ROS 9년간의 분석

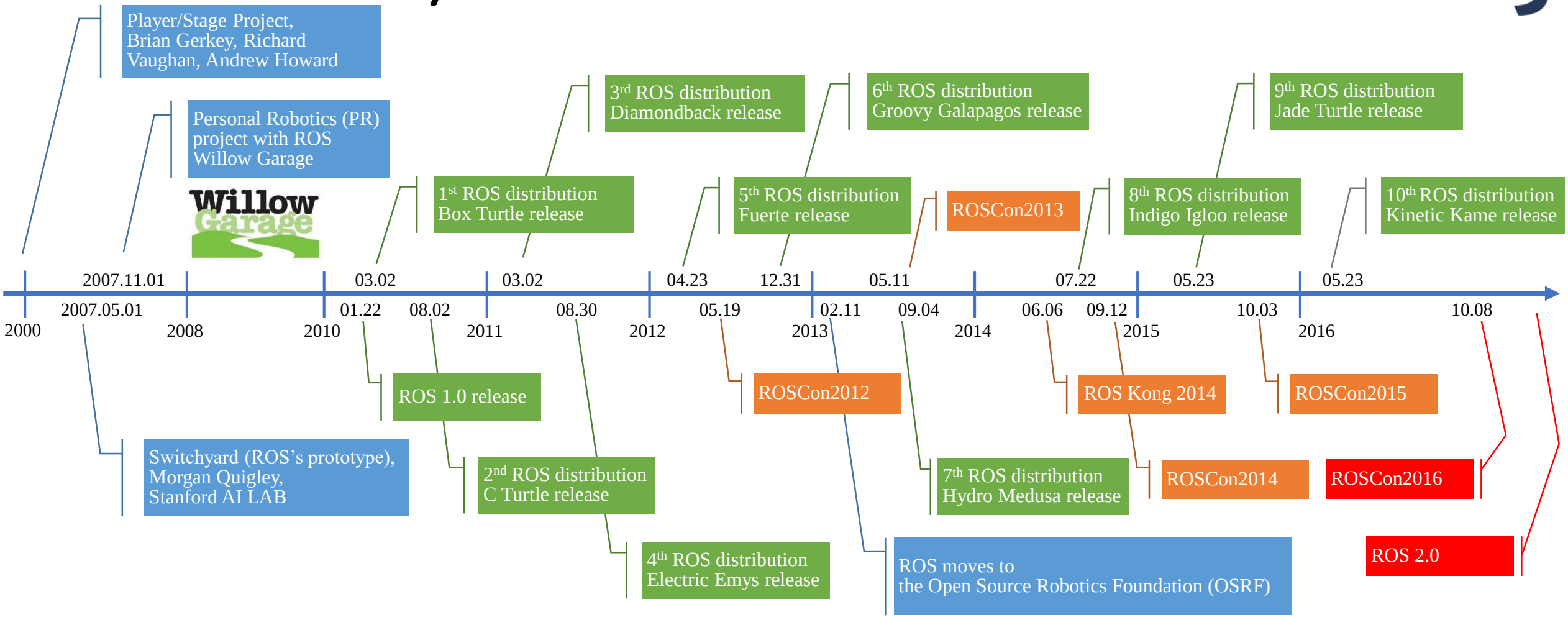
ROBOTIS

Open Source Team

Yoonseok Pyo

ROS History

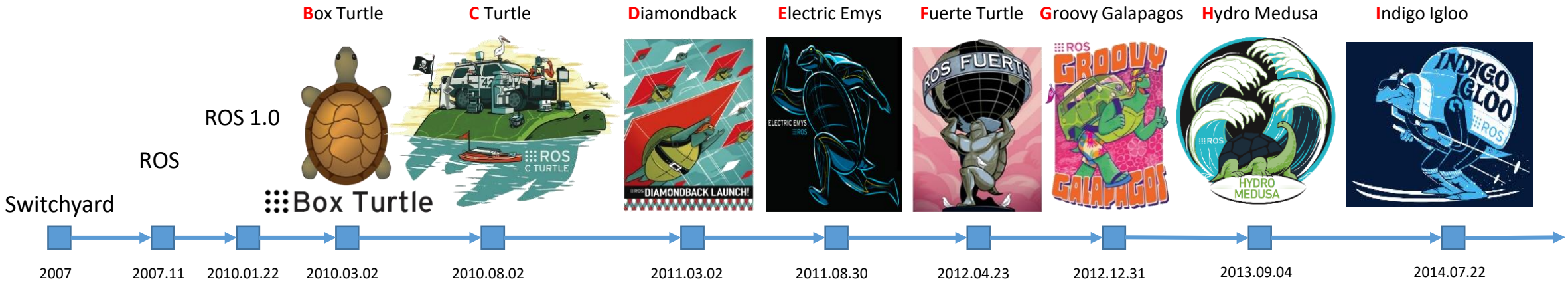
ROS.org

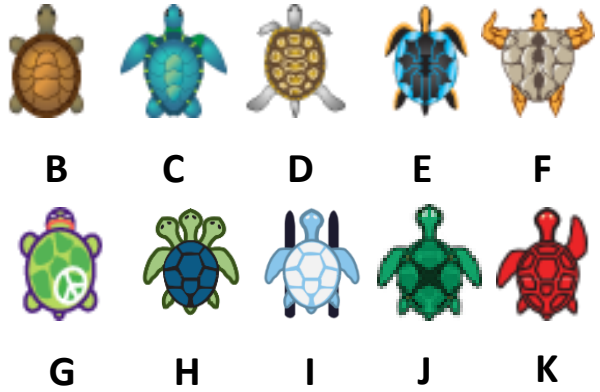


Open Source Robotics Foundation

http://wiki.ros.org/Distributions
http://wiki.ros.org/Events

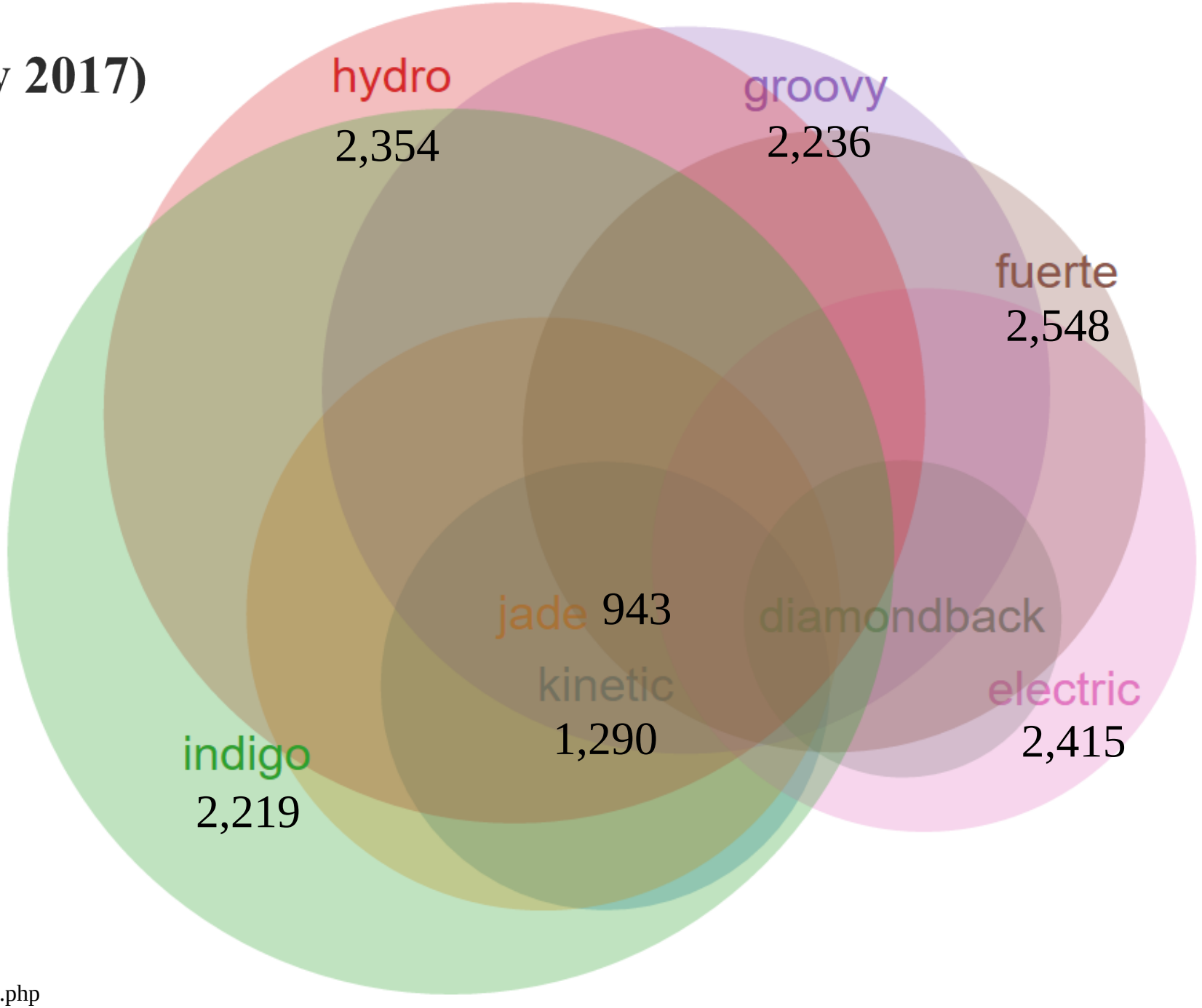
ROS Versions, Posters, Icons





http://wiki.ros.org/Distributions

Known packages (May 2017)



http://rosindex.github.io/stats/, http://www.ros.org/browse/list.php

Visitor locations (official wiki.ros.org, not include data of mirrors)

2012	
United States	39,112
Germany	17,225
Japan	6,725
Spain	6,563
India	5,187
France	5,074
China	4,975
United Kingdom	4,095
Canada	3,754
Italy	3,549
South Korea	2,890
Australia	2,706
Brazil	2,341
Netherlands	2,214
Mexico	2,168
Russia	2,005
Portugal	1,941
Sweden	1,633
Singapore	1,604
Austria	1,447
New Zealand	
Turkey	
Switzerland	
Poland	
Taiwan	
Israel	

2013	
United States	37,773
Germany	19,666
China	7,822
Japan	7,714
United Kingdom	5,672
India	4,745
Australia	4,734
Canada	4,145
Brazil	4,122
France	4,074
South Korea	4,050
Spain	3,951
Italy	2,849
Singapore	2,612
Russia	2,162
Mexico	2,097
New Zealand	2,073
Sweden	2,040
Turkey	1,849
Switzerland	1,795
Portugal	
Netherlands	
Poland	
Taiwan	
Austria	
Israel	

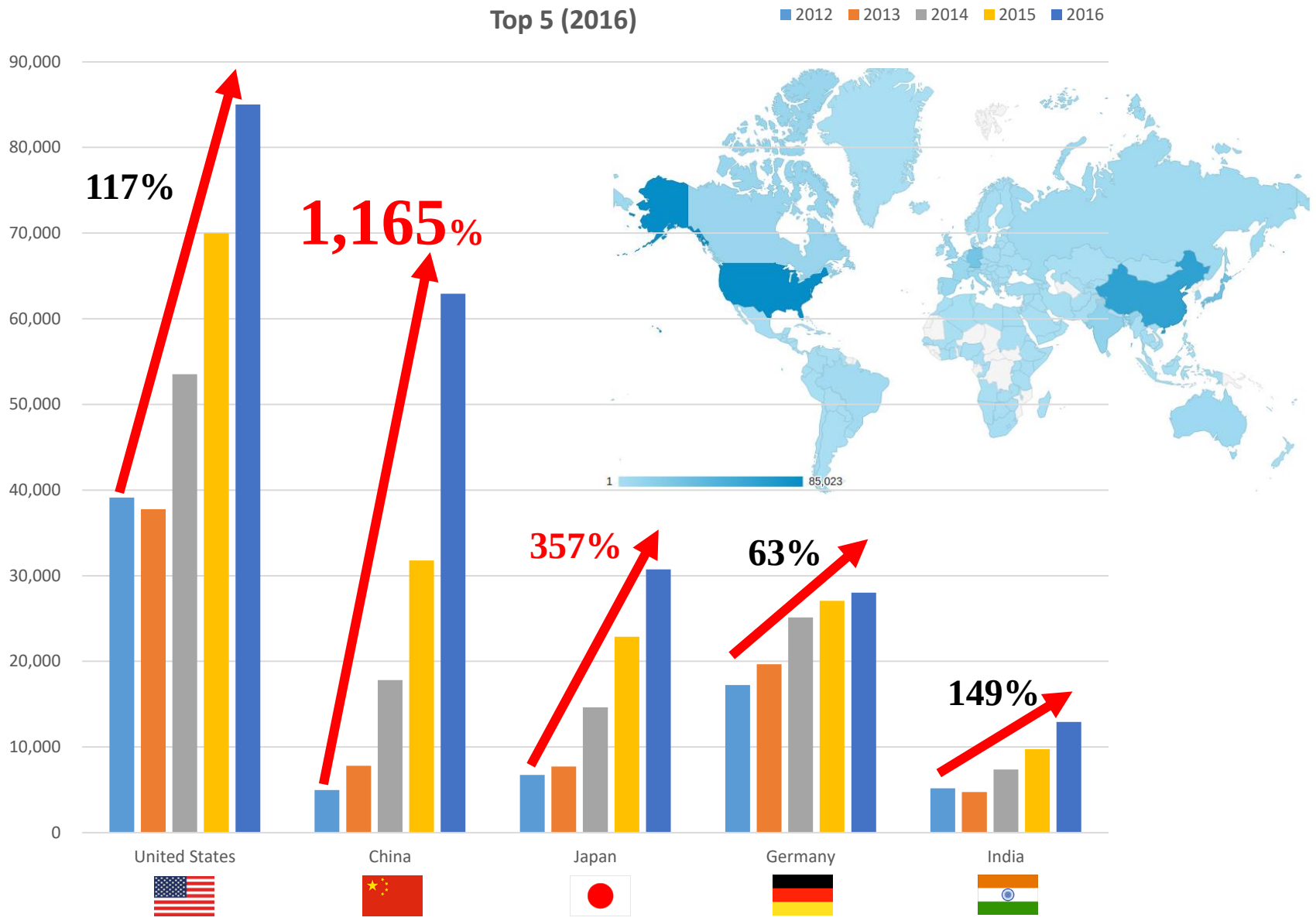
2014	
United States	53,530
Germany	25,133
China	17,812
Japan	14,619
Spain	9,192
Canada	8,611
France	8,399
United Kingdom	7,434
India	7,360
Italy	6,623
Brazil	5,837
South Korea	4,988
Australia	4,828
Singapore	4,688
Russia	3,534
Portugal	3,194
Netherlands	2,556
Switzerland	2,454
Poland	2,279
Taiwan	2,252
Mexico	
Turkey	
Austria	
New Zealand	
Israel	
Sweden	

2015	
United States	69,989
China	31,778
Germany	27,080
Japan	22,867
India	9,740
France	9,431
United Kingdom	9,143
Spain	8,617
Canada	8,497
Italy	7,176
South Korea	7,022
Singapore	5,457
Taiwan	5,411
Russia	4,732
Brazil	4,359
Australia	4,252
Portugal	3,623
Switzerland	2,871
Poland	2,706
Netherlands	2,431
Mexico	2,306
Turkey	2,302
Austria	2,277
New Zealand	2,019
Israel	1,938
Sweden	

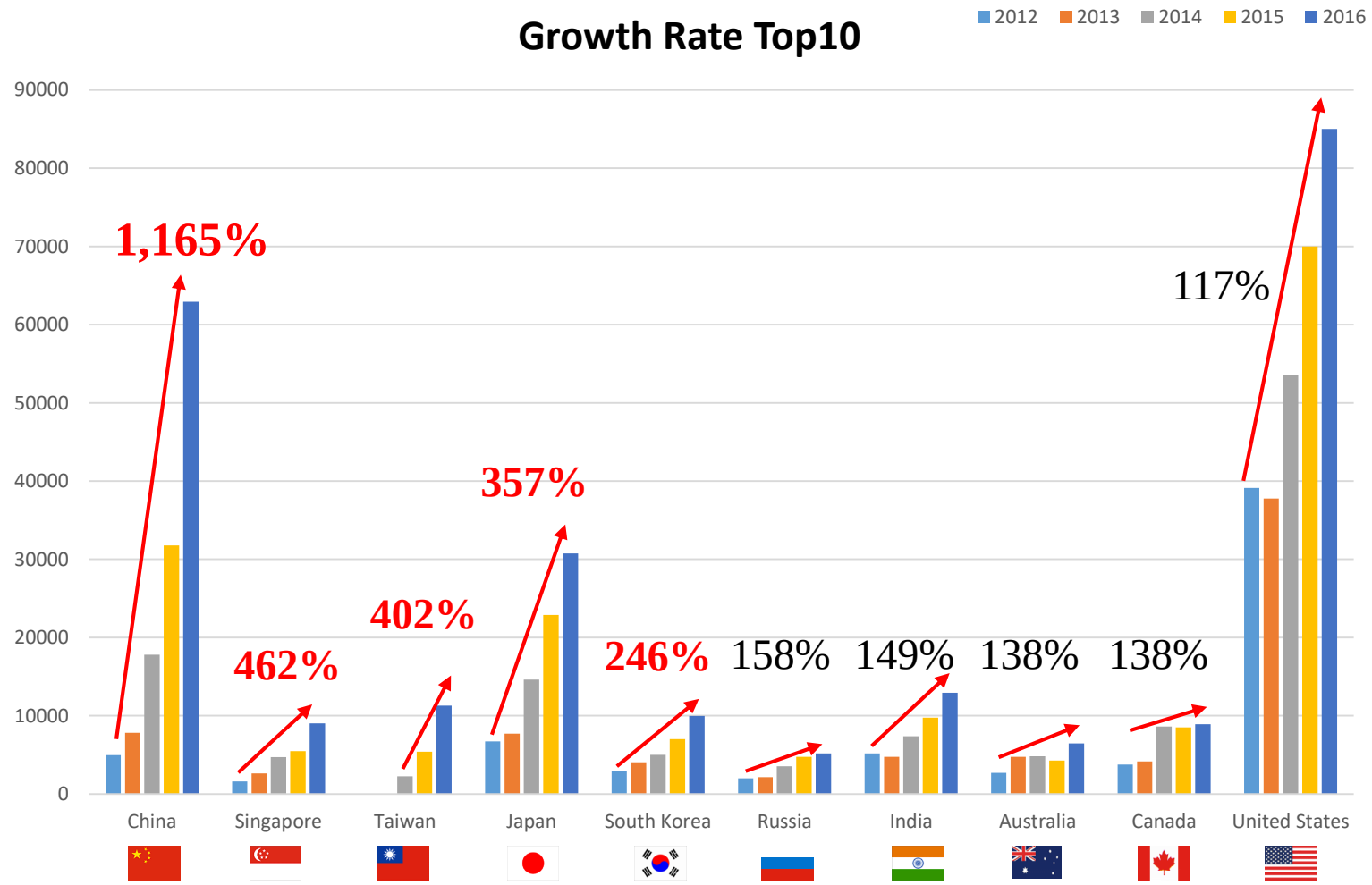
2016	
United States	85,023
China	62,933
Japan	30,745
Germany	28,022
India	12,918
Taiwan	11,301
South Korea	9,990
Singapore	9,015
Canada	8,928
Spain	8,517
United Kingdon	8,436
France	7,678
Italy	7,663
Australia	6,459
Russia	5,171
Brazil	4,805
Switzerland	3,554
Portugal	3,120
Netherlands	3,074
Turkey	2,603
Hong Kong	2,462
Israel	2,386
none	2,374
Mexico	2,314
Poland	2,076

http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2012~2016)

Visitor locations (official wiki.ros.org, not include data of mirrors)



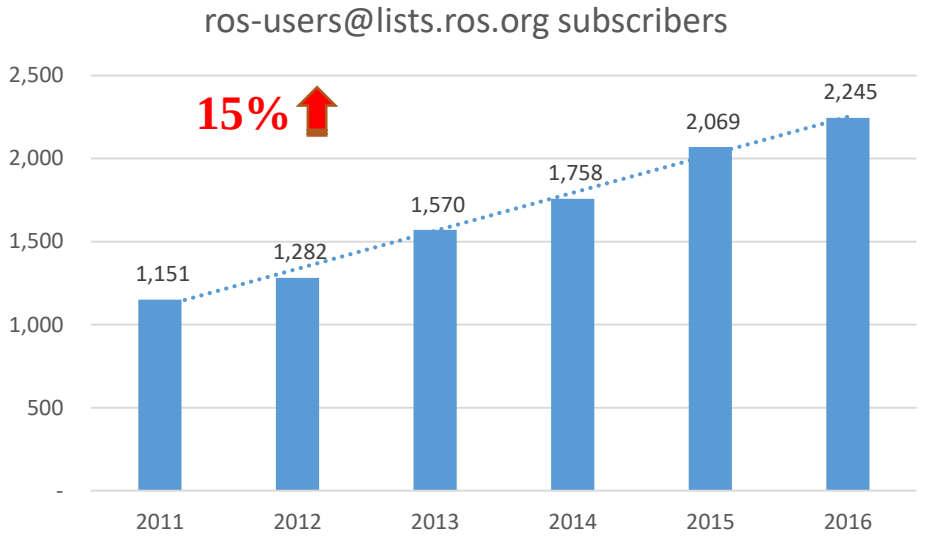
Visitor locations (official wiki.ros.org, not include data of mirrors)

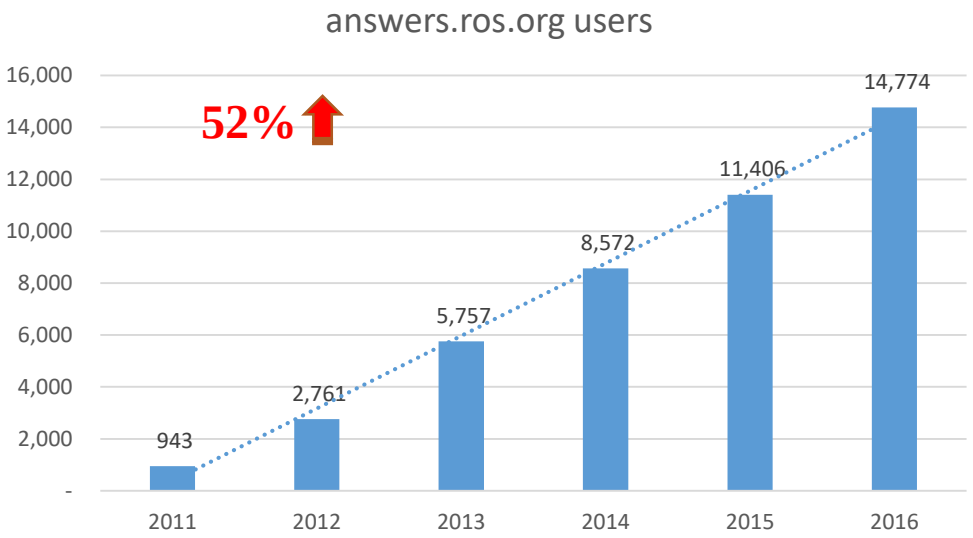


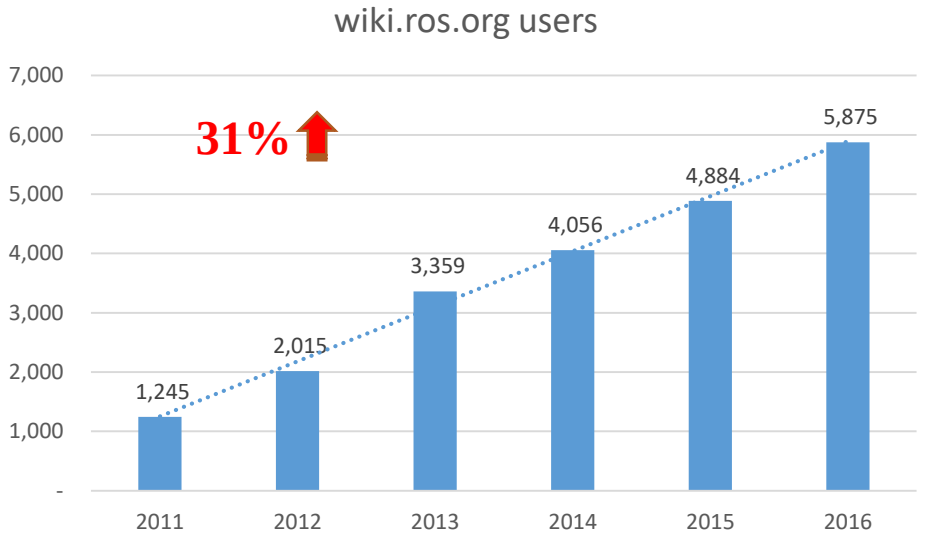
http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2012~2016)

Membership Metrics

	2011	2012	2013	2014	2015	2016	Compound Annual Growth Rate
ros-users@lists.ros.org subscribers	1,151	1,282	1,570	1,758	**2,069**	**2,245**	**15%**
wiki.ros.org users	1,245	2,015	3,359	4,056	**4,884**	**5,875**	**31%**
answers.ros.org users	943	2,761	5,757	8,572	**11,406**	**14,774**	**52%**
discourse.ros.org users	-	-	-	-	-	**280**	**-**



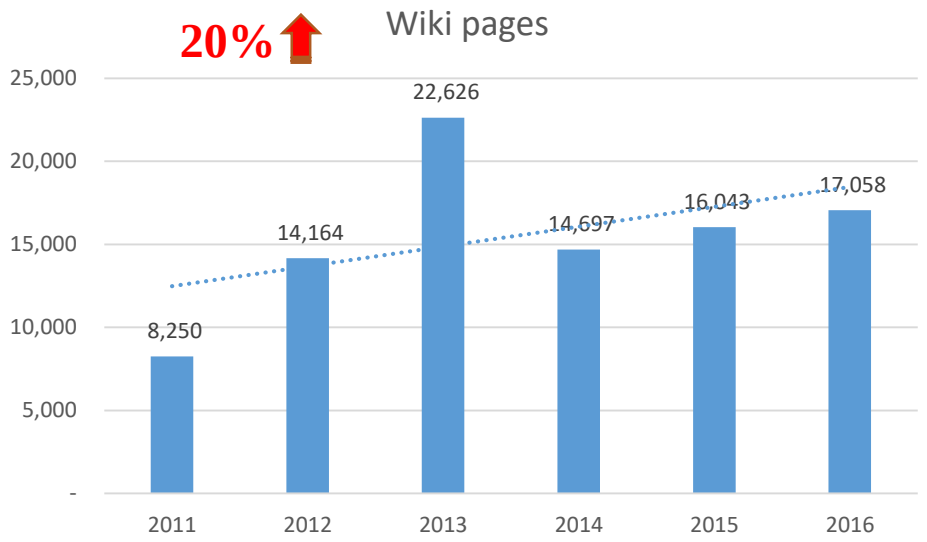


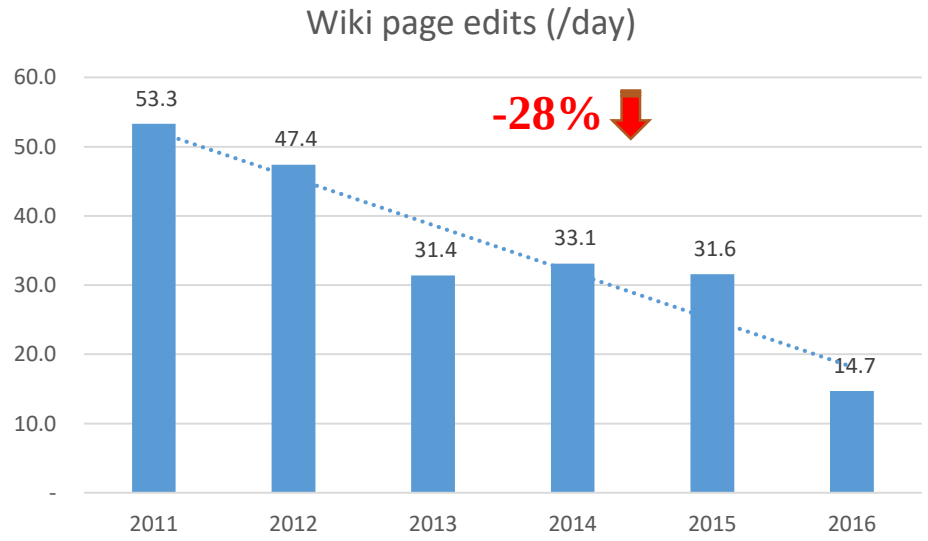


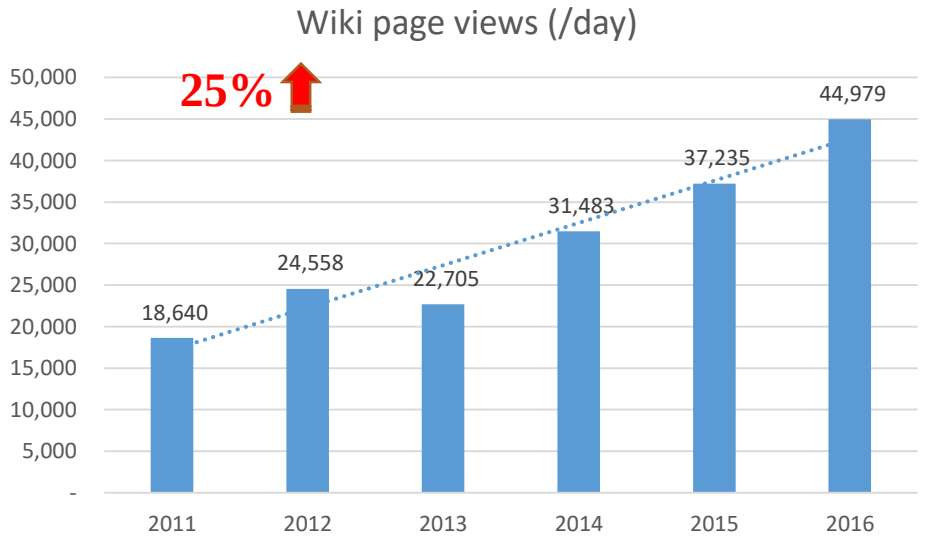
http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

Activity Metrics (wiki.ros.org)

	2011	2012	2013	2014	2015	2016	Compound Annual Growth Rate
Wiki pages	8,250	14,164	22,626	14,697	16,043	**17,058**	**20%**
Wiki page edits (/day)	53.3	47.4	31.4	33.1	31.6	**14.7**	**-28%**
Wiki page views (/day)	18,640	24,558	22,705	31,483	37,235	**44,979**	**25%**



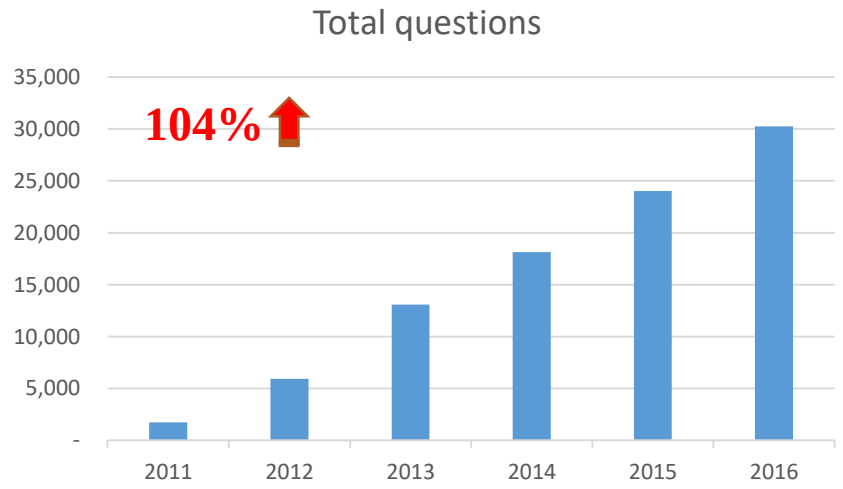


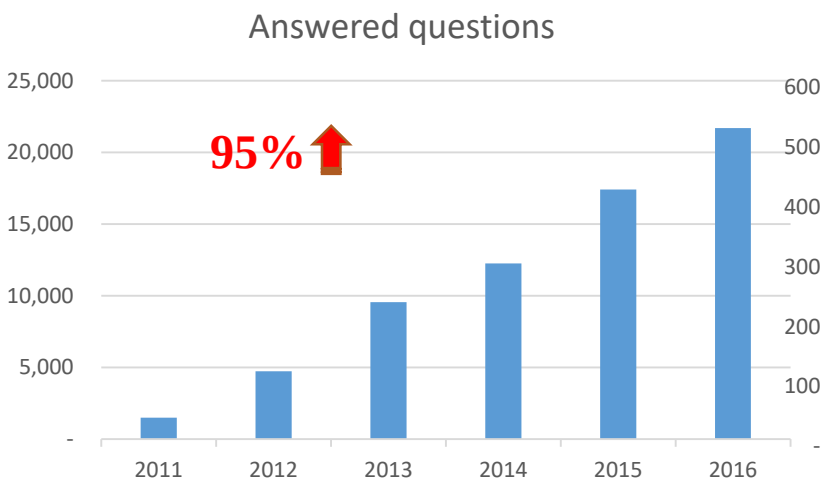


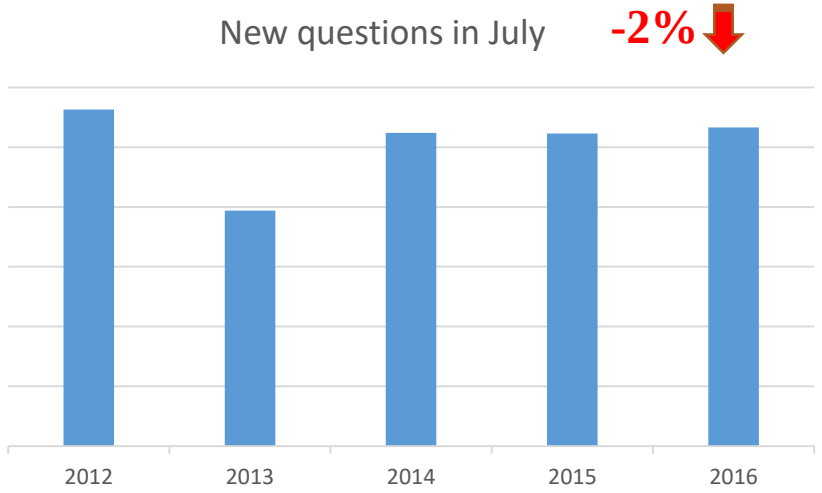
http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

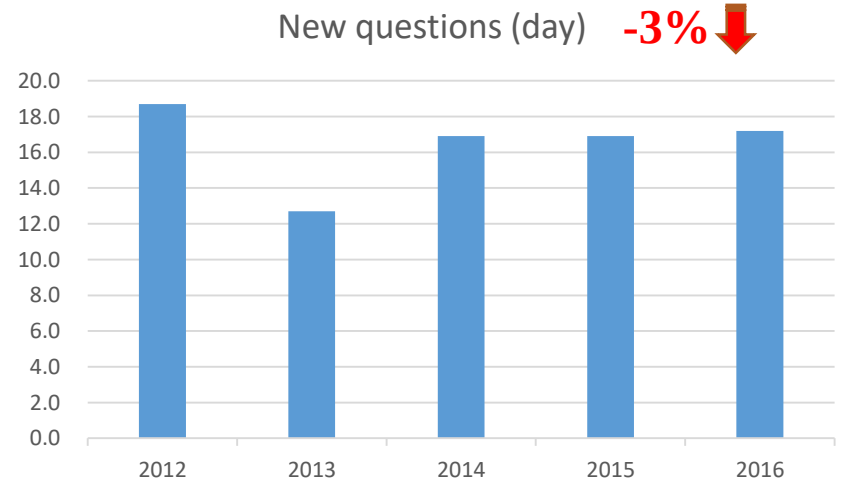
Activity Metrics (answers.ros.org)

	2011	2012	2013	2014	2015	2016	Compound Annual Growth Rate
Total questions	1,731	5,935	13,095	18,144	24,026	**30,243**	**104%**
Answered questions	1490	4728	9558	12260	17414	**21,697**	**95%**
New questions (month)		563	394	524	523	**533**	**-2%**
New questions (day)		18.7	12.7	16.9	16.9	**17.2**	**-3%**





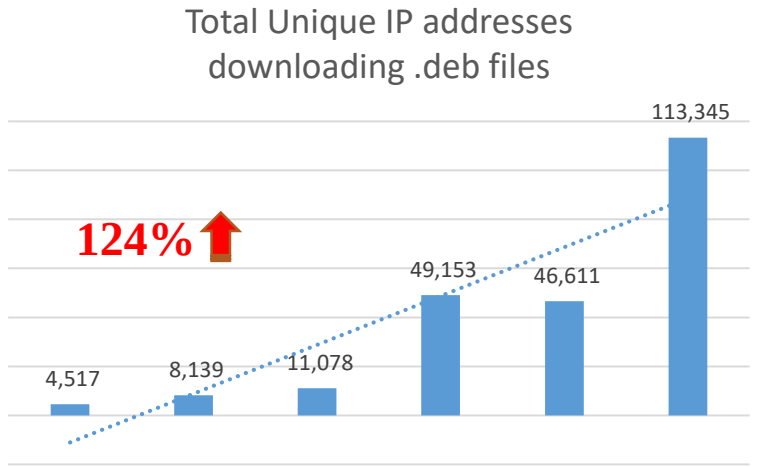


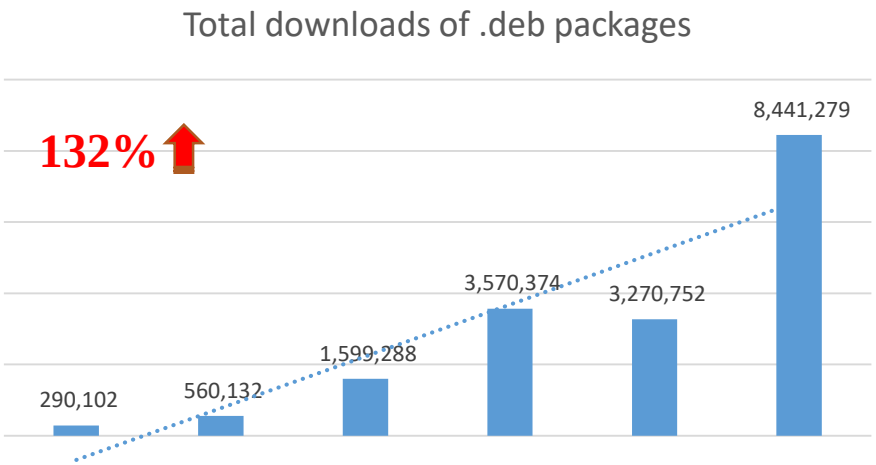


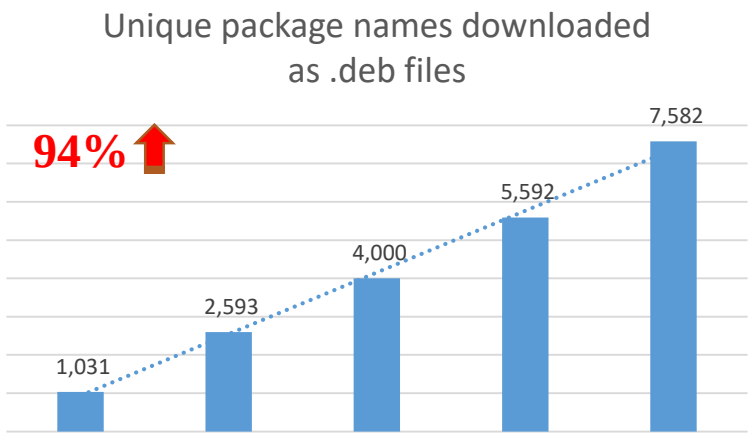
http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

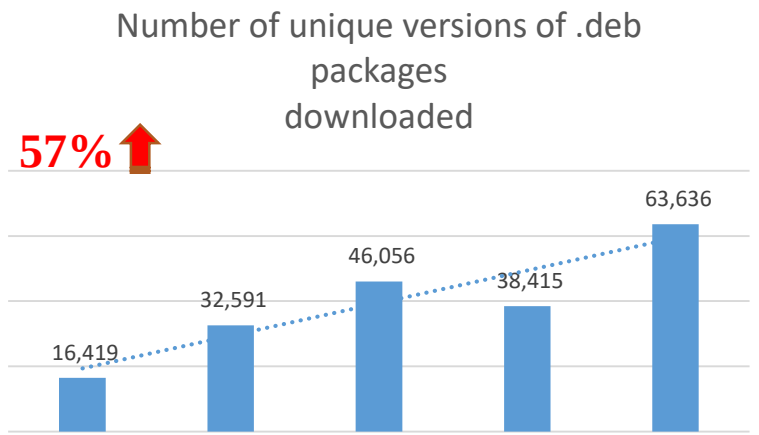
Code Metrics (Binary Downloads)

	2011	2012	2013	2014	2015	2016	Compound Annual Growth Rate
Total Unique IP addresses downloading .deb files	4,517	8,139	11,078	49,153	46,611	**113,345**	**124%**
Total downloads of .deb packages	290,102	560,132	1,599,288	3,570,374	3,270,752	**8,441,279**	**132%**
Unique package names downloaded as .deb files		1,031	2,593	4,000	5,592	**7,582**	**94%**
Number of unique versions of .deb packages downloaded		16,419	32,591	46,056	38,415	**63,636**	**57%**



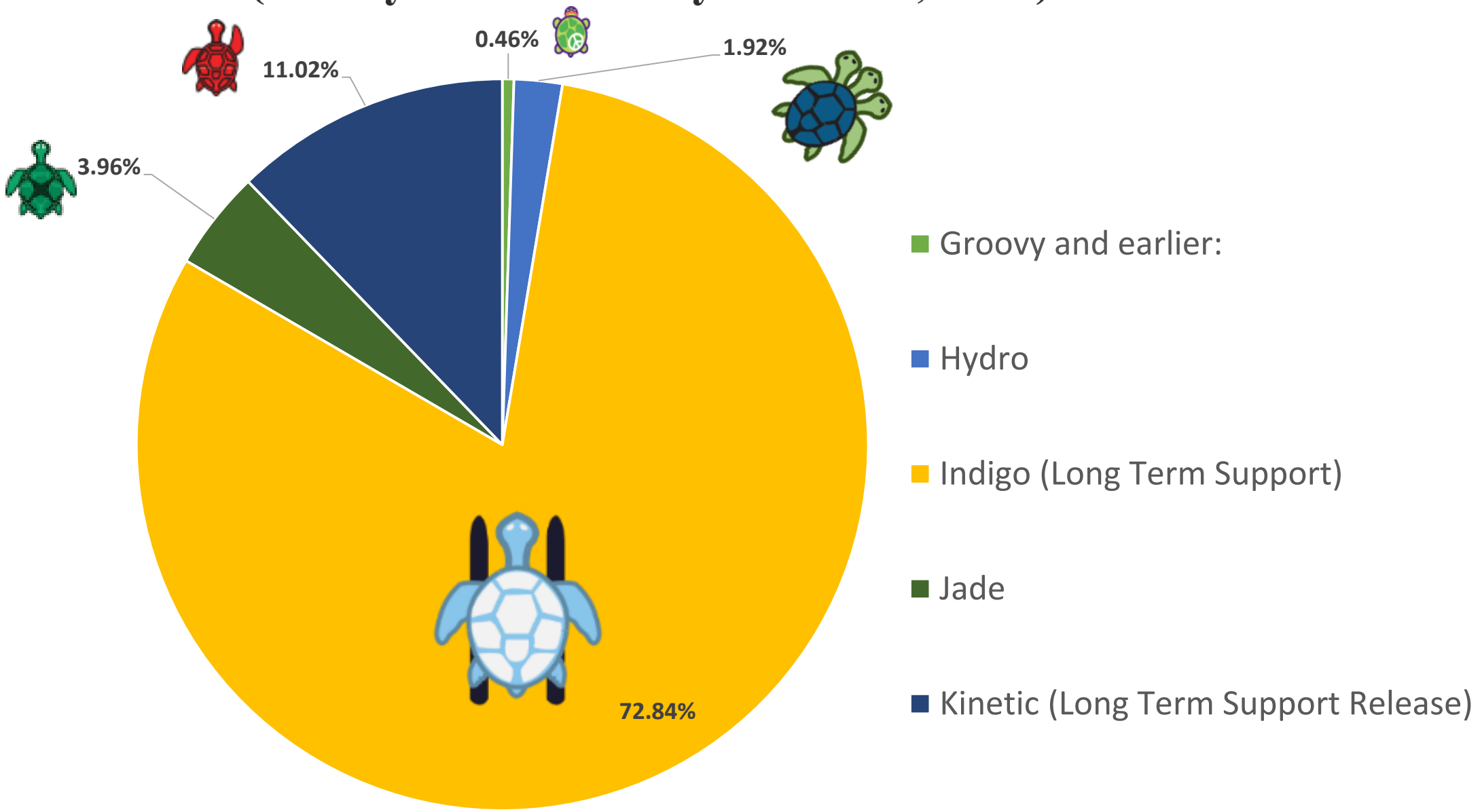






http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

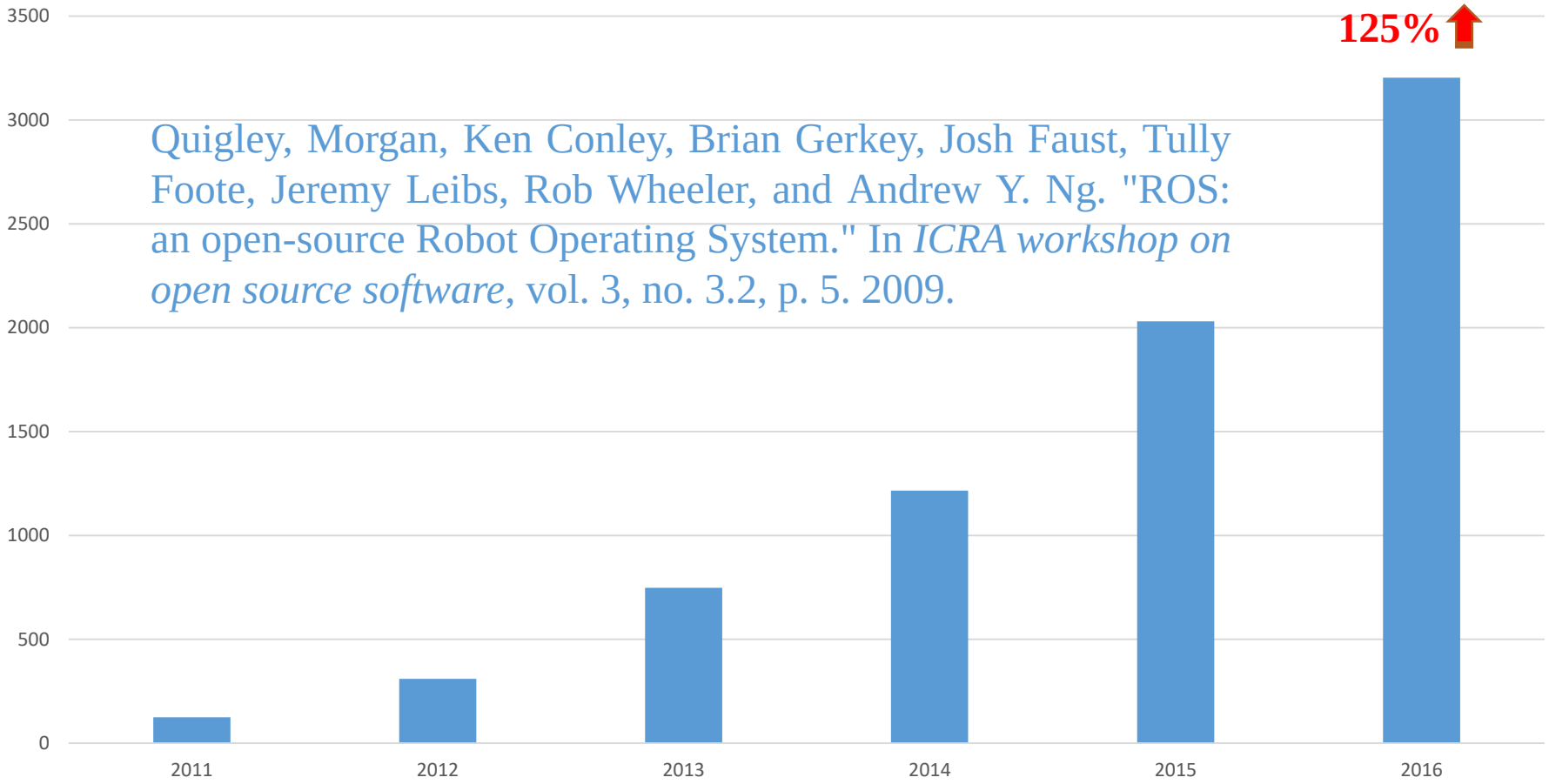
Code Metrics (Binary Downloads by rosdistro, 2016)



http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

Research use

Number of papers citing “ROS: an open-source Robot Operating System”



Quigley, Morgan, Ken Conley, Brian Gerkey, Josh Faust, Tully Foote, Jeremy Leibs, Rob Wheeler, and Andrew Y. Ng. "ROS: an open-source Robot Operating System." In *ICRA workshop on open source software*, vol. 3, no. 3.2, p. 5. 2009.

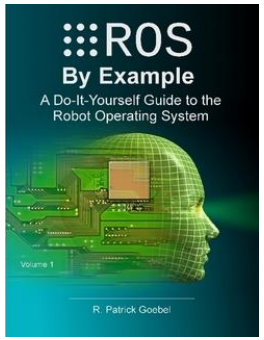
http://wiki.ros.org/Metrics, Community Metrics Report by Tully Foote (2011~2016)

University courses listed on wiki.ros.org/Courses

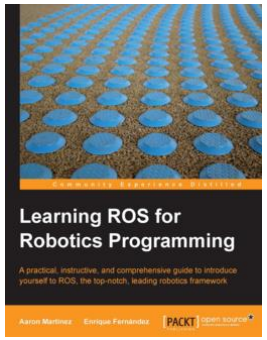
- Brown University, USA
- Case Western Reserve University, USA
- Cornell University, USA
- CU Boulder, USA
- Northwestern University, USA
- Siena College, USA
- Stanford University, USA
- University at Albany, USA
- University of Pennsylvania, USA
- University of South Carolina, USA
- University of Texas at Austin, USA
- Washington University in St Louis, USA
- KU Leuven, Germany
- Leibniz Universität Hannover, Germany
- DEI - University of Padova, Italy
- Sapienza University of Rome, Italy
- Kyushu University, Japan
- Tokyo University, Japan
- Bar-Ilan University, Israel
- Prince Sultan University, Saudi Arabia
- University of Birmingham, United Kingdom
- Université de Sherbrooke, Canada
- University of Zagreb, Croatia

http://wiki.ros.org/Courses

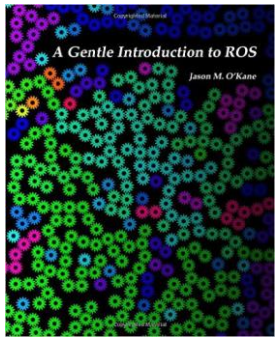
Books for ROS



September, 2012



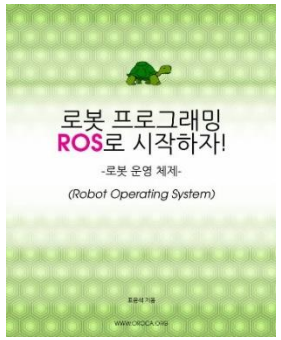
September, 2013



October, 2013

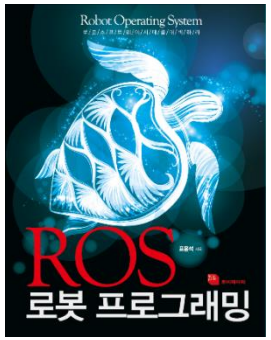
August, 2014

한국어

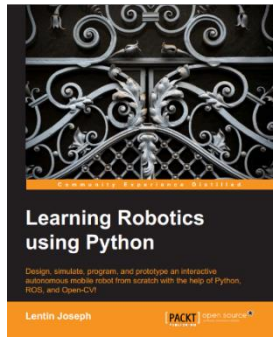


December, 2014

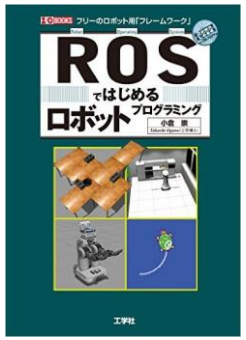
한국어



March, 2015

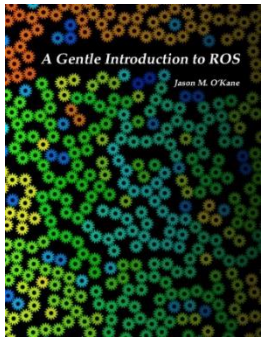


May, 2015



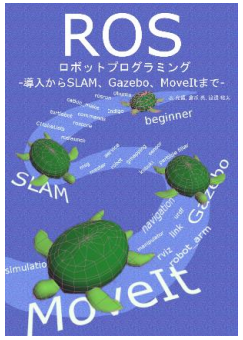
June, 2015

汉语

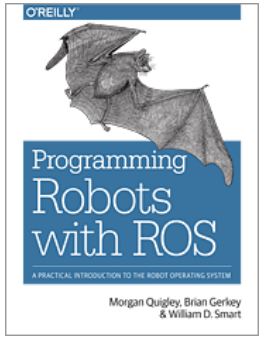


October, 2015

日本語



November, 2015



December, 2015

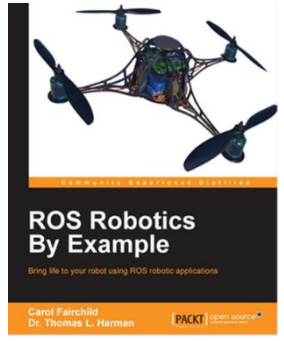
December, 2015

日本語

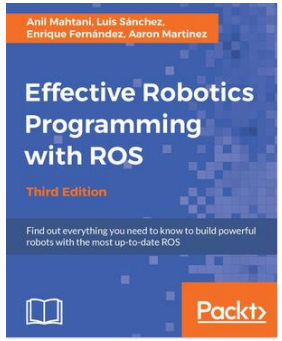
December, 2015

March, 2016

日本語



June, 2016

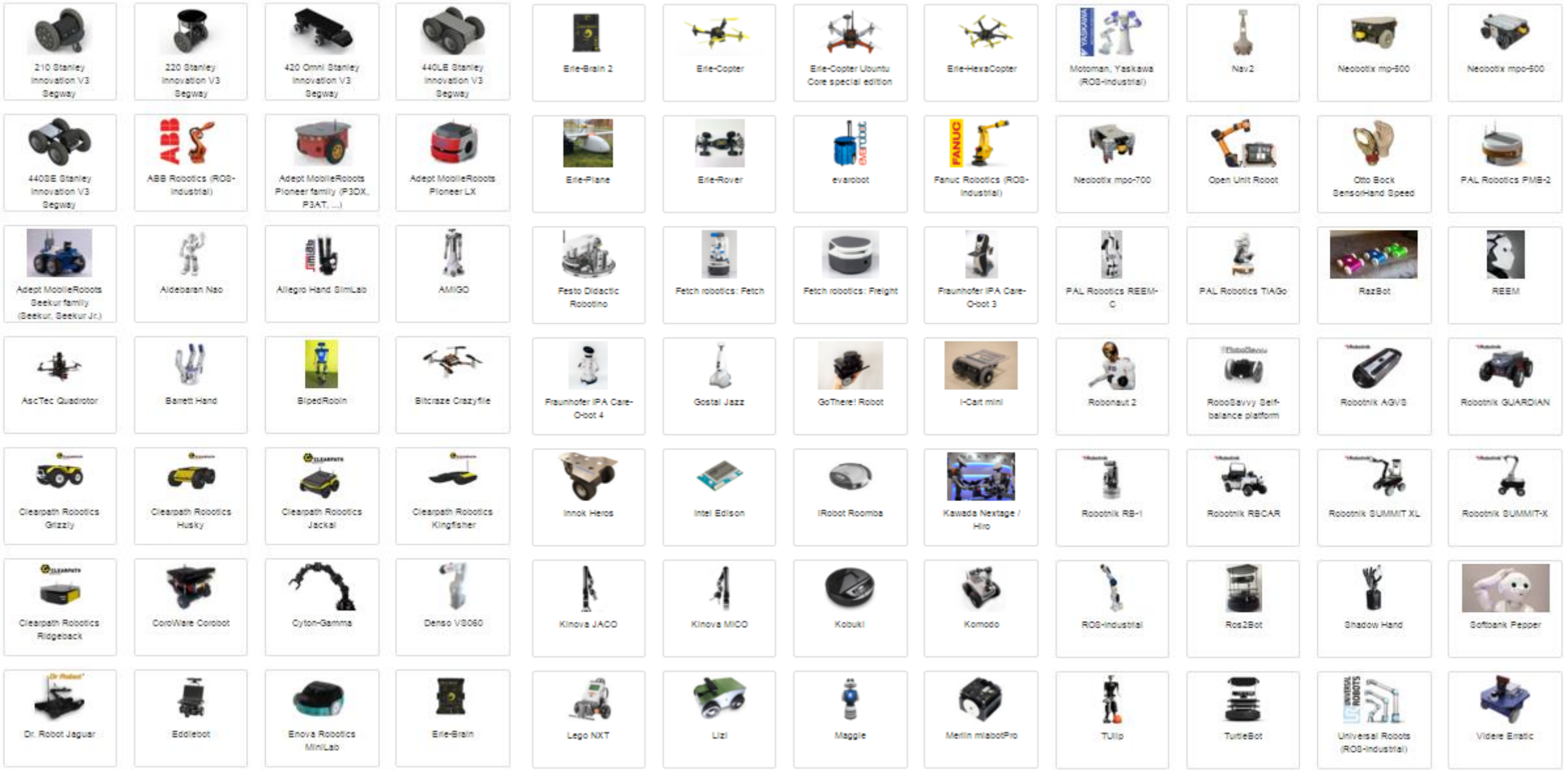


December 2016

March 2017

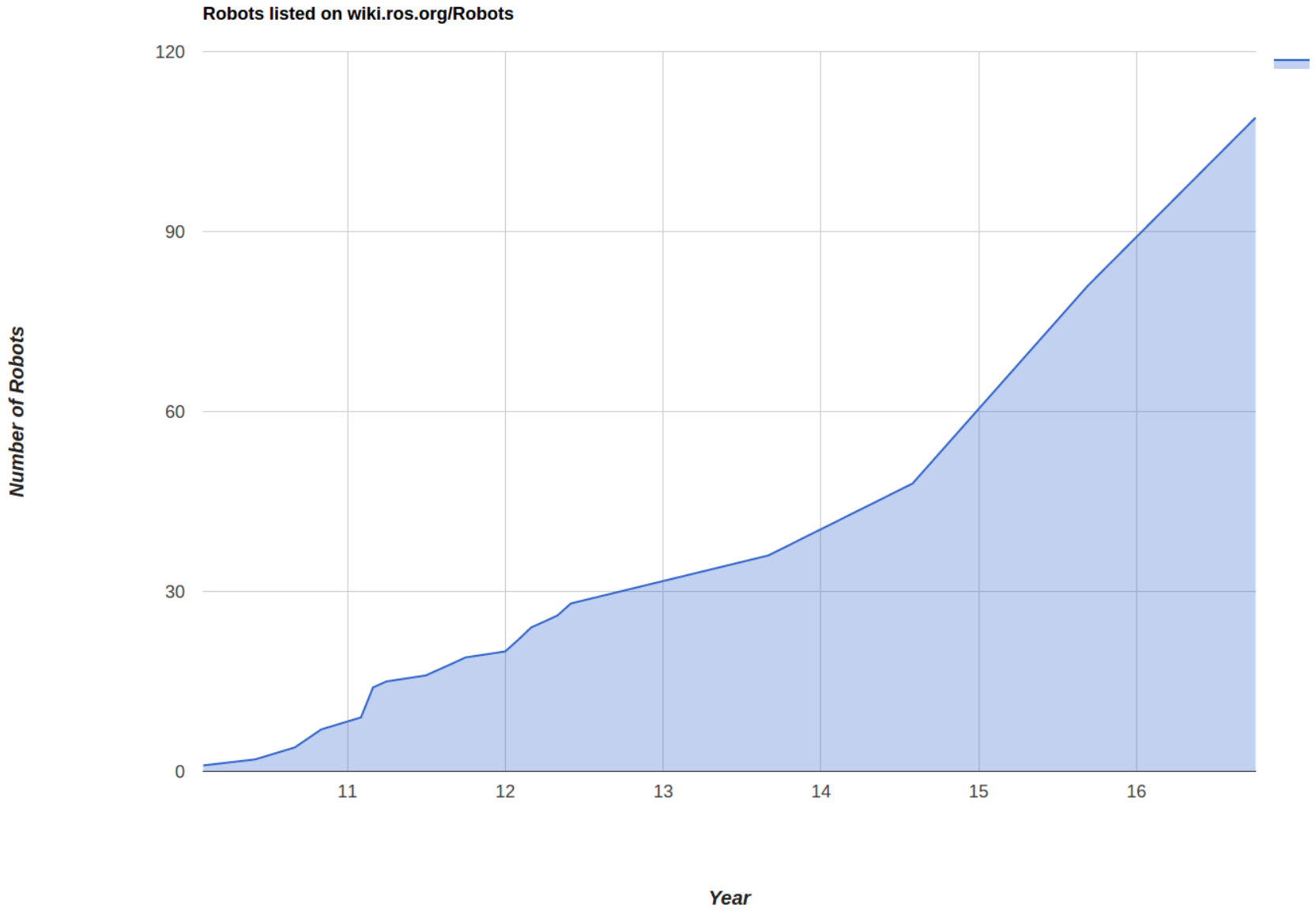
http://wiki.ros.org/Books, http://www.ros.org/news/book/

Robots listed on wiki.ros.org/Robots



http://wiki.ros.org/Robots

Robots listed on wiki.ros.org/Robots



http://wiki.ros.org/Robots

ROS Conferences

St. Paul, Minnesota, USA
19-20 May 2012

Stuttgart, Germany
11-12 May 2013

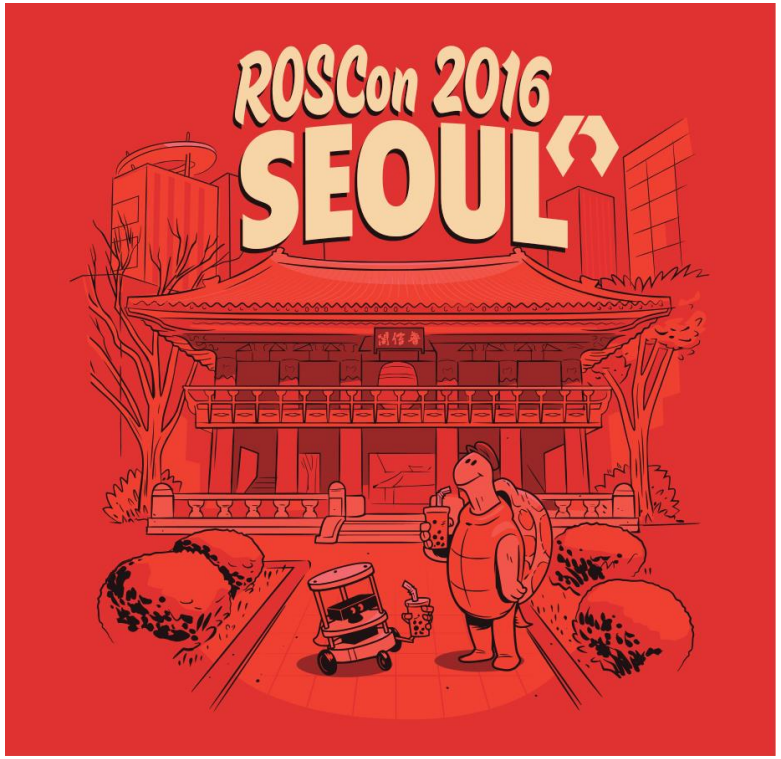
Hong Kong University
June 6, 2014

Chicago, Illinois, USA
September 12-13, 2014

Hamburg, Germany
May 3-4, 2015

ROS Conferences

ROSCon will happen October 8th-9th, 2016 in Seoul, Korea!



Seoul, Korea
October 8th-9th, 2016

Sponsors

QUALCOMM

CRUISE

ubuntu

intel

rethink
robotics

Willow
Garage

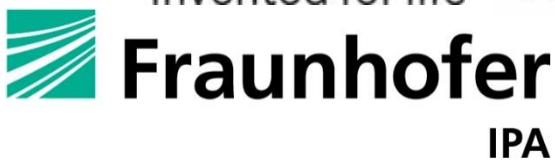
BOSCH
Invented for life

fetch
robotics

CLEARPATH
ROBOTICS™

Google

www.gaitech.hk
GaiTech International


Fraunhofer
IPA

Open Source
Robotics Foundation

THE UNIVERSITY OF HONG KONG

ETRI

Webots
robot simulation

Robotnik

hiDOF

3DR

YUJIN ROBOT

YASKAWA
MOTOMAN ROBOTICS

HEARTLAND
ROBOTICS

ROBOTIS

MAGAZINO
simple storage

SCHUNK

oroWare

TOYOTA

ROS
industrial
consortium

I Heart Engineering

Erle Robotics

synaptcon

SICK
Sensor Intelligence.

BLUE RIVER
TECHNOLOGY

Shadow
Robot Company

NVIDIA

SwRI

McCormick
Northwestern Engineering
Master of Science
in Robotics

Metrics for Celebrating Nine Years

끝.

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Thanks for your attention!

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