



The Supernetwork Sentinel

Spring 2025

Welcome to the Spring 2025 edition of **The Supernetwork Sentinel**, the newsletter of the Virtual Center for Supernetworks at the Isenberg School of Management, UMass Amherst. We are now publishing this newsletter in Fall and Spring editions. The newsletter's purpose is to keep you informed of events, activities, and successes of the Virtual Center for Supernetworks and the Center Associates. In this newsletter, we share with our readers and supporters the achievements of the Center Director and Center Associates as well as Center activities. As always, we include Kudos and News and a list of our recent Center publications.

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Doctoral Student Center Associate Dana Hassani Receives 2025 Outstanding Doctoral Student Research Award from the Isenberg School

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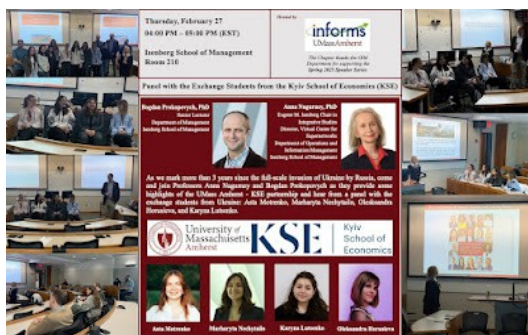


Collage of Photos from the End of the Semester UMass Amherst INFORMS Student Chapter Party

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The Partnership with KSE Flourishes

The partnership established between the University of Massachusetts Amherst and the Kyiv School of Economics (KSE) continues to flourish. On the afternoon of February 27, 2025, we hosted a panel at the Isenberg School of Management with the 4 exchange students from the Kyiv School of Economics (KSE) in Ukraine. Professor Anna Nagurney thanks the UMass Amherst INFORMS Student Chapter and its President, Doctoral Student Center Associate Ismael Pour, for designing a nice flyer for the event and for handling the promotion and logistics.



It was an honor for Professor Anna Nagurney to moderate this panel with her colleague, Dr. Bogdan Prokopych.

The slide deck of Professor Nagurney's presentation, with some background on the UMass Amherst - KSE partnership, which includes the student exchange program as well as a Virtual Scholar Program with scholars in Ukraine, can be found on the Supernetwork Center website: <https://supernet.isenberg.umass.edu/visuals/KSEExchangeStudentPanel2025.pdf>

On March 7, 2025, Dr. Tymofiy Mylovanov, the long-term President of KSE, returned for his third visit to UMass Amherst. Despite Russia's full-scale war on Ukraine, now in its fourth year, enrollment at KSE has tripled; many new programs have been started, including in engineering, and, through its KSE Institute, numerous timely white papers have been published that are regularly cited in the media. KSE, even in wartime, has hosted many dignitaries and thought leaders.

The Center Director, who continues to serve as a Co-Chair of the Board of Directors of KSE, and is on its International Academic Board, helped to organize his visit and talk, with assistance from the Office of Global Affairs and the UMass Amherst INFORMS Student Chapter.

Thanks to the Office of Global Affairs at UMass Amherst and its Director, Vice Provost Dr. Kalpen

Trivedi, and Kim Stender for organizing the excellent lunch at The Commonwealth Restaurant and with Provost Fouad Abd-El-Khalick, Dr. Trivedi, the Dean of Social and Behavioral Sciences Dr. Karl Rethemeyer, and Isenberg School Senior Associate Dean Lisa Masteralexis joining.

Since President Mylovanov was having a big birthday in a few days, we surprised him with dessert and Happy Birthday and his name written out in chocolate.

Afterwards, we had a terrific, informal Meet and Great in the Elkins Room at the Isenberg School, which included the exchange students from KSE, some of our Operations Management PhD students, the OIM Department Chair, Professor Senay Solak, and Professor Bogdan Prokopych.



Collage of Photos from the Visit of the KSE President

We then, as a group, headed to the IALS building where Dr. Mylovanov gave the talk, "Future of Europe if Ukraine Loses," to a packed audience of students, faculty, and staff from UMass Amherst, and even guests from Amherst College and the community. The UMass Amherst INFORMS Student Chapter did a fantastic job promoting this event. In fact, the announcement for Mylovanov's seminar was posted all week on the UMass Amherst homepage!

There was a great reception afterwards with delicious food and desserts.

The KSE exchange students were interviewed by the very popular radio show Talk the Talk as was Professor Anna Nagurney this spring semester.

Two of the KSE exchange students have been with us for two academic years and are now returning back to Ukraine. Two are staying on for another year and we expect additional ones to arrive in the Fall.

The Center Director invited the students for a special dinner in order to celebrate their accomplishments. The dinner was at The Inn at Boltwood in downtown Amherst. The warm conversations covered much territory - the students' classes and great professors, friends made from Massachusetts and from around the globe, the award-winning UMass Amherst food, college sports (notably, UMass hockey), life in

beautiful Amherst, and the differences between learning in the US and in Ukraine. Traveling thousands of miles from their homes and their families, the students: Asta Motrenko, Marharyta Nechytailo, Oleksandra Horusieva, and Karyna Lutsenko have achieved so much and have left a big imprint on all those who have had the pleasure of interacting with them.



Photos at the Dinner

Many thanks to Lorraine Martinelle, of Isenberg's Marcomm Department, for the lovely writeup on events with KSE folks this past semester:

<https://www.isenberg.umass.edu/news/three-years-later-isenberg-reflects-umass-amherst-partnership-ukrainian-institution>

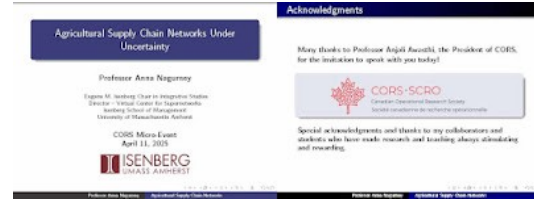
And, although UMass Amherst graduations were over as well as, officially, the academic year, on May 28, 2025, we helped to host the visit of Dr. Kostyantyn Kyrychenko, the Vice Rector for International Cooperation at the Kyiv School of Economics (KSE), to UMass Amherst. Many thanks to the Office of Global Affairs and Isenberg colleagues: Professors Ina Ganguli and Bogdan Prokopovych for the fabulous lunch and conversations. It was extra special that a few of the KSE exchange students could also join us for a while.



Collage of Photos from the Lunch with Dr. Kyrychenko of KSE

The Center Director Delivers Invited Seminars

It is always an honor to be invited to give seminars. This past semester, Professor Anna Nagurney was delighted to be invited by the CORS (Canadian Operational Research Society) President Dr. Anjali Aswathi to present on April 11, 2025 in a CORS online event. The title of her presentation was, "Agricultural Supply Chain Networks Under Uncertainty."



First Two Slides from the Presentation

A very official certificate was also issued.



Many thanks to CORS and to its President for the hospitality and for posting Professor Nagurney's talk:

<https://www.youtube.com/watch?reload=9&v=AIbWpVPM4uU&feature=youtu.be>

On March 28, 2025, Professor Anna Nagurney spoke at the University of Louisville in Kentucky. She was hosted by Professor Lihui Bai, who, along with Professor Monica Gentili, co-directs the Logistics and Distribution Institute there. Professor Nagurney had the pleasure of meeting with Professor Bai's PhD students, who even made presentations to her, and tremendously enjoyed seeing the campus. She even received a tour of where the Kentucky Derby takes place each spring. The research at the Institute is highly relevant and impactful. Professor Nagurney was delighted to hear about how variational inequalities are being applied to multiple problems related to sustainability there.

In her seminar presentation, the Center Director discussed agricultural supply chain networks as essential to food security and a major component of global trade. She described how optimization and game theory are being utilized to model and solve agricultural supply chain problems subject to a spectrum of trade instruments; how to capture fresh produce quality in multitiered supply chains, and how to measure resilience in order to mitigate against disruptions under conditions such as the pandemic, climate change, and wars. She also discussed how we can better promote our research contributions in order to influence

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Our Expertise on Tariffs Draws Media Attention

The Center Director strongly believes in responding to media requests on topics that we have expertise on.

<https://www.isenberg.umass.edu/news/isenberg-supply-chain-expert-nagurney-talks-tariff-impact-national-regional-media>

The POMS conference in Atlanta, Georgia, brought together many Center Associates. Thanks to Center Associate Professor Deniz Besik of the University of Richmond for hosting a nice lunch at a Turkish restaurant that included Center Associate Professor Min Yu of the University of Portland and Doctoral Student Center Associates: Dana Hassani, Ismael Pour, and Samira Samadi, all of whom gave presentations.



This summer will be busy in terms of conferences. The Center Director will present 3 invited talks at the EURO Conference in Leeds, UK. This will be a very special conference since the professional society of EURO is marking its 50th anniversary.

Plus, several Center Associates will present at the 2nd Virtual Conference on Ukraine in late August, being organized with support from the Royal Institute of Technology (KTH) in Stockholm, Sweden. The Center Director, as well as several Nobel laureates, will deliver keynote talks.

Congratulations to Doctoral Student Center Associate Dana Hassani on his receipt of two research awards - from the OIM Department and from the Isenberg School of Management. Thanks to the Isenberg School for this nice article on Dana's Outstanding Doctoral Research Award for 2025:
<https://www.isenberg.umass.edu/news/isenberg-phd-student-dana-hassani-honored-2025-outstanding-student-research-award>

Congratulations to Doctoral Student Center Associate Ismael Pour on the publication of his article, **Integrated Crop and Cargo War Risk Insurance: Application to Ukraine**, joint work with the Center Director and Professor Borys Kormych of the Odesa Law Academy, in the *International Transactions in Operational Research*! Professor Kormych was a Virtual Scholar (in both cohorts), part of the partnership between the University of Massachusetts Amherst and KSE.

Ismael Pour did an outstanding job as President of the UMass Amherst INFORMS Student Chapter 2024-2025. His writeups on activities and other news can be found on the student chapter website:

<https://websites.umass.edu/umassinf/>

Congratulations to Doctoral Student Center Associate Samirasadat "Samira" Samadi, on the acceptance of her paper, co-authored with the Center Director, **Multicommodity Trade, Tariffs, and Rerouting**, in: *Convex and Variational Analysis with Applications: In Honor of Terry Rockafellar's 90th Birthday*. P.M. Pardalos and T.M. Rassias, Editors, Springer Nature Switzerland AG, 2025.

Congratulations to Center Associate Professor Deniz Besik on the publication of the paper, **Networks with Quality Deterioration Under Congestion and Transportation Capacities**, co-authored with the Center Director! This paper was published open access, thanks to the University of Richmond, in the *Journal of Global Optimization*. Professor Besik will present this paper at the CEMA in Houston in mid June: <https://business.rice.edu/cema>.

Professor Anna Nagurney is grateful to the Operational Research Society for having her Blackett Lecture paper published free access through 2025: **NetWORks and Policies: OR to the Rescue**, A. Nagurney, *Journal of the Operational Research Society* (2025): <https://www.tandfonline.com/doi/full/10.1080/01605682.2025.2494706?src=exp-la#abstract>

Congratulations to Center Associates Professors Dong Li of Babson College, Jose M. Cruz of the University of Connecticut, and Ke Ke of Central Washington University on the publication of their paper, **Closed-loop Supply Chain Network Model with Recycling, Re-manufacturing, Refurbishing, and Corporate Social Responsibility**, in the *Annals of Operations Research* in 2025.

Professor Anna Nagurney was honored to be ranked #6 in supply chains globally according to ScholarGPS. She is in the top .05% of highly ranked scholars: <https://annanagurney.blogspot.com/2025/06/thrilled-to-be-ranked-6-in-supply.html>

Recent Center Publications

Please see our center articles at: <http://supernet.isenberg.umass.edu/dart.html>

Integrated Crop and Cargo War Risk Insurance: Application to Ukraine, A. Nagurney, I. Pour, and B. Kormych, *International*

Transactions in Operational Research (2025), published online.

NetWORks and Policies: OR to the Rescue, A. Nagurney, *Journal of the Operational Research Society* (2025), free access through 2025: <https://www.tandfonline.com/doi/full/10.1080/01605682.2025.2494706?src=exp-la#abstract>

Multicommodity Fresh Produce Trade Networks with Quality Deterioration Under Congestion and Transportation Capacities, D. Besik and A. Nagurney, *Journal of Global Optimization* (2025), published open access: <https://link.springer.com/article/10.1007/s10898-025-01507-3>

Multicommodity Trade, Tariffs, and Rerouting, A. Nagurney and S. Samadi, accepted for publication in: *Convex and Variational Analysis with Applications: In Honor of Terry Rockafellar's 90th Birthday*. P.M. Pardalos and T.M. Rassias, Editors, Springer Nature Switzerland AG, 2025.

A Multiperiod, Multicommodity, Capacitated International Agricultural Trade Network Equilibrium Model with Applications to Ukraine in Wartime, D. Hassani, A. Nagurney, O. Nivievskiy, and P. Martyshev, *Transportation Science* (2025), **59(1)**, 143-164.

In Memoriam: Marguerite Straus Frank (1927-2024), I.M. Bomze and A. Nagurney, *EURO Journal on Computational Optimization* (2025), **13**, 100104.

Dynamics of Disasters: From Natural Phenomena to Human Activity, I.S. Kotsireas, A. Nagurney, P.M. Pardalos, S. Pickl, C. Vogiatzis, Editors, (2024), Springer Nature Switzerland AG; see: <https://link.springer.com/book/9783031740053>

A Variational Inequality Trade Network Model in Prices and Quantities Under Commodity Losses, A. Nagurney, I. Pour, S. Samadi, *Journal of Nonlinear and Variational Analysis* (2024), **8(6)**, 935-952.

Civilian-Military Integration in Ukrainian Defense Supply Chain, M. Kushnir, A. Nagurney, and R. Konrad, *Proceedings of the 21st ISCRAM Conference – Münster, Germany May 2024*, Berthold Penkert, Bernd Hellingrath, Monika Rode, Adam Widera, Michael Middelhoff, Kees Boersma, Matthias Kalthöner, Editors.

Commentary on Carroll & Esposito Amideo "Gender Equality: Opportunities and Challenges for the OR Community," A. Nagurney, *Journal of the Operational Research Society* (2024), **75(6)**, 1035-1038.

Schäden und Wiederaufbau der ukrainischen Infrastruktur (Damage and Reconstruction of Ukrainian Infrastructure)

O. Nivievskyi, D. Goriunov, and A. Nagurney, *UKRAINE-ANALYSEN AUSGABE* 296 (15.03.2024) — DOI: 10.31205/UA.296.03. For the English translation, see: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4831914

Multicommodity International Agricultural Trade Network Equilibrium, A. Nagurney (2024), in press in *Encyclopedia of Operations Management*, T.M. Choi, Editor, Elsevier.

Quantification of International Trade Network Performance Under Disruptions to Supply, Transportation, and Demand Capacity, and Exchange Rates in Disasters,

A. Nagurney, D. Hassani, O. Nivievskyi, and P. Martyshev (2024), in *Dynamics of Disasters-From Natural Phenomena to Human Activity*, I.S. Kotsireas, A. Nagurney, P.M. Pardalos, S. Pickl, C. Vogiatzis, Editors, Springer Nature Switzerland AG.

Ukraine – Addressing the Domestic Humanitarian Crisis and the Effects of the War on Global Food Systems,

O. Nivievskyi and A. Nagurney, in: *Food and Humanitarian Crises: Science and Policies for Prevention and Mitigation Proceedings of the Working Group 9-10 May 2023*, Joachim von Braun, Bettina Iseli, Maximo Torero, Peter Turkson (Editors) Scripta Varia 154, LEV, Vatican City, 2024.

Multicommodity International Agricultural Trade Network Equilibrium: Competition for Limited Production and Transportation Capacity Under Disaster Scenarios with Implications for Food Security,

A. Nagurney, D. Hassani, O. Nivievskyi, and P. Martyshev, *European Journal of Operational Research* (2024), **314(1)**, 1127-1142.

Food Security and Multicommodity Agricultural International Trade: Quantifying Optimal Consumer Subsidies for Nutritional Needs,

A. Nagurney, *International Transactions in Operational Research* (2024), **31(3)**, 1375-1396.

Exchange Rates and Multicommodity International Trade: Insights from Spatial Price Equilibrium Modeling with Policy Instruments via Variational Inequalities,

A. Nagurney, D. Hassani, O. Nivievskyi, and P. Martyshev, *Journal of Global Optimization* (2023), **87**, 1-30.

A Three-Stage Stochastic Optimization Model integrating 5G Technology and UAVs for Disaster Management, G. Colajanni, P. Daniele, A. Nagurney, L.S. Nagurney, and D.

Sciacca, *Journal of Global Optimization* (2023), **86**, 741-780.

International Migrant Flows: Coalition Formation Among Countries and Social Welfare,

M. Passacantando, F. Raciti, and A. Nagurney, *EURO Journal on Computational Optimization* (2023), **11**, 100062.

An Integrated Multitiered Supply Chain Network Model of Competing Agricultural Firms and Processing Firms: The Case of Fresh Produce and Quality,

D. Besik, A. Nagurney, and P. Dutta, *European Journal of Operational Research* (2023), **307(1)**, 364-381.

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