The Role of International Student Mobility in Hybridized STEM and Interdisciplinary Programs in Japanese Higher Education: The Empowerment Informatics Program

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Abstract
Motives of international student mobility include education policy, globalization and migration policy, responsible for the labor flows of the 21st century. It follows that universities are forced to compete globally for foreign talent. The economic, political and societal forces of globalization leveled the playing field for students via education policy and an increase of students' choices. Establishing degree programs that hybridize STEM and interdisciplinary studies can attract foreign talent that seeks real skills applicable to industry. Policy diversifies degree programs not only on a basis of subject matter, but also by student demographic diversification. After establishing existing theories and examples of international student mobility and STEM and interdisciplinary hybrid programs, this article will describe how the EMP program effectuates both and offers direction on future research comparing such programs.

Keywords: International student mobility, globalization, STEM, interdisciplinary studies, higher education, Tsukuba, empowerment, informatics, cultural diversity, JSPS, MEXT, NSF

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Introduction

Across the world, higher education faces the major issue of adapting to the changes brought about by modern globalization. The growth of a knowledge based economy and changing demand for skills attained at universities are especially remarkable in the fields of science, technology, engineering, and mathematics (STEM). In order for higher education institutions to compete at the global level, international student mobility is key to the acquisition and development of talented students who can succeed globally. In the past, migration as a form of mobility was largely motivated by political, economic and historical factors. However, Altbach and Knight (2007) define globalization as the "economic, political and societal forces pushing 21st century higher education toward greater international involvement" (p. 290). Modern migration has undergone a paradigm shift and is now not only motivated by traditional factors, but also by educational policies, rapid globalization, and reforms in the policies and practices controlling and encouraging migration. Universities must now deal with upgrading excellence in internationalization of research, teaching learning, and advertising in programs at the domestic and international levels.

Today, as students are becoming more mobile domestically and internationally, Japanese higher education faces the challenge of attracting foreign students and retaining domestic students to study in undergraduate and grade Japanese university programs. Japanese universities need to offer programs designed with globalization and the knowledge based society in mind. Higher education institutions confront the challenge of producing students who possess global citizenship skills that allow them to succeed domestically and internationally. This entails global human resource development strategies to foster students possessing linguistic and communication skills, an understanding of diverse cultures and a sense of identity. "International intellectual contribution" and "mutual international understanding" have been raised as important keywords for Japanese higher education policy.

The apparent chicken and egg problem inherent in diverse student population can be bootstrapped and solved by funded pilot programs, like the University of Tsukuba Ph. D. Program in Empowerment Informatics (EMP program). As part of the The Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT) Program for Leading Graduate Schools, it is funded to develop educational policies which drive international student mobility to create a diverse and interdisciplinary student body. This program drives interdisciplinary and global competency across industrial, academic, and governmental sectors. The EMP program exemplifies how a Leading Graduate School can assure quality with a focus on international student mobility and hybridization of STEM and interdisciplinary studies.

Literature Review

Per the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2016), 4.1 million students went abroad in 2013, up from 2 million in 2000. As the trend toward increased globalization and student mobility continues, Gürüz's (2008) *Higher Education and International Student Mobility in the Global Knowledge Economy* provides a basis for discussion of this topic. He explains "internationalization of higher education in today's global knowledge economy includes, in addition to increased international content in curricula, movement of

students, scholars, programs, and institutions across borders" (2008, p. 20). Globalization has changed student mobility in several ways, leveling the playing field for higher education institutions across the world. Higher incomes in emigrant nations combined with need-blind admissions and merit-based institutional (as opposed to private) scholarship initiatives, new migratory policies worldwide allow meritorious students easier access to foreign institutions, and increased institutional awareness of the benefits of a diverse student population are all ways globalization leveled the playing field for students. In turn, increasing equalization of access forces universities to compete, domestically and internationally for the growing influx of foreign talent. Similarly, essential and planned forces, such as the economic, political and societal forces of globalization leveled the playing field for institutions directly and indirectly. Leveling was direct through educational policies and indirect through the rising international student segment with an ever-increasing number of options. Gürüz (2008) also highlights the emergence of a global higher education market for human resources that can operate globally and supplement domestic students and scholars. Combined with the impact of globalization and the development of the global "knowledge based society," these competitive forces have resulted in the global competition that is currently reshaping higher education. To remain competitive in a knowledge based society it is now essential for higher education institutions to enact policy changes to attract and develop a globalized pool of talented students and researchers.

Gürüz (2008) argues that the rise of the knowledge economy further has led to the demand for education programs that directly meet the commercial sector demands. To compete in the modern knowledge based economy, a workforce needs intercultural skills and the ability to lead and act upon knowledge in domestic and international contexts. Higher education institutions are enacting policies to cope with competition caused by globalization in several ways. First, institutions begin to nurture high level skills like team-based innovation, comprehensive problem solving, cultural awareness, globally focused ethics, and leadership, in addition to traditional field specialization studies. Second, higher education prepares engineers for the global workforce by providing a diverse and interdisciplinary environment. Third, higher education extends its reach beyond national boundaries as a matter of policy. Funding policies that require donors and sponsors to not restrict the origin of technologies procured effect open access to technologies worldwide. Creation of diverse environments institutionally breaks the national cultural barrier. Equalization of scholarship funding for the international segment breaks the national socio-political barrier.

Numerous studies support the ongoing efforts toward intercultural and globally focused engineering curriculum outcomes. For example, Ragusa, Matherly & Phillips' (2014) study focused on students participating in two Research Experiences for Undergraduates (REU) programs allowing U.S. engineering students to partake in Japanese research internships. Participants results showed noticeable improvement on a scale of global preparedness in line with Gürüz's (2008) points on global human resource development necessary to operate in a global knowledge based society. Additionally, Ravankar et al. (2016) supported the benefits of creative and critical thinking using problem finding while developing global competencies in interdisciplinary teams under the Top Global University Project at Hokkaido University. In the United States, there are other examples of ad-hoc and systematic programs for STEM and interdisciplinary study hybridization. For example, the S-

STEM program at Louisiana State is one example of a one-off program in the United States. Regarding, there is a program of National Science Foundation (NSF) grants under the Integrative Graduate Education and Research Traineeship (IGERT) program, superseded by the NSF Research Traineeship Program (NRT) in 2013.

Though Japan was previously perceived as indifferent towards supplementing its shrinking and aging population, and its reluctance toward internationalization strategies (Gürüz, 2008), examining MEXT policies since 2008, it is clear there is a commitment to attract foreign talent while bolstering the global competency of domestic students. Regarding the state of Japanese international student mobility, foreign higher education enrollment has expanded by 16,543 students since 2013, bringing the total hosted international students to 152,062 (Japan Student Services Organization, 2016). This represents a significant recovery from stagnation that preceded since 2011 due to the Great East Japan Earthquake. However, the top nine sending countries are all within in Asia, with China, Vietnam, Nepal, South Korea, representing 78.9% of international students in 2016, indicated there is still much room for improvement. Japan's policy planning recognizes the importance of increased internationalization and human capital development, and seeks to rectify points of weakness:

> [To] maximize Japan's potential for create innovation, it is important to: secure [diverse human resources] with different views, knowledge, and ways of thinking; increase the mobility of human resources; and, advance cooperation between different fields, between industry, academia, and government, and between countries. (Council for Science and Technology, 2015).

This vision manifests in numerous MEXT budgeted programs, including the Program for Leading Graduate Schools, Top Global University Project, Go Global Japan, Re-Inventing Japan Project, and promotion for student exchange. International student mobility towards Japanese universities presents an opportunity to reach this vision for internationalization. For instance, the Top Global University Project started in 2014. This project sets extensive internationalization goals for the 2013-2023 period, including more than tripling the number of students who meet foreign language standards, more than doubling the percentage of international students, and more than quadrupling the number of Japanese students who have earned credits abroad, to name a few (Matsumoto, 2015).

Given the worldwide trend of education reform to meet needs of global competency, this paper will look at how the MEXT Program for Leading Graduate Schools implements this reform while using the University of Tsukuba Ph.D. Program in Empowerment Informatics as a case study.

Methods

This article used several methods to establish the status quo in the literature and collect data on the EMP program. First, the author reviewed existing literature on international student mobility and hybrid STEM and interdisciplinary programs. She conducted literature review both in periodicals and in primary source matter (government and institutional documentation). Second, this article relies on the

author's first-person experience as a policy-maker in the EMP program. Finally, the article relies on the author's experience as an implementer of these policies, and specifically as a dedicated faculty member of the EMP program.

Results and Discussion

First, the author discusses how the formation, organization and maintenance of the EMP program indirectly promote international student mobility and STEM and interdisciplinary studies hybridization. Next, the author examines how the EMP program directly encourages international student mobility and STEM and interdisciplinary studies hybridization.

Conceiving and funding the EMP program

The initial authorization for the Leading Graduate School program was included in the DPJ coalition government's regular budget in 2011 and continued even after LDP returned to power. Formation of these programs remained a priority despite fiscal pressure related to recovery efforts after the Fukushima earthquake in 2011. The University Promotion Division of the Higher Education Bureau in MEXT announced information sessions regarding a request for proposal (RFP) for the establishment of "Leading Graduate Schools" to all public and private university presidents of Japan on June 14th, 2011. The RFP is for new graduate schools to operate for a period of up to seven years each. Per the Japan Society for the Promotion of Science (JSPS, 2011) RFP (the author translated the Japanese original):

> The Leading Graduate Schools program will gather first class faculty and students domestically and abroad, with the participation of industry, academia and government to form world-class and accredited M.S.-Ph.D. interdisciplinary degree programs. These degree programs will nurture excellent students who possess creativity and wide perspective into leaders that act globally in industry, academia and government. The program aims to form graduate schools that belong to the highest academic spheres by fundamentally revolutionizing graduate education with these new degree programs.

Therefore, the programmatic goals of this enterprise already demand elements of international student mobility and interdisciplinary studies in each degree program.

Likewise, the student development goal of these Leading Graduate Schools per the RFP is to educate global leaders with the:

1. [a]bility to collaborate with others while possessing a solid set of values, and to act globally with firm resolve [; the]
2. [a]bility to identify issues and independently challenge them by developing hypotheses and applying knowledge in testing them [; and the]
3. [a]bility to ascertain the essence of matters by applying a wide range of knowledge buoyed by high levels of specialization and international perspective

as set out in the initial RFP (JSPS, 2016a). Establishing global perspective and broad and specialized knowledge as expected learning outcomes in the bid phase of these new graduate schools enshrines international mobility and hybridization at the student level.

Three categories of programs were set forth: all-around programs, only-one programs, and composite (multidisciplinary) programs. Composite programs are further divided into the MEXT held the information sessions one week later in Tokyo and Osaka on June 22nd and 24th, 2011. Another series of information sessions was held in 2012, and RFPs were issued in 2012 and 2013 as well. Prof. Dr. Hiroo Iwata, an engineer by training but a device artist by trade, submitted a bid for the EMP program at the University of Tsukuba in the 2013 round as a composite program in information sciences. Consequently, the EMP program was selected as a Leading Graduate School in late 2013. The EMP program is one of two Leading Graduate Schools at the University of Tsukuba, the other being the Ph.D. Program in Human Biology. Prof. Dr. Iwata became the EMP program leader.

The budget of the Program for Leading Graduate Schools nationwide oscillates around 17.8 billion JPY per annum (160 million USD on November 21st, 2016). The budgets in 2011 (3.9 billion JPY) and 2012 (11.6 billion JPY) appear smaller but are relatively consistent because MEXT had not selected all the participating programs yet. A breakdown of the annual budgets since program inception in JPY and USD is listed in the table below. These figures are on the JSPS overview web site (2016b) and are corroborated with MEXT section reports (2014, 2016).

Year	Annual budget in JPY	Annual budget in USD
2011	3,900,000,000	$35,090,876.37
2012	11,600,000,000	$104,372,863.06
2013	17,800,000,000	$160,158,358.83
2014	18,500,000,000	$166,456,721.25
2015	17,800,000,000	$160,158,358.83
2016	17,000,000,000	$152,960,230.34

Table 1: Program for Leading Graduate Schools Annual Budget

Of the total budget for Leading Graduate Schools in 2016, 107 million USD (11.8 billion yen), or more than two thirds of the total budget was allocated to programs in the composite category, based on averages derived from the maximum funding per program in each category for 2016 and the total numbers of programs per category. Again, the average funding per program in the EMP program's category in 2016 is 2.7 million USD by the same logic. This derivation is necessary because the author confirmed that MEXT does not publish the award amounts to each individual program. The table of calculations used to arrive at the average budget of 2.7 million USD per program in the composite category is listed in the table below.

	Funding limits per program in 2016 (JPY)	Category total if programs are funded to the maximum (JPY)	Weighted annual budget per category (JPY)	Average funding per program per year (JPY)	Average funding per program per year (USD)
All around	540,000,000	3,780,000,000	2,487,804,878	355,400,697	$3,197,774.85
Com-posite	450,000,000	18,000,000,000	11,846,689,895	296,167,247	**$2,664,812.37**
Only one	270,000,000	4,050,000,000	2,665,505,226	177,700,348	$1,598,887.42
2016 budget if programs are funded to the maximum (JPY)				25,830,000,000	
2016 budget as a percentage of this theoretical budget				65.815%	

Table 2: Leading Graduate Schools Budgeting

The EMP program's budget covers the matriculated students' tuition and stipends, the salaries of dedicated faculty and staff, prorated salaries for shared faculty and staff, domestic and foreign travel for research, publication and recruitment, capital expenses, operational expenses and other miscellaneous cost. Even taken in the average, this budget is much larger than the annual budgets of the large (awards greater than one million USD) active NSF IGERT/NRT programs (all funded at approximately 500k - 600k USD per annum for five years), with one exception. There exists an active NSF grant, numbered 1425989, a six year grant at Princeton funded at 2.9 million USD per year (see Appendix).

The fact that the EMP program's budget is specifically allocated to an independent graduate school overcomes the crux of the issues experienced by most interdisciplinary programs worldwide. Schmidt et al. (2012) note that "cultural and methodological differences, competing departmental requirements and advisors and difficulty becoming fluent in multiple academic cultures" all impede effective interdisciplinary training (p. 297). The EMP program makes a point of enforcing cultural (national) diversity in the program by aggressively recruiting foreign students and faculty trained abroad. The EMP program enforces disciplinary diversity in the student and faculty bodies in the same way; inbound students have backgrounds including computer science, mechanical engineering, art and design. Likewise, the faculty are drawn from many faculties, as described in the organizational structure section that follows. The EMP program has the flexibility to self-determine its composition because it has an independent budget with interdisciplinary studies in mind. Again, as the EMP program is an independent graduate school with dedicated faculty, it does not encounter problems like competing departmental requirements or multiple advisors, as there is only "one" interdisciplinary department and one "advisor" in that department. Finally, the EMP program makes a point of instructing all students in the methodology of all disciplines to create a common language for

students. For example, in addition to quantitative methodologies of experimentation and measurement prevalent in STEM fields, like statistics, the author was responsible for instructing students of multiple cultural and educational backgrounds in the qualitative methods required to conduct a survey.

Organizational structure of the EMP program

The University of Tsukuba created a new graduate school named the School of Integrative and Global Majors (abbreviated as SIGMA) to house the two Leading Graduate Schools of the University of Tsukuba, the EMP program and the Ph.D. Program in Human Biology.

The EMP program employs more than sixty faculty members on a full or part time basis. Aside from the seven faculty members fully employed by the program, the faculty shared with other schools hail from the graduate schools of Systems and Information Engineering, Business Science (systems management and business law) and Comprehensive Human Sciences (clinical sciences, kansei, behavioral and brain sciences, psychology, and nursing science). The EMP program is interdisciplinary by nature (MEXT and JSPS mandated that the program be interdisciplinary, especially because of its placement in the composite category) and by composition (the faculty hail from many schools). Finally, EMP program leadership consists of three people: the program coordinator, Prof. Dr. Iwata; the university president who applied for the award, Prof. Dr. Kyosuke Nagata; and the program executive officer, Prof. Dr. Yuichi Ohta, emeritus. Prof. Dr. Iwata oversees the day to day operation of the program, and his device art concentration supports a focus on hybridizing interdisciplinary studies and STEM.

Continuing the EMP program

MEXT and Japan Society for the Promotion of Science (Japanese equivalent of the US National Science Foundation) guidelines for the Leading Graduate School programs allows unilateral funding reduction or removal for programs that do not achieve or surpass the planned outcomes described in the respective proposals (JSPS, 2016b). JSPS and MEXT plan periodic evaluations that begin in the third year of each program and are repeated, assigning grades of S, A, B, C, or D each time. The meaning of each grade is listed in Table 3 below (JSPS, 2016c).

Rating	Description
S	Surpasses expectations and will meet programmatic goals if current efforts are sustained
A	Meets expectations and will meet programmatic goals if current efforts are sustained
B	Meets or surpasses some expectations but falls short as a whole, and needs to redouble efforts based on advice on how to meet programmatic goals
C	Delay-ridden and hindered, the program falls short of expectations and needs a fundamental reduction and redefinition of scope to meet programmatic goals
D	Based on progress to date, the program has no chance of meeting programmatic goals, and therefore financial support needs to be cancelled.

Table 3: Leading Graduate School Program Grading Rubric

The Japanese-American entrepreneur William Hiroyuki Saito serves as the program officer for the EMP program (JSPS, 2015). Mr. Saito took part in the midterm evaluations that occurred in October 2016. Even before the official midterm evaluation, MEXT and JSPS evaluated the programs based on their proposals and based on an on-site visit. The continuous feedback loop ensures that each program, the EMP program included, continues to meet goals involving international student mobility and STEM/interdisciplinary study hybridization.

Aside from the official evaluations, the Japanese government have decorated the EMP program and many of the Leading Graduate Schools in general since inception. The EMP program was selected as a member of MEXT's Top Global Universities program, which aims to internationalize Japanese universities through Anglophone programs and extensive recruitment and support of international students and faculty. Finally, since inception, the Leading Graduate Schools have received positive mentions by MPs in the two houses of the Japanese Diet. On November 12th, 2014, MP Hideki Niwa, the vice-minister of MEXT also referred to the programs in the Special Committee on the Promotion of Science, Technology and Innovation of the House of Representatives as follows.

> MEXT, in addition to supporting excellent doctoral students research with special researcher financial support programs, we can cover the living expenses for doctoral students in the form of scholarships provided by the Leading Graduate School programs... we at MEXT argue that it is important to enable skilled and hungry students to become doctoral students with financial aid, without making them choose between research and living expenses, a very fine line.

The EMP program prioritized allowing students to focus on learning and research, without having to worry about living expenses. As per the 2014 self-report, the university paid 180,000 JPY per month to each student in residence for living

expenses. Additionally, to further lessen their financial burdens, the university halved or nullified student tuition, and postponed tuition due dates for these students far in the future (JSPS, 2014).

The specific ways the EMP program implements mobility and hybridization are discussed in the following two sections.

International student mobility in the EMP program

The EMP program aggressively seeks out international student participation, both through student recruitment and through individual exchanges and MOU's with other higher education and research institutions. Finally, after initially exporting this degree program to inbound international students, EMP curricula holds students to a high bar of international exposure by requiring students to present at select international conferences and competitions as part of their candidacy. For example, every year students present papers and posters at IEEE and ACM conferences domestically and abroad, and submitting device art works to the Prix Ars Electronica competition held in Linz, Austria as well as to the Tsukuba Media Art Festival annually has practically become a tradition for the EMP program. Finally, some students even won themed awards in the Microsoft Imagine Cup Japan in 2015 with the Childhood project, and the national grand award in 2016 with the Bionic Scope (Microsoft 2015, 2016), continuing to represent Japan at the finals in Washington state.

The EMP program has six international education points of contact in Europe and the United States (JSPS, 2013a). As per the JSPS (2013b) self-report, EMP program leadership planned for recruiting students abroad, and lowered the barrier for them with Anglophone application websites, and conducting candidate interviews abroad. International student recruitment activities, like interviews held in the United States and the Netherlands were carried out in 2014 as well (JSPS, 2014), resulting in five international students being offered seats in the program. The EMP program, increased its exportability to international students by expanding availability of instruction in the English language (JSPS, 2013b, 2014).

Hybridization of STEM fields and interdisciplinary studies in the EMP program

Per the 2013 EMP self-report, "students create a portfolio of their scholarship, consisting of self-evaluations and measured learning outcomes along six axes:

1. broad experience and domain knowledge
2. rich education and interdisciplinary perspective
3. excellence in specialization and creativity
4. global interpersonal skills,
5. leadership, and
6. on-point technology development skills and entrepreneurship.

This portfolio helps students gauge their progress" (JSPS, 2013b). Of these axes, the interdisciplinary perspective axis embodies the EMP program's early commitment to hybridization of STEM and interdisciplinary studies.

Another example of hybridization is the international symposium students attended in March 2013. The initial industrial partners (JSPS, 2013a) participated in the 2013 International Symposium, deepening students' and industry's mutual understanding of the EMP program goals, and thus some or these instructors were appointed as visiting instructors to formalize their advisory role in the program. Connecting students to industry is one of the pain points in Japanese higher education today. The director of the Higher Education Bureau, Yutaka Tokiwa referred to the Leading Graduate Schools in the MEXT standing committee of the House of Councillors on April 19th, 2016 as he replied to a comment by the committee chair that justified the decline of graduate student enrollment with the lack of clear career paths.

> ...[we] reacted to the reality that narrow fields of specialization greatly limit graduate students when applying for jobs by introducing the Leading Graduate School programs. We [cultivate] human resources from graduate students that can approach research with a wider view with these programs...

In other words, the effects of programs like the EMP program to curtail a decline in matriculation to doctoral programs is expressively felt at the highest levels of national government. The EMP program's engineering residency (a requirement for graduation) is another vehicle used to force students to bridge the gap with industry: industrial partners provide placement locations, and the EMP program provides funded students, ready to hit the ground running (JSPS, 2013b).

Other mechanisms the EMP program uses to advance hybridization is the formulation of classes where first year graduate students collaborate to create device art and submit it for consideration in the Prix Ars Electronica. One example of a work of device art that was submitted to Ars under these auspices was the idMirror interactive installation, later published in CHI EA 2016 (Jazbec & Erich) and the EMP Studio Symposium (University of Tsukuba, 2015). Another highly acclaimed research effort at the crossroads of STEM and interdisciplinary studies was the Bird Song Diamond project, directed by Professors Iwata, Vesna, and Takashi Ikegami of the University of Tokyo. The PIs engaged multiple students in engineering and art to create an immersive experience of bird migratory patterns in the EMP Large Space (Taylor, Vesna & Ikegami, 2015).

Conclusions and future directions

This article demonstrates how the EMP program, a member of the Graduate Leading Schools program of the Japanese MEXT, effectively increased international student mobility and hybridization of STEM and interdisciplinary studies. Fully funding all students, English language instruction, and recruitment efforts abroad reaped fruit in international student enrollment. Again, traditional inhibitors of interdisciplinary programs were not present because the EMP program is in an independent school with a dedicated budget and staff. Comparing many more NSF IGERT/NRT programs systematically with Graduate Leading Schools in Japan may offer another dimension of analysis in program outcomes. More research and comparative analysis is necessary after the rating and report from the EMP program's first midterm evaluation become available.

Appendix

Active NSF IGERT/NRT awards greater than one million USD, an abstract of results retrieved from the National Science Foundation (NSF, 2016).

Award	Start Date	End Date	Awarded Amount To Date	Years	Amount per year
1425989	09/01/2014	08/31/2020	$17,194,857.00	6	$2,865,809.50
1144843	07/01/2012	06/30/2017	$3,199,979.00	5	$639,995.80
1450006	04/01/2015	03/31/2020	$3,105,701.00	5	$621,140.20
1449815	04/01/2015	03/31/2020	$3,069,340.00	5	$613,868.00
1545261	09/01/2015	08/31/2020	$3,057,337.00	5	$611,467.40
1450053	04/01/2015	03/31/2020	$3,040,967.00	5	$608,193.40
1144804	07/01/2012	06/30/2017	$3,033,953.00	5	$606,790.60
1633557	09/15/2016	08/31/2021	$2,999,055.00	5	$599,811.00
1633299	09/15/2016	08/31/2021	$2,993,930.00	5	$598,786.00
1144584	07/15/2012	06/30/2017	$2,993,020.00	5	$598,604.00
1633608	09/15/2016	08/31/2021	$2,989,899.00	5	$597,979.80
1450032	04/01/2015	03/31/2020	$3,013,779.00	5	$602,755.80
1144616	07/01/2012	06/30/2017	$3,006,642.00	5	$601,328.40
1449785	04/01/2015	03/31/2020	$3,006,000.00	5	$601,200.00
1633216	09/01/2016	08/31/2021	$3,000,000.00	5	$600,000.00
1144726	07/01/2012	06/30/2017	$3,000,000.00	5	$600,000.00
1144807	07/01/2012	06/30/2017	$3,000,000.00	5	$600,000.00
1144635	07/01/2012	06/30/2017	$2,999,984.00	5	$599,996.80
1633831	09/01/2016	08/31/2021	$2,999,932.00	5	$599,986.40
1633740	09/15/2016	08/31/2021	$2,976,889.00	5	$595,377.80
1144860	07/01/2012	06/30/2017	$2,999,713.00	5	$599,942.60
1144752	07/01/2012	06/30/2017	$2,999,589.00	5	$599,917.80
1144901	07/01/2012	06/30/2017	$2,999,533.00	5	$599,906.60
1144885	08/01/2012	07/31/2017	$2,999,501.00	5	$599,900.20
1633098	09/01/2016	08/31/2021	$2,999,263.00	5	$599,852.60
1144646	07/01/2012	06/30/2017	$2,999,154.00	5	$599,830.80
1545220	09/01/2015	08/31/2020	$2,999,999.00	5	$599,999.80
1545188	10/01/2015	09/30/2020	$2,999,829.00	5	$599,965.80
1545481	09/01/2015	08/31/2020	$2,999,767.00	5	$599,953.40
1545362	09/01/2015	08/31/2020	$2,999,328.00	5	$599,865.60
1144676	07/01/2012	06/30/2017	$2,996,937.00	5	$599,387.40
1545433	09/01/2015	08/31/2020	$2,997,528.00	5	$599,505.60

1633631	09/15/2016	08/31/2021	$2,967,150.00	5	$593,430.00
1449617	04/01/2015	03/31/2020	$2,990,339.00	5	$598,067.80
1632976	09/15/2016	08/31/2021	$2,959,866.00	5	$591,973.20
1545403	09/01/2015	08/31/2020	$2,976,937.00	5	$595,387.40
1545399	09/01/2015	08/31/2020	$2,975,376.00	5	$595,075.20
1633213	09/15/2016	08/31/2021	$2,943,562.00	5	$588,712.40
1449828	04/01/2015	03/31/2020	$2,965,341.00	5	$593,068.20
1633336	09/15/2016	08/31/2021	$2,922,930.00	5	$584,586.00
1633722	09/15/2016	08/31/2021	$2,921,681.00	5	$584,336.20
1633516	09/01/2016	08/31/2021	$2,928,842.00	5	$585,768.40
1545287	09/01/2015	08/31/2020	$2,908,825.00	5	$581,765.00
1449999	04/01/2015	03/31/2020	$2,873,955.00	5	$574,791.00
1545453	09/01/2015	08/31/2020	$2,866,938.00	5	$573,387.60
1631776	09/15/2016	08/31/2021	$2,721,142.00	5	$544,228.40
1633756	09/15/2016	08/31/2021	$2,689,908.00	5	$537,981.60
1144591	07/01/2012	06/30/2017	$2,709,035.00	5	$541,807.00
1633587	09/15/2016	08/31/2021	$2,555,633.00	5	$511,126.60

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