The Centre for Distance Engineering Education Programme (CDEEP) at IIT Bombay

Goal: Make IIT Bombay’s high quality courses available to students around the country

CDEEP’s Webcast Model

- Live lectures from IITB recorded and transmitted free over the internet
- Anyone with www can access the lectures at scheduled times

Causal loop diagram for Webcast system

Stock-flow diagram for Webcast system

Variables in the model

<table>
<thead>
<tr>
<th>Central variable</th>
<th>Technological variables</th>
<th>Operational variables</th>
<th>Economic variables</th>
<th>Social variables</th>
<th>Affective variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students viewing</td>
<td>Quality of video, network</td>
<td>No. of courses transmitted, recd. from government</td>
<td>Annual budget, grants</td>
<td>Awareness about CDEEP’s activities</td>
<td>Student satisfaction, perception of courses</td>
</tr>
<tr>
<td>Webcast lectures (stock)</td>
<td>bandwidth, equipment</td>
<td>no. of studios</td>
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</tbody>
</table>

Results and Discussion

1) Effect of feedback loops - Dependence between number of students, number of studios and number of transmitted courses

2) Effect of injecting a one-time grant into the CDEEP system

3) Optimal allocation of funds from grant

Take-aways

- System dynamics makes it possible to even begin to theoretically analyze complex feedback loops – e.g. number of students affecting number of courses, which in turn affects number of students, via other variables.
- Before making policy decisions, identify potential problems from simulation results. For CDEEP, we learned that sufficient attention should be paid to obtaining high quality servers, since server performance could be a bottleneck.
- Simulation results can be used as a predictive tool. System dynamics results helped CDEEP allocate extra funding received in an optimal manner between various aspects of the system (increase courses vs. marketing).
- Limitation of system dynamics. The results are only as good as the model. The model needs to be validated by independent empirical data.