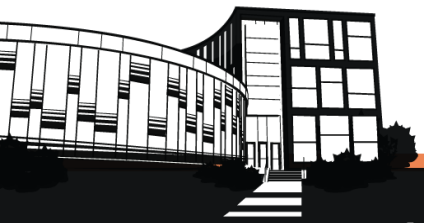
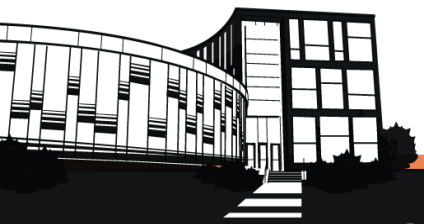
Open Video Chat: Open Source Video Conferencing on a Constrained Platform

Taylor Rose Fran Rogers



Overview

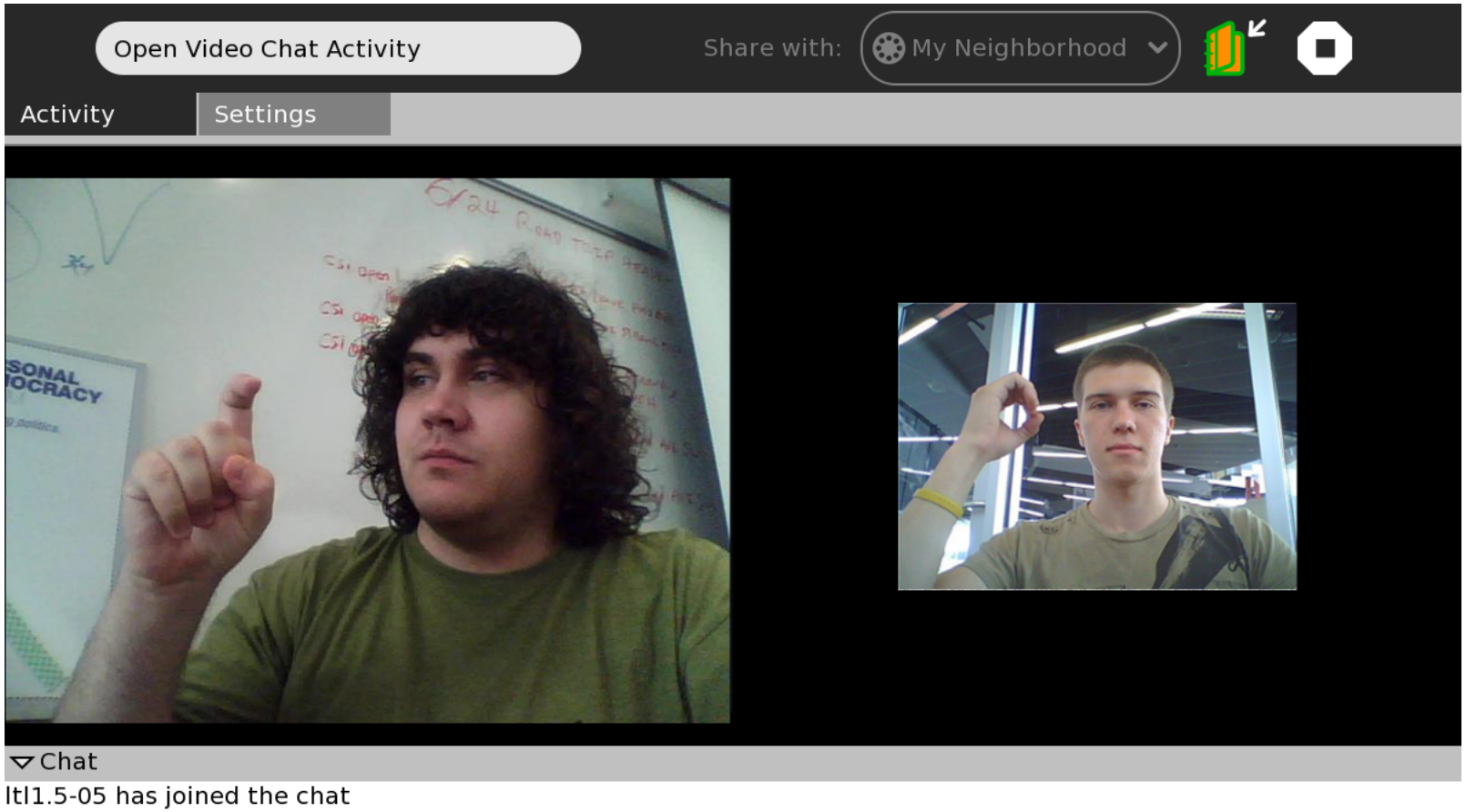
- What is Open Video Chat (OVC)?
- Requirements
- Problems with Spring Proof-of-Concept
- Summer Research
- Telepathy/ Farsight
- What went wrong?
- What would we do better?



What is Open Video Chat (OVC)?

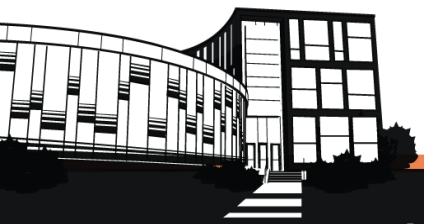
- Free/Open Source videoconferencing on the One Laptop per Child XO Laptop
- Development started in Spring 2010 under a grant from NTID's PEN International
- Enables communication for deaf and hard-of-hearing children in developing countries

What is Open Video Chat (OVC)?



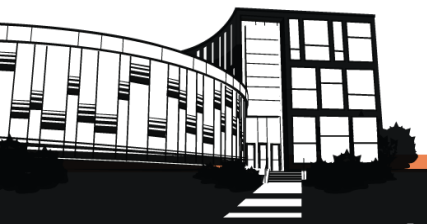
Requirements

- Provide one-to-one videoconferencing activity running on the XO laptop
  - Runs in the XO's Linux-based "Sugar" environment
- Performance acceptable enough for fluent sign language users to communicate
  - Minimum of fifteen frames of video per second
  - Audio optional
  - Auxiliary text chat
- Intuitive, child-friendly interface



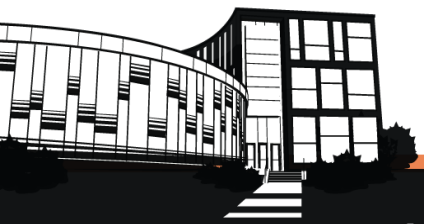
Problems with Spring Proof-of-Concept

- Video performance is acceptable, but could be better
  - Hardware acceleration isn't used to its fullest
- Uses an *ad hoc* UDP-based protocol to communicate
  - Unreliable; often requires multiple connection attempts
  - Inflexible; unable to reconfigure video parameters
  - No audio
- Not interoperable with other videoconferencing protocols - Jabber (Google Talk), SIP, *et al*.



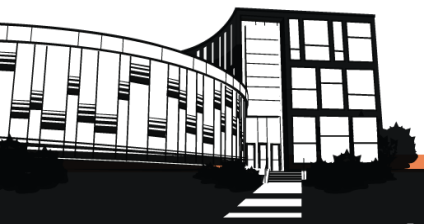
Summer Research

- For our Summer Research Fellowship, we decided to replace our *ad hoc* videoconferencing protocol with a pluggable implementation of tried-and-true protocols using existing Free/Open Source components
- This would yield many benefits:
  - Improved reliability
  - Interoperability with existing videoconferencing protocols
  - Simplified implementation
  - Code reuse



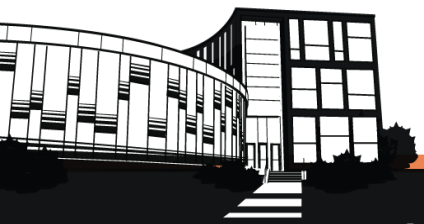
Telepathy/Farsight

- The components: **Telepathy** and **Farsight**, from Collabora Ltd. and freedesktop.org
- Telepathy: a flexible, modular communications framework based on D-Bus and other freedesktop.org technologies
  - Underpins the presence and collaboration services in Sugar
- Farsight: videoconferencing framework engineered concurrently with Telepathy
  - Supports Google Talk, SIP, and other protocols
  - Encapsulates many of the challenging aspects of videoconferencing - NAT traversal, codec negotiation



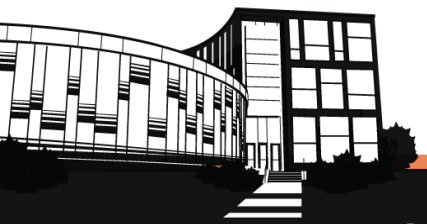
What went wrong?

- Outdated OS on the XO laptops
  - Uses a custom-built derivative of Fedora 11 GNU/Linux distribution - no longer supported since early 2010
  - Unable to incorporate fixes for components we depend on
  - Working with upstream developers difficult, as they generally assume the "bleeding edge" version is in use
- Custom builds of OS components or entire OS required to support new versions of Telepathy/Farsight

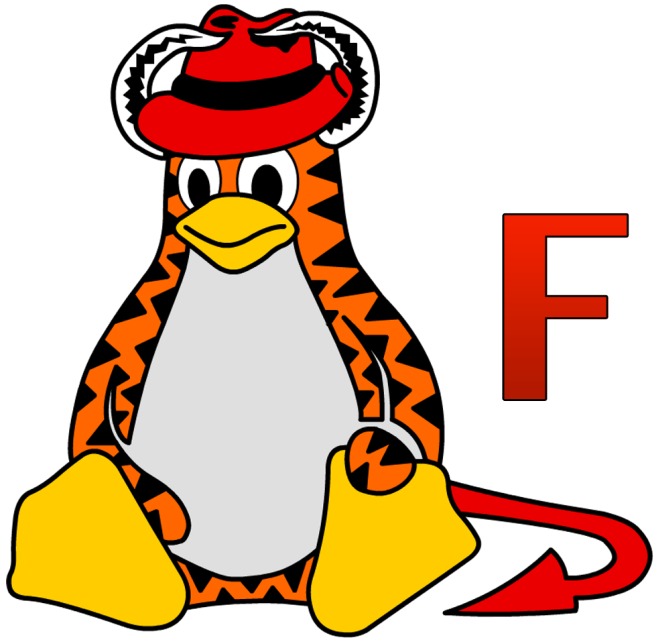


Starting Over:
What would we have done differently?

- Test concurrently on XOs, Live USB "Sugar on a Stick" environments, and Linux desktops
- Build a "bleeding-edge" development build for the XO as early in the development process as possible
- Work more closely with upstream developers



Questions?



FOSS @ RIT