

Core skills and responsibilities of an RSE

— as viewed from within the RSE community —

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A bit about me...

- Diploma in physics, minor subjects numerical mathematics, computer science
- PhD in theoretical physics: numerical simulations with Quantum Monte Carlo methods
- Infrastructure project in CRC: Sustainable Code development for massively parallel HPC systems
- $\approx$ 2016 got in contact with deRSE community.

The start

- workshop in Paderborn at deRSE23(co-located with SE23)
- We asked questions on:
 - who needs it?
 - essential topics?
 - categories of RSEs?
 - how do we reach users?

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Foundational Competencies and Responsibilities of a Research Software Engineer

Florian Goth ¹, Renato Alves ², Matthias Braun ³, Leyla Jael Castro ⁴, Gerasimos Chourdakis ⁵, Simon Christ ⁶, Jeremy Cohen ⁷, Fredo Erxleben ⁸, Jean-Noël Grad ⁹, Magnus Hagdorn ¹⁰, Toby Hodges ¹¹, Guido Juckeland ⁸, Dominic Kempf ¹², Anna-Lena Lamprecht ¹³, Jan Linxweiler ¹⁴, Moritz Schwarzmeier ¹⁵, Heidi Seibold ¹⁶, Jan Philipp Thiele ¹⁷, Harald von Waldow ¹⁸, and Samantha Wittke ¹⁹

Research Skills

- Skills that enable you to work in a research context *and* participate in it.
- Curiosity, (Software) Publication, interacting with domain infrastructure, research cycle, ...

Software Skills

- Skills that enable you to create good code for your community.
- Software lifecycle, Software behaviour and analysis(Program comprehension), creating software, ...

Communication Skills

- Skills that facilitate effective interaction with people/teams.
- teaching, project management, end user interaction, ...

dimensions

- career level
- RSE specialization(how much RSE should be taught in standard domain courses)
- project team structures/organisations

specializations

- \${DOMAIN} - RSE
- Open Science RSEs
- project/community manager RSEs
- Legal-RSEs
- ...

Interested in the deRSE community?

deRSE24 in Würzburg 05.03.24 - 07.03.24

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Thank You for your Attention!

$$Z = \sum_{C \in \mathcal{C}} P(C) + \mathcal{O}(\Delta\tau^p) \text{ with} \quad (1)$$

$$P(C) = \left[\prod_{i,\tau,k} w(l_{i,\tau,k}) \right] \det \left(1 + \prod_{\tau=1}^{L_\tau} B_\tau^{X_s} \right) \text{ and} \quad (2)$$

$$B_\tau^{X_s} = \prod_{k=1}^{s+1} e^{-\Delta\tau t_k T} \prod_{i=1}^{L_N} e^{\sqrt{\Delta\tau v_k} U x(l_{i,\tau,k}) V_i}. \quad (3)$$

$$\Delta\tau = \beta/L_\tau, H = T + V, V = U \sum_i^{L_N} V_i^2$$

