

Introduction to Architectural Thinking



The Architect Toolbox

Version 2

Architectural Thinking



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In this module of the *Introduction to Architectural Thinking* course, we will discuss the tools and resources available to Architects.

Module outline



► **Introduction and Objectives**

The Architect Profession Toolkit

Additional Resources

Tools for Architects

Summary and References

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We will begin with the introduction and objectives.

Module Overview



This module describes the tools and resources available to Architects.

- It begins with an overview description of the Architect profession toolkit.
- Then it explains each component in the toolkit.
- Next, other profession resources available to Architects are described.
- Finally, an overview on tooling for Architects is presented.



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This module describes the tools and resources available to Architects to grow their career. It begins with an overview description of the Architect profession toolkit that the profession developed for early career Architects. The overview is then followed by a more detailed description of each component of the toolkit. Then, we will describe other resources available to Architects. Finally, we will provide an overview on tooling for Architects.

Module Objectives



At the end of this module, you should be able to:

- Describe the Architect profession toolkit
- Describe the components of the Architect profession toolkit
- Describe the many profession resources available to Architects
- Describe how tools for Architects can be classified by the type of work products they help create



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At this end of this module, you should be able to describe the Architect profession toolkit and each component of the toolkit. You should also be able to describe other profession resources available to you as an Architect. Finally, you should be able to describe the way that tools for Architects can be classified by the type of work products they help to create.

Module Outline



Introduction and Objectives

► **The Architect Profession Toolkit**

Additional Resources

Tools for Architects

Summary and References

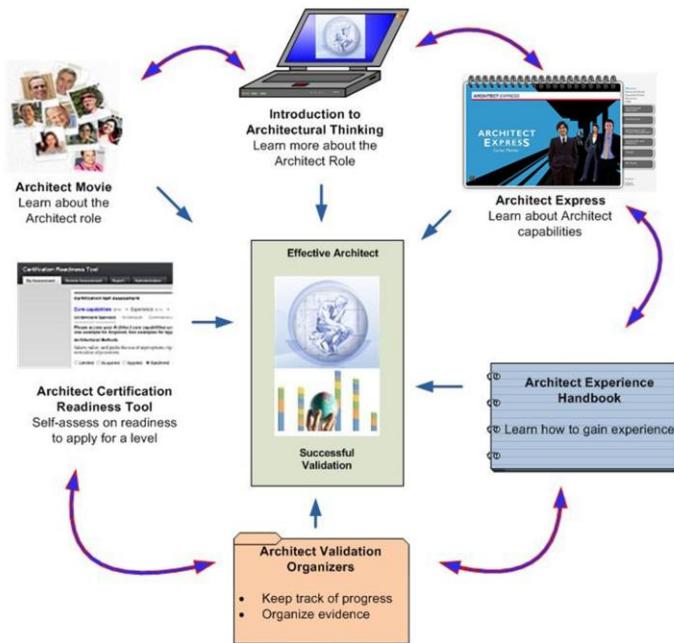
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First, we will talk about the Architect profession toolkit.

The Architect Profession Toolkit



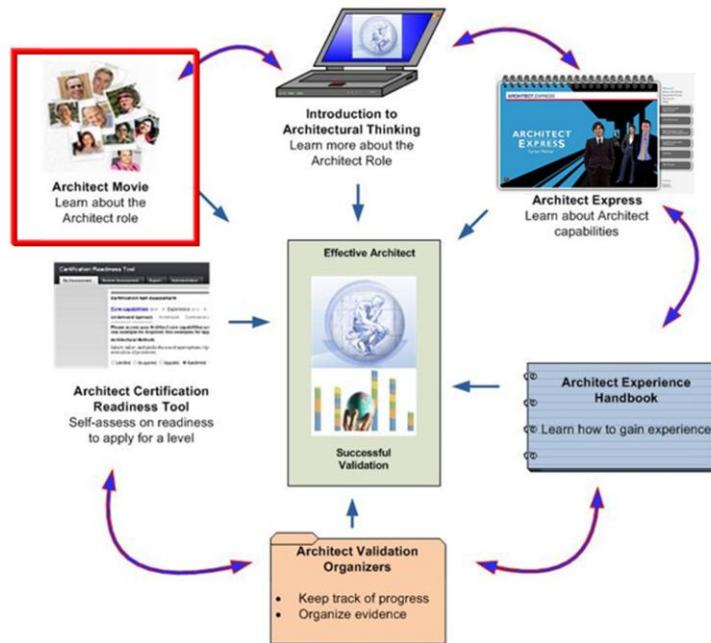
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The Architect profession has developed a suite of tools to help early career Architects be effective Architects and to support them as they grow their career.

The Architect Profession Toolkit - Movie



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The first component of the toolkit is the Architect movie.



"It's a great time to be an Architect."

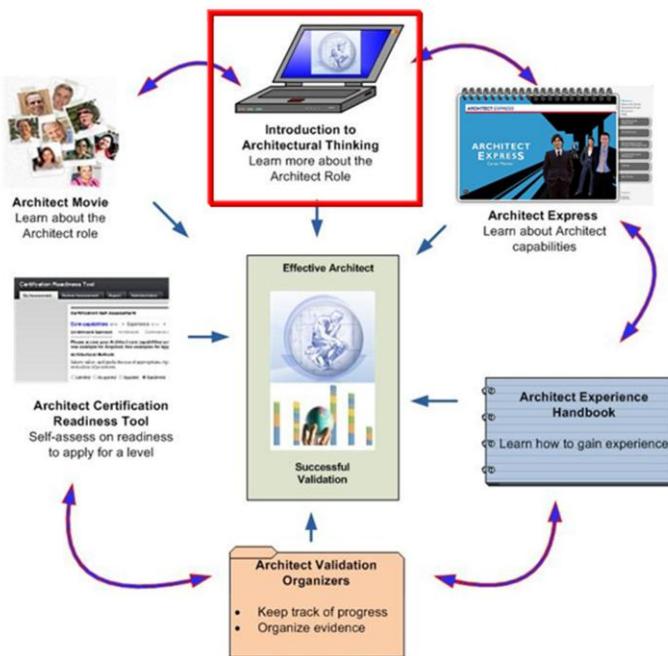
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The Architect movie describes, at a high level, what Architects do, and some of the traits of Architects. It showcases several successful practicing Architects from all over the world talking about this exciting career. It answers the frequently asked question "what does an Architect do?" This is one of the activities in the Architect career module. If you haven't watched the movie, or if you want to watch it again or forward it to your colleagues, the movie is available from the Architect Resource Center wiki, which will be described later.

The Architect Profession Toolkit - Course



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The next component of the toolkit is the *Introduction to Architectural Thinking* course.

Introduction to Architectural Thinking Course



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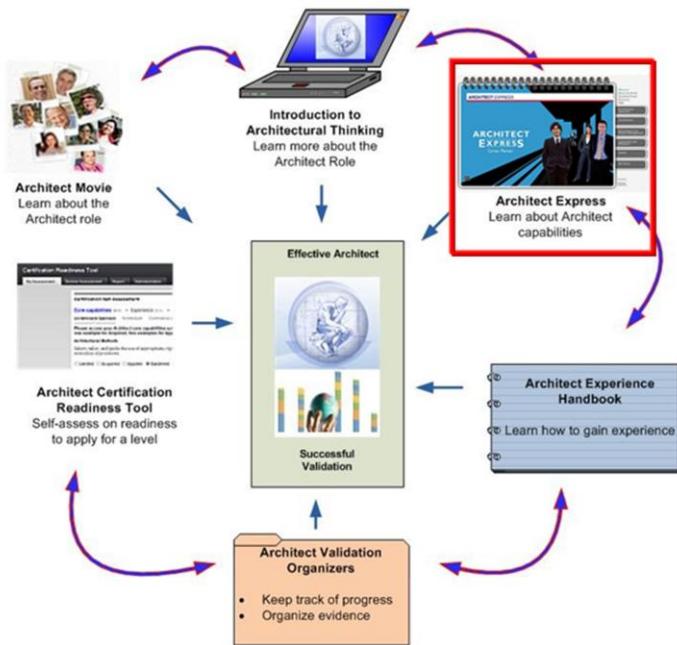
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The *Introduction to Architectural Thinking* course, which is this course, is intended to provide you with knowledge of the Architect role and the Architect career and to give you information that you need if you are interested in being an Architect or if you will be working with Architects.

The Architect Profession Toolkit - Express



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If you feel you need to build your core Architect capabilities, Architect Express is a logical follow-on to this course.



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Architect Express is a stand-alone, interactive career guide for IBM Architects to manage both formal and informal learning and relate those learning activities to the Architect core capabilities.

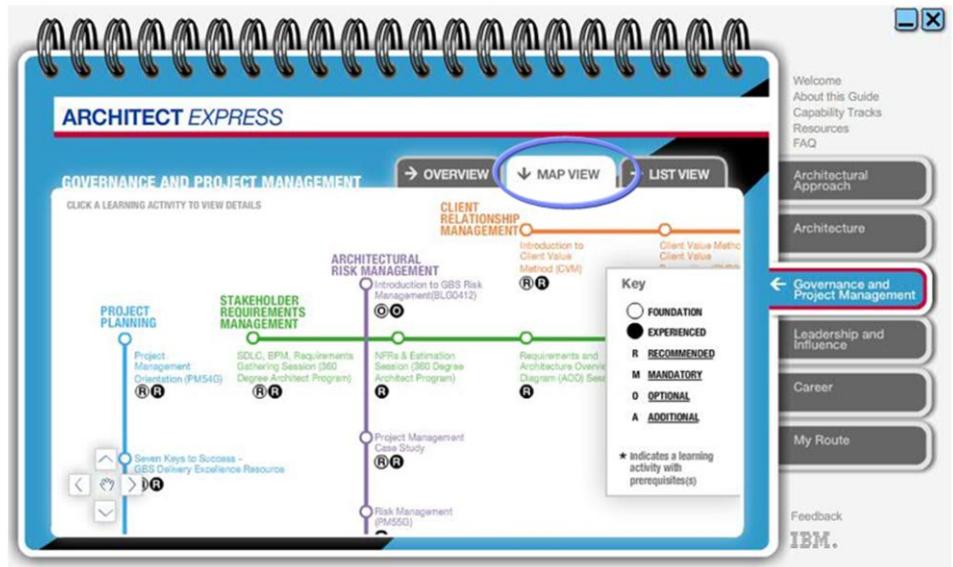
- It is focused on clarifying the Architect's role and growing the breadth of capabilities required by Architects, such as consulting, project management, leadership, and architectural capabilities.
- It was designed to leverage the wealth of learning offerings available within IBM.
- The target audience is Architects at the Foundation and Experienced levels.

Architect Express - Overview



The Architect core capabilities are divided into the same four categories you learned in the Architect capabilities module. To continue with the train theme, the categories are called *routes* in Express. Within each route, there is an **Overview** tab, a **Map View** tab, and a **List View** tab. On the overview tab, a short description of the route is displayed, and then you can click the **Capability Tracks** button to view detailed descriptions of the core capabilities associated with this category.

Architect Express - Map View



In the map view, the learning activities are displayed graphically to mimic a metropolitan transportation system map. From this view, you can click an activity title on the map to learn more about the activity.

Architect Express - List View



Learning Activity	Level	Status
Introduction to Client Value Method (CVM)	R (R)	Completed
Client Value Method: Client Value Proposition (CVP001)	R (R)	Not Viewed
Becoming a Trusted Advisor (TLE) (BAC-902)	R (O)	Not Viewed
Effective Relationships with Clients (EDE072)	O (R)	Visited
Introduction to business acumen: Communicating and establishing trusted client relationships (SGC60351)	O (O)	Not Viewed
The Client-Consultant Relationship (CONSO112)	R (★)	Visited

Key

- FOUNDATION
- EXPERIENCED
- R RECOMMENDED
- M MANDATORY
- O OPTIONAL
- A ADDITIONAL
- ★ ADDED TO MY ROUTE

* indicates a learning activity with prerequisite(s)

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In the list view, you will see a tab for each of the capabilities in this category. The learning activities for each capability are displayed under the appropriate tab. In this example, you are viewing the learning activities for the Client Relationship Management capability in the Governance and Project Management category. Clicking the activity name will open up the activity view, where you can find more information about the activity. The Level column indicates whether the activity is recommended or mandatory for the Foundation and/or Experienced level. The status in the Status column can be “Not Viewed,” “Visited,” or “Completed.” The yellow star next to the status means you have bookmarked the activity. The list of bookmarked activities will appear on the **My Route** tab.

Architect Express - Activity View



The screenshot shows a detailed view of a learning activity titled "ARCHITECT EXPRESS" under the category "ARCHITECTURE > SOLUTION ARCHITECTURE DEVELOPMENT". The activity is titled "ARCHITECTURAL THINKING (SIMT2G)".
ABOUT THIS LEARNING ACTIVITY:
This course is the first in a series of courses based on the Architecture Description Standard (ADS) concepts and is part of the road-map for IT Architects. It is intended to present, in a holistic fashion, the complete thinking process that an IT Architect must contend with during an engagement. The topics introduced will cover requirements definition, constraints considerations, applications architecture concepts, frameworks and patterns, qualities of service (performance, capacity, availability etc.), operational concerns (systems management, physical infrastructure design, etc.) and viability assessment. A focus will also be placed on the use of reusable designs, via selection of assets.
This course is required for Accreditation and Certification. See the Worldwide IT Architect Education Guideline document for education requirements information. Link to the document is in the Resources page.
TOPICS INCLUDE:
What is a systems architecture Relationship of business systems and IT systems Systems requirements
Actions:
★ ADD TO MY ROUTE | PRINT THIS PAGE | MARK AS COMPLETE | LEARN MORE

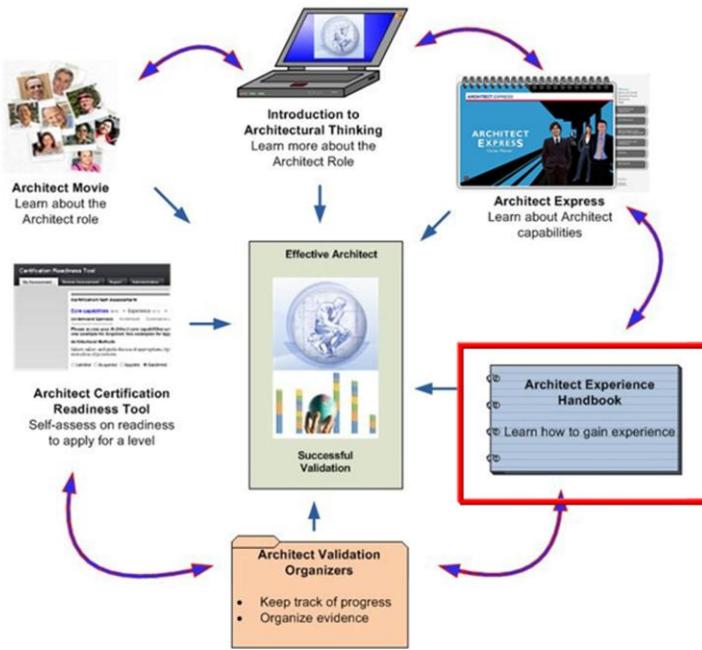
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When you click the activity title from either the map view or the list view, the detailed description of the learning activity appears. From this view, you can bookmark the activity by adding it to the **My Route** tab, print the page, or mark the activity as complete. Clicking the **Learn More** button will take you to Learning@IBM, Books 24x7, or other websites, depending on the type of activity.

The Architect Profession Toolkit - Handbook

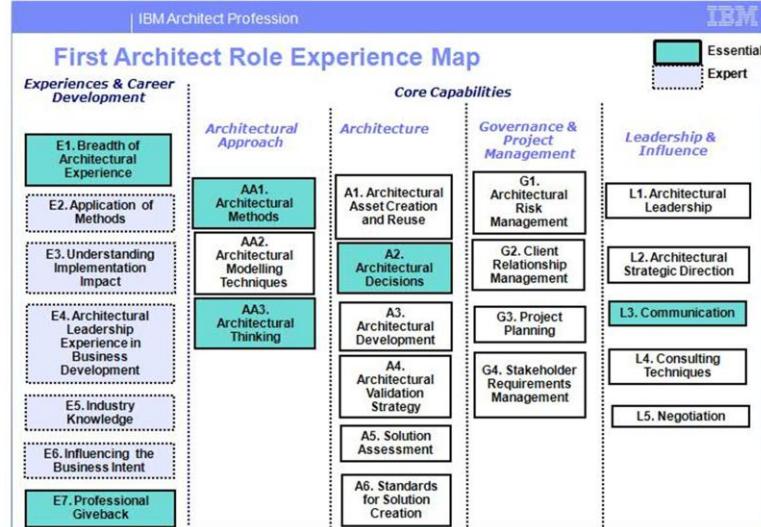


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The next component of the toolkit is the Architect Experience Handbook. This handbook provides guidance and examples on how to gain experience as an Architect.



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Architect Express is great for gaining skill through learning activities. But to progress in the Architect career, each Architect must gain architectural experience. The Architect Experience Handbook provides guidance and advice on how to gain the experience you need to start working as an Architect. The experience map is divided into experience and career development requirements on the left and the 18 core capabilities divided into four categories on the right. In the Experiences & Career Development column, the Certification experience requirements are listed, denoted by the shaded boxes with dotted outlines. The reason they are included is to make you aware of these requirements and encourage you to actively seek these kinds of experiences regardless of your current level or band.

Architect Experience Handbook - Example



IBM Architect Profession

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Experiences that help guide towards a first Architect role – Experiences & Career Development



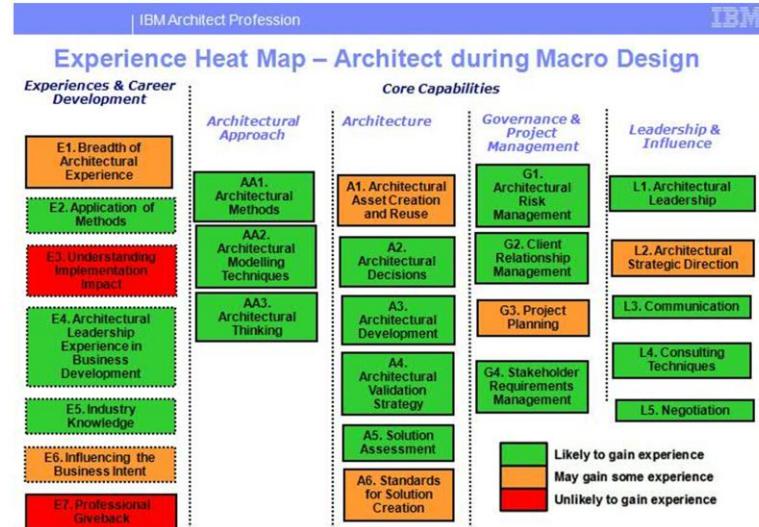
Ref	Description	Guidance and Advice
E1. Breadth of Architectural Experience	<p>You must have architecture experiences that:</p> <ul style="list-style-type: none"> ▪ Involved the application and integration of a variety of elements that came together to produce the architecture ▪ Encompassed multiple viewpoints to define the architecture ▪ Utilized multiple architectural styles ▪ Utilized multiple and diverse technologies 	<p>Background</p> <ul style="list-style-type: none"> • To be an Architect you need to gain broad experience, so look around at what others within your organisation / project are doing and find out about what they do and how they do it. • If team members are working on the other aspects of the architecture, engage with them to discuss how each aspect complements or depends on one another. <p>Key tasks</p> <ul style="list-style-type: none"> • Explore different areas, ensure that you look at the 'other side'. If you predominately work with application / functional aspects, look at the infrastructural / non-functional aspects of your work. • Look to use different technologies, whether that be platforms (e.g. mainframe / unix / windows), frameworks (e.g. client / server, SOA), vendors (e.g. IBM, Oracle). • Experiment with different ways of describing your architectures.

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For each of the boxes identified in the experience map, there is an entry in the handbook that provides a more detailed description along with guidance and advice for gaining experience in that area.



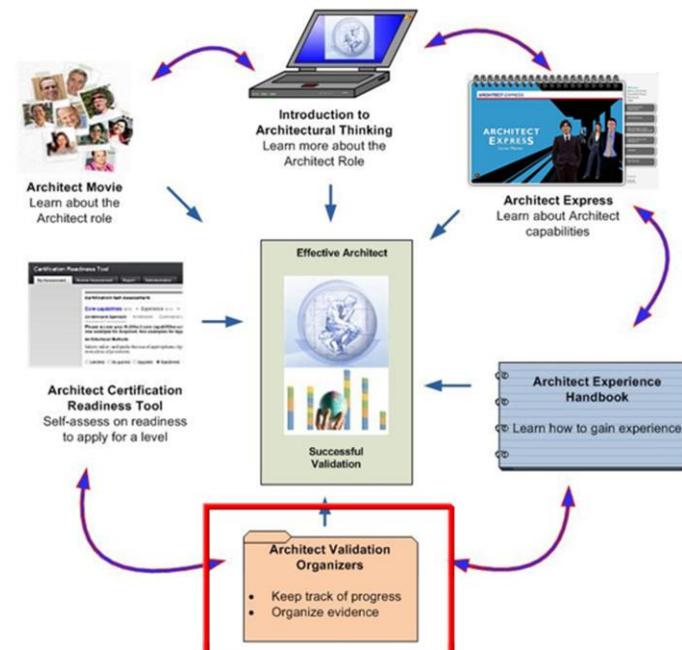
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In addition to guidance and advice for each experience's requirements and core capabilities, the handbook also provides "heat maps" that identify several common project roles where you may gain experience in different areas. There are heat maps for presales Architect roles, working on a bid, leading a proof of concept, macro design, leading micro design, and implementation. You can use these maps to proactively seek opportunities to gather experience.

The Architect Profession Toolkit - Organizers



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The next component is the Architect validation organizers. The organizers are Microsoft® Excel spreadsheets that assist Architects in collecting required information to complete a validation package in the Defining Architectures capability.

Architect Validation Organizers (1 of 9)



Criterion	Description	Number of examples required	Criterion Met?	If criterion is met, document evidence here			
				If NOT met - development plan	From Date	To Date	Project or Major Activity
3 Experience requirements							
4 Experience in IT Industry	You must have at least four (4) years of experience in the IT industry.	1* You may need to use more than one example to demonstrate this experience.					
5 Breadth of Architectural Experience	You must have architecture experiences that: <ul style="list-style-type: none">* Involved the application and integration of a variety of elements that came together to produce the architecture* Encompassed multiple viewpoints to define the architecture* Utilized multiple architectural styles* Utilized multiple and diverse technologies	1* You may need to use more than one example to demonstrate this experience.					
8 Experience producing architecture	You must have 2 years experience in producing architectures. (to be documented in the Architectural Development core capability)	multiple					
11 Architectural Leadership	You must have 1 year experience providing architectural knowledge, direction, and leadership to guide the team to perform the work to completion (to be documented in the	multiple					

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The Architect validation organizers list the validation criteria for each Defining Architectures capability level. Each organizer includes space for development activities and an area to collect project-related evidential information that you can use when applying for a validation level. One reason that completing a package takes many hours is that people need to look for the dates and information for projects completed years ago. This organizer serves as a central repository for you to store the types of information you will need to complete a package.

Architect Validation Organizers (2 of 9)



Each organizer contains the following tabs when applicable:

Experience / Core Capabilities / Specialization / Education and others / Profile 1 / Profile 2 / Profile 3 / Links and Resources

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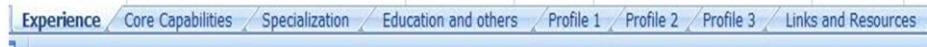


Each organizer contains the following tabs as applicable for the level:



Each organizer contains the following tabs when applicable:

→ **Experience** – Experience requirements and experience profile requirements



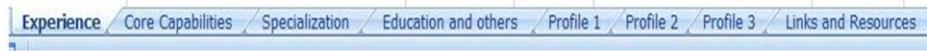
- **Experience** - This tab includes requirements for experience, years of experience, and the experience profile. The profile tabs provide the space to document the content of the experience profiles.



Each organizer contains the following tabs when applicable:

- **Experience** – Experience requirements and experience profile requirements

→ **Core Capabilities** – 18 capabilities for the lower levels, 13 for Senior Certification

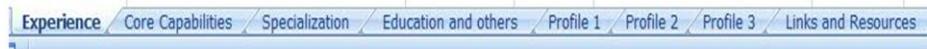


- **Core Capabilities** - This tab includes the 18 core capabilities for the Foundation, Associate Certification, and Certification levels. It contains 13 core capabilities for the Senior Certification level.



Each organizer contains the following tabs when applicable:

- **Experience** – Experience requirements and experience profile requirements
- **Core Capabilities** – 18 capabilities for the lower levels, 13 for Senior Certification
- **Specialization** – Required for Certification and for Senior Certification if changing specialization



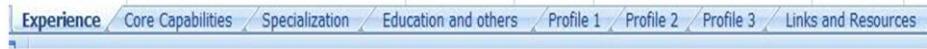
- **Specialization** - This tab is only in Certification and Senior Certification organizers. It contains the capability statements for the six Architect specializations. For Senior Certification, this tab is applicable only if you are changing your specialization since your last certification or revalidation.



Each organizer contains the following tabs when applicable:

- **Experience** – Experience requirements and experience profile requirements
- **Core Capabilities** – 18 capabilities for the lower levels, 13 for Senior Certification
- **Specialization** – Required for Certification and for Senior Certification if changing specialization

→ **Education and others** – Required education, giveback, and references

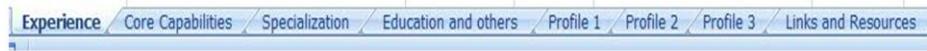


- **Education and others** - This tab includes education, giveback, and reference requirements.



Each organizer contains the following tabs when applicable:

- **Experience** – Experience requirements and experience profile requirements
 - **Core Capabilities** – 18 capabilities for the lower levels, 13 for Senior Certification
 - **Specialization** – Required for Certification and for Senior Certification if changing specialization
 - **Education and others** – Required education, giveback, and references
- **Profile** – Experience profiles

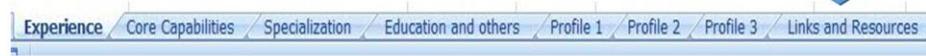


- **Profile** - Two profile tabs are included in the Associate Certification organizer, and three profile tabs are included in the Certification and Senior Certification organizers. The contents of the profiles are different for each level because the profile requirements are different.



Each organizer contains the following tabs when applicable:

- **Experience** – Experience requirements and experience profile requirements
- **Core Capabilities** – 18 capabilities for the lower levels, 13 for Senior Certification
- **Specialization** – Required for Certification and for Senior Certification if changing specialization
- **Education and others** – Required education, giveback, and references
- **Profile** – Experience profiles



- **Links and Resources** - This tab is preloaded with some frequently used links that will be helpful when you are collecting data. You can also use this tab to gather links and reference materials that you might need when you write your package.



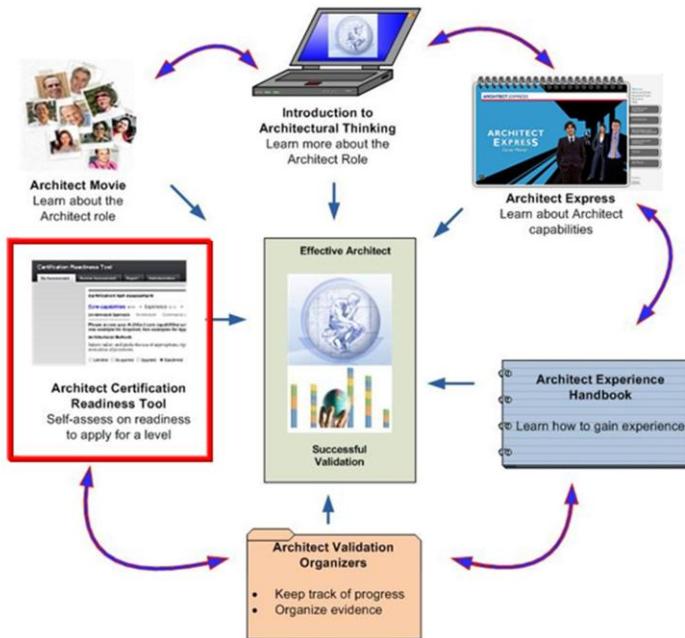
To use the organizer effectively:

- Fill in content periodically
- While on a project, review missed criteria and seek opportunities to fill in gaps
- When completing a project, document project information and add examples of evidence



To use the organizer effectively, you should review and fill in the content periodically. While you are on a project, review the missed criteria and proactively look for opportunities in your current project to help you fill some of the gaps. If you are completing a project, take the time to document the project information and add examples of evidence while they are still fresh in your mind. Another way to use the organizer is to collect the important project documents in a folder and then add the file location information in the organizer to help you locate critical information quickly when you are ready to work on the validation package.

The Architect Profession Toolkit - CRT



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The last component of the toolkit is the Certification Readiness Tool (CRT). CRT allows Architects to self-assess and determine whether they are ready to apply for a certification level.

Certification Readiness Tool



Self-assess against current certification criteria to determine readiness to complete a validation package.

A screenshot of a web-based login interface. At the top, there is a dark header bar with the text "w3" on the left and "Certification Readiness Tool" in the center. Below this is a sub-header bar with a "Login" button on the left. The main content area has a light gray background and contains a "Login" form. The form includes two input fields: "User Name:" and "Password", each with its own input box. To the right of the password field is a "Login" button. Below the form is a large, empty rectangular area.

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After you log in with your intranet user ID and password and select the Architect assessment, the tool prompts for your target level. You can choose from Foundation level; Associate Certification, which equates to Career Framework's Experienced level; Certification, which is the same as Expert level; and Senior Certification, which is the Thought Leader level.

Certification Readiness Tool - Self-Assessment



Certification Readiness Tool

My Assessment Review Assessment Report Administration

Certification Self Assessment

Core capabilities 0/18 > Experience 0/10 > Education 0/4 > Giveback and others 0/2 > Specialization capabilities 0/6

Architectural Approach Architecture Governance and Project Management Leadership and Influence

Please access your Architect core capabilities using one of the attainment levels. To meet the requirement, you must be able to provide at least one example for Acquired, two examples for Applied, and three examples for Mastered or Innovative Leadership.

Architectural Methods
Select, tailor, and guide the use of appropriate, rigorous, structured, and recognized architectural methods in the delivery of work products and the execution of processes.

Limited Acquired Applied Mastered Innovative Leadership

Architectural Modeling Techniques
Select and use appropriate modeling techniques for the development of architecture models in order to guide, communicate, validate, and test proposed solutions and outcomes against requirements.

Limited Acquired Applied Mastered Innovative Leadership

Architectural Thinking
Apply sound, creative, and innovative architectural thinking to enhance and expand the implementation of architectural principles, practices, and concepts to meet the business intent or the delivery of solutions.

Limited Acquired Applied Mastered Innovative Leadership

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Based on your selected target level, CRT will display the criteria for that level. You can assess yourself against the criteria, including the core capabilities, experience requirements, education requirements, giveback requirements, and references. Specialization capabilities are available for Certification level assessment and, optionally, for Senior Certification assessment.

Certification Readiness Tool - Assessment Result



Assessment Result

Employee Name: Cynthia Lau
Employee Email: colau@us.ibm.com
Program participating in:
IOT, IMT/GMT: North America - U.S. West
Organization: CHQ/OTH
Mentor(s):
Mentor(s) Email:
Target level: Certification
Specialization: IT Architecture - Information Architecture

Indicator Level (Number of missed Criteria) Approaching(4) ←

Criteria	Required for target level	2011-07-06 Assessed
Architectural Thinking	Mastered	Applied
Architectural Leadership Experience In Business Development	Yes	No
Architectural Leadership	2 years or more	1.5 to 2 years
Information System Architecture	Three or more	Two

Comment for this assessment:

Your assessment indicates that you are on your way towards your target level. The assessment has identified several criteria that you need to work on. You should work with your mentor to create a development plan to help you achieve your target level within one year. Review the "Finding a mentor" page on the Architect profession wiki if you need help identifying a mentor.

Disclaimer:

The assessment result is based on your self-evaluation. It is no guarantee of your readiness for certification. This is for your personal use only. You should work with your manager and/or mentor to close any gaps you may have. The result is not used in the formal certification process.

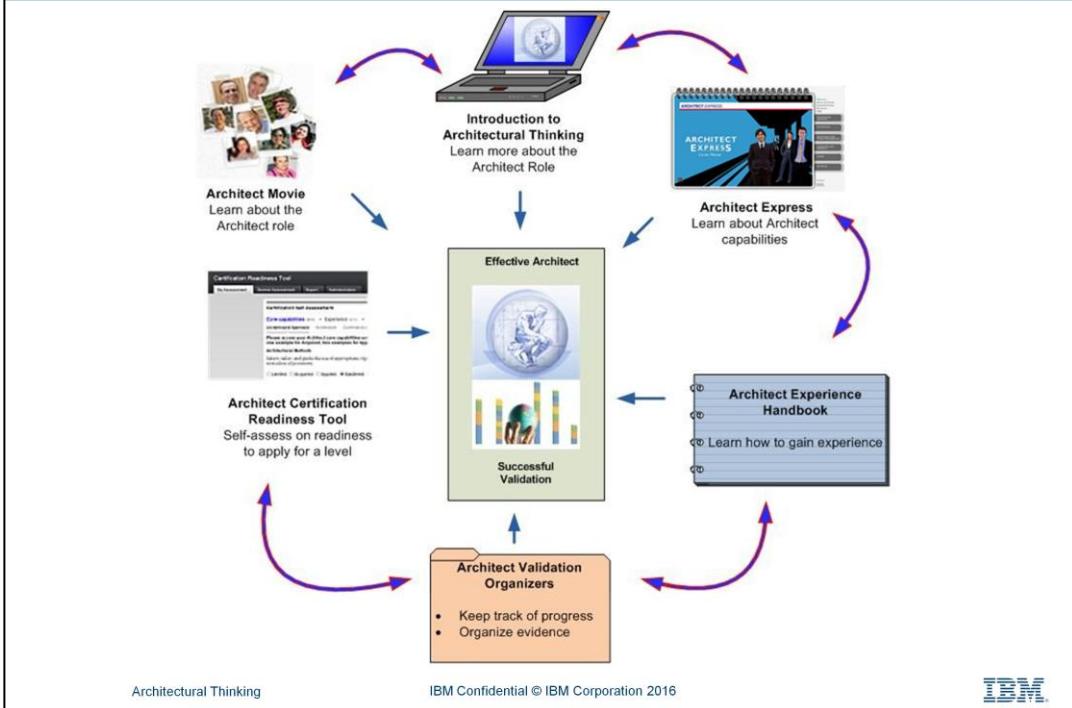
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After you finish the self-assessment, the tool provides a quick analysis. It shows your demographic information, followed by the readiness indicator level and the number of missed criteria. Then the list of missed criteria, the requirements for the target level, and the self-assessed input are displayed. You can use the result as a conversation starter with your mentor and your manager. Furthermore, this serves as the beginning of an action plan to close gaps; you can now go to Architect Express to find learning activities, and to the Architect Experience Handbook to get advice and guidance on how to gain experience.

The Architect Profession Toolkit - Summary



In summary, when used together, the components of the Architect profession toolkit can help you build your skills and gain experience to be an effective Architect. The toolkit can also help you achieve successful validation at the appropriate certification level.

Module Outline



- Introduction and Objectives
- The Architect Profession Toolkit

► Additional Resources

- Tools for Architects
- Summary

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Now we will discuss some of the additional profession and Architect resources that will be helpful to you.

Architect Resource Center (ARC) wiki



A screenshot of the IBM Architect Resource Center (ARC) wiki homepage. The page has a dark blue header with the title "Architect Resource Center (ARC) wiki". Below the header is a navigation bar with links: Welcome, Existing IBM Architects, New or Potential IBM Architects, Managers of IBM Architects, Mentors, Board Members and Reviewers. To the right of the navigation bar is a circular profile picture of a person's head with a blue brain-like pattern inside. The main content area features several sections: "Welcome to the IBM Architect Resource Center" with a brief description and a large circular logo; "Existing IBM Architects" with a photo of hands working on a blueprint and a link to "Explore your Architect Career"; "New or Potential IBM Architects" with a photo of a person looking through binoculars and a link to "Explore the Architect Career"; "Managers of IBM Architects" with a photo of three people in a meeting and a link to "Managing Architects"; and "Mentors, Board Members and Reviewers" with a photo of two people talking and a link to "Helping Architects". On the right side, there are two columns: "see the Latest Updates" (Leader's Corner, News) and "Frequently Used Links" (Architect Document Library, Architect Solutions, Architect Policies, Design Patterns, Access to Clients, Writing an Effective Certification Profile, General Frameworks, Defining Architecture, Certification Processes Tool, Professor Dates, Professor Contact, IBM Architect Professor Guide). At the bottom left is the text "Architectural Thinking", at the bottom center is "IBM Confidential © IBM Corporation 2016", and at the bottom right is the "IBM" logo.

The Architect Resource Center (ARC) wiki is the reference site for Architects. All profession-related information can be accessed from this wiki. All members of the Architect Profession are catered to. From a high level there are pages for Existing Architects, New or Potential Architects, Managers of IBM Architects and Mentors, Board Members and Reviewers

From these pages you can click through to all the information you require. There is also a Forum for Q&A.

On the next few slides, we will point out some of the important resources you can find on the Architect Resource Center wiki. But note that with continuous improvement the content of the wiki will change over time. The content shown on the next few slides will be updated or rearranged and may not look exactly the same.

**New or Potential IBM Architects**

Are you new to the IBM Architect Profession, or trying to determine if the IBM Architect role would be appropriate for you? If so, click the following link to learn more about the IBM Architect profession.

 [Explore the Architect Career](#)

This link leads to information for new or potential Architects to explore the Architect career. It links to the *Architect Movie*, information on what it means to be an Architect in IBM, Architect job roles in IBM, the Architect career path, and guidance on how to develop along that path.

**Existing IBM Architects**

Are you already an IBM Architect? If so, click the following link to learn how you can grow your IBM Architect career.

[Grow your Architect Career](#)

This link leads to information that will help Existing Architects grow their Architect careers. It has guidance for all four validation levels; Foundation or Entry level, Associate Certification or Experienced level, Certified or Expert level, and Senior Certified or Thought Leader level. For each of these levels there is information on Education, Certification Requirements, and Certification Tools and Resources. Where applicable, it includes information on Recertification, External Recognition with the Open Group, and certified professional transitioning from other professions such as IT Specialist and Consultant.



Managers of IBM Architects



Do you manage IBM Architects? If so, click the following link to learn more about how you can provide support for your employees as well as recruit new Architects to the career.

[Managing Architects](#)

This link is intended for Managers of IBM Architects. Information is provided here that will assist managers in fully understanding the Architect Profession and help them with developing their existing Architects, as well as recognizing and developing new Architects on their team.

**Mentors, Board Members and Reviewers**

Are you a mentor, a board member, or a reviewer? If so, click the following link to learn more about helping other Architects grow their careers.

➤ [Helping Architects](#)

This link leads to information for Mentors, Board Members and Reviewers. The Mentors section has links to information on being a mentor and being mentored along with guidance on obtaining a mentor. Having a Mentor is mandatory and a key resource to achieving a successful Certification or validation. The Board Member section has links to detailed information about the Certification processes, its responsibilities, timeframes, and tools and resources for Board members. Board members and Reviewers are certified Architects who are contributing to the profession by performing the Certification review processes for their fellow members of the Architect profession. The Reviewers section provides guidance for Certification package reviewers to enable them to perform their initial package reviews and from their guide Architects to successful certification.



Career Development Guidance > Career Guide >

Architect

Career Path



What is an Architect?

The Architect defines the structures of solutions and architectures to address client business problems. The Architect understands client needs and business constraints, works in levels of abstraction, applies industry knowledge, and leverages appropriate business elements and information technology to address those needs. The solutions are manifested as Business, Enterprise, or IT architectures and can include systems, applications, and process components. They may also involve the application and integration of a broad variety of products, technologies and services, and various architectural styles and domains.

Additional resources on career development, as well as communities, events, industry information, and other helpful information can be found on the [Architect Resource Center](#).

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The Career Framework Career Guide is the official website for various job categories at IBM. For Architects, the Career Guide for the Architect job category now points back to the Architect Resource Center wiki that is our reference site for Architect information.

Architect Documents (1 of 6)



Architect Document Library		
Must Read Profession Documents for all levels		
Worldwide Architect Profession Guide		
Additional Profession Documents		
Writing an Effective Certification Package	Architect Mentoring Whitepaper	IBM Architect Profession Job Role Guide
Architect Experience Handbook		
Education		
Worldwide Architect Education Guidelines		
Foundation Level Validation		
Defining Architectures Foundation	Foundation Level Organizer	

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All Architect documents are available on the Architect Document Library page of the Architect Resource Center wiki. There is a Must Read section plus an Additional Profession Documents section and a section for each validation level. You can navigate to this page from the Frequently Used Links on the Welcome page of the Architect Resource Center wiki.



Important documents

- WW Architect Profession Guide – The definitive source of information for the Architect career and certification criteria.



Documents you should be aware of include the WW Architect Profession Guide, which is the definitive source of information for Architects. Before you start the certification process, you should review the information in the Architect Profession Guide first.



Important documents

- WW Architect Profession Guide – The definitive source of information for the Architect career and certification criteria.
- WW Architect Education Guidelines – Specifies required and recommended education for Architects.



The Education Guideline document shows the required and recommended education for Architects. You should refer to this guide if you have questions about Architect education.



Important documents



- WW Architect Profession Guide – The definitive source of information for the Architect career and certification criteria.
 - WW Architect Education Guideline – Specifies required and recommended education for Architects.
- WW Architect Method Guide – Specifies the methods that meet certification requirements.

The Methods Guide contains information about methods, or the type of methods that meet the certification requirements.



Important documents

- WW Architect Profession Guide – The definitive source of information for the Architect career and certification criteria.
 - WW Architect Education Guideline – Specifies required and recommended education for Architects.
 - WW Architect Method Guide – Specifies the methods that meet certification requirements.
- Defining Architectures Validation Templates – Give a view of the content of the validation package. Templates are available for each level.

We provide a validation template for each level to give you a view of the package content and how the requirements are stated.



Important documents

- WW Architect Profession Guide – The definitive source of information for the Architect career and certification criteria.
 - WW Architect Education Guideline – Specifies required and recommended education for Architects.
 - WW Architect Method Guide – Specifies the methods that meet certification requirements.
 - Defining Architectures Validation Templates – Give a view of the content of the validation package. Templates are available for each level.
- ➡ Writing an Effective Certification Package – Provides information on completing a validation package and guidance on specific criteria.

The Writing an Effective Certification Package document provides guidance on the validation process, completing the validation package, and on specific criteria. All the documents listed here are available on the Document Library page.

Communities



- IBM® Lotus® Connection communities and wikis
- Many geography-based or organization-based Architect communities
- Architect mentors
- Architect Express



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Networking and getting to know your peers are very important in your everyday job and in advancing your career. The Lotus Connection community is a great way to connect. There are many location-based communities and wikis such as the ones for the Americas, the UK, Germany, Australia and New Zealand, and so on. Other public communities for Architects are based on business units or roles, such as the AIS Architect community and Software Architect communities. You can find many of the links in the Architect Resource Center wiki links and on the communities page, or you can do a search in the community.

Two communities are worth special mentioning here. One of them is the Architect mentors community. The intent of the Architect mentors community is to provide the means for proteges to identify potential mentors and for Architects to make themselves available as mentors. The second one is the community set up especially for the Architect Express tool. This is where you can get support for the tool.



Many resources within IBM provide knowledge and support:

- Reference architectures
 - SOA reference architecture
 - IBM cloud computing reference architecture
- Intellectual capital repositories and reusable assets
 - IBM Rational® Asset Manager (iRAM)
 - GBS Asset Hub, GBS software assets websites



There are many resources available within IBM that help you with your day-to-day job. There are many reference architectures available. The SOA and IBM cloud computing reference architectures are just two examples of technology-specific reference architectures. Others are application- or industry-specific.

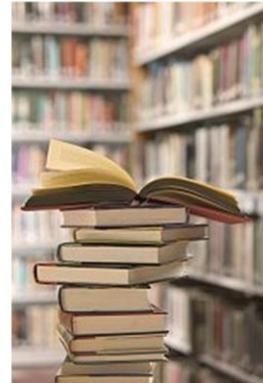
IBM has several internal asset repositories. Assets are valuable because they represent approaches and solutions that have been proven successful and thus help reduce risk. iRAM is a collaborative environment for creating and governing assets. GBS also provides a full range of assets at Asset Hub and software assets websites.



Many resources within IBM provide knowledge and support.

- Knowledge resources

- Practitioner Support Network
- IBM Redbooks® publications and Redpapers
- Books 24x7
- Know Your Industry website
- IndustrySPACE
- School of Software Architecture
- Software Sellers Workplace (Xtreme Leverage)



Many knowledge resources are available as well. Some are business-unit-specific and some are available to the general population.

- Practitioner Support Network is a single point of contact in GBS for finding assets, experts, information and analyst reports, business research, and so on.
- The Redbooks series of publications provides IBM products skills, technical know-how, and materials to IBM technical professionals, Business Partners, clients, and the marketplace in general.
- Books24x7 provides leading on-demand business, technical, and engineering content containing thousands of digitized "best in class" books, book summaries, research reports, and best practices.
- The Know Your Industry website and the IndustrySPACE community provide industry-specific information.
- School of Software Architecture is a website for Software IT Architects and Software Group Architects. It contains information on Software Group brand offerings, solutions, and technologies.
- Software Sellers Workplace contains information on IBM products, industry, resources for technical sellers, learning activities, the Software Answering Network, and more. You can also download some IBM products for personal use and education.

Module Outline



- Introduction and Objectives
- The Architect Profession Toolkit
- Additional Resources
- ▶ **Tools for Architects**
- Summary

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Next, we will discuss tooling for Architects. A more extensive lecture on this topic is in the *Architectural Thinking* class.



Tool:

- “A device or implement used to carry out a particular function.”

Architectural thinking is all about using devices.

- Work products, techniques, notations, language, and so on

All can be done:

- By hand – using sticky notes on flip charts
- Using implements – specifically, computer-aided design tools



According to the dictionary, a tool is a device or implement used to carry out a particular function. For Architects applying architectural thinking in their work, it is all about using devices such as work products, techniques, notation, language, and so on. All of them can be done either by hand, for example, using sticky notes on flip charts, or by using implements – especially computer-aided design tools.



- Which work products or artifacts do I need to create?
- Do I need to create formal or informal work products? Or both?
- With whom do I need to communicate or share?
- Is there a standard used by the project or client?

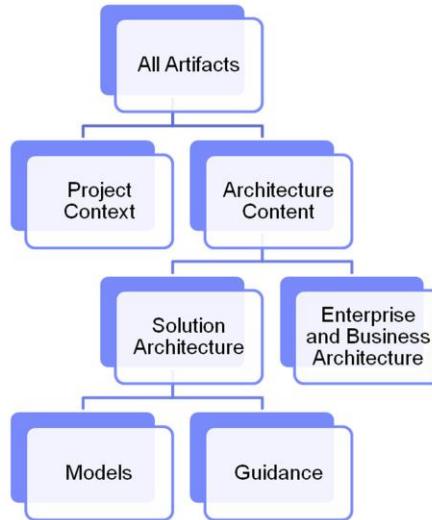


There are so many tools available, which one should you choose? That depends on which work products or artifacts you need to create, and on whether the work products are to be formal or informal representations of your architecture. If you need to share the architecture or communicate it to various stakeholders or team members, you should consider upstream and downstream. Finally, if there is already a standard specified by the project or the client, that will also affect your selection.

The Architect Tooling Landscape



The Architect tooling landscape can be depicted as a hierarchy.



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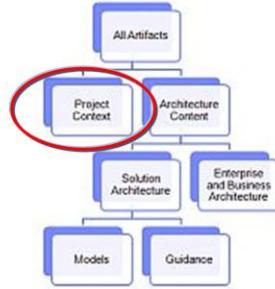
As mentioned before, selecting the tool depends on what you need to do – what work products you need to create. Therefore, we can superimpose the tooling landscape on the work product landscape so that we can discuss the tooling available to Architects based on work products.

Context



Architects work on, contribute to, or use information associated with dozens of “contextual” artifacts throughout the life cycle of their work.

- Pre-project
- Project kickoff
- Project execution



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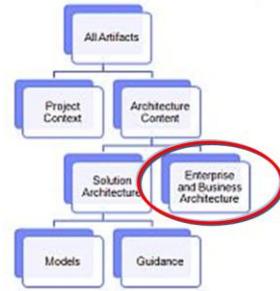
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Architects do not just create architecture artifacts; they work on, contribute to, or use information associated with many contextual artifacts throughout the life cycle of their work. These may include inventory analysis, portfolio planning, and business case and proposal development in the pre-project phase. In the project kickoff phase, some of the artifacts may include selection and customization of the engagement process, methods, and techniques. In the project execution phase, the artifacts may include planning, management, and governance. Architects should be aware of the tools associated with these contextual artifacts.



Architecture sits between requirements and design.

- Upstream → Requirements are defined in business architecture.
- Downstream → Design is the responsibility of IT solution design.



As we discussed in the “What Is Architecture” module, architecture sits between requirements and design. What this means is that there are “upstream” artifacts, such as requirements, that are defined in the business architecture space. Design artifacts, such as application development and package configuration, system deployment, and so on, are the responsibility of IT solution design.

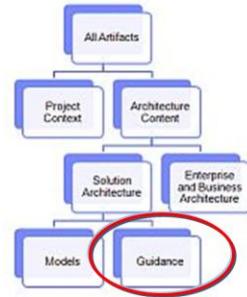


Solution IT Architects' solution models may be based on guidance.

Architects use architectural assets to help them ensure that their IT solutions "do the right things right."

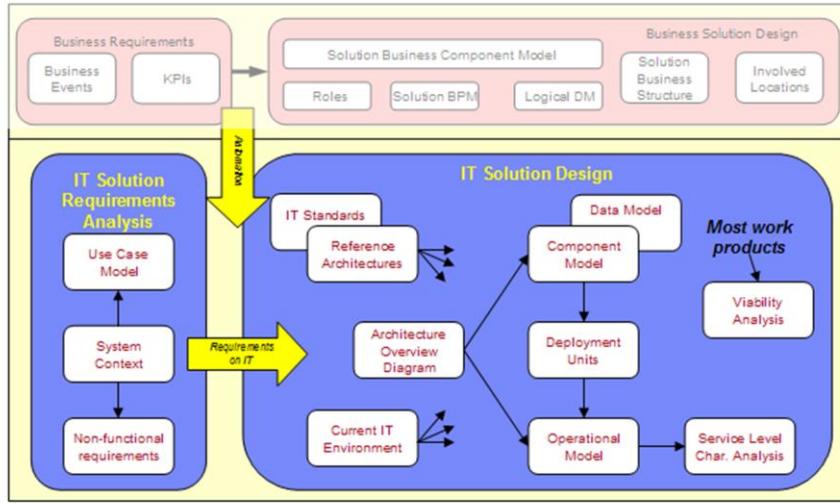
Assets may include:

- Principles, policies, and guidelines
- Patterns and antipatterns
- Development frameworks
- Reference architectures



Solution IT Architects' solution models may be based on guidance, such as that available from the enterprise architecture, patterns, and the like. Architects use architectural assets to help them ensure that their IT solutions do the right things right. Such assets may be ways to do things. Examples are principles, policies and guidelines, patterns and antipatterns, and development frameworks. Or the assets can be things such as architecture building blocks and reference architectures.

Solution IT Architects Focus on These Work Products



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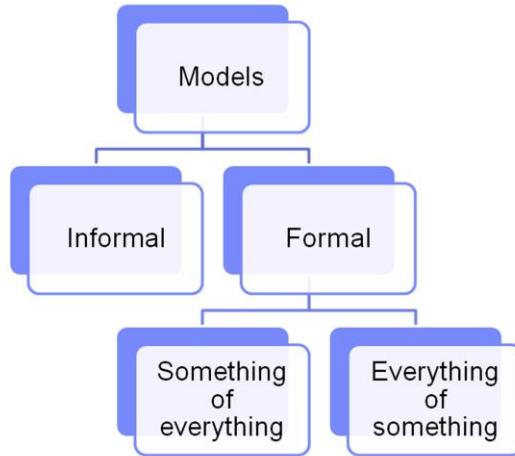


These work products are used by Architects when developing an IT solution. These are covered in detail in the *Architectural Thinking* class.



Solution IT Architects reason about these artifacts at many levels of completeness, accuracy, and detail, often dependent on:

- A moment in time
- Intended audience



Tooling that supports these artifacts needs to accommodate a range of modeling modes, from sketching through faithful representation of reality.

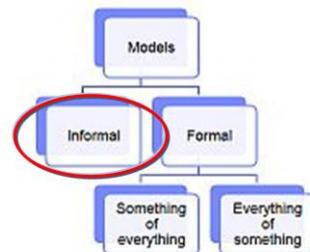
Solution IT Architects reason about these artifacts at many levels of completeness, accuracy, and details, often dependent on:

- A moment in time: Earlier is generally less detailed, and later is often more.
- Intended audience: Stakeholders need fewer details, and designers need more.



Architects render their architecture as sketches and drawings.

- Provide initial and high-level understanding of the system to business stakeholders.
- Provide early view of system implications to technical stakeholders.
- Some work products do not require depth or maintenance.



Architects need to render their architecture as informal sketches and drawings, often with little or no sense of formal notation or consistent viewpoint. There are several reasons for sketching:

- Business stakeholders may require an initial and high-level understanding of the system to provide appropriate response and sponsorship.
- Technical stakeholders may need an early view of system implications related to their concern prior to your investing in detailed work product development.
- Some work products will only have a short relevance to members of an initiative and will not require depth or maintenance.

“Something of Everything”



Architects sometimes need to render their architecture more formally, but holistically.

A tool that captures the majority of work product needs will be useful.

- Provides consistency on all related work products
- Manages the dependencies among work products
- Provides a wide diversity of models based on modeling standards
- Integrates with tools used by other stakeholders



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Architects may need to render their architecture more formally but holistically. On these occasions, Architects may want to use one tool that captures the majority of their work product needs with an appropriate level of depth and artifact maintenance support in a holistic view. The artifacts within this tool will primarily be used by the Architect, although exportation may allow access by broader stakeholders. Some advantages of this type of tool are:

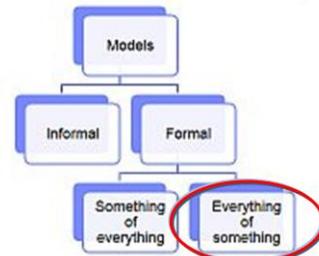
- The ability to model an element only once and have all related work products leverage it to ensure consistency
- The ability to manage the dependencies among work products using impact analysis
- A wide diversity of models based on modeling standards
- Integration with tools used by other stakeholders to exchange content up- or downstream

“Everything of Something”



Architects render their architecture more formally, with significant detail and “reality.”

- Some work products require further elaboration to reflect the actual target implementation or to reflect standards and regulation requirements.
- These work products are often built with a collection of tools.
- These work products can be grouped by SDS's four aspects:
 - Requirements aspect
 - Functional aspect
 - Operational aspect
 - Viability aspect



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A more formal rendition may be required to further elaborate on the work product to reflect the actual target system implementation. The need for greater detail may also reflect standards and regulation requirements. These work products are often built with a collection of tools that are typically used not just by Architects but by other stakeholders and practitioners, too.

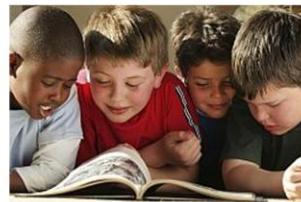
The work products in System Description Standard have four aspects:

- Requirements aspect
 - System context diagram, use case model, nonfunctional requirements
 - Principles, architecture decisions
- Functional aspect
 - Component model, subject area, data model, service model
- Operational aspect
 - Deployment units, operational model
- Viability aspect
 - Validation, viability



One advantage of using tools is the ability to share the architecture easily:

- Among tools
- Among stakeholders
- Among Architects



Architects need to share their work with different stakeholders in different phases of the project life cycle. Using the right tools will help information sharing among tools, stakeholders, and other Architects. You should review the information-sharing requirements on the project when you select tools.

Module Outline



- Introduction and Objectives
- The Architect Profession Toolkit
- Additional Resources
- Tools for Architects
- ▶ **Summary**

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Next, we will have a brief summary.

Summary



This module described the tools and resources available to Architects.

- The Architect profession toolkit is a suite of tools developed to help early career Architects build capabilities and gain experience.
- Additional resources such as the Architect Resource Center wiki, Career Guide, communities, and documents are also available to Architects.
- There are many tools available to Architects, and we can use work products to classify the tooling landscape.

This module described the tools and resources you can use to further your career as an Architect. Specifically, the Architect profession toolkit is a suite of tools that can be used together to build the core capabilities and gain experience. There are other resources, such as the Architect Resource Center wiki, Career Guide, communities, and documents, that are available to you. As an Architect, you will use tools, so knowing the types of tools available will help you when you need to select the right tools for your architecting work.

We hope this course was helpful to you as someone who is interested in pursuing the Architect career, as an experienced professional Architect wanting to learn about the Architect role at IBM, or as someone who works with Architects and wants to learn more about the role.

Don't forget to listen to Sue-Miller Sylvia's closing remarks, and remember to download additional course materials. These are in the final module of the course, the course Summary.

THANK YOU



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This concludes Module 7, The Architect Toolbox.