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APPLICATIONS



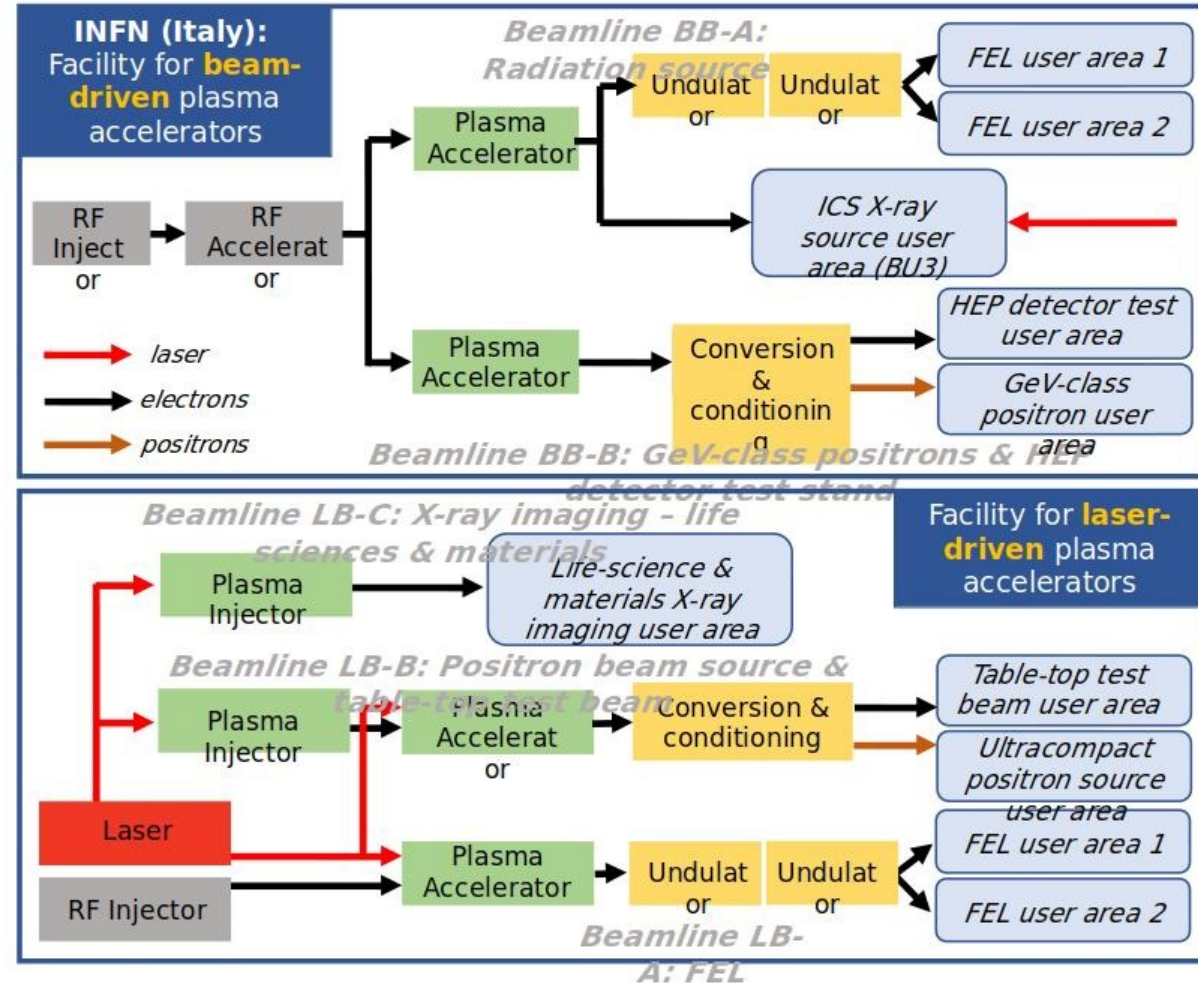
# Considerations on the EuPRAXIA beamline from the CDR

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	Laser-driven	Beam-driven
<b>Phase 1</b>	<ul style="list-style-type: none"> <li>✓ FEL beamline to 1 GeV + user area 1</li> <li>✓ Ultracompact positron source beamline + positron user area</li> </ul>	<ul style="list-style-type: none"> <li>✓ FEL beamline to 1 GeV + user area 1</li> <li>✓ GeV-class positrons beamline + positron user area</li> </ul>
<b>Phase 2</b>	<ul style="list-style-type: none"> <li>✓ X-ray imaging beamline + user area</li> <li>✓ Table-top test beams user area</li> <li>✓ FEL user area 2</li> <li>✓ FEL to 5 GeV</li> </ul>	<ul style="list-style-type: none"> <li>✓ ICS source beamline + user area</li> <li>✓ HEP detector tests user area</li> <li>✓ FEL user area 2</li> <li>✓ FEL to 5 GeV</li> </ul>
<b>Phase 3</b>	<ul style="list-style-type: none"> <li>✓ High-field physics beamline / user area</li> <li>✓ Other future developments</li> </ul>	<ul style="list-style-type: none"> <li>✓ Medical imaging beamline / user area</li> <li>✓ Other future developments</li> </ul>





# CDR has several design choices to choose from

Single stage 1 GeV seems to be within reach with present-day laser technology, good starting point

## Pros and cons

- High beam quality can be obtained from an optimized LPA stage (LUX DESY)
- Sufficient energy gains have been shown in a single-stage setup
- Significant R&D still needed to demonstrate efficient staging, external injection
- **Ultimately, it is the decision of the 2nd site lab to choose the overall design**

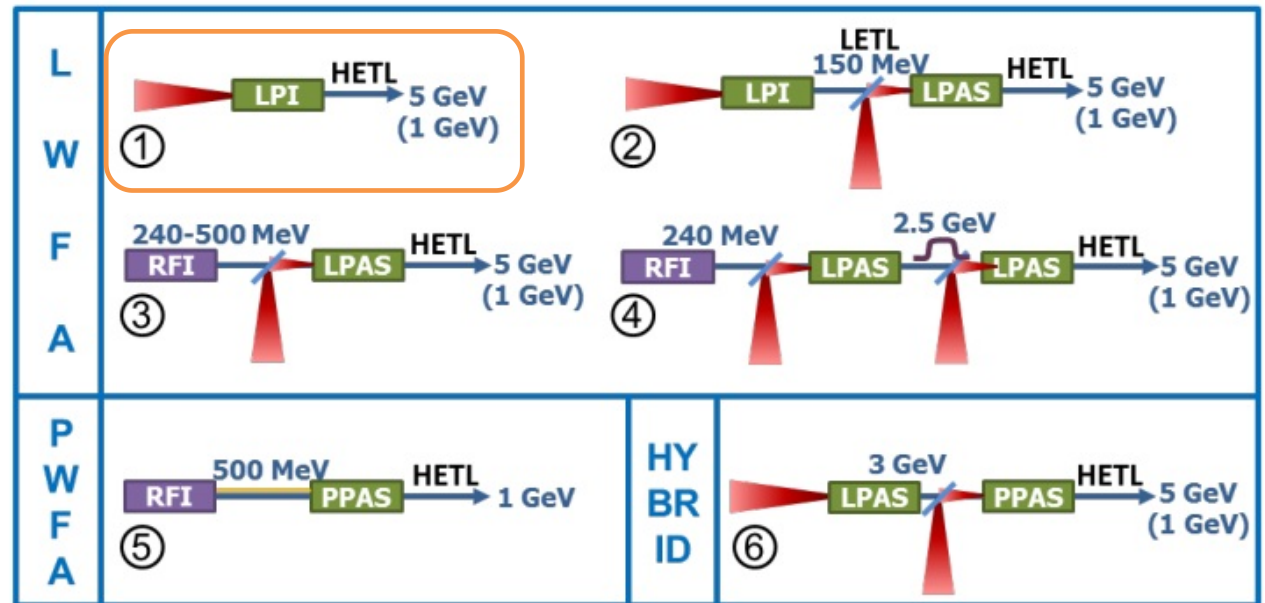


Figure 8.3: Beam distribution and acceleration configurations under consideration for the various EuPRAXIA beamlines. The following abbreviations are used besides those listed in the main text: LETL = low-energy transport line, HETL = high-energy transport line. A detailed description and assessment of the performance of each of these schemes as a whole is presented in Chapter 23.