



Robotics Forum

Modularity in Surgical Robotics

Common platforms and frameworks
for standardizing CIS research

**ERF Workshop on Hardware and software modularity and
interoperability in service robotics: Towards standardisation**

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European Robotics Forum – Vienna, 2015





Óbuda University

Antal Bejczy Center for Intelligent Robotics

<http://irob.uni-obuda.hu/>

- **euRobotics aisbl member**
- **Founder of CELLI (Central European Living Lab for Intelligent Robotics – <http://cellir.org/>)**
- **Focusing on human-centered robotics**
- **Key research areas:**
 - **Cloud robotics**
 - **Medical robotics**
 - **Advanced applied robotics**
 - **Teleoperation and telepresence**



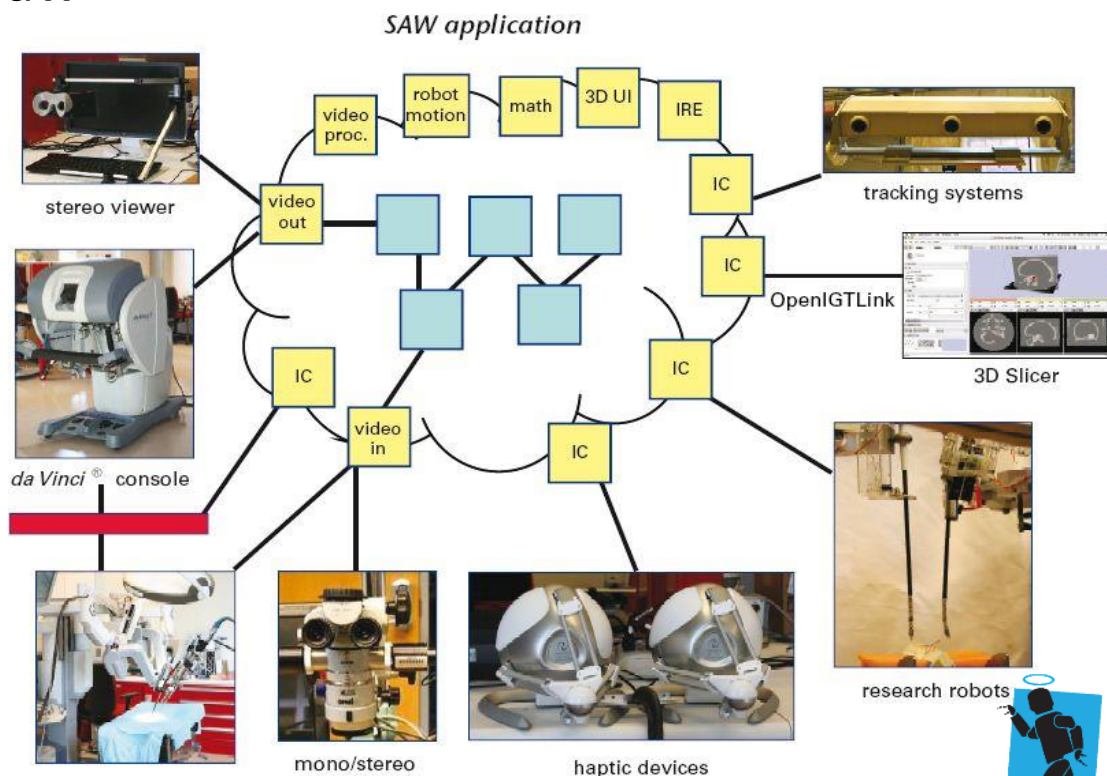
The case of open source infrastructure

5

- Free open source software
 - allows multi-party development
 - quality assurance
 - potential to bridge the gap between research and clinical devices
- Open hardware
 - research platforms
 - open prototypes
- Standards for interfaces
 - good examples from CS
 - standardization (ACM, IEEE, etc)



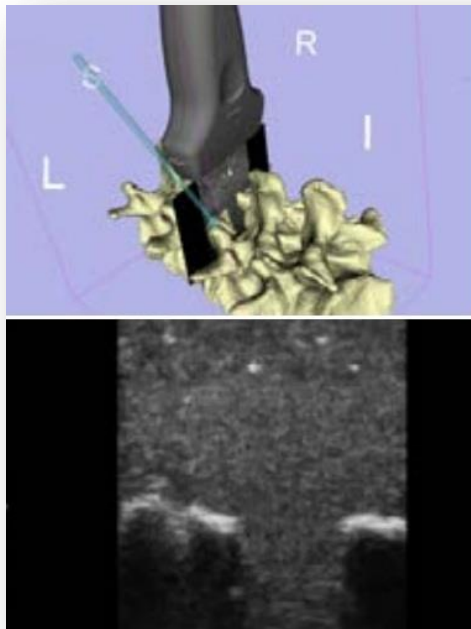
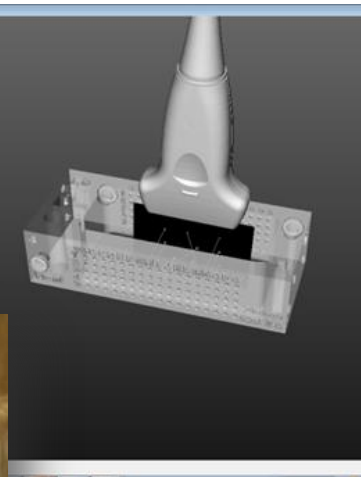
- Computer Integrated Surgical Systems and Technology
 - <http://cisst.org/cisst/>
- Surgical Assistant Workstation (SAW)
 - <https://www.cisst.org/Saw>



- Public software Library for UltraSound imaging research
 - <https://www.assembla.com/spaces/plus/wiki/>



Queen's
UNIVERSITY



plus
Remote



Hardware platforms – Raven II

11

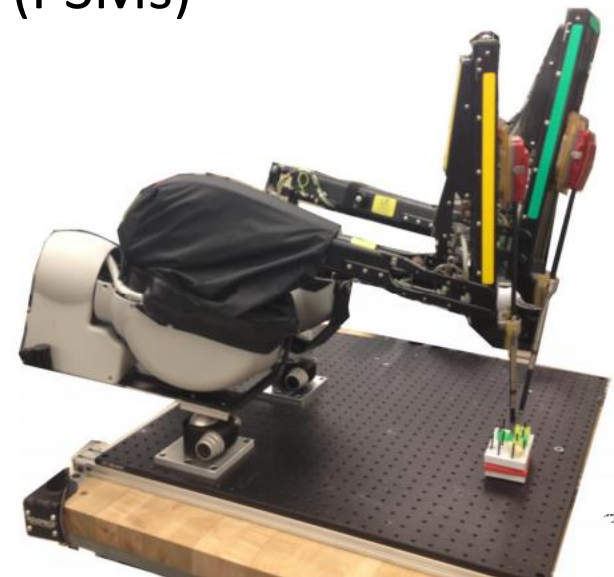
- **University of Washington and partners**
 - 2nd generation: 8 devices from grant
 - Applied Dexterity selling it @\$300K
 - Existing community: 13+ robots
 - Development Blog: <http://r2db.tumblr.com/>



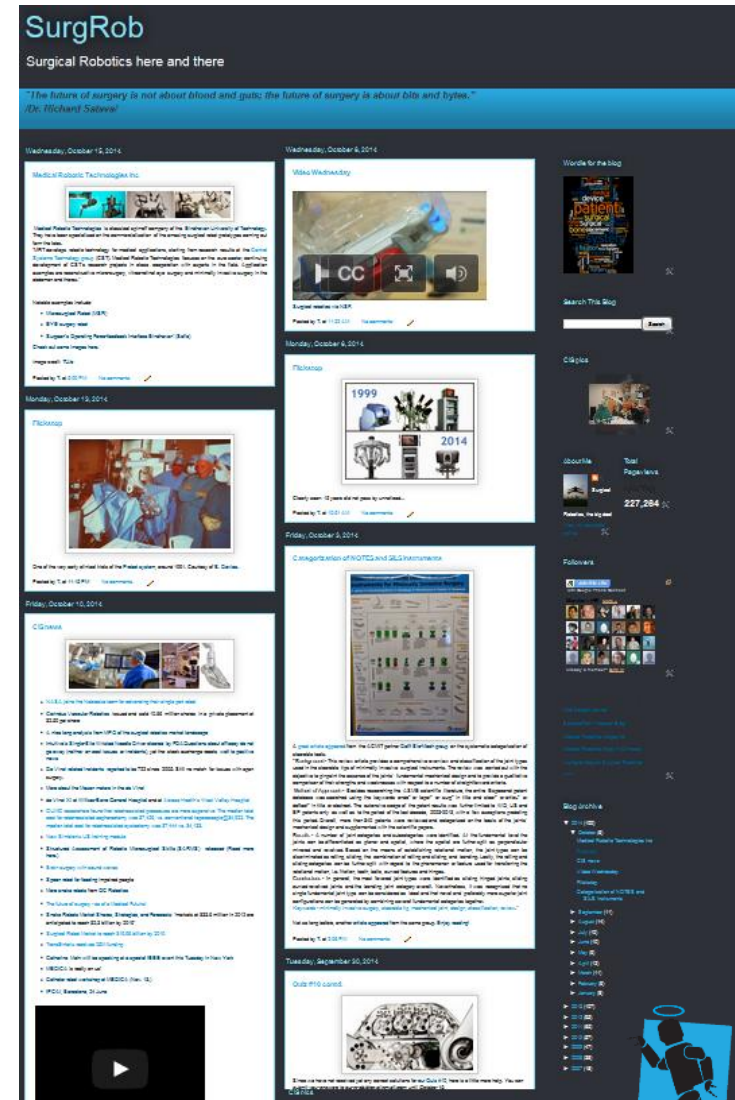
Credit: University of Washington



- Generic Research Kit for the da Vinci Surgical System (DVRK)
 - <http://research.intusurg.com/dvrkwiki/>
- Research application based
- 16 sites (US, Canada, UK, Italy, Hungary, S. Korea)
 - Two da Vinci Master Tool Manipulators (MTMs)
 - Two da Vinci Patient Side Manipulators (PSMs)
 - A stereo viewer
 - A foot pedal tray
 - Manipulator Interface Boards
 - Basic accessory kit

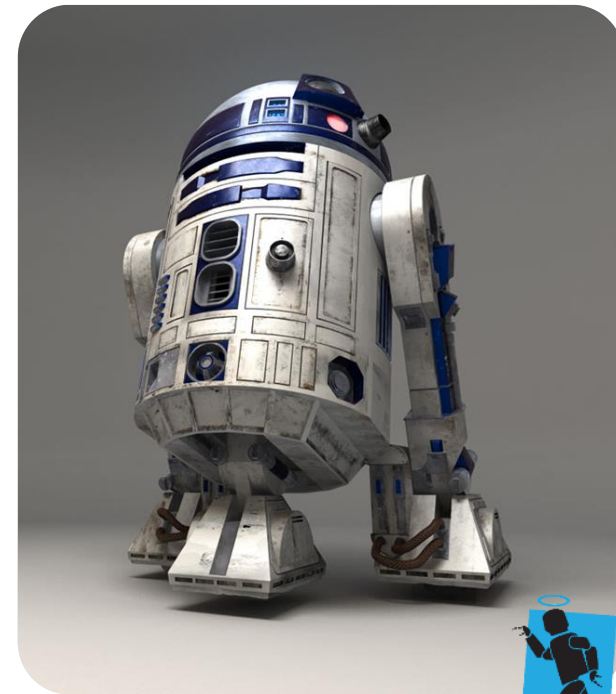


- ICRA2015 Workshop
Shared Frameworks for Medical
Robotics Research
 - <http://research.intusurg.com/workshops/icra-2015/>
 - Deadline for abstracts: March 16.
- SURGROB blog
Surgical Robotics here and there
 - <http://surgrob.blogspot.com/>



- **All my colleagues and students at Óbuda University**
 - <http://irob.uni-obuda.hu/>
- **Austrian Center for Medical Innovation and Technology**
 - www.acmit.at
- **Hungarian Academy of Sciences**
 - Haidegger T. is a Bolyai Fellow

Thank you!



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