Project Description

Iowa State uses programs such as Mapworks from Skyfactor and EAB SSC to address issues of *student success*. Iowa State also has various programs and initiatives to address issues of *student experience*. This proposal works at the intersection of *student success* and *student experience* by proposing a student-centered educational and professional development platform called CourseLink.

CourseLink is an educational-professional development platform that generates a visual output that is a combination of a portfolio, a transcript, and a resume. Its novel contribution is the visual display of development experiences. It generates a node-network visualization (see Figure 1) that helps students visualize connections between their academic development experiences.

![CourseLink Interface](image)

Figure 1. Interface for CourseLink node-network course visualization.

The node-network visualization is designed to help advisors talk with students about coursework and professional development, students reflect on their coursework and professional development, and students display their coursework and professional development to employers.

CourseLink will generate value at Iowa State because it will support the student experience of the following three exigencies:

- Students need academic guidance
- Students should develop a professional identity
- Students want to use their education to find a career

In the future, CourseLink may foster academic-industry connections by having students develop their professional identity and by having employers search for qualified graduates.
CourseLink is a concept at this time. Funding would be used to research stakeholder needs, develop a system, and user-test it in select classes.

**Architecture**

We propose using Amazon’s Cloud infrastructure to host the database and webserverservices, either via setting up linux VMs or by using a more managed service such as AWS Beanstalk or AWS Lambda (see Figure 2). Other providers such as Heroku would be a consideration, as would other database cloud providers.

![Cloud based architecture](image)

**Material Cost Estimate**

During the first year of operation, no more than three AWS instances would need to be running at a given time. (Two development servers, one deployment server.) An AWS t2.medium server would likely be sufficient during this period. At approximately $0.05 per hour, over a month each t2.medium would cost 730 hrs/month * $0.05/hr = $36.50 / month. If we assume approximately $10/month for associated storage costs per server, each server would cost approximately $46.50/month or $558/year. For three servers, we estimate cloud costs would be up to $1674/year.

Development would occur on personal PCs at home. No office space would be required during this first year period. We expect approximately $70/month for various project management and development services required for a small project. (e.g., Github hosting, Atlassian project management tools, Slack, etc.) We estimate the cost of these materials to be $840/year.
For research, we will need access to educational research software packages: IBM SPSS (85$ per semester), NVivo (85$ per semester), Rev software for transcripts (1$ per minute). We estimate the cost of these tools to be $600.

Total material cost estimate: $3,114/year.

**Labor Cost Estimate**

- Set up initial baseline server and database baselines, establish software config control, continuous integration, project management site, development push and deployment procedures. (60 hrs)
- Research/Analysis of stakeholder needs (advisors, students, employers) (120 hours)
- Initial requirements gathering, use case modeling, storyboarding (120 hrs)
- Initial database schema development, backend architecture trades (60 hrs)
- Mockup of page flow, main page elements (without full interactive graphics) (200 hrs)
- Develop interactive graphics technology (or find suitable library) (250 hrs)
- Import representative data (80 hrs)
- Mockup with interactive graphics, representative data (300 hrs)
- Usability / user feedback studies (120 hrs)

Total labor estimate: 1310 hrs
Hourly labor rate: $25
Total labor cost estimate: $32,750

**Total Cost Estimate for Initial Development**

<table>
<thead>
<tr>
<th>Labor</th>
<th>$32,750</th>
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<tbody>
<tr>
<td>Material</td>
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<tr>
<td><strong>Total</strong></td>
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