
**Welcome
to the 11th
(and 2nd virtual)
DIRAC Users' Workshop**

We felt it was too still early to organize a f2f workshop.

So, back on Zoom, with basically the same agenda as per DUW 2021:

2 half-days for:

- knowing about recent and upcoming developments
- users (experiments') reports

DIRAC Developments and DevOps

09:00	Intro and directions <i>Zoom</i>	<i>Federico Stagni</i> 09:00 - 09:20
	On Authentication, Authorization and Single Sign On <i>Zoom</i>	<i>Andrii Lytovchenko et al.</i> 09:20 - 09:45
	Interfaces: WebApp and COMDIRAC <i>Zoom</i>	<i>Andrii Lytovchenko et al.</i> 09:45 - 09:55
10:00	WMS and Computing Resources <i>Zoom</i>	<i>Alexandre Franck Boyer</i>  09:55 - 10:40
	Coffee break <i>Zoom</i>	10:40 - 11:00
11:00	Monitoring with and for DIRAC <i>Zoom</i>	<i>Ruben Pozzi</i> 11:00 - 11:20
	Data Management <i>Zoom</i>	<i>Christophe Haen</i> 11:20 - 11:40
	DIRAC and Rucio <i>Zoom</i>	<i>Janusz Martyniak</i> 11:40 - 12:00
12:00	On Python 3, DIRACOS, and other FAQs <i>Zoom</i>	<i>Chris Burr</i> 12:00 - 12:30

Experiments' reports

09:00	LHCb <i>Zoom</i>	<i>Concezio Bozzi</i> 09:00 - 09:20
	CLIC/ILC/FCC/Calice <i>Zoom</i>	<i>Andre Sailer</i> 09:20 - 09:40
	GridPP <i>Zoom</i>	<i>Daniela Bauer</i> 09:40 - 10:00
10:00	EGI <i>Zoom</i>	<i>Gino Marchetti</i> 10:00 - 10:20
	Belle2 <i>Zoom</i>	<i>Michel Hernandez Villanueva</i> 10:20 - 10:40
	coffee break <i>Zoom</i>	10:40 - 11:00
11:00	IHEP <i>Zoom</i>	<i>Xiaomei Zhang</i> 11:00 - 11:20
	CTA <i>Zoom</i>	<i>Luisa ARRABITO</i> 11:20 - 11:40
	JINR <i>Zoom</i>	<i>Igor Pelevanyuk</i> 11:40 - 12:00
12:00	Summary and prospects <i>Zoom</i>	<i>Federico Stagni</i> 12:00 - 12:20

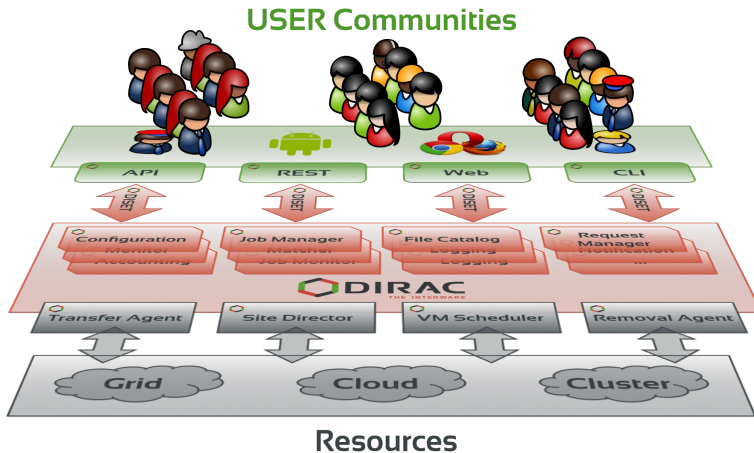
Workshop rules

(also posted [here](#))

- The sessions are recorded, and will be made public afterwards
- After each presentation there will be few minutes for questions. Please “raise your hand” in Zoom to intervene.
 - and it would be nice if you switch on the camera while speaking
- Notes are taken in [this](#) free-for-all notebook and you are welcome to participate to it.
 - you can also write the questions here

What's DIRAC?

- A software framework for distributed computing
- A **complete** solution to one (or more) user community
- Builds a layer between users and resources



- Started as an LHCb project, experiment-agnostic in 2009
- Developed by communities, for communities
 - Open source (GPL3+), [GitHub](#) hosted
 - Python 3 (python 2.7 kept for current production release)
 - Publicly [documented](#), active [assistance forum](#), yearly [users workshops](#), open [developers meetings](#) and [hackathons](#)
- The DIRAC consortium as representing body

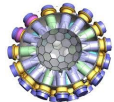


Shared by multiple experiments/projects, both inside
HEP, astronomy, and life science

Experiment agnostic

Extensible

Flexible



Why is DIRAC popular?

- **DIRAC as-a-service** (1 installation, several VOs) available since long time
 - all DIRAC functionalities are multi-VO as of release v7r3
 - good for limited-manpower communities
- Feature-rich, all-in-one (WMS, DMS, but also Productions and Dataset management, and monitoring)
 - again, good for limited-manpower communities
- Tightly-integrated DIRAC WebApp
- Actively developed and maintained

“Stable”

from
previous
workshops

“Communication is the
killer feature of DIRAC”

- always valid: Integrating DIRAC workflows in HPCs
- always valid: DMS advancements
- **Done:** Python 3
 - py3 clients supported since version 7.2 (pip installable)
 - py3 server supported since version 7.3 (production)
 - py2 support ends with 8.0 (release is few weeks away)
 - with some obvious exceptions of part of pilots code
- **Ongoing:** dips:// → https://
 - dips: DIRAC proprietary protocol for RPC calls
 - http: based on [tornado](#)
 - several DIRAC services already available using HTTP, and adding more
 - http will be the default for all the DIRAC services from version 8.1
- **Ongoing:** token support, and IdP (IaM, Check-in)
- **Ongoing:** ES/kibana/grafana dashboards
- **Started:** running on kubernetes (goal: define a *helm* chart)
- **Started:** using celery and RabbitMQ (retiring part of DIRAC framework)

Production

- [v7r2 \(7.2\)](#) (March 2021)
 - code structure changed
 - + using sweeper for propagating PRs
 - https services (few)
 - python3 clients (optional)
- [v7.3 \(v7r3\)](#) (Sept 2021)
 - https services (some more)
 - python3 clients (default)
 - python3 server (optional, but stable)

Upcoming

- [v8.0](#) (May 2022)
 - https services (more)
 - python3 only, client and server
 - initial support for tokens, OAuth2, non-VOMS IdPs
- v8.1
 - all services can be exposed via http
 - OAuth2: full support
 - use of celery and RabbitMQ
- v8.2
 - abandoning DISET?

NB: many other developments are not listed here but in the presentations that follow.

- Releases deployed by Github Actions:
 - on [pypi](#) (for python3) for DIRAC and its extensions
 - in CVMFS: `/cvmfs/dirac.egi.eu/installSource`
- Deploys:
 - servers: [puppet modules](#) (used at least by LHCb and CLIC)
 - can be added to github if requested
 - starting to look into k8s services deployments

We're not too strict but *normally*:

The “production branch” - 1

e.g., today v7r3 ... v7r2

note: in few weeks v8.0 will be out

... and try to keep up to date!

- Backward compatibility is assured for 1 release

<u>Production, but legacy, and unsupported</u>	<u>Really Production</u>
<p data-bbox="407 536 653 583"><u>DIRACOS</u></p> <p data-bbox="330 598 726 689">available since v6r21 default from v7r0</p> <p data-bbox="160 756 904 847">will stay for all python2 installations but <u>not anymore developed/maintained</u></p>	<p data-bbox="1261 536 1537 583"><u>DIRACOS2</u></p> <p data-bbox="1122 598 1676 743">available since v7.2 for python3 only installations (client, and server)</p> <p data-bbox="1242 809 1557 847">based on <i>Conda</i></p>

BILD meetings:

“BiWeekly ‘Loyal’ DIRAC Developers meetings”

every 2nd week

Thursday at 10:00 AM CET

LHCb hosted

Clic, Belle2, EGI/FG, BES3/Juno, GridPP, IHEP
represented

→ *you want to be invited? Just let me know*

Where releases and issues
are discussed!

Certification hackathons:

every (other) 2nd week

Thursday at 10:00 AM CET

LHCb hosted

Clic, EGI/FG, GridPP represented

→ *you want to be participate? Just let me know*

lhcbdirac.slack.com + [Trello](#)

Development and testing

```

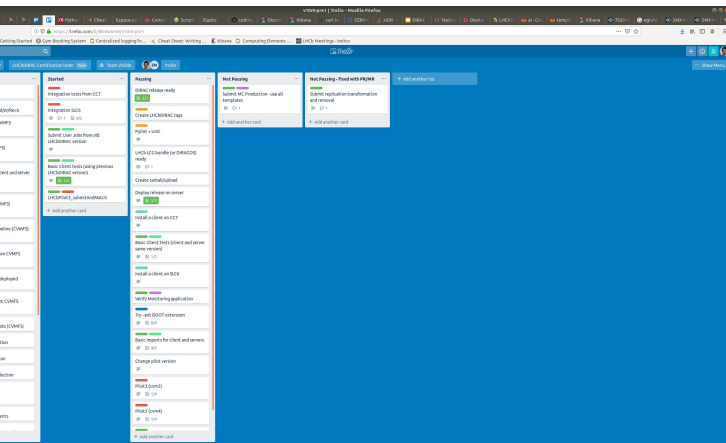
137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

```

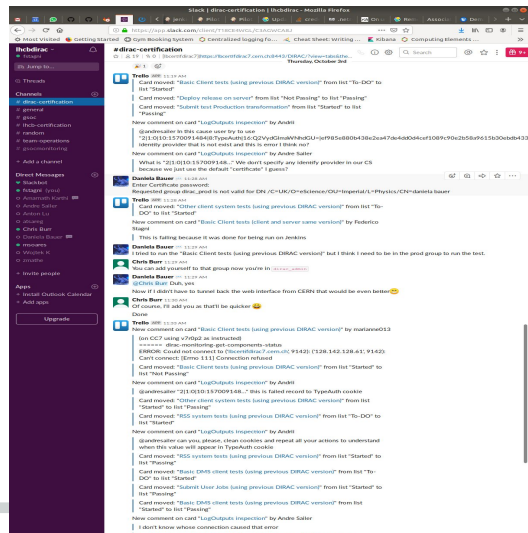
~6 FTE as core developers, a dozen contributing developers

Tests, certification, integration process is a daily work.

- We use (lots of) GitHub Actions, and Jenkins for some bits
- We run certification hackathons every 2nd week



The screenshot shows the Jenkins dashboard for the 'DIRAC' project. It features a 'Build' section with a table of jobs, including 'DIRAC-Client', 'DIRAC-Server', and 'DIRAC-Tools'. The 'Test' section shows a table of test results for various components. The 'Deploy' section shows the deployment of the DIRAC software to various environments.



The screenshot shows a GitHub pull request for the 'dirac-certification' repository. The pull request is titled 'dirac-certification' and is authored by 'yellu'. It contains a detailed discussion about the certification process, including comments from other contributors and a list of changes. The pull request is currently open and has several comments.

- dirac.readthedocs.io
 - including [code documentation](#)
- Ops and general questions: Google [forum](#) – but we prefer [github discussions](#)
- Dev and DevOps issues: on [github](#)
- Bi-weekly developers meetings (and/or hackathons): [BILD](#)

backup

→ official doc: <http://dirac.readthedocs.io/en/latest/index.html>

BTW: click on low, right side, search for “edit”, click, write/correct it...

→ GitHubWiki: <https://github.com/DIRACGrid/DIRAC/wiki>

e.g. for operational changes for new releases

→ ...or in the presentations of previous workshop(s)

→ on the google forum, for operations and assistance

→ github issues, for... filing issues

or solving them... ;-)

- 2009: monolithic framework
 - batteries (all dependencies) included, for client and for server
 - ship *python* and *MySQL* (also for server) and *runsv*
 - DSET framework, `dips://` protocol
 - in-house monitoring (based on RRD)
 - in general, large use of in-house libraries

pyGSI, gLogger, ThreadPool, ProcessPool, Script

- 2022: lighter project(s)
 - dips:// → https://
 - DISET → *tornado*
 - replace in-house developments with external libraries
 - m2crypto, logging, concurrent.futures, celery, etc.
 - separate the development from the deployment
 - e.g. *MySQL*, *ElasticSearch*, *runit* are not distributed
 - with *python3*, instead of “bringing the environment with the release”, we “deploy a release in an environment”.