

# **SYSC 5801T**

## **ADVANCED TOPICS IN COMPUTER- COMMUNICATIONS: WEB 2.0 (COLLECTIVE WEB)**

**Winter 2012**

**Department of Systems and Computer Engineering  
Carleton University**

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This course outline is a living document. Improvements Version 0.3  
may be made as necessary during the term.

### **Instructor availability**

The instructor is available via e-mail any time. Office hours by appointment (online/offline).

### **Calendar description**

SYSC 5801T [0.5 credit] Advanced Topics in Computer Communications: Web 2.0

This topics course examines the Web 2.0 paradigm through the lenses of eight different activities: how people create, curate, collect/share, re/mix, and access content, products and services, collaborate in the creation of products, seek/solve problems, and connect with each other. In parallel, we will study the novel business models arising from this new way of developing products and services.

Prerequisites: TTMG 5001

### **Course objectives**

This course examines how innovation changes in a Web 2.0 world. Unlike the Web 1.0 that preceded it, Web 2.0 emphasizes collaboration, openness, and participation. In a Web 2.0 world, the difference between information producers and consumers has essentially disappeared, turning the Web from a read only into a read/write medium. We will explore new ways that users can collaborate to create products and services, by connecting with each other and re/mixing data and services into mashups. We will examine the implications of the collective nature of the Web 2.0, and study the new business models enabled by user participation.

### **Rationale**

Many courses focus on the mechanics of Web 2.0 technologies. This course takes a broader perspective and examines what opportunities Web 2.0 presents in terms of new business models, new forms of social interaction, and new ways of sharing and reusing data. However, these opportunities also come with risks and unresolved issues. Our goal is, therefore, also to identify open issues that research on Web 2.0 needs to address.

### **Benefits**

Students will benefit from:

- understanding the literature on Web 2.0 technologies and business models
- developing skills in making, assessing and communicating recommendations on how to create new business opportunities from Web 2.0 technologies
- using Web 2.0 collaboration technologies to create a product

### **Class Sessions**

This course is offered in-class as well as online. Remote students can participate by logging into conference room 85801 with password "student" at <http://present.carleton.ca>. For audio call into our conference server at the phone number indicated on login, and enter the room number when prompted. You can also connect via the VOIP feature from within the web conferencing system by clicking on the headphones icon at the top of the window. When

using the VOIP feature, please make sure to use headphones and a good microphone.

Please see the tutorials on participating in an online classroom on the [present.carleton.ca](http://present.carleton.ca) site.

For the weekly sessions there will be assigned readings and tasks.

During the student group presentation sessions, groups will be asked to make short presentations on their assignments (max. 10 minutes; please practice so you stay on time). Each group decides who presents what and in which order. Before 6 p.m. EST the day prior to when presentations are due, each group will distribute to all members of the class the slides to be presented the next day. No exceptions.

The course material and recordings of the class sessions will be made available on the Moodle learning content management system at <http://cms.sce.carleton.ca>. If you don't have an account contact the instructor.

### **Student Evaluation**

Course participants are required to complete two group assignments and participate actively in class (discussion and assigned tasks). To determine the course grade, these weights apply:

- |                         |     |
|-------------------------|-----|
| • Class participation   | 20% |
| • Group blog            | 20% |
| • Group lessons learned | 10% |
| • Group report          | 20% |
| • Final exam            | 30% |

Assignments submitted late and presentations not made will receive a grade of zero. All students in a group receive the same grade. The mark of the group project is composed of a mark given to all students and a mark based on peer evaluation. Final grade reports will follow Carleton University guidelines.

### **Group project**

This is a group assignment. Groups should be approximately equal in size.

Propose a new Web 2.0 business opportunity. The proposal has four elements: value proposition, customers, revenue model, key activities/resources/expenses. Deliverables are four presentations, one around each of these elements (only the last one of these will be marked), and a final report. The final presentation/report must:

- describe the initial idea, group members and their roles,
- original business model, feedback from testing the hypotheses,
- iterated business model, feedback from testing the hypotheses, ..., and
- business model you ended up with at the end, and
- clearly state which Web 2.0 verbs and principles you used

The presentations should follow the template supplied by the instructor and be in PDF format. The report should be no longer than 5 pages, and be formatted using a 1in margin and 12pt Times font.

Presentation of final presentation and report due: April 2.

Groups need to contribute to a weekly blog. In each post, they should provide a report on what the group did.

### **Class participation**

Active class participation is an important component of this class:

1. Participation in class discussions (contribute to lessons learned at the end of each class, lead a discussion, provide feedback on the assignments of your classmates)
2. Start discussions on three topics related to the class material and post them to the forum, and contribute to three discussions created by others. The contributions are evaluated based on their significance.
3. Contribute two examples to our version of the Collective Intelligence handbook. Descriptions should be based on public reports and your study of the examples' websites. You must use your own words.

**Final exam**

A final exam will be handed out on the last day of classes. It is due one week after the last class, on April 9.

**Group work and free loaders**

Group work is an important component of this course. You may elect to work in the same group to prepare both assignments or work in two different groups. Group conflicts are to be dealt with by the group in a way that is fair, fast and without personal attacks. The instructor does not settle group disputes.

The instructor will dissolve a group that is late submitting an assignment. A group of three is expected to deliver better work than a group of two.

Free loaders are not welcome anywhere. This course is no exception. The best way to deal with free loaders is to not include their names in the first page of the group assignments. If a student's name does not appear in an assignment submitted by his or her group, the student must submit his or her own assignment. Failure to do so, the student will receive zero for the assignment. There is zero tolerance for free loaders.

**Students with disabilities**

Students with disabilities who require academic accommodations in this course are encouraged to contact the Paul Menton Centre (PMC) for Students with Disabilities to complete the necessary forms. After registering with the PMC, make an appointment with me in order to discuss your needs at least two weeks before the first assignment is due. This will allow for sufficient time to process your request

**Plagiarism**

Plagiarism (copying and handing in for credit someone else's work) is a serious instructional offence that will not be tolerated. Please refer to the section on instructional offences in the Graduate Calendar for additional information. Plagiarism is against the TIM culture. A case of plagiarism will be referred to the Chair of the Department and the Carleton University Ethics Committee. The instructor will not deal with the matter directly. The university has clear processes to deal with students who are suspected of plagiarism.

**Administrative details**

These are the rules of conduct for this course:

- Please notify the instructor via e-mail if you will not attend a class.
- You must be prepared for each class. You do so by reading the material assigned and being prepared to discuss in class how what was read can be applied in product development organizations.
- Each presenter must make his/her slides available to all other students by noon the day before.

**Web 2.0 (Collective Web): Schedule**

<b>Date</b>	<b>Topic</b>	<b>Readings</b>
Jan 9	Session 1: Introduction	<ul style="list-style-type: none"> <li>• Course outline</li> <li>• O'Reilly (2009)</li> <li>• Vossen (2011)</li> <li>• Leadbeater (2009)</li> <li>• Lee et al. (2008)</li> <li>• McAfee (2006)</li> </ul>
Jan 16	Session 2: Create	<ul style="list-style-type: none"> <li>• Cook (2008)</li> <li>• DesAutels (2011)</li> <li>• Malone (2010)</li> <li>• Berman et al. (2011)</li> <li>• Wirtz et al. (2010)</li> </ul>
Jan 23	Session 3: Collaborate	<ul style="list-style-type: none"> <li>• Baldwin &amp; von Hippel (2011)</li> <li>• Faraj et al. (2011)</li> <li>• Governor et al. (2008)</li> <li>• Standing &amp; Kinti (2011)</li> </ul>

Jan 30	Session 4: Curate	<ul style="list-style-type: none"> <li>• Marlow et al. (2006)</li> <li>• Viegas et al. (2009)</li> <li>• Governor et al. (2009)</li> <li>• Cusumano (2011)</li> </ul>
Feb 6	Session 5: Present value proposition and customers	
Feb 13	Session 6: Connect	<ul style="list-style-type: none"> <li>• Hagiü &amp; Yoffie (2009)</li> <li>• Boyd et al. (2010)</li> <li>• Hansen et al. (2010)</li> <li>• Bentley &amp; Earls (2008)</li> </ul>
Feb 20	Winter break	
Feb 27	Session 7: Present revenue model	
Mar 5	Session 8: Collect/share	<ul style="list-style-type: none"> <li>• Heer &amp; Agrawala (2008)</li> <li>• Huynh et al. (2007)</li> <li>• Jacobson et al. (2011)</li> <li>• Hey (2010)</li> <li>• Guinard et al. (2011)</li> </ul>
Mar 12	Session 9: Re/mix	<ul style="list-style-type: none"> <li>• Lessig (2008)</li> <li>• Balasubramaniam et al. (2008)</li> <li>• Daniel et al. (2011)</li> <li>• Hoyer (2011)</li> <li>• Weiss &amp; Gangadharan (2010)</li> </ul>
Mar 19	Session 10: Present key activities/resources/expenses	
Mar 26	Session 11: Seek/solve Access	<ul style="list-style-type: none"> <li>• Bonabeau (2009)</li> <li>• Archak (2010)</li> <li>• Boudreau (2011)</li> <li>• Weinhardt et al. (2009)</li> </ul>
Apr 2	Session 13: Present group lessons learned Group report due at 6pm	<ul style="list-style-type: none"> <li>• Lessons learned from the course</li> </ul>
Apr 9	Exam due at 6pm	

### Readings

To access the required journal articles in electronic form, go to: <http://www.library.carleton.ca>, and click on “Journals & Journal Articles”. Enter the name of the journal, and click “Search”. Click on the link (there may be several), and enter your barcode number and PIN. For material on the Web, the URL is provided.

The “In depth” and “Examples” sections contain further reading which is optional.

#### *Readings for Session 1*

O’Reilly, T. (2006), Web 2.0 compact definition: Trying again, O’Reilly Radar,  
<http://radar.oreilly.com/archives/2006/12/web-20-compact.html>

Vossen, G. (2011), Web 2.0: From a buzzword to mainstream web reality, *International Conference on e-Business*

and *Telecommunications (ICETE)*, CCIS 130, Springer, 53-67

Lee, S.-H., DeWester, D., & Park, S. (2008), Web 2.0 and opportunities for small business, *Service Business*, 2(4), 335-345.

Leadbeater, C. (2009), How we-think works (and not), Chapter 3, 61-87

McAfee, A. (2006), Enterprise 2.0: the dawn of emergent collaboration, *MIT Sloan Management Review*, 47(3), 21-28.

Further reading:

Musser, J., & O'Reilly, T. (2006): *Web 2.0: Principles and Best Practices*, O'Reilly Radar, 10-54.

#### *Readings for Session 2*

Cook, S. (2008), The contribution revolution: let volunteers build your business, *Harvard Business Review*, October, 60-69.

DesAutels, P. (2011), UGIS: Understanding the nature of user-generated information systems, *Business Horizons*, 54, 185-192.

Malone, T., Laubacher, R., & Dellarocas, C. (2010), The collective intelligence genome, *MIT Sloan Management Review*, 51(3), 21-31.

Wirtz, B., Schilke, O., & Ullrich, S. (2010), Strategic development of business models: Implications of the Web 2.0 on creating value on the Internet, *Long Range Planning*, 43(2-3), 272-290.

Berman, S., Battino, B., & Feldman, K. (2011), New business models for emerging media and entertainment revenue opportunities, *Strategy & Leadership*, 39(3), 44-53.

#### *Readings for Session 3*

Baldwin, C. & von Hippel, E. (2011), Modeling a paradigm shift: From producer innovation to user and open collaborative innovation, *Organization Science*, 22(6), 1399-1417.

Faraj, S., Jarvenpaa, S., & Majchrzak, A. (2011), Knowledge collaboration in online communities, *Organization Science*, 22(5), 1224-1239.

Governor, J., Hinchcliffe, D., & Nickull, D. (2009), Participation/Collaboration pattern, in: *Web 2.0 Architectures*, O'Reilly, 135-143.

Standing, C., & Kinti, S. (2011), How can organizations use wikis for innovation?, *Technovation*, 3, 287-295.

#### *Readings for Session 4*

Governor, J., Hinchcliffe, D., & Nickull, D. (2009), Collaborative Tagging and Declarative Living and Tag Gardening patterns, in: *Web 2.0 Architectures*, O'Reilly, 184-189.

Marlow, C., Naaman, M., Boyd, D., & Davis, M. (2006), HT06, tagging paper, taxonomy, Flickr, academic article, ToRead, *Hypertext*, 31-40.

Viegas, F., Wattenberg, M., & Feinsberg, J. (2009), Participatory visualization with Wordle, *Transactions on Visualization and Computer Graphics*, IEEE, 15(6), 1137-1144.

Cusumano, M. (2011), Platform wars come to social media, *Communications of the ACM*, 54(4), 31-33.

#### *Readings for Session 6*

Hagiu, A., & Yoffie, D. (2009), What's your Google strategy?, *Harvard Business Review*, April, 74-81.

Boyd, D., Golder, S., & Lotan, G. (2010), Tweet, tweet, retweet: Conversational aspects of retweeting on Twitter, *Hawaii International Conference on System Sciences*, 1-10.

Hansen, D., Shneiderman, B., & Smith, M. (2010), Social network analysis: Measuring, mapping, and modeling collections of connections, *Analyzing Social Media Networks with NodeXL: Insights from a Connected World*, Morgan Kaufmann, [http://www.elsevierdirect.com/samplechapters/9780123822291/02~Chapter\\_3.pdf](http://www.elsevierdirect.com/samplechapters/9780123822291/02~Chapter_3.pdf).

Bentley, A., & Earls, M. (2008), Forget influentials, herd-like copying is how brands spread, *AdMaps*, 43(499), 19-22.

Further reading:

Boyd, D., & Ellison, N. (2007), Social network sites: definition, history, and scholarship, *Journal of Computer-Mediated Communication*, 13(1), 11, <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>.

Van Alstyne, M., & Brynjolfsson, E. (2005), Global village or cyber-balkans? Modeling and measuring the integration of electronic communities, *Management Science*, 51(6), 851-868.

Evans, D. (2009), How catalysts ignite, forthcoming in Gawer, A. (ed.), *Platforms, Markets and Innovation*, Edward Elgar, <http://ssrn.com/abstract=1279631>.

*Readings for Session 8*

Heer, J., & Agrawala, M. (2008), Design considerations for collaborative visual analytics, *Information Visualization*, 7, 49-62.

Huynh, D., Karger, D., & Miller, R. (2007), Exhibit: lightweight structured data publishing, *International World Wide Web Conference (WWW)*, ACM, 737-746.

Jacobson et al. (2011)

Hey (2010)

Guinard et al. (2011)

Further readings:

Pirolli, P. (2009), An elementary social information foraging model, *Conference on Human Factors in Computing Systems*, ACM, 605-614.

*Readings for Session 9*

Lessig (2008)

Balasubramaniam et al. (2008)

Daniel et al. (2011)

Hoyer (2011)

Weiss & Gangadharan (2010)

*Readings for Session 11*

Bonabeau (2009)

Archak (2010)

Boudreau (2011)

Weinhardt et al. (2009)

### **Suggested books**

Abelson, H., Ledee, K., & Lewis, H. (2008), *Blown to Bits*, Addison Wesley.

- Bell, G. (2009), *Social Web Applications*, O'Reilly.
- Berman, S. (2011), *Not For Free: Revenue Strategies for a New World*, Harvard Business Review Press.
- Bollier, D. (2008), *Viral Spiral*, The New Press, available at under a Creative Commons license at: <http://www.viralspiral.cc/sites/default/files/ViralSpiral.pdf>
- Easley, D., & Kleinberg, J. (2010), *Networks, Crowds, and Markets*, Cambridge. Draft at <http://www.cs.cornell.edu/home/kleinber/networks-book>.
- Governor, J., Hinchcliffe, D., & Nickull, D. (2009), *Web 2.0 Architectures*, O'Reilly.
- Hansen, D., Shneiderman, B., & Smith, M. (2010), *Analyzing Social Media Networks with NodeXL: Insights from a Connected World*, Morgan Kaufmann.
- Hayes, T. (2008), *Jump Point: How Network Culture is Revolutionizing Business*, McGraw Hill.
- Johnson, S. (2010), *Where Good Ideas Come From: The Natural History of Innovation*, Riverhead Books.
- Leadbeater, C. (2009), *We-Think: Mass Innovation, Not Mass Production*, Updated Edition, Profile Books, chapters 1-3 available at: <http://www.wethinkthebook.net>.
- Lessig, L. (2008), *Remix: Making Art and Commerce Thrive in the Hybrid Economy*, Penguin.
- Li, C., & Bernoff, J. (2008), *Groundswell: Winning in a World Transformed by Social Technologies*, Harvard Business Press.
- Libert, B., & Spector, J. (2008), *We are Smarter than Me*, Wharton School Publishing.
- Lytras, M., Damiani, E., de Pablos, P. (2009), *Web 2.0: The Business Model*, Springer.
- Mahemoff, M. (2006), *Ajax Design Patterns*, O'Reilly.
- McAfee, A. (2009), *Enterprise 2.0: New Collaborative Tools for Your Organization's Toughest Challenges*, Harvard Business Press.
- Musser, J., & O'Reilly (2006), *Web 2.0: Principles and Best Practices*, O'Reilly Radar.
- Ogrinz, M. (2009), *Mashup Patterns: Designs and Examples for the Modern Enterprise*, Pearson.
- Penenberg, A. (2009), *Viral Loop: From Facebook to Twitter, How Today's Smartest Businesses Grow Themselves*, Hyperion.
- Russell, M. (2011), *Mining the Social Web: Analyzing Data from Facebook, Twitter, LinkedIn and Other Social Media Sites*, O'Reilly.
- Segram, T. (2007), *Programming Collective Intelligence*, O'Reilly.
- Shih, C. (2009), *The Facebook Era: Tapping Online Social Networks to Build Better Products and Sell More Stuff*, Prentice Hall.
- Shirky, C. (2008), *Here Comes Everybody: The Power of Organizing without Organizations*, Penguin.
- Shuen, A. (2008), *Web 2.0: A Strategy Guide*, O'Reilly, available on Safari through the library.
- Weinberger, D. (2011), *Too Big to Know: Rethinking Knowledge Now That the Facts Aren't the Facts, Experts Are Everywhere, and the Smartest Person in the Room is the Room*, Basic Books.
- Yee, R. (2008), *Pro Web 2.0 Mashups: Remixing Data and Web Services*, Apress, Springer, available through the Lecture Notes in Computer Science (LNCS) link from the library.
- Zittrain, J. (2008), *The Future of the Internet*, Yale University Press, also available under a Creative Commons License at <http://futureoftheinternet.org/download>