# Max Ghenis Synergistic Activities

1. Open Source Policy Analysis Innovation: Co-invented PolicyEngine, the first open-source software product to enable custom tax and benefit policy modeling at both the household and societal level in the US and UK. PolicyEngine democratizes sophisticated economic analysis, allowing policymakers, researchers, and the public to design and evaluate policies through an intuitive web interface backed by validated microsimulation models. This innovation integrates and transfers knowledge from academic economic research into an accessible tool for evidence-based policymaking.
2. Novel Data Science Applications in Economics: Pioneered the use of quantile regression forests for economic survey data integration and gradient descent for reweighting survey data to calibrate against national accounts. These innovations combine machine learning techniques with economic data to improve the accuracy and reliability of policy analysis. By open-sourcing these methodologies, he has enabled other researchers to build upon and refine these approaches.
3. Open Source Economic Think Tank: Founded the UBI Center in 2019, establishing the first economic policy think tank to apply 100% open source standards across all aspects of its work. From microsimulation models to website development and research articles, all work is conducted in public GitHub repositories. This approach promotes transparency, reproducibility, and collaboration in policy research, setting a new standard for think tanks and research organizations.
4. Software Development for Economic Analysis: Developed microdf, an open-source Python package that produces weighted pandas DataFrames for automatic weighted calculations in economic analysis. This tool simplifies and standardizes common data manipulation tasks in policy research, enhancing productivity and consistency across the field. By making this tool freely available, he has contributed to the broader ecosystem of open-source scientific computing.
5. Education and Outreach: Regularly conducts workshops, webinars, and presentations on open-source policy analysis tools and methodologies. These activities focus on training researchers, students, and policymakers in using innovative software for economic analysis, broadening the adoption of open and transparent research practices in the field of public policy.

These activities demonstrate Max Ghenis's commitment to integrating and transferring knowledge through innovative software development, novel analytical methods, and open-source practices in economic policy research and analysis. His work has contributed significantly to democratizing access to sophisticated policy modeling tools and promoting transparency and collaboration in the field.