

Design DNA (DDNA)

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DDNA Overview

DDNA is a three-tier, process-based structure for rapidly and reliably generating a Work Breakdown Structure (WBS) for any design discipline, for any size project. We call it "DNA" because it is a core design process building block method that can create the framework for almost any design solution.

DDNA is the "heart and soul" of the iProjects Design Management system. This evolutionary concept - capable of driving design management processes for all design disciplines, on any project, down to the level of task actions - yet managing all of these from a single page layout - offers its users a level of power, control, and freedom the design professions have only ever dreamed of, until now.

A key benefit of this structure is that it prompts the user to think about the range of project requirements, making a decision as to whether a particular process is or isn't required for a particular project. The only "overhead" is the user's thought time: making the selection takes a millisecond - simply a mouse click. The output from this process set is a Work Breakdown Structure for the project, which in addition to generating a fee proposal, can be used to generate the project schedule, and to facilitate design progress monitoring and control.

In addition to creating the WBS, DDNA allows the user to specify both inputs and outputs to process Stages, selecting from a practice-customizable schedule, and to select appropriate tools (such as checklists and forms) required for that Stage. Selecting the inputs and outputs creates a list of the same for the project, as a guide for what the project team has to both consider, and produce.

By selecting the various tools the user decides are needed, the software automatically puts the project number and project name throughout all of the selected forms and checklist masters, identifying and keying them for use on the project. In the event that project requirements change - as they invariably do - the user can go back to the project master and add or delete WBS items, then create a revised document for use as noted above.

This entire process is actioned via a single screen layout of the system, allowing WBS preparation for a quite complex project in 15-20 minutes. More than that will be head-scratching time, as you try to decide what will be in, or out, of your proposed scope of services.

Customizing DDNA for your practice

You can quickly and easily customize DDNA to suit the unique way in which your practice works. From that customized version, you can create new templates specific for use on specific project types, again built to reflect the way you uniquely practice.

These customizing options are described in UserGuide 5.7 **Custom DDNA & System DDNA**.

Decoding the Design DNA genome

Let's start with an overview of the DDNA page for a sample project:

Discipline/Project Type shows you the template that you selected in creating the project (see UserGuides 3.1 and 3.2). At the bottom of this schedule is a pair of check boxes:

You use these check boxes to select either just the selected (checked) Stages, Tasks, Actions, Tools, Inputs, Outputs, etc. – or to see the complete Master set.



Below this are some scrolling Instructions, and below that, a selection panel for **Common Tools** you'll use on the project. We'll come to the **Checkset Indicator** later.

Basic Navigation

As used throughout the whole of iProjects, clicking the check box “selects” the item for inclusion in a project.

Clicking on the red triangle next to the check box displays everything that “sits below” the heading. In the case of Stages, clicking the arrow shows the Tasks related to that Stage, and clicking the arrow in Tasks displays the Actions related to that Task.

In the case of Tools – eg the **Common Tools** pane shown above, clicking the arrow displays the ProFrom tool.

DDNA Stages

Now we'll look at the **Stages** schedule. There are nine stages in the **iProjects** structure (compared to 6 to 8 in most other project management structures). There are three reasons for this.

First, consistent with the entire focus of **iProjects**, we have raised Coordination to the importance of a "stage" – although in reality Coordination takes place across all Stages.

Second, we also treat Management as being sufficiently important to warrant stage status, although, like Coordination, it takes place across all the other Stages.

The third reason is purely pragmatic: in order to make the simple, 3-character numbering structure work, there were so many tools, actions and tasks associated with these that they needed their own place in the hierarchy. It simply didn't make any sense to include categories for coordination and management in each of the other seven Stages.

If you are comfortable with the more-or-less traditional idea that coordination and management are not really project work, just a necessary evil you have to do but never get paid for – well, you don't have to select these Stages when you prepare your cost and time schedules. You can just go on doing them for free.

Below the nine Stages, you can see three more high-level categories: E00 Expenses, S00 Subconsultants and V00 Variations. There are here, because it is the Stage structure that drives the project cost plan and the project schedule, and having them here means they will be part of those project plans.

Note that there is an editable, scrollable Stage description pane below the Stage schedule. This description text box has two functions:

- ❖ It explains to your less experienced staff what the Stage is about, and is a reminder to them of what they have to do, and
- ❖ If you are preparing a detailed proposal, it will save you tons of time – just cut and paste the contents into your proposal.

You can, of course, create discipline-specific and project type-specific Descriptions.

Before moving on to Tasks, a word about the **iProjects** "taxonomy" – the 3-character structure. We felt it was extremely important to create the simplest possible structure that would actually work – and we spent a long time looking at different classification systems used around the world (the new "Omniclass" structure in the US is positively scary in its complexity). To make a long story short, the solution to the taxonomy problem was to separate design **process** – which is amazingly consistent across all disciplines, worldwide - from design **content** – which is unique for nearly every project.

Stages

Check	Title
100 <input checked="" type="checkbox"/>	Initiation
200 <input checked="" type="checkbox"/>	Schematic Design
300 <input checked="" type="checkbox"/>	Design Development
400 <input checked="" type="checkbox"/>	Coordination
500 <input checked="" type="checkbox"/>	Documentation
600 <input checked="" type="checkbox"/>	Procurement
700 <input checked="" type="checkbox"/>	Delivery
800 <input checked="" type="checkbox"/>	Completion
900 <input checked="" type="checkbox"/>	Management
E00 <input checked="" type="checkbox"/>	Expenses
S00 <input checked="" type="checkbox"/>	Subconsultants
V00 <input checked="" type="checkbox"/>	Variations

Stage description

The Initiation Stage clarifies and quantifies project requirements, opportunities, and constraints. Research into the site, adjoining properties, concerned stakeholders, relevant planning schemes, zoning, and other issues affecting development possibilities is required. This Stage results in the preparation of a Project Management Plan (PMP) which is the first deliverable under the fee agreement.

By doing that, we were able to use just three numbers – 9 x 9 x 9 – to describe any process in a discipline. Some care is needed in how the information is organized, but it really works. 9 cubed is 729 process actions – more than enough to track and manage design on even complex projects. The key is mentally keeping *process* separate from the literally millions of *content* decisions that go to create the average project.

DDNA Tasks

There can be a maximum of 9 Tasks per Stage. If you look back at the Stage schedule on the previous page, you will see that Stage 100: Initiation is selected (green highlight). Doing this displays the Tasks for Stage 100 – 110 to 190. There are a number of important features to observe about this structure:

- ❖ Note that the top item is listed as 100 Initiation General. This is the selection to make if you DO NOT want to break down this Stage in your cost plan and time schedule – it means that you will carry a single value for all of the work of this Stage – and you would not tick any of the 110-190 Task titles.
- ❖ Note, however, in this example the user *has* ticked several of the Task titles: 110, 120, 130, 140, 150 and 180. What this means is that the user has decided that 5 Tasks are required for the project – but doesn't want to have to separately cost, schedule and track all of them. In fact, the user is only going to cost, schedule and track one of these – 120 Project Design Management Plan. To this, she has clicked on the \$ sign icon at the right. Doing that changes the icon to white in a green square – indicating that this item will appear in the cost plan and schedule.

The user has also made this selection for 100 Initiation general, which means this item will be tracked, and will include the costs of doing the work of Tasks 110, 140, 150 and 180 – but not 120.

This feature gives *maximum flexibility* to project planning, and helps users to identify all of the things they will need to do, without the overhead of having to manage a huge cost plan/schedule. Your financial/schedule planning can be as streamlined or as detailed as you want it – your call.

- ❖ Note the [Track Costs](#) button at the top right. This is a toggle switch that turns all of the \$ sign icons either on or off – a shortcut.
- ❖ Note that some titles are in [blue](#); others in black. [Blue](#) means that there are Actions assigned to the Task; black means there are not.
- ❖ Note the [Edit](#) button after each Task. Users can modify any **Task** title; they can also modify any **Task Description** below.

ID	Check	Title	Track Costs	
100	<input checked="" type="checkbox"/>	Initiation general	\$	Edit
110	<input checked="" type="checkbox"/>	Collect/review data	\$	Edit
120	<input checked="" type="checkbox"/>	Project/Design Management Plan	\$	Edit
130	<input type="checkbox"/>	Brief & Proposal to Client	\$	Edit
140	<input checked="" type="checkbox"/>	Structure project #	\$	Edit
150	<input checked="" type="checkbox"/>	Consult with Authorities #	\$	Edit
160	<input type="checkbox"/>	Set up ESD project	\$	Edit
170	<input type="checkbox"/>	Set up Green Star project	\$	Edit
180	<input checked="" type="checkbox"/>	Set up BIM project	\$	Edit
190	<input type="checkbox"/>	Communication	\$	Edit

Task description

Collect and review relevant data for the project, including surveys, site plans, soils and utilities data, photographic records, previous documents of record, and previous proposals for site if relevant.

DDNA Actions

Glance back at the **Tasks** graphic on the previous page; you'll see that Task 100 was selected and displayed with a **green** highlight.

Doing this also selects the matching set of **Actions** assigned to the Task – in this case 111 through 118 (118 is a newly-created Action, not yet described).

Actions are for reference – to remind you (and your team) of the detail of the scope of work to be performed throughout the project.

Actions are not costed or scheduled, but they are displayed as reference detail on PF18 **Project Financial Plan**, to help you remember scope when you are pricing. See UserGuide 4.4.2, p9 for an example.

Note that Action 111 is highlighted above. Selecting an Action displays its associated **Action Description**. Users can edit both Action titles and descriptions.

ID	Check	Title		New
111	<input checked="" type="checkbox"/>	Site and survey information	Edit	
112	<input type="checkbox"/>	Public services and amenities	Edit	
113	<input type="checkbox"/>	Constraints	Edit	
114	<input type="checkbox"/>	Existing structures	Edit	
115	<input type="checkbox"/>	Previous proposals for site	Edit	
116	<input type="checkbox"/>	Adjoining building defects survey	Edit	
117	<input type="checkbox"/>	Examination of drawings/documents	Edit	
118	<input type="checkbox"/>	New Action	Edit	

Action description

Obtain site and survey information, including locations and capacities of all utilities serving site and running through it, and any available information on soils, substrate conditions, etc. This Action is an input to Task 210.

Reference to Professional Association Guide Documents

Services identified in Australian Institute of Architects *Advisory Note AN10.01.101 Scope of the Architect's Services* as "Core Services" are marked by the # symbol in DDNA. All AIA Core Services are included in DDNA. The Stages in DDNA correspond to the AIA model as follows:

100	Initiation	A1: Pre-Design Services
200	Schematic Design	A3: Schematic Design/Development Application Services
210	Site Analysis	A2: Site Analysis Services
300	Design Development	A4: Design Development/Development Application Services
400	Coordination	A5.02.03: Coordination of secondary consultants
500	Documentation	A5: Contract Documentation Services
600	Procurement	A6: Tendering and Negotiating Services
700	Delivery	A7: Contract Administration: Construction Services
800	Completion	A8: Contract Administration: Post-construction Services

Update Note: The document cited above has been superseded, and there have been some amendments to the AIA's list of Core Documents. These references will be checked and updated in a future software release. Until amended, treat them as generic "core services" headings rather than the AIA's current recommendations.

DDNA tools structure

The DDNA page provides links to **iProjects** ProForms and Checklists, organized by the Stage in which they are typically first used. Clicking from one Stage to another displays the tools associated with that Stage. Note that tools Ids – eg PF11, PF12, CL11, CL12 – match the overall numbering structure.

Common Tools			
ID	Check	Title	
CF	<input checked="" type="checkbox"/>	Communication Form	
PF01	<input checked="" type="checkbox"/>	Internal Project	
PF02	<input checked="" type="checkbox"/>	Project Document Register & Transfer	
PF03	<input checked="" type="checkbox"/>	Incoming Project Document Register	

Stage ProForms			
ID	Check	Title	Green Text = Tool not built yet
PF11	<input checked="" type="checkbox"/>	Project Briefing & Change Log	
PF12	<input checked="" type="checkbox"/>	PMP Cover Sheet	
PF13	<input checked="" type="checkbox"/>	Project Team	
PF14	<input checked="" type="checkbox"/>	Project Set up & Controls	
PF15	<input type="checkbox"/>	Small Project Setup & Controls	
PF16	<input checked="" type="checkbox"/>	Quality Control Plan	
PF17	<input checked="" type="checkbox"/>	Project Schedule	
PF18	<input checked="" type="checkbox"/>	Project Financial Plan	
PF19	<input checked="" type="checkbox"/>	Project Delivery Budget	

Stage CheckLists			
ID	Check	Title	Green Text = Tool not built yet
CL11	<input checked="" type="checkbox"/>	Preadgreement	✓
CL12	<input checked="" type="checkbox"/>	Programme Development	✓
CL13	<input type="checkbox"/>	Environmental Requirements	
CL14	<input checked="" type="checkbox"/>	Site information	
CL15	<input checked="" type="checkbox"/>	Authorities & Planning Approvals	
CL16	<input type="checkbox"/>	Building Diagnostics	
CL17	<input type="checkbox"/>	Building Survey	
CL18	<input checked="" type="checkbox"/>	Design Planning & DA	✓
CL19	<input checked="" type="checkbox"/>	Project Quality Planning	✓

As with Stages, Tasks and Actions, tools are selected by clicking on the check box next to them. Clicking the red triangle displays the tool selected.

The **CheckSet Indicator** feature enables you to see instantly which Checklists contain items that relate to one of the nine selection criteria. Note that the QM box in the Indicator is checked, and that there are green checkmarks (✓) against four of the checklists. This means that these checklists contain one or more QM-related checklist items (See UserGuide 4.5 **Checklists** for more information).

In the example shown above, you can click through the various Stages, and this feature will identify all of the checklists that contain check items for the selected criteria. If you are unsure whether or not to include a checklist in your project plan, just click the red arrow next to it and locate the item(s) – you can see in seconds whether or not that checklist has relevance to your project. – a *massive* time-saver.

Finally, note the two Show Me: fields below the Tools schedules (shown right). Clicking in one of these fields will display a scrollable, alphabetical list of all ProForm or Checklist tools (selected or not) – very handy if you can't remember which Stage a tool is listed under.

Project Inputs and Outputs

In the lower right corner are scrollable repeating fields for **Stage Inputs** and **Stage Outputs**. We provide some samples for illustration, but the point is for you to list the most common inputs and outputs that YOUR firm uses in conjunction with a particular discipline or project type. As you click on different Stages, different sets of Inputs and Outputs will be displayed.

Users are prompted to select those inputs and outputs that are required for their particular project.

You can enter as many inputs and outputs for each Stage as you need.

Users can create [New](#) inputs and/or outputs if there is something unusual about their project that the “standard” set doesn’t cover, and can delete them using the trashcan.

As with **iProjects** tools, Inputs/Outputs have IDs that reflect the Stage they relate to.

Stage Inputs				New
ID	Check	Title		
IP11	<input type="checkbox"/>	Client brief		
IP12	<input type="checkbox"/>	Surveys & site studies		
IP13	<input type="checkbox"/>	Existing conditions reports		

Stage Outputs				New
ID	Check	Title		
OP11	<input type="checkbox"/>	Return Client brief		
OP12	<input type="checkbox"/>	Project Management Plan		
OP13	<input type="checkbox"/>	Proposal to Client		
OP14	<input type="checkbox"/>	Nominated forms & checklists		

Finally, go back to the **Action Description** shown on p5. Note that Action 111 is listed as an Input to Task 210. This linking is up to the firm – but the idea is to build clarity throughout the system, so that design processes flow smoothly and logically. Although this thinking takes a bit of up-front effort, it is repaid many times over in producing better design and documentation of the project.

Creating a new Task, Action or Input/Output

When you click the New button anywhere in DDNA, you will get a dialog box as shown right. The header will tell you which toolset you are in eg Action or Input.

This dialog box always displays the last use of the function; you overwrite it to enter the ID and Title of the new item. Then click OK.

If you are creating a new Task or Action, remember to enter a Description below for the item.

The DDNA Rules

Every system has rules. **iProjects** has the least rules, and the most flexibility, that we could figure out how to make work. Here are the rules:

1. Maximum of 9 Tasks for any Stage; maximum of 9 Actions for any Task.
2. You can’t change the Stages (but you don’t have to use all of them).
3. Any DDNA ID cannot exceed 4 characters; any title cannot exceed 37 characters.

In Summary: the Power of DDNA

The ability to create detailed Task and Action plans for different design disciplines, and for different Project Types, and re-use these as templates – while being able to quickly and easily amend these templates to suit projects - brings users many benefits, including:

- ❖ Save **time** – minimize re-invention of round wheels.
- ❖ Unprecedented quality control – relevant, accessible, project-based guidelines for new and inexperienced staff.
- ❖ Improved client relationships – your teams will **do** what you said they would do. Clients really like that about a firm.