Demonstrating Laughter Detection in Natural Discourses

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Motivation

- Laughter an essential part of communication
- Unobtrusive setup (only coarse features, and natural behavior)
- Nice results in offline experiments, but what is the online performance? Is it performing in real time or close to it?
- What can be done to integrate different sources in an online experiment?

Common Problems in Pattern Recognition

- Development of system is time consuming
- Components are almost never reusable
- Errors may be manifold
- Black box processes
- Biggest problem: How to use the system in a real application? (mostly offline performance measured)

→ Real time and online performance

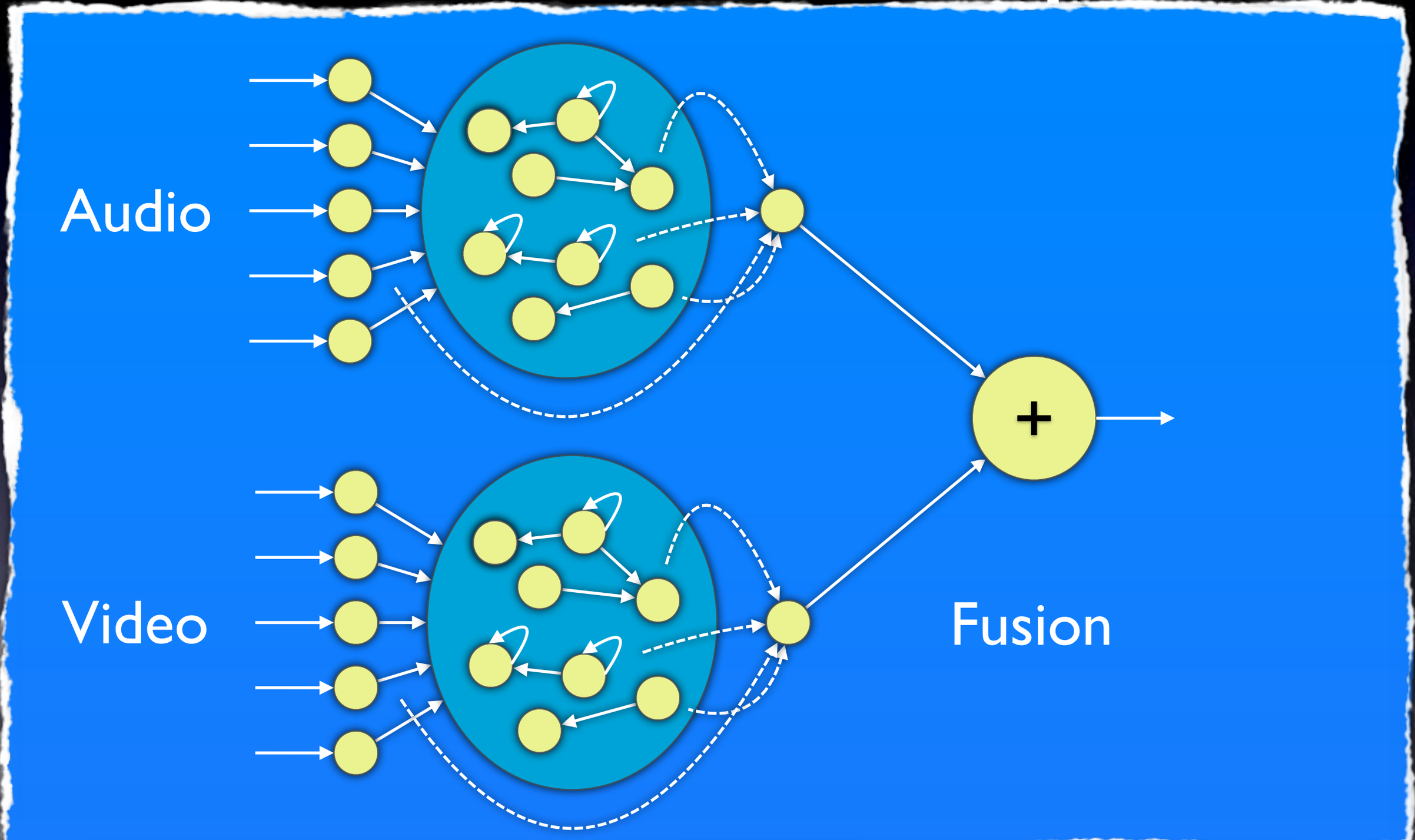
Laughter Detection

Coarse features Natural discourse Multiple sensors

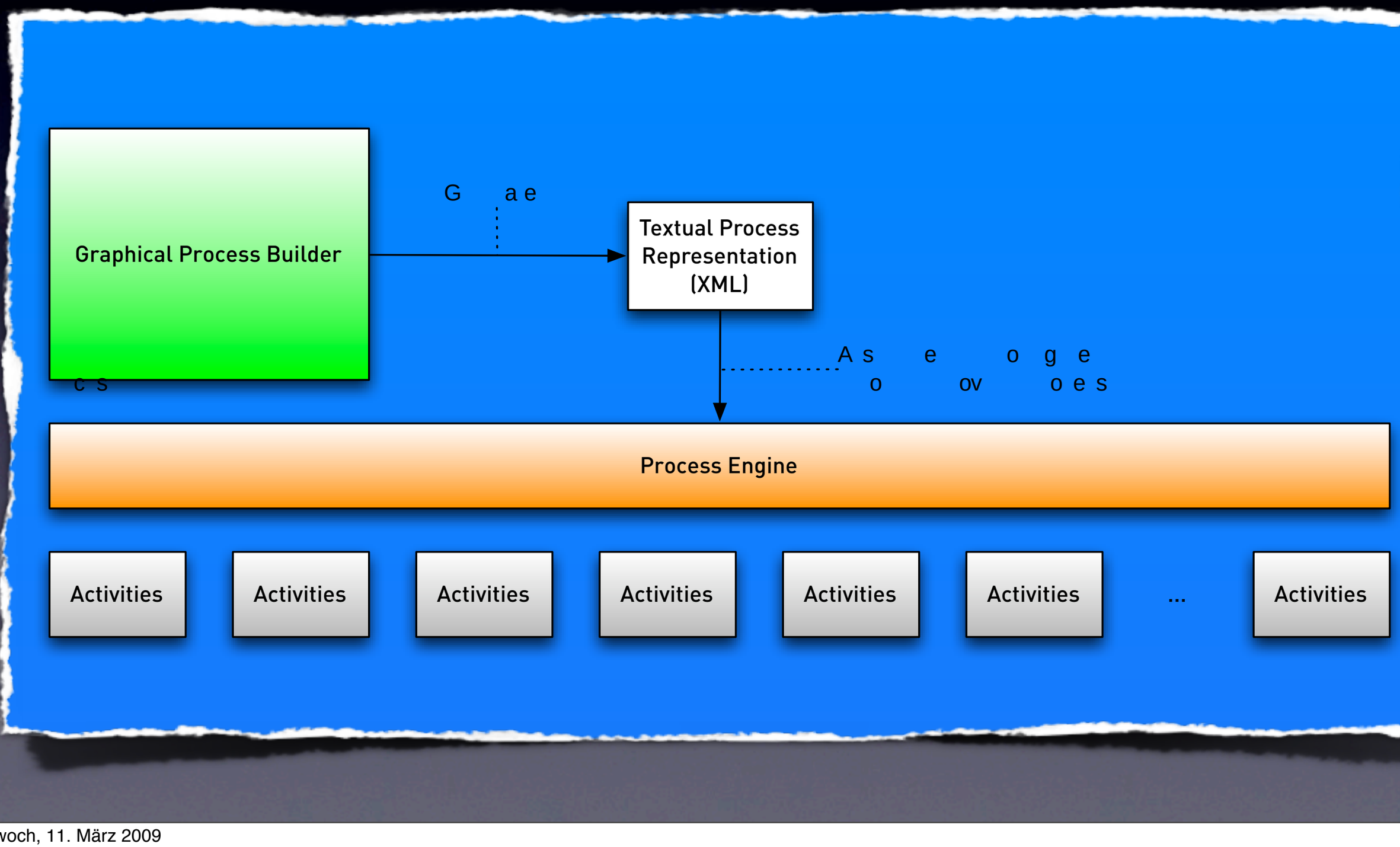
Classifier Setup

- Biologically motivated features representing the „rate of change of frequency“ and coarse movement features (single camera)
- Echo state network models trained on meeting corpus (multimodal)
- Training in offline mode and testing offline

Classifier Setup



Process Engine

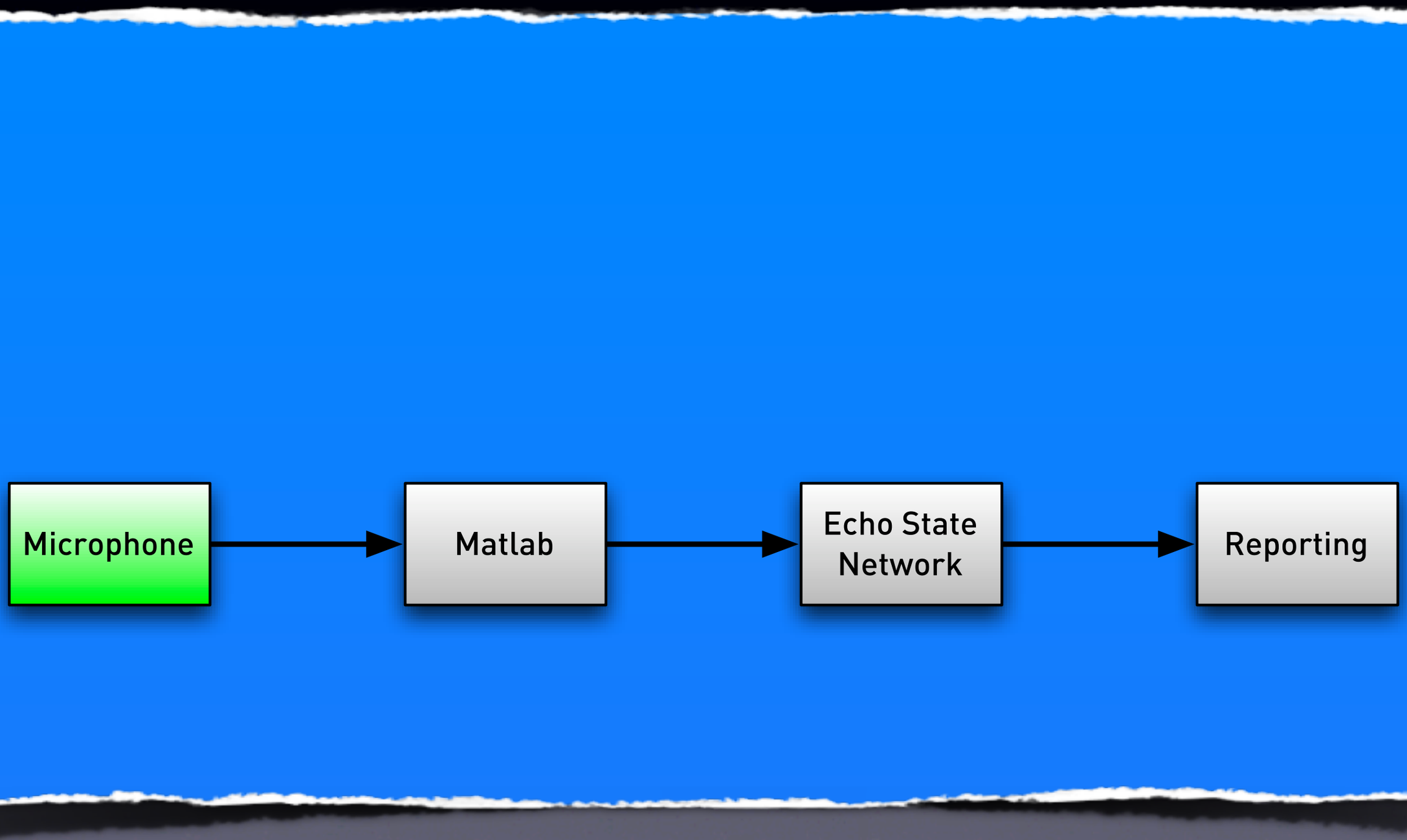


Benefits of the Engine

- Reusable activities
- Possible integration of different sources
- Fast prototyping of different experimental setups (feature fusion, classification fusion, etc. ...)
- Online performance (however, real time is not guaranteed)
- Graphical process design (less mistakes, and great illustration)

→ ..., but still work in progress

Example Process



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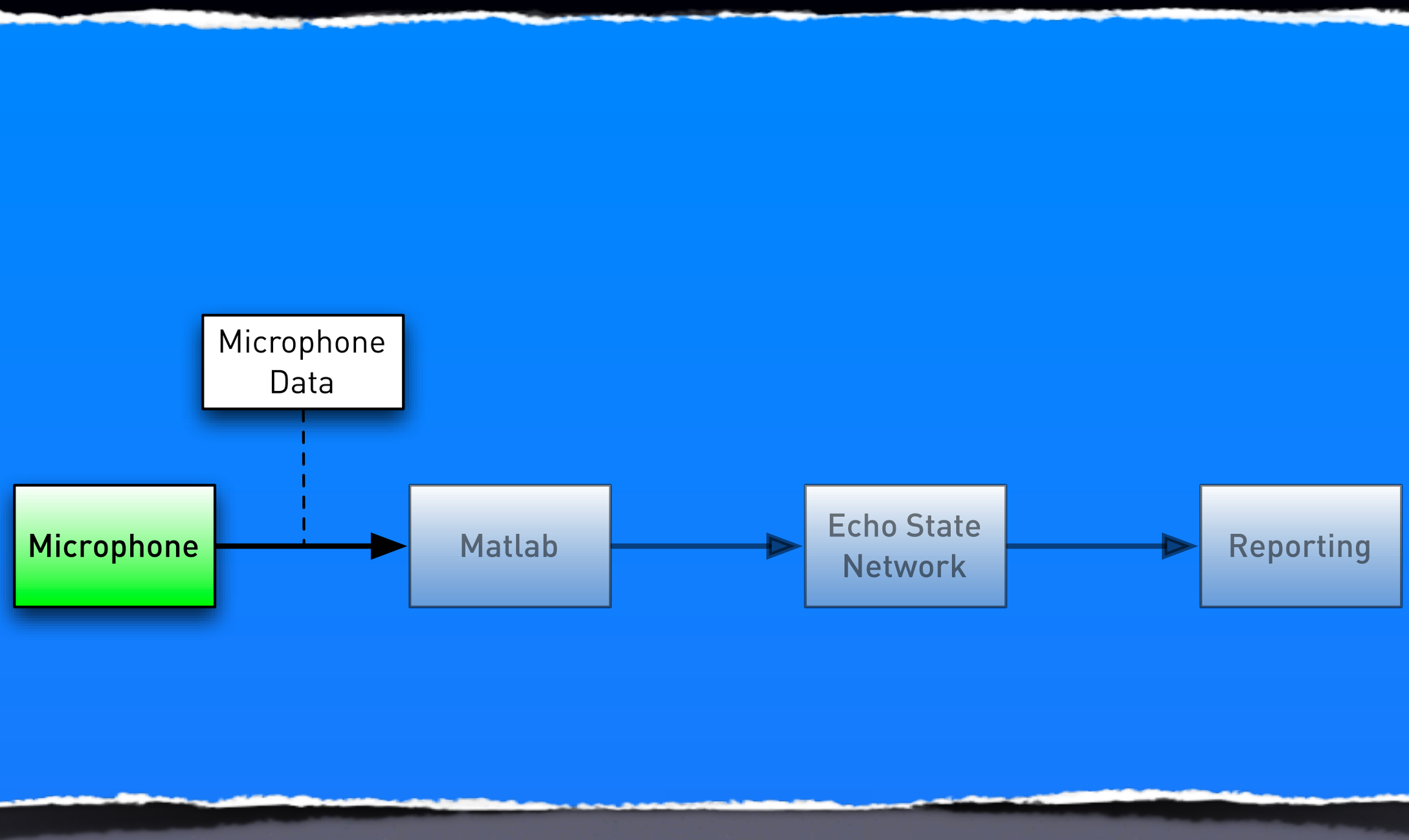

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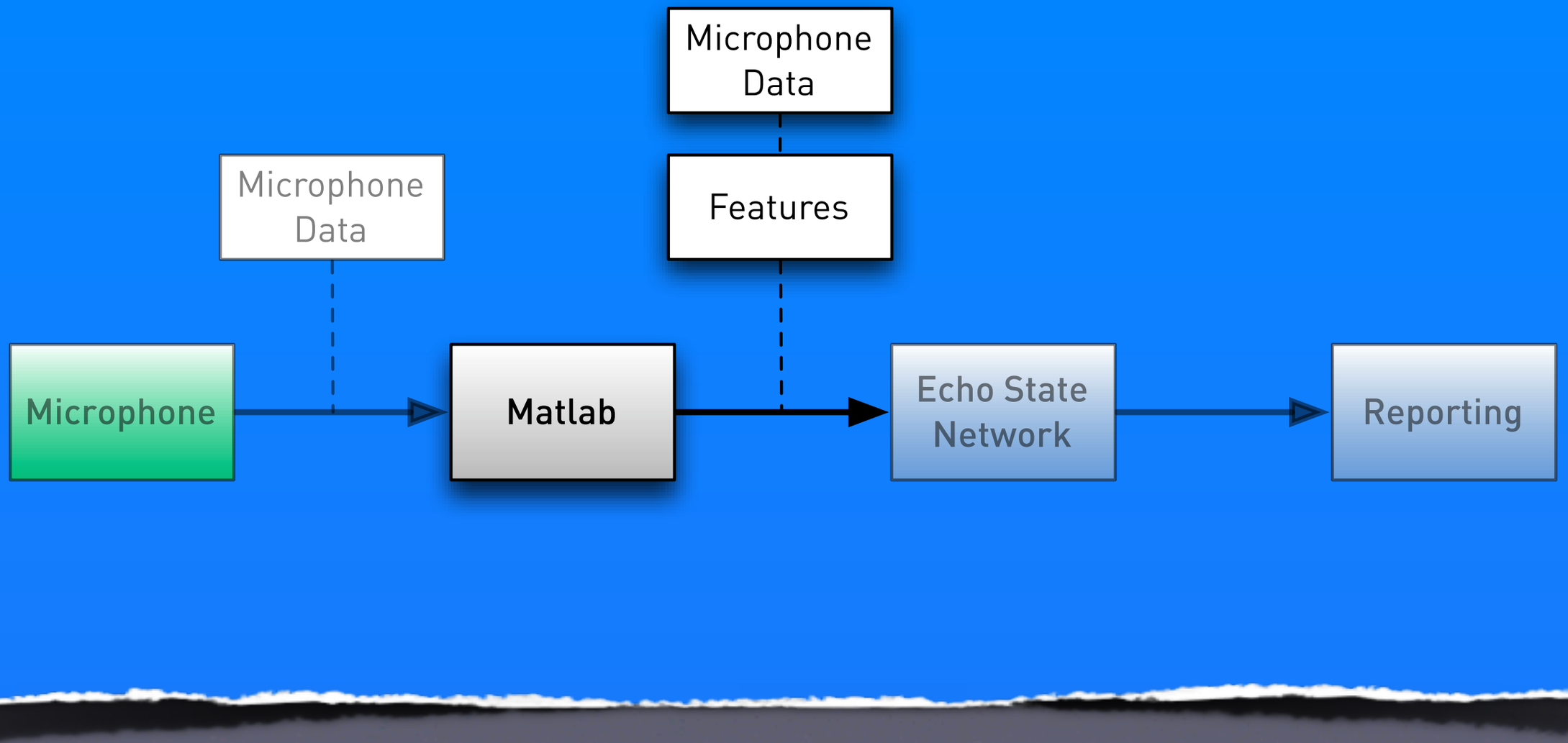

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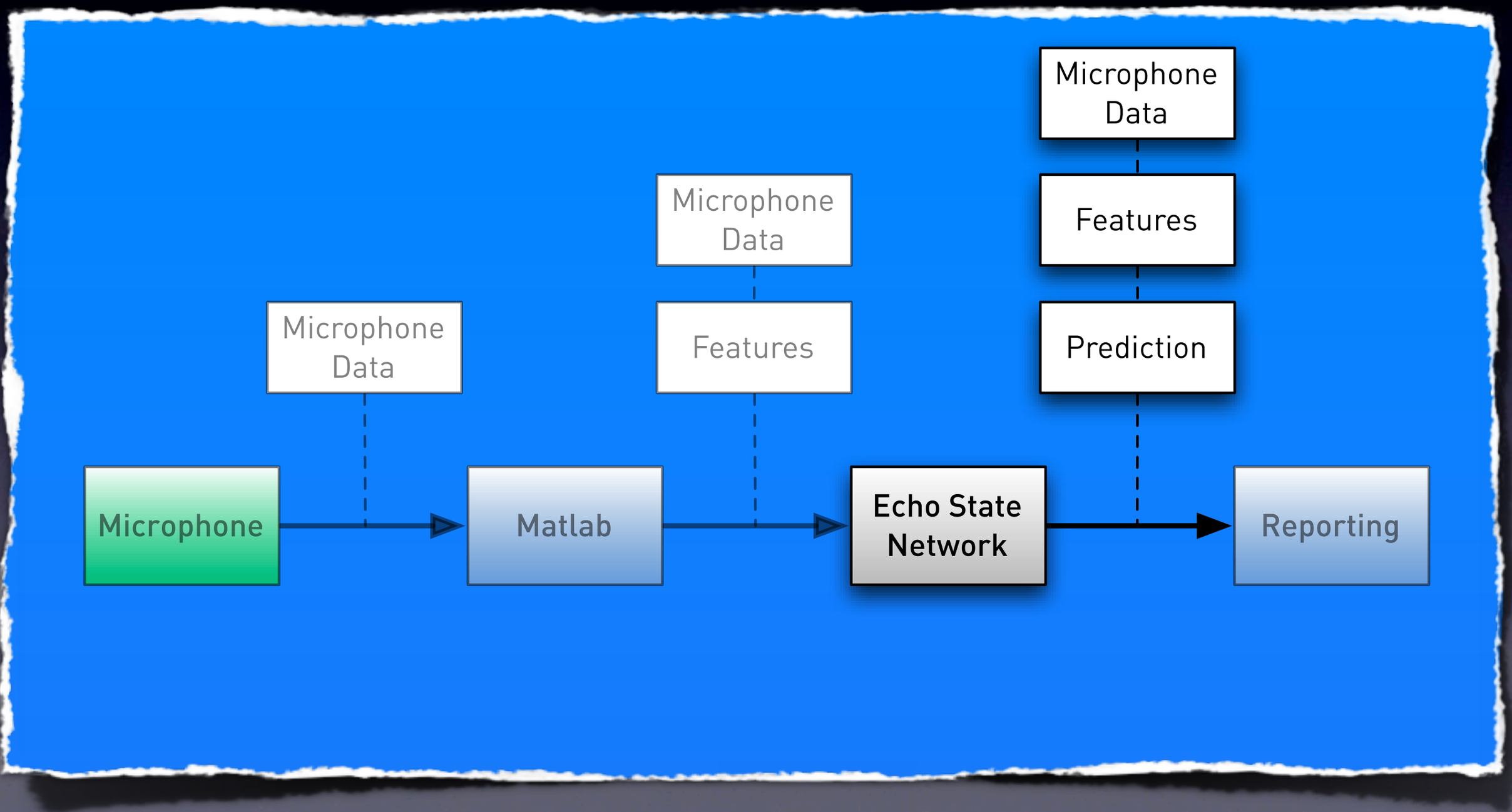

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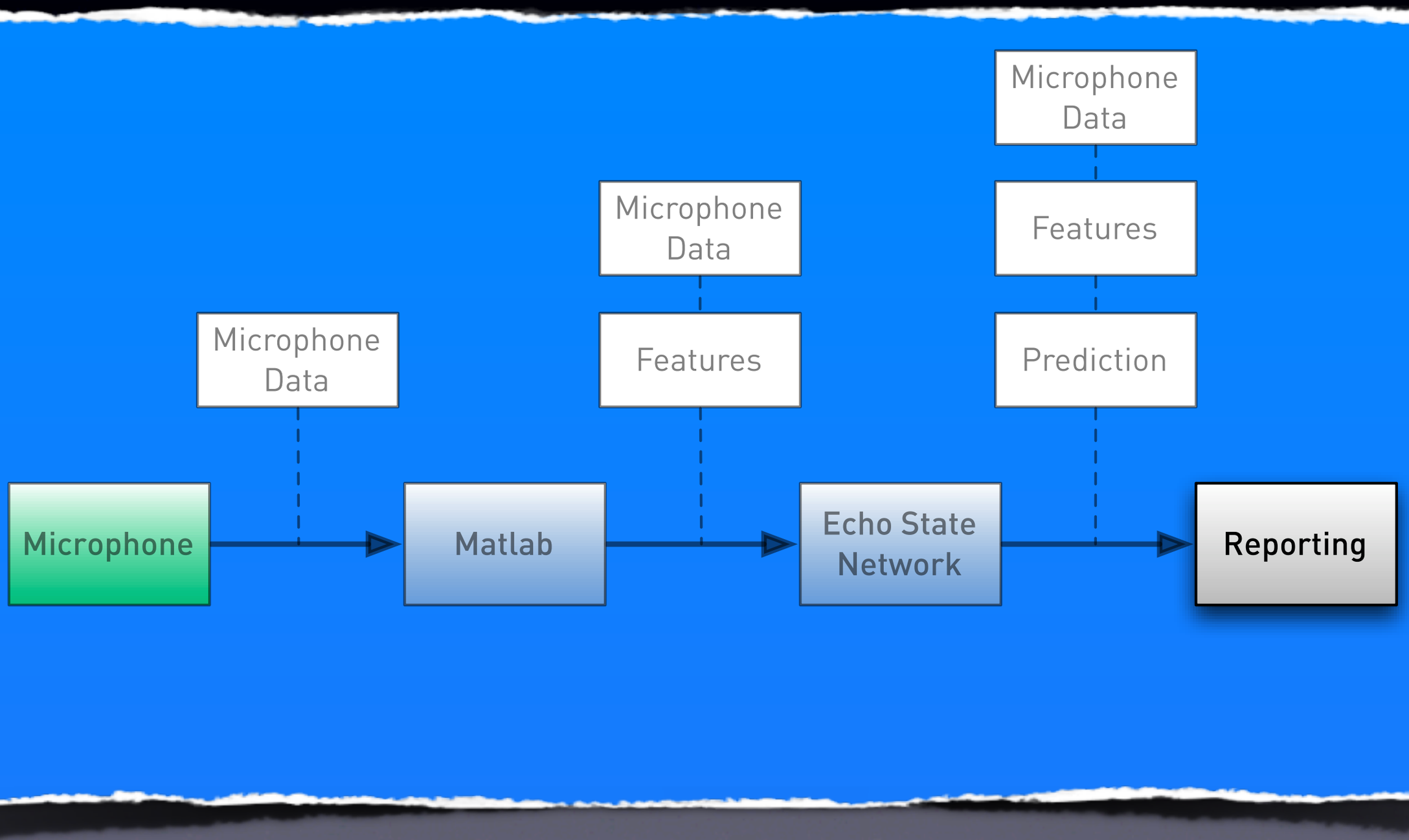

Future Work

- Graphical process builder
- Performance evaluation
- Integration of multiple sources
- Expanding on other applications
- Research on open issues (noise and microphone dependence)

Thank you for your attention!

And now, demo time!