

A surgical workflow editor and analytics tool

Surgery staff, medical devices providers and research labs need to track the workflow of the surgical procedures for practice improvement, training, QC or research. Paper-free documentation is an increasing requirement. But digital information should be easy to capture, store, edit, process and share.

The **b com *Surgery Workflow Toolbox* [Annotate]** makes it possible to create surgical process models by annotating surgical videos and signals (vital signs, robotics).



{applications}:



{key features}:

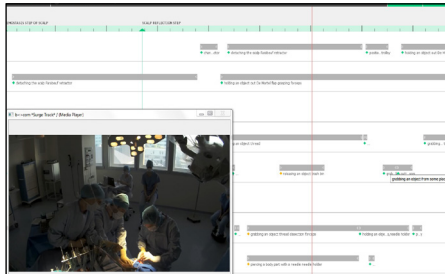
- ◆ Quickly **create, edit and share** the surgery workflow elements on a video or signals timeline.
- ◆ Maintain consistency of procedure language thanks to a basic **surgery procedure ontology** describing the most common terms of use for surgery applications.
- ◆ Compare sets of surgical procedure recordings thanks to the **data analytics** module.

{benefits}:

- ◆ **Improve and share** with surgical communities the way to perform a surgery procedure.
- ◆ **Empower** the surgical team (e.g. reducing adverse events).
- ◆ **Optimize** surgical processes thanks to analytics results.
- ◆ **Create reference bases** for the automatic recognition of videos (machine / deep learning results).

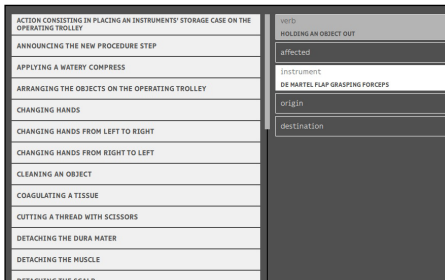
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{how it works}:



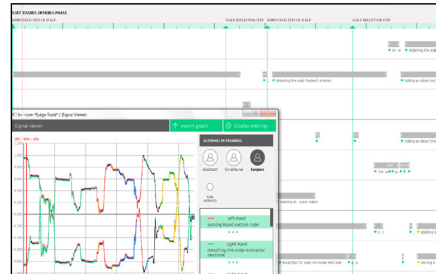
Annotation tool

- ◆ Select workflow elements: human participants with body parts, phases, steps, actions, status, instruments, etc.
- ◆ Specify the durations of actions



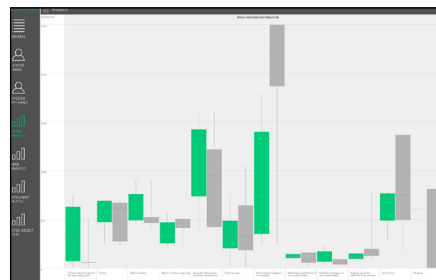
Surgery procedure vocabulary

- ◆ Define and select phases and steps names
- ◆ Define and select terms to use (ex: effector, verb, instrument)



Observation tool

- ◆ Visualize whole surgery procedure phases and steps
- ◆ Visualize vital signs/robotics signals synchronized with video and/or signals



Analytics tool

- ◆ Cross-data analytics: resources & timing, box plot
- ◆ Data extraction: time (h, mn), day, month, year, participants role, instrument, body part, action, phase, step

{specifications}:

Intuitive User Interface

- ◆ Automatic suggestions of terms to use
- ◆ Automatic synchronization between annotations and observed video/signals

Multi-platform

- ◆ Runs on Windows 7, Mac 10.8 and above, Linux

Ontology

- ◆ Use OntoSPM (Ontology for Surgical Process Models) or proprietary terms
- ◆ Expand it by adding new terms and relations

Data export

- ◆ In CSV or XML formats

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{about b com}:

With its innovations, the Institute of Research and Technology (IRT) b<>com is taking part in the European digital transformation. Its 230 researchers develop tools, products, and services that make everyday life easier. They focus on three fields of research:

- Hypermedia (Ultra-high definition images, 3D sound, smart content, virtual and augmented reality)

- More agile ultra-high speed networks (cloud, cybersecurity, ultra-high speed mobile, network resilience, Internet of Things).
- e-Health (image sharing, augmented reality, surgical workflow)

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