The abcg Advantage™

The Advantage

Engage with abcg™ to deliver accelerated, sustainable transformation that propels business performance from good to exceptional.

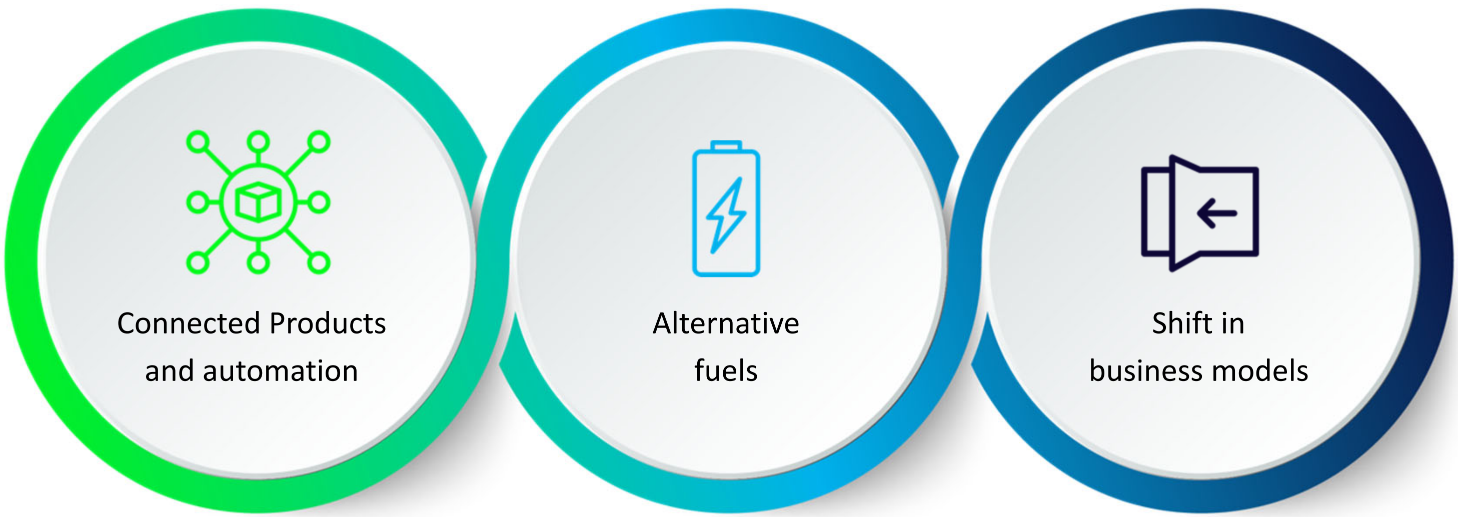
Unrivalled experience.

Deep industry knowledge.

An external 360º perspective.

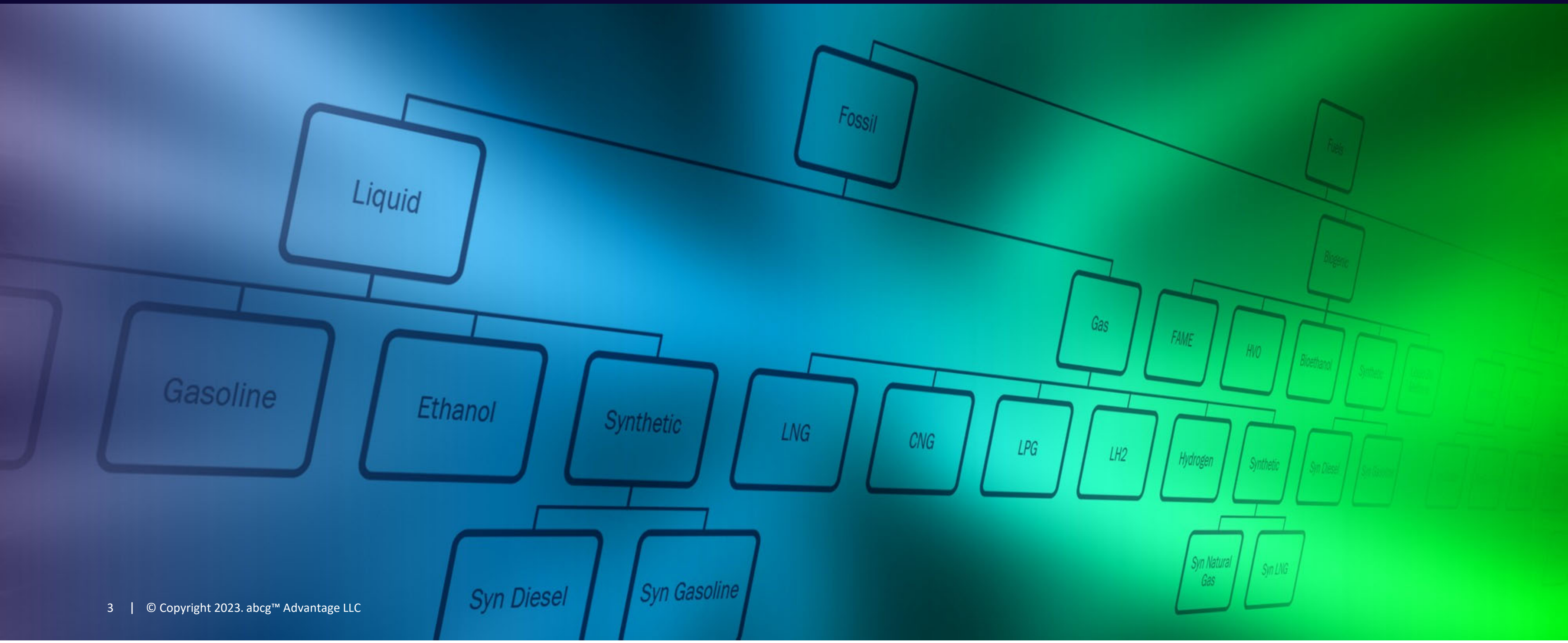
The triple technology challenge

How to transform while maintaining the legacy business

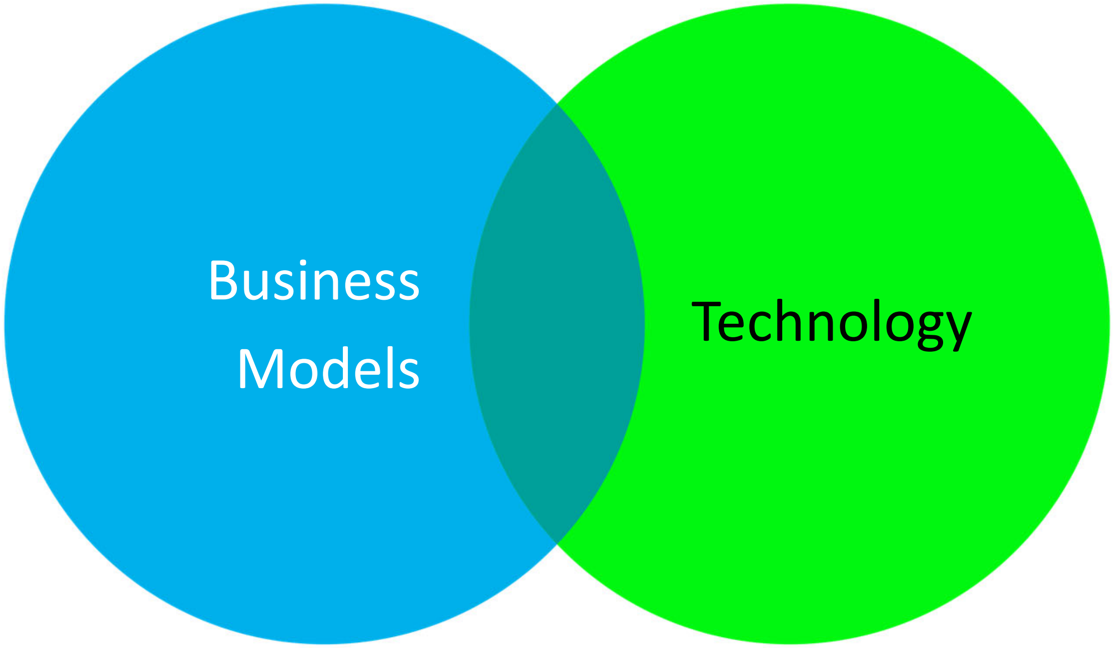


The alternative fuels space

The future energy supply is far from certain



The Key Challenges

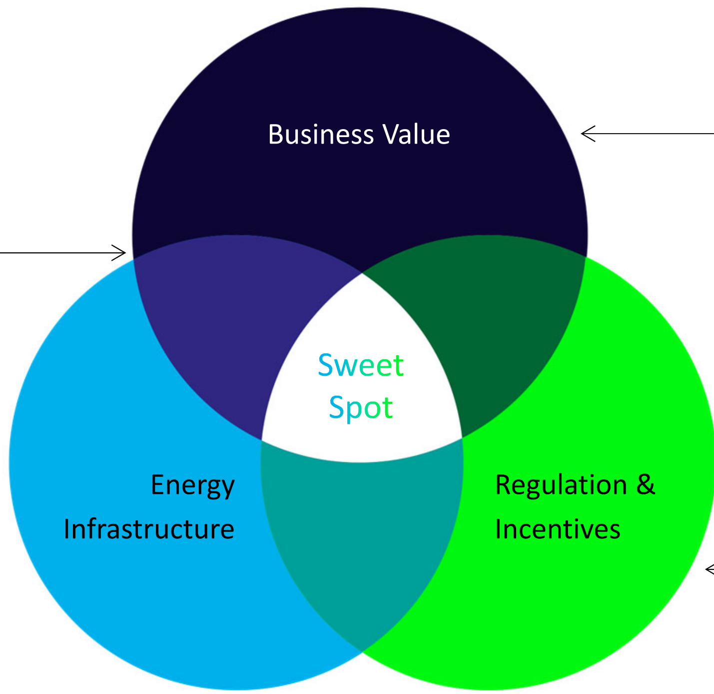


→ The interconnection is the key

Alternative Energy Commercial Vehicle Adoption Drivers

On-road adoption

- Return to home base each day
- Limited operating time/day
- Frequent Stop/Start enabling energy recovery



- City Busses
- Refuse
- Local distribution
- Last mile

- CARB
- EPA
- Germany (investment credit)

→ Environmental image alone will only drive minimal adoption

Alternative Energy Commercial Vehicle Adoption Drivers

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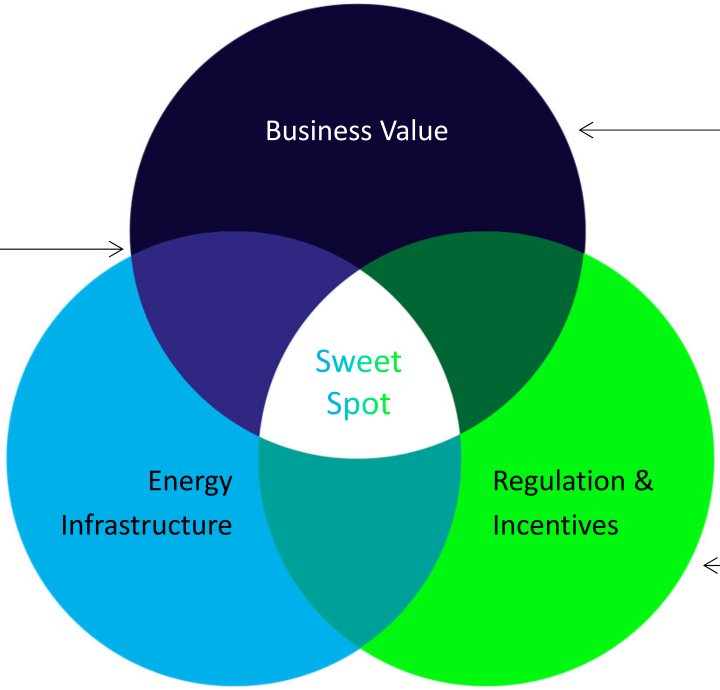


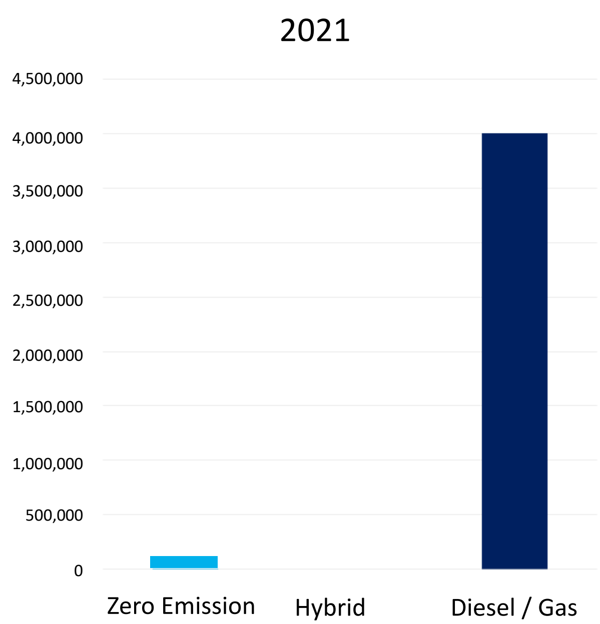
- Noise sensitive locations (urban and residential areas)
- Emissions sensitive locations (indoor)

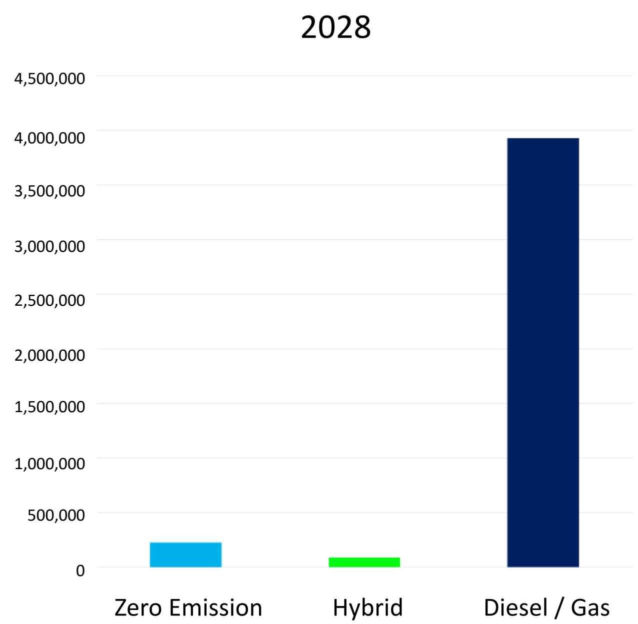
- Limited current regulations except evolving city diesel bans in Europe
- But typically off-road regulation follows on-road by a few years

→ Environmental image alone will only drive minimal adoption

Diesel will be with us for quite a while…

Indicative industry segment >25hp 2021-2028





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Alternative energy adoption

Smaller/lighter use trucks & equipment:

- Rapid Evolution to Battery Electric
- Diesel/Gasoline disappears from many new markets in ~10-15 years

2 Stages

- Adaptation of existing vehicle architectures
- New native electric vehicle and machine types

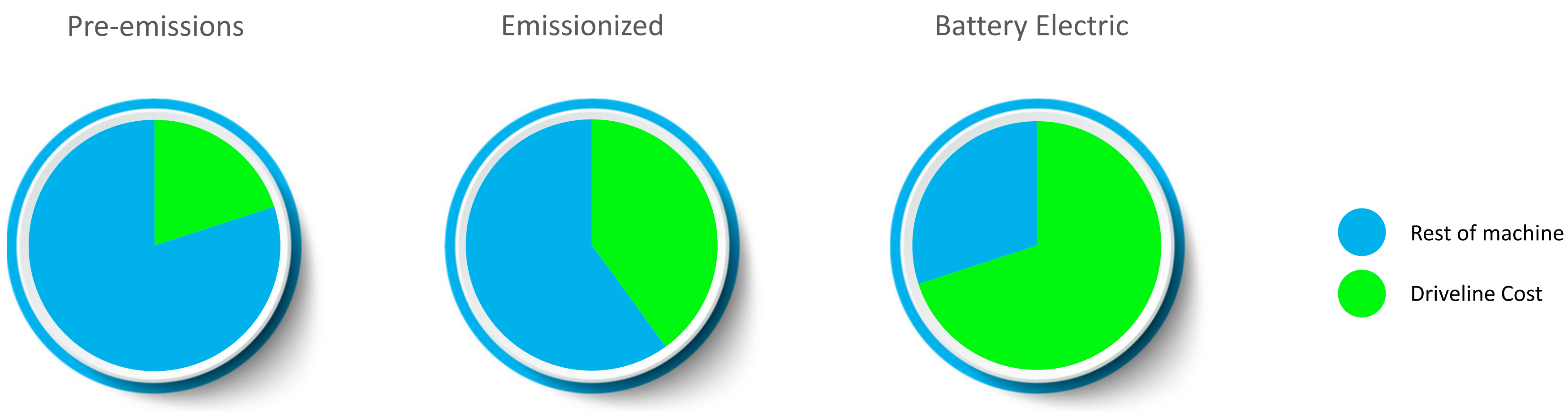
Larger/higher daily use trucks & equipment:

- Diesel remains significant part of market for foreseeable future
- Extensive experimentation with various alternative energy sources
- Electrification enters mainstream not as main powerplant but in 'microhybrid' form

Business model challenges

Sharply increasing product costs and reducing aftermarket parts revenue squeeze OEM margins.

Commercial vehicle battery costs are 2-3x that of passenger cars



- Are services a realistic high margin opportunity to offset?
- Will subscription models work?

Scenario changing breakthroughs

But, the business model challenges will still exist

Higher density batteries

Faster charging

Energy infrastructure

Electrification Opportunities = Electrification Challenges

Manual User Orientated

Powered User Orientated

Motor Efficiency Innovation

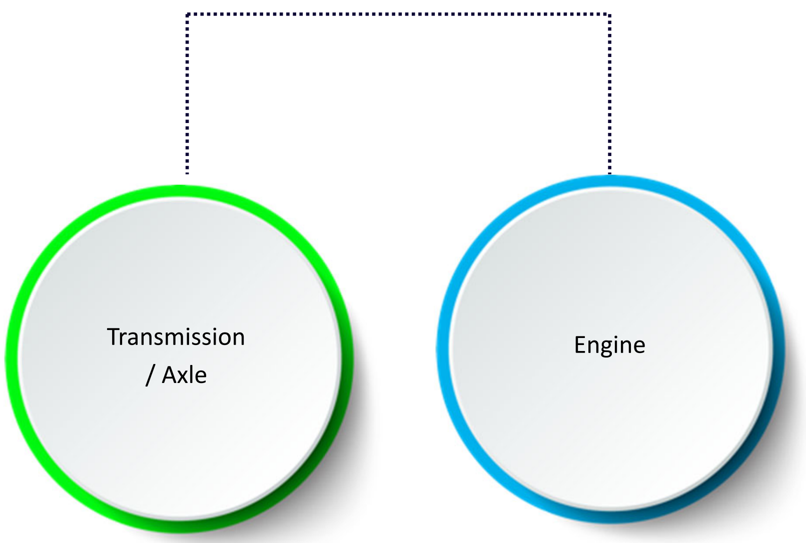
Fully Autonomous Technology

- The ‘right’ electric powered vehicle might look completely different.
- OEMs need to address this for each vehicle type.

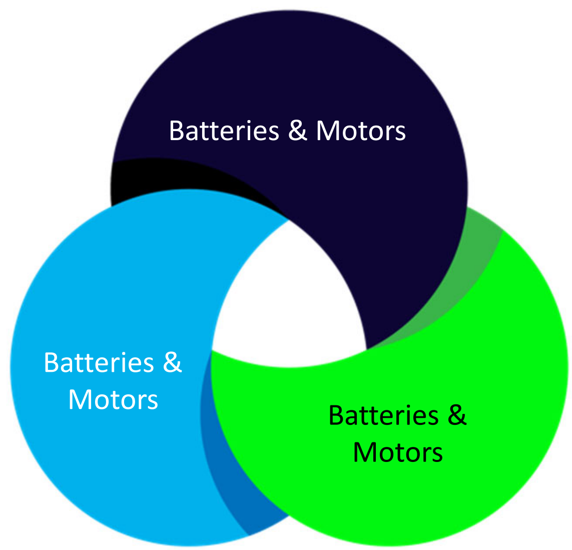
The new world for power system suppliers

Strategic challenges and opportunities

Past



Present

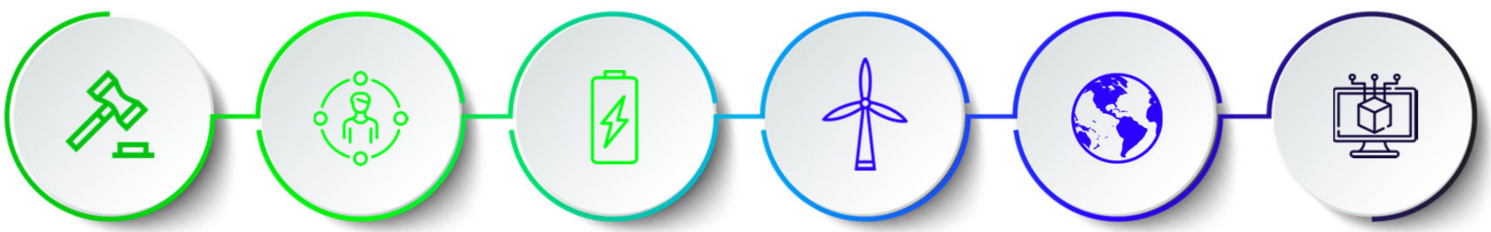


Who will succeed?

Skill Transformation

Business model uncertainty (green revolution)

Value shift to software & machine re-architecting



Regulations

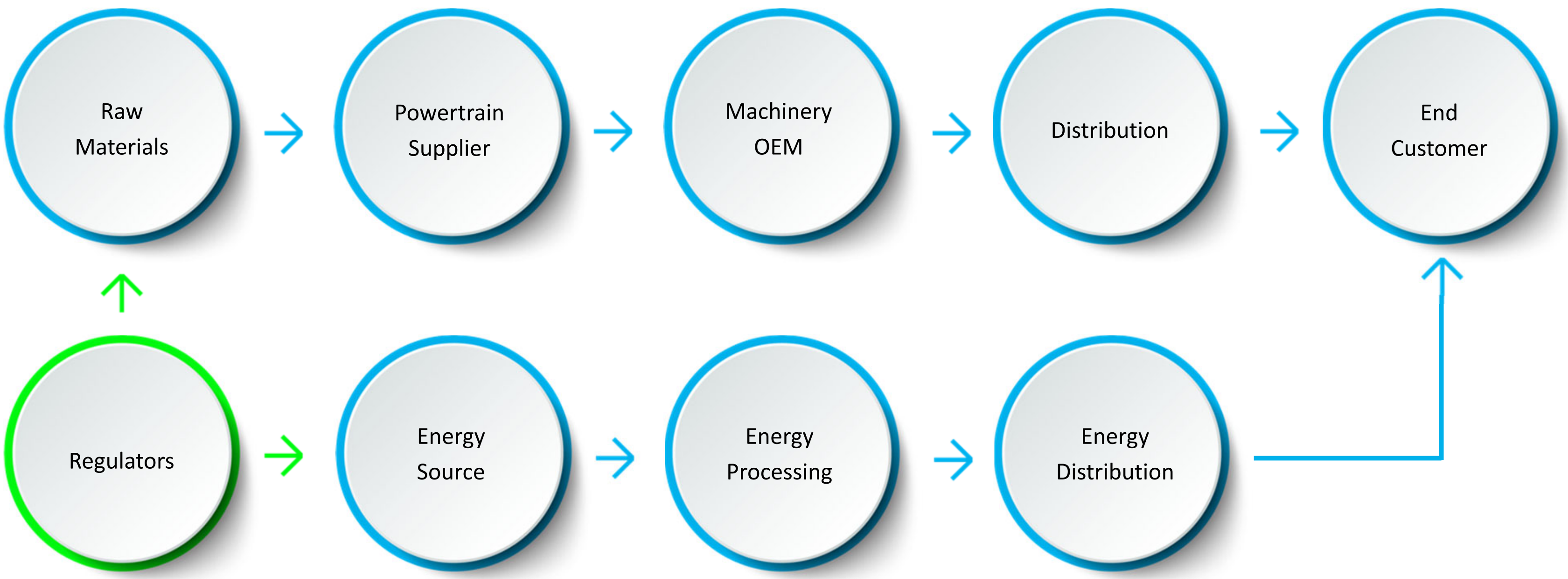
Uncertainty in fuel types

Ecosystem uncertainity

- Will the industry consolidate?
- Will a disruptor successfully enter?

It takes an entire ecosystem to succeed

Success requires more than market and OEM alignment



Accelerating Business,
Connecting Growth

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