Application to the Lincoln Institute of Land Policy Curriculum Innovation Awards

A. COVER PAGE

Names: **Scott Spak, Lucie Laurian, Steve Spears**

Institution: **School of Urban and Regional Planning, The University of Iowa**

B. INFORMATION ABOUT THE COURSE

1. Title: Eight Generational Planning - Envisioning Cities for Year 2228 (URP 4752)

2. Topic and subtopics:

- Introduction: Welcome to the Anthropocene
  - The Anthropocene
  - Participatory envisioning and scenario planning
  - Systems thinking and design thinking
  - The Athens Charter and Charter of the New Urbanism
- Cities and Climate Change
  - Evidence, impacts, and projections
  - Adaptation
  - Climate mitigation and adaptation plans
- Principles and practices of sustainability, resiliency, anti-fragility, regeneration
  - Applications to ecological systems
  - Applications to human systems (economics, culture, human capital, equity, governance)
  - Science, ethics, planning, applications, and fiction
- Urban planning and urban functions
  - Governance, municipal operations, resource management, human interactions, equity, justice and inclusivity
  - The power and role of urban design and aesthetics
- Long-term scenarios for sustainable, resilient and regenerative futures
  - Assumptions and goals
  - Alternatives (50, 100, 200 years into the future)
  - Assessment

3. Learning goals:

The overall learning goals for the course are to provide students with:

(1) the knowledge, critical understanding and innovative creativity necessary to examine and solve the planetary challenges of climate change in the Anthropocene, and

(2) the skills necessary to collaborate, develop and refine bold new concepts and ideas, and communicate them effectively to planning practitioners and urban decision-makers.

4. Primary audience

This course is designed for undergraduate students from any year and any major interested in creative thinking about the future of cities, learning to lead participatory visioning activities in planning, and applying urbanism as a positive force for humanity and the planet. Enrollment to date has come from a wide variety of majors across six of the University's Colleges, including civil engineering, chemical engineering, creative writing, enterprise leadership, finance, international studies, journalism, environmental sciences, political science, public health, social work, and theatre. This course fulfills the project-based course requirement of the undergraduate Sustainability Certificate, the University of Iowa's most popular certificate program, which has attracted half the enrollment to date.

5. Prerequisite knowledge

None. Students from all years and majors are welcome and can excel in this course. The faculty designed the course to meet the preparation and learning needs of all interested students without prerequisites. The intent of the course is to engage students from all walks of life using many ways of learning and knowing to examine the context and impacts of the Anthropocene and climate change, and to develop their creative capacity to generate 'good futures' for cities. Instead of universal prerequisites, students are expected to bring the skills and lenses of their degree programs to contribute to an interdisciplinary and transdisciplinary course and to the final collaborative innovation tournament.

6. Learning objectives, materials, instructional methods, assessments

Learning objectives

The learning objectives in support of Goal (1) "*to provide students with the knowledge, understanding and innovative creativity necessary to solve the planetary challenges of the Anthropocene,"* are that students will:

- understand and express their placement in time and space (across multiple scales) in the context of the Anthropocene;
- articulate and apply contemporary climate projections and best practices in urban climate change mitigation and adaptation;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological and human systems (economics, culture, human capital, equity and governance);
- explore and expand the elements that make up "Smart Cities";
- understand and apply the power and role of aesthetics for regenerative cities;
- expand their horizons into possible sustainable, resilient, and regenerative futures; and
- envision, examine, and assess alternative long-term futures scenarios for regenerative cities.

The learning objectives in support of Goal (2) *"to provide students with the skills necessary to collaborate, develop and refine bold new concepts and ideas, and communicate them effectively to planning practitioners and urban decision-makers,"* are that students will acquire and deepen skills to:

- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development);
- apply systems thinking skills by developing and proposing plans that simultaneously and synergistically address human and ecological objectives;
- apply design thinking in developing and presenting a vision for the future city they create;
- apply contemporary visualization techniques and immersive technologies to communicate their ideas;
- problem solve, think, and design collaboratively;
- write and evaluate strategic plans;
- present solutions in succinct and convincing formats; and
- foster innovation in public, nonprofit or corporate workplaces.

Materials for the course

The materials for the course consist of graphics-rich presentations, readings, including Girardet's 2014 *Creating Regenerative Cities* (Routledge), recent articles, and the Athens and New Urbanism Charters, as well as online simulations, data, and supplemental materials.

Instructional methods

The flipped-classroom course is taught in a TILE (Spaces to Transform, Interact, Learn, Engage) classroom. Each class session is centered around at least two individual and group activities (whiteboard, systems thinking game, computer, scenario simulation), structured discussion and decision-making, and the major semester-long project of imagining and designing a regenerative city for 2228.

Assessments

Ten individual assessments scaffold toward a final product – the plan for the City of 2228.

1. **A good Anthropocene.** Students write their personal, original and actionable definition of a Good Anthropocene. This definition may be formatted in any way, including poetry, goals and objectives, clickbait, laws and regulations, or design philosophy guidelines (e.g., a Charter or Manifesto).

2. **Point of view narrative**. This first-person narrative (written in the voice of someone living 8 generations in the future) describes the narrators' values, their daily lives, hopes, dreams and fears, how they act toward and feel about the environment, and the concepts of regeneration and the Anthropocene.

3. A Prospectus that presents the issue each student is seeking to address for our 2228 Iowa City, explains why this topic will be important in 2228, and the assumptions made about science, technology and social changes.

4. A Design guide with principles, goals and objectives, and proposed strategies (material, aesthetic, functional, and policy).

5. An Adaptation Memo with critical steps to adapting each component of the plan to projected changes in the region's climate and to ensemble climate model simulations, considering changes to seasonal conditions, extreme events, and secondary impacts on human and environmental systems.

6. The Draft Plan combines the results from and feedback on prior works, and explains the format of the final project. It showcases the key idea or concept(s) in images, maps, videos, musical, real or virtual environment, emphasizing innovative and engaging strategies.

7. Draft plan presentations: In 3-minute presentations with visual aids, students present their topic, design guide, adaptation and implementation strategies, and proposed deliverables.

8. Connections: This 2-3 page paper explains how each student's proposal connects with and enhances all others, including synergies, feedback loops, and resolving potential conflicts.

9. The Final Plan integrates each student's work throughout the semester: the rationale, assumptions, principles, goals, and objectives of the proposal; the Design Guide; the plan itself; tractable implementation measures; and an explanation of how the plan connects with other students' and contributes to the overall Regenerative Iowa City of 2228.

10. America's Next Regenerative City: Individual presentations to local expert Judges, followed by questions and answers, judges' deliberation, and responses.

7. How the course fits into a broader program of study

The course introduces students interested in cities, sustainability and creative design to planning thought, profession and practice, to the goals and strategies of regenerative cities, and to the creative and real-life practical potential of constructive long-range visioning. An applied module uses active learning to introduce contemporary climate adaptation planning skills, content, institutions, exemplary plans, and data.

This is designed to be the first open undergraduate curriculum on regenerative cities. It is designed for flexible global application in any field connected to cities, people, and the Anthropocene, e.g. planning, business, leadership, engineering, environmental studies, architecture, sustainability sciences, etc. Its learning objectives and modules are designed to support this flexibility in contributing to many programs of study.

For open courseware, the course is intended to contribute globally to undergraduate planning curricula in qualitative methods (scenario, long-range planning, and participatory planning), environmental ethics, quantitative methods (climate adaptation planning), systems thinking, visualization, and an applied introduction to comprehensive and strategic planning.

In its initial application, this new course is not required in any designated program of study at the University of Iowa. Its current role in a broader program of study is as one of the few "Project/ Integrative Systems" courses in the well-subscribed university-wide undergraduate Sustainability Certificate, and as an engaged service-learning project through the Iowa Initiative for Sustainable Communities. In practice, the course has become an introductory course to the Masters' in Urban and Regional Planning, and several students taking the course have chosen graduate study in planning. For students pursuing other careers, this course is intended to broaden their views, acclimate them to the challenges of the Anthropocene, to the possibility and value of long-range thinking and planning, to the role of their chosen specializations in this process, and to the creative potential that can be unleashed when imagination is deployed in the service of regenerative cities.

9. Innovative approach, how we remove barriers to learning, and how goals and topics are aligned with the Institute's key mission

Major innovations of the course are its goals and content as one of the first undergraduate courses on regenerative cities; its collaborative innovation tournament format; flipped-classroom active learning approach; rigorous and expansive content on participatory envisioning practices; applied service-learning long-term plan as major term project; and applied climate adaptation planning training for the widest undergraduate audience. All majors are invited and all disciplinary skills and approaches encouraged.

The course is intended as open courseware for global application, following several rounds of refinement and evaluation. As implemented at the University of Iowa, the course uses a TILE (Spaces to Transform, Interact, Learn, Engage) flipped-classroom active learning format, in classrooms with glass whiteboards on all walls, circular tables equipped with their own large screen, microphones and laptops for each student, and a range of audio-visual technologies.

The course innovates by applying a collaborative innovation tournament approach to systematic long-term strategic and comprehensive planning, implemented as an Iowa Initiative for Sustainable Communities applied service-learning project with the City of Iowa City. Judges include the city's Mayor, council members, the Metropolitan Planning Association Director, the chair of the School of Urban & Regional Planning, and local green building and permaculture practitioners.

URP 4752 removes barriers to learning for the widest range of undergraduate learners in its content, format, and setting. The course emphasizes active learning, assumes no prerequisites, and enlists the skills and viewpoints of students from all backgrounds. Quantitative and qualitative methods are equally represented. Readings also remove barriers through their breadth and accessibility, with materials from design and architecture, peer-reviewed scientific articles, fiction, 20th century planning principles, and contemporary climate plans. The flipped-classroom format includes a range of activities that engage many ways of learning and knowing. The TILE classroom supports these features.

This course connects directly to three Lincoln Institute of Land Policy goals for human-environment interactions:

- Low-carbon, Climate-Resilient Communities and Regions
- Sustainably Managed Land and Water Resources
- Reduced Poverty and Spatial Inequality

URP 4752 introduces contemporary content best practices, skills, datasets, and recent municipal plans for building Low-carbon, Climate-Resilient Communities and Regions. It provides a climate adaptation primer in a service-learning project for a wide undergraduate audience. The course emphasizes long-range consideration of Sustainably Managed Land and Water Resources, from multi-generational to epochal time scales. It considers Reduced Poverty

and Spatial Inequality from the perspective of regenerative cities that regenerate, restore, repair, and enhance people and the environment.

10. Academic years in which it was offered

2018-2019 (Spring 2019), 2019-2020 (Spring 2020)

C. COURSE DELIVERABLES

1. SYLLABUS AND SCHEDULE

School of Urban & Regional Planning
Eight Generational Planning - Envisioning Cities for Year 2228 (URP 4752)

Springs 2019- 2020

Monday/Wednesday 3:30 – 4:45

Instructors:

Scott Spak	**Lucie Laurian**	**Steven Spears**
(Co-creator, instructor in 2019, 2020)	(Co-creator, instructor in 2019)	(Instructor in 2020)

In this course, students will envision and design regenerative cities in the age of Anthropocene. Students will learn about the Anthropocene as a foundational framework for human-planetary interactions in cities. They will also explore contemporary philosophies and urban strategies for sustainability, resilience, anti-fragility, post-scarcity abundance, human well-being, social inclusiveness and just governance in an era of rapid changes in society, technology, climate, and environment. Students will learn to think critically about smart city systems (including buildings, energy, water, landscape, local foods, transportation, public/private) from the perspectives of human interactions and behaviors, ethics, equity, governance, economic systems, informatics and innovation.

Students will conduct authentic inquiry into one critical issue in urban-human-environment systems, and collaborate to develop creative and practical policy, design, and management alternatives to address that issue in a long-term Strategic Vision Plan for an Iowa community, evaluating and synthesizing their ideas through a series of collaborative Innovation Tournaments. In this process, students will develop cutting-edge skills in urban design and visualization to analyze and communicate their proposed solutions.

Course Objectives & Learning Outcomes

With regards to course content, students will be able to:

- understand and express our placement in space and time (across scales) in the context of the Anthropocene;
- articulate and apply contemporary climate projections and best practices in urban climate change mitigation and adaptation;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- explore and expand the elements that make up “Smart Cities”;
- understand and apply the power and role of aesthetics for regenerative cities;
- expand their horizons into possible sustainable, resilient, and regenerative futures; and
- envision, examine, and assess alternative long-term futures scenarios for regenerative cities.

Students will acquire and deepen skills, and will be able to:

- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development);
- apply systems thinking skills by developing and proposing plans that simultaneously and synergistically address human and ecological objectives;
- apply design thinking in developing and presenting a vision for the future city they create;
- apply contemporary visualization techniques and immersive technologies to communicate their ideas;
- problem solve, think, and design collaboratively;
- write and evaluate strategic plans and climate plans;
- present solutions in succinct and convincing formats; and
- foster innovation in the workplace, whether in the public, nonprofit or corporate sector.

Texts
Girardet, Herbert. 2014. *Creating Regenerative Cities*. Routledge
All other readings are posted on ICON.

Expectations, Assignments and Grading Criteria
Students are expected to complete all of the required readings, postings, class presentations and major assignments, as well as attend and participate in each class. Absences should be accompanied by a notification from the student, preferably by e-mail, prior to class. All assignments are to be submitted before the beginning of class on the date due. Grades will not be re-evaluated. **Late assignments must be discussed with the instructor before they are due.**

Class Meeting Cancellation Notices
Severe weather, illness, or other circumstances may require cancellation of a class meeting. If this is the case, we will send an email to the class email list.

Required Reading Materials
Beyond materials in the required texts, all readings for the course will be available at the course site on ICON. Dates for completing reading assignments are listed in the syllabus on ICON and are subject to change.

Class Participation
This is not a passive-learning lecture course. Please silence all electronic devices before class. Students are expected to come prepared to participate in activities, including posing questions and providing critical analyses of the week's readings or presentations, or to publicly reflect on their own efforts as they work through assignments. Everyone is expected to monitor their own contributions and allow for space for others to contribute to the class discourse.

Assessment

My definition of a Good Anthropocene	15 %	A-	90 %
Point of View Essay	10 %	B-	80 %
Eighth Generation Plan	75 %	C-	70 %
Prospectus	5 %	D-	60 %
Design Guide	5 %		
Adaptation Memo	10 %		
Draft Plan	10 %		
Connections	5 %		
America's Next Regenerative City	10 %		
Final Plan	25 %		
Reflection on process	5 %		
Total	**100 %**		

Class Schedule

Date	Topic	Readings	Assignments due
	WELCOME TO THE ANTHROPOCENE		
1/22	You Are Here		
1/27	Anthropocene 101	Girardet. 2014. *Creating Regenerative Cities*, Chapter 1 Lewis & Maslin. 2015. Defining the Anthropocene. *Nature* 519: 171–180. Steffen et al. 2015. Planetary boundaries: Guiding human development on a changing planet. *Science* 347(6223).	
1/29	Good Anthropocenes in Iowa City	Bennet, Elena et al. 2016. Bright spots: seeds of a good Anthropocene. *Frontiers in Ecology and the Environment* 14(8) Raworth, Kate. 2017. A Doughnut for the Anthropocene: humanity's compass in the 21st century. *The Lancet* (1):48-49	
2/3	Thinking in Systems + Choosing a Challenge	Athens Charter Items 1-8 (City & Region) and 71-95 (Recommendations) Meadows, Donella. 2008. *Thinking in Systems*, Chapter 1. Grant, Benjamin. 2012. Grand Reductions: 10 Diagrams That Changed City Planning. *The Urbanist*, 518 https://www.spur.org/publications/urbanist-article/2012-11-09/grand-reductions-10-diagrams-changed-city-planning	

	CITIES AND CLIMATE CHANGE		
2/5	Scenarios & Storytelling	Yahara Scenarios*. Water sustainability and climate change in the Yahara watershed. University of Wisconsin-Madison. https://wsc.limnology.wisc.edu/research/scenarios* *Throgmorton, James. 2007. Inventing the Greatest: Crafting Louisville's Future Out of story and Clay.* Planning Theory *6(3): 237-262*	*Good Anthropocene*
2/10	Why do cities have good futures? Why do good futures have cities?	Girardet. 2014. *Creating Regenerative Cities*, Chapters 2 and 3	
2/12	Cities + Climate 101	*US Global Change Research Program (USGCRP). 2018.* 4th National Climate Assessment. *Chapter 11: Built Environment, Urban Systems, and Cities* Iowa City Climate Action and Adaptation Plan *https://www8.iowa-city.org/weblink/0/edoc/1803121/Climate%20Action%20Plan.pdf*	*Prospectus*
2/17	Solarpunk & Regeneration	Sayler, Zoe. 2019. How sci-fi could help solve climate change. *Grist*, Feb 18 2019. + 1-2 solarpunk stories of your choice from ICON	
2/19	Climate projections I	*IPCC 2014.* Climate Change 2014, Impacts, Adaptation, and Vulnerability. Summary for policymakers. *Working group II.*	
2/24	Equity	Leopold, Aldo. 1949. The Land Ethic. *A Sand County Almanac.* Oxford University Press. Fainstein, Susan. 2014. The just city. *International Journal of Urban Sciences* 18(1): 1-18.	Point of View essay
2/26	Climate projections II	USGCRP. 2018. *4th National Climate Assessment.* Chapter 1 (Overview), Chapter 21 (Midwest), Appendix 3 (Scenario Products)	

PRINCIPLES AND PRACTICES OF SUSTAINABILITY, RESILIENCE, ANTI-FRAGILITY, AND REGENERATION			
3/2	Urban Form & Design	Athens Charter Items 9-29 (Habitation) Charter for the New Urbanism https://www.cnu.org/who-we-are/charter-new-urbanism	
3/4	Climate adaptation I	USGCRP. 2018. 4th National Climate Assessment. Chapter 28 (Reducing risks through adaptation) <u>Supplemental:</u> Mann, Charles 2018. The worst effects of climate change may not be felt for centuries. So how should we think about it now? *Science*. April 11 2018	Design Guide
3/9	Natural, Human, Built & AI Capital	Athens Charter Items 30-40 (Leisure) Tegmark, Max. 2018. *How to get empowered, not overpowered, by AI*. Video: https://www.ted.com/talks/max_tegmark_how_to_get_empowered_not_overpowered_by_ai	
3/11	Climate adaptation II	Rosen, Kenneth. 2017. A Staten Island Urban Farmer. *The New York Times* March 10, 2017 Vinny Ricciardi. 2018. Small Farms grow a large portion of the world's food. *Medium* Nov 16, 2018 *Chicago Climate Action Plan* https://www.chicago.gov/content/dam/city/progs/env/CCAP/CCAP.pdf	
3/16 - 3/18	No Class – Spring Break		
3/23	Pattern Languages	Johnson Gracen. 2016. Patterns of Home, Importance of Homeyness, *Strong Towns* Aug 22, 2016 Watch at least 4 videos at *Better Block.org* "Summary of the pattern language" excerpt from Alexander, 1977. *A Pattern Language: Towns, Buildings, Construction*. Oxford University Press. At patternlanguage.com	

3/25	Climate adaptation III	Read and prepare to analyze 2 plans: PlanLA. LA's Green New Deal, Sustainable City pLAn, 2019. http://plan.lamayor.org/sites/default/files/pLAn_2019_final.pdf London Climate Adaptation Strategy https://www.london.gov.uk/sites/default/files/gla_migrate_files_destination/Adaptation-oct11.pdf	
		URBAN PLANNING AND URBAN FUNCTIONS	
3/30	Function	*Athens Charter* Items 41-49 (Work) and 50-64 (Traffic) Thorpe David, nd. 21 Features of the Future Sustainable City. *Smart Cities Dive*. Supplemental: Eschrich and Miller (eds). 2018. The Weight of Light: A Collection of Solar Futures. Arizona State University. (See stories in "Small Urban" section)	Adaptation Memo
4/1	Aesthetics	Athens Charter Items 65-70 (Heritage) Green Architecture. See projects at highlighted at DeZeen, https://www.dezeen.com/features/green/	
4/6	Draft Plan Presentations	Students present draft plan in class	Draft plan
4/8	Governance	Readings TBA based on students' consensus about social and governance principles.	
4/13	Implement	Meadows, Donella. 2008. *Thinking in Systems*, Chapter 2.	
4/15	Connect	All class integration and mapping exercise to connect all students' plans into a coherent whole.	

LONG-TERM SCENARIOS FOR SUSTAINABLE, RESILIENT AND REGENERATIVE FUTURES			
4/20	Wonder	Student-supplied texts, images, videos	Connections
4/22	Mitigate	Poon, Linda. 2018. How one city kickstarted the Ozone's recovery. *City Lab* Nov 9, 2018	
4/27	Adapt	Kevkin, Andrew 2019. Once derided, ways of adapting to climate change are gaining steam. *National Geographic* January 2019. Fox, Tim et al. 2017. Engineering the Anthropocene: Scalable social networks and resilience building in human evolutionary timescales. *The Anthropocene Review* 4(3):199-215	
4/29	Rewild	McLaren, Duncan. 2018. In a broken world: Towards an ethics of repair in the Anthropocene. *The Anthropocene Review* 5(2): 136-154 Monbiot, George. *For more wonder, rewild the world.* Video: https://www.youtube.com/watch?v=8rZzHkpyPkc	
5/4	America's Next Regenerative City	Students' Presentations to panel of judges	Final plan presentation
5/6	Reflection	In class discussion	Reflections on process Final plan due

Policies and Resources

The administrative home of this course is the Graduate College, which governs academic matters relating to the course such as the add/drop deadlines, issues concerning academic misconduct, and how credits are applied for various graduation requirements. Different colleges might have different policies. As a registered student in this course, you are responsible for the collegiate policies posted below.
Students of this program are subject to the policies, procedures, and requirements of The University of Iowa as well. For additional details, students should consult: the Manual of Rules and Regulations of the Graduate College (http://www.grad.uiowa.edu/graduate- college-manual), applicable sections of The University of Iowa Catalog (http://www.registrar.uiowa.edu/registrar/catalog/) and Policies and Regulations Affecting Students (http://dos.uiowa.edu/policy-list/current/).

Collegiate Policies and Guidelines

Privacy — As part of this course, your name will be revealed to other students in the class. If you have concerns, please contact the instructors immediately.

Fairness and Freedom of Expression — Every student is entitled to the same intellectual freedom we have. We will respect that freedom, and are obliged to protect your freedom to learn, regardless of your religion, race, sex, sexual orientation, gender identity, or political views, or on your agreement or disagreement with my positions pertaining to matters of controversy within the discipline. We will do our best to provide you with a fair and impartial evaluation of your work, consistent with articulated standards for this course.

Academic Honesty — We expect all students to do their own work, following the CLAS Code of Academic Honesty and their College's standards for conduct. Integrity is a reflection of your character and is critical for creating meaningful and lasting relationships. One part of integrity is abstaining from acts like cheating, so cheating on any assignment in this class will result in an appropriate consequence, usually a zero for the grade in question and, if that penalty does not reduce the grade, a penalty of a full letter grade reduction. If a student has been found in violation of this policy, they will first be notified directly. All incidents of cheating will be reported to the appropriate academic offices, and the student may be placed on disciplinary probation, be suspended, or even permanently expelled, depending on the severity of the offense.

Making a Suggestion or a Complaint — Students with a suggestion or complaint should first visit the instructors, then the departmental DEO. See the CLAS Student Academic Handbook.

University Policies and Guidelines

Electronic Communication — University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (Operations Manual, III.15.2. k.11.)

Accommodations for Disabilities — The University is committed to provide an educational experience that is accessible to all students. If you have a diagnosed disability or any other condition that would impair your ability to complete the course requirements as stated above, please inform me as early in the semester as possible, but no later than two weeks prior to the scheduled activity. Students needing accommodations must register with Student Disability Services, (SDS): https://sds.studentlife.uiowa.edu/students/apply to obtain a Student Academic Accommodation Request (SAAR) form. The form will specify what course accommodations are reasonable for that student. The office is located at 3100 Burge Hall, (319) 335.1462.

Mental Health — Students are encouraged to be mindful of their mental health and seek help if they are feeling overwhelmed or incapable of meeting course expectations. For assistance with the class, students are encouraged to talk to the faculty member. For additional advice or support, students are encouraged to contact University Counseling Services at University Capital Centre Suite 1950 or 3223 Westlawn South (319-335-7294) for same day appointments (Mon-Fri. 8AM-4:30PM). After hours, we encourage you to call the Johnson County Crisis Line at 319.351.0140 or 911 if you are in immediate danger.

Sexual Harassment — Sexual harassment subverts the mission of the University and threatens the well- being of students, faculty, and staff. The University will not tolerate sexual harassment, nor will it tolerate unwelcomed behavior of a sexual nature toward members of the University community when that behavior creates an intimidating or hostile environment for employment, education, on-campus living, or participation in a University activity. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. As a member of the university community you have a responsibility to report concerns of sexual harassment immediately at the Office of the Sexual Misconduct Response Coordinator: https://osmrc.uiowa.edu/. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Multicultural Holidays — Students compelled by their religious convictions to refrain from attending class on specific days must request instructor permission during the first few days of the session. If this request is denied, a student may address concerns according to University Procedures.

Sustainability — The University is committed to demonstrating sustainability practices within all facets of the institution. Students are encouraged to utilize recycled materials and use as few natural resources as possible (such as by making use of digital forms of note taking, as appropriate). Recycling of all paper materials is expected. Learn more at the Office of Sustainability.

2. Learning Objectives for each module

Learning objectives overlap across modules to reinforce learning and enable longitudinal evaluation by students and faculty. Rubrics for each assignment assess the concrete, measurable steps for students achieving learning goals across contents and methods.

The major learning objectives of the *Welcome to the Anthropocene* module are:

- understand and express our placement in space and time (across scales) in the context of the Anthropocene;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- expand their horizons into possible sustainable, resilient, and regenerative futures;
- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development).

The major learning objectives of the *Cities and Climate Change* module are:

- articulate and apply contemporary climate projections and best practices in urban climate change mitigation and adaptation;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development);
- apply systems thinking skills by developing and proposing plans that simultaneously and synergistically address human and ecological objectives;
- write and evaluate strategic plans and climate plans;
- present solutions in succinct and convincing formats.

The major learning objectives of the *Principles and practices of sustainability, resiliency, anti-fragility, and regeneration* module are:

- understand and express our placement in space and time (across scales) in the context of the Anthropocene;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development).

The major learning objectives of the *Urban planning and urban functions* module are:

- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- explore and expand the elements that make up “Smart Cities”;
- understand and apply the power and role of aesthetics for regenerative cities;
- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development).

The major learning objectives of the *Long-term scenarios for sustainable, resilient and regenerative futures* module are:

- understand and express our placement in space and time (across scales) in the context of the Anthropocene;
- understand and apply the multiple dimensions of sustainability, resiliency, anti-fragility, and regeneration to ecological systems and human systems (economics, culture, human capital, equity and governance);
- articulate and apply contemporary climate projections and best practices in urban climate change mitigation and adaptation;
- understand and apply the power and role of aesthetics for regenerative cities;
- expand their horizons into possible sustainable, resilient, and regenerative futures;
- envision, examine, and assess alternative long-term futures scenarios for regenerative cities;
- apply critical thinking to sustainability across scales and topics (e.g., by exploring the long- term impacts of alternative scenarios and of adding or removing constraints on urban development);
- apply systems thinking skills by developing and proposing plans that simultaneously and synergistically address human and ecological objectives;
- apply design thinking in developing and presenting a vision for the future city they create;
- apply contemporary visualization techniques and immersive technologies to communicate their ideas;
- problem solve, think, and design collaboratively;
- write and evaluate strategic plans and climate plans;
- foster innovation in the workplace, whether in the public, nonprofit or corporate sector.

3. Materials, Instructional methods, activities, exercises/assignments and assessments

1) Materials

All the materials are provided in the syllabus (readings, videos, articles etc.) For the Exemplary units described below, we include course Powerpoint and activities.

2) Instructional methods

We used a flipped-classroom approach. We used the class time to present and explain new materials (with many visual aids), answer students' questions about the readings, and apply and enhance students' understanding of each topic through at least two individual and group activities (whiteboard, systems thinking game, computer, scenario simulation). Each class session involved structured discussion and decision-making about the topic of the day, including discussions of the situation in Iowa City today and how it may play out in the near and distant futures, and how the class's collective and creative visioning of a future regenerative urban design for Iowa City may address the issue at hand. We used the major semester-long project of imagining and designing a regenerative city for 2228 to anchor and solidify students' ability to engage in complex and systemic reflection as they developed their long-term Good Anthropocene visioning and designing exercise.

The use of a TILE (Spaces to Transform, Interact, Learn, Engage) classroom greatly facilitated students' interactions, discussions and co-generation of ideas and plans.

Activities are varied throughout the semester. Guided discussions and student collaborative project work are applied throughout. The Innovation Contest format is applied for the second half of the course as a series of challenges to refine students' individual projects and their connections.

Representative activities include:

- Consider and revise sections of the Athens Charter and Charter on New Urbanism in the context of the Anthropocene, individually and in synthesis.
- Systems games from the Systems Thinking Playbook.
- Long-term historical planning focus group: What makes the study city (in our case, Iowa City) a good or unique city? What elements of its core identity will extend beyond eight generations?
- Search the Seeds of a Good Anthropocene and select those that would benefit Iowa City immediately and in the long term.
- Consensus generation: What remains scarce in a world without energy or material scarcity?
- Yahara 2070 scenario planning module with guided discussions.
- How would the urban elements you've designed respond to a major flood? A tornado? An earthquake? A terrorist attack from the outside? An AI gone rogue from within? As

students engage with each of these scenarios, they refine the personal and collective features of their plan.

In 2019, students designed and developed connections between:

- An AI and drone system that optimizes municipal services and materials and energy flows;
- A web-based human connectivity application that supports information, resource sharing and labor allocation;
- A bubble-based long-distance travel network that uses air and water contaminants as fuel, and thus cleans air and water as it travels;
- A multimodal municipal transport system;
- A future land use map combining the return to nature of large swaths of greenways and the management of wildlife-human interactions;
- Form-based greening of streetscapes and specific iconic spaces along urban to rural transects;
- Vertical and horizontal urban farms that are disaster resilient adapted to climate change; and
- New green building designs to optimize quality of life, social connections and building flexibility.

3) Assignments

To promote deliberate and reflective learning, the ten assignments scaffold into the students' final project. The ten assignments are as follows:

1. A good Anthropocene
Write your personal, original, actionable definition of a Good Anthropocene. This definition may be formatted in any way, e.g.:

- Proverbs and sayings
- Song, poem, haiku
- Metrics
- Goals and objectives
- Clickbait
- Laws and regulations
- Design philosophy guidelines (like the Athens Charter)
- Radical manifesto
- Infographic

2. Point of view narrative (1 page + 1 figure maximum, each item is a grading rubric.)
Write a first-person narrative story in the voice of someone living at least 8 generations in the future. Describe their world in their words: what matters to them, what they do in their lives, their existential problems, hopes/dreams/fears, etc. Describe how they act toward and feel about the environment, the planet, and the concept of the Anthropocene.
Your narrative should reflect:
- The issues of the day, and the position of the narrator in this society;

- That it is set in a distant and radically different (not near) future, i.e., if it involves technology that could be built in the next 20 years, this is not far enough in the future;
- That it is a creative production. You can write in the style of novels, poetry, plays, sing a song, develop a website etc.

3. Prospectus (Each item is a grading rubric.)
Present the issue/topic you are seeking to address for our 2228 Iowa City. Explain:

- Why this topic will be important in 2228
- What assumptions you are making about science, technology and/or social changes

4. Design guide (Each item is a grading rubric.)
Present the principles, goals, objectives and strategies you will be proposing in your plan.

- Describe the context in which your plan will operate in 2228.
- Spell out principles, goals and objectives.
- Specify the material, design, and policy strategies that will be needed to implement your system.
- Discuss briefly the ways in which your plan will need to be integrated with other urban systems.

5. Draft Plan (3-5 pages of text, 1-3 pages of illustrations, each item is a grading rubric.)

- Combine the results and feedback from your Prospectus and Design Guide, and explain the format of your final project.
- Showcase your concept(s) visually, the final project must include a strong visual element, in addition to text. This could comprise 2D or 3D art, images or maps, a video, website, a play or musical, a real or virtual environment, or any other innovative rendering/communications strategies.
- Indicate the skills you have to support the realization of this concept.

6. Shark Tank presentations

3-minute presentation with visual aids. Present the topic, design guide and proposed deliverables for constructive comments. The criteria used to score are:

Rubric	Not clear/ not sure	Good	Great
Importance of the topic	1	2	3
Originality / creativity	1	2	3
Regeneration potential	1	2	3
If this change happened by 2228, this would be…	1	2	3
Quality of visualization	1	2	3

Total points (5-15):

7. Connections (2-3 pages, each item is a grading rubric.)

Explain how your proposal connects with other students' proposals:

- Start with an introductory paragraph summarizing your current thoughts on your own proposal--it might have evolved--as well as the way you plan on presenting your proposal (e.g., images, maps, video, website, brochure, diagrams etc).
- In the main body of the text and associated tables and infographics, show (1) how your proposal is compatible with all other students' proposals, and (2) how it enhances all or some of the other proposals. We recommend that you organize your thoughts by topic, e.g., transportation, green spaces, streetscapes, human relations, climate resilience etc.
- Conclude by (1) highlighting the most important synergies or positive feedback loops you envision, (2) noting any possible incompatibility or conflict that will need to be resolved (if any) and (3) indicating how you will show visually the compatibility of your proposal with the others (e.g., how will your images, websites, brochures, diagrams incorporate other students' proposals).

8. Final plan (5-7 pages with illustrations, maps etc., each item is a grading rubric.)

Your final plan incorporates all your work this semester. It includes:

- Your introduction builds on your Prospectus (revised as needed), and includes the rationale for the importance of your topic in 2228 and the assumptions you are making about science, technology and/or social changes.
- The second section builds on your Design Guide (revised as needed) and presents the context in which your plan will operate in 2228 and the principles, goals and objectives of your proposal.
- The third and central section builds on your Shark Tank presentation (revised as needed) and presents your proposal itself and the material, design, and/or policy strategies that will be needed to implement it. This section will showcase the maps, images, diagrams, website, videos, etc., you have created.
- Your conclusions build on the Connections paper (revised as needed) to highlight the ways in which your proposal contributes meaningfully to the overall Regenerative Iowa City of 2228.

9. Presentations: America's Next Regenerative City

On April 24th, you will be presenting your project to the Judges.

- The faculty will introduce the judges and the course challenge.
- You will then each have 4 minutes to present your project individually, followed by 2 minutes for clarification questions.
- The judges will then deliberate, assess your contributions and respond (10 minutes)

The judges are:

- Jim Throgmorton, Mayor of Iowa City
- Darian Nagle-Gamm, Iowa City Transportation Director
- John Thomas, Iowa City Councilman
- Martha Norbeck, President of C-Wise (green construction consulting)

The criteria they will use to score your projects will be:

Rubric	Not clear/ not sure	Good	Great
Importance of the topic	1	2	3
Originality / creativity	1	2	3
Regeneration potential	1	2	3
If this change happened by 2228, this would be…	1	2	3
Quality of visualization	1	2	3

Total points (5-15):

10. Reflections (1-2 pages, each item is a grading rubric)

In this assignment, you will reflect on and discuss:

- The most important lessons you have learnt from this course (from your own work designing a far-future regenerative city, and working with your peers);
- How this might shape your current perceptions and understanding of cities; and
- How it might shape your actions in the future.

4) Assessments

The assessment rubrics for the 10 assignments are:

Assignment	Assessment rubrics
My definition of a Good Anthropocene	- Definition is personal and well justified - Definition is original - Definition is actionable - Format is creative
Point of View narrative	- Narrator's position in society - Relevant issues/ concerns in year 2228 - Distant and radically different future - Creative content - Creative format
Prospectus	- Presentation of topic. - Justification: Why this topic will be important in 2228. - Assumptions made about science, technology and social changes.
Design guide	- Social and environmental context in which the plan will operate. - Values, principles, goals and objectives. - Material and design strategies. - Policy strategies that will be needed to implement the plan. - Discussion of the plan's integration with other urban systems.
Connections	- Introduction summarizing the proposal. - Discussion of how the proposal is compatible with all other students' proposals. - Discussion of how it enhances all or some of the other proposals. -Highlight the most important synergies or positive feedback loops - Note any possible incompatibility or conflict that needs to be resolved
Final Plan (same for the Draft plan)	- Rationale for the importance of the topic in 2228 - Assumptions made about science, technology and social changes. - Context in which the plan will operate in 2228 - Plan values, principles, goals and objectives. - Proposed material, design, and policy strategies. - Maps, images, diagrams, website, videos, etc. - Highlight how the proposal contributes meaningfully to the overall Regenerative Iowa City of 2228.
America's Next Regenerative City (same for the Shark Tank presentations)	- Importance of the topic - Originality / creativity - Regeneration potential - If this change happened by 2228, this would be… - Quality of visualization Scores (attributed by the judges) for each item: Not sure: 1 point; Good: 2 points; Great: 3 points

Assignment	Assessment rubrics
Reflections	- Most important lessons gained from the personal design/ plan. - Most important lessons gained from working with peers. - How this course may shape your perceptions and understanding of cities. - How this course may shape your actions in the future.

The assessment system for each rubric (except for the *Shark Tank* and *America's Next Regenerative City* presentations) is as follows:

The rubric is:	- discussed in depth, high quality, with strong examples/visuals:	4 points
	- discussed in depth but without illustrations:	3 points
	- discussed but unclear or incomplete:	2 points
	- mentioned but no discussed in any detail:	1 point
	- missing:	0 points

4. Exemplary modules

We present here the contents of the first and last modules of the course.

1. Module "Welcome to the Anthropocene"

In this Module, we use 2 PowerPoint presentations (Welcome to the Anthropocene and Regenerative Cities, included below) to ground the course in core principles, values and goals.

The graphics in those Powerpoints act as the starting points for structured discussions.

- Maslow's Hierarchy of Needs is the basis for a discussion of the meaning of self-actualization (which in turns becomes a key criteria that the regenerative city envisioned needs to strive for).
- The UN Sustainable Development Goals are the basis for a discussion about the connections between the multiple dimensions of a good city/ place / planet.
- The Seeds of a good Anthropocene are used to discuss the scaling up and down of systems thinking, and of interventions and their impacts.
- Kate Raworth's "Doughnut for the Anthropocene" is the foundation for the biological and material regeneration criteria that the future city envisioned needs to resolve. While students are often familiar with the general topics of climate change and biodiversity loss, we spend more time explaining and discussing land conversion, farmland loss, as well as nitrogen and phosphorus cycles and loading. We discuss those latter topics in the context of Iowa's intensive agriculture.
- The Ecopolis and Circular Economy graphs and related examples provide the foundation for discussions of what small and closed-loop economies may look like in practice (today and in the future).

These guided discussions set the context for the values, principles and goals of a Good Anthropocene.

The assessment for this module is based on the assignment "My definition of a Good Anthropocene" personal paper. In this paper, students are tasked to provide a personal, original and actionable definition of what a Good Anthropocene means for them, based on their reflections and in-class discussions. We encourage students to showcase their personal skills (which vary based on their majors). We encourage creative thinking from the outset, by asking students to provide this definition a creative form, e.g.:

- Proverbs and sayings
- Song, poem, haiku
- Metrics
- Goals and objectives
- Clickbait
- Laws and regulations
- Design philosophy guidelines (like the Athens Charter)
- Radical manifesto
- Infographic

Powerpoint presentations for the Module “Welcome to the Anthropocene”

WELCOME TO THE ANTHROPOCENE

URP 4172: Eight Generational Planning —
Envisioning Cities for Year 2228

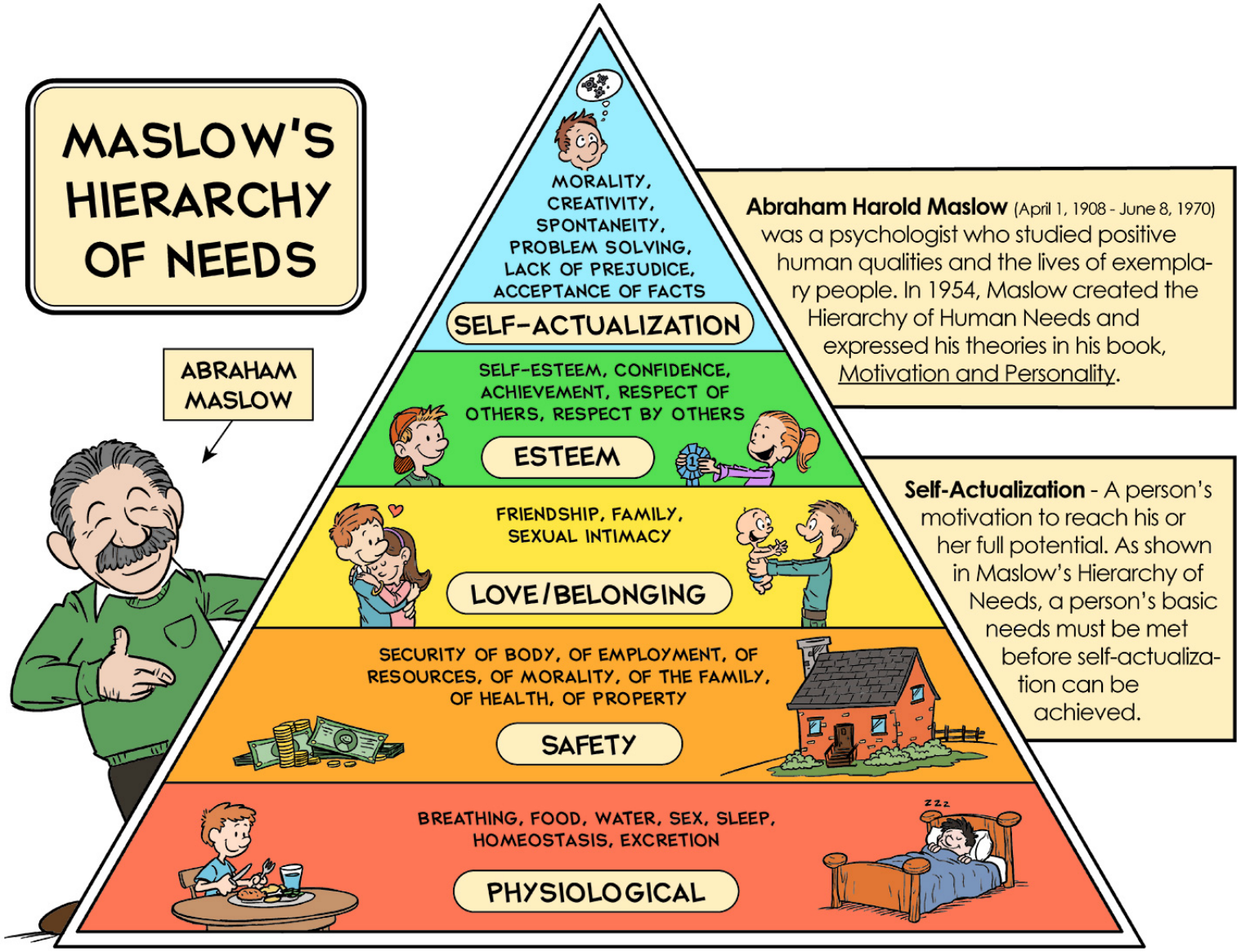
The University of Iowa School of Urban & Regional Planning

The University of Iowa Iowa Initiative for Sustainable Communities

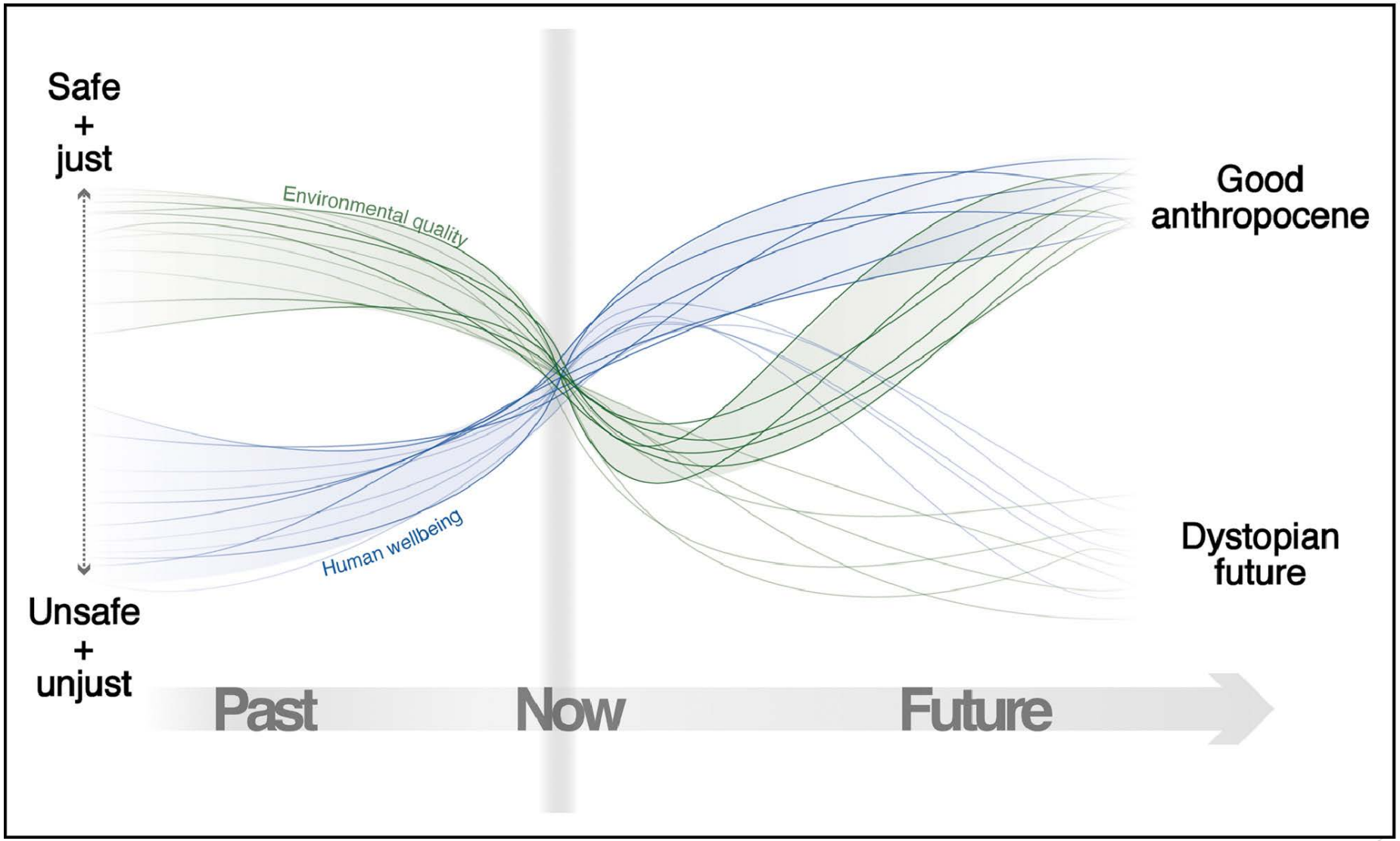
City of Iowa City UNESCO City of Literature


WELCOME TO
RIVERSIDE
Trek
Where The ~~Best~~ Begins

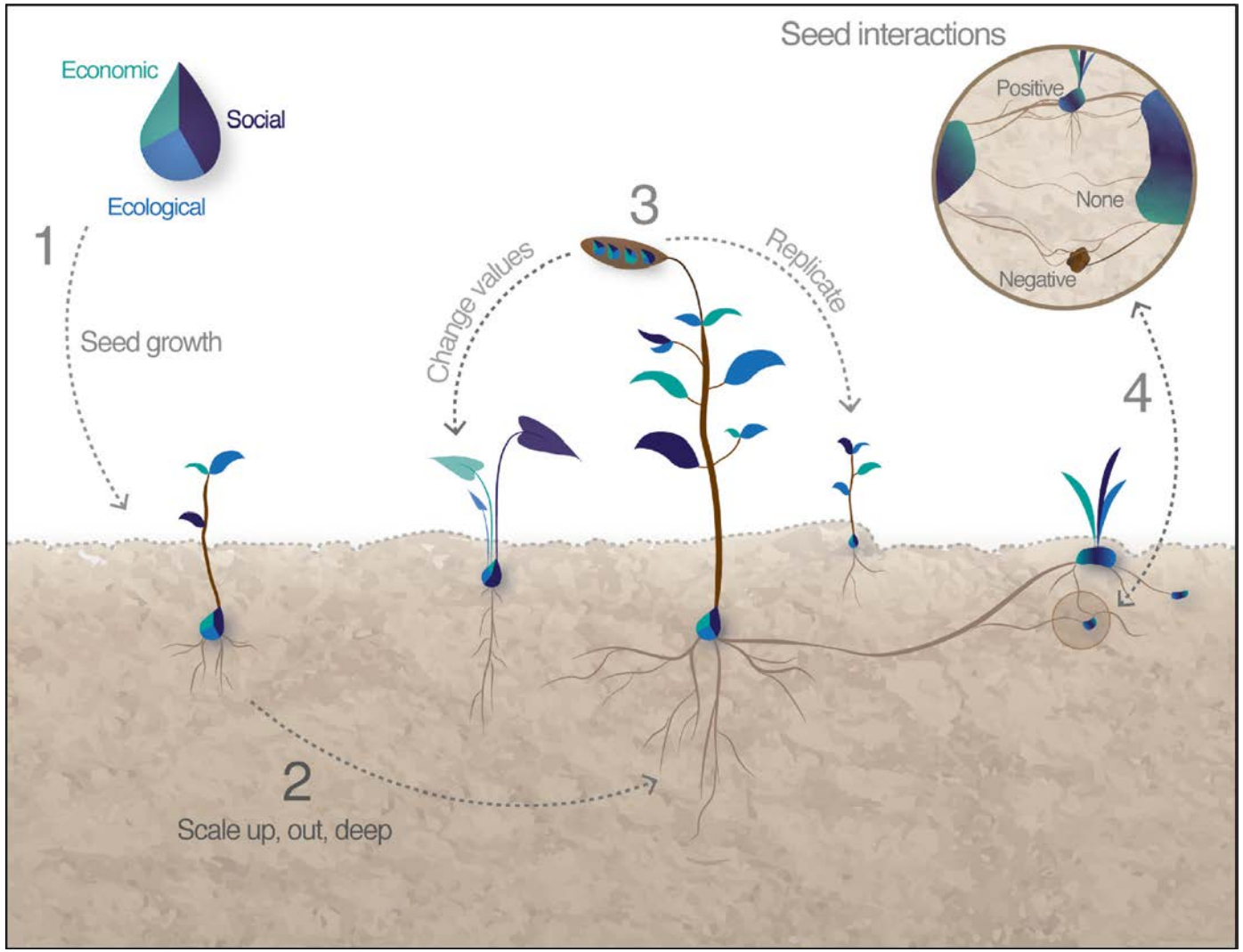
Riverside, Iowa
Zoned for light industry, 2255



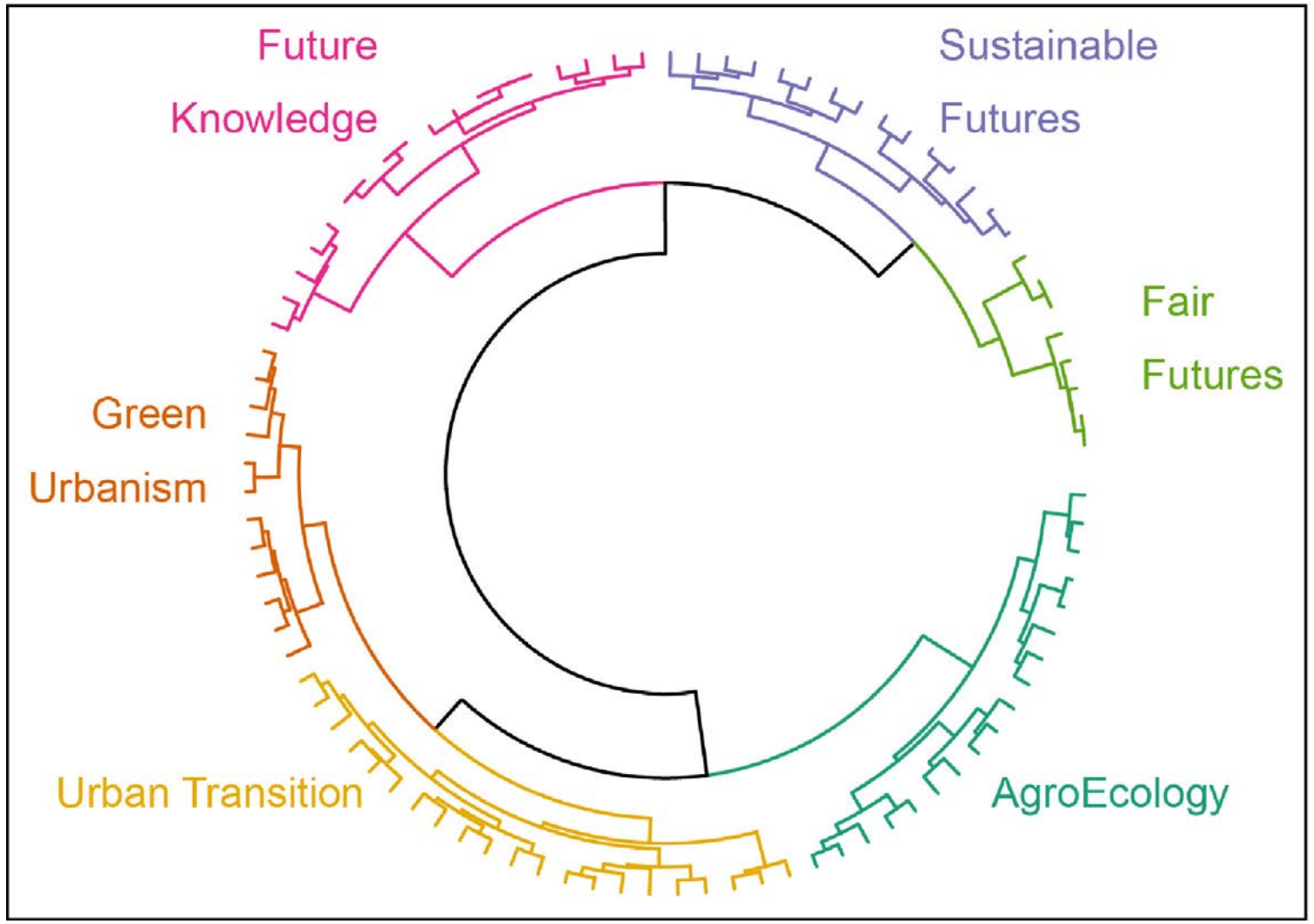

SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS


Safe
+
just
Environmental quality
Human wellbeing
Unsafe
+
unjust
Good
anthropocene
Dystopian
future
Past
Now
Future

Seeds of a Good Anthropocene



What kinds of seeds?



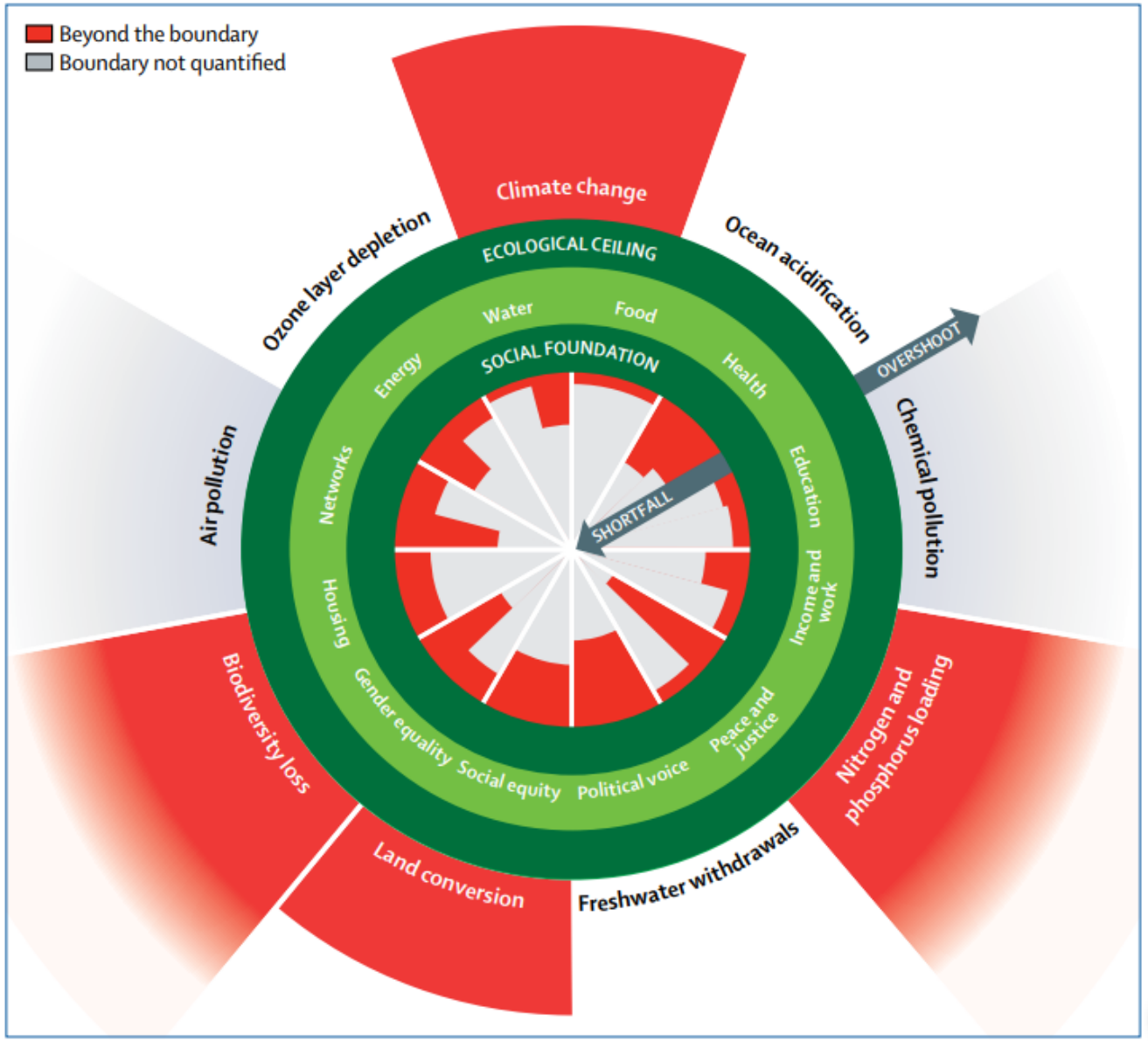


Figure: **Shortfalls and overshoot in the Doughnut**
Dark green circles show the social foundation and ecological ceiling, encompassing a safe and just space for humanity. Red wedges show shortfalls in the social foundation or overshoot of the ecological ceiling. The extent of pressure on planetary boundaries that are not currently being overshot is not shown here (see appendix for all graphics).

What will it take to address these threats?

What will it take to regenerate lost assets?

EIGHT GENERATIONAL PLANNING:

ENVISIONING CITIES FOR YEAR 2228

URP:4752
SPRING 2019

REGENERATIVE CITIES IN THE ANTHROPOCENE
COLLABORATIVE URBAN DESIGN
RESILIENCE & SUSTAINABILTY

M/W 3:30 - 4:45 TILE

REGENERATIVE CITIES

URP 4172: Eight Generational Planning —

Envisioning Cities for Year 2228

The University of Iowa School of Urban & Regional Planning

The University of Iowa Iowa Initiative for Sustainable Communities

City of Iowa City UNESCO City of Literature

COLLABORATIVE **URBAN DESIGN**

RESILIENCE & **SUSTAINABILITY**

A GOOD **ANTHROPOCENE**

Envisioning Regenerative Cities

SPRING 2019

URP4752 - Eight Generational Planning

M/W 3:30-4:45 TILE

From Good Anthropocene to Seeds

Green urbanism seeds (Bennett et al.):

Which seeds best implement your Good Anthropocene? 10-12 min

https://goodanthropocenes.net/map-of-seeds/

What is a regenerative city?

- **Enhances the environment, restores relationship with regional natural systems**
  - **Symbiotic relationship with region**
  - **Improves, regenerates the productive capacity of the ecosystems it depends on**

  - World Future Council International Expert Commission on Cities & Climate Change (2008-11)
  - "Regenerative Cities" 2010 report
  - "Creating Regenerative Cities" book
  - UN-Habitat "*The city we need is a regenerative city*" e.g. Wittenberg, Iowa City

- Herbert Girardet: https://www.academyofurbanism.org.uk/herbert-girardet-creating-regenerative-cities/ min 15-24

- **Paradigm shift : circular, not linear metabolism**

- Closing the urban resource cycle
  - Meet city needs (energy, food, water, goods) locally / as close as possible
  - Renewable energies
  - Regenerate materials and resources the city uses
  - Waste becomes resources, organic nutrients, materials

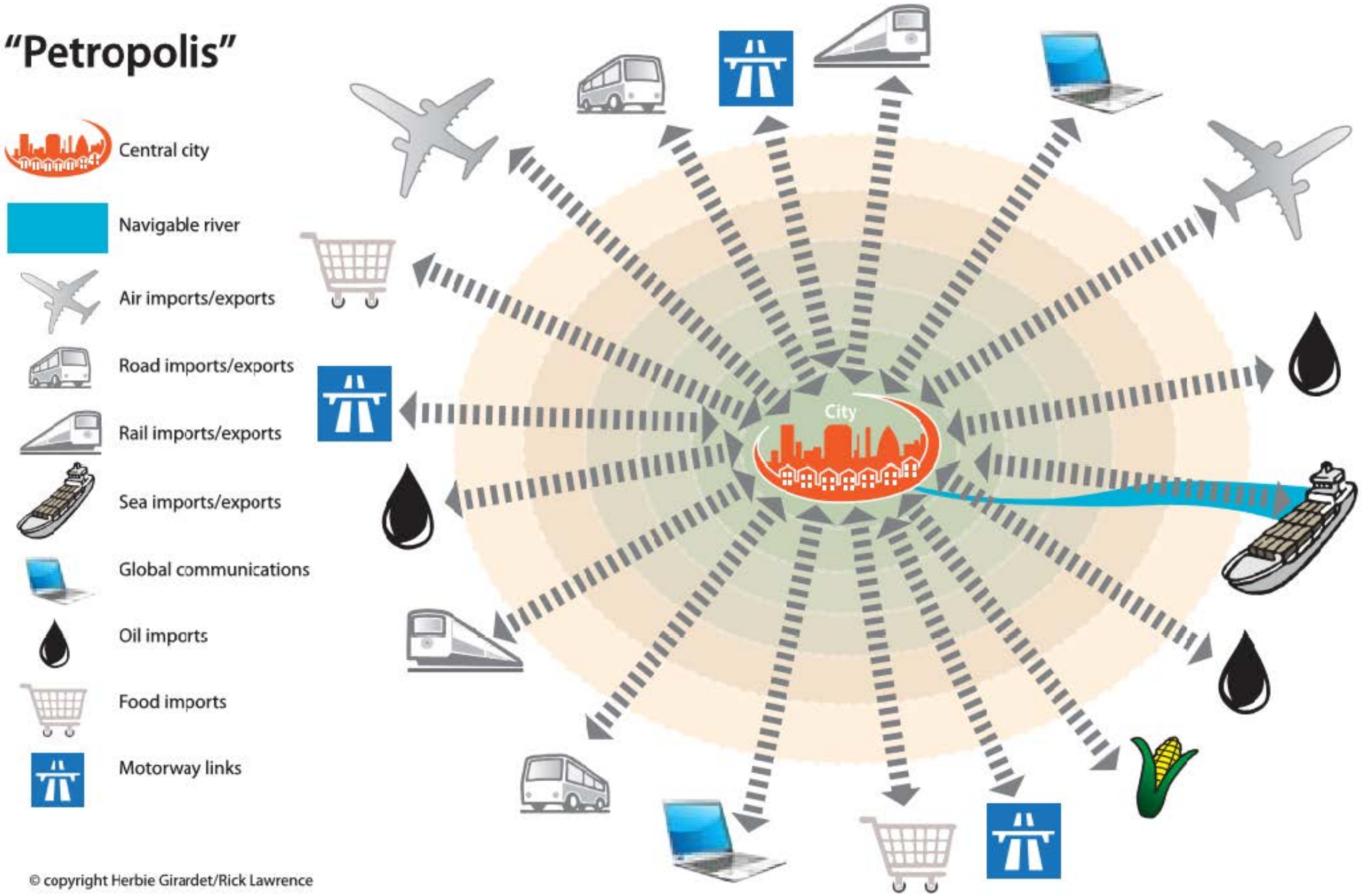
- Opportunities for growth, liveability, well-being, equality, resilience

- How to think about cities? Systems, Metabolism, Ecosystems

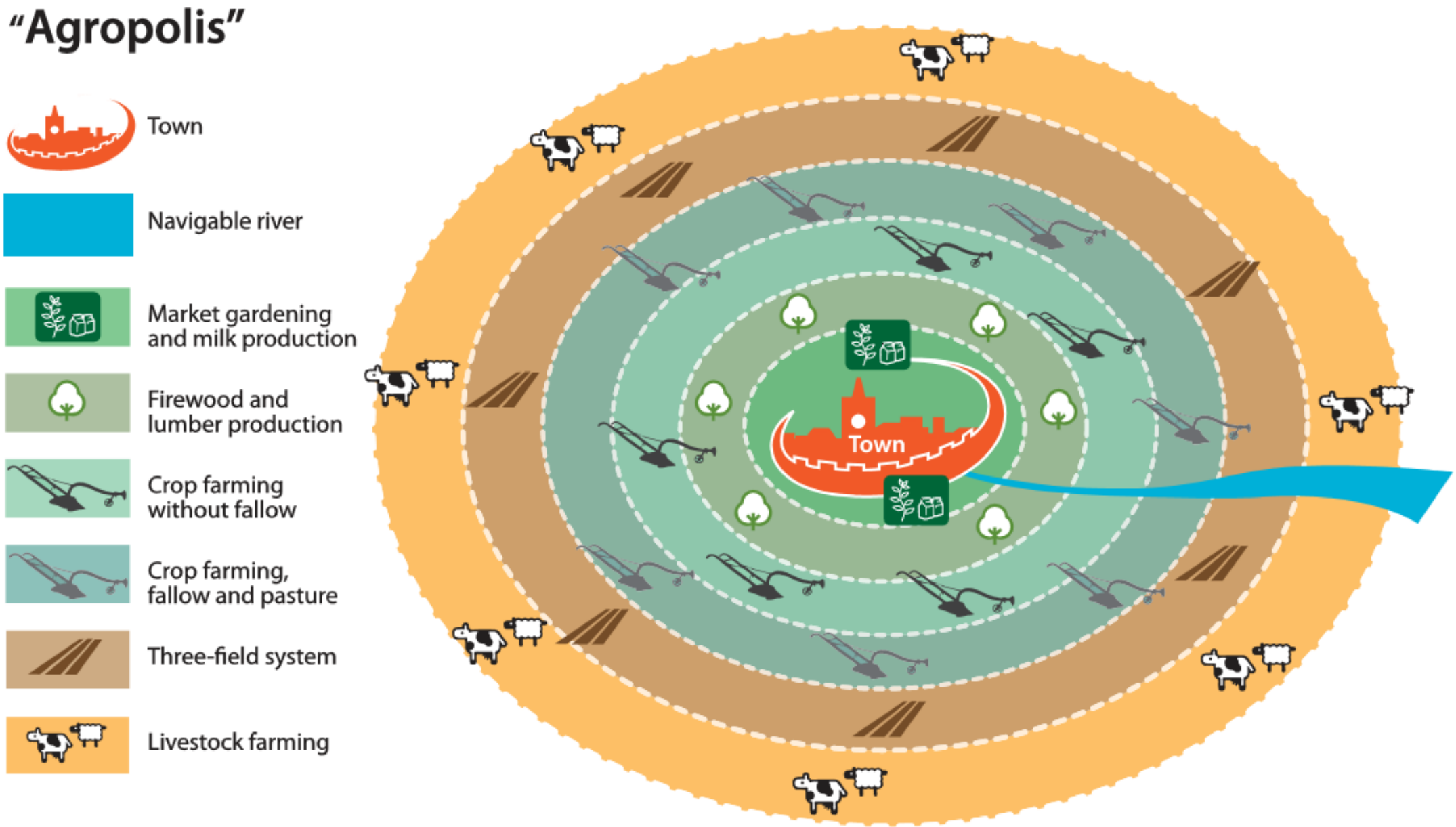
https://www.youtube.com/watch?v=0kFxzQJaeME 6 min

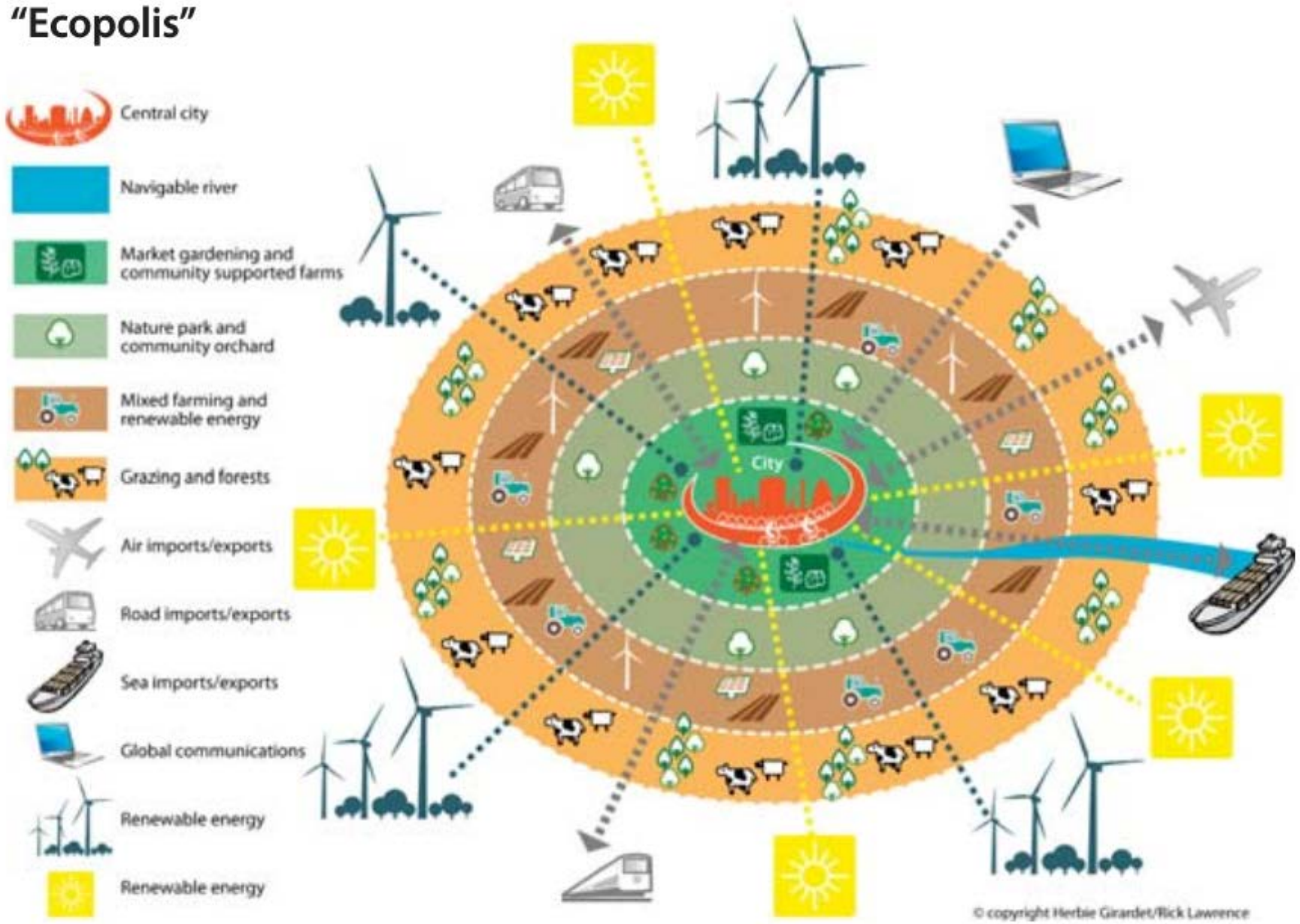
Circular economy

"Petropolis"



Regenerative cities





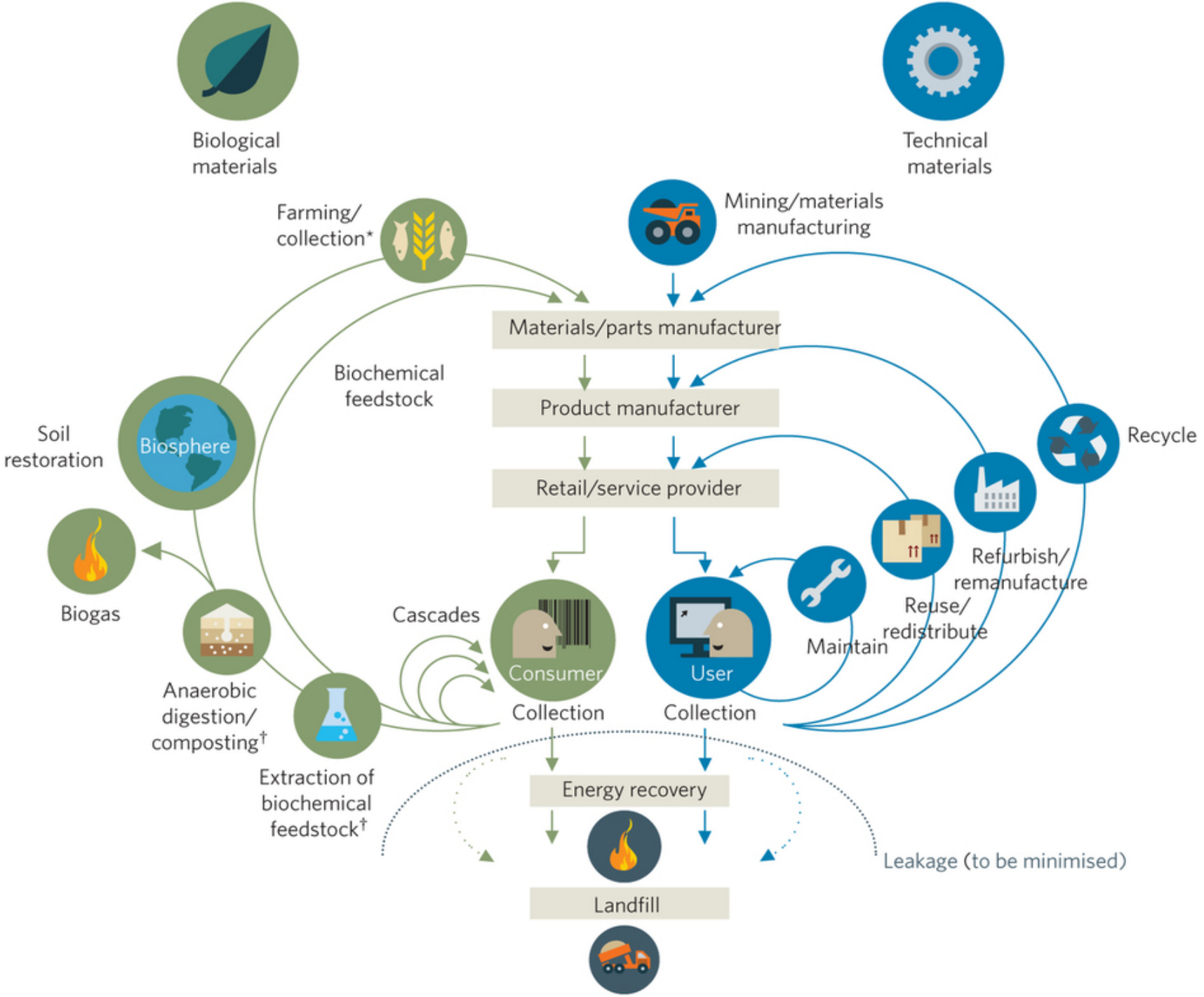
http://www.worldfuturecouncil.org/wp-content/uploads/2016/01/WFC_2010_Regenerative_Cities.pdf

Circular-minded production

- McDonough 2002 *Cradle to Cradle: Remaking the Way We Make Things*
  - http://www.youtube.com/watch?v=tE9lj8NThMM 10 min

- See also:
- Rethinking products
  - https://www.youtube.com/watch?v=Cd_isKtGaf8 3 min

- FYI: Helen MacArthur on the circular economy
  - https://www.youtube.com/watch?v=M6MLFJDddM4 10 min

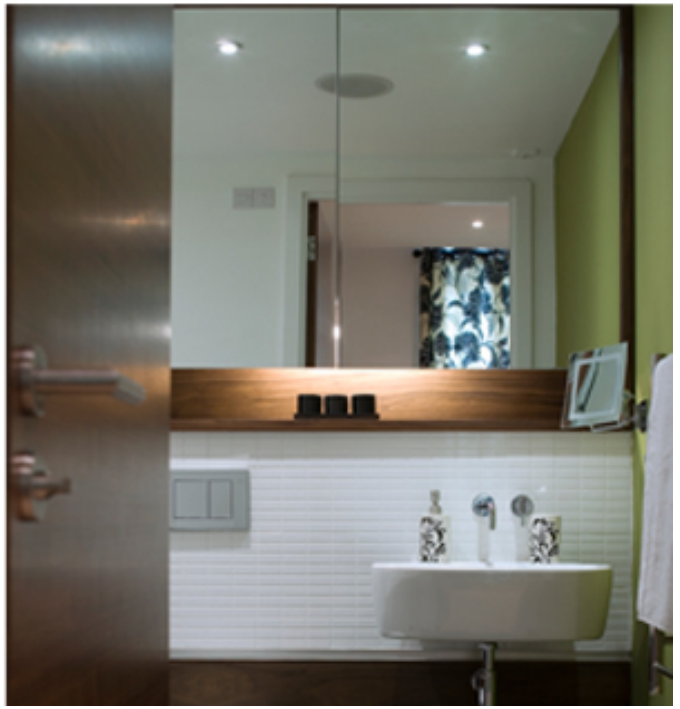


Circular Economy (Mac Arthur Foundation)

Walter Stahel

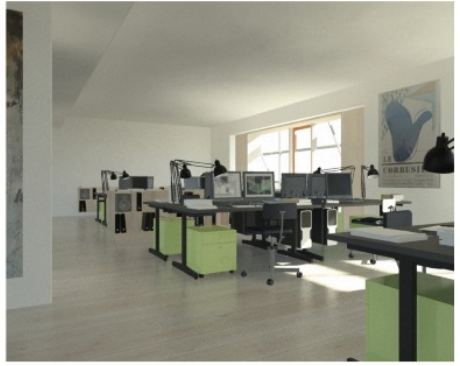
- **Small loops: highest social benefits**
  - Labor intensive, few material and energy resources, decentralized
- **Repairing, Remarketing, Reusing**
  - Downcycling: lose value, quality: flea markets, 2nd hands stores, eBay
  - Upcycling: materials increase/ maintain value as resources (antique furniture)
- **Commodity prices**
  - Down until 1990s
  - Up since 2000 -> makes sense to retain ownership of goods “the goods of today in the market are the resources of tomorrow, but at yesterday’s prices”
- **Toxic materials:**
  - If company keeps ownership of goods, less incentive to use toxics. Will design to separate toxics (e.g., rare earth elements in electronics)

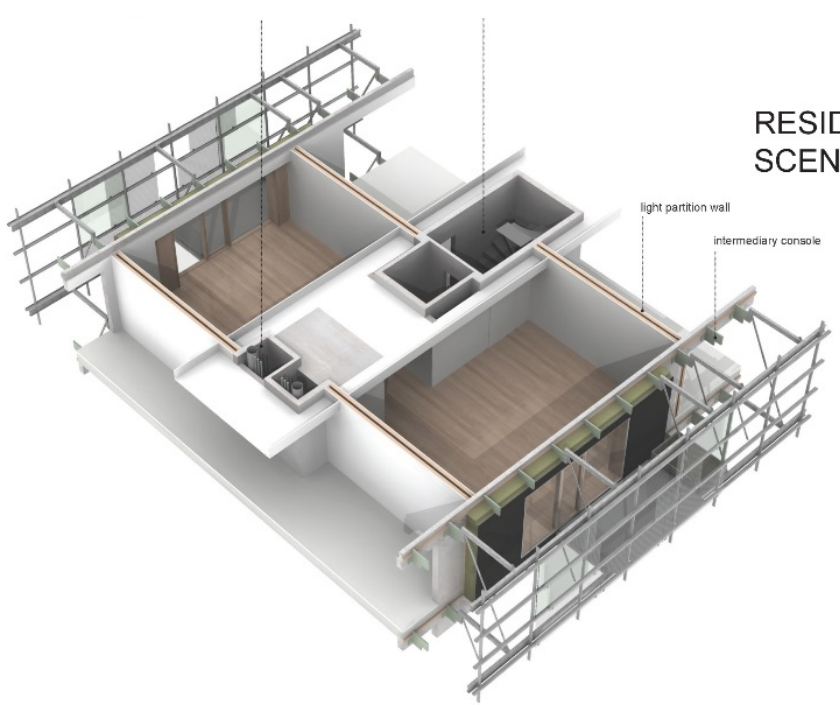
Office to residential conversion



BDP converted Witham Wharf in Lincoln
Added balconies to max city views
open-plan interiors



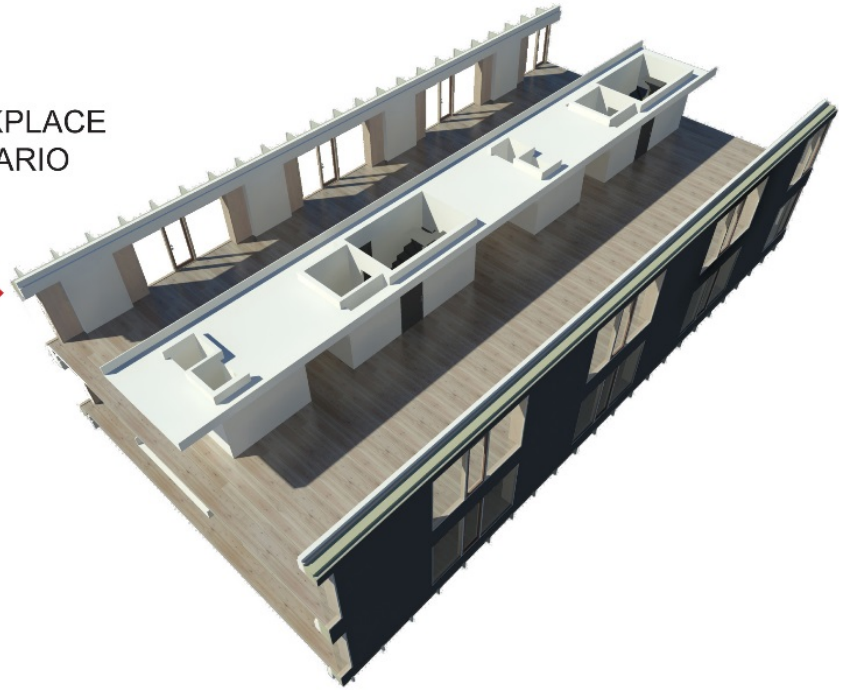





RESIDENTIAL SCENARIO

WORKPLACE SCENARIO

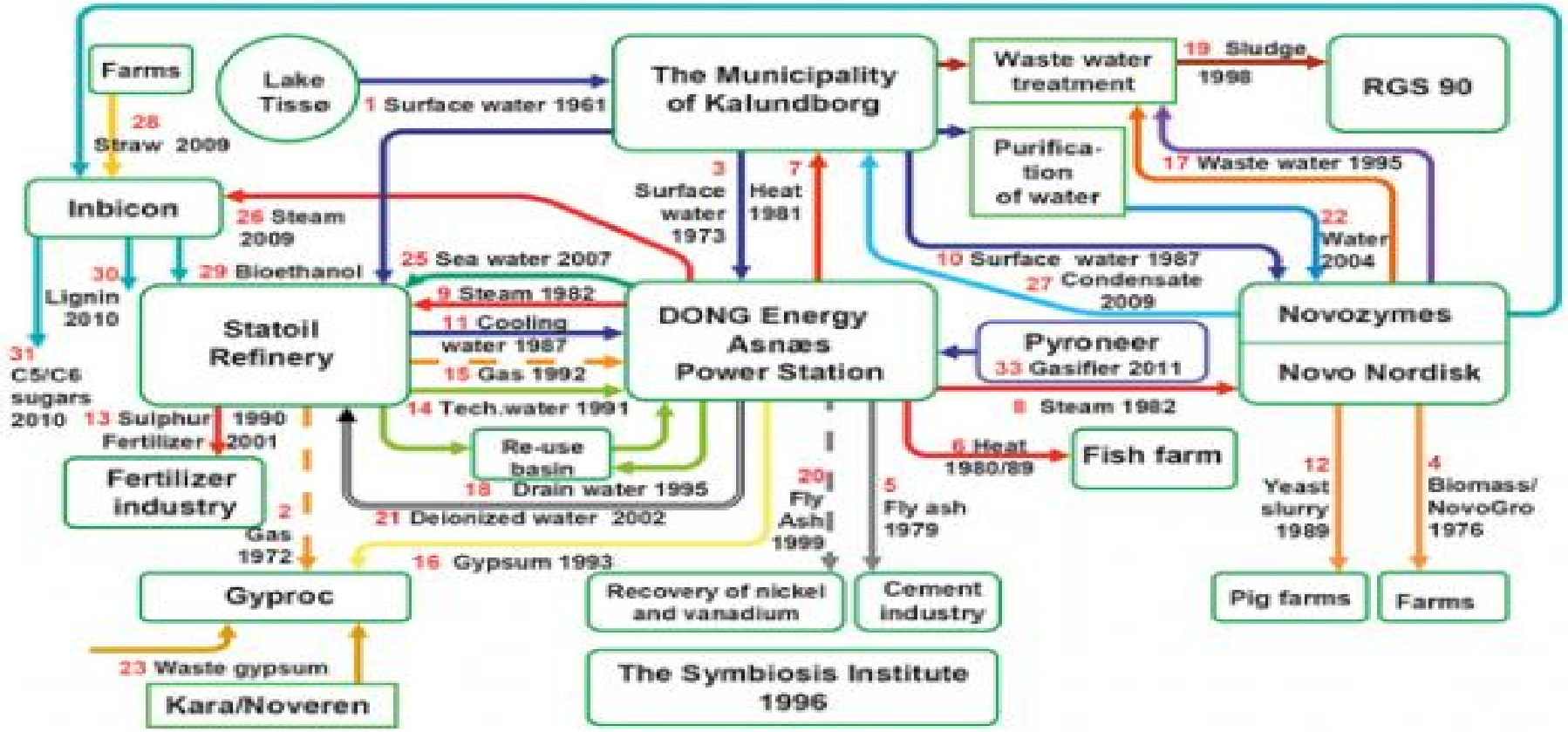
CONVERTIBILITY

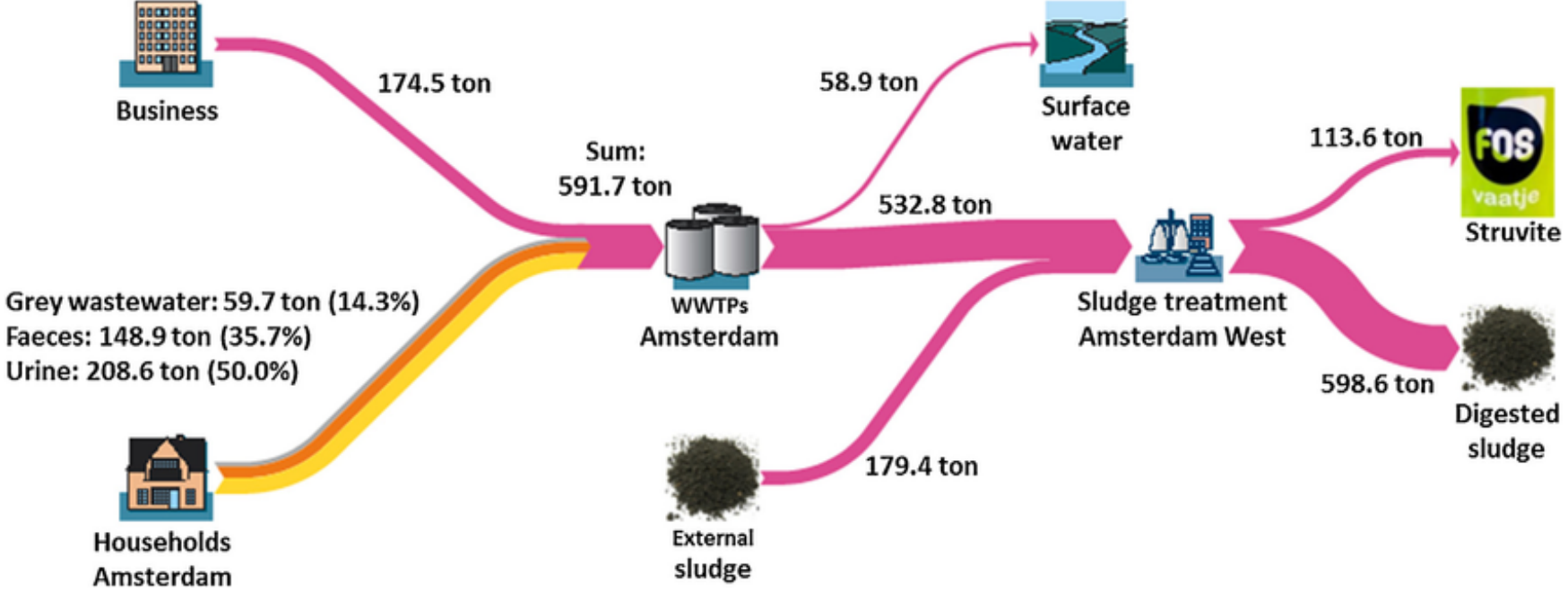


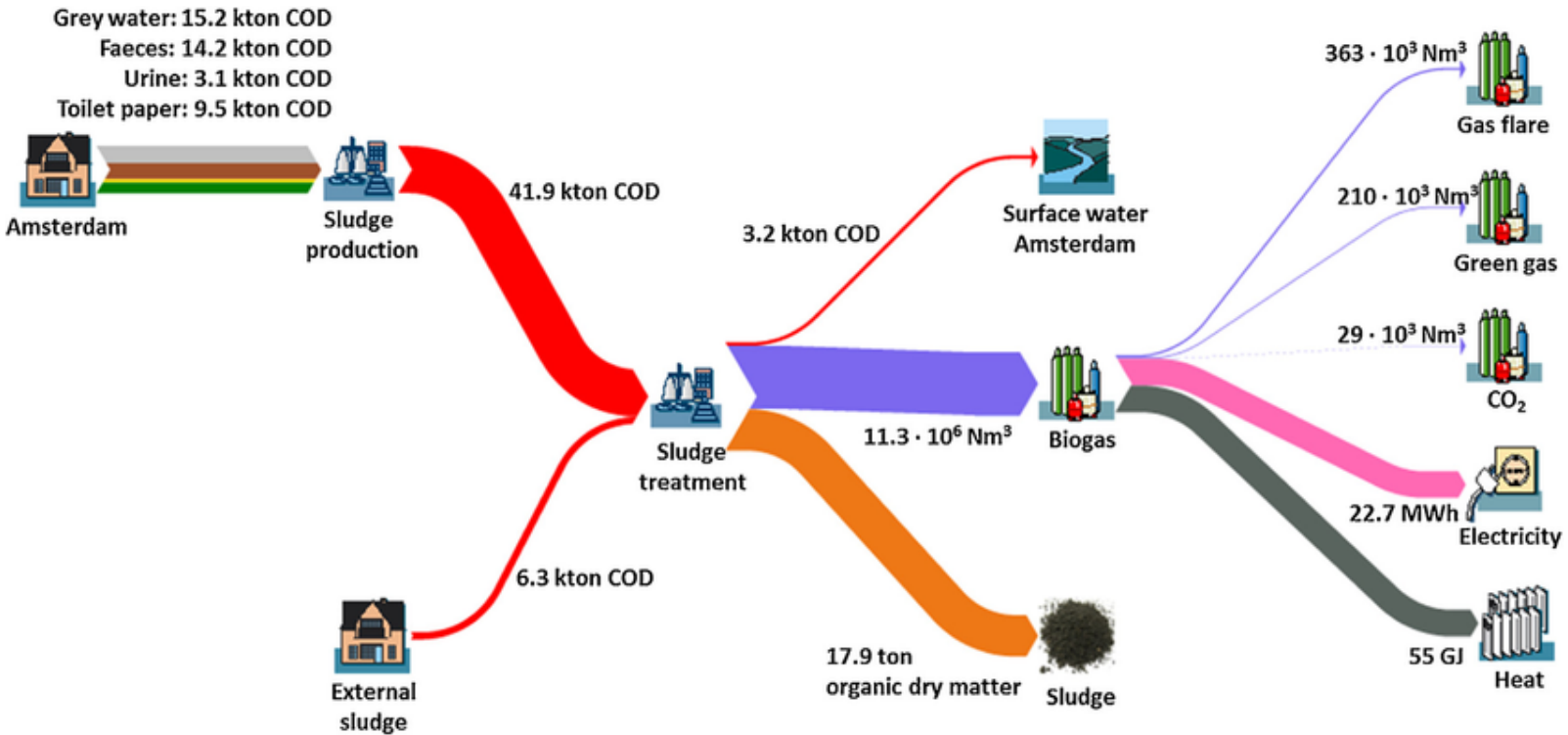
vandkunsten 2011

Adaptable futures
architects: Tegnestuen Vandkunsten
client: Loughborough University, Adaptable Futures Research Team
http://www.vandkunsten.com/public_site/webroot/cache/proj/adaptable_convertibility.jpg

Kalundborg Eco-industrial park







- Amsterdam: Phosphorous recovery from wastewater
- P mined for fertilizer, shortages

2. Module "Long-term scenarios for sustainable, resilient and regenerative futures"

This module aims at improving and finalizing the ideas and designs that the students have formed throughout the semester.

Activity 1.

We begin the module with students sharing texts and films involving good futures that they find most inspiring. Most are literary texts, movies and TV series. The discussions involve identifying what they find of value in each scenario, and whether and how they can integrate (or have already integrated) these values in their future regenerative city designs.

Activity 2.

We then challenges students to refine, improve and reduce the fragility of their final designs by "sending" a series of unexpected threats (not discussed before) to their planned city. The activity is centered around these questions:

How would the urban elements you've designed respond to a major flood? A tornado? An earthquake? A terrorist attack from the outside? An AI gone rogue from within?

As students engage with each of these scenarios, they refine the personal and collective features of their plan.

Activity 3.

The students have watched Monbiot's *"For more wonder, rewild the world"* video, and are tasked with envisioning how other species interact with the environment, with local ecosystems and with humans in the city they propose.

Activity 4.

Finally, the course culminates with students' presentations of their ideas and designs in the *America's Next Regenerative City* (friendly) competition.

<u>Competition description:</u>

The students present their project to the Judges.

- The faculty introduces the judges and the course challenge.
- Students have 4 minutes each to present their project individually, followed by 2 minutes for clarification questions.
- The judges then deliberate, assess students' contributions and provide feedback.
- Students have an opportunity to briefly respond to judges' input.

In 2019, the judges were:

- Jim Throgmorton, Mayor of Iowa City
- Darian Nagle-Gamm, Iowa City Transportation Director
- John Thomas, Iowa City Councilman
- Martha Norbeck, President of C-Wise (green construction consulting)

The criteria judges used to score the projects (communicated to the students) were :

Rubric	Not clear/ not sure	Good	Great
Importance of the topic	1	2	3
Originality / creativity	1	2	3
Regeneration potential	1	2	3
If this change happened by 2228, this would be…	1	2	3
Quality of visualization	1	2	3

Total points (5-15):

Powerpoint of students' final presentations in the America's Next Regenerative City.

AMERICA'S NEXT regenerative city

URP 4172: Eight Generational Planning —

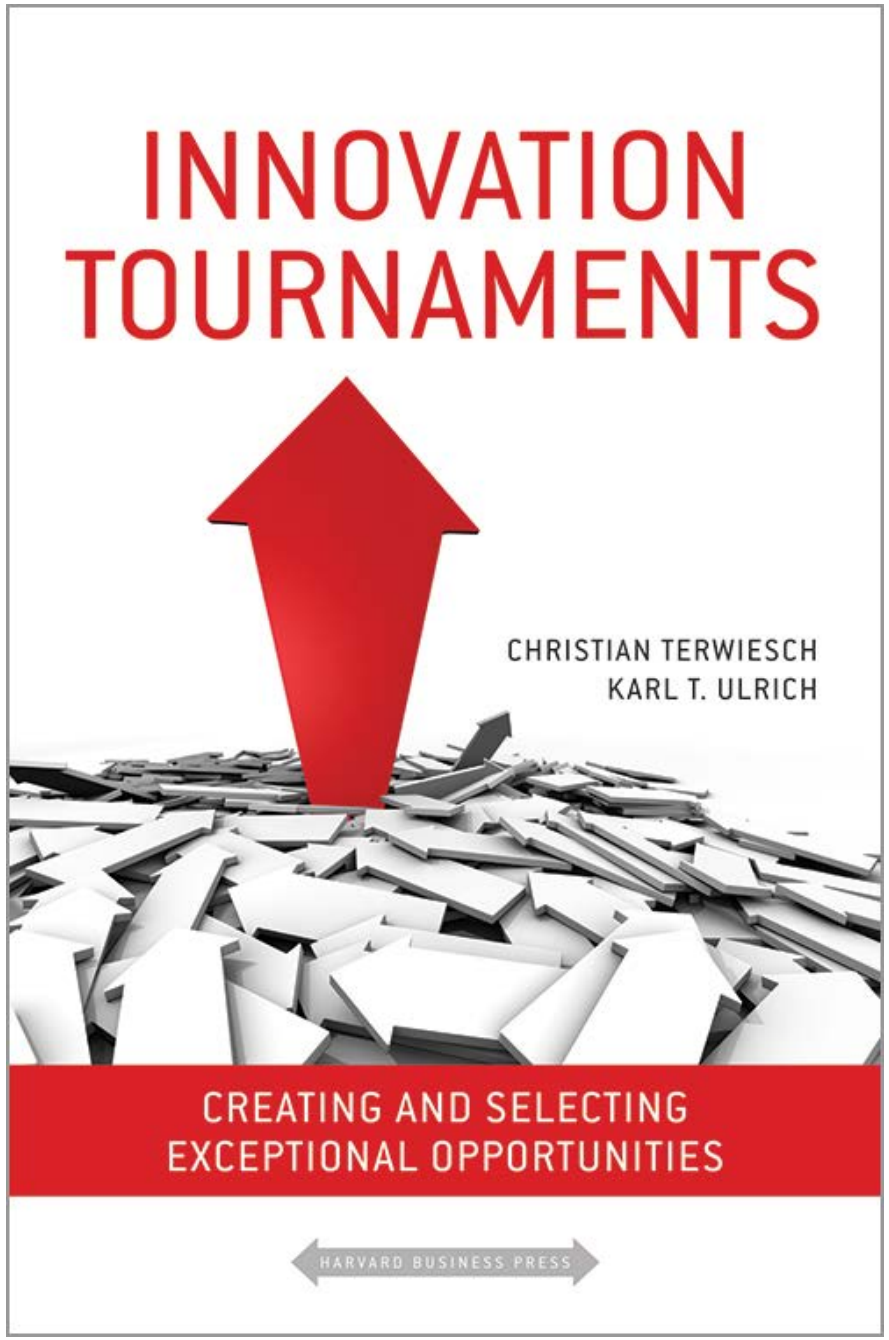
Envisioning Cities for Year 2228

The University of Iowa School of Urban & Regional Planning

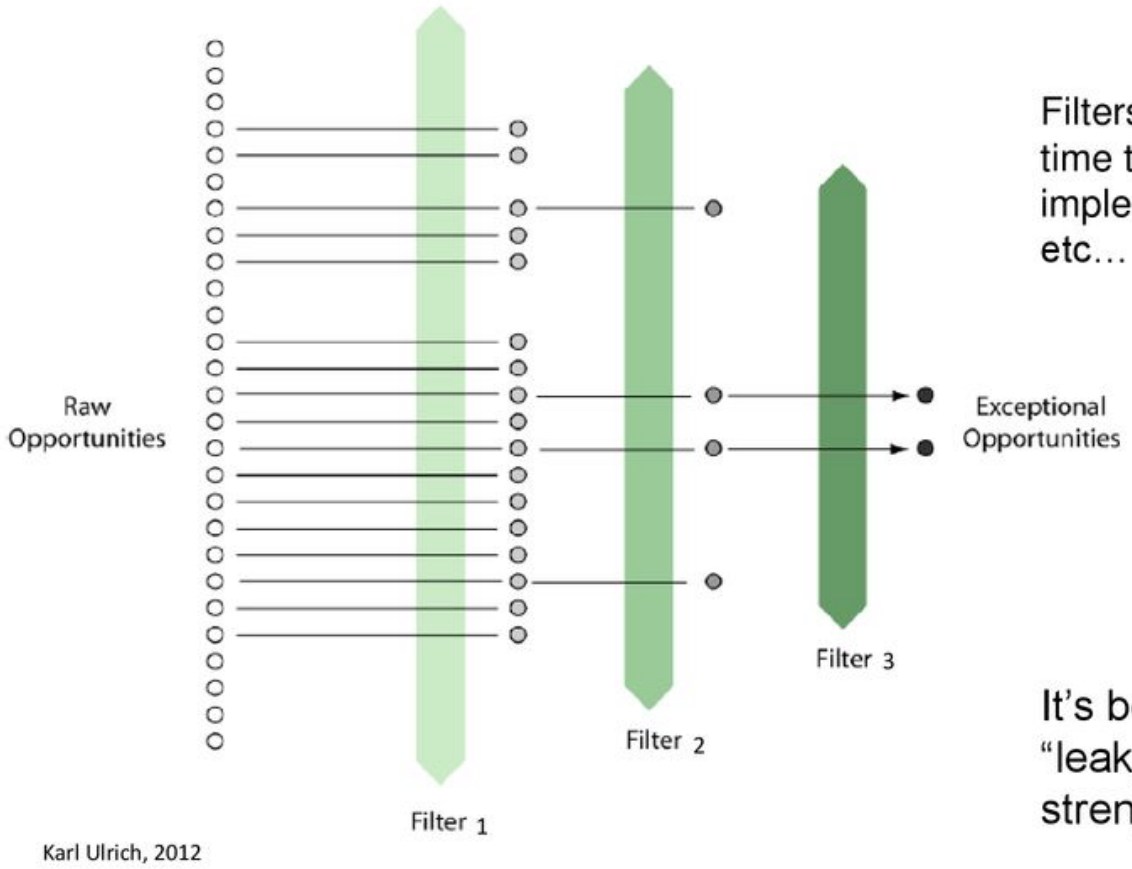
The University of Iowa Iowa Initiative for Sustainable Communities

City of Iowa City UNESCO City of Literature


WELCOME TO
RIVERSIDE
Trek
Where The ~~Best~~ Begins


INNOVATION TOURNAMENTS
CHRISTIAN TERWIESCH
KARL T. ULRICH
CREATING AND SELECTING EXCEPTIONAL OPPORTUNITIES
HARVARD BUSINESS PRESS

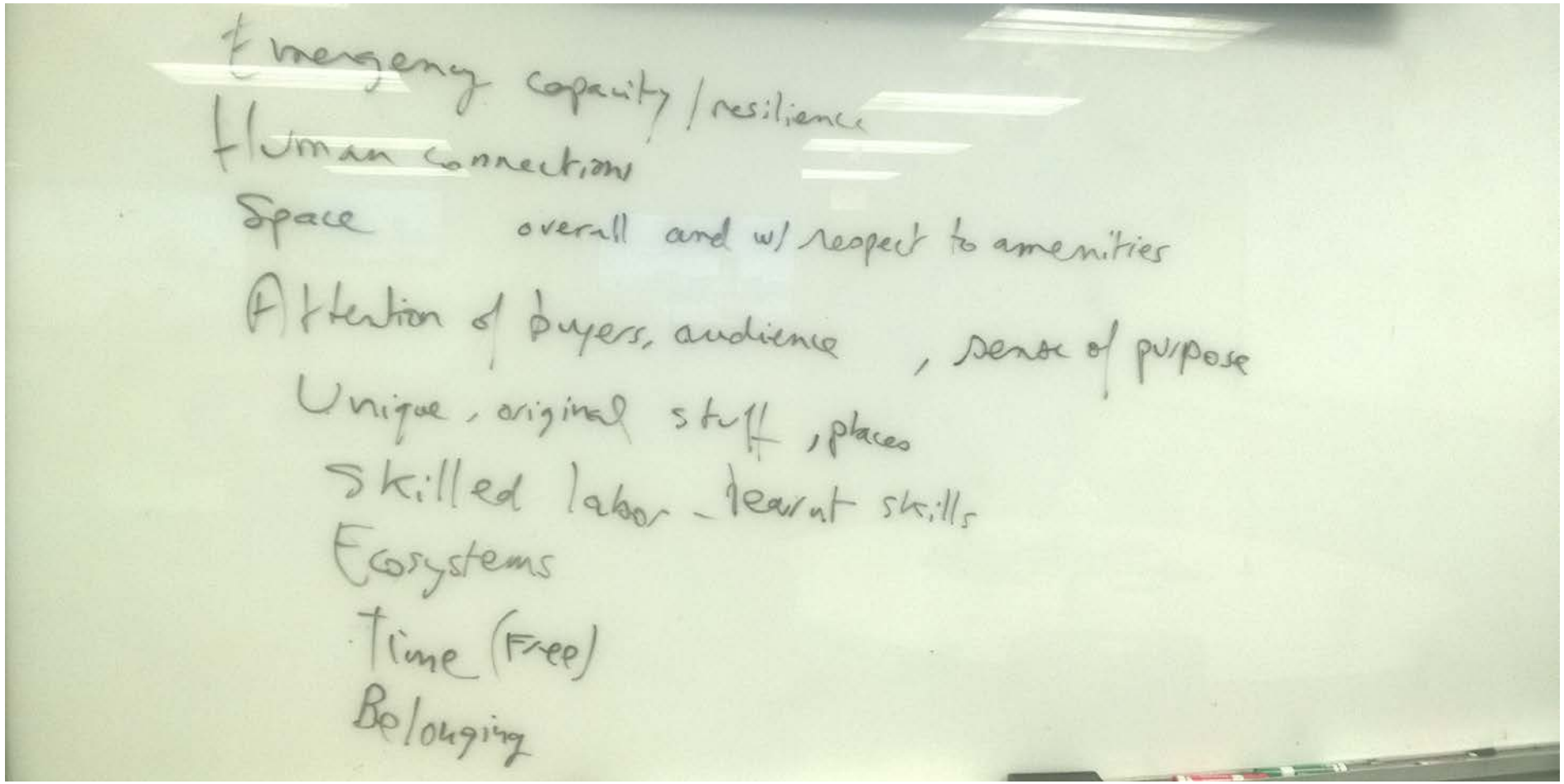
Innovation tournament – high level format

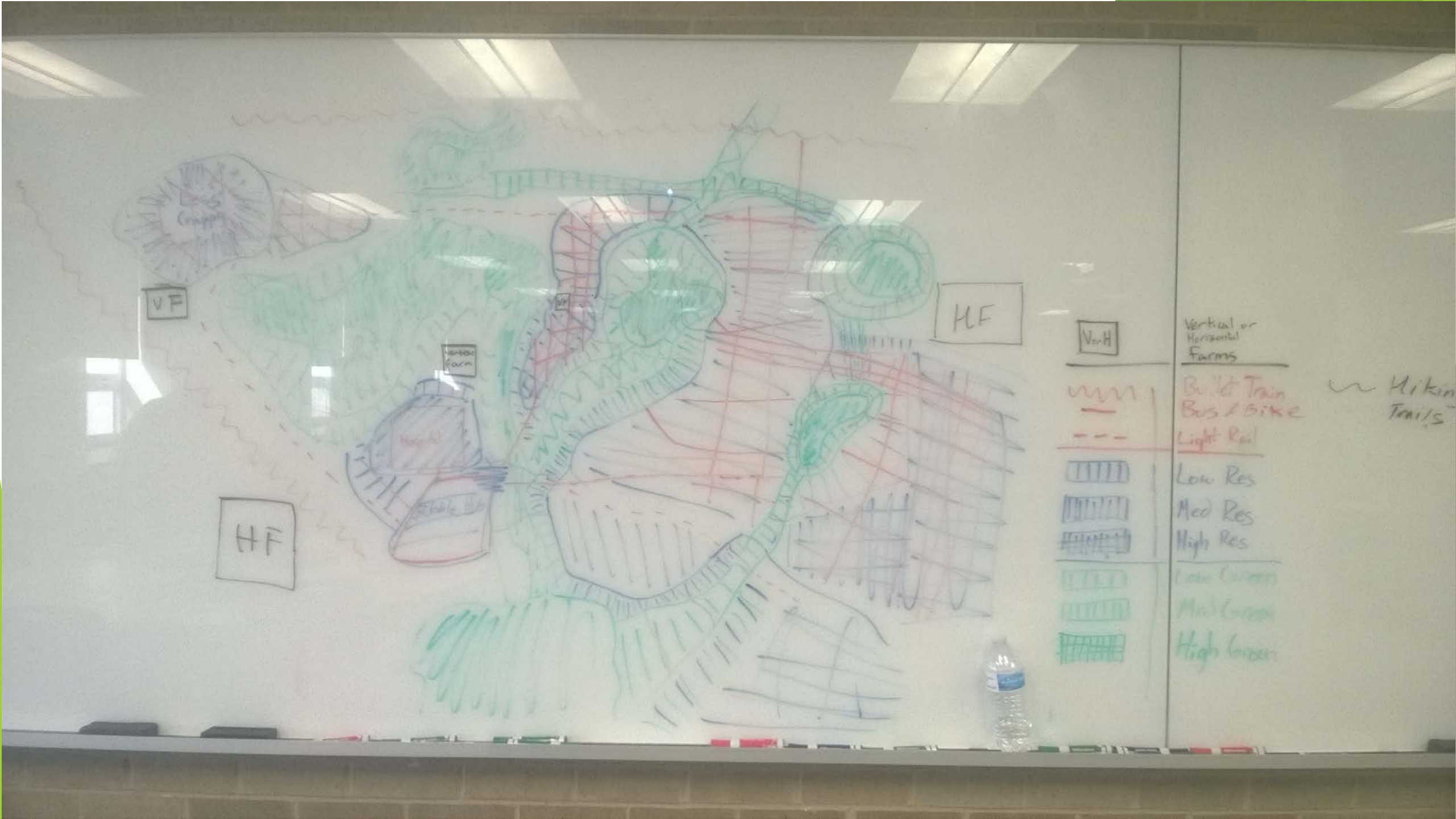


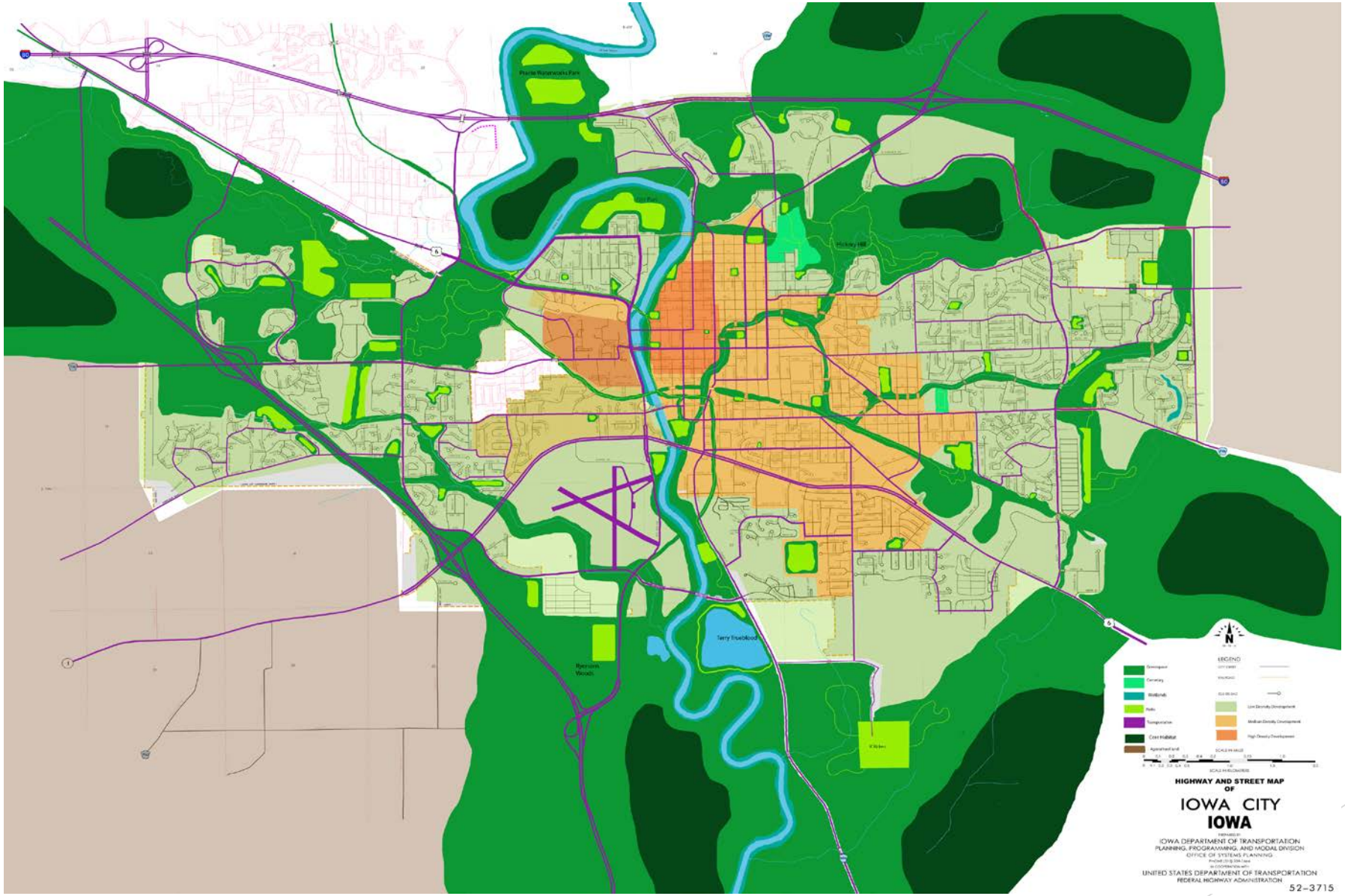
Karl Ulrich, 2012

Filters can be novelty, financial, time to implement, cost to implement, overall potential, etc…

It's better to start with "leaky" filters first and then strengthen them…


Emergency capacity / resilience
Human connections
Space overall and w/ respect to amenities
Attention of buyers, audience, sense of purpose
Unique, original stuff, places
Skilled labor - learnt skills
Ecosystems
Time (Free)
Belonging


VF
HF
HF
V or H
Vertical or Horizontal Farms
Built Train
Bus / Bike
Light Rail
Low Res
Med Res
High Res
Hiking Trails


Prairie Waterworks Park
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Hickory Hill
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UNITED STATES DEPARTMENT OF TRANSPORTATION
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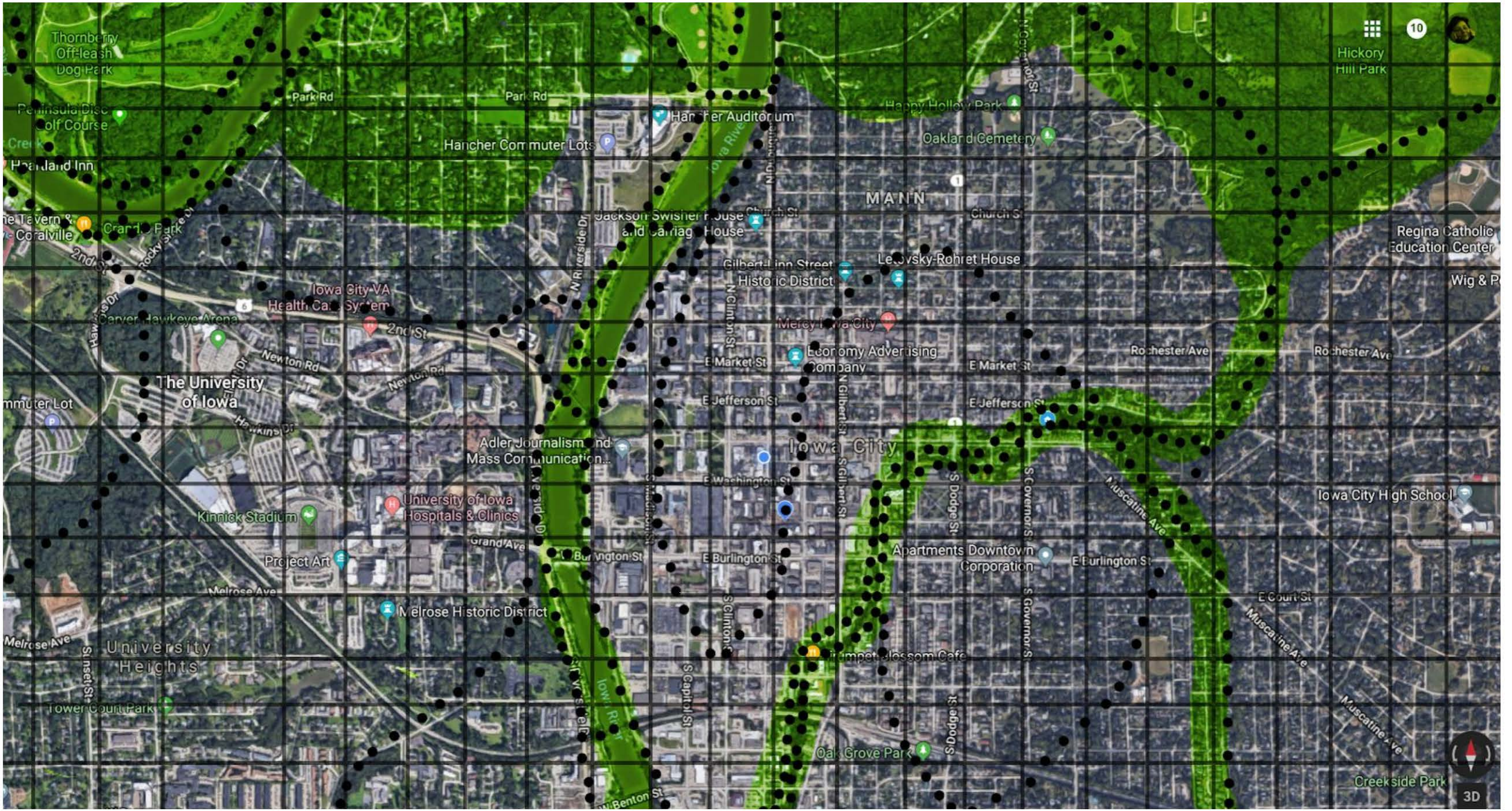
52-3715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Kinnick Stadium
Grand Ave
Iowa City High School
Muscatine Ave
Project Art
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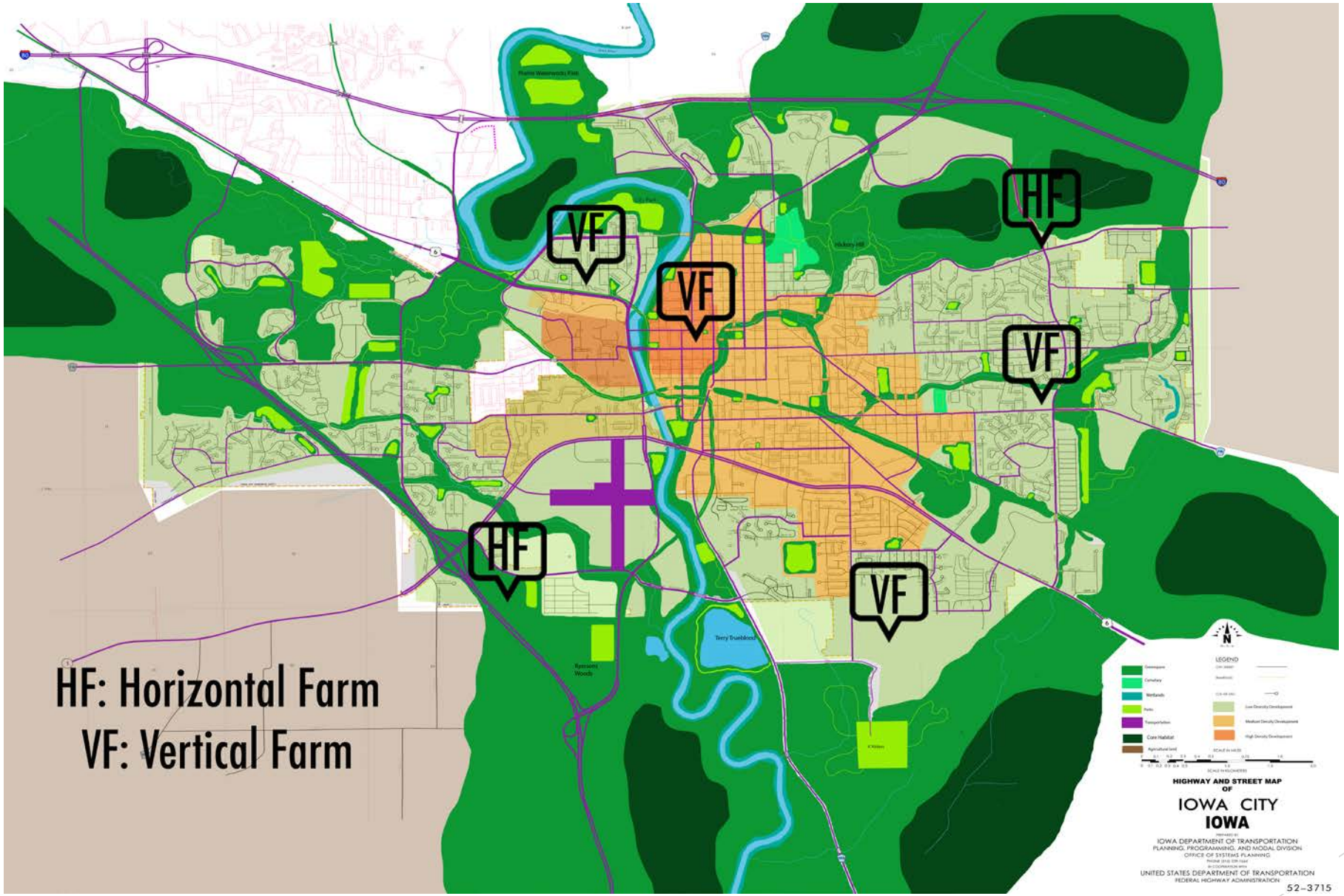
E Court St
University Heights
Sunset St
Tower Court Park
Iowa River
Oak Grove Park
Creekside Park
3D


HF
VF
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HF: Horizontal Farm
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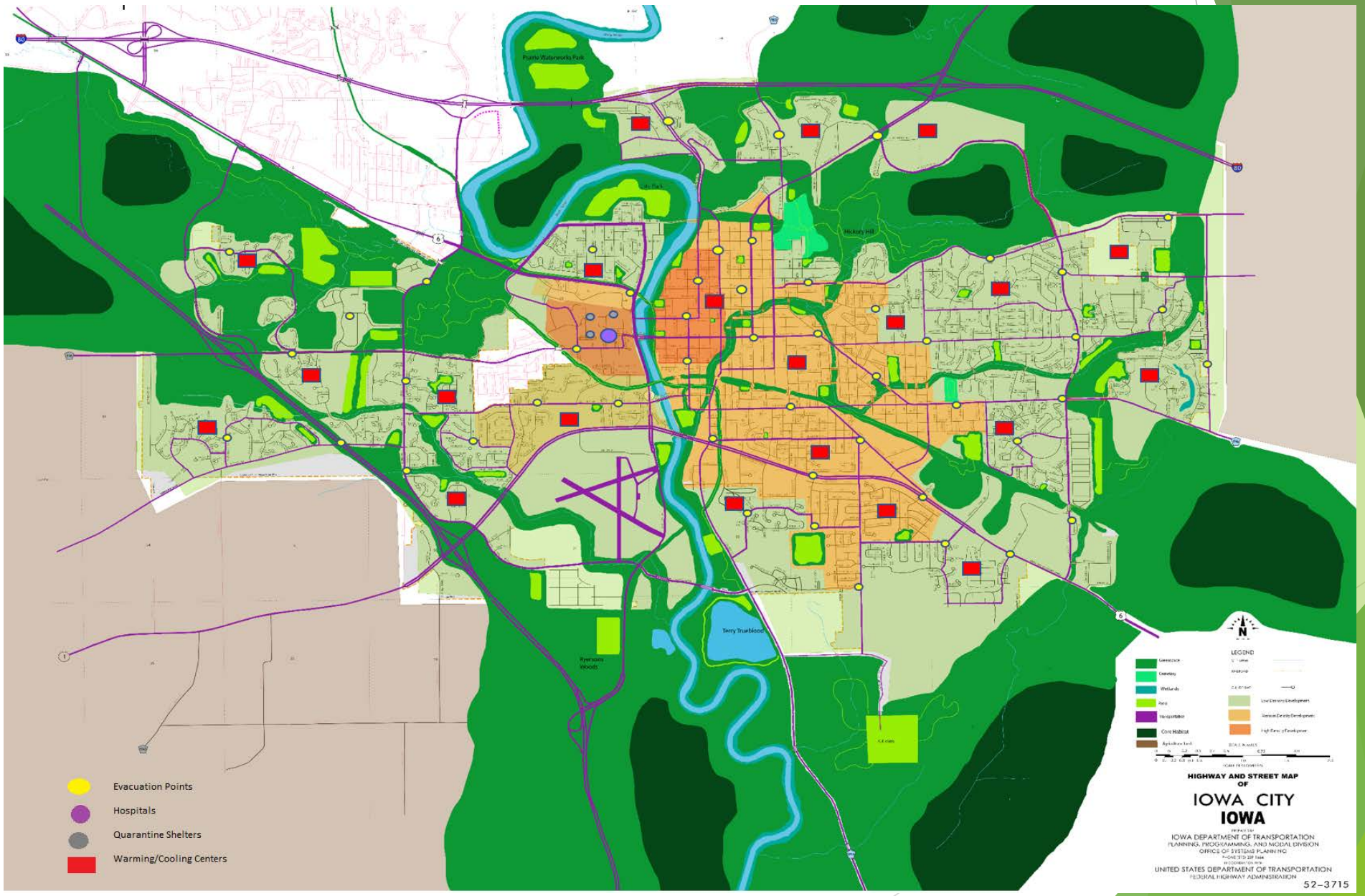
Disaster Preparedness Map



Human Connections

https://rachaelschaefer97.wixsite.com/connectic

Rachael Schaefer

Political Science 4th Year

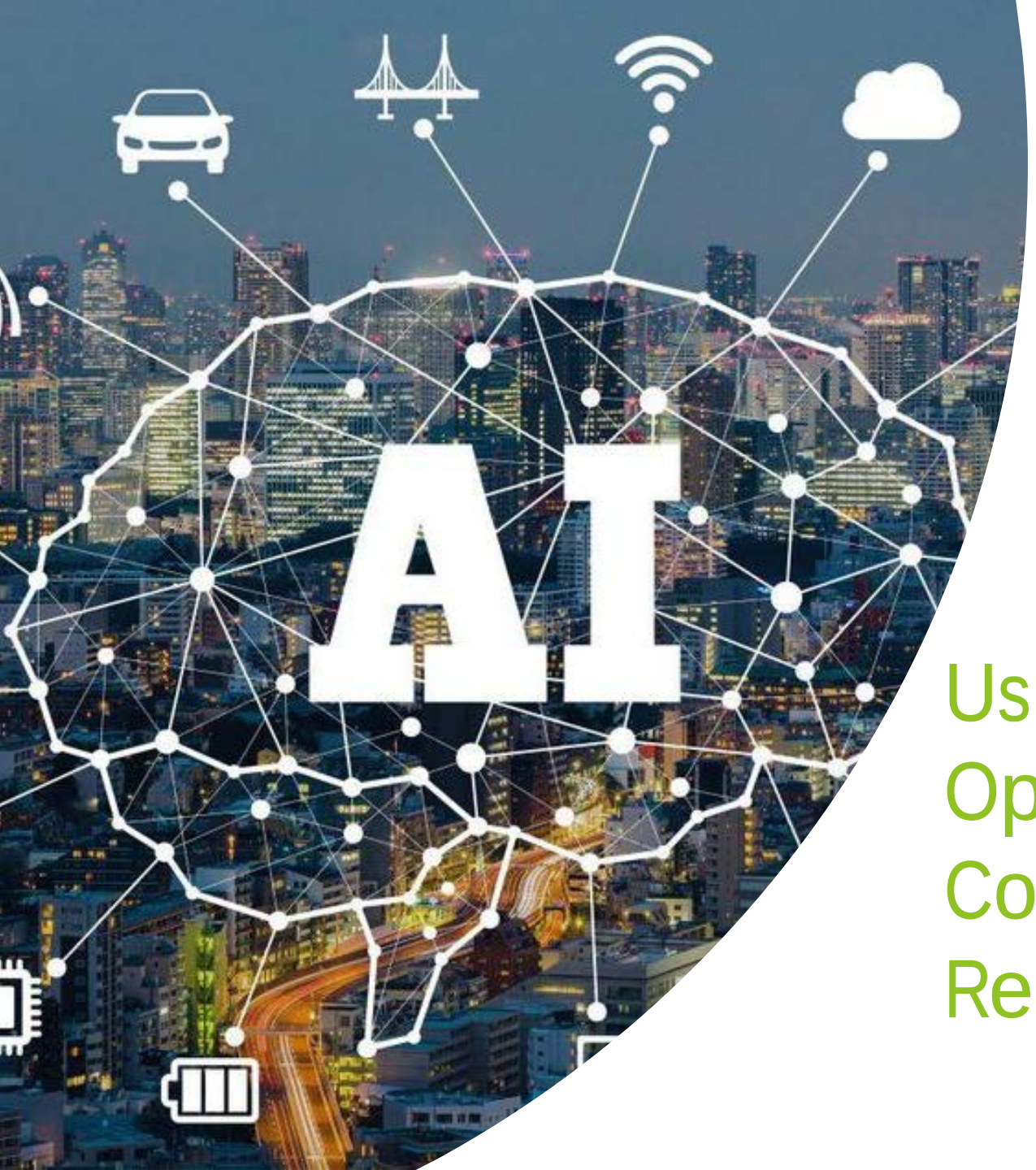
Waterloo, IA

Artificial Intelligence Sensors & Optimization

Jackson Solsma

Chemical Engineering 3rd Year

Ankeny, IA



Using A.I. Enhanced Optimization and Controls to Build a Regenerative City

“Smart” is not enough…

- Modern cities need to adapt, with modern technology
- Waste streams, incoming streams, and consequential effects are often monitored as minimally as possible.
- Community engagement is limited.

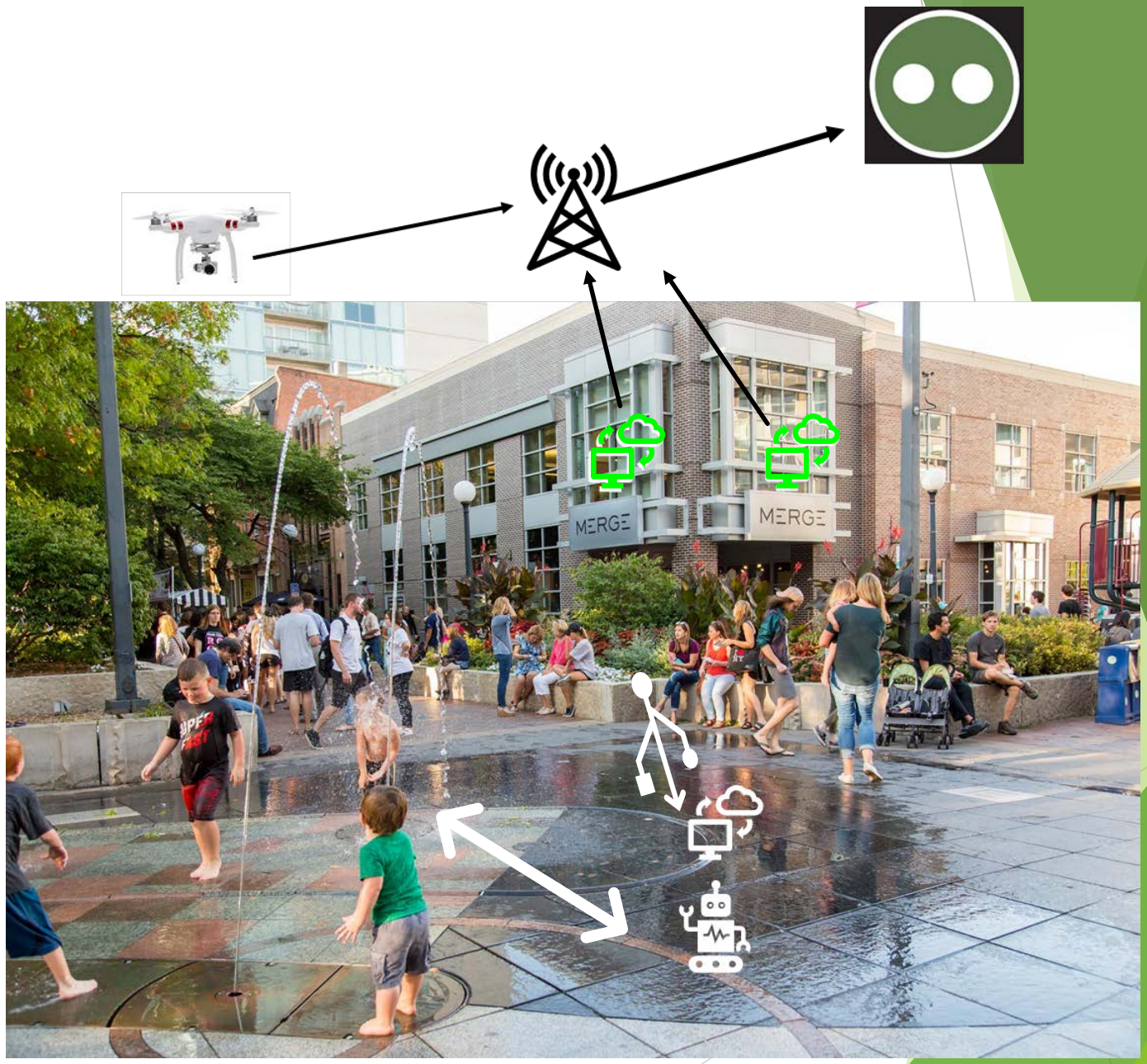
THE SOLUTION:

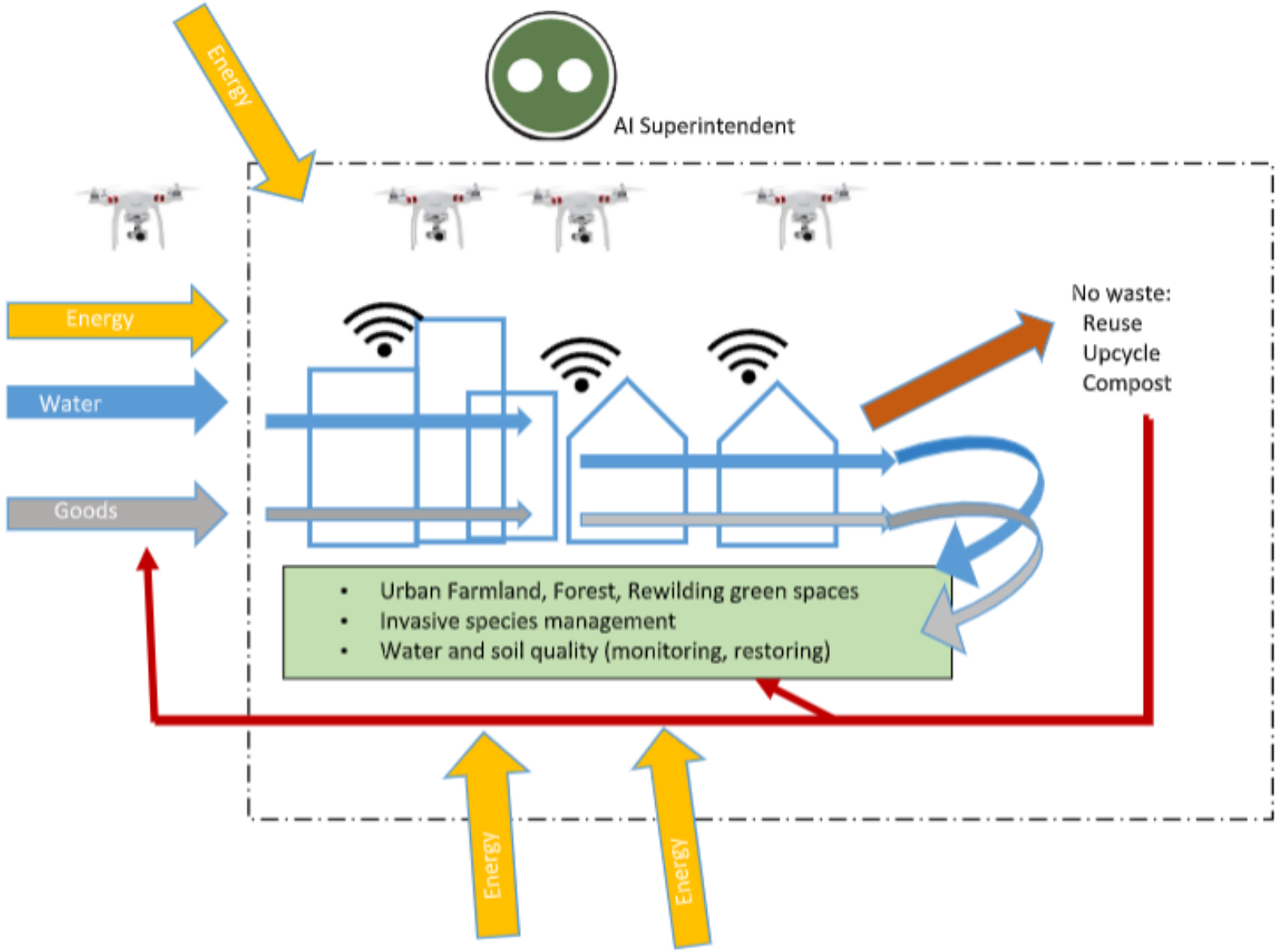
Using A.I., to do real-time control and monitorization of city inputs, outputs, and functions. It controls and prioritizes for *REGENERATIVITY*. It is also community interactive!

On a City Scale

Things to note…

1. Physical manifestation will be macroscopic.
2. It will interfere with daily life minimally.
3. Keeps track of where the city needs resources, where it can cut back, etc.




Energy
AI Superintendent
Energy
Water
Goods
No waste:
Reuse
Upcycle
Compost
Urban Farmland, Forest, Rewilding green spaces
Invasive species management
Water and soil quality (monitoring, restoring)
Energy
Energy

Why this is different from a “smart city”

Smart City

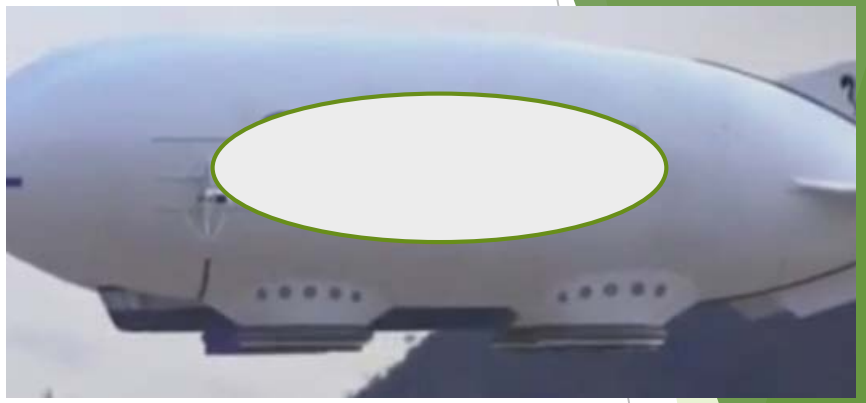
- Needs human labor-intensive management
- Doesn’t monitor inputs and outputs
- Doesn’t do a consequential LCA of all things that constitute the city and its functions.

Regenerative A.I. Optimized City

- Can do regenerative tasks on its own
- Real-time monitorization
- CONNECTED with its community
- When people ARE needed, shows them exactly where they need to be

Where is this technology currently being applied?

- Delivery companies
- Military
- Agriculture
- Public Safety



Greenspace and ecosystem services

Joshua Engelbrecht

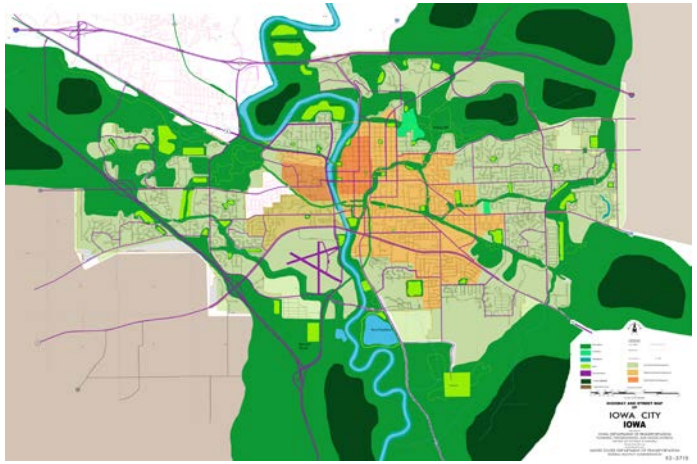
Environmental Sciences 3rd Year

Sustainability Certificate

Iowa City, IA

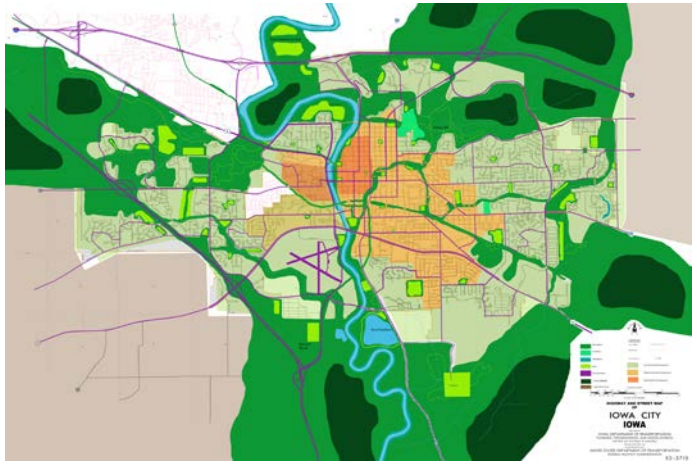
The Project

- Goal: To create a map of extensive and connected greenspace plan for Iowa City
  - Greenspace is linked to regeneration in many different forms, from Human wellbeing to CO2 sequestration.



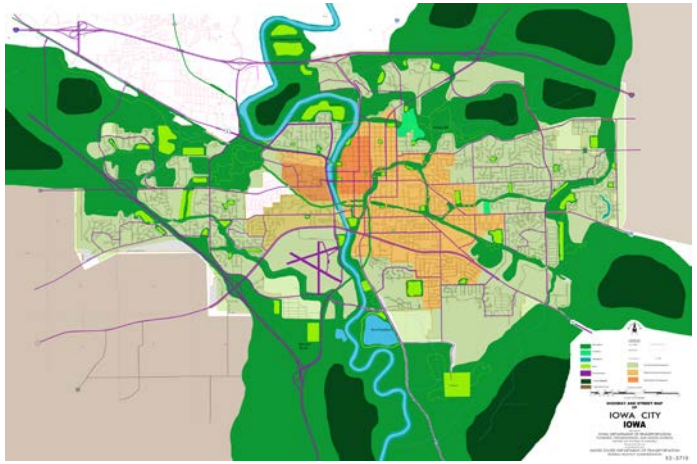
Ecosystem services for the Environment

- Greenspaces provide many services for a city:
  - Wetlands mitigate flooding and Stormwater run off
  - Increased tree cover reduces the Urban Heat Island effect, CO2 and VOC uptake
  - Vegetation stabilizes and regenerates soil
  - Increased vegetation cover provides habitat



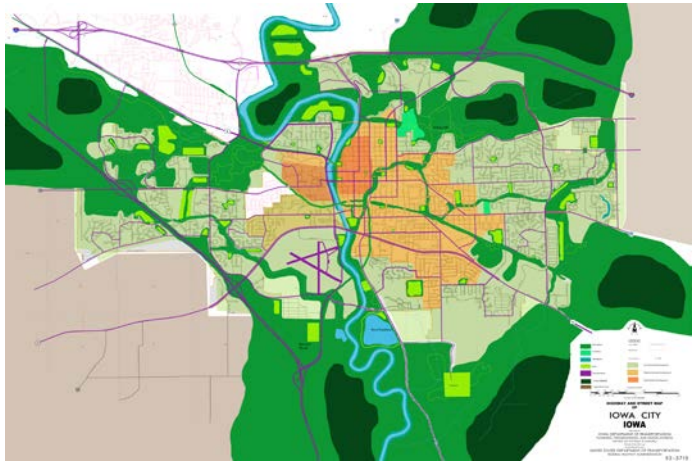
Greenspaces for Plants and Animals

- Large areas of restored ecosystem provide habitat for species
  - Connecting corridors allow for increased genetic flow and reduces stress
  - Buffer greenspace protects core habitat needed for species sensitive to human interaction



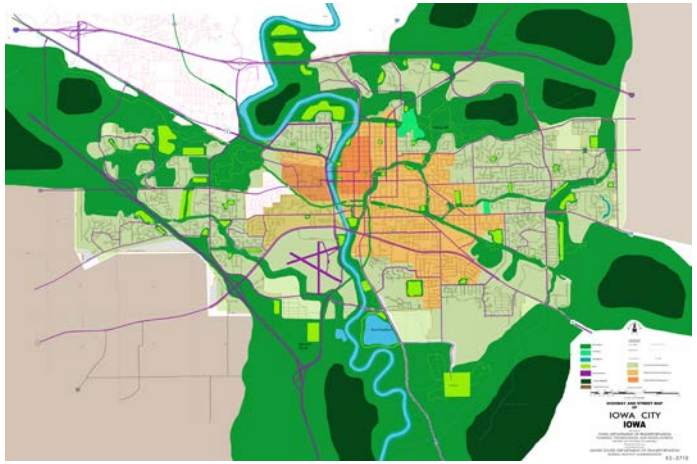
Greenspace and Human wellbeing

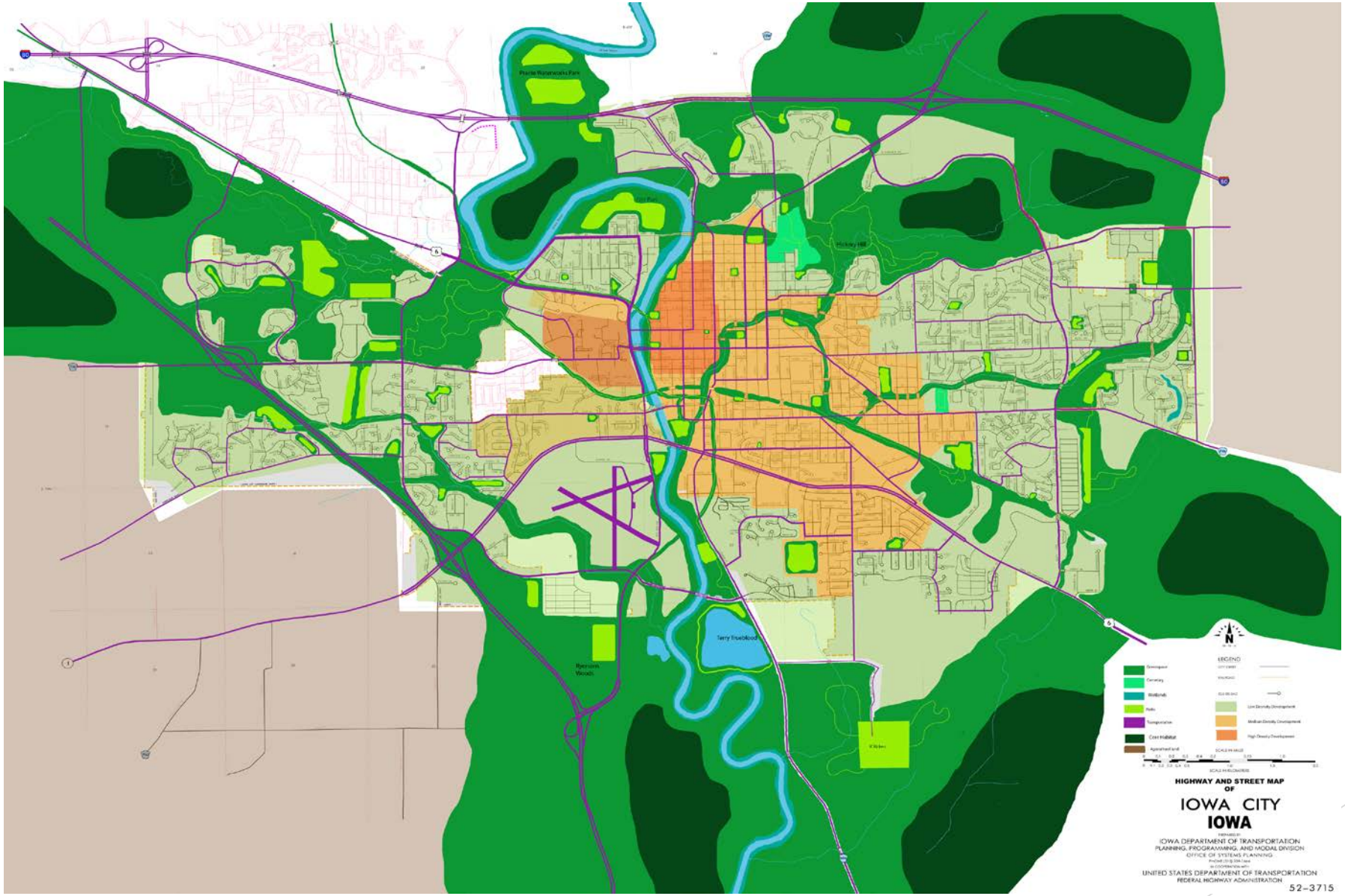
- Greenspace benefits:
  - Access to recreation
  - Reduced “Extinction of experience”
  - Recharges attention and increases productivity
  - Increases to Mental and Physical health



Big Takeaways

- The plan changes the anthropocentric view on Urban environments
  - These green spaces seek to make room for non-human species and give them a place, while creating access for human inhabitants to enjoy nature and the environment as well.

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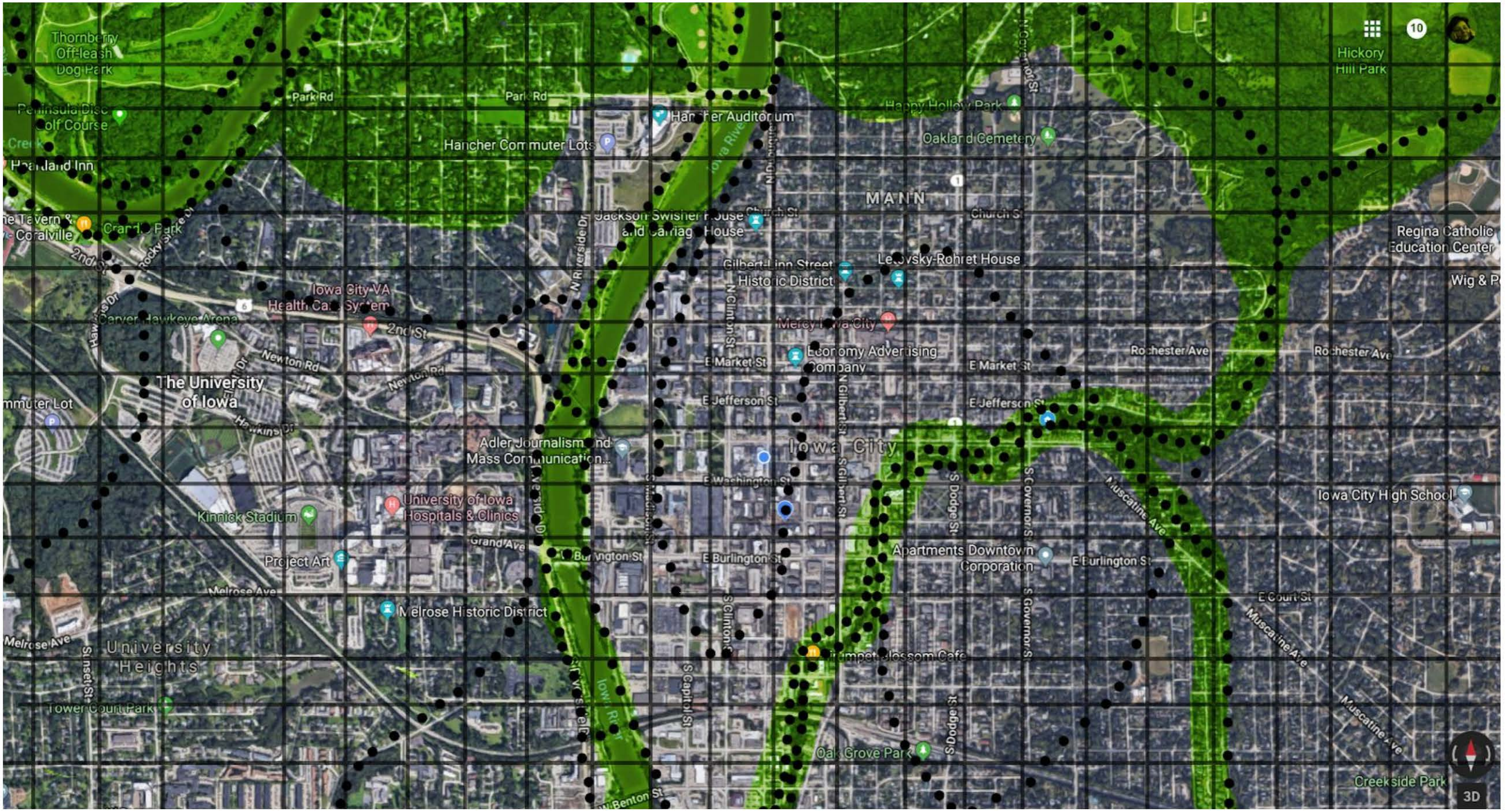
Streetscapes & mobility

Elin Dejus
Theatre Arts 4th Year
Sustainability Certificate
Hinsdale, IL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Apartments Downtown Corporation
Melrose Ave
Melrose Historic District
E Court St
University Heights
Sunset St
Tower Court Park
Iowa River
Oak Grove Park
Creekside Park
3D

Local & regional transportation

Jane Rice

Journalism and Mass Communication 4th Year

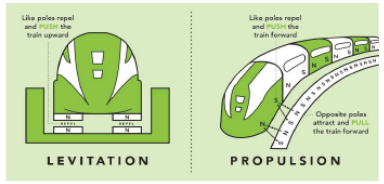
Sustainability Certificate

Des Moines, IA

BRAIN Transportation

Promoting a regenerative, carless future

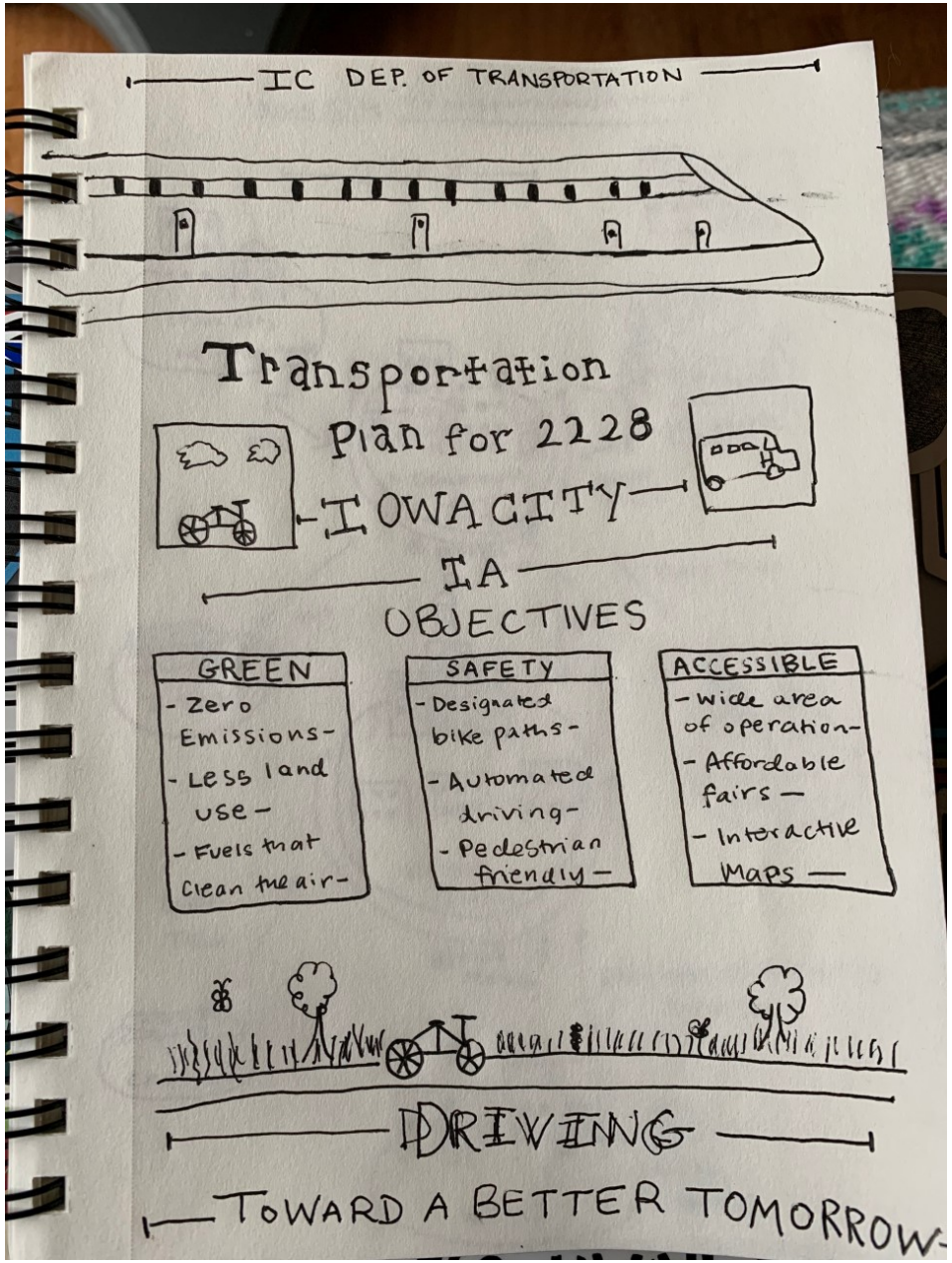
Regional transport: Electromagnetic Rail Elevated Trains

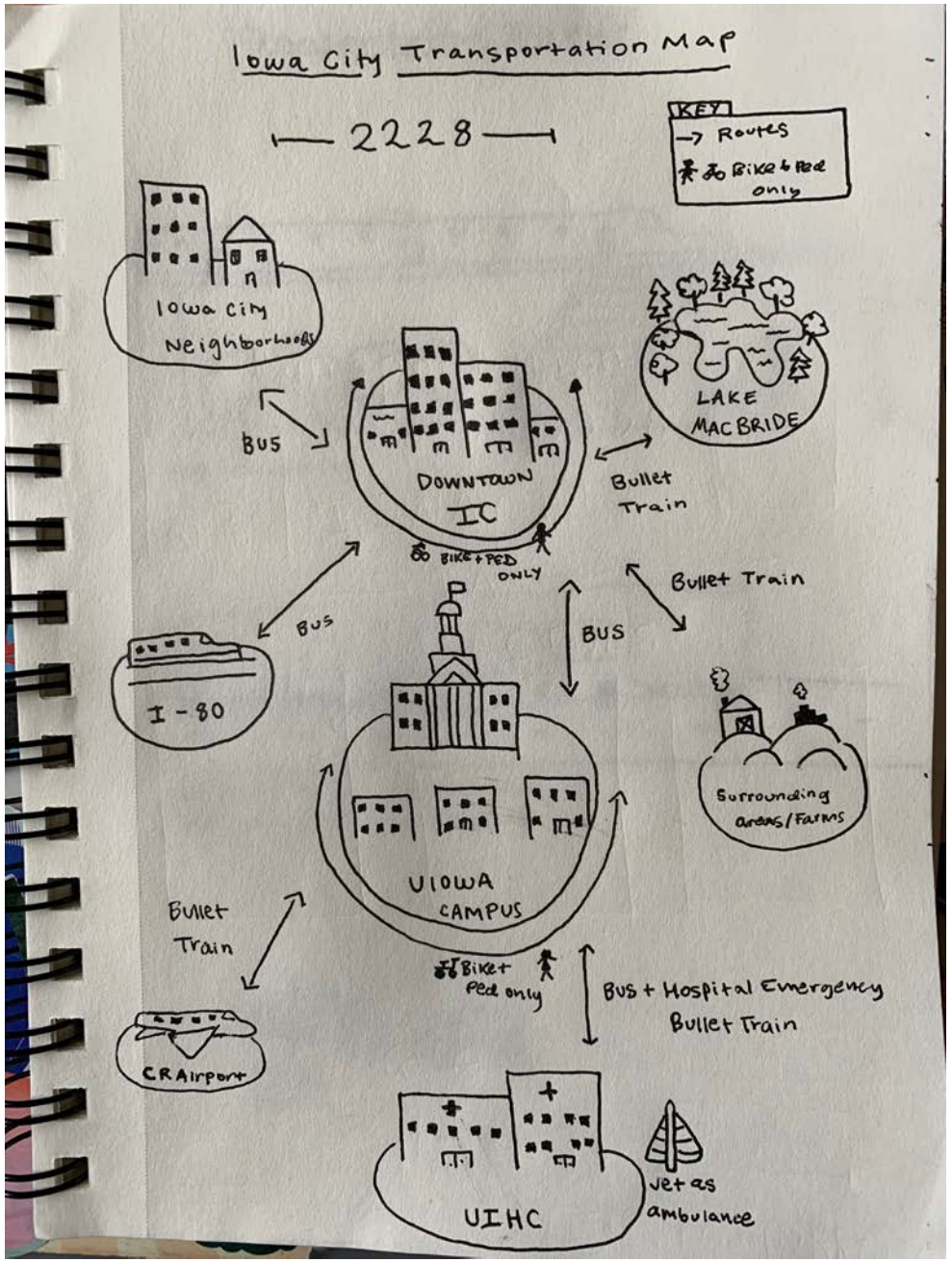


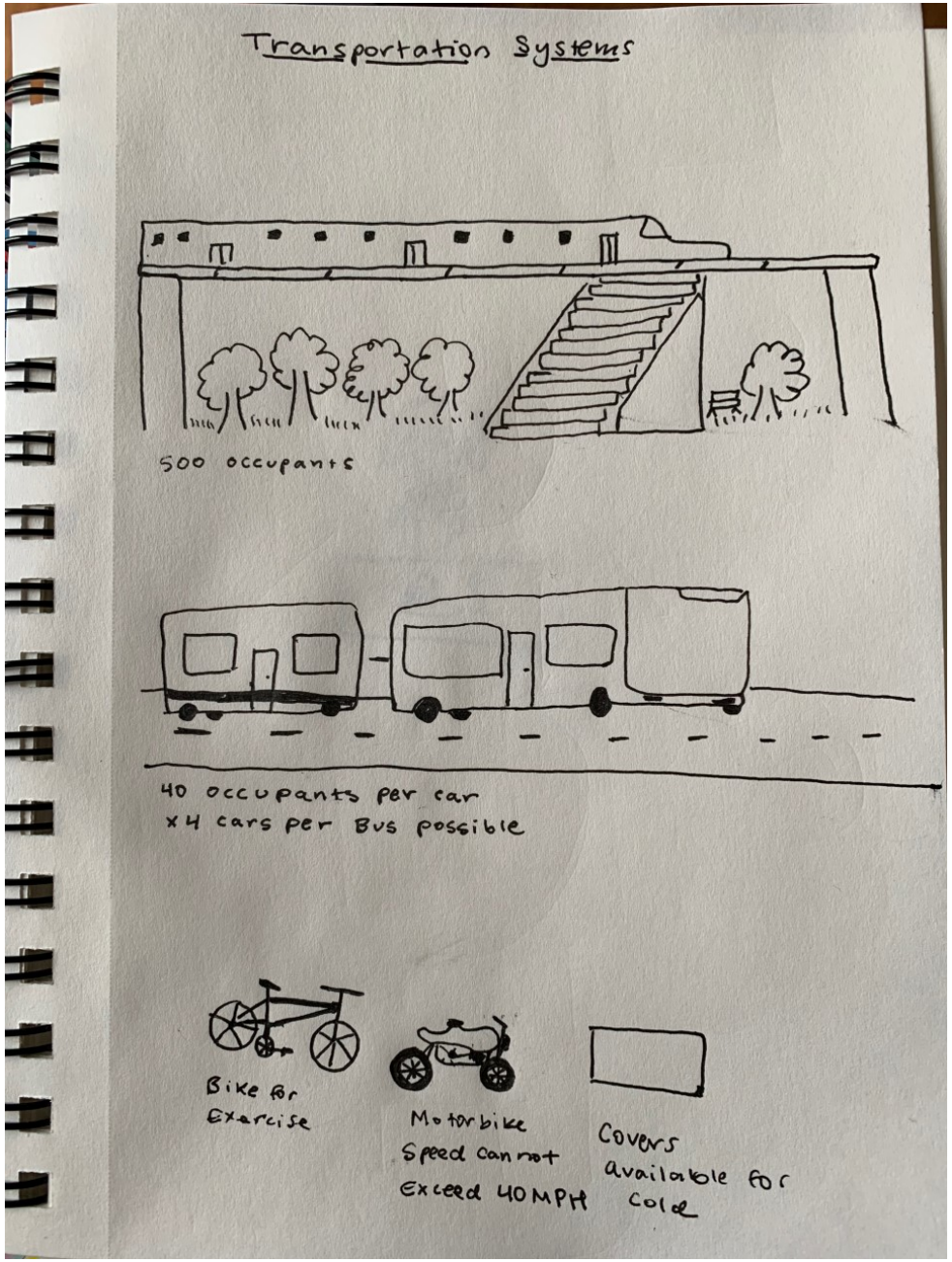
Local transport: Electromagnetic Rail Bus System

Objectives

GREEN	SAFE	ACCESSIBLE
-Zero emissions -Silent -Overpasses use less land -Fuel that cleans air as it drives	-Automated driving -AI Sensors -Stops at designated pedestrian areas -No car traffic related risks	-Wide area of operation -Free transit -Interactive maps -Regional travel


IC DEP. OF TRANSPORTATION
Transportation
Plan for 2228
IOWA CITY
IA
OBJECTIVES
GREEN
- Zero Emissions-
- Less land use-
- Fuels that clean the air-
SAFETY
- Designated bike paths-
- Automated driving-
- Pedestrian friendly-
ACCESSIBLE
- Wide area of operation-
- Affordable fairs-
- Interactive Maps-
DRIVING
TOWARD A BETTER TOMORROW


Iowa City Transportation Map
2228
KEY
Routes
Bike & Ped only
Iowa City Neighborhoods
LAKE MACBRIDE
BUS
DOWNTOWN IC
Bullet Train
BIKE & PED ONLY
BUS
Bullet Train
BUS
I-80
Surrounding areas/Farms
UIOWA CAMPUS
Bullet Train
Biker Ped only
Bus + Hospital Emergency
Bullet Train
CR Airport
UIHC
Vet as ambulance


Transportation Systems
500 occupants
40 occupants per car
x4 cars per Bus possible
Bike for Exercise
Motorbike Speed cannot Exceed 40MPH
Covers available for cold

Global transportation & connectivity

Caroline Wagner

Social Work 4th Year

Sustainability Certificate

Nevada, IA

BENEFITS

- Quick travel
- Easy system to navigate
- Accessible to anyone
- Free
- No high traffic
- Promotes discovery of new places
- Interesting views

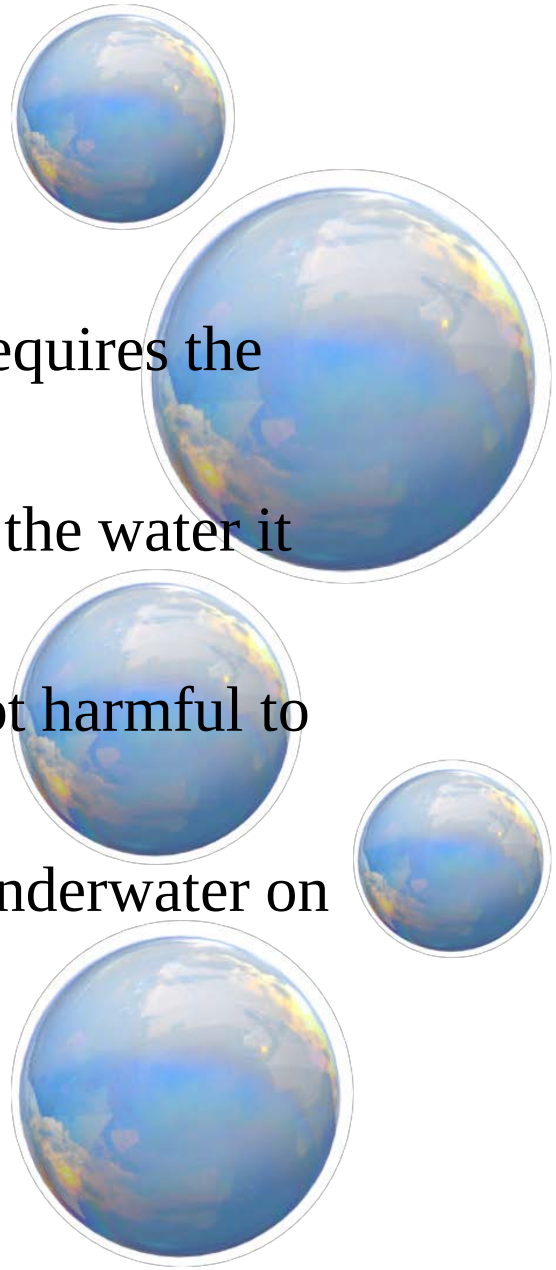
REGENERATIVE PROPERTIES

- Bubble cleans the water as it passes
- Bubble cleans the air as it passes
- Sticky exterior picks up pollution in air and water to be deposited back at the Bubble hubs

Travels underwater if going across the ocean – doesn't disrupt habitats

UNDERWATER TRAVEL

- Travelling across the ocean requires the Bubbles to go underwater
- Bubble removes plastic from the water it passes through
- Safe for the animals and is not harmful to the environment
- Passengers can see wildlife underwater on their trip



Food, farms, and gardens

Riley Cranston

Civil Engineering 1st Year

Chicago, IL

Issues of Today's Industrial "conventional" Agriculture

- Monocrop
- Extensive land use
- Methane emissions
- Chemical Run off

A collection of

Greenhouses

Vertical farms

IC Farming Future

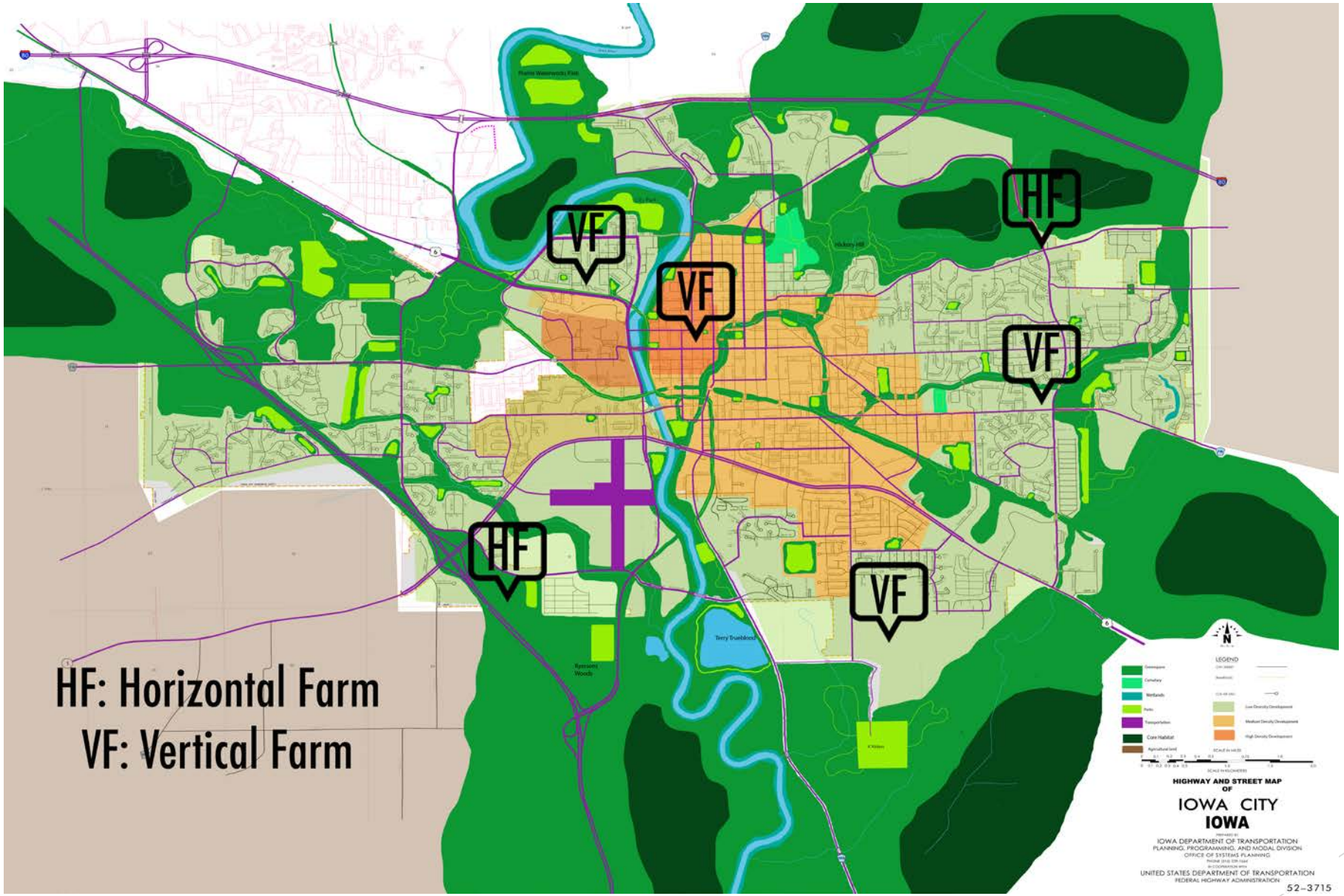
Horizonal farms

Vertical Farm Production

- Hydroponics
- Aeroponics

Horizontal Farms

A mix of greenhouses &
farms with limited livestock


HF
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52-3715

Disaster Mitigation and Adaptation

Katie Bussell

Geography 4th Year

Sustainability Certificate

Woodstock, IL

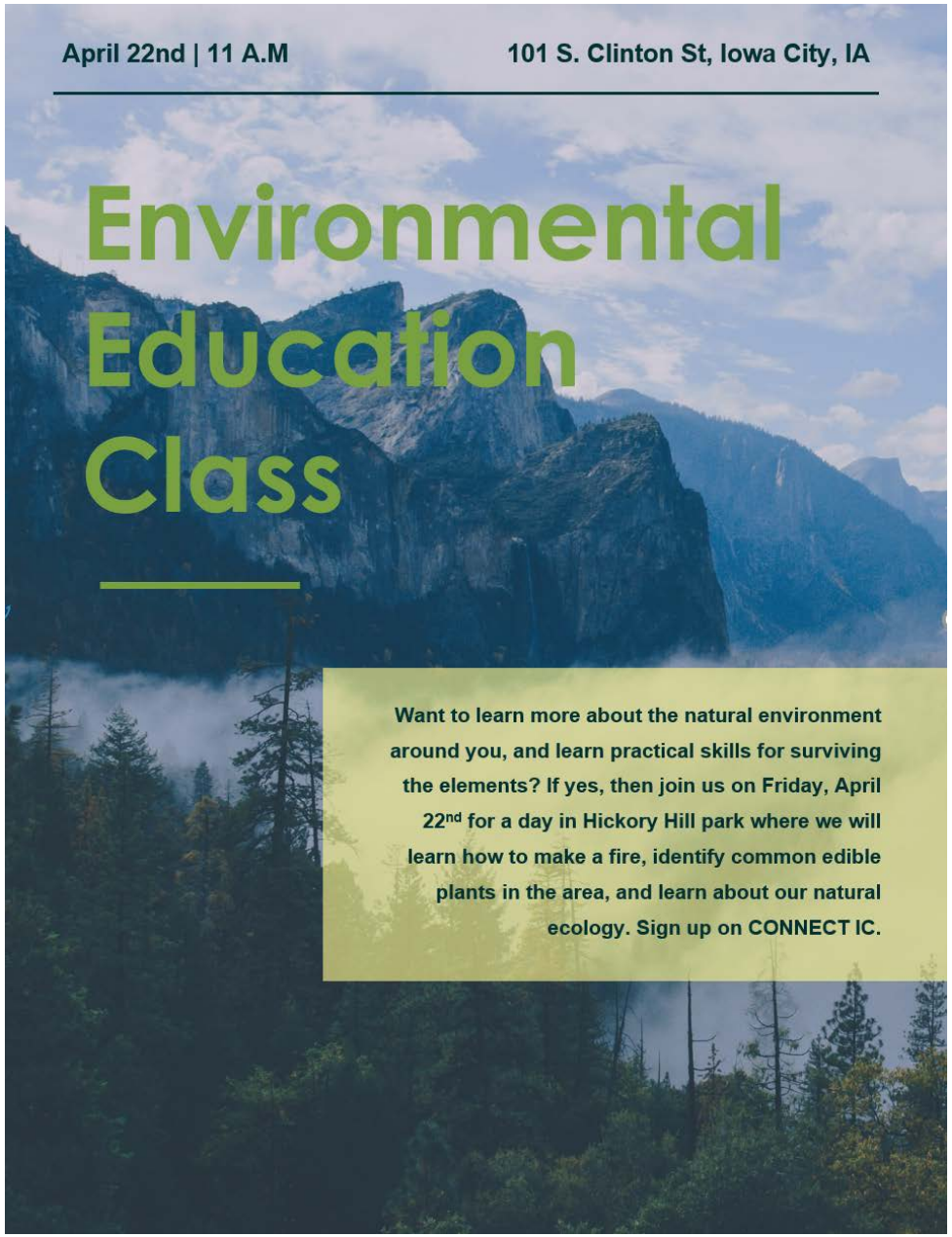
Why Disaster Mitigation?

- Disasters don’t just go away
- Climate change
- Natural disasters
- New technology – new challenges

Objectives

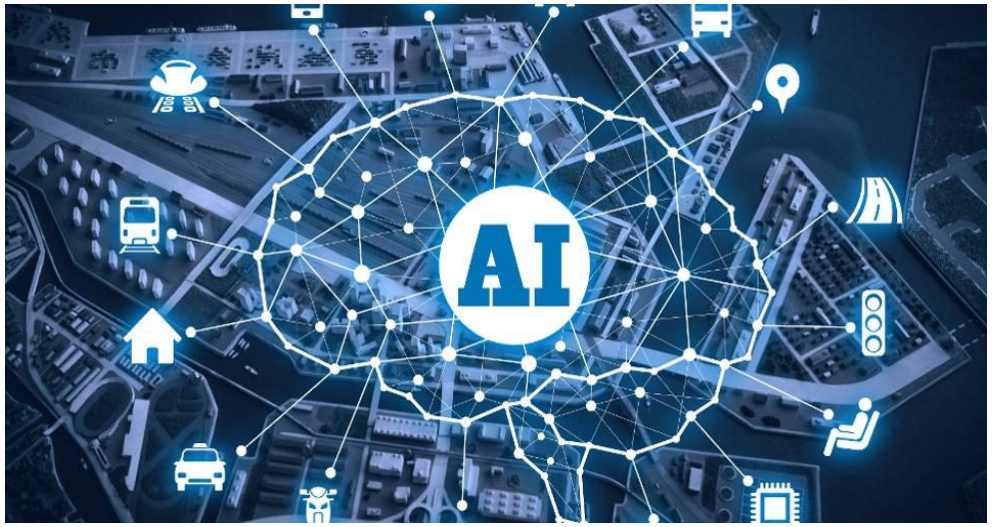
- Education
- Nature-based solutions with technological enhancements
- Alert system
- Citizen instruction guide
- Government Protocol guide
- Disaster Map

Education


April 22nd | 11 A.M
101 S. Clinton St, Iowa City, IA
Environmental Education Class
Want to learn more about the natural environment around you, and learn practical skills for surviving the elements? If yes, then join us on Friday, April 22nd for a day in Hickory Hill park where we will learn how to make a fire, identify common edible plants in the area, and learn about our natural ecology. Sign up on CONNECT IC.

Nature-based and Technological Solutions

- Wetlands and greenspace
- Technology



Alert System

FLOOD ALERT

THERE IS A FLOOD WARNING FOR OUR AREA EFFECTIVE UNTIL TUESDAY, MARCH 30TH. THE RIVER IS EXPECTED TO CREST AT 32 FEET. SANDBAGGING IS UNDERWAY. REFER TO PAGE 1 OF YOUR DISASTER PREPAREDNESS GUIDE, OR CLICK THE LINK BELOW FOR FURTHER INSTRUCTIONS.

“DISASTER PREPAREDNESS GUIDE – FLOODING”

Citizen Instruction Guide

FLOODING

WHAT TO DO

- Get to high ground
- Do not go into water
- Invite those living on lower floors to higher floors
- Stock up on food and use water-generator as a back-up
- Assist with sandbagging

AI REVOLT ALERT

THE AI IS COMPROMISED. REFER TO PAGE 14 OF YOUR DISASTER PREPAREDNESS GUIDE, OR CLICK THE LINK BELOW FOR FURTHER INSTRUCTIONS.

“DISASTER PREPAREDNESS GUIDE – AI REVOLT”

AI REVOLT

WHAT TO DO

- Stay calm
- If you are an engineer on the AI, report to Headquarters
- Turn off all electronics
- Turn on auxiliary back-up generators
- Head to emergency shelter if technology becomes violent
- Make sure neighbors are aware of the threat
- Wait for further instruction and updates

GoKit

- Survival kit
- Essentials
  - Dehydrated food
  - Lighter
  - Water purifier
  - Temporary shelter
  - Etc.
- Every citizen has one
- Checked on every month to make sure everything is in working order

Government Protocols

- Overview
  - Extraterrestrial issues
- Preemptive and adaptive measures
  - Ex: Farms
  - Ex: Dome
- Figures
- Map

Example of the Dome

Food Shortage

Preemptive Measures

- Diverse farming methods to ensure not all crops will fail in the event of a blight or other problem
  - Hydroponics
  - Aeroponics
  - Greenhouses
  - Horizontal farms
- AI monitors food output and consumption
- AI monitors for disease and administers natural pesticides when necessary
- Set aside portions of food production for emergency rations

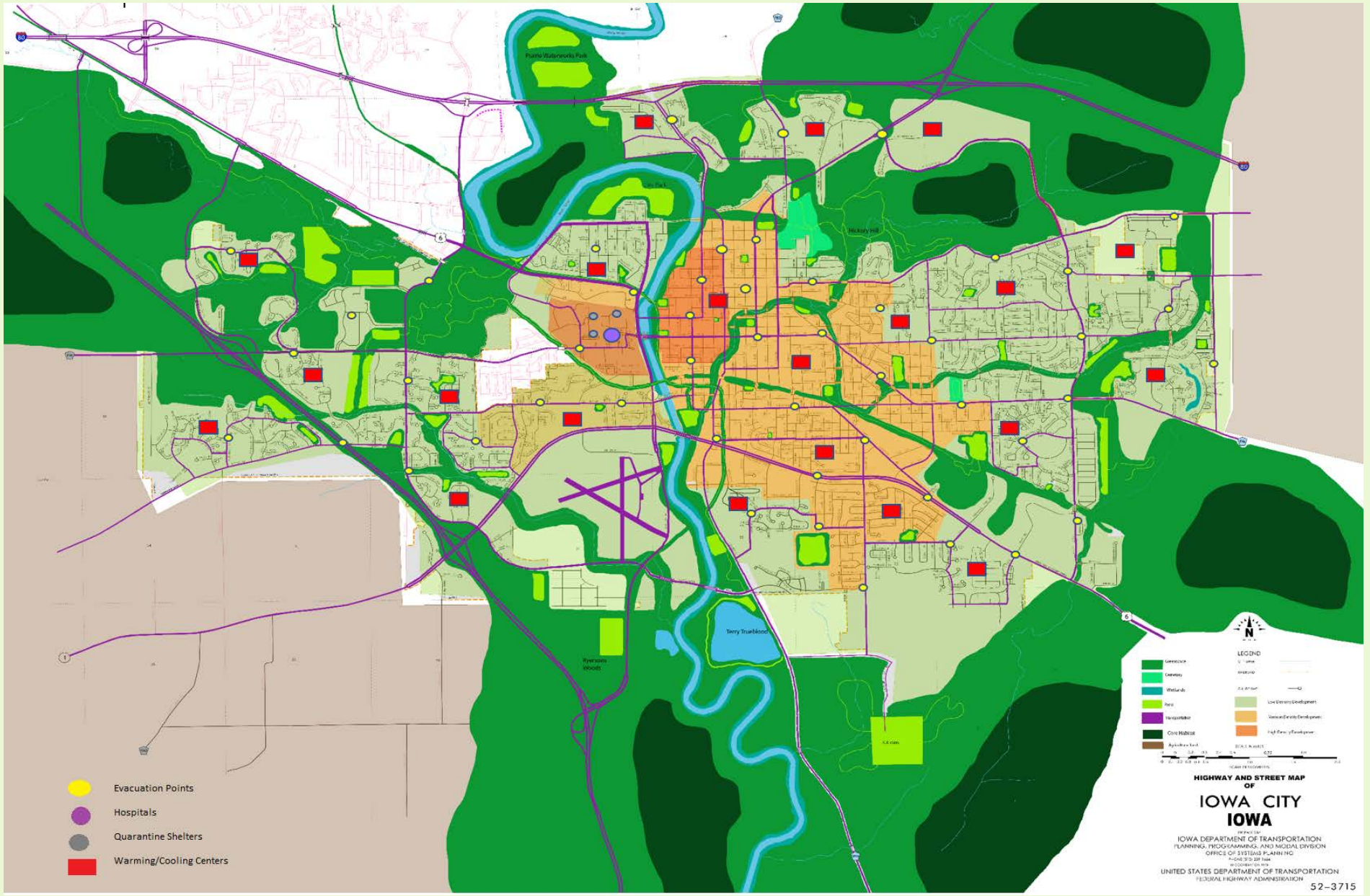
Adaptive Measures

- AI will send out alert if there is a famine expected
- Drones will send out emergency food rations
- Will start importing food from around the globe to make up for the dearth
- If it is a global food famine, we start synthesizing food with technology

Figure 15: Example of a vertical farm.

Figure 16: Example of a 3D printer/food synthesizer for when we are short on natural food.

Disaster Preparedness Map



Buildings & urban form

Benjamin Elliot

Art & Art History 3rd Year

Cedar Rapids, IA


THE AIRLINER
312

Land use planning & zoning

EJ Jordan-Wood

Civil Engineering 4th Year

Elmhurst, IL

AMERICA'S NEXT regenerative city

URP 4172: Eight Generational Planning —
Envisioning Cities for Year 2228

The University of Iowa School of Urban & Regional Planning

The University of Iowa Iowa Initiative for Sustainable Communities

City of Iowa City UNESCO City of Literature

@scottspak