Yield10 Bioscience, Inc.

(NASDAQCM:YTEN)

BIO Presentation

Yield10 is developing new technologies to achieve step-changes in crop yield to enhance global food security

June 20, 2017

Safe Harbor Statement*

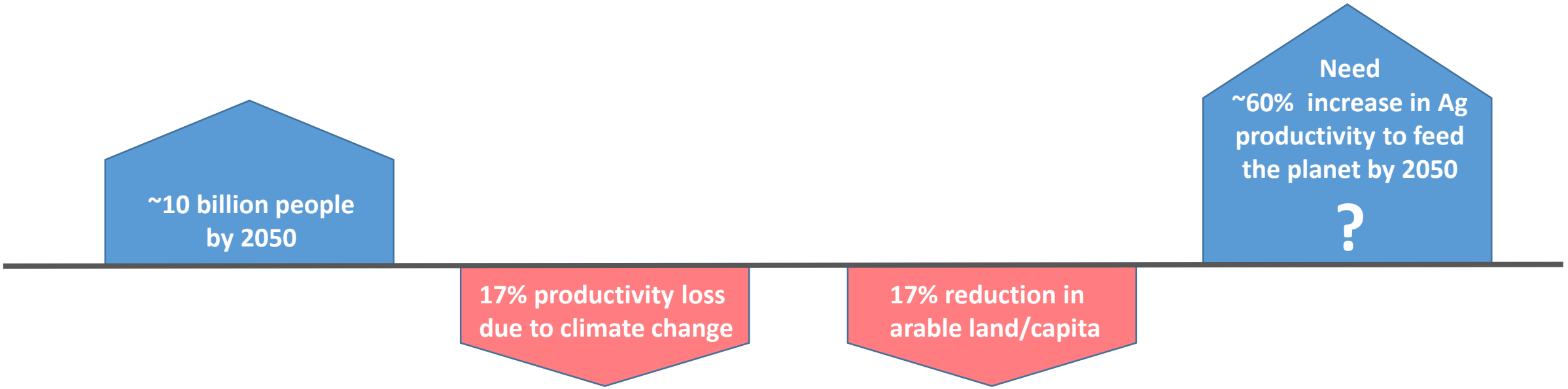
The statements made by Yield10 Bioscience, Inc. (the "Company," "we," "our" or "us") herein regarding the Company and its business may be forward-looking in nature and are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements describe the Company's future plans, projections, strategies and expectations, including statements regarding future results of operations and financial position, business strategy, prospective products and technologies, timing for receiving and reporting results of field tests and likelihood of success, and objectives of the Company for the future, and are based on certain assumptions and involve a number of risks and uncertainties, many of which are beyond the control of the Company, including, but not limited to, the risks detailed in the Company's Annual Report on Form 10-K for the year ended December 31, 2016 and other reports filed by the Company with the Securities and Exchange Commission (the "SEC"). Forward-looking statements include all statements which are not historical facts, and can generally be identified by terms such as anticipates, believes, could, estimates, intends, may, plans, projects, should, will, would, or the negative of those terms and similar expressions.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and may be beyond the Company's control, you should not rely on these statements as predictions of future events. Actual results could differ materially from those projected due to our history of losses, lack of market acceptance of our products and technologies, the complexity of technology development and relevant regulatory processes, market competition, changes in the local and national economies, and various other factors. All forward-looking statements contained herein speak only as of the date hereof, and the Company undertakes no obligation to update any forward-looking statements, whether to reflect new information, events or circumstances after the date hereof or otherwise, except as may be required by law.

***Under the Private Securities Litigation Reform Act of 1995**

The Need for Ag Innovation

Factors affecting agricultural demand by 2050



- Biotic stress
  - Insects, weeds, fungi
- Abiotic stress
  - Drought, flooding, heat, cold, salinity
- Chemical inputs
  - Nitrogen, phosphate

Yield10: Increasing inherent crop yield

Nelson et al., (2014) PNAS; FAO 2016 "Climate change and food security"

Technology Platform Overview

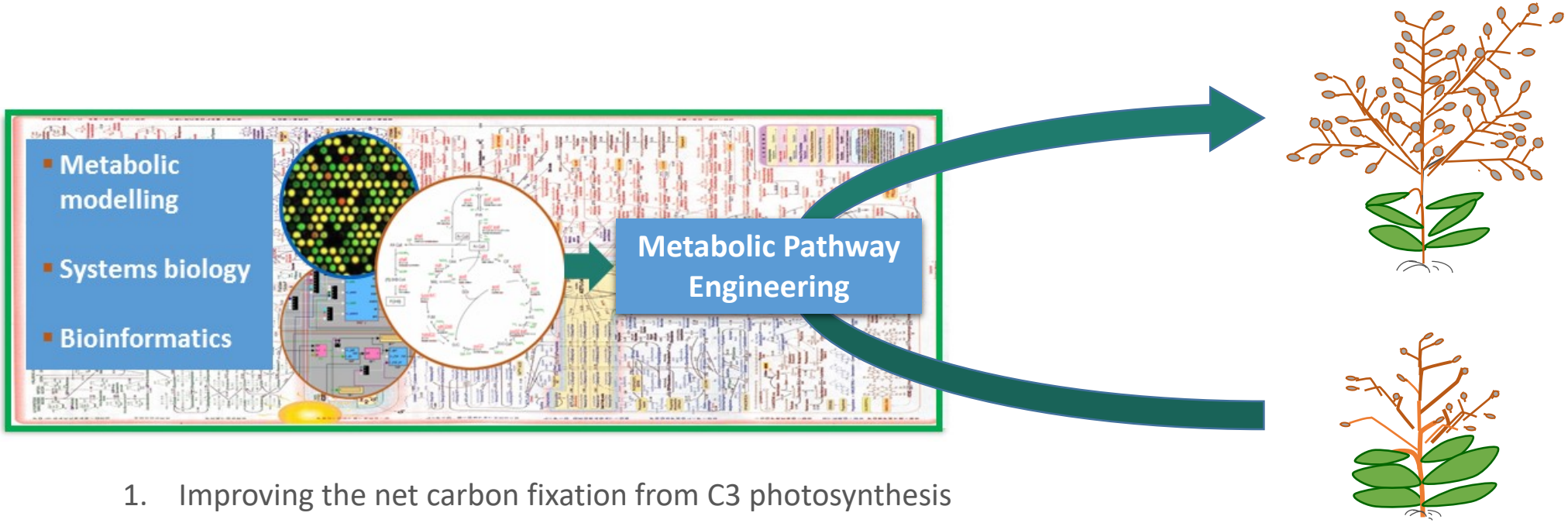
A discovery paradigm based on the intelligent targeted manipulation of gene combinations

- Transgenic screening of thousands of single plant genes has failed
- Yield10 approaches the problem via a technology approach/knowledge base that has been historically productive at a time when a critical new tool, genome editing, is available
- We focus on two proven approaches:
  - The use of microbial genes to bring new functionality to crops
    - First generation Ag biotech (microbial genes) – 1990's, currently ~440 million acres
  - Targeted deactivation of combinations of key plant genes known as transcription factors
    - Teosinte (2-3 inch ear, 12 hard kernels) evolution to corn (12 inch ears, 500 kernels)

Smart Carbon Grid for Crops

The use of microbial genes to bring new functionality to C3 crops

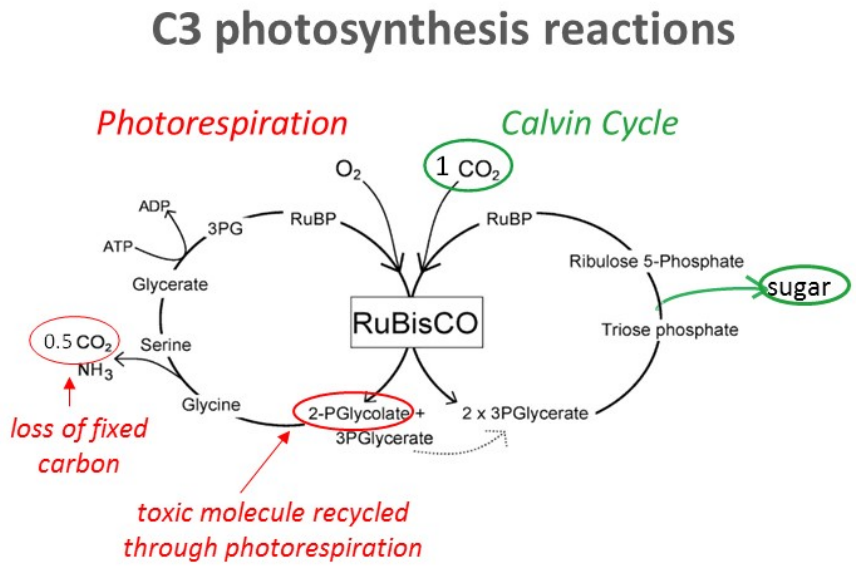
- The majority of food plants consumed by humans, e.g., canola, soybean, rice, wheat, potato, etc have C3 photosynthesis
- Successful Ag biotech traits are based on microbial genes (– 1990's – today, ~440 million acres)



1. Improving the net carbon fixation from C3 photosynthesis
2. Optimizing carbon conversion through central metabolism
3. Optimizing the partitioning of fixed carbon to seed vs biomass

Novel Yield Trait Gene: C3003

C3003 yield trait gene impacts photorespiration, improving efficiency of photosynthesis



- A 5% reduction of photorespiration in soybean and wheat would add ~$500 million/year of economic value in the US

(Walker et al., 2016, Ann. Rev. Plant Biol. 67:17.1 – 17.23)

Spring 2016 field tests of C3003 in Camelina

- Generation one, up to 23% seed yield increase
- Generation two, up to a 24% increase in seed yield (greenhouse)

Spring 2017 field tests of C3003 underway

- Testing 2nd generation C3003 in Camelina
- Testing 1st generation C3003 in canola
- Study results due in Q4 2017

Translating the C3003 trait to other C3 Crops

- Q4, 17-Q1,18, data for Gen. 1 and Gen. 2 C3003 in soybean
- Early 2018, data for C3003 in rice

The Potential for Genome Editing in Agriculture

Potential to develop crop traits using genetic engineering having "unregulated status"

- Genome editing techniques (CRISPR/Cas9) to reduce the activity of or inactivate gene targets in a plants
- Genome edited plants may be unregulated thereby reducing product development timelines and costs[1]

Yield10 identifies gene combinations for editing to achieve increased crop performance

- Yield10 has a number of proprietary genome editing targets:
  - Metabolic gene targets C3004, C3007 and C3008
  - 22 transcription factors we have shown to be down regulated in high yield transgenic plants
- Can we leverage CRISPR to achieve step change outcomes?

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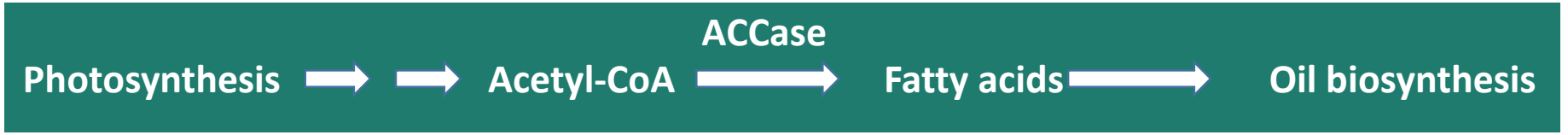
Next Phase of High-Tech Crops, Editing Their Genes
May 7, 2017 By Jacob Bunge

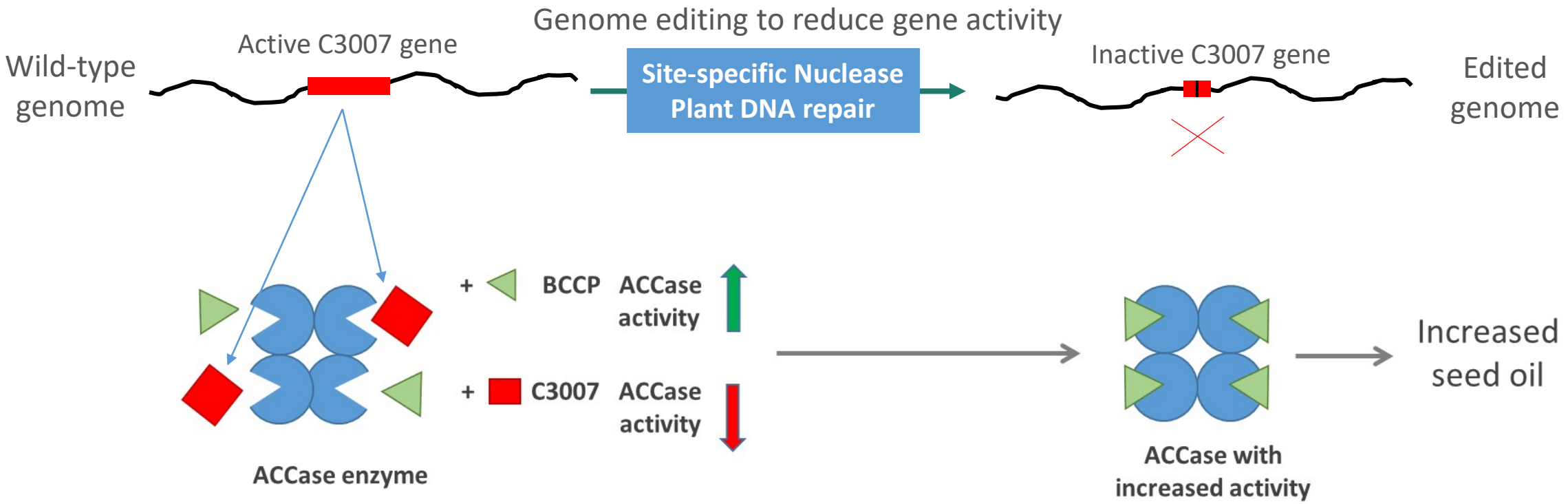
[1] https://www.aphis.usda.gov/aphis/ourfocus/biotechnology/sa_brs_vpm/340-peis

Increasing Oil Content through Genome Editing

Genome Editing: the C3007 Oil Content Trait Example

Key pathway for global edible vegetable oil production





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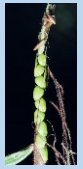
Deactivation of Transcription Factor Genes

Targeted deactivation of combinations of key plant genes known as transcription factors

Teosinte
(2-3 inch ear,
12 hard kernels)

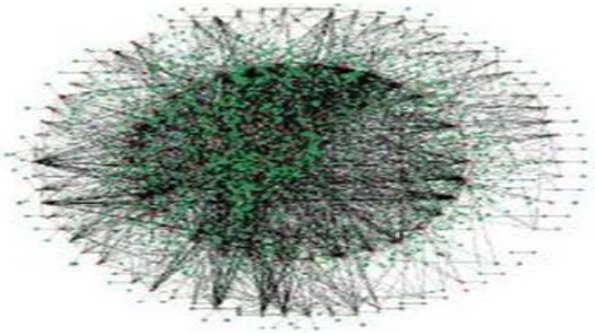


- Evolution of Teosinte to modern corn
  - ~9000 years of evolution followed by breeding
  - ~6 transcription factors (TFs)

Modern corn

(12 inch ears,
500 kernels)

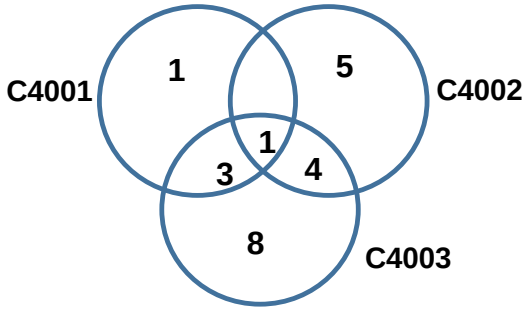
Corn genome network



- ~39000 genes
- ~2400 transcription factors

- CRISPR enables the down regulation of genes
- What combination of transcription factors do we modulate to double modern corn yield ?
- How long will it take?

Yield10 focus is on TFs identified as down regulated in transgenic lines with enhanced photosynthesis



- 22TFs
- 3 overlapping groups

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"Yield10 designs precise alterations to gene activity and the flow of carbon in food and feed crops to produce higher yields with lower inputs of land, water or fertilizer"

- **Our mission is aligned with compelling megatrends**
  - Global prosperity and population growth creates reliable long-term demand for ag-innovation
- **Leveraging a large historical investment in advanced metabolic engineering into a new arena**
  - 10 recent patent applications for increased crop yield
- **Applying a historically productive technology/knowledge base at a time when a critical new tool, genome editing, is available**
- **Significant, near-term milestones in major row crops**
  - Canola (field trials Q4 2017) and soybean (greenhouse data Q1 2018)
- **Numerous opportunities for value capture**
- **An organization structured to achieve upcoming milestones**