ESSENTIALS

CHEAT SHEET

rese arch

GRASSHOPPER®

on-line courses with Jan Pernecky

WEBINARS

The rese arch Grasshopper® sessions are unique for their thorough explanation of all the features, which creates a sound foundation for your further individual development or direct use in the practice. The webinars are divided into four groups: Essential, Advanced, Iterative and Architectural.

The webinars are series of on-line live courses for people all over the world. The tutor broadcasts the screen of his computer along with his voice to the connected spectators who can ask questions and comment in real time. This makes webinars similar to live workshops and superior to tutorials. The rese arch Grasshopper® sessions are using cross platform reliable GoToTraining technology allowing for the best learning experience. You are advised to run the live broadcast on a second screen or in a separate window while working together with the tutor. Through the hands-on experience the sessions build practical skills for an everyday Grasshopper® use.

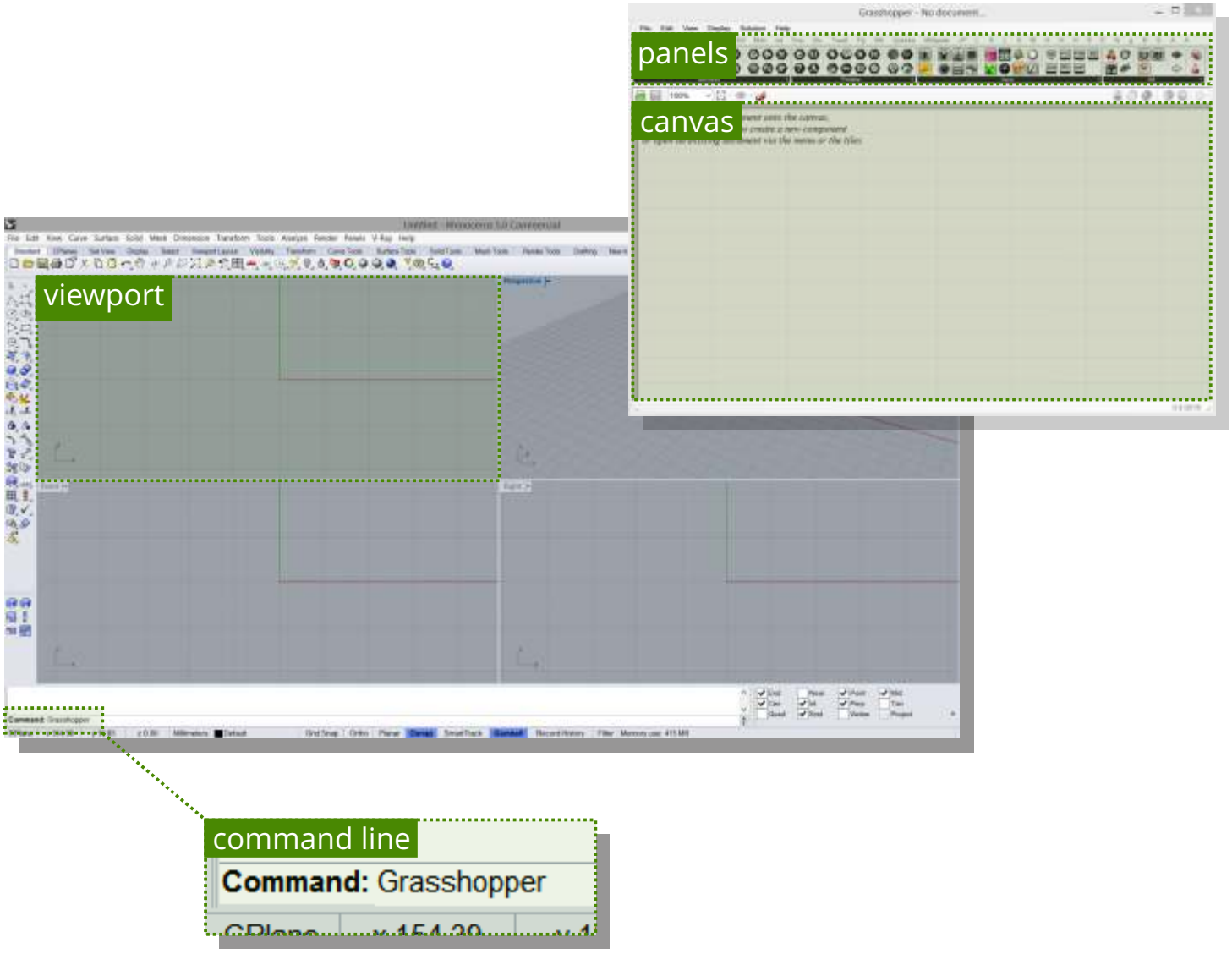
GRASSHOPPER®

Grasshopper® is a visual programming environment for Rhinoceros 3D developed by David Rutten and numerous plug-in developers. In recent years it became the major tool of digital / parametric / generative architecture worldwide and is rapidly spreading from academia to production practice. The node-based environment makes Grasshopper® easy to learn, simple to use and quick to deploy. An ever-growing community of Grasshopper® users provides great support and releases new software, hardware and fabrication applications on a daily basis.

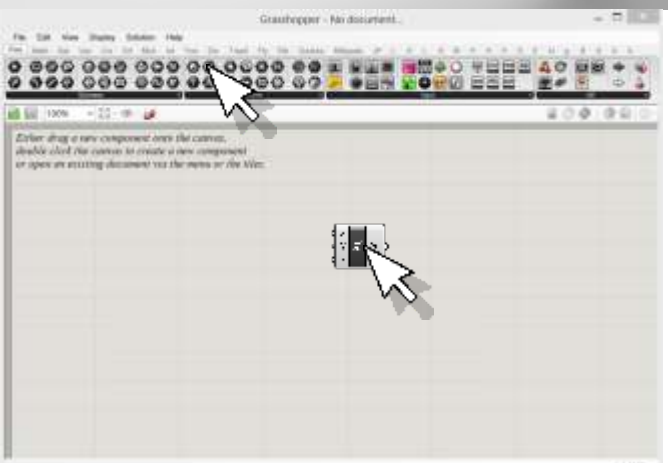
Grasshopper® and most of its plugins are available for free, however it's not a standalone software. It's tightly connected with Rhinoceros 3D – an advanced NURBS modelling and drafting software, which is available for education purposes under exceptionally favorable conditions. Grasshopper® works exclusively on Windows and there is no OSX version available.

http://grasshopper.rese-arch.org

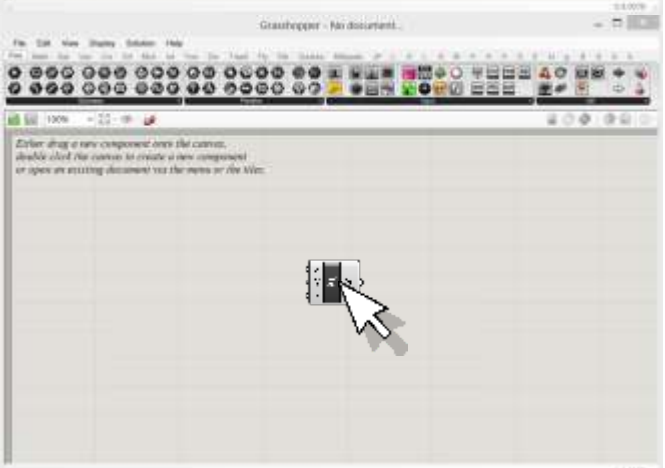
FIRST STEPS



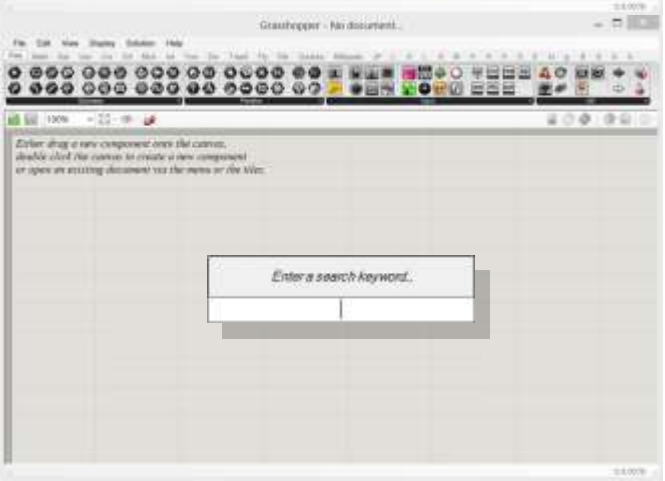
FIRST STEPS



1. left mouse button click on the component in the panel
2. left mouse button click on canvas to place the component

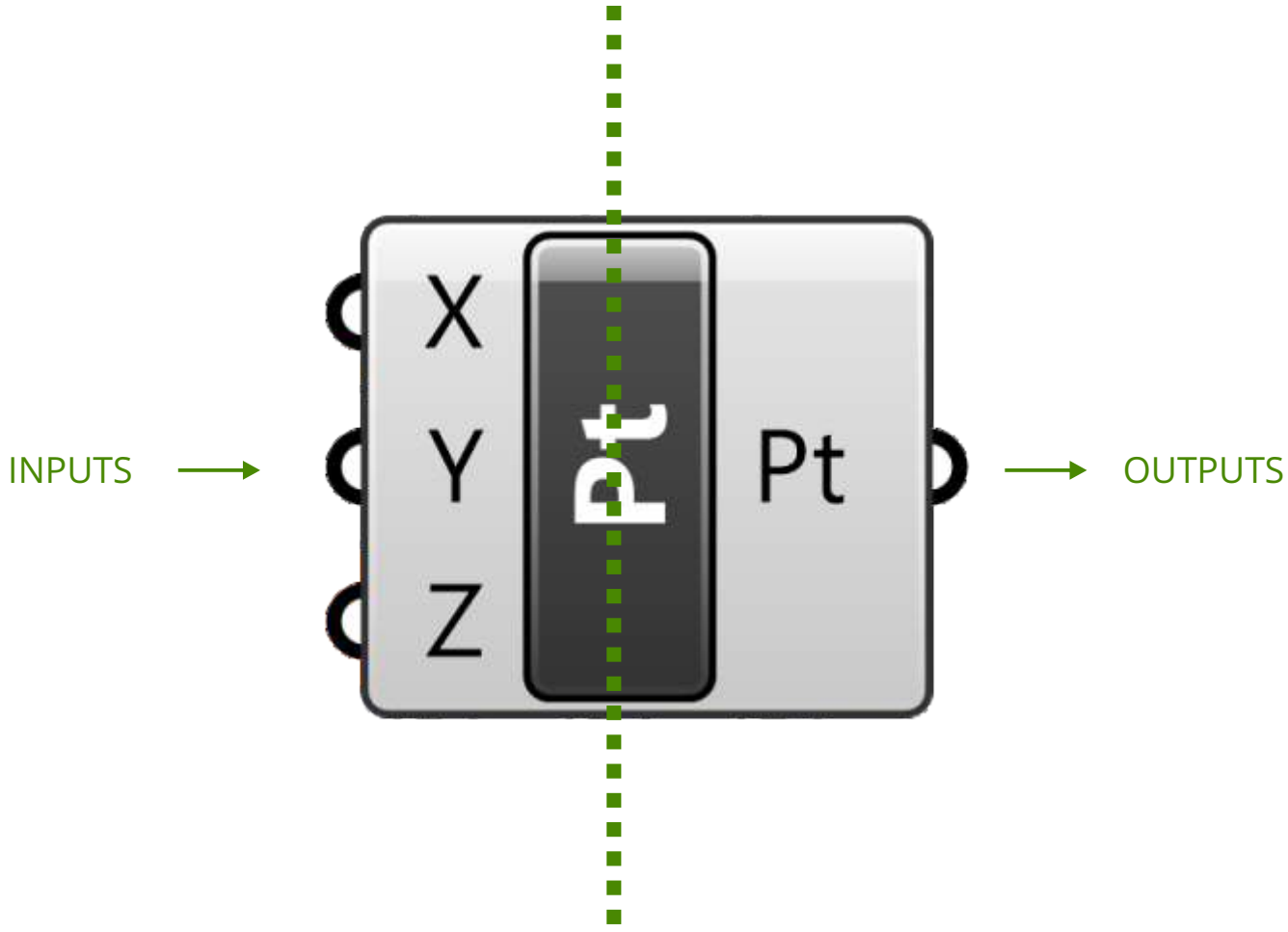


left mouse button drag component from panel to canvas



1. left mouse button double click
2. type component name
3. enter

FIRST STEPS



FIRST STEPS

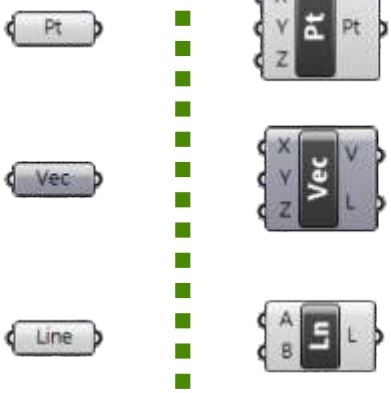
PARAMETERS

can take an input
only contain values
do not perform any action
output values

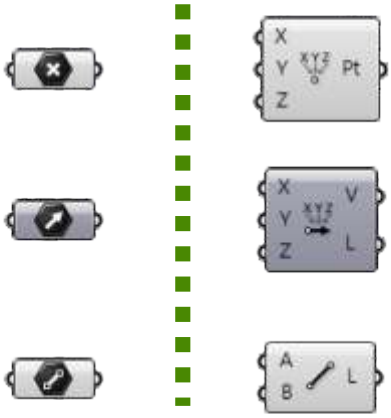
COMPONENTS

can take an input
perform an action
output values

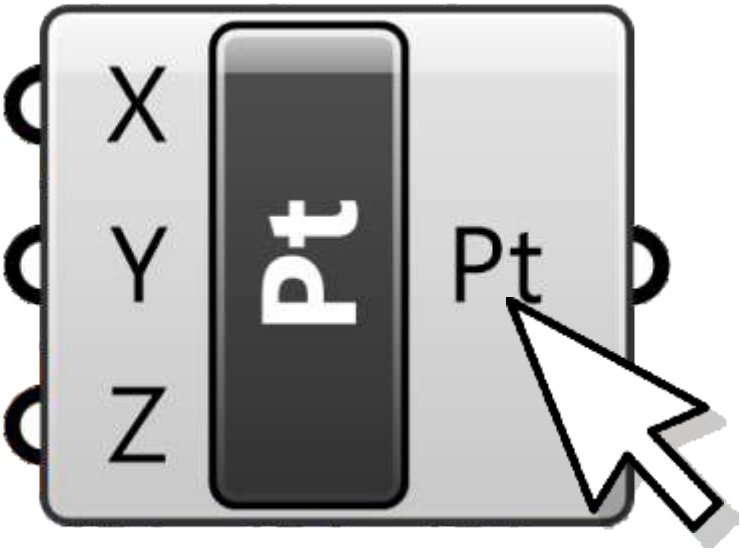
DRAW NAMES



DRAW ICONS



FIRST STEPS

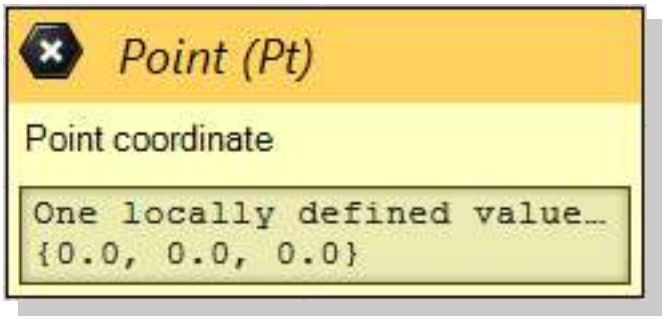


HOVER INFO

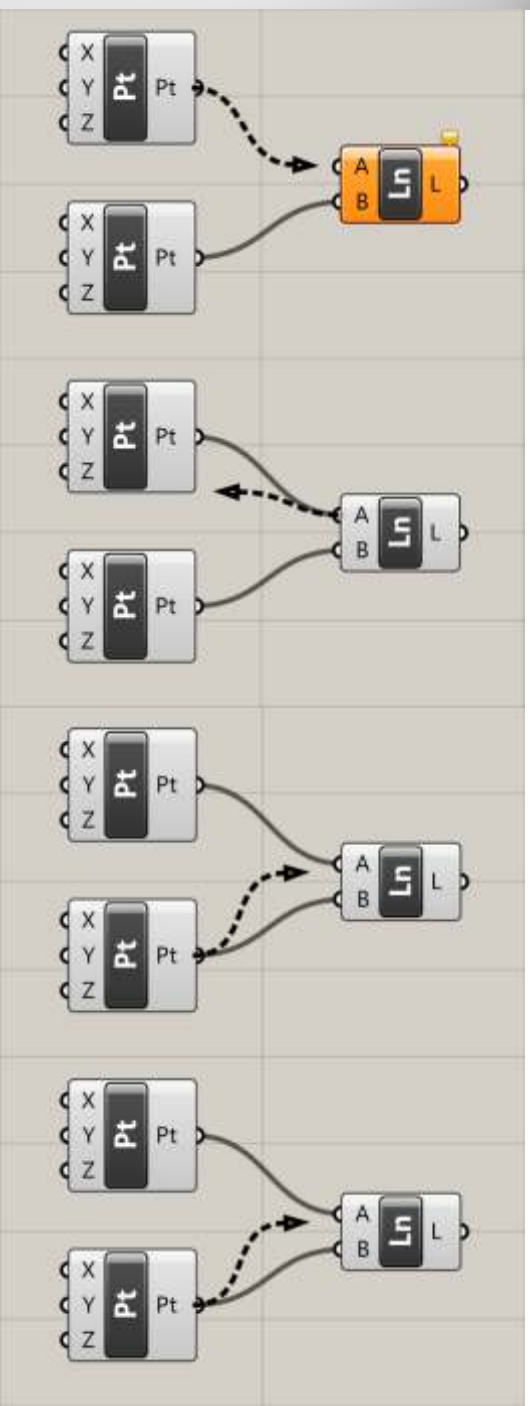
data type

data description

data content and structure



FIRST STEPS



PLUG A WIRE

left mouse button drag

UNPLUG A WIRE

CTRL + left mouse button drag

CTRL +

ADD A WIRE

SHIFT + left mouse button drag

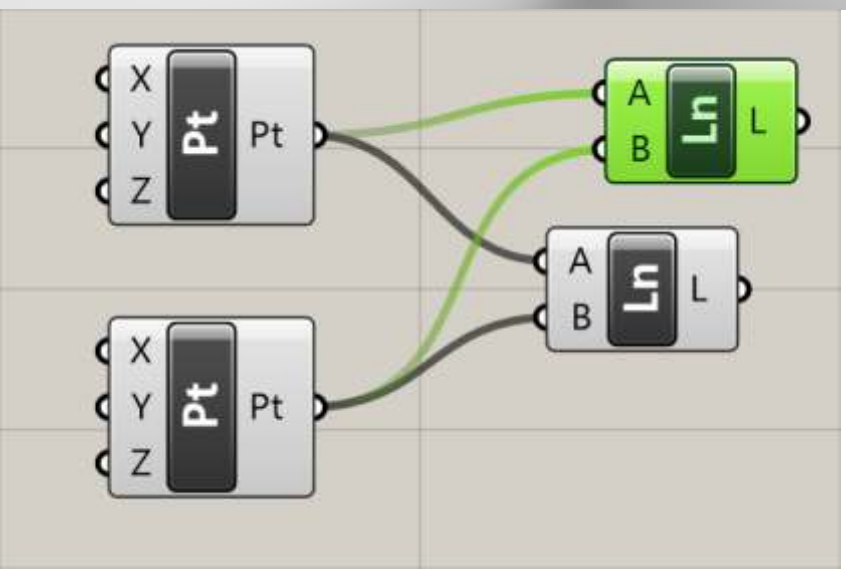
SHIFT +

RE-PLUG A WIRE

CTRL + SHIFT + left mouse button drag

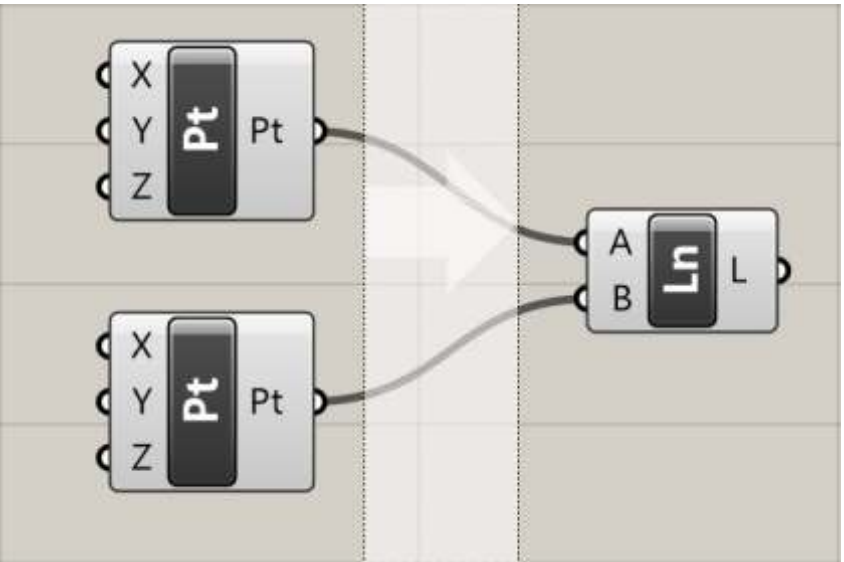
CTRL + SHIFT +

FIRST STEPS



COPY A COMPONENT WITH WIRES

left mouse button drag & tap ALT

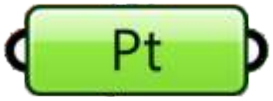


MAKE HORIZONTAL SPACE

ALT + left mouse button drag

FIRST STEPS

OK
component/parameter contains correct data
geometry is red in the viewport



SELECTED
geometry is green in the viewport

WARNING
component/parameter contains no data

ERROR
component/parameter contains wrong data

HIDDEN
geometry output from the component/parameter
is not visible in the viewport

DISABLED
component/parameter does not output any data
component does not perform any action

FIRST STEPS

CONTEXT MENU

middle mouse button click / space bar

LISTS AND CONDITIONS

SINGLE VALUE

the wire transfers a copy of
a single value

LIST

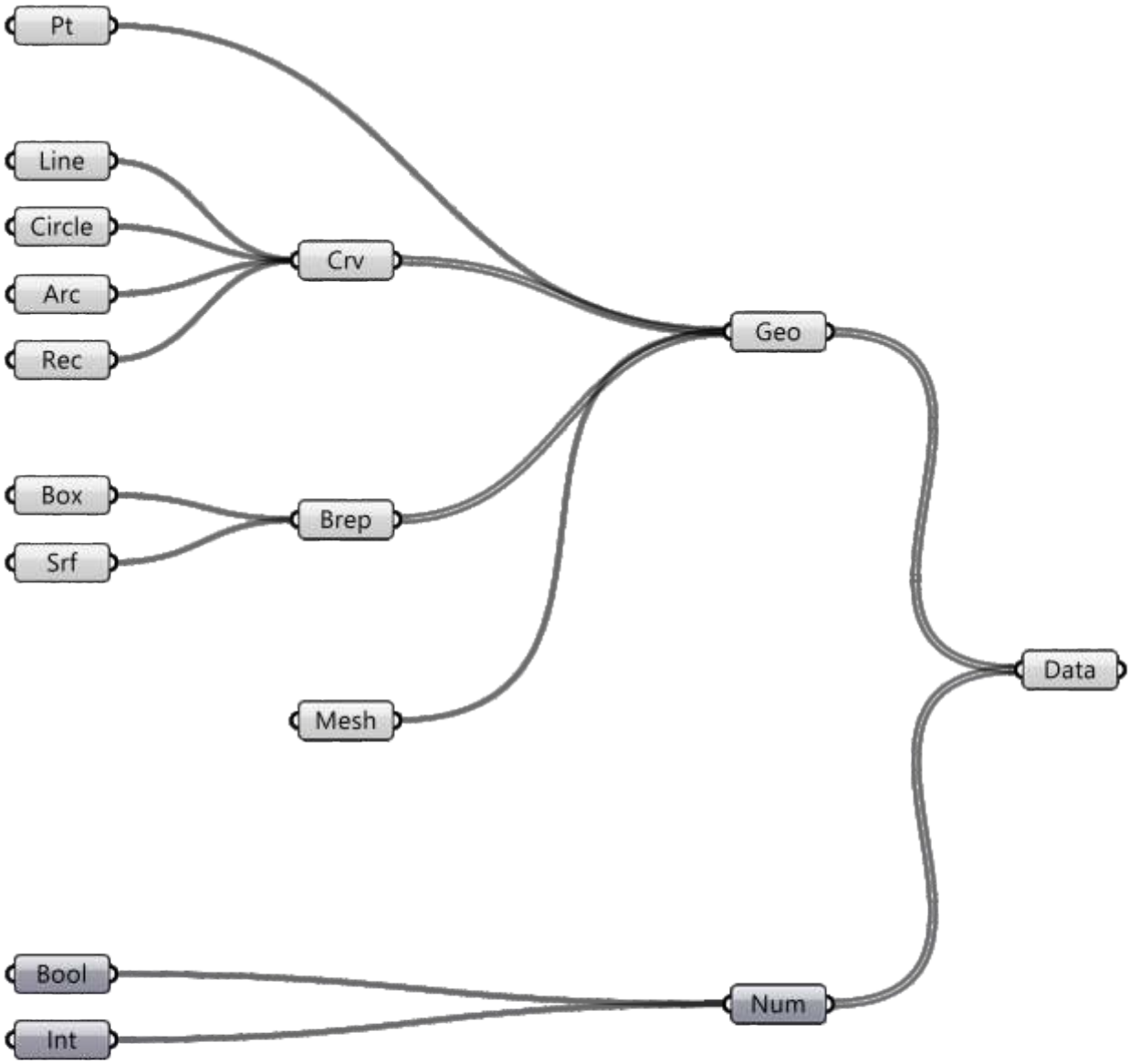
the wire transfers a copy of
a list of values of the same data type

TREE

the wire transfers a copy of
a data tree (hierarchical list of lists) of
values of the same data type

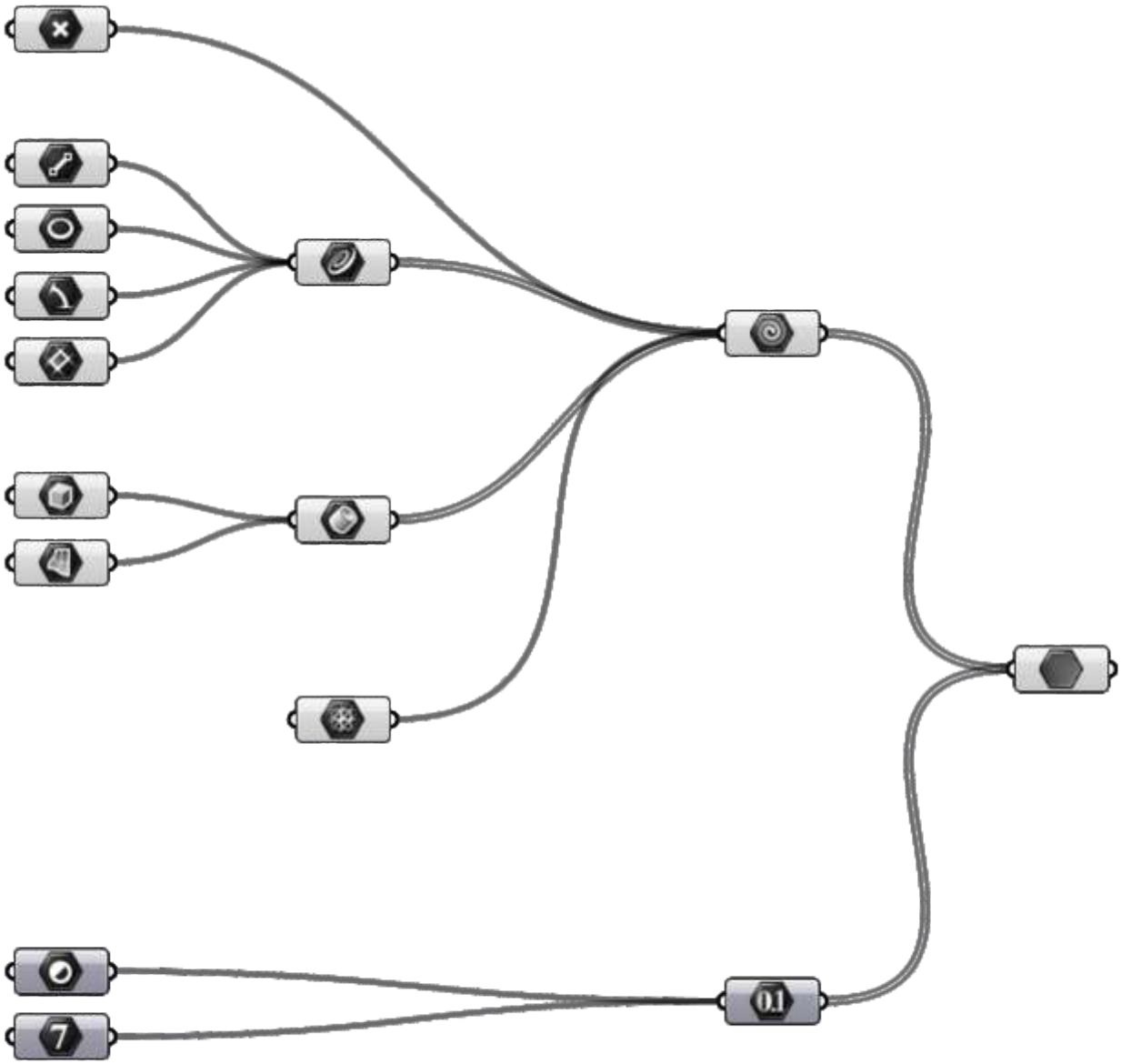
LISTS AND CONDITIONS

DATA TYPE HIERARCHY



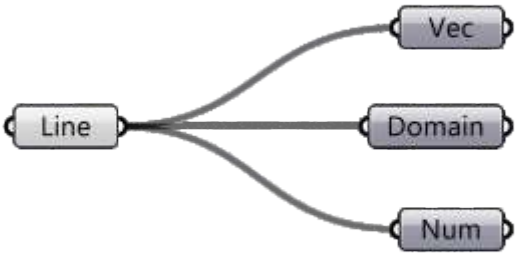
LISTS AND CONDITIONS

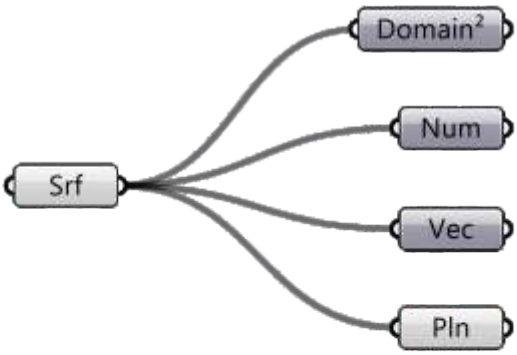
DATA TYPE HIERARCHY



LISTS AND CONDITIONS

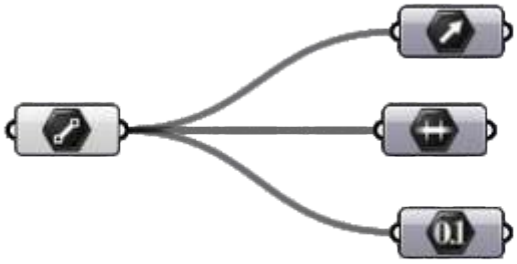
DATA TYPE CONVERSION

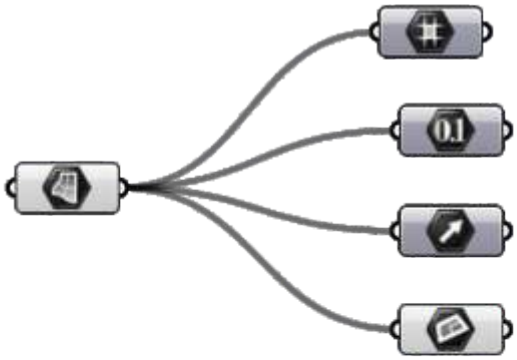




LISTS AND CONDITIONS

DATA TYPE CONVERSION





rese arch

rese arch is an NGO established in 2009 to support architectural theory and education in the region of the Central Europe. Soon it became a recognized platform attracting topics and people from the digital architecture domain. In 2013 and 2014 rese arch fused with 3D Dreaming: architecture from the digital point of view. rese arch organized panel discussions on theory of architecture and digital architecture 12x in Slovakia, 2x in Czech Republic, 1x in Italy, 2x in Austria, organized lectures 6x in Slovakia, 2x in Italy, 4x in Austria with 50 speakers from 8 countries. Organizes 12 lectures. Published a dedicated issue of a major architectural magazine Projekt. Together with 3D Dreaming organized 13 workshops in SK, CZ, AT, DE, RS and NL with 19 international tutors. Rese arch is collaborating with the Slovak University of Technology, Academy of Fine arts and Design, Academy of Performing Arts , Slovakia, Technical University Košice , Slovakia and numerous individual researchers in the field of digital architecture and new media art.

JAN PERNECKY

Ing. arch. Mgr. art. Ján Pernecký (*1982) graduated from architecture at the Faculty of Architecture, STU, Bratislava, SK (2007) and Acedemy of Fine arts and design, Bratislava, SK (2008), studied at the Arkitekturskolan, KTH, Stockholm, SE (2003) and die Angewandte/Urban Strategies/Excessive, Vienna, AT (2011-12). Honorable mention at the Shinkenchiku residential competition (as a:sk peprszo, 2003) and D. Jurkovic prize (as AABP, 2010). In 2010 established rese arch ngo, supporting and creating original theory and research in architecture. Partner at 3D Dreaming: architecture from the digital point of view (2013-14).

Expert in creative programming, form making and computer vision in Java / Processing and Grasshopper®. Maker of the Boid flocking library for Grasshopper® (2014). Teaching creative programming at independent workshops and at universities in SK and CZ (8 courses since 2013). Conducting independent research on the theory of digital architecture (genetic algorithms, generative design, design by behavior, augmented reality), lecturing at independent events (9 since 2011) and universities (10 since 2012 at Faculty of Architecture, STU, SK; Academy of Fine Arts and Design, SK; Faculty of Arts, TUKE, SK; Faculty of Arts, VUT, CZ; UTB, CZ).

Creator and curator of Asking Architecture (2012) - Slovak and Czech national pavilion at 13th architecture exhibition of la Biennale di Venezia. In 2012 published articles and interviews on Asking Architecture - the Biennale project in SME (sk), Pravda (sk), Romboid (sk), Slovak Radio (sk), ASB (sk), Arch (sk), Hospodárske noviny (sk), Revue Piešťany (sk), Kinečko (sk), Atrium (sk), Reflex (cz), Lidové noviny (cz), Radio Wave (cz). In 2011 edited and curated special issue of the magazine Projekt 2/2011. Published comprehensive articles on digital architecture in Romboid and Enter(2014). Published a chapter on Richness and evolutionary methods in the Compact city, compendium book, (cz), 2011. Mentioned for Asking architecture and published a transcript of a discussion on the Digital architecture at Czech and Slovak architecture 1971-2011, anthology by Monika Mitášová a Jiří Ševčík, 2014.

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