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# Liability for Software Development

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# INTRODUCTION

## SCOPE

- FOCUS: Obligations to avoid faulty software
- NOT COVERED: Liability that may arise from software purposefully designed in violation of a law (to 'invade privacy')

### *Obligations may be ....*

- *Contractual – Arising from software development contracts*
- *Professional – Arising from role as an 'engineer'*
- *Tortious – Arising from general duties we owe each other*
- *Governance/Regulation – Arising from targeted laws*

# CONTRACTUAL OBLIGATIONS

## CONTRACTS – BRIEF OVERVIEW

Contract law protects obligations undertaken between individuals.

- If you promise X to develop a software suite in a contract and fundamentally fail to do so, you may be obligated to compensate X for any damage you caused her
- Many software developer attempt to use contracts to absolve themselves of all obligations with respect to the product they are offering:

*"Although we endeavour to maintain the accuracy of the above information, we cannot be held responsible for errors or omissions. All market data is delayed by at least 20 minutes unless otherwise noted. Click here for more information...MLHC will not be responsible or liable for any direct, indirect, special, incidental or consequential damages, or any other damages whatsoever, including without limitation, lost revenues, lost profits or loss of prospective economic advantage, resulting from use or misuse of this web site or the information, documents, software or content thereof, even if advised of the possibility of such damages or such damages are reasonably foreseeable."*

- Courts will in some cases find ways to avoid enforcing clauses of this nature:

*"...The design, format and wording of the agreement and fine print documentation created by the defendant, virtually eliminates liability for inaccuracy in the performance of the services contracted for by the customer and, on a close reading, it is almost suggestive that the customer could expect there to be a significant degree of mistake or inaccuracy, which they would simply be required to accept without complaint. The wording of clause 16 (h) of the agreement is almost such as to constitute the creation of a license fee for the defendant to be reckless in its provision of services."*

*Zhu v. Merrill Lynch HSBC, [2002] B.C.J. No. 2883 (B.C. P.C.); Robert v. Versus Brokerage Services Inc., [2001] O.T.C. 232 (Ont. S.C.)*

# PROFESSIONAL OBLIGATIONS

## SOURCES

### SOURCES OF PROFESSIONAL OBLIGATIONS

- Arise from membership in a profession [professional engineer]
- Defined and overseen by a self-regulatory body [Professional Engineers Ontario - PEO]
- Professional Body is authorized by statute [*Professional Engineers Act*]

R.S.O. 1990, c. P.28, <[http://www.e-laws.gov.on.ca/html/statutes/english/elaws\\_statutes\\_90p28\\_e.htm](http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90p28_e.htm)>

- Obligations are enforced by tribunals composed of fellow professionals +others [PEO Disciplinary Committee]

# PROFESSIONAL OBLIGATIONS

## PROFESSIONAL OBLIGATIONS

*“A professional engineer is a person holding a professional engineering licence granted by a provincial engineering licensing body such as PEO. Holders of a valid licence are allowed to use the title “P.Eng.””*

PEO, “Licensing as a Professional Engineer”,  
<<http://www.peo.on.ca/registration/SoftwarePamphlet.pdf>>



Mobilefolk, public domain, 2009,  
<<http://commons.wikimedia.org/wiki/File:Ironring2005.JPG>>



A.A. Chesterfield/Library and Archives Canada, 1916 (Public Domain),  
<[http://commons.wikimedia.org/wiki/File:Collapse\\_of\\_the\\_centre\\_span\\_of\\_the\\_Quebec\\_Bridge.jpg](http://commons.wikimedia.org/wiki/File:Collapse_of_the_centre_span_of_the_Quebec_Bridge.jpg)>

# PROFESSIONAL OBLIGATIONS

## NATURE OF OBLIGATIONS

*“Section 77 of Regulation 941 states that ‘it is the duty of a practitioner to the public, to the practitioner's employer, to the practitioner's clients, to other licensed engineers of the practitioner's profession, and to the practitioner to act at all times with:*

- i. fairness and loyalty to the practitioner's associates, employers, clients, subordinates and employees,*
- ii. fidelity to public needs,*
- iii. devotion to high ideals of personal honour and professional integrity,*
- iv. knowledge of developments in the area of professional engineering relevant to any services that are undertaken, and*
- v. competence in the performance of any professional engineering services that are undertaken.’*

*Through the Code of Ethics, professional engineers have a clearly defined duty to society, which is to regard the duty to public welfare as paramount, above their duties to clients or employers.”*

PEO Code of Ethics, Preamble, <<http://www.peo.on.ca/>>

- ❖ In becoming an engineer, you take on ethical obligations to consider more than your employer's interests.
- ❖ Engineers may lose their license to practice if they fail to perform competently
- ❖ Purpose: provide personal accreditation, instil confidence in engineering and ensure public welfare by enforcing standards in ways that non-technical customers cannot

# PROFESSIONAL OBLIGATIONS

## 'SOFTWARE' ENGINEERS

Are software engineers 'Engineers'?

12. (1) No person shall **engage** in the practice of professional engineering or hold himself, herself or itself out as engaging in the practice of professional engineering unless the person is the holder of a licence, a temporary licence, a provisional licence or a limited licence.

*“practice of professional engineering” means **any act** of planning, designing, composing, evaluating, advising, reporting, directing or supervising **that requires the application of engineering principles and concerns the safeguarding of life, health, property, economic interests, the public welfare or the environment, or the managing of any such act;** (“exercice de la profession d’ingénieur”)*

Professional Engineers Act, R.S.O. 1990, c. P.28,  
<[http://www.e-laws.gov.on.ca/html/statutes/english/elaws\\_statutes\\_90p28\\_e.htm](http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90p28_e.htm)>

# PROFESSIONAL OBLIGATIONS

## 'SOFTWARE' ENGINEERS

Does software engineering “require[] the application of engineering principles and concern[] the safeguarding of life, health, property, economic interests, the public welfare or the environment”?

*“PEO’s mandate is to ensure that the public welfare and interest are served where engineering is concerned. Since the practice of software engineering has the potential of impacting the public interest, PEO is responsible for its regulation. This view is consistent with the IEEE definition of software engineering as: the application of a systematic, disciplined, quantifiable approach to the development, operation and maintenance of software: that is the application of engineering to software.”*

Recommendations of the Software Engineering Task Force, Nov 16, 2000,  
<[http://www.peo.on.ca/News/Software\\_ccpesubmission.htm](http://www.peo.on.ca/News/Software_ccpesubmission.htm)>

### 'Safeguarding life, health, property?'

- Residential/business software packages
- Stock exchange/Financial software
- Nuclear power plants
- Automobiles
- Internet/Critical Information Systems



# PROFESSIONAL OBLIGATIONS

## PEO DISCIPLINARY MEASURES

The PEO Disciplinary Committee may find any 'engineer' guilty of either **professional misconduct** or **incompetence**.

### POSSIBLE PENALTIES:

- Revocation of license (temporary or permanent)
- Impose fines up to \$5,000
- Place various conditions on the engineer's continued practice

### INCOMPETENCE

- (a) ...displayed in his or her professional responsibilities a lack of knowledge, skill or judgment or disregard for the welfare of the public of a nature or to an extent that demonstrates the member or holder is unfit to carry out the responsibilities of a professional engineer; or*
- (b) ...is suffering from a physical or mental condition or disorder of a nature and extent making it desirable in the interests of the public or the member or holder that the member or holder no longer be permitted to engage in the practice of professional engineering or that his or her practice of professional engineering be restricted.*

*Professional Engineer's Act, Ontario*

# PROFESSIONAL OBLIGATIONS

## PEO DISCIPLINARY MEASURES

### PROFESSIONAL MISCONDUCT

- (a) negligence,*
- (b) failure to make reasonable provision for the safeguarding of life, health or property of a person who may be affected by the work for which the practitioner is responsible,*
- (c) failure to act to correct or report a situation that the practitioner believes may endanger the safety or the welfare of the public,*
- (f) failure of a practitioner to present clearly to the practitioner's employer the consequences to be expected from a deviation proposed in work, if the professional engineering judgment of the practitioner is overruled by non-technical authority in cases where the practitioner is responsible for the technical adequacy of professional engineering work,*
- (h) undertaking work the practitioner is not competent to perform by virtue of the practitioner's training and experience,*

*Professional Engineer's Act, R.R.O. 1990, Regulation 941, s. 72, <[http://www.e-laws.gov.on.ca/html/regs/english/elaws\\_regs\\_900941\\_e.htm](http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_900941_e.htm)>*

# TORTIOUS OBLIGATIONS

## NEGLIGENCE - OVERVIEW

Torts are violations of obligations individuals owe each other in society.

Negligence is a tort:

*“The rule that you are to love your neighbour becomes in law you must not injure your neighbour; and the lawyer's question: Who is my neighbour? receives a restricted reply. You must take reasonable care to avoid acts or omissions which you can reasonably foresee would be likely to injure your neighbour. Who, then, in law, is my neighbour? The answer seems to be - persons who are so closely and directly affected by my act that I ought reasonably to have them in contemplation as being so affected when I am directing my mind to the acts or omissions that are called in question.”*

*Donoghue v. Stevenson, [1932] A.C. 562 (H.L.)*

We each owe other the legal obligation or duty to take reasonable care so as to avoid doing reasonably foreseeable harm to one another.

# TORTIOUS OBLIGATIONS

## NEGLIGENCE - OVERVIEW

### ELEMENTS OF NEGLIGENCE:

Duty of Care

Duty of Care: An individual (Alice) owes a duty to Bob if Bob is sufficiently proximate that it is reasonably foreseeable that Alice's actions may impact on Bob. Unless there is a good reason not to have such a duty.

Standard of Care

Standard of Care: The Duty Alice owes to Bob is to take a certain level of care in her actions so as to avoid causing reasonably foreseeable harm to Bob.

Causation

Causation: It is not enough for Alice to fail in meeting a duty owed to Bob. Negligence requires that her failure to meet the standard of care in place actually cause the loss for which Bob is seeking compensation. Causation is more complex than simple cause and effect – if an effect is too remote, it will not be attributed to Alice

Damages/Injury

Damages/Injury: The loss caused by Alice's failure to meet the duty she owed Bob must be one that the law recognizes. Certain types of harms are not included in this category.

# TORTIOUS OBLIGATIONS

## NEGLIGENCE – SOFTWARE DESIGN

### ELEMENTS OF NEGLIGENCE:

Duty of Care

Standard of Care

Causation

Damages/Injury

### FINANCIAL SOFTWARE:

*Zhu v. Merrill Lynch HSBC*: Online trading software glitch. User cancelled a transaction and received a ‘cancelled’ message. ML argued that ‘cancelled’ means the cancellation request has been sent, but does not confirm it has been received. For such confirmation, Zhu should have phoned to confirm.

*COURT: “Why indeed should someone who is using the NetTrader services offered by the Defendant as permitting the customer to make trades on his or her personal computer, have to telephone the Defendant to confirm that a trade has taken place or for that matter, cancelled? One might properly ask why would one retain the Defendant's services for net trading if before he or she can proceed confirmation of the trade has to be obtained by telephone...It strikes me that the nature of the Defendant's services demands a higher duty of care and performance than ordinarily expected in the provision of services, because of the high risk of loss of a customer's investment monies.”*

DESIGN ISSUE: Didn't include order/cancellation confirmation process in online trading software suite. Failed to take sufficient care not to cause foreseeable harm to their customers.

# TORTIOUS OBLIGATIONS

## NEGLIGENCE – SOFTWARE DESIGN

### ELEMENTS OF NEGLIGENCE:

Duty of Care

Standard of Care

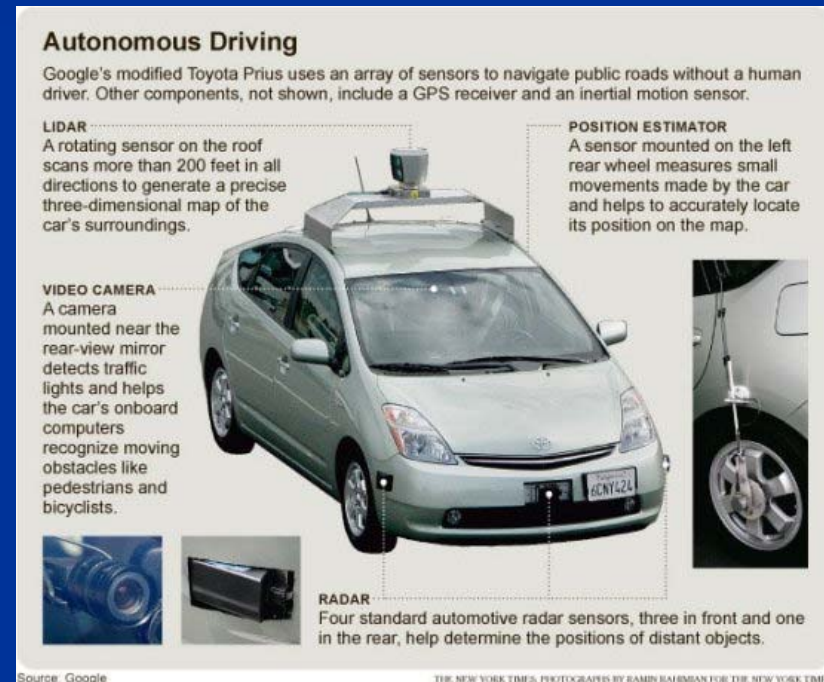
Causation

Damages/Injury



### AUTOMOBILES

- Perhaps most frequent source of negligence suits
- Computers now implemented in engines



SOURCE: Google. Photographs by Ramin Rahimian for the New York Times. October 10, 2010, <<http://www.nytimes.com/imagepages/2010/10/10/science/10googleGrfxA.html?ref=science>>

Terabithia4 CC-BY-NC-SA 2.0, 2009,

<<http://www.flickr.com/photos/terabithia4/3285167273/>>

# TORTIOUS OBLIGATIONS

## NEGLIGENCE – SOFTWARE DESIGN

### ELEMENTS OF NEGLIGENCE:

Duty of Care

Standard of Care

Causation

Damages/Injury

### BUSINESS/RESIDENTIAL NETWORK APPLICATIONS

- Often hastily put together with insufficient safety mechanisms
- This makes software operators susceptible to malware, spyware, but also to bot nets.
- Bot nets can be used to launch DDOS attacks on any other system or service, causing harm.
- Reasonably foreseeable?
- Remote?

Chandler: Software developers are the most **efficient** point in distribution chain to mitigate proliferation of bot nets,

J. Chandler, "Security in Cyberspace: Combatting Distributed Denial of Service Attacks", (2003) 1 UOLTJ 231, <[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=596667](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=596667)>

# GOVERNANCE/REGULATION

## GOVERNANCE/REGULATION

### EMERGING APPROACHES TO ICT GOVERNANCE:

*“All stakeholders have a role to play in improving trust on the Internet  
Participants pointed out that all stakeholders have important roles to play in improving trust on the Internet: intermediary platforms are part of an ecosystem that also includes buyers / sellers, application developers, advertisers, merchants, law enforcement agencies and users. A strong multi-stakeholder partnership was viewed as crucial to address new policy issues by incentivising the entities capable of remedying policy problems, while preserving the open nature of the Internet.”*

OECD, “Workshop Summary: The Role of Internet intermediaries in Advancing Public Policy Objectives”, Conference held on June 16, 2010, in Paris, France,  
<<http://www.oecd.org/dataoecd/8/59/45997042.pdf>>



# GOVERNANCE/REGULATION

## GOVERNANCE/REGULATION

- DDOS ATTACKS: Governments realizing importance of protecting critical infrastructure
  - Stuxnet virus in Iran
  - DDoS attacks post-wikileaks
  - Software security legislation?
- ANTI-SPAM/PHISHING ACT
  - Potential hefty fines for not explaining to users the potential foreseeable 'impacts' and functions of software

### 'Safeguarding life, health, property?'

- Residential/business software packages
- Stock exchange/Financial software
- Nuclear power plants
- Automobiles
- Internet/Critical Information Systems