

# Assessing and Improving the Quality of Docker Artifacts

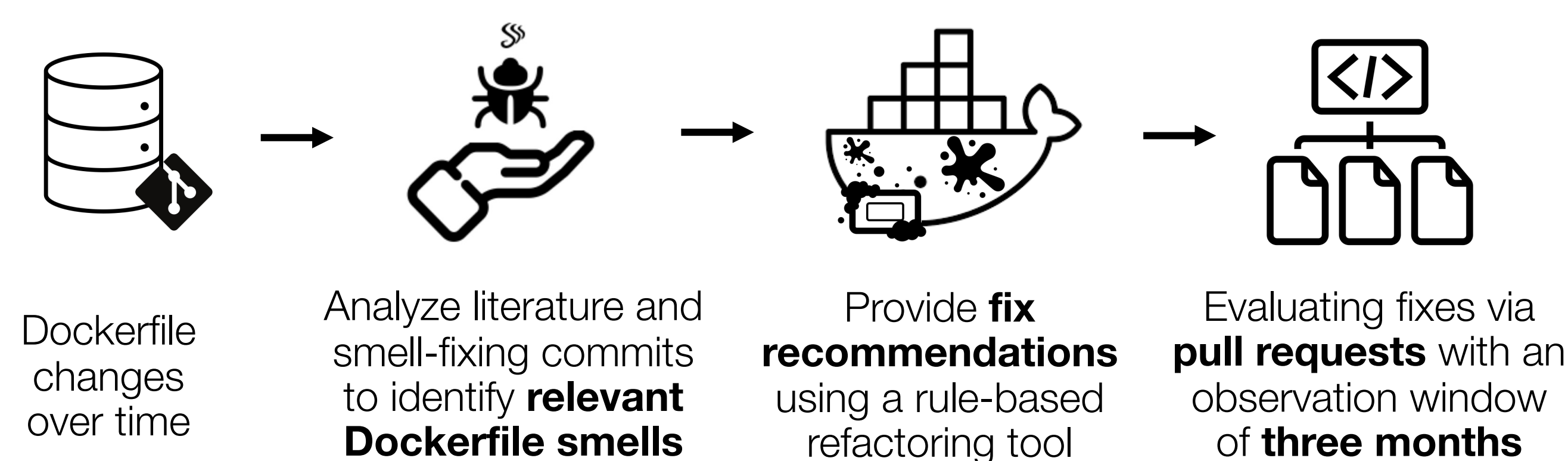
«The quality assessment of Docker artifacts and approaches to solving associated issues could provide cutting-edge support for developers to produce high-quality Dockerfiles and, consequently, more reliable and performing Docker images»

## Step 1. Improving the Quality of Dockerfiles

### Goal

- ⚠ Dockerfile **smells** are **common**, but not all of them are **relevant** to be addressed by developers. Smells are used in literature to measure Dockerfile quality
- 🎯 Empirical evaluation of **smell survivability**
- 🎯 Evaluation of what smells developers are **willing to address**

### Execution Plan



### Status

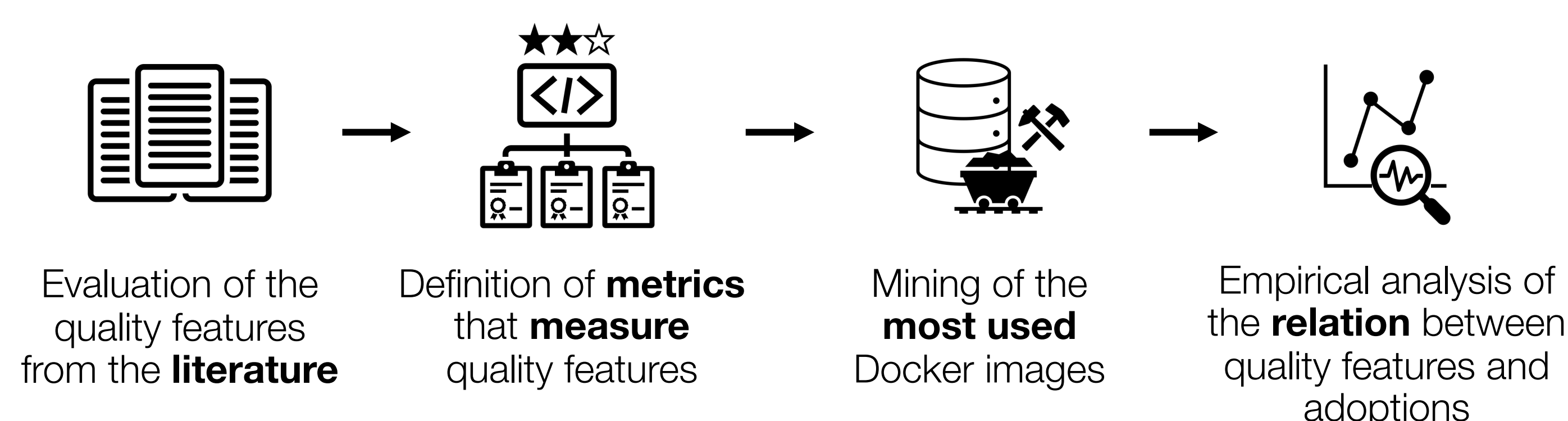
- ✅ Registered Report paper submitted and accepted to ICSME '22
- ✅ A preliminary version of the refactoring tool provides fixes for 6 of the 8 most common smells from the literature

## Step 2. Quality Features that Influence Docker Images Adoption

### Goal

- ⚠ It is **not clear** how developers **measure** the **quality** of a Docker image. Evaluating smells is not enough
- 🎯 Empirical evaluation of the **internally** and **externally** observable quality aspects of Docker images

### Execution Plan



### Status

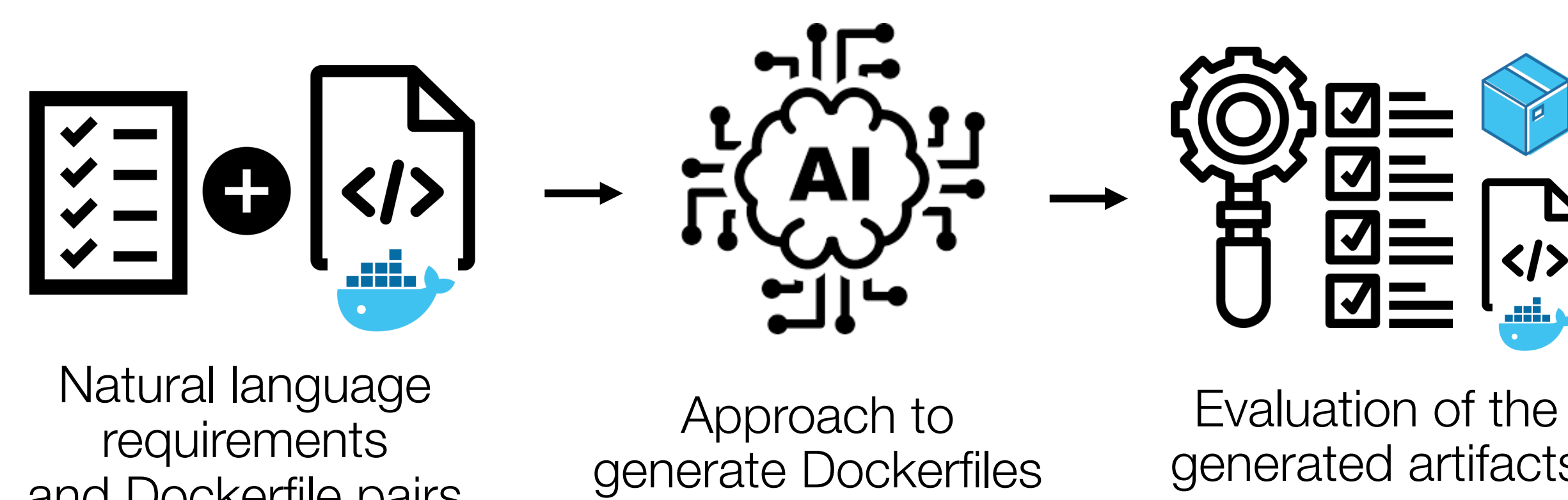
- ✅ Some of the features related to image size and security negatively impact the adoption
- ✅ The “official image” label has a positive impact on the adoption of Docker images
- ❌ These are preliminary results as the work is currently under review

## Step 3. Quality-Aware Generation of Docker Artifacts

### Goal

- ⚠ Lack of **advanced tools** to support developers during development
- 🎯 Automatic generation of Dockerfiles matching the **quality model** resulting from the previous steps
- 🎯 The generated artifacts must match **developers' preferences**

### Execution Plan



### Status

- ✅ A preliminary experiment using deep-learning was conducted
- ❌ The results are promising, but more work is required to achieve our goal



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