Team 839

LiSBatt

The next-generation energy storage solution

TEXAS A&M UNIVERSITY

	Interview Count			
TOTAL	101	65	10	26

Our Initial Thought

- A new, lower cost battery system providing 2x-5x higher energy density compared to current Li-ion batteries
- Electric Vehicle Manufacturers, Military, Cellphone Manufacturers, Stationary Energy Storage Companies
- Multi-billion Market

Team 839

LiSBatt

The next-generation energy storage solution

TEXAS A&M UNIVERSITY

Choongho Yu, PI

Associate Professor
Mechanical Engineering
Materials Science and Engineering

Chris Scotti, M

Consultant,
Entrepreneur-In-Residence
Texas A&M Engineering Experiment Station (TEES)

Gang Yang, EL

PhD Candidate
Novel electrode design for Li-S batteries and fuel cells

BMC Version 1

Value Propositions

- Rechargeable battery systems with lower price
- Better safety control/ Risk reduction
- Rechargeable battery systems with higher specific energy ...
- Rechargeable battery systems with higher specific energy ...

Customer Relationsh...

- Customized design (size, shape, compatibility, ...

Channels

- License technology to existing battery manufacturers
- Sell customized batteries to device manufacturers

Customer Segments

- Electric/hybrid car manufacturers
- Military/Government
- Portable electronic companies (e.g. cellphones, laptops, ...
- Stationary Energy Storage (e.g. wind, solar energy ...

Focus on Drones

"NO!"

"Focus on One!"

YES

Customer Segments

- Electric/hybrid car manufacturers
- Military/Government
- Portable electronic companies (e.g. cellphones, laptops, ...
- Stationary Energy Storage (e.g. wind, solar energy ...

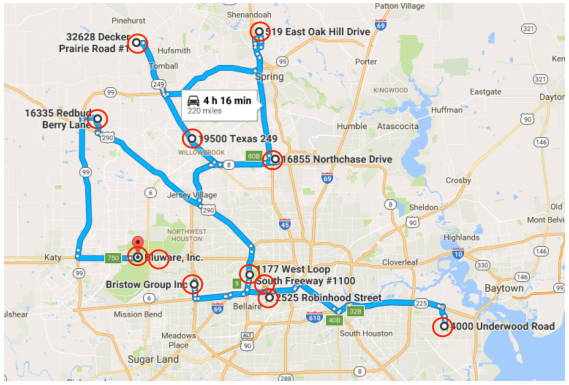
NO

Interview Starts

Battery Manufacturer

Drone Specialist

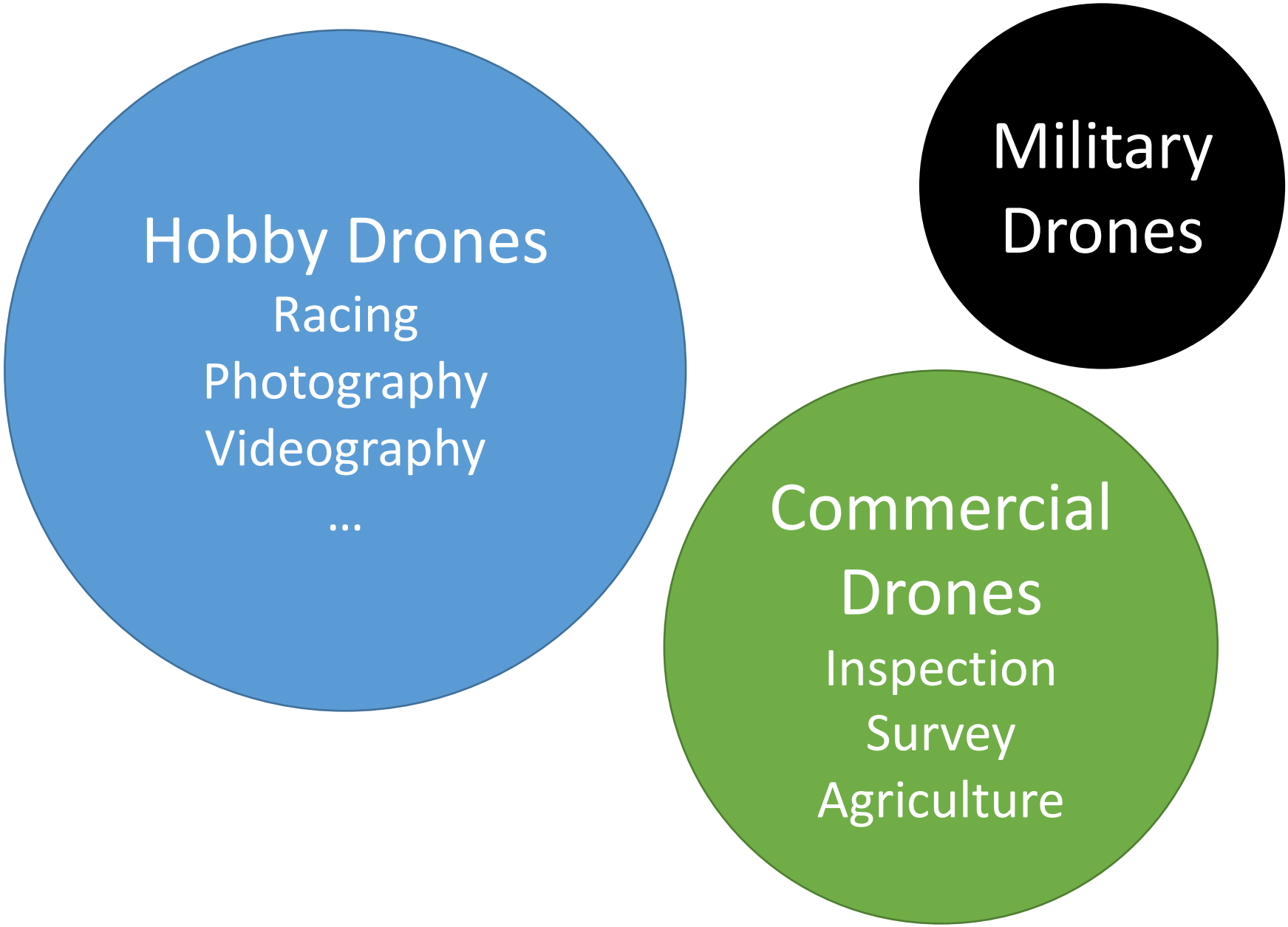
Hobby Drone User



Drone Dealer

Drone Professional – 60 years flying experience

What We Found



What We Found

Jeff, Excel Drones

"YES, longer flying time is a **critical** need."

"YES, we want to pay much more for new batteries."

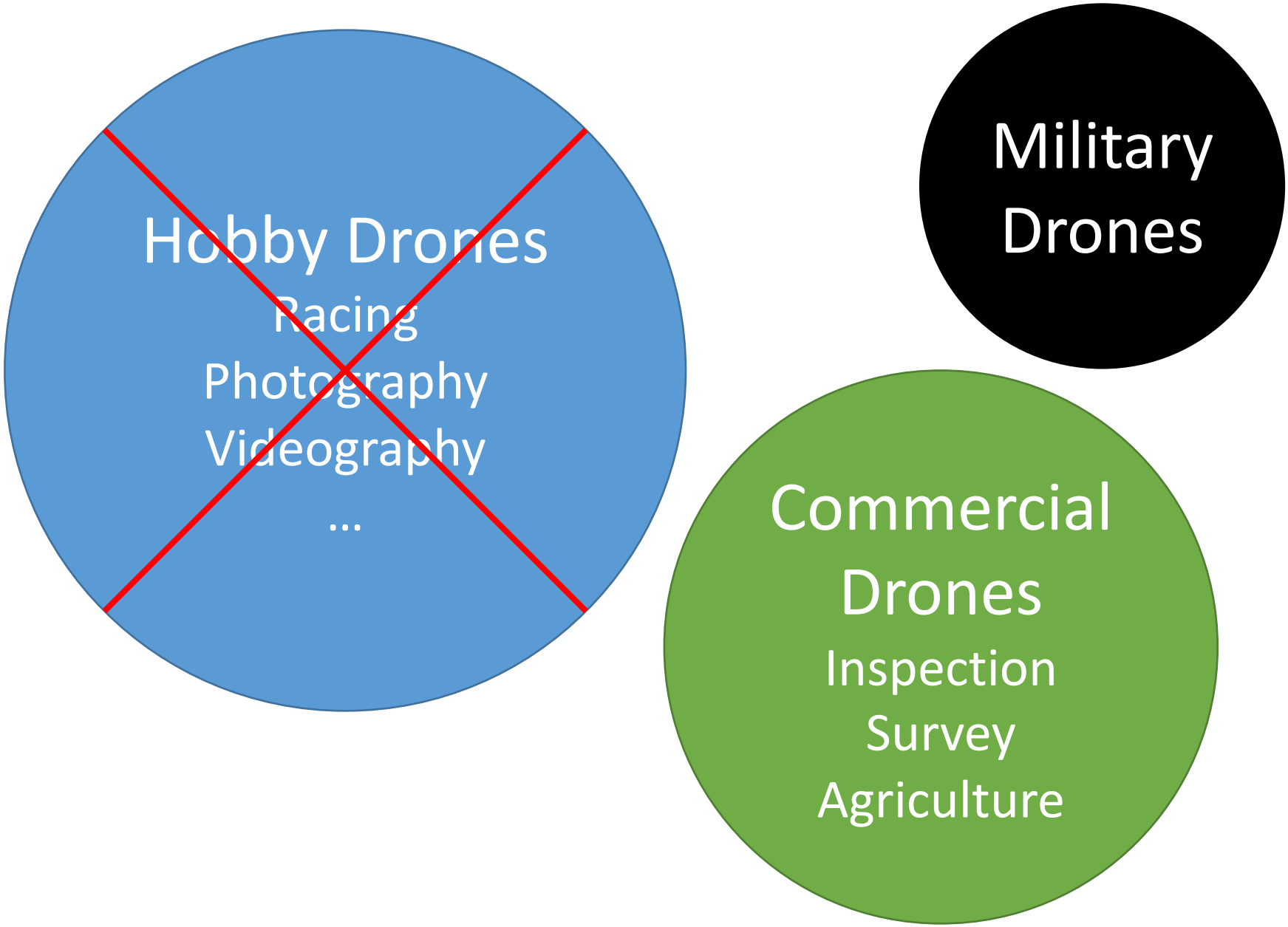
NO, racing drone market is **small**.

What We Found

NO, longer flying time is a **GOOD** thing to have.

NO, they are **OK** with current batteries, and they **don't want to pay** more for longer flying time.

What We Found



AHA Moment

"By doubling the flying time, we would bill **tens of thousands $ more per day**."
– Robert Daniel, AAIR

Commercial Drones

Inspection

Survey

Agriculture

BMC Version 2

LaunchPad Central

Value Propositions

- 2x flying time to reduce inspection time, facility
- 50% battery weight reduction to put
- ~~Larger service coverage~~

Customer Relationships

- Get: Drone Manufacturer Reference, Professional
- Keep: Technological Improvement, Process
- Grow: Licensing to other application fields

Customer Segments

- Survey & Inspection
- ~~Media & Entertainment~~
- ~~Prosumer (proprietary battery)~~
- ~~Prosumer (universal battery)~~
- ~~Transport (universal battery)~~

Channels

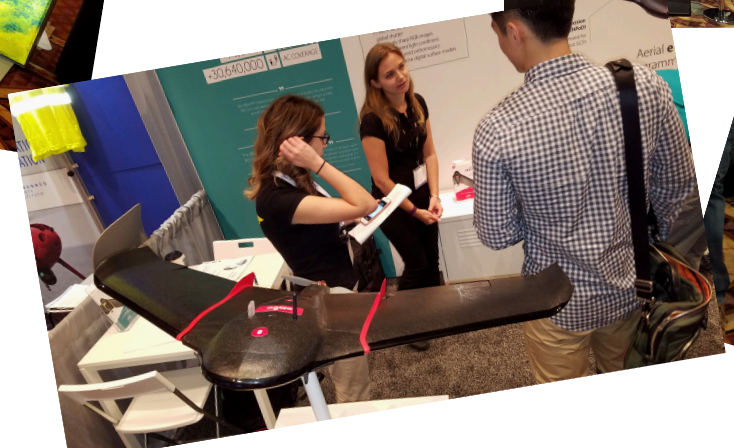
- Drone Manufacturers
- Battery Manufacturers
- ~~Web Sales~~
- ~~Dealer/Retailer~~

The service coverage is now regulated by FAA, although it is a critical need!

Pivot

We move from hobby drone users to high-end commercial drone users!

Verify: 30+ interviews



The Pain

Different needs for **survey** and **inspection** drones

Type

Fixed-wing

Multi-rotor

Pain

Need more sensors

Too much downtime

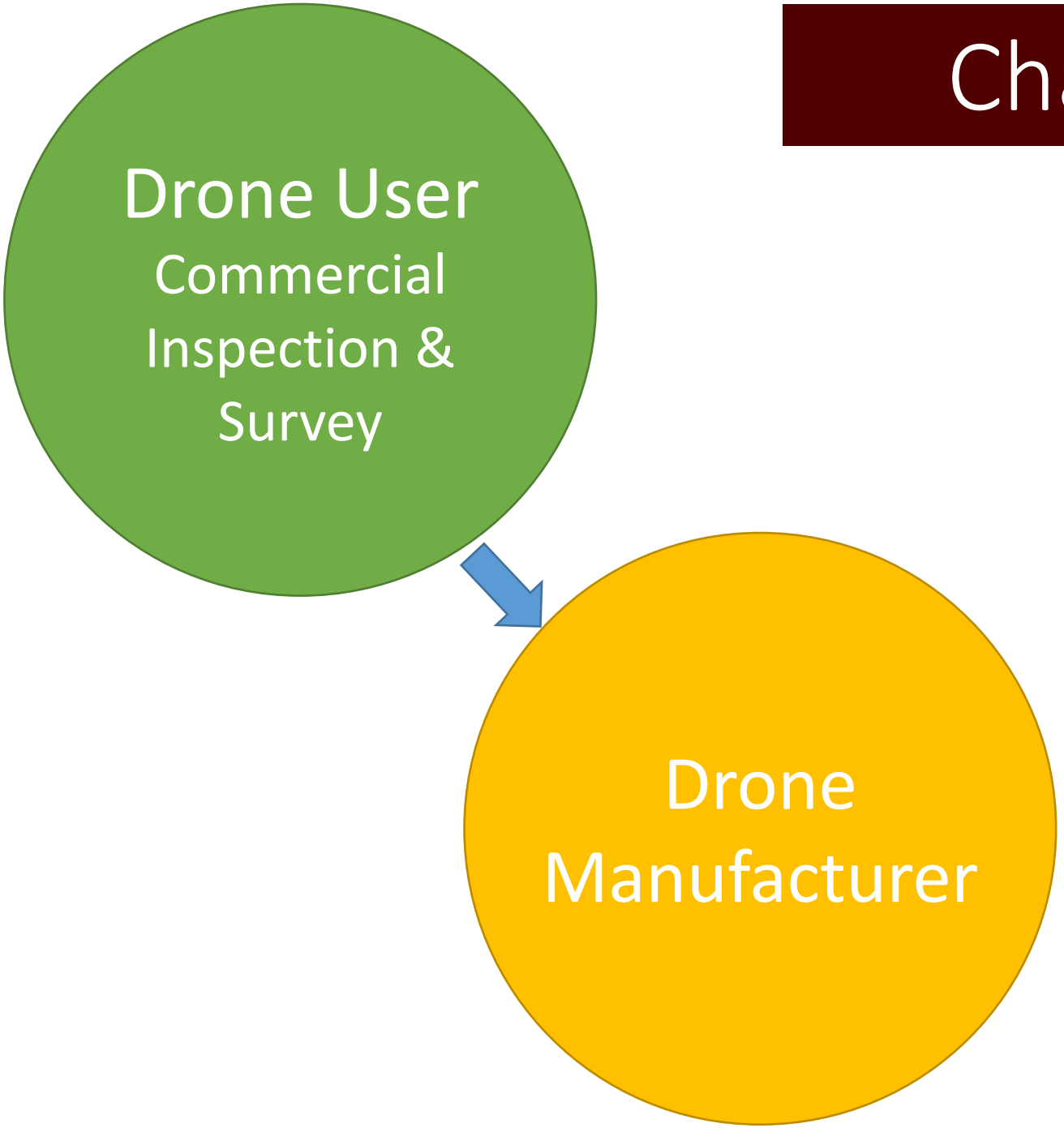
Solution

LiSBatt

(2x energy-to-weight ratio)

High-end commercial drone users/service providers are willing to pay up to **10 times** more per battery with 50% battery weight reduction or 60% downtime savings.

Channel


Drone User
Commercial
Inspection &
Survey
Drone
Manufacturer

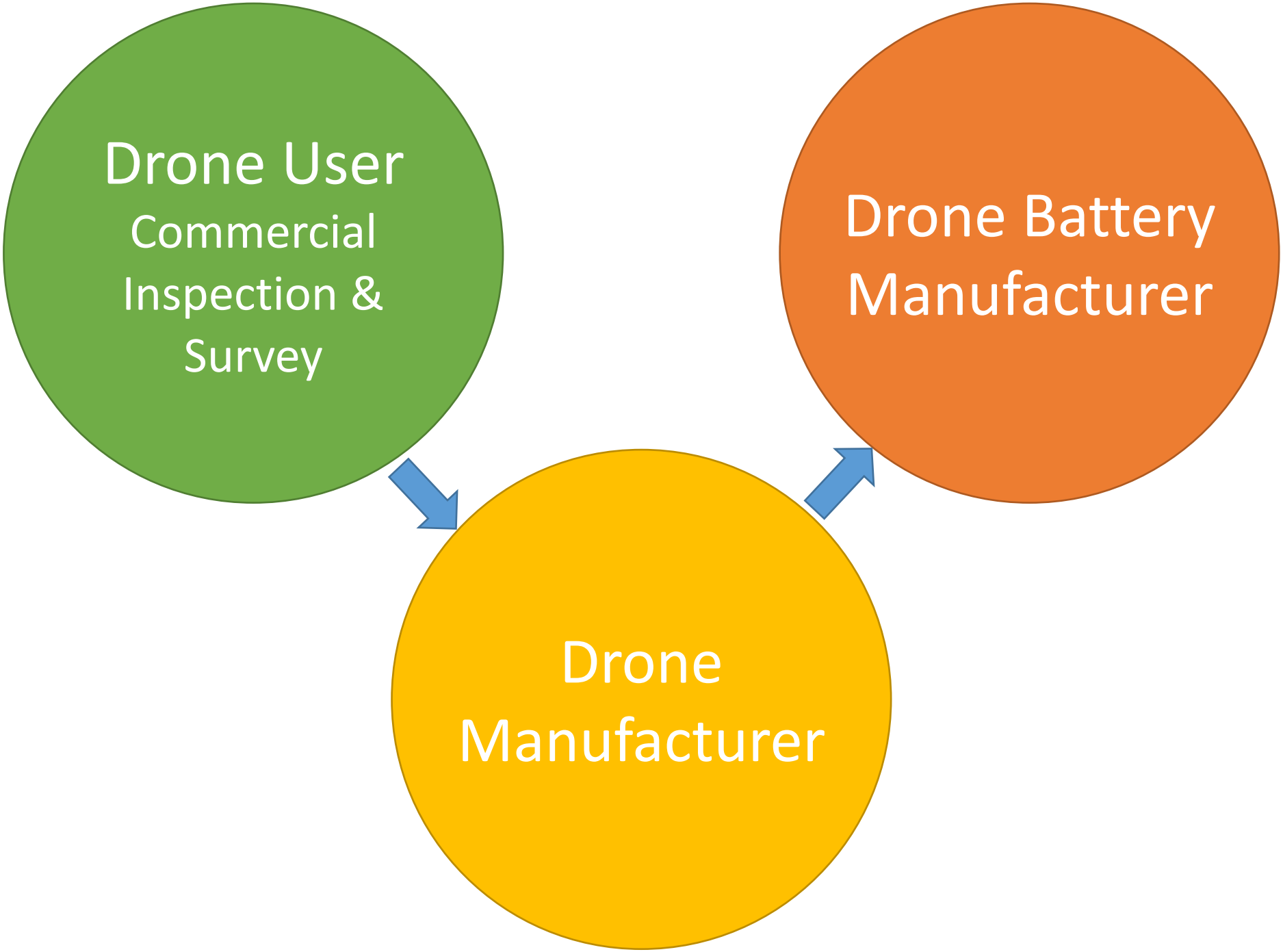
Drone Manufacturer Says

Douglas Spotted Eagle
Director of Commercial Business/Product Development
Yuneec, Inc.

Market? "The drone battery market will be $Billion"

Need? "…2x improvement on energy-to-weight ratio of batteries"

How? "show me the prototype and prove it in micro drones"


Drone User
Commercial
Inspection &
Survey
Drone Battery
Manufacturer
Drone
Manufacturer

Battery Manufacturers Say

- The drone battery market will be $Billion;
- NO licensing experience before, but impressed by our battery performance (Value Proposition);
- Prototype performance testing;
- **Adaptability to current manufacturing line**.

BMC Final Version

LaunchPad Central

Key Partners

- Drone Manufacturers
- TEES/NSF
- ~~Battery Manufacturers~~

Key Activities

- Build demos that can
- Look for key material

Key Resources

- Patents
- Qualified employees
- Capital

Value Proposition

- 2x flying time to reduce
- 50% battery weight

Customer Relationships

- Get: Drone Manufacturer
- Keep: Technological
- Grow: Licensing to

Customer Segments

- Inspection & Survey Drone

Channels

- Drone Manufacturers
- Battery Manufacturers

Cost Structure

- Advertising and Marketing
- Man Power
- Maintenance

Revenue Streams

- Licensing

BMC Final Version

LaunchPad Central

Value Propositions

- 2x flying time to reduce inspection time, facility
- 50% battery weight reduction to put

Customer Relationships

- Get: Drone Manufacturer Reference, Professional
- Keep: Technological Improvement, Process
- Grow: Licensing to other application fields

Customer Segments

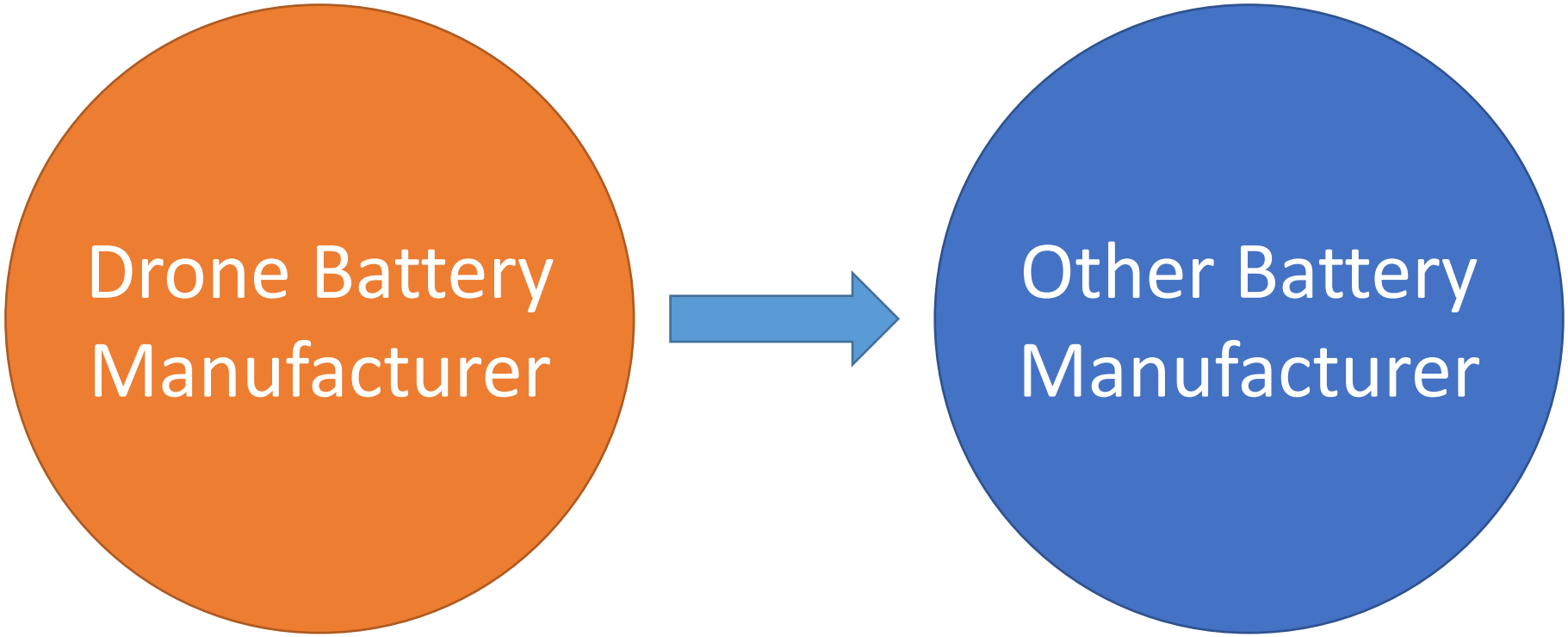
- Inspection & Survey Drone Users

Channels

- Drone Manufacturers
- Battery Manufacturers

?

Resistance in process adaptability

NO GO

Channel?