INNOVATE, SUPPORT AND SIMPLIFY
CANCER-FIGHTING SOLUTIONS WORLDWIDE

MEDICAL PHYSICS MAKING A DIFFERENCE VIA INDUSTRY



THE NEED IS GROWING GLOBAL CANCER BURDEN RISING

24.6

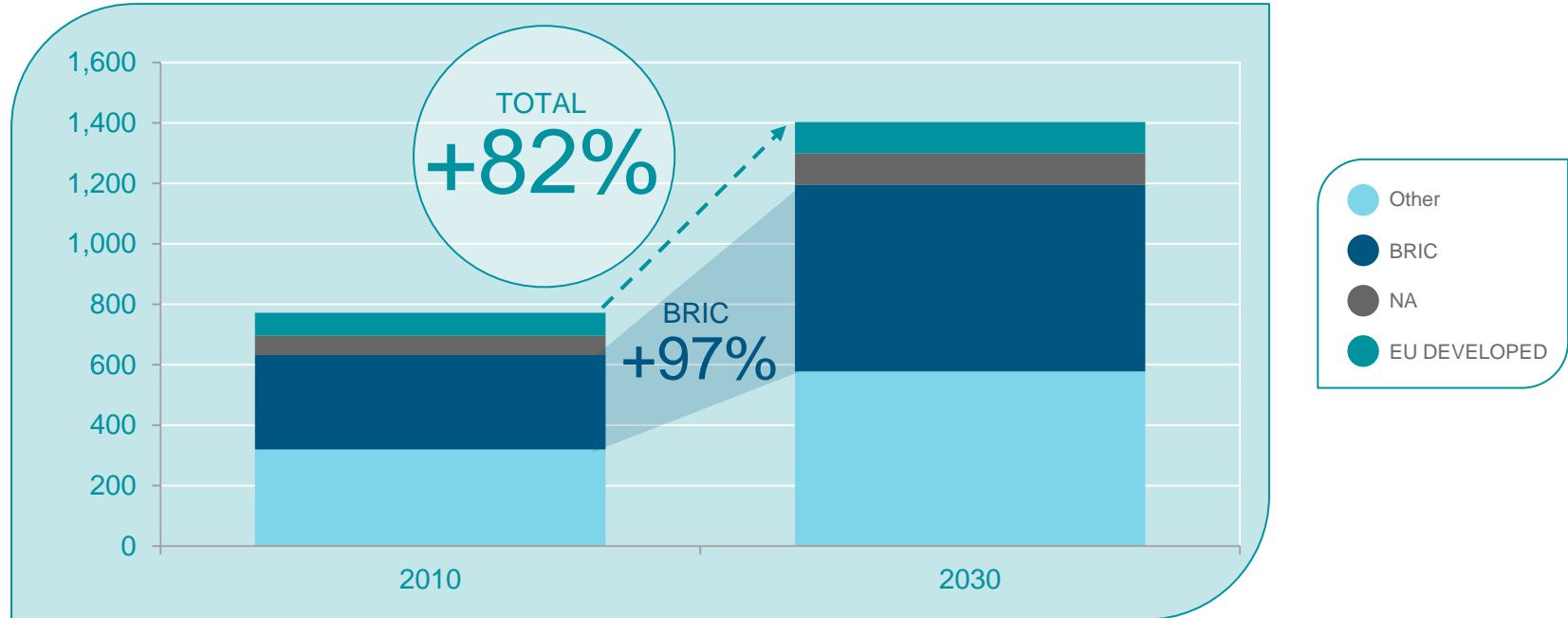
MILLION PEOPLE
NEXT 15 YEARS

The global cancer burden nearly doubles by 2030; expected to grow to 24.6 million new cancer cases with 13.5 million deaths.*

*Lancet Commission Report, 2015

COMPELLING DEMOGRAPHICS

PEOPLE 60 YEARS AND OLDER IN MILLIONS



Source: U.S. Census Bureau

Expanding global access to radiotherapy

Lancet Oncology Vol 16 Sept. 2015



\$2T

global economic burden in 2010

50-60%

of patients with cancer need RT



56%

of cancers diagnosed in high income countries



10%

of patients have access to RT in low income countries



20,000+

Linacs needed by 2035, with greatest need in low and mid-income countries

TREATMENT THEN



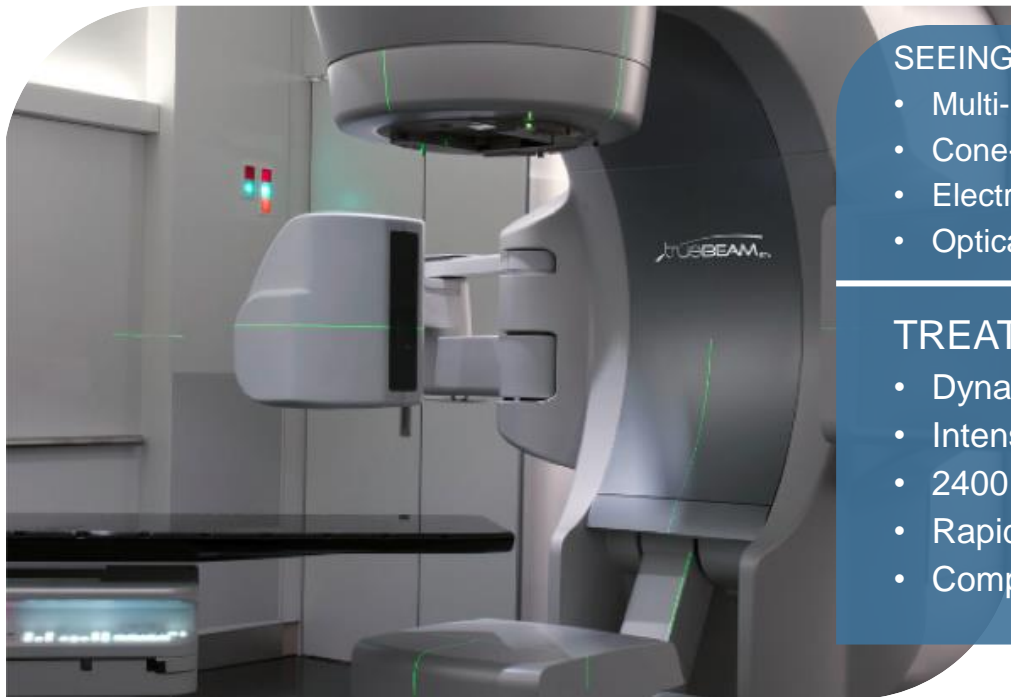
HOW WE SAW THE TARGET

- Weekly MV port films

HOW WE TREATED THE TARGET

- 2D treatment planning
- Blocks to shape the beam
- 250 MU/min dose rate
- R/V systems
- Paper based systems

TREATMENT TODAY....INCREASING COMPLEXITY



SEEING MORE ACCURATELY

- Multi-modality imaging
- Cone-Beam CT & kV radiographs
- Electromagnetic transponders
- Optical surface monitoring

TREATING MORE PRECISELY

- Dynamic Multileaf Collimator beam shaping
- Intensity Modulated Radiotherapy (IMRT)
- 2400 MU/min dose rate
- RapidArc planning and delivery
- Comprehensive software systems

COLLABORATION TO ADDRESS GLOBAL HEALTHCARE TRENDS

MINIMALLY INVASIVE TREATMENTS

SRS & SBRT PROTOCOLS

EMERGING ECONOMIES

EDUCATION GAPS

RISING HEALTHCARE COSTS

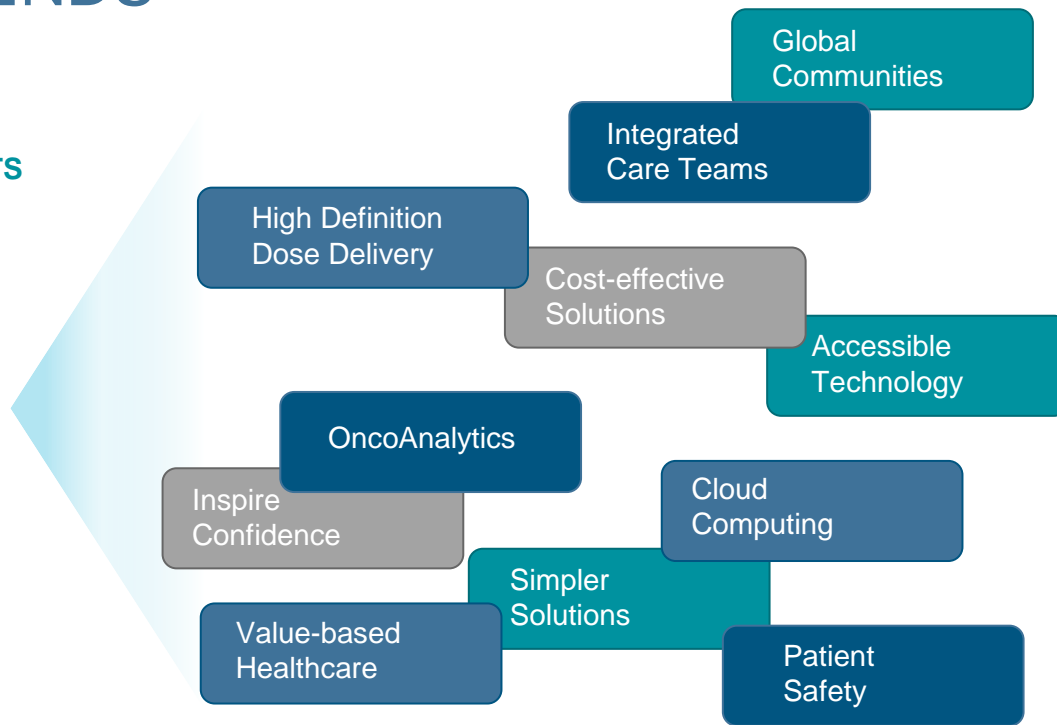
EVIDENCE-BASED MEDICINE

BIG DATA - CYBERSECURITY

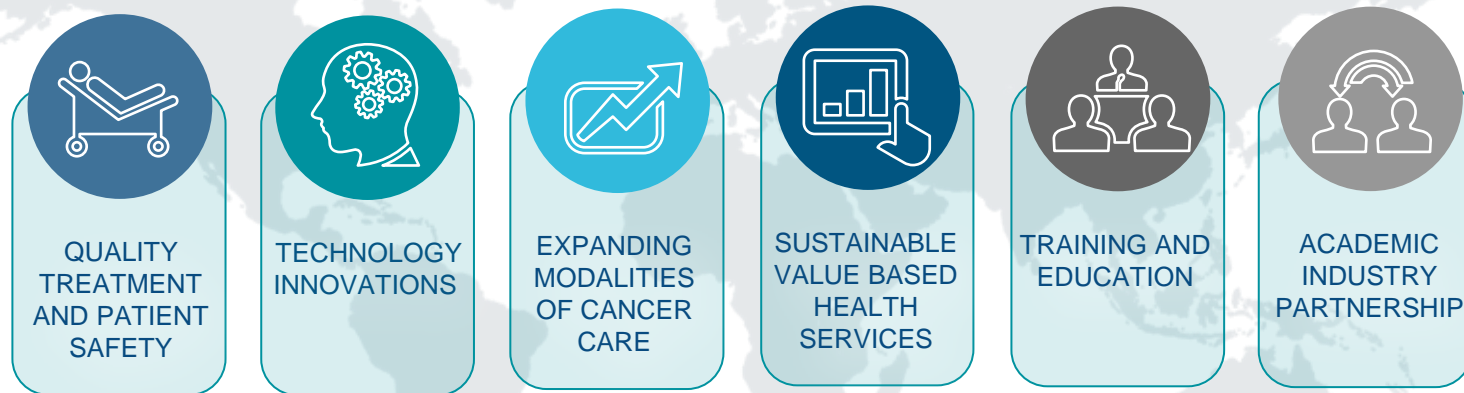
DIGITAL FRONTIER

PERSONALIZED MEDICINE

PATIENT SELF CARE

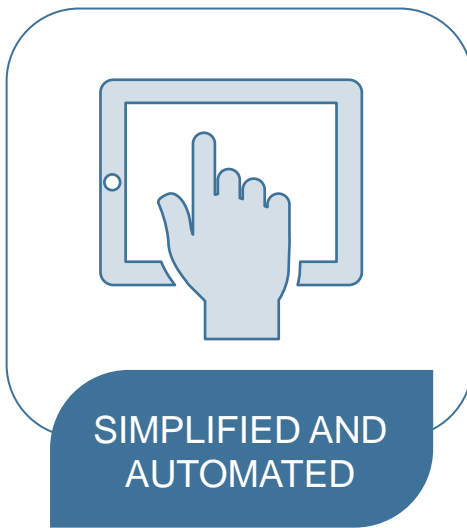


GLOBAL ONCOLOGY ECOSYSTEM



FOCUS OF VARIAN PORTFOLIO

The opportunity to impact cancer care globally



MEDICAL PHYSICIST SPECIALTIES



Source: AAPM

2% MEDICAL PHYSICISTS IN INDUSTRY

NORTH AMERICA
BY EMPLOYMENT FUNCTION

>50%

CLINICAL
AND
ACADEMIC
RESEARCH/
DEVELOPMENT

ONLY
2%

COMMERCIAL
RESEARCH/
DEVELOPMENT



Source: AAPM

OPPORTUNITIES FOR MEDICAL PHYSICISTS ROLES IN INDUSTRY

RESEARCH

ENGINEERING

PRODUCT
MANAGEMENT

EDUCATION

APPLICATIONS
TRAINING

HELP DESK

PROFESSIONAL
SERVICES

MARKETING

SALES

INDUSTRY: MEDICAL PHYSICS VALUE ADD

Key Attributes



METHODICAL

Problem solver, creative, thoughtful, inclusive, results focused, safety-minded



MISSION ORIENTED

Innovation to improve cancer care, developing new technologies, solutions to simplify clinical workflow



REWARDING

Interacting with people from across the globe, enabling new breakthroughs, challenging tasks to tackle

INDUSTRY: MEDICAL PHYSICS VALUE ADD

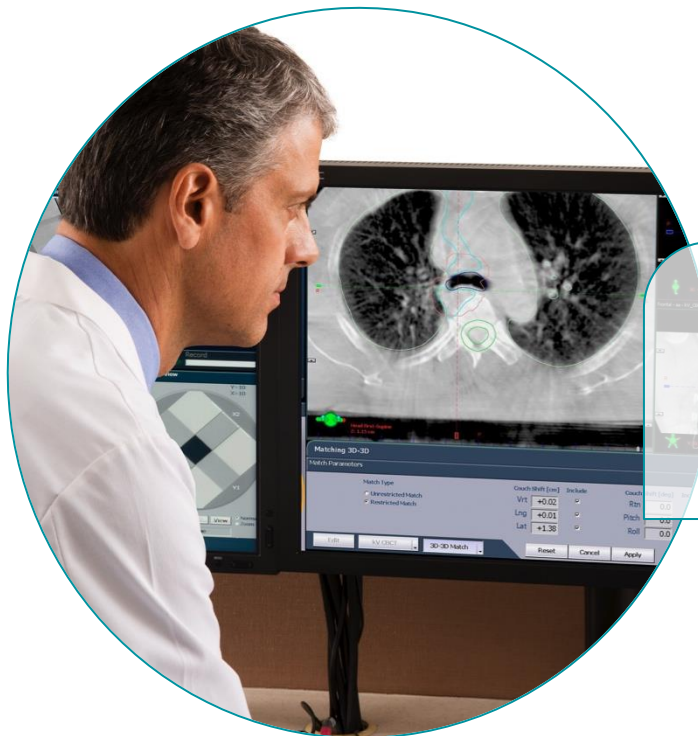
Linking science, technology and application

Research project
approval committee and
governance

Establish scientific and
medical advisory boards

Horizon technology review
and assessment

Spearheading Open
Innovation programs

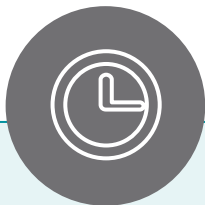


Bringing clinical domain expertise
to product requirements
definition, test protocols
development, usability design,
interoperability conditions and
release performance metrics

NEW ERA INNOVATION: PRECISION MEDICINE



Genetic profiling
and population
based analytics



Biomarker guidance
Immunotherapy
+ Radiation



Technology advances
- Imaging
- Treatment Delivery



Cloud based
ecosystems



Growth of
meaningful
survivorship
programs

INDUSTRY

New frontiers in radiation medicine

PLANTAR
FASCIITIS

CARDIAC
ARRHYTHMIAS

DEPRESSION

EMPHYSEMA

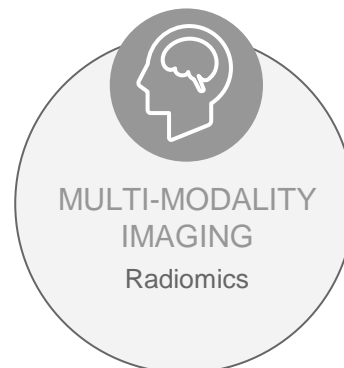
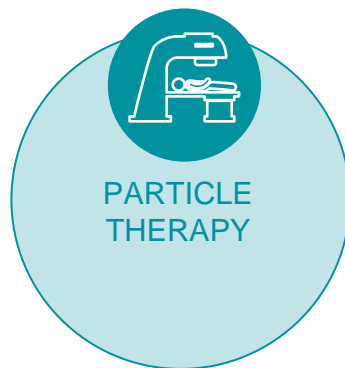
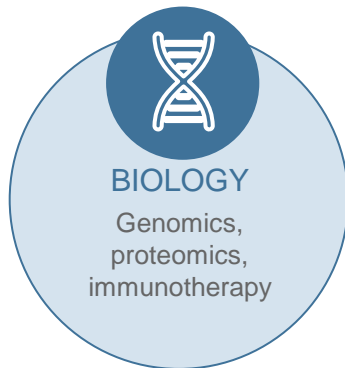
ARTHRITIS

POST-THORACIC
SURGERY NEUROPATHY



INDUSTRY OPPORTUNITY FOR MEDICAL PHYSICS

Skills for a New Era



THE CHOICE....INDUSTRY OPPORTUNITIES



OPPORTUNITIES IN MULTIPLE ROLES

Multiple role opportunities:

- Training and Education
- Engineering
- Product Management
- Professional Services
- Clinical Helpdesk
- Sales



TOUCHING MANY LIVES

Thousands over a lifetime
vs millions every year



WORLDWIDE COLLABORATION

with the global oncology community

MULTI-MILLION
R&D investment

INDUSTRY: MEDICAL PHYSICS VALUE



COMPELLING JOB VALUE

OPPORTUNITIES ARE DIVERSE

ADVANCING THE FUTURE OF
MEDICAL PHYSICS

THANK YOU