

Module Guide

Master of Digital Health (MDH)

Team Framework for MDH-11-13

Faculty European Campus Rottal-Inn

Date: Sonntag 14.03.2021 17:17

MDH-11 TEAM Framework Overview

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| **Code** | **Title** | **Roles** |
| MDH-11 | Digital Health Management  (DHM) | Digital Health System, Regulatory, Reimbursement |
| MDH-13 | Digital Health Entrepreneurship (DHE) | Product Management, UI/UX Business Design |
| MDH-12 | Digital Health Data Analytics + AI (DHI) | Data Science, Data Engineering |
| MDH-14 | Digital Health Programming  (DHP) | Software Engineering, Software Architecture |

Roles in Cross-functional Teams  
Dependent on the exact project teams will be built out of 3-5 persons fulfilling all or some of these roles.

Market Development

Product Development

The development of an innovative digital product in healthcare needs agile cross-functional teams. These teams develop a viable business model based on a thoroughly identified medical need. In order to tightly connect both business and technological aspects in the design of these products, an integrated setup is necessary. Therefore six distinct roles are usually present in start-up and innovation teams: Product Management, Business Development, Medical Lead, UI/UX, Data Engineering/AI, Software Engineering.

These roles are group in technical and market-oriented roles. The market team jointly defines and validates a strategy and business model based on user and customer research. The technology teams build a usable and technically advanced product based on this research. However, they also bring back technical possibilities and constraints into strategy definition.

|  |  |
| --- | --- |
| Product Development Team | Market Development Team |
| UX - UI/UX Specialist  (MDH 13+14)   * Develops a usable interface based on the product strategy and software architecture. * Tests the usability based on jointly defined priorities with PM * Develops integrated solutions together with SE and AI   SE – Software Engineer  (MDH 11+14)   * Creates a clean and extensible code base and architecture. * Defines Frameworks and Tools to use and aligns with UX and AI. * Implements functional and security testing.   AI - Data Scientist  (MDH 12+14)   * Develops data-driven insights and machine learning models for SE and UX. * Works in close collaboration with MED in the quest for evidence. * Manages the evolution of data pipelines and machine learning models. | PM - Product Manager  (MDH 12+13)   * Defines Product Strategy based on insights of user needs and basic AI knowledge. * Identifies key user groups and gains insights through observation or interview * Brings back the findings to the team of developers and aligns the team around a product roadmap   MED - Medical Lead/Data Scientist, Regulatory (MDH 11+12)   * Assures evidence and medical need is correct and consistent with product strategy. * Develops a basic regulatory strategy and assesses effort and risk * Develops clinical pathway together with PM and BD   BD - Biz Dev, Reimbursement (MDH 11+13)   * Generates a viable business model based on the product and in joint discussion with Medical Lead. * Identifies key customer groups and details their buying decision * Connects closely to PM and MED to reassure business objectives are being reached |

Framework Objective

* Provide a clear team matching an coaching framework across the four modules (see 2 weekly scrum and agenda)
* Offer an opportunity for the whole cohort to work a real innovation project and implement a prototype for a digital health product (2.5days per week)
* Offer intensive coaching on different roles in a cross-functional team
* Found 1 company per year

Schedule

*Before:*

* Team building and vision development workshop (offsite?)
* Teams self-select around a joint vision
* Teams find partners and application contexts for exploration and development

*During:*

* 2 week scrum iterations with Sprint planning, Daily Stand-ups, and Retro sessions
* Needs-driven input sessions through Experts and Professors
* Guest lectures from star-ups and experienced product developers

*After:*

* Final Pitch Session with Partners and Investors
* Handing in of documentation (Business Plan, Code, Interview Transcripts and Artefacts)
* Intensive follow-on to further high-potential projects

Teaching Methods

Combination of lectures, seminars, project work, supervised problem based learning and student presentations.

Remarks

Recommended Literature

Project/Product Management:

* Cagan, Marty. *Inspired : How to Create Tech Products Customers Love*, John Wiley & Sons, Incorporated, 2017.*ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5152848.
* Banfield, Richard, et al. *Product Leadership : How Top Product Managers Launch Awesome Products and Build Successful Teams*, O'Reilly Media, Incorporated, 2017.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4858079>.
* Moussa, Mario, et al. *Committed Teams : Three Steps to Inspiring Passion and Performance*, John Wiley & Sons, Incorporated, 2016.*ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4413730.
* Edge, J. (2018). *Agile: An Essential Guide to Agile Project Management, The Kanban Process and Lean Thinking + A Comprehensive Guide to Scrum*. Luxemburg: CreateSpace Independent Publishing Platform
* Kunow, A. (2019). *Project Management & Business Coaching: Agile project management - target-oriented and efficient with active body language & comprehensive communication*. Buchum, Germany: KISP Bücher.
* Sutherland, J. (2015). *Scrum: the art of doing twice the work in half the time*. London: Random House Business Books.
* Wysocki, R. (2014). *Effective project management: traditional, agile, extreme*. Indianapolis, IN: Wiley

Design Thinking/Entrepreneurship:

* Lewrick, Michael, et al. *Das Design Thinking Playbook : Mit traditionellen, aktuellen und zukünftigen Erfolgsfaktoren*, Versus, 2017.*ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4852944.
* Bland, David, and Alexander Osterwalder. *Testing Business Ideas*, John Wiley & Sons, Incorporated, 2019.*ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5974984.
* Osterwalder, Alexander, et al. *Value Proposition Design : How to Create Products and Services Customers Want*, John Wiley & Sons, Incorporated, 2014.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=1887760>.
* Aulet, Bill. *Disciplined Entrepreneurship Workbook*, John Wiley & Sons, Incorporated, 2017.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4826750>.

Regulatory:

* Johner, Christian, et al. *Basiswissen Medizinische Software : Aus- und Weiterbildung zum Certified Professional for Medical Software*, dpunkt.verlag, 2020.*ProQuest Ebook Central*, https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6379308.

Product Management:

* Olsen, D. (2015). The Lean Product Playbook. Wiley.
* Liedtka, J., Ogilvie, T., & Brozenske, R. (2014). Front Matter. In *The Designing for Growth Field Book: A Step-by-Step Project Guide* (pp. I-Viii). New York; Chichester, West Sussex: Columbia University Press. doi:10.7312/lied16467.1
* Fitzpatrick, R (2013). The Mom Test. <http://momtestbook.com/>
* Gothelf, J. & Seiden, J. (2016). Lean UX. O’Reilly. <https://learning.oreilly.com/library/view/lean-ux-2nd/9781491953594/>

UI/UX:

* Tidwell, Jenifer, et al. *Designing Interfaces : Patterns for Effective Interaction Design*, O'Reilly Media, Incorporated, 2020.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5996435>.
* Maeda, J. (2004), Simplicity, *BT Technology Journal* 22, pp. 285–286. <https://doi.org/10.1023/B:BTTJ.0000047606.06343.2d>
* Krishna, G. (2015), The Best Interface is no Interface, New Riders Publishing.
* MacDonald, Matthew. *HTML5: the Missing Manual : The Missing Manual*, O'Reilly Media, Incorporated, 2013.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=1581451>.

Software Engineering:

* Gerrard, Paul. *Lean Python : Learn Just Enough Python to Build Useful Tools*, Apress L. P., 2016.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=4741464>.
* Percival, Harry, and Bob Gregory. *Architecture Patterns with Python : Enabling Test-Driven Development, Domain-Driven Design, and Event-Driven Microservices*, O'Reilly Media, Incorporated, 2020.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6128678>.
* Beyer, Betsy, et al. *The Site Reliability Workbook : Practical Ways to Implement SRE*, O'Reilly Media, Incorporated, 2018.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5475462>.
* Richards, Mark, and Neal Ford. *Fundamentals of Software Architecture : An Engineering Approach*, O'Reilly Media, Incorporated, 2020.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6029037>.
* Hoffman, Andrew. *Web Application Security : Exploitation and Countermeasures for Modern Web Applications*, O'Reilly Media, Incorporated, 2020.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6126606>.

Data Science:

* Rowell, Katherine, et al. *Visualizing Health and Healthcare Data : Creating Clear and Compelling Visualizations to See How You're Doing*, John Wiley & Sons, Incorporated, 2020.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=6370634>.

Designing Data Intensive Applications:

* Koul, Anirudh, et al. *Practical Deep Learning for Cloud, Mobile, and Edge : Real-World AI and Computer-Vision Projects Using Python, Keras and TensorFlow*, O'Reilly Media, Incorporated, 2019.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5945145>.
* Swamynathan, Manohar. *Mastering Machine Learning with Python in Six Steps : A Practical Implementation Guide to Predictive Data Analytics Using Python*, Apress L. P., 2019.*ProQuest Ebook Central*, <https://ebookcentral.proquest.com/lib/th-deggendorf/detail.action?docID=5915715>.