workflowsRI is funded by the National Science Foundation (NSF) under grants number 2016610, 2016619, and 2016682

workflowsRI

Towards an Infrastructure for Enabling Systematic Development and Research of Scientific Workflow Management Systems

USC Viterbi School of Engineering
Information Sciences Institute
University of Hawai'i at Manoa
The University of Chicago

workflows are becoming more complex and require more sophisticated workflow management capabilities

workflows now…

can analyze terabyte-scale data sets

be composed of millions of individual tasks

require coordination between heterogeneous tasks

manage tasks that execute for milliseconds to hours

can process data streams, files, and data placed in object stores

challenges

WMS development is ad hoc!

there has been a profusion of different,
yet similar in functionality, systems

`https://s.apache.org/existing-workflow-systems`

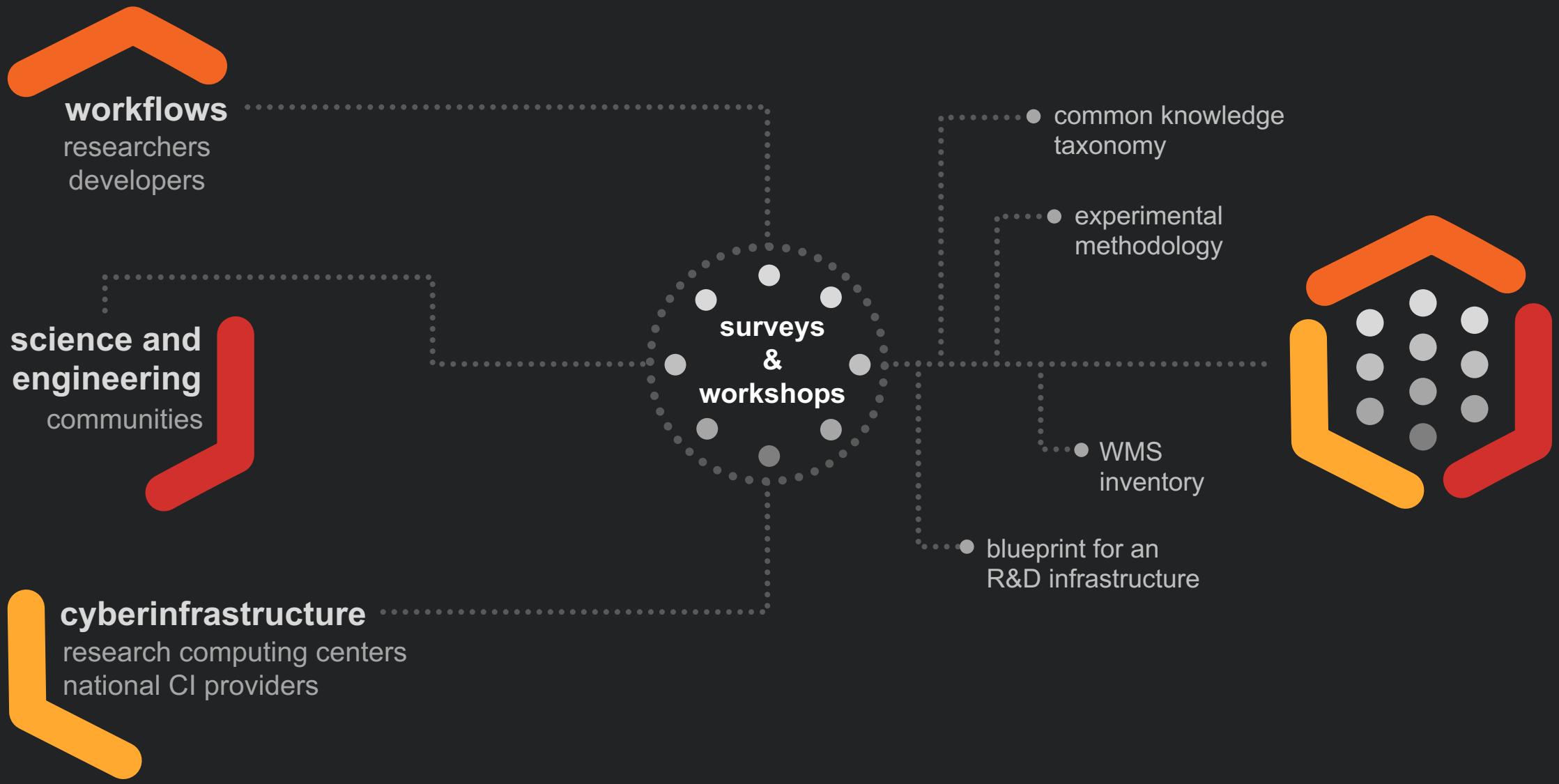
a community list of WMSs includes **280+** systems

`https://github.com/pditommaso/awesome-pipeline`

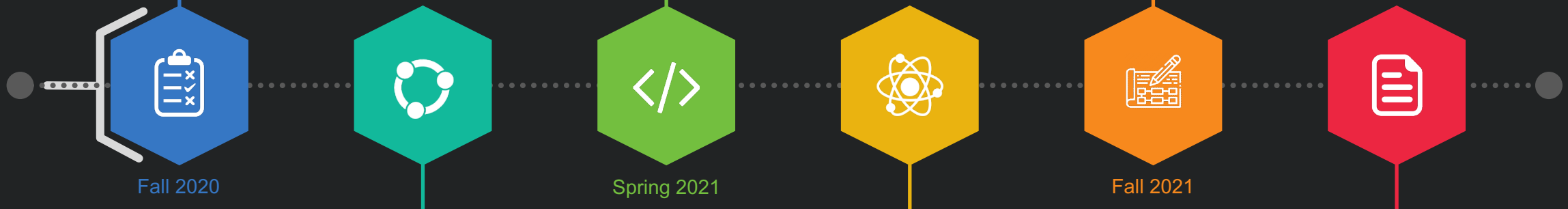
a curated list of pipeline toolkits includes **140+** systems

state-of-the-art

"there is a pressing need to bring the ***workflows community together*** *(both from academia and industry), with the goal of defining a* ***rigorous methodology*** *for* ***characterizing current and upcoming*** *WMS capabilities, and* ***supporting the innovations*** *necessary to address the range of imminent workflows challenges"*


workflows
researchers
developers
science and
engineering
communities
cyberinfrastructure
research computing centers
national CI providers
surveys
&
workshops
common knowledge
taxonomy
experimental
methodology
WMS
inventory
blueprint for an
R&D infrastructure

roadmap



surveys

workflow research and developers, science and engineering domain, and cyberinfastructure practitioners

Fall 2020

community RI workshop

define the goals of the planning project, participation of key stakeholder groups (WMS developers and researchers, users, and CI)

Winter 2021

common knowledge taxonomy

developers workshop

discuss challenges, identify stakeholders, and define a taxonomy of WMSs capabilities and associated benchmarks

Spring 2021

CI and science workshop

provide an opportunity for these communities to describe their challenges and propose ways they could contribute to this initiative

experimental methodology

Summer 2021

blueprint for an R&D infrastructure

CCRI planning workshop

review and consolidate outcomes and create a blueprint document for a community research infrastructure

Fall 2021

CCRI Proposal

develop an open, community infrastructure for scientific workflows research and development

board of experts

Daniel S. Katz
Parsl

Douglas Thain
Makeflow

Rosa Filgueira
Dispel4Py

Bertram Ludascher
YesWorkflow

Shantenu Jha
RADICAL

Carole Globe
Taverna

Justin Wozniak
Swift

Michael Crusoe
CWL

Lavanya Ramakrishnan
Tigres

Thomas Fahringer
ASKALON

Anubhav Jain
FireWorks

Paolo Di Tomasso
Nextflow

Ewa Deelman
Pegasus

Rosa Badia
COMPSs

Ilkay Altintas
Kepler

Marta Mattoso
SciCumulus/C^2

David Abramson
Nimrod/K

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get involved

our team

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