

# Providing relevant information for relevant communities – The Systems Medicine Web Hub

**CASyM report**

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# IMPRINT

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m.kirschner@fz-juelich.de

## **Authors**

Virginia Bolowski, Sherry Freiesleben and Olaf Wolkenhauer  
SBI – University of Rostock, Germany

## **Date**

April 2017

## **Contact information**

Olaf Wolkenhauer  
SBI – University of Rostock, Germany  
[olaf.wolkenhauer@uni-rostock.de](mailto:olaf.wolkenhauer@uni-rostock.de)

## **References**

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# THE SYSTEMS MEDICINE WEB HUB

## Creating a community without creating a discipline – What should the future of Systems Medicine be?

Human health is a complex system and the data we have available to assess it are heterogeneous, requiring a broad range of expertise for its interpretation. Systems Medicine is an interdisciplinary approach that integrates technologies, data, models and expertise, for contributions to improved diagnosis, prognosis and therapy. So, is Systems Medicine an interdisciplinary approach, or should it develop into a discipline, with its own conferences, journals etc.? If we accept the fact that health and disease are complex systems, we should also accept that any solution to its problems should require experts from different fields. Most important, it seems, is therefore an effort to bring experts from different disciplines together. For being experts in their field, these people will naturally “live” in different communities. The goal of the web hub is to support a community, without defining a discipline attracting experts from a wide range of disciplines to health research. The Systems Medicine Web Hub ([www.systemsmedicine.net](http://www.systemsmedicine.net)) was established to foster and support the formation of a Systems Medicine community, improving integration, supporting scientists with the search for and dissemination of information.

## A recognized source of information for Systems Medicine

The newly established Systems Medicine Web Hub ([www.systemsmedicine.net](http://www.systemsmedicine.net)) disseminates the CASyM roadmap and the Systems Medicine concept including outreach activities in Europe. The Systems Medicine Web Hub is a web based platform for information related to Systems Medicine, integrating a range of social media channels to support scientists, projects and initiatives with the communication of their efforts. It helps forming a community, thereby preventing fragmentation and duplication of efforts. By integrating information, the web hub will contribute to the development of integrative approaches that can address the challenges of biological complexity, taking us towards predictive, preventative, personalised and participatory medicine.

Most relevant projects in the field have their own web-page, but none of these pages is a recognised source for information related to Systems Medicine. Our concept is thus to channel information through a hub by focusing on “dynamic” web-page elements, that is, news items, information about events, announcements, etc. The web hub concentrates information, overcomes disciplinary boundaries and increases the traffic to participating sites, thus the recognition of relevant projects. The web hub helps funded projects to increase their visibility, supporting them with the dissemination of their work. It provides individual researchers with a central place to efficiently search for information and resources related to Systems Medicine, increasing opportunities for involvement.

The design of the webpage is related to the idea to have different categories and sub categories (events, projects, positions, resources and publications) and characteristic web tools (e.g. search tool, social media buttons). In addition, the homepage should show the most recent and popular entries as well as featured articles.

Besides the editor of the editorial office at the University of Rostock (Olaf Wolkenhauer (OW), beneficiary SBI), who is responsible for the whole content and technical background of the web hub, the members of an editorial advisory board<sup>1</sup> (CASyM members) evaluate the published articles to implement a quality assurance for information as an output of the web hub.

To ensure the most efficient visibility and reach of the news item social media accounts were created for the web hub on [Twitter](#), [Facebook](#), [Google+](#) and [LinkedIn](#) where articles of the web hub can be published in parallel.

The editor uses the information about the users of the web hub and its media channels for statistical analysis with analytic tools whereby the editor can find information about new followers, reach and visibility of posts. The feedback of the community, the statistics and the user analysis makes it necessary to create regularly quality alignments for a more efficient visibility and reach of the Systems Medicine Web Hub.

## Development

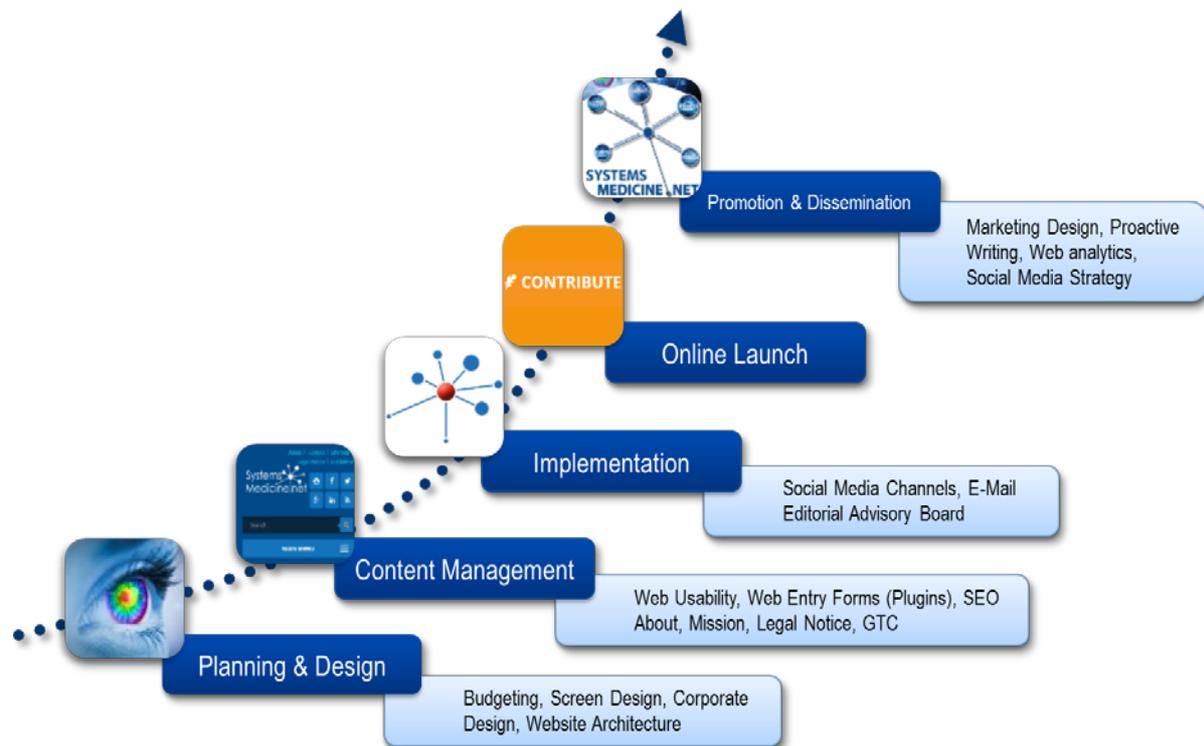
The project started in August 2014. The first step was to create a time and work schedule for the next three years by defining tasks and milestones for the initiation, implementation and maintenance of a Systems Medicine Web Hub. To overview the state-of-the-art of Systems Medicine in Europe it was necessary to collect information about existing projects, initiatives, literature and funding opportunities. In the first six months it was the task of the editor of the editorial office, located at the University of Rostock (beneficiary SBI) to get in contact with the web designer (located at Project Management Jülich) to communicate and coordinate additional needs e.g. for interactive web tools or other requirements which support the web usability. A key element of the design was to ensure that the website does not “belong” to anyone in particular. There are numerous interest groups and individuals who try to influence decision makers. The web hub should not serve a particular group of individuals and their views. The design of the page is thus deliberately neutral. Furthermore, the editorial workflow, described below, is designed to be as neutral in views and positions, as possible. A first draft of the layout of the website was designed by SBI (OW). The idea was to have different categories and sub categories (events, projects, positions, resources and publications) and characteristic web tools (e.g. search tool, social media buttons). In addition, the homepage should show the most recent and popular entries as well as featured articles.

To identify the technical and content-related requirements for user entries in the categories, examples of articles were created by the editor. These examples were also used as placeholders for the first web implementation. The focus for the design has been on dynamic elements. There are numerous project webpages in Europe but they contain mostly static information. Our goal was to focus on dynamic elements, helping projects to communicate their meetings, positions, events and additional information, whenever applicable.

To gather all the relevant information for these categories it was necessary to define a draft of a web entry form for the contributors. The entry is then used to create an article (see workflow below). Beside the entry of new articles (new projects, interviews, etc.) there are featured articles, for which the editor is responsible. “Featured Articles” highlight projects and introduce key figures in Systems

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<sup>1</sup> The composition of the editorial board of the web hub can be found in the section „Acknowledgements“



**Figure 1: Development and implementation of the Systems Medicine Web Hub.** The project started in August 2014 with the planning and design phase, whereas the actual website was launched in March 2015.

Medicine. The content for these articles is generated through two types of interviews, answering a given set of questions.

There are two types of interviews, one focusing only on questions related to a project and a second interview with additional personal questions. For each interview we request a scientific image, a photo of the project leader and the logo of the project. The technical implementation of the online form is also done with the plug-in mentioned above.

After few months of running the web hub online, the editorial office introduced a new concept of an interview: the “10 Questions Science” (10QS). The people and project interviews have been very popular and therefore interviews about publication highlights were added. In these short interviews, focusing on concise, easy to understand answers, notable publications are presented. The idea is developed on the basis of Nautilus’ “Three Sentence Science” and is based on guidelines for authors of Nature papers. The 10QS helps with heterogeneity in interdisciplinary research, encouraging and informing experts in different fields with topics of interest, which would otherwise not easy to find.

A permanent interaction between the editorial office and the web designer was needed. After the layout of the website was implemented the multimedia design with logos and headers for the web hub and its social media channels were needed. The last step of the implementation phase was to create social media accounts for the web hub on [Twitter](#), [Facebook](#), [Google+](#) and [LinkedIn](#) where articles of the web hub can be published in parallel to ensure the most efficient visibility and reach of the news item. For the implementation of a quality assurance, an editorial advisory board was founded. The members of the board are key figures in Systems Medicine in Europe and their main task is to pre-check the published articles concerning conflicts or misuse. The editorial board receives on a regular basis an E-mail with links to preview the content of the hub. If no objections occur within 24 hours, the content is put online.

After the online launch in March 2015, the main task of the editor in the first year was to get in contact with potential contributors. This means a proactive writing to potential partners to inform them about the use and benefit of the web hub and finally to get information about descriptions, positions, events etc. of their projects. After the initial stage these tasks are recurrent over the next months. Important is the promotion and dissemination of the Systems Medicine Web Hub. Therefore the design and production of flyers, posters, roll-up poster, PowerPoint Slides for presentation of the web hub at conferences, meetings & initiatives were needed. This task needed more attention in the first year to strengthen the recognition of the hub but is also necessary in the future.

While the web hub was running, it turned out that there must be additional technical alignments to fulfil the requirements of a user and editor friendly web usability of the hub. To improve the workflow described below plug-ins for WordPress were installed and used by the editor. The regular updates of WordPress and its plug-ins is controlled by the web designer and the editor to ensure a consistent running of the web hub.

## Statistics

Statistic of success since the online launch of the web hub in March 2015:

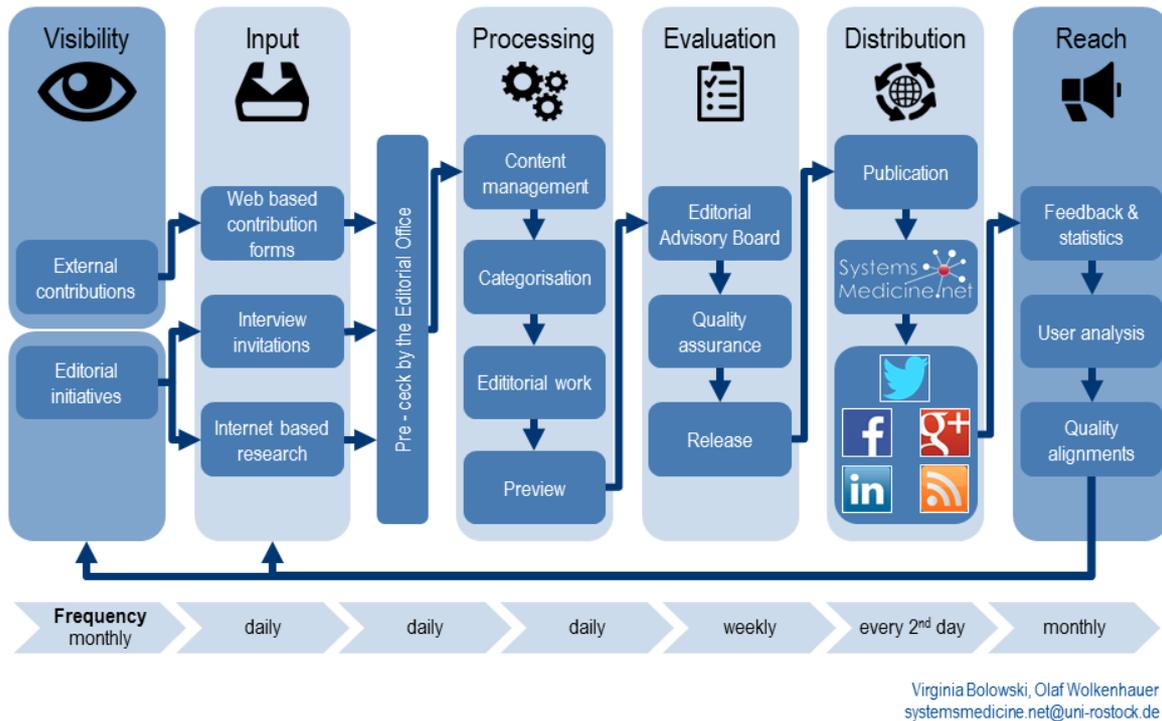
- > 183+ published articles on [www.systemsmedicine.net](http://www.systemsmedicine.net)
- > 7463+ site visits
- > Facebook: 102+ followers, 99 shares/likes, 4308 reach
- > Google: 31.000+ hits
- > LinkedIn: 53 followers, 9548 reach
- > Twitter: 204 followers, 250 retweeted tweets, 162 favourite tweets, 4755 profile views

## Workflow

The workflow below lists the daily, weekly and monthly tasks during the operation of the hub. The editorial office has developed and revised the workflow to its current form. All tasks for the remaining CASyM funding period are listed above. Within eight months an efficient workflow for the Systems Medicine Web Hub was implemented by the editorial office (SBI). There is only one person (the editor) needed to improve the visibility and reach of the web hub and its news items.

The visibility of the web hub depends on external and internal initiatives. Whereas the external initiatives are defined by the direct contributions of the user through a web based contribution form, the internal efforts are more related to the web hub's promotion. In addition, journalistic expertise of the editor is needed to write press releases and newspaper articles. The internal activities also include the presentation of the web hub at stakeholder and funder meetings as well as scientific conferences and events. Another element is the editorial knowledge about how to write a post to maximise the reach of it and therefore the visibility of the hub. The incoming information being pre-checked by the editorial office for relevance, ethical issues etc. If news are very important and urgent the head of the editorial office has the right to publish information directly e.g. via twitter without the permission of the editor or editorial advisory board.

Once a week, after the collection of up to five draft posts the editor send an email to the members of the editorial advisory board. The email informs that the following news items are being considered for publication through the Systems Medicine Web Hub.



**Figure 2: The Systems Medicine Web Hub implementation and work flow.**

The members of the board have the possibility to review the posts with the preview links and should let the editor know if they have any concerns about these news items. The evaluation of the articles by the editorial advisory board is necessary to implement a quality assurance for information as an output of the web hub.

After the release of the articles by the board the next step is to distribute the information as efficient as possible. Depending on the amount of income contributions, daily or every second day an article is published at the web hub [www.systemsmedicine.net](http://www.systemsmedicine.net). The editor has access to the various media channels of the web hub and publishes at the same time a post with headline, hash tags, a picture and the link to the web hub article at [Twitter](https://twitter.com), [Facebook](https://www.facebook.com), [Google+](https://plus.google.com) and [LinkedIn](https://www.linkedin.com). In addition, a RSS feed is installed where every new entry of the web hub is visible.

The last step of the workflow is to analyse and use the information about the users of the web hub and its media channels. The data are collected anonymously for use in marketing and optimization. The social media channels have its own user analytic tools whereby the editor can find information about new followers, reach and visibility of posts. The feedback of the community, the statistics and the user analysis makes it necessary to create regularly quality alignments for a more efficient visibility and reach of the Systems Medicine Web Hub.

To offer a professional and efficient service that is dynamic and very responsive, responding to news within hours and processing information within short times (see workflow above), the Web Hub requires the editorial office. The service offered by the current office is very cost effective, compared to the many project websites that have been created and which in most cases turn into static and outdated sites. The goal should thus to establish the Web Hub as a long term project, helping researchers, projects and initiatives, saving them time and money.

We have already optimised the workflow and services so that these could be offered to other initiatives - not just under the "hood" of CASyM or systemsmedicine.net but by offering other

initiatives to create such a service with their own branding, website etc. The effort to create such a service for new projects should not be underestimated and we are happy to offer our experience and service for similar projects. Large parts of the workflow, the technical infrastructure, the design of the structure of the webpage, can be used by other projects, which receive than an adaption of graphics and logo. We hope that others will realise the opportunity to save time and money by adopting our experience, creating a tailor-made "clone" for their purposes.

# ACKNOWLEDGEMENTS

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## Steering Committee

The following officials, as part of the Scientific Steering Committee, are involved in the scientific coordination of CASyM:

*Charles Auffray* - European Institute for Systems Biology & Medicine - EISBM, France  
*Mikael Benson* (Deputy Chair) - Linköping University Hospital, Sweden  
*Rob Diemel* - The Netherlands Organisation for Health Research and Development, The Netherlands  
*David Harrison* (Chair) - University of St. Andrews, United Kingdom  
*Walter Kolch* - University College Dublin, Ireland  
*Johannes Mohr* - Federal Ministry of Education and Research, Germany  
*Francis Lévi* - Institut National de la Santé et de la Recherche Médicale, France  
*Damjana Rozman* (Deputy Chair) - University of Ljubljana, Faculty of Medicine, Slovenia  
*Johannes Schuchhardt* - MicroDiscovery GmbH, Germany  
*Olaf Wolkenhauer* - Dept. of Systems Biology & Bioinformatics University of Rostock, Germany

## Administrative Office (Coordination)

*Marc Kirschner* - Project Management Jülich, Forschungszentrum Jülich GmbH, Germany

## Editorial Advisory Board of the Systems Medicine Web Hub

*Helen Byrne* - University of Oxford, UK  
*Walter Kolch* - SBI, Ireland  
*Mikael Benson* - Linköping University, Sweden  
*Marc Kirschner* - Forschungszentrum Jülich GmbH, Germany  
*Olaf Wolkenhauer* - University of Rostock, Germany  
*Andreas Schuppert* - Bayer Technology Services GmbH, Germany  
*Charles Auffray* - EISBM, France  
*Francis Lévi* - University of Warwick, United Kingdom  
*Silvio Parodi* - University Hospital of Genoa, Italy  
*Avi Israeli* - Ministry of Health, Israel

