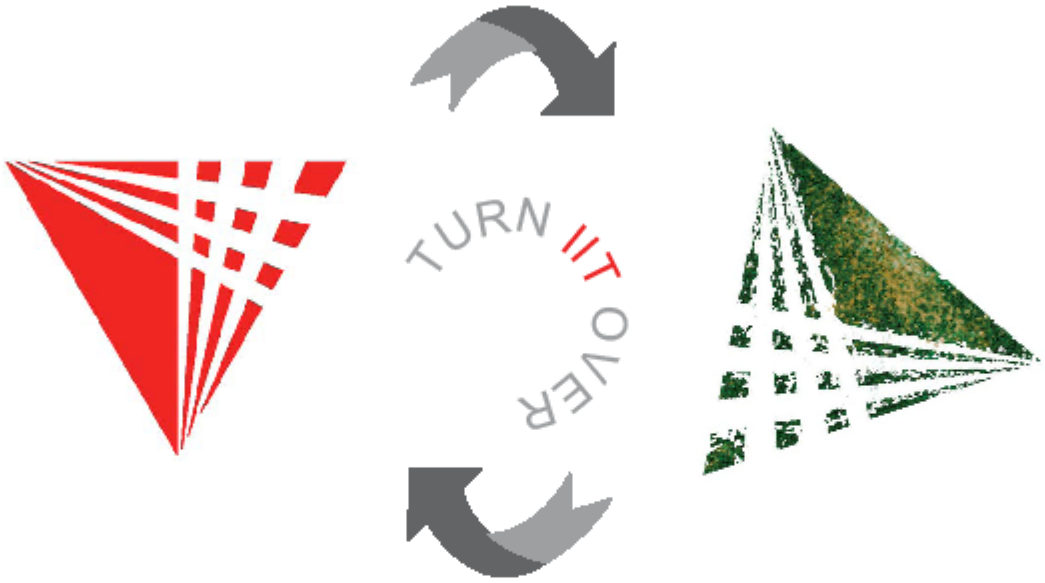

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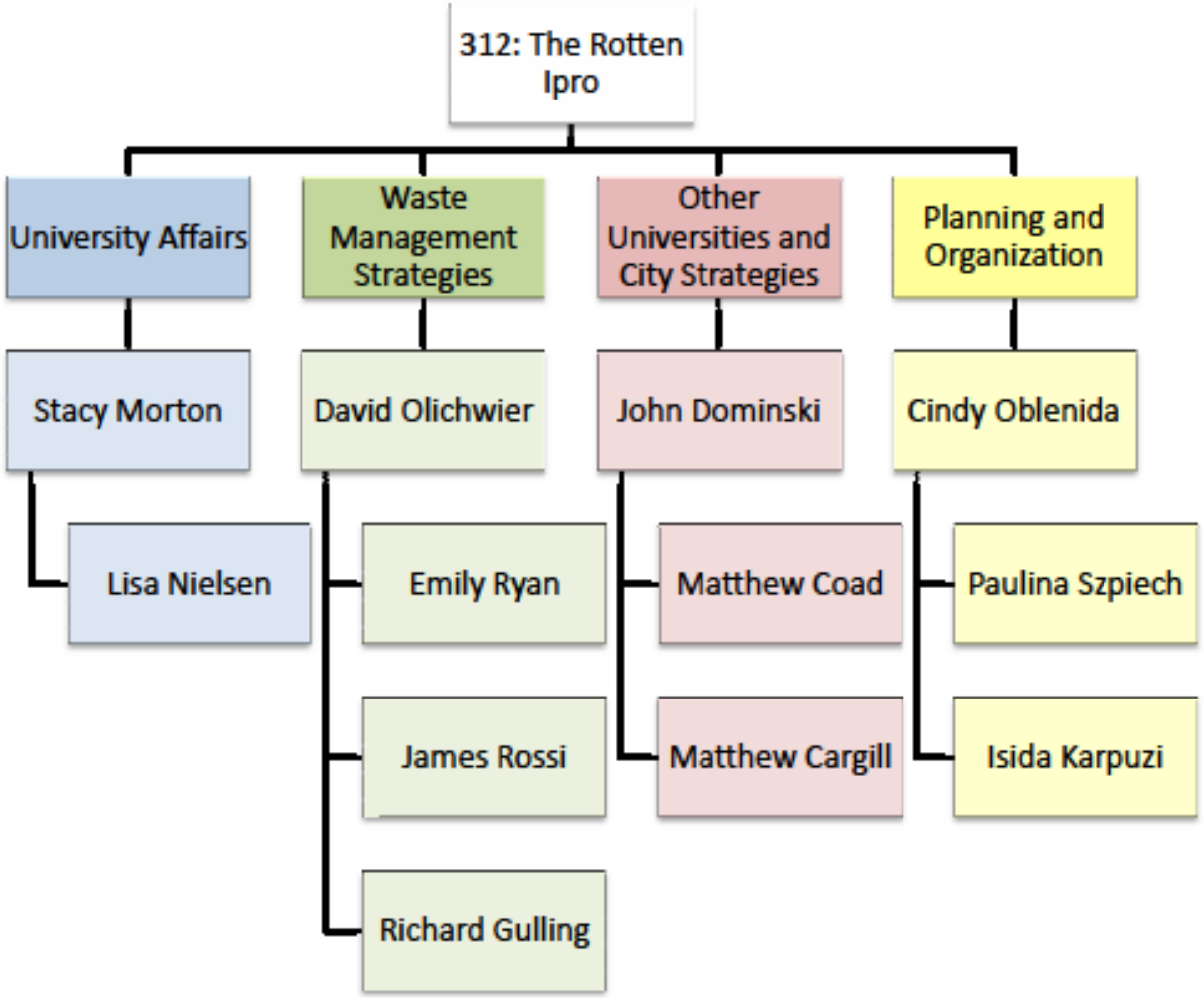
COMMERCIAL SCALE COMPOSTING AT IIT

PROBLEM STATEMENT

As part of IIT's effort to create a sustainability plan, determine the best method on how to recycle organic waste generated by the university

TEAM ORGANIZATION



OBJECTIVES

Based on research, give IIT a tangible solution for organic waste recycling

UNIVERSITY AFFAIRS TEAM	ORGANIC WASTE RESEARCH TEAM	OTHER UNIVERSITIES TEAM	CHARTER TEAM
•To work with Office of Campus Energy and Sustainability, Premiere Recycling, and Sodexo towards implementation • Gather waste data from IIT's Main Campus	•Research composting methods •Scale composting facility to meet IIT waste management needs •Research other waste management methods •Determine allowable composting materials	•Surrounding university efforts for sustainability and composting •Chicago, Cook County and Illinois Composting Regulations	•Document weekly team discussion and progress • Ensure IPRO office deliverables are submitted on time • Prepare booklet for final report presentation to IIT •Branding

TIMELINE PROGRESS: WORK PHASES AND MILESTONES

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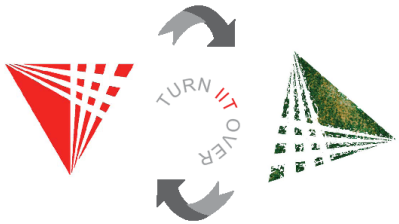
	UNIVERSITY AFFAIRS TEAM	ORGANIC WASTE RESEARCH TEAM	OTHER UNIVERSITIES TEAM	CHARTER TEAM
PHASE 1 (Research)	•IIT waste research •Contact campus officials •Contact Northwestern •Contact Sodexho •Brookfield Zoo fieldtrip	•Composting methods •Examine mechanics of composting	•Compare other universities composting programs • Analyze municipal regulations and permits	•Project Plan •Sales Pitch •Business Card
PHASE 2 (Decision)	•Compile needed research •Waste data at IIT	•Chose the best method	•Provide sufficient data in comparison to IIT	•Brochure •Design and outline of final booklet
PHASE 3 (Proposal)	•Proposing method to IIT officials	•Support chosen method with valid research	•Provide data on the benefits of composting on other campuses	•Proposal pamphlet •IPRO day preparations

RESULTS



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RESULTS: PROGRESS

PHASE1

RESEARCH

-Possible methods of composting

-Organic waste in IIT

-Composting in City of Chicago

-Other University Composting

PHASE2

SOLUTION

-Best composting method fit for IIT

-Pricing

-Location

-Benefits

PHASE 3

MARKETING

-Meeting with campus officials

-Proposing chosen method of composting

-Spreading the word

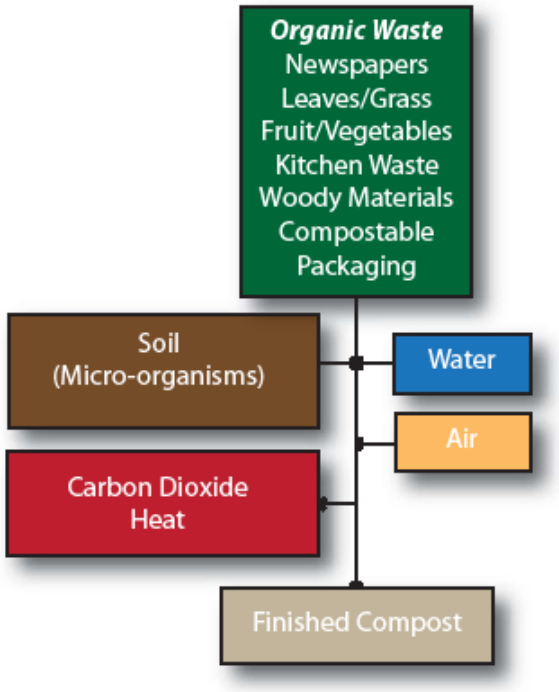
RESULTS: RESEARCH

What is Composting?

Composting is a form of biological decomposition, which occurs naturally when plants fall to the ground, slowly decay, and return nutrients to the soil. Decomposition is performed mostly by bacteria, yeasts and fungi. Composting involves accelerating the breakdown of materials by adding bulking agents (such as wood chips), oxygen, and water.

Composting in Chicago

Due to composting regulations in the Chicago land area we were limited to an in-vessel unit mainly because of its protection against vectors and its ability to prevent and contain odor.



RESULTS: RESEARCH

Brookfield Zoo Fieldtrip

-Collect zoo's own animal and plant waste
-Compost for their own zoo's landscaping and grounds maintenance
-$10,000 in annually savings for disposal costs
-Reduces zoo's landfill waste by significant amount

RESULTS: RESEARCH

ILLINOIS INSTITUTE OF TECHNOLOGY

-Commitment: “IIT will become the most sustainable, urban campus in the nation.”
-Food Waste: 1,360 cubic yards/year
-Landscape Waste: 250 cubic yards/year

	Current Enrollment	Sustainability Overall Grade	Food and Recycling Grade
Illinois Institute of Technology	4500	D	D
St. Olaf College	3046	B	A
Dickinson College	2321	A-	A

Greenreportcard.com 2008

IIT is projected to become one of the nation’s leaders in food and recycling sustainability.

RESULTS: RESEARCH

Research on other Universities Composting Methods

Approximate Waste Composted per University

University/School	Location	Students	Waste Composted Annually (tons)	Cubic Yards	Waste per student (lbs)	Method	Material food/yard	Year of data
University of Minnesota	Twin Cities, MN	50,880	200	300	8	Hauler	f	08
University of Michigan	Ann Arbor, MI	41,050	45	67	2	WMS	f	08
University of California	Berkeley, CA	32,000	200	300	13	Vermi-composting	f	05-06
Cornell University	Ithaca, NY	20,300	300	450	30	Windrows	f	05-06
Ohio University	Athens, OH	16,640	619	928	74	In-Vessel (s)	f	08
Binghamton University	Binghamton, NY	14,000	32	83	5	Pile	fy	08
Tufts University	Medford, MA	12,000	657	2221	110	Haulers/yard on-site	fy	07
University of Vermont	Burlington, VM	10,000	258	387	52	Windrows	f	05-06
Illinois Institute of Technology	Chicago, IL	4,000	60	90	30	In-Vessel Required	fy	Est. 09
St. Olaf	Northfield, MN	3,000	79	118	53	In-Vessel	f	08
Dickinson College	Carlisle, PA	2,350	77	116	66	Pile	f	08
Allegheny College	Meadville, PA	2,100	75	194	71	In-Vessel (s)	fy	08

RESULTS: SOLUTION

Proposed Composting Method for IIT's Campus

The Rocket
Accelerated Composter

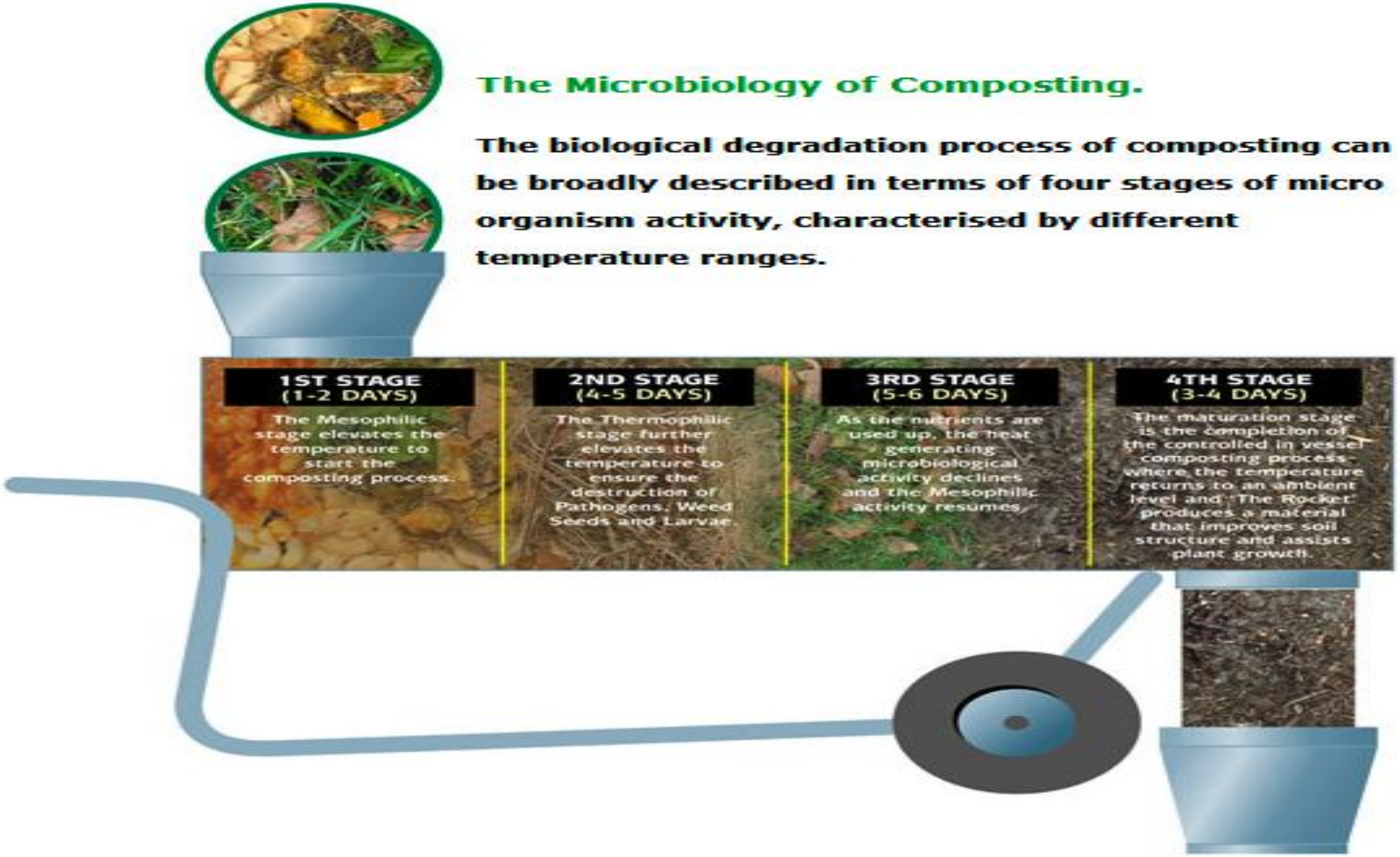
A-900 In-Vessel Composting Unit

Specifications

-Unit Capacity: 3 cubic yards/ week

-Expected Life Span: 20 years

RESULTS: SOLUTION



Courtesy: Accelerated Compost Ltd.

RESULTS: SOLUTION

IN-VESSEL COMPOSTING UNITS

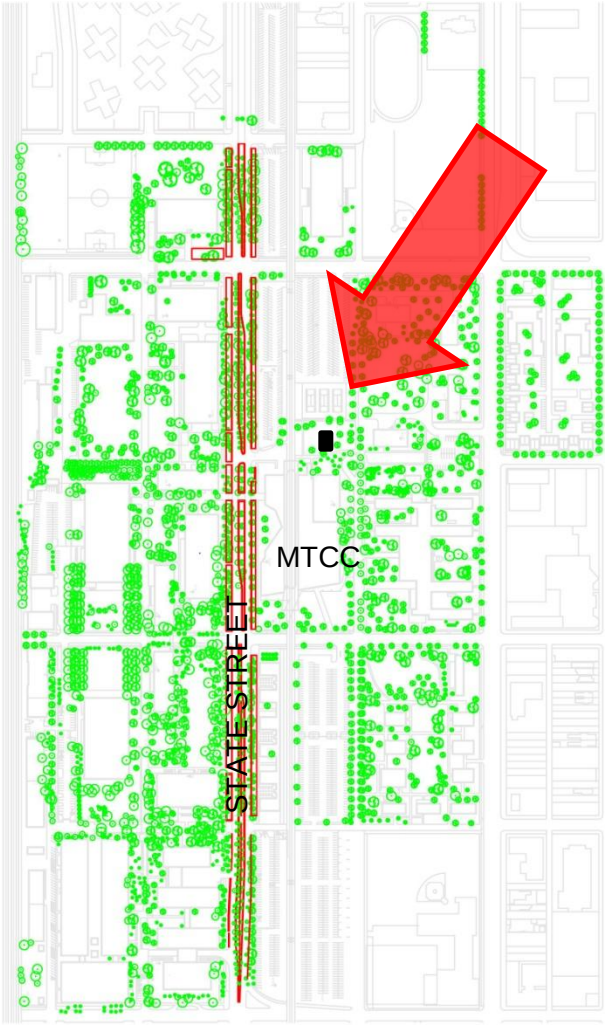
Cost Analysis
Initial Cost: $52,000 for unit, accessories, & warranty
Maintenance per year: $2,000/year
Current Disposal of Food & Landscape Waste: $5,000/year
Compost Expenses: $7,000/year

Savings:
-Reduce disposal costs
-Compost generated on-site, instead of purchasing
-Diversion of waste from landfills

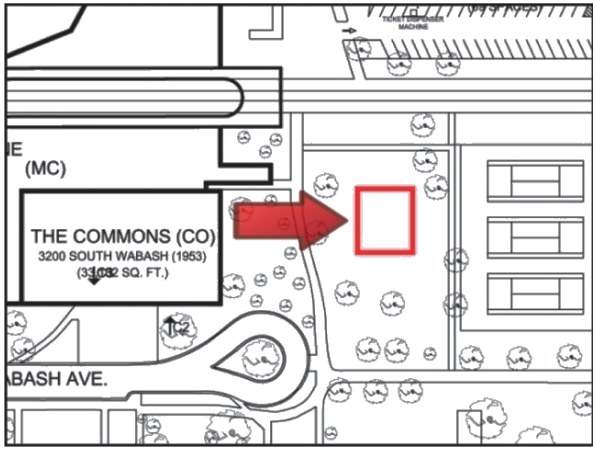
SAVING THE ENVIRONMENT: PRICELESS

A three cubic yard in-vessel unit will pay for itself within 5 years and results in saving $150,000 over its lifespan.

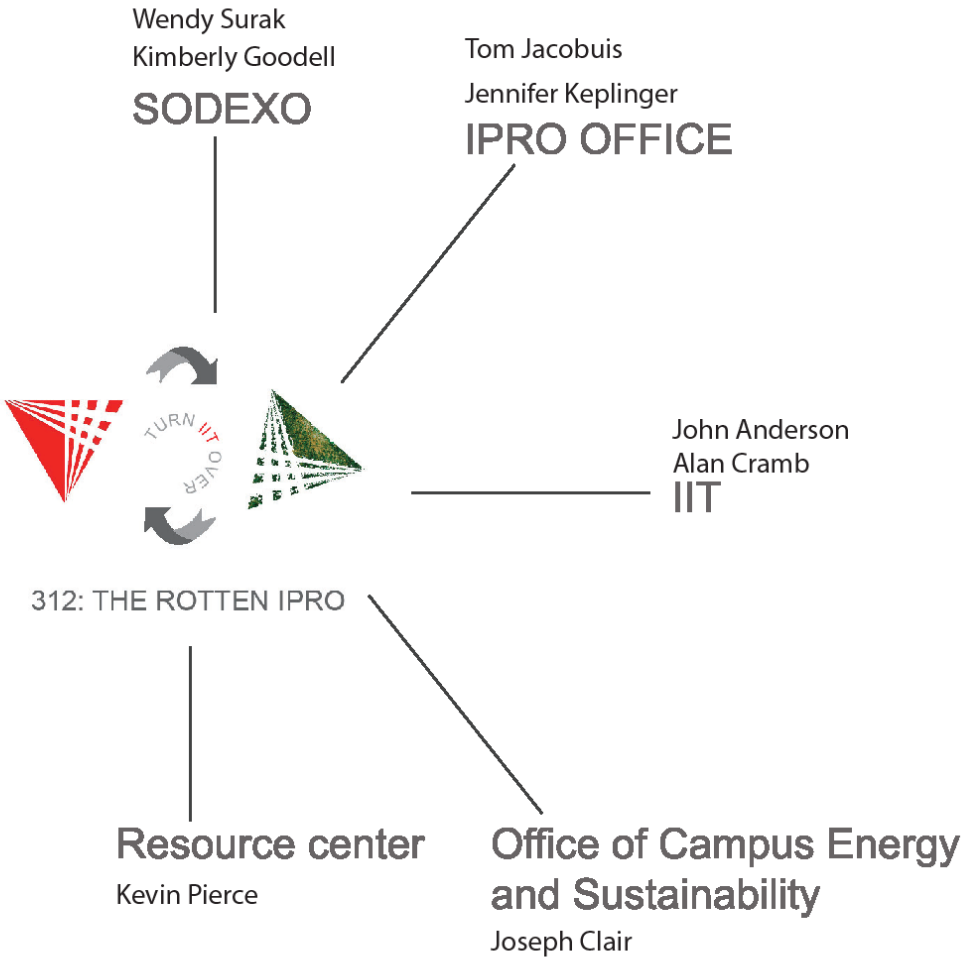
RESULTS: SOLUTION

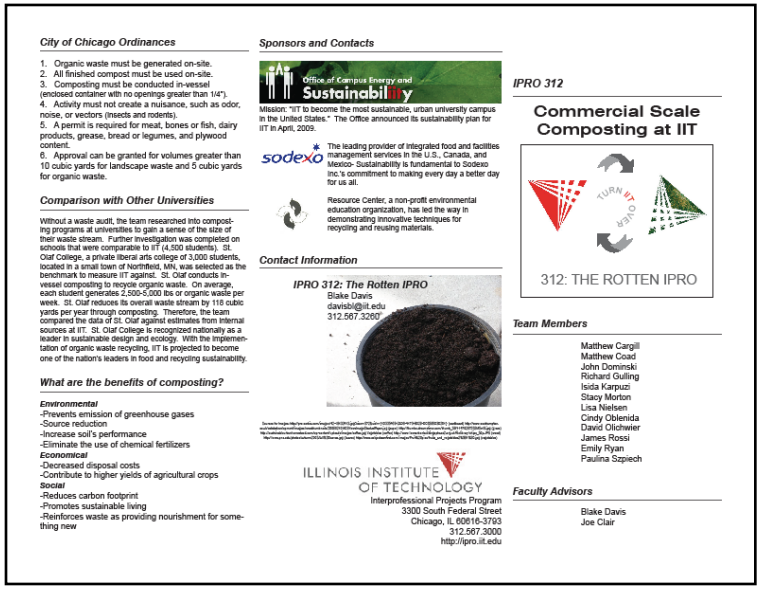


Proposed location for the In-Vessel unit on IIT campus



RESULTS: MARKETING





City of Chicago Ordinances

1. Organic waste must be generated on-site.
2. All finished compost must be used on-site.
3. Composting must be conducted in-vessel (enclosed container with no openings greater than 1/4").
4. Activity must not create a nuisance, such as odor, noise, or vectors (insects and rodents).
5. A permit is required for meat, bones or fish, dairy products, grease, bread or legumes, and plywood content.
6. Approval can be granted for volumes greater than 10 cubic yards for landscape waste and 5 cubic yards for organic waste.

Comparison with Other Universities

Without a waste audit, the team researched into composting programs at universities to gain a sense of the size of their waste stream. Further investigation was completed on schools that were comparable to IIT (4,500 students). St. Olaf College, a private liberal arts college of 3,000 students, located in a small town of Northfield, MN, was selected as the benchmark to measure IIT against. St. Olaf conducts in-vessel composting to recycle organic waste. On average, each student generates 2,500-5,000 lbs or organic waste per week. St. Olaf reduces its overall waste stream by 116 cubic yards per year through composting. Therefore, the team compared the data of St. Olaf against estimates from internal sources at IIT. St. Olaf College is recognized nationally as a leader in sustainable design and ecology. With the implementation of organic waste recycling, IIT is projected to become one of the nation's leaders in food and recycling sustainability.

What are the benefits of composting?

Environmental
-Prevents emission of greenhouse gases
-Source reduction
-Increase soil's performance
-Eliminate the use of chemical fertilizers

Economical
-Decreased disposal costs
-Contribute to higher yields of agricultural crops

Social
-Reduces carbon footprint
-Promotes sustainable living
-Reinforces waste as providing nourishment for something new

Sponsors and Contacts

Office of Campus Energy and Sustainability

Mission: "IIT to become the most sustainable, urban university campus in the United States." The Office announced its sustainability plan for IIT in April, 2009.

sodexo

The leading provider of integrated food and facilities management services in the U.S., Canada, and Mexico- Sustainability is fundamental to Sodexo Inc.'s commitment to making every day a better day for us all.

Resource Center, a non-profit environmental education organization, has led the way in demonstrating innovative techniques for recycling and reusing materials.

Contact Information

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IPRO 312

Commercial Scale Composting at IIT

312: THE ROTTEN IPRO

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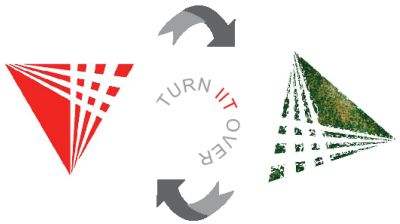
Brochure

Business Card

CONCLUSION



COMPLETED OBJECTIVES

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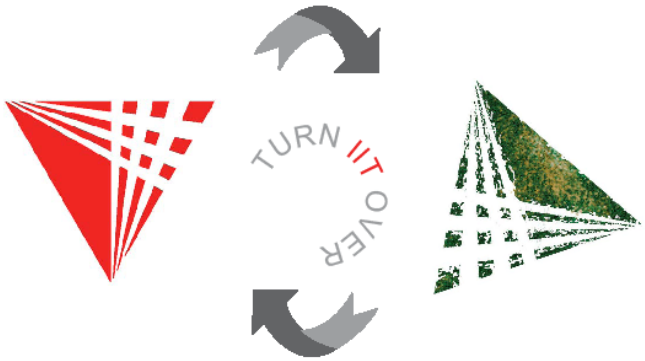
IMPACT



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SUSTAINABILITY

EFFICIENCY

AWARENESS

SPECIAL THANKS TO:

-Prof. Blake Davis- Professor

-Joseph Clair- Director of Campus Energy and Sustainability, IIT

-Wendy Surak - Sodexo

-Kevin Pierce – Resource Center

-Joelle Mogerman - Brookfield Zoo

-John Anderson- President, IIT

-Alan Cramb- Provost, IIT

-Peter Sanburg - St. Olaf University

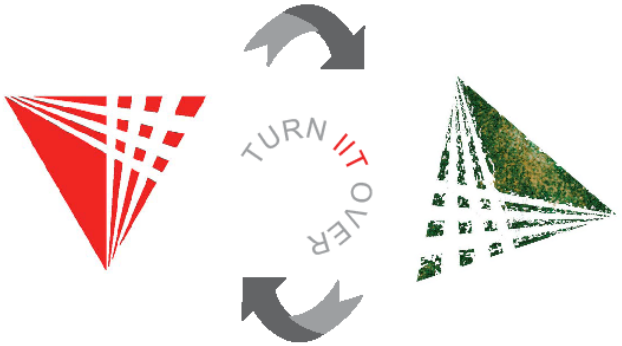
-Kelly Boulton - Allegheny University

-Jennifer Haplin - Dickinson College

-Steven Wright - Wright Environmental

-Gerald Tibbo - Accelerated Compost Ltd.

QUESTIONS?



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THANK YOU FOR YOUR ATTENTION!

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