
Johnson & Johnson

2nd Munich Technology Conference

MTC2- Medical Market

Johnson & Johnson 3D PRINTING CENTER OF EXCELLENCE

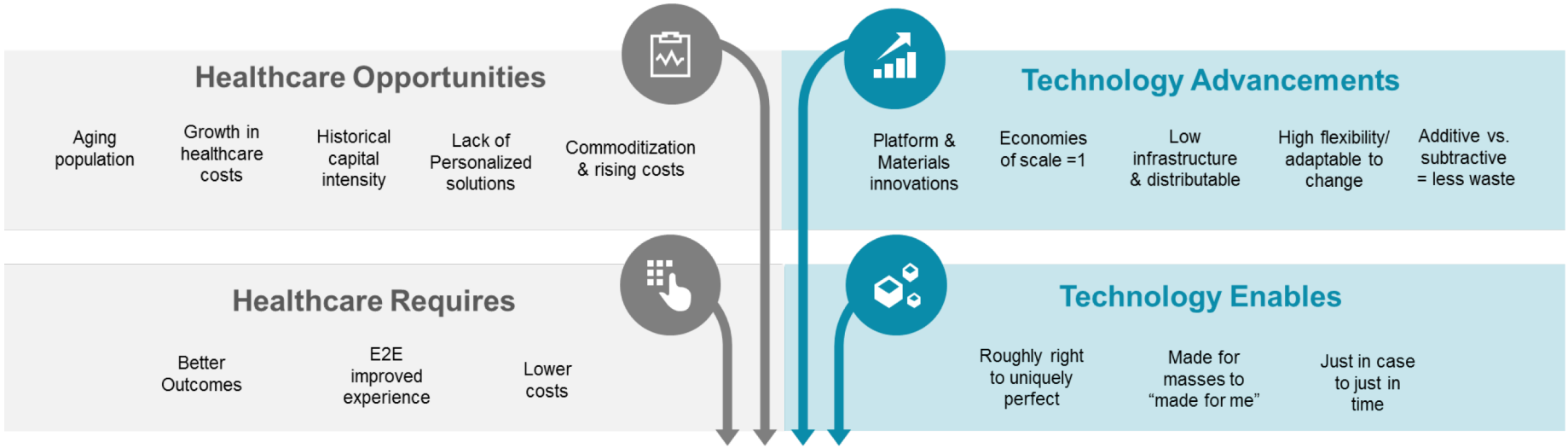
Charles Tomonto. Ph.D.

3D Printing Center of Excellence

Johnson & Johnson

Confluence of Healthcare & Technology

The evolving world of healthcare intersecting with a new world of technology



As health needs and expectations evolve,

we must anticipate what's next and innovate new solutions

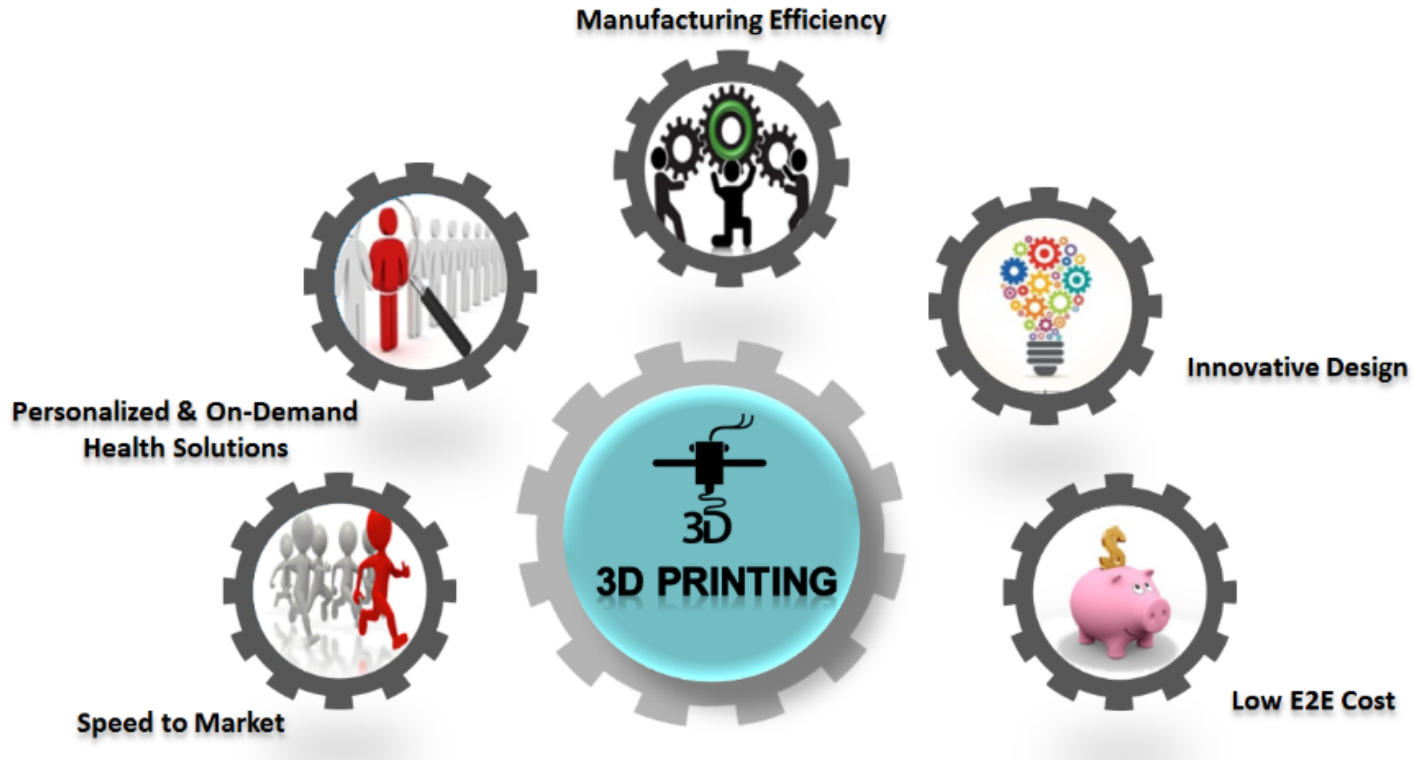
Imagining J&J's Future,

Solving every customer's unique needs…

Integrating 3D capabilities in ways that **REVOLUTIONIZE OUR BUSINESS MODEL** and more closely **CONNECT BOTH PATIENT AND PROVIDER** at every touchpoint along the episode of care

3D Printing Represents a Substantial Opportunity

Enabling a disruptive impact for J&J Supply Chain



Can drive big value in most all segments

Segment based product roadmaps can maximize the value

3DP solutions drive tools, materials, and process improvements

How did you identify the part for AM production?

- *Personalized products*
- *Parts requiring internal and external feature dimensional control*
- *Product platforms where low volume and high SKUs are required.*
- *Products where multiple parts can be integrated into a single build.*

What were the biggest challenges to bring the part in the field?

- *Scan to Health Infrastructure*
- *Worldwide Regulatory acceptance*
- *Cost of Goods as compared to traditional manufacturing*

Has the potential
to provide
BETTER PATIENT OUTCOMES

What would help to make it easier to bring more AM parts into your industry?

- *Development of End to End Manufacturing processes where AM part costs are less than part produced with traditional manufacturing processes*

What are the key levers to accelerate?

- *Development of elements required to implement a AM Virtual Factory*
  - *Computational Modeling Capability*
  - *Automated Post Processing Capability*
  - *Metrology Capabilities*
  - *Data Management between Multiple Processes*

What are limitations and what needs to be done?

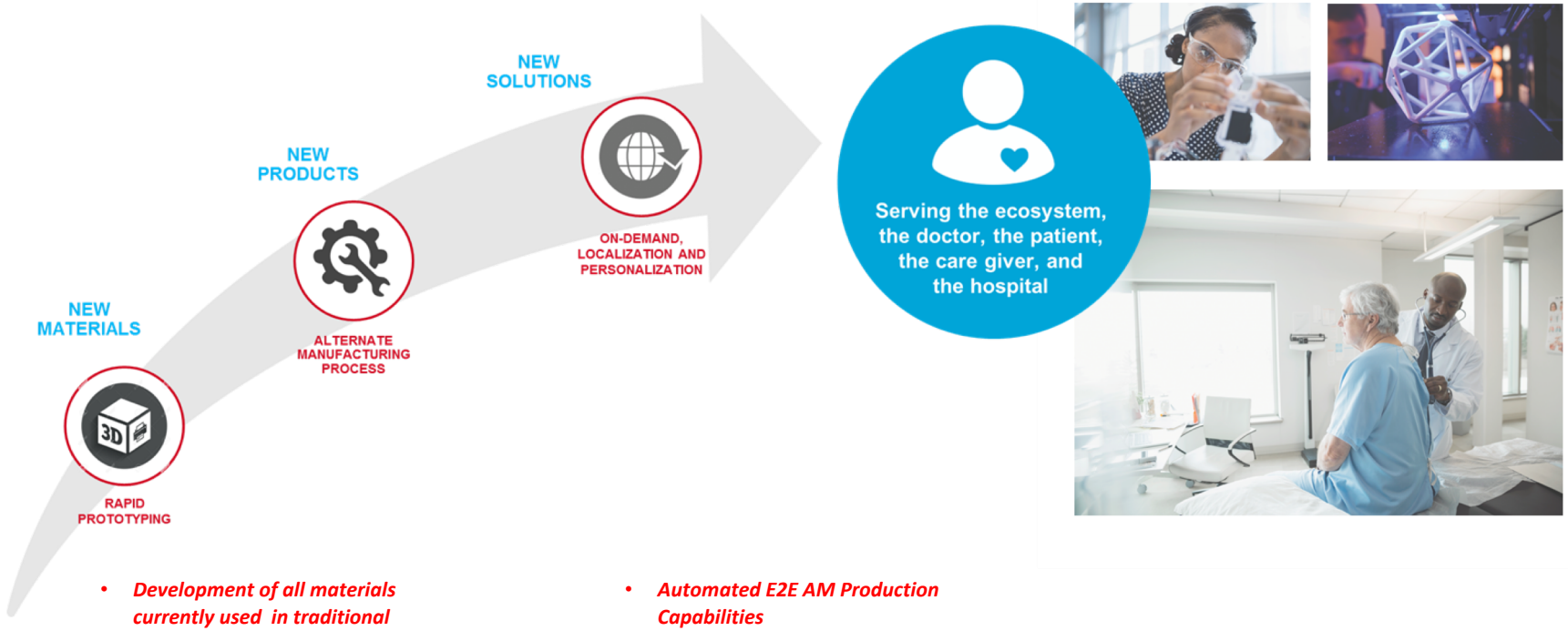
- *Computational Modeling: The ability to execute modeling to produce parts in specification on a single build.*
- *Automated Post Processing: The ability to execute post processing on a common platform*
- *Metrology: The ability to confirm internal and external features real time*
- *Data Management: A common industry wide communication platform between manufacturing processes*

What potential do you see within your industry for AM parts?

- *The medical device industry has significantly engaged additive manufacturing*

Changing the Landscape of Healthcare

Our 3D printing approach begins with innovative raw materials and ends with **personalized solutions for the patient or consumer**



- ***Development of all materials currently used in traditional manufacturing (metal, plastic & ceramic)***
- ***Metals: Fe, Co, and Ti based alloys***
- ***Plastics (Biocompatible thermosets and elastomers)***
- ***Ceramics (alumina and zirconia based ceramics)***

- ***Automated E2E AM Production Capabilities***
  - ***Metal Powder Bed Fusion***
  - ***Metal Binder Jet***
  - ***CLIP***
  - ***Polymer Binder Jet***
  - ***Post Processing***
  - ***Metrology***

Changing the Trajectory of Health for Humanity

3D Printing will allow J&J to create and deliver solutions with a global reach that was once impossible

Thank you

Johnson & Johnson

3D PRINTING CENTER OF EXCELLENCE