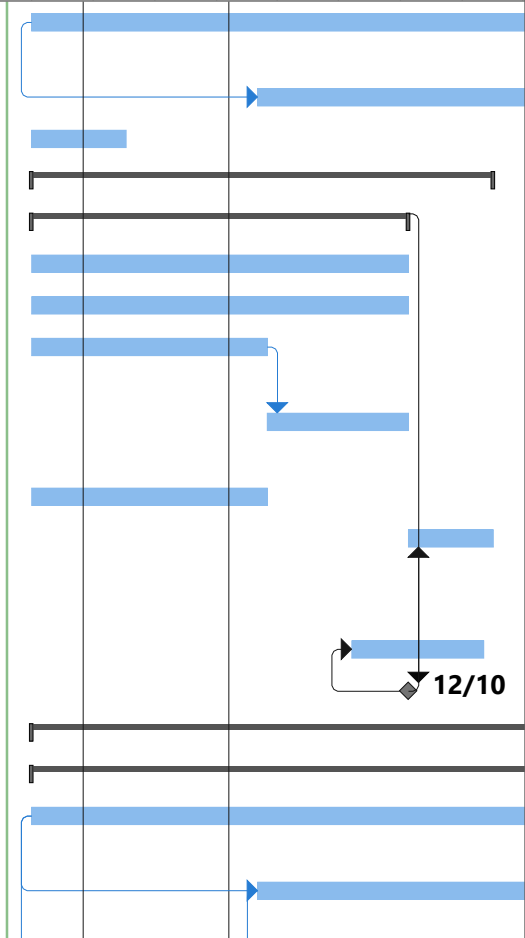


| ID | Task Name | Duration | Start | Finish | Predecessors | Resource Names | 2020 | | | | 2021 | | | | 2022 | |
|----|---|--------------------|---------------------|---------------------|---------------|-----------------|------|----|----|----|------|----|----|----|------|----|
| | | | | | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 1 | LhARA Stage 1 construction | 540 days | Tue 27/12/22 | Tue 21/01/25 | 52 | | | | | | | | | | | |
| 2 | LhARA Stage 2 construction | 1200 days | Tue 03/09/24 | Tue 10/04/25 | 15 | | | | | | | | | | | |
| 3 | Radiobiology | 2528.5 days | Thu 19/12/19 | Tue 28/08/25 | | | | | | | | | | | | |
| 4 | Radiobiology at partner facilities | 1320 days | Thu 19/12/19 | Wed 08/01/25 | | Rbio_PDRA_1[50% | | | | | | | | | | |
| 5 | Radiobiology at LhARA | 1200 days | Tue 21/01/25 | Tue 28/08/25 | 1 | Rbio_PDRA_1 | | | | | | | | | | |
| 6 | System/near clinical aspects | 2527.5 days | Fri 20/12/19 | Tue 28/08/25 | | | | | | | | | | | | |
| 7 | Pre-LhARA: in collaboration with RFI SnL theme and other partners | 1320 days | Fri 20/12/19 | Thu 09/01/25 | | | | | | | | | | | | |
| 8 | LhARA: in collaboration with RFI SnL theme and other partners | 1200 days | Tue 21/01/25 | Tue 28/08/29 | 1 | | | | | | | | | | | |
| 9 | LhARA 5yr R&D plan | 1202.4 days | Wed 01/04/20 | Fri 08/11/24 | | | | | | | | | | | | |
| 10 | Facility design | 1154.5 days | Wed 01/04/20 | Tue 03/09/24 | | Eng_1,Eng_2,FD_ | | | | | | | | | | |
| 11 | Development of conceptual design | 960 days | Wed 01/04/20 | Tue 05/12/23 | | | | | | | | | | | | |
| 12 | Development of technical design | 1100 days | Mon 01/06/20 | Fri 16/08/24 | 49 | | | | | | | | | | | |
| 13 | CDR (detailed for Stage 1) | 0 days | Mon 31/01/22 | Mon 31/01/22 | | | | | | | | | | | | 3 |
| 14 | TDR Stage 1 | 0 days | Tue 01/11/22 | Tue 01/11/22 | 13FS+180 days | | | | | | | | | | | |
| 15 | TDR Stage 2 | 0 days | Tue 03/09/24 | Tue 03/09/24 | | | | | | | | | | | | |
| 16 | Laser-driven source | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | LAS_PDRA_1 | | | | | | | | | | |

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| Milestone | | Duration-only | | Deadline | |
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|----|--|------------------|---------------------|---------------------|--------------|--------------------------|------|----|----|----|------|----|----|----|------|----|----|
| | | | | | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 |
| 17 | Proton-production target R&D | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | | | | | | | | | | | | |
| 18 | Ion-production R&D | 960 days | Wed 03/03/21 | Tue 05/11/24 | | | | | | | | | | | | | |
| 19 | Laser diagnostics | 100 days | Wed 01/04/20 | Tue 18/08/20 | | | | | | | | | | | | | |
| 20 | Stage 1 R&D | 490 days | Wed 01/04/20 | Tue 15/02/21 | | | | | | | | | | | | | |
| 21 | Gabor lens prototypes | 400 days | Wed 01/04/20 | Tue 12/10/21 | | GL material[1],GL | | | | | | | | | | | |
| 22 | 1st Gen | 400 days | Wed 01/04/20 | Tue 12/10/21 | | | | | | | | | | | | | |
| 23 | 2nd Gen | 400 days | Wed 01/04/20 | Tue 12/10/21 | | | | | | | | | | | | | |
| 24 | Electron density measurements | 250 days | Wed 01/04/20 | Tue 16/03/21 | | | | | | | | | | | | | |
| 25 | Alpha source and detector tests | 150 days | Wed 17/03/21 | Tue 12/10/21 | 24 | | | | | | | | | | | | |
| 26 | Laser-capture interface | 250 days | Wed 01/04/20 | Tue 16/03/21 | | | | | | | | | | | | | |
| 27 | Stage 1 beam line performance evaluation | 90 days | Wed 13/10/21 | Tue 15/02/22 | 29 | | | | | | | | | | | | |
| 28 | Vertical bend | 140 days | Wed 21/07/21 | Tue 01/02/22 | 29SS-60 days | | | | | | | | | | | | |
| 29 | Capture technology | 0 days | Tue 12/10/21 | Tue 12/10/21 | 21 | | | | | | | | | | | | |
| 30 | Stage 2 R&D | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | | | | | | | | | | | | |
| 31 | FFA | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | | | | | | | | | | | | |
| 32 | Design and simulation | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | | | | | | | | | | | | |
| 33 | Detailed magnet design | 960 days | Wed 03/03/21 | Tue 05/11/24 | | MAG_ENG_1[50% | | | | | | | | | | | |



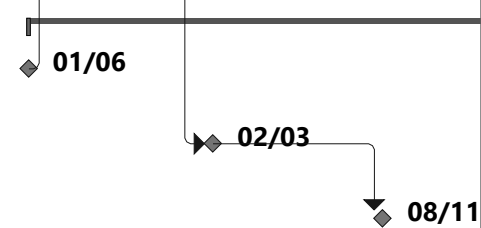
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|--------------------------------------|--------------------|--|-----------------------|--|--------------------|--|
| Project: LhARA Date: Mon 24/02/20 | Task | | Inactive Summary | | External Tasks | |
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|----|--|--------------------|---------------------|---------------------|---------------|-----------------------|------|----|----|----|------|----|----|----|------|----|
| | | | | | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| 34 | Magnet prototype | 480 days | Wed 02/02/20 | Tue 05/12/23 | | | | | | | | | | | | |
| 35 | RF cavity design and performance evaluation | 720 days | Wed 03/03/21 | Tue 05/12/23 | | RF_PDRA_1,RF_P | | | | | | | | | | |
| 36 | Injection and extraction design | 280 days | Wed 09/11/22 | Tue 05/12/23 | 34SS+200 days | S2_PDRA_1 | | | | | | | | | | |
| 37 | Stage 2 performance evaluation | 240 days | Wed 06/12/23 | Tue 05/11/24 | 36 | | | | | | | | | | | |
| 38 | Longitudinal phase space manipulation design, simulation and prototyping | 560 days | Wed 14/09/22 | Tue 05/11/24 | 32FF | S2_PDRA_2,S2_P | | | | | | | | | | |
| 39 | Final beam preparation for in vivo end station | 560 days | Wed 14/09/22 | Tue 05/11/24 | 32FF | S2_PDRA_3 | | | | | | | | | | |
| 40 | End stations | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | Rbio_PDRA_1[50 | | | | | | | | | | |
| 41 | Automation, sample handling, imaging | 1200 days | Wed 01/04/20 | Tue 05/11/24 | | | | | | | | | | | | |
| 42 | Instrumentation | 1202.4 days | Wed 01/04/20 | Fri 08/11/24 | | INST_PDRA_1 | | | | | | | | | | |
| 43 | Online dosimetry and dose profile | 400.8 days | Wed 01/04/20 | Wed 13/10/21 | | | | | | | | | | | | |
| 44 | Absolute dosimetry at ultra-high dose rates | 400 days | Wed 01/04/20 | Tue 12/10/21 | | | | | | | | | | | | |
| 45 | Low-energy beam diagnostics | 300.8 days | Wed 13/10/21 | Thu 08/12/22 | 43 | | | | | | | | | | | |

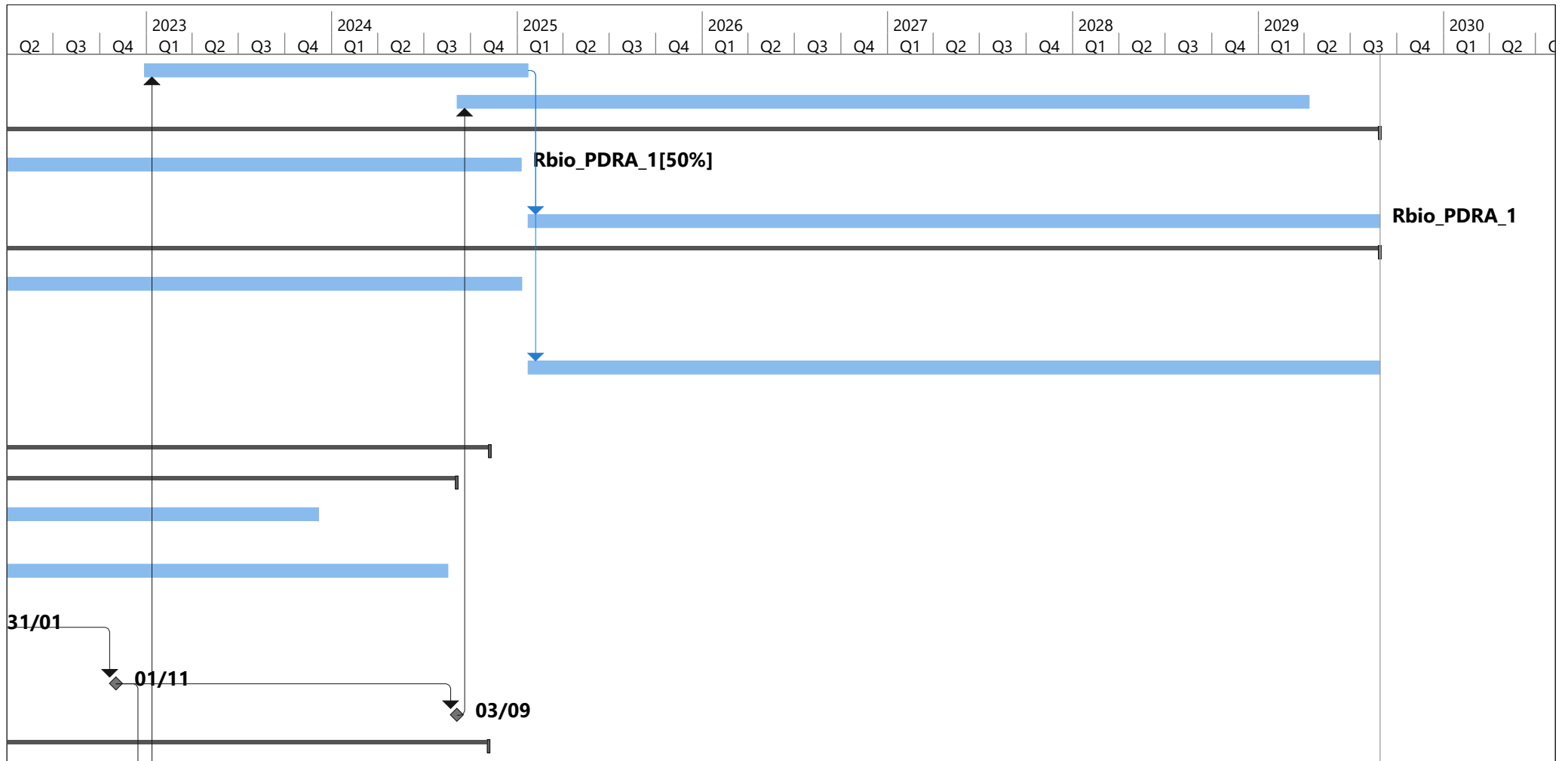
Project: LhARA
Date: Mon 24/02/20

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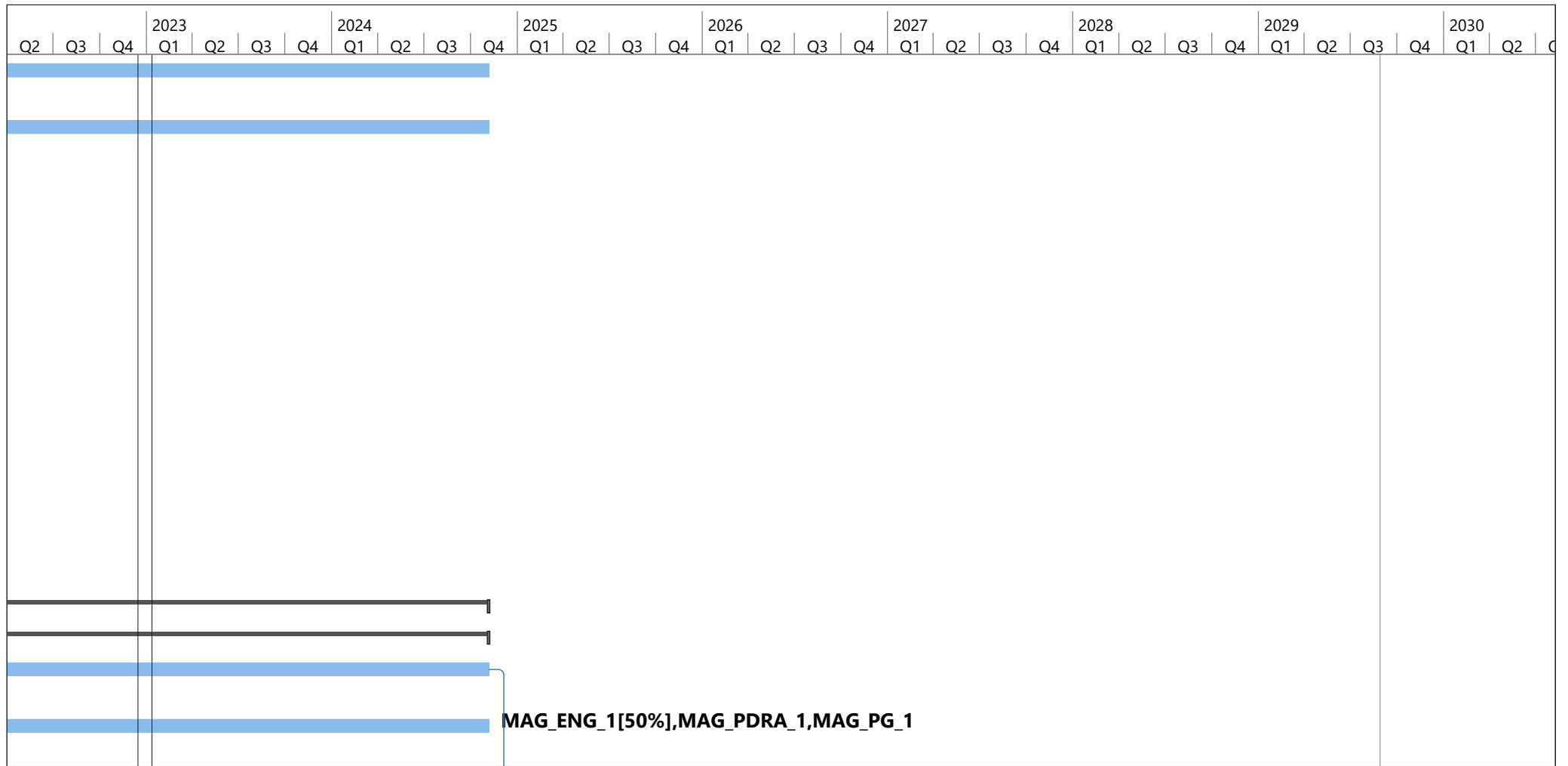
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|----|-------------------------------|-------------------|---------------------|---------------------|--------------|----------------|------|----|----|----|------|----|----|----|------|----|----|
| | | | | | | | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 |
| 46 | Fast feedback and control | 400.8 days | Thu 08/12/22 | Fri 21/06/24 | 45 | | | | | | | | | | | | |
| 47 | High-energy beam diagnostics | 100 days | Fri 21/06/24 | Fri 08/11/24 | 46 | | | | | | | | | | | | |
| 48 | Gateway process | 671.5 days | Mon 01/06/20 | Tue 27/12/22 | | | | | | | | | | | | | |
| 49 | GW0 -- Strategic assessment | 0 days | Mon 01/06/20 | Mon 01/06/20 | | | | | | | | | | | | | |
| 50 | GW1 -- Business justification | 0 days | Tue 02/03/21 | Tue 02/03/21 | | | | | | | | | | | | | |
| 51 | GW2 -- Delivery strategy | 0 days | Mon 08/11/22 | Mon 08/11/22 | 50FS+9 mons | | | | | | | | | | | | |
| 52 | GW3 -- Investment decision | 0 days | Tue 27/12/22 | Tue 27/12/22 | 14FS+2 mons | | | | | | | | | | | | |



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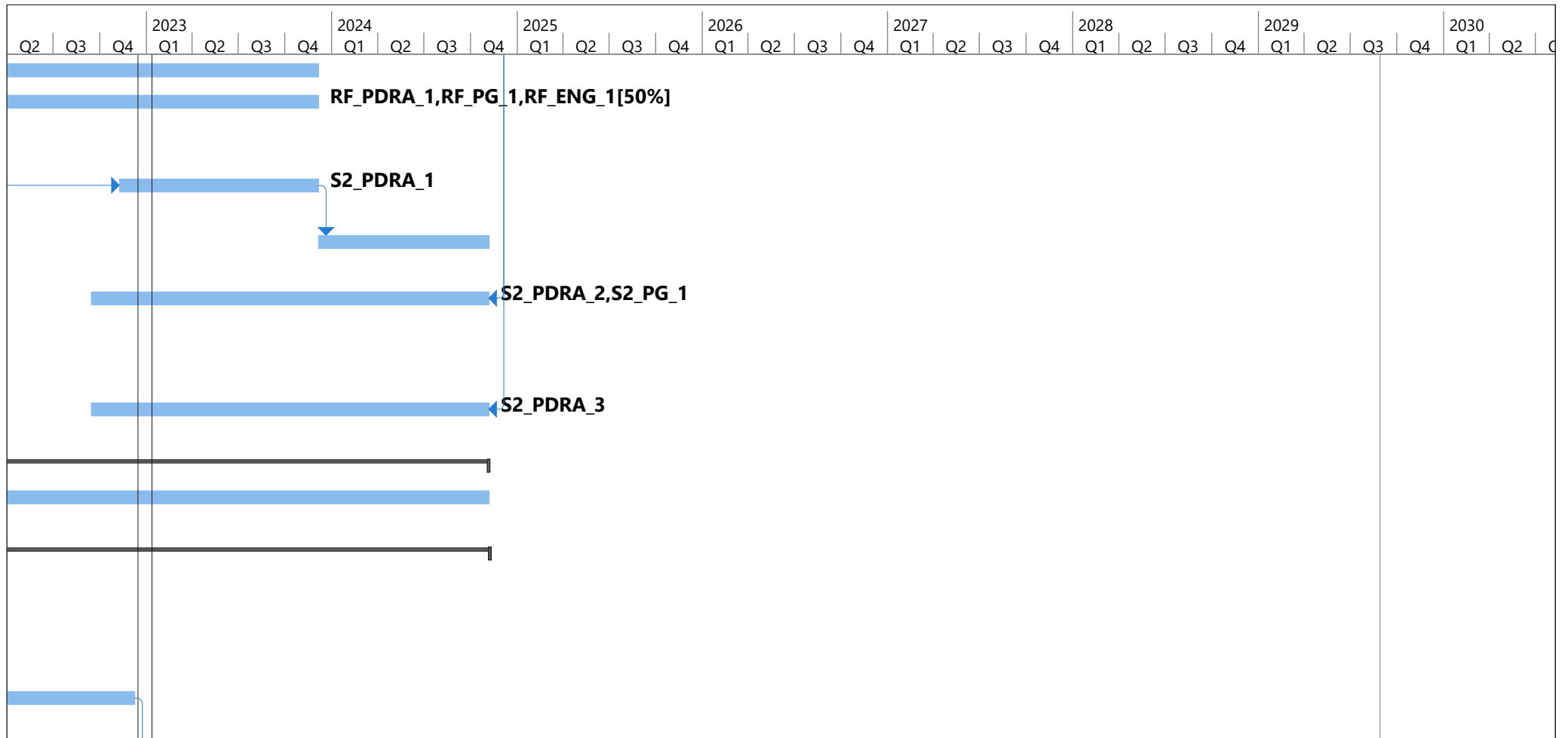


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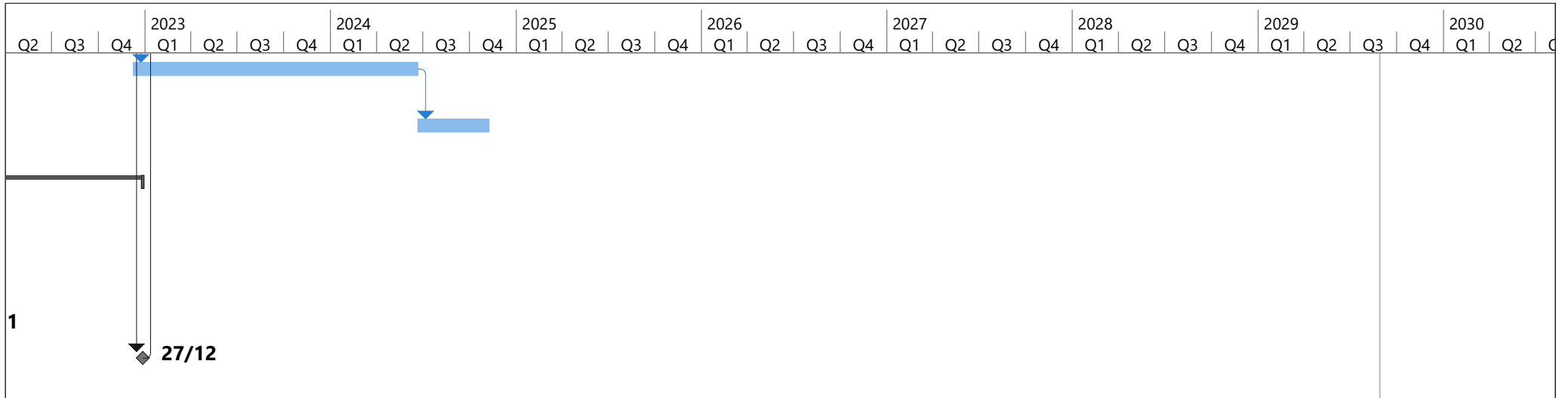
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