Some data on the field of Visualization

BASED ON DATA ABOUT IEEE VIS PUBLICATIONS

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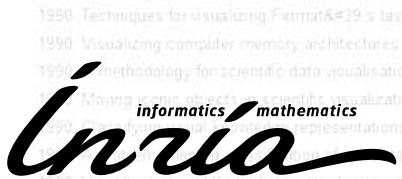


Collected with the help of many people: Petra Isenberg, Florian Heimerl, Steffen Koch, Tobias Isenberg, Panpan Xu, Charles D. Stolper, Michael Sedlmair, Jian Chen, Torsten Möller, John Stasko, Natkamon Tovanich

vispubdata.org

- Metadata on all IEEEVis papers from 1990 – 2018
- Google spreadsheet – can be commented, edited, & easily converted
- Cleaned titles, authors, DOIs

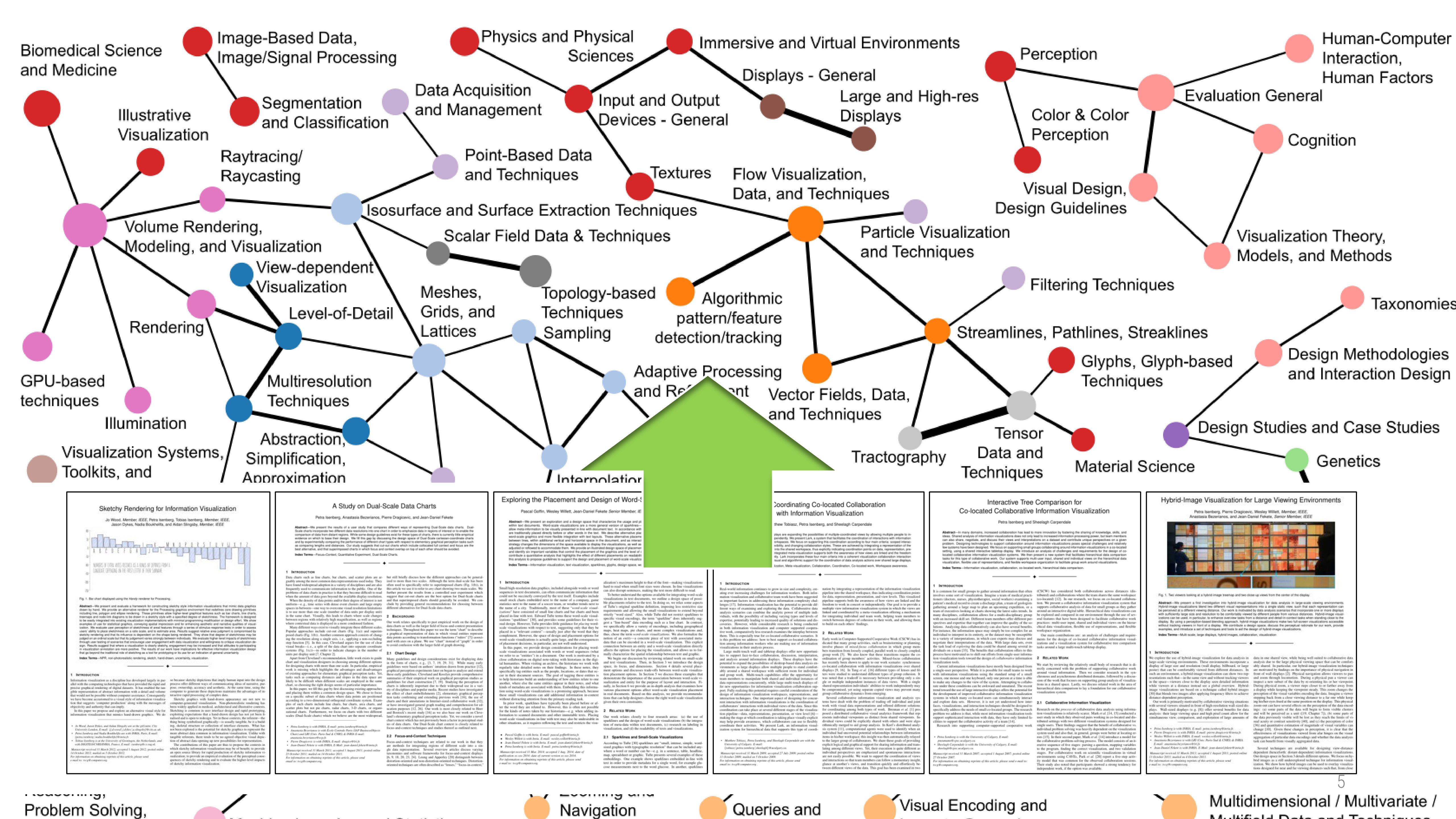
Vis	1990	Surface representations of two- and three-dimensional fluid	10.1109/VISUAL.1990.146359	http://dx.doi.org/10.1109/VISUAL.1990.146359	6	13, 460	C	The use of critical po	James Helman;Lambertus Hesseli	Stanford Univ., CA, USA|c|;
Vis	1990	FAST: a multi-processed environment for visualization of cc	10.1109/VISUAL.1990.146360	http://dx.doi.org/10.1109/VISUAL.1990.146360	14	27, 461	C	The authors discuss	Gordon V. Bancroft;Fergus Merrit	Sterling Federal Syst. Inc., Palo Alto, CA, USA|c|;;;;;
Vis	1990	The VIS-5D system for easy interactive visualization	10.1109/VISUAL.1990.146361	http://dx.doi.org/10.1109/VISUAL.1990.146361	28	35, 462	C	The VIS-5D system	William L. Hibbard;David A. Sante	Space Sci. & Eng. Center, Wisconsin Univ., Madison, WI, USA|c|;
Vis	1990	A procedural interface for volume rendering	10.1109/VISUAL.1990.146362	http://dx.doi.org/10.1109/VISUAL.1990.146362	36	44, 462	C	The author presents	James L. Montine	Alliant Comput. Syst., Littleton, MA, USA|c|
Vis	1990	Techniques for the interactive visualization of volumetric da	10.1109/VISUAL.1990.146363	http://dx.doi.org/10.1109/VISUAL.1990.146363	45	50, 462	C	Some ideas and tech	Gregory M. Nielson;Bernd Hamar	Dept. of Comput. Sci., A 10.1109/VISUAL.1990.146388
Vis	1990	Displaying voxel-based objects according to their qualitativ	10.1109/VISUAL.1990.146364	http://dx.doi.org/10.1109/VISUAL.1990.146364	51	58, 463	C	The use of qualitative	Yaser Yacoob	Dept. of Comput. Sci., Maryland Univ., College Park, MD, USA|c|
Vis	1990	Interpreting a 3D object from a rough 2D line drawing	10.1109/VISUAL.1990.146365	http://dx.doi.org/10.1109/VISUAL.1990.146365	59	66	C	Visualizing the third	Del Lamb;Amit Bandopadhay	Dept. of Comput. Sci., State Univ. of New York, Stony Brook, NY, USA|c|;
Vis	1990	Animation techniques for chain-coded objects	10.1109/VISUAL.1990.146366	http://dx.doi.org/10.1109/VISUAL.1990.146366	67	73	C	The animation of two	Anthony J. Maeder	Dept. of Comput. Sci., Monash Univ., Clayton, Vic., Australia|c|
Vis	1990	Extracting geometric models through constraint minimizati	10.1109/VISUAL.1990.146367	http://dx.doi.org/10.1109/VISUAL.1990.146367	74	82, 464	C	The authors propose	James V. Miller;David E. Breen;Mi	Rensselaer Design. Res. Center, Rensselaer Polytech Inst., Troy, NY, USA|c|;;
Vis	1990	Wide-band relativistic Doppler effect visualization	10.1109/VISUAL.1990.146368	http://dx.doi.org/10.1109/VISUAL.1990.146368	83	92, 465	C	The authors present	Ping-Kang Hsiung;Robert H. Thiba	Carnegie Mellon Univ., Pittsburgh, PA, USA|c|;;;;;
Vis	1990	Dynamic graphics for network visualization	10.1109/VISUAL.1990.146369	http://dx.doi.org/10.1109/VISUAL.1990.146369	93	96, 467	C	The authors describe	Richard A. Becker;Stephen G. Eick	AT&T Bell Lab., Murray Hill, NJ, USA|c|;;;
Vis	1990	Techniques for visualizing Fermat's last theorem: a c	10.1109/VISUAL.1990.146370	http://dx.doi.org/10.1109/VISUAL.1990.146370	97	106, 46	C	The authors describe	Andrew J. Hanson;Pheng-Ann Hei	Indiana Univ., Bloomington, IN, USA|c|;;
Vis	1990	Visualizing computer memory architectures	10.1109/VISUAL.1990.146371	http://dx.doi.org/10.1109/VISUAL.1990.146371	107	113	C	The authors describe	Bowen Alpern;Larry Carter;Ted Se	IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA|c|;;
Vis	1990	A methodology for scientific data visualisation: choosing re	10.1109/VISUAL.1990.146372	http://dx.doi.org/10.1109/VISUAL.1990.146372	114	123	C	A methodology for gu	Philip K. Robertson	CSIRO, Canberra, ACT, Australia|c|
Vis	1990	Moving iconic objects in scientific visualization	10.1109/VISUAL.1990.146373	http://dx.doi.org/10.1109/VISUAL.1990.146373	124	130, 46	C	The idea of independ	G. David Kerlick	Tektronix Labs., Beaverton, OR, USA|c|
Vis	1990	Classifying visual knowledge representations: a foundation	10.1109/VISUAL.1990.146374	http://dx.doi.org/10.1109/VISUAL.1990.146374	131	138	C	An exploratory effort	Gerald L. Lohse;Henry H. Rueter;K	Cognitive Sci. & Machine Intelligence Lab., Michigan Univ., Ann Arbor, MI, USA|c|;;;
Vis	1990	A problem-oriented classification of visualization technique	10.1109/VISUAL.1990.146375	http://dx.doi.org/10.1109/VISUAL.1990.146375	139	143, 46	C	Progress in scientific	Stephen Wehrend;Clayton Lewis	Colorado Univ., Boulder, CO, USA|c|;
Vis	1990	Visualization and three-dimensional image processing of p	10.1109/VISUAL.1990.146376	http://dx.doi.org/10.1109/VISUAL.1990.146376	144	149, 46	C	The author applied in	Nahum D. Gershon	MITRE Corp., McLean, VA, USA|c|
Vis	1990	Applying space subdivision techniques to volume rendering	10.1109/VISUAL.1990.146377	http://dx.doi.org/10.1109/VISUAL.1990.146377	150	159, 47	C	We present a new ra	Kalpathi R. Subramanian;Donald S	;
Vis	1990	Volume visualization in cell biology	10.1109/VISUAL.1990.146378	http://dx.doi.org/10.1109/VISUAL.1990.146378	160	168, 47	C	The authors discuss	Arie E. Kaufman;Roni Yagel;Reuve	Dept. of Comput. Sci., State Univ. of New York, Stony Brook, NY, USA|c|;;;
Vis	1990	Hierarchical triangulation using terrain features	10.1109/VISUAL.1990.146379	http://dx.doi.org/10.1109/VISUAL.1990.146379	168	175	C	A hierarchical triangu	Lori L. Scarlatos;Theodosios Pavlic	Grumman Data Syst., Woodbury, NY, USA|c|;
Vis	1990	Rendering and managing spherical data with sphere quadtr	10.1109/VISUAL.1990.146380	http://dx.doi.org/10.1109/VISUAL.1990.146380	176	186	C	The sphere quadtree	Gyorgy Fekete	NASA, Goddard Space Flight Center, Greenbelt, MD|c|
Vis	1990	Methods for surface interrogation	10.1109/VISUAL.1990.146381	http://dx.doi.org/10.1109/VISUAL.1990.146381	187	193, 47	C	The authors discuss	Hans Hagen;Thomas Schreiber;Er	Kaiserslautern Univ., Germany|c|;;
Vis	1990	A three-dimensional/stereoscopic display and model contr	10.1109/VISUAL.1990.146382	http://dx.doi.org/10.1109/VISUAL.1990.146382	194	201, 47	C	A forecasting systen	Chieh-Cheng Yen;Keith W. Bedfor	Dept. of Civil Eng., Ohio State Univ., OH, USA|c|;;;
Vis	1990	Spline-based color sequences for univariate, bivariate and t	10.1109/VISUAL.1990.146383	http://dx.doi.org/10.1109/VISUAL.1990.146383	202	208, 47	C	Alternative models th	Binh Pham	Dept. of Comput. Sci., Monash Univ., Melbourne, Vic., Australia|c|
Vis	1990	Interactive visualization of quaternion Julia sets	10.1109/VISUAL.1990.146384	http://dx.doi.org/10.1109/VISUAL.1990.146384	209	218, 47	C	The first half of a two	John C. Hart;Louis H. Kauffman;D	Electron. Visualization Lab., Illinois Univ., Chicago, IL, USA|c|;;
Vis	1990	A journey into the fourth dimension	10.1109/VISUAL.1990.146385	http://dx.doi.org/10.1109/VISUAL.1990.146385	219	229, 47	C	It is shown that by a	Yan Ke;E. S. Panduranga	Dept. of Comput. Sci., Saskatchewan Univ., Saskatoon, Sask., Canada|c|;
Vis	1990	Exploring N-dimensional databases	10.1109/VISUAL.1990.146386	http://dx.doi.org/10.1109/VISUAL.1990.146386	230	237	C	The ability of researc	Jeffrey LeBlanc;Matthew O. Ward	Worcester Polytech. Inst., MA, USA|c|;;

CAVEAT: IEEE VIS is just a proxy

THERE IS A LOT WE DON'T HAVE

- Other academic conferences EuroVis, PacificVis, ChinaVis, …
- Journals
- Non-academic conferences (Info+, OpenVisConf, …)
- …

WHAT ARE TRENDING TOPICS IN RESEARCH?


Biomedical Science and Medicine
Image-Based Data, Image/Signal Processing
Physics and Physical Sciences
Immersive and Virtual Environments
Perception
Human-Computer Interaction, Human Factors
Displays - General
Large and High-res Displays
Evaluation General
Illustrative Visualization
Segmentation and Classification
Data Acquisition and Management
Input and Output Devices - General
Color & Color Perception
Cognition
Raytracing/ Raycasting
Point-Based Data and Techniques
Textures
Flow Visualization, Data, and Techniques
Visual Design, Design Guidelines
Isosurface and Surface Extraction Techniques
Volume Rendering, Modeling, and Visualization
Scalar Field Data & Techniques
Particle Visualization and Techniques
Visualization Theory, Models, and Methods
View-dependent Visualization
Meshes, Grids, and Lattices
Topology-based Techniques
Algorithmic pattern/feature detection/tracking
Filtering Techniques
Taxonomies
Rendering
Level-of-Detail
Sampling
Streamlines, Pathlines, Streaklines
Glyphs, Glyph-based Techniques
Design Methodologies and Interaction Design
GPU-based techniques
Multiresolution Techniques
Adaptive Processing
Vector Fields, Data, and Techniques
Illumination
Tensor Data and Techniques
Design Studies and Case Studies
Tractography
Material Science
Genetics
Visualization Systems, Toolkits, and
Abstraction, Simplification, Approximation
Sketchy Rendering for Information Visualization
A Study on Dual-Scale Data Charts
Exploring the Placement and Design of Word-
Coordinating Co-located Collaboration with Information Visualization
Interactive Tree Comparison for Co-located Collaborative Information Visualization
Hybrid-Image Visualization for Large Viewing Environments
Problem Solving,
Navigation
Queries and
Visual Encoding and
Multidimensional / Multivariate /

SHOULD WE LOOK AT TRENDS?

2000–2007	2008–2015
volume rendering, modeling & vis	interaction techniques – general
meshes, grids & lattices	evaluation – general
flow vis, data, & techniques	**volume rendering, modeling & vis**
biomedical science & medicine	graph/network data & techniques
numerical methods / mathematics	multidim./-var./.-field data & techn

Isenberg et al.: Visualization as Seen Through its Research Paper Keywords

SIGNIFICANT TEMPORAL TRENDS

interaction techniques—general

evalua

machi

timese

multi

analys

graph

visual

data c

visuali

biome

flow v

numer

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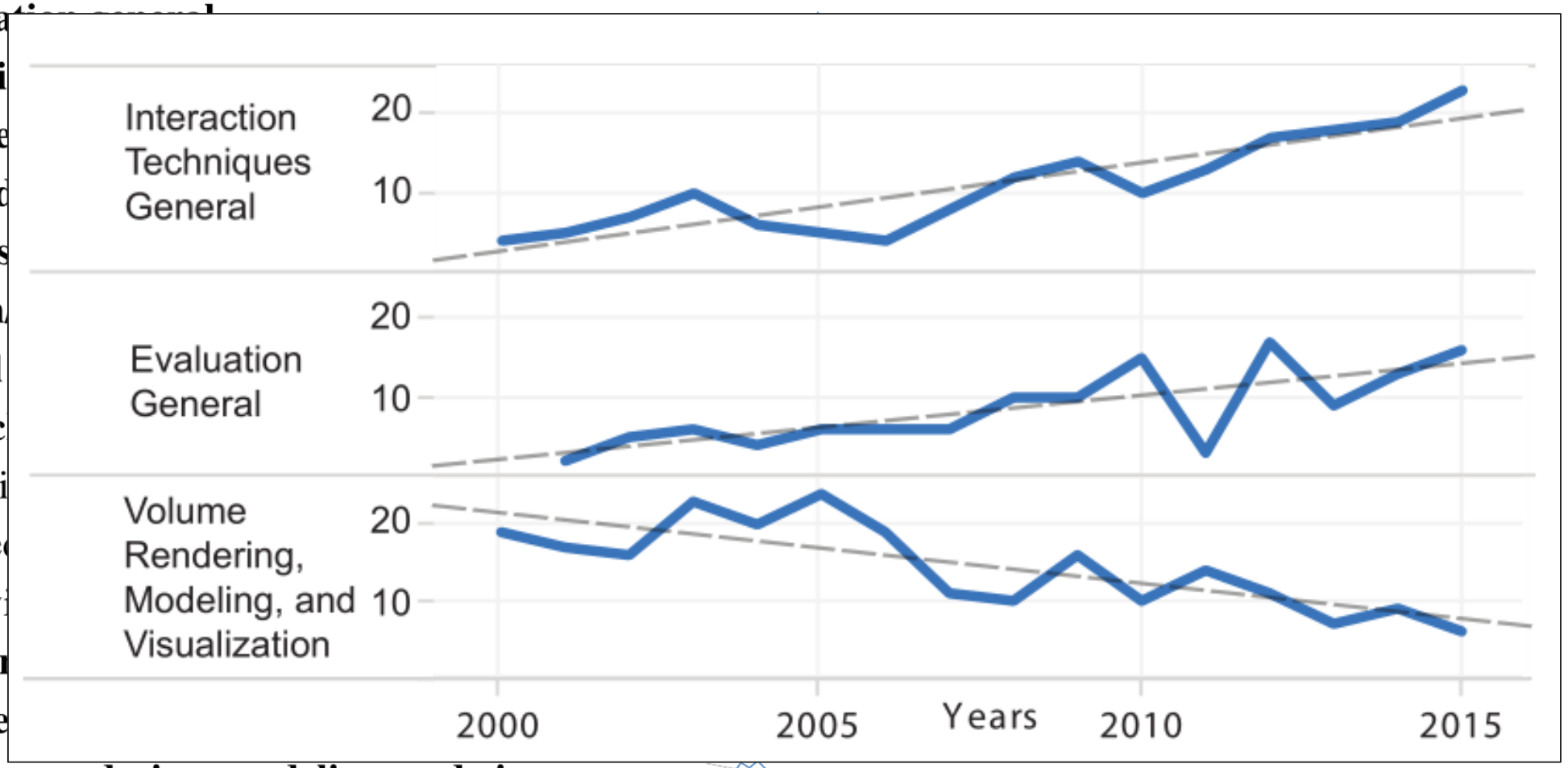
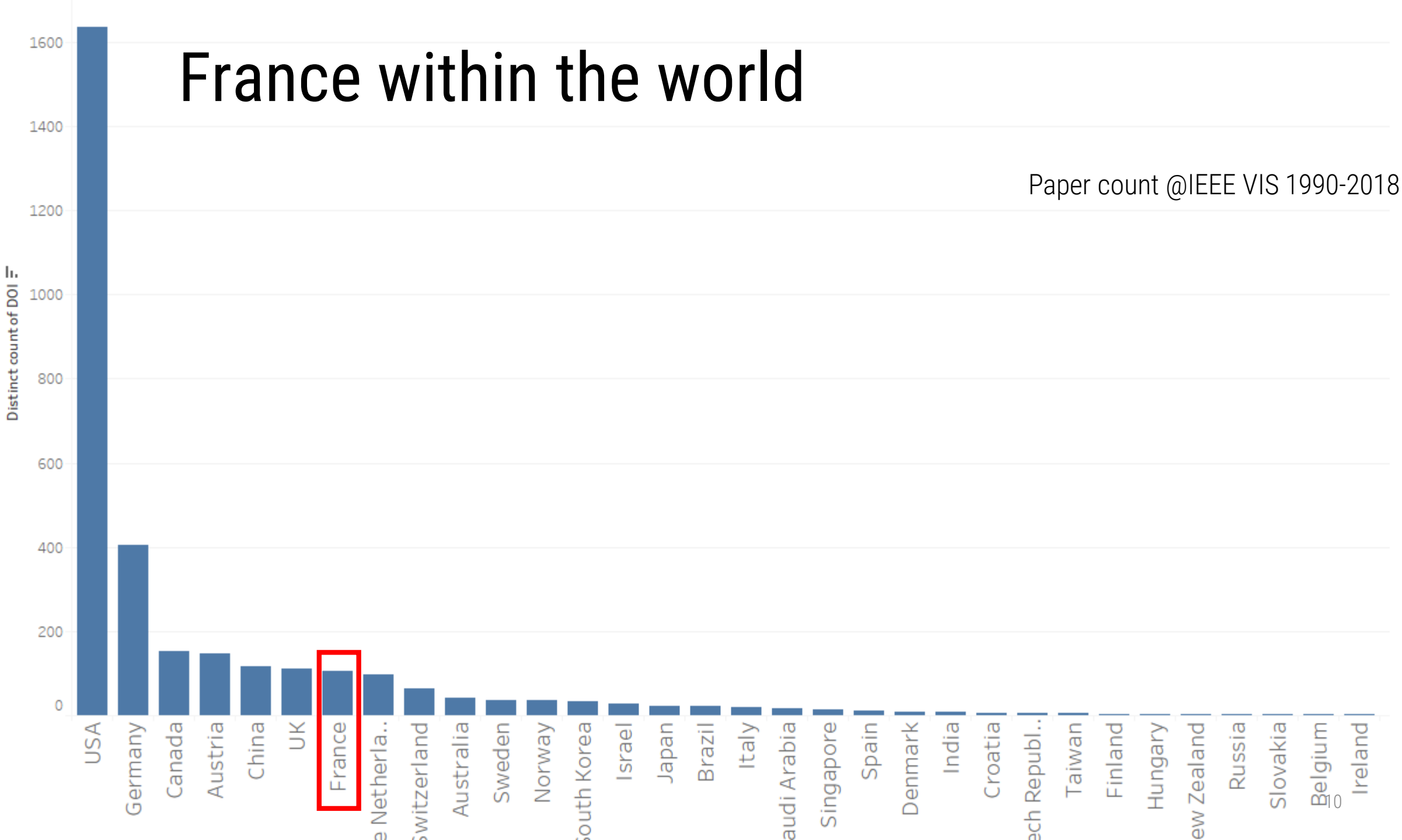
volume rendering, modeling, and vis.



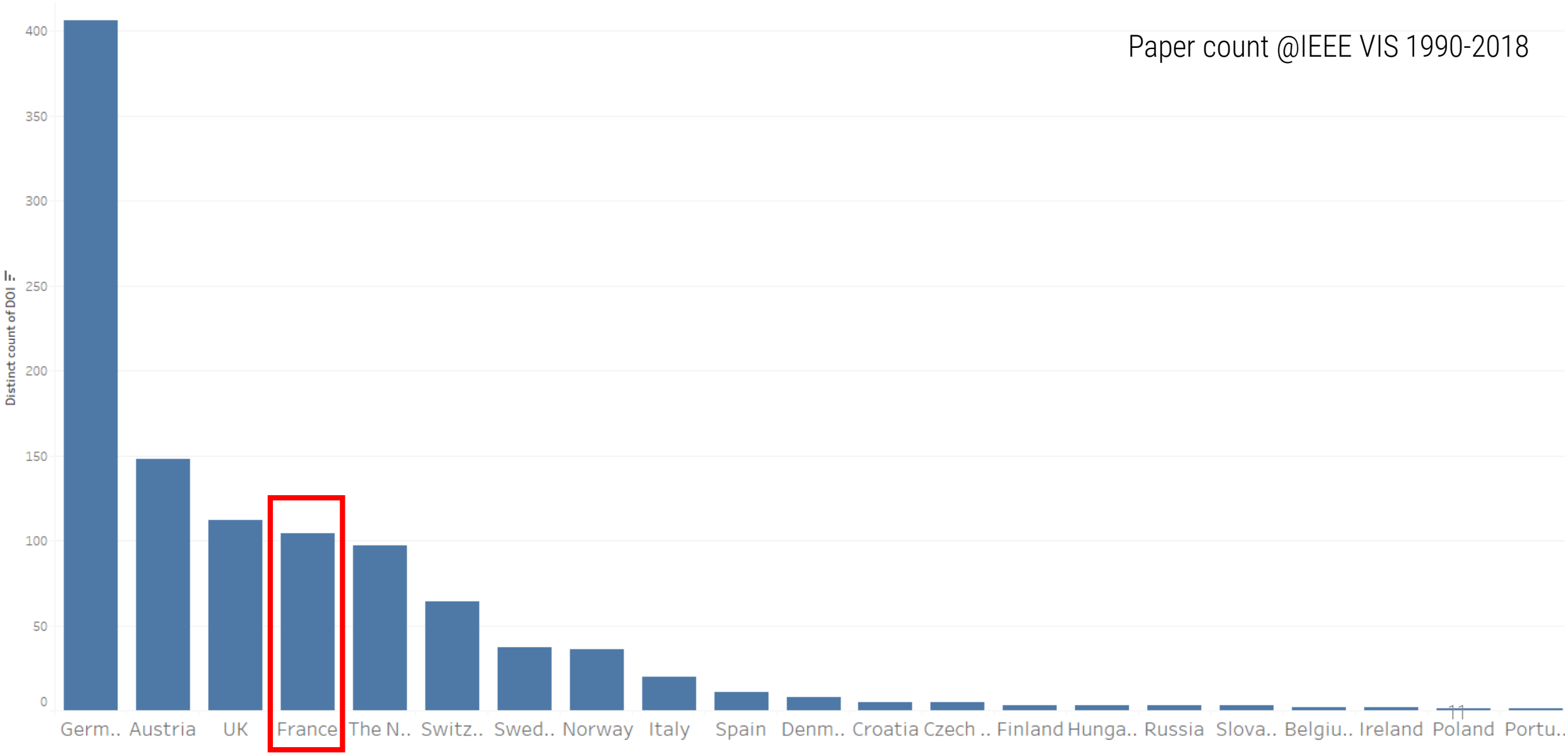
WHAT DOES VIS IN FRANCE LOOK LIKE?

France within the world

Paper count @IEEE VIS 1990-2018

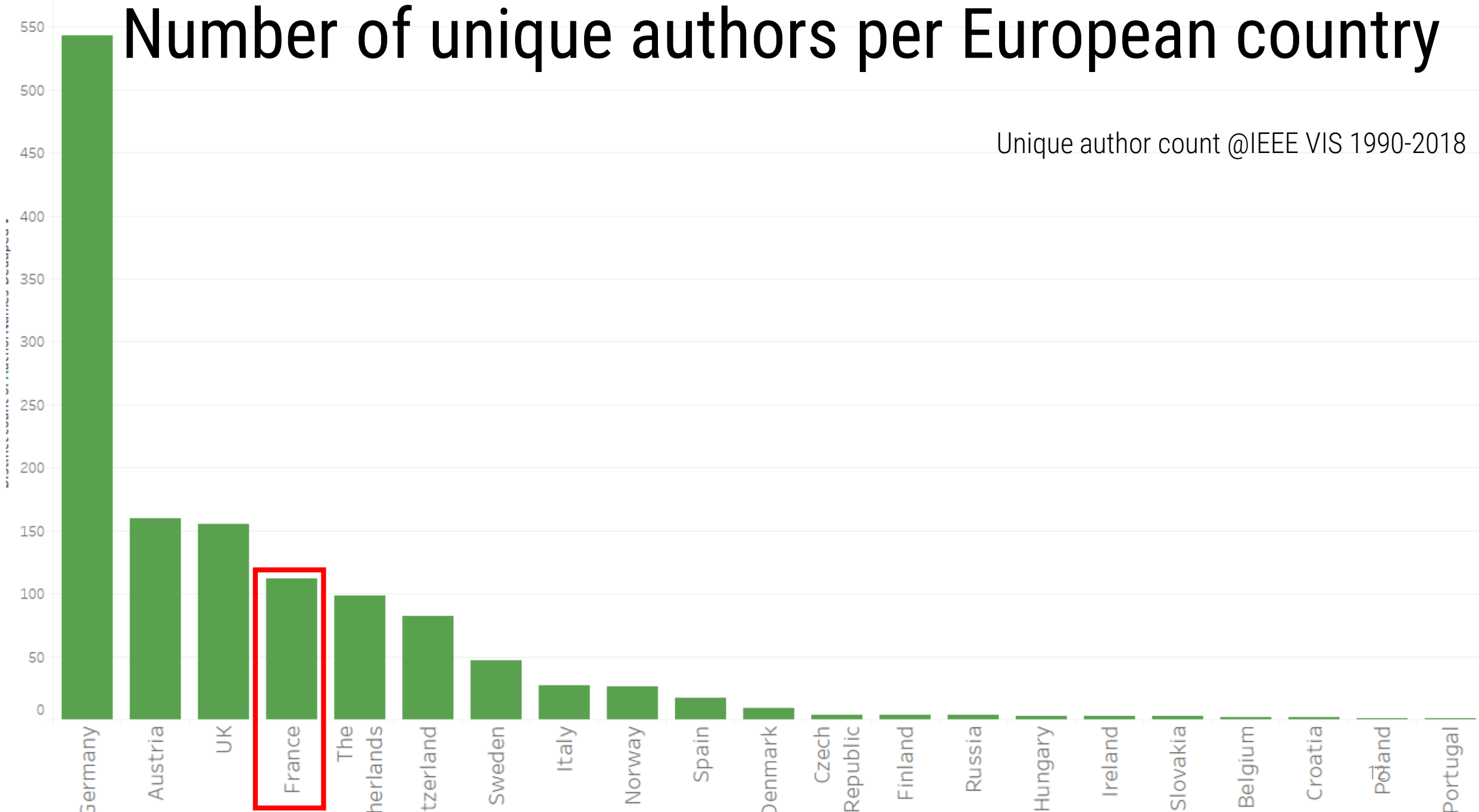


France within Europe



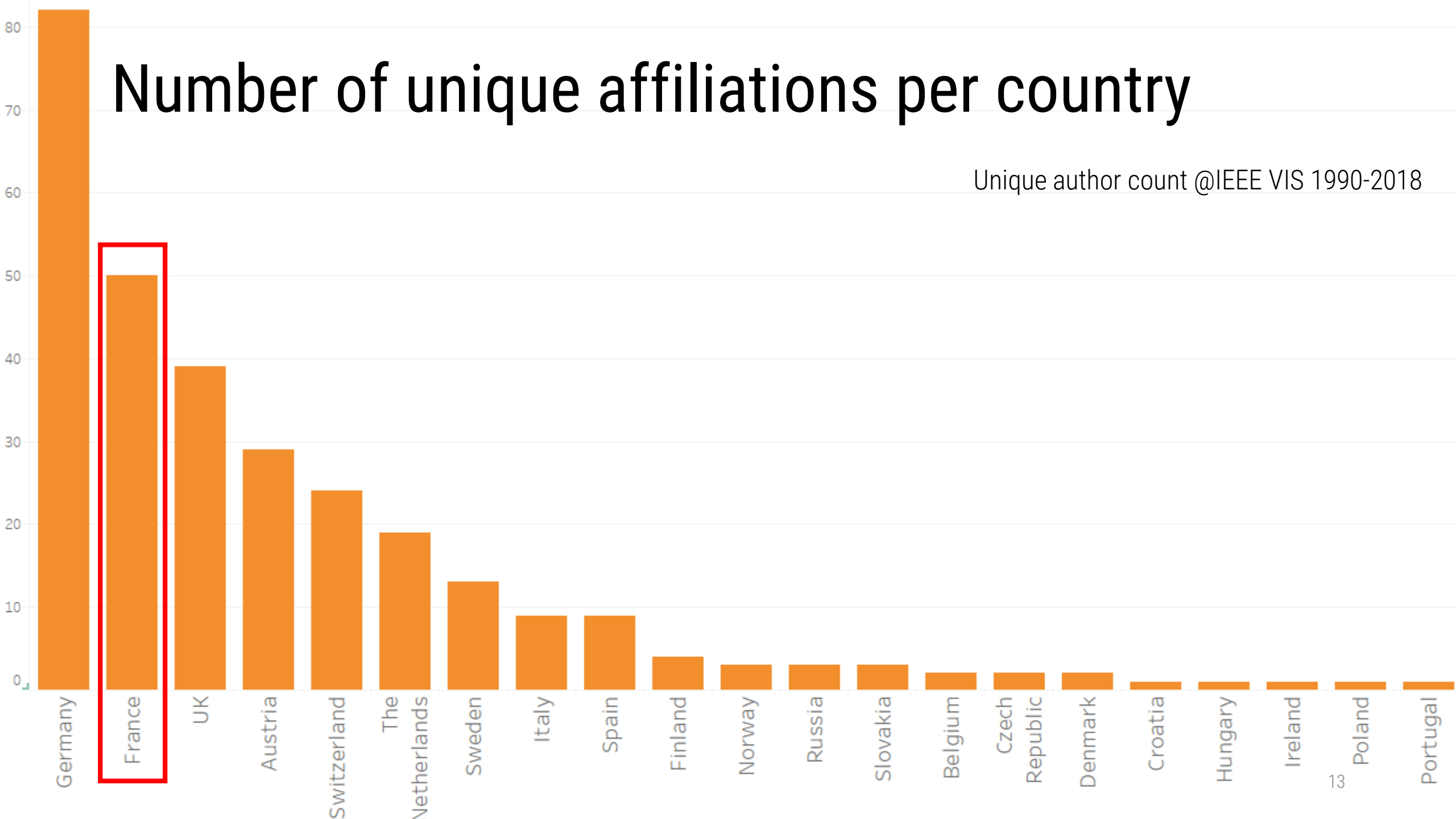
Number of unique authors per European country

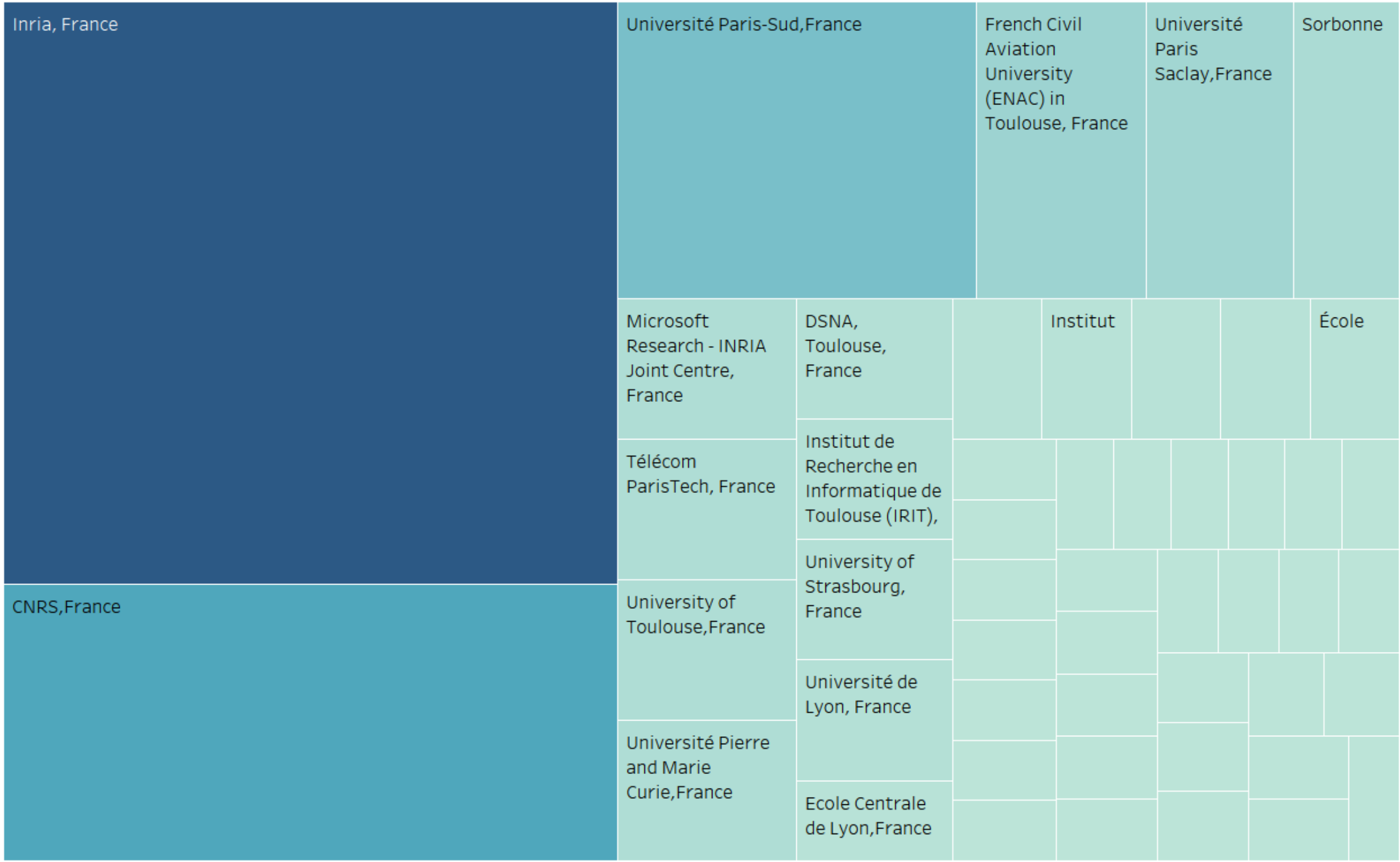
Unique author count @IEEE VIS 1990-2018



Number of unique affiliations per country

Unique author count @IEEE VIS 1990-2018




Inria, France
Université Paris-Sud,France
French Civil Aviation University (ENAC) in Toulouse, France
Université Paris Saclay,France
Sorbonne
CNRS,France
Microsoft Research - INRIA Joint Centre, France
DSNA, Toulouse, France
Institut
École
Télécom ParisTech, France
Institut de Recherche en Informatique de Toulouse (IRIT),
University of Toulouse,France
University of Strasbourg, France
Université de Lyon, France
Université Pierre and Marie Curie,France
Ecole Centrale de Lyon,France

We’re pretty dominated by 2-3 institutions

And I don’t think this is a good thing!

But there are many institutions

I’m probably not seeing the whole picture