# **Week-3: Research-Informed Product Strategy & Roadmap**

**Group-2**

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# **Research-Informed Product Strategy & Roadmap**

Our idea for **SLU Alumni Connect – Data Nexus** and making it stronger with real research. Instead of just planning features, we’ll use studies and industry reports to back up our choices and design a clear roadmap for how the product should grow. The focus is on creating an MVP (the core features we need to test the idea) and an MMP (the next set of features that make it ready for wider use). Along the way, we’ll also think about ethics like data privacy, fairness, and inclusivity so the product is not only useful but also responsible. By the end, we’ll put everything together into four deliverables: a **Product Strategy Canvas, a Product Roadmap, a Research Matrix, and an Annotated Bibliography.** These will help show that our strategy is grounded in research and aimed at solving real challenges for SLU.

**1. Company & Industry Research - Product Strategy**

**1.1 SWOT Analysis for SLU Alumni Connect\_ Data Nexus**

### **Strengths –** What SLU Already Has

SLU benefits from a large, global alumni network across industries, which provides a rich pool of employment and career data. Its strong academic reputation and Jesuit values emphasize ethics, trust, and community, which build credibility with alumni and employers. The MRP project shows clear institutional backing for data-driven innovation, giving this initiative a solid starting point.

* Global alumni dataset (BHEF, 2024 – importance of alumni/employer data).
* Academic reputation + Jesuit values (align with ethics and cura personalis).
* Institutional support for innovation.

### **Weaknesses –** Current Gaps

Right now, SLU lacks a centralized system to track alumni employment or employer relationships, leading to fragmented data across LinkedIn, surveys, and university records. This makes it difficult to generate consistent insights. Employer engagement is also shallow, mostly tied to recruitment events rather than ongoing partnerships, meaning the alumni network is underused.

* No integrated alumni tracking (Mpia et al., 2023 - need for combined data sources).
* Data scattered, insights inconsistent (Romero & Ventura, 2010 - data integration challenges).
* Weak employer engagement (UPCEA & Collegis, 2024 - employers want deeper partnerships).

### **Opportunities –** Where SLU Can Grow

There’s strong potential to apply Educational Data Mining (EDM) methods like clustering, classification, and predictive analytics to alumni data, helping uncover career patterns and skill demands (Romero & Ventura, 2024). Employers increasingly need job-ready graduates and real-time talent pipelines (BCG, 2022). By showcasing alumni success stories, SLU can attract new partnerships, secure funding, and improve global rankings.

* Apply EDM for career insights (Romero & Ventura, 2024).
* Deliver skills-aligned, job-ready graduates (BCG, 2022).
* Employer partnerships via alumni data (UPCEA, 2024).
* Boost reputation + rankings by showcasing outcomes (USHE, 2024).

### **Threats –** What Could Hold SLU Back

SLU faces competition from peer universities like CMU and Columbia, which already have advanced alumni dashboards. Skills and technologies evolve quickly, so dashboards risk becoming outdated (Safavi et al., 2018). There are also compliance challenges around data privacy (FERPA, GDPR), and reliance on alumni self-reported data could reduce reliability (Okewu, 2021 – ANN interpretability and bias concerns).

* Competition from advanced university platforms.
* Rapidly evolving career skills (Safavi et al., 2018).
* Data privacy + compliance (FERPA, GDPR).
* Reliability issues with self-reported data (Okewu, 2021).

**Slide-1:**



**1.2 Product Strategy Statement:**

**SLU Alumni Connect** is a data-driven platform that unites students, alumni, employers, and faculty through mentorship, networking, and career insights—strengthening partnerships and aligning education with real-world skills.

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| **Product Strategy Canvas:** | | |
| **Section** | **Guiding Question** | **Team Notes** |
| **Vision Statement** | What is your product’s purpose? | To create a data-driven alumni engagement and analytics platform that connects SLU graduates with students, faculty, and employers to strengthen mentorship, networking, employer partnerships, and institutional reputation. |
| **Target Users** | Who will use this product? | Students - mentorship, job referrals, career insights |
| Alumni- networking, giving back, career storytelling |
| Employers/Recruiters- talent discovery, skills insights |
| SLU Leadership & Faculty - evidence-based decision-making |
| **Problem** | What pain point does it solve? | SLU lacks a centralized system to track alumni employment and employer engagement. This creates weak employer partnerships, limited curriculum alignment with industry needs, and missed opportunities to highlight alumni success. |
| **Value Proposition** | Why is it valuable/different? | Provides real-time employer and alumni analytics in one platform, enabling stronger partnerships, data-informed curriculum updates, and higher employability outcomes. Differentiates by combining predictive analytics, mentorship features, and ethical compliance. |
| **Business Goals (Top 3)** | Which goals does it support? | 1. Strengthen employer partnerships for jobs, internships, and research. |
| 2. Align curriculum with industry trends and in-demand skills. |
| 3. Increase alumni engagement in events, mentorship, and philanthropy. |
| **Key Differentiators** | How is it unique? | Uses Educational Data Mining (EDM) and predictive modeling (career paths, skill forecasts). |
| Integrates alumni + employer data from LinkedIn, surveys, and SLU systems. |
| Anchored in Jesuit values-promoting ethics, inclusivity, and cura personalis. |

## **Slide-2:**



## **2. Product Roadmap with MVP/MMP:**

The Product Roadmap for **SLU Alumni Connect** is designed in two phases MVP to test the core idea and MMP to make it ready for wider use. The MVP focuses on essentials like an Alumni Employment Dashboard, Employer Insights Dashboard, Mentorship Matching, and secure data pipelines to centralize alumni information and build stronger partnerships (Romero & Ventura, 2010; BCG, 2022; UPCEA, 2024). The MMP then adds deeper features such as Skills Demand Analytics, Career Path Modeling, Alumni Engagement Scoring, and Event Management to align with industry needs and encourage ongoing alumni involvement (Romero & Ventura, 2024; Safavi et al., 2018; USHE, 2024). At each step, ethical practices privacy, fairness, and inclusivity guide design choices (Okewu, 2021), keeping the platform both effective and responsible.

### **2.1 Goals of SLU Alumni Connect**

1. **Strengthen Employer Partnerships** – Build stronger ties with companies through insights on alumni employment and industry trends.
2. **Align Curriculum with Industry Needs** – Use alumni and employer data to identify in-demand skills and update courses accordingly.
3. **Increase Alumni Engagement** – Connect alumni with students, encourage mentoring, event participation, and long-term involvement.

A diagram of a product goals

AI-generated content may be incorrect.

**2.2 MoSCoW Prioritization**

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| **MoSCoW Prioritization** | | | |
| **Must-Have**  (MVP – Critical to Launch) | **Should-Have**  (MMP – Important Next Phase) | **Could-Have**  (Future Enhancements) | **Won’t-Have**  (At this stage, future roadmap) |
| • Alumni Employment Dashboard baseline alumni outcomes by company, industry, geography. • Employer Insights Dashboard shows top recruiters, industries, skills demand. • Alumni–Student Mentorship Matching core engagement feature for students. • Secure Data Integration Pipelines: ETL (MySQL + LinkedIn + survey data) to power dashboards | • Skills Demand Analytics: identify trending skills from alumni career data. • Alumni Engagement Scoring System: track contributions (mentorship, events, donations). • Event Management & Tracking: alumni/student participation and feedback. • Predictive Career Trajectory Modeling: visualize alumni growth pathways for advising. | • Gamification Features: badges, leaderboards for active alumni contributors. • Mobile App Version: expands access, improves usability for global alumni. • Job Board Integrations: connect with Indeed, Glassdoor, LinkedIn. | • AI Chatbot for Career Counseling: advanced functionality for later phases. • Blockchain Credential Verification: long-term innovation for trust/security. |
| **Reason:** These are foundational to proving value quickly and achieving all 3 goals (partnerships, curriculum alignment, engagement). | **Reason:** These add depth and long-term value once MVP adoption is proven | **Reason:** Enhances user experience but not essential for MVP/MMP rollout. | **Reason:** Requires heavy investment and is not critical in first 2 phases. |

**2.3 Product RoadMap:**

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| **Product RoadMap** | | | |
| **Phase** | **Features** | **Description** | **Ethical Considerations** |
| **MVP (Phase 1)** | Alumni Employment Dashboard *(Devaki)* | Shows alumni outcomes by company, industry, and geography. | Privacy – ensure FERPA/GDPR compliance. |
| Employer Insights Dashboard *(Keerthi)* | Highlights top recruiters, industries, and in-demand skills. | Transparency – avoid biased or misleading data. |
| Alumni–Student Mentorship Matching *(Sanjeev)* | Connects students with alumni mentors by skills, branch, and goals. | Inclusivity – fair matching across demographics. |
| Secure Data Integration Pipelines *(Harsha)* | Collects and unifies data from LinkedIn, surveys, and SLU systems. | Security – encryption, consent, and restricted access. |
| Basic Reporting & Visualization *(Lasya)* | Provides simple reports for leadership and faculty. | Accessibility – clear, easy-to-read dashboards. |
|  | | | |
| **MMP (Phase 2)** | Skills Demand Analytics *(Devaki)* | Identifies trending skills and technologies from alumni career data. | Fairness – keep models updated to prevent bias. |
| Alumni Engagement Scoring System *(Keerthi)* | Tracks alumni contributions in mentoring, events, and donations. | Transparency – use clear, open scoring logic. |
| Event Management & Tracking *(Sanjeev)* | Supports registrations, attendance, and feedback for alumni/student events. | Accessibility – ensure ADA compliance & inclusivity. |
| Gamification Features *(Future)* | Adds badges and leaderboards to motivate alumni engagement. | Inclusivity – ensure rewards are fair across groups. |
| Predictive Career Trajectory Modeling *(Harsha)* | Forecasts alumni career paths from entry to leadership roles. | Explainable AI – results must be clear & bias-free. |
| Advanced Employer Reports *(Lasya)* | Provides tailored insights to strengthen employer partnerships. | Compliance – data sharing only with consent. |

**Slide: **

**Part 3: Research Integration:**

* 1. **Source Collection:**

**Devaki (Academic- EDM Foundations)**

1. **Educational data mining: A review of the state of the art.**

Foundational IEEE paper on EDM that discusses classification, clustering, and predictive modeling. Pertinent to SLU's employer insights dashboard design.

**Reference:**

Romero, C., & Ventura, S. (2010). Educational data mining: A review of the state of the art. IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), 40(6), 601–618.

<https://doi.org/10.1109/TSMCC.2010.2053532>

**Annotated Bibliography:**

Summary: The paper examines EDM methods for performance prediction, decision support, and ethical matters.

Relevance: It forms the basis of alumni/employer analytics and career modeling functionality.

1. **Educational data mining and learning analytics: An updated survey.**

Current survey on EDM/learning analytics trends and tools. Will help to justify predictive analytics in MVP/MMP.

**Reference:**

Romero, C., & Ventura, S. (2020). Educational data mining and learning analytics: An updated survey. Wiley Interdisciplinary Reviews Data Mining and Knowledge Discovery, 10(3).

https://arxiv.org/pdf/2402.07956

**Annotated Bibliography:**

Summary: The survey discusses EDM developments with emphasis on AI utilization and ethical challenges.

Relevance: It enables skills demand and career modeling functionalities.

**Keerthi (Academic – AI & Career Trajectories)**

1. **Artificial neural networks for educational data mining in higher education: A systematic literature review.**

Systematic review of ANN applications in higher education analytics. Aids the application of AI in career prediction features.

**Reference:**

Okewu, E. (2021). Artificial neural networks for educational data mining in higher education: A systematic literature review. Applied Artificial Intelligence, 35(9), 737–765.

<https://www.tandfonline.com/doi/epdf/10.1080/08839514.2021.1922847?needAccess=true>

**Annotated Bibliography:**

Summary: The review emphasizes ANN's place in education with robust prediction versus transparency issues.

Relevance: It enables AI-based career and skills analytics in SLU Alumni Connect.

1. **Career transitions and trajectories: A case study in computing.**

Evaluates career trajectory modeling using network analysis. Establishes proof of SLU's predictive career path modeling feature.

**Reference:**

Safavi, T., Davoodi, M., & Koutra, D. (2018). Career transitions and trajectories: A case study in computing. arXiv preprint arXiv:1805.06534.

<https://arxiv.org/abs/1805.06534>

**Annotated Bibliography:**

Summary: The study utilizes career network modeling to predict role transition and establish promotion and job change patterns.

Relevance: It is used to inform SLU's predictive career path function and employer collaboration.

**Sanjeev (Academic – Employability Models)**

1. **Employability Prediction of Information Technology Graduates using Machine Learning Algorithms**

Examines data mining methods used to approximate graduate employability. Supports SLU's mission for skills-demand analytics.

**Reference:**

Mpia, C., Mburu, B., & Mwendia, P. (2023). Applying data mining in graduates’ employability: A systematic literature review. International Journal of Engineering Pedagogy, 13(2), 121–138.

<https://www.academia.edu/118703381/Employability_Prediction_of_Information_Technology_Graduates_usi>

**Annotated Bibliography:**

Summary: The critique explores the employability prediction with data mining methods in which it determines the key factors including academics, qualifications, and internship.

Relevance: It supports SLU's skills demand analysis by relating graduate data with labor market needs.

1. **University-industry research collaboration: a model to assess university capability:**

Assesses the impact of research excellence on industry partnership. Relevant to creating SLU's employer partnership strategy.

**Reference:**

Abramo, G., D’Angelo, C. A., & Di Costa, F. (2010). University-industry research collaboration: a model to assess university capability. Higher Education, 62(2), 163–181.

<https://doi.org/10.1007/s10734-010-9372-0>

**Annotated Bibliography:**

Summary: The study suggests that good quality research enhances universities' ability for industry collaboration.

Relevance: It enables SLU's employer partnership strategy through alumni and employer insights.

**Harsha (Industry – Employer Partnerships & Pipelines)**

1. **How higher ed and employers can partner to power talent pipelines.**

Examines university–employer partnerships for workforce readiness. Helps SLU map roadmap with industry strategy.

**Reference:**

Boston Consulting Group (BCG). (2022). How higher ed and employers can partner to power talent pipelines. Boston Consulting Group.

<https://www.bcg.com/publications/2022/bridging-the-talent-gap-by-partnering-with-higher-ed-institutions>

**Annotated Bibliography:**

Summary: The report highlights university–employer partnership through data sharing, co-designed curricula, and internships, highlighting transparency for success.

Relevance: It enables SLU's Employer Insights Dashboard to connect education with talent needs.

1. **An employer-centric approach to higher education partnerships.**

Employer survey results regarding what successful partnerships look like. Underpins SLU's employer insights dashboard.

**Reference:**

UPCEA & Collegis Education. (2024). An employer-centric approach to higher education partnerships. UPCEA.

<https://collegiseducation.com/wp-content/uploads/2024/01/An-Employer-Centric-Approach-to-Higher-Education-Partnerships.pdf>

**Annotated Bibliography:**

Summary: The 500+ employer survey identifies priorities like flexible credentials, professional development, and outcome-focused partnerships, with alumni data being a key enabler.

Relevance: It enables SLU's employer-first strategy through alumni dashboards and engagement scoring.

**Lasya (Industry – Skills & Workforce Alignment)**

1. **Align education and industry for the workforce of tomorrow**

Examines resilient skills employers require (e.g., teamwork, problem-solving). Informs curriculum alignment features.

**Reference:**

Business-Higher Education Forum (BHEF). (2024). Align education and industry for the workforce of tomorrow (Forging Partnerships). BHEF.

<https://www.bhef.com/sites/default/files/2024-BHEF-Forging%20Partnerships.pdf>

**Annotated Bibliography:**

Summary: The report focuses on industry-compatible curricula and long-term skills, urging the use of employment and alumni information to remain competitive.

Relevance: It reinforces SLU's curriculum compatibility and demand analysis of jobs in the MMP.

1. **Workforce alignment study report. USHE.**

State-level workforce alignment analysis. Provides support for event management and work-based learning features.

**Reference:**

Utah System of Higher Education (USHE). (2024). Workforce alignment study report. USHE.

<https://ushe.edu/wp-content/uploads/pdf/reports/2024/2024_USHE_State_Workforce_Alignment_Study_Report.pdf>

**Annotated Bibliography:**

Summary: It spots discrepancies between employer demand and higher education in Utah, focusing on work-based learning, flexible credentials, and the use of alumni information.

Relevance: It reinforces SLU's internship matching and event management strengths for better employability.

**3.2 Research Matrix**

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| **Theme** | **Source** | **Key Insight** | **Implication for Product** |
| **Industry Trends** | How Higher Ed and Employers Can Partner to Power Talent Pipelines | This report shows how universities and employers must co-design curricula, share alumni data, and create internship pipelines to strengthen graduate employability. Case studies demonstrate successful models of employer collaboration. | Validates the **Employer Insights Dashboard** and employer partnership features in MVP. |
| Unveiling the Employer's View: An Employer-Centric Approach to Higher Education Partnerships | Based on surveys of 500+ employers, this report highlights priorities like flexible credentials, ROI, and professional development. It emphasizes that employer-driven partnerships lead to sustainable outcomes. | Supports **Alumni Engagement Scoring** and employer-focused reports in MMP. |
| Forging Partnerships to Align Education and Industry for the Workforce of Tomorrow | The study highlights that employers increasingly seek durable skills such as communication, critical thinking, and teamwork alongside technical skills. | Informs **Skills Demand Analytics** to align SLU curriculum with durable and technical skill needs. |
| Partnerships to make higher education work for the workforce | The article emphasizes long-term employer partnerships as key to reputation building and graduate employability. | Reinforces SLU’s **vision** to become an employer of choice through Alumni Connect. |
| [Utah System of Higher Education. (2024). Workforce alignment study report](https://ushe.edu/wp-content/uploads/pdf/reports/2024/2024_USHE_State_Workforce_Alignment_Study_Report.pdf) | The report identifies gaps between employer needs and higher education offerings, emphasizing work-based learning and internships. | Justifies **Event Management** and **Internship Matching** features in MMP. |
| **Technology Solutions** | Educational Data Mining: A Review of the State of the Art | Reviews EDM methods (classification, clustering, sequential mining) and applications in education. Shows how data mining improves prediction and decision-making. | Supports **Alumni Employment Dashboard** in MVP and **Career Trajectory Modeling** in MMP. |
| Educational data mining and learning analytics: An updated survey | Updates EDM research, showing advances in AI and data integration for education. Highlights challenges of scalability and fairness. | Validates **Predictive Analytics** and **Skills Forecasting** features in MMP. |
| Artificial Neural Networks for Educational Data Mining in Higher Education: A Systematic Literature Review | Reviews ANN applications in higher education, showing strong predictive performance but issues with interpretability. | Justifies **AI-driven predictions** while embedding **explainable AI** as an ethical checkpoint. |
| Career Transitions and Trajectories: A Case Study in Computing | Demonstrates how career transitions can be modeled using network analysis. Identifies patterns in role changes and promotions. | Directly supports **Predictive Career Path Modeling** in MMP. |
| **Ethics & Regulation** | Romero & Ventura (2010, 2024) | Both papers highlight the risks of bias, privacy issues, and fairness challenges in EDM. They stress the need for transparency in predictive models. | Roadmap includes **FERPA/GDPR compliance** and **explainable models** for alumni analytics. |
| Okewu (2021) | Emphasizes accountability and interpretability challenges in ANN-based models. | Ensures predictive features use **explainable AI** to meet ethical standards. |
| **Business Impact** | Applying data mining in graduates’ employability: A systematic literature review | Reviews how data mining predicts graduate employability using performance, skills, and internships as predictors. | Supports **Skills Demand Analytics** to inform SLU’s curriculum and employer strategy. |
| University-industry research collaboration: a model to assess university capability | Shows that research quality enhances university–industry collaboration potential. | Reinforces SLU’s **Employer Partnership Dashboard** as a strategic credibility tool. |

**Conclusion:** In short, our research shows that SLU Alumni Connect isn’t just a good idea—it’s the right strategy, now. By grounding our plan in proven methods from educational data mining and clear employer needs, we’ve defined an MVP that delivers immediate value (alumni and employer insights, mentorship matching, secure data pipelines) and an MMP that makes the platform adoption-ready (skills demand analytics, engagement scoring, events, career path modeling). The industry evidence confirms this will strengthen partnerships and align courses with real-world skills, while the academic literature guides how we build responsibly and effectively. Throughout, we’ve embedded ethical guardrails—privacy, transparency, fairness, and accessibility—so the product earns trust as it scales. Together, the Strategy Canvas, Roadmap, Research Matrix, and Annotated Bibliography demonstrate a coherent, research-informed path to making SLU an employer of choice and improving student outcomes.

**References**

Romero, C., & Ventura, S. (2010). Educational data mining: A review of the state of the art. *IEEE Transactions on Systems, Man, and Cybernetics, Part C (Applications and Reviews), 40*(6), 601–618.

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