



# **Technology to Market Challenges in Liquid Fuels**

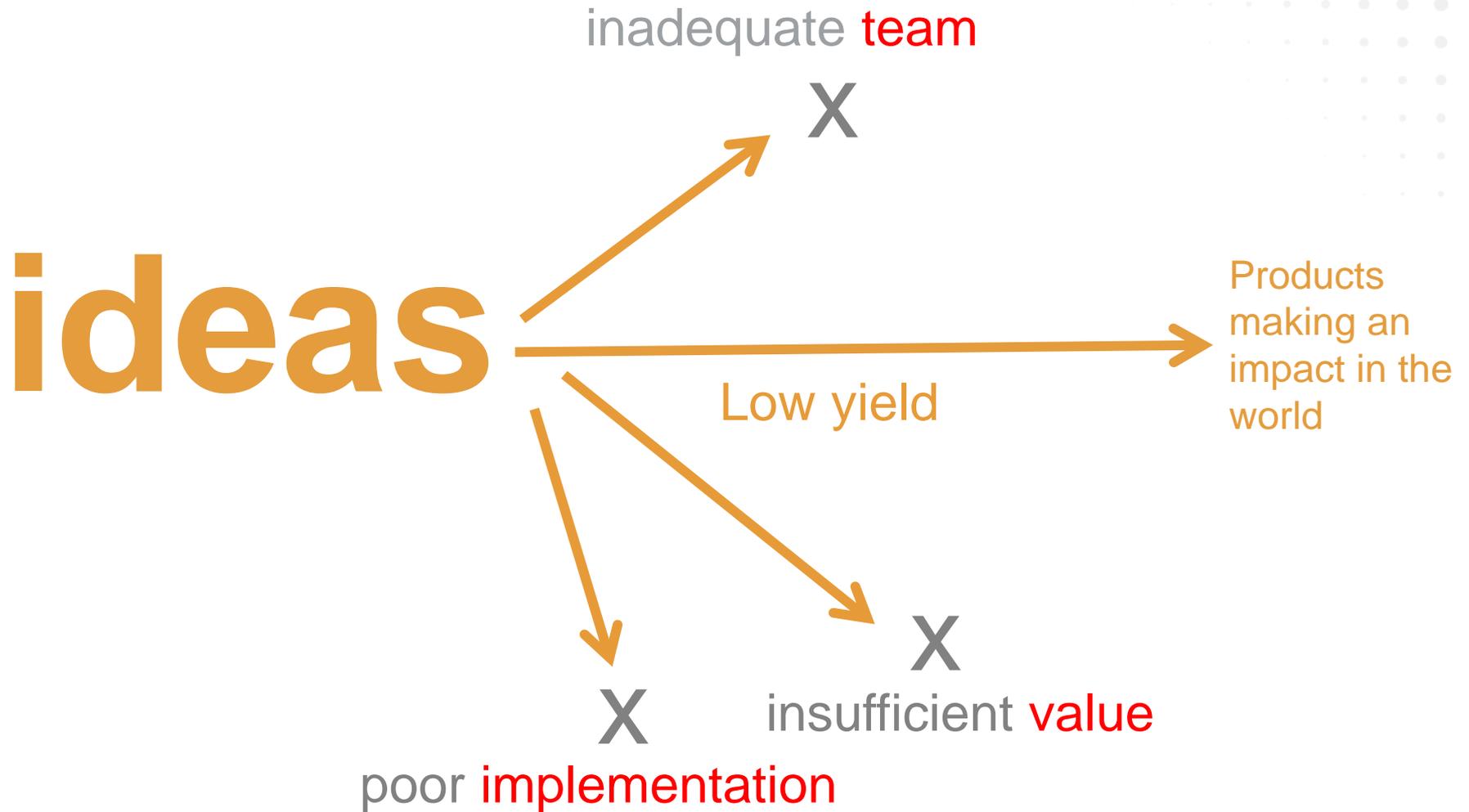
Cheryl Martin

Harwich Partners

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# Improving the Yield

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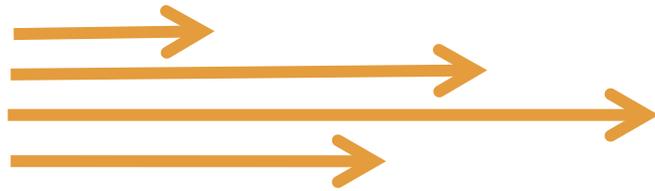


# Changing the Model

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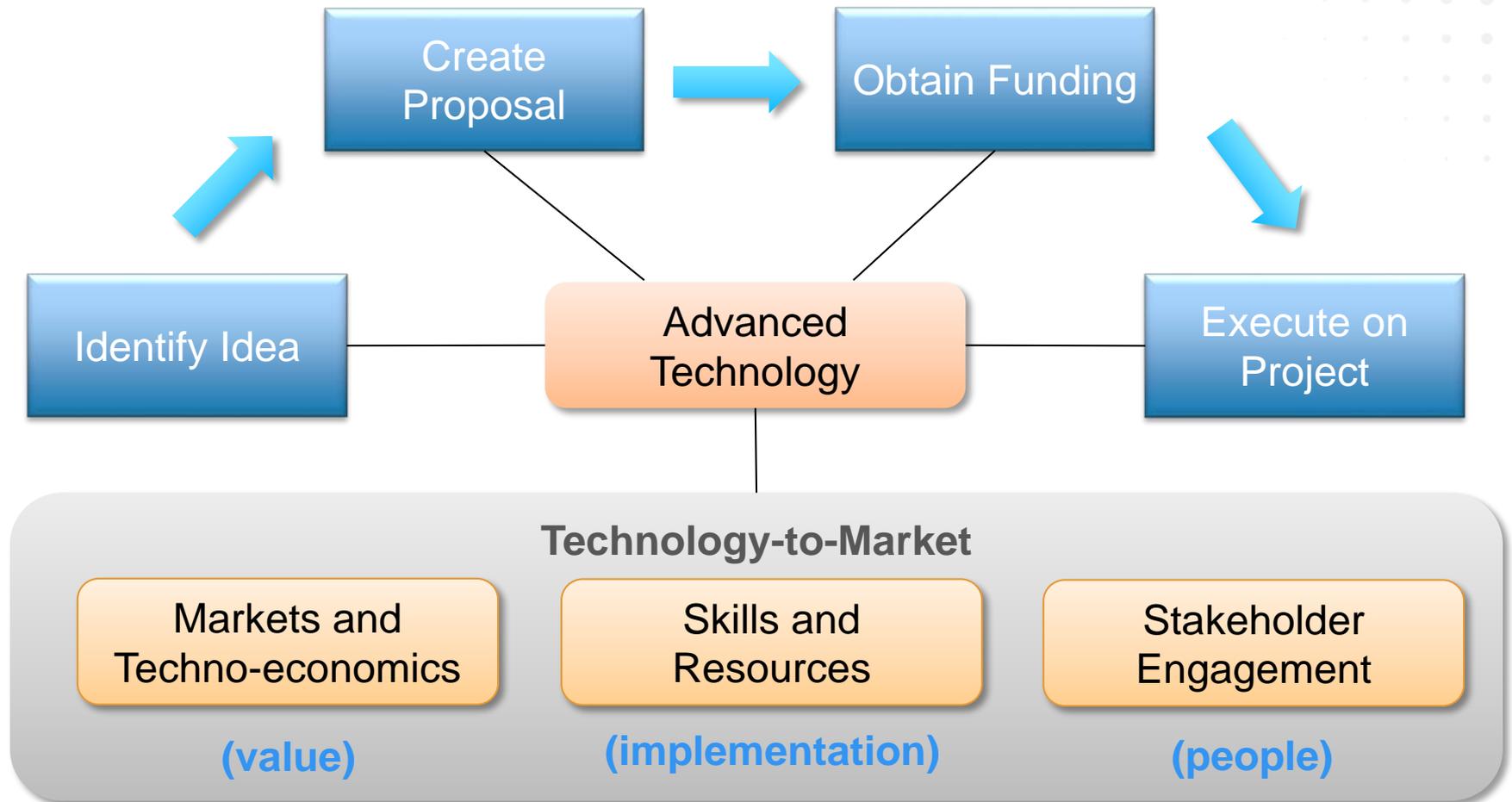
ideas

+ value  
+ team  
+ implementation



Products  
making an  
impact in the  
world

# Changing the Model



# Observations

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The Frame Matters

Thinking from the End  
Is Critical

Embracing Information  
Is Essential

Relationships  
Take Time

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# “What Matters” for Liquid Fuel Success

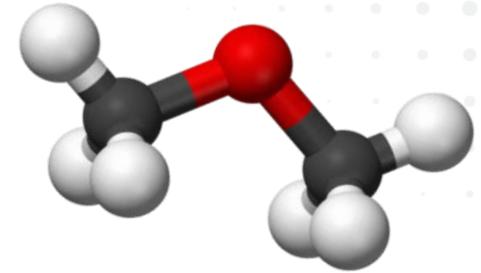
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- ▶ Technical Challenges
  - Energy Density, Catalysts, Conversion Efficiency etc...
  - Scale-up
- ▶ Infrastructure
  - Compatibility
- ▶ System Level Cost and Safety
- ▶ Regulation
- ▶ End Markets
- ▶ Financing
- ▶ Partners and Networks

# **DME Dimethyl Ether**

## ▶ **Simple Fuel**

- Diesel-like performance
- Clean burning, no soot generated
- Made from methane and carbon dioxide



## ▶ **Simple Engine**

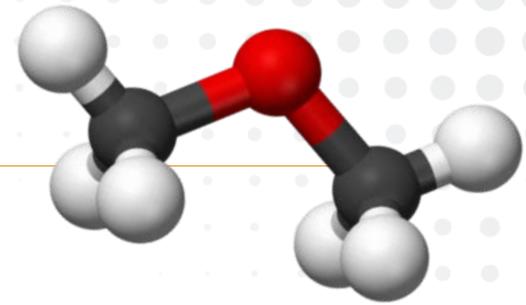
- Efficiency & torque of diesel engine with no soot produced
- Remove significant amount of after-treatment equipment

## ▶ **Simple Infrastructure**

- Propane-like Handling (cylinders/tank, only change seal)



# Oberon Fuels & DME



- ▶ **Founded in November 2010**
- ▶ **Technology acquired from failed startup**
  - Benchtop-scale conversion of wastewater treatment gas to gasoline, pivoted to DME
- ▶ **Key Development Milestones**



**2013** Volvo Oberon Partnership to Commercialize DME

**2013** Oberon DME pilot plant online. Fuels Volvo's US-based demonstrations.



**2015** With CA's change in their Code of Regulations, DME can now be legally sold in all 50 states.



**Thank You**

[www.harwichpartners.com](http://www.harwichpartners.com)