Radiotherapy Product Development  
As presented by C. Zankowski in 2011

Modern Innovation and Product Development  
Design-thinking and human factors engineering

"Early consultation with the user population is necessary for assessing needs and developing requirements.

"Users also are critical for analytical work and testing throughout product development."
Modern Innovation and Product Development
Starts with understanding our users and the Jobs they want done...

"Early consultation with the user population is necessary for assessing needs and developing requirements."

"Users also are critical for analytical work and testing throughout product development."

Modern Innovation and Product Development
… to understand the problems to solve and WHY?

Modern Innovation and Product Development
Followed by agile iterations with customers...
Modern Innovation and Product Development
...and continuous integration, delivery and deployment

"Users also are critical for analytical work and testing throughout product development."

Do it by Design, An Introduction to Human Factors in Medical Devices

U.S. Department of Health and Human Services Public Health Service Food and Drug Administration Center for Devices and Radiological Health

Modern Innovation and Product Development
Applies many new techniques to improve quality

<table>
<thead>
<tr>
<th>Design-thinking</th>
<th>Human-centered approach to innovation that integrates the needs of people, the possibilities of technology, and the requirements for business success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agile Scrum</td>
<td>Software development method of iterative development, and collaboratively evolving requirements and solutions in self-organizing cross-functional teams</td>
</tr>
<tr>
<td>Test-driven Development</td>
<td>Requirements are turned into very specific test cases, then the code is improved until it passes the old and new tests</td>
</tr>
<tr>
<td>Continuous Integration</td>
<td>Code changes are merged into the main branch, validated by creating a build and running automated tests against the build</td>
</tr>
<tr>
<td>Continuous Delivery</td>
<td>Automated release processes enable you to deploy an application at any point of time by clicking on a button</td>
</tr>
<tr>
<td>Continuous Deployment</td>
<td>All changes that pass all stages of the production pipeline are released to your customers</td>
</tr>
</tbody>
</table>

Modern Innovation and Product Development
Where should the Medical Physicist get involved?

A Medical Physicist should engage medical device manufacturers throughout their entire development process