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# Investor Presentation

Spring 2017

Fizikl is developing an automated inventory counting program, fusing inputs from cameras and sensors on drones, robots and stationary devices with artificial intelligence to continuously cycle count items in inventory.

Proof-of-Concept by June, 2017 • MVP by YE, 2017

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(f i z - i - k u h - l)

Fizikl is a play on the short-hand reference to doing physical inventory.

US industry and trade **spends** over

**$25**

**Billion**

in labor taking physical inventory

- Involves stopping primary work and spending weekends, holidays counting
- Boring, laborious, monotonous, error prone, manual work
- Errors disappoint customers when goods are thought to be in stock, or
- Cause waste when undercount results in extra inventory purchases
- Zero top line benefit to business
- Required by Auditors, SEC to reconcile the inventory asset
- Traditional Bricks & Mortar losing share to Amazon.com, need to “digitize” to compete

# Addressable Market

The value of US Manufacturing and Trade inventory

**$1.8 Trillion**

**1 TRILLION** within our scope

**$0.009** cost of taking Inventory per $1 of inventory*

US TAM **$8.5b**

**EURO ZONE**

roughly the same size

**$8.5b**

**CANADA**

APPROX. **10%** of U.S.

**ASIA & LATIN AMERICA**

is cheap

**currently not in our scope**

GLOBAL TAM

**18** APPROXIMATELY **BILLION**



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# Emerging Technology

Opportunity arises from convergence of developing technology

## Autonomous Platforms

Unmanned Aerial Vehicle

Automated Guided Vehicles

Interior Positioning Systems

## Identification

RFID and Barcode

Cameras and Scanners

Big data & artificial intelligence

3D object modeling



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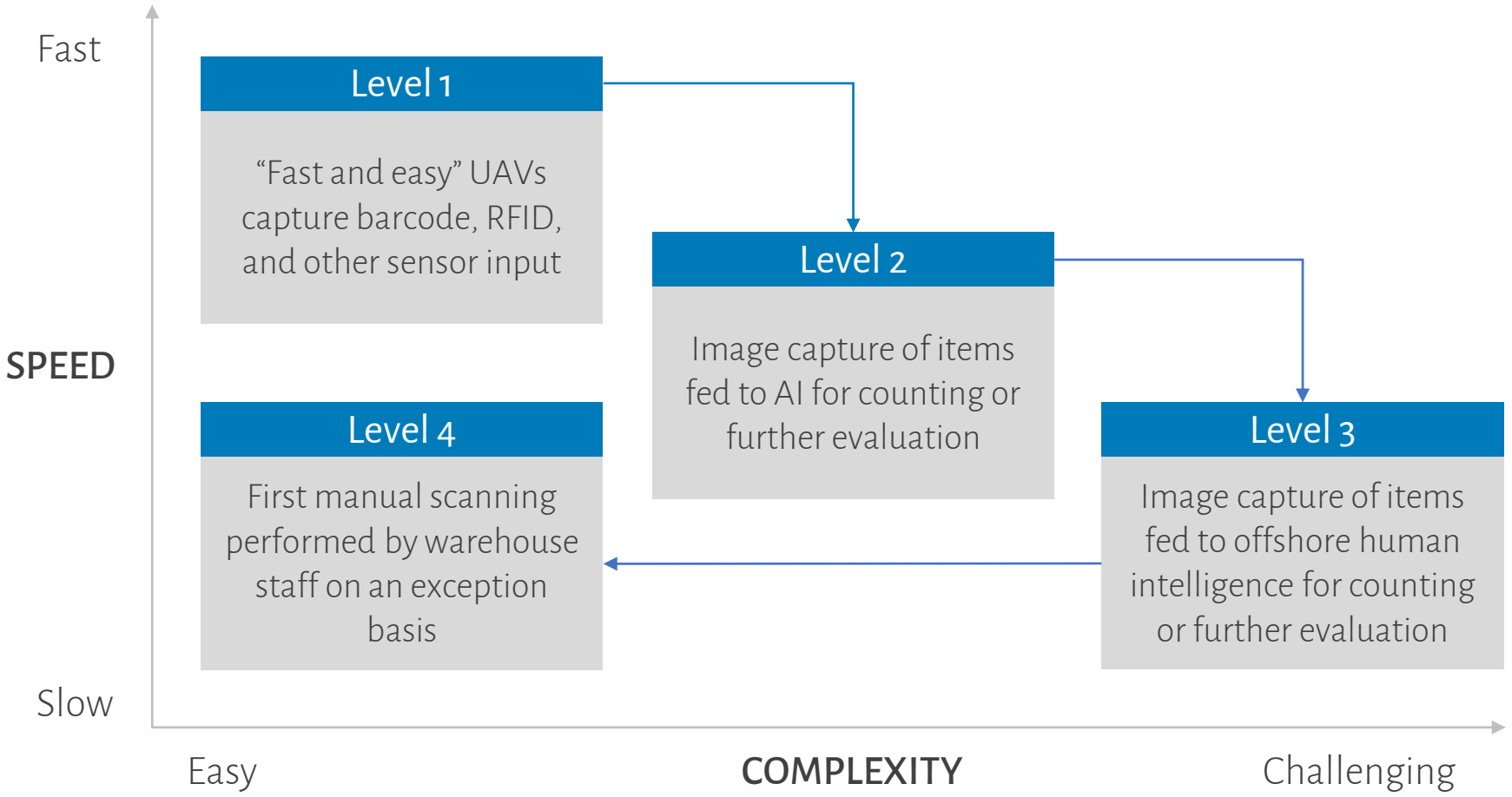
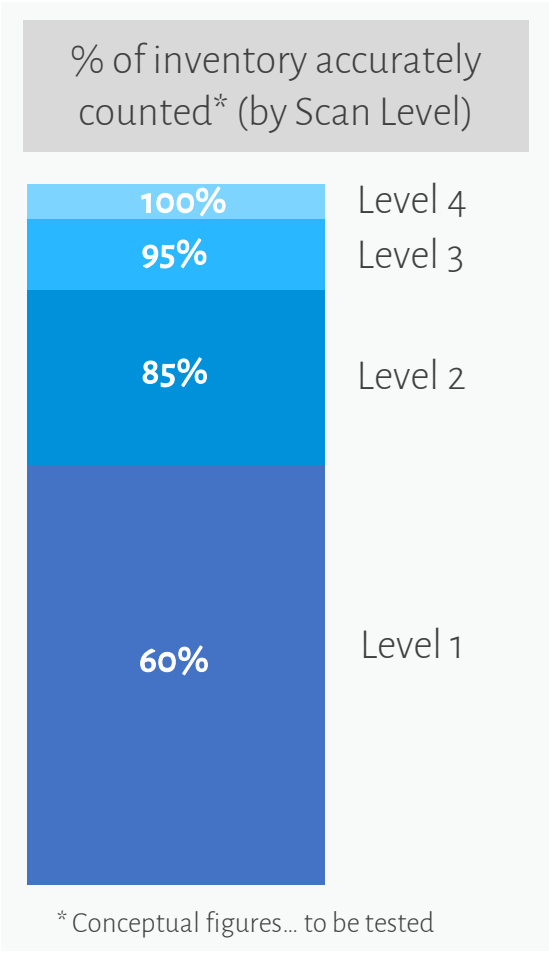
# Conceptual Product Overview

After hours, Fizikl's system counts warehouse items, then provides count to customer's management for reconciliation the following day.



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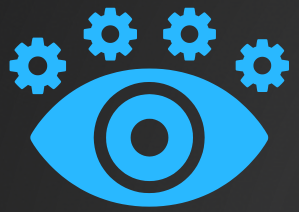
# Convergence Technology

Fizikl's "secret sauce" is how it couples existing technologies to automate the inventory counting process in a proprietary way.



## Machine Vision

Using RGB cameras, barcodes on item labels are captured from video streamed from UAVs to base station where they are compared to reference database

Neural Net technology (AI) used to recognize items in video stream and infer box topology and box count

Using depth cameras, we create 3D object models for manual counting by offshore human intelligence where needed

## Autonomous Vehicles

UAVs– Flying platform for cameras

Robots (AGVs) – in some warehouses AGVs move cameras mounted on booms to image all sides of pallets to stream video

Indoor navigation – system capable of navigating using ultrasonic beacons as well as Visual Light Communication and other indoor navigation systems

## AI and Software

Standard input and output with csv files: ERP and WMS agnostic

Pallet, case and SKU description weight and dimension database

Sensor fusion – from camera input and, as needed, weight from bin sensors

AI compares target image to database of standard images to recognize items, brain develops confidence factor as it learns over time



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# Project Deliverables

Project team is developing Proof-of-Concept by July , Minimum Viable Product (MVP) by YE 2017

## Delivered by end of July 2017

1. Demo of drone automatically navigating a warehouse, ID items using barcode AutoID
2. Demo of 3D image of item being captured, ID with confidence percentage
3. Software architecture complete, backend framework functional, partial UI developed

## Delivered by end the end of year

4. Demo of UAVs and AGVs, each using the technologies (scanning, modeling, learning) to count items on warehouse shelves.
5. Product cost review – capital and operating expenses
6. First version UI and cloud based software complete
7. Business plan components, including market scope, go to market strategy, staffing, financial forecast, and funding strategy



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# Business Model

Monthly Subscription, Cloud Model

Priced to yield 2 year payback to customer

Onboarding fee covers our hardware cost

Breakeven by customer in first year

Profitable by customer in second year

Note: Onboarding process for first customers require high customer attention as we teach our brain how to ID items, work out unknown issues

## Starter Kit ~$8,700

Intel Aero UAV
Base Station Laptop, preconfigured connectivity
Charging landing pad
Indoor navigation beacons


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# Customer #1

**Sonepar**, the World's largest electrical products distributor (+$20B revenue), has agreed to be our first customer

- ✓ Agreement is contingent upon successful development of equipment and technology
- ✓ Sonepar facility to be utilized for a trial, including test inventory
- ✓ Physical inventory data to be provided to Fizikl for use in test database at University of Washington
- ✓ Sonepar key management participation

Customer Advisory Group (accounting, operations)
Market Research (distribution focus, technology)
Project coordination (facilities, inventory, access)

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October 31, 2016

Dave Gabriel
North America Region President
Sonepar N.A., Inc.
4400 Leeds Avenue, Suite 500
Charleston SC 29405

Re: Proposal

Dear Mr. Gabriel

In discussions with Mark Pedro I understand you are interested in the idea that Fizikl can develop methods of taking physical inventory automatically, using software, drones and robots. The goal is to offer customers such as Sonepar the means of increasing the accuracy of inventory count while saving the labor cost and disruption of taking physical inventory.

We have secured initial seed investment in this concept, as well as an indication of support in the form of cash and in-kind contribution from a strategic investor. We are seeking your commitment to be a trial customer, once we have developed our product. The purpose of this proposal is to set out the terms of such a trial.

Fizikl is currently developing the specification of a minimum viable product ("MVP") and negotiating the terms under which we will build a laboratory and work with the engineering departments at the University of Washington. Once functionality has been proven at UW, in roughly 12 to 18 months' time, we want to deploy the system in a functioning warehouse to test performance. We ask that Sonepar allow Fizikl to work in a warehouse of its choosing for that purpose. Our work will be performed during non-operating hours and we intend to not disrupt normal business operations in any way.

Fizikl MVP

We envision our Fizikl product to be deployed and function in the following manner; note steps 1 to 5 are preparatory, taking place in the weeks prior to deployment:

1. Prepare warehouse environment including installing Visual Light Communication (VLC) and mapping the space.
2. Install Unmanned Aerial Vehicle (UAV) & Automated Guided Vehicle (AGV) bases with charging capability
3. Enable VLC downlink for indoor positioning
4. Install and enable wireless radio link for two-way communication
5. Obtain SKU data from ERP for reference
   - Includes expected location addresses and quantity
   - Received as CSV file

FIZIKL CONFIDENTIAL, pg. 1

r support in helping us develop our product, we offer to sell you 3
be deployed at the North American location of your choice. We will
upport as we would any customer purchasing at full price.

d and agreed to this 4 day of NOV, 2016, by

e)

G. GABRIEL, its

S. /CEO NA

North America

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# Go to Market Strategy

Securing a beachhead in electrical distribution vertical ($60M addressable market), then rapidly expand to include electrical parts manufacturers.

## Electrical Parts Distributors

| | Distributor | Annual Revenue | Avg. Inv. Value | Physical Cost |
|---|---|---|---|---|
| 1 | Sonepar (North America) | 9,600 | 700 | 6.0 |
| 2 | WESCO International | 7,500 | 832 | 7.1 |
| 3 | Graybar | 6,100 | 445 | 3.8 |
| 4 | Rexel | 5,600 | 621 | 5.3 |
| 5 | CED | 5,500 | 610 | 5.2 |
| 6 | Anixter | 4,800 | 1182 | 10.1 |
| 7 | Border States | 1,500 | 166 | 1.4 |
| 8 | Crescent Electric | 1,100 | 122 | 1.0 |
| 9 | City Electric Supply | 1,000 | 111 | 1.0 |
| 10 | W.W. Grainger | 997 | 1409 | 12.1 |
| 11 | Mayer Electric Supply | 811 | 90 | 0.8 |
| 12 | EIS | 752 | 83 | 0.7 |
| 13 | Elliot Electric Supply | 742 | 82 | 0.7 |
| 14 | McNaughton-McKay Electric | 500 | 55 | 0.5 |
| 15 | The Reynolds Company | 500 | 55 | 0.5 |
| 16 | States Electric Supply | 500 | 55 | 0.5 |
| 17 | North Coast Electric | 475 | 53 | 0.5 |
| 18 | Turtle & Hughes | 450 | 50 | 0.4 |
| 19 | Kendall Electric | 450 | 50 | 0.4 |
| 20 | Summit Electric Supply | 426 | 47 | 0.4 |
| | Total Physical Inventory Cost | | | 58.4 |

## Electrical Parts Manufacturers

Source: Modern Distribution Management "2016 Top Distribution Companies", Public company data, Google Finance, and Fizikl estimates.



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# Go to Market Strategy

Physical inventory costs more than $80 million in the top 20 industrial distributors.
Industry "verticals" will guide selling prioritization.

| | | | | Primary Verticals | | | | | | Opportunistic Verticals | | | Out of Scope | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Distributor | Average Inventory | Annual Physical Cost | Industrial Products | Electrical | HVACR | Satefy | Fasteners | Fluid Power | Indust. PVF | Power Trans | Jan-San | Bldg. Mat'l | Hose & Access | Cases and Welding | Electronics | Plastics |
| 1 | W.W. Grainger | 1,409 | 12 | ● | ● | ● | ● | ● | ● | | ● | ● | | | | | |
| 2 | HD Supply | 852 | 7 | ◐ | | | | | | | | | ◐ | | | | |
| 3 | Airgas | 469 | 4 | ○ | | | ○ | | | | | | | | ○ | | |
| 4 | Motion Industries | 708 | 6 | ● | | | | | ● | | ● | | | | | | |
| 5 | MRC Global Corp. | 693 | 6 | ◐ | | | | | | ◐ | | | | | | | |
| 6 | The Fastenal Company | 978 | 8 | ● | | | ● | ● | ● | | | ● | | | | | |
| 7 | NOW, Inc. | 462 | 4 | ◐ | | | | | | ◐ | | | | | | | |
| 8 | MSC Industrial Direct | 356 | 3 | ● | | | | ● | | | | | | | | | |
| 9 | McMaster-Carr | 431 | 4 | ● | | | | ● | | | | | | | | | |
| 10 | Winsupply | 416 | 4 | ● | | ● | | | | | | | | | | | |
| 11 | Applied Industrial Tech | 344 | 3 | ● | | | | | ● | | ● | | | | | | |
| 12 | Sonepar (North America) | 700 | 6 | ● | ● | | ● | | | | | | | | | | |
| 13 | Edgen Murray | 388 | 3 | ◐ | | | | | | ◐ | | ◐ | | | | | |
| 14 | Interline Brands | 262 | 2 | ● | | ● | | | | | | | | | | | |
| 15 | Wurth-Americas | 262 | 2 | ● | | | | ● | | | | | | | | | |
| 16 | Wolseley Industrial | 216 | 2 | ● | | | | ● | | ● | | | | | | | |
| 17 | DXP Enteprises | 102 | 1 | ● | | | ● | | | | ● | | | | | | |
| 18 | Kaman Distribution | 392 | 3 | ◐ | | | | | ◐ | | ◐ | | | | | | |
| 19 | F.W. Webb | 148 | 1 | ● | | ● | | | | | | | | | | | |
| 20 | ERIKS North America | 122 | 1 | ○ | | | | | | | | | | | | | |



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# Use of Funds: Cash Flow Planning

**Investment**

| | | | | | |
|---|---|---|---|---|---|
| 1st SEED FINANCING | $300 K | | 2nd SEED FINANCING | $500 K | SERIES A ~$2.0 MM |
| Less closed Sept. '16 | $150 K | | (Q3 2017) | | Q4 2017 – Q1 2018 |
| Amounts still needed (April 2017 close) | $150 K | | | | |

| Months 1-6 | Months 7-12 |
|---|---|

**Milestones**

Proof of Concept Demo, June 2017

MVP Demo, Year-End 2017

**Uses of Funds**

| | | | |
|---|---|---|---|
| UW Sponsored Research | $110 | Capital Expenditures | $110 |
| Capital Expenditures | 40 | Fizikl R&D Salaries | 40 |
| Administrative & Travel | 75 | Administrative and Travel | 75 |
| Project Management | 45 | Project Management | 45 |
| **Subtotal** | **270** | **Subtotal** | **270** |
| Contingency | 25 | Contingency | 25 |
| **Total** | **295** | **Total** | **295** |



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# Timing is everything

> *Your project is exciting, right on the edge of what is needed commercially and what the computer world is capable of addressing.*

**Lucas Dixon, Google Jigsaw**
(When referencing Checking CTO candidate)

> *It is amazing how fast you have been able to recruit professors to help you, I think it is because you are giving them a challenge that is just within the reach of their most exciting breakthrough technology.*

**Mohan, Vaghul**
(UW CoMotion EIR and OneRadio, Inc. CEO)

> *When the time is right I'll introduce you to Amazon's VP Logistics. If you can pull this off they will buy you in a heartbeat.*

**Ian MacDuff, VP Business Development**
(Product Creation Studio, Seattle, WA)



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# The next chapter

Fizikl has **committed** to the UW project to POC

Angel **investment** $150K March'17 + $550K July'17

UW project to MVP, **Hire** software engineers, build UI and data management

Sonepar to **support** commercially during commercial scale-up

Venture Capital **funded** Series A ~$2.0mm

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# Team

## Fizikl

### TOM MALONE

CEO & Founder
Entrepreneur-In-Residence at UW

- 4 prior startups
- MBA, Pepperdine University
- www.linkedin.com/in/thomasgmalone

### MARK PEDRO

CFO & Founder
Former CFO Sonepar N.A.

- Product Visionary
- MBA UCLA
- www.linkedin.com/in/markpedro

### KEVIN DIBBLE

Consulting with expectation to join as CTO

- Seasoned software executive, Agile guru
- 5 prior start-ups, track record of building technology companies.
- www.linkedin.com/in/kevin-dibble-0a35032

## UW

### KRISTI MORGANSEN

- PhD, Professor in the Williams E. Boeing Department of Aeronautics & Astronautics,
- UW (CalTech, Harvard, Boston U.
- https://www.aa.washington.edu/people/faculty/morgansen

### SIERRA ADIBI

- Grad candidate
- A&A Engineering
- UW
- https://www.linkedin.com/in/adibisierra

### UNSIK LEE

- PhD PostDoc Fellow
- A&A Engineering
- Leading Robotic, Aerospace, and Information Networks (RAIN) Lab
- UW
- http://rain.aa.washington.edu/Group_Members/Unsik_Lee

### CARLO PASCUCCI

- PhD PostDoc Fellow
- A&A Engineering
- Aeronautical Engineering, Electronic Engineering, Control Systems Engineering
- https://www.researchgate.net/profile/Carlo_Pascucci

# APPENDIX ITEMS

# Seed Financing Terms

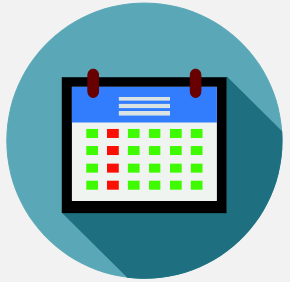
## Type of Security

Convertible Promissory Notes

## Promissory Note Terms

8% Interest

## Maturity



December 31, 2017
"The Maturity Date"

## Conversion Rights

The principal and interest will convert into the Company's next equity financing (the "Next Equity Financing") on the same terms as the Next Equity Financing; provided the Notes shall convert at a price per share equal to 80% of the per share price paid by outside investors in the Next Equity Financing.

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# Product Development Underway at UW

**Objective:** Build a fully autonomous and scalable system composed of quadrotors and ground robots with a base station to plan and to execute safe motion through a warehouse, maintain an inventory of all items in the space, identify unknown items, and update the inventory at a known rate.

## 1 BASE STATION

- Select computing platform
- Develop communication links to "base station" computer and vehicles
- Develop software to link system to real-time control/ID system

## 2 VEHICLE HARDWARE

- Select vehicle platforms and sensors
- Integrate sensors and scanners on all vehicles
- Integrate "auto-pilot" with base station

## 3 VEHICLE MOTION CONTROL

- Develop navigational algorithms and implement
- Develop two-stage waypoint algorithm – move vehicle to points and scan
- Integrate obstacle avoidance

## 4 VEHICLE TRAJECTORY PLANNING

- Construct trajectory plans for known, partially known, and unknown inventory layouts
- Incorporate autonomous recharging
- Develop multi-UAV system

## 5 3D MODELING & OBJECT ID

- Generate 3D models of sample warehouse items
- Develop algorithms to match 3D object models to items in warehouse

## 6 INVENTORY ITEM ID

- Build process for sending ID query to update vehicle trajectory
- Determine serial vs. parallel structuring of operations (motion, trajectory and ID)

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# Development "Towers"

**Objective:** Build a fully autonomous and scalable system composed of quadrotors and ground robots with a base station to plan and to execute safe motion through a warehouse, maintain an inventory of all items in the space, identify unknown items, and update the inventory at a known rate.

| | Autonomous Platform | Identification | Data & Communication |
|---|---|---|---|
| **Critical Technologies and Capabilities** | • Navigation – Interior Positioning Systems<br>• Unmanned Aerial Vehicles<br>• Automated Guided Vehicles<br>• Scanners (RFID, Barcode, 3D)<br>• Base Station Computing<br>• Power Management | • Identification of Unknown Items, Sensor Fusion and 3D Object Modeling<br>• Scanners (RFID, Barcode, 3D)<br>• Predictive Analytics Algorithms<br>• Warehouse Item Identification<br>• Warehouse Item Tracking | • Identification of Unknown Items, Sensor Fusion and 3D Object Modeling<br>• Scanners (RFID, Barcode, 3D)<br>• Predictive Analytics Algorithms<br>• Warehouse Item Identification<br>• Warehouse Item Tracking |
| **Responsibilities** | UW – Morgansen and Burden | UW – Morgansen and Fox | Fizikl and VLC Partner |
| **Key Question for Project Viability** | Is the VLC technology sufficient to allow indoor navigation, manipulation and operation of drones? | Will 3D object modeling provide adequate quality digital images to enable unknown object identification? | Will data flow fast enough to make ID decisions timely? |

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