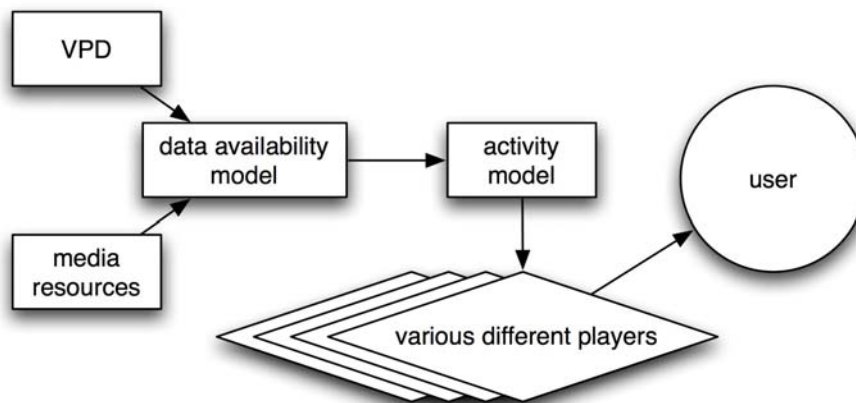


MVP Data Availability Model (DAM)

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The data availability model (DAM) of the emerging MedBiquitous Virtual Patient standard functions as a bridge between the virtual patient data, media resources and the activity model. It indicates which media resources and virtual patient data elements are available at particular nodes of the virtual patient learning activity. The Activity Model can then reference these nodes in structuring learning activities. This architecture allows virtual patient creators to progressively reveal clinical data as part of the learning activity.

The following diagram from the MedBiquitous Virtual Patient white paper shows both Virtual Patient Data and Media Resources connected to an activity via a DAM:



The DAM is expressed as an XML document containing one or more node elements, each with a unique ID and text label. There are one or more of either (or both) Virtual Patient Data or media resource elements with a reference both to the overall file and a unique element ID within it.

In a little more detail:

- The root element is `<DataAvailabilityModel>` with a child element of `<Identifier>`.
- The rest of the model is an iteration of `<Node>` elements, which have one `<NodeID>` and `<NodeLabel>` child element each.
- Each `<Node>` element then has zero, one or more `<VPData>` and/or `<MediaResource>` elements.
- Each `<VPData>` has a `<VPDataID>`, which references the unique identifier for the Virtual Patient Data document, and a `<VPDataElementID>`, which references the unique identifier for a particular element within that document.
- Each `<MediaResource>` has a `<ManifestID>` that references the identifier for the content package manifest that references all Media Resources in the virtual patient (see the content packaging document for description of manifests and submanifests) and a `<ResourceID>` that references the identifier for the specific resource as indicated in the manifest.

A simple complete DAM `<Node>` example looks like this:

```
<Node>
  <NodeID>B37FB5W8</NodeID>
  <NodeLabel>3</NodeLabel>
  <VPData>
    <VPDataID>A2DKJNA</VPDataID>
    <VPDataElementID>VEDRNW3</VPDataElementID>
```

```

    </VPData>
  <MediaResource>
    <ManifestID>A2DKJNA </ManifestID>
    <ResourceID>E563UW0S</ResourceID>
  </MediaResource>
</Node>

```

A simple complete DAM example looks like this:

```

<?xml version="1.0" encoding="UTF-8"?>
<DataAvailabilityModel>
  <Identifier>NG746SP</Identifier>
  <Node>
    <NodeID>B37FB583</NodeID>
    <NodeLabel>Initial Presentation</NodeLabel>
    <VPData>
      <VPDataID>U9RESK</VPDataID>
      <VPDataElementID>PEJRWEF</VPDataElementID>
    </VPData >
  </Node>
  <Node>
    <NodeID>B37FB5W8</NodeID>
    <NodeLabel>Followup</NodeLabel>
    <VPData>
      <VPDataID>TU9RESK</VPDataID>
      <VPDataElementID>PEJR6WEF</VPDataElementID>
    </VPData >
    <VPData>
      <VPDataID>A2DKJNA</VPDataID>
      <VPDataElementID>VEDRNW3</VPDataElementID>
    <VPData>
      <MediaResource>
        <ManifestID>A2DKJNA</ManifestID>
        <ResourceID>E563UW0S</ResourceID>
      </MediaResource>
    </Node>
</DataAvailabilityModel>

```

In this way a reference to Virtual Patient Data element with identifier 'VEDRNW3' in VPD 'A2DKJNA' is associated the node labelled "Followup." An activity model referencing this DAM and node will make element 'VEDRNW3' available to the user.

The activity model should be able to run a DAM as 'inclusive' (where all data at or below the current DAM level is available), 'cumulative' (where data once accessed remains available) or 'discrete' (where only data at the current DAM level is available).

It should also be possible for an activity model to be set to use different DAMs with or independently of different VPD and media resource sets. In this way different data and resources should be able to be run into the same activity or the same data and resources should be able to be used by different activities.

The DAM can also be used to group elements as regards sections in a VP activity. For instance, many VP activities (exemplified by WebSP) take a linear form of introduction, history, examination, tests, diagnosis and therapy with user mobility only within each section. Rewriting the simple example DAM for this kind of scenario would give:

```

<?xml version="1.0" encoding="UTF-8"?>
<DataAvailabilityModel>
  <Identifier>NG746SP</Identifier>
  <Node>
    <NodeID>B37FB583</NodeID>
    <NodeLabel>History</NodeLabel>
    <VPData>
      <VPDataID>U9RESK</VPDataID>
      <VPDataElementID>PEJRWEF</VPDataElementID>
    </VPData>
  </Node>
</DataAvailabilityModel>

```

```

    </VPData >
  </Node>
  <Node>
    <NodeID>B37FB5W8</NodeID>
    <NodeLabel>Examination</NodeLabel>
    <VPData>
      <VPDataID>TU9RESK</VPDataID>
      <VPDataElementID>PEJR6WEF</VPDataElementID>
    </VPData >
    <VPData>
      <VPDataID>A2DKJNA</VPDataID>
      <VPDataElementID>VEDRNW3</VPDataElementID>
    <VPData>
      <MediaResource>
        <ManifestID>A2DKJNA</ManifestID>
        <ResourceID>E563UW0S</ResourceID>
      </MediaResource>
    </Node>
  </DataAvailabilityModel>

```

It should be noted that the DAM does not control how Virtual Patient Data and Media Resource items are exposed to the user not how they are structured. It should also be noted that the DAM is not required to link Virtual Patient Data and Media Resource elements to an activity as they can be referenced directly (but unconditionally) by an activity.