IHE Work Item Proposal (Short)

1. Proposed Work Item: Cross Enterprise Tumor Board Workflow Definition Profile

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2. The Problem

Diagnosis, treatment and aftercare of oncological patients require cooperation of a multidisciplinary team of healthcare professionals. Typically, an oncological care pathway is both multidisciplinary and cross-enterprise, with participants from different specialisms and different hospitals. The participating specialists, nurses and paramedics want an overview of their tasks in the process, and need to share images and documents. One of the most important steps in the oncological pathway are the Tumor Board meetings. These are meetings where a team of medical professionals, often from different hospitals, get together (physically or by remote conference) to weigh all the different medical information, and decide on the diagnosis and treatment. At each meeting, between 5 and 15 patients are being reviewed. Depending on the hospital size, between 10 and 30 Tumor Board meetings are held each week. Tumor Boards are organized for many different cancer types, often on a weekly basis. A typical Tumor Board team consists of the following participants:

Role	**Function(s)**
radiologist	review of medical images
pathologist	review of biopsies
oncologist	diagnosis, surgery
radiotherapist	radiotherapy
specialized nurse	counseling, main contact person

Depending on the type of tumor, other healthcare professionals such as psychologists, plastic surgeons, physiotherapists may participate; in cross-enterprise settings, there can be more than one radiologist or pathologist, especially in the case of rarer forms of cancer, where knowledge of the particular cancer is scarce.

Tumor Board meetings also serve as a platform for sharing the latest guidelines, developments and insights in the diagnosis and treatment of the pertaining cancer type.

A typical Tumor Board (TB) meeting can be described by the following stages:

Activity		**participant(s)**
1.	Request TB meeting	requestor
2.	Schedule TB meeting	chairperson
3.	Prepare TB meeting	any participants
4.	TB meeting	all participants
5.	Writing notes and conclusions	minutes secretary
6.	Sending TB meeting report	requestor, GP, other participants

In the current situation, problems arise at all of the above stages:

1. Requesting TB meeting

   Specialists complain about the cumbersome process of gathering the necessary images, reports, and excerpts from their EPR. Currently, texts are faxed (and have to be re-entered into the EPR of the hospital where the TB meeting is held), and images are sent by CD or DVD. The images and reports on these cd's have to be linked manually to the right patient in the receiving HIS/EPR. This is a time consuming and error-prone process.
2. Scheduling TB meeting

   The chairperson of the Tumor Board has to decide whether the patient fits the constraints for the particular TB meeting, and whether all necessary documents and images are available. If the maximum number of patients has been reached, the chairperson has to determine which patients can be postponed to a later TB meeting. These tasks are time-consuming and often require extra phone calls to the requestor. There is no overview of the status of all requests.
3. Preparing TB meeting

   In the current situation, results from diagnostic studies such as CT scans, X-ray images and endoscopic images can only be seen by the radiologist. Faxes have to be copied if someone wishes to prepare the TB meeting beforehand. In most cases, preparation is not possible for most team members except the radiologist.
4. TB meeting

   During the TB meeting, sometimes patients that where scheduled cannot be discussed because DVD's have not arrived on time, or not at the right address, or have not yet been linked to the patient.

   Since the patient come from different hospitals, the medical information is presented in different ways, on different EPR systems. Since most participants have never met the patients they discuss, this can lead to confusion. Also, the notes that are taken during the discussion of a patient can often not be seen or checked by the all participants.
5. Writing notes and conclusions

   This is a two-step process: during the TB meeting, someone writes down the findings, conclusions and recommendations for treatment of the patient. After the TB meeting, a full report is written. The TB report has to be authorized (mostly by the chairperson of the Tumor Board) before it can be distributed
6. Sending TB meeting report

These are pdf or Word documents that have to be sent manually to the designated recipients. Tis is also a time-consuming task

3. Key Use Case

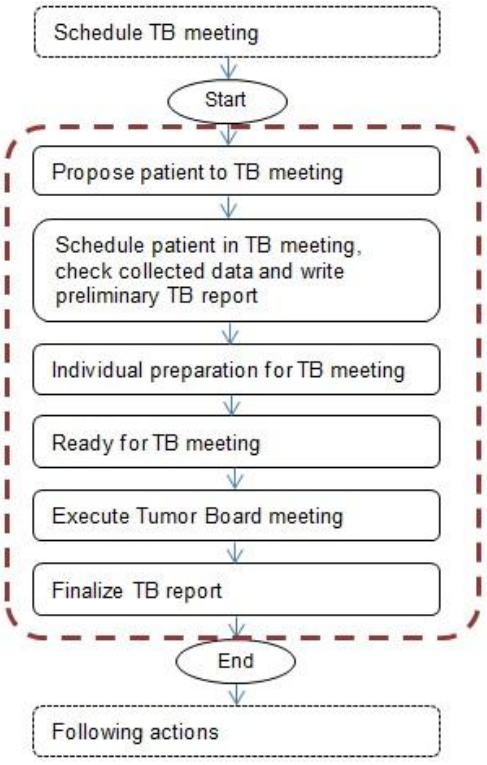
This use case describes the planning of the TB meetings, the tasks in the different stages of the workflow, and documents required in the process.

For the correct management of the Tumor Board meetings, each of the actors in should have the possibility to share and manage the patient's complete clinical picture. At the moment, this is not possible because there is no possibility to manage a workflow related to the documents and different stages of the TB meeting workflow.

The key elements are:

- Managing TB meeting workflow
- Tracking of all events and related documents
- Tracking the status of each subtask in the workflow

Below is a high-level schema of the workflow:



We present below the chronological steps:

-A patient needs diagnoses

-The patient comes to a reference hospital for several diagnostic studies

-For each exam, a report is created.

-The attending physician decides whether patient is proposed for a Tumor Board meeting. After the patient is scheduled for a meeting, a Workflow Document is created, and a Preliminary TB report (prelimTBreport). In the Workflow Document, at the onset, there is only one task. In the "input" section there are links to the reports of the exams and possible images that can be useful to evaluate clinical status of the patient; in the "output" section there is the link to PrelimTBreport. Updates to the prelimTBreport are tracked in the XDW Workflow Document.

-To be able to perform an efficient discussion about each case, clinicians are able to request new clinical exams, read or add new reports and comments on the patient's case. Depending on the type of cancer, and the selected care pathway, several diagnostic studies are performed, often in different locations. The results of these diagnostic studies (images and reports) can be viewed by all TB members. Each change of the TB report, or added study result, is tracked by updating the XDW Workflow Document. Each task added in the XDW Workflow Document can have an "input" section with links to reports or images, and an "output" section with links to added reports.

- In the next stage, the Tumor Board Meeting itself, all members convene and discuss the different cases, using all relevant information that has been gathered by the team members. The discussion between members leads to a consensus-based diagnosis, and an advice for the further treatment of the patient. Also, a reference to relevant reports is filled in the TB report. This phase is tracked in the Workflow Document by adding a new task where in the "input" section there are references to reports or images added during the discussion; and in the "output" section there are links to the TB report.

In the final phase of the workflow, the final TB report is created. This usually consists of a structured document which contains the conclusion of clinical investigation and the recommendation for treatment. A new task is added to the Workflow Document where in the "input" section there are links to relevant reports and images; in the "output" section there is the link to Final TB Report.

4. Standards & Systems

Afferent IHE Domains: IT Infrastructure, Patient Care Coordination

Afferent IHE Profiles – Existing ITI Profiles: XDW, XDS, XDM, DSUB, NAV, BPPC, ATNA, CT, PIX, XUA, XCA

5. Discussion

This proposal arises from the necessity of different actors to manage the Tumor Board workflow. Looking at the process, both the workflow and the content form an integral part of this process. We therefore propose to combine an XDW Definition profile and PCC workflow process to form an oncological Care Pathway. This Care Pathway offers full workflow support, including input- and output documents (as described in the XDW profile).

The value statement of this proposal is:

- the creation of a workflow definition for the management of a tumor board, including scheduling, tasks, and documents. Also, the tracking of the status of all workflow components;
- the monitoring of documents used in the process, and the creation of an integrated TB report to document the conclusions and recommendations;
- the creation of an instrument able to respond at the present needs and possibly to extend to future requirements.
- XDW Workflow Documents and the linked Input and Output document references can be stored together in Patient Care Coordination to create a Tumor Board Care Pathway.

This profile proposal connects two domain, ITI and PCC, leading a complete management of a oncological care pathway. In fact, with the support of the first domain and, in particular, of the XDW profile, it increases the consistency of workflow interoperability and it is allowed to share and update all events of the process between different enterprise. The PCC domain, instead, has the duty to define the specific workflow. The workflow definition can be understood and executed among the participating systems/applications. The orchestration of a specific workflow allows the workflow participants to share a common understanding of the specific tasks, the dependencies between these tasks, and a number of rules that control the workflow execution and leading the interoperability between different information systems. Execution details are conveyed through the XDW Workflow Document.