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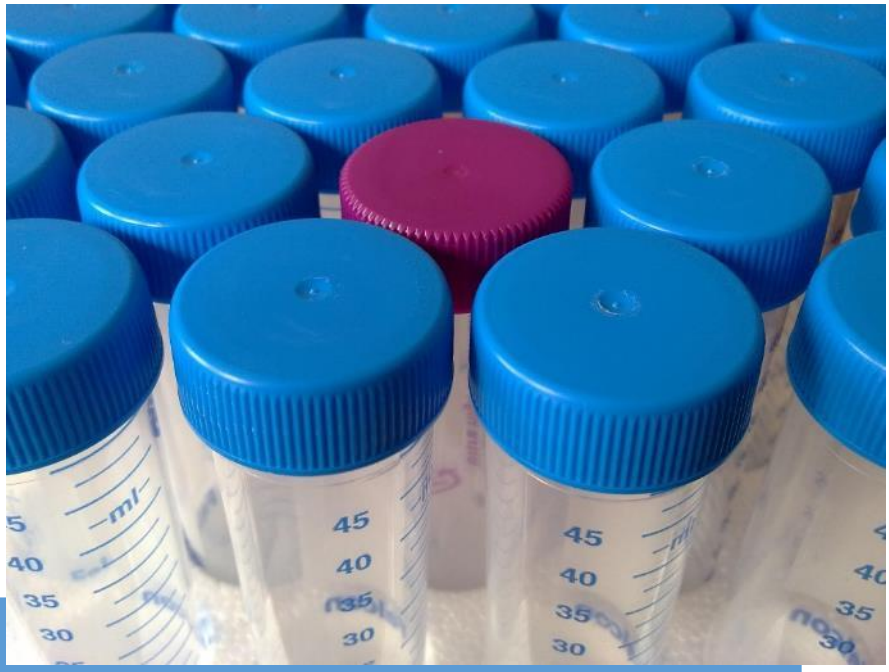


Collaboration Technology

PRISME Forum – Fall 2014

PRISME Forum

Pharmaceutical R&D Information Systems Management Executives

Introduction

Pharma R&D is increasingly cross-company connected and reliant on collaboration as the industry evolves. Loss of exclusivity and increased pressure to deliver medicines more quickly and more cost-effectively to serve unmet medical need are all challenges that require innovative new ways of working. R&D is increasingly leveraging on service providers and partners, requiring greater collaboration with partners including academia, contract research organizations, medical centers, payers, providers, and each other. Furthermore, increased cross-disciplinary collaboration is required within a company to deliver successful inter-disciplinary R&D. In this increasingly networked environment, cybersecurity is growing as an issue.

New technology and the availability of "Cloud" solutions have lowered barriers to innovation. In leveraging such capabilities for collaboration, biopharma organizations must balance the competing needs to share information, while protecting intellectual property and data privacy. The increasing requirement for cybersecurity demands a focused approach to protecting intellectual property and personal information. Privacy regulations such as HIPAA and the EU Data Protection Regulation, create regulatory-compliance responsibilities and constraints as to how, why, where and when data can be used and managed.

The PRISME Forum Technical Meeting, in Fall 2014, set out to discuss these topics and share lessons learned and collaboration experiences, both intra-company and with commercial and academic partners.

Across all collaboration areas key themes emerged emphasizing the importance of building trust, building relationships, gathering collaborator input and feedback, and establishing rules of engagement. While information technology capabilities are rapidly growing, without a solid foundation of relationships and process, technology will fail to deliver the essential outcomes.

This whitepaper is the output of a 1-day session, which ended with the PRISME Forum members, R&D IT leaders and technology experts, collaborating in real-time in the assembly of a document containing the learnings of the day. The process generated over 10 pages of observations and insights from a day of presentations and discussions.

Collaboration

Enablers & Disablers

Webster's online dictionary defines "collaborate" as

col·lab·o·rate

verb \kə-ˈla-bə-ˌrāt\ : to work with another person or group in order to achieve or do something

Several essential enablers (or, if not managed well, derailleurs) of successful collaborations were highlighted by PRISME Forum members to address the baseline needs of participants in collaboration:

- Engaging the right participants / stakeholders and building relationships was emphasized as the highest priority for successful collaborations
- Agreement on the objectives and outcomes that the collaborators will achieve
- Clear collaboration communication & governance, establishing the way in which the team will work together & share information, and make decisions builds effective teamwork. Core values should allow for disagreement, debate, while also driving to decision and commitment.

Implementing Collaboration Technology

Themes also emerged from the discussion on technology projects and with the following advice for success:

- Intentionally building teams, with the right diversity of perspectives on the use of technology, from early adopter to reluctant user
- Leaders must model behaviors in the use of new technology to reinforce the change in the way people work. Various approaches can be successful and examples were shared of CEO-led change from AstraZeneca, appointed leads at Amgen, and the use of Yammer at Bristol-Myers Squibb, “reverse mentoring” where executives are supported by younger "mentors" on the use of social media. In biopharma, culture is often very heavily defined and influenced by the behaviors of senior leaders. Several biopharma companies describe collaboration as a core behavior (or a core value) to establish a "top-down" imperative for collaborative behavior.
- Geography and time were highlighted as key risk and one that technology solutions can be very important in mitigating. The more geographically distributed the team, the more important it is to create opportunities for team building and informal or open team interactions. Shared information in virtual workspaces, electronic newsletters, and virtual discussion groups can play a significant role in complementing face-to-face meetings and teleconferences.
- A “branching model” for operating the team that allows for individual contribution and then periods of working in a collaborative relationship was recognized as efficient.
- End users should be engaged in the design process for new technology tools. Projects should begin with a baseline understanding of “how” the user community works today. Human factors are very important; building trust through interactive sessions and building relationships between team members will pay dividends in both collaboration team and technology success.
- Being intentional about disrupting teams to encourage innovation was also highlighted. By breaking the normal pattern of collaboration you can change the way that individuals and groups work.

When establishing new technology, an iterative approach that engages the users in the process was emphasized as important to support the development of team working.

- Define the target collaboration working state
- Define the gaps that will be addressed to move from the current state to the target state
- Use rapid prototyping and user feedback to refine and build the next iteration.

Using rapid prototyping and iterative approaches can reduce the risk of mismatched expectations between users and designers to ensure that the design is well informed by user experience. Solutions that evolve with user feedback will move significantly from the initial vision. "Don't force-fit" a solution, was the advice of the PRISME Forum Technical Meeting participants.

- Cultural awareness is important and early communication that recognizing that teams assembled even within a company may not have the shared assumptions and vocabulary to work effectively together.

Not getting these basics in place early can have negative impacts on productivity and/or decision-making, e.g.:

- "**over-collaboration"** or the inability to get to an outcome can result from expectations about "how decisions are made" being unclear or under defined.
- **"competing goals"** the team may have implicit disagreement about the priorities and expected outcomes
- **"communication failure"** – cultural differences can result in mismatched expectations or behaviors that reduce effectiveness or damage relationships

Panel Discussion

A panel discussion was moderated by Frances Grote (Biogen Idec) and included Scott Snyder (Evotec), Margaret Keegan (Quintiles), and Ashok Upadhyay (HCL). The panel reinforced the key enablers of collaboration and collaboration technology success. Margaret Keegan described two collaborations both using the same technologies with very different outcomes because in one of the collaborations the group felt more involved in shaping the process.

The panel also illustrated the importance of incentives being aligned with an example of sharing processes in cross-pharma initiatives. CROs and Pharma have different IP definitions: what's Intellectual Property (IP) to pharma is not IP for CROs. CROs' IP is in the value in the process and the service; as such it can be very challenging for CROs to sit with others and share process information.

In defining new technologies and in engaging partners, the panel emphasized the importance of involving all the right stakeholders e.g. CROs getting engaged in TransCelerate Biopharma Inc. Encouraging end-users to get involved in the process of defining the collaboration tools to ensure a great user experience is important. User experience can also be a perceived barrier; it is always harder to learn a new tool, and embedding experienced people and providing support for the transition can help overcome this barrier.

Communication and building relationships through f-2-f meetingS, joint town halls, and joint innovation days were highlighted by Biogen Idec as valuable tools to build collaboration.

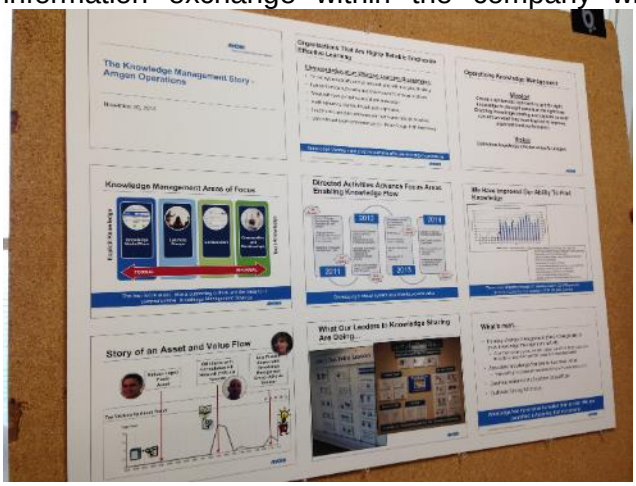
Collaboration within a Company

Technology can plan a valuable role in fostering internal collaboration including:

- Publishing & Access to Information: tools to share information including web portals and SharePoint, are ubiquitous and well established. While not always perfect, there is no going back!
- Connecting People: tools can facilitate human connections with searchable organization charts and skills/competencies to locate experts across departments and geographies, and recognize informal knowledge bases.
- Immersive Technologies: tools to reduce travel and create a virtual in-person environment such as desktop video, telepresence, video-presence, and virtual meeting enables groups easily to share pictures and images (histology images, clinical images, etc.) e.g. Aperio Spectrum. Increasing availability of touchscreen technology can add to the immersive experience with multiple hands on at the same time. An example of Roche's use for chemistry data collaboration.
- Tools for active discussion and integration of data are still emerging and used in widely varying ways across companies. These tools can be used to bridge groups that typically don't work together – examples shared included:
    - YamJam - a group's intensive use of Yammer on a topic or series of topics in real-time
    - Chemistry Journal Club – a group found value in sharing learning from literature via Yammer.

Across technologies the PRISME Forum members described the importance of sharing examples of success and use of technology to foster appropriate use and support adoption. For social tools and virtual discussion spaces, "tummeling"[1] and dedicated roles for active moderators to create vibrant virtual social spaces was highlighted (as described in the book - "Smarter Than You Think").

EXAMPLE 1: An Amgen poster highlighted a "Knowledge Marketplace" that facilitates information exchange within the company with a focus on Quality Management.



[1] the art of creating active social spaces

Collaboration with Other Companies in the Industry

An article "In Vivo" "Making The Grade? Big Pharma Deals With Academia Begin To Score" (published 12th November 2014) highlighted several models for collaborative pursuit of new medicines, implemented by Bayer, Glaxo, J&J and Pfizer and the value they are delivering.

The challenges of collaboration and the implementation of new technologies for collaboration within companies are amplified as one works across different companies with the increased complexity of culture, geography and less-shared language, assumptions, and processes.

Technology cross-company has overlapping benefits with work intra-company:

- Publishing & access to Information
- Connecting people to each other between meetings
- Immersive technologies can reduce the cost and time for travel
- Tools for active discussion and integration of data

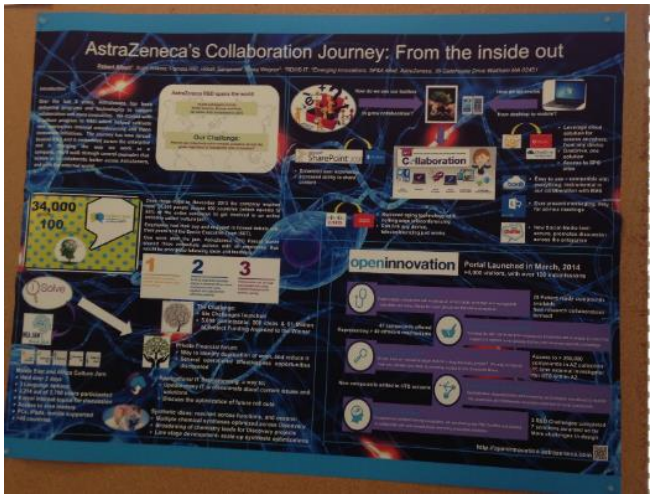
One of the major challenges that technology solutions must overcome in a multi-company collaboration is establishing the common security and access mechanisms to create a virtual workspace. The core challenges in introduction of new technology are also increased and user experience, with appropriate effort dedicated to relationships training and learning the new processes and tools, is essential.

EXAMPLE 2: Tom Crabbe, External Solutions UCB, described UCB's Open Innovation Space and New Medicines Technology Access Program where automated processes for finding monoclonal antibodies are made available to any group around the globe that wants to make an antibody.

He emphasized the importance of remaining open to innovative ideas, and avoiding "pharma imperialism" and challenging the human factors that stifle innovation, such as:

- we stick with tried and trusted
- we always work with people we relate to (group think)
- we don't try hard enough to work through problems

EXAMPLE 3: An AstraZeneca poster highlighted examples of internal crowdsourcing and open innovation models for collaboration.



Security, Identity & Access

One of the key challenges for IT and systems security is identity and access management. Information security is high on the list of threats to a company's IP and reputation. Getting this right lowers the barriers to collaboration and manages anxiety about security. Several companies highlighted products including OKTA, Ping Federate, Microsoft Active Directory, Exostar.

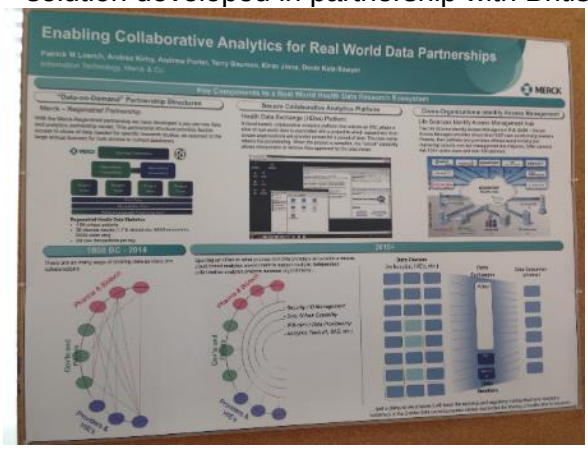
EXAMPLE 4: Spencer Mott, Amgen CISO and VP Information Security, described some cybersecurity collaboration opportunities identified by 30 CISOs:

1. Recognizing compelling 3rd party
2. Managing in high risk markets
3. Common methods to assess vendor
4. Common cyber-risk communications
5. Sharing intelligence
6. Launching shared SOC (Security Ops Utility)

EXAMPLE 5: An Amazon.com poster highlighted the changing technology landscape for security and the cloud and use cases demonstrating capabilities. Rapidly evolving services from multiple providers were addressing the needs of the pharma industry.

PRISME Forum efforts contributing to a framework to lower barriers to Cloud solution adoption have contributed to the rapid evolution were noted.

EXAMPLE 6: A Merck Poster highlighted a secure, compliant, clinical-data-sharing cloud solution developed in partnership with British Telecom.



EXAMPLE 7: Jim Rinaldi, CIO Jet Propulsion Lab highlighted several technologies:

- Google Glass - new technologies give us ability to share data in new ways
- Mobile JPLers use Robots in remote locations to allow people to share what they are seeing
- Kubi - iPad experience https://revolverobotics.com/

Jim also described the “Cloud” and a “deployment architecture for reproducible virtual companies” & sharing between companies.

EXAMPLE 8: Beam presence tools were demonstrated at the conference and other next generation video conferencing and presence tools were referenced by members including Lync, Polycom 360 camera solutions.

Conclusions

Information technology is a key enabler of industry innovation in collaborative business models and internal collaboration. Technology can facilitate both real-time and asynchronous collaboration over distances. Culture and human factors are the most important element in both successful collaborations and successful implementations of collaboration technology. While the value of technology can be similar in internal collaboration, cross-biopharma collaboration and cross-industry collaboration, the complexity of culture grows and the building of trust, and establishing common processes and language increase in importance.

For the implementation of technology solutions, rapid prototyping, early engagement of end-users and agile approaches that manage implementation in 'bite-sized' achievable pieces is important to change management and to prioritizing the features of a technology solution based on user experience and needs.

Identity management and security are essential to enabling cross-company collaboration. Establishing identity management and cybersecurity defense continues to be a value-adding area for industry partnership.