

How we tell the robot what to do?

Deliberation in CONVINCE



What is Robotic Deliberation?

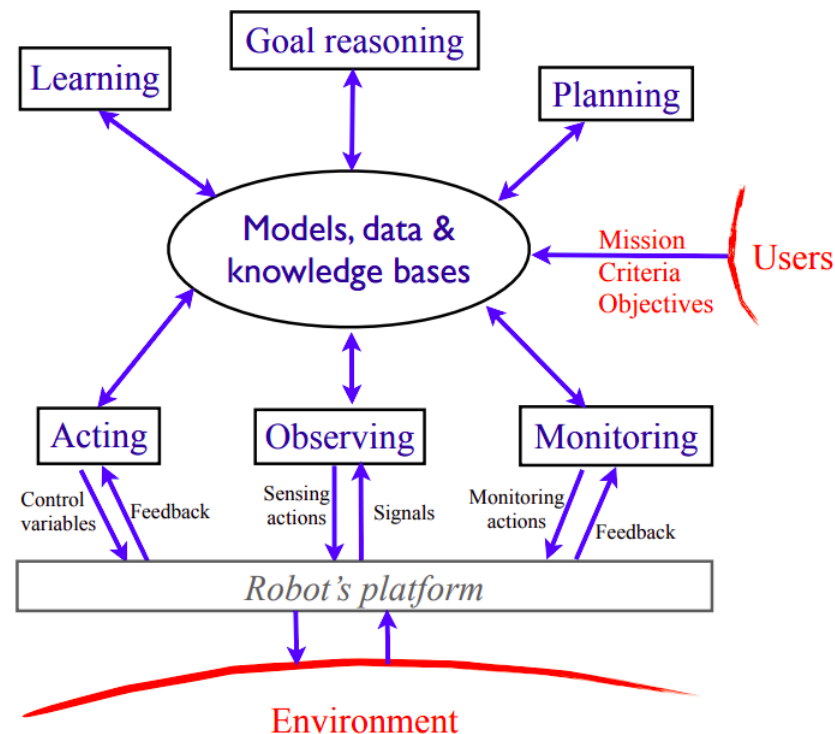
Autonomous robots facing

- a diversity of **environments**,
- a variety of **tasks** and
- a range of **interactions**

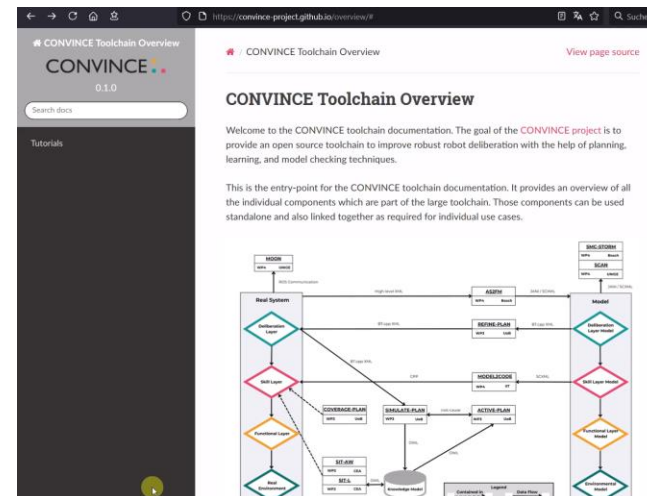
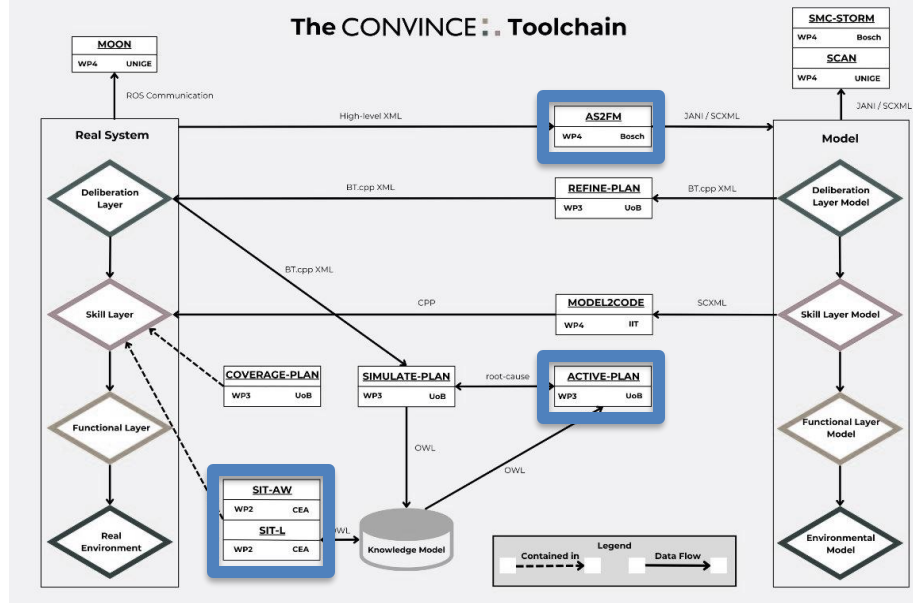
cannot be preprogrammed by foreseeing at the *design stage* all possible courses of actions they may require.

These robots need to perform some explicit **deliberation**.

In short: **autonomy plus diversity entail the need for deliberation**.



[Ingrand and Ghallab \(2017\)](#)



<https://convince-project.github.io/overview/>

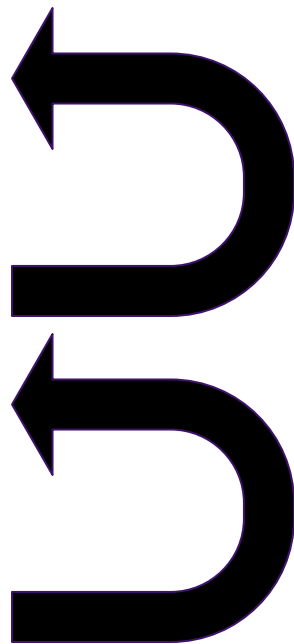
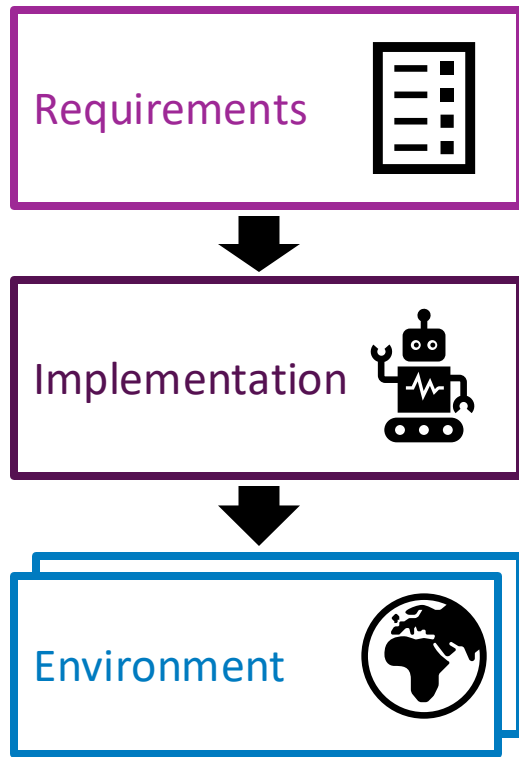


Street, et. al

[Towards a Verifiable Toolchain for Robotics.](#)

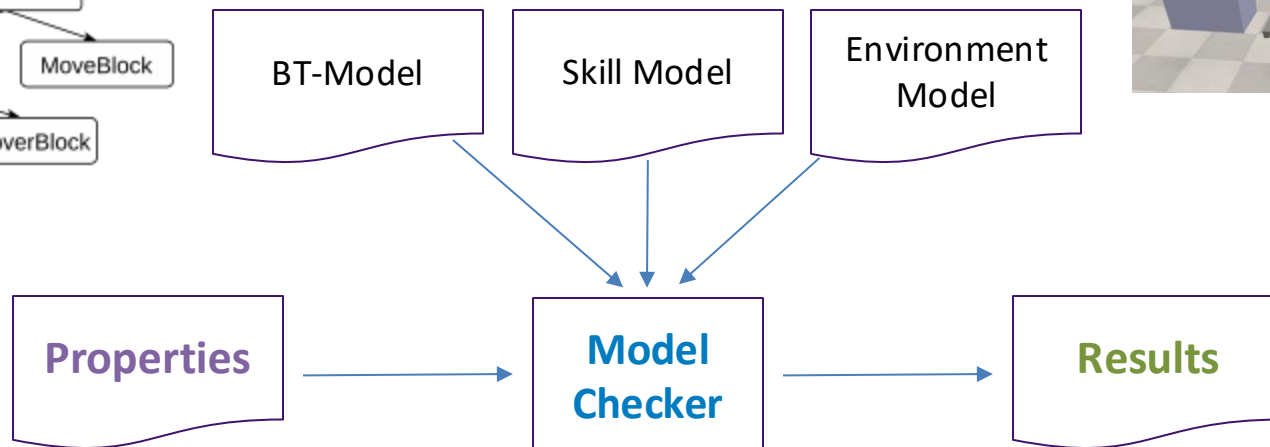
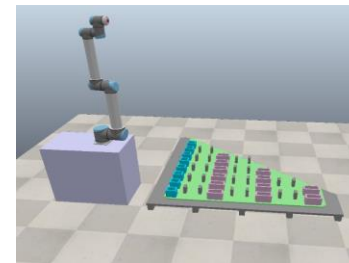
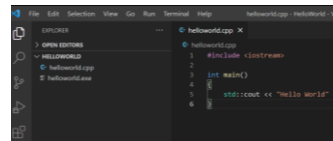
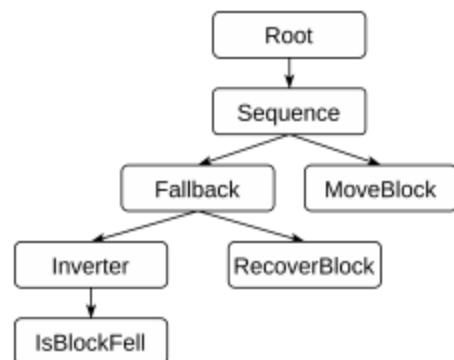
Proceedings of the AAAI Symposium Series 2024.

Best Paper Award



How can we ensure a given implementation meets the desired requirements?

At runtime and in any given environment



$(\text{abort} \implies (t_{\text{curr}} < (t_{\text{abort}} + t_{\text{timeout}})))$
 $U(\text{success} \vee \text{recovery}),$

Probability: 1



<https://convince-project.github.io/AS2FM/>

More on deliberation

ROS Community Group **Deliberation**

[join](#)

ROSCon 2024 Workshop material

[github/ros-wg-delib/roscon24-workshop](https://github.com/ros-wg-delib/roscon24-workshop)

[BT.CPP](#)

[ros_bt_py](#)

[FlexBE](#)

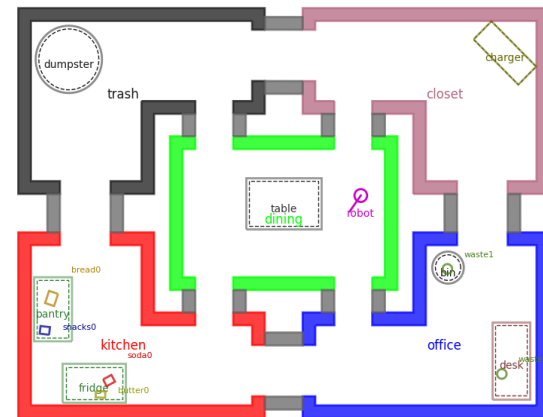
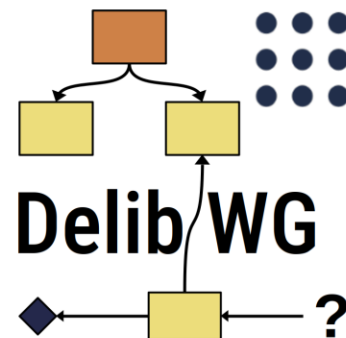
[SkiROS2](#)

[AS2FM](#)

Awesome Deliberation

[github/ros-wg-delib/awesome-ros-deliberation](https://github.com/ros-wg-delib/awesome-ros-deliberation)

CONVINCE



Open Questions

Will this all be replaced by LLMs?

How can deliberation logic be learned?

Should this be changed by the user?

Can a deliberation descriptions be interpreted?

-> **working on new proposal**

Contact me if you have an idea for a use case

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